START

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1054

MAY

1985

BELL+HOWELL

Publication Products

Vol. 1054 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 7, 1985

Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

May 7, 1985 Volume 1054 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1054 OG 2
Notice of Maintenance Fees Payable	1054 OG 2
Reissue Applications Filed	1054 OG 2
Requests for Reexaminations Filed	1054 OG 3
Notice of Availability for Licensing	1054 OG 3
Patent Certificates of Correction	1054 OG 5
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1054 OG 6
Condition of Patent Applications	1054 OG 7
Defensive Patent Publication (105,401)	1
Reissue Patents Granted (31,877)	3
Plant Patents Granted (5,458)	5
Patents Granted	
General and Mechanical (4,514,861)	7
Chemical (4,515,596)	265
Electrical (4,515,991)	377
Design Patents Granted (278,660)	473
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 52
Application of Defensive Publications	PI 55
Classification of	
Patents (Including Reissues	PI 57
Designs, Plants and Defensive Publications	PI 60
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 61
Designs, Plants and Applicants of Defensive Publications	PI 63
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 25/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

Note that the amount of the international search fee for the European Patent Office will change effective May 7, 1985 and the amounts of the International PCT fees will change effective May 28, 1985. For information on these fee changes see the notice appearing in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Mar. 20, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 4, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents None
Utility Patents 4,327,447 through 4,328,591
Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,311,076, Re. S.N. 719,558, Filed May 24, 1984, Cl. 84/001, ELECTRONIC MUSICAL INSTRUMENT WITH HARMONY GENERATION, Thomas E. Rucktenwald, et al., Owner of Record: *Whirlpool Corp., Benton Harbor, Mich.*, Attorney or Agent: Albert L. Jeffers, Ex. Gp.: 217

4,457,960, Re. S.N. 718,245, Filed Apr. 1, 1985, Cl. 428/035, POLYMERIC AND FILM STRUCTURE FOR USE IN SHRINK BAGS, David L. Newsome, Owner of Record: *American Can Co., Greenwich, Conn.*, Attorney or Agent: Stuart S. Bowie, Ex. Gp.: 154

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,523,889, Reexam. No. 90/000,751, Requested: Apr. 3, 1985, Cl. 210/713, METHOD AND APPARATUS FOR SEPARATING LIQUIDS FROM SOLIDS, Frederick G. Eis, Owner of Record: *American Sugar Co., New York, N.Y.*, Attorney or Agent: Elmer S. Albritton, Ex. Gp.: 310, Requester: Eimco Process Equipment Co., Salt Lake City, Utah

3,862,861, Reexam. No. 90/000,747, Requested: Mar. 28, 1985, Cl. 429/57, MAINTENANCE-FREE TYPE LEAD ACID, Donald H. McClelland, et al., Owner of Record: *Gates Energy Products, Inc., Denver, Colo.*, Attorney or Agent: C. Castleman, Ex. Gp.: 110, Requester: Yuasa Battery Co., Ltd., Tokyo, Japan

4,042,890, Reexam. No. 90/000,749, Requested: Mar. 28, 1985, Cl. 330/207A, HIGH EFFICIENCY ELECTRICAL POWER CONDITIONER, Joseph S. Eckerle, Owner of Record: *Joseph S. Eckerle, La Honda, Calif.*, Attorney or Agent: Townsend & Townsend, Ex. Gp.: 250, Requester: Hewlett-Packard Co., Palo Alto, Calif.

4,231,105, Reexam. No. 90/000,754, Requested: Apr. 11, 1985, Cl. 364/900, VENDOR CONTROL CIRCUIT, James T. Schuller, et al., Owner of Record: *UMC Industries, Inc., Stamford, Conn.*, Attorney or Agent: Senniger, Powers, et al., Ex. Gp.: 237, Requester: Unidynamics Corp., St. Louis, Mo.

4,408,081, Reexam. No. 90/000,753, Requested: Apr. 9, 1985, Cl. 568/571, PROCESS FOR OXIDATION OF ISOBUTANE, Elton G. Foster, Owner of Record: *Shell Development Co., Houston, Tex.*, Attorney or Agent: Ronald L. Clendenen, Ex. Gp.: 120, Requester: Owner

4,446,113, Reexam. No. 90/000,752, Requested: Apr. 3, 1985, Cl. 422/267, BENZOPYRANS, John M. Evans, et al., Owner of Record: *Beecham Group P.L.C., Brentford, Middlesex, England,* Attorney or Agent: Jacobs & Jacobs, Ex. Gp.: 134, Requester: Owner

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage fand may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF COMMERCE

SN 6-400,571 (4,499,770). SYSTEMS FOR MONITORING CHANGES IN ELASTIC STIFFNESS IN COMPOSITE MATERIALS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-399,257 (4,500,637). PREVENTION OF GRAFT VERSUS HOST DISEASE FOLLOWING BONE MARROW TRANSPLANTATION.
SN 6-475,215. MULTI-LAYER COIL ASSEMBLY COAXIALLY MOUNTED AROUND THE ROTARY AXIS FOR PREPARATORY COUNTERCURRENT CHROMATOGRAPHY.

DEPARTMENT OF THE AIR FORCE

SN 6-520,356. METHOD AND APPARATUS FOR GENERATING A STRUCTURED LIGHT BEAM ARRAY.
SN 6-624,567. SECURE DIGITAL SPEECH COMMUNICATION.
SN 6-643,138. METHOD AND APPARATUS FOR HIGH SPEED, SUSTAINED RECORDING AND INFRARED LASER BEAM PATTERNS.
SN 6-649,454. APPARATUS FOR RETRIEVING, PLACING, AND STOCKING TRAYS FROM AN AUTOMATIC STORAGE AND RETRIEVAL CAROUSEL.
SN 6-659,484. CARGO HANDLING SYSTEM.
SN 6-675,171. FREQUENCY SELECTIVE SIGNALS-TO-NOISE ENHANCER/LIMITER APPARATUS.
SN 6-680,432. ACTIVE DISPERSION CONTROL FOR A DOPPLER BROADENED LASER.
SN 6-684,240. AUTONOMOUS UNINTERRUPTABLE POWER SUPPLY APPARATUS.
SN 6-686,954. INTERACTIVE COMMUNICATION CHANNEL.
SN 6-689,681. ELECTRON-BOMBARDED SILICON SPATIAL LIGHT MODULATOR.
SN 6-689,699. CHARGE ISOLATION IN A SPATIAL LIGHT MODULATOR.
SN 6-689,736. SABOT/GUN GAS DIVERTER.
SN 6-690,438. VIBRATION ISOLATOR ACTUATOR.
SN 6-698,728. OPTIMIZING HOT WORKABILITY AND CONTROLLING MICROSTRUCTURES IN DIFFICULT TO PROCESS HIGH STRENGTH AND HIGH TEMPERATURE MATERIALS.
SN 6-698,979. WAVELENGTH DEPENDENT, TUNABLE, OPTICAL TIME DELAY SYSTEM FOR ELECTRICAL SIGNALS.

DEPARTMENT OF THE ARMY

SN 6-686,048. DEVICE FOR CONTROLLING OPTICAL FIBER TWIST ON A BOBBIN.
SN 6-699,990. DIELECTRIC RESONATOR.
SN 6-704,816. INJECTION CONTROLLED LASER TRANSMITTER WITH TWIN LOCAL OSCILLATORS.

SN 6-705,267. MONOLITHIC PLANAR DOPED BARRIER LIMITER.
SN 6-707,107. ADJUSTMENT OF THE FREQUENCY-TEMPERATURE CHARACTERISTICS OF CRYSTAL OSCILLATORS.
SN 6-707,346. COMPENSATION OF ACOUSTIC WAVE DEVICES.

DEPARTMENT OF THE INTERIOR

SN 6-488,482 (4,500,329). SELF-ACTUATING VACUUM GAS/LIQUID SEPARATOR.
SN 6-622,515 (4,500,398). PRODUCTION OF LEAD FROM SULFIDES.

PATENT NOTICES

Certificates of Correction for the Week of May 7, 1985

Pp. 5,234	4,446,586	4,472,699	4,486,772
Re. 31,651	4,447,127	4,472,938	4,486,827
Re. 31,693	4,447,704	4,473,066	4,486,919
D. 273,101	4,451,657	4,473,711	4,487,104
D. 274,574	4,452,831	4,473,953	4,487,257
D. 276,393	4,454,486	4,474,037	4,487,276
D. 276,700	4,454,582	4,474,600	4,487,429
D. 276,706	4,454,888	4,474,744	4,487,544
3,938,095	4,455,418	4,474,821	4,487,559
3,993,658	4,457,286	4,474,930	4,487,797
4,110,595	4,458,732	4,476,033	4,487,883
4,262,553	4,459,681	4,476,188	4,488,261
4,265,713	4,460,581	4,476,192	4,488,325
4,276,789	4,460,633	4,476,373	4,488,428
4,333,011	4,460,637	4,476,540	4,489,910
4,338,511	4,460,638	4,476,581	4,490,316
4,341,550	4,460,687	4,478,781	4,490,676
4,349,160	4,460,933	4,478,822	4,490,765
4,353,912	4,461,183	4,478,858	4,490,829
4,360,440	4,461,204	4,478,952	4,491,035
4,366,823	4,461,806	4,479,325	4,491,082
4,368,151	4,462,029	4,479,759	4,491,093
4,389,852	4,462,269	4,479,852	4,491,221
4,390,192	4,462,767	4,479,870	4,491,246
4,393,115	4,462,928	4,480,401	4,491,260
4,401,312	4,462,995	4,480,601	4,491,472
4,405,796	4,463,549	4,481,015	4,491,588
4,407,872	4,463,679	4,481,101	4,491,596
4,408,147	4,463,886	4,481,146	4,491,898
4,410,583	4,464,471	4,481,607	4,492,066
4,414,588	4,465,424	4,481,650	4,492,858
4,414,952	4,465,639	4,481,815	4,493,433
4,420,153	4,466,067	4,482,055	4,493,510
4,420,160	4,466,336	4,482,259	4,493,558
4,420,567	4,466,369	4,483,153	4,493,578
4,420,868	4,468,152	4,483,204	4,494,540
4,423,333	4,468,303	4,483,301	4,494,571
4,425,147	4,468,691	4,483,737	4,494,756
4,430,335	4,470,339	4,483,748	4,495,059
4,431,033	4,470,478	4,484,113	4,495,225
4,431,293	4,470,608	4,484,301	4,496,339
4,434,174	4,471,427	4,484,312	4,496,708
4,435,666	4,471,603	4,484,864	4,497,028
4,435,731	4,471,614	4,485,113	4,499,484
4,439,008	4,471,938	4,485,337	4,501,020
4,441,135	4,472,036	4,485,837	
4,442,451	4,472,225	4,485,923	
4,446,000	4,472,516	4,486,322	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 30, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-12-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-28-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-03-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-20-81
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	7-19-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-20-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-05-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-22-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-21-83

Expiration of patents: The patents within the range of numbers indicated below expire during March 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,371,351 to 3,375,528, inclusive

Plant Patents ..... Numbers 2,797 to 2,801 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 7, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T105,401

PROCESS FOR THE PREPARATION OF COTTON-LIKE TEREPHTHALATE POLYESTER FIBER AND YARNS

Vikas M. Nadkarni, A-6 Pranjali M.G. Rd., Thane, India (400602), and Hyunkook Shin, 134 Hitching Post Dr., Wilmington, Del. 19803

Continuation of Ser. No. 418,524, Sep. 15, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,277

Int. Cl.³ D01D *5/22*

U.S. Cl. 264—151

1 Sheets Drawing. 25 Pages Specification

Production of a high-strength, convoluted polyester staple fiber which includes use of a spinneret having a slot aperture having a width of greater than about 0.07 mm, and a length to width ratio of at least 2, spinning at a spin stretch factor of equal to or greater than 100N, where N is the number of elongated slots that make up each outlet orifice, at a spinning speed of greater than about 1500 m/min., drawing the fiber under amorphous retaining conditions by an amount greater than the natural draw ratio, mechanically crimping the fiber, cutting it to staple lengths, and relaxing the fiber 10 to 40%. The fiber is cotton-like. The preferred polyester is polyethylene terephthalate.

T105,402

METHOD FOR POLISHING AMORPHOUS ALUMINUM OXIDE

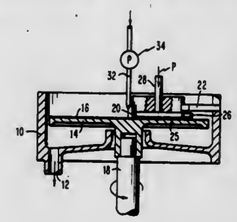
Jagtar S. Basi, 97 Nantucket Dr., Fishkill, N.Y. 12524, and Eric Mendel, 3 High Point Dr., Poughkeepsie, N.Y. 12603

Continuation of Ser. No. 474,120, Apr. 10, 1983, abandoned. This application Apr. 23, 1984, Ser. No. 603,263

Int. Cl.³ H01L *21/306*

U.S. Cl. 156—636

1 Sheets Drawing. 14 Pages Specification



A method for the chemical-mechanical polishing of amorphous aluminum oxide surfaces to a high degree of perfection is described. The aluminum oxide surfaces are continuously wetted with a water-citric acid slurry containing a soft abrasive material. The continuously wiping of the aluminum oxide surface is accomplished with a firm surface using pressure while maintaining a relative movement between the aluminum oxide surface and the firm surface to remove the water reacted aluminum oxide product from the high points of the aluminum oxide surface. This method is continued until a high degree of perfection of the surface is accomplished. The slurry is typically composed of colloidal silicon dioxide dispersed in water containing citric acid.

T105,403

METHOD OF MANUFACTURING A SEALING CAP FOR AN INTEGRATED CIRCUIT CARRYING SUBSTRATE

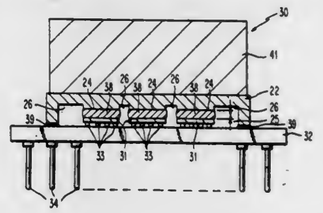
Eric B. Hultmark, 18 Quarry Dr., Wappingers Falls, N.Y. 12590

Continuation of Ser. No. 414,764, Sep. 7, 1982, abandoned. This application Aug. 2, 1984, Ser. No. 636,877

Int. Cl.³ B29C *17/08*

U.S. Cl. 264—23

2 Sheets Drawing. 13 Pages Specification



A cap for sealing a substrate having integrated circuit chips thereon is manufactured by ultrasonically machining a pattern of channels in the top surface of a plate, the pattern of channels defining a plurality of pedestals at locations corresponding to integrated circuit chip locations on the substrate. The pedestal tops are then ultrasonically machined so that each top lies a predetermined distance from the top surface of the plate. Ceramic caps manufactured according to the present invention may be mass produced with precise dimensional tolerances.

T105,404

BENEFICIATION OF PHOSPHATE ORES CONTAINING SURFACE ACTIVATED SILICA

Shuang-shii Hsieh, 1622 Bridlewood Dr., and James R. Lehr, 124 Riverview Dr., both of Florence, Ala. 35630

Filed Sep. 14, 1984, Ser. No. 650,390

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166

No Drawing. 13 Pages Specification

A phosphate ore flotation process comprising subjecting a phosphate ore containing surface-activated silica and silicates to froth flotation in the presence of a fatty-acid collector, recovering the phosphate concentrate from the overflow; removing the fatty acid collector from the phosphate concentrate in the presence of a sulfuric acid deoiling agent; subjecting the phosphate concentrate to a reverse froth flotation in the presence of a silica collector and a modifier, said silica collector being an amine and said modifier being either alkyl diphosphonic acid, or being HF; removing the separated silica from the overflow; and recovering the phosphate product in the underflow. The process of the present invention not only overcomes the problems of activated silica flotation, but also results in greatly improved grade and/or recovery of phosphate product in comparison to present conventional phosphate ore flotation processing.

REISSUES

MAY 7, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,877

AIR INTAKE CONDUITRY FOR A MOTORCYCLE

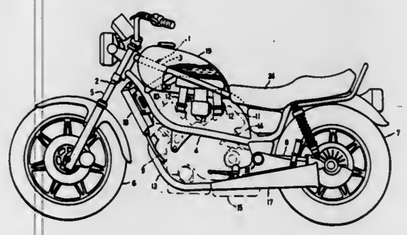
Kazuhiki Nomura, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Original No. 4,319,657, dated Mar. 16, 1982, Ser. No. 78,696, Sep. 25, 1979. Application for reissue Nov. 26, 1982, Ser. No. 444,863

Claims priority, application Japan, Sep. 25, 1978, 53-116695

Int. Cl.³ F02M *35/16, 35/12*

U.S. Cl. 180—219 **7 Claims**



5. In combination: a motorcycle frame; a multi-bank, multi-cylinder V-type engine supported by said frame with its crankshaft extending transversely thereto, a fuel tank supported by said frame, said fuel tank being disposed above said engine and being generally V-shaped, with legs depending downwardly at each side; and air intake conduitry comprising a respective air intake pipe extending upwardly from each bank of said engine, a connecting box defining an inner cavity positioned in proximity to the valley of said V-type engine and contiguous to said fuel tank, said intake pipes all opening into the inner cavity of said connecting box, and an inlet device providing the air inlet to said connecting box, said inlet device being positioned in the area between said valley and said fuel tank and comprising an outlet communicating with said connecting box, an inlet and an air filter element interposed between said inlet and said outlet.

Re. 31,878

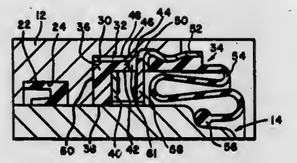
DISC BRAKE HAVING A PISTON RETRACTION ASSEMBLY

Irving R. Ritsema, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Original No. 4,382,492, dated May 10, 1983, Ser. No. 248,650, Mar. 27, 1981. Application for reissue Sep. 22, 1983, Ser. No. 535,966

Int. Cl.³ F16D *65/54*

U.S. Cl. 188—71.8 **6 Claims**



1. In a disc brake having a piston retraction assembly, a caliper defining a bore for receiving a piston to substantially form a pressure chamber, the pressure chamber receiving pressurized fluid during braking to move the piston relative to the caliper, the retraction assembly cooperating with the caliper and the piston to substantially control withdrawal for the piston relative to the caliper upon termination of braking and a boot assembly cooperating with the caliper and the piston to isolate a sliding interface therebetween from the environment, characterized by said caliper bore including a recess at the open end, said retraction assembly comprising a friction ring engaging said piston and a resilient member biasing said friction ring to a first position engaging said caliper, said friction ring and said resilient member being disposed within said recess and said boot assembly including a portion extending into said recess to engage said resilient member, said friction ring being movable to a second position in response to movement of said piston to also engage said boot assembly portion whereby said boot assembly portion limits movement for said friction ring, and said friction ring [being substantially L-shaped in cross section with an axially extending leg] forming a radial clearance with an axially extending wall of said recess.

Re. 31,879

METHOD AND ARRANGEMENT FOR MEASURING THE CONCENTRATION OF GASES

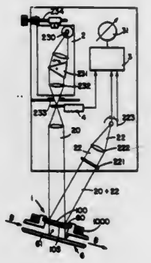
Dietrich W. Lübbers, and Norbert Opitz, both of Dortmund, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Munich, Fed. Rep. of Germany

Original No. 4,003,707, dated Jan. 18, 1977, Ser. No. 661,636, Feb. 26, 1976. Continuation of Ser. No. 2,184, Jan. 8, 1979, abandoned. Application for reissue Jul. 29, 1982, Ser. No. 403,121

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2508637

Int. Cl.³ G01N *21/64, 21/79, 33/84*

U.S. Cl. 436—133 **47 Claims**



28. A method of measuring at least the pH value of a sample comprising the steps of generating a light beam having a predetermined color characteristic; generating light signals indicative of the pH value of a sample to be measured by positioning an indicator having a light-transmissive surface positioned to be impinged by said light beam, a diffusion membrane adapted to be placed in the proximity of a sample and being selectively permeable to a component of the sample which will allow a pH measurement of the sample to be made, and a pH indicating substance which is capable of fluorescing positioned to be impinged by the light beam penetrating said light-transmissive surface and by said component penetrating said diffusion membrane, said pH indicating substance responding when illuminated by said incident light beam by emitting a resultant light beam having a fluorescent emitted component which has a color characteristic different from said predetermined color characteristic and is related to the pH value of the sample; conducting said resultant light beam away from said indicating substance through said light-transmissive surface; and

discriminating said emitted component from said resultant light beam so that the change in the color characteristic of said indicating substance can be measured and correlated with the pH value of the sample.

33. In an arrangement for measuring the concentration of gases in a sample, a combination comprising means for generating a monochromatic light beam having a predetermined color characteristic; indicating means for generating light signals indicative of the concentration of gases in a sample to be measured, including a light transmissive surface positioned to be impinged by said monochromatic light beam, a diffusion membrane of silicone adapted to be placed in proximity of a sample and being permeable to a selected gas component thereof, and an indicating substance sealingly embedded throughout said diffusion membrane and positioned to be impinged by said monochromatic light beam penetrating said light-transmissive surface and by said gas component penetrating said diffusion membrane, said indicating substance reacting when illuminated by said incident monochromatic light beam by emitting a resultant light beam having an emitted component which has a color characteristic different from said predetermined color characteristic; means for conducting said resulting light beam away from said indicating substance through said light transmissive surface; and means for discriminating said emitted component from said resultant light beam so that the change in the color characteristic of said indicating substance can be measured and correlated with the concentration of gases in the sample.

Re. 31,880
Patent Not Issued For This Number

PLANT PATENTS

GRANTED MAY 7, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,458
MINIATURE ROSE PLANT
Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010
Filed Feb. 1, 1982, Ser. No. 344,539
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by bud and flowers similar in color to the variety, Mrs. Aaron Ward, a climbing hybrid tea: plant is easy to grow from cutting or bud.

5,459
MINIATURE ROSE PLANT
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Sep. 9, 1983, Ser. No. 530,732
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, to spreading, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a cream to soft yellow color which changes to white, the bud and flower resembling the variety Yellow Doll (U.S. Plant Pat. No. 2,450, expired) in form but smaller in size; and further characterized by a plant of vigorous and compact growth habit, with main canes and branches completely thornless, easy to propagate from cuttings or by budding, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne usually in loose clusters of 3 to 5 or more.

5,460
MINIATURE ROSE PLANT
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Sep. 9, 1983, Ser. No. 530,731
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, spreading, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a generally orange red color, being of a shade generally near Scarlet 19/1 or lighter, the bud and flower resembling the variety Anytime (not patented) in form with more petals, and slightly smaller size; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne usually in loose clusters (or spray) of 3 to 15 or more.

5,461
NECTARINE TREE—ZAIPRIDE CULTIVAR
Chris F. Zaiger, Modesto, Calif., assignor to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.
Filed Aug. 22, 1983, Ser. No. 525,272
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by (a) a large, vigorous, and upright growth habit, (b) a relatively low chilling requirement, and (c) the productive formation of good quality, early maturing, medium to large fruit having a high level of red skin coloration and a firm yellow flesh which possesses good eating and shipping qualities.

5,462
NECTARINE TREE, ISLAND DELIGHT
Alan R. Asdoorian, 6384 Chico Ave., and Soren Asdoorian, 522 6th Ave., both of Kingsburg, Calif. 93631
Filed Oct. 3, 1983, Ser. No. 538,139
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, broadly characterized by its bearing of large, yellow-fleshed fruit and by its general resemblance to the unpatented Firebrite Nectarine Tree, of which it is believed to be a mutant, but from which it is distinguished as to novelty by its fruit ripening approximately eight to ten days earlier than the fruit of the Firebrite variety, and by its fruit having a skin covered over approximately 60% to 80% of its surface by a blush color ranging from light red to garnet on a ground color of yellow.

5,463
PEACH TREE — ZAIQUEEN CULTIVAR
Chris F. Zaiger, Modesto, Calif., assignor to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.
Filed Aug. 22, 1983, Ser. No. 525,835
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by (a) a large, vigorous and upright growth habit, (b) a relatively low chilling requirement, and (c) the productive formation of good quality early maturing and uniform ripening medium to large fruit having a high level of red skin coloration and a firm yellow flesh which possesses good eating and shipping qualities.

5,464
CARNATION NAMED MEDEA
J. F. Sarneel, Nieuwveen, Netherlands, assignor to Milek en Zonen B.V., Nieuwveen, Netherlands
Filed Jun. 29, 1983, Ser. No. 508,863
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. The new and distinct variety of carnation, substantially as herein shown and described, characterized by its profuse and continuous production of very light peach colored blooms, and by its vigorous and strong growth habit producing stong main stems about one meter in length and strong flower stems of medium length.

5,465
***DIGITARIA DIDACTYLA* GRASS PLANT**
Hubert F. Whiting, Fallbrook, Calif., assignor to Amfac Garden Perry's Inc., Ventura, Calif.
Filed Oct. 6, 1983, Ser. No. 539,742
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new variety of *Digitaria didactyla* grass plant herein shown and described by a moderate green color as defined by the ISCC-NBS Centroid color chart; this new variety retains a superior greener color during the winter period by only losing some of its green color, and produces a finer more dense textured surface with a very small amount of thatch buildup; the anthers are a grayish reddish purple as defined by the ISCC-NBS Centroid color chart; the stigmas are of a very dark purplish red as defined by the ISCC-NBS Centroid color chart.

PATENTS

GRANTED MAY 7, 1985

ERRATA

For CLASS	See PATENT NO.
525–036	4,514,947
384–445	4,515,417
384–502	4,515,418
418–001	4,515,512
418–101	4,515,513
418–150	4,515,514
417–026	4,515,515
417–038	4,515,516
417–046	4,515,517
065–171	4,515,621
065–351	4,515,622
424–094	4,515,637
534–635	4,515,716
514–046	4,515,781
514–024	4,515,782
514–027	4,515,783
514–063	4,515,784
514–182	4,515,786
514–180	4,515,787
514–202	4,515,788
514–196	4,515,789
514–234	4,515,790
514–248	4,515,791
514–214	4,515,792
514–252	4,515,793
514–249	4,515,794
514–263	4,515,795
514–303	4,515,796
514–349	4,515,797
514–341	4,515,798
514–341	4,515,799
514–392	4,515,800
514–403	4,515,801
514–288	4,515,802
514–338	4,515,803
514–456	4,515,804
514–460	4,515,805
514–471	4,515,806
514–513	4,515,807
514–521	4,515,808
514–533	4,515,809
514–530	4,515,810
514–554	4,515,811

ERRATA—Continued

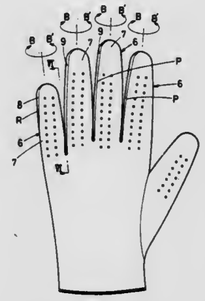
For CLASS	See PATENT NO.
514–592	4,515,812
514–563	4,515,813
514–652	4,515,814
548–237	4,515,946
556–453	4,515,976
360–025	4,516,162
360–032	4,516,163
360–053	4,516,164
360–053	4,516,165
360–072	4,516,166

PATENTS

GRANTED MAY 7, 1985

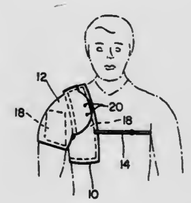
GENERAL AND MECHANICAL

4,514,861
GOLF GLOVES
Toshihiko Kamada, Kagawa, Japan, assignor to Kamatari Co., Ltd., Kagawa, Japan
Filed Jan. 6, 1984, Ser. No. 568,568
Claims priority, application Japan, Jun. 8, 1983, 58-88100[U]
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 A **4 Claims**



1. A golf glove characterized in that the lateral sides of outer and inner wall members of finger compartments thereof are respectively sewn together as twisted in a direction opposite to the direction of and in amount substantially equal to the amount of twist of said finger compartments that occurs with respect to fingers when a golf club is gripped with the glove.

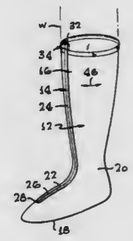
4,514,862
GUN RECOIL PROTECTOR
Anthony A'Costa, 2216 7th Ave., Apt. #301, Pueblo, Colo. 81003
Filed Jul. 25, 1983, Ser. No. 517,102
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—268 **1 Claim**



1. A versatile recoil protector for a user's shoulder during firing a gun, which comprises:

a main body protector portion, said main body protector portion having an inner surface and an outer surface, said inner surface having a padded area of absorption material, said main body protector portion having a horizontal leg portion and a vertical portion, said horizontal portion arranged to extend across a portion of the torso of the wearer from front-to-back under the arm and the vertical portion of said protector is arranged to pass up to and above the shoulder of the wearer, a rectangularly shaped panel arranged to be secured to said horizontal portion of said protector and to said vertical portion along the back side of the wearer above the shoulder, a tubular portion capable of encircling the arm of the wearer and including a front extended portion that overlaps and is affixed to said vertical portion, said tubular portion further being delimited adjacent to the bicep of the wearer and means for securing said recoil protector relative to the shoulder of the wearer.

4,514,863
SOCK
Hoang T. Tuyet-Van, 1921 Beloit Ave., Los Angeles, Calif. 90025
Filed Sep. 13, 1982, Ser. No. 417,460
Int. Cl.³ A41B *11/00*
U.S. Cl. 2—240 **9 Claims**

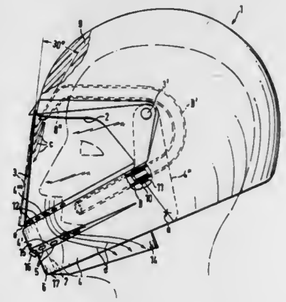


1. A sock comprising:

a sock body which includes a lower portion for surrounding the foot of a wearer and an upper portion for surrounding the lower leg of the wearer; and

a strip-shaped stiffener having an upper stiffener portion attached to said upper sock body portion, and having a lower stiffener portion attached to the lower sock body portion, said lower stiffener portion positioned to lie on the top of the foot of a wearer and extend from the ankle and along most of the distance therefrom to the toes of the wearer's foot.

4,514,864
SAFETY HELMET, ESPECIALLY FOR USERS OF AUTOMOTIVE VEHICLES
Siegfried Huber, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Dec. 6, 1982, Ser. No. 447,099
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148725
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—424 **13 Claims**



6. A safety helmet especially for users of automotive vehicles, comprising a viewing opening, visor means for the view-

ing opening, vent openings terminating into an air-collecting chamber located on the inside of a chin protector, at least one air-conducting channel leading from the air-collecting chamber to the upper zone of the viewing opening and the efflux direction of the air-conducting channel being extended from above obliquely and at an acute angle to the inside of the visor, and

the air conducting channel includes a ventilating tube inserted in the lining of the safety helmet,

wherein the chin protector is removable, the ventilating tubes each having a separating site, and the mutually facing tube ends being associated with cooperating sealing collars.

4,514,865
STEMMED FEMORAL COMPONENT FOR THE HUMAN HIP
William H. Harris, 665 Concord Ave., Belmont, Mass. 02178
Continuation-in-part of Ser. No. 369,510, Apr. 19, 1982, Pat. No. 4,406,023. This application Jun. 20, 1983, Ser. No. 506,103
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.³ A61F *1/04*
U.S. Cl. 3—1.913 **11 Claims**



1. A femoral component for a hip prosthesis for the human hip comprising:

a femoral stem adapted to fit into the medullary canal of the femur, said femoral stem having an upper portion and a lower portion, said upper portion having lateral, medial, anterior and posterior surfaces;

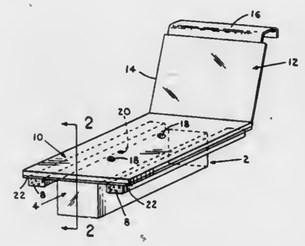
a collar formed on a proximal end of the stem adjacent the upper portion thereof and extending transversely of the direction of elongation of the stem, said collar extending transversely beyond only selected ones of said lateral, medial, anterior and posterior surfaces on the proximal end of the stem, and said collar not extending transversely beyond surfaces of said upper portion of said stem other than said selected ones of said lateral, medial, anterior and posterior surfaces; and

means for bonding said femoral stem to the femur, said bonding means being provided only on said other surfaces of said upper portion of said stem, said selected ones of said lateral, medial, anterior and posterior surfaces and the outer surfaces of said lower portion of said stem being free of said bonding means.

4,514,866
BUOYANT METERING DISPENSER
Richard G. S. Pong, 132 Spring St., Passaic Park, N.J. 07055
Filed Jun. 10, 1983, Ser. No. 503,000
Int. Cl.³ E03D *9/03*
U.S. Cl. 4—228 **17 Claims**

1. A buoyant dispenser for suspension in a fluid reservoir with a cyclically variable fluid level, for the periodic delivery of a metered quantity of a dispensable material thereto, said dispenser comprising:

A. a container with a central receptacle for holding said dispensable material, said receptacle having a greater longitudinal dimension and having a partition extending transversely to the greater longitudinal dimension of said receptacle, said partition having a height less than the depth of said receptacle whereby the fluid within said receptacle may rise and flow over said partition, and said partition divides said receptacle into a first and a second compartment;



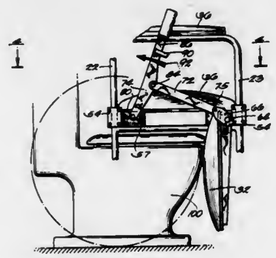
B. buoyancy means communicating with said container and straddling said receptacle;

C. a cover in fluid-tight engagement with said receptacle;

D. attitude guide means, attached to said container and adapted to be anchored to a wall of said fluid reservoir; and

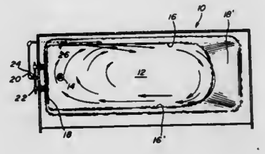
E. metering means in fluid registry with said receptacle to permit the controlled ingress and egress of said fluid, said metering means comprising a first hole located in said cover and a second hole located in said container in substantial axial alignment with said first hole, and in fluid registry with one of said compartments.

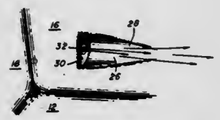
4,514,867
WHEEL CHAIR WITH DISPLACEABLE SEAT PANEL
Neil B. Jensen, W. 339, N. 5175, Rd. O, Nashotah, Wis. 53058
Continuation-in-part of Ser. No. 348,530, Feb. 12, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,062
Int. Cl.³ A61G *7/02*
U.S. Cl. 4—480 **5 Claims**



3. A seat assembly for converting and adapting a wheel chair body having generally vertically extending front and rear legs for toilet use said assembly comprising a seat frame having front and rear cross frame members, said cross frame members having end portions adapted for connection to said front and rear legs of said wheel chair two side panels, a central panel, a pivot shaft rigidly connected to said control panel and rotatably housed by said front frame for pivotally supporting said central panel in a contileverid manner to said front frame, linkage means including a handle connected between said front and rear cross frame member and connected to said pivot shaft to accord pivotal movement of said central panel between an open generally vertical position and a closed generally horizontal position, said frame members including integrally formed vertically extending clamp portions having clamp parts oriented to embrace said vertically extending wheel chair legs to secure said side frames in assembly with a four point connection to the side frames.

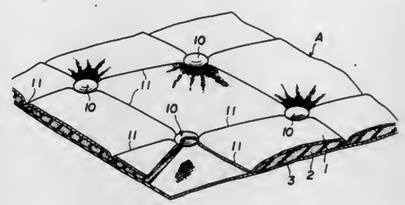
4,514,868
BATHTUB
Jean-Claude Visinand, 3535 Papineau, Apt. 2405, Montreal, Quebec, Canada H2K 4J9
Filed Apr. 27, 1983, Ser. No. 489,046
Int. Cl.³ E03C *1/02*
U.S. Cl. 4—541 **4 Claims**





1. In a bathtub having a bottom wall, a pair of sidewalls and opposed first and second end walls integrally formed with said bottom wall, said second end wall being angularly inclined outwardly to define an abutment surface against which a person lying in the bathtub may rest, and water inlet means connected to hot and cold water supply means for filling said bathtub with a mixture of hot and cold water, whereby the improvement comprises only one of said sidewalls having a flow directing channel defined by an elongated recess, said elongated recess having a longitudinal axis, first and second ends and a transverse end wall at the first end of said recess extending transversely thereto, said recess being near said first end wall on said one sidewall and at a height above the buttocks of an individual seated in the bathtub and being curved in cross-section and tapering toward said second end to merge with said one sidewall in a direction toward said second end wall, and wherein said water inlet means comprises a single water discharge nozzle integral with said transverse end wall and extending therethrough in substantial axial alignment with the longitudinal axis of said recess so as to discharge a flow of hot and cold water along said one sidewall in a direction toward said second end wall and to impart to the water a circulatory movement as the water fills the bathtub, thereby uniformly mixing the hot and cold water and providing a uniform water mixture having a substantially constant temperature.

4,514,869
TOP MEMBER FOR A VEHICLE SEAT
Akira Aoki, and Kunihiko Ito, both of Akishima, Japan, assignors to Tachikawa Spring Co., Ltd., Japan
Filed Aug. 1, 1983, Ser. No. 519,418
Int. Cl.³ A47C *3/00*
U.S. Cl. 5—472 **8 Claims**



1. A top member for a vehicle seat comprising:

a top layer, a wadding and wadding cover laminated to one another;

a rigid button core member having outer circumferential portions interposed at a given interval between said top layer and said wadding or between said wadding and said wadding cover, and wherein

said top layer, said wadding and said wadding cover at the outer circumferential portions of said button core member are annularly adhered to one another by application of heat and pressure to form an integral unit, and wherein

said top layer, said wadding and said wadding cover are welded radially from the annularly adhered portions to provide an integral unit.

4,514,870
FIRE RESISTANT LAP PROTECTION BLANKET
Charles E. Tyler, Jr., Rte. 1, Box 275, Troy, Va. 22974
Filed Sep. 30, 1982, Ser. No. 432,386
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—485 **8 Claims**



1. A fire-resistant blanket adapted for placement in a vehicle upon a seated user's lap to protect clothing from tobacco burns and the like, comprising:

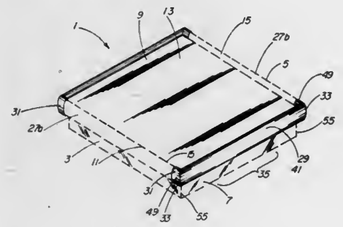
(a) a piece of fire resistant material dimensioned to substantially cover the seated person's lap and clothing to catch debris dropping thereon;

(b) a pocket formed along an edge of the material for receiving and retaining debris collecting on the material, said pocket being operatively attached to the material so that debris can fall into the pocket by gently shaking the material or brushing the debris in the direction of the pocket for containment thereon; and

(c) a layer of heat insulating backing material attached to cover a lower surface of said fire resistant material so as to directly contact and cover the user's lap, said backing material having a high coefficient of friction to prevent

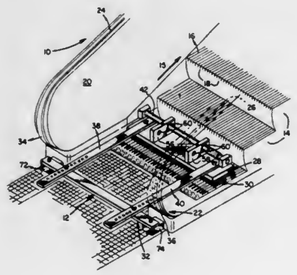
slippage of the blanket from the user's lap, said backing layer being a sheet of foam material.

4,514,871
WATERBED CONVERTIBLE CAP
Susan S. Fisher, and Jared D. Fisher, both of 630 Ave. J, Lake Charles, La. 70601
Filed Aug. 15, 1982, Ser. No. 523,302
Int. Cl.³ A61G *7/10*
U.S. Cl. 5—508 **6 Claims**



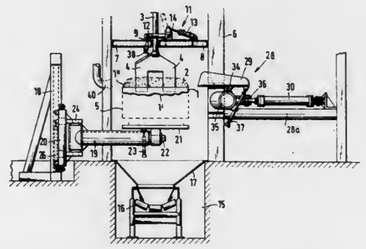
1. A padded rail cap for a water bed, comprising:
an elongated first rail cap means extending in covering relationship substantially the length of a first rail;
a corner cap means extending perpendicularly to the first rail cap means and at least in part covering a second rail, which is attached, perpendicularly, to the first rail;
said corner cap means and said rail cap means meeting in a mitered joint at the point of attachment of two rails; said corner cap means being provided with attachment means to securely, fittingly engage a rail cap means of the second rail.

4,514,872
ESCALATOR TREAD CLEANING BRUSH
Hammond W. Hopkins, 6019 St. Andrews, Dallas, Tex. 75205
Filed Apr. 29, 1983, Ser. No. 489,834
Int. Cl.³ A46B *15/00, 9/02, 9/06*
U.S. Cl. 15—256.5 **15 Claims**



1. An apparatus for cleaning the steps of an escalator, the escalator having parallel rail housings for mounting rails in the escalator, comprising:
a brush bar extending generally perpendicular to the direction of motion of the steps and positioned between the rail supports above a step;
a first set of relatively elongate bristles mounted on the brush bar for extending into the grooves in each of the steps for cleaning;
a second set of relatively short length bristles mounted on the bursh bar for contacting the tread of the steps for cleaning, the first and second set of bristles being slanted from the vertical, the first set of bristles being slanted to assist in easing the bristles into the grooves;
a cross bar for extending between the ends of the rail supports for contacting the ends of the rail supports; and
at least one arm connected between the cross bar and the brush bar for positioning the brush bar above a step and fixing the brush bar relative to the rail housing so that motion of the steps of the escalator causes the sets of bristles to clean the steps as they pass underneath the cross bar.

4,514,873
EQUIPMENT FOR CLEANING REMNANTS OF CARBON BLOCKS
Franz Golla, Lünen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany
Filed Nov. 14, 1983, Ser. No. 551,166
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242285
Int. Cl.³ B08B *1/02*
U.S. Cl. 15—306 B **23 Claims**

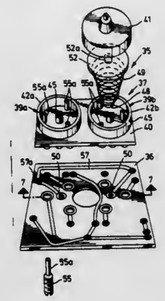


1. Apparatus for cleaning bar-mounted remnants of carbon blocks, the apparatus comprising a machining station defining a working position, a breaking device for loosening incrustations adhering to the remnants at the working position, and a transport device for moving the individual remnants into the working position, wherein the breaking device includes at least two blades which are displaceable transversely of the direction of movement of the transport device, each of said blades having a cutting edge provided with at least one recess.

4,514,874
DEVICE FOR AUTOMATICALLY CONTROLLING THE SUCTION POWER OF A VACUUM CLEANER
Gerhard Kurz, Industriestrasse, 7261 Althengstett, Fed. Rep. of Germany
Filed Mar. 9, 1983, Ser. No. 473,572
Int. Cl.³ A47L *9/28*
U.S. Cl. 15—319 **16 Claims**

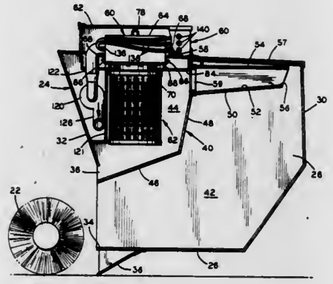
1. A device for the automatic control of the suction of a vacuum cleaner having a motor, a dust container upstream of said motor whereby the suction produced by said motor causes dust to enter said container, and a speed control adjustment means connected to said motor, said device comprising: at least one vacuum-operated switch positioned in the vacuum region of the vacuum cleaner, said switch comprising a housing having an open end, and a diaphragm covering said open end and movable in response to changes in the vacuum, a contact plate in said housing; at least two contacts in said housing spaced at different distances from said plate; lead means connecting said plate and said contacts in circuit with said speed control adjustment means whereby the connection of said plate with said contacts effects variations in the speed of said motor, and

mounting means tiltably mounting said contact plate on said diaphragm, whereby said plate is moved by said diaphragm



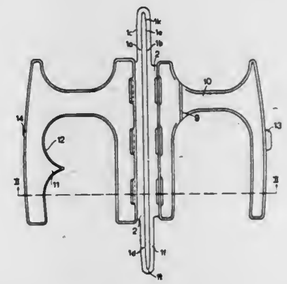
into sequential connection with said contacts in response to increases in suction of the vacuum.

4,514,875
HIGH CAPACITY FILTER FOR FLOOR CLEANING MACHINES AND THE LIKE
Philip L. Comer, Bowling Green, Ohio, assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Mar. 16, 1983, Ser. No. 475,718
Int. Cl.³ A47L *11/24*
U.S. Cl. 15—349 **11 Claims**



1. In a machine for sweeping a surface comprising a frame, wheel means supporting the frame on the surface, a rotatable sweeping brush carried by said frame, and a hopper carried by said frame near said sweeping brush, said hopper having a dirt- and debris-receiving opening near said sweeping brush through which dirt and debris are received from said brush, the improvement comprising wall means dividing said hopper into a lower dirt- and debris-receiving chamber and an upper exhaust chamber and defining an air inlet opening communicating between said chambers, a manifold in said exhaust chamber, at least one filter extending from said manifold and having a filter medium defining an outer surface and a central chamber communicating with the interior of said manifold, means for removably supporting said manifold in said exhaust chamber, said removably supporting means comprising a supporting frame in said hopper, and supporting plate means supported on said supporting frame under said manifold and supporting said manifold above said supporting frame, and exhaust means having an outlet communicating with the exterior of said hopper and an inlet communicating with the interior of said manifold.

4,514,876
INJECTION MOULDED BAG CLOSURE
Jorn P. Houlberg, Studsgade 40, DK-8000 Århus C., Denmark
PCT No. PCT/DK81/00014, § 371 Date Oct. 13, 1981, § 102(e) Date Oct. 13, 1981, PCT Pub. No. WO81/02284, PCT Pub. Date Aug. 20, 1981
PCT Filed Feb. 12, 1981, Ser. No. 314,078
Claims priority, application Denmark, Feb. 12, 1980, 598/80
Int. Cl.³ B65D *33/24*
U.S. Cl. 16—110 R **4 Claims**

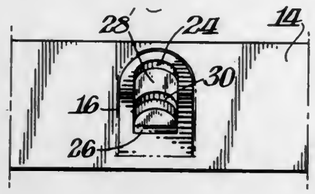


1. An injection molded plastic closure device for a bag having a mouth, said closure device comprising:
a pair of parallel carrying bars which are attachable to opposite sides of the mouth of the bag, each of said carrying bars having an elongated dimension and a width dimension and each of said carrying bars, when oriented such that its elongated dimension is horizontal and its width dimension is vertical, defining opposite end portions and upper and lower side edges, said carrying bars also defining imaginary vertical planes in their width dimensions,
connector portions integrally connecting the respective associated opposite end portions of said carrying bars along their entire width dimensions, and
closure members respectively connected to the upper side edges of said carrying bars, each of said closure members including a handle part and at least one of said closure members including a flexible connecting part; each said flexible connecting part extending between the associated carrying bar and the associated handle part and each said flexible connecting part being integrally molded with the associated carrying bar to initially extend in a plane perpendicular to the imaginary vertical plane defined by the associated carrying are, each said flexible connecting part including a portion of reduced thickness which forms a weakening line that extends in parallel with the upper edge of the associated carrying bar; and wherein the handle part of each said closure member includes a base wall, inner and outer side walls and an open side, thus forming a U-shaped cross section, the base wall of the handle part of a first of said closure members having a lesser width between its associated inner and outer side walls than the base wall of the handle part of a second of said closure members, such that when said closure members are brought together to close the mouth of the bag, the open sides of the handle parts thereof will face one another and the handle part of said first closure member will fit within the handle part of said second closure member.

4,514,877
STOVE DAMPER HANDLE
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed Feb. 22, 1983, Ser. No. 468,088
Int. Cl.³ G05G *2/10*
U.S. Cl. 16—111 R **7 Claims**

1. A handle for a stove damper comprising an elongated rod having a remote end and a near end, said remote end being

adapted to be secured to the damper whereby movement of said rod causes corresponding movement of the damper, a handle member for being grasped by the user, mounting means securing said handle member to said near end of said rod at a non-perpendicular angle thereto, said mounting means comprising a hollow boss secured to said handle member, said boss having an open face remote from said handle member telescopically receiving said rod therein, means securing said rod to



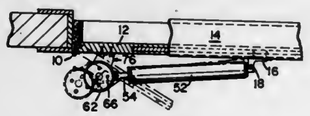
said boss preventing axial and rotational movement of said rod with respect to said boss, said boss having edge means in contact with said remote end of said rod preventing any pivotal movement of said rod with respect to said boss, said boss being of generally U-shaped cross section having an elongated open side area of a dimension at least as great as the width of said rod to permit said rod to be inserted into said boss through said open side area, and said open side area remaining open and exposed after insertion of said rod.

4,514,878

REVERSIBLE ADJUSTABLE TORSION DOOR CLOSER

Walter Arneberg, Anoka, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.

Filed Sep. 13, 1982, Ser. No. 416,871
Int. Cl.³ E05F *1/08*
U.S. Cl. 16—300 **1 Claim**



1. In combination with a door closer assembly for use with a door, wherein said assembly comprises a cylinder, and a rod extending axially within the cylinder with one end extending therefrom, a torsion spring door closer comprising:

(a) a housing having an engaged end and a nonengaged end, and a top portion, and a bottom portion which is disposed for relative angular movement with respect to the top portion about an axis which extends through the top and bottom portions of the housing, said housing being attached at one of the top and bottom portions to the end of the rod which extends from the cylinder, said rod being disposed for relative angular movement with respect to the portion of the housing to which it is not attached;

(b) a torsion spring having coils which encircle the axis which extends through the top and bottom portions of the housing, wherein one end of the spring is sufficiently fixed against movement relative to one portion of the housing and the other end of the spring is sufficiently fixed against movement relative to the other portion, that the tension of the spring can be varied by the angular movement of one portion relative to the other portion;

(c) a sleeve located inside the housing and around the axis which extends through the top and bottom portions of the housing;

(d) at least two lugs, at least one at each end of the sleeve and extending outside the housing, wherein at least one of the lugs is located at and engages the engaged end of the housing while at least one of the lugs is located at and does not engage the nonengaged end of the housing;

(e) a plate located at the nonengaged end of the housing, said plate engaging said at least one of the lugs located at the nonengaged end of the housing, thus fixing the plate against movement relative to the sleeve;

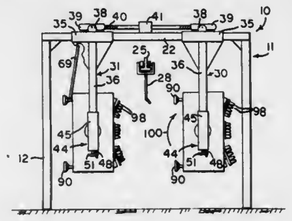
(f) a reversible tension adjusting mounting bracket disposed for engagement with the sleeve, wherein the bracket can engage the sleeve in a variety of positions which correspond to particular strengths of closing force for the door closer assembly when installed, said bracket being fixed against movement when the door closer assembly is installed.

4,514,879

SUSPENDED FEATHER PICKER WITH ROTATABLE SECTIONS

Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands

Filed Jan. 26, 1983, Ser. No. 461,145
Int. Cl.³ A22C *21/02*
U.S. Cl. 17—11.1 R **7 Claims**



1. Apparatus for picking feathers from suspended poultry carcasses moving in succession along a predetermined path of travel comprising:

a support frame for positioning along the path of travel of the poultry carcasses,

two banks of pickers suspended from said support frame for positioning on opposite sides of the path of travel of the poultry carcasses,

each of said banks of pickers comprising a housing with an open side, a plurality of rotatable disks with flexible feather picking fingers supported from said rotatable disks and projecting from the open side of said housing toward the path of travel of the poultry carcasses,

said support frame including means for rotatably supporting said banks of pickers on laterally spaced, horizontal axes extending parallel to the path of travel of the poultry carcasses for rotational movement about the axes sufficient for the open side of each bank of pickers to face in the opposite direction away from the path of travel of the poultry carcasses and away from the other bank of pickers to permit the picking fingers of one bank of pickers to be replaced and cleaned without physical obstruction from the other bank of pickers.

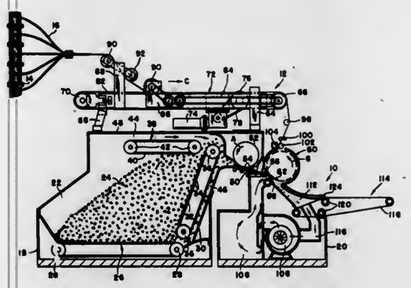
4,514,880

FORMATION OF NONWOVEN WEBS OR BATTS FROM CONTINUOUS FILAMENT TOW OR YARN STRANDS

Edward A. Vaughn, Clemson, S.C., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 7, 1983, Ser. No. 472,829
Int. Cl.³ D01G *1/08*
U.S. Cl. 19—0.35 **8 Claims**

1. Method of forming continuous batts of random fibers comprising the steps of breaking individual filaments bundled into tows at relatively weak points in the filament into segments which are relatively short but of random length by separating said tows into individual filaments, arranging said filaments on a conveying table in a substantially parallel arrangement, holding said filaments against said conveying table while maintaining said relatively parallel arrangement of the filaments on the conveying table, using said conveying table to move said filaments in said substantially parallel arrangement



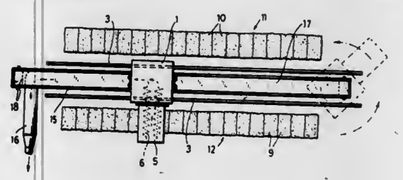
toward a rotating lickerin, rotating said lickerin at a surface speed greater than the surface speed of the conveying table, causing said lickerin to grasp said filaments, and, due to the greater surface speed of said lickerin, applying said tensile force to said filaments to break the latter into said segments, doffing said segments from the lickerin, and depositing said segments on a condenser.

4,514,881

METHOD AND APPARATUS FOR REDUCING FIBER BALES

Hubert Hergeth, and Helmut Hergeth, both of Dülmen, Fed. Rep. of Germany, assignors to Hergeth Hollingsworth, GmbH, Fed. Rep. of Germany

Filed Mar. 4, 1983, Ser. No. 472,137
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208346
Int. Cl.³ D01G *7/06*
U.S. Cl. 19—80 R **21 Claims**



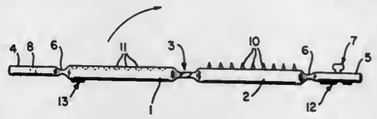
1. A process for reducing the material of rows of bales of spinning material such as cotton, synthetic fiber material and the like comprising the steps of positioning two rows of bales in side-by-side generally parallel relationship with a space therebetween, spanning one row of the bales with a milling device carried by a frame positioned generally within the space, operating the milling device to remove flocks from the one row of bales while simultaneously moving the frame along the rows with the space, rotating the frame and thus the milling device through generally 180° to transfer the milling device to a position spanning the other of the row of bales, operating the milling device to remove flocks from the other row of bales while simultaneously moving the frame along the rows within the space, and delivering the removed flocks from the one and other row of bales to the space through the frame.

4,514,882

DEVICE FOR RETAINING IN SIDE-BY-SIDE RELATIONSHIP FLEXIBLE TYING MEANS SUCH AS SHOELACES

Christian Lavielle, 59 Chemin de Suzon Résidence du Grand-Chene, 33400 Talence, France

Filed Oct. 26, 1983, Ser. No. 545,505
Int. Cl.³ B65D *63/00*; F16G *11/00*
U.S. Cl. 24—16 PB **6 Claims**



1. A device for retaining in side-by-side relationship flexible tying means such as shoelaces comprising:

a pair of relatively rigid clamping members formed of a plastic material,

a relatively flexible linking member comprising a hinge section of reduced dimension integrally formed with said clamping members and joining said clamping members in such a manner as to permit said clamping members to be folded so as to lie one against the other for firmly retaining said flexible tying means in side-by-side relationship therebetween,

gripping means on the mating surfaces of said clamping members comprising pins on one of said surfaces and corresponding cooperating depressions on the other of said surfaces, said pins being of sufficient size and number as to be able to engage and retain said flexible tying means placed between said clamping members,

means for locking said clamping members together, said locking means being such as to require at least partial destruction of said device for removal of said tying means from between said clamping members, and

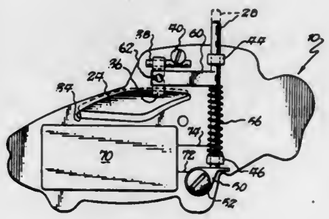
said clamping members including severable portions of reduced thickness so as to enable severance of said frangible portions for opening said device and releasing said flexible tying means for use.

4,514,883

OBJECT-SIMULATING BELT BUCKLE

John J. Barbieri, 756 E. Main St., East Aurora, N.Y. 14052, and Ross C. Oar, Orchard Park, N.Y., assignors to John J. Barbieri, East Aurora, N.Y.

Division of Ser. No. 245,016, Mar. 18, 1981,. This application Dec. 2, 1983, Ser. No. 569,009
Int. Cl.³ A44B *11/00*
U.S. Cl. 24—163 K **2 Claims**



1. A belt buckle comprising:

(a) a body adapted to be connected to a belt for wearing on a user, said body having a structure which simulates a known object;

(b) an operator member carried by said body in a manner

permitting movement of said member relative to said body in response to manual operation; and

(c) sound generating means carried by said body and operatively connected to said operator member for providing an audible sound output in response to movement of said operator member, said sound generating means having a structure for providing sound selected to have some relation to the known object being simulated by said body structure.

4,514,884

DOUBLE-SLIDER FASTENING LOCK

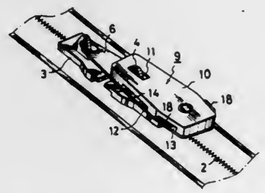
Katsukichi Kaneko, 2-20-9, Daito-ku, Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,163

Claims priority, application Japan, Dec. 21, 1981, 56-189350[U]

Int. Cl.³ E05B *67/38;* **A44B** *19/26*

U.S. Cl. 24—386 **4 Claims**



1. A double-slider fastening lock comprising:

a first slider having a projecting head, a first catch plate connected to said first slider, a hole defined by said projecting head, a second slider, a second catch plate connected to said second slider, a hole defined by said second catch plate adapted to receive the projecting head of said first slider, a cover body fixedly mounted on one side of said second catch plate, said cover body defining a hole corresponding to said hole defined by said second catch plate, a hook-shaped plate including a projection, said hook-shaped plate being slidably mounted in said cover body and said hook-shaped plate adapted to slide across said hole of said cover body and to slide perpendicular to the longitudinal axis of said hole of said cover body, a tip of said hook-shaped plate adapted to pass through said hole of said projecting head, and a sliding plate slidably mounted in said cover body, said sliding plate including a projection and said sliding plate adapted to slide in a direction parallel to the longitudinal axis of the cover body, said projection of said sliding plate engaging said projection of said hook-shaped plate to lock said first slider and said second slider together when said tip of said hook-shaped plate passes through said hole of said projecting head when the projecting head extends through the hole defined by said second catch plate and the hole defined by said cover body.

4,514,885

CLIP WITH TWO STABLE POSITIONS OF THE CLOTHES PIN TYPE

Régis Delahousse, Princé , and Philippe Delahousse, 33 Rte. de Nantes, both of Murs Erigné 49130, France

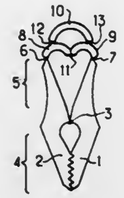
Filed Feb. 10, 1984, Ser. No. 579,191

Claims priority, application France, Feb. 14, 1983, 83 02540

Int. Cl.³ E05D *7/00;* **D06F** *55/02*

U.S. Cl. 24—557 **7 Claims**

1. A clip comprising first and second arm means pivotally connected to each other at a first hinge means located intermediate opposed ends of each arm means, a first component hingedly connected to an end of said first arm means, a second component hingedly connected to an end of said second arm means, wherein said first and second components are hingedly connected to each other and said ends are on the ssme side of said first hinge means, and spring means connected to said first component by a second hinge means and connected to said second component by a third hinge means, wherein said spring



means maintains said first and second arm means in two stable conditions and wherein said spring means is in tension only when said first and second arm means are between said two stable conditions.

4,514,886

UNIT FOR POSITIONING A VENETIAN BLIND LADDER AND FOR GUIDING THE SLATS OF THE BLIND THEREONTO

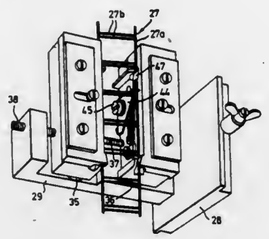
Gerardus H. Edixhoven, Voorschoten, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Filed Jun. 21, 1983, Ser. No. 506,352

Claims priority, application United Kingdom, Jul. 23, 1982, 8221403

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—24.5 **12 Claims**



1. A unit for positioning a venetian blind ladder tape and for guiding slat material or individual slats for a blind between the individual rungs of a rung pair of the ladder tape, said unit comprising two body portions, a guiding member on each body portion, each guiding member locating, for movement longitudinally of the guiding member, one of the side tapes of the ladder tape and permitting the rungs to extend to the side tape located by the other guiding member, means resiliently urging said body portions apart from one another to tension the rungs, a slat guide element positioned to feed a slat or slat material between the rungs of a pair, an abutment located adjacent said slat guide element so as to be engaged by the rung of a pair nearer thereto, means to advance the ladder tape intermittently forward longitudinally of said guiding member and means to urge the ladder tape in a reverse direction between intermittent advances so that said nearer rung of a pair is engaged against said abutment and the rung pair is accurately positioned thereby relative to said slat guide element for insertion of a slat or slat material.

4,514,887

ROLL FOR USE IN CALENDARS OR THE LIKE

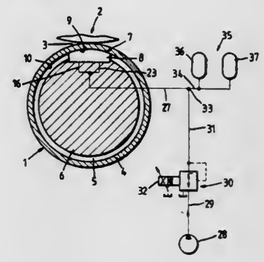
Richard Rauf, Krefeld-Oppum; Josef Pav, Krefeld, and Klaus Schöll, Krefeld-Fischeln, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,110

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151001

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **11 Claims**



1. A pressure applying roll for use in calenders and the like, comprising a hollow rotary cylindrical shell having an internal surface; at least one bearing element provided in the interior of said shell and having an external surface provided with at least one recess and being adjacent to said internal surface; pressure generating means arranged to urge said bearing element toward said internal surface and having at least one chamber; flow restrictor means connecting said chamber with said recess; a source of pressurized liquid arranged to continuously supply liquid to said one chamber; an elastically yieldable pressurized liquid reservoir system communicating with said chamber, at least while such chamber is supplied with liquid by said source; first and second conduit means respectively connecting said one chamber with said source and with said reservoir system; and adjustable pressure regulating valve means in said first conduit means, the resistance of said first conduit means to the flow of liquid from said valve means to said one chamber being more pronounced than the resistance which is offered by said second conduit means to the flow of liquid between said reservoir system and said one chamber.

4,514,888

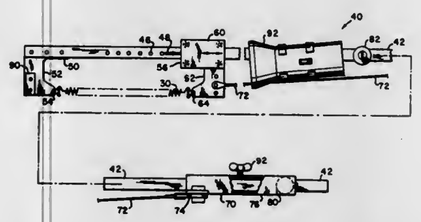
APPARATUS FOR INSTALLING A TENSION COIL SPRING

Louis B. Wheeler, Birmingham, Ala., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 31, 1983, Ser. No. 481,001

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—227 **6 Claims**



1. An apparatus for installing a tension coil spring comprising:

a. a longitudinally elongated support rod:

b. first spring engagement means mounted stationarily to said support rod at one end thereof, said first spring engagement means for engaging one end of the tension coil spring to be installed;

c. second spring engagement means supported from and translatably movable along said support rod, said second spring engagement means for engaging the other end of the tension coil spring to be installed so that the tension coil spring extends between said first and second spring engagement means; and

d. spring tensioning means operatively associated with said support rod for selectively positioning said second spring engagement means along said support rod so as to adjust the tension on the tension coil spring whereby the length of the tension coil spring is elongated as necessary for installation, said spring tensioning means comprising: handle support means supported from and translatably movable along said support rod, said handle support means having a handle extending therefrom at the end of said support rod opposite said first spring engagement means with said second spring engagement means disposed therebetween; and cable means extending from said handle support means to said second spring engagement means for attaching said handle support means to said second spring engagement means so that said second spring engagement means may be selectively positioned along said support rod by moving said handle support means along said support rod.

4,514,889

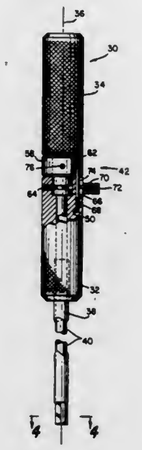
SPRING CLIP INSERTER TOOL

Stephen J. Ferlan, Wilkins Township, Allegheny Count, and Leonard T. Gesinski, North Huntingdon Twp., Westmoreland Co., both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1983, Ser. No. 548,548

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—229 **5 Claims**



1. A tool for inserting a spring clip with inwardly turned ends into a hollow member, comprising:

coaxially disposed inner and outer members each having distal and proximal ends, the distal ends of said members being adapted to receive the spring clip thereon and engage the inwardly turned ends of the spring clip;

a front handle secured to the proximal end of said outer member;

a rear handle secured to the proximal end of said inner member;

means for innerconnecting said handles for relative rotational movement; and

means for releasably locking said handles against relative

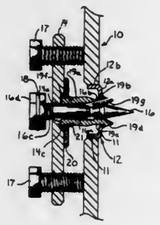
rotational movement, wherein said handles are coaxially disposed, and wherein said means for releasably locking said handles comprises: a rotatable ring disposed between adjacent ends of said handles; means for selectively locking said ring against rotation relative to one of said handles; a pin slidably disposed in a longitudinal slot located in the adjacent end of the other handle, said pin being movable relative to a corresponding hole in said rotatable ring; an external thumb release secured to said pin; and a spring disposed in the longitudinal slot of said other handle for normally urging said pin into engagement with the hole in said ring.

4,514,890

TOOL ASSEMBLY FOR REMOVAL AND INSTALLATION OF FREEZE PLUGS

Alvin E. Stewart, 2900 Hagemann, Kansas City, Kans. 66106

Filed Nov. 20, 1981, Ser. No. 323,282
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—256 **4 Claims**



3. A tool for pulling a freeze plug from an engine block comprising:

a shaft member terminating at one end in a tapered point for piercing a plug and forming an opening therein,

a frame supporting said shaft at a location on said shaft remote from said point,

means for moving said shaft longitudinally relative to said frame responsive to rotation of said shaft,

cooperating spreadable segments surrounding said shaft and associated with said point,

resilent means biasing said segments inwardly towards said shaft in a retracted condition during piercing of the plug,

said segments anchored at one end to said frame and free to move laterally outwardly relative to said shaft at the other end having plug engaging shoulders adapted to engage the plug around the opening and resist withdrawal of the segments through the opening when they have passed through the opening in the direction of piercing of the plug,

cooperating camming means on said shaft and said segments operable to spread said segments away from said shaft in response to longitudinal movement of said shaft relative to said frame, and

means for applying force to said frame thereby to displace same and cause the plug to be pulled from the opening by the engaged segments.

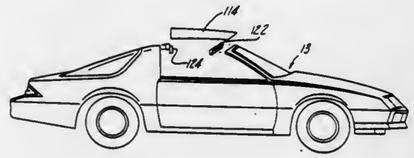
4,514,891

METHOD OF CONVERSION OF VEHICLE BODIES

David L. Draper, Hamburg, Mich., assignor to Cars & Concepts, Inc., Brighton, Mich.

Division of Ser. No. 282,078, Jul. 10, 1981, Pat. No. 4,457,555. This application Jul. 11, 1983, Ser. No. 512,522
Int. Cl.³ B22D *19/10;* **B23P** *6/00*
U.S. Cl. 29—401.1 **3 Claims**

1. The method of converting a sedan passenger automobile body which includes a continuous roof panel, a floor pan and suspension supports formed integrally to each other, the steps comprising: adding a reinforcing structure having a channel member with inverted U-shaped cross-sections centrally and longitudinally within the interior of said body, fastening said channel member to said floor pan, adding a forward transverse reinforcing member within the interior of said body and fastening it to the channel member, to the floor pan and to the forward suspension supports, adding a rearward transverse member to the interior of said body and fastening it to the channel member, to the floor pan and to the rear suspension supports, cutting and removing the continuous roof panel completely from one side of said body to the other and along the sides of the continuous roof panel, and replacing a detachable roof panel in the cut away portion of the continuous roof panel.

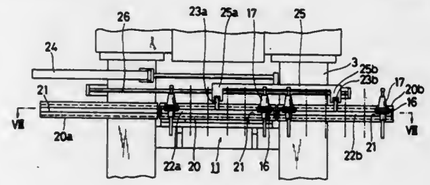


4,514,892

MACHINE TOOL

Isao Tsujimura, Toyohashi, and Takani Yoshimi, Gamagori, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

PCT No. PCT/JP81/00261, § 371 Date Jan. 6, 1982, § 102(e) Date Jan. 6, 1982, PCT Pub. No. WO82/02848, PCT Pub. Date Sep. 2, 1982
PCT Filed Oct. 1, 1981, Ser. No. 339,453
Claims priority, application Japan, Feb. 27, 1981, 56-26925
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **4 Claims**



1. A machine tool for machining a workpiece comprising:

a bed;

a workpiece support table slidably mounted on said bed for movement in a first horizontal direction;

a gate-shaped column having a pair of upstanding support portions fixedly mounted on said bed, said upstanding support portions being spaced in a second horizontal direction transverse to said first horizontal direction for permitting said workpiece support table to move thereacross;

a tool spindle mounted on said column for movements in a vertical direction as well as in said second horizontal direction; and

a tool magazine for removably storing a plurality of tools, wherein said tool magazine is disposed between said upstanding support portions and over said workpiece support table, and that said tool magazine comprises a support bracket disposed between and secured to said support portions of said column and formed with a guide way extending in said first horizontal direction, a frame mounted on said support bracket and slidable along said guide way, linear tool support means provided on said frame for removably holding a plurality of tools in such a manner that said tools form a row extending in said second horizontal direction with the axes thereof extending in a vertical direction, and drive means connected to said frame for moving said tool support means between an advanced position where the row of said tools is presented under said tool spindle for a tool change operation and a retracted position where said row of said tools do not interfere with the machining of said workpiece,

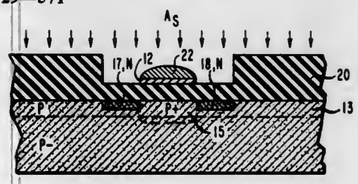
wherein said tool support means includes a supporting member secured to said frame, a slider slidably supported by said supporting member in said second horizontal direction, and a plurality of tool holders mounted on said slider each for releasably holding one of said tools, and wherein said tool magazine further comprises shifting drive means fixed to said column and connecting means provided between said shifting drive means and said slider for shifting said slider in said second horizontal direction when said shifting drive means is operated.

4,514,893

FABRICATION OF FETS

Eliezer Kinsbron, Highland Park; William T. Lynch, Summit, and Thomas E. Smith, Madison, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 29, 1983, Ser. No. 489,708
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **8 Claims**



1. A method of forming a field effect transistor which includes a source and drain region formed in the surface of a semiconductor substrate with a channel region therebetween, the method comprising the steps of:

forming a pattern of photoresist over the semiconductor substrate which leaves the desired channel region exposed and covers the remainder of the device area in the substrate;

implanting impurities into the exposed area of the substrate to form a surface region having a concentration which will set the threshold potential of the device to a desired level;

depositing at least one metal over the portion of the semiconductor exposed by the photoresist pattern to establish the boundaries of the gate electrode;

removing the photoresist pattern to expose the remainder of the device area; and

implanting source and drain regions into the substrate subsequent to the removal of the photoresist utilizing the gate electrode as a mask so as to align the edges of the source and drain regions with the surface region.

4,514,894

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE MANUFACTURING METHOD

Hiroto Kawagoe, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

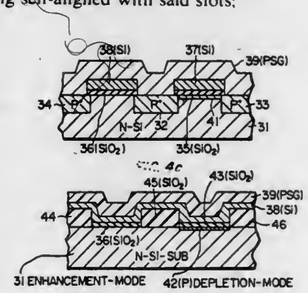
Continuation of Ser. No. 327,119, Dec. 3, 1981, abandoned, which is a division of Ser. No. 141,574, Apr. 18, 1980, Pat. No. 4,365,263, which is a continuation of Ser. No. 634,772, Nov. 24, 1975, abandoned. This application Jan. 3, 1984, Ser. No. 567,519
Claims priority, application Japan, Sep. 4, 1975, 50-107350
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **14 Claims**

1. A method of manufacturing a semiconductor integrated circuit device having a series gate matrix in which insulated field effect transistors are arranged in rows and columns and are serially connected in each row, comprising the steps of:

(a) forming an insulating layer on the surface of a semiconductor substrate of a first conductivity type, said insulating layer having a plurality of substantially parallel slots forming relatively thin insulating portions, and relatively thick insulating portions between adjacent slots, said slots extending along a row direction;

(b) selectively forming a masking layer on said thin and thick insulating portions to expose predetermined areas of said thin insulating portions;

(c) introducing an impurity of a second conductivity type, opposite to said first conductivity type, into surface portions of said substrate beneath said thin insulating portions through said exposed areas by using said thick insulating portions and masking layer as a mask to form a plurality of first semiconductor regions of said second conductivity type being self-aligned with said slots;



(d) selectively forming a plurality of gate electrode strips spaced from each other on the thin and thick portions of said insulating layer, along a column direction being substantially perpendicular to said slots, some of which said strips overlie said surface portions of said substrate; and

(e) introducing an impurity of said second conductivity type into selected regions of the surface of said substrate between adjacent ones of said strips by using said strips in said slot of each row and parts of said thick insulating portions not covered with said strips as a mask to form a plurality of second semiconductor regions of said second conductivity type, being self-aligned with said strips and slots, adjacent ones of said second semiconductor regions in each row respectively serving as a source and a drain for an insulated field effect transistor having said strip located therebetween as a gate, each of said first semiconductor regions serving as a conductive path between adjacent second semiconductor regions which interpose each such first semiconductor region therebetween.

4,514,895

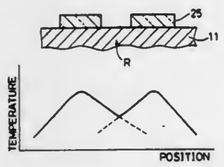
METHOD OF FORMING FIELD-EFFECT TRANSISTORS USING SELECTIVELY BEAM-CRYSTALLIZED POLYSILICON CHANNEL REGIONS

Tadashi Nishimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1984, Ser. No. 586,861
Claims priority, application Japan, Apr. 20, 1983, 58-71609
Int. Cl.³ H01L *21/265, 21/306, 21/268*
U.S. Cl. 29—571 **11 Claims**

1. A method of manufacturing MOS field effect transistor using a wafer having a polycrystal or amorphous semiconductor layer formed on an insulator, comprising the steps of: depositing a polysilicon layer on a silicon substrate; depositing on said polysilicon layer at least two non-reflective stripes forming a channel therebetween; scanning said polysilicon layer and said non-reflective stripes with an energy beam having a diameter and intensity adequate to melt said polysili-

con only in regions beneath and between non-reflective stripes and controlling said beam to be intermittent to impinge only



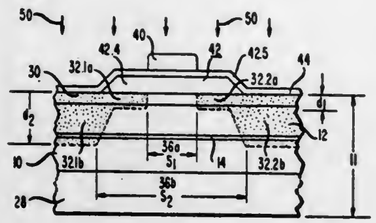
preselected regions of said polysilicon layer assigned to be channel regions.

4,514,896

METHOD OF FORMING CURRENT CONFINEMENT CHANNELS IN SEMICONDUCTOR DEVICES

Richard W. Dixon, Bernardsville; William B. Joyce, Basking Ridge; Louis A. Koszi, Scotch Plains; Richard C. Miller, Summit, and Bertram Schwartz, Westfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 247,523, Mar. 25, 1981, Pat. No. 4,447,905.
This application Jan. 17, 1984, Ser. No. 571,386
Int. Cl.³ H01L *21/265;* **B01J** *17/00;* **G01L** *29/06*
U.S. Cl. 29—576 B **3 Claims**



1. A method of forming a trapezoidal-shaped current channel in a semiconductor body comprising the steps of

(a) epitaxially growing a semiconductor layer on a major surface of said body,

(b) patterning said layer to form trapezoidal openings in said layer, the remaining segments of said layer forming complementary trapezoidal masks in cross-section, said masks having oblique side walls,

(c) subjecting said body to particle bombardment, the oblique side walls of the trapezoidal masks being effective to grade the penetration depth of the particles and to form high resistivity zones having oblique sides as a function of depth, and

(d) removing said masks from said surface.

4,514,897

ELECTRICALLY PROGRAMMABLE FLOATING GATE SEMICONDUCTOR MEMORY DEVICE

Te-Long Chiu, Houston, and Jih-Chang Lien, Sugar Land, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 470,122, Feb. 28, 1983, Pat. No. 4,467,453, which is a division of Ser. No. 72,504, Sep. 4, 1979, Pat. No. 4,376,947. This application Apr. 26, 1984, Ser. No. 604,270
Int. Cl.³ H01L *21/265, 29/76*
U.S. Cl. 29—578 **5 Claims**

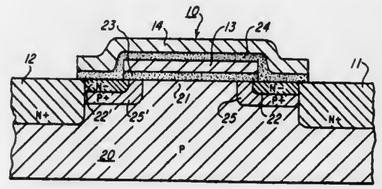
1. A method of making a semiconductor device comprising the steps of:

depositing a first conductive layer on a face of a semiconductor body of one type over an insulating coating, and patterning said first conductive layer to leave an electrode,

depositing a second conductive layer on said face over an insulating coating and over said first conductive layer, with insulating coating between the first and second layers, and patterning said second layer to leave an electrode,

introducing conductivity determining impurity of the opposite type into the body in self-alignment with the first and second conductive layers,

the improvement comprising the step of introducing con-



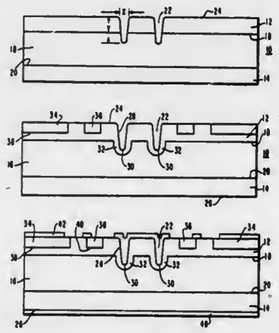
ductivity determining impurity of said one type into said body in self-alignment with the first conductive layer using one of said conductive layers as a mask, to form a region more heavily doped than the body, said region extending partially beneath the first conductive layer but not extending completely from one side of said electrode of the first layer to the other side of said electrode of the first layer.

4,514,898

METHOD OF MAKING A SELF PROTECTED THYRISTOR

John X. Przybysz, Penn Hills, and John A. Ostop, Youngwood, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 18, 1983, Ser. No. 468,016
Int. Cl.³ H01L *21/223, 21/302, 29/74*
U.S. Cl. 29—582 **4 Claims**



1. A process for making a thyristor, said thyristor being self-protected from overvoltage by avalanche, comprising, forming two regions of a second type of semiconductivity in a body of semiconductor material of a first type of semiconductivity by diffusing a first doping material capable of forming a region of second type semiconductivity through opposed major surfaces of said body, said opposed major surfaces comprising top and bottom surfaces of said body, forming by laser etching a ring shaped groove in a central portion of said top surface of said body, said groove extending entirely through said region of second type semiconductivity, formed by diffusion through said top surface, and into said body of first type semiconductivity, diffusing a second doping material capable of forming a region of second type semiconductivity through said top and bottom surfaces of said body, said second doping material diffusing through said groove, whereby a region of

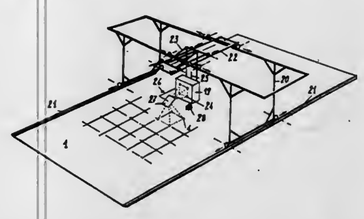
said second type of semiconductivity is formed adjacent to said groove in said body, said region extending into and becoming a part of said region of second type semiconductivity formed by diffusion through said top surface, forming at least two regions of said first type of semiconductivity in said region of second type semiconductivity formed by diffusion through said top surface, said at least two regions being spaced apart from each other and from said groove, said two regions extending into said region of second type semiconductivity to a width less than the width of the region of second type semiconductivity, affixing first metal electrical contacts to said top surface of said body of semiconductor material in ohmic electrical contact with said regions of first type semiconductivity and said region of second type semiconductivity whereby said regions are electrically shorted to each other, affixing a second metal electrical contact to said top surface in ohmic electrical contact with walls of said groove, and affixing a third electrical contact to the bottom surface of said body in ohmic electrical contact with said region of second type semiconductivity formed by diffusion through said bottom surface of said body.

4,514,899

APPARATUS WITH OPTICAL PROJECTOR FOR ASSEMBLING A WOODEN STRUCTURE

Raymond Burger, 7, place de la Fleur, Sainte-Marie-aux-Mines (Haut-Rhin), France

Division of Ser. No. 333,268, Dec. 22, 1981, Pat. No. 4,426,759.
This application Dec. 1, 1983, Ser. No. 556,902
Claims priority, application France, Dec. 22, 1980, 80 27644
Int. Cl.³ B23Q *15/00*
U.S. Cl. 29—721 **9 Claims**



1. Apparatus for assembling a wooden structure from a plurality of wooden pieces, comprising a table on which said assembly is effected, an optical projector, means mounting the optical projector on the table for movement lengthwise of the table with the optical axis of the projector perpendicular to the table at the point of intersection with the table, and means to compress an assembly of wooden elements against said table with the wooden pieces arranged in a pattern dictated by the image projected by the projector onto the table.

4,514,900

APPARATUS TO MANUFACTURE HEAT EXCHANGER FINNED TUBE

Jacques A. V. Bénard, Paris, France, assignor to Con Rad Industries, Inc., Sand Springs, Okla.

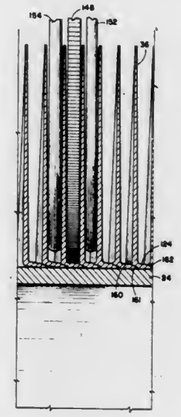
Filed Nov. 20, 1981, Ser. No. 323,539
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—727 **6 Claims**

1. An apparatus for producing heat exchanger finned tubing consisting of a central tube of heat conductive material and a spirally wound fin of a somewhat malleable heat conductive mterial, comprising:

first knurling means for forming a plurality of closely spaced substantially longitudinal grooves in the outer surface of the central tube and moving said tube longitudinally and rotationally;

forming means for bending one edge of the fin material into a substantially L-shaped cross-section forming a foot portion of the fin along said one edge;

roller means for tapering the thickness of the fin from a base adjacent the foot portion thereof to a thinner outer edge thereof thereby causing said fin or curl about the central tube with the foot portion being wrapped in spiraling engagement with the grooved outer surface of the central tube; and



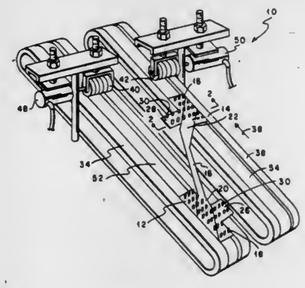
second knurling means for depressing and deforming the foot portion of the fin into close fitting meshing engagement with the substantially longitudinal grooves in the outer surface of the central tube, the heel portion of the foot portion disposed to slightly overlap a toe portion of the foot portion of the next succeeding wrap.

4,514,901

METHOD AND APPARATUS FOR ATTACHING MOUNTING PLATES

Edward R. Kirby, Dallas, Tex., assignor to Associated Truss Company, Dallas, Tex.

Filed May 23, 1983, Ser. No. 496,846
Int. Cl.³ B23P *19/00;* **B30B** *3/00*
U.S. Cl. 29—822 **4 Claims**



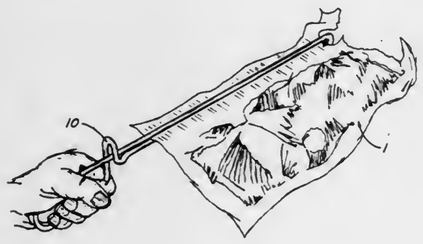
1. An apparatus for attaching a mounting plate having substantially parallel rows of prongs to a workpiece which forms rows of holes for receiving some of the prongs in an interference fit wherein the prongs extend substantially beyond the workpiece for further attachment to another object, comprising in combination:

a conveyor for carrying the mounting plate and the workpiece positioned above the mounting plate in a direction substantially parallel with the rows of prongs;

a roller positioned above the conveyor, having ribs which form circumferential grooves aligned to allow passage of the rows of prongs wherein the ribs extend sufficiently close to the conveyor to make contact with the workpiece and to force the rows of holes down over the prongs; and

means for turning the roller wherein the bottom of the ribs move in the direction of travel of the mounting plate and at substantially the same speed as the mounting plate.

4,514,902
FOOD POUCH OPENING DEVICE
James F. Stewart, 13153 Horseshoe Bend Rd., Boise, Id. 83703
Filed Feb. 9, 1984, Ser. No. 578,446
Int. Cl.³ B65D *35/28*
U.S. Cl. 30—2 **8 Claims**



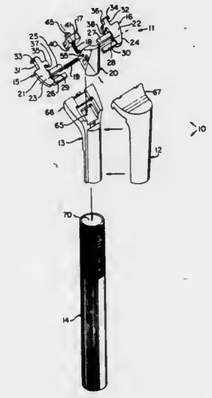
1. A food pouch opening device comprising:
a handle;
a pair of stripping rods affixed to said handle, and pivotaly moveable in relationship to one another from a closed to open position, said rods operable to clampingly engage a food pouch to tongs-like manner, and said rods having parallel abutting surfaces when in the closed position for stripping contents from a food pouch; and
cutting means affixed to at least one of said rods adjacent the terminal free end thereof, said cutting means operable to cut a food pouch for emptying the contents thereof.

4,514,903
PERSONAL GROOMING DEVICE
H. Maie' Pope, Boardwalk Apartment Bldg., 4343 N. Clarendon Ave., Chicago, Ill. 60613
Filed Nov. 14, 1983, Ser. No. 551,352
Int. Cl.³ B26B *21/00*
U.S. Cl. 30—49 **9 Claims**



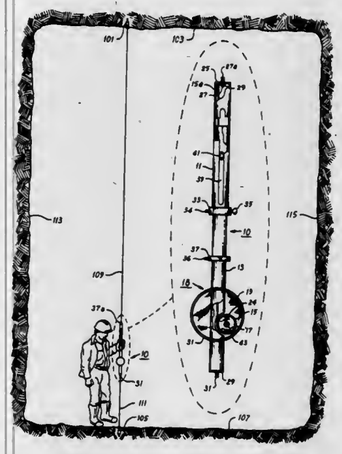
1. A cutter for trimming and shaping facial hair, said cutter comprising:
a relatively narrow metal blade having a pair of longitudinally extending and opposed edges,
the first of said edges being honed or sharpened;
a fingergrip for said blade,
said fingergrip engaging said blade at said second edge thereof and over a portion of said strip towards said first edge,
said first or sharpened edge remaining exposed when said blade is engaged by said handgrip,
said handgrip having a central segment and a pair of longitudinally-extending wing segments integral therewith,
said wing segments being angled or inclined one toward the other,
said blade being thereby held in an angled or inclined attitude approximating that of said handgrip.

4,514,904
RAZOR HANDLE
Michael J. Bond, Quincy, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Sep. 21, 1983, Ser. No. 534,240
Int. Cl.³ B26B *21/52*
U.S. Cl. 30—87 **11 Claims**



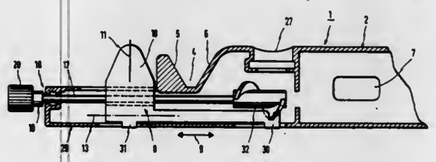
1. A razor handle for a razor blade assembly adapted to be movably mounted on said handle, the razor blade assembly having a cam means thereon for receiving a biasing force and journal bearing means for coupling to said handle, said razor handle comprising:
journal means disposed on first and second movable members of said razor handle, said first and second movable members each including a hook member, said movable members being slidably movable toward and away from each other to permit engagement of the journal bearing means of the razor with said journal means of said razor handle when said movable members are in a first position away from each other, and disengagement of the journal bearing means of the razor blade assembly with said journal means of said handle when said movable members are in a second position toward each other; and
cam follower means having a free end portion, disposed between said first and second movable members and coupled to said razor handle for providing a yieldable biasing force on the cam means of the razor blade assembly, said cam follower means also including first and second catch means for releasably engaging said first and second hook members of said first and second movable members and for maintaining said movable members in said second position toward each other until said free end portion of said cam follower means receives a predetermined force from the razor blade assembly thereby releasing said movable members to said first position for engagement with the razor blade assembly.

4,514,905
CONVERGENCE EXTENSOMETER FOR MEASURING MINE ROOF SUBSIDENCE
William W. Lutzens, Parachute, Colo., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Sep. 26, 1983, Ser. No. 535,428
Int. Cl.³ G01B *5/30;* **G08B** *21/00*
U.S. Cl. 33—125 B **11 Claims**



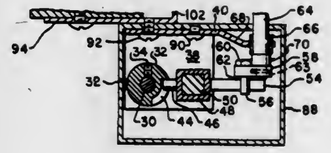
1. An extensometer for measuring changes in the vertical distance between the roof and floor of a mine opening which comprises a pair of rigid telescoping members, a tension spring securing said member to each other in a telescoping relationship, means for attaching a non-extendible cable to each of said members, and an indicator for determining telescopic movement of said members comprising a pair of lugs, each of said lugs being affixed to a separate flange.

4,514,906
PUPILLARY DISTANCE MEASURING INSTRUMENT
Paul Pehart, Kapuzinerstrasse 35, D-8000, Munchen 5, Fed. Rep. of Germany
Filed Oct. 3, 1983, Ser. No. 538,081
Int. Cl.³ A61B *3/10*
U.S. Cl. 33—200 **6 Claims**



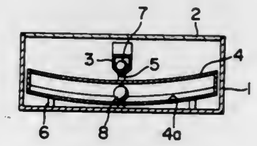
1. An instrument for measuring the distance of the eye from the root of the nose comprising a housing having a handle portion adapted for gripping by the hand of a user, said handle portion further having recesses therein for receiving a battery and a battery-operated display device, said housing further having a nose piece portion for resting on the root of the nose, said housing further having a measurement portion with interior recesses and at least one slot through said housing in said measurement portion; a slider in said housing measurement portion, said slider having a transparent plate projecting therefrom and through said slot, said plate having an eye index mark thereon; a rotatable shaft projecting from the measurement portion of the housing at one of its ends, and into the interior recesses of said measurement portion at its other end; means for drivingly coupling said shaft interior end to said slider, whereby rotation of said shaft causes said slider plate to linearly move relative to said nose piece.

4,514,907
BOW AND ARROW SIGHTING DEVICE
Leonard F. Saltzman, 14 Sandybrook Rd., Burlington, Mass. 01803
Division of Ser. No. 357,726, Mar. 12, 1982, which is a continuation-in-part of Ser. No. 265,361, May 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 63,464, Aug. 3, 1979, abandoned. This application Jul. 18, 1984, Ser. No. 631,874
Int. Cl.³ F41G *1/46*
U.S. Cl. 33—265 **18 Claims**



1. In a sighting device for a bow and arrow the combination of
a. a range finder of the type having a rotatable target range adjustment wheel member with a range adjustment angular displacement corresponding to distance to the target,
b. a bow sighting member mounted for movement in a vertical plane when the sighting device is fixed to the bow and the bow and arrow are aimed at the target, and
c. cam means coupled to responsive relation to said rotatable target range adjustment wheel member and in control relation to said bow sighting member for causing said bow sighting member to be moved in said vertical plane in response to rotation of said target range adjustment wheel member to a sighting position with respect to said bow such that said arrow is inclined with respect to the target by an amount corresponding to the displacement of said target range adjustment wheel member for the associated distance to the target.

4,514,908
LEVEL WITH TWO GUIDE FRAMES AND BALL IN EACH
Izumi Yamaguchi, Ohmiya, Japan, assignor to Kabushiki Kaisha Nagaoka, Tokyo, Japan
Filed Aug. 6, 1984, Ser. No. 637,865
Claims priority, application Japan, Apr. 13, 1984, 59-54519[U]
Int. Cl.³ G01C *9/10*
U.S. Cl. 33—365 **2 Claims**



1. A level characterized by comprising:
a base member;
two guide frames arranged within said base member one above the other so that they cross each other at right angles, and which are each provided with an internal rolling-contact surface shaped as an upward-curving circular arc, the lowest parts of said rolling-contact surfaces

being positioned at the point at which said guide frames cross, and the interiors thereof being visible through top surfaces thereof; and

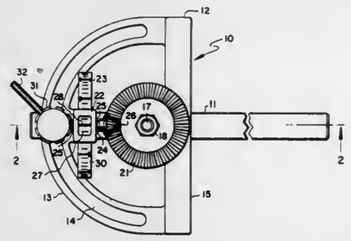
a ball contained rotatably in each of said two guide frames.

4,514,909

MITER GAUGE

Curtis R. Gilbert, 501 W. Gilbert, Viroqua, Wis. 54665

Filed Aug. 8, 1983, Ser. No. 520,998
Int. Cl.³ B26D *7/06*; B43L *7/06*
U.S. Cl. 33—471 **20 Claims**



1. A miter gauge for establishing a miter angle between a workpiece and a tool, said miter gauge comprising

a. a guide bar adapted to slide within a groove, in a direction parallel to the bar's longitudinal axis;

b. a reference frame pivotably mounted on the guide bar and adapted to support the workpiece as it is pushed across the tool;

c. a rotatably mounted angle index dial graduated to show the miter angle at which the gauge is set; and

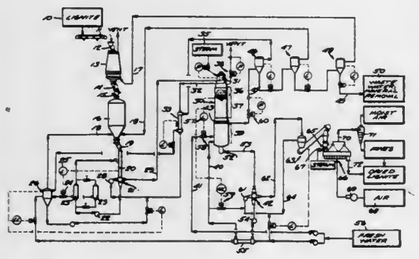
d. gear means for turning the angle index dial as the reference frame is pivoted on its mount to the guide bar, said gear means being further operative to rotate the angle index dial through a greater angle than the change in the miter angle, whereby the resolution in setting the miter angle is increased substantially.

4,514,910

DEHYDRATION OF LIGNITE OR THE LIKE

Carl L. Elmore, and Erwin D. Funk, both of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,675
Int. Cl.³ F26B *3/00*
U.S. Cl. 34—15 **17 Claims**



1. A method of dehydrating low rank coal comprising the steps of continuously:

(a) establishing a first flow stream of particulate low rank coal;

(b) preheating the first flow stream of particles with steam;

(c) immersing the first flow stream of particles in water;

(d) transferring the particles flowing in the first flow stream immersed in water to a second flow stream having a pressure substantially higher than in said first flow stream, and in the range of about 300–1500 psig;

(e) feeding the particles in the second flow stream to the top of a dehyration vessel, and separating the liquid from the particles at the dehydration vessel and recirculating the separated water to the second flow stream;

(f) exposing particles at the top of the dehydration vessel to saturated steam, condensing steam and particles flowing downwardly in a column in the dehydration vessel;

(g) effecting countercurrent washing of the particles at the bottom of the dehydration vessel to cool and wash the particles at the bottom of the dehydration vessel;

(h) withdrawing spent wash water from the dehydration vessel;

(i) gradually depressurizing the particles to prevent breakup thereof, as the particles are withdrawn from the bottom of the dehydration vessel in a third particle flow stream by transferring the particles flowing in the third flow stream to a fourth, lower—but super-atmospheric—pressure flow stream;

(j) separating the water from the particles in the fourth flow stream at a super-atmospheric pressure significantly lower than the pressure in the dehydration vessel, to flow the particles in a fifth flow stream; and

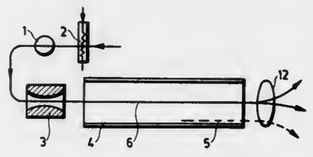
(k) evaporatively cooling the particles flowing in the fifth flow stream to produce dehydrated low rank coal in a dry form.

4,514,911

METHOD FOR REMOVING MOISTURE ADHERED TO SURFACES OF BODIES AND FOR SIMULTANEOUSLY ADJUSTING THE SURFACE TEMPERATURE OF THE BODIES

László Varga; Sándor Krekács; János Latorcai; Zoltán Pálfi, all of Budapest, and István Fledrich, Gödöllö, all of Hungary, assignors to Budapesti Muszaki Egyetem, Budapest, Hungary

Filed Jul. 13, 1982, Ser. No. 397,876
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—22 **1 Claim**



1. Method for removing moisture adhered to surfaces of bodies and simultaneously for adjusting the surface temperature of the bodies to a predetermined value, comprising providing air or steam having a temperature within a range of ±10 degrees centigrade of said predetermined temperature, and streaming said air or stream along the surface of the body with a velocity

$$\bar{v}_1 = c\sqrt{\frac{g \cdot t_v}{G_1} \cdot v_{v1} \cdot (R_b - R_1)^{-1}} \cdot \frac{1}{1 - f_1},$$

wherein

$\bar{v}_1$ is the average velocity of stream of the air or steam,

g is the gravitational acceleration ($g = 9.81\ m/s^2$),

t_v is the dynamic viscosity of the moisture in the state of its removal,

G_1 is the specific weight of the air or steam in the state of removal of the moisture,

v_{v1} is the velocity of stream of the moisture at radius R_1,

R_b is the hydraulic radius of the moistured surface,

R_1 is the hydraulic radius of the interface of the moisture and the air or steam,

f_1 is the degree of saturation of the air or steam,

c is

$$c = \sqrt{\frac{8}{k}},$$

wherein

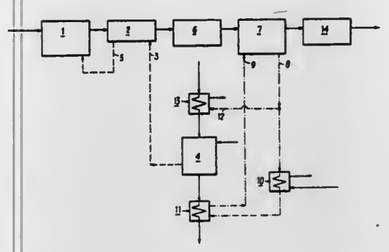
$0.0015 < K < 3$ and k is the modified resistance coefficient.

4,514,912

PROCESS FOR DRYING OF ORGANIC SOLID MATERIALS, PARTICULARLY BROWN COALS

Alois Janusch, Leoben-Seegraben, and Franz Mayer, Graz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Nov. 14, 1980, Ser. No. 206,896
Claims priority, application Austria, Jan. 21, 1980, 312/80
Int. Cl.³ F26B *3/06*
U.S. Cl. 34—37 **15 Claims**



1. Process for drying organic solid materials, particularly brown coals, in which the preheated solid materials are passed through at least one drying stage and put there under the action of saturated steam under a super-atmospheric pressure, characterized in that the solid materials are, after removal of the process water formed, at least partially pressure-released and further dried in an atmosphere of super-heated steam at a temperature of the steam atmosphere of at least 200° C. and in that the steam from the steam atmosphere is passed along a closed circuit over heat exchangers and brought to and/or maintained at the temperature of the steam atmosphere, the excess steam of the steam obtained and to be supplied to the heat exchanger or exchangers being tapped from the steam obtained and being used for preheating purposes.

4,514,913

APPARATUS FOR DRYING A MOVING WEB HAVING MOVABLE DRYER MODULES

Erik W. Stephansen, Hillsborough, Calif., assignor to Impact Systems, Inc., San Jose, Calif.

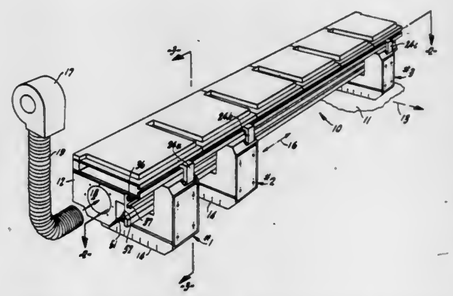
Filed Feb. 7, 1984, Ser. No. 577,898
Int. Cl.³ F26B *23/04*
U.S. Cl. 34—48 **8 Claims**

1. Apparatus for drying a moving web having a variable cross-direction moisture profile comprising:

an elongated structural member having a length at least as great as said web in a transverse cross-direction and carrying a plurality of movable dryer modules for drying said web, said modules having an effecting heating area mounted in close proximity to said web and for movement in said cross-direction, the combined lengths of said heating areas measured in the cross-direction being substantially less than said length of said web measured in the cross-direction;

means for deriving said moisture profile of said web and means for compiling a list of deviations from a predetermined moisture target at a plurality of locations across said web;

automatic means responsive to said moisture profile to move each dryer module to an optimum cross-direction location



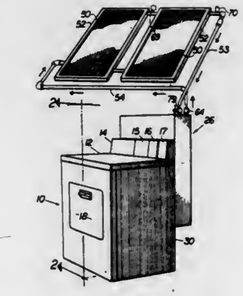
where the worst deviations of said list from said predetermined moisture target occurs.

4,514,914

SOLAR CLOTHES DRYER

George R. Kitzmiller, 721 E. 5th St., Hialeah, Fla. 33010

Filed Feb. 16, 1984, Ser. No. 580,817
Int. Cl.³ F24J *3/02*; F24B *19/00*
U.S. Cl. 34—93 **14 Claims**



1. A solar drying assembly of the type primarily designed to dry clothes and like articles by exposure to heated air, said drying assembly comprising:

(a) a dryer housing including a casing having a hollow interior dimensioned and structured to maintain clothes therein, air inlet means formed in said casing and disposed in communicating relation to a supply of heated air,

(b) an air flow casing structured to at least partially define a path of air flow disposed in direct fluid communicating relation with said casing hollow interior,

(c) an air flow casing entrance means disposed within said path of air flow and comprising a cover means for defining an exterior face of said air flow casing, said cover means including an apertured construction and being disposed and dimensioned to allow a quantity of air flow to pass therethrough,

(d) air heater means including a heat transferring coil means mounted in said air flow casing downstream of said cover means and structured to house a substantially continuous flow of heated fluid therein, said heat transferring coil means disposed in heat transferring, substantially interruptive relation to air passing along said path of air flow,

(e) air driving means disposed in fluid communication with said air flow casing and at least partially defining said path of air flow through said casing and said air flow casing entrance means,

(f) solar energy collector means disposed in direct exposure to radiant energy from the sun and including heat absorb-

ing coil means structured to house a substantially continuous flow of heated fluid therein,

(g) said heat absorbing coil means disposed in direct fluid communication with said transferring coil means, the latter two coil means at least partially defining along with a fluid driving means, a path of heated fluid flow,

(h) said path of heated fluid flow structured and disposed to direct a substantially continuous flow of heated fluid in heat transferring relation to air passing along said path of air flow into said casing means,

(i) whereby clothes within said casing are dried by exposure to heated air passing into said casing.

4,514,915

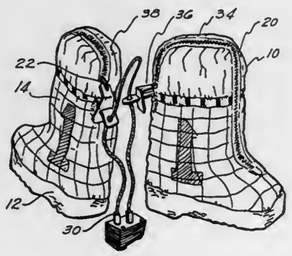
COMBINATION BOOT AND LOCKABLE STORAGE MEANS

Nicholas J. Galetta, 1 Blossom Terrace, Larchmont, N.Y. 10538

Continuation-in-part of Ser. No. 353,566, Apr. 16, 1982, abandoned. This application Dec. 6, 1982, Ser. No. 447,207

Int. Cl.³ A43B *3/16*

U.S. Cl. 36—1 **3 Claims**



1. A combination boot and lockable storage means comprising:

a boot having an opening therein for insertion of a foot into the boot, said opening extending from the rear of the boot along the top of the boot to the front of the boot;

a slide fastener including closure means having a pendant member, attached to the sides of the opening along its entire length for closing the opening around an ankle of a foot when inserted therein and completely closing the opening when the foot is removed therefrom;

a slide extension member having one end attached to the top rear area of the boot;

a first opening provided in the other end of said pendant member adapted for passage therethrough of the slide extension member for securing the members together when the closure means completely closes the opening, the extension member having an opening therethrough at its other end adapted to received cable means to maintain the pendant means in a locked position and provide means to suspend the boot from and lock the boot to, a secure location.

4,514,916

SOLE FOR CROSS-COUNTRY SKI SHOE

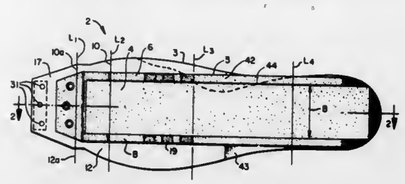
Kjell Aarflot, Oslo, Norway, assignor to Nike, Inc., Beaverton, Oreg.

Filed Jun. 8, 1982, Ser. No. 386,352

Int. Cl.³ A43B *5/04;* **A63C** *9/00*

U.S. Cl. 36—117 **9 Claims**

1. An outer sole for a cross-country ski shoe wherein the shoe moves upward and downward with respect to the ski during skiing, said sole comprising a flexible sole plate member having a toe section, a forefoot section, an arch section, a heel section, an upper surface for attachment to a shoe upper and a lower surface adapted to contact a ski, said lower surface having a pair of transversely spaced, longitudinally extending side walls defining between them a longitudinally extending groove, said groove having a width sufficient for receiving the ski so that said side walls of said groove extend about the side walls of the ski, said groove extending through at least said



forefoot, arch and heel sections so that in normal cross-country skiing motions some portion of said side walls of said groove extend about the side walls of the ski to provide lateral stability.

4,514,917

SELF-PROPELLED WORKING VEHICLE

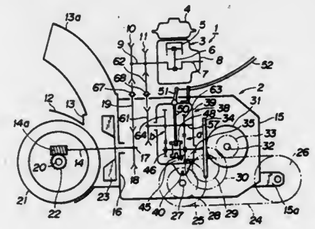
Takeo Ogano; Hiroshi Sueshige, and Sakichi Hatakeyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1984, Ser. No. 614,204

Claims priority, application Japan, May 25, 1983, 58-93197

Int. Cl.³ E01H *5/09*

U.S. Cl. 37—249 **5 Claims**



1. A self-propelled working vehicle comprising:

a vehicle frame;

an engine mounted on said vehicle frame;

working implement means equipped to said vehicle frame and operatively interconnected to be driven with said engine;

running means suspended from said vehicle body;

said running means having at least one driving wheel mounted on an axle;

first transmission means disposed in said vehicle frame;

said first transmission means having a drive shaft extending in the fore to aft direction of said vehicle, a drive disc secured at the center thereof to the rear end of said drive shaft, a driven shaft arranged behind said drive disc perpendicularly to said drive shaft and operatively connected to said axle of said driving wheel, and a friction disc fitted on and arranged to be slidable along and non-rotatable about said driven shaft and adapted along the circumference thereof to be frictionally engageable with said drive disc;

second transmission means disposed in said vehicle frame; and

said second transmission means being operatively connected to said engine and supporting at least the front end of said drive shaft, such that the driving power from said engine is transmittable to said drive shaft in the form of a torque, shiftably between at least a pair of speed modes.

4,514,918

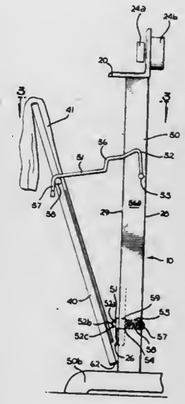
PANTS PRESSER WITH SPRING GRIPPING DEVICE

David Warner, 999 Green St., #1905, San Francisco, Calif. 94133

Filed Sep. 1, 1983, Ser. No. 528,577

Int. Cl.³ D06F *71/28*

U.S. Cl. 38—36 **10 Claims**



1. A pants presser comprising:

first and second flat members having facing surfaces between which pants are pressed, said second member being maintained in a a substantially vertical plane by a pair of support brackets, one of which is disposed along each vertical side edge of said second member, and said first member being angularly movable with respect to said second member;

a heatable sheet covering at least one of said members;

a pants gripping means attached near the bottom of said second flat member, said gripping means being mounted so that it moves substantially linearly and transversely to the plane of said second flat member when said first member is closed against said second flat member; and,

a latching means connecting said first flat member to said second flat member for urging said first flat member towards said second flat member and maintaining said first flat member at predetermined angles with respect to said second flat member,

said latching means comprising a knob disposed upon the side edge of said first flat member, and a latch bar pivotally connected to one of said support brackets on the same side of said presser as said knob, said latch bar comprising at least three detents, wherein

the first detent is disposed furthest from the pivoted connection to said support brackets at a position whereby when said knob is seated in said first detent, said gripping means is not in contact with said first flat member so that the pants can be installed in said pants presser without obstruction;

the second detent is disposed at an intermediate distance from said pivoted connection, whereby when said knob is seated in said second detent, said first and second flat members are angularly disposed with respect to each other such that said gripping means is urged against and proximate with said first flat member, thereby gripping the bottom of pants installed thereon such that said pants bottoms are securely held in place while the remainder of the pants are free; and,

the third detent is disposed closest to said pivoted connection, whereby when said knob is seated in said third detent, said flat members are held in vertical adjacent relation with each other such that said pants installed thereon are pressed therebetween.

4,514,919

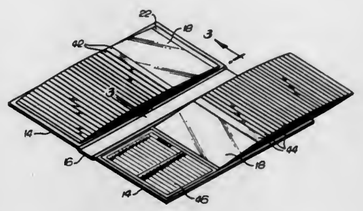
APPARATUS FOR STORING, DISPLAYING AND IDENTIFYING PHOTOGRAPHS

Sheldon Plutsky, Chatsworth, Calif., assignor to Pioneer Photo Albums, Inc., Chatsworth, Calif.

Filed Oct. 17, 1983, Ser. No. 542,404

Int. Cl.³ A47G *1/06*

U.S. Cl. 40—159 **3 Claims**



1. A flippable pocket for a photo album having a backing member to which the pocket is attachable at a first edge thereof comprising:

a transparent member having a fold along its center, said fold forming said first edge and dividing said member into two transparent panels, each having an edge opposite the fold;

an opaque sheet placed between said transparent panels with a first edge against the fold and a second edge extending slightly beyond the edges of the transparent panels opposite the fold; and

an adhesive-backed opaque strip having a surface for writing upon and a width slightly greater than twice the distance that said opaque sheet extends beyond the edges of the transparent panels opposite the fold, said strip centered on said second edge and folded over upon and adhering to said opaque sheet and said transparent panels adjacent their edges opposite the fold, whereby a pocket having two compartments for holding photographs and opaque writing surfaces which do not substantially block photographs placed within the compartments is formed.

4,514,920

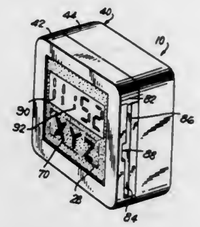
DISPLAY MODULE

Doron Shafrir, 4 Ross Ave., Spring Valley, N.Y. 10977, and Giora Tamir, 26 Lillian St., Pamona, N.Y. 10970

Filed Nov. 16, 1982, Ser. No. 442,139

Int. Cl.³ G09F *9/00*

U.S. Cl. 40—448 **14 Claims**



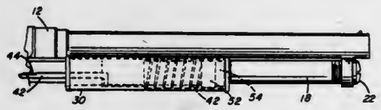
1. A display module for displaying a symbol, said display module comprising:

a liquid crystal display including first and second glass plates, a liquid crystal material between said glass plates, first and second polarizers adjacent said first and second glass plates, respectively, and first and scond transparent electrodes on the inner surfaces of said first and second glass plates, respectively;

a source of electricity, and a circuit connected to said source

of electricity and said electrodes for applying an electric field across said liquid crystal material;
a housing for supporting said liquid crystal display, said source of electricity, and said circuit in assembled relation;
symbol depicting means having a symbol for display to a viewer; and
a supporting structure receivable in said housing for supporting said symbol depicting means behind said liquid crystal display with the symbol within the projected area defined by the overlapping portions of said first and second electrodes, said symbol being selectively displayed and masked by selectively applying said electric field to said liquid crystal material for selectively blocking and unblocking the transmission of light through the area of said liquid crystal display defined by said overlapping electrode portions;
said housing having a slot in a wall thereof in alignment with an edge of said symbol depicting means for accommodating removal of said symbol depicting means from said housing for permitting replacement of said symbol depicting means with a different symbol depicting means having a different symbol.

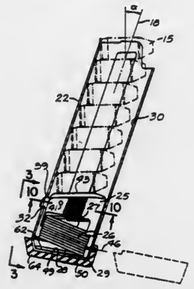
4,514,921
FIREARM RECOIL BUFFER
Frank M. Burkleca, 5947 Library Rd., Bethel Park, Pa. 15102
Filed Feb. 7, 1983, Ser. No. 464,642
Int. Cl.³ F41C *27/00, 21/18*
U.S. Cl. 42—1 V **15 Claims**



1. A firearm recoil reducing device comprising,
a firearm having a receiver,
a fore end member positioned forwardly of said receiver,
means for connecting said fore end member to said receiver,
a movable fore end adapted to receive said fore end member,
said movable fore end having an internal shoulder,
a compression coil spring positioned in said movable fore end in surrounding relation with said fore end member,
said coil spring having a first end and a second end,
said coil spring first end exerting a force on said fore end internal shoulder,
a spanner nut releasably engageable with the end of said fore end member adjacent said coil spring second end portion, and
said spanner nut movable to a predetermined position on said fore end member to compress said coil spring on said fore end member between said fore end internal shoulder and said spanner nut such that when the firearm is discharged said movable fore end remains stationary against the compression of said coil spring and said coil spring compresses further to reduce the recoil force directed toward said receiver.

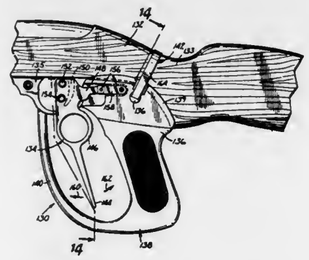
4,514,922
GUN MAGAZINE STRUCTURE
Frank W. Farrar, Los Alamitos, and Carl J. Cupp, Hawaiian Gardens, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.
Filed Feb. 1, 1983, Ser. No. 462,958
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 **11 Claims**

1. A magazine comprising:
a magazine body to be removably inserted into a gun and adapted to contain a series of rounds of ammunition;
a spring yieldingly urging said rounds upwardly for firing by the gun;
a floor plate disposed across the bottom of said body;
a sliding connection mounting said floor plate to said body for generally horizontal sliding movement relative thereto to attach the floor plate to or remove it from said body;



said sliding connection being constructed to allow slight generally vertical movement of the floor plate relative to said body; and
locking means for blocking sliding detachment of said floor plate from said magazine body and adapted to be released to permit such sliding detachment by said slight generally vertical movement of the floor plate relative to the magazine body.

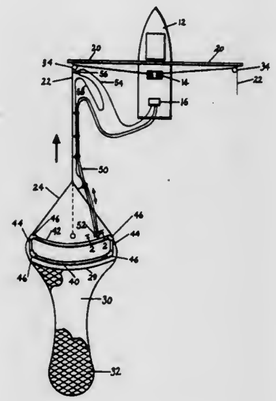
4,514,923
TRIGGER ACTUATOR
Patrick Teel, 5215 11th Ave., Minneapolis, Minn. 55417
Continuation-in-part of Ser. No. 413,859, Sep. 1, 1982, abandoned. This application May 31, 1984, Ser. No. 615,929
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—69 R **3 Claims**



1. A trigger-actuating device for use in a firearm having a trigger, with the trigger being movable between a normal non-fire position and a fire position, the device comprising:
an actuator lever pivotally attachable to the firearm at one end and having a second, free end for manual engagement and the lever having first and second side members extending along both sides of the trigger to a position forward of the trigger;
means for pivotally attaching the actuating lever to the firearm including a trigger guard assembly having a pistol grip portion and a forward guard portion and means for fixedly attaching the pistol grip portion to the firearm and first and second slots disposed within the pistol grip portion and first and second slot followers in sliding relationship with the slots and each slot follower having a pin portion extending therefrom pivotally engaging the actuating lever;
a first pin member extending between the side members at a position forward of an upper section of the trigger;

a second pin member extending between the side members forward of a lower portion of the trigger; and
wherein the first and second pin members are positioned such that when the free end of the lever is moved in a first direction, the first pin member engages the upper portion of the trigger actuating the trigger, and when the free end of the actuating lever is moved in an opposing second direction, the second pin member engages a lower end portion of the trigger actuating the trigger.

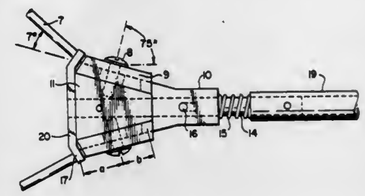
4,514,924
OPENING DEVICE FOR A TRAWL NET
Maurice J. Ojserkis, A-14 Point Gardens Apartments, Somers Point, N.J. 08244
Filed Jul. 9, 1982, Ser. No. 396,783
Int. Cl.³ A01N *93/02*
U.S. Cl. 43—9 **1 Claim**



1. An improved method of fishing using a conventional type fishing net to be trawled but without the use of trawling doors and requiring substantially less use of energy than is normally required with a conventional net having trawling doors and a mouth opening comprising the steps of attaching a normally flaccid flexible hose structure around said mouth opening of the net;
suspending the net from a fishing vessel so as to be capable of applying hydraulic fluid under high pressure to the normally flaccid flexible hose structure in order to make same rigid for holding the mouth of the fishing net open;
performing trawling operations in a conventional manner; and releasing the hydraulic pressure from the flexible structure in order to collapse same together with the mouth opening in order to close said fishing net prior to hauling the net aboard the vessel.

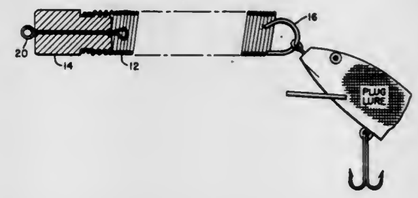
4,514,925
FOLDING NET MECHANISM
Albert M. Rockwood, 505 Ruddiman Dr., N. Muskegon, Mich. 49445
Filed Feb. 28, 1983, Ser. No. 458,667
Int. Cl.³ A01K *77/00*
U.S. Cl. 43—12 **4 Claims**

1. A folding fishing net comprising a handle; a support block attached to said handle; two arms pivotally attached to said support block so as to rotate at an angle to the handle; a net attached to both arms and supported on a third side by a flexible interconnecting member; pivoting arm supports into which the arms are recessed, said pivoting arm supports having a truncated conical form about the outer periphery thereof, said pivoting arm supports each carrying a latching notch at one end of the conical form; a single latch element slidably mounted to the handle having protrusions in line with the axis of the handle designed to engage the latching notches; the latch being spring loaded so that its protrusions are in continu-



ous contact with the conical form of the arm supports until they can engage both notches when both arms are fully extended.

4,514,926
SNAGGED FISH HOOK RELEASE DEVICE
Richard E. Weber, Sr., 3719 Sarah St., Franklin, Ohio 45005
Continuation-in-part of Ser. No. 183,434, Sep. 2, 1980, abandoned, Continuation of Ser. No. 419,730, Sep. 20, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 575,282
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—17.2 **7 Claims**

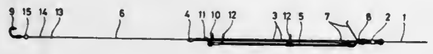


1. In a snagged fish hook release device for disposing between a hook and a line on fishing tackle, the improvement in combination therewith which consists of only two parts specifically comprising:
(a) an elongated helically wound tension spring having a first end with means thereon for detachably joining directly to the eye at the end of the shank on said fish hook, and having an open second end; and,
(b) an elongated weight having a first end externally threaded for threadably engaging the open end of said spring, and with an unthreaded extending second end having means thereon for the attachment of said line, the inward end of the thread on the first end of said weight directly adjacent to the extending second end of said weight having a reduced diameter undercut with respect to the minor diameter of said first threaded end for receiving at least the first coil on the open end of said spring when assembled on said weight for resisting separation of said weight from said spring when said spring is rotated.

4,514,927
FISHING LINE WITH A REINFORCED LEADER
Hiromu Fukemoto, 953-9, Kushimoto, Kushimoto-cho, Nishimuro-gun, Wakayama, Japan
Filed Nov. 25, 1983, Ser. No. 555,631
Claims priority, application Japan, Nov. 27, 1982, 57-208336
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—44.98 **2 Claims**

1. A fishing line assembly having a fishing line, a hook, a leader connected between said fishing line and said hook, a reinforcing rod for reinforcing said leader when a big fish has taken the hook, a ring member for connecting said fishing line to said leader, said fishing line having one end passing through

said ring member and attached to one end of said reinforcing rod remote from said hook, a stopper means attached to said fishing line for stopping temporarily said reinforcing rod in its inoperative position from moving toward the hooks, said reinforcing rod being adapted to become free from said stopper means and move to its operative position when it is pulled with a sufficient force, and return preventing means for preventing said reinforcing rod from returning from its operative position along said leader to its inoperative position.

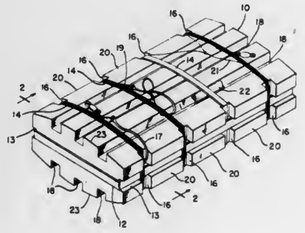


4,514,928

LEADER HOLDER WITH ELASTIC ELEMENT

Clarence A. Hanson, Hilman, Minn., assignor to Richard A. Hanson, Woodinville, Wash.

Filed Jan. 27, 1983, Ser. No. 461,660
Int. Cl.³ A01K *97/06*
U.S. Cl. 43—57.2 **11 Claims**



1. A leader storage device comprising:
a base;
at least one pair of opposite winding slots located on opposite sides of said base, wherein said base includes a pair of posts located on opposite sides of each said winding slot, wherein each said winding slot has a bottom, and wherein said winding slots are adapted to have wound therein and therebetween leader means;
at least one winding plan surface extending between said at least one pair of winding slots; and
an elastic tension band, wherein said elastic tension band is supported by each said pair of posts, wherein said elastic tension band extends across said winding slots and is spaced away from said bottoms of said winding slots to permit said elastic tension band to be deflected downwardly under tension into said winding slots by said leader means, when said leader means is wound under tension over said elastic tension band, to permit said elastic tension band to exert a winding and holding tension on said leader means to keep said wound leader taut.

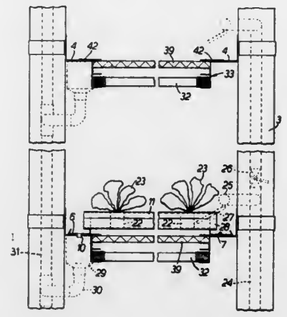
4,514,929

CELL

Jacobus W. Lestraden, Sassenheim, Netherlands, assignor to Schulte & Lestraden B.V., Sassenheim, Netherlands

Filed Jun. 6, 1983, Ser. No. 501,188
Claims priority, application Netherlands, Jun. 10, 1982, 8202342
Int. Cl.³ A01G *13/00*
U.S. Cl. 47—17 **18 Claims**

1. A cell for growing plants, said cell comprising:
(a) at least one stand in which a plurality of crop containers are arranged in a plurality of layers one above the other;
(b) at least one light source located beneath a first one of said plurality of crop containers and above a second one of said plurality of crop containers; and
(c) a plate made from a heat insulating material disposed between said at least one light source and said first one of said plurality of crop containers, the side of said plate facing said at least one light source being light reflecting, whereby:



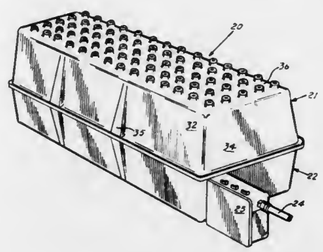
(d) said plate reflects light from said at least one light souce downwardly on said second one of said plurality of crop containers and
(e) said plate substantially prevents the underside of said first one of said plurality of crop containers from absorbing heat from said at least one light source.

4,514,930

METHOD AND APPARATUS FOR AEROPONIC PROPAGATION OF PLANTS

Steven M. Schorr, Boulder, and Richard J. Stoner, Jr., Longmont, both of Colo., assignors to Genisis Technology, Inc., Boulder, Colo.

Filed Jan. 6, 1983, Ser. No. 455,989
Int. Cl.³ A01G *31/00*
U.S. Cl. 47—60 **5 Claims**



1. An apparatus for applying an intermittent aqueous atomized mist composition to plants, including an enclosed chamber, means for supporting plant cuttings with a propagation portion thereof extending into said chamber, and means for intermittently applying an aqueous nutrient mist composition to said plants, comprising a supply of water at tap water pressure, means for controlling the flow of water from said supply, a distributing manifold including a plurality of mist forming nozzles positioned in said chamber, a source of plant growth promoting composition, a suction venturi positioned above and in communication with said growth promoting composition for introducing said plant growth promoting composition into said water from said supply before said water is introduced into said distributing manifold, means for draining water from said distributing manifold and venturi unit, and means for actuating said water control means and said drain means in an intermittent timed sequence for periodically stopping flow of said water, draining said suction venturi and distributing manifold;

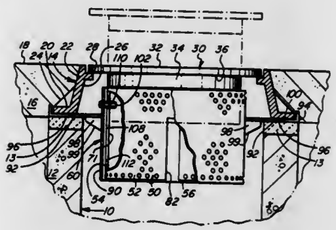
and thereafter initiating flow of said water from said supply and a flow of said growth composition from said source through said venturi to form an aqueous growth composition and introducing said aqueous growth composition into said distributing manifold and thence into said chamber as a fine mist for application to said plants, and repeating said time sequence.

4,514,931

SECURING DEVICE FOR MANHOLE COVER

Alfred Beck, and Piet Van Papeveld, both of Edmonton, Canada, assignors to Allied Flux Reclaiming Ltd., Alberta, Canada

Filed Jul. 2, 1984, Ser. No. 626,694
Int. Cl.³ E05F *15/20*
U.S. Cl. 49—21 **12 Claims**



1. A pressure release device for use with a manhole cover for releasing excess fluid pressure within a manhole or the like, said device comprising:
a tubular member having a tubular wall, fluid inlet means at one end thereof, fluid outlet means in said wall, means at the other end thereof for securing said member to said cover, and means for securing said member to said manhole adjacent a manhole opening for longitudinal movement of said member between a closed position whereat said cover closes said opening and an open position whereat said cover is removed from said opening permitting fluid flow from said manhole into said member via said inlet means and outwardly of said member and said manhole opening via said outlet means, said securing means permitting movement of said member from said closed position at a predetermined fluid pressure within said manhole and permitting said member to return to said closed position when said fluid pressure drops below said predetermined pressure.

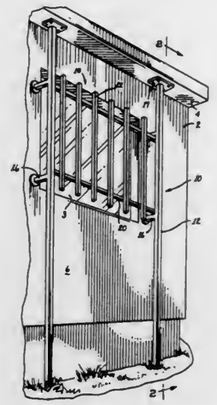
4,514,932

SECURITY SYSTEM WINDOW GUARD APPARATUS AND ANCHOR ASSEMBLY THEREFOR

James Janis, 4104 N. Reno, Tucson, Ariz. 85705

Filed Sep. 30, 1982, Ser. No. 430,402
Int. Cl.³ E06B *9/00*
U.S. Cl. 49—50 **19 Claims**

15. An anchoring apparatus for a window guard grill comprising, in combination:
a pair of elongated vertical support members operably disposed on each side of a window to be protected and spaced a predetermined distance away from and substantially parallel to an outer wall, each of said pair of vertical support members including an upper end portion and a lower end portion;
means for fixedly anchoring the lower end portion of each of said pair of vertical support members underground for preventing easy access thereto;
means for fixedly securing the top end portion of said pair of said vertical support members to a roof overhang;
said window guard grill including a plurality of substantially vertical and horizontally oriented bars spaced such that a person cannot gain access to the window therethrough;
means for fixedly securing the opposite sides of said window guard grill to corresponding ones of said pair of elongated vertical support members for fixedly positioning said window guard grill over said window to be protected and a predetermined fixed distance from said window and substantially parallel thereto, said distance being such that a person cannot squeeze between the window guard grill and the wall to gain access to said window.

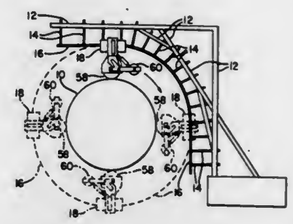


4,514,933

SELF-BALANCED SURFACE-PROCESSING APPARATUS

Theodore N. Baskett, 9514 Portland Ave., Tacoma, Wash. 98441

Filed Aug. 23, 1982, Ser. No. 410,335
Int. Cl.³ B24B *17/00*
U.S. Cl. 51—32 **7 Claims**



1. A surface processing apparatus, comprising:
(a) a frame,
(b) a track mounted on the frame a spaced distance from the surface to be processed,
(c) a carriage on the track movable along the latter,
(d) a tool support,
(e) a surface processing tool mounted on the tool support,
(f) powered extension means directly interconnecting the carriage and the tool support and operable to move the latter to move the processing tool toward and away from a surface to be processed,
(g) extension control means for controlling movement of the extension means, and
(h) sensor means operatively associated with the extension control means and tool support and operable upon changing of the distance between the track and surface to be processed to operate the extension means to move the tool support in the direction to maintain substantially constant surface contacting pressure of the processing tool against the surface to be processed.

4,514,934

METHOD AND APPARATUS FOR ABRASIVELY MACHINING A WORKPIECE

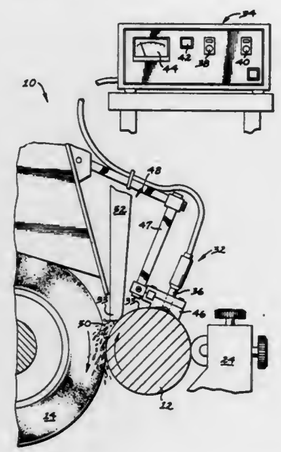
Robert W. Ray, and Rex G. Pierce, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00623, § 371 Date May 10, 1982, § 102(e) Date May 10, 1982, PCT Pub. No. WO83/03994, PCT Pub. Date Nov. 24, 1983

PCT Filed May 10, 1982, Ser. No. 394,731

Int. Cl.³ B24B *49/14*

U.S. Cl. 51—165 R **14 Claims**



1. In a method for abrasively machining a workpiece (12) by contacting the workpiece (12) with an abrasive tool (14) and moving at least one of the workpiece (12) and the tool (14) relative to the other, the improvement comprising:

directing a flow of coolant (50) to the workpiece (12) at an area (33) where the abrasive tool (14) contacts the workpiece (12);

establishing an eddy-current in the workpiece during an abrasive machining operation (12) at said area (33) on the workpiece (12);

sensing a change in the properties of the eddy-current in response to a change in the microstructure of the workpiece (12) at said area (33);

comparing the sensed change to a preselected value;

determining the magnitude of the difference between the preselected value and the sensed value; and,

controlling the abrasive machining operation in response to said sensed change in microstructure.

4,514,935

SCANNING DEVICE FOR A MACHINE FOR THE AUTOMATIC SHARPENING OF BROACHING OR REAMING TOOLS

Roland Börner, Schellberger Weg 43, and Herbert Holstein, Felder Strasse 65, both of D-5650 Solingen 1, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 399,885

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131511

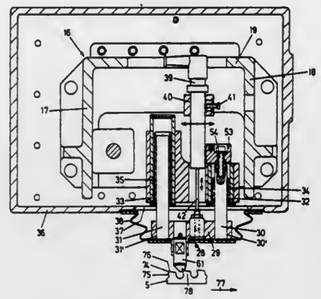
Int. Cl.³ B24B *49/00*

U.S. Cl. 51—165 R **8 Claims**

1. A scanning device for a machine for the automatic sharpening of broaching or reaming tools, including a driven horizontal slide for receiving a tool which is to be sharpened and a driven vertical slide provided with at least one grinding spindle mounted on a grinding slide, said scanning device comprising:

means for mounting said scanning device on said grinding slide;

means, including a scanning finger movable relative to the scanning device, for detecting the position of a given tooth of the tool being ground, said detecting means further including two sliding members displaceable at right angles to one another in a substantially vertical plane,



means for mounting said scanning finger upon one of said sliding members,

and displacement pickup means associated with each sliding member for detecting the displacement pickup distance travelled by the respective sliding member beginning at its position of rest, said displacement pickup means emitting displacement-dependent signals for triggering drive mechanisms for the machine slides.

4,514,936

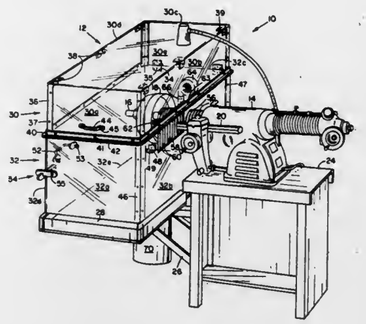
LATHE DUST ENCLOSURE

Ruben G. Hurtado, 106 Sylvia, San Antonio, Tex. 78237

Filed Oct. 19, 1983, Ser. No. 543,308

Int. Cl.³ B24B *55/06*

U.S. Cl. 51—270 **12 Claims**



1. Apparatus for collecting airborne particles produced during the operation of a drum and disc lathe, comprising:

a housing adapted to be substantially sealed comprising a ceiling, a floor, and a plurality of sides, at least one of said sides being adapted to receive therethrough an arbor of said lathe and a cutting tool;

means for removing said airborne particles from said housing; and

means for collecting said airborne particles exterior to said housing.

4,514,937

METHOD FOR THE SURFACE TREATMENT OF MAGNETIC RECORDING MEDIA

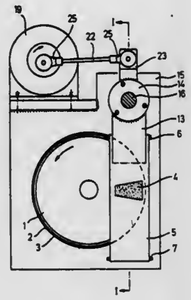
Manfred Gehrung, Grossniedesheim; Klaus Schoettle, Heidelberg; Helmut Kreissler, Oberkirch; Peter Rudolf, Fussgoenheim; Joachim Hack, Ludwigshafen, and Friedrich Anslinger, Freinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,504

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103874

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—281 SF **4 Claims**



1. A method of treating the surface of magnetic recording media by burnishing, comprising: applying relative movement between the surface to be burnished and an abrasive member, pressing the abrasive member against the said surface, commencing with an unused portion of said abrasive member against a portion of said surface and controlling the pressure with which the said abrasive member portion is applied to said portion of said surface during the burnishing operation by burnishing at a lower burnishing pressure and then increasing from said one pressure up to a maximum burnishing pressure as the abrasive member portion in contact with the surface said portion of surface becomes loaded with abraded material from said surface and then reducing to less than the maximum pressure, and wherein the increase in the applied pressure occurs with a decrease in the abrasiveness of the abrasive member.

4,514,938

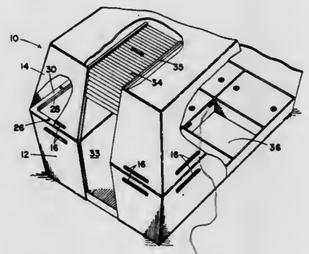
PORTABLE BUILDING STRUCTURE

Edward D. Maguire, P.O. Box 4950, San Rafael, Calif. 94903

Filed Mar. 7, 1983, Ser. No. 473,034

Int. Cl.³ E04H *1/12*

U.S. Cl. 52—79.4 **3 Claims**



1. A building structure comprising:

a pair of nestable, top and bottom frusto-pyramid shells;

each of said shells including a generally rectangular horizontal panel with generally upright side and end panels around the periphery thereof;

said side and end panels sloping outward from said horizontal panel at substantially equal angles thereto to form a frusto-pyramid;

means forming a peripheral lip including generally horizontal surface portions around the edges of said side and end panels;

a fastening means for securing together the lips of said shells in face to face engagement to form a complete enclosure, with the horizontal panels of said top and bottom shells forming roof and base panels, respectively;

a floor panel above said base panel forming a stabilizer compartment therebetween;

a fluid inlet in one of said side and end panels to introduce stabilizing fluid into said stabilizer compartment;

means forming aligned door openings through said top and bottom shells;

a slideway on said shells along said door opening; and

a door slidably mounted in said slideway.

4,514,939

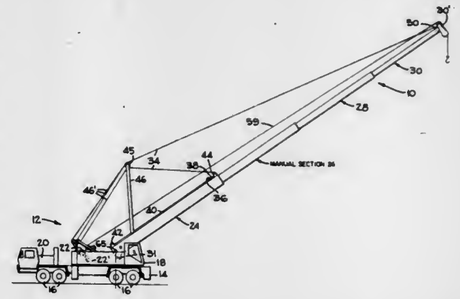
EXTENSIBLE BOOM WITH MANUAL SECTION STORED IN BASE

Robert A. Rathe, Cedar Rapids, and Thomas J. Volkmann, Hiawatha, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 293,728, Aug. 17, 1981, abandoned. This application Sep. 10, 1984, Ser. No. 648,619

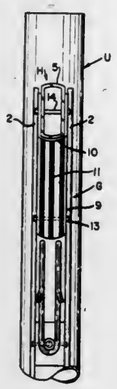
Int. Cl.³ E04H *12/34*

U.S. Cl. 52—118 **4 Claims**



1. An extensible telescopic boom for a crane or the like comprising means defining a tubular base section; means supporting said base section for pivotal movement about a horizontal axis; means defining a manual section telescopically received in said base section; means defining at least one additional boom section telescopically received in said manual section; power means having a single cylinder case anchored to and movable with said additional section and having a piston rod; coupling means for selectively coupling said piston rod of said cylinder to said base section for selectively extending or retracting said manual section relative to said base section, or for coupling said piston rod to said manual section when disconnected from said base section for extending and retracting said at least one additional section relative to said manual section; means for locking said manual section in one of a plurality of selected positions; said at least one additional section including said additional section and a tip section telescopically received in said additional section; and extend-retract connecting means continuously and operatively connecting said manual section, said additional section, and said tip section to said single cylinder case and responsive to extension of said single cylinder and said additional section for proportionally extending said tip section and said additional section relative to said manual section.

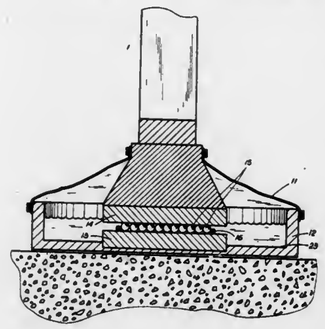
4,514,940
SHORING SYSTEM
Henry J. Manderla, Burlington, Canada, assignor to Anthes Equipment Limited, Mississauga, Canada
Filed Apr. 5, 1982, Ser. No. 365,321
Claims priority, application Canada, Feb. 25, 1982, 397031
Int. Cl.³ E04D *15/00*; E04H *12/00*
U.S. Cl. 52—126.1 **3 Claims**



1. A shoring system including a plurality of vertically extending frames each including a pair of mutually opposed upright members each said upright member having a pair of spaced integral projecting side cheeks extending longitudinally at least partially throughout its associated upright member; at least a pair of mutually opposed gusset members each detachably secured to an upright member of said pair of mutually opposed upright members between said pair of spaced, integrally projecting side cheeks at a selectable location; and provided with a pair of mutually opposed side faces connected by an arcuate lower surface provided with striations extending along its longitudinal axis; at least one horizontally extending member opposite ends of which are supported by and detachably secured to said gussets, and the side cheeks, said horizontal member being constituted by a pair of mutually opposed substantially planar side faces connected at their upper and lower extremeties by convex surfaces at least one of which has a plurality of striations extending parallel with the central longitudinal axis of said horizontal member; and a lock, including a horizontally extending bolt, secured to each said pair of said vertical cheeks and adapted to receive and retain apertured cross-braces between horizontally spaced pairs of said frame members, said bolt receiving said cross-braces thereon.

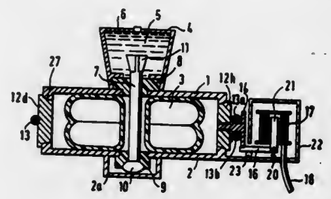
4,514,941
ASEISMIC SLIDERS
Manuel Gonzalez Flores, Uruapan 3, Mexico 7, D.F., Mexico
Continuation-in-part of Ser. No. 35,192, May 2, 1979, abandoned. This application Dec. 24, 1981, Ser. No. 334,397
Claims priority, application Mexico, May 2, 1978, 173291
Int. Cl.³ E02D *27/34*
U.S. Cl. 52—167 **4 Claims**

1. An improved aseismic slider construction for a building or other large structure to isolate the structure from horizontal ground movement resulting from seismic waves caused by earthquakes, including supporting means for the structure having a sliding element adapted to slide when horizontal ground movement occurs and to maintain the structure substantially free from horizontal movement due to its inertia; in which the improved construction comprises three horizontal portions, including a lower plate for contact with the ground, an upper plate for supporting the building structure, and a plurality of identical hard spherical balls located between and contacting said upper and lower plates, said balls being confined to the area within a ring member also located between said plates and extending over and contracting each other in



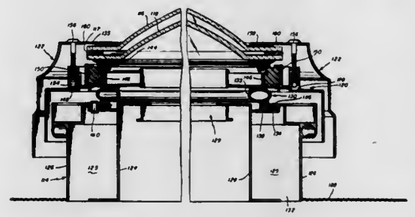
said area, said ring member being free to move together with the balls.

4,514,942
DAMPING INSTALLATION FOR EARTHQUAKE-ENDANGERED BUILDINGS
Adrian Pocanschi, Hauptmannreute 94, Stuttgart 1, Fed. Rep. of Germany
Filed Dec. 22, 1982, Ser. No. 452,241
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151011
Int. Cl.³ E02D *27/34*; E04B *1/98*; E04H *9/02*
U.S. Cl. 52—167 **5 Claims**



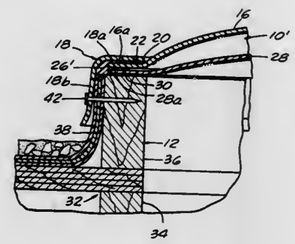
1. Damping installation for earthquake-endangered buildings where a vabration insulator is arranged between the foundation and the building showing that the vibration insulator rests in an overall casing consisting of a top casing and a bottom casing through which, under normal conditions, i.e. excluding earthquakes, the gravity of the building is transmitted mainly through a rigid connection of minor load to the vibration insulator and that the connection between the top and bottom section severs in an earthquake, thereby loading the vibration insulator wherein the detachable connection is formed by spacer wedges in the vertical sections of the casing which, under normal conditions, are held in position by a closure ring, the ring having a plane of weakness breaking by the agency of an earthquake.

4,514,943
THERMAL BREAK SKYLIGHT
Arthur P. Jentoft, Kennebunkport, and Paul A. Couture, Emery Mills, both of Me., assignors to Wasco Products, Inc., Sanford, Me.
Division of Ser. No. 175,305, Aug. 4, 1980, Pat. No. 4,388,784. This application Dec. 27, 1982, Ser. No. 453,349
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Int. Cl.³ E04B *7/18*; E06B *7/14, 7/98*
U.S. Cl. 52—200 **26 Claims**



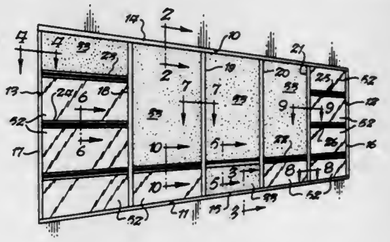
1. A skylight construction for an opening in a building comprising;
a frame means extending about the opening and including means securable about the opening,
translucent or transparent means covering the opening and extending at edges to overlie the frame means,
means for retaining the covering means on the frame means,
said frame means comprising a base frame and a support frame overlying the base frame,
and a compliant sealing means extending contiguously about and overlying the base frame and for sealing between the base frame and support frame,
said base frame having thermal break means for minimizing heat transfer through the base frame,
said support frame including an inner frame section, an outer frame section and second thermal break means disposed between and joining the inner and outer frame sections,
said thermal break means being non-metallic and extending between the inner and outer frame sections about the periphery thereof.

4,514,944
SKYLIGHT AND MOUNTING THEREFOR
Aubrey C. Doell, Newport Beach, Calif., assignor to Bristol Fiberlite Industries, Santa Ana, Calif.
Continuation of Ser. No. 352,406, Feb. 25, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,138
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—200 **7 Claims**



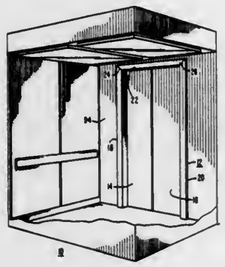
1. In a skylight structure which includes a preformed plastic dome with an integral outwardly extending peripheral flange, a plastic mounting skirt having integral angularly related flanges, one of which extends inwardly and is positioned in overlying spaced lapped relation with respect to said outwardly extending peripheral flange, and an initially flowable bonding medium fixedly secures the overlapped flanges together and encompasses the outer edge of the outwardly extending peripheral flange and extends into the space between the confronting surfaces of the overlapped flanges to an inner locus edge spaced from the adjacent inner edge of the associated skirt flange, the improvement comprising:
a sealing strip coextensive with said locus edge, and having sealing surface engagements with the confronting surfaces of said overlapping flanges and said locus edge of said bonding medium, whereby to form a protective seal against the entrance of outside moisture into the space between the confronting surfaces and the locus edge of the bonding material.

4,514,945
WINDOW INSULATING SYSTEM
Robert J. Menchetti, Kenmore, and Gale E. Sauer, Williamsville, both of N.Y., assignors to Donn Incorporated, Westlake, Ohio
Filed Jun. 23, 1981, Ser. No. 276,469
Int. Cl.³ E06B *3/26, 3/28*
U.S. Cl. 52—202 **16 Claims**



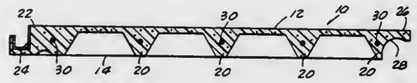
1. A window insulating system capable of being assembled to cover a window assembly mounted within a window wall opening in a building wall, said opening being defined by horizontally extending top and bottom surfaces and vertically extending side surfaces, each of said top, bottom and side surfaces, extending inwardly of said opening; said system when assembled including:
at least one generally rectangular insulating panel having inner and outer faces, upper, lower and opposite side edges, and an intermediate core of insulating material;
vertical channel members having a generally U-shaped cross section and normally adapted to be positioned on the opposite side edges of the insulating panel and in gripping engagement with the inner and outer faces of the insulating panel; and
upper and lower horizontal channel members adapted to be mounted on the horizontally extending top and bottom surfaces, each of said horizontal channel members having a generally U-shaped cross section defining an opening in which an edge of an insulating panel is adapted to be removably received, and including inner and outer legs with said outer legs adapted to be disposed closest to said window assembly;
the parts being so arranged and constructed that when the system is assembled an insulating panel is removably positioned adjacent to but spaced from the interior side of the window assembly and has its lower edge resting within said horizontal lower channel member and its upper edge within said upper horizontal channel member, and the vertical channel members are supported by said opposite side edges and are disposed adjacent the side surfaces of said window wall opening.

4,514,946
ARCHITRAVE
Edward F. Sherwood, Gettysburg; Karl B. Orndorff, Bonneauville, both of Pa., and Charles M. Dillon, Emmitsburg, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 25, 1983, Ser. No. 488,307
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—211 **1 Claim**



1. A method of constructing a mitered architrave for insertion into an opening in a wall of an elevator car, comprising the steps of:
forming first and second right angle frames each having first and second leg portions,
forming first and second post sections each having first and second ends,
mitering the first end of each of said first and second post sections,
forming a head section having first and second ends,
mitering each end of said head section,
said steps of forming the post and head sections including the steps of forming a metallic sheet to provide an L-shaped right angle configuration having first and second major leg portions, with the width dimensions of said first and second major leg portions being selected to provide the desired jamb depth and reveal width, respectively, of the architrave,
said steps of forming the post and head sections further including the steps of bending each of the first and second major leg portions to provide first and second right angle anchoring flanges which function to secure the post and head sections to both the wall of an elevator cab, and to the right angle frames, with the first right angle flange extending from the first major leg portion in the same direction as the second major leg portion, and with the second right angle flange extending from the second major leg portion in the same direction as the first major leg portion,
said steps of forming the post and head sections creating cross sectional configurations for the associated section which define an only partially enclosed elongated recess configured and dimensioned to snugly accept a leg portion of a right angle frame,
inserting the first leg portions of the first and second right angle frames into the partially enclosed recesses at the mitered first ends of the first and second post sections,
inserting the second leg portion of the first right angle frame into the partially enclosed recess at the first mitered end of the head section, to tightly butt the adjoining mitered ends of the head section and first post section,
inserting the second leg portion of the second right angle frame into the partially enclosed recess at the second mitered end of the head section, to tightly butt the adjoining mitered ends of the head section and second post section,
securing the first and second right angle anchoring flanges of the first and second post sections to the first leg portions of the first and second right angle frames, respectively, and
securing the first and second right angle anchoring flanges of the head section to the second leg portions of the first and second right angled frames,
said first and second right angle anchoring flanges being adapted to secure the architrave within an opening of an elevator cab, with a portion of the second right angle anchoring flange functioning as a wall return from the reveal defined by the second major leg portion,
said securing steps including the steps of applying fastener means to predetermined locations of the first and second right angle anchoring flanges which are concealed when the architrave is installed in an opening of a wall of an elevator car.

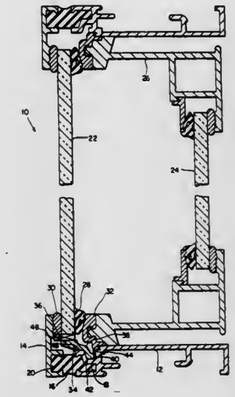
4,514,947
ROOF TILE AND TILE COMPOSITION OF MATTER
Donald J. Grail, Santa Ana, Calif., assignor to Embelton-Grail, Inc., Sherman Oaks, Calif.
Filed May 18, 1983, Ser. No. 495,829
Int. Cl.³ E04D *1/00*
U.S. Cl. 52—536 **5 Claims**



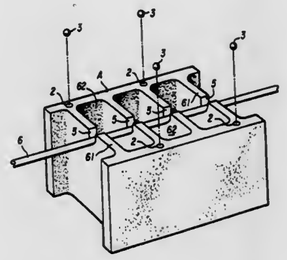
1. A roof tile comprising:
a top surface, a bottom surface, a top end, a butt end, said top and bottom surfaces being tapered towards each other from said butt end to said top end, said roof tile being provided with one longitudinal side edge having a longitudinal flange, and another longitudinal edge having a longitudinal concavity;
a plurality of spaced longitudinal ribs each of equal width and depth formed in said bottom surface and extending continously from said butt end to said top end;
longitudinal reinforcing wire embedded in each of said ribs;
longitudinal reinforcing wire embedded in the bottom perimeter of said roof tile and in the same plane as said wire embedded in said ribs; and
means for securing said tile to a roof.

4,514,948
THERMAL BREAK FRAME WITH LOAD TRANSFER MEMBER
William Meigs; David M. Guffey, and Donald E. Brumfield, all of Selma, Ala., assignors to Disco Aluminum Products Co., Inc., Selma, Ala.
Filed Jun. 1, 1982, Ser. No. 384,069
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—397 **6 Claims**

1. A thermal break frame for supporting a planar object such as a pane of glass, comprising:
a main frame member including a laterally extending portion and a horizontally extending lip;
a secondary frame member;
a thermal break material which supports in spaced relationship said main frame member and said secondary frame member and which thermally insulates said main frame member from said secondary frame member;
a means for holding the planar object between said main frame member and said secondary frame member in a vertical orientation; and
a load transfer member including a flat horizontal surface, and a laterally and downwardly extending portion having a distal end, said extending portion bearing against said laterally extending portion of said main frame member, and said distal end of said downwardly extending portion being located beneath and bearing against said horizontally extending lip, whereby said load transfer member is supported by said main frame member and in turn supports the weight of the planar object such that the weight of the planar object is borne by said main frame member.

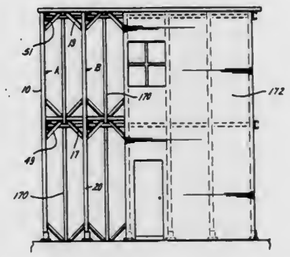


4,514,949
INTERLOCKING SYSTEM FOR BUILDING WALLS
Jorge L. N. Crespo, 809 Managua St., San Juan, P.R. 00921
Filed May 6, 1983, Ser. No. 492,132
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—585 **9 Claims**



1. A wall comprising superposed rows of longitudinally aligned building blocks, said blocks having approximately parallel front and back faces connected by a plurality of transverse webs defining chambers between said webs, the top and bottom of said front and back faces being approximately parallel and providing longitudinally extending tops and bottoms for said blocks, said tops and bottoms being formed to include uniformly spaced apart ball-receiving depressions positioned so that the depressions in the tops of each block mate with the depressions in the bottoms of the block above it, balls fitted into the space defined by mating depressions, said balls being slightly larger than said mating depressions to space the blocks, the depressions in the tops of each block being machined to a specific depth in relation to the height of the block so that the interconnection of said blocks by said balls provides horizontal alignment for each ball-supported block, the upper face of said webs being formed with longitudinally aligned V-shaped grooves which are accurately positiond at a uniform distance from the front faces of said blocks, and elongated straight bars of circular cross-section fitted in said grooves and extending longitudinally and horizontally from one block to the next to provide longitudinal alignment of the blocks in each row.

4,514,950
BUILDING FRAMING SYSTEM AND METHOD
Albert A. Goodson, Jr., 13923 Myrtlea, Houston, Tex. 77079
Filed Nov. 27, 1981, Ser. No. 325,283
Int. Cl.³ E04H *12/00*
U.S. Cl. 52—648 **8 Claims**

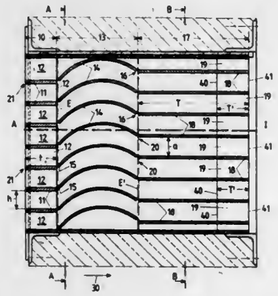


1. A structural framework for a multi-story building having a foundation comprising:
first and second multi-story framing units, each said framing unit having at least two unitary vertical load bearing column/studs and at least one horizontal joist, each of said unitary column/studs extending from the foundation to the top of the multi-story building and being a C-shaped steel member;
a first bolted connection connecting the ends of said horizontal joist to said column/studs;
a plurality of horizontal spacer members extending between said first and second framing units, a second bolted connection connecting one end of said spacer members to said first framing unit and a third bolted connection connecting the other end of said spacer members to said second framing unit, said third bolted connection including a support bracket having an angle-like body with a horizontal projecting flange, said angle-like body being received within said column/stud and bolted thereto, said horizontal projecting flange being bolted to a web of said spacer member;
means for anchoring the lowermost ends of said column/-studs to the foundation;
said horizontal joists and spacer members forming supports for floors and a roof;
a plurality of nonaxial load bearing studs extending vertically between said spacer members, said nonaxial load bearing studs being arranged for support of wall collateral materials; and
interior bridging members extending between adjacent framing units and interior of said spacer members, said interior bridging members being connected to said joists by a fourth bolted connection including angle iron supports having one flange bolted to said joists and the other flange bolted to said web of said interior bridging members.

4,514,951
GUARD GRID FOR A PASSAGEWAY
Helmut Eder, Triesen, Liechtenstein, assignor to Multisafe AG, Schaan, Liechtenstein
Filed Jul. 7, 1983, Ser. No. 511,668
Claims priority, application Switzerland, Jul. 9, 1982, 4184/82
Int. Cl.³ F24F *13/00*
U.S. Cl. 52—660 **10 Claims**

1. A guard grid for use in a ventilating shaft and similar passageway, such as in structures with a considerable wall thickness, said guard grid comprising a plurality of different grid-like members provided one following the other in the direction of the passageway through a wall, said guard grid having a first end and a second end spaced apart in the direction of the passageway and a pair of first sides extending between the first and second end spaced apart in the direction

extending transversely of the first end-second end direction and a pair of second sides extending between the first and second ends and spaced apart transversely of the first end-second end direction and extending transversely of the first sides, a first grid-like member extending from the first end toward the second end of said guard grid, a second grid-like member extending from the second end toward the first end of said guard-grid and an intermediate grid-like member extending in the first end-second end direction and located between said first and second grid-like members, said guard grid having a first and a second direction each extending transversely of the first end-second end direction with said first and second directions extending substantially perpendicularly of one another, said first grid-like member comprising a plurality of first bars extending in the first direction between the first sides of said guard grid and disposed in spaced parallel relation and a plurality of first spacer bars arranged substantially perpendicularly to and extending between adjacent said first bars so that a row of said first spacer bars are located between adjacent pairs of said first bars, and said first spacer bars in adjacent said rows being offset, said first bars and first spacer bars form a honeycomb-like structure with the dimension in the first end-second end direction equal at least to the dimension of said first spacer bars extending in the direction between the second sides of said guard grid, said intermediate grid-like member including a plurality of cross-members disposed in spaced parallel relation extending between the first sides of said guard grid and said cross-members being bent in the plane extending in the



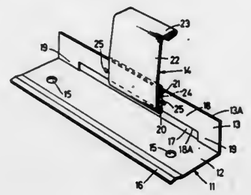
first end-second end direction and in the direction between the second sides of said guard grid so that each of said cross-members has a first surface facing toward one of said second sides and a second surface facing toward the other of said second sides, each said cross member has a first edge and a second edge spaced from the first edge in the first end-second end direction and said first edge is located adjacent to the edges of said bars of said first grid-like member more remote from the first end of said guard grid, said second edge of each said cross-members is offset relative to the first edge of the same said cross-member in the direction between the second sides of said guard grid, and the dimension of said cross-member in the first end-second end direction is at least twice the dimension of said first bars extending in the first and second end direction, and said second grid-like member comprising a plurality of plates disposed in spaced parallel relation and extending between the first sides of said guard grid and in the first end-second end direction, a plurality of spacer struts each arranged perpendicularly to a pair of adjacent said plates extending in the first end-second end direction with a row of said spacer struts located between each pair of adjacent said plates, said spacer struts in adjacent said rows thereof being offset, said plates and spacer struts forming a honeycomb-like structure with the dimension in the first end-second end direction being a multiple dimension of said spacer struts in the direction between said second sides, and said plates having a first edge extending between said first sides of said guard grid adjacent the second edge of said cross-members.

4,514,952

ROOF PANEL MOUNTING CLIP

Bengt Johansson, Blidö , Sweden, assignor to Maskingruppen 82 AB, Täby, Sweden

Filed May 9, 1983, Ser. No. 493,037
Claims priority, application Sweden, Jul. 8, 1982, 8204222
Int. Cl.³ E04D *1/00, 1/34*
U.S. Cl. 52—713 **7 Claims**



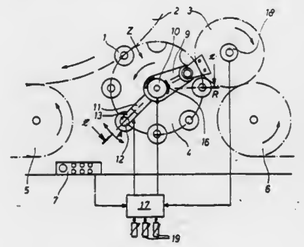
1. Roof panel mounting clip, comprising
a sheet metal anchoring member having a horizontal base flange and an integral upstanding web with a horizontal upper edge and a horizontal closed slot defining with said upper edge a bridge in said web, and
a tab member formed of a sheet metal strip substantially narrower than the horizontal extent of said slot, one end portion of said strip being folded a full turn about said bridge and having its terminal edge of said turn directed downwardly and spaced between said upstanding web and an upstanding portion of said tab member, the other end portion of said strip being adapted to be engaged with a roof panel.

4,514,953

DEVICE FOR REMOVING AIR FROM FILLED BOTTLES OR OTHER CONTAINERS

Hans-Jürgen Patzwahl, Bad Abbach, Fed. Rep. of Germany, assignor to KRONES AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,282
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311200
Int. Cl.³ B65B *31/04, 57/00*
U.S. Cl. 53—52 **8 Claims**



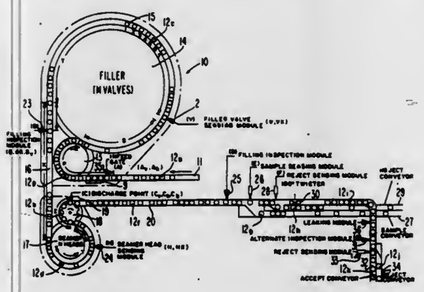
1. Apparatus for displacing air from above the fill level in containers such as bottles that are in transit to a container closing unit, comprising:
a nozzle located for injecting a jet of a medium into the moving open container to effect said air displacement and movable means to which said nozzle is mounted for being moved selectively closer to and farther from said container closing unit,
means for determining the speed at which said containers are transported and drive means controlled by speed determining means to drive said moveable means to locate said nozzle farther from said container closing unit for increasing transport speed and closer to said closing unit for decreasing transport speed so that the elapsed time between injecting said medium and closing of the containers remains substantially constant.

4,514,954

FILLER LINE MONITORING SYSTEM

F. Allan Anderson, San Francisco; Henry C. J. Chen, Fremont; Vito A. DiMucci, Saratoga, and Roger C. Wang, San Jose, all of Calif., assignors to Peco Controls Corporation, Milpitas, Calif.

Filed Jan. 31, 1983, Ser. No. 462,640
Int. Cl.³ B65B *57/00*
U.S. Cl. 53—53 **21 Claims**



1. A monitoring and control system for a fluid container filler line having an empty container in-feed conveyor, a multi-valve rotary fill station, a multi-head seamer station to close and seal the then filled containers, a discharge conveyor and a fill height detector for under and overfill detection of liquid within said containers, said monitoring and control system comprising;
(a) first sensor means located to indicate the first valve of a sequence of numbered fill valves in said fill station and means to reset a valve counter to each time increment that said first valve passes said first sensor means;
(b) second sensor means located to count each valve of the sequence of fill valves; a signal from said second sensor means triggering a valve counter;
(c) controller means responsive to said first and second sensor means and said valve counter to spacially track each of said containers through said system and to identify the particular fill valve for each particular container; and
(d) detector means responsive to said controller means and fault signals from said fill height detector to detect an improperly filled faulty container and the particular numbered valve which filled said faulty container.

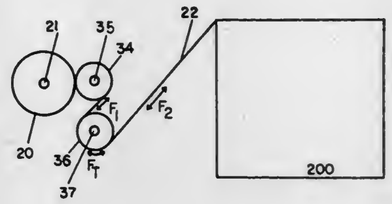
4,514,955

FEEDBACK CONTROLLED STRETCH WRAPPING APPARATUS AND PROCESS

Curtis A. Mouser, Louisville; Mark G. Roberts, Middletown; Daniel R. Haas, Louisville, and Patrick R. Lancaster, III, Anchorage, all of Ky., assignors to Lantech, Inc., Louisville, Ky.

Filed Apr. 6, 1981, Ser. No. 250,926
Int. Cl.³ B65B *11/02, 57/04*
U.S. Cl. 53—64 **29 Claims**

1. An apparatus for making a unitary package using a web of stretchable plastic material to form an overwrap, comprising a frame, plastic material dispensing means mounted to said frame, drive means to provide relative rotation between said load and said material dispensing means thereby to pull said plastic material from said material dispensing means and wrap said load, material elongation means positioned between said dispensing means and said load, said material elongation means comprising at least a rotating upstream roller and a rotating downstream roller to receive said plastic material and elongate said plastic material pulled across said rollers to wrap said load, and material elongating control means connected to said material elongation means and comprising means to determine and apply a restraint force on said upstream roller, to determine actual elongation of said material by sensing speeds of said rollers in said material elongation means, and to vary said restraint force to maintain elongation of said material within said material elonation means substantially at an infinitely



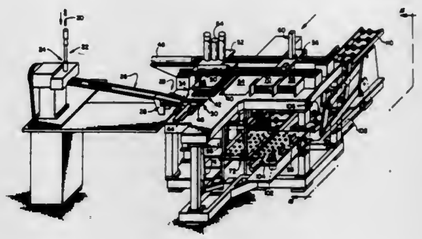
variable predetermined constant elongation level, and means to apply to and sense at said downstream roller a power assistance force and means to vary said power assistance force so that said varied restraint force less said varied power assistance force, which equal wrapping force on said load, is maintained substantially at an infinitely variable predetermined constant force level.

4,514,956

VACUUM TRANSFER APPARATUS FOR PACKING LAYERS OF ARTICLES IN A CONTAINER

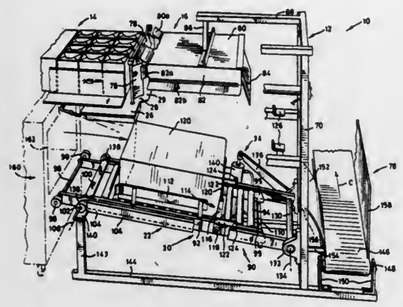
Thomas P. Varallo, Beaumont, Tex.; Albert W. G. Ervine, Bridgeport, Conn.; Joseph J. Duffy, Newark, Del., and Edwin G. Olson, Cabot, Ark., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1982, Ser. No. 355,230
Int. Cl.³ B65B *35/56, 19/34*
U.S. Cl. 53—148 **19 Claims**



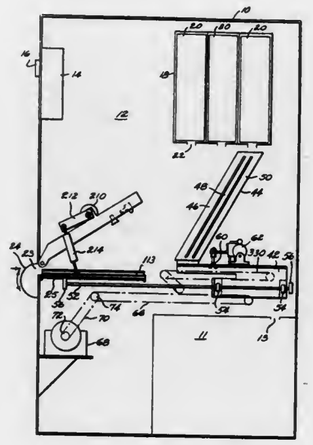
1. Apparatus for packing layers of cylindrical articles in a container comprising:
feeding means for delivering successive rows of a predetermined number of cylindrical articles oriented horizontally and arranged side-by-side to a staging area;
transition means for alternately vertically staggering the cylindrical articles in each row and for transferring a predetermined number of rows of alternately vertically staggered cylindrical articles to an accumulating area where they will collect as a layer; and
vacuum pickup means adapted to make vacuum-tight contact with the side of each cylindrical article in the accumulating area, means for lifting said pickup means so that the entire layer can be lifted in its staggered condition and transferred to a container at a loading station where it is released and forms an unstaggered horizontal and tightly packed layer in the container.

4,514,957
BAG LOADING MACHINE
Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Limited, Mississauga, Canada
Filed Feb. 3, 1983, Ser. No. 463,584
Int. Cl.³ B65B *5/06, 43/52*
U.S. Cl. 53—252 **8 Claims**



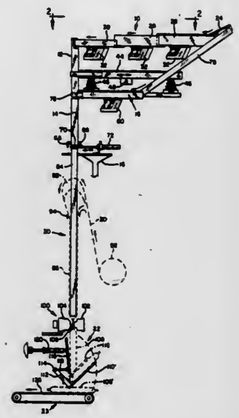
1. A bag loading machine comprising;
(a) a bag receiving station for receiving an open bag from a bag dispenser and a bag loading station for receiving a load from a load dispenser, said bag loading station being located directly above said bag receiving station,
(b) bag embracing means mounted and held fast in said bag loading station, said bag embracing means being adapted to embrace the upper, side and outer end walls of a bag and having an open lower end through which a loaded bag may be removed from said bag embracing means,
(c) receiver means adjacent said bag receiving station for receiving loaded bags,
(d) a bag transfer platform having a front end and a back end, said bag transfer platform underlying the open lower end of said a bag embracing means, said platform being movable relative to said bag embracing means,
(e) platform mounting means mounting said platform for movement between;
(I) a first position in which said front end is disposed in the bag receiving station, at a discharge end of said bag dispenser from which a bag is discharged bottom first and on its side, said platform being spaced a substantial distance below the open lower end of the bag embracing means and being arranged to underlie and support said bag on its side with its open end opening toward said front end of said platform;
(II) a second position disposed above said first position in a bag loading plane in which said platform is arranged to close said open lower end of said a bag embracing means and to cooperate therewith to retain a bag in said bag embracing means with its open end disposed toward said load dispenser means and in which said front end of said platform is disposed in a load receiving relationship with respect to said load dispenser means, movement of said platform from said first position to said second position resulting in said spacing being reduced; and
(III) a third position in which the discharge end of said platform is disposed below the front end and adjacent to the receiver means whereby a loaded bag may be discharged from the platform onto the receiver means,
(f) drive means for sequentially driving said platform between the first, second and third positions and back to the first position.

4,514,958
AUTOMATIC X-RAY FILM CASSETTE UNLOADER AND RELOADER
Willem A. Hoorn, Amersfoort, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 24, 1982, Ser. No. 444,087
Int. Cl.³ B65B *5/10, 43/38;* **B65H** *1/00*
U.S. Cl. 53—266 R **10 Claims**



1. An apparatus for automatically unloading exposed film from an X-ray film cassette and reloading with unexposed film, comprising
a light-tight chamber having an entry slot for insertion and withdrawal of X-ray film cassettes, and an access gate adapted to cover and uncover said slot;
a film-holding magazine rack support mounted in said chamber;
a plurality of refillable film-holding magazines positioned on said support, each containing a substantially vertical stack of unexposed X-ray film sheets of a predetermined size, and each further comprising an associated release mechanism, which combination functions to release on demand a single sheet of predetermined size film;
a film transport carriage mounted below the magazine rack support and moveable between a first predetermined position below said rack support and a second position spaced horizontally therefrom in the direction of the entry slot, said film transport carriage being equipped with (1) a first film-receiving means to receive and temporarily store an X-ray film sheet released from the film-holding magazine, and (2) film gripping means for removal of exposed film from a cassette,
a cassette-receiving and sizing rack mounted within said chamber, and communicating with the outside of said chamber through said entry slot;
cassette-opening means mounted within said chamber and positioned over said cassette-receiving and sizing rack, designed to open the lid of a cassette and hold it in an open position, the raised lid of the opened cassette defining the aforesaid second position;
actuating means to move the film transport carriage between said first and second positions,
a second film receiving means in said chamber,
and means to release the exposed film sheet from the film transport carriage into said second film receiving means.

4,514,959
APPARATUS AND METHOD FOR ALIGNING AND PACKAGING ELONGATED ARTICLES
David Shroyer, Aurora, Oreg., assignor to Lamb-Weston, Inc., Portland, Oreg.
Filed May 10, 1982, Ser. No. 376,515
Int. Cl.³ B65B *9/10, 13/20, 63/02*
U.S. Cl. 53—428 **26 Claims**

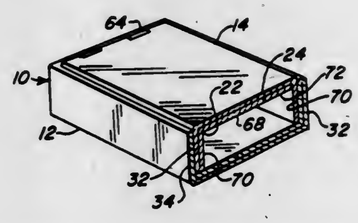


1. Apparatus for aligning elongated articles, comprising:
alignment container means for aligning a plurality of elongated articles contained within said container means with their longitudinal axes substantially parallel;
first vibrating conveyor means for conveying said elongated articles into the alignment container means in a direction of travel which forms an acute angle with a wall of said container means;
said first conveyor means being divided longitudinally into a plurality of tracks defined by and separated by divider partitions extending to a position above said container means and each track having a track width which is less than the average length of the articles so that said articles are prealigned longitudinally in said tracks with their longitudinal axes substantially parallel to said direction of travel;
said alignment container means having an article inlet opening of a width less than the average length of said articles so that the majority of said articles strike the inner surface of said wall of said container means while they are in said tracks on said first conveyor means and are aligned substantially parallel with said wall before said articles drop from said first conveyor tracks directly into said container means through said inlet opening; and
first discharge means for discharging said articles from the bottom of said container as a batch of articles in an aligned condition.

4,514,960
IN-PACKAGE INSECTICIDAL BAIT PREPARATION UTILIZING MICROWAVE ENERGY
Karl Sears, Kendall Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Jul. 16, 1982, Ser. No. 399,030
Int. Cl.³ B65B *63/08*
U.S. Cl. 53—440 **5 Claims**

1. A process for preparing a cohesive solid insecticidal bait composition within a dispensing package therefor which comprises:
(a) intimately mixing an insecticidal composition, a food attractant, a binder material. and a microwave-responsive material in the event the insecticidal composition, food attractant and binder material are not microwave-responsive, together into a paste-like material at a temperature below the melting point of said binder material;
(b) inserting said paste-like material into said package;
(c) treating said paste-like material-containing package with microwave energy for a period of time sufficient to cause said binder material to melt; and
(d) cooling said package to form a cohesive, solid insecticidal bait composition.

4,514,961
METHOD FOR HANDLING ENVELOPES
Raymond A. Gillie, Walnut Creek, Calif., assignor to Arvey Corporation, Chicago, Ill.
Filed Sep. 29, 1982, Ser. No. 427,492
Int. Cl.³ B65B *25/14, 43/39, 43/40*
U.S. Cl. 53—449 **5 Claims**



1. A method for the handling of unstuffed envelopes in a manner which facilitates the subsequent handling of the stuffed envelopes stuffed as pre-sorted mail, comprising the steps of:
(a) providing a telescopic carton assembly having a first carton and a second carton for telescopically receiving the first carton, wherein each of the first and second cartons are self-contained shipping containers having an outer panel providing a bottom for the carton, upright walls extending generally upwardly around the outer panel, and converting means for converting the carton from use as a separate self-contained shipping container to use as a carton as part of the telescopic carton assembly;
(b) placing unstuffed envelopes in the telescopic carton assembly for shipment of the unstuffed envelopes;
(c) separating the first carton from the second carton;
(d) removing the unstuffed envelopes from the first and/or second cartons;
(e) positioning the converting means of the first and second cartons to positions outside of the interiors of the respective first and second cartons;
(f) stuffing and sorting the envelopes as pre-sorted mail;
(g) placing a first portion of the envelopes stuffed as pre-sorted mail in the first carton and a second portion of the envelopes stuffed as pre-sorted mail in the second carton; and
(h) positioning the converting means of the first and second cartons so as to define the tops of self-contained shipping containers housing the stuffed envelopes for shipment of the pre-sorted mail.

4,514,962
METHOD AND APPARATUS FOR FILLING RECLOSABLE BAGS
Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.
Filed Dec. 16, 1982, Ser. No. 450,243
Int. Cl.³ B65B *43/12, 9/08*
U.S. Cl. 53—457 **18 Claims**

1. A method of seriatim filling of closed bottom bags at a filling station, and wherein the bags are of the kind supplied in a chain and have closed sides and aligned tops closed by reclosable profiled fastener means from which a pair of confronting

lip flanges project upwardly and extend continuously along the top of the chain, comprising:

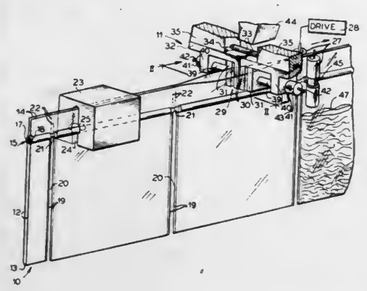
receiving each of said lip flanges between separable clamping means;

permitting relative movement of the lip flanges and the clamping means in an open phase of the clamping means;

firmly clamping said lip flanges in said clamping means in a clamping phase of the clamping means;

cyclically operating said clamping means through each of said phases, and in said clamping phase actuating the clamping means for pulling said lip flanges apart and thereby separating said reclosable fastener means of each bag at said bag filling station; and

after filling of each bag at said station advancing the filled bag from said station and reclosing the fastener means of the filled bag.



8. Apparatus including a filling station for seriatim filling of closed bottom bags of the kind supplied in a chain and wherein the bags have closed sides and aligned tops closed by reclosable profiled fastener means from which a pair of confronting lip flanges project upwardly and extend continuously along the top of the chain, and comprising:

separable clamping means for receiving each of said lip flanges therebetween and having an open phase permitting relative movement of the lip flanges and the clamping means, and a clamping phase wherein said lip flanges are firmly clamped by said clamping means;

means for cyclically operating said clamping means through each of said phases, and adapted in said clamping phase for actuating the clamping means for pulling said lip flanges apart and thereby separating said reclosable fastener means of each bag at said filling station; and

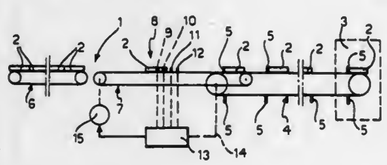
means for advancing each filled bag from said filling station and for reclosing said fastener means of the filled bag.

4,514,963

SYSTEM FOR REGULATING THE FEED OF ARTICLES TO A WRAPPING MACHINE

Carlo L. Bruno, Turin, Italy, assignor to Alisyncro S.p.A., Turin, Italy

Filed Jan. 5, 1983, Ser. No. 455,713
Claims priority, application Italy, Jan. 5, 1982, 67005 A/82
Int. Cl.³ B65B *1/30, 3/26, 57/00;* **B65G** *43/00*
U.S. Cl. 53—493 **4 Claims**



1. A system for regulating the feed of articles to a wrapping machine, comprising:

conveyor means for feeding a series of longitudinally spaced articles to the wrapping machine; said conveyor means including a first accumulation belt conveyor on which the articles are accumulated in an aligned condition and a second spacing belt conveyor having a length for supporting only a single article at a time thereon at the desired spacing, said second belt conveyor receiving the articles from the first accumulation belt conveyor and feeds said articles to the wrapping machine, said second belt conveyor having a speed greater than that of said first belt conveyor so as to cause the spacing of the articles from each other,

sensor means operable at predetermined time intervals for detecting the position of each article on said second spacing belt conveyor relative to said sensor means,

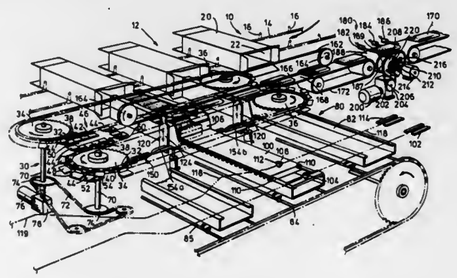
control means for varying the speed of said second spacing belt conveyor in dependence on output signals from the sensor means so that the articles are fed to the wrapping machine in a predetermined phase relationship therewith, said sensor means being arranged to provide a combination of on/off signals which contains the information on the degree of any deviation of each article from the correct position in phase with the wrapping machine and said control means being arranged to correct the speed of the second spacing belt conveyor in proportion to the degree of deviation detected.

4,514,964

PACKAGING MACHINES

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Limited, Mississauga, Canada

Filed Sep. 19, 1983, Ser. No. 533,070
Int. Cl.³ B65B *35/44, 35/50*
U.S. Cl. 53—540 **12 Claims**



1. In a packaging machine having a loading station in which load items are loaded into a container, the improvement of;

(a) a load transport conveyor having a forward run extending through said loading station in a first direction along a first path,

(b) a load supporting compartment formed on said conveyor, said compartment having a leading end and a trailing end,

(c) a discharge passage opening from the trailing end of said compartment,

(d) guide means at the trailing end of said compartment for guiding a load item toward said discharge passage,

(e) receiver means located in said loading station for receiving a load item discharged from said load supporting compartment,

(f) stop means located in said loading station and extending into said path upstream of said receiver means whereby the movement of a load item carried by said load supporting compartment along said path in said first direction is arrested by contact with said stop means and continued movement of the load transporting conveyor causes the load item to engage the guide means to be directed thereby through the discharge passage into the receiver means, and,

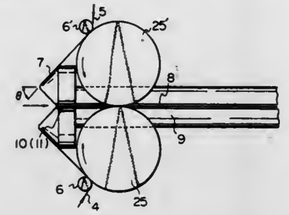
(g) means for discharging the load item from the receiver means.

4,514,965

APPARATUS FOR CONTINUOUSLY PACKING MEDICAL APPLIANCES FOR STERILIZATION

Kiyoshi Adachi, Otake; Masaru Uehara, Komaki; Hiroshi Kitagawa, Nagoya; Hirotaka Kojima, Kasugai, and Masaaki Sato, Nagoya, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Division of Ser. No. 207,900, Nov. 18, 1980, abandoned. This application Apr. 8, 1983, Ser. No. 483,108
Claims priority, application Japan, Nov. 19, 1979, 54-149702; Nov. 19, 1979, 54-149703; Nov. 19, 1979, 54-149704
Int. Cl.³ B65B *9/10*
U.S. Cl. 53—553 **3 Claims**



1. An apparatus for continuously packing medical appliances for sterilization, comprising:

means for delivering said appliances to said apparatus along a packing path in a packing direction;

means for supplying continuous packing sheets to said apparatus in said packing direction;

means for enclosing each of said appliances between two of said packing sheets;

means for sealing first edges of said packing sheets which are lateral to said packing direction;

means for sealing said packing sheets at sealing portions between said appliances in said packing direction;

means for cutting said sealed sheets at said sealing portions so as to form individual packets, wherein said means for enclosing comprise:

a cylinder having a longitudinal axis extending along said packing path in said packing direction;

a pair of longitudinal first slits in said cylinder, said slits extending along said packing direction and dividing said cylinder into two semi-cylinder portions which are symmetric about a plane defined by said slits; and

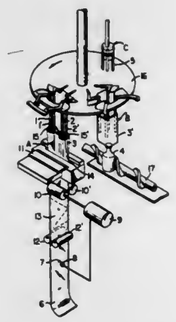
guide means fixed to each of said semi-cylinder portions at one axial end thereof, said guide means being separated by second slits coplanar with said first slits, whereby said means for supplying packing sheets supply one of said packing sheets to be turned over each of said guide means and passed through said first and second slits, wherein said guide means are each symmetric about said plane and each include a semiconical guide portion, each said guide portion extending axially from a respective said semi-cylinder portion and being angled from said feed direction by between 5° and 90°, wherein each of said guide means include flat extending portions confronting one another on either side of said plane and extending outward from said semi-cylinder portions in a radial direction, said second slits being equal in width to said first slits and comprising spaces between said flat extending portions.

4,514,966

SHRINK BANDING MACHINE FOR USE WITH THIN FILM

Anatole E. Konstantin, 10 Live Oak Rd., Norwalk, Conn. 06851

Filed Dec. 2, 1982, Ser. No. 446,223
Int. Cl.³ B65B *13/16, 7/28, 5/00*
U.S. Cl. 53—585 **3 Claims**



1. Apparatus for placing a band of thin, shrinkable, plastic film over an article to be banded, comprising in combination;

(a) means for feeding a specified length of thin, shrinkable, plastic tubing flattened in a first plane,

(b) means for opening the flattened tubing and for refolding it in a second plane perpendicular to the first plane in such manner that the refolded tubing is substantially closed in the middle but open at the ends,

(c) means for feeding the specified length of substantially closed refolded tubing into position for being cut,

(d) means for cutting the specified length of said refolded into a band,

(e) means for conveying articles to be banded in timed sequence with said cut bands to a banding position, and after being banded to a heating tunnel to shrink fit the band tightly around the article,

said apparatus being characterized by band opening means capable of entering the open ends of refolded tubing that is substantially closed in the middle as said band is cut from said tubing and opening said band into a polygonal configuration, comprising: two sets of parallel fingers, each set containing at least two fingers and adapted to move in arcuate paths in the plane perpendicular to the axes of the fingers, from a contracted position at the two open ends of the band to an expanded position nearer the center of the band, thereby enabling the open ends of the substantially closed tubing to be slipped over the contracted fingers before the band is cut from the tubing, and enabling the fingers to expand against the inside surface of the band with sufficient force to open the band fully into a polygonal configuration and to hold the band on the expanded fingers.

4,514,967

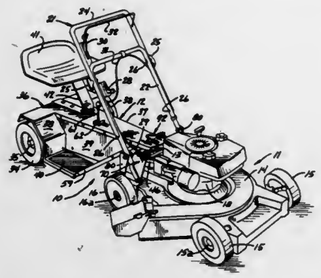
BRIDGE SUPPORT FOR SECURING SULKY TO WALK-BEHIND MOWER

Joseph E. Scanland, Savannah, Ga., and David B. Skillman, Winston-Salem, N.C., assignors to Roper Corporation, Kankakee, Ill.

Filed Aug. 3, 1983, Ser. No. 520,020
Int. Cl.³ A01D *35/12, 35/262*
U.S. Cl. 56—14.7 **12 Claims**

1. An articulated riding mower comprising, in combination, a sulky having a frame, an operator's seat mounted on said frame, a pair of ground-engaging traction wheels for supporting the sulky frame, a walk-behind mower disposed forwardly of the sulky, said mower having a deck with forward and rear

ends and defining an inverted pan-shaped housing, ground engaging mower support wheels disposed on respective axles carried at said forward and rear deck ends, a handle extending rearwardly and upwardly from said mower deck for guiding movement of the mower, a rotary power source with a shaft mounted on said housing, a cutting blade mounted on said shaft within said housing, transmission means connecting the rotary power source to wheels of the sulky so as to rotatably drive the



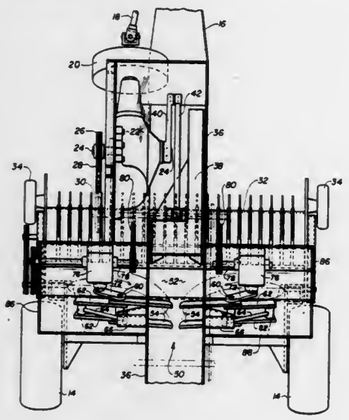
sulky wheels, a bridge support having a central portion bridgingly extending over a rear end of said deck and depending extensions secured to opposite sides of said rear deck end, and means pivotally attaching a forward end of said sulky frame to said central portion of said bridge support whereby forces incurred as an incident propelling the mower are transmitted from the sulky through said bridge and thence to opposed sides of said mower deck.

4,514,968

IN-LINE RECTANGULAR BALER

Kenneth R. Underhill, Strasburg, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 4, 1982, Ser. No. 439,000
Int. Cl.³ A01P *61/00*
U.S. Cl. 56—341 **4 Claims**



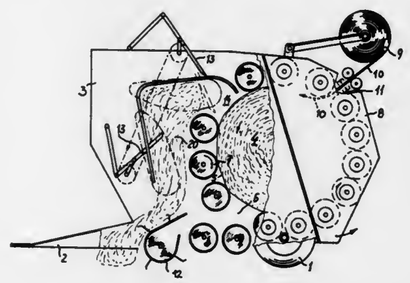
1. A baler comprising:
(a) a subframe;
(b) pickup means supported on said subframe;
(c) a bale case supported on said subframe above and substantially centrally of said pickup means, said bale case having a bottom wall with a feed opening formed therein and side walls;
(d) a plunger reciprocably disposed in said base case for movement back and forth across said feed opening;
(e) a feed case located adjacent to said bale case and being substantially wider than said bale case, said pickup means disposed for delivering crop material to said feed area;
(f) feed means for moving crop material from said feed area upwardly into said bale case through said feed opening;
(g) said feed means including first finger means for moving crop material from one side of said feed area into said bale case and second finger means for moving crop material from the other side of said feed area into said bale case,
(h) said first and second finger means each comprising a pair of fingers, mounted on a shaft, and movable in non-circular loop-like paths through said bale case in timed relationship with the movement of said plunger, the fingers of each said pair of fingers being inclined at an angle with respect to said bottom wall of said bale case; and
(i) said feed area being defined by a bottom panel, side panels, and a back panel, said bottom panel lying below said bottom wall of said bale case, said side panels lying substantially parallel to and outwardly from said side walls of said bale case, said back panel extending upwardly from said bottom panel past said bottom wall of said bale case, and said back panel extending transversely between said side panels.

4,514,969

APPARATUS FOR PRODUCING A WRAPPED CYLINDRICAL BALE OF HARVESTED AGRICULTURAL MATERIAL

Karl Moosbrucker, Sonnenhalde 21, D-7968 Saulgau; Bernd Hollmann, Karl-Peters-Str. 17, D-4800 Bielefeld 1, and Theodor Freye, Am Rowekamp 11, D-4834 Harsewinkel, all of Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,648
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311132
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **9 Claims**



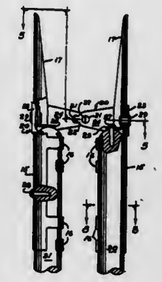
1. A mechanism for rolling and wrapping harvested agricultural material to produce a roll bale of said agricultural material, comprising a roll bale press apparatus adapted to be moved through a field of harvested agricultural material, said apparatus having first means defining a prechamber that is disposed adjacent the forward portion of said apparatus relative to the direction of movement of said apparatus, second means defining a press region that is disposed rearwardly of said prechamber, and means for supplying wrapping material to said press region, means defining a first inlet orifice through which harvested agricultural material may pass from the exterior of said apparatus into said press region, means defining a second inlet orifice through which harvested agricultural material may pass from said prechamber into said press region, said second inlet orifice being located within said apparatus at a position above said first inlet orifice, said apparatus further including a variable position pick-up device operative in a first position thereof to direct harvested agricultural material through said first inlet orifice into said press region and operative in a second position thereof to direct harvested agricultural material into said prechamber, and transport means within said prechamber for conveying harvested agricultural material in said prechamber upwardly to said second inlet orifice.

4,514,970

RAKE ATTACHMENT

Richard C. Wilson, Champlin, Minn., assignor to Tie Down Engineering, Inc., Atlanta, Ga.

Filed Feb. 9, 1984, Ser. No. 578,485
Int. Cl.³ A01D *7/00*
U.S. Cl. 56—400.12 **10 Claims**



1. A rake attachment for connecting a pair of rakes, each rake having tines and an elongated handle connected at one end to the tines, comprising:
(a) a first handle clamp attachable to one of the rake handles adjacent its free end, and including anti-rotational means for preventing rotation of that rake handle about its longitudinal axis with respect to the clamp;
(b) a second handle clamp attachable to the other rake handle adjacent its free end and including anti-translational means for preventing longitudinal movement of the rake with respect to the clamp but permitting rotation of the rake handle about its longitudinal axis with respect to the clamp; and
(c) hinge means for connecting the handle clamps and permitting the clamps to swing with respect to one another in a common plane about an axis normal to the plane, so that the second rake may be rotated to nest its tines with those of the first rake or may be rotated so as to bring its tines in opposition to those of the first rake, permitting raked material to be gathered between the opposed tines of the rakes.

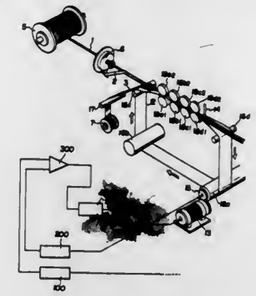
4,514,971

APPARATUS FOR MANUFACTURING SCREENED CABLE

Yasuhiko Mizuo, 29-7, Honta 5-chome, Kokubunji-shi, Tokyo, Japan (185)

Filed Apr. 8, 1983, Ser. No. 483,844
Claims priority, application Japan, May 10, 1982, 57-77887
Int. Cl.³ B21D *13/00*; **H01B** *13/22, 7/20*
U.S. Cl. 57—9 **3 Claims**

1. In an apparatus for manufacturing a screened cable and of the type wherein a wavily patterned conductive tape is supplied from a supply to a core also supplied from a supply, and including means for longitudinally forming said tape around said core, thereby forming a screened cable, and means for pulling the thus formed cable through the apparatus, thereby imparting tension to said cable, the improvement wherein said forming means comprises at least two pairs of rolls, each said pair of rolls comprising a first roll having a concave peripheral surface shaped for pressing said tape against said core, and a second roll having a concave peripheral surface shaped for deforming opposite edges of said tape over said core, and of means for relieving said tension on said tape during said forming thereof around said core, said tension relieving means comprising:
means for supporting and advancing said tape between said rolls of said forming means during the period of forming thereby of said tape around said core; and



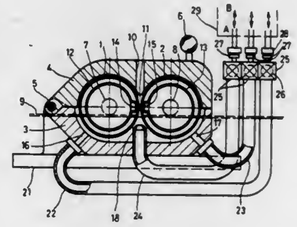
means separate from said pulling means, for moving said supporting and advancing means, and thereby said tape, in the same direction and at the same speed as said cable is moved by said pulling means;
whereby said rolls of said forming means longitudinally form said tape around the circumference of said core in an untensioned state of said tape.

4,514,972

PNEUMATIC CLEANING APPARATUS FOR OPEN END FRICTION SPINNING MACHINES

Fritz Stahlecker, Josef-Neidhart Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, of DEX

Filed Feb. 24, 1984, Ser. No. 583,390
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308247
Int. Cl.³ D01H *7/885*
U.S. Cl. 57—301 **22 Claims**



1. Open end friction spinning apparatus comprising:
a plurality of spinning units having respective friction roller pairs disposed to form yarn forming wedge slots therebetween, and
pneumatic cleaning means for cleaning the friction roller.

4,514,973
MOBILE CLEANING DEVICE FOR OPEN END FRICTION SPINNING MACHINES

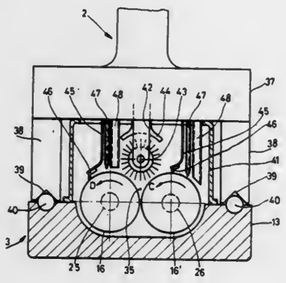
Fritz Stahlecker, Joseph-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, of DEX

Filed Feb. 24, 1984, Ser. No. 583,392

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308248

Int. Cl.³ D01H *7/885*

U.S. Cl. 57—301 **30 Claims**



1. Apparatus for open end friction spinning comprising:

a plurality of adjacently arranged spinning units exhibiting respetive friction roller pairs defining a yarn forming wedge slot therebetween, fiber supply means for supplying fiber to said wedge slot, and roller driving means for drivingly rotating the rollers in the same rotational direction,

mobile servicing unit means including cleaning means for cleaning friction rollers of the spinning units and drive means for selectively moving said mobile servicing unit means to respective servicing positions adjacent spinning units to be cleaned.

4,514,974
OPEN END FRICTION SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, of DEX

Filed Jan. 25, 1984, Ser. No. 573,633

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305621

Int. Cl.³ D01H *1/135, 1/20*

U.S. Cl. 57—401 **32 Claims**

1. Open end friction spinning machine having a plurality of spinning units disposed at a machine frame to be driven by common driving element means extending in the machine longitudinal direction, at least one of the spinning units comprising:

a pair of friction rollers disposed adjacent one another to form a wedge shaped yarn forming slot therebetween,

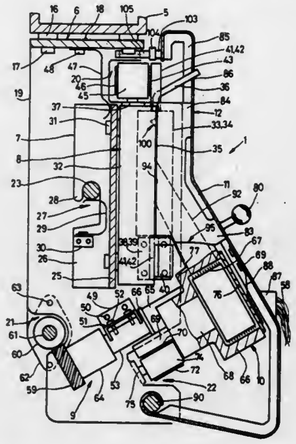
a common bearing housing rotatably supporting the pair of friction rollers,

said common bearing housing and friction rollers being assembled as a first construction unit which is mounted for movement into and out of driving connection with a common driving element means,

fiber inlet and opening means for drawing in and opening fiber material to be fed to the yarn forming slot,

said fiber inlet and opening means being assembled as a second construction unit which is mounted for movement into and out of driving element means, and

a movable intermediate means engageable with both said first and second construction units to force said construction units toward one of their driving and non-driving



positions against the effect of return force adjusting means.

4,514,975
FRICTION ROLLER ARRANGEMENT FOR OPEN END FRICTION SPINNING MACHINE

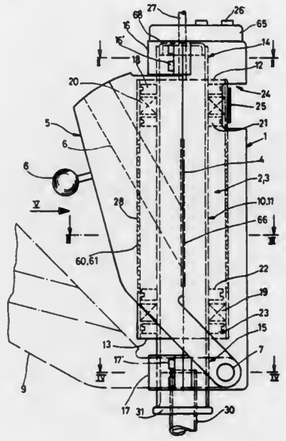
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, of DEX

Filed Jan. 25, 1984, Ser. No. 573,725

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306225

Int. Cl.³ D01H *1/135, 1/20*

U.S. Cl. 57—401 **26 Claims**



1. Apparatus for open end friction spinning comprising:

two friction rollers arranged adjacent to one another to form a yarn forming wedge slot therebetween, said rollers exhibiting respective roller shells;

roller bearing means rotatably supporting the friction rollers adjacent their respective ends, said shells being arranged and supported at the roller bearing means; and

a belt drive means engageable directly at the outer surface of the shells for rotatably driving same during spinning operations.

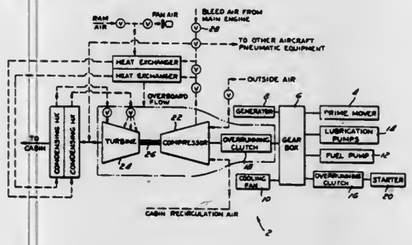
4,514,976
INTEGRATED AUXILIARY POWER AND ENVIRONMENTAL CONTROL UNIT

William J. Christoff, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 155,369, Jun. 2, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 422,118

Int. Cl.³ F02C *6/08*

U.S. Cl. 60—39.07 **1 Claim**



1. An integrated environmental control and auxiliary power unit for a vehicle having a propulsion engine, said unit comprising:

a prime mover;

a variable geometry compressor including a diffuser having a plurality of controllable variable exit vanes;

means for positioning said variable exit vanes to control the output flow of said compressor;

an overrunning clutch operable to couple said prime mover to drive said compressor;

means for supplying bleed air from said propulsion engine to drive said compressor when said prime mover is not running;

a controlled emission turbine coupled to said compressor by a common drive shaft;

means for blocking a selectable portion of the flow supplied to said turbine to match the flow from said compressor to maintain near constant pressure to said turbine over a wide flow operating range; and

means for independently utilizing the output flow from said compressor and from said turbine.

4,514,977
WATER LIFT SYSTEM

Collin W. Bowen, 1105 Ada St., Durant, Okla. 74701

Continuation-in-part of Ser. No. 303,692, Sep. 21, 1981, abandoned, which is a continuation of Ser. No. 88,955, Oct. 29, 1979, abandoned. This application Dec. 13, 1982, Ser. No. 449,509

Int. Cl.³ F04F *10/00*

U.S. Cl. 60—398 **2 Claims**

1. An apparatus to create a liquid energy head at an elevational B, comprising:

a vacuum fill-tank (VFT) disposed above a liquid supply at elevation A, wherein B is higher than A and no greater that about 30';

a vacuum pump mounted on the top of said VFT;

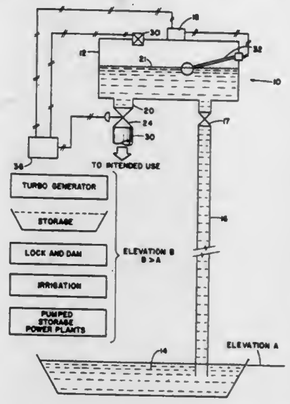
an air intake valve located at the top of said VFT;

an inlet conduit extending from below the level of said lower liquid supply to said vacuum fill-tank;

a unidirectional valve in said conduit to allow flow into said VFT and prevent flow back into the lower liquid supply;

and outlet from said VFT, and a discharge valve means to control the flow of liquid through said outlet;

means to sequentially initiate operation of said system, including means to close said discharge valve and said air intake valve, and initiate said vacuum pump, means to stop said pump upon a given condition in said VFT, means



while said pump is stopped thereafter to open said discharge valve and said air intake valve; and

directing said discharging liquid to a useful purpose.

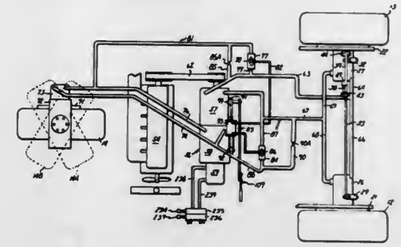
4,514,978
FLUID PRESSURE POWER TRANSMISSION

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Division of Ser. No. 170,145, Jul. 18, 1980, Pat. No. 4,373,600. This application Sep. 29, 1982, Ser. No. 428,010

Int. Cl.³ F15B *18/00;* **F16H** *39/02, 39/46*

U.S. Cl. 60—426 **10 Claims**



1. A fluid pressure power transmission comprising: fluid operated first motor means, fluid operated second motor means, first pump means for supplying fluid under pressure to the first motor, first fluid circuit means connecting the first pump means to the first motor means, second pump means for supplying fluid under pressure to the second motor means, second fluid circuit means connecting the second pump means with the second motor means, means for concurrently operating the first and second pump means whereby said first and second pump means supply fluid under pressure to the first and second circuit means thereby operating said first and second motor means, said first and second pump means each having control means operable to vary the rate of flow of fluid discharged by the pump means, linkage means connected to the control means of the first and second pump means to concurrently operate the control means of the first and second pump means, means connected to the control means of one pump means operable through said linkage means to actuate the control means of the first and second pump means to vary the output flow of fluid from said first and second pump means, said linkage means including fluid operated means operable in response to a difference in the pressure of the fluid in the first

and second circuits to actuate the control means of the other pump means to alter the rate of flow of fluid discharged by said other pump means so as to substantially balance the pressure of the fluid in the first and second circuits thereby maintaining the torque and speed output of the first and second motor means substantially constant, means having fluid flow restricting means interconnecting the first fluid circuit with the second fluid circuit whereby fluid under high pressure in one fluid circuit flows to the other fluid circuit increasing the pressure of the fluid therein, and shuttle valve means connected to the first and second fluid circuit means in parallel with the means having fluid flow restricting means and connected to the fluid operated means, said shuttle valve means operable to supply fluid under pressure to the fluid operated means when there is a difference in fluid pressure in the first and second fluid circuit means whereby said fluid operated means moves the control means of one of said pump means to substantially balance the pressure of the fluid in said first and second circuits.

4,514,979

HOT-GAS PISTON TYPE ENGINE

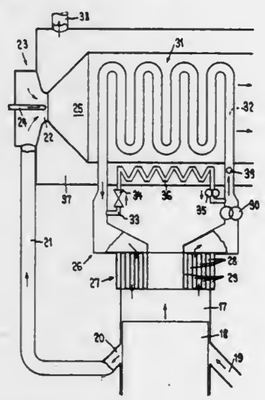
Ernst Mohr, Murten, Switzerland, assignor to Fides Treuhand GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jan. 22, 1982, Ser. No. 341,755

Claims priority, application European Pat. Off., Jan. 27, 1981, 81810022

Int. Cl.³ F01B *29/00*

U.S. Cl. 60—512 **11 Claims**



1. A hot-gas piston type engine comprising a first heat exchanger constructed to act as a compression space of a cylinder of said engine, an intermediate circuit containing an auxiliary medium, and a second heat exchanger cooperating with a heat medium, said first heat exchanger, said intermediate circuit and said second heat exchanger being connected in series whereby heat may be efficiently transferred between said heat medium and said compression space of said cylinder, said first heat exchanger including annular, concentric capillary chambers which, viewed from an underneath disposed cylinder, are alternatively open at the top and at the bottom, the air coming out of the cylinder flowing into the capillary chambers open at the bottom and the auxiliary medium circulated by a circulation pump flowing through the capillary chambers open at the top.

4,514,980

HYDRAULIC RESERVOIR FOR TANDEM MASTER CYLINDER

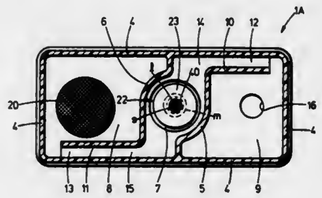
Ichiro Ishiwata, Kanagawa, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Continuation of Ser. No. 191,929, Sep. 29, 1980, abandoned. This application Jan. 3, 1983, Ser. No. 455,243

Claims priority, application Japan, Oct. 22, 1979, 54-146658[U]

Int. Cl.³ B60T *17/22*

U.S. Cl. 60—534 **12 Claims**



1. A hydraulic reservoir for a tandem master cylinder comprising:

(a) a body having an upper wall, a lower wall, first and second side walls disposed opposite each other and joining the upper and lower walls, and third and fourth side walls joining the first and second walls and the upper and lower walls,

(b) two transversely extending partition walls spaced from each other to form a float chamber therebetween, one of said transversely extending partition walls extending from the first side wall toward the second side wall, the end of said one partition wall terminating at a point short of said second side wall, the other of said partition walls extending from said second side wall toward said first side wall with the end of said other partition wall terminating at a point short of said first side wall,

(c) a brake fluid level sensor disposed in said float chamber, said sensor operating to indicate a predetermined brake fluid limit level for said cylinder;

(d) two ancillary walls extending closely to and along said first and second side walls, respectively, a slit-like passage being defined between each ancillary wall and the adjacent side wall, said ancillary walls being joined, respectively, to said ends of said partition walls, one of said ancillary walls extending toward and terminating close to said third side wall, the other ancillary wall extending toward and terminating close to said fourth side wall whereby said slit-like passages terminate, respectively, close to said third and fourth side wall; and

(e) two brake fluid reserving chambers formed within the spaces defined by said partition walls and ancillary walls and the adjacent upper, lower and side walls in said body, said slit-like passages defining bottoms positioned in a plane above the plane of said lower wall, said passages thereby defining open ends communicating with said brake fluid reserving chambers from said bottoms upwardly so that said brake fluid reserving chambers communicate with each other through said slit-like passages and through said float chamber, the plane containing said bottoms being slightly lower than said brake fluid limit level, and said slit-like passages having at least such length that the amount of flow of brake fluid between said two brake fluid reserving chambers is limited to a predetermined value upon the inclination of the brake fluid level relative to said body whereby at least a minimum amount of brake fluid sufficient to brake is secured in each of said reserving chambers upon such inclination.

4,514,981

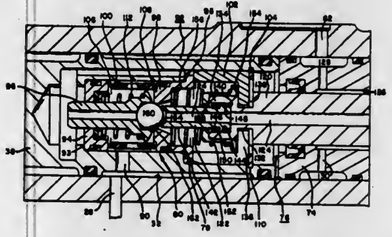
BRAKE BOOSTER

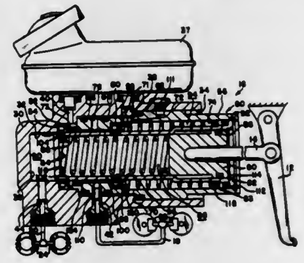
Arthur K. Brown, South Bend; Kelth H. Fulmer, Mishawaka, and Jerome T. Ewald, South Bend, all of Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Mar. 7, 1983, Ser. No. 460,725

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547.1 **6 Claims**





1. A brake booster having a housing with at least one outlet communicating with a brake, a piston movably disposed within the housing to separate a pressure chamber from a work chamber, the piston defining a cavity facing the work chamber, a valve assembly disposed within the cavity and an inlet formed by the housing to communicate fluid pressure to the valve assembly whereby the latter is operable in response to movement of an input assembly to control communication of fluid pressure to the work chamber wherein the fluid pressure biases the piston to move from a rest position to a braking position, the valve assembly including a valve member normally closing fluid communication between the fluid pressure source and the work chamber, the input assembly including an end projection with a passage therein normally communicating the work chamber with a reservoir associated with the brake booster, and the end projection is sealingly engageable with the valve member to close the passage when the valve member is moved by the end projection to communicate the fluid pressure source with the work chamber, characterized in that said end projection comprises a separate part from the remaining portion of said input assembly and said end projection is free to form an angular relationship with said remaining portion to permit said end projection to move angularly relative to said remaining portion when said end projection is forming a sealing engagement with said valve member, said end projection cooperating with said remaining portion of said input assembly to carry a sealing member therebetween, said sealing member sealing said passage from the fluid pressure communicated to the work chamber, the sealing member further biasing said end projection to a coaxial relationship with said remaining portion, the remaining portion terminating in an enlarged head adjacent said end projection for receiving the latter, said enlarged head carrying a collar, a spring engaging said collar to bias the remaining portion to a rest position and the collar cooperating with said end projection to limit the angular relationship between said end projection and remaining portion, said other piston including a pair of sealing means partially defining passages leading to the pair of pressure chambers, respectively, when the other piston is in a rest position, said other piston including means cooperating with said pair of sealing means to substantially define both passages leading to the pair of pressure chambers and movement of said other piston relative to said pair of sealing means simultaneously controls communication through said passages to said pair of pressure chambers, and said other piston cooperating with said sleeve assembly to define at least three sealing interfaces controlling fluid communication between said sleeve assembly and said other piston, two of said sealing interfaces controlling fluid communication to respective pressure chambers and the third sealing interface preventing fluid communication between said chambers.

4,514,982

MASTER CYLINDER

Lloyd G. Bach, South Bend, Ind., and Robert F. Gaiser, Stevensville, Mich., assignors to Allied Corporation, Morristown, N.J.

Filed Mar. 1, 1982, Ser. No. 353,320

Int. Cl.³ B60T *11/20*

U.S. Cl. 60—562 **7 Claims**

1. A master cylinder having a housing with a bore receiving a pair of movable pistons, the pair of pistons cooperating with each other and with the housing to substantially define a pair of pressure chambers, one of the pair of pistons being adapted to connect with an input member which is operable during braking to move the one piston within the housing bore, and a sleeve assembly fixedly disposed within the housing bore in-

4,514,983

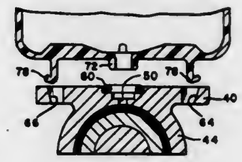
MASTER CYLINDER ATTACHMENT FOR PLASTIC RESERVOIR

Robert F. Gaiser, Stevensville, Mich., assignor to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 193,764, Oct. 3, 1980, abandoned. This application Oct. 6, 1982, Ser. No. 433,179

Int. Cl.³ B60T *11/20*

U.S. Cl. 60—562 **3 Claims**



1. In a master cylinder assembly having a housing movably supporting a pair of pistons which are movable axially therein, the pair of pistons cooperating with the housing to substantially define a pair of pressure chambers, the housing defining a pair of openings leading radially to the pair of pressure chambers, a plastic reservoir substantially defining a pair of cavities which communicate fluid stored in the plastic reservoir to respective pressure chambers via a pair of ports defined by the plastic reservoir, and sealing means between the plastic reservoir and the housing to substantially prevent leakage from the communication of fluid between the pair of cavities and the pair of pressure chambers, characterized by said plastic reservoir including at least one integrally formed boss extending into one of said housing openings, said one boss cooperating with said housing to substantially define a groove for receiving said sealing means, and said plastic reservoir also including at least one tab extending outwardly in the same direction as said one boss, said one tab releasably engaging said housing to retain said one boss within said one opening and lock said plastic reservoir to said housing in the absence of further parts, thereby maintaining said sealing means in sealing engagement

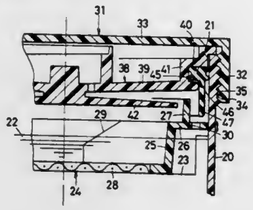
with said plastic reservoir and said housing, and said one tab cooperating with said housing during attachment of said plastic reservoir to said housing to substantially align said one boss with said one housing opening before said sealing means is engageable with said housing and said plastic reservoir in order to permit the attachment of said plastic reservoir to said housing to proceed in a radial direction to said housing.

4,514,984

RESERVOIR TANK STRUCTURE FOR MASTER CYLINDER

Hitoshi Kubota, Minami-ashigara, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 13, 1983, Ser. No. 503,719
Claims priority, application Japan, Aug. 25, 1982, 57-129016[U]
Int. Cl.³ F15B 7/00
U.S. Cl. 60—585 **4 Claims**



1. A reservoir tank structure for a master cylinder, comprising:

a reservoir tank comprising an inlet port;

a filter disposed within said reservoir tank, said filter comprising an annular projection which extends upwardly in the direction of said reservoir tank inlet port;

a cap assembly disposed such that it covers said inlet port, and

an oil seal disposed on said cap assembly in resilient engagement with the inner peripheral surface of the reservoir tank to form a seal therebetween, said oil seal being provided with a downwardly extending annular projection which is inserted between the inner peripheral surface of the reservoir tank and the upwardly extending annular projection of said filter.

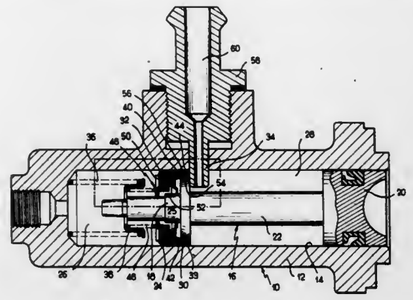
4,514,985

MASTER CYLINDER

Leonardo Cadeddu, Crema, Italy, assignor to Benditalia S.p.A., Crema, Italy

Continuation of Ser. No. 411,389, Aug. 25, 1982, abandoned, and Ser. No. 225,229, Jan. 14, 1981, abandoned. This application Oct. 15, 1984, Ser. No. 661,261
Claims priority, application Italy, Jan. 17, 1980, 19270 A/80
Int. Cl.³ B60T 11/28
U.S. Cl. 60—589 **1 Claim**

1. A master cylinder comprising a housing provided with a bore, a piston slidably mounted in said bore and having a head limited by a forward radially extending face and a rearward radially extending face with the latter being urged against a stop by a spring to define a rest position for the piston, a stop ring also slidably received in the bore around said piston head and also limited by radially extending forward and rearward faces, and an annular sealing cup made of elastomeric material sliding at its periphery in the bore and separating therein a pressure chamber from a fluid supply chamber, the sealing cup having a radially extending face on the side of the supply chamber and which is urged by a further spring against one of the faces of the stop ring to urge the other face of the stop ring against the stop in the rest position of the piston, the sealing cup radially extending face being engageable by the forward radially extending face of the piston head during its compression stroke, said faces on the piston head and on the stop ring being respectively separated by complementary frusto-conical surfaces whose vertex is located on the axis of the bore on the side of the pressure chamber, said frusto-conical surfaces being separated from each other in the rest position of the piston to allow fluid communication between the pressure chamber and the supply chamber and being mutually intimately engageable during the compression stroke of the piston to cause the piston to move the stop ring toward said pressure chamber with the stop ring acting as a stabilizing guide for the piston, the frusto-conical surface formed on the piston head between its two



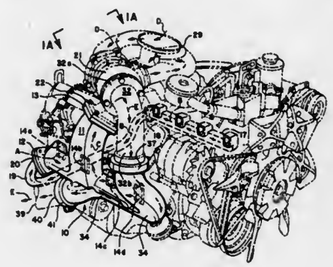
faces having a maximum axial height less than that of the complementary frusto-conical surface formed on the stop ring while their respective minimum diameters are substantially equal, so that the respective forward faces of the piston head and stop ring define a continuous coplanar radial surface engaging the entire radially extending face of the sealing cup on the supply chamber side thereof during the compression stroke, the continuous coplanar radial surface applying a substantially constant force across the radially extending face of the sealing cup during the compression stroke in order to reduce deformation and wear of the sealing cup.

4,514,986

DOUBLE-CHAMBERED EXHAUST MANIFOLD

Steven R. Benson, 1339 W. Main St., Vernal, Utah 84078

Filed Jul. 18, 1983, Ser. No. 514,631
Int. Cl.³ F02B 37/00; F01N 7/10
U.S. Cl. 60—605 **8 Claims**



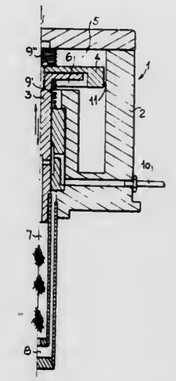
1. A double-chamber exhaust manifold for use with an exhaust gas driven turbine air compressor comprising, an exhaust inlet chamber including spaced apart inlet ports therein; means for connecting said exhaust inlet chamber over and to the exhaust ports of one cylinder head of an internal combustion engine, that is the sole means for mounting the double-chamber exhaust manifold to said internal combustion engine, such that exhaust ports of said cylinder head will align with to vent engine exhaust gases through said inlet ports; connection means for connecting said exhaust inlet chamber to the exhaust gas inlet side of an exhaust gas driven turbine air compressor; said separate exhaust outlet chamber rigidly connected to said exhaust inlet chamber; connection means for connecting said exhaust outlet chamber to the exhaust gas outlet side of said exhaust gas driven turbine air compressor; and means for coupling said exhaust outlet chamber to a vehicle exhaust system venting an exhaust gas flow thereto.

4,514,987

PASSIVE AUTOMATIC PHASE DELAY CONTROL OF THE DISPLACER MOTION IN PNEUMATICALLY DRIVEN SPLIT CYCLE TYPE CRYOCOOLERS

Nachman Pundak, Kibbutz Eyn Charod, and Shmuel Shtrikman, Rechovot, both of Israel, assignors to Ricor Ltd., Israel

Filed May 17, 1983, Ser. No. 495,429
Claims priority, application Israel, May 25, 1982, 65881
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 **6 Claims**



2. A split cycle type cryocooler system comprising an expansion cell and walls forming a pneumatic volume, a displacer located within and dividing the volume into separate chambers in communication within said volume through a constrictive passage, said displacer being displaceable within said volume for varying the volume of said chambers where the volume changes periodically under the phase difference in relation to pressure pulses acting on said expansion cell, to said displacer is attached an electrically conductive body, means incorporated into said pneumatic volume for forming a magnetic field so that said electrically conductive body is located in the magentic field whereby eddy current is created and mechanical drag is produced by the displacement of said displacer.

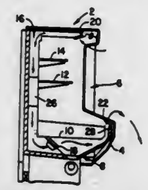
4,514,988

REFRIGERATED DISPLAY CASE HAVING AMBIENT AIR DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Division of Ser. No. 361,798, Mar. 25, 1982, Pat. No. 4,457,139, which is a continuation-in-part of Ser. No. 117,571, Feb. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 60,459, Jul. 25, 1979, Pat. No. 4,295,340, which is a continuation-in-part of Ser. No. 11,804, Feb. 14, 1979, abandoned, and a continuation-in-part of Ser. No. 295,542, Aug. 24, 1981, Pat. No. 4,408,465, and Ser. No. 225,997, Jan. 19, 1981, Pat. No. 4,338,792. This application Nov. 9, 1983, Ser. No. 550,103
Int. Cl.³ F25D 21/12
U.S. Cl. 62—82 **5 Claims**

1. A method for selectively operating a refrigerated display case in a refrigeration cycle and a defrost cycle, where the case includes top, rear, front and bottom walls with an access opening in the front wall and a single air conduit extending along the top, rear, bottom, and lower front walls, the air conduit having first and second openings at its opposite ends and each of the openings being located on opposite sides of the access opening; the method comprising the steps of: refrigerating air moving through the air conduit during a refrigeration cycle; circulating air within the air conduit in a forward direction through the air conduit during a refrigeration cycle; switching the operation of the display case between the refrigeration cycle and the defrost cycle and correspondingly causing the direction of circulation of air within the air conduit to be reversed; circulating air in a reverse direction during a defrost cycle; drawing in ambient air from outside of said display case



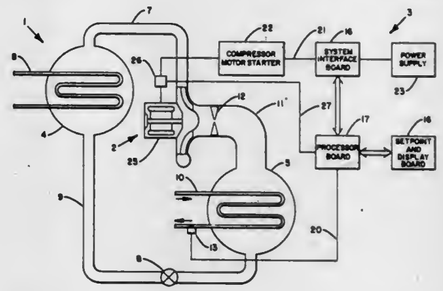
through the first opening when air is circulated within the air conduit in the reverse direction and is circulated upwardly through the lower front wall; and imparting a significant horizontal velocity vector directed away from the case to the air ejected from said air conduit near the top of the lower front wall for causing substantially all air leaving the air conduit during substantially the entire defrost cycle to change from an upward to an outward flow direction so as to flow away from the case; said change in flow direction being at least 20° from the vertical plane of the lower front wall.

4,514,989

METHOD AND CONTROL SYSTEM FOR PROTECTING AN ELECTRIC MOTOR DRIVEN COMPRESSOR IN A REFRIGERATION SYSTEM

Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 14, 1984, Ser. No. 610,150
Int. Cl.³ F25D 17/02; H02H 7/00
U.S. Cl. 62—201 **8 Claims**



1. A method of operating a refrigeration system having a compressor driven by an electric motor, comprising:

monitoring a load to be satisfied by operation of the refrigeration system;

turning on the refrigeration system, including the refrigeration system compressor, when the step of monitoring detects a load to be satisfied by operation of the refrigeration system;

turning off the refrigeration system compressor when the load is satisfied and the refrigeration system is providing excess capacity for satisfying the load;

sensing current flow to the electric motor driving the refrigeration system compressor when the compressor is turned off due to excess capacity; and

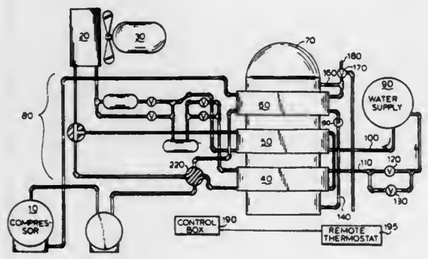
shutting down operation of the refrigeration system if the sensed current flow is abnormal.

4,514,990

HEAT EXCHANGE SYSTEM WITH SPACE HEATING, SPACE COOLING AND HOT WATER GENERATING CYCLES

Alfred Sulkowski, 4 Oak Dr., Marlboro, Conn. 06447

Filed Nov. 9, 1982, Ser. No. 440,370
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.7 **12 Claims**



1. A heat exchange system having a space heating cycle, a space cooling cycle with water heating, and an independent water heating cycle comprising:

a compressor;

a refrigerant adapted to absorb and emit heat by changing from a liquid to a gas and from a gas to a liquid phase respectively circulated by said compressor;

a medium adapted to absorb or emit heat;

a water storage tank;

a first transfer means for transferring heat for space heating from said refrigerant during the heating cycle and for transferring heat to said refrigerant for space cooling during the cooling cycle;

a second transfer means for transferring heat from said medium to said refrigerant during the space heating cycle and independent water heating cycle and for transferring heat to said medium from said refrigerant during said space cooling;

a third transfer means for transferring excess heat during the independent water heating cycle from said refrigerant to said medium; to condense said refrigerant;

a fourth transfer means for transferring heat from said refrigerant to a water storage tank;

a piping means operatively connected to allow the flow of said refrigerant between said compressor, and said transfer means; and

a control means for controlling said flow; whereby during the heating cycle heat is transmitted by the refrigerant form said medium to said first transfer means;

whereby during the cooling cycle heat is transmitted by the refrigerant from said first transfer means to said medium; and

whereby during the independent water heating cycle heat for water heating is transmitted from said medium to said tank.

4,514,991

VARIABLE SPEED DRIVE MOTOR SYSTEM WITH INVERTER CONTROL

Thomas M. Zinsmeyer, Pennellville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,640
Int. Cl.³ F25B *1/00*; F16H *37/06*
U.S. Cl. 62—209 **4 Claims**

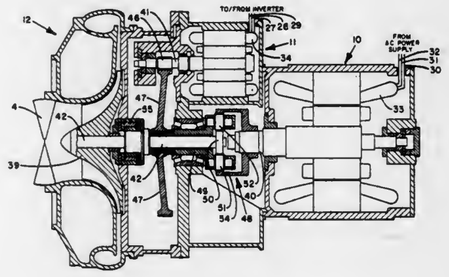
1. A variable speed drive motor system for a centrifugal compressor in a vapor compression refrigeration system comprising:

a main motor means for rotating a main motor drive shaft about its longitudinal axis at a fixed speed;

an AC auxiliary motor/generator means for receiving electrical excitation signals in a selected sequence, each of said excitation signals having a selected frequency and magnitude, and for rotating an auxiliary motor/generator drive shaft about its longitudinal axis at a speed and in a direction which depend on the selected sequencing, frequencies, and magnitudes of the received electrical excitation signals wherein during the upper half of the compressor speed range the AC auxiliary motor/generator means rotates in a first direction and during the lower half of the speed range of the compressor the motor/generator means rotates in the opposite direction;

an output drive shaft for rotating an impeller of the centrifugal compressor when said output drive shaft is rotated about its longitudinal axis;

a transmission means for interconnecting the main motor drive shaft and the auxiiary motor/generator drive shaft



to the output drive shaft to rotate the output drive shaft about its longitudinal axis at a speed which depends on the speed and direction of rotation of the auxiliary motor/-generator drive shaft relative to the speed and direction of rotation of the main motor drive shaft;

an inverter means for receiving electrical power signals and electrical control signals, for processing said received electrical power signals and electrical control signals to form electrical excitation signals each having a selected frequency and magnitude which is determined by the received electrical control signals, and for supplying said electrical excitation signals to the AC auxiliary motor/-generator means in a selected sequence which also is determined by the received electrical control signals;

power supply means for supplying the electrical power signals to the inerter means; and

a control means for monitoring selected operating conditions of the refrigeration system, and for generating electrical control signals in response to the monitored operating conditions, and for supplying these generated electrical control signals to the inverter means to vary the speed of rotation of the output drive shaft in a desired manner.

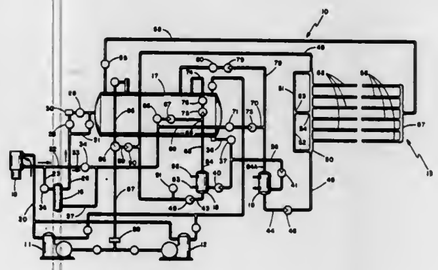
4,514,992

REFRIGERATION SYSTEM FOR ICE RINKS UTILIZING PRESSURE CONTROL/METERING VALVE

Richard B. Holmsten, 2127 Dudley Ave., St. Paul, Minn. 55108

Filed Mar. 19, 1984, Ser. No. 591,220
Int. Cl.³ A63C *19/10*
U.S. Cl. 62—235 **3 Claims**

1. In a refrigeration system for delivering chilled refrigerant substantially entirely in the liquid state to a zone where heat is being extracted and including compressor means having an inlet and an outlet for delivering high pressure refrigerant therefrom, means for delivering said high pressure refrigerant to a first storage vessel wherein said output is received and at least partially evaporated and maintained at a relatively lower pressure, means for intermittently delivering refrigerant in liquid phase from said first storage vessel to a second storage vessel wherein said delivered refrigerant is received and normally maintained at said relatively lower pressure, first conduit means for providing communication between the upper portions of said first and said second storage vessels, means including said first conduit means for intermittently coupling said second storage vessel substantially directly to said high pressure refrigerant, means for delivering the refrigerant from said



second storage vessel under the influence of said high pressure refrigerant to the zone where heat is being extracted, and means for returning the refrigerant from said zone where heat is being extracted to said first storage vessel, the improvement comprising:

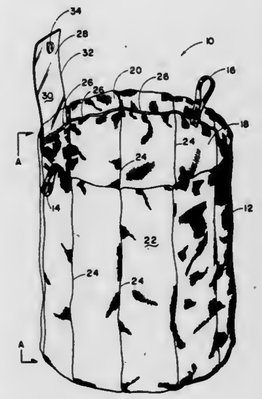
(a) fixed orifice means disposed within said first conduit means immediately adjacent the inlet to said second storage vessel and adapted to provide an expansion zone within said second storage vessel to achieve pressure reduction for high pressure refrigerant flowing therealong from said compressor means to said second storage vessel.

4,514,993

INSULATED BARREL COOLER

Randolph K. Johnson, Bartlesville, Okla., assignor to Idttkow, Inc., Bartlesville, Okla.

Filed Mar. 2, 1984, Ser. No. 585,453
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—372 **3 Claims**



1. A barrel cooler comprising:

(a) an insulated cloth pocketed sleeved member having at least four concentrically sleeved layers further comprising:

(i) a first outer cloth layer;

(ii) an inner layer of cloth insulation;

(iii) a second inner cloth layer attached circumferentially to said first outer cloth layer at the top and at the bottom of said pocketed sleeved member thus confining said inner layer of cloth insulation therebetween;

(iv) a third inner layer of cloth attached circumferentially to said second inner layer and said first outer layer at the bottom of said pocketed sleeved member with the top of said third inner layer of cloth being open; and

(v) a plurality of vertical seams in said sleeved member displaced essentially equal distance around said sleeved member thus creating a plurality of internal open topped pockets between said second and third inner layer of cloth; and

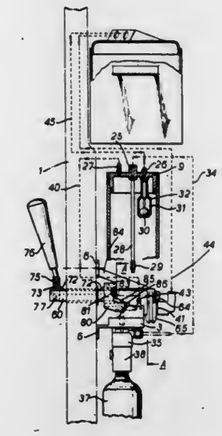
(b) a plurality of plastic bags adapted to hold a freezeable liquid and further adapted to be inserted into said pockets to cool an object placed within said insulated cloth pocketed sleeved member.

4,514,994

APPARATUS FOR AERATING LIQUIDS

Kenneth G. Mabb, Peterborough, England, assignor to Sodastream Limited, Peterborough, England

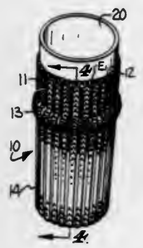
PCT No. PCT/GB82/00116, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/03751, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 21, 1982, Ser. No. 433,209
Claims priority, application United Kingdom, Apr. 27, 1981, 8112942
Int. Cl.³ B67D *5/62*
U.S. Cl. 62—389 **20 Claims**



1. A domestic refrigerator having a cold food compartment defined within a walled cabinet including a door, and a carbonating apparatus mounted within the cold compartment and operable to deliver carbonated liquid to a discharge nozzle, said carbonating apparatus being mounted on the inner side of the refrigerator door and comprising a sealed pressure chamber and a reservoir tank both exposed to the temperature in the cold compartment, valve means to control supply of liquid to the pressure chamber from the reservoir tank and discharge of liquid from the pressure chamber to the nozzle, a gas supply valve for controlling supply of pressurized gas from a gas source to the pressure chamber, an exhaust valve operable to release the gas pressure in the pressure chamber, and a control arrangement for extending through the refrigerator door and coupled to the liquid flow control valve means, said gas supply valve and said exhaust valve for operating the carbonating apparatus manually from outside the refrigerator, the liquid flow control valve means comprising a valve member movable in opposite directions to connect the pressure chamber to the reservoir tank and the discharge nozzle, respectively, the valve member being coupled to the control arrangement to be driven thereby in both said opposite directions, and said discharge

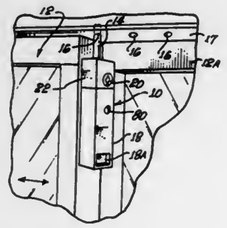
nozzle being mounted to deliver liquid on the outer side of the door.

4,514,995
KNIT COVER FOR BEVERAGE CONTAINER
James J. Curtis, and Edward A. Bourgo, both of 6604 N. Mississippi Ave., Portland, Oreg. 97217
Filed Jul. 8, 1983, Ser. No. 512,158
Int. Cl.³ D04B *9/06;* **B65D** *37/00, 65/02*
U.S. Cl. 66—170 **9 Claims**



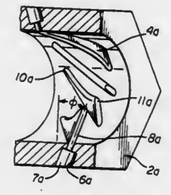
1. A knit cover for receiving a beverage container comprising a knit sleeve of successive courses knit of yarn having inherent heat insulating properties, and comprising:
an upper tubular knit section having an upper opening;
an outwardly bulging hang engageable annular band encircling said sleeve and being integrally knit with the lower end of said upper tubular section, said outwardly bulging band including held stitch loops and a plurality of courses of outwardly facing stitch loops positioned between said held stitch loops, said band aiding in preventing slipping of the cover through the hand of the holder of a beverage container received therein; and
a lower tubular knit section having an upper portion integrally knit with the lower end of said band, said lower tubular section including a bottom portion having a lower opening of a diameter less than the diameter of the remaining portions of said sleeve, and such that the bottom portion is adapted to underlie the flat bottom of a beverage container received in the sleeve.

4,514,996
SLIDING DOOR LOCK
C. Norman Sjogren, San Gabriel, Calif., assignor to Belwith International, Ltd., City of Industry, Calif.
Filed Dec. 16, 1983, Ser. No. 562,100
Int. Cl.³ E05B *65/08*
U.S. Cl. 70—100 **6 Claims**



1. A sliding door lock comprising:
a bolt;
a substantially flat, generally rectangular base plate having an upstanding body disposed at one end thereof,
said body including a longitudional guide passsage extending therethrough for guiding the bolt when disposed therein between an open position and a closed position and a rotary barrel lock operable to selectively lock said bolt in a locked position when in the closed position;
a handle which is channel-shaped in transverse cross section and has a pair of inwardly extending flanges disposed one along each of the channel edges to engage the base plate so as to hold the handle thereon in linear longitudinally slidable engagement therewith;
means for fastening said bolt to said handle so that said bolt extends through said guide passage so as to expose the base plate when in the open position and to cover the base plate and cause the bolt to extend through and substantially beyond the upstanding body when in the closed position; and
means operable to hold the handle selectively either in the open position or in the closed position.

4,514,997
TUBE CORRUGATING DIE
Lothar R. Zifferer, Waco, Tex., assignor to Packless Metal Hose, Inc., Waco, Tex.
Filed May 16, 1983, Ser. No. 494,615
Int. Cl.³ B21C *1/00;* **B21D** *15/04*
U.S. Cl. 72—68 **16 Claims**

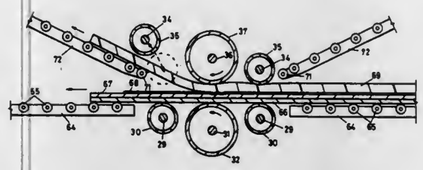


1. A metal tube corrugating die for corrugating tubing without a supporting mandrel comprising
a hollow die body with a longitudinally extending bore,
a plurality of die teeth supported in said die body equidistantly around the circumference of and extending into said bore, each having a base portion supported in said die body at an angle to the longitudinal axis thereof,
a corrugating die portion comprising a flat planar plate extending from said base portion having an edge curving from a root portion adjacent to the surface of said bore to a peak portion radially inward therefrom and an arcuate length of a small fraction of one helical coil of the tubing corrugated therein,
each die tooth being uniformly tilted outward at an angle such that the planes of said plates intersect on the longitudinal axis of the die at a point spaced from the intersection of said axis with a plane normal to said axis and passing through the base portions of said die teeth, the angle and spacing of said die teeth being such that multiple uniform helical corrugations in thin walled tubing are produced by passing such tubing therethrough while rotating said die, and
said tilt angle of said die teeth determining the spacing of the innermost points of said flat planar plates.

4,514,998
METAL FORMING MACHINE
Harold R. Jury, 22 Provident Ave., Glynde, Australia
Filed Mar. 8, 1983, Ser. No. 473,224
Claims priority, application Australia, Mar. 9, 1982, PF3019; Sep. 21, 1982, PF5977
Int. Cl.³ B21D *22/10*
U.S. Cl. 72—184 **8 Claims**

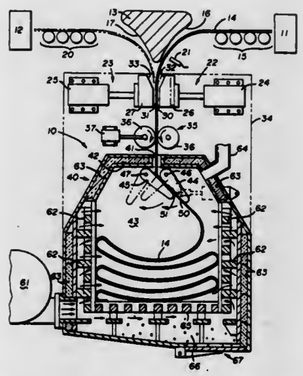
1. A metal forming machine having a frame assembly comprising a fixed frame, an adjustable frame carried by the fixed frame and adjustable with respect thereto, and a pair of sub-

frames each movable with respect to the adjustable frame, a pair of co-operating embossing rollers located one above the other and respectively journalled for rotation in bearings carried by the adjustable frame and the fixed frame,
drive means coupled to both said embossing rollers and arranged to drive the embossing rollers at similar peripheral speeds,
two pairs of co-operating pinch rollers each of which is



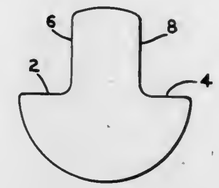
parallel to the embossing rollers, the pinch rollers of each pair also being positioned one above the other and respectively journalled for rotation in bearings carried by the sub-frame and the fixed frame, one of the pairs of pinch rollers being on one side of the embossing rollers and the other on the other side thereof,
and respective piston/cylinder assemblies coupled between the sub-frames and one of the other said frames being operable to selectively retract the upper pinch rollers.

4,514,999
HEAT RECUPERATOR FOR A STRIP MILL
Donald E. Alvarez, 17256 Akita Ct., Strongsville, Ohio 44136
Filed Oct. 11, 1983, Ser. No. 540,485
Int. Cl.³ B21B *41/00, 45/00*
U.S. Cl. 72—202 **11 Claims**



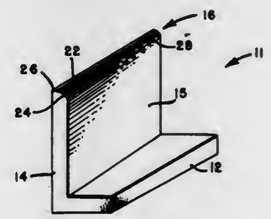
1. Apparatus for maintaining the temperature of an intermediate product of a strip metal rolling mill, comprising:
oven means to receive the intermediate product from the strip metal rolling mill;
deflector means to direct the intermediate product from the strip metal rolling mill to said oven means;
guide means within said oven means oscillating to positively dispose the intermediate product in a foldedly layered configuration within said oven means, said guide means including co-pendular elements oriented relative to each other on individual pivotal shafts and having opposingly oriented parallel surfaces defining therebetween a region through which the intermediate product may pass; and
pinch roll means for selectively advancing or withdrawing the intermediate product relative to said oven means;
said deflector means further directing the intermediate product from said oven means to the strip metal rolling mill.

4,515,000
METHOD FOR MANUFACTURING CONSUMABLE WELDING SPACER
Roger W. von Ahrens, Colonia, N.J., assignor to Robvon Backing Ring Company, Avenel, N.J.
Filed Sep. 17, 1982, Ser. No. 419,633
Int. Cl.³ B21C *1/00, 3/00*
U.S. Cl. 72—278 **5 Claims**



1. A method for forming a consumable welding insert having a multiple gauge configuration from a continuous length of wire having a Rockwell B hardness rating of from 60 to 80, consisting essentially of the steps of:
achieving an 80% to 90% formation of the final cross-sectional configuration of the insert consisting of the step of cold working said continuous length of metal wire by conducting a single first drawing pass of said wire through a drawing die defining a multiple gauge configuration, and
forming said consumable welding insert having its greatest cross-sectional dimension increased over the greatest cross-sectional dimension of said wire including the step of cold working said 80% to 90% formation by conducting at least one further drawing pass of said wire through a drawing die defining a multiple gauge configuration.

4,515,001
VARIABLE RADIUS LEAD FORMER
Robert L. Zahn, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 28, 1983, Ser. No. 566,352
Int. Cl.³ B21F *1/00*
U.S. Cl. 72—323 **2 Claims**



1. A variable radius lead former, said former bending opposing axial leads of an electronic component in a staple like fashion, said variable radius lead former comprising:
means for bending said axial leads with a selected radius, said means for bending having a pair of die means for receiving said axial leads, each of said die means having a die, said die having a contact anvil upon which said axial lead is bent; a die platform, said die mounted upon said die platform, said die platform able to move in a horizontal direction parallel to said axial leads in a precisely defined manner whereby a position for starting of a radius bend on said axial leads is determined; and a platform control operatively connected to said die platform, said platform control moving said die platform;
said die including a base, said base mounted to said die plat-

form; a pedestal, said pedestal mounted upon said base; and said contact anvil, said contact anvil mounted to said pedestal;

said contact anvil including a flat horizontal stripe upon which said lead rests while bending occurs and a bending surface shaped like a quartered conical frustum, said lead being bent upon said frustum shaped bending surface, said pedestal having a wall, a top surface of said wall congruent with said bending surface shaped like a quartered conical frustum;

means located between said pair of die means for positioning said component between said means for bending whereby said axial leads are bent to have a selected radius, said leads being positioned along said bending surface shaped like a quartered conical frustum; and

means operatively connected to said bending means and said positioning means for controlling said means for bending and said means for positioning, said means for controlling being programmed to produce said selected radius.

4,515,002

METHOD OF MANUFACTURING SHEAR BLADES FOR SHEARING HOT GLASS

Roland E. Groethe, 640 Lemoyne Ave., Washington, Pa. 15301

Filed Sep. 9, 1983, Ser. No. 530,541

Int. Cl.³ B21D *28/00*

U.S. Cl. 72—339 **7 Claims**



1. The method of making a shear blade for shearing gobs of hot glass without noticeable shear marks, comprising heating a blank of tool steel to a minimum of about 400° F., stamping the desired outline shape of said heated blade by one set of dies followed by forming the blade in its final shape by reheating to said minimum temperature or to about 2150° F. by a second set of dies.

4,515,003

PISTON SHAPING

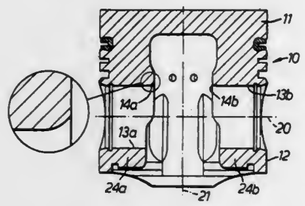
Ludovico Bruni, Turin, Italy, assignor to Associated Engineering Italy S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 263,688, May 14, 1981, abandoned. This application Jul. 8, 1983, Ser. No. 512,404

Claims priority, application Italy, May 20, 1980, 9440 A/80

Int. Cl.³ B23P *15/10*

U.S. Cl. 72—370 **20 Claims**



1. A method of shaping gudgeon pin bores formed in respective gudgeon pin bosses of a piston for an internal combustion engine or a compressor, the method comprising, before the insertion of the piston into the engine or compressor, the steps of introducing respective portions of a pin-shaped tool into the gudgeon pin bores and then applying a load to a part of the pin-shaped tool intermediate the gudgeon pin bores, to deform radially outwardly respective areas of bore-defining walls of the gudgeon pin bosses which extend to the inner ends of the bores and which lie on the crown side of a plane which includes the common axis of the gudgeon pin bores and which is normal to the piston axis, whereby, when the piston is inserted into an internal combustion engine or compressor, said deformed areas form a relief between the gudgeon pin bosses and the gudgeon pin.

4,515,004

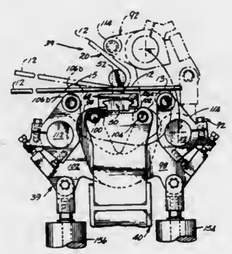
WELDED WIRE FABRIC BENDING APPARATUS AND METHOD

Howard W. Jaenson, Irwindale, Calif., assignor to Jenglo Engineering, Inc., Azusa, Calif.

Filed Oct. 7, 1982, Ser. No. 433,360

Int. Cl.³ B21D *9/05*

U.S. Cl. 72—388 **2 Claims**



1. Apparatus for bending wire, the apparatus comprising:

(a) an elongated support;

(b) a track mounted on the top of the support and extending along the length of the support;

(c) at least one anvil mounted on the track, such an anvil having an axis and around which a wire is to be bent, the anvil axis and longitudinal axis of the support defining a plane that divides the support into two generally symmetrical halves;

(d) a pair of forming bar assemblies wherein:

(i) the first such forming bar assembly comprises:

(a) a plurality of arms wherein each such arm is pivotally mounted to the support on a first side of the plane and extends to the second side of the plane; and

(b) an elongated forming bar secured to the arms on the second side of the plane; and

(ii) the second such forming bar assembly comprises:

(a) a plurality of arms wherein each such arm is pivotally mounted to the support on the second side of the plane and extends to the first side of the plane; and

(b) an elongated forming bar secured to the arms on the first side of the plane; and

(e) means on the elongated support for pivoting the arms of each forming bar assembly with respect to the anvil to thereby bring such a forming bar into contact with the wire and bend it around the anvil wherein each such forming bar assembly additionally comprises a torque tube for distributing forces provided by the arm pivoting means generally evenly along the length of such a forming bar so that the longitudinal axis of the forming bar remains about parallel to the longitudinal axis of the support when the forming bar is bending the wire around the anvil, wherein each such torque tube extends along the length of the support, is free to rotate about its longitudinal axis, and is connected at each end to a pivot arm of its respective forming bar assembly.

4,515,005

HYDROPNEUMATIC BLIND RIVETER WITH AUTOMATIC MANDREL CATCHER

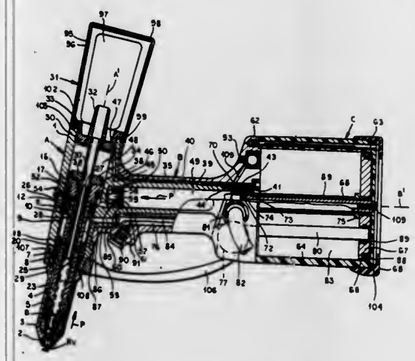
Günter Klein, Walldorf, Fed. Rep. of Germany, assignor to GESIPA Blindniettechnik Gesellschaft mit beschränkter Haftung, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,288

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112711

Int. Cl.³ B21D *31/00*

U.S. Cl. 72—391 **16 Claims**



1. A blind riveter comprising:

a housing forming an air chamber and a liquid-filled hydraulic chamber adjacent thereto;

a head on said housing having a tip and forming a liquid—filled working chamber communicating with said hydraulic chamber;

a working piston in said working chamber and carrying a chuck for grasping a mandrel of a blind rivet, said head and chuck forming a passage having a front end opening at said tip and a rear end, said piston being displaceable in said working chamber between a ready position juxtaposed with said tip and wherein a mandrel of a blind rivet can be fitted into said passage at said chuck with said rivet engaged backwardly against said tip and an actuated position spaced from said tip and wherein said chuck is retracted;

a generally closed mandrel-catching compartment on said head, said other end of said passage opening into said compartment;

an air piston in said air chamber;

a hydraulic piston carried on said air piston and displaceable in said hydraulic chamber between an advanced position pressurizing said hydraulic chamber and corresponding to a front position of said air piston and a retracted position corresponding to a rear position of said air piston;

means for pressurizing said air chamber and thereby moving said air and hydraulic pistons into the respective front and advanced positions for pressurizing said working chamber and displacing said chuck from said ready to said actuated position, whereby on displacement of said chuck from said ready to said actuated position the mandrel is pulled off the rivet at said tip;

a nozzle directed in said passage toward said other end; and

a valve means connected between said air chamber and said passage for feeding air under pressure from said air chamber to said nozzle after displacement of said chuck from said actuated into said ready position and for thereby simultaneously sucking the pulled-off mandrel from said chuck back along said passage into said compartment, said chuck including an inner mandrel tube extending back toward said other end and having an end forming part of said nozzle, said chuck including an outer mandrel tube spacedly surrounding said inner tube and forming said nozzle therewith, and a spring being braced between said mandrel tubes and urging said inner tube into engagement with said chuck and said outer tube oppositely, said head being provided with a mandrel-tube piston carrying said outer mandrel tube and displaceable therewith toward and away from said tip.

4,515,006

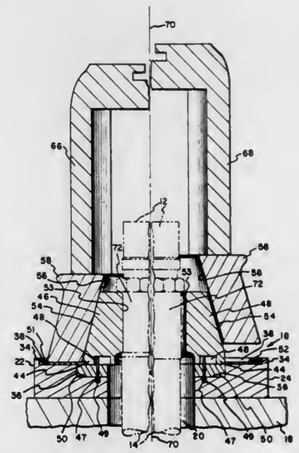
HOSE COUPLING CRIMPER AND METHOD OF CRIMPING

John H. Stanley, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 27, 1983, Ser. No. 461,648

Int. Cl.³ B21D *41/04, 39/00*

U.S. Cl. 72—402 **14 Claims**



1. A crimping die assembly for radially compressing a sleeve against the exterior of a hose comprising a base plate having an opening for positioning said hose with said sleeve thereon, a die plate mounted on said base plate, said die plate having radial slots, crimping segments slidably mounted in said radial slots for movement into engagement with said sleeve, said die plate being split into two die plate halves, each of said halves being pivotally mounted on said base plate for swinging movement from an open position for positioning said hose and said sleeve to a closed position around said opening in said base plate, a restraining ring member positioned radially outward of said segments to restrain radial outward movement of said segments in said radial slots, said restraining ring member being split into two generally semicircular restraining ring halves, each of said die plate halves having a recess with a shoulder portion in which one of said restraining ring halves is positioned for preventing radial movement, a pressure ring having a tapered bore movable over tapered surfaces of said segments in said closed position of said die plates halves, power means for causing movement of said pressure ring into sliding engagement with tapered surfaces on said segments to move said segments into crimping engagement with said sleeve for compressing said sleeve around said hose and said die plate halves being pivotally movable independently of the movement of said pressure ring into said closed position for gripping said sleeve at a predetermined position by said segments prior to said sliding engagement of said tapered bore on said tapered surfaces of said segments.

13. A method of crimping a sleeve on a hose with a pair of die plate halves containing a plurality of radially movable clamping segments pivotally mounted on a base plate for swinging movement toward and away from a closed position of said segments around an opening in said base plate and with radial movement of said segments being restrained by restraining ring halves positioned in recesses with shoulder portions in

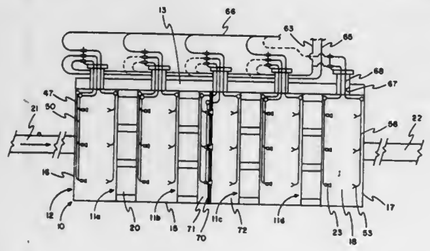
each of said die plate halves to hold said sleeve and hose firmly in position comprising swinging said die plate halves away from said closed position into an open position, positioning said restraining ring halves on said die plate halves within said recesses, positioning a hose in said opening with the sleeve in a predetermined axial position, swinging said die plate halves into said closed position and toward said opening to urge said clamping segments into gripping engagement with said sleeve to retain said sleeve in said predetermined axial position, placing a pressure ring over said segments and depressing said pressure ring in the axial direction causing said segments to move only radially until said sleeve is crimped on said hose after said die plate halves are moved into said closed position and said clamping segments have been urged into gripping engagement with said sleeve, then removing said pressure ring and swinging said halves away from said sleeve in said opening to facilitate removal of said hose from said opening.

4,515,007

METHOD OF AND APPARATUS FOR TESTING THE INTEGRITY OF FILTERS

Raymond L. Herman, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1983, Ser. No. 455,446
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—38 **18 Claims**



1. A method of testing the integrity of a filter mounted in a housing in sealing engagement therewith comprising: passing an airstream in a laminar flow path through said housing and filter, introducing trace agent particles into said airstream upstream of said filter, introducing from a separate source a restricted high velocity airstream in an axial direction within said first mentioned airstream and along said laminar flow path, diffusing said high velocity airstream outwardly in a diverging path into said laminar flow path to create pressure differentials for agitating and uniformly dispersing said particles within said first mentioned airstream to form a homogeneous air-particle mixture passing through said filter, and sampling the filtered airstream downstream of said filter to determine the extent of particle concentration therein.

4,515,008

POLYMERIZATION RATE DETECTION METHOD

Nobuo Matsushita; Tokinobu Furukawa, both of Kudamatsu; Tetsuo Shintani, Hikari; Tomoaki Sumitani, and Chikao Oda, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

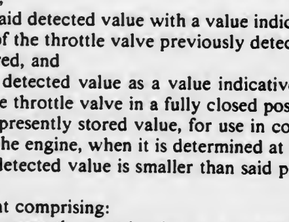
Filed Jun. 10, 1983, Ser. No. 503,349
Claims priority, application Japan, Jun. 16, 1982, 57-102053
Int. Cl.³ G01N *33/44*
U.S. Cl. 73—53 **11 Claims**

1. A process for detecting rate of polymerization, which comprises:

a step of taking out a predetermined amount of a polymer composition from a polymerization reaction process and measuring the amount thereof,

a step of separating the polymer composition thus measured into a volatile component and a non-volatile component,

a step of measuring the amount of the separated volatile component, and



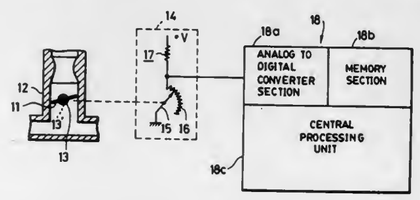
a step of calculating the rate of polymerization of the polymer composition by using the measured amount of the polymer composition and the measured amount of the volatile component.

4,515,009

METHOD FOR DETECTING OPENING OF A THROTTLE VALVE IN A FULLY CLOSED POSITION IN AN INTERNAL COMBUSTION ENGINE

Shumpei Hasegawa, Niiza, and Yutaka Otobe, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,605
Claims priority, application Japan, Jan. 14, 1982, 57-4124
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **6 Claims**



1. In a method for detecting the opening of a throttle valve in an internal combustion engine having an intake passage in which said throttle valve is arranged, having the steps of:

(a) constantly detecting the opening of the throttle valve at intervals of time corresponding to the pulse separation of a predetermined timing pulse signal and storing a value thus detected,

(b) comparing said detected value with a value indicative of the opening of the throttle valve previously detected and presently stored, and

(c) storing said detected value as a value indicative of the opening of the throttle valve in a fully closed position, in place of said presently stored value, for use in control of operation of the engine, when it is determined at the step (b) that said detected value is smaller than said presently stored value;

the improvement comprising:

(d) setting said presently stored value to a predetermined initial value upon occurrence of a predetermined event associated with the start of the engine;

(e) repetitively determining whether or not said detected value has kept the same value for a substantial period of time which is sufficient for measuring the opening of the throttle valve in a fully closed position without being affected by noises or other disturbances; and

(f) in the step (c), storing said detected value in place of said presently stored value, only when it is determined at the step (e) that said detected value has kept the same value for said substantial period of time,

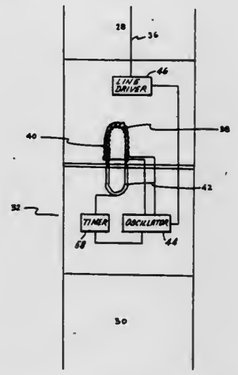
said predetermined timing pulse signal comprising a pulse signal each pulse of which is generated at each of one or more predetermined rotational positions of the engine.

4,515,010

STUCK POINT INDICATING DEVICE WITH LINEAR SENSING MEANS

Vincent C. Weido, and David Grissom, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,980
Int. Cl.³ E21B *31/00, 47/00*
U.S. Cl. 73—151 **10 Claims**



7. A method of determining the point at which a pipe is stuck in a borehole traversing an earth formation comprising:

positioning a movement-sensing means in said pipe at two vertically spaced points at the depth to be tested; subjecting said pipe above said sensing means to a change in stress capable of deforming the pipe between said spaced points, said change in stress being indicated by a change in inductance indicative of said deformation; converting said change in inductance into a frequency modulated signal; converting said frequency modulated signal into a substantially linear voltage capable of quantitative display wherein said display is indicative of deformation between said points in response to said change in stress; and, displaying said linear voltage on the earth's surface.

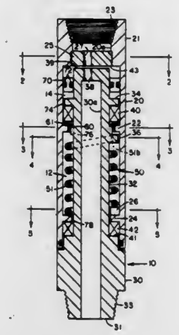
4,515,011

TORQUE TRANSMITTING AND INDICATING DEVICE FOR WELL DRILLING APPARATUS

Herbert W. Beimgraben, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed May 6, 1983, Ser. No. 492,188
Int. Cl.³ E21B *47/00*; G01L *3/14*
U.S. Cl. 73—151 **13 Claims**

1. A downhole apparatus responsive to the torque transmitted by a rotating power source to a drill bit in drilling tool, the apparatus comprising: an annular housing; a mandrel having one end thereof telescopingly mounted with respect to one end of said annular housing, said housing and said mandrel being disposed between, and each keyed to one of, the rotating power source and a portion of the drilling tool; resilient means opposing relative rotation of said annular housing and said mandrel, and thereby between the rotating power source and the portion of the drilling tool, annular flexure of the resilient means producing angular displacement between said housing and said mandrel as a function of torque transmitted from the rotating power source by said resilient means; and means responsive to angular displacement between said mandrel and



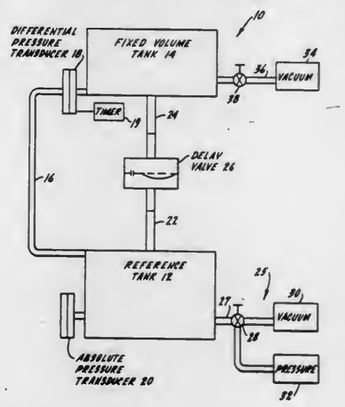
said housing producing a fluid pressure signal for gauging the torque transmitted by the power source.

4,515,012

VALVE TESTING SYSTEM UTILIZING AN ARTIFICIAL ATMOSPHERE

Patrick A. Jenkins, Decatur, and Donald A. Ferguson, Dixon, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 25, 1983, Ser. No. 555,091
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 **10 Claims**



1. A test stand assembly for testing a delay valve, comprising:

a first means enclosing a first fluid at a reference pressure;

a second means defining a known volume and enclosing a second fluid;

a pressure transducer connected between the first means and the second means;

a delay valve, connected in parallel with the pressure transducer between the first means and the second means for the testing of said valve; and

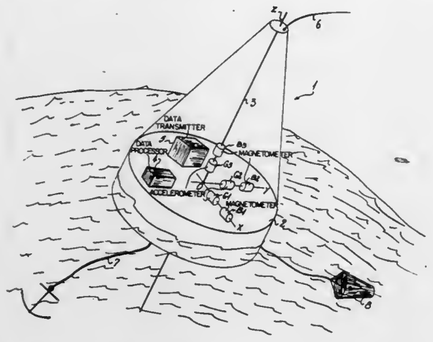
first valve means, connected to the second means, for regulating the pressure of the second fluid, thus adjusting the pressure difference across the delay valve under test.

4,515,013

APPARATUS FOR MEASURING THE VERTICAL ACCELERATION DUE TO THE SWELL

Jean-Pierre Hue, Brest, France, assignor to 501 Etablissement Public dit "Centre National d'Exploitation des Oceans" (CNEXO), Paris, France

Filed Oct. 11, 1983, Ser. No. 540,794
Claims priority, application France, Oct. 14, 1982, 82 17584
Int. Cl.³ G01P *15/00*; G01M *10/00*
U.S. Cl. 73—170 A **5 Claims**



1. Apparatus with accelerometers and magnetometers for measuring the surface characteristics of a sea swell, said apparatus comprising a floating buoy having a main plane which follows the free surface of the water, first accelerometer means mounted on the buoy and oriented along an axis which is perpendicular to the main plane of the buoy, a pair of mutually perpendicular accelerometer means mounted in the main plane, and three magnetometer means, one of said magnetometer being mounted along and coincident with individually associated ones of each of the three axes of the accelerometers, data processor means coupled to be driven by said accelerometers and magnetometers, said data processor means including means for deriving an acceleration vector (h) perpendicular to the free surface of the water responsive to the swell, finding the sum of the acceleration vector (h) due to the swell and the projection of the gravity vector (g) along the axis of the buoy responsive to the accelerometer oriented perpendicular to the main plane, measuring the components of the projection of the gravity vector (g) in the main plane of the buoy responsive to the mutually perpendicular pair of accelerometers mounted on the main plane of the buoy, finding the projection of the gravity vector (g) along the axis perpendicular of the buoy responsive to the value of the gravity vector (g) and the values of the gravity vector components of (g) in the main plane of the buoy, and giving the value of said projection of the gravity vector responsive to the value measured by the first accelerometer for obtaining the value of the acceleration vector (h) due to the swell.

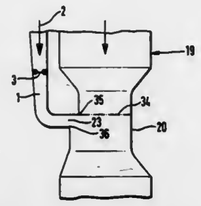
4,515,014

APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM

Jaihind S. Sumal, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 395,876, Jul. 7, 1982, Pat. No. 4,468,957. This application Apr. 20, 1984, Ser. No. 602,567
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130626
Int. Cl.³ G01F *5/00*
U.S. Cl. 73—202 **3 Claims**

1. In an apparatus for measuring the mass of a flowing medium, which includes a flow conduit for the medium which has a restricted section, a bypass line which has a mouth connected to said restricted section and through which a proportionate mass of the medium flows which is at a predetermined proportion with respect to a mass of the medium flowing through the flow conduit and said proportionate mass of the medium discharges from said mouth into said restricted section, at least one temperature-dependent resistor disposed in the bypass line, and a regulating means for regulating the temperature and/or resistance of the at least one temperature-dependent resistor, in accordance with the flowing mass of medium wherein a control variable of the at least one temperature-dependent resistor, is a standard for the flowing mass of medium, the improvement wherein said restricted section includes first and second portions of said flow conduit for said medium with said second



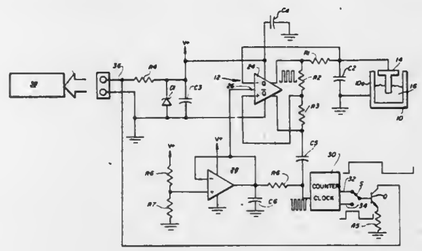
portion downstream of said first portion, said first portion having a narrower cross section than said second portion such that said first portion of said restricted section of the flow conduit for the medium is embodied such that the flow cross section of the medium in the flow direction in said first portion of said restricted section is smaller up to the mouth of the bypass line than said second portion and said second portion beginning at the mouth of the bypass line is wider than said first portion by an amount which corresponds to the bypass line cross section at the mouth of said bypass, and wherein the medium flow conduit is embodied such that said second portion downstream of said first portion forms a stepped widening of the flow cross section.

4,515,015

CAPACITANCE LEVEL SENSOR FOR USE WITH VISCOUS, ELECTRICALLY CONDUCTIVE MATERIALS

George A. Kuhlman, St. Charles, Ill., assignor to Magnetrol International, Incorporated, Downers Grove, Ill.

Filed Feb. 16, 1983, Ser. No. 466,932
Int. Cl.³ G01F *23/26*; G01R *27/26*
U.S. Cl. 73—304 C **12 Claims**



1. A level sensor for developing an output signal indicative of the level of a viscous electrically conductive material in a tank, the material having an electrical impedance including a resistive component, comprising:

a variable capacitor having first and second electrodes, the capacitance between the electrodes being a function of material level height in the tank;

a charging resistor coupled to the variable capacitor having a resistance which is selected to be substantially less than the resistive component of the material between the first and second electrodes; and

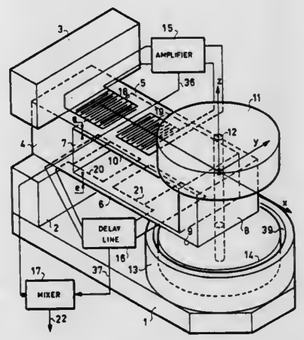
an oscillator which includes the charging resistor and the variable capacitor for developing an output signal having a period which is dependent upon the resistive component of the material between the first and second electrodes, the resistance of the charging resistor and the capacitance of the variable capacitor so that the output signal period is substantially independent of build up of material on the variable capacitor.

4,515,016

ELASTIC SURFACE WAVE ACCELEROMETERS

Pierre Hartemann; Paul-Louis Meunier, and Alain Jacobelli, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 17, 1983, Ser. No. 505,174
Claims priority, application France, Jul. 2, 1982, 82 11657
Int. Cl.³ G01P *15/08, 15/13*
U.S. Cl. 73—517 R **14 Claims**



1. An elastic surface wave accelerometer comprising a deformable structure, whereof one end is fixed and whereof the other end is provided with a seismic mass, said structure having two parallel measuring faces with a plane of symmetry perpendicular to the sensitive axis of the accelerometer, each of the said measuring faces have an area occupied by an elastic surface wave means, which detects the bending stresses produced by the component along said sensitive axis of the acceleration to be measured and which acts on the tuning frequency of an oscillator, said oscillator and its homologue being connected to a subtractive mixer, which produces a measuring signal, whose frequency represents the measurement of said component, wherein the said deformable structure has on either side of the said plane of symmetry, two lamelliform flexible elements surrounding a central recess extending from the fixed end to the seismic mass, said measuring faces being constituted by the surfaces of the elements equidistant of the said plane of symmetry and each lamelliform flexible element having a part widened towards the fixture which satisfies the condition of equal bending resistance.

4,515,017

OSCILLATING ULTRASOUND SCANHEAD

Robert F. McConaghy, Kirkland, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Nov. 21, 1983, Ser. No. 553,716
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—618 **8 Claims**

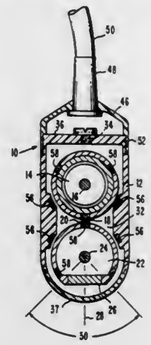
1. An oscillating ultrasound scanhead comprising:

(a) a housing;

(b) a reversible electric motor mounted in said housing, the shaft of said motor being fixedly mounted to said housing:

(c) an ultrasound transducer mounted on a rotor, said rotor being rotatably mounted on a rotor shaft which is substantially parallel to said motor shaft, whereby said rotor can rotate at least through an angle corresponding to the scan angle of said oscillating ultrasound scanhead;

(d) means for driving said rotor by said motor; and



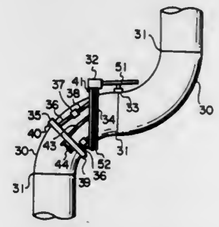
(e) repulsion and energy storage means comprised of fixed magnets mounted in said housing and rotating magnets mounted on said motor and rotor, whereby said magnets are arranged to repel one another at the ends of said scan angle due to the magnetic fields generated therebetween.

4,515,018

GUIDE RAIL APPARATUS FOR AN OBJECT RUNNING AROUND PIPING

Sigeru Kajiyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,159
Claims priority, application Japan, May 13, 1981, 56-70802; Aug. 7, 1981, 56-122960
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—637 **4 Claims**



1. A guide rail apparatus for guiding a running body along an outer peripheral surface of a piping, the apparatus comprising a guide rail including two segments adapted to fit around said piping; a holder including two segments fitting around said piping, said holder being spaced in an axial direction from said guide rail, openable ends of said segments of said guide rail and said holder are located at the same side as said piping; and a rigid connector means for integrally connecting said guide rail and said holder to each other.

4,515,019

PRESSURE MEASURING DEVICE FOR BOTTLES

Ronald C. Woodfill, 4124 Shady Grove, Toledo, Ohio 43623

Filed Mar. 14, 1983, Ser. No. 475,295
Int. Cl.³ G01L *19/00*
U.S. Cl. 73—756 **1 Claim**

1. A cap for an enclosed bottle with an opening, said device incorporating pressure measuring capabilities, comprising:

(a) a bottle cap member with a vertically depending shaft, with such shaft having a vertically aligned central longitu-

dinal axis, such shaft adapted to fit downwardly into the opening of the bottle, said cap member having a hollow chamber therein extending completely through the cap from the bottom of the shaft to the upper extreme of said cap, whereby said cap has a continuous chamber open at the bottom and the top of said cap, said cap member having a threaded exterior lower circumferential surface for engagement with said bottle opening, said hollow chamber having a threaded circumferential extending surface to receive a mating threaded surface;



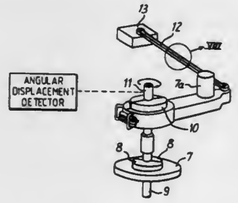
(b) a pressure measuring gauge which has a downwardly depending stem with an open chamber therein, said stem being affixed concentrically in the upper part of the continuous chamber in said cap, such that said stem communicates directly with the hollow chamber of said cap member, said stem having a circumferentially extending surface which is threaded so as to securely engage the interior portions of the bottle cap member.

4,515,020

METHOD AND APPARATUS FOR ENSURING CORRECT THREAD MAKE-UP OF A PIPEJOINT

Bernard Plaquin, Aulnoye Aymeries, France, assignor to Vallourec, Paris, France

Filed Feb. 23, 1983, Ser. No. 469,173
Int. Cl.³ G01N *5/00*
U.S. Cl. 73—761 **6 Claims**



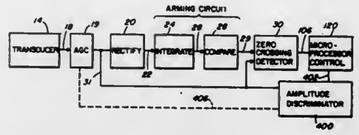
1. A method for ensuring correct tightening of the two members of a threaded pipe joint having at least one torque limiting shoulder, comprising the steps of:
- applying a torque to one of said members relative to the other;
- measuring continuously said torque and providing a signal indicative thereof;
- providing a signal indicative of time;
- providing a signal representative of the instantaneous torque gradient of the torque-time curve;
- providing a signal representative of the rate of change of said gradient of said torque-time curve; and
- comparing with a predetermined value the maximum value of said signal representative of the rate of change of said gradient in order to ensure that said maximum value exceeds said predetermined value.

4,515,021

INTERVALOMETER TIME MEASUREMENT APPARATUS AND METHOD

David R. Wallace, Milton; James M. Korba, Woburn; James E. Matson, Brookline, and Lawrence C. Lynnworth, Waltham, all of Mass., assignors to Panametrics, Inc., Waltham, Mass.

Filed Jul. 29, 1983, Ser. No. 518,738
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.27 **28 Claims**



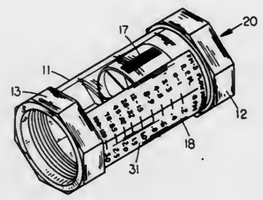
1. An intervalometer for determining the transit time of ultrasonic energy traversing a fluid medium, said intervalometer comprising
- a transmitting transducer for emitting a pulse of ultrasonic energy,
- a receiving transducer for receiving said ultrasonic energy and for generating ancelectrical signal in response thereto,
- an automatic gain controlled amplifier circuit for amplitude stabilizing said electrical signal, said amplifier circuit having means for tracking both a rapidly increasing and a rapidly decreasing signal amplitude of the electrical signal representing a said energy pulse, and
- a transit time measurement means responsive to said stabilized electrical signal for determining said transit time.

4,515,022

FLOW MONITORING METHOD AND DEVICE

Glen Brand, 4114 N. 79th, Omaha, Nebr. 68134

Filed Jun. 10, 1983, Ser. No. 502,917
Int. Cl.³ G01F *1/10*
U.S. Cl. 73—861.79 **11 Claims**



1. A flow monitoring device in combination with a hydraulic pump or motor, comprising:
- a housing having an inlet end, an outlet end and a transparent wall portion;
- means for supporting an axle within said housing;
- an axle affixed at one end to the supporting means and located centrally and longitudinally with respect to the two ends of the housing; and
- a turbine mounted for rotation about said axle, having a mark thereupon visible through the transparent wall portion of the housing.

4,515,023

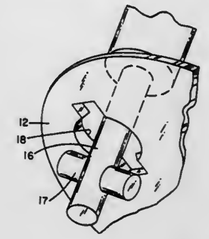
RECREATIONAL POOL IMPLEMENT

Daniel E. Kershner, 1609 Woodside Ave., Baltimore, Md. 21227

Filed Mar. 24, 1983, Ser. No. 478,351
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—864.51 **3 Claims**

3. A lid lifter and a combined water sampling device for a swimming pool comprising an elongated stick having one end

provided with a reduced cross-sectional area, a prong carried by the reduced cross-sectional area and extending transversely therefrom from at least one side of the reduced cross-sectional area, whereby the prong may be inserted beneath the removable lid of a swimming pool skimmer to lift the lid, a rectangular cross-sectioned sampling vial open at one end and closed at



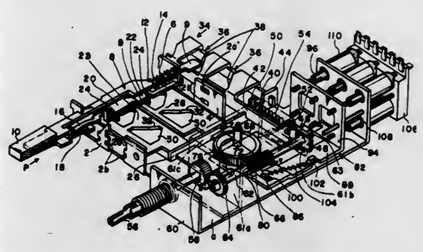
the other end, the stick having an intermediate portion with a complementary transverse recess formed therein to receive the vial, the closed end of the vial being disposed towards the one end of the stick, and the open end of the vial extending laterally beyond both adjacent respective surfaces of the stick, whereby the stick may be inserted into the pool and lifted out to obtain a water sample in the vial.

4,515,024

CLUTCH MECHANISM OF A PUSH-BUTTON TUNER

Takeshi Kataoka; Ryoichi Aoki; Hisashi Matsui, and Hiroshi Matsumoto, all of Ueda, Japan, assignors to Ono Seiko Co., Ltd., Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,987
Claims priority, application Japan, May 19, 1981, 56-74295; May 19, 1981, 56-71370[U]
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 **4 Claims**



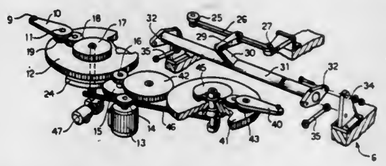
1. In a push-button tuner for use with a tape recorder and which has flat cam plates provided with cam portions in holes therein and which are horizontally slidable through holes in side walls of the tuner, and a push button assembly slidably arranged between front and rear walls and which has a channeling plate pivotably mounted thereon, a clutch mechanism having a clutch plate having a cam therein and slidable lengthwise parallel with the cam plates against the action of a coil spring by the action of the push-button assembly on the cam, a main manual shaft and a follower shaft connected for rotation together, the end of the main manual shaft being rotatably held in the end of the clutch plate for lateral movement, a worm gear on said main manual shaft, and a core support plate slidable for moving cores into and out of coils in accordance with the movement of the core supporting plate; an improved gear wheel clutch and transmission means connected between said cam plates, said worm wheel and said core support plate and comprising: an annular gear wheel having an annular projection projecting radially into the center of said annular gear wheel; a rotation head positioned within said annular gear wheel and mounted on said tuner for rotation within said annular gear wheel and having a laterally outwardly opening groove therearound substantially complementary in shape to said annnular projection, said head having a diameter for having the surfaces defining said groove spaced slightly from the surfaces defining said projection when said head is centered in said annular gear wheel, said annular gear wheel being in mesh with said worm gear and being movable laterally of said head upon lateral movement of said main manual shaft for bringing said projection into frictional driving engagement with said groove; a pair of feet projecting from the lower side of said head and engaged with said cam plates for transmitting movement between said cam plates and said head; and an arm projecting laterally from said head and connected to said core support plate for moving said core support plate in response to movement of said head.

4,515,025

APPARATUS FOR DRIVING TAKE-UP ELEMENTS FOR PALLETIZABLE LOAD UNITS

Bruno Missio, Moncalieri, and Angelo Giorgioni, Turin, both of Italy, assignors to Girogioni di A. Giorgioni & C. s.a.s., Turin, Italy

Filed Sep. 9, 1982, Ser. No. 416,423
Claims priority, application Italy, Sep. 28, 1981, 68248 A/81
Int. Cl.³ F16H *21/16;* B65G *25/04*
U.S. Cl. 74—27 **2 Claims**



1. In an installation for handling palletizable load units with take-up elements adapted to carry out cycles of movement each comprising at least a first horizontal movement, a vertical movement, and a second horizontal movement in an opposite direction to said first movement, apparatus for driving the take-up elements which includes a motor; guide means for the horizontal movement of said take-up elements; a mechanical transmission connected between said motor and said take-up elements for driving the horizontal movements thereof, and means for driving the vertical movement, wherein the improvements consist in:
- said mechanical transmission between the motor and the take-up elements being constituted by a linkage including gear means defining a crank mechanism driven by the motor and a connecting rod of substantially the same length as the crank mechanism, which is articulated at one end to the crank mechanism and at the other end to a part moveable with the take-up elements, and
- said means for driving the vertical movement of the take-up elements comprise cam means driven by the motor and arranged to operate close to the end of the first horizontal movement to cause a continuous variation in the velocity and acceleration of said take-up elements during the vertical movement,
- whereby the operation of said motor drives said three movements in succession without intermediate stoppages and with a continuous and substantially harmonic variation in the velocity and acceleration of said take-up elements, and
- wherein said crank mechanism is constituted by a first gear wheel; a pinion driven by said motor meshes with said first gear wheel; a second gear wheel is carried by said end of the connecting rod articulated to said crank mechanism; a third gear wheel coaxial with said first gear wheel; an auxiliary gear wheel freely rotatable on the said first gear wheel is interposed between said third gear wheel and said second gear wheel, the latter having a diameter of half the diameter of said third gear wheel, and an auxiliary motor

is provided for rotating said third gear wheel through a limited angle;

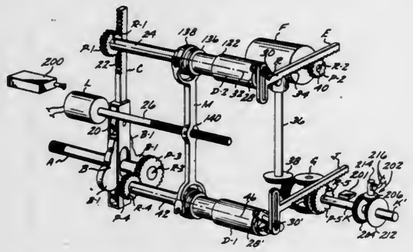
said apparatus further including an auxiliary connecting rod articulated to said first gear wheel at a symmectrical point diametrically opposite the point of articulation of the said connecting rod; a pair of coupling elements provided on the take-up elements and spaced from each other in the direction of horizontal movement of the take-up elements, each coupling element being selectively engageable with the free end of a respective said connecting rod; a fourth gear wheel fixed to the end of the auxiliary connecting rod articulated to the first gear wheel and having a diameter equal to that of said second gear wheel, and a further auxiliary gear wheel interposed between said third and fourth gear wheels.

4,515,026

TRANSMISSION

Frank M. Perkins, 257 Avenida Atezsda, Redondo Beach, Calif. 90277

Filed Feb. 16, 1983, Ser. No. 467,140
Int. Cl.³ F16H *35/02*
U.S. Cl. 74—63 **8 Claims**



1. A mechanical transmission that has an input and output shaft and a variable speed ratio, said transmission including:

a. a differential that includes a spider secured to said output shaft, a pair of idler gears rotatably supported on said spider, and first and second gears rotatably supported on said output shaft and in toothed engagement with said idler gears;

b. first and second mechanisms that include rotatable first and second crank arms, and first and second crank pins on said first and second arms that may move longitudinally thereon to have their radii varied, said first mechanism including a first shaft rotatably supported therein that has first and second ends, said first crank arm secured to said first end, said second mechanism including a second shaft rotatably supported therein that has first and second ends, said second crank arm secured to said first end of said second shaft;

c. first means for concurrently varying the radii of said crank pins;

d. second means that include first and second gears that are in toothed engagement and secured to said input shaft and said first shaft for transferring rotary motion from said input shaft to said first mechanism to rotate said first crank arm;

e. third means for transforming rotary motion of said first crank pin to rotary oscillating motion of said first gear of said differential;

f. fourth means for transforming rotary motion of said input shaft to oscillating rotary motion of said second crank arm said fourth means including:

1. a cam rigidly secured to said input shaft, said cam including at least one lobe;

2. a follower in contact with said cam;

3. a toothed first rack that supports said follower, said first rack having linear oscillating motion imparted thereto as said cam rotates;

4. a third gear secured to said second shaft, said third gear in engagement with said toothed first rack, and said third gear, second shaft, and secured crank arm having rotary oscillating motion imparted thereto as said first rack oscillates;

g. fifth means for transferring oscillating rotary motion of said second pin to pulsating rotary motion in a single direction;

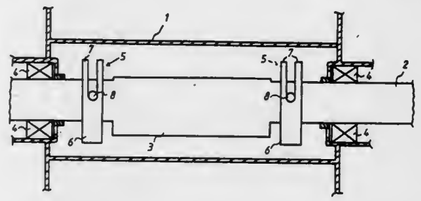
h. sixth means for transferring said oscillating rotary motion of said fifth means to said second gear of said differential, for said differential to impart a fixed ratio of output to input velocities of said output and input shafts for each setting of said first means.

4,515,027

UNBALANCE VIBRATOR

Heinz Baier, Willich; Hans W. Kürten, Ratingen, and Hans-Georg Waschulewski, Mettmann, all of Fed. Rep. of Germany, assignors to Losenhausen Machinenbau AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 30, 1982, Ser. No. 454,951
Claims priority, application European Pat. Off., Jan. 29, 1982, 82710002.5
Int. Cl.³ F16H *33/08*
U.S. Cl. 74—87 **6 Claims**



1. An unbalance vibrator including a shaft which is driven in reversible directions, comprising:

(a) a housing

(b) said shaft being rotatably mounted in said housing about an axis of rotation,

(c) first flyweight means provided on said shaft and rotatable therewith,

(d) second flyweight means rotatably mounted relative to said first flyweight means about said axis of rotation,

(e) dog means on said shaft, and

(f) first and second engagement surfaces of said second flyweight means on peripherally opposite sides therof,

(g) said dog means being arranged to engage said first engagement surface in a first operative position of said flyweight means when said shaft is driven in one direction and to engage said second engagement surface in a second operative position of said flyweight means when said shaft is driven in the opposite direction,

(h) said first and second flyweight means having a relatively large resultant unbalance when in said first operative position, and having a relatively small resultant unbalance when in said second operative position,

(i) a locking member arranged for rotation which said shaft and radially movable between a locking position and a releasing position,

(j) said locking member being arranged to engage said second engagement surface when said locking member is in said locking position and said flyweight means are in their first operative position, and to engage said first engagement surface when said locking member is in said locking position and said flyweight means are in their second operative position, and to release said second flyweight means when said locking member is in its releasing position,

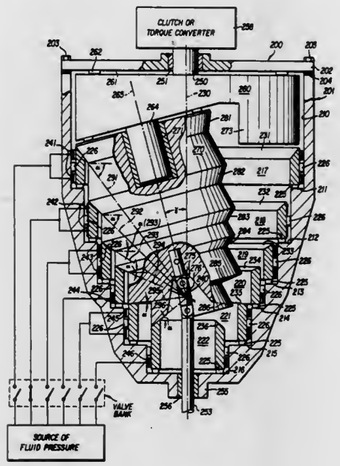
(k) spring means for urging said locking member towards its releasing position, whereby, in operation, said locking member is held in its releasing position at relatively low rotary speeds and is moved into its locking position when a predetermined rotary speed of said shaft is exceeded.

4,515,028

MULTI-SPEED DRIVE

Roy E. VanDerLinden, West Minster, Md., and John H. Francis, Charles Town, W. Va., assignors to Frederick Manufacturing Company, Frederick, Md.

Continuation-in-part of Ser. No. 426,875, Sep. 29, 1982,. This application Mar. 29, 1983, Ser. No. 480,144
Int. Cl.³ F16H *15/00, 15/16*
U.S. Cl. 74—191 **10 Claims**



1. A multi-speed drive comprising:

a supporting frame;

an input shaft;

means for mounting the input shaft for rotation with respect to the supporting frame about a first axis;

a plurality of first members disposed about the first axis, the first members having conical surfaces thereon of different slopes with respect to the first axis, wherein the conical surfaces have apexes which are coincident at a single point, which point is coincident with the first axis;

means for mounting the first members for rotation with respect to the frame;

means for selectively stopping the first members individually;

a second member having a plurality of second conical surfaces in individual engagement with the plurality of first conical surfaces along lines of contact, said second conical surfaces having apexes which are coincident with the apexes of the first conical surface;

means for mounting the second member for rotation about a second axis which is oblique with respect to the first axis said second axis being coincident with the apexes of the first and second conical surfaces and with the first axis;

means for connecting the mounting means to the input shaft to rotate the mounting means about the first axis in a first direction, wherein the second conical surfaces revolve around the first axis as the second member rotates about the second axis, wherein one of the second conical surfaces rolls on whichever of the first members is stopped with respect to the frame with progressive line contact with respect thereto and without sliding motion with respect thereto;

an output shaft mounted for rotation in the frame, the output shaft being in alignment with the first axis;

a coupling having first and second ends, the first end being connected to the output shaft, and the second end being connected to the second member at a location in juxtaposition with the apexes of the conical surfaces thereon;

whereby,

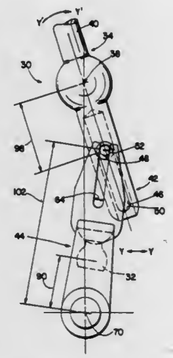
the second shaft has an output torque, speed and direction which is determined by whichever of the first members is stopped with respect to the frame by the stopping means.

4,515,029

COMPOUND VARIABLE MECHANICAL ADVANTAGE SHIFTING MECHANISM

Joseph D. Reynolds, Climax, and Alan R. Davis, Plainwell, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 8, 1982, Ser. No. 440,121
Int. Cl.³ G05G *9/18, 7/04;* F16D *23/06*
U.S. Cl. 74—339 **19 Claims**



1. A compound variable mechanical advantage/variable effective length shifting mechanism for axially moving a shift rail of a synchronized positive clutch transmission of the type comprising synchronzied positive clutches wherein the axial movement of a shift rail and a shift fork carried thereby will axially move a synchronized positive clutch member and wherein the axial movement of said synchronized positive clutches from a fully disengaged axial position to a fully engaged axial position comprises a first segment of axial movement wherein the axially movable positive clutch member is moved into engagement with the blocking means and the frictional synchronizing clutches are initially engaged, a second segment of axial movement wherein the frictional synchronizing clutches are fully engaged to bring the positive clutch members into substantially synchronous rotation and a third segment of axial movement occuring after substantial synchronization of the positive clutch members wherein the axially movable clutch member moves past the blocking means into positive engagement with another positive clutch member, said second segment of axial movement of said positive clutch member requiring a substantially higher axial force than is required during said third segment of axial movement of said positive clutch member, said compound shifting mechanism comprising;

a first member comprising a variable mechanical advantage/variable effective length first class lever defined by a substantially rigid first body having a first lever portion extending from a first end to a first fixed pivot axis and a second lever portion extending from said first pivot axis to a second end, said second lever portion carrying a force applying member fixed for pivotal movement therewith about said first pivot axis and movable from a first position spaced from said first pivot axis by a first distance to a second position spaced from said first pivot axis by a second distance, said second distance greater than said first distance;

a second member comprising a variable mechanical advantage/variable effective length second rigid body, said

second rigid body pivotably mounted about a second fixed pivot axis parallel to and spaced from said first pivot axis, said second body extending from said second pivot axis toward said second lever portion of said first member, said second member defining an axially extending surface extending axially from a third point spaced from said second pivot axis by a third distance axially toward said second portion to a fourth point spaced from said second pivot axis by a fourth distance, said fourth distance greater than said third distance, said force applying member engageable with said contact surface from said third to said fourth point, said force applying member engageable with said contact surface at said third point when in said second position and at said fourth point when in said first position;

a shift finger fixed to said second member for pivotal movement about said second pivot axis therewith, said shift finger axially displacable in an axial direction perpendicular to a line drawn through said first and second axes and engageable with said shift rail for axially moving said shift rail along an axes substantially perpendicular to said line drawn from said first to said second pivot axes; and

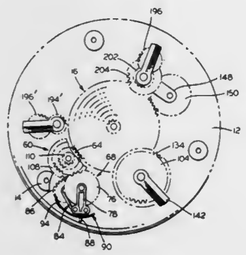
resilient biasing means for biasing said force applying member to said second position thereof, the biasing force of said biasing means selected so that the force required to axially displace said shift finger during said third segment of axial movement of said positive clutch member is insufficient to cause said force applying member to move from said second to said first position thereof and the force required to axially displace said shift finger during said second segment of axial movement of said positive clutch member is sufficient to cause said force applying member to move from said second to said first position thereof.

4,515,030

EXTENDED RANGE VARIATOR FOR FUEL PUMP COMPUTER

Tom Stephenson, Simsbury, Conn., assignor to Petroleum Meter & Pump Co., Inc., Avon, Conn.

Filed Dec. 30, 1982, Ser. No. 453,332
Int. Cl.³ F16H *3/22*
U.S. Cl. 74—348 **22 Claims**



1. In a variator for a fuel pump computer having a frame, a rotatable primary cone gear stack mounted therein comprised of a multiplicity of gears of different proportionate sizes affixed upon a shaft for operative connection to a fuel pump metering device, three range arm assemblies mounted in said frame and having means for selective meshing engagement with each of said gears of said primary gear stack and having a shaft offset from the axis thereof, and a primary rotary summing mechanism coaxially mounted with said primary gear stack for operative engagement with said range arm assemblies to combine the rotary outputs thereof; the improvement comprising a supplemental range mechanism mounted on said frame and including:

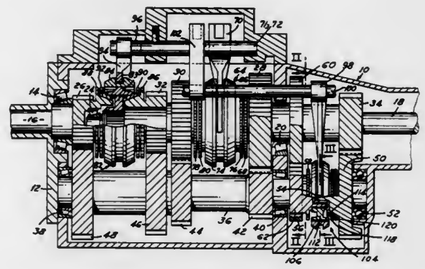
a secondary cone gear stack comprised of a multiplicity of gears of different proportionate sizes affixed upon a shaft and disposed on an axis offset from that of said primary gear stack, said secondary cone gear including a drive gear affixed upon said shaft thereof in direct meshing engagement with one of the gears of said primary cone gear for operative connection to said metering device, and means other than said three range arm assemblies for selectively operatively connecting each of said gears of said secondary gear stack to said primary summing mechanism, said other means comprising a selector assembly pivotably mounted adjacent said primary and secondary cone gear stacks, said assembly including an arm member which is movable thereon along an axis parallel to the axis of pivoting thereof, and a selector gear rotatably mounted on said arm member for selective engagement with each of said gears of said secondary cone gear stack to establish such operative connection with different proportionate input rates, whereby the rotary output from said secondary gear stack can be combined with the rotary output of said range arm assemblies to generate a cumulative proportionate rotary output from said primary summing mechanism.

4,515,031

CHAIN DRIVEN REVERSE GEAR FOR A MANUAL TRANSMISSION

David A. Janson, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 28, 1982, Ser. No. 425,826
Int. Cl.³ F16H *3/08, 3/38, 3/14*
U.S. Cl. 74—359 **7 Claims**



1. A multiple speed ratio manual transmission comprising:

an input shaft adapted to be clutched to the crankshaft of an internal combustion engine, the shaft having an input gear secured thereto;

a countershaft having a gear fixed thereto in meshing engagement with the input gear;

an output shaft;

gearing defining a torque delivery path that includes a pair of meshing gears, one gear carried by the output shaft and one gear supported, at least in part, on the countershaft;

a first sprocket wheel carried by the countershaft and a second sprocket wheel carried by the output shaft;

a flexible, endless drive belt or chain engaging the sprocket wheels;

coupler means including a first coupler for selectively connecting one gear of the meshing gear pair and one sprocket wheel to the shaft on which said gear and said sprocket wheel are supported; and

a drive ratio selector mechanism having a first shift fork adapted to move the coupler means selectively into engagement with said gear and said sprocket wheel;

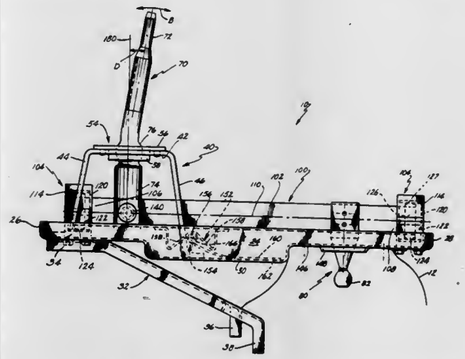
wherein the countershaft is rotatably mounted on bearings, a portion of the countershaft extending axially beyond the bearings, said extending portion providing a splined surface for supporting and connecting the coupler means to the shaft and providing means for at least partially rotatably supporting said gear of said meshing gear pair.

4,515,032

DROP-IN TYPE SHIFTER WITH DISPLACED SHIFT STICK

Bruce E. Olmsted, Fruitport, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Filed Sep. 30, 1982, Ser. No. 429,516
Int. Cl.³ B60K *20/04;* **G05G** *13/00;* **C07C** *107/08*
U.S. Cl. 74—473 R **24 Claims**



8. A drop-in shifter mechanism for use with a vehicle transmission, said mechanism comprising:

an elongated frame;

bracket means joined to said frame for securing said frame to the vehicle transmission;

a manually actuable shift stick having an upper end and a lower end;

stick mounting means on said frame for mounting said shift stick to said frame for multi-axis movement in a pair of orthogonal planes, said stick mounting means allowing sliding movement of said shift stick in one plane and pivotal movement in the other plane;

an elongated bar having a longitudinal axis, said shift stick lower end being pivotally secured to said elongated bar;

bearing means on said frame and supporting said bar for rotational movement of said bar about said longitudinal axis and for sliding movement of said bar along said longitudinal axis upon movement of said shift stick upper end; and

a gear actuating lever secured to said bar at a point spaced along said longitudinal axis of said bar from said shift stick lower end, said lever having a lower end including means for changing the drive ratio of the transmission, whereby said gear actuating lever may be dropped into said transmission and said shift stick may be offset from the centerline of the vehicle transmission.

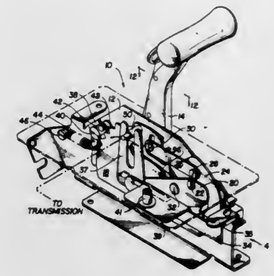
4,515,033

DUAL MODE SHIFTER FOR AUTOMATIC TRANSMISSIONS

Louis D. Carlo, Litchfield, Ohio, assignor to Mr. Gasket Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 189,430, Sep. 22, 1980, Pat. No. 4,370,897. This application Jun. 9, 1982, Ser. No. 386,672
Int. Cl.³ G05G *7/06;* **F16H** *57/06;* **G09F** *9/00*
U.S. Cl. 74—476 **45 Claims**

1. A shifter for an automatic transmission comprising ratchet means operable to control said transmission through some of its gears in a ratchet mode of operation and gate means operable to control said transmission through all of its gears in a gate mode of operation, said shifter further comprising a main frame and a handle, means to mount said handle on said main frame to permit said handle to control said ratchet means and said gate means and to move between controlling said ratchet means and said gate means, said ratchet means comprising ratchet teeth and a ratchet pawl, said ratchet pawl being mounted in link means, said link means being controlled by said handle means so that said pawl cooperates with said ratchet teeth when said shifter is operated in said ratchet mode, and



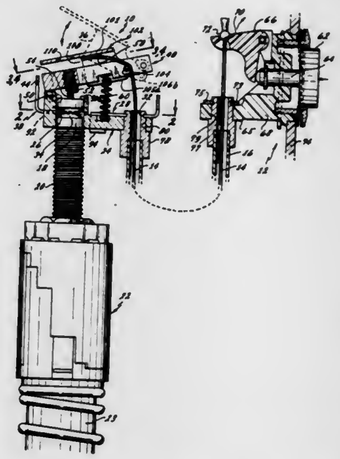
said link means being operative to keep said pawl out of operative engagement with said ratchet teeth when said shifter is operated in said gate mode.

4,515,034

CONTROL MECHANISM FOR HYDRAULIC LOCKING DEVICE

Clyde R. Porter, Woodland Hills, Calif., assignor to P. L. Porter Co., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 157,356, Jun. 9, 1980, Pat. No. 4,354,398. This application Aug. 27, 1982, Ser. No. 412,242
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **6 Claims**



1. A control mechanism for use with a hydraulic device employed to control relative movement between two members, said hydraulic device including a hydraulic locking device including a hydraulic cylinder connected to one of the members, a piston rod extending outwardly through one end of the hydraulic cylinder and terminating in an exposed end of the piston rod and connected to the other of the two members, and an operating rod operative when moved to a release position with respect to the piston rod to release the hydraulic locking device to thereby allow relative movement between the two members, said control mechanism comprising in combination:

a conduit having a proximal end associated with the piston rod and having a distal end;

a cable extending through said conduit, slidable within it and including a proximal end and a distal;

push button means affixed to the distal end of said conduit

for moving said cable under control of an operator through a stroke with respect to said conduit;

a mounting base;

retaining means mounted to said base for engaging said piston rod and said pivotal conduit end respectively;

output lever means pivotably mounted to said mounting base and responsive to movement of said cable to move the operating rod to the release position with respect to the piston rod;

said output lever means having pair of normally parallel fingers and clamp means manually movable between a release position in which said cable is movable through said clamp means and a locked position in which the cable is clamped between said fingers at an arbitrary continuously selectable point along its length to said output lever.

4,515,035

CURVED CABLE SUPPORT MEMBER FOR BOWDEN LIFTERS

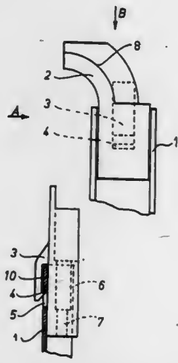
Klaus Küster, Ehringshausen, Fed. Rep. of Germany, assignor to Küster & Co. GmbH, Ehringshausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 326,038, Nov. 30, 1981, abandoned. This application May 14, 1984, Ser. No. 608,939

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 8032764[U]

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **3 Claims**



1. In a Bowden window lift having a guide rail with a first end and a second end and a cable passing through said guide rail and around the ends, said guide rail being of U-shape with a bottom having first and second sides and parallel sides extending from said bottom first side, the guide rail having a material thickness, the improvement comprising preventing kinking of the Bowden sleeve where said guide rail comprises a clearance in the bottom of its U-shaped cross-section, and curved cable support members positioned in said U-shape and set against said first end and said second end, each said support member comprising:

(a) at least one first catch means projecting from a side of said support member adjacent said first bottom side of said guide rail;

(b) said projecting catch means being undercut and defining a free gap adjacent said bottom second side about said material thickness of said guide rail (1) which exists between a free standing lip (3) and said support member said free standing lip being attached to said side of said support member; and

(c) said free standing lip (3) being provided at its inside with a beak (4) entering said clearance (5) in said guide rail, whereby said support member is slipped onto one of said ends of said guide rail and secures said support member against being pulled off said guide rail.

4,515,036

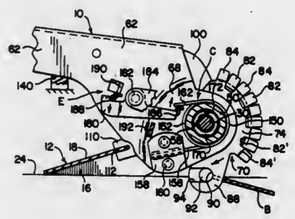
VEHICLE PARKING BRAKE SELF-ADJUSTING CONTROL MECHANISM

Jarvis L. Dotson, Detroit, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Apr. 25, 1983, Ser. No. 488,029

Int. Cl.³ G05G *5/18*; F16C *1/22*

U.S. Cl. 74—535 **19 Claims**



1. Control mechanism for vehicle parking brakes comprising, in combination, a mounting bracket, an adjusting shaft journaled on said bracket, a brake actuator lever pivotable on said shaft, operating arm means locked on said shaft for attachment to the head end of a normally spring biased brake actuating cable, clutch means normally locking said actuator lever to said shaft for unitary rotative movement therewith in one direction to set the parking brakes and in the other direction on release of said brakes, locking means for locking said lever in a brake setting pivotal position on said bracket, adjusting spring means normally urging said operating arm means in said one rotative direction, and release means actuated by said actuator lever, on pivotal return movement thereof from its brake set to its brake released position, for disengaging said clutch means to permit said adjusting spring means to rotate said shaft in said one direction relative to said actuator lever, to take up slack in the brake cable and maintain a predetermined minimum tension therein.

4,515,037

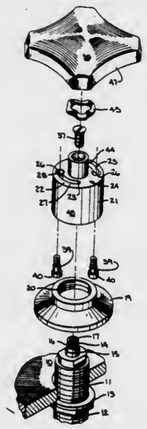
HANDLE ASSEMBLY

Dale A. Block, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Apr. 1, 1983, Ser. No. 481,576

Int. Cl.³ G05G *1/10*

U.S. Cl. 74—553 **3 Claims**



1. In a concealed mounting arrangement for attaching a valve handle to a rotatable valve control stem so that the handle is capable of rotating in both a clockwise and a counter-

clockwise direction to control flow volume, the combination comprising:

an adapter element fixedly mountable on the stem;

a handle element mountable on the adapter with a fit that allows relative rotational and axial movement therebetween;

one of said elements being provided with a connecting pin that extends towards the other element and has an enlarged head near its outer end;

the other of said elements being provided with a mounting slot comprising an access opening that faces said one element and receives the head therethrough when the elements are moved axially toward each other, an intermediate portion leading from the access opening in a direction of a relative rotation between the elements, and that includes a shoulder engageable with the inward side of the head during such rotation to prevent the elements from moving axially apart, and an outwardly facing pocket portion adjacent the far end of the intermediate portion that can receive the head when it is aligned therewith, said head and pocket then being constructed and arranged so that a portion of the head abuts laterally against the pocket to prevent relative rotation of the elements; and

a spring member between said elements that is compressible to allow the elements to be moved axially towards each other to allow the head to enter the access opening and to be rotated into alignment with the pocket, and that is expandable to cause the head to be moved into and held in the pocket.

4,515,038

POWER TRANSMISSION MECHANISM FOR MOTORCYCLES

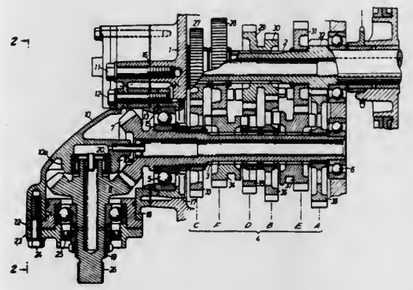
Masaharu Tsuboi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,881

Claims priority, application Japan, Mar. 25, 1981, 56-43403; Mar. 30, 1981, 56-46676; Mar. 30, 1981, 56-46677; Apr. 2, 1981, 56-49843

Int. Cl.³ F16H *57/02*; B62M *11/10*

U.S. Cl. 74—606 R **1 Claim**



1. A power transmission mechanism for a motorcycle, comprising

a transmission casing having a wall provided with an opening therethrough;

a change speed gear mechanism mounted in said transmission casing and including a countershaft having one end projecting out of said transmission casing through said opening;

a driving bevel gear formed integrally on the projecting end of said countershaft;

a final gear case including fasteners detachably fixing said final gear case to said transmission casing;

axially spaced bearings supporting said countershaft within said transmission casing;

a first bearing holder mounted in said opening and secured to said final gear case and engaging one of said bearings;

a second bearing holder engaging the same bearing and carried by said final gear case;

a final shaft rotatably mounted in said final gear case and having a driven bevel gear integrally formed therewith and meshing with said driving bevel gear;

a final shaft bearing mounted within said final gear case;

said final gear case, said bearing holders, said driving bevel gear, said countershaft, said driven bevel gear, said final shaft and a plurality of the gears on said countershaft of said change speed gear mechanism being separable from said transmission casing as a unit with release of said fasteners.

4,515,039

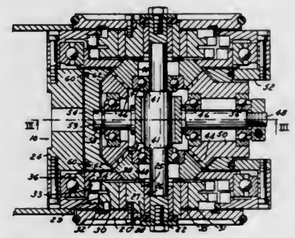
ROBOT JOINT

Keith W. Nord, Stillwater, Minn., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 18, 1983, Ser. No. 524,273

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—665 C **4 Claims**



1. A robot joint comprising a housing, dual input means on opposite sides of the housing, single output means, reduction means secured for rotation with each of said input means within said housing, a first pair of bevel gears operatively connected to said respective reduction means for rotation thereby, and a second pair of oppositely disposed bevel gears, each of which meshes with both of said two bevel gears, said single output means being secured to one of said second pair of bevel gears, the speed and direction of rotation of said single output means and the raising and lowering thereof being controlled by the relative speeds and directions of rotation of said respective input means.

4,515,040

CONTROL APPARATUS AND METHOD FOR ENGINE-CONTINUOUSLY VARIABLE TRANSMISSION

Yasuhisa Takeuchi; Yoshiro Morimoto, and Tadashi Suzuki, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 26, 1982, Ser. No. 411,987

Claims priority, application Japan, Aug. 27, 1981, 56-133327; Sep. 3, 1981, 56-137826; Sep. 3, 1981, 56-137827

Int. Cl.³ B60K *41/12, 41/18*

U.S. Cl. 74—866 **27 Claims**

1. A control apparatus for a motor vehicle having an accelerator pedal, an engine having an intake pipe and a continuously variable transmission, the continuously variable transmission having a drive shaft drivingly connected to the engine, a driven shaft, a drive pulley including a cylinder chamber, a fixed conical disc secured to the drive shaft and a movable disc controllably movable in an axial direction of the drive shaft in response to fluid pressure in the cylinder chamber thereof, a driven pulley including a cylinder chamber, a fixed conical disc secured to the driven shaft, a movable disc controllably

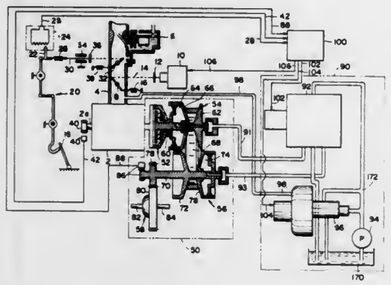
movable in an axial direction of the driven shaft in response to fluid pressure in the cylinder chamber thereof, and a V-belt running over the drive and driven pulleys to establish a driving connection therebetween, said control apparatus comprising:

an accelerator pedal sensor means coupled with the accelerator pedal for generating an accelerator pedal stroke electric signal indicative of a depression degree of the accelerator pedal;

an engine revolution speed sensor means coupled with the engine for generating an actual engine revolution speed electric signal indicative of an actual revolution speed of the engine;

means for generating an output electric signal indicative of a target engine revolution speed, said output electric signal generating means coupled with said accelerator pedal sensor means for generating a first target engine revolution speed electric signal which is a first predetermined function of said accelerator pedal stroke electric signal, said first predetermined function providing a single target engine revolution value for any single depression degree of the accelerator pedal;

a fuel supply device control means coupled with said accelerator pedal sensor means for generating a target engine torque electric signal indicative of a target engine torque which is a second predetermined function of said accelerator pedal stroke electric signal, said second predetermined function providing a single target engine torque value for any single depression of the accelerator pedal;



a comparator means coupled with said engine revolution speed sensor means and said output electric signal generating means for generating a deviation signal indicative of a difference between said actual engine revolution speed electric signal and said output electric signal;

a pumping means for supplying hydraulic fluid;

means for detecting an actual reduction ratio within said continuously variable transmission;

means coupled with said pumping means for regulating the fluid supplied by said pumping means in response to the detected actual reduction ratio within the continuously variable transmission and generating a line pressure variable with the detected actual reduction ratio;

a shift control valve driver means coupled with said comparator means for generating an electric command signal in response to said deviation signal;

a shift control valve means coupled with said line pressure generating means to receive said line pressure for controlling fluid supply to said both cylinder chambers and fluid discharge therefrom in response to said electric command signal;

a fuel supply device communicating with the intake pipe and including a control element means for adjusting supply of fuel to the engine; and

means coupled with said fuel supply device control means for actuating said control element means in response to said target engine torque electric signal.

4,515,041

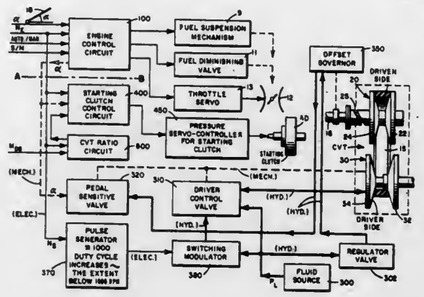
CONTROL SYSTEM AND METHOD FOR A POWER DELIVERY SYSTEM HAVING A CONTINUOUSLY VARIABLE RATIO TRANSMISSION

Andrew A. Frank, and Takashi Omitsu, both of Madison, Wis., assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 380,923, May 21, 1980,. This application Apr. 27, 1983, Ser. No. 489,177

Int. Cl.³ B60K *41/18, 41/12*

U.S. Cl. 74—866 **73 Claims**



1. A method of controlling the operation of a power delivery system including a prime mover and a continuously variable ratio transmission coupled to said prime mover for delivering power from said prime mover to an output shaft, said transmission having adjustable driver means operatively coupled to said prime mover for adjustably transmitting power from said prime mover, and adjustable driven means operatively coupled to said driver means and to said output shaft for adjustably transmitting power from said driver means to said output shaft, the ratio of said transmission being determined by the relative adjustments of said driver means and said driven means, said prime mover having fuel delivery means for delivering a variable quantity of fuel thereto, said power delivery system being controlled by command means for commanding a desired system performance, the method comprising the steps of:

measuring the actual performance of the power delivery system;

controlling the ratio of said transmission as a function of the desired system performance commanded by said command means and said measured actual system performance, the speed of said prime mover varying as a function of transmission ratio, the step of controlling the transmission ratio comprising:

controlling the adjustment of said driver means as a function of the desired system performance commanded by said command means; and

controlling the adjustment of said driven means as a function of said measured actual system performance; predetermining a fuel function defining desired fuel requirements for said prime mover in relation to prime mover operating speed;

measuring the speed of said prime mover; and

controlling said fuel delivery means only in accordance with said fuel function so that the quantity of fuel delivered to said prime mover is determined only by the speed thereof.

4,515,042

SERVICE TOOL MEANS FOR RACK AND PINION STEERING SYSTEMS

Tony E. Martin, Cahokia, Ill., assignor to Moog Automotive, Inc., St. Louis, Mo.

Filed Mar. 28, 1983, Ser. No. 479,510

Int. Cl.³ B25B *13/06*

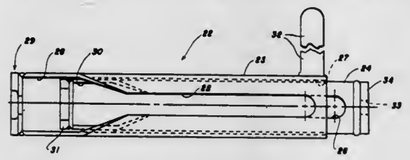
U.S. Cl. 81—55 **3 Claims**

1. In a service tool means for use in servicing a rack and pinion steering assembly in which a ball joint threadedly connected to the end of the rack bar in the steering assembly has a diameter larger than the diameter of the end of a rack bar extending from the ball joint, the improvement in such a tool which comprises:

(a) a first elongated hollow body having at one side an open notch adjacent one end and an elongated slot extending from said side open notch toward the opposite end;

(b) first jaw means carried by said first body adjacent said open notch, said first jaw means having fixed elements providing a predetermined space therebetween for receiving a rack bar to be held by said first body against rotation;

(c) a second elongated hollow body operably supported within said first body, said second body having at one side an open notch adjacent one end and an elongated slot extending from said side open notch and substantially matching said elongated slot in said first body, said notches and elongated slots being sized for passing the tie



rod and ball joint through said first body and into said second body;

(d) second jaw means carried by said second body adjacent said open notch, said second jaw means having fixed elements providing a predetermined space therebetween larger than said first mentioned jaw means for receiving the larger diameter ball joint to be held in said jaw means; and

(e) force applying means carried by each of said first and second bodies for effecting turning of one of said jaw means relative to the other jaw means to thread said ball joint relative to said rack bar, said force applying means relatively rotating said first and second hollow bodies to bring said notches and elongated slots into alignment for the placement of said tool means over the ball joint housing and tie rod.

4,515,043

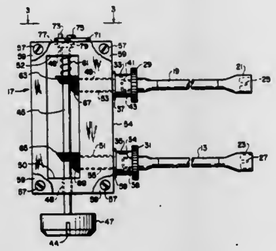
CARBURETOR ADJUSTMENT TOOL

Billy C. Gray, Los Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1983, Ser. No. 519,932

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—57.22 **5 Claims**



1. A carburetor adjustment tool comprising:

a pair of shrouded screwdriver blades attached to a gear box through flexible shanks;

said gear box having a front wall and a rear wall;

said gear box having a main shaft running therethrough which is connected to a hand operable knob at one end thereof;

said main shaft has an enlarged end opposite from said knob and said enlarged end is journaled in a bore in the rear wall of said gear box;

said main shaft having a pair of bevel gears thereon which can engage mating bevel gears on two output shafts which are connected to said shanks;

said main shaft being spring loaded so that said bevel gears are normally engaged;

means for disengaging said pair of bevel gears on said main shaft from said mating bevel gears on said output shafts by sliding said main shaft toward said rear wall such that said enlarged end exits from said bore;

means for latching said gears in the disengaged position;

said means for latching said gears in the disengaged position is pivoted on the outside of said rear wall such that it is pivotally movable under the enlarged end of said main shaft when said main shaft has been slid toward said rear wall; and

each of said shanks having hand operable discs thereon.

4,515,044

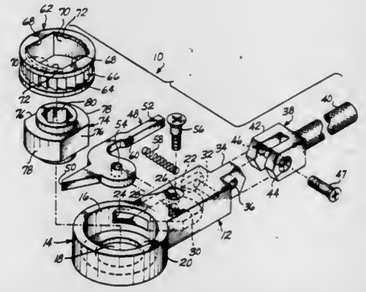
QUICK CHANGE RATCHET WRENCH

Larry V. Harstad, 19326 Pac. Hwy. S., Space 10, Des Moines, Wash. 98188

Filed Oct. 23, 1980, Ser. No. 200,255

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—61 **4 Claims**



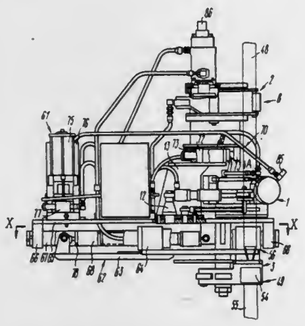
1. A quick change ratchet wrench comprising: a handle having an integral head on one end with said head having a cylindrical shaped opening extending in from one side of the head, and a concentric smaller diameter circular opening extending in from the other side of the head to form a lip, a hollow cylinder sized to rotatably fit in the cylindrical shaped opening with said cylinder having a narrow recess with ratchet teeth around the periphery and having a lip adjacent opposite sides of the hollow interior, an insert sized to fit inside and to move with the hollow cylinder and contained by the lip in the cylinder and the lip in the opening in the head with said insert having means for joining to a fastener, a ratchet teeth contacting pawl pivotally mounted in the handle with said pawl having a resiliently held lever arm extending outside the handle to permit the pawl to be moved out of contact with the ratchet teeth to permit entry and removal of the cylinder from the head.

4,515,045

AUTOMATIC WRENCH FOR SCREWING A PIPE STRING TOGETHER AND APART

Viktor V. Gnatchenko; Nikolai P. Makarov, both of Moscow; Albert S. Shaginian, Gomel; Alexei G. Asan-Dzhalalov, Gomel; Anatoly A. Pevnev, Gomel; Valery A. Panteleev, Gomel; Alexandr P. Androsenko, Gomel; Nikolai I. Davidenko, Gomel; Zoya N. Mochalova, Gomel, and Leonid N. Palkin, Gomel, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Seismicheskoi Tekhniki, Gomel, U.S.S.R.

Filed Feb. 22, 1983, Ser. No. 468,482
Int. Cl.³ B25B *23/00*
U.S. Cl. 81—429 **4 Claims**



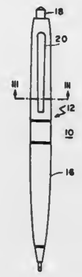
1. An automatic wrench for screwing together and apart a string of pipes joined with threaded collars, said automatic wrench comprising:
a first base;
a high-torque device mounted on said first base and including:
a rotatable clamping means having grippers adapted to embrace a pipe;
an actuator for bringing together and apart the grippers of said rotatable clamping means, operatively connected with said grippers; and
a rotation actuator, operatively connected with said rotatable clamping means;
a second base mounted on said first base;
a low-torque device mounted on said second base and including:
a spinning clamping means having grippers adapted to embrace the pipe;
an actuator for bringing together and apart the grippers of said spinning clamping means, operatively connected with said grippers; and
a spinning actuator operatively connected with said spinning clamping means;
a locking device mounted on said first base under said high-torque device and comprising:
a locking clamping means having grippers adapted to embrace a pipe string on the external side surface of a threaded collar;
an actuator for bringing together and apart the grippers of said locking clamping means, operatively connected with said grippers; and
a means for a movable attachment of said second base on said first base; and
a control system comprising:
a system of detectors, including:
a torque detector installed on said high-torque device for delivering a signal when the torque developed by said high-torque device reaches as preset value; and
a rotation angle detector installed on said high-torque device for delivering a signal when the angle of rotation of said rotatable clamping means with respect to said locking clamping means reaches a preset value;
a control unit for generating control commands based upon the signals of the detectors of said system of detectors, said control unit comprising a unit monitoring the duration of the execution of a command and an AND gate, and the AND gate, upon receiving the signals from said torque detector and rotation angle detector within a preset time measured by said unit monitoring the duration of the execution of a command, outputs a signal indicative of the end of the rotation of the pipe by said high-torque device; and
a system of electrically controlled actuating mechanisms acting upon said actuators of said devices under commands from said control unit.

4,515,046

RETRACTABLE TORQUE APPLYING TOOL

Gilbert Johnson, 3561 N. Leroy St., San Bernardino, Calif. 92404

Filed Feb. 8, 1983, Ser. No. 465,038
Int. Cl.³ B25G *1/08*
U.S. Cl. 81—436 **16 Claims**



1. A retractable screwdriver comprising:
housing means incorporating a gear rigidly attached thereto, for housing said screwdriver;
first geared cam means rigidly attached to a rear end portion of said screwdriver for engaging said housing gear in an advanced position of said screwdriver, and for maintaining a substantially fixed angular displacement between said screwdriver and said housing means,
manually operable plunger means for rapidly advancing and retracting said screwdriver, including second geared cam means having means for engaging said housing gear, thereby establishing a substantially fixed angular displacement between said plunger means and said housing means, said second geared cam means having further means for cammingly contacting said first geared cam means thereby to advance said tool to an operable position.

4,515,047

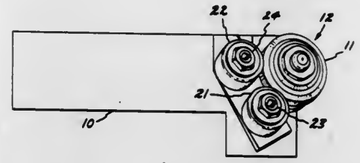
DYNAMICALLY STIFFENED ROTARY TOOL SYSTEM

Ranga Komanduri; Robert H. Ettinger, both of Schenectady; Morton P. Casey, Jr., West Sand Lake, and William R. Reed, Jr., Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,436
Int. Cl.³ B23B *1/00*; B26D *1/12*
U.S. Cl. 82—1 C **5 Claims**

1. In a rotary cutting tool construction comprising in combination a longitudinally-extending spindle affixed at one end thereof in a tool shank, a rotatable cutting disc assembly including a cutting disc mounted on said spindle and antrifriction bearing means disposed between said spindle and said cutting disc assembly, the improvement comprising rotatable means for dynamically stiffening said spindle, means mounted on said tool shank supporting said dynamic stiffening means for rotation adjacent said cutting disc assembly and in direct contact with said cutting disc for the application of at least one biasing force of preselected magnitude against said cutting disc.

4. In the process of rotary tool machining in which a rotary tool having a rotatable cutting disc is mounted on stationary support means is presented into contact with a workpiece to



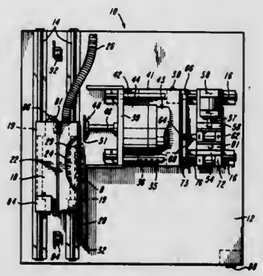
remove material from the workpiece with succeeding portions of said rotating cutting disc, the improvement of applying at least one dynamic biasing force of predetermined magnitude directly against said cutting disc as it rotates to substantially directly oppose cutting forces applied to said cutting disc by the workpiece.

4,515,048

METHOD AND APPARATUS FOR TRIMMING LEAD WIRES PROJECTING FROM PRINTED CIRCUIT BOARDS

Glenn W. Forsell, 718 Market St., Brookville, Ohio 45309

Filed Aug. 1, 1983, Ser. No. 519,009
Int. Cl.³ B23D *33/02*
U.S. Cl. 83—13 **16 Claims**



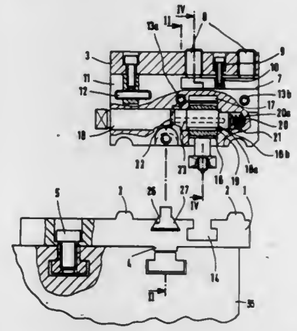
1. A method of trimming lead wires projecting from one side of a printed circuit board supporting electronic components located on the other side of the board and wherein the lead wires are soldered within holes formed within the board, comprising the steps of supporting the printed circuit board by a flat supporting surface engaging the other side of the board, positioning a rotary cut-off blade with its axis substantially perpendicular to the supporting surface, relatively moving the blade and the supporting surface axially until the blade contacts the one side of the board, retracting the blade from the one side of the board by a predetermined distance to a retracted position, rotating the blade, and producing relative lateral movement between the board and the blade while the blade is rotating in the retracted position to shear the projecting lead wires at the predetermined distance from the one side of the board and independent of the thickness of the board.

4,515,049

QUICK-CHANGE TOOL HOLDER FOR LATHES

Peter Dietz, Büttelborn; Norbert W. Müller, Frankfurt, and Horst F. M. Kroh, Langen, all of Fed. Rep. of Germany, assignors to Pittler Machinenfabrik AG, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 314,228
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 8029160[U]
Int. Cl.³ B23B *29/00, 3/06*; B23Q *3/00*
U.S. Cl. 82—36 R **13 Claims**



1. A quick change tool holder for a lathe including a tool carriage, said holder comprising a support member adapted to be mounted on the tool carriage, a tool holder member adjacent said support member and including a first bore extending generally perpendicularly from said support member, and a second bore extending at about a right angle from said first bore, and means for attaching said tool holder member to said support member, said attaching means comprising a mounting member which is mounted on said support member, which is received in said first bore in said tool holder member, and which includes a bore, and a bolt which is received in said second bore and which is movable between an operating position wherein said bolt penetrates said bore in said mounting member and secures said mounting member in said first bore in said tool holder member, and a nonoperating position wherein said bolt is withdrawn from said bore in said mounting member so that said tool holder member is detached from said mounting member.

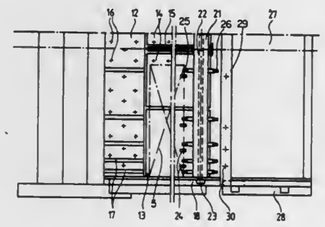
9. A quick change tool holder for a lathe including a tool carriage, said holder comprising a support member adapted to be mounted on the tool carriage, a tool holder member including a first bore extending generally perpendicularly from said support member, and a second bore extending at about a right angle from said first bore, and means for attaching said tool holder member to said support member, said attaching means comprising a mounting member which is detachably mounted on said support member, which is received in said first bore in said tool holder member, and which includes a bore, a bolt which is received in said second bore, which includes an eccentric portion, and which is axially movable between an operating position, wherein said eccentric portion penetrates said bore in said mounting member and secures said mounting member in said first bore in said tool holder member, and a nonoperating position, wherein said bolt is withdrawn from said bore in said mounting member so that said tool holder member is detached from said mounting member, and said eccentric portion, in response to rotation of said bolt, is radially movable between a first position, wherein said mounting member is retracted into said tool holder member, thereby clamping said tool holder member against said support member, and a second position, wherein said mounting member is extended from said tool holder member, thereby unclamping said tool holder member from said support member, and means for releasably securing said bolt in said operating position in re-

sponse to rotation of said bolt, said releasably securing means comprising said bolt further including a circumferential groove, and an axial groove in communication at one end thereof with said circumferential groove, and a member in said tool holder member which projects into said second bore and which is receivable in said axial groove and said circumferential groove.

4,515,050
APPARATUS FOR FEEDING SHEET METAL PLATES TO A SHEET SHEAR ARRANGEMENT

Eduard Haenni; Theo Frei, both of Zofingen, and Peter Hug, Safenwil, all of Switzerland, assignors to Hämmerle AG Maschinenfabrik, Zofingen, Switzerland

Filed Nov. 1, 1983, Ser. No. 547,583
Claims priority, application Switzerland, Nov. 9, 1982, 6488/82
Int. Cl.³ B23D *33/02;* B21D *43/11*
U.S. Cl. 83—71 **11 Claims**



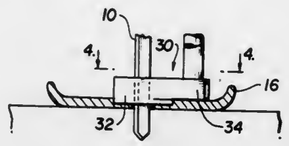
1. An apparatus for feeding sheet metal plates to a sheet shear arrangement, especially a computerized numerically controlled sheet shear arrangement containing cutting blades, comprising:
- a working table arranged in front of the sheet shear arrangement;
- a feeding bar extending substantially parallel to the cutting blades of said sheet shear arrangement and having a first side facing said cutting blades and a second side located remote from said cutting blades;
- drive means for reciprocatingly moving said feeding bar substantially perpendicular to said cutting blades and longitudinally of said working table;
- elevationally displaceable first holding elements arranged on said first side of said feeding bar for gripping an edge of a sheet metal plate;
- elevationally displaceable second holding elements arranged on said second side of said feeding bar for gripping an edge of a sheet metal plate;
- said working table comprising at least two stationary table members and at least one downwardly pivotable table member; and
- at least one intermediate support with which there is operatively connected said at least one downwardly pivotable table member.

4,515,051
KNIFE BLOCK GUIDE

Michael J. Phillips, Milmont Park, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 22, 1983, Ser. No. 534,921
Int. Cl.³ D06H *7/00*
U.S. Cl. 83—146 **9 Claims**

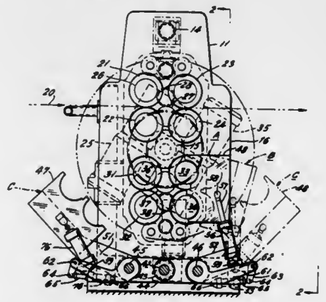
1. In a cutting machine including a thin, elongated cutting blade, and a foot positioned immediately above the material to be cut and through which the elongated cutting blade moves and extends into the material during a cutting operation, the improvement comprising:
- guide means for the cutting blade; and
- means for mounting the guide means to the foot,
- said guide means defining an opening through which the elongated cutting blade moves and by which the elongated cutting blade is guided both laterally and transversely of its elongated extent, and
- said opening being shaped to conform to the cross-sectional shape of the elongated cutting blade.



4,515,052
AUTOMATIC SLITTER

Stephen S. Flaum, Brooklyn, N.Y., assignor to S&S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,234
Int. Cl.³ B26D *3/08, 11/00*
U.S. Cl. 83—479 **17 Claims**

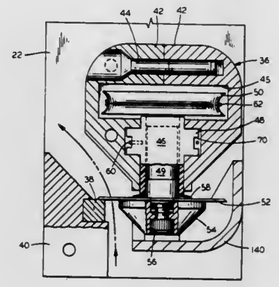


1. Slitter scorer apparatus including a first station and a second station; each of said stations including first, second, third and fourth parallel tool carrying shafts; a main relatively fixed frame; a sub-frame having said stations thereon; means defining a pivot axis disposed between said stations and about which said sub-frame is pivotable 180° between first and second positions relative to said fixed frame; with said sub-frame in said first position, said first station being at a working location and said second station being at a set-up location; with said sub-frame in said second position, said second station being at said working location and said first station being at said set-up location; a power driven common adjusting means for longitudinally positioning tools on said first, second, third and fourth parallel tool carrying shafts of both said first and second stations; said adjusting means disposed at said set-up location to move tools to selected axial positions along said shafts of the one of said stations at said set-up location while a web of sheet material is running along a path extending through the other of said stations; said set-up location and said adjusting means being entirely on one side of a plane in which said web moves through said stations; said adjusting means including adjusting elements selectively engageable in sequence with tools on said first, second, third and fourth shafts of the one of said stations disposed at said set-up location, with a first of said adjusting elements engaging in sequence cooperating tool sections on two of said shafts at said set-up location and a second of said adjusting elements engaging in sequence cooperating tool sections on two others of said shafts at said set-up location.

4,515,053
CONTINUOUS WEB FEEDER WITH WEB CUTTING MEANS

R. Clark DuBois, 332 Wakeman Rd., Fairfield, Conn. 06430

Filed May 16, 1983, Ser. No. 494,774
Int. Cl.³ B26D *1/18, 1/20*
U.S. Cl. 83—488 **15 Claims**

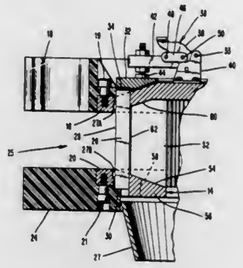


1. In a continuous web feeder attachment for printers and the like, the combination comprising:
- A. a housing including side frames;
- B. a drive shaft extending transversely of said housing and mounted for rotation in said side frames;
- C. a support shaft extending transversely of said housing and mounted in said side frames, said drive and support shafts being adapted to support paper feed means for advancing paper or the like through said feeder;
- D. a cutter assembly supported on said housing and including a cutter wheel, means mounting said cutter wheel in said cutter assembly for rotation about an axis generally perpendicular to said drive and support shafts and for movement transversely of said housing between stop positions adjacent said side frames, said cutter wheel mounting means including slider means and guide means for said slider means;
- E. drive means for effecting movement of said cutter assembly between said stop positions, said drive means including a reversible drive electric motor, said drive means also including means for effecting rotation of said cutter wheel about its rotational axis during its movement between said stop positions, said cutter assembly drive means including a winch driven by said motor and drive cord means engaged with said winch and said slider means, whereby rotation of said winch will effect movement of said slider means, said cutter wheel rotation means including a second winch rotatably supported on said slider and engaged with said cutter blade to effect rotation thereof, a cutter rotating cord engaged about said second winch and extending to said side frames whereby movement of said slider causes said second winch to rotate said cutter blade; and
- F. control means including means adapted to be actuated by a predetermined motion of the platen of the associated printer to actuate said electric motor, means to terminate motor operation upon movement of the cutter assembly from one stop position to the other stop position, and means for changing the direction of rotation of said motor upon movement of said cutter assembly from one stop position to the other stop position, said cutter wheel being adapted to cut the web in either direction of movement of said cutter assembly between said side frames.

4,515,054
CUTTER WHEEL FOR CUTTING CONTINUOUS TOW

William D. McLaughlin, Jr., Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,560
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—663 **18 Claims**



1. A cutting wheel for cutting continuous filamentary tow, comprising:
- first and second carrier plates, said plates being rotatable about a common axis and being mutually spaced in the axial direction,
- said second carrier plate defining a central exit opening,
- an annular row of cutter blades extending between said first and second carrier plates,
- said blades having radially outwardly facing cutting edges such that as filamentary tow is wrapped around said row of blades and pushed thereagainst, the tow is cut by said cutting edges and passes between said blades,
- at least four connecting plates having opposite ends affixed to respective carrier plates to prevent mutual separation of said carrier plates in the axial and radial directions,
- each connecting plate being aligned with an associated one of said blades,
- each connecting plate being positioned radially inwardly relative to the associated blade and having a thickness substantially the same as that of said associated blade,
- said connecting plates as a group providing a substantial portion of the resistance against mutual separation of said carrier plates in the axial and radial directions,
- said blades as a group transmitting a substantial portion of the torque between said carrier plates.

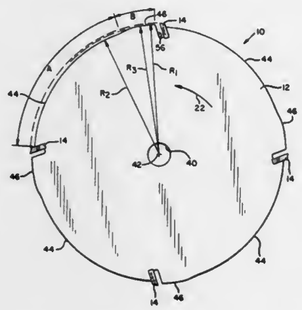
4,515,055
CIRCULAR SAW BLADE

Lewis A. Scott, Lake Oswego, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Division of Ser. No. 404,850, Aug. 3, 1982, Pat. No. 4,432,264, which is a continuation-in-part of Ser. No. 292,572, Aug. 13, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 560,587
Int. Cl.³ B27B *33/08;* B23D *61/04*
U.S. Cl. 83—835 **9 Claims**

1. A saw blade comprising a substantially circular integral main body with a plurality of circumferentially spaced cutter tips secured thereto and projecting radially outwardly therefrom, the outer end of a tip being positioned to describe an arc during rotation of the blade which is at a first radius, a tip having a front surface in the direction of rotation of said blade during operation, said main body having a peripheral edge defining a circular arc at a second radius throughout a major portion of its circumference, a depth gauge portion on said main body associated with and leading a tip and having a radially outwardly facing guide surface which describes an arc at a third radius during rotation which is intermediate said first and second radii, said guide surface of the depth gauge portion being connected with the peripheral edge of said main body through a transition section which curves from concave to

convex on progressing from said peripheral edge to said guide surface, and a chip clearance channel intermediate said front face of a cutter tip and its associated depth gauge, said channel



extending generally radially inwardly from said guide surface to a region spaced radially inwardly from said second radius and having a width measured circumferentially of said blade in a range of 0.030 to 0.100 inch.

4,515,056

ELECTRONIC MUSICAL INSTRUMENT

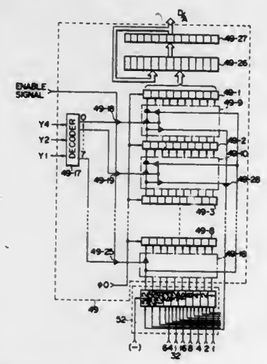
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co. Ltd., Tokyo, Japan

Division of Ser. No. 215,024, Dec. 10, 1980, which is a continuation of Ser. No. 020,749, Mar. 15, 1979, abandoned. This application Nov. 13, 1981, Ser. No. 320,887

Claims priority, application Japan, Mar. 18, 1978, 58-31369; Apr. 17, 1978, 53-45528; Apr. 20, 1978, 53-46836; Jun. 13, 1978, 53-71064

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **12 Claims**



1. An electronic musical instrument for simultaneously generating at most n musical sound waves by an n-channel time sharing process, comprising:

means for producing differential values of the musical sound waves;

delay control means coupled to receive the differential values of the musical sound waves;

setting means coupled to said delay control means for supplying said delay control means with a digital time value which enables said delay control means to delay said differential values of the musical sound waves; and

accumulating means coupled to said delay control means for accumulating said differential values of the musical sound waves which have been delayed by the digital time value supplied from said setting means.

4,515,057

MUSICAL SOUND WAVE GENERATING CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT

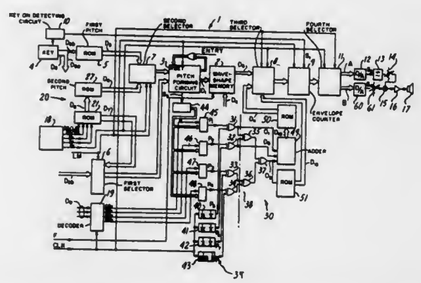
Yukichi Momoshima, and Nobuyuki Nagasaka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,477

Claims priority, application Japan, Jan. 21, 1982, 57-7894

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **7 Claims**



1. A musical instrument having a wave generating circuit comprising in combination: a keyboard having a plurality of keys; a first pitch ROM connected to said keyboard for determining a musical step; a first selector responsive to said keyboard; a second selector responsive to said first pitch ROM; a drum rhythm sound pitch data generating circuit connected as an input to both said first and second selectors; a pitch forming circuit responsive to both said first and second selectors; a wave-shape memory responsive to said pitch forming circuit; a noise rhythm sound forming circuit responsive to said pitch forming circuit and receptive of a clock signal during use of the wave generating circuit; a third selector responsive to both said wave-shape memory and said noise rhythm sound forming circuit; means for applying a play-rhythm musical sound wave-shape switching signal to said first, second and third selectors; an envelope counter responsive to said third selector; and audio amplifying means responsive to said envelope counter; whereby a drum rhythm of said drum rhythm sound pitch data generating circuit and a noise rhythm of said noise rhythm sound forming circuit are both generated using said one wave-shape memory.

4,515,058

ADAPTIVE TONE GENERATOR ASSIGNMENT IN A KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jan. 27, 1984, Ser. No. 574,440

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **9 Claims**

1. In combination with a keyboard musical instrument comprising a first and a second keyboard array of keyswitches and comprising a first and a second plurality of tone generators for generating musical tones, apparatus for assigning members of said first and second plurality of tone generators to actuated keyswitches comprising:

a keyswitch state detect means wherein a detect signal is generated in response to each actuated keyswitch in said first and in said second keyboard array of keyswitches,

an encoding means for encoding each said detect signal to generate a detect data word which identifies the corresponding actuated keyswitch and its associated keyboard array of keyswitches,

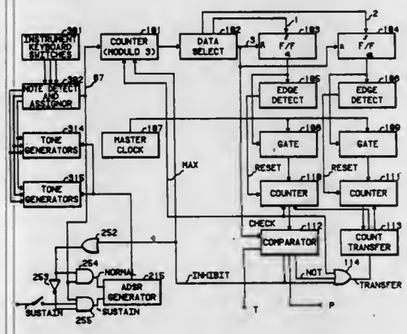
an assignor means responsive to said detect data word whereby one of said first plurality of tone generators is assigned to generate a musical tone associated with said first keyboard array of keyswitches if said detect data word identifies an actuated keyswitch on said first keyboard array of keyswitches and whereby one of said second plurality of tone generators is assigned to generate a musical tone associated with said second keyboard array of keyswitches if said detect data word identifies an actuated keyswitch on said second keyboard array of keyswitches,

a first envelope modulation function generator for scaling the amplitudes of musical tones generated by assigned ones of said first plurality of tone generators wherein in response to a first sustain mode signal musical tones having a long release phase are generated,

a second envelope modulation function generator for scaling the amplitudes of musical tones generated by assigned ones of said second plurality of tone generators wherein in response to a second sustain mode signal musical tones having a long release phase are generated,

a sustain mode means wherein said first sustain mode signal and said second sustain mode signals are created,

a note sequence timing detect means responsive to each said detect signal whereby a first inhibit signal is generated if a



sequence of a prespecified number of detect data words encoded to identify actuated keyswitches on said first keyboard array of keyswitches occurs in a time interval less than a prespecified time interval and whereby a second inhibit signal is generated if said prespecified sequence of detect data words encoded to identify actuated keyswitches on said second keyboard array of keyswitches occurs in a time interval less than said prespecified time interval,

a release time control means whereby in response to said first inhibit signal said first sustain mode signal is not provided to said first envelope modulation function generator and whereby in response to said second inhibit signal said second sustain mode signal is not provided to said second envelope modulation function generator, and

a borrow assignor means interposed between said assignor means and said first and second plurality of tone generators whereby select ones of said second plurality of second tone generators are caused to generate musical tones corresponding to musical tones generated by said first plurality of tone generators.

4,515,059

GEARED TUNING MACHINE

Roger H. Siminoff, 112 Privada Luisita, Los Gatos, Calif. 95030

Filed Feb. 8, 1983, Ser. No. 464,932

Int. Cl.³ G10D *3/14*

U.S. Cl. 84—306 **10 Claims**

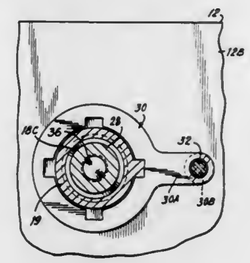
1. A universal tuning machine for tuning a string of a stringed musical instrument, said machine comprising:

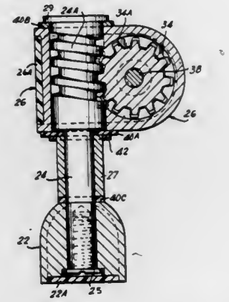
a. a two-part housing including a base and threaded flange means for threading onto mating threads of said base so as to mount said machine in an opening formed through a peghead portion of said stringed musical instrument;

b. a string post rotationally journalled through and aligned by said flange means for engaging said string to be tuned;

c. a worm gear-wheel member attached to said post and housed in a cavity defined by said housing;

d. a demountable rotatable tuning shaft journalled through a pair of aligned apertures defined by opposite sidewalls of said housing, said shaft including a collar at one end thereof extending beyond said housing for engaging a first semi-rigid washer bearing against an adjacent outer surface of a said sidewall, said shaft including a worm gear segment adapted for meshing with said worm gear-wheel member and for causing it to rotate as said shaft is rotated, said shaft further including a knob extension portion extending from said housing opposite from said collar;





e. removable tubular spacer bushing means placed over said knob extension portion of said tuning shaft and including a lip engaging a second semi-rigid washer bearing against an adjacent outer surface of said other sidewall, said spacer bushing means for retaining said shaft in proper alignment with said housing;

f. tuning knob means removably attached to the end of said knob extension portion of said shaft for enabling said shaft to be rotated, said tuning knob means including an inner surface engaging a third semi-rigid washer bearing against an adjacent surface of said tubular spacer bushing means;

whereby said shaft may be installed in two opposed orientations relative to said housing and along the same axis of rotation and further whereby said first, second and third semi-rigid washer means coact to inhibit stickiness in turning said tuning shaft by manipulating said knob means.

4,515,060

WIND INSTRUMENT WITH ADJUSTABLE TONE

Ernest Ferron, 14 rue Massacre, Rouen, France 76000

Filed Jan. 20, 1983, Ser. No. 459,320

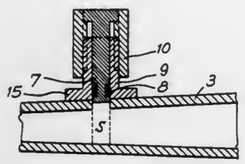
Claims priority, application France, Jan. 22, 1982, 82 0123

Int. Cl.³ G10D *7/00*

U.S. Cl. 84—380 R **5 Claims**

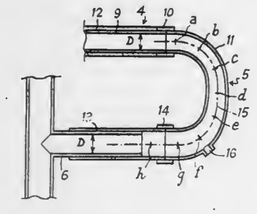
1. Wind instrument of the type with mouthpiece, single or double reed, lip, etc . . . , permitting to develop stationary

waves inside a column of air, comprising a device for laterally perturbing the column of air, wherein said lateral perturbation device comprises a piston adapted to slide inside a hollow body disposed laterally with respect to the column of air and issuing directly therein, the end of the piston which faces towards the



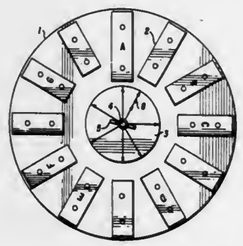
column of air being adapted to move inside the body and even to project out of it by encroaching on said column of air, means being provided for moving very slightly the piston, so as to change the tone of the instrument without really noticeably affecting the pitch of the instrument.

4,515,061
TRUMPET WITH IMPROVED TONE
Ernest Ferron, Rouen, France, assignor to Establissement E. Ferron, France
Filed Dec. 21, 1982, Ser. No. 451,738
Claims priority, application France, Dec. 22, 1981, 81 23961
Int. Cl.³ G10D *7/10*
U.S. Cl. 84—394 **15 Claims**



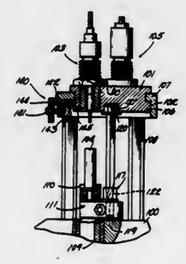
1. In a trumpet comprising, and connected in succession, a mouth piece, a lead pipe, a tuning slide assembly, a piston tube, a set of pistons, a bell tube and a bell, said tuning slide assembly in turn comprising an upper tube, a tuning slide bow having a curved portion, and a lower tube, the improvement wherein the inner bore defined by the tuning bow comprises a conical widening portion along only a portion of said curved portion.

4,515,062
MUSICAL INSTRUMENT HAVING A RIGID BASE WITH CIRCLE OF TONE BARS AND PATTERN GUIDES
Richard E. Bozung, Rte. 1, Box 286, Mt. Pleasant, S.C. 29464
Filed Apr. 6, 1983, Ser. No. 482,477
Int. Cl.³ G10D *13/08*
U.S. Cl. 84—403 **4 Claims**



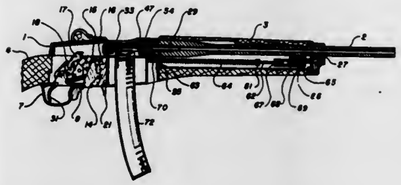
3. A musical instrument comprising a flat base having a plurality of tone generators mounted on one surface of the base, each of said tone generators being mounted along a radius of a circle defined by a center point on the base, the angular distance between radii having tone generators mounted thereon being approximately equal; and a circular guide mounted on said base coaxially with the circle of tone generators, said guide having indicia thereon indicating which of said plurality of tone generators have sounds among those in a desired musical scale or chord.

4,515,063
TURRET PRESS FOR RELOADING RIFLE AND PISTOL CARTRIDGES
Richard J. Lee, 3146 Kettle Moraine, Hartford, Wis. 53027
Filed Aug. 22, 1983, Ser. No. 525,101
Int. Cl.³ F42B *33/02*
U.S. Cl. 86—27 **24 Claims**



15. Ammunition cartridge reloading apparatus comprising:
a base,
a member mounted for moving relative to said base for executing alternate linear upstrokes and downstrokes and means for driving said member reversibly,
a die head mounted in fixed spaced relationship with respect to the base and above the base, said die head having a plurality of circularly and equiangularly arranged holes for retaining dies that respectively operate on cartridges,
a body mounted to said member,
a first ratchet element secured against rotation in said body, said element having a bore whose axis is parallel to the line of movement of said member and having longitudinally directed teeth surrounding the bore within a cavity in said body.
a hexagonal indexing rod extending longitudinally through said bore without engaging said first ratchet element, the upper end of said rod extending into said die head for freely rotating therein and the lower end of said rod being proximate to said base for rotating thereon, said rod having a region which is twisted about its axis through a predetermined angle,
a second ratchet element comprised of resilient plastic material and having a hexagonal bore of substantially the same size as said rod and fitting frictionally and slidably on said rod and slidably in said cavity, said second ratchet element having teeth surrounding its bore directed toward the teeth on the first element and selectively engageable with and separable from the teeth on the first ratchet element,
turret means supported for rotation in said body and constrained against longitudinal movement thereon, said turret means having a plurality of circularly and equiangularly arranged slot means for holding a corresponding plurality of cartridges, said hexagonal indexing rod extending through a corresponding hexagonal bore centrally of said turret means so rotation of said rod will index said turret means rotationally,
initiating a downstroke of said member after and upstroke causing said secured first ratchet element to engage said slidable second plastic ratchet element in said cavity such that when said second element advances over said twisted portion of the indexing rod, said rod turns and drives said turret means rotationally through said predetermined angle, and initiating an upstroke of said member causes said elements to separate so said second element slides on said twisted portion without rotating the rod.

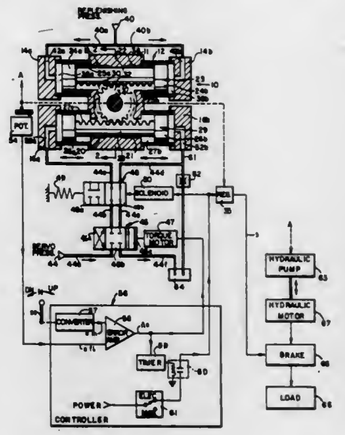
4,515,064
WEAPON RIM-FIRE CONVERSION UNIT II
Henry E. Hohrein, 3950 N. McDermitt Rd., Meridian, Id. 83642
Filed Mar. 14, 1983, Ser. No. 475,122
Int. Cl.³ F41D *7/03*
U.S. Cl. 89—128 **3 Claims**



1. A conversion unit improvement for utilizing 0.22 long rifle caliber ammunition in semi-automatic and fully automatic firearms of the type having an open receiver, a bolt assembly, an operating rod assembly, a magazine, and a barrel having a 223 caliber rifle bore, wherein the improvement comprises:
a replacement bolt assembly including a firing pin operable to strike the rim of a 0.22 long rifle cartridge;
a replacement operating rod assembly including gas venting means for venting to atmosphere gas formed in the barrel during discharge of the firearm;
a replacement magazine including an ejector operable to eject empty cartridges;
an auxiliary chamber including a forward portion having an exterior surface identical in form to the form of the ammunition cartridge for which the firearm was originally intended for precise locking engagement between the auxiliary chamber and the breech end of the barrel of the firearm, said chamber having a rearward portion operable to support the 0.22 caliber long rifle shell; and
said auxiliary chamber having a 0.22 caliber bore in registry and in alignment with the bore of said firearm.

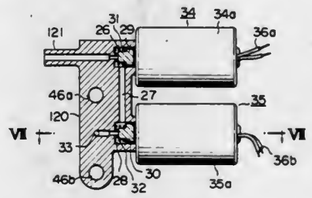
4,515,065
AUTOMATIC CENTERING SERVO ACTUATOR
Ralph A. Hannmann, Jr., Medford, and James F. Higginbotham, Cherry Hill, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 30, 1982, Ser. No. 412,616
Int. Cl.³ F15B *9/03*
U.S. Cl. 91—363 A **6 Claims**

1. An automatic centering servo actuator comprising: a rotatable shaft;
hydraulic centering means for providing a constant centering force to center said shaft, including first and second pistons disposed within a first piston chamber on one side of said shaft, a slidable member disposed between said first and second pistons, stops disposed within the first piston chamber for limiting the inward stroke of said pistons such that each piston is prevented from traveling beyond a position necessary to center the slidable member with respect to the shaft, and a first pressurized source of hydraulic fluid communicating with the first piston chamber for conveying fluid to and from the ends thereof at a constant pressure as said pistons move within the chamber;
hydraulic working means for providing a working force to drive the shaft through its range of travel, including a double-action piston operatively disposed within a second piston chamber on the other side of said shaft from the first piston chamber, a second pressurized source of hydraulic fluid having a pressure range sufficient to overcome the centering force, and flow means connected



between said second source and the second piston chamber for directing the fluid to either end thereof; and
force transmission means drivingly connecting said hydraulic centering means and said hydraulic working means to said shaft.

4,515,066
VACUUM ACTUATOR
Tosikazu Ito; Kiyomi Komathuzaki, both of Ibaraki; Kenichi Chonan, Katsuta, and Kiyoshi Horibe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 22, 1981, Ser. No. 314,036
Claims priority, application Japan, Oct. 22, 1980, 55-148718
Int. Cl.³ F15B *13/044*
U.S. Cl. 91—454 **8 Claims**



1. A vacuum actuator comprising:
a diaphragm chamber defined between a diaphragm and an acutator case means for housing said diaphragm;
an actuator rod means for transferring a displacement of said diaphragm;
a valve member for controlling a communication of vacuum with said diaphragm chamber;
solenoid means for actuating said valve member, said solenoid means being mounted on an outer surface of said actuator case and includan annular solenoid coil, a plunger means for displacing said valve member under an electromagnetic force caused by said solenoid coil and a cylindrical case means made of magnetic material for receiving said solenoid coil;
a valve case means for forming a part of a vacuum passage and for housing said valve member therein, said valve case means comprises a first valve chamber housing said valve

member, a vacuum inlet port for introducing vacuum to said first valve chamber, an atmosphere inlet port opening at an opposite side of said first valve chamber from said valve inlet port for introducing atmosphere to said first valve chamber, a second valve chamber housing a second valve member, a communication passage between said first valve chamber and said second valve chamber, and a vacuum outlet nipple for introducing vacuum from said second valve chamber to said diaphragm;

means for releasably securing said solenoid means to said actuator case means in such a manner that an outer surface of said cylindrical case means of said solenoid means is in contact with an outer surface of said actuator case means and said valve case means is disposed on said outer surface so as to enable a completion of said vacuum passage; and

wherein said solenoid means comprises a first solenoid portion secured to said valve case means for selectively controlling the first mentioned valve member to open and close the vacuum inlet port, and a second solenoid portion secured to said valve case means for selectively controlling said second valve member to open and close said vacuum outlet nipple.

4,515,067

ADJUSTABLE AXIAL PISTON MACHINES

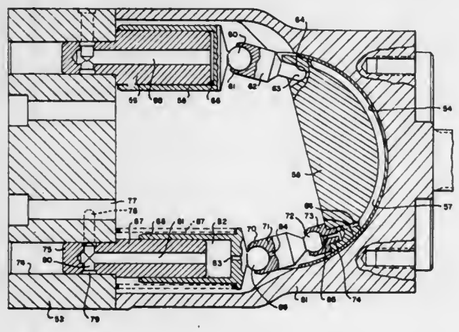
Walter Heyl, Johannesberg, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Weisbaden, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 414,668

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3135605

Int. Cl.³ F01B *13/04*

U.S. Cl. 91—506 **2 Claims**



1. An adjustable axial piston machine comprising a housing, a source of high pressure fluid, an adjusting mechanism in said housing consisting of at least one operating cylinder that is connected with said high pressure source, a servo piston capable of sliding in said cylinder, a revolving cylindrical drum having cylindrical bores in said housing, working pistons in said bores capable of sliding therein, a swash plate in supporting connection with said pistons, said swash plate being formed on a rocker body which is in operating connection with the adjusting mechanism and has a semi-cylindrical support surface, a hollow-cylindrical bearing surface in the housing against which said semi-cylindrical surface bears, a pressure pocket recess connected with said high pressure source located in one of said surfaces and being loaded with pressure medium from the high pressure source through channels effected in the rocker body, the connection between the high pressure source and the pressure pocket recess being provided through the operating cylinder pressure chambers and the servo pistons, and wherein the operating cylinder is guided coaxially and in a displaceable manner on the servo piston which is rigidly connected with the housing, and wherein the operating cylinder is supported through a ball-and-socket joint against an intermediate element, which is in turn supported through a ball-and-socket joint against the rocker body and, in which boreholes connected with each other and with the channel in the rocker body are located in the servo piston, operating cylinder and in the intermediate element and in the ball-and-socket joints.

4,515,068

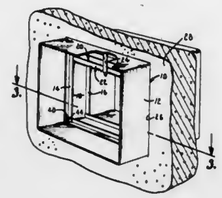
DAMPER WITH INTEGRAL MOUNTING MEANS

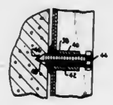
Robert M. Van Becelaere, Johnson County, Kans., assignor to Ruskin Manufacturing Company, Grandview, Mo.

Filed Jun. 1, 1983, Ser. No. 500,285

Int. Cl.³ F24F *7/00*

U.S. Cl. 98—1 **1 Claim**





1. A fire damper for ready installation in a wall opening in condition to resist dislodgement by forces applied against the damper closure, said damper comprising:

a peripherally extending damper frame of sheet material adapted to fit within a wall opening in facing relationship to the wall, said frame being provided with a plurality of peripherally spaced apart apertures;

a damper closure carried by the frame and movable from a standby position permitting flow of fluids through the damper to a closed position resisting said flow;

a tubular element for each aperture respectively, each element being rigidly secured to the frame and projecting inwardly therefrom, each element being provided with a threaded bore; and

an elongated, threaded stud for each element, each stud being telescoped in its respective element bore in threaded engagement therewith, the outwardly projecting end of each stud being substantially conical and having a cutting edge adapted to cut a hole for the stud when the latter is rotated on its longitudinal axis, the opposite end of each study being provided with a tool engageable head, whereby the respective studs may be advanced into projected relationship from the frame and into holes bored in the wall by the studs upon manual rotation of the respective studs on their longitudinal axes, to firmly secure the damper in the wall opening.

4,515,069

CHANGE-OVER DIFFUSER

James R. Kline, Moraga, and Peter Brand, San Francisco, both of Calif., assignors to Acutherm, Ltd., Emeryville, Calif.

Filed Jan. 20, 1984, Ser. No. 572,688

Int. Cl.³ F24F *13/072*

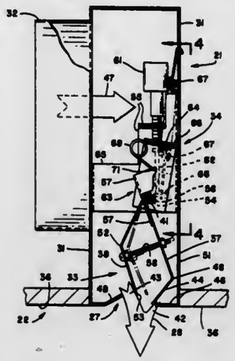
U.S. Cl. 98—40 D **4 Claims**

1. A change-over diffuser including a housing formed for coupling to air supply means and formed with outlet means for

discharge of air therefrom, blade means movably mounted with respect to said housing, and blade displacement means coupled to said blade means for displacement of said blade means between a first position and a second position for control of air discharged from said outlet means, wherein the improvement in said change-over diffuser comprises:

said blade displacement means being provided as an expansible thermal sensor-actuator element coupled to drive said blade means and being positioned inside said housing for displacement of said blade means in response to the temperature of the air supplied to said housing;

said blade means being formed for the discharge of air from



said outlet means when said blade is in said first position at a first angle of discharge;

said blade means being formed for the discharge of air from said outlet means when said blade means is in said second position at a second angle of discharge angularly displaced from said first angle of discharge; and

said displacement means further includes a snap-acting assembly coupled between said thermal sensor-actuator element and said blade means and formed for snap-acting displacement of said blade means between said first position and said second position in response to expansion and contraction of said thermal sensor-actuator element upon changes of temperature in said housing.

4,515,070

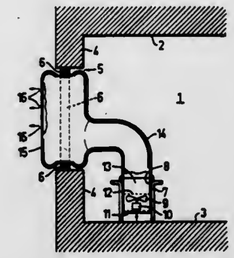
VENTILATION METHOD AND APPARATUS

Olle Bobjer, Carl Barks väg 3, S-163 58 SPånga, Sweden; Torsten Dahlin, Jose Almeida Camargo 103, Sao Paulo SP CEP05436, Brazil, and John Grieves, G:a Lundagatan 6 A, S-117 26 Stockholm, Sweden

Filed Jun. 16, 1983, Ser. No. 505,128

Int. Cl.³ F24F *7/06*

U.S. Cl. 98—42.07 **5 Claims**



1. A method for temporary ventilation of a room through an existing wall opening, said method comprising the step of:

blowing room air through a self-sustained sealing inflatable balloon installed in the existing wall opening wherein the exit of the blown air from the balloon takes place under a sufficient resistance to build an overpressure sufficient to inflate the balloon and maintain the balloon in self-sustained sealing connection with the existing wall opening.

4,515,071

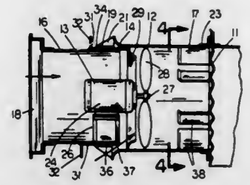
VENTILATION AIR CONTROL UNIT

Elmer S. Zach, R.R. #2, Box 118, Humphrey, Nebr. 68642

Continuation-in-part of Ser. No. 365,113, Apr. 5, 1982, abandoned. This application Sep. 23, 1982, Ser. No. 422,068.

Int. Cl.³ E04H *7/00;* **F04D** *29/52*

U.S. Cl. 98—55 **8 Claims**



1. An improved ventilation air control unit of the type having a pneumatic pathway and a fan and motor unit disposed within said pneumatic pathway for causing air to be moved therethrough, the improvement comprising:

(a) forming said pneumatic pathway of two tubes connected together, the first of said tubes having an interior diameter that is smaller than the interior diameter of the second of said tubes;

(b) positioning said fan blade and motor unit such that said fan blade may rotate within said second tube; and

(c) a supplemental feed unit for reducing air slippage around the fan blade that includes:

(i) a substantially annularly shaped flange disposed within said pneumatic pathway upstream of and proximal to said fan blade;

(ii) at least one pneumatic port unit disposed through said pneumatic pathway upstream of said annularly shaped flange; and

(iii) at least one air flow augmentation scoop disposed on the interior wall of said pneumatic pathway under each of said port units, whereby air from the pneumatic pathway interior flows from said scoops through said ports in said pneumatic pathway wall to the exterior of said ventilation air control unit and back into the interior through the larger diameter tube.

3. The improved ventilation air control unit of claim 1 wherein said pneumatic pathway pneumatically connects to a grain drying bin.

4,515,072

SPRAYBOOTH

Eric H. Crisp, Colchester, England, assignor to Spraybake Limited, England

Filed Nov. 24, 1982, Ser. No. 444,094

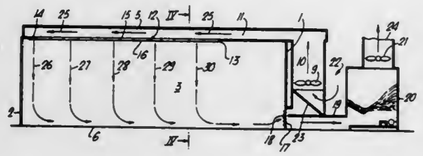
Claims priority, application United Kingdom, Dec. 14, 1981, 8137625

Int. Cl.³ B05C *15/00*

U.S. Cl. 98—115.2 **12 Claims**

1. In a spraybooth for use in spray painting motor vehicles, said spraybooth including first and second side walls, first and second end walls, a top, vehicle access doors and means mounting said access doors in said second end wall, the improvement comprising an air supply and extraction system comprising air supply duct means which extends substantially centrally along the length of said top and is spaced from said first and second side walls, means defining at least one air supply opening in said air supply duct means, and filter means fitted to said at least one opening for suplying air downwardly,

said filter means extending from a position at or adjacent said first end wall to a position at or adjacent said second end wall, means defining at least one air outlet opening only in the bottom of said first end wall, air extraction means connected to said at least one air outlet opening for extracting air from said spraybooth through said at least one outlet opening, blower means for causing air to flow through said air supply duct means only in a direction from said first end wall towards said second end wall of said spraybooth, and air heater means for heating said air caused to flow through said air supply duct means, whereby, in operation, the velocity head of the air



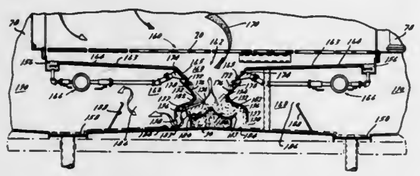
flowing through said air supply duct means decreases and the pressure head of said air flowing through said duct means increases along the whole length of said filter means in a direction from said first end wall towards said second end wall, and the downward air flow from said filter means per unit length of said air supply duct means increases in a direction from said first end wall towards said second end wall of said booth, such that an extremely efficient downward air flow pattern in the spraybooth is achieved with little or no turbulence, whereby, after spraying, droplets of paint with which the air in the spraybooth is contaminated after spraying are not precipitated on the surface of the motor vehicle which has been sprayed.

4,515,073

AIR SCRUBBING SYSTEM

Robert Dorsch, Warren, and Arnold J. Matusz, West Bloomfield, both of Mich., assignors to Alpha-Debon Industries, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 399,430, Jul. 19, 1982, abandoned. This application Jun. 16, 1983, Ser. No. 505,088
Int. Cl.³ B05C *15/00*
U.S. Cl. 98—115.2 **24 Claims**



5. In an apparatus for removing particulate matter from contaminated air, said contaminated air flowing from a chamber through a perforate floor of said chamber, the improvement comprising:

a sub-floor beneath at least a portion of said perforate floor, means for flooding said sub-floor with a flowing fluid to a depth sufficient to substantially prevent the accumulation of said particulate matter on said sub-floor as said contaminated air flows through said perforate floor, a flow opening in said sub-floor for receiving said contaminated air flowing therethrough;

means for producing a fluid spray;

means for merging said flowing sub-floor fluid with said fluid spray to form a combined fluid spray;

conduit means communicating with said flow opening for passing said contaminated air through said combined fluid spray in order to remove said particulate matter from said contaminated air, said conduit means including

baffle means in said conduit means for directing said combined fluid spray along a generally serpentine fluid flow path and for directing said contaminated air along a generally serpentine air flow path so that said contaminated air passes through said combined fluid spray at least twice as it flows through said conduit means; and

fluid collection means for collecting said combined fluid spray after said contaminated air has passed therethrough and for draining said combined fluid spray from said conduit means;

said fluid spray means, said conduit means and said fluid collection means all being located beneath the elevation of said sub-floor, and said sub-floor including an apron member extending therefrom in a generally downward direction into said flow opening in order to flowingly direct said sub-floor fluid along said apron member and then into said flow opening, said fluid spray means being located beneath said sub-floor and beneath

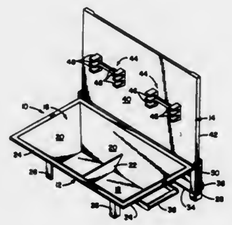
said apron portion in order to be out of the flow of said contaminated air, and said means for producing said fluid spray and said apron member both being oriented generally in said downward direction in order to direct said combined spray flow into said flow opening to impinge upon said baffle means.

4,515,074

BARBECUE COOKING UNIT

Kjeld K. Iverson, R.R. 1, Pender Island, British Columbia, Canada V0N 2M0

Filed May 3, 1984, Ser. No. 606,677
Int. Cl.³ A47J *37/07*
U.S. Cl. 99—393 **4 Claims**



1. A barbecue cooking unit, comprising:

a. a coal well having an open top, defined within a bottom wall and upstanding side walls;

b. support means for securing said coal well in a generally upright position;

c. lid means for covering said open top, depending from said support means in pivotable engagement therewith from a closure position and in vertically sliding receipt therewith over an adjustable range in a cooking position; and,

d. grill support means on said lid means for receiving perforate grill members and presenting the same at a preselected height over said open top;

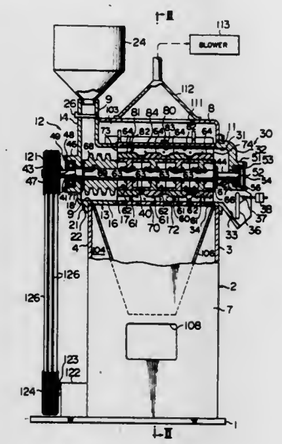
wherein said lid means is selectively pivotable into sealing engagement with said coal well for extinguishing coals contained therein when in said closure position and is selectively slideable over said range to present said grill support means at a desired vertical level over said coal well when in said cooking position.

4,515,075

RICE POLISHING MACHINE

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co. Ltd., Tokyo, Japan

Filed May 14, 1984, Ser. No. 609,807
Claims priority, application Japan, Jul. 15, 1983, 58-129786
Int. Cl.³ B02B *3/00, 7/02*
U.S. Cl. 99—519 **12 Claims**



1. A machine for polishing rice grains comprising,

a frame;

a shaft supported by said frame for rotation about an axis generally extending horizontally;

a polishing roll mounted on said shaft for rotation therewith;

a perforated cylindrical polishing assembly mounted in substantially concentric relation to said axis, said perforated cylindrical polishing assembly cooperating with said polishing roll to define a polishing chamber between an outer circumferential surface of said polishing roll and an inner circumferential surface of said perforated cylindrical polishing assembly, said polishing chamber having an inlet and an outlet;

supply means communicating with said inlet of said polishing chamber for supplying rice grains to be polished into said polishing chamber;

drive means drivingly connected to said shaft for rotating said shaft to rotate said polishing roll relative to said perforated cylindrical polishing assembly, to thereby polish the rice grains within said polishing chamber, to remove a surface bran layer from each of the rice grains, the polished rice grains being discharged from said polishing chamber through said outlet thereof;

partition wall means engaging with an outer circumferential surface of said perforated cylindrical polishing assembly at a location below said axis of said shaft, for dividing said outer circumferential surface into an arcuate bottom surface section and the remaining arcuate surface section and for defining a lower space to which said arcuate bottom surface section is exposed and an upper space to which said remaining arcuate surface section is exposed; and

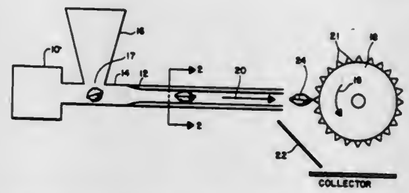
air flow means for causing air to flow from said lower space into said polishing chamber through apertures in said arcuate bottom surface section of said perforated cylindrical polishing assembly and then to flow from said polishing chamber into said upper space through apertures in said remaining arcuate surface section of said perforated cylindrical polishing assembly, the air flow from the lower space into the polishing chamber through the apertures in the arcuate bottom surface section of the perforated cylindrical polishing assembly being higher in velocity than that of the air flow from the polishing chamber into the upper space through the apertures in the remaining arcuate surface section of the perforated cylindrical polishing assembly, to thereby impart an upward force to the rice grains within the bottom portion of said polishing chamber.

4,515,076

APPARATUS FOR CRACKING AND SEPARATING NUTS

David Reznik, 375 Coleridge, Palo Alto, Calif. 94301

Filed Jun. 22, 1983, Ser. No. 506,682
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—571 **13 Claims**



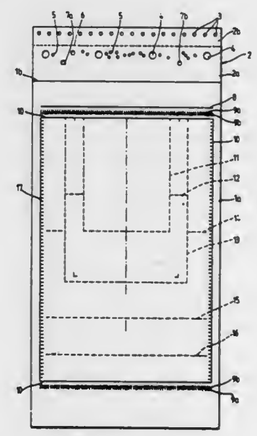
1. Apparatus for cracking walnut halves having an edge defining an open bottom, comprising a tube through which the walnut halves are propelled, said tube having a first cross-section dimension which will pass the halves in a desired orientation, and a second cross-section dimension orthogonal to and less than the first cross-section dimension, and means for applying sufficient force along the second cross-sectional dimension to crack the walnut halves, the desired orientation being such that the open bottom faces away from the force applying means and the first and second dimensions of said tube being such that the edges of the walnut halves rest on said tube during application of force by said force applying means.

4,515,077

DUPLICATING STENCIL

Lewis Davidson, Woodford Green; Brian Lees, Hertfordshire, and Eric K. Lytra, Enfield, all of England, assignors to Gestetner Manufacturing Limited, London, England

Filed Jul. 19, 1983, Ser. No. 515,151
Claims priority, application United Kingdom, Jul. 22, 1982, 8221249; Nov. 2, 1982, 8231257
Int. Cl.³ B41N *1/24*
U.S. Cl. 101—127 **12 Claims**



1. A duplicating stencil for use on more than one type of duplicator, comprising: a sheet of limp stencil material having first and second edges; printed markings on said sheet to assist the user in positioning the image correctly on the stencil based

upon the size of a paper sheet to which the image is to be transferred during duplication; a stencil heading strip attached along said first edge of said sheet and defined as first and second heading strip regions separated by an intended line of separation of the heading strip regions, said first and second heading strip regions each having a plurality of differently configured apertures defining a respective array of mounting holes in each of said regions for mounting said stencil on any of several duplicators having different mounting post configurations and patterns, said intended line of separation being parallel to and spaced from said first edge of the limp sheet; said printed markings defining a plurality of image fields having a common printed top edge line for aligning material to be duplicated relative to an edge of the copy sheet to be printed, said common printed top edge line spaced from said heading strip, whereby the user can position the image to be duplicated with reference to said common top edge line and does not need to choose from a range of different said top edges for respective different duplicators when positioning the image on the stencil before printing.

4,515,078

DOCTOR BLADE DRIVE

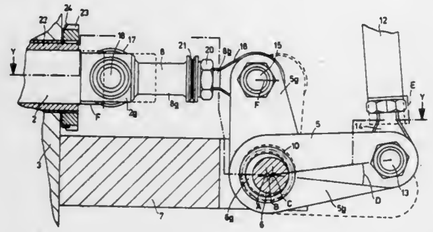
Kurt Difflipp, Dietzenbach, and Johannes Wanke, Offenbach am Main, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,272

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220845

Int. Cl.³ B41F *9/10*

U.S. Cl. 101—157 **12 Claims**



1. In a printing press having a form cylinder and a doctor blade, means for mounting the doctor blade for longitudinal oscillatory movement relative to the form cylinder, and means for generating oscillating movement of said doctor blade wherein the improvement comprises:

said oscillating movement generating means includes a pivotably mounted rocker, means coupling the rocker to the doctor blade, means for sequentially pivoting said rocker in opposite directions to effect oscillation longitudinal movement of said doctor blade, and means for continuously displacing the pivot axis of said rocker independently of the press operation for continuously varying the points of reversal of the doctor blade oscillating movement, said means for continuously displacing the rocker pivot axis including a shaft having an eccentric section, first one way idler bearing means for supporting said rocker on said eccentric shaft portion for rotation about an eccentric axis thereof, means including second one way idler bearing means for supporting said shaft for rotational movement about a pivot axis of said shaft, said first bearing means being operable to permit rotational movement of said rocker relative to said eccentric shaft portion in one direction while said second bearing means blocks rotational movement of said shaft in such direction about said pivot axis, and said second bearing means being operable to permit rotational movement of said shaft about said pivot axis in an opposite direction while said first bearing means blocks rotational movement of said rocker relative to said eccentric shaft portion in such direction.

4,515,079

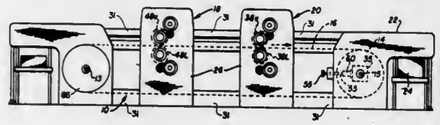
PLANETARY SYNCHRONIZING DEVICE

Harold P. Dahlgren, 11 Turtle Creek Bend, Dallas, Tex. 75204

Filed Mar. 9, 1983, Ser. No. 473,852

Int. Cl.³ B41F *21/08*; B41L *21/10*

U.S. Cl. 101—183 **3 Claims**



1. In a device for moving a sheet of paper relative to a printing cylinder in a printing press comprising a printing cylinder; an impression cylinder; a pair of drive wheels, one of the said drive wheels being positioned adjacent each side of said printing press; variable speed drive means to rotate said drive wheels and to synchronize the speed of the drive wheels with the speed of the printing and impression cylinders; a second pair of wheels adjacent the opposite end of the printing press; a pair of endless steel tapes, one of said tapes extending about one of said second pair of wheels and a drive wheel adjacent one side of the press and the other of said tapes extending about a drive wheel and another of said second pair of wheels adjacent the opposite side of the printing press; gripper bars secured to and extending between said tapes, spacing between the second wheel and drive wheel adjacent each side of the press being adjustable for adjusting tension in the tapes, the improvement comprising: said second pair of wheels being idler wheels; means supporting said idler wheels such that the idler wheels are driven by the tapes and each idler wheel is rotatable independently of the other idler wheel and independently of the drive wheels; positive adjusting means for adjusting the position of the idler wheels such that a change in temperature of said tapes will result in a change in tension in said tapes but not a change in the length of said tapes, said adjustment means being adapted for independent adjustment of the length of each of said tapes for changing the length of the distance between gripper bars on each of said tapes.

4,515,080

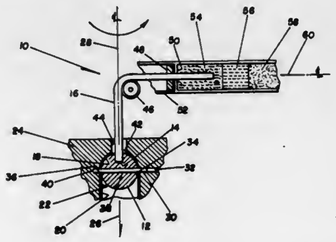
INERTIA TYPE FRICTION INITIATOR FOR ROTATING PROJECTILES

Frank H. Bell, Logan, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Dec. 27, 1982, Ser. No. 453,317

Int. Cl.³ F42C *19/08*

U.S. Cl. 102—205 **6 Claims**



1. An inertia type friction initiator for a rotating projectile having a central axis comprising,

a cable having a first end and a second end, and having a first portion adjacent said first end and a second portion adjacent said second end,

a mass means,

cavity forming means providing a cylindrical cavity having a narrowed opening at one end, a shoulder around said opening for supporting said mass means in said cavity, and having a longitudinal axis that is in substantial parallel alignment with the central axis of the projectile,

a shear pin extending through said mass means and at least a portion of said cylindrical cavity forming means to retain said mass means against said shoulder,

sleeve forming means providing a sleeve having a longitudinal axis that is positioned transversely of the longitudinal axis of said cylindrical cavity and is displaced axially of said cavity in a direction opposite the direction of movement of the projectile when launched for flight, said sleeve having a keeper-washer therein, a shoulder against one side of which said keeper-washer is in engagement and on the other side of which there is provided friction initiating means, said keeper-washer and shoulder each having an opening therein,

said cable having said first end extending through the narrowed opening in said cavity and fixedly attached to said mass means, said cable for said first portion extending in a direction that is substantially parallel to the central axis of the projectile, said direction being opposite to the direction of movement of the projectile when launched for flight, and

said cable having said second end thereof extending through the opening in the keeper-washer and shoulder in said sleeve into physical contact with said friction initiating means, said cable being affixed to said keeper-washer, and

means for guiding said second portion of said cable in a direction transversely of the central axis of the projectile.

4,515,081

ARRANGEMENT IN A FUSE FOR PROJECTILES WITH EXPLOSIVE CHARGE FOR CHANGING OVER BETWEEN DIRECT AND DELAYED IGNITION OF THE EXPLOSIVE CHARGE

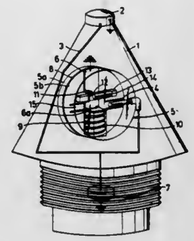
Kenneth Sundvall, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Nov. 16, 1982, Ser. No. 442,155

Claims priority, application Sweden, Nov. 16, 1981, 8106780

Int. Cl.³ F42C *9/00*

U.S. Cl. 102—266 **4 Claims**



1. A fuse for an ignitor circuit of a projectile having an explosive charge, said ignitor circuit being changeable by said fuse between a direct and delayed ignition of said explosive charge, said fuse comprising:

a body being electrically conducting,

a cavity defined by said body,

a housing mounted in said cavity, said housing being electrically insulating,

a first channel defined by said housing, said first channel extending parallel to a longitudinal axis of said body,

means defining an electrically conductive path and a tongue, said means being located in said housing,

a power source having one pole for electrical connection to said igniter circuit and said means and an opposite pole electrically connected to said body,

an electrical contact member slidingly mounted in said first channel and electrically contacting said contact means, said electrical contact member being biased for engagement with said body, the electrical contact member being movable in the first channel under accelerational forces effected on the fuse for moving from an initial position contacting the body and short-circuiting the electrical ignitor circuit to a second position where the electrical contact member interrupts the short-circuit of the electrical ignitor circuit by engaging said tongue,

spring means for biasing said electrical contact member into electrical contact with said body,

a second channel defined by said housing located transversely to said first channel, and

locking means slidable in said second channel between two positions, one position prevents said electrical contact member from being restrained from electric contact with said body for short-circuiting the electrical ignitor circuit and the other position permits said electrical contact member to be restrained from electric contact with said body and interrupting the short-circuiting of the electrical ignitor circuit.

4,515,082

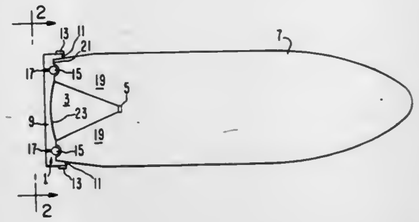
GUIDED PROJECTILE LENS COVER

Vito F. Pizzurro, Villa Park, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 22, 1983, Ser. No. 534,852

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—293 **4 Claims**



1. A soft cover for protectively covering a rearward-looking lens of a guided projectile fired from a barrel, comprising:

a substantially planar soft plate that covers an exposed rear surface of the lens; and

formed within the soft plate, a vacated toroidal chamber that receives gases of combustion during the firing of the projectile from its barrel; wherein

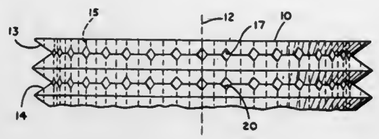
the soft plate has many small holes coupling a rear surface of the soft plate to the chamber, for admitting gases of combustion into the chamber during firing;

the shape of the chamber in the plane of the soft plate is a circular band surrounding and spaced apart from the lens;

the chamber is separated from a substantially planar rear surface of the projectile by a thin portion of soft cover generally in the shape of a circular band; and

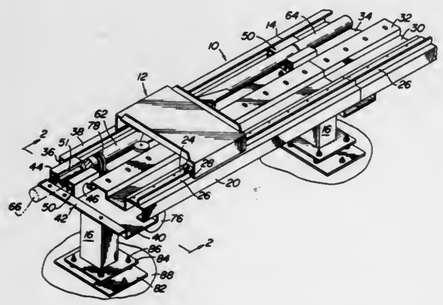
the difference between the gas pressure within the chamber and the gas pressure outside the soft plate subsequent to the projectile's leaving its barrel causes the soft cover to be removed from the lens.

4,515,083
ANTI-PERSONNEL FRAGMENTATION LINER
Anthony M. Caruso, 1620 Dallas St., Aurora, Colo. 80010
Filed Jan. 27, 1983, Ser. No. 461,509
Int. Cl.³ F42B *27/00, 13/48*
U.S. Cl. 102—493 **6 Claims**



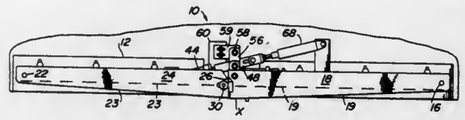
6. A structure for producing anti-personnel fragments comprising a liner, said liner having an inner surface and an outer surface, a plurality of grooves formed in the inner surface thereof, and a plurality of grooves formed in the outer surface thereof, said grooves being angularly oriented with respect to each other in order to establish a plurality of points of mutual intersection, said grooves being sufficiently deep to form an aperture in said liner at said mutual intersection points in order to produce an anti-persoinnel fragment of predetermined size and shape.

4,515,084
TRACK FOR DRIVERLESS VEHICLES
Charles E. Jacoby, Bethleham, assignor to SI Handling Systems, Inc., Easton, Pa.
Filed Dec. 7, 1981, Ser. No. 328,282
Int. Cl.³ B61B *13/12*
U.S. Cl. 104—166 **10 Claims**



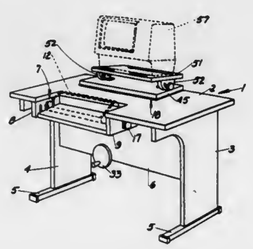
1. A track for a driverless vehicle comprising a horizontally disposed integral sheet metal track structure having a low profile and shaped to have first and second rails on a top surface thereof along opposite sides thereof for supporting a driverless vehicle disposed entirely above said track structure, said track structure being a plurality of sheet metal members arranged end to end, said first rail being a discrete longitudinally extending drive shaft supported by cylindrical bearings on said track structure and adapted for frictional contact with a drive wheel on one side of a driverless vehicle, said second rail being a horizontally disposed surface which is an integral portion of said track structure and adapted to be in rolling contact with a support wheel on the other side of a driverless vehicle, motor means supported by said track structure and connected to said shaft for rotating said shaft about its longitudinal axis, the top surface of said second rail lying in a generally horizontal plane which is tangent to said shaft at the 12 o'clock position thereof, and said shaft being both a drive and a rail for a driverless vehicle.

4,515,085
SPEED CONTROL APPARATUS
Peter H. Rohrbach, Bath, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.
Filed Jul. 15, 1983, Ser. No. 514,123
Int. Cl.³ B61K *7/02*
U.S. Cl. 104—250 **13 Claims**



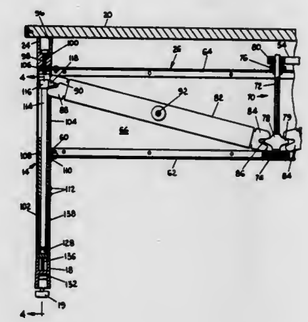
1. Apparatus for controlling the angular position of a drive wheel for a driverless vehicle comprising first and second speed control devices supported for pivotable movement between a first position wherein said first device is adapted to cause deceleration movement of a drive wheel and a second position wherein said second device is adapted to allow acceleration movement of a drive wheel, motor means coupled to said devices for moving said devices between said positions, and means associated with said devices so that said devices move rapidly toward said second position by said motor means for the initial part of their movement and then move slowly for the remainder of their movement.

4,515,086
ADJUSTABLE WORD PROCESSOR WORK STATION
Alfred Kwiecinski, and Jon A. Yauger, both of Fairfield, Ohio, assignors to Hamilton Sorter Company, Inc., Fairfield, Ohio
Filed Apr. 21, 1982, Ser. No. 370,467
Int. Cl.³ A47B *57/00*
U.S. Cl. 108—96 **14 Claims**



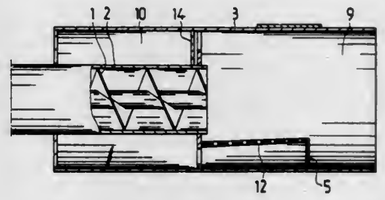
1. A work station for a word processor having a keyboard and a separate console, said work station comprising:
a planar general rectangular work surface;
a front opening in said work surface extending inwardly from the front edge of said work surface intermediate the opposite ends thereof;
a front platform of a size to mount a keyboard thereon received within said front opening;
means for raising and lowering said front platform relative to said work surface;
a rear opening in said work surface extending inwardly from the rear edge thereof intermediate the opposite ends thereof, said rear opening terminating short of said front opening;
a rear platform of a size to be received within said rear opening, said rear platform being adapted to mount a console thereon;
means for raising and lowering said rear platform relative to said front opening, means in association with said rear platform for moving a console mounted thereon forwardly and rearwardly relative to said rear platform, means in association with said rear platform for rotating a console mounted thereon in a horizontal plane relative to said rear platform, and means in association with said rear platform for tilting said rear platform about a horizontal axis, whereby the front and rear platforms may be independently adjusted relative to said planar work surface to thereby adjust the relative positions of the keyboard and console of a word processor.

4,515,087
HEIGHT ADJUSTABLE TABLE
Andrew J. Kurrasch, Saugatuck, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Feb. 17, 1983, Ser. No. 467,245
Int. Cl.³ A47B *9/00*
U.S. Cl. 108—147 **14 Claims**



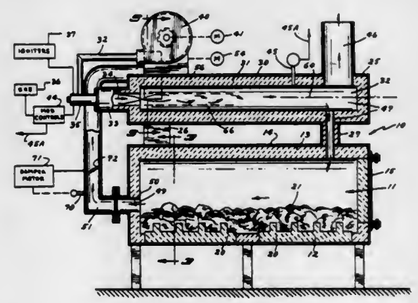
1. A table with a vertically movable top surface, said table comprising:
a work surface;
at least two legs, each of which has a stationary member and a movable member adapted to move vertically with respect to said stationary member;
means securing the work surface to said legs movable members;
at least two levers pivotably mounted to one of said stationary and movable members of said legs, each of said levers having at one end thereof a leg engagement means to engage the other of said movable and stationary members of one of said legs and having at the other end thereof drive engagement means;
a drive means mounted to the one of said stationary and movable members and adapted to vertically drive said drive engagement means on the other ends of said levers, said drive means including a driven shaft, means for rotating said driven shaft, and a nut mounted for travel along the driven shaft and engagable with said levers;
the improvement which comprises:
an enlarged diameter on said nut and said levers drive engagement means comprising recesses for receiving said enlarged diameter on said nut so as to operatively connect said nut to said levers, said enlarged diameter and recesses allowing for hinge-like movement of said levers relative to said nut during rotation of said lever;
whereby rotation of said drive shaft results in vertical movement of said nut and results in a corresponding vertical movement of said work surface with respect to said legs stationary members.

4,515,088
BURNER FOR PELLETS
Markku Orjala, Jyväskylä, Finland, assignor to Valtion Teknillinen Tutkimuskeskus, Finland
PCT No. PCT/FI82/00055, § 371 Date Jun. 27, 1983, § 102(e) Date Jun. 27, 1983, PCT Pub. No. WO83/01671, PCT Pub. Date May 11, 1983
PCT Filed Nov. 3, 1982, Ser. No. 515,048
Claims priority, application Finland, Nov. 5, 1981, 813487
Int. Cl.³ F23K *3/14*
U.S. Cl. 110—110 **3 Claims**



1. A burner for the combustion of granular fuels, comprising an inner tube, an outer tube spaced outwardly of the inner tube with the space between said tubes defining an air supply chamber, the outer end of the outer tube projecting beyond the inner end of the inner tube and the projecting end of the outer tube defining a combustion chamber, a flange connecting the outer end of the inner tube to said outer tube and separating said air supply chamber from said combustion chamber, a grate disposed within the lower end of the combustion chamber, the lower end of said flange having at least one hole providing communication between the said supply chamber and said grate, the upper portion of said grate having a plurality of openings whereby air flows upwardly from the grate into the combustion chamber, and air distribution means in the upper end of said flange for delivering air from said air supply chamber to said combustion chamber in a swirling pattern.

4,515,089
INCINERATOR HAVING KINETIC VENTURI ISOTHERMIC GRID BURNER SYSTEM
Merlin W. Ehrlichmann, Alexandria, Minn., assignor to Sunburst Laboratories, Inc., Minneapolis, Minn.
Filed Feb. 23, 1984, Ser. No. 583,046
Int. Cl.³ F23B *5/00*
U.S. Cl. 110—235 **10 Claims**



1. An incinerator assembly for burning organic materials comprising a first housing defining a main burning chamber having a first end and a second end;
an outlet port defined in a second end of said main burning chamber;
a second housing defining a secondary chamber, said second

housing having an input end and a distal end, said secondary chamber having a substantially circular cross section and being elongated along a longitudinal central axis;

conduit means leading from the outlet port of said main burning chamber;

and effluent gas blower having an inlet connected to said conduit means, and a blower outlet opening to said secondary chamber, said blower outlet having an outlet opening central axis positioned generally perpendicular to the longitudinal axis of said secondary chamber, said blower outlet opening to the secondary chamber adjacent the input end of said secondary chamber;

a burner member mounted on said second housing and opening to the secondary chamber through an opening substantially coaxial with the longitudinal axis and opening into the secondary chamber at said input end, including burner blower means for directing burning gases generally along the central axis of said secondary chamber under burner blower pressures, said opening to the secondary chamber for said burning gases being substantially smaller than the diameter of said secondary chamber so the burning gases move along a core path adjacent the input end of the secondary chamber;

said blower outlet opening being on a lateral side of the second housing, the blower outlet opening central axis being laterally offset from the longitudinal central axis, the blower outlet opening being defined by surface means including a surface portion that is oblique with respect to the blower outlet opening central axis for directing a portion of the flow through the blower outlet opening to cross the longitudinal central axis, and intermix by moving unsymetrically across the core path with respect to the longitudinal axis;

a pipe connection at the distal end of said secondary chamber opening into said main burning chamber adjacent the first end thereof to form a circulation path when the effluent gas blower is operating; and

means to control combustion rate of said burner to maintain burning in the secondary chamber and substantially completely burn combustible materials in the effluent gases as the effluent gases move along the secondary chamber from the input end to the distal end thereof.

4,515,090

SOLID FUEL BURNER

David F. Brashears, Oviedo, and Joseph T. Mollick, Longwood, both of Fla., assignors to Mechtron International Corp., Orlando, Fla.

Filed Dec. 12, 1983, Ser. No. 560,439
Int. Cl.³ F23C *1/10*; F23K *5/00*
U.S. Cl. 110—264 **5 Claims**

1. A solid fuel burner comprising in combination:

a combustion chamber;

a housing;

a solid fuel and primary air nozzle attached to the combustion chamber through the housing for directing pulverized solid fuel and primary air to the combustion chamber;

a solid fuel and primary air input connected to the solid fuel and primary air nozzle for directing solid fuel and air thereinto;

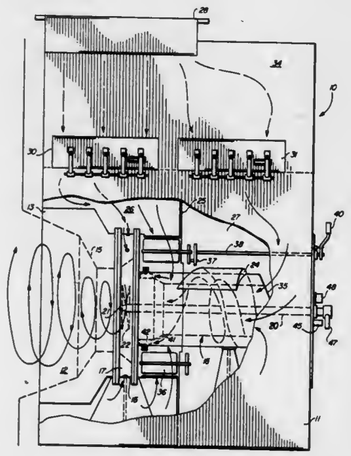
a secondary air input means for directing air under pressure through said housing into said combustion chamber;

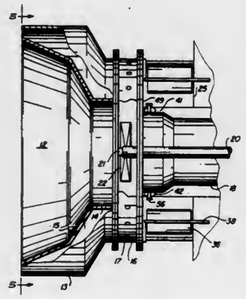
a housing dividing means dividing the housing into first and second compartments;

proportioning means for directing the input secondary air between said housing first and second compartments, the first compartment directing air into said combustion around said solid fuel and primary air nozzle and the second compartment directing air through said solid fuel and primary air nozzle and around said solid fuel and primary nozzle, said proportioning means including a plurality of adjustable dampers for directing predetermined proportions of secondary air between said first and second housing compartments whereby a two zoned secondary air control may be used in adjusting the flame of a solid fuel burner;

a plurality of registers located in said solid fuel burner for directing the secondary air from said housing first compartment to said combustion chamber in one direction of rotation;

a plurality of vanes located in said housing around said solid fuel and primary air nozzle for directing a portion of the secondary air from said second compartment into said combustion chamber in a second direction of rotation;





a solid fuel and primary air diffuser mounted at the output of said solid fuel and primary air nozzle for rotating solid fuel and air passing through said solid fuel and primary air nozzle in said second direction of rotation and an air cooled annular shaped metal conduction barrier having a plurality of apertures therein mounted to said combustion chamber adjacent the inlet of secondary and primary air into said combustion chamber, whereby said conduction barrier is air cooled by the incoming air.

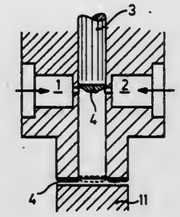
4,515,091

METHOD OF REMOVING PLASTIC RESIDUES IN MIXING APPARATUSES AND MOLDING TOOLS

Klaus Schlueter, 1 c Windeckstrasse, 8000 Muenchen 70, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,622
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231795
Int. Cl.³ F23G *3/00*
U.S. Cl. 110—346 **1 Claim**

1. A method for removing plastic residues in a mixing apparatus or molding tool filled from such apparatus, wherein the plastic residues are heated and vaporized by means of a heated



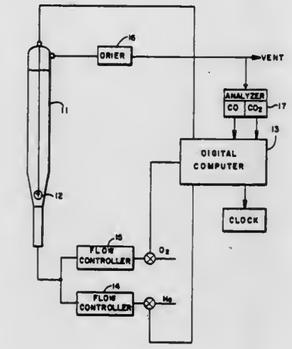
shaped part adapted to the shape of the component to which the said residues adhere.

4,515,092

ENHANCEMENT OF SOLID FUEL COMBUSTION BY CATALYST DEPOSITED ON A SUBSTRATE

Dennis E. Walsh, Richboro, and Gary J. Green, Yardley, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 11, 1984, Ser. No. 569,816
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **9 Claims**



1. A method of burning solid fuel comprising:

depositing a catalyst which enhances combustion by impregnating a particulate refractory substrate;

contacting a solid fuel with said particulate refractory substrate; and

burning said fuel.

4,515,093

METHOD AND APPARATUS FOR THE RECOVERY OF HYDROCARBONS

David H. Beardmore, and Riley B. Needham, both c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Mar. 4, 1982, Ser. No. 354,564
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **18 Claims**

1. A method for generating steam by a high pressure, high intensity, or high heat release method of combustion in an elongated combustion zone having upstream and downstream ends on an intermediate location and utilizing a normally-solid, fuel which produces non-combustible solid residues, comprising:

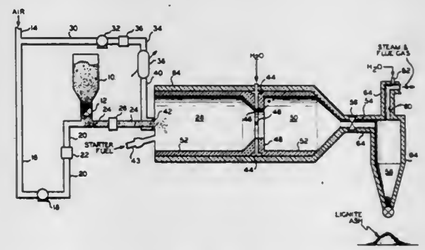
(a) introducing said fuel axially into said upstream end of said elongated combustion zone;

(b) introducing a first volume of combustion-supporting gas into said upstream end of said combustion zone, as an annular, rotating stream about said fuel, in a manner to produce a rotating, toroidal vortex, of said fuel and said first volume of combustion-supporting gas, moving from said upstream end toward said downstream end of said combustion zone;

(c) said first volume of combustion-supporting gas being in an amount at least equal to the stoichiometric amount necessary for combustion of essentially all of the combustible portion of said fuel;

(d) said fuel and said first volume of combustion-supporting gas being introduced into and flowed through said combustion zone in a manner to collapse said vortex, at said intermediate location in said combustion zone, to produce an intimate mixture of said fuel and said first volume of combustion-supporting gas and produce plug-type flow through the remaining downstream portion of said combustion zone;

(e) burning said fuel in the presence of said first volume of



combustion-supporting gas while thus flowing the same through said combustion zone under conditions to produce a heat release rate of at least about 7 MM Btu/hr and a flue gas containing non-combustible solid residues of said fuel;

(f) abruptly terminating said burning of said fuel, adjacent said downstream end of said combustion zone, at least in part, by introducing water into said flue gas to form a mixture of said flue gas and said water;

(g) maintaining said mixture of flue gas and water in an vaporization zone, directly coupled to and in open communication with said downstream end of said combustion zone, for a time sufficient to vaporize a major portion of said water and produce a mixture of said flue gas and steam; and

(h) separating said solid residues from said mixture of flue gas and steam.

4,515,094

FUEL JET METHOD AND APPARATUS FOR PULVERIZED COAL BURNER

Shigeru Azuhata; Norio Arashi, both of Hitachi; Kiyoshi Narato, Ibaraki; Tooru Inada, Hitachi; Kenichi Souma, Hitachi; Keizou Ohtsuka, Hitachi; Yukio Hishinuma, Hitachi, and Tadahisa Masai, Kure, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,179
Claims priority, application Japan, Dec. 27, 1982, 57-226907
Int. Cl.³ F23K *5/00*
U.S. Cl. 110—347 **1 Claim**

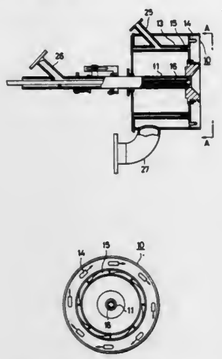
1. A fuel jet method for a pulverized coal burner comprising the steps of:

(a) jetting a first coal in fine powder form with an air ratio of 0.1 to 0.3,

(b) jetting and swirling a second coal in a coarse powder form with an air ratio of 1 to 2 from a first outer circumferential portion of said first coal a first swirling of said second coal being performed in a swirl number, which is equal to momentum of the first swirling stream of said second coal per momentum toward a straight direction of said second coal, of 0.75 to 1.3, and a swirl angle of said

first swirl being from 45° to 90° along an axis of the burner, and

(c) jetting and swirling air from a second outer circumferential portion of said first swirling stream of said second coal, the speed of the second swirling of said air at an



outermost circumferential portion of said second swirling stream of said air being faster than that at an inner circumferential portion of said second swirling stream, and a swirl angle of said second swirl being from 45° to 90° along an axis of the burner.

4,515,095

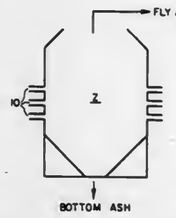
COMBUSTION OF COAL/WATER SLURRIES

Eugene J. Greskovich, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 585,796, Mar. 2, 1984, abandoned. This application May 1, 1984, Ser. No. 605,945

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **9 Claims**



1. A method for combusting coal/water slurries with oxygen enriched air in a furnace firebox which contains means for supplying a coal/water slurry, a primary airstream and a secondary airstream into the firebox, for the purpose of substantially complete combustion of the coal to CO_2 and H_2O;

(a) feeding a coal/water slurry into the furnace firebox along with the primary and secondary airstreams to yield a flame of combustion, and

(b) adding a sufficient amount of oxygen into the primary airstream, such that oxygen concentration of the air in the flame zone when the primary and secondary airstreams converge with the coal is greater than 21 up to 28 volume percent.

4,515,096

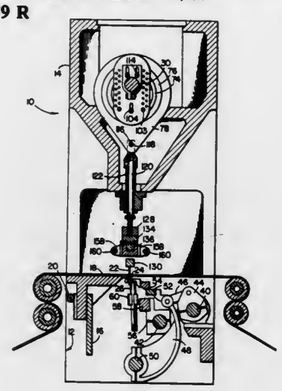
TUFTING MACHINES

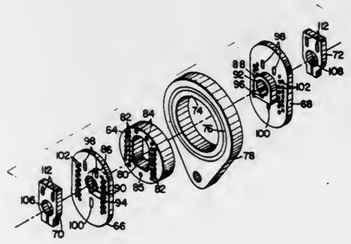
Gary L. Ingram, Ooltewah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Continuation of Ser. No. 407,753, Aug. 13, 1982, abandoned. This application Oct. 11, 1983, Ser. No. 540,365

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **23 Claims**





1. In a tufting machine having a frame, a drive shaft rotatably carried by said frame, a circular cam eccentrically mounted on said shaft for rotation about preselected rotational axes off-set from the geometric center of the cam, a connecting rod operably connected to said cam and driven thereby, a needle bar, means constrained for movement in a linear path connecting said needle bar to said connecting rod for reciprocation of the needle bar, a plurality of needles carried by said needle bar, and a plurality of looper means for cooperating with said needles to seize loops of yarn presented thereby, the improvement comprising, adjusting means for changing the reciprocating stroke of said needles, said adjusting means comprising a slot extending through said cam for receiving said shaft, said slot being elongated along a radial line substantially interconnecting said geometric center and said rotational axes, said slot having spaced side walls substantially parallel to said radial line, and locking means for locking said cam to said shaft with the axis of said shaft at preselected positions along said radial line, said locking means comprising plate means including a hub protruding from a face thereof, means defining an aperture extending through said hub for receiving said shaft, said hub including substantially linear side walls spaced apart a distance substantially equal to the spacing between the side walls of said slot for receipt of said hub within said slot while permitting said cam to be positioned along said radial line, said cam and plate means including selectable cooperating indexing means corresponding to preselected eccentricities of said cam, means for fastening said cam to said plate means with said hub within said slot in a position corresponding to a preselected eccentricity, and means for fastening said plate means to said shaft.

4,515,097

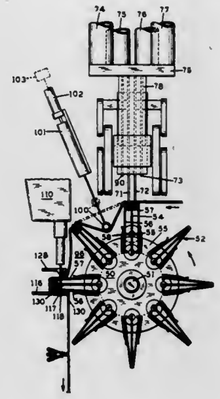
DRAPERY PLEAT HEMMING METHOD

Herman Rovin, c/o Automatech Industries Inc., Rte. 3 Box 370A, Piedmont, S.C. 29673

Filed Aug. 30, 1982, Ser. No. 412,553

Int. Cl.³ D05B *97/00, 35/08, 3/02*

U.S. Cl. 112—262.3 **5 Claims**



1. The method of making pleated drapes or the like, in which a fabric panel is advanced widthwise, gathered periodically into multiple fold pleats along the top edge and secured at the pleat folds, the improvement which comprises

(a) advancing the top edge of the fabric widthwise in a controlled manner,

(b) forming a set of pleat folds in said top edge and gripping the folds,

(c) while continuing to grip said folds, incrementally advancing the fabric top edge to bring the next pleat fold region into pleat-forming position,

(d) while continuing to grip the previously formed pleat folds. controllably displacing the fabric in the region between the gripped pleat folds and the pleat forming position, to establish a predetermined spacing between adjacent pleats,

(e) forming a next set of pleat folds while continuing to grip the previous set and while maintaining the fabric controllably displaced, and gripping said last formed set of folds,

(f) while continuing to grip the beforementioned sets of pleat folds, incrementally advancing said fabric to bring said previously formed set of pleat folds into sewing position, and

(g) sewing said previously formed set of pleat folds.

4,515,098

DEVICE FOR DRIVING A SEWING MACHINE

Karl-Heinz Walther, Weilerbach, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,512

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 8124815[U]

Int. Cl.³ D05B *69/22, 69/16, 69/08, 55/14*

U.S. Cl. 112—274 **9 Claims**

1. A device for driving a sewing machine from at least one predetermined stop position to at least one second predetermined position, the sewing machine having a main shaft, a positioning motor and transmission means connected between the main shaft and the motor for rotating the main shaft in a forward drive direction, the motor being operable for stopping the main shaft at the first position, comprising:

a driver disc connected to the transmission means;

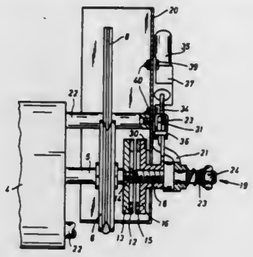
a coupling disc movably mounted with respect to the sewing machine and engageable with said driver disc;

a supporting part movably mounted with respect to the sewing machine for movably carrying said coupling disc;

a cam surface defined on said coupling disc and fixed relative thereto;

a cam engaging surface defined on said supporting part and engaged with said cam surface for movement of said coupling disc into engagement with said driver disc upon relative movement between said support part and said coupling disc; and

drive means connected to said coupling disc for moving said coupling disc to engage said driver disc with and for further moving said coupling disc to rotate driver disc and thus rotate the main shaft in a direction opposite to the forward drive direction for bringing the main shaft into the at least one second predetermined position.



4,515,099

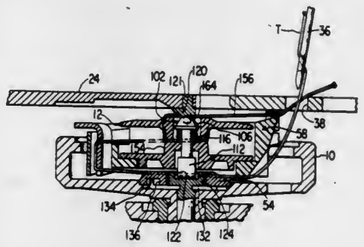
THREAD SEVERING ARRANGEMENT FOR THREAD WINDING BOBBIN

Gerald J. Creed, Rahway, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 25, 1984, Ser. No. 573,733

Int. Cl.³ D05B *59/00, 57/08*

U.S. Cl. 112—279 **6 Claims**



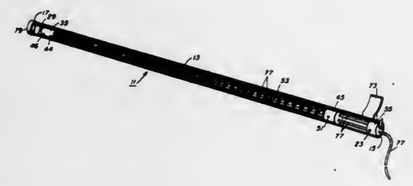
1. In the bed of a sewing machine; a rotatable looptaker; a bobbin case within the looptaker; a bobbin supported for rotation in the bobbin case; a bobbin driver; a plunger which is axially movable but rotationally confined in the bobbin, the plunger being spring biased upwardly and having an actuating button thereon which projects above the bobbin; a plate slidable in the bed; a cam on the plate movable by the plate between a position in which bobbin winding operations are performed on the machine and a position in which sewing operations are performed, the actuating button on the plunger including a top planar surface, and the cam including a bottom planar surface to engage said planar surface on the button in the bobbin winding position of the slide plate and thereby hold the plunger downwardly in the bobbin in a position wherein the plunger is connected to the driver and the bobbin is rotatable by the driver acting through the plunger, one of the said

planar surfaces having a sharp edged hole therein and the other planar surface including a sharp edged elongate slot which is disposed to extend across the edge of said hole in the bobbin winding position of the slide plate.

4,515,100
ATTACHMENT FOR SAIL VEHICLES TO AUTOMATICALLY COMPENSATE FOR VARYING WIND PRESSURE

Robert A. Grierson, 11 Great Rd., Sudbury, Mass. 01776

Filed Oct. 24, 1983, Ser. No. 544,499
Int. Cl.³ B63H *9/10*
U.S. Cl. 114—97 **11 Claims**



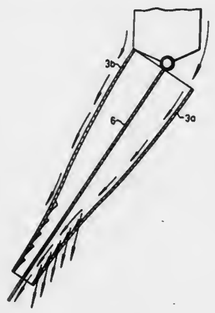
1. A device for use in automatically adjusting the angular position of a boom supporting the foot of a sail in a sailing vehicle relative to a mast in said sailing vehicle supporting the luff of said sail in said sailing vehicle in order to compensate for sudden gusts of wind and the like, said device comprising:
   a. an elongated tubular housing having a first end and a second end,
   b. a pulley slidably mounted in said housing,
   c. an adjustment block slidably mounted in said housing between said first end and said pulley,
   d. an end block fixedly mounted on said housing at said first end,
   e. a compression spring disposed inside said housing between said pulley and said adjustment block for urging said pulley away from said adjustment block,
   f. means for mounting said housing on said boom, and
   g. a line extending into said housing through said first end around said pulley and back out of said housing through said first end and adapted to be secured at one end to said body of said sailing vehicle and provided with means at the other end for limiting inward movement of said line into said housing.

4,515,101
FLOW-MODIFYING ELEMENT, ESPECIALLY A RUDDER

Bengt Akerblom, Tokers väg 1, S-231 00 Trelleborg, Sweden

PCT No. PCT/SE82/00230, § 371 Date Feb. 25, 1983, § 102(e) Date Feb. 25, 1983, PCT Pub. No. WO83/00129, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 29, 1982, Ser. No. 474,647
Claims priority, application Sweden, Jun. 30, 1981, 8104074
Int. Cl.³ B63H *25/38*
U.S. Cl. 114—162 **5 Claims**

1. A hollow water-flow modifying element for boats and ships, said element having leading and trailing ends and a rear end proximate said trailing end, said element comprising
   a pair of opposite side walls defining a space therebetween and having a pair of opposite, outer surfaces which are symmetrical in relation to each other and in relation to water flow when said boat or ship is moving forward on a straight course and with said element positioned such that said surfaces form substantially similar angles in relation to said course;
   wherein one of said outer surfaces forms a suction side and the other a pressure side of said element when said element is positioned at an angle in relation to said course;
   a central partition wall means for dividing said space into a pair of parallel, symmetrical flow passages extending in the direction of water-flow from the leading end to the trailing end of said element;
   water inflow openings in said element at the leading end of said element in communication with each of said flow passages on either side of said partition;
   water outflow openings arranged in each of said side walls in the rear end portion thereof;
   wherein any water flow induced by movement of said element in water and passing through said flow passages is

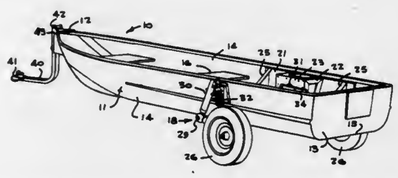


   symmetrically distributed through the outflow openings of said side walls when said element is moving forward on said straight course;
   wherein such water flow will be distributed predominantly through the outflow openings at said suction side of said element to modify water flow therealong when said element is set at an angle in relation to said straight course; and
   wherein said outflow openings are provided in vertical and horizontal rows in said side walls.

4,515,102
COMBINATION BOAT AND TRAILER ASSEMBLY WITH INTEGRATED RETRACTABLE TRAILER WHEEL STRUCTURE

John A. Kury, Beaumont, Tex., assignor to Port-A-Boat, Inc., Pensacola, Fla.

Filed Nov. 23, 1983, Ser. No. 555,635
Int. Cl.³ B63C *13/00*
U.S. Cl. 114—344 **15 Claims**

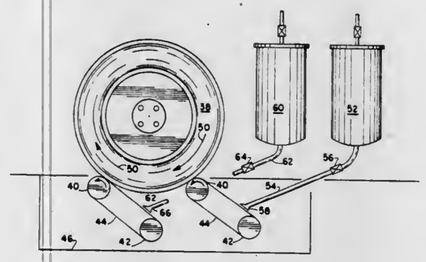


1. A combination boat and trailer assembly movable on land and on water having outboard wheel assemblies and support structure therefor provided in integrated relation on the boat, wherein the wheels can be lowered to form a trailering system when it is desired to tow the boat and can be raised to positions withdrawing the wheel assemblies above normal water level when the boat is waterborne, comprising a boat hull having bow and stern end portions and boat hull sides, hitch means at the bow of the boat for removable attachment to a trailer hitch ball of a towing vehicle, said wheel assemblies each having a pair of pivotally intercoupled articulated rigid arms and an interconnecting shock absorber located outwardly adjacent opposite sides of the boat hull providing an upper arm and a lower arm, a ground engaging wheel rotatably journaled on the lower portion of said lower arm, said shock absorber resiliently maintaining said upper and lower arms substantially at an acute angle to each other within a predetermined angular range, a rigid axle member extending from and rigidly fixed to the upper arm intermediate its ends adapted to be disposed in horizontal position in use attitude of the boat, and a wheel assembly mounting frame structure fixed inwardly adjacent each side of the boat adjacent the wheel assemblies having means supporting a pair of axially spaced bearing members defining journal bearings aligned along a common axis extending transverse of the boat hull for the axle members associated with the respective wheel assemblies, and axle member rotating means located inboard of the boat affixed to inboard portions of each said axle member for rotating the axle members to angularly spaced first and second positions locating the wheel assemblies respectively in said lowered trailering position and in said raised position.

4,515,103
APPARATUS FOR COATING A TIRE TREAD

Robert E. Greig, 911 Imperial Palm Dr., Largo, Fla. 33541

Continuation-in-part of Ser. No. 343,406, Jan. 28, 1982, abandoned. This application Oct. 28, 1983, Ser. No. 546,449
Int. Cl.³ B05C *1/02, 19/00*
U.S. Cl. 118—218 **3 Claims**

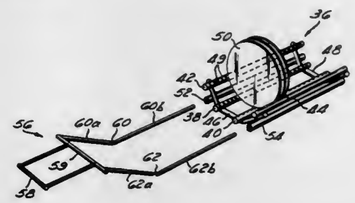


1. An apparatus for improving the friction-related and traction-related qualities of a tire having a tread formed by raised, road-contacting surfaces and depressed, non-road contacting surfaces, comprising,
   a pit formed in a support surface,
   a first pair of vertically spaced roller members comprising an upper roller member and a lower roller member,
   a first belt member disposed in interconnecting relation between said first pair of upper and lower roller members,
   a second pair of vertically spaced roller members comprising an upper roller member and a lower roller member,
   a second belt member disposed in interconnecting relation between said second pair of upper and lower roller members,
   said first and second pairs of roller members longitudinally spaced from one another by a distance sufficient to accommodate therebetween a vehicle tire,
   said first and second pairs of roller members disposed within said pit so that the respective upper roller members of said first and second pair of roller members are positioned substantially coplanar with said support surface,
   said vehicle tire contacting said first and second belt members at circumferentially spaced contact-regions thereon,
   a first reservoir member for the storage of an adhesive,
   said first reservoir member adapted to discharge said adhesive at preselected rates of discharge onto said first belt member at a point intermediate said first pair of upper and lower roller members,
   a second reservoir member for the storage of particulate,
   said second reservoir member adapted to discharge said particulate at preselected rates onto said second belt member at a point intermediate said second pair of upper and lower roller members,
   said first and second belt members positioned so that their axes of rotation are parallel to the axis of rotation of the tire,
   and a common belt-rotation means to impart unidirectional and uniform rate rotation to said first and second belt members so that adhesive is applied to said tire by said first belt member and so that said particulate is applied to said tire by said second belt member subsequent to said adhesive application.

4,515,104
CONTIGUOUS WAFER BOAT

Steven N. Lee, Irvine, Calif., assignor to ASQ Boats, Inc., Tustin, Calif.

Filed May 13, 1983, Ser. No. 494,171
Int. Cl.³ B05C *13/02*
U.S. Cl. 118—500 **7 Claims**

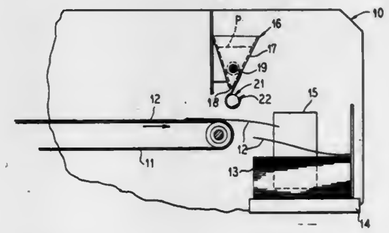


1. A boat for supporting a batch of semi conductor wafers comprising support means having a plurality of slots for supporting a series of wafers in spaced, parallel relation with the slots extending from one end of the support means to the other with no obstruction extending beyond the ends so that a second boat of the same kind may be positioned in end-to-end relation with the first boat and the adjacent wafers between the mating ends of the boat will have the same spacing between them as the rest of the adjacent wafers, and a pair of pickup tubes secured to said support, with the tubes extending generally perpendicular to the wafer-receiving spaces defined by the slots, said tubes being sized to receive the tines of a fork-like tool for lifting the boat.

4,515,105
DIELECTRIC POWDER SPRAYER

William E. Danta, 10440 S. Mason St., Oak Lawn, Ill. 60453, and Frank H. Adams, 8014 S. Talman Ave., Chicago, Ill. 60652

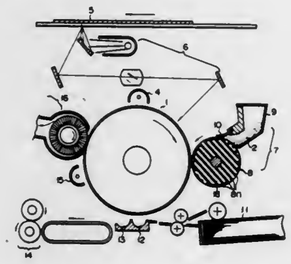
Filed Dec. 14, 1982, Ser. No. 449,572
Int. Cl.³ B05B *5/02;* **B05C** *5/02;* **F23D** *11/32*
U.S. Cl. 118—629 **5 Claims**



1. In a dry powder sprayer forming a mist of dispersed powder particles for use in printing presses of the type discharging printed sheets successively onto a stack and having an elongated container for dry powder with an outlet spanning the path of the discharging sheets and positioned above the stack and means controlling the feeding of powder through said outlet, the improvement which comprises an elongated

electrode in the path of powder discharging from the outlet, said electrode having an electric current conducting core spanning the full length of the electrode and surrounded by a high dielectric plastics material cover, and means for feeding a high voltage current through the length of said core to provide an electrostatic field surrounding the electrode receiving controlled amounts of powder from said outlet.

4,515,106
DEVELOPING APPARATUS
Mitsuaki Kohyama, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Oct. 13, 1983, Ser. No. 541,657
Claims priority, application Japan, Oct. 15, 1982, 57-180924; Oct. 15, 1982, 57-180925
Int. Cl.³ G03G *15/06*
U.S. Cl. 118—651 **18 Claims**



1. A developing apparatus operatively associated with an electrostatic latent image forming surface of an image carrier for supplying the electrostatic latent image forming surface with developer particles charged with a predetermined polarity to thereby develop an electrostatic latent image formed on the electrostatic latent image forming surface, said developing apparatus comprising:

a substrate having a portion in confronting relationship with said electrostatic latent image forming surface to establish a space between said portion and said electrostatic latent image forming surface, said charged developer particles being transferrable from said portion to said electrostatic latent image forming surface through said space;

at least one pair of adjacent spaced-apart electrodes formed on said substrate portion, each said electrode having a surface facing the electrostatic latent image forming surface; and

voltage impressing means for impressing said at least one pair of adjacent electrodes with a voltage of sufficient magnitude to generate an electric field which repels charged developer particles away from said surface of one of said pair of electrodes into said space, wherein certain ones of said repelled charged developer particles are attracted by said electrostatic latent image forming surface while other ones of said repelled charged developer particles are transferred in said space between said one and the other of said pair of electrodes.

4,515,107
APPARATUS FOR THE MANUFACTURE OF PHOTOVOLTAIC DEVICES
Eugene Fournier, Garden City, and Joachim Doehler, Union Lake, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio
Filed Nov. 12, 1982, Ser. No. 441,280
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—718 **22 Claims**

1. An apparatus for manufacturing photovoltaic devices of the type including at least one layer of semiconductor material deposited onto a substrate; said apparatus comprising:

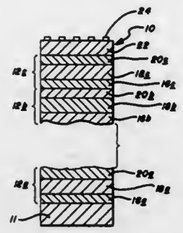
a source of substrate material;

at least one deposition chamber, said chamber arranged to deposit said layer of semiconductor material onto said substrate as said substrate is advanced therethrough;

a source of microwave energy;

means for continuously advancing said substrate material through said at least one deposition chamber;

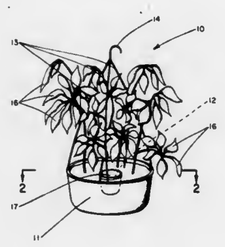
coupling means coupling said microwave energy into said at least one deposition chamber, said coupling means com-



prising an antenna contained within said at least one deposition chamber; and

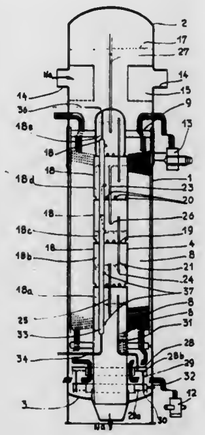
means for introducing reaction gases including at least one semiconductor containing compound into said at least one deposition chamber to form a microwave energy excited glow discharge plasma within said at least one deposition chamber for depositing a layer of semiconductor material onto said substrate from the microwave energy excited glow discharge plasma within said at least one deposition chamber.

4,515,108
BIRD NESTING HABITAT
Henry Rankin, Jr., 505 Valley Rd., Fayetteville, N.C. 28305
Filed Mar. 22, 1984, Ser. No. 592,293
Int. Cl.³ A01K *31/14*
U.S. Cl. 119—45 R **11 Claims**



1. An artificial bird nesting habitat comprising: an open vessel means; a nesting chamber means having sides and being centrally disposed within said vessel means; foliage support material disposed within said vessel means and surrounding the sides of said nesting chamber means; and foliage like means mounted in and extending upwardly and outwardly from said support material whereby a relatively secure habitat is provided which will attract birds to nest within said chamber.

4,515,109
APPARATUS FOR THE PRODUCTION OF STEAM BY HEAT EXCHANGE BETWEEN A HEAT-TRANSFER LIQUID METAL AND FEED WATER, COMPRISING SEVERAL LIQUID METAL/INERT GAS INTERFACES
Georges Jullien, Saint Michel sur Orge, France, assignor to Novatome, Le Plessis-Robinson, France
Filed Feb. 28, 1983, Ser. No. 470,807
Claims priority, application France, Mar. 11, 1982, 82 04076
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—32 **4 Claims**



1. Apparatus for the production of steam by heat exchange between a heat-transfer liquid metal and feed water, comprising

(a) a cylindrical envelope (**1**), having a vertical axis closed by solid ends (**2, 3**);

(b) a hollow cylindrical central body (**4**) and a peripheral tube bundle (**8**) coaxially disposed within said envelope over only a portion of its height;

(c) at least one pipe (**14**) for introducing heat-transfer liquid metal into said envelope (**1**), said at least one pipe passing through the latter into a zone located above said tube bundle (**8**);

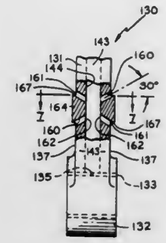
(d) at least one outlet pipe for the liquid metal, passing through the lower part of said envelope (**1**);

(e) means (**12**) for feeding the tubes of said bundle with feed water;

(f) means (**13**) for the recovery of steam produced in said tube bundle (**8**) by heat exchange between the liquid metal, circulating in contact with the surface of said tubes of said bundle, and said feed water, the top level (**17**) of the liquid metal having above it inert gas which fills the top part of said envelope; and

(g) a plurality of superposed compartments within said central body and separated from one another by transverse partitions (**19**) located at different heights inside said central body, apertures (**20**) being provided in a side wall of said central body in the lower part of each said compartment (**18, 28**) and each of said compartments (**18***c*) being placed in communication with the compartment located directly thereabove (**18***d*) by means of a substantially vertical first tube (**23**), and with the compartment (**18***b*) located directly therebelow by means of a substantially vertical second tube (**21**), both tubes issuing into the compartment (**18***c*) under consideration at a height such that the end of said second tube (**21**) is above the end of said first tube (**23**), the compartment located at the highest level (**18***e*) communicating with the upper part of said envelope (**1**) filled with inert gas, while the compartment (**28***a*) located at the lowest level is in communication with a reserve of neutral gas for establishing liquid metal inert gas interfaces in each of the successive compartments (**18**), through the introduction of inert gas from the compartment (**28***a*) located at the lowest level.

4,515,110
ROD BEARING LUBRICATION FOR TWO-CYCLE ENGINES
John C. Perry, 3170 Falcon Dr., Carlsbad, Calif. 92008
Filed Jul. 23, 1984, Ser. No. 633,471
Int. Cl.³ F01P *1/04*
U.S. Cl. 123—41.37 **15 Claims**



1. A method to lubricate and cool a piston rod and rod bearings, said rod being connected between a crankpin of a crankshaft and a wrist pin secured to a piston for a two-cycle internal combustion engine comprising the steps of:

forming a longitudinally extending bore within said rod, said bore communicates between said crankpin at a first end of said rod and said wrist pin at a second end of said rod,

forming an interconnecting passage means in said rod that communicates between said longitudinally extending bore and a crankcase chamber formed by and within an engine block of said two-cycle engine, said passage having a first inlet end and a second exit end, said rod forming a protrusion at said second exit end of said passage within said longitudinal bore,

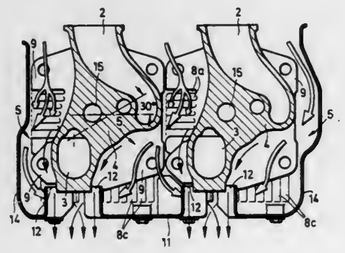
injecting a combustible mixture of fuel and oil within said crankcase chamber from a source of said fuel and oil communicating with said chamber, and

collecting said mixture of fuel and oil entrained within said chamber through said interconnecting passage in said rod communicating between said longitudinally extending bore in said rod and said chamber, said fuel and oil enters said bore in said rod and exits through a crankpin rod bearing and a wrist pin rod bearing as said rod reciprocates with said piston and rotates around said crankshaft through said crankpin, said protrusion formed by said rod within said bore at said second exit end of said interconnecting passage means serves to divert said collection of fuel and oil around said passage means to inhibit said fuel and oil from exiting said passage means, said fuel and oil thereby lubricating said bearings and cooling said rod as said engine operates.

4,515,111
AIR-COOLED, RECIPROCATING PISTON, INTERNAL COMBUSTION ENGINE WITH CYLINDER HEADS FORMING ARCUATE OR S-SHAPED COOLING DUCTS THEREBETWEEN
Wilhelm Vosmeyer, Beaconsfield, Canada; Roderick Cole, Kirkland, Canada and Pavel J. Slezak, Quebec, Canada, assignors to KHD Canada Inc., Quebec, Canada
Filed Apr. 19, 1984, Ser. No. 601,961
Int. Cl.³ F01P *1/02*
U.S. Cl. 123—41.61 **13 Claims**

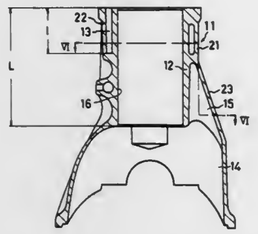
1. In a air-cooled, reciprocating piston, internal combustion engine which defines a longitudinal axis and which includes at least one row of cylinders comprising individual cylinder

heads arranged side-by-side, said cylinder heads being provided with cooling ribs extending substantially normal to the axes of the cylinders, said cylinder heads including means for accommodating attachment bolts, said cylinder heads each having at least one inlet valve and one exhaust valve, the valve stems of which extend substantially parallel to the axes of the cylinders and are situated such that the plane passing through said valve stems lies at an acute angle to said longitudinal axis of the internal combustion engine, said cylinder heads each including an intake duct located on a side thereof which is swept by cooling air, said intake duct having its inlet opening aligned approximately centrally of the cylinder head, said cylinder heads each including an exhaust duct extending sub-



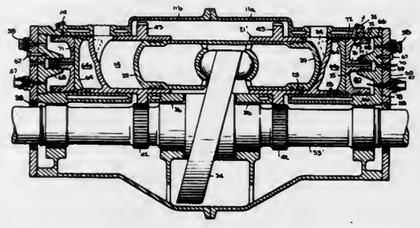
stantially perpendicularly to the exhaust air side, and a lateral deflector being provided adjacent the end cylinder head in each row, the improvement wherein each of the cylinder heads includes a central area between the valve stems therein, and wherein each cylinder head is externally shaped to provide at least one arcuate or S-shaped cooling air duct between it and an adjacent, similarly constructed cylinder head, and wherein each cylinder head includes an enclosed cover plate section facing the associated cylinder of the cylinder head, said enclosed cover plate being provided with cooling ribs at the cylinder head periphery, substantially on the exhaust air side thereof, and the side thereof facing the inlet valve stem, and includes boss means for accommodating attachment bolts.

4,515,112
ALUMINUM ALLOY CYLINDER BLOCK
Yasuhiro Tsuchiya, and Hitoshi Ozawa, both of Shizuoka, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Sep. 28, 1982, Ser. No. 426,077
Claims priority, application Japan, Oct. 28, 1981, 56-172466
Int. Cl.³ F02F 7/00, 1/06
U.S. Cl. 123—41.84 **15 Claims**



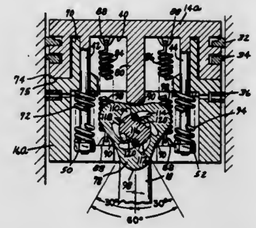
1. An aluminum alloy cylinder block for use in a water-cooled internal combustion engine, said cylinder block having a longitudinal axis and comprising:
a plurality of cylinders formed integrally with the block and disposed in a row, each cylinder having an integral bore into which a piston is to be movably fitted, each bore having a center axis which intersects the longitudinal axis of the cylinder block, and each cylinder having an upper end where combustion occurs and a lower end;
a water jacket provided around the upper end of each cylinder, said water jacket being adapted to allow passage of water therein for cooling the upper end of the cylinder and having an outer side wall and a lower end wall integral with the cylinder, the lower end wall being spaced from the upper end of the cylinder by 0.2 to 0.5 times the length of the cylinder from the upper end to the lower end;
a crankcase having an outer side wall connected to and formed integrally with the lower end wall of the water jacket, said outer side wall having an inside surface spaced from the cylinders and an outside surface;
at least one cylinder rib extending downwardly from the lower end wall of the water jacket and outwardly from the lower end of each cylinder to the inside surface of the outer side wall of the crankcase being integrally formed with each of said lower end wall of the water jacket, lower end of each cylinder and the inside surface of the outer side wall of the crankcase for dissipating heat from the lower end of the cylinder below the water jacket and for increasing the rigidity of the engine, said at least one rib intersecting the corresponding cylinder at a line parallel to the center axis of the cylinder and located at a distance of not more than one quarter of a diameter of the cylinder bore from a plane containing the center axis of the cylinder and perpendicular to the longitudinal axis of the cylinder block.

4,515,113
SWASH PLATE ENGINE
John Z. DeLorean, 834 Fifth Ave., New York, N.Y. 10021
Filed Jun. 1, 1982, Ser. No. 383,989
Int. Cl.³ F02B 75/04
U.S. Cl. 123—48 C **26 Claims**



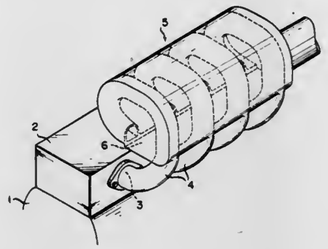
1. An engine comprising
an engine block having at least one cylinder chamber, an intake duct extending to said cylinder chamber to deliver a combustible medium thereto and an exhaust duct extending from said cylinder chamber to exhaust a combustion gas therefrom;
a sleeve rotatably and axially mounted in said chamber, said sleeve having a cavity and a port communicating said cavity with a selected one of said ducts;
a piston slidably mounted in said cavity of said sleeve to define a compression chamber therewith;
transmission means for reciprocating said piston within said sleeve while rotating said sleeve about an axis thereof to alternately communicate said port with said ducts; and
means for moving said sleeve axially in said block relative to said piston for adjusting said compression chamber in volume when the piston is at TDC.

4,515,114
TWO PART PISTON ASSEMBLY
Nguyen Dang, 2524 Clinton Ave. S., Minneapolis, Minn. 55404
Filed Aug. 15, 1983, Ser. No. 523,091
Int. Cl.³ F02B 75/04
U.S. Cl. 123—48 B **5 Claims**



1. A two-part piston assembly for use in the cylinder bore of a four-stroke internal combustion engine having a connecting rod and a wrist pin comprising a piston having upper and lower parts, one atop the other, means for slideably connecting said parts whereby they move relative to each other between distended and compressed positions along an axis defined by the central axis of the cylinder bore, a contact member extending from said upper part toward said lower part, camming means responsive to the periodic angular movement of the connecting arm to rotate said camming means to engage said contact member and distend the parts when the piston is in the exhaust stroke and compress the parts when the piston is in the compression stroke, said camming means including a ring member operatively connected to said wrist pin, said ring member including at least one pawl in swiveling engagement therewith, and a cam having a plurality of lobes on its outer periphery and a ratchet wheel on its inner periphery sized to receive said at least one pawl, said lobes being aligned to engage said contact member.

4,515,115
INERTIA SUPERCHARGER FOR INTERNAL COMBUSTION ENGINES
Junpei Okubo, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Mar. 31, 1982, Ser. No. 364,030
Claims priority, application Japan, Oct. 3, 1980, 55-140451
Int. Cl.³ F02B 75/22
U.S. Cl. 123—52 M **2 Claims**

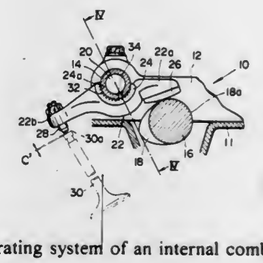


1. An inertia supercharging apparatus for a comparatively low speed internal combustion engine having cylinders within a cylinder head with a plurality of air intake ports formed therein, said supercharging apparatus comprising:
a generally barrel shaped surge tank having a substantially cylindrical peripheral surface enclosing an interior volume and having an air intake thereto; and
a plurality of spaced apart pipes each having two ends, each pipe having one of said ends open within said surge tank and extending spirally along the inside of said peripheral surface of said surge tank for most of its circumference, said pipes having their other of said ends projecting out of said surge tank through said peripheral surface and connected to respective air intake ports of said cylinder head, said pipes having spaces between them within said surge tank which are unobstructedly open to and form part of said interior volume of said surge tank, wherein said air intake ports are fitted with an air intake manifold consisting of said surge tank and said plurality of pipes, and the diameter of said surge tank is selected so that said pipes will have a length to approximately satisfy the formula:

$$\gamma = \frac{a}{2\pi}\sqrt{\frac{F_{pip}}{V_h \times l}}$$

wherein γ is the frequency of air supplied into the intake manifold, a is the velocity of sound in the supplied air, F_{pip} is an inner sectional area of the surge tank of the air intake manifold, V_h is the effective cylinder volume, and 1 is the length of air travel through the air intake manifold including the air intake ports thereof.

4,515,116
VALVE OPERATING SYSTEM OF INTERNAL COMBUSTION ENGINE
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 31, 1983, Ser. No. 480,866
Claims priority, application Japan, Apr. 2, 1982, 57-55573
Int. Cl.³ F01L 1/24
U.S. Cl. 123—90.43 **4 Claims**



1. A valve operating system of an internal combustion engine, comprising:
a rocker arm disposed in abutting contact with and swingable relative to a rocker arm shaft, said rocker arm having a first end portion co-operative with an operating cam, and a second end portion co-operative with a valve stem,
a generally semicylindrical bearing section formed on said rocker arm at the central part thereof and at which said rocker arm is swingably supported on said rocker arm shaft, said bearing section abuttingly contacting and extending along the outer peripheral surface of said rocker arm shaft; and
means for supplying engine lubricating oil under pressure between said bearing section and said rocker arm shaft and forcing said rocker arm away from said rocker arm shaft during engine operation to effectively maintain zero valve clearance, said oil supplying means including means defining a closed end groove on a surface of said rocker arm bearing section which surface is contactable with the outer peripheral surface of said rocker arm shaft, said groove being formed with an arcuate shape and extending along the outer peripheral surface of said rocker arm shaft, means defining an oil passage in said rocker arm shaft, said oil passage being filled with engine lubricating oil supplied under pressure, and means defining a hole in said rocker

arm shaft to establish fluid communication between said oil passage and said groove.

4,515,117

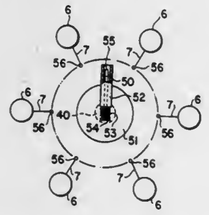
METHOD OF AND APPARATUS FOR IGNITING INTERNAL COMBUSTION ENGINE

Yukio Kajino, No. 3279-6, Oaza Yokoze, Yokoze-mura, Chichibu-gun, Saitama-ke, Japan

Continuation of Ser. No. 419,305, Sep. 17, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,866

Int. Cl.³ F02P *1/00, 5/04*

U.S. Cl. 123—146.5 A **1 Claim**



1. A method of igniting an internal combustion engine comprising the steps of:

generating a continuous train of pulses from a pulse generator adapted to generate pulses at such a desired pulse rate as to be capable of producing a desired number of electric discharges per one explosion step in each cylinder of the engine at a maximum number of rotations of a crank shaft of the engine,

stepping-up the voltage of the continuous train of pulses thus generated so that continuous electric discharges can be produced in a distributor and in ignition plugs of the engine cylinders,

distributing said stepped-up pulses from a feed arm carried by a rotor rotating in synchronism with said crankshaft of the engine to each one of a plurality of circumferential stationary electrodes of said distributor only and exclusively when said feed arm and one of said plurality of stationary electrodes are opposed to each other when said crank shaft is rotating at a relatively low number of rotations,

carrying out electric discharge of said stepped-up pulses at said desired pulse rate in each of said ignition plugs connected to each of said stationary electrodes respectively at the optimum explosion timing when evaporated fuel charges in each of the cylinders are compressed to the highest pressure when said crank shaft is rotating at a relatively low number of rotations, and

varying the angle of electric discharge of said stepped-up pulses from the feed arm to each of said opposing stationary electrodes by displacing said feed arm axially in the radial direction of rotation of the rotor in accordance with a centrifugal force generated by rotation of said rotor acting upon said feed arm when said crank shaft is rotating at a relatively high number of rotations, to provide advance control of ignition.

4,515,118

MAGNETO IGNITION SYSTEM, PARTICULARLY FOR ONE-CYLINDER INTERNAL COMBUSTION ENGINES

Georg Haubner, Ludwigstrasse 1, D-8431 Berg, and Hans-Dieter Schmid, Kamenzerstrasse 8, D-8500 Nürnberg, both of Fed. Rep. of Germany

Filed Jun. 19, 1984, Ser. No. 622,133

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1983, 3325275

Int. Cl.³ F02P *1/08*

U.S. Cl. 123—149 C **9 Claims**

1. Magneto ignition system to provide ignition pulses to a spark plug (**16**) of an internal combustion engine (ICE) and electrical operating energy for a control circuit (**22**) to control the ignition instant, having

a magneto (**10**) including a rotating magnet (**11, 12**), a magneto coil (**13**) having a primary winding (**14**) and a secondary winding (**15**),

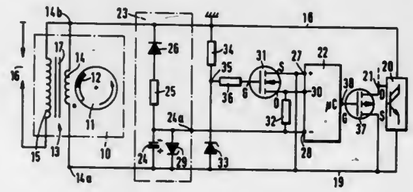
the secondary winding being coupled to the spark plug;

an ignition instant control circuit (**22**) including a control input terminal (**30**) to connect to the primary winding (**14**), and a semiconductor switch (**20**) having a main current carrying path, serially connected to the primary winding;

an energy supply circuit (**23**) having an output coupled to supply operating energy to the ignition instant control circuit including a storage capacitor (**24**) and a diode coupling network (**26**) coupling one output terminal (**14***b*) of the primary winding to the storage capacitor for storing electrical energy upon rotation of the magnet,

wherein, in accordance with the invention,

the diode coupling network (**26**) includes at least one diode (**26**) which is polarized reversely with respect to the main current carrying path of the semiconductor switch (**20**);



one input of the energy supply circuit (**23**) being connected to a terminal (e.g. FIG. 1: **14***a*) of the primary winding;

an insulated gate semiconductor switch (**31**) and a load resistor (**32**) are provided,

the switching path of the insulated gate semiconductor switch being connected in parallel to the output (e.g. FIG. 1: **14***a*, **24***a*) of the energy supply circuit,

the output (D) of the insulated gate semiconductor switch (**31**) being connected to a control input (**30**) of the ignition instant control circuit (**22**), and the gate (G) of the insulated gate semiconductor switch (**31**) being connected to one of the terminals (e.g. FIG. 1: **14***b*) of the primary winding (**14**);

and another one (e.g. FIG. 1: **14***a*) of the terminals of the primary winding being connected to an energy supply terminal (e.g. FIG. 1: **27**) of the ignition instant control circuit (**22**),

so that the another one terminal (**14***a*) of the primary winding (**14**) is connected both to said energy supply terminal (**27**) of the ignition instant control circuit (**22**) and to said input of the energy supply circuit (**23**).

4,515,119

BEARING BEAM STRUCTURE OF AUTOMOTIVE ENGINE

Yoshimasa Hayashi, Kamakura, and Naoki Ogawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 28, 1983, Ser. No. 470,372

Claims priority, application Japan, Mar. 4, 1982, 57-34245

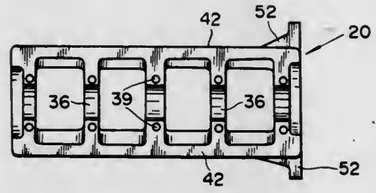
Int. Cl.³ F02F *7/00;* **F02B** *77/00*

U.S. Cl. 123—198 E **6 Claims**

1. A bearing beam structure of an automotive internal combustion engine having a cylinder block formed with a plurality of bearing sections, said bearing beam structure comprising:

a plurality of main bearing cap sections each of which associates with one of said cylinder block bearing sections to rotatably support the journal of a crankshaft;

first and second side wall sections respectively connected with the opposite side portions of each bearing cap section to securely connect said bearing cap sections with each other, each of said first and second side wall sections extending from a top portion to a bottom portion of each of said bearing cap sections, and being in contact with said cylinder block; and



first and second transmission installation sections to which a transmission housing is securely connected, said first and second transmission installation sections being formed respectively at said first and second side wall sections and located spaced from the cylinder block.

4,515,120

GOVERNOR FOR INTERNAL COMBUSTION ENGINE

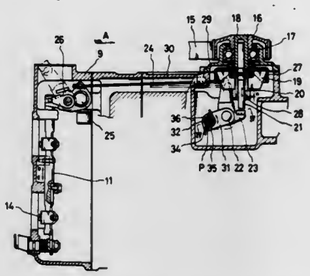
Koichi Amemori; Toshihiko Kawabe, both of Takatsuki, and Yosuke Takahashi, Kobe, all of Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Aug. 24, 1983, Ser. No. 526,069

Claims priority, application Japan, May 16, 1983, 58-84069; Jun. 21, 1983, 58-110188; Jul. 27, 1983, 58-117689[U]

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—368 **7 Claims**



1. A governor for an internal combustion engine for an outboard motor, of an arrangement in which the motion of a governor spindle is transmitted through a floating lever and a link member to a control rod for controlling the fuel injection of the engine, wherein said governor has a regulator handle operatively associated with a shaft of a grip of a steering handle of said outboard motor.

4,515,121

VALVE DRIVING CONTROL APPARATUS IN AN INTERNAL COMBUSITON ENGINE

Masaaki Matsuura, Tokyo, and Yoshikatsu Nakano, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,638

Claims priority, application Japan, Dec. 3, 1981, 56-194816

Int. Cl.³ F01L *1/34;* **F02D** *13/06*

U.S. Cl. 123—198 F **5 Claims**

1. A valve driving control apparatus for an internal combustion engine having a crankshaft and a power cylinder provided with a plurality of intake and exhaust valves, comprising:

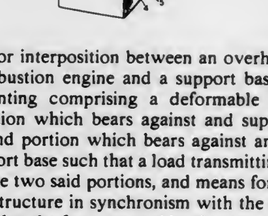
(a) an engine speed sensor means for generating an engine speed signal indicative of the rotational speed of the crankshaft;

(b) a cam shaft driven by the crankshaft;

(c) a plurality of cam assembly means associated with said cam-shaft for opening one of the intake and exhaust valves in accordance with the rotation of said cam-shaft at a predetermined valve timing;

(d) a first change-over means associated with said cam assembly means for selectively disabling operation of opening the intake valve upon receiving a first valve drive control signal;

(e) a second change-over means associated with said cam assembly means for selectively disabling an operation of



opening the exhaust valve upon receiving a second valve drive control signal; and

(f) a control means for producing said first and second valve drive control signal in response to said engine speed signal, said control means being arranged to produce said first and second valve drive control signals when the engine speed is lower than a first reference level, and to produce only said first valve drive control signal when the engine speed is between said first reference level and a second reference level higher than said first reference level.

4,515,122

MOUNTING FOR A VIBRATING SYSTEM

Jan Skorecki, Bramhall, England, assignor to National Research Development Corporation, London, England

Filed Apr. 20, 1983, Ser. No. 486,943

Claims priority, application United Kingdom, Apr. 26, 1982, 8211972

Int. Cl.³ F02B *77/00*

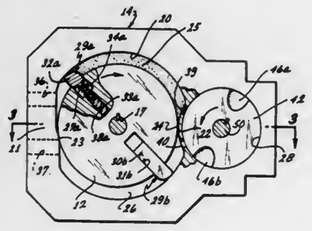
U.S. Cl. 123—198 E **2 Claims**



1. A mounting for interposition between an overhead camshaft internal combustion engine and a support base for the engine, the amounting comprising a deformable structure having a first portion which bears against and supports the engine and a second portion which bears against and is supported by the support base such that a load transmitting path is defined between the two said portions, and means for deforming the mounting structure in synchronism with the vibration of the engine such that the force exerted by the second portion on the support base remains substantially constant, wherein the deforming means is operative to apply an external deforming force to the mounting structure at a portion of the structure spaced from the main load transmitting path and comprises a lever system connected to the deformable structure and acted upon by a force which varies in synchronism with the vibration of the engine, wherein the deformable structure comprises a resilient cantilever one end of which is connected to the

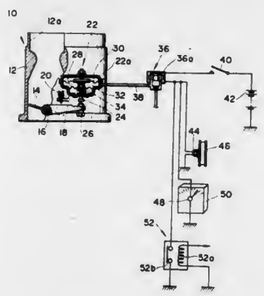
engine and the other end of which is supported by a resilient member located on the base, the lever system comprising a substantially rigid lever attached to the said other end of the cantilever and wherein the lever is connected by a tie rod to a beam positioned adjacent the camshaft and acted upon by a cam follower in contact with a cam rotating with the camshaft.

4,515,123
ROTARY INTERNAL COMBUSTION ENGINE
John L. Taylor, 12724 Barlin Ave., Downey, Calif. 90242
Filed Jul. 11, 1983, Ser. No. 512,325
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—222 **12 Claims**



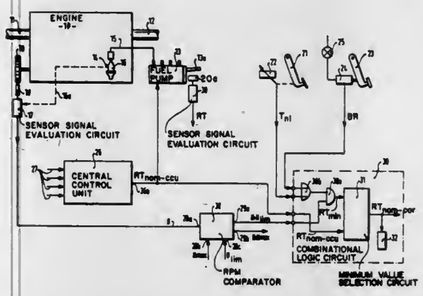
1. A rotary internal combustion engine comprising:
a stator housing defining a power rotor cavity therein;
a power rotor rotatably mounted in said power rotor cavity and combining therewith to form an arcuate compression chamber and an arcuate expansion chamber;
a pair of diametrically disposed sliding vanes mounted on said power rotor, the outer end of each vane maintaining contact with the internal surface of said power rotor cavity during rotation of said power rotor;
an intake passage for transferring a quantity of fuel-air mixture into said arcuate compression chamber;
an exhaust passage for transferring exhaust gases resulting from combustion out of said arcuate expansion chamber;
each vane operable during each rotation of said power rotor to pass through the arcuate compression chamber to compress a quantity of fuel-air mixture and to pass through the arcuate expansion chamber upon the burning of said quantity of fuel-air mixture;
a rotary transfer valve housing forming a part of said stator housing and defining a cylindrical cavity therein located adjacent said power rotor cavity so as to have a common internal wall portion therewith;
a rotary transfer valve in the form of a plug having a pair of diametrically disposed pockets formed on the periphery thereof and rotatably mounted to have sealing contact with the wall of the cylindrical cavity in said rotary transfer valve housing;
a first port in the common internal wall portion of said power rotor cavity and said rotary transfer valve cavity for transferring a quantity of compressed fuel-air mixture in said arcuate compression chamber into a pocket of said rotary transfer valve;
a second port in the common internal wall portion of said power rotor cavity and said rotary transfer valve cavity for transferring said quantity of compressed fuel-air mixture out of the pocket of said rotary transfer valve into said arcuate expansion chamber behind the vane used to compress said quantity of fuel-air mixture;
ignition means for igniting said quantity of fuel-air mixture in said arcuate expansion chamber;
a cam wheel assembly mounted to rotate with said power rotor;
said cam wheel assembly including a first cam wheel and a second cam wheel larger in diameter than said first cam wheel;
said first cam wheel having formed on an angular portion of the periphery thereof an arcuate recess followed by a pair of V-shaped notches and having on a diametrically disposed angular portion of the periphery thereof a similarly formed arcuate recess followed by a pair of V-shaped notches, the remaining outer periphery of said first cam wheel being circularly formed;
said first cam wheel having on the face thereof a pair of diametrically disposed initiating pins located just ahead of the arcuate recesses on the periphery thereof;
said second cam wheel having on an angular portion of the periphery thereof an arcuate recess followed by a pair of V-shaped notches forming lateral extensions of the V-shaped notches on said first cam wheel, and having on a diametrically disposed angular portion of the periphery thereof a similarly formed arcuate recess followed by a pair of V-shaped notches forming lateral extensions of the V-shaped notches on said first cam wheel, the remaining outer periphery of said second cam wheel being circularly formed;
a timing wheel mounted to rotate with said rotary transfer valve;
first and second sets of spaced pins on diametrically disposed portions of the face of said timing wheel; and
a pair of diametrically disposed notches on the periphery of said timing wheel, said notches respectively substantially aligned with the leading edges of said pair of pockets on said rotary transfer valve;
said arcuate recesses and V-shaped notches on said cam wheel assembly coacting with the sets of pins on the face of said timing wheel and said pins on said first cam wheel respectively engaging said notches on said timing wheel to position each pocket on said rotary transfer valve opposite the first port to receive the quantity of compressed fuel-air mixture being compressed by a vane in said arcuate compression chamber and opposite the second port to deliver the quantity of fuel-air mixture into said arcuate expansion chamber behind said vane.

4,515,124
ENGINE CONTROL SYSTEM
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jan. 17, 1983, Ser. No. 460,494
Claims priority, application Japan, Jan. 21, 1982, 57-6600[U]; Feb. 5, 1982, 57-15756[U]
Int. Cl.² F02D *31/00*
U.S. Cl. 123—324 **10 Claims**



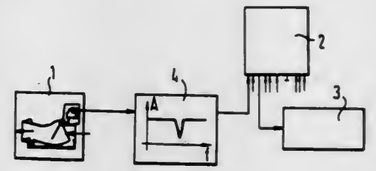
1. A control system for an internal combustion engine of a vehicle equipped with an accelerator pedal and an automatic transmission, comprising:
means for detecting one of an engine speed and a vehicle speed not lower than a predetermined level;
means for detecting an engine temperature not lower than a predetermined level;
means for decreasing the amount of air to be supplied to the engine by a predetermined amount during release of said accelerator pedal and only in response to (1) said one detected speed and (2) said engine temperature being both not lower than said respective predetermined levels; and
wherein said vehicle has a throttle valve controlled by the accelerator pedal and wherein the air amount decreasing mean includes throttle regulating means operative for placing the fully closed position of the throttle valve in a first state when at least one of said detected speeds is lower than said predetermined level and said engine temperature is lower than said predetermined level, and a second state when at least one of said detected speeds is not lower than said predetermined level and said engine temperature is not lower than said predetermined level, the valve opening degree of said second state being smaller than that of said first state.

4,515,125
SAFETY ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE
Rainer Buck, Tamm; Hermann Kull, Stuttgart; Fridolin Piwonka, Tamm; Albrecht Sieber, Ludwigsburg; Gerhard Stumpp, Stuttgart, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 17, 1984, Ser. No. 571,477
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301742
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—359 **10 Claims**



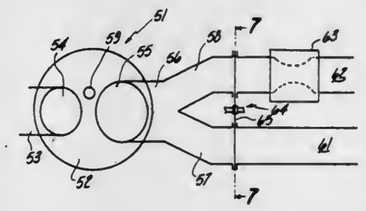
1. A safety arrangement for a self-igniting internal combustion engine such as a diesel engine or the like for a motor vehicle wherein the engine includes: throttle means; brake means; fuel pump means including a rack controller; and, an electronic control system including a central control unit for computing and generating a rack-travel nominal value signal $R_{nom\text{-}ccu}$ for supplying the same to the rack controller; the safety arrangement comprising:
first sensor means for providing an electrical signal N indicative of the rotational speed (rpm) of the engine;
second sensor means for providing an electrical signal T_{n1} of the no-load or idle position of said throttle means;
third sensor means for providing an electrical signal BR indicative of the position of said brake means; and,
a combinational logic circuit connected to said central control unit for receiving said rack-travel nominal value signal $R_{nom\text{-}ccu}$, said combinational logic circuit being further connected to each of said sensor means for receiving said signals N, T_{n1} and BR;
said combinational logic circuit including: combining circuit means for combining said signals N, T_{n1} and BR for forming a rack-travel value RT_{min}; and, minimum-value selection circuit means for receiving said RT_{min} and said $RT_{nom\text{-}ccu}$ for comparing the same and providing a new corrected rack-travel nominal value $RT_{nom\text{-}cor}$ for said rack controller.

4,515,126
DEVICE FOR DAMPING PERIODICALLY ALTERNATING LONGITUDINAL ACCELERATIONS OF A MOTOR VEHICLE
Jochen Kessler, Karlsruhe, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany
Filed Oct. 28, 1983, Ser. No. 546,555
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240293
Int. Cl.³ F02D *9/08*
U.S. Cl. 123—401 **8 Claims**



1. An installation for damping periodically alternating longitudinal accelerations, respectively, jerking movements of a motor vehicle which is driven by an internal combustion engine having control means for controlling the admixture of fuel, respectively, fuel-air mixture including electronic fuel injection means and a mechanically actuated throttle valve means in its air suction channel, wherein the jerking motions are damped by a damper means operatively connected into the control means, and
an electric filter means is interconnected as damper means into an electric connecting line from an air quantity measuring means to an electronic control apparatus, and
the filter means is operable to be short-circuited by a switch means actuated by the throttle valve mean by way of a relay means.

4,515,127
FOUR-CYCLE ENGINE
Tatsuzo Katsuoka, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Aug. 2, 1982, Ser. No. 403,926
Claims priority, application Japan, Aug. 7, 1981, 56-123891
Int. Cl.³ F02B *17/00*
U.S. Cl. 123—430 **8 Claims**



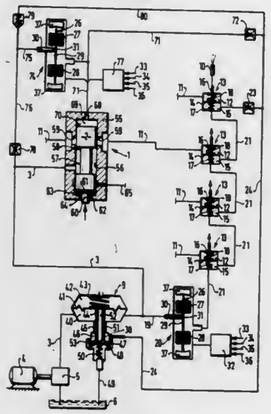
1. In an induction system for an internal combustion engine comprising a substantially open chamber of variable volume, first intake passage means for delivering a first charge to said chamber, and second intake passage means for delivering a second charge to said chamber, at least one of said intake passage means terminating at a poppet valve for controlling the flow into said open chamber, said charges having different mixture strengths, the improvement comprising means communicating said intake passage means with said chamber through a single intake port and single poppet type intake valve at different times during the intake cycle with the leaner charge being delivered to said chamber only during the initial portion of the intake cycle and the richer charge being deliv-

ered only at the ending portion of the intake cycle for stratifying the charge in said chamber.

4,515,128
FUEL INJECTION SYSTEM

Günther Jäggle, Stuttgart; Wolfgang Maisch, Schwieberdingen; Klaus-Jürgen Peters, Affalterbach, and Rudolf Schütz, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,606
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248258
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—454 **1 Claim**

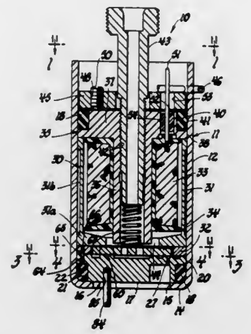


1. A fuel injection system for mixture-compressing internal combustion engines with externally supplied, ignition, comprising a metering sheath, a plurality of metering openings in said metering sheath which are variable in common by a movable control slide, said control slide including an annular control groove, a fuel metering valve disposed in a fuel supply line and intended for metering a quantity of fuel which is at a specific ratio to a quantity of air aspirated by the engine, said control slide opens metering openings more or less widely counter to a restoring force, said control slide includes one end which protrudes into a compression chamber, a restoring force pressure control line which communicates with said compression chamber and with the fuel supply line so that metering takes place at a pressure difference which is constant but is variable in accordance with operating characteristics of the engine, a regulating valve disposed downstream of each metering valve opening, each said regulating valve including a movable valve element which regulates the pressure difference at each metering valve acted upon on one side by the fuel pressure downstream of the particular metering valve opening and on the other side by the pressure in a differential pressure control line, a first electrofluidic converter of the nozzle/baffle type which is triggerable in accordance with operating characteristics of the engine and serves to apply a differential pressure in the differential pressure control line from the fuel supply line, to one side of said movable valve element, a throttle element downstream of said regulating valves and connected on one side to a fuel return line, the fuel pressure in the restoring force pressure control line is variable by means of a second electrofluidic converter of the nozzle/baffle type, which is triggerable in accordance with engine operating characteristics and is disposed upstream of a second throttle defining the restoring force pressure control line and connected at one end to said fuel return line, said second electrofluidic converter including an inlet which communicates with an intermediate line, which at one end communicates via an uncoupling throttle with the fuel supply line and the intermediate line is defined on the other end by a pressure regulating valve.

4,515,129
EDGE DISCHARGE PULSE FUEL INJECTOR

Ernest R. Stettner, Spencerport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 10, 1983, Ser. No. 503,070
Int. Cl.³ F02M *39/00*; F16K *31/04*
U.S. Cl. 123—472 **3 Claims**



1. An edge discharge pulse fuel injector for discharging fuel to the cylinder of an internal combustion engine including a housing means having a bore extending axially therein; an orifice plate fixed in said bore of said housing adjacent one end thereof to partly enclose said one end, said orifice plate having a valve seat surface and an opposed outboard surface with an orifice passage means extending therethrough that is located radially outward from said axis whereby fuel can be discharged from the injector next adjacent to one outer edge of said housing; a solenoid means fixed in said housing means, said solenoid means including a pole piece means with a flat working surface positioned at right angles to said axis and located in axial spaced apart opposed relationship to said valve seat surface whereby to define a fuel chamber therewith and with said housing means; a fuel supply means operatively associated with said housing means and having one end thereof connectable to a source of fuel and having its other end in flow communication with said fuel chamber; an armature valve means loosely positioned in said fuel chamber for movement between said opposed working surface of said pole piece means and said valve seat surface; and, a spring means operatively associated with said armature valve means to normally bias said armature valve means into seating engagement with said valve seat surface; one of said armature valve means and said valve seat surface presenting a surface inclined at an angle to said axis whereby the axial movement of said armature valve means between said valve seat surface and said working surface of said pole piece is greater adjacent to said orifice passage means than at a location diametrically opposite thereof.

4,515,130
METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE AT DECELERATION

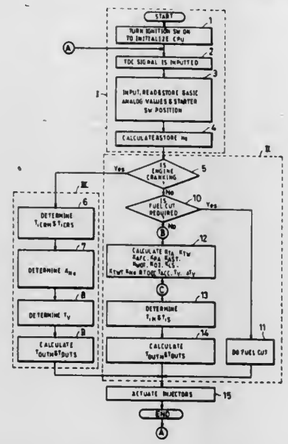
Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,167
Claims priority, application Japan, May 17, 1982, 57-82837
Int. Cl.³ F02B *3/04*; F02D *5/02, 5/00, 35/00*
U.S. Cl. 123—493 **6 Claims**

1. A method for controlling the quantity of fuel being supplied to an internal combustion engine having an intake passage and a throttle valve arranged therein, at deceleration thereof, by the use of electronic means operable in synchronism with generation of a predetemined control pulse signal, the method comprising the steps of:

(1) detecting the valve opening of said throttle valve while said throttle valve is being closed at deceleration of the engine and each time each pulse of a predetermined sampling signal is generated;

(2) determining the difference between a value of the valve opening of said throttle valve detected at the time of generation of a present pulse of said sampling signal and



one detected at the time of generation of the preceding pulse of said sampling signal, and providing a control parameter having a value corresponding to the difference thus determined; and

(3) after the lapse of a predetermined period of time from the time the value of said control parameter becomes smaller than a predetermined negative value, decreasing the quantity of fuel being supplied to the engine by an amount corresponding to the value of said control parameter.

4,515,131
FUEL-INJECTION CONTROL IN AN INTERNAL-COMBUSTION ENGINE

Yukio Suzuki; Kunihiko Sato, and Motoyasu Muramatsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

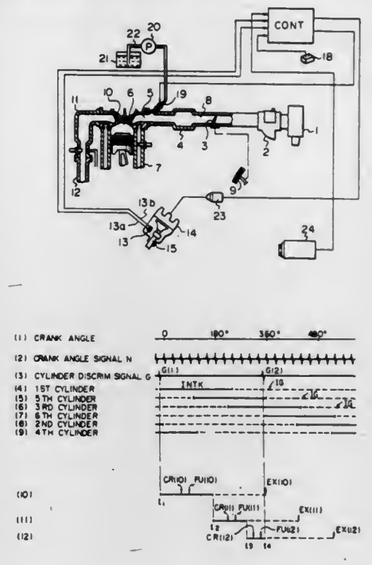
Filed Dec. 1, 1982, Ser. No. 445,991
Claims priority, application Japan, Mar. 30, 1982, 57-50117
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—491 **4 Claims**

1. Aa method for controlling fuel injection in an internal-combustion engine, comprising the steps of:

producing crankshaft angle signals and cylinder discrimination signals with a crankshaft angle sensor,

determining generation of a signal for execution of the first injection of fuel in response to the produced crankshaft angle signals and the produced cylinder discrimination signals, and

performing the first injection of fuel in accordance with the first crankshaft angle signal after the starting of cranking of the engine in response to said determination so that the

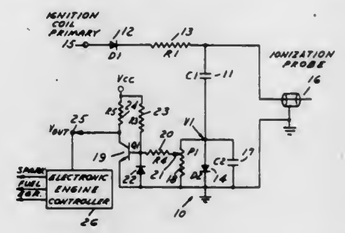


first explosion of the air-fuel mixture takes place within one rotation of the crankshaft of the engine.

4,515,132
IONIZATION PROBE INTERFACE CIRCUIT WITH HIGH BIAS VOLTAGE SOURCE

Robert L. Anderson, Saline, and William R. McDonald, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1983, Ser. No. 564,280
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—494 **1 Claim**



1. A vehicle engine ionization probe interface circuit means for detecting cylinder combustion in an engine having an ignition coil with a relatively high voltage primary winding and for applying a bias voltage to an ionization probe, said ionization probe interface circuit means including:

a coupling means for coupling the primary winding of the engine ignition coil to said ionization probe;

said coupling means including a first capacitor connected in parallel with said ionization probe for charging in response to ignition coil primary current,

a transistor coupled to said ionization probe to provide a logic level output voltage signal as a function of a resistance change in the ionization probe due to occurrence of cylinder combustion, and an engine control means coupled to said transistor for controlling engine operating

parameters in response to the logic level output voltage signal;

said primary winding of the engine ignition coil being coupled to a series combination of said first capacitor and a first diode, said series combination of said first capacitor and said first diode being in parallel with said ionization probe, a potentiometer resistance coupled in parallel with said first diode, said transistor having a base adjustably coupled to said potentiometer resistance and said base being coupled through a bias resistor to a voltage source suitable for applying a base current to said resistor, and said engine control means being coupled to a collector of said transistor;

a second capacitor coupled in parallel with said first diode to substantially reduce noise spikes due to the reverse recovery time of said first diode;

a protection resistor coupled in series between the ignition coil primary winding and a node between said ionization probe and said first capacitor to provide protection against shorting out the ignition system primary winding if the ionization probe is shorted;

a second diode coupled between a ground potential and the base of said transistor to provide reverse voltage protection for the base of said transistor; and

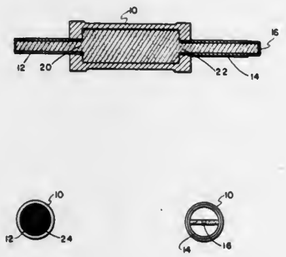
a third diode coupled in series between said protection resistance and the ignition coil primary winding, a load resistance coupled between the voltage source for applying the logic signal and the collector of said transistor, and a base resistor coupled between the base of said transistor and said potentiometer.

4,515,133

FUEL ECONOMIZING DEVICE

Frank Roman, Star Rte. 113, Long Pond, Pa. 18334

Filed May 31, 1984, Ser. No. 615,581
Int. Cl.³ F23D *21/00*
U.S. Cl. 123—538 **4 Claims**



1. A fuel economizing device for internal combustion engines comprising:

(a) a cylinder having generally a length of about 2.25 inch and a diameter of about 0.75 inch, said cylinder also having an inlet at one end and an outlet at the opposite end;

(b) a conduit, said conduit mated at its one end to said cylinder inlet, said conduit opposite end being adapted to connect to a fuel pump outlet line;

(c) a second conduit, said second conduit mated at its one end to said cylinder outlet, said conduit opposite end being adapted to connect to a carburetor fuel inlet line; and,

(d) a restricted opening, said restricted opening positioned at the terminus of said second conduit's opposite end, said restricted opening having a diameter ranging from about 0.045 inch to about 0.050 inch,

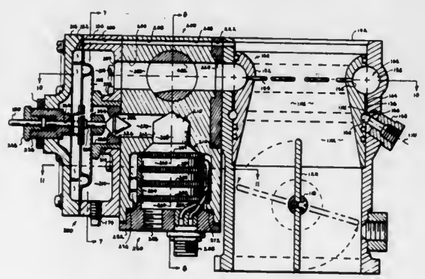
so that fuel passing through said inlet conduit under pressure from a fuel pump, enters said cylinder where said fuel is concentrated under pressure, and exits through said restricted opening causing said fuel to atomize into a combination of liquid and vapor state due to the pressure drop across said restricted opening.

4,515,134

MOLECULAR DIFFUSER ASSEMBLY

Conrad K. Warren, II, 1401 Quaker St., No. 3, Golden, Colo. 80401

Continuation of Ser. No. 134,107, Mar. 26, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,297
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **12 Claims**



1. Apparatus for delivering a fuel/air mixture to the induction system of a combustion chamber, said apparatus comprising:

structure presenting a passageway adapted for communication with said induction system and having an air-receiving inlet;

means for deriving information indicative of the mass flow rate of an airstream drawn through said passageway by said induction system upon demand therefor by said combustion chamber;

evaporator means for vaporizing liquid fuel supplied thereto;

conduit means extending from said evaporator means and including a first channel surrounding said passageway;

means for communicating said vaporized fuel disposed about said first channel to the interior of said passageway and at a region adjacent said inlet for introducing said vaporized fuel from a plurality of points about the exterior of said passageway and into said airstream for a dispersed diffusion of said vaporized fuel to provide said fuel/air mixture;

regulator means interposed in said conduit means and responsive to the mass flow rate information from said deriving means for controlling a flow of said vaporized fuel from said conduit means into the airstream in accordance with said demand;

a slot downwardly extending from said first channel;

a second channel extending about the exterior of said passageway structure and isolated therefrom, said second channel communicating with said slot at a position below said first channel; and

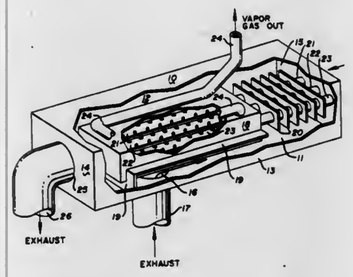
a discharge line extending from said second channel for returning said condensate to a supply of said liquid fuel whereby condensate of said vaporized fuel along the extent of said first channel is directed into second channel by said slot and away from said vaporized fuel entering said first channel to generally preclude delivery of said condensate into said interior of said passageway and said downstream induction system.

4,515,135

HOT FUEL GAS GENERATOR

James W. Glass, New Castle, Pa., assignor to General Energy Systems, Inc., Youngstown, Ohio

Filed Jan. 6, 1984, Ser. No. 568,812
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **7 Claims**



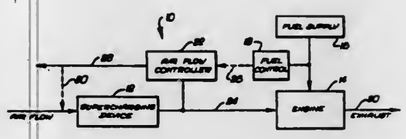
1. An improvement in a fuel supplying system for an internal combustion engine having inlet and exhaust manifolds with inlet and outlet ports, a fuel conducting device in communication with said inlet manifold, controlled air supplying means in communication with said device, a measuring valve in communication with said fuel conducting device; the improvement comprising a hot fuel gas generator upstream of said measuring valve in said fuel supplying system, said hot fuel gas generator comprising a first hollow body of a known size, a second smaller hollow body with said first hollow body positioned in spaced relation thereto, inlet and outlet ports in said first hollow body, means connecting said inlet port in said first hollow body with said exhaust manifold outlet port, at least two tubes positioned in said first hollow body and having portions of said tubes extending exteriorly of said first hollow body and other portions of said tubes extending into said second hollow body, said portions of said tubes in said second hollow body having openings therein, fins on said portions of said tubes in said first hollow body, baffles in said first hollow body positioned to guide hot exhaust gases from the inlet port in said first hollow body around said second hollow body and against said fins on said tubes in said first hollow body so that said tubes form heat exchangers vaporizing fluids therein, fuel supplying means in communication with at least one of said tubes, a delivery tube in said first hollow body communicating with said second hollow body and extending exteriorly of said first hollow body and communicating with said measuring valve in communication with said fuel conducting device.

4,515,136

SUPERCHARGED DIESEL ENGINE AIR INFLOW CONTROL SYSTEM

Robert L. Cholvin, Santa Monica; Charles E. McInerney, Rolling Hills Estates; James N. Nancarrow, Torrance, and Jack L. Gantz, Marina Del Rey, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 424,205, Sep. 27, 1982,. This application Dec. 19, 1983, Ser. No. 562,798
Int. Cl.³ F02D *23/02*
U.S. Cl. 123—564 **5 Claims**



2. A method of controlling engine air inflow in a diesel engine system including means for supplying pressurized air to an engine and means for supplying fuel to the engine, comprising the steps of:

selecting the flow of fuel to the engine;

modulating the position of a force-biased air flow relief valve in response to the pressure of air supplied to the engine; and

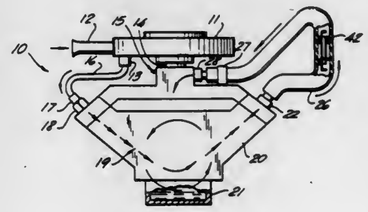
adjusting the inflow of air to the engine in response to the fuel flow by altering the force-bias acting on said relief valve in response to the fuel flow to the engine.

4,515,137

CRANKCASE EMISSIONS DEVICE

John Manolis, P.O. Box 380, New York, N.Y. 10028

Filed Feb. 8, 1984, Ser. No. 578,077
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—572 **3 Claims**



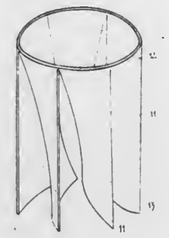
1. An improved device for separating liquid from gases and vapors passing from the crankcase of an internal combustion engine to the intake manifold thereof and allowing return of the separated liquid to the crankcase through a conduit interconnecting the crankcase with the intake manifold, the improvement comprising a restricting means providing a restricted flow path for the crankcase gases and vapors and a surface upstream of said restricted flow path for allowing separated liquid to collect thereon for return to the crankcase, said restricting means including a ring-like member adapted to be held in mating relationship with and within the conduit, said ring-like member having a port to allow fluid flow therethrough, a tube-like member extending from one side of said ring-like member and providing a flow passage with said port, and baffle means associated with said tube-like member generally to block direct flow into the flow passage of said tube-like member, yet allow access to the flow passage for flow through said tube-like member such that liquid associated with the crankcase gases and vapors will tend to collect at said device for return to the crankcase.

4,515,138

INTERNAL COMBUSTION ENGINES

Isaac Agadi, 16 Ir Hayona St., Tel-Aviv, Israel

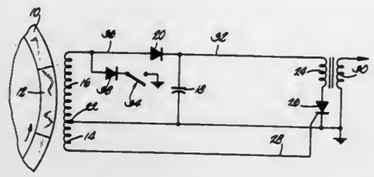
Filed Jun. 19, 1979, Ser. No. 50,017
Claims priority, application Israel, Jun. 23, 1978, 54993
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—590 **6 Claims**



1. A device for improving the combustion characteristics of

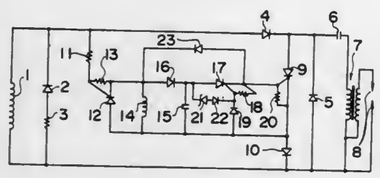
a flowing fuel-air mixture, the device defining an axis of flow for the mixture and comprising a plurality of vanes extending generally longitudinally of and disposed about said axis, each vane having first and second ends joined by first and second longitudinal edges, the first ends being contiguously arranged to extend along the circumference of a circle coaxial with said axis, said first edges defining a cylindrical surface coaxial with said axis and said second edges defining a conical surface coaxial with said axis, the vanes being interconnected at their first ends and said second ends are disposed generally radially of said axis and extend from said cylindrical surface to said axis, the vanes substantially meeting at said axis.

4,515,139
LOW MOISTURE SENSITIVE IGNITION
Joseph B. St. Ledger, Knoxville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 21, 1983, Ser. No. 544,093
Int. Cl.³ F02P 3/06
U.S. Cl. 123—599 **1 Claim**



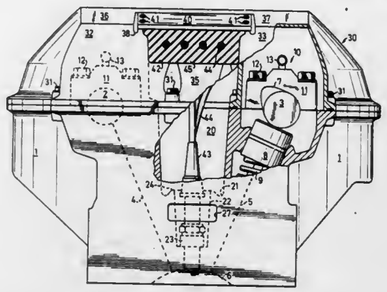
1. A capacitor discharge ignition system comprising, a charging coil, a first diode having an anode and a cathode, a direct connection between said anode and said coil, a capacitor connected to said cathode for charging by said coil, an ignition transformer having a primary and a secondary winding, said primary winding being connected to said capacitor, a trigger device connected to said primary winding to discharge said capacitor to ground through said primary winding, a second diode having an anode directly connected to said connection between said charging coil and said first diode and also having a cathode, and a shutdown switch connected in series between said cathode of said second diode and ground.

4,515,140
CONTACTLESS IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES
Kiyoshige Enomoto, and Masao Iwata, both of Kanagawa, Japan, assignors to Oppama Kogyo Kabushiki Kaisha, Yokosuka, Japan
Filed Apr. 26, 1983, Ser. No. 488,753
Claims priority, application Japan, Nov. 4, 1982, 57-193744
Int. Cl.³ F02P 3/06, 1/00, 1/17
U.S. Cl. 123—603 **5 Claims**



1. A contactless ignition device for internal combustion engines comprising an exciter coil and pulser coil inducing voltages of phases substantially reverse to each other in response to the rotation of the internal combustion engine, a first capacitor charged with the voltage induced by the exciter coil, an ignition coil feeding a high voltage to a spark plug by receiving the voltage discharge by said first capacitor, a second capacitor charged with the voltage induced by said pulser coil, a first switching element conducting the voltage discharged by said second capacitor, a second switching element enabling the discharge of said first capacitor with the conduction of said first switching element and a third switching element making said first switching element or second switching element conductive by being conductive at a set constant rotating speed of the internal combustion engine.

4,515,141
ARRANGEMENT FOR IGNITION MEANS IN A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE
Lars L. SäE,uml/a/ f, Södertälje, and Lars E. Bergsten, Järna, both of Sweden, assignors to Saab-Scania Aktiebolag, Södertälje, Sweden
Filed Jan. 16, 1984, Ser. No. 571,096
Claims priority, application Sweden, Jan. 17, 1983, 8300190
Int. Cl.³ F02B 77/00
U.S. Cl. 123—647 **10 Claims**

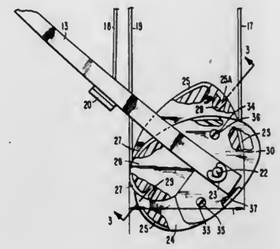


1. An arrangement for protecting ignition means in a multi-cylinder internal combustion engine, including a cylinder head and two longitudinal, parallel valve cover banks mounted thereon, a longitudinal space for the ignition means to the combustion chambers of the engine being arranged between the valve cover banks and defined by the opposing surfaces of the valve cover banks wherein the longitudinal space is a trough having a bottom, two side walls and front and rear end walls formed within the cylinder head, the trough being covered by a removable lid joining on to both valve cover banks and on to at least one end wall of the trough, and in that the trough is formed with at least one opening in the cylinder head for ventilation and drainage.

4,515,142
COMPOUND BOW AND ECCENTRIC WHEEL ASSEMBLIES THEREFOR
David J. Nurney, Seattle, Wash., assignor to Indian Industries, Inc., Evansville, Ind.
Filed Jan. 31, 1983, Ser. No. 462,385
Int. Cl.³ F41B 5/00
U.S. Cl. 124—23 R **11 Claims**

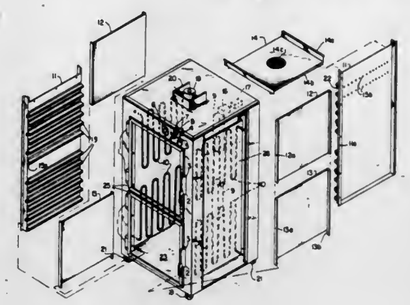
1. A compound bow having adjustable eccentric wheel assemblies, said compound bow comprising:
- a center handle portion for gripping the bow;
- a pair of limbs extending outwardly from opposite ends of said handle portion, said limbs having inner end portions connected with said handle portion and also having free outer end portions;
- cable means for flexing said pair of limbs;
- eccentric wheel means for movably supporting said cable means on said limbs, said eccentric wheel means including an eccentric wheel assembly attached to the free outer end portion of each of said pair of limbs; and
- attachment means for rotatably attaching the eccentric wheel assemblies to said limbs;

each of the eccentric wheel assemblies including:
- a bowstring wheel having a central portion and a periphery, the bowstring wheel defining a first, cable-receiving groove about at least a portion of its periphery;
- a first take-up wheel component mounted to the bowstring wheel, the first take-up wheel component having a central portion and a periphery and defining a second, cable-receiving groove about at least a portion of its periphery;
- the bowstring wheel and the first take-up wheel component also defining a passageway communicating with the first and second grooves and extending through the central portions of the bowstring wheel and the first take-up wheel component;
- at least one second take-up wheel component removably mountable to one of the bowstring wheel and the first take-up wheel component, the second take-up wheel component including a periphery and defining a third cable-receiving groove about at least a portion of its periphery; and
- mounting means for removably mounting the at least one second take-up wheel component to the bowstring wheel and the first take-up wheel component to align the third cable-receiving groove with the second cable-receiving groove such that upon rotation of the first and second take-up wheel components a cable received within the second groove is also received within the third groove;
- said cable means including a continuous cable having end portions secured to said pair of limbs and a central bowstring portion extending between the eccentric wheel assemblies, each of the end portions being associated with and extending over one of the pair of eccentric wheel assemblies, each of the end portions for the associated eccentric wheel assembly extending within the first, cable-receiving groove, through the passageway and within the second, cable-receiving groove, said compound bow having a first, relaxed condition in which the end portions are displaced from the third, cable-receiving groove of the associated eccentric wheel assembly, said compound bow also having a second, drawn condition in which the end portions are received within the third, cable-receiving groove of the associated eccentric wheel assembly.



4,515,143
MOVING AIR OVEN FOR BAKING AND THE LIKE
Florian H. Jabas, 712 Chautauqua Rd., Marinette, Wis. 54143
Filed Apr. 27, 1984, Ser. No. 604,455
Int. Cl.³ A21B 1/06; F24C 15/32
U.S. Cl. 126—21 A **7 Claims**

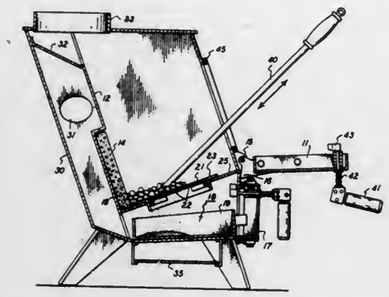
1. An oven for evenly baking or heating products placed therein, comprising:
- (a) an insulated frame consisting of interconnected back, side, top and bottom walls, said frame defining at least one opening at the front thereof,
- (b) door means to close said opening and thus form with said walls an oven enclosure,
- (c) an inner cover positioned adjacent and in spaced relation to said top wall to form therewith a top air channel, said inner cover being formed with an opening to permit recirulation of air from said enclosure,
- (d) fan means positioned in said top air channel above said opening, and motor means for driving said fan means,
- (e) plate means vertically positioned at each side of said enclosure and spaced from said side walls so as to define therewith outer air channels in air flow communication with said top air channel, said plate means being formed with openings in the bottoms thereof,
- (f) heating means positioned in said outer channels and spaced from said plate means and said side walls so as to accommodate air flow on either side thereof,
- (g) inner walls spaced inwardly from said plates and defining therewith inner flow channels communicating with said outer channels through said bottom openings in said plate means, said inner walls being formed with a series of horizontally aligned and vertically spaced openings through which air can pass from said inner channel toward said enclosure, and
- (h) air guide means mounted on the inner surface of said inner walls, said air guide means being aligned with and covering said series of openings formed in said inner walls and having open inner ends through which the heated air can pass into said enclosure,
- whereby air is circulated by said fan outwardly through said top air channel, downwardly past said heating means in said outer channels so as to heat said air, upwardly through said inner channels and through said series of openings in said inner walls and then through said air guides to said enclosure, the arrangement providng even heating of said enclosure from top to bottom and laterally across.



4,515,144
HAND-FIRED, SOLID FUEL STOVE
Edward H. Cumpston, 6 Stonehedge Dr., Bennington, Vt. 05201
Filed Oct. 24, 1983, Ser. No. 544,570
Int. Cl.³ F24C 1/00
U.S. Cl. 126—58 **15 Claims**

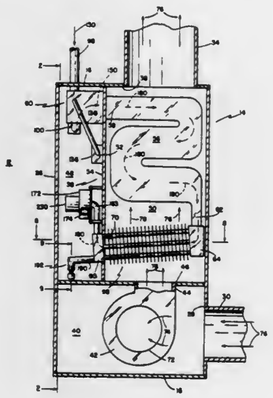
1. A hand-fired, solid fuel stove having a fuel opening closed by a fuel door, a grate below and adjacent said fuel opening, an ash pit under said grate, and a combustion air inlet to a region under said grate, said stove comprising:
- a. said grate being inclined to slope downward with increasing distance from said fuel opening;
- b. an upper surface of said inclined grate being generally flat so that a poker can skid freely along said upper surface;
- c. said grate being arranged to stay fixed in place during use;
- d. a central region of said grate having a plurality of perforations through which combustion air can rise and ashes can fall;
- e. an upper border of said grate in a region near said fuel opening being unperforated; and
- f. said perforated central region of said grate being sufficiently close to said fuel opening and said fuel opening

having a lower edge spaced sufficiently close to said upper border of said grate so that a hand-held poker can be thrust through said fuel opening to engage said upper border of said grate at an acute angle a few degrees above



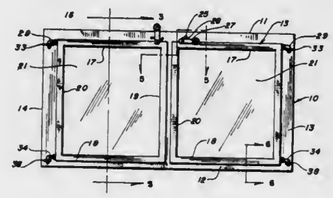
the inclination of said grate wherein said poker can be skidded along said flat upper surface of said inclined grate to slide under a burning region of said fuel bed located over said perforated central region to dislodge ashes that fall through said perforations into said ash pit.

4,515,145
GAS-FIRED CONDENSING MODE FURNACE
William R. Tallman, Huntington; Steven C. McDevitt, Fort Wayne, both of Ind., and Warren H. Delancey, Elyria, Ohio, assignors to Yukon Energy Corporation, Minneapolis, Minn.
Filed Oct. 3, 1983, Ser. No. 538,582
Int. Cl.³ F24H *3/08*
U.S. Cl. 126—99 A **20 Claims**



1. In a hot air furnace including means for burning fluid fuel, exhaust passage means for carrying the products of combustion from the burner means to an exhaust flue, heat exchanger means in the exhaust passage means for extracting heat from the products of combustion therein, air passage means for carrying a flow of air over the heat exchanger means to be heated thereby, and air moving means for causing a flow of air through the air passage means, the improvement comprising: means communicating with said exhaust passage means for enclosing said burner means, said burner means firing into said exhaust passage means; a fresh air duct communicating with said enclosing means for admitting combustion air thereto; condenser means in said exhaust passage means for removing water from the products of combustion therein, said condenser means being exposed to said air passage means; and second air moving means in said exhaust passage means for causing fluid flow therein from said fresh air inlet duct through said enclosing means and said exhaust passage means to said exhaust flue.

4,515,146
FIREPLACE DOOR
Donald W. Wilkening, Akeley, Minn. 56433
Filed Oct. 20, 1983, Ser. No. 543,626
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—140 **7 Claims**

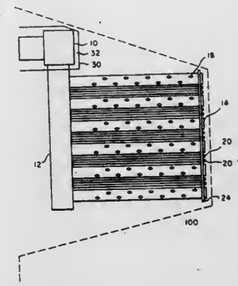


1. A fireplace door comprising, in combination;
a rectangular frame to be mounted on the front of a fireplace and having at least one rectangular opening;
a door dimensioned to overlie said frame over each opening in said frame;
laterally and angularly adjustable hinge means pivotally mounting the side of said door to one side of said frame, said hinge means disposed at the top and bottom side of said door and said frame;
adjustable mounting means on the inside periphery of said door;
a transparent panel disposed intermediate said mounting means and the inside of said door;
gasket means disposed intermediate said adjustable mounting means, said panel and said door, said gasket means including a looped portion extending toward said frame and being comprised of resilient, fire resistant material; and
latch means rotatably disposed on top of each door, said latch means operable to engage a catch extending forwardly of the top of said frame and including an operating handle operable to bias said catch means into engagement with said catch.

4,515,147
CLEAN BURNING GRATE FOR FIREPLACES AND WOOD STOVES
Samuel J. Van Grouw, 1142 Blythe St., Foster City, Calif. 94404, and Richard D. Smith, 2415 S. Court, Palo Alto, Calif. 94301
Filed Jan. 23, 1984, Ser. No. 572,986
Int. Cl.³ F23H *1/02*
U.S. Cl. 126—163 R **15 Claims**

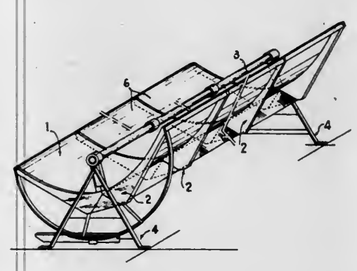
1. An improved grate for the efficient burning of solid fuel, said grate comprising
a plurality of substantially parallel, hollow first support members defining a first generally planar surface for supporting the lower surface of solid fuel,
a plurality of substantially parallel second support members defining a second generally planar support surface located below said first surface, said second support members being located between alternate ones of said first support members and defining, in combination with said first support members, a plurality of troughs for supporting glowing coals,
a multiplicity of orifices extending through each of said first

support members, each orifice being directed toward said first planar surface for creating a zone of turbulence in one



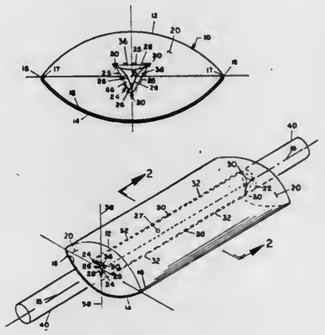
of said troughs beneath the lower surface of the solid fuel, and
means for moving air to and through said orifices.

4,515,148
CYLINDRO-PARABOLICAL SOLAR ENERGY COLLECTOR
Jean L. M. R. Boy-Marcotte, Orsay; Georges J. Chastang, Lex Clayes Sous Bois; Laurent O. Salvaire, Laval, and Christian D. Burnouf, Montsurs, all of France, assignors to Rossignol S.A., Montsurs and Bertin et Cie, Plaisir, both of, France
Filed Nov. 10, 1982, Ser. No. 440,745
Claims priority, application France, Nov. 12, 1981, 81 21196
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **20 Claims**



13. A solar energy collector comprising a troughlike concave reflector having an axis through the focus of the reflector, a heat absorber tube disposed along and coincident with said axis, a heat transfer fluid circulating in said tube, pivot means pivotably and detachably mounting said reflector on said heat absorber tube, said pivot means comprising frames carrying the reflector and spaced apart along said axis and including arms having end portions defining openings for receiving and removing said tube in a direction radially of said axis, and releasable locking means engaged in said openings for retaining said tube in said openings, said reflector being of cylindro-parabolical shape, said end portions of said arms defining a partly annular fork at the end of each arm and surrounding the absorber tube, and said locking means comprising an element of an insulating material locking each fork on the absorber tube, each frame comprising two identical members of moulded metal, each of which members having a curved side defining the shape of the reflector, said members being assembled in pairs so that the curved sides are in the extension of each other.

4,515,149
APPARATUS FOR THE COLLECTION OF SOLAR HEAT ENERGY AND A SOLAR COLLECTOR
Carl M. Sgroi, 609 Monroe Blvd., Long Beach, N.Y. 11561, and Klaus M. Hubner, 22 Claurome Pl., Freeport, N.Y. 11520
Filed Nov. 4, 1983, Ser. No. 548,696
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—442 **17 Claims**



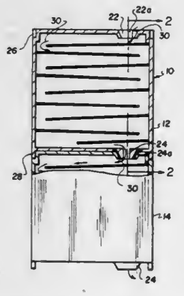
1. Apparatus for the collection of solar heat energy and its transference to a fluid media to be heated comprising an elongated housing having a transparent front panel, an arcuate rear panel and a pair of opposed side walls, said rear panel having a reflecting surface directing the solar energy along an elongated line of focus,
an elongated heat collector extending substantially along the line of focus between said side walls,
said heat collector comprising a hollow elongated transparent tubular support and an inner tubular heat exchanger formed of a plurality of curved elongated absorbent sheets in surface engagement along their edges with adjacent sheets to provide outwardly extending elongated projections,
and means for releasably retaining said sheets in surface engagement with the elongated projections thereof spaced in and from said tubular support to define a plurality of heat chambers therebetween, said means spacing each of the projections out of contact with said tubular support to define gaps therebetween for the free circulation and flow of the fluid media between said tubular support chambers, and duct means extending through said side walls respectively for communication with each end of said heat collector for the passage therethrough of a fluid media to be heated.

4,515,150
BUILDING STRUCTURE AND BUILDING PANEL AND METHOD OF CONTROLLING APPEARANCE AND LIGHTING OF A BUILDING
John J. McGlew, and John J. B. McGlew, Jr., both of P.O. Box 823, Tuxedo Park, N.Y. 10987
Continuation of Ser. No. 121,808, Feb. 15, 1980, abandoned. This application Jun. 8, 1983, Ser. No. 502,182
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—445 **11 Claims**

1. Building panel structure which may be interfitted with other panels to form a wall, comprising a structural member for both the interior and exterior of a building wall and roof, comprising outer, inner and intermediate substantially parallel spaced-apart transparent walls and a side, bottom and top wall interconnecting said outer and inner and intermediate walls and forming therewith an outer chamber between said intermediate wall and said outer wall and an inner chamber between said intermediate wall and said inner wall, an outlet and an inlet connected into each of said outer chamber and said inner

chamber, media supply means of a material for selectively changing light transmission, heat transmission, color and appearance of said panel associated with said panel and having a discharge connectible with said inlet to at least one of said chambers and a return connectible to said outlet of the associated chamber, and heat transfer media means connectible to the other of said chambers for conditioning the interior of the building.

6. A building structure comprising exterior walls, interior walls within said exterior walls and a roof overlying said interior and exterior walls, at least one of said walls comprising a panel having outer, inner and intermediate substantially parallel spaced-apart transparent walls and a side, bottom and top wall interconnecting said outer and inner and intermediate walls and forming therewith an outer chamber between said intermediate wall and said outer wall and an inner chamber between said intermediate wall and said inner wall, an outlet and an inlet connected into each of said outer chamber and said inner chamber, media supply means of a material for selectively changing light transmission, heat transmission, color and appearance of said panel associated with said panel and having a discharge connectible with said inlet to at least one of said chambers and a return connectible to said outlet of the associated chamber, and heat transfer media means connectible to the other of said chambers for conditioning the interior of the building.



7. A method of controlling the appearance and lighting of a building having a transparent exterior portion, a transparent interior wall portion within the exterior, and a transparent roof portion, and in using at least one wall defining at least an inner and outer aligned transparent chambers one behind the other, and comprising directing a flowable media through one of the chambers in a quantity and of a characteristic to selectively control the amount of sun light and light passing through the chambers and the color and appearance of the panel and the amount of light which will pass into the interior rooms of the building and circulating a heat transfer media through other of said chambers which will not interfere with the selective control of the flowable media.

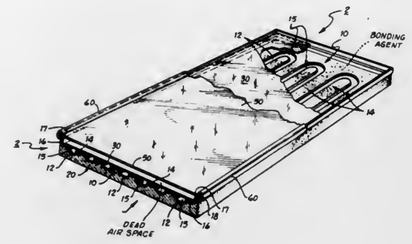
4,515,151

FIBER-REINFORCED CONCRETE SOLAR COLLECTOR

Arthur J. Slemmons, Los Gatos, and Peter J. Newgard, Redwood City, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Sep. 27, 1982, Ser. No. 404,272
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **12 Claims**

1. A solar collector comprising a glass member having a solar selective coating on a first surface thereon characterized by high absorption and low emissivity, a shaped concrete member secured to said glass member, said concrete member comprising thin-wall concrete reinforced with alkali-resistant fibers and shaped to provide, in co-operation with said glass member secured thereto, a series of passageways capable of carrying heat exchanging fluid therethrough to a heat exchanger, said solar collector being further characterized by the use of materials having substantially matching thermal expansion coefficients over the temperature range to which solar collectors are normally exposed.

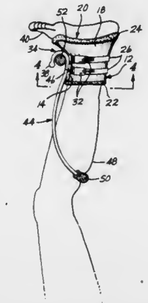


4,515,152

LOAD CENTERING BOOT FOR INVERSE SUSPENSION

Roger C. Teeter, 4106 Snag Island Dr., Sumner, Wash. 98390

Filed May 17, 1982, Ser. No. 379,106
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 **5 Claims**



2. An inversion boot adapted for attachment to a person's leg for suspending that person in an inverted position wherein said boot comprises: a preformed resilient shell having normally and automatically closed overlapping ends that may be opened to permit placement on a person at the juncture of said person's foot and leg then to automatically close with said ends overlapping around the leg, a resilient liner secured to the inside of the shell, a buckle secured to an outer surface of the shell, a strap secured at one end to the outer surface of the shell with the other end of the strap extended to permit encircling the overlapping shell and to be adjustably secured in the buckle, and means secured to the shell for transferring the person's weight to an independent support means for suspending the person in an inverted position from the independent support means.

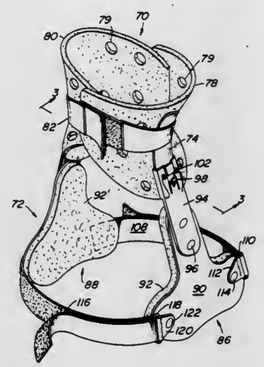
4,515,153

STABILIZER FOR CERVICAL COLLAR

Anthony Calabrese, Philadelphia, Pa., assignor to Charles Greiner & Company, Inc., Westville, N.J.

Filed Aug. 4, 1983, Ser. No. 520,083
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 **7 Claims**

1. A cervical collar comprising discrete front and back halves adapted to partially overlap one another, said halves being made from a soft, flexible polymeric plastic material, strap means for securing the halves in overlapping relation, a stabilizer for said collar including a front piece adapted to overlie part of a person's chest and a rear piece adapted to overlie part of a person's back, adjustable strap means for encircling a portion of a person's body and removably interconnecting said front piece and said rear piece, means on the upper end of said front and rear pieces for removably connecting the front and rear pieces to their associated collar half, said last-mentioned means including at least one plastic rivet having a non-circular head and being removable by a hand tool.

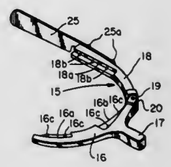


4,515,154

METHOD AND APPARATUS FOR INDEXING THE CONDYLE POSITION DURING SAGITTAL RAMUS SPLIT SURGERY

Myer S. Leonard, 1340 Fairlawn Way, Golden Valley, Minn. 55416

Filed Jun. 6, 1983, Ser. No. 501,655
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 EB **4 Claims**



1. The method for providing a positive position indexing reference for sagittal ramus split surgery comprising,

providing an indexing template which includes means for adjusting the size thereof to fit different size maxillary arch structures,

placing the template in contact with the front surfaces of the maxillary arch teeth,

conforming the template to the shape and size of the arch,

positively anchoring the template to the teeth of the maxillary arch to provide a fixed reference anchor,

attaching a rearwardly extending indexing paddle to the template in overlapping relation to the ramus,

marking the outer surface of the ramus along the edges of the indexing paddle with a pair of indexing lines to positively indicate the occlusal position and angular relationship of the condyle in the temporal fossa socket,

splitting the ramus into two sections having an overlapping adjustment portion,

adjusting the two sections to correct the abnormal mandible condition,

repositioning the two split-apart ramus sections with the two reference indexing lines realigned with the indexing paddle,

reconnecting the split-apart ramus sections in their corrected occlusal position,

the two split-apart ramus sections being reconnected by a plurality of screws after drilling holes through the overlapping portion of the upper ramus section slightly larger than the diameter of the anchoring screws,

drilling and tapping holes in the overlying lower ramus section aligned with the larger outer holes to threadably receive the screws therein, and

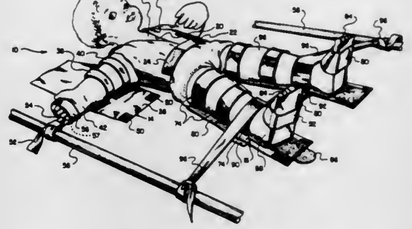
positively attaching the two overlapped sections during the reuniting healing process of the ramus.

4,515,155

INFANT RESTRAINT

Dolores Wagemann, 2075 Rialto Ave., San Bernardino, Calif. 92410

Filed Jul. 11, 1983, Ser. No. 512,666
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—134 **4 Claims**



1. In combination for use with an infant, said infant having a torso from which extends a head, legs and arms with a foot connected to each said leg, each said arm terminating in a hand, a restraint assembly for substantially immobilizing an infant, said restraint assembly comprising:

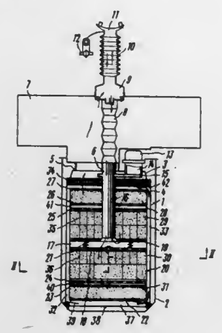
a vest to be located about said torso, said vest including an opening assembly for permitting ease of accessability to the torso, a disengageable first fastener assembly attached to said vest directly adjacent said opening assembly, said first fastener assembly to be operable to connect together said vest about said opening assembly; and

at least one sleeve attached to said vest and extending therefrom, a said arm adapted to extend through said sleeve, said sleeve including a first splint, said first splint extending the substantial length of said arm, a second fastener assembly connected to said sleeve, said second fastener assembly to be operable to fixedly secure said sleeve onto said arm, whereby said first splint and said second fastener assembly cooperate to maintain said arm in the extended (non-bent at the elbow) position, said sleeve having a free outer end, said free outer end adapted to be connected with said hand, a third fastener assembly attached to said sleeve at said free outer end, a first securing strap removably connected by said third fastener assembly to said sleeve, whereby said first securing strap is to be connected to a separate structure to restrain against movement said arm located within said one sleeve.

4,515,156
REGENERATIVE CANISTER OF A SELF-CONTAINED OXYGEN-BREATHING APPARATUS ON CHEMICALLY FIXED OXYGEN

Nikolai M. Khudosovtsev; Jury A. Shevchenko; Anatoly I. Artemenko; Mikhail G. Danilevsky; Vladimir K. Kocherga; Viktor N. Luchko; Anatoly E. Margolis; Vladimir K. Ovcharov; Ljudmila Y. Filimonovna, and Grigory A. Shulman, all of Donetsk, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Gornospasatelngo Dela, Donetsk, U.S.S.R.

Filed Jun. 28, 1983, Ser. No. 508,556
Claims priority, application U.S.S.R., Jan. 17, 1983, 3530204; Mar. 14, 1983, 3558351
Int. Cl.³ A62B *7/08*
U.S. Cl. 128—202.26 **8 Claims**

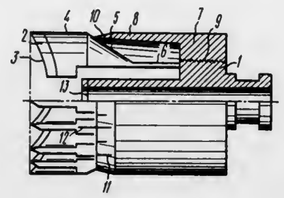


1. A regenerative canister of a self-contained oxygen-breathing apparatus on chemically fixed oxygen, comprising:
an outer casing having ends;
an inhalation tube fluidically connected with said outer casing for supplying regenerated air to the respiratory organs;
an exhalation tube communicating with said outer casing for the exhaled air to supply thereinto;
an inner shell accommodated in said outer casing and communicating with said exhalation tube, said inner shell having air-permeable ends;
an oxygen-delivering chemical situated in said inner shell between the ends thereof;
a top and a bottom collector space defined between said ends of the inner shell and of the outer casing, a passageway defined between said inner shell and outer casing fluidically communicating said top and bottom collector spaces, and said inhalation tube communicating with said top collector space;
a filter provided in said inhalation tube;
a starting device adapted for initiating the evolution of oxygen by said oxygen-delivering chemical and located on said outer casing;
air-permeable transverse partitions installed substantially in the central portion of said inner shell and subdividing the interior thereof into two compartments; a distributing chamber formed by said transverse partitions and the walls of said inner shell, said chamber communicating with said starting device and said exhalation tube so as to direct the exhaled air from said distributing chamber to said ends of the inner shell through the bulk of said oxygen-delivering chemical;
at least two additional transverse partitions installed in each compartment of said inner shell so as to establish a mixing chamber therebetween and to divide said oxygen-delivering chemical into at least two layers as along the direction of air flow from said distributing chamber to the ends of said inner shell;
heat-distributing elements made of a heat-conducting material and located in each of the compartments of the inner shell in the bulk of said oxygen-delivering chemical on its section running from said distributing chamber to the layer of the oxygen-delivering chemical adjacent to the end of said inner shell for heat distribution and withdrawal from the oxygen-delivering chemical situated on said section.

4,515,157
CORNEAL INCISION MARKER

Svyatoslav N. Fedorov; Evgeny I. Degtev; Vladimir N. Golubev; Sergei V. Khromov; Igor A. Yatsenko, and Alexandr A. Karavaev, all of Moscow, U.S.S.R., assignors to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza, Moscow, U.S.S.R.

Filed Jan. 18, 1983, Ser. No. 458,789
Claims priority, application U.S.S.R., Jul. 28, 1982, 3464601
Int. Cl.³ A61F *9/00*
U.S. Cl. 128—303 R **4 Claims**



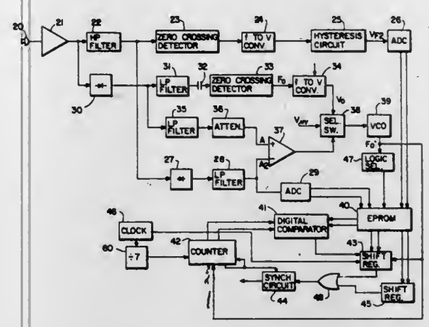
1. A device for marking locations for incisions on the cornea of an eye, said device comprising: an elongated, hollow case defining a bush; sight means for centering said device over the cornea, said sight means being positioned within said hollow case; multiple, radially oriented plates having sharpened, curvilinear edges for marking said incision locations on the cornea; means for holding said plates, said holding means having an outer surface and including a tapered surface which tapers inwardly from said outer surface in the direction of said case and away from said curvilinear edges, said holding means having a cylindrical end which is rigidly secured to said case, said plates being mounted on the holding means on an end opposite said tapered surface and extending outwardly of said bush; and drive means movably coupled to said case for engaging said tapered surface of said holding means for providing smooth synchronized movement to radially adjust the positions of said holding means and said plates.

4,515,158
SPEECH PROCESSING METHOD AND APPARATUS

James F. Patrick; Peter Seligman; Yit C. Tong, and Graeme M. Clark, all of Melbourne, Australia, assignors to The Commonwealth of Australia Secretary of Industry and Commerce, Canberra, Australia

Filed Dec. 11, 1981, Ser. No. 329,986
Claims priority, application Australia, Dec. 12, 1980, 6923/80; Jun. 30, 1981, 9509/81
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 R **11 Claims**

1. A signal processing system for converting a speech signal into a data signal for controlling a means for stimulating of a hearing prosthesis for an individual patient, the prosthesis being of the type including an implanted electrode array adapted to stimulate the auditory nerve fibers of a patient by the application of electrical currents to selected electrodes in the array, said processing system comprising
means for receiving a speech signal and for generating an electrical input signal having a plurality of components corresponding to a plurality of formant components of the received speech signal,
first means for generating from said input signal electrical signals representative of at least one of the amplitude and frequency of the fundamental voicing component FO of said speech signal,
second means for generating from said input signal electrical signals representative of at least one of the amplitudes or frequencies of a plurality of formants of said speech signal,
programmable means for producing instruction signals for controlling the application of sets of electrical signals selected from said signals generated by said first and second means to selected groups of electrodes in said array with selectable delays between the stimulation of each electrode in each of said groups, said programmable means including
means for storing data representative of a predetermined



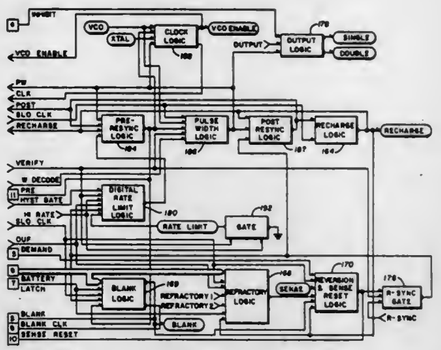
relationship between each group of electrodes and a selected range of at least one formant frequency based on psychophysical testing of the patient and data defining a predetermined relationship between another formant frequency and the delay between stimulation of electrodes in each group,
said programmable means further including means for producing instruction signals for determining the level of stimulation of each selected group of electrodes as a function of the amplitude of said formants of said speech signal, and
storage means for generating and storing stimulus signals corresponding to said instructions and for releasing said signals, separated in time by said selectable delays, to said means for stimulating the selected electrodes.

4,515,159
DIGITAL CARDIAC PACEMAKER WITH RATE LIMIT MEANS

Ray S. McDonald, St. Paul; David L. Thompson, Fridley; Martin A. Rossing, Anoka, and Jerome T. Hartlaub, New Brighton, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 170,447, Jul. 21, 1980, abandoned, which is a continuation of Ser. No. 957,960, Nov. 6, 1978, abandoned. This application Mar. 15, 1982, Ser. No. 358,172
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **38 Claims**

1. A medical device pulse generator for providing stimulating pulses to output terminals adapted to being electrically coupled to body tissue, said pulse generator comprising:
clock means for providing a series of clock pulses;
counter means for counting said clock pulses;
first decoding means responsive to said counter means for providing a signal whenever said counter means reaches a first certain count, said first count relating to the time between stimulating pulses;
first bistable means for being set in response to said first decoding means signal;
second decoding means responsive to said counter means for providing a signal whenever said counter means reaches a second certain count, said second certain count relating to the minimum acceptable time between stimulating pulses;
second bistable means for being set in response to said second decoding means signal;
gate means responsive to said first and second bistable means for providing a signal when both said first and second bistable means are set;
output means for providing said stimulating pulses in response to said gate means signal;

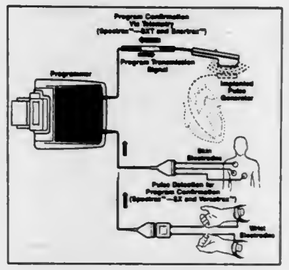


reset means for resetting said counter means, said first bistable means and said second bistable means in response to the provision of said stimulating pulse; and
override means for providing a signal to enable said gate means to provide a signal whenever said first bistable means is set regardless of the state of said second bistable means, said override means signal only being provided when it is desired to provide stimulating pulses separated by a time period less than the time for said counter means to reach said second count.

4,515,160
CARDIAC PACEMAKER SYNCHRONIZED PROGRAMMING

John G. Keimel, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 23, 1982, Ser. No. 371,335
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **4 Claims**



1. A method of controlling the output pulse intervals of the pulses emitted by an implantable programmable cardiac pulse generator means which normally operates under the control of a program stored in said pulse generator means comprising the steps of:
(A) transmitting temporary pulse interval program information from a control location to said pulse generator means which specifies the interval between at least one cardiac depolarization event and an ensuing output pulse;
(B) sensing the occurrence of cardiac depolarization events at said control location;

(C) interrupting the control of said pulse interval established by said stored program of said pulse generator means upon the satisfaction of predetermined criteria by said sensed cardiac depolarization event;

(D) utilizing said temporary pulse interval program information to provide the specified interval between said cardiac depolarization events and said ensuing pulses before said ensuing pulses are specified to occur; and,

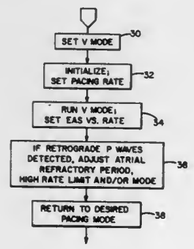
(E) releasing control of the operation of said pulse generator upon utilization of said temporary pulse interval program information to allow said stored program to resume control of said output pulse intervals.

4,515,161

DUAL CHAMBER PACEMAKER SYSTEM WITH V-A TIME MEASUREMENT APPARATUS AND METHOD

Frederik H. M. Wittkampf, Brummen, and Willem Boute, Doesburg, both of Netherlands, assignors to Vitafin N.V., Curacao, Netherlands

Filed Jan. 10, 1984, Ser. No. 569,669
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **14 Claims**



1. In a dual chamber cardiac pacemaker, a method of determining patient V-A conduction time and setting the pacemaker atrial refractory period as a consequence thereof, comprising the following steps:

(a) setting the patient's pacemaker to a ventricular pacing mode and delivering ventricular stimulus signals at a first stable pacing rate;

(b) enabling atrial sensing during a predetermined A sense window of the pacing cycle;

(c) measuring the timing of sensed atrial signals relative to delivered ventricular stimulus signals;

(d) determining whether said timing is substantially stable, and determining V-A conduction time as a function of determined stable timing; and

(e) setting said atrial refractory period as a function of said determined V-A time, and returning the pacemaker to a selected mode of dual chamber operation.

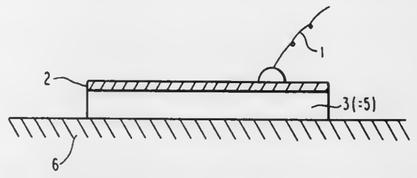
4,515,162

ELECTRODE PAD

Katsuhiro Yamamoto; Katsuo Matsumoto, and Yoshiyuki Okada, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 14, 1981, Ser. No. 301,861
Claims priority, application Japan, Mar. 14, 1980, 55-33948[U]
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—640 **6 Claims**

1. An electrode pad consisting essentially a tacky cross-linked electrically conductive hydrogel, wherein said hydrogel comprises at least one of polyacrylic acid and polyacrylic acid



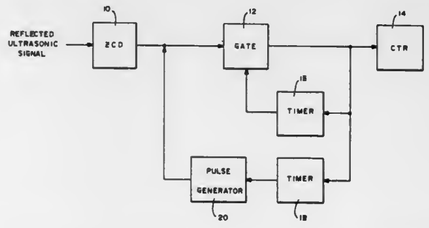
salt, water, and a cross-linking compound containing at least two epoxy groups in the molecule.

4,515,163

METHOD AND A MEANS FOR DETERMINING ULTRASONIC WAVE ATTENUATION IN TISSUE USING ZERO CROSSING DETECTOR FUNCTIONING WITHIN A SPECIFIED FREQUENCY BAND

Stephen W. Flax, Waukesha, and Norbert J. Pelc, Wauwatosa, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Mar. 2, 1984, Ser. No. 585,527
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **6 Claims**



1. Apparatus for counting zero crossings of an ultrasonic wave for use in a system for determining characteristics of biological tissue comprising:

means for generating a pulse in response to a zero crossing of a signal,

counter means,

gate means for applying said pulse to said counter means,

first means for inhibiting said gate means for a first period of time after a zero crossing, and

second means for generating and applying a pulse to said gate means after a second period of time after a zero crossing,

said first means and said second means being reset after each pulse is passed by said gate means.

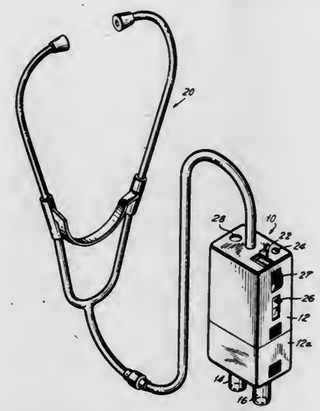
4,515,164

DIFFERENTIAL DOPPLER FOR BLOOD FLOW MEASUREMENT

Martin J. Slavin, Dix Hills, N.Y., assignor to Intech Systems Corp., Hauppauge, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,490
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **9 Claims**

1. An apparatus for determining whether an occlusion is present in a blood vessel comprising a portable housing, transmitter means supported in said housing for producing an ultrasonic signal of a given frequency, a first probe supported on said housing for directing said ultrasonic signal to a first location in a blood vessel and receiving a reflected ultrasonic signal from said first location, a second probe supported on said housing and spaced a predetermined distance from said first probe for directing said ultrasonic signal to a second location in said blood vessel spaced from said first location and receiving a reflected ultrasonic signal from said second location, said predetermined distance being chosen so that said first probe is responsive substantially to signals from said first location and said second probe is responsive substantially to signals from said second location, first receiver means supported in said housing for receiving said reflected ultrasonic signal after return from contact with blood flowing in said blood vessel at said first location and for producing a first received signal representative of frequency shift of the received signal, second



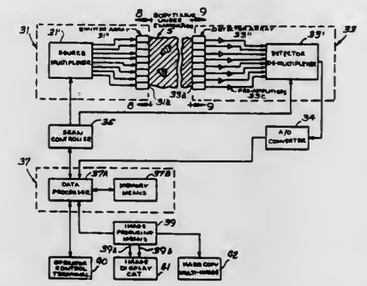
receiver means supported in said housing for receiving said reflected ultrasonic signal after return from contact with blood flowing in said blood vessel at said second location and for producing a second received signal representative of frequency shift of the received signal, and difference measuring means supported in said housing for receiving said first and second received signals and for producing a difference signal representative of a measurement of the difference between said first and second received signals whereby a difference in blood flow velocity is determined.

4,515,165

APPARATUS AND METHOD FOR DETECTING TUMORS

Robert Carroll, Gainesville, Fla., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 118,639, Feb. 4, 1980, abandoned. This application Sep. 15, 1981, Ser. No. 302,443
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—664 **51 Claims**



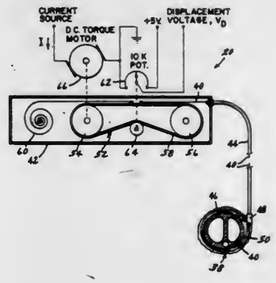
1. A method of detecting the presence of tumors and distinguishing cancerous from non-cancerous tumors in situ within the body of a human being or animal, said method comprising the steps of scanning a test region in said body by individually applying at discrete locations on the skin surface of said body opposite the test region in said body where a tumor may be located a visible or infrared beam of radiation having a tumor-distinguishing wavelength which is absorbed or scattered to a greater degree by a cancerous tumor relative to a non-cancerous tumor and by surrounding normal healthy tissue and which is absorbed or scattered to a lesser degree relative to a non-cancerous tumor than by normal healthy tissue and cancerous tumors, and detecting and measuring the magnitude of the radiation emanating from the skin surface of the body at a discrete point of the skin surface no greater than 2 mm thereacross on the opposite side of the test region where the radiation is expected to emanate for each individual application of radiation as the radiation being directed into the skin surface irradiates said region of the body where a tumor may be located and determining from said detecting and measuring if any tumors are present and if present distinguishing cancerous from non-cancerous tumors.

4,515,166

NOCTURNAL PENILE TUMESCENCE AND RIGIDITY MONITOR

Gerald W. Timm, Minneapolis, Minn., assignor to Dacomed Corporation, Minneapolis, Minn.

Filed Jun. 13, 1983, Ser. No. 503,872
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—694 **19 Claims**



1. A penile rigidity and tumescence monitor apparatus, comprising:

(a) transducer means for providing output signals indicative of penile rigidity and tumescence throughout a penile tumescence event; and,

(b) control means operatively interconnected to said transducer means for providing control of said transducer means, said control means further providing for acquisition of said out put signals.

4,515,167

DEVICE FOR THE DEVELOPMENT, TRAINING AND REHABILITATION OF THE PUBOCOCCYGEAL AND RELATED PERINEAL MUSCULATURE OF THE FEMALE

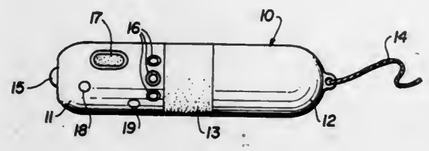
Joel S. Hochman, 121 Sandoval St., Santa Fe, N. Mex. 87501

Filed Feb. 28, 1983, Ser. No. 470,196
Int. Cl.³ A61B *10/00*; A61N *1/36*
U.S. Cl. 128—736 **4 Claims**

1. A device for monitoring CSV and temperature to thereby predict ovulation and fertility periods comprising a casing having a size and shape whereby it can be contained bodily and entirely within the vagina, the casing including metallic parts on the exterior surface thereof adapted to serve as a dipole

antenna, an integrated circuit inside of the casing including a signal averager and comparator, said integrated circuit also including an antenna matching network connected with said metallic parts, and CSV and temperature sensing transducers on the casing and adapted to contact the vaginal wall and being electrically connected with said integrated circuit.

2. A stimulating and monitoring device adapted to be entirely contained in the vagina comprising a casing including metallic parts on the exterior surface of the casing serving as electrodes and being adapted to contact the vaginal wall, the metallic parts also serving as a dipole antenna, circuitry including a power source and means to generate electrical stimulation to the vaginal wall through the metallic parts contained in said casing, said circuitry including a programmable timer, a pressure-sensing signal emitting element, a pressure feedback



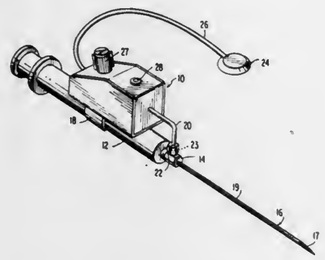
signal processor connecting the programmable timer and the pressure-sensing signal emitting element and an antenna matching network connected to said metallic parts, a manual switch operably mounted on the exterior of the casing and connected to the programmable timer to energize said circuitry, programming switches operably mounted on the exterior of the casing for regulating the intensity, amplitude and time period of stimulation produced by the device and being connected to said programmable timer, a pressure sensing yielding element on the casing adapted to engage the vaginal wall and being connected with said pressure-sensing signal emitting element, and CSV and temperature transducer elements on the casing and being connected with the circuitry, and the circuitry further including a signal averager and comparator for the signals delivered by said transducer elements and being connected to said matching network.

4,515,168

CLAMP-ON NERVE STIMULATOR AND LOCATOR

Martin H. Chester, 25310 Tierra Grande Dr., Carmel, Calif. 93921, and Cary A. Norman, 440 Juniper Ave., Pacific Grove, Calif. 93950

Filed Jul. 22, 1983, Ser. No. 516,213
Int. Cl.³ A61H *39/02*; A61N *1/32*
U.S. Cl. 128—741 **9 Claims**



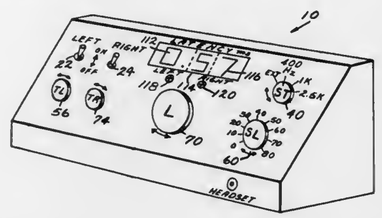
1. A nerve stimulator/locator unit for applying current pulses to a patient's body through an injection needle connected to a syringe, said unit comprising:
a housing;
pulse generator means mounted in said housing for generating a series of output current pulses;
indicator means mounted on said housing for producing a visual indication of the generation of each pulse;
manually controlled current-adjusting means mounted in said housing for adjusting the current values of the pulses;
connector means for electrically connecting the output of said pulse generator means to an injection needle; and
clamping means, fixed to said housing, for clamping said housing directly to a syringe.

4,515,169

DIFFERENTIAL LATENCY AUDIOMETER

John W. Ward, Charlottesville, Va., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 12, 1982, Ser. No. 433,641
Int. Cl.³ A61B *5/12*
U.S. Cl. 128—746 **41 Claims**



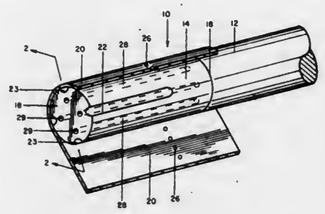
1. A method for determining the differential interaural latency of a subject comprising the steps of:
applying a first complex sound signal to a first ear of said subject;
applying, simultaneously with the application of said first signal, a second complex sound signal to the second ear of said subject, said second sound signal corresponding to said first sound signal, but offset in time with respect to said first sound signal;
varying the time offset of said second signal until the apparent source of said sounds is perceived by said subject as in the vicinity of a predetermined position within the interior of said subject's head; and
deriving indicia of differential interaural latency from said varied time offset.

4,515,170

VENTILATED MOUTHPIECE FOR A SMOKING ARTICLE

Daniel V. Cantrell, and Robert A. Sanford, both of Prospect, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed May 9, 1983, Ser. No. 492,978
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 **16 Claims**



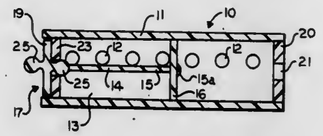
1. A ventilated mouthpiece for a cigarette, comprising:
a generally cylindrical core member fabricated entirely out of an air and smoke impermeable material, the core member having a smoke inlet end and mouth end;
means defining a plurality of ventilating air flow channels extending along at least a portion of the core member, the air flow channels being open to the mouth end of the core member providing for the flow of only ventilating air therethrough to the outside of the core member at the mouth end;
means providing for the flow of only ventilating air into the ventilating air flow channels;
means defining a plurality of linear, cylindrically shaped smoke flow capillaries extending through the core member from the smoke inlet end to the mouth end of the core member, each smoke flow capillary being open to the smoke inlet end of the core member and open to the mouth end of the core member providing for the flow therethrough of only smoke from the inlet end of the core member to the outside of the core member at the mouth end; and
the openings of the smoke flow capillaries at the mouth end of the core member being spaced inwardly generally radially of the core member from the openings of the ventilating air flow channels at the mouth end of the core member.

4,515,171

HAIR CURLER WITH RETRACTABLE RETAINING BAND

Patricia T. Thibodeaux, 6544 St. Ann Ave., Baton Rouge, La. 70811

Filed Oct. 3, 1983, Ser. No. 538,501
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—42 R **1 Claim**



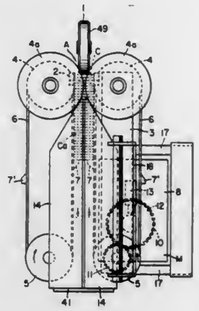
1. A hair curling apparatus comprising:
a. a hollow two ended tubular body member about which hair can be wound to form a curl, said tubular body member having a first end and second end, said hollow tubular body member having a first cover on said first end and a second cover on said second end, each of said two covers having a hole therein, said two covers being parallel, said tubular body having a connecting member located between said two covers and inside said tubular body member,
b. an elastic hair retaining band having a first end and a second end, said first end of said elastic hair retaining band being connected to said connecting member on the inside of said hollow tubular body member, the second end of said elastic hair retaining band having connected thereto attachment means having tab means thereon for attaching said second end of said elastic hair retaining band to said second cover of said hollow tubular body member when said elastic hair retaining band is stretched outwardly from said first end of said hollow tubular body means, said elastic hair retaining band extending through said hole in said first cover, said tab means being adapted for receipt in said hole in said second cover, said elastic hair retaining band being adapted to completely retract into the interior of said hollow tubular body member, said elastic retaining band having a length sufficient to extend from the point at which said first end is connected to said connecting member outwardly through said first end of said hollow tubular body over the surface of said hollow tubular body member to said second end of said hollow tubular body means, and to retract completely into the interior of said hollow tubular body member, said hollow tubular body member having holes in the outer surface thereof communicating with the interior thereof.

4,515,172

COIN STACKING APPARATUS FOR A COIN PACKAGING MACHINE OR THE LIKE

Minoru Nakamura, and Kazuto Asami, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo, Japan

Filed Oct. 25, 1982, Ser. No. 436,480
Claims priority, application Japan, Oct. 28, 1981, 56-171386
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—8 A **7 Claims**



1. A coin stacking apparatus for stacking vertically in a stacking space a plurality of coins fed horizontally along a coin passage in a coin disposing machine such as a coin packaging machine or the like; said stacking space having an upper end where coins are received from the coin passage and a lower end which is released after a predetermined number of coins have been stacked so that the stacked coins discharged from the stacking space, comprising:
(a) a pair of endless belts disposed substantially vertically and having inner vertical travelling portions, respectively, which are opposite to each other to define the sides of the stacking space with a certain distance kept therebetween, the inner vertical travelling portions being moved downwardly together with each other,
(b) belt guides means for guiding the endless belts so as to form the inner vertical travelling portions, said belt guide means having at least two pulleys which are located opposite to each other in upper portions of the respective inner vertical travelling portions so that the opposite portions of the respective endless belts running along the pulleys provide a coin-receiving region at the upper end of the stacking space,
(c) at least two coin supports fixedly secured to each of said belts respectively in a symmetrical relationship with respect to the axis of the stacking space, said coin supports on the opposite inner vertical travelling portions being cooperable with each other in pairs to support the lower end of a stack of coins,
(d) first coin locating means for locating the foremost end of each coin conveyed horizontally exactly above the stacking space, said first coin locating means being positioned at the front of the stacking space between the belts,
(e) second coin locating means positioned at rear of the stacking space between the belts,
(f) coin guide means extending over the coin-receiving region for guiding the upper surface of each coin which is delivered into the stacking space,
(g) said inner travelling portions of the belts being movable downwardly in response to the introduction of each coin into the stacking space, and driving means operable after a predetermined number of coins have been stacked in the stacking space to move the endless belts so that first said supports holding the lower face of the stacked coins move downwardly to permit the discharge of a stack of coins from the stacking space and second said supports move into positions ready for receiving the next coins intro-

duced from the coin passage into the coin-receiving region of the stacking space, and

(h) shutter means at the lower end of the stacking space for receiving the stacked coins, said shutter means being movable to an open position to permit the discharge of a stack of coins from the stacking space.

4,515,173

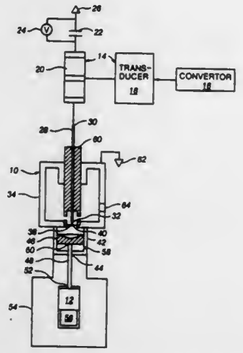
FAST SHUTTER APPARATUS

Eugene L. Zimmermann, Santa Fe, and Don R. Kania, Los Alamos, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,322

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—68 R **7 Claims**



1. An apparatus for providing protection from blast damage by rapidly interposing a shutter between an area to be protected and the blast area, said apparatus comprising:

a. sensor means for sensing a trigger signal associated with the blast and for converting the trigger signal into a voltage pulse of sufficient magnitude to create a discharge;

b. a firing pin for receiving said voltage pulse, said firing pin having first and second ends, said first end being electrically connected to said sensor means;

c. a pressure chamber holding a first gas under pressure, said pressure chamber having a portion defining an orifice, said pressure chamber disposed about and having said orifice disposed beneath said second end of said firing pin;

d. an insulator disposed around and separating said firing pin from said pressure chamber;

e. a metal foil member sealably covering said orifice of said pressure chamber;

f. a drive housing connected to said pressure chamber, said drive housing having a portion which encloses said orifice and having a portion defining a drive housing aperture, said drive housing aperture located opposite from said foil member;

g. a drive piston disposed within and sealably engaging said drive housing, said drive piston being slidable within said drive housing from a first position adjacent said foil member to a second position spaced apart from said foil member;

h. a drive rod having first and second ends, said first end being connected to said drive piston, said drive rod being slidably passable through said drive housing aperture;

i. a shutter housing having a portion defining a shutter aperture, said shutter housing being disposed beneath said drive housing; and

j. a shutter for moving from an open position to a closed position to cover said shutter aperture, said shutter being connected to said second end of said drive rod, whereby after said sensor means receives a trigger signal and converts it into said voltage pulse, said voltage pulse passes from said first end to said second end of said firing pin and a point-to-plane discharge occurs rupturing said foil member, allowing said first gas in said pressure chamber to enter said drive housing and move said drive piston from said first position to said second position, moving said shutter into said closed position to cover said shutter aperture.

4,515,174

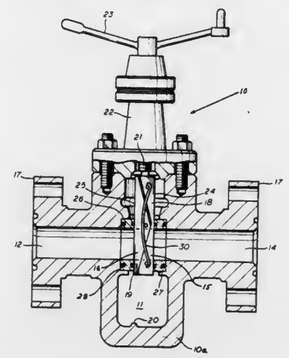
GATE VALVE WITH INTERNAL PRESSURE RELIEF MEANS

F. Harold Hollister, Houston, and Danny S. Meyer, Richmond, both of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 27, 1983, Ser. No. 565,550

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—72 **6 Claims**



1. In a gate valve having a valve body with inlet and outlet flow passages defining a flow way through said valve, a valve chamber in the body communicating with said flow passages, opposed aligned valve seats in said valve body surrounding the inlet and outlet flow passages and exposed to said valve chamber, an expansible ported gate assembly movably mounted in the valve chamber for rectilinear movement across said flow way between a first position wherein the valve is open and a second position wherein the valve is closed, said assemblage including ported juxtaposed gate and segment members having parallel outer sealing surfaces and ports for alignment with said flow passages when the valve is open; and means for moving said gate and segment members into sealing engagement with said valve seats in the open and closed positions of the valve, the improvement comprising:

pressure relief means installed in said segment member for relieving excessive fluid pressure from the valve chamber into the inlet flow passage at a predetermined temperature, said pressure relief means including a passage extending from the port through the segment to the sealing face of the segment at a location which is exposed to said inlet flow passage when the gate assemblage is in the valve closed position;

an internal annular shoulder formed in the wall of said passage intermediate the ends thereof and providing a valve seating surface within the passage, said passage having a first counterbore section extending from the sealing face of the segment to said valve seating surface and a second section extending from the port in the segment to said first section;

a valve element normally disposed in seated engagement with said valve seating surface and blocking said passage;

a perforated retainer element installed in the first counterbore section of said passage in spaced relation to said valve element; and

a plug of eutectic material filling the remainder of the first counterbore section between said retainer element and said valve element and holding the valve element in seated engagement against said valve seating surface, said plug being adapted to melt at a preselected temperature whereby upon the temperature of the valve chamber reaching said preselected temperature a greater fluid pressure in the valve chamber will force the eutectic material from said passage through the perforated retainer element into the upstream flow passage to relieve said valve chamber, said valve element being pressure energizable in response to a subsequent leak from the valve chamber or the downstream seal to block said passage and allow the valve to provide an upstream seal.

4,515,175

CONTROL IMPULSE INTENSIFIER

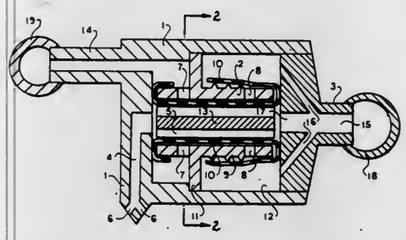
Rolf Nolting, and Bernhard Siniza, both of Bad Freienwalde, German Democratic Rep., assignors to VEB Ingenieurbuero fuer Meliorationen, Bad Freienwalde, German Democratic Rep.

Filed Mar. 18, 1982, Ser. No. 359,537

Claims priority, application German Democratic Rep., Apr. 9, 1981, 2291107

Int. Cl.³ F16K *11/00*

U.S. Cl. 137—107 **4 Claims**



1. A control impulse intensifier for an impulse fluid flow system adapted to be situated between a supply line and a pipe line, comprising

a housing situated between the supply line and the pipe line, said housing having an outflow passage therein,

a hollow valve element situated inside the housing to define an inner valve space inside the valve element communicating with both the outflow passage and the pipe line and an outer valve space between the housing and the valve element, said hollow valve element including a sealing flange outside thereof so that the outer valve space is divided into a supply side communicating with the supply line and a pipe side communicating with the pipe line, at least one first boring passing through the valve element at the supply side, and at least one second boring passing through the valve element at the pipe side, said second boring having means to prevent fluid from passing therethrough from the outer valve space of the pipe side,

flexible cylindrical means situated at least inside the hollow valve element to be located beneath the first and second borings, and

a valve core situated inside the flexible cylindrical means in the hollow valve element, said valve core having at least one path outside the valve core so that when fluid pressure of the supply line is higher than that of the pipe line, fluid in the supply line flows to the pipe line by passing through the first boring and then through a space between the hollow valve element and the flexible cylindrical means and extending from the first boring to the second boring and finally through the second boring to thereby block the path outside the valve core by means of the flexible cylindrical means being inflated inwardly by the fluid, and when fluid pressure of the supply line is lower than that of the pipe line, fluid in the pipe line passes through the path outside the valve core and exits from the outflow passage.

4,515,176

SOLENOID OPERATED PRESSURE REGULATION

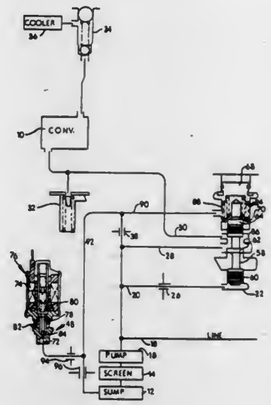
James P. McCarthy, Inkster, and Richard E. Byler, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01060, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO84/00627, PCT Pub. Date Feb. 16, 1984

PCT Filed Aug. 4, 1982, Ser. No. 425,193

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—115 **7 Claims**



1. A line pressure regulation system for regulating fluid pressure in a hydraulic line comprising:

a source of pressurized fluid connected to the hydraulic line;

an orifice communicating with the outlet of the fluid pressure source having a predetermined pressure drop thereacross, the orifice being normally closed, the outlet of the pressure source being opened to vent when the orifice is opened;

a second orifice of fixed size in parallel with the first orifice across which the outlet of the pressure source is communicated to vent; and

an electrical solenoid adapted to open and close the first orifice.

4,515,177

MOLDED CONNECTION PIECE

Alfred Thalmann, and Fritz Reich, both of Uhwiesen, Switzerland, assignors to George Fischer Limited, Schaffhausen, Switzerland

Filed Apr. 26, 1983, Ser. No. 488,650

Claims priority, application Switzerland, Apr. 29, 1982, 2638/82

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—318 **17 Claims**

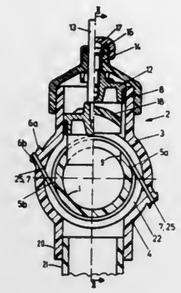
1. A molded connection device for connecting a conduit with a pipeline, comprising:

first and second connection members, each of said connection members having a surface shaped to mate with and partially surround the pipeline;

cutting means, mounted in said first connection member, for penetrating said pipeline and forming a hole only in one wall of the pipeline; coupling means, attached to said second connection member for connection to a conduit; and

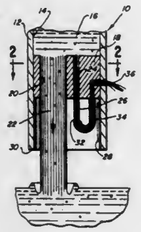
an annularly extending channel in said connection members providing fluid communication between the hole and the

conduit and permitting flow of fluid from the interior of the pipeline, through the hole and said annularly extend-



ing channel and out the conduit when the cutting means is withdrawn into said first connection member.

4,515,178
LIQUID LEVEL CONTROL DEVICE
Daniel N. Campau, 656 Duxbury Ct., Grand Rapids, Mich. 49506
Filed May 29, 1984, Ser. No. 614,550
Int. Cl.[3] F15C *1/14*; F16K *21/18*
U.S. Cl. 137—393 **17 Claims**



1. A fluid amplifier adapted for sensing the level of a liquid in a reservoir, storage tank or other container and for generating a differential in pressure signal in response to the static presence of the liquid level at a predetermined level, comprising:

inlet means for developing a liquid flow stream;

an access region downstream of said inlet means;

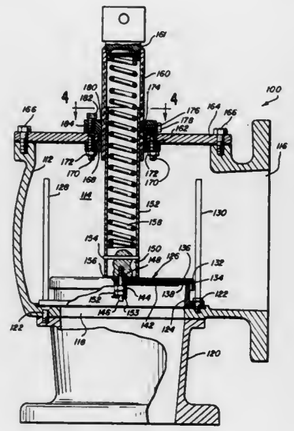
first passage means in communication with said inlet means and of major cross-sectional dimensions for delivering a major portion of said flow stream through said access region to said reservoir, storage tank or other container;

second passage means in communication with said inlet means for receiving a portion of said flow stream, said second passage means being of minor cross-sectional dimensions spaced laterally of said first passage means for developing a liquid power stream through said access region independent of and generally parallel to said major portion of the flow stream delivered by said first passage means;

sensing means responsive to said static presence of the liquid level at said predetermined level for altering said liquid power stream from said generally parallel condition; and

signal developing means for receiving a fluid pressure signal of one magnitude when said liquid power stream is generally parallel and of a second magnitude when said liquid power stream is altered from said generally parallel condition.

4,515,179
PRESSURE RELIEF VALVE WITH ADJUSTMENT FOR SET PRESSURE
Robert H. Edmunds, Glenview, and Jay D. Vanek, Brookfield, both of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed Jan. 28, 1983, Ser. No. 461,752
Int. Cl.[3] F16K *15/06*
U.S. Cl. 137—543.13 **16 Claims**



1. A pressure relief valve, comprising:

a housing defining a valve chamber,

a valve seat in said chamber,

a valve pallet,

means for reciprocally mounting said valve pallet in said chamber and aligning said valve pallet to engage said valve seat in a valve closed position,

means for biasing said valve pallet into engagement with said valve seat,

means for retaining said biasing means, said retaining means movable into and out of said chamber,

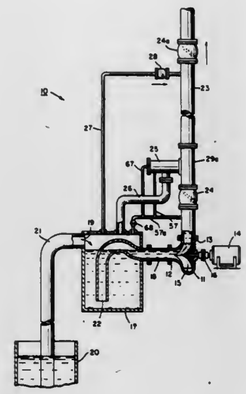
a stop member releasably secured on said retaining means, said stop member including a locking element locking said stop member to said retaining means, and means for releasably securing said stop member to said housing, said releasably securing means extending through said stop member and movable relative to said stop member into and out of engagement with said housing.

4,515,180
VALVE FOR SELF-PRIMING PUMP SYSTEM
Pellegrino E. Napolitano, Middletown, N.J., assignor to Hudson Engineering Company, Bayonne, N.J.
Filed Dec. 9, 1982, Ser. No. 448,235
Int. Cl.[3] B63 *1/00*
U.S. Cl. 137—565 **17 Claims**

1. In a self-priming pump system for a liquid pump having a fluid inlet and a fluid outlet, a suction tank for the liquid to be pumped, the suction tank being in communication with the pump inlet, a discharge line connected to the pump outlet, a check valve positioned in the discharge line downstream of the pump outlet a distance sufficient to provide a column of priming liquid of a quantity sufficient for priming the pump upon loss of suction at the pump inlet, and a priming valve positioned between the pump outlet and the check valve and having an inlet in communication with the discharge line and an outlet in communication with the suction tank, the priming valve responsive to liquid flow from the pump to automatically permit flow of the priming column of liquid from the discharge line to the suction tank, the improvement comprising:

a. a second check valve positioned between the priming valve and the pump outlet to define a quantity of liquid

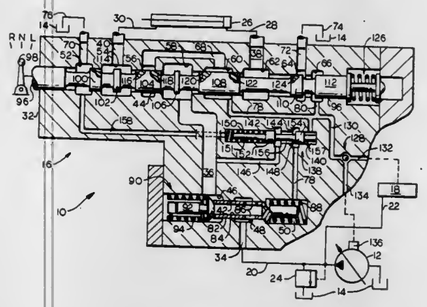
between said check valves when flow through the pump ceases, said priming valve including a piston operated valve member having a rod connected to said piston, one face of said piston exposed to the discharge line static pressure at a point upstream of said second check valve



and forming one wall of a piston pressure chamber, and the other side of said piston exposed to a pressure not exceeding atmospheric pressure;

b. a conduit extending from said piston pressure chamber to said suction tank, and control valve means positioned in said conduit to control the flow of liquid therethrough.

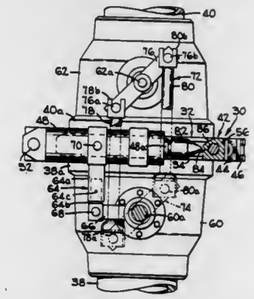
4,515,181
FLOW CONTROL VALVE ASSEMBLY WTH QUICK RESPONSE
Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 25, 1983, Ser. No. 497,985
Int. Cl.[3] F15B *13/02*
U.S. Cl. 137—596 **9 Claims**



1. In a valve assembly (16) adapted for use in a fluid system (10) having an actuator (26) and a source (12) of fluid pressure each respectively connected to the valve assembly (16), said valve assembly (16) having a housing (32) defining an inlet port (34), a supply passage (36) and a work port (38,40); a valving element (96) located in the housing (32) and movable between a neutral position and an actuated position to selectively interconnect the supply passage (36) and the work port (38,40); a flow control element (82) located in the housing (32) and movable between a closed position, an infinite number of fluid metering positions and a full open position to controllably interconnect the inlet port (34) and the supply passage (36); a spring chamber (50) defined in the housing (32) at one end of the flow control element (82) with a spring (88) located therein to bias the flow control element (82) towards the full open position; said flow control element (82) being movable toward the closed position in response to fluid pressure in the supply passage (36) acting on the other end of the flow control element (82); and a load sensing passage (78) defined in the housing (32) to communicate a load pressure signal in the work port (38,40) with the spring chamber (50), the improvement comprising:

means (138) for blocking the load sensing passage (78) between the work port (38,40) and the spring chamber (50) and interconnecting the spring chamber (50) with one of the inlet port (34) and the supply passage (36) in response to the load pressure signal in the load sensing passage (78) from the work port (38,40) being below a predetermined pressure level.

4,515,182
PIPE COUPLING WITH VALVE CLOSURE SAFETY SYSTEM
Eugene R. LeDevehat, Saligny, France, assignor to FMC Corporation, Chicago, Ill.
Filed Nov. 19, 1982, Ser. No. 443,100
Int. Cl.[3] F16L *23/04, 37/28*
U.S. Cl. 137—614.06 **14 Claims**



1. A quickly and safely releasable pipe coupling assembly for connecting together opposed flange ends of two pipe sections, at least one of said pipe sections including a valve with a flow control element and a stem for rotating said element between open and closed positions, said coupling assembly comprising:

(a) a plurality of arcuate segments with means for securing the flanged pipe ends together;

(b) pivot means interconnecting the arcuate segments to form a collar having two connectable end portions;

(c) collar release means functionally associated with the end portions for releasably securing said end portions together;

(d) first fluid power means functionally associated with the collar release means and the valve for releasing the end portions from each other; and

(e) means for preventing actuation of the collar release means by the first fluid power means unless the valve flow control element is in its closed position.

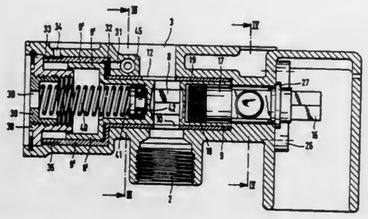
4,515,183
PNEUMATIC CONTROL VALVE
Werner Reiffert, Bochum; Dieter Peters, Witten, and Joachim Wiendahl, Dortmund, all of Fed. Rep. of Germany, assignors to J. D. Neuhaus, Witten, Fed. Rep. of Germany
Filed Apr. 12, 1983, Ser. No. 484,214
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3215290
Int. Cl.[3] F16K *11/00*
U.S. Cl. 137—625.21 **14 Claims**

1. A pneumatic control valve for controlling the forward

motion and reverse motion of a pneumatically driven apparatus comprising:

a valve housing having a longitudinal bore with a rotary slide valve member mounted therein to be rotatable and axially slidable within said bore, said housing having four connections formed therein each communicating with said bore including a compressed air supply inlet, first and second channels and a scavenging air line, said connections lying substantially in a common plane disposed transversely of the axis of said bore;

said valve member having a valve portion formed to connect said compressed air supply inlet with one of said first or second channels while the other of said channels is vented



lpast said valve portion to said scavenging air line connection and a shut-off portion in said bore at one end of said valve member for throttling the air flow stream passing through said control valve;

a control piston sidably mounted in said bore axially aligned with and connected with said valve member, said shut-off portion being disposed adjacent said four connections to throttle flow through said control valve in response to movements of said control piston;

biasing means acting against one side of said control piston; and

passage means formed in said valve housing to selectively apply pressured from one of said channels to the other side of said control piston.

4,515,184

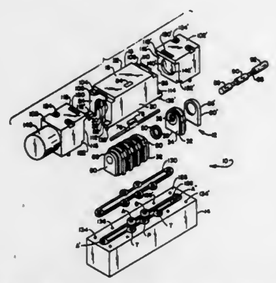
MODULAR DIRECTIONAL VALVE

Norris Bownass, Burgess Hills, and Donald J. Clarkson, Wokingham, both of England, assignors to Abex Corporation, Stamford, Conn.

Filed Jul. 18, 1983, Ser. No. 514,741

Int. Cl.³ F16K *27/04*

U.S. Cl. 137—625.66 **10 Claims**



1. A multi-port, spool type, directional valve and a subplate for mounting the valve, characterized by the valve comprising a cover housing having a plurality of parallel, laterally spaced slots formed in its inner surface; a plurality of individual port modules each having a pair of parallel side walls, a bottom surface, a lateral spool bore which opens into each side wall, a longitudinal port bore one end of which opens into the spool bore and the other end opens into the bottom surface of the module, an outer surface, and a rib formed on the outer surface of each module such that the outer surface of a module is complementary with the inner surface of the cover housing and the module rib is received in a cover housing slot; a plurality of spool seals each adapted to be inserted between adjacent port modules and to surround the spool bores; a longitudinally extending spool inserted through the spool bores, wherein movement of the spool causes the operating position of the valve to change; and a pair of actuator housings each connected to one end of the cover housing and mounted on the subplate; and the valve body mounted on the subplate such that each subplate port is aligned with the port bore of a port module to enable the subplate ports to supply pressure fluid to the modules and receive fluid therefrom.

4,515,185

APPARATUS FOR THE CONSTRAINED ACTUATION OF THE CLAMPING SYSTEM OF FILLING-YARN INSERTION DEVICES IN SHUTTLELESS WEAVING MACHINES

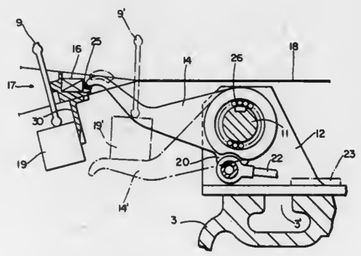
Florian Windischbauer, Pfeiffergässele 6, D 8990 Lindau, Fed. Rep. of Germany

Filed Jul. 5, 1983, Ser. No. 510,833

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224708

Int. Cl.³ D03D *47/18*

U.S. Cl. 139—446 **9 Claims**



1. In an apparatus employed in a shuttleless weaving machine wherein filling-yarn is inserted by gripper systems which are bilaterally advanced into the shed and then retracted and which are provided with clamping means for the filling-yarn for constrained actuation of the clamping means by control levers controlled by cam means and entering through the warp threads of the shed from the exterior, the improvement which comprises:

means for rotatably mounting said control levers below a path of travel of a fabric being woven at the weaving machine;

means for pivoting said control levers out of an operative position entering said shed into an idle position beneath a path of motion of a reed stay;

said cam means comprising a constrained-control cam system;

said constrained-control cam system including cam devices;

a control shaft extending beneath said path of travel of said fabric;

means for mounting said cam devices on said control shaft;

control means arranged bilaterally of the weaving machine for processing ends of said filling-yarn before and after said filling-yarn is inserted into the shed;

said rotatably mounting means comprising pivot bearings provided for said control levers;

sensing rolls cooperating with each of the control levers;

said cam devices each comprising a double eccentric mounted on said control shaft;

means for mounting said pivot bearings such that an axis thereof is parallel to said control shaft; and

each said control lever including two arms for contacting said double eccentric through said sensing rolls.

4,515,186

LOOM HEALD CONTROL MEANS

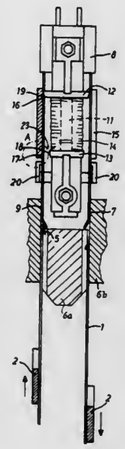
Gerard A. Durville, Gipf-Oberfrik, and Robert R. Bucher, Frick, both of Switzerland, assignors to Textilma Ag, Switzerland

Filed Jun. 22, 1983, Ser. No. 506,771

Claims priority, application Switzerland, Jul. 1, 1982, 4025/82

Int. Cl.³ D03C *13/00, 3/08*

U.S. Cl. 139—455 **10 Claims**



1. An improved loom heald control means for operating the warp healds of a loom, specifically of a Jacquard machine, including two rods mounted at one end to the wire, which said two rods are reciprocable between an upper and a lower position, including further flexible rod retaining members supported at one end in a supporting means and operative to retain said rods in their respective end positions, the rods and their corresponding retaining members having complementary shaped engaging sections located at the respective free ends of said rods and said retaining members, which engaging sections are movable into and out of engagement relative to each other, and including an electromagnet located between said retaining members and supported by said supporting means and operative to deflect said retaining members relative to said rods such to move said retaining members into and out of engagement with their respective corresponding rod, the improvement comprising an I-shaped core of said electromagnet having flange sections of differing widths, comprising further armature bodies mounted each to said retaining members and located and arranged such that said armature bodies abut on the one hand the broader of said flange sections and on the other hand there is provided an air gap each between the said respective armature bodies and the narrower of said flange sections, whereby said retaining members are deflectable by the movement of said rods in a direction towards said electromagnet in order to adjust said air gap between said narrower flange section and said armature bodies to a predetermined value.

4,515,187

COMPOUND DISPENSING METHOD AND APPARATUS

Edward G. Schaumburg, Askov, and Eugene F. Stanefski, South St. Paul, both of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed May 7, 1982, Ser. No. 375,802

Int. Cl.³ B65B *3/06;* H01M *7/00*

U.S. Cl. 141—1 **35 Claims**

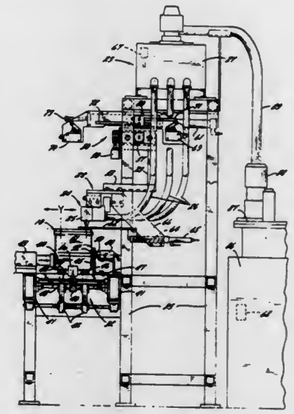
1. A method of controlling a compound dispenser having at least one filler head with an outlet for dispensing compound into a container having relative movement past the dispenser, the container having a plurality of sections separated from each other by partition walls, the container being positioned on conveyor means such that the container and dispenser have relative movement, comprising the steps of:

(a) locating the container in a filling position wherein a first container section is aligned with the filler head;

(b) detecting the position of an accurately aligned container in the filling position adjacent the filler head;

(c) clamping said container to prevent movement thereof from said accurately aligned filling position;

(d) causing the filler head to dispense viscous compound in



a first direction from the filler head into said first container section of the clamped container while moving the filler head horizontally relative to the container section from a start position in a second direction transversely of said first direction to dispense a layer of viscous compound onto the bottom thereof;

(e) moving the filler head back to the start position upon completing the dispensing of a layer of compound in the first container section;

(f) moving the filler head into alignment with a second container section; and

(g) causing the filler head to similarly dispense a layer of viscous compound in the second container section.

4,515,188

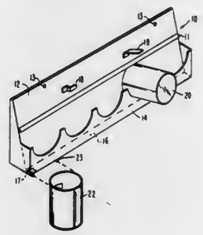
DRAIN APPARATUS

James W. Brutsman, 414 W. Allison Rd., Cheyenne, Wyo. 82007

Filed Jun. 14, 1983, Ser. No. 504,259

Int. Cl.³ B65B *3/04*

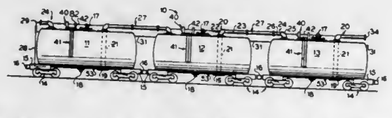
U.S. Cl. 141—1 **17 Claims**



9. Apparatus for draining fluid from a plurality of containers of the type having an opening at the top thereof and for collecting said fluid in a collection vessel, said apparatus comprising:

(a) rear wall means having forwardly projecting retention means;
(b) front wall means spaced from said rear wall means, wherein the top edge of said front wall means is horizontally disposed with respect to said apparatus; and wherein said top edge includes notches therealong which are adapted to receive a side of each said container;
(c) a floor extending between said rear wall means and said front wall means, wherein said floor is sloped to a drain point;
(d) drain means in said floor at said drain point which is adapted to permit said fluid to drain through said floor;
(e) supporting means carried by the underside of said floor which is adapted to support said collection vessel below said drain point;
wherein the top portion of each said container is engaged and retained by said retention means on said rear wall means, wherein the front wall means supports each said container in a manner such that each said container remains tilted sufficiently for fluid in each said container to flow out the top thereof by the force of gravity onto said floor and thence through said drain means into said collection vessel; wherein said apparatus is adapted to be mounted on a wall.

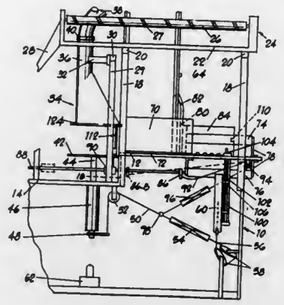
4,515,189
MOLTEN SULFUR TANK CAR ASSEMBLY
Erling Mowatt-Larssen, Warren, Ohio, assignor to General American Transportation Corporation, Chicago, Ill.
Filed Jul. 11, 1983, Ser. No. 512,749
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—11 **20 Claims**



14. A method for unloading lading from a wheeled tank car, said lading being of a type which is melted by heating for effective unloading and which produces noxious gases when heated, and said tank car having a storage tank for containing said lading, discharge port means on said storage tank through which said lading is emptied from said storage tank, and heating soil means on said storage tank for passing a heating fluid therethrough to melt said lading to facilitate emptying, comprising the steps of:
providing a vapor line means in fluid communication with said storage tank and a relatively remote recovery sink,
passing heating fluid through said heating coil means to melt said lading,
opening said vapor line means to said storage tank during the melting of said lading such that noxious gases produced during said melting are vented from said storage tank to said recovery sink, and
closing said vapor line means to said storage tank during the emptying of said lading from said storage tank.

4,515,190
ICE CREAM CAN FILLING MACHINE WITH CONTENT VARIGATOR
Frank A. Tindall, 1150 East U Ave., Vicksburg, Mich. 49097
Filed May 19, 1983, Ser. No. 496,136
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—131 **17 Claims**

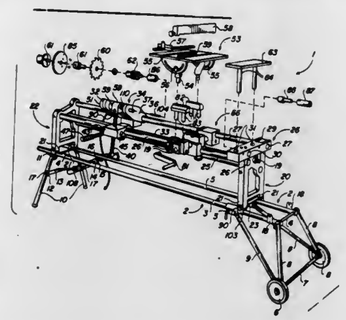
1. In combination with a contineously operating source of fluid ice cream,
a downwardly enlarged and opening delivery cone connected at its upper end to the lower end of said source,
means for successively delivering empty cans on their sides with the open ends of the cans facing the lower end of the cone,
first pusher means arranged to push each can endwise against the side of said cone,
a vertically movable platform disposed in its uppermost position to receive bottom of the can under said cone,
support means for said platform guiding its movement to a lower position with the can thereon flush with the bottom of said cone,



adjustable spring means biasing said support means to its upper position,
second pusher means arranged to push filled cans off of said platform,
fluid pressure operated means connected to simultaneously advance and retract said first and second pusher means,
a first control element actuated by movement of said platform to lowered position and connected to activate said pressure operated means to advance said pusher means,
and a second control means positioned to be actuated by movement of said pusher means to the limit of their advancing motion and connected to reverse the pressure operated means.

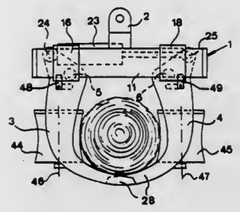
4,515,191
RADIAL UNIVERSAL TOOL
James R. Fetty, Chatham, La. 71226
Filed Aug. 22, 1983, Ser. No. 525,110
Int. Cl.³ B27C *9/00*
U.S. Cl. 144—1 C **20 Claims**

10. A radial universal tool comprising:
(a) a frame characterized by a pair of generally horizontally disposed supports joined at each end by cross supports and vertical struts supporting said supports at each end of said frame;
(b) a pivoting end member pivotally attached to one end of said supports and normally oriented in substantially vertical relationship with respect to said supports;
(c) a fixed end member releasably attached to the opposite end of said supports in spaced relationship with respect to said pivoting end member and normally oriented in substantially vertical relationship with respect to said supports;
(d) a top way fixedly disposed in said pivoting end member and said fixed end member in substantially parallel relationship with respect to said supports and aligned in a first horizontal plane; a middle way fixedly disposed in said pivoting end member and said fixed end member in substantially parallel relationship with respect to said supports and said top way and aligned in a second horizontal plane; and a bottom way fixedly disposed in said pivoting end member and said fixed end member in substantially parallel relationship with respect to said supports and said top and said middle way and aligned in a third horizontal plane;
(e) feed screw means journalled for rotation in said pivoting end member and said fixed end member and screw drive



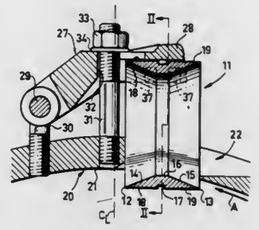
means attached to each end of said feed screw means for manipulating said feed screw means;
(f) radial tail stock means pivotally carried by said top way and disposed in pivotal cooperation with respect to said pivoting end member; and
(g) radial head stock means slidably carried by said top way, said middle way and said bottom way and in threadible cooperation with said feed screw means and a spindle rotatably mounted in said radial head stock means, whereby said radial head stock means can be slidably adjusted on said top way, said middle way and said bottom way, responsive to manipulation of said screw drive means on said feed screw means.

4,515,192
DEVICE FOR PROCESSING TREES OR THE LIKE
Jan Eriksson, Pl 345, S-810 20 Österfärnebo, Sweden
PCT No. PCT/SE82/00322, § 371 Date May 25, 1983, § 102(e) Date May 25, 1983, PCT Pub. No. WO83/01248, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 7, 1982, Ser. No. 503,136
Claims priority, application Sweden, Oct. 7, 1981, 8105907
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—2 Z **29 Claims**



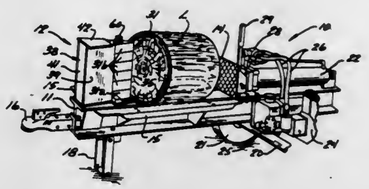
1. In a trunk processing device of the type including at least two grabbing members, means mounting at least one of said grabbing members for pivoting movement in a pivoting plane relative to the other of said grabbing members, a plurality of rolls each having an axis, said rolls being relatively movable about their axes with respect to said grabbing members for effecting feeding movement of trunks at an angle to the pivoting plane, the improvement comprising means for adjustably positioning said grabbing members at any one of a plurality of different distances from each other in the absence of essentially any change in the mutual angular relationship of said roll axes relative to each other.

4,515,193
CUTTING TOOL AND HOLDER
Karl-Erik A. Jonsson, Floraplan 14, S-802 28 Gävle, Sweden
Filed Feb. 8, 1983, Ser. No. 464,848
Claims priority, application Sweden, Feb. 12, 1982, 8200869
Int. Cl.³ B27C *1/14*
U.S. Cl. 144—172 **14 Claims**



13. In combination, a cylindrical cutting tool and a holder therefor, said tool having a cutting edge in each of its ends and at least one closed annular groove on its periphery located symmetrically between said edges, and said holder including a part-cylindrical recess in a surface of a tool carrier and clamping means connected to the tool carrier including a part-cylindrical surface, said part-cylindrical recess and said part-cylindrical surface having a radius corresponding to the radius of said cylindrical cutting tool, said cylindrical recess including part-annular ridge means adapted to engage said groove means such that axial displacement of said tool is prevented when said tool is received in said part-annular recess and clamped between it and said part-cylindrical surface.

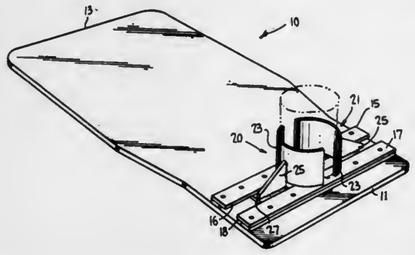
4,515,194
LOG SPLITTER HAVING SERVICEABLE WEDGE ASSEMBLY
Douglas D. Dankel, Kankakee, Ill., assignor to Roper Corporation, Kankakee, Ill.
Filed Jun. 20, 1983, Ser. No. 506,035
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **28 Claims**



1. A log splitting apparatus comprising an elongated frame, selectively actuateable ram means mounted for longitudinal movement on one end of said frame, a wedge assembly mounted on the opposite end of said frame, said wedge assembly including a plurality of wedge tip sections each having a log splitting leading edge on a longitudinal axis thereof and being removably mounted in vertically stacked relation, said wedge tip sections each having interlocking means between mating upper and lower surfaces thereof for maintaining the

leading edges of said wedge tip sections in alignment, and means for supporting and retaining said stack of wedge tip sections on said frame with the longitudinal axes thereof parallel to the movement of said ram means.

4,515,195
METHOD AND APPARATUS FOR SUPPORTING LOGS AND THE LIKE
Harvey Gladstein, 309 E. 49th St., New York, N.Y. 10017
Filed Jul. 20, 1983, Ser. No. 515,508
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—366 **20 Claims**



1. Apparatus for supporting a log in upright position to permit the log to be longitudinally split, said apparatus comprising:

a base member having a top surface which is substantially horizontal in use;

a pair of support members; and

mounting means mounting said support members on said top surface of said base member for relative movement of said support members in one horizontal dimension toward and away from one another to permit a log to be engaged between said support members, said mounting means including further means for preventing inadvertent relative movement between said support members when a log is supported therebetween;

wherein said base member is sufficiently long in a second horizontal dimension perpendicular to the relative movement of said support members to permit a user of said apparatus to stand on said top surface and positionally stabilize said base member with the user's weight while sledging a log supported on end between said support members.

18. The method of supporting a log or piece of cord wood to be split comprising the steps of:

supporting the log upright on a base member between two supports which are mutually re-positionable toward and away from one another; and

positionally stabilizing the base member by standing thereon while splitting the supported log with a sledging action.

4,515,196
LOG HANDLING AND SAWING SYSTEM
Dean W. Shields, 4645 Calnita Pl., Jackson, Miss. 39211
Filed Jan. 28, 1983, Ser. No. 461,852
Int. Cl.³ B27B *15/00, 31/04, 31/06*
U.S. Cl. 144—378 **30 Claims**

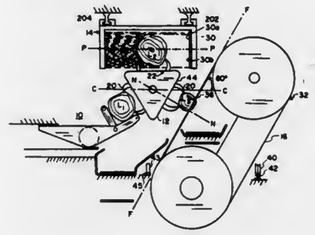
16. The method of positioning a log with respect to a saw comprising:

clamping a log while positioned in a first position in space;

rotating the clamped log about an axis of rotation generally parallel with, but spaced from, the log through a second position in space;

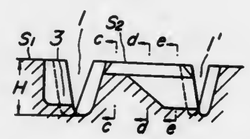
scanning a profile of said log while in said second position, scanning being with respect to a radial scale and distance from said axis of rotation, and therefrom the spatial position of a selected, generally longitudinal plane, located, said selected plane extending through the log, and being perpendicular to a radial plane along and through said axis of rotation;

further rotating said log about said axis of rotation to a third position in space; and



relatively positioning a saw and said log, with reference to said selected plane through said log, whereby said log is sawable in a sawing plane with regard to said selected plane.

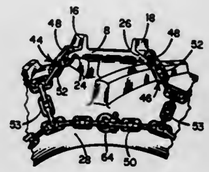
4,515,197
HEAVY DUTY PNEUMATIC RADIAL TIRE
Kenichi Motomura; Hiroshi Ogawa, both of Higashiyamato; Akira Yamamoto, Sayama, and Noriyuki Hagita, Kuroiso, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 4, 1983, Ser. No. 491,488
Claims priority, application Japan, May 12, 1982, 57-78123
Int. Cl.³ B60C *11/06, 11/12*
U.S. Cl. 152—209 R **13 Claims**



1. A heavy duty penumatic radial tire, comprising; a body reinforcement consisting of a carcass and a belt, an outer rubber layer covering the body reinforcement, and a tread formed by covering the crown portion of the body reinforcement by the outer rubber layer; said carcass consisting of at least one rubberized cord layer having tire cords arranged therein in the substantial radial plane of the tire; said belt consisting of at least two metal cord layers arranged on the outer side of the carcass such that the metal cords in the adjacent cord layers are crossed with each other at a relatively small inclined angle with respect to the equatorial line of the tire; said tread having at least four lands formed thereon and separated from each

other by at least three main grooves extending continuously in zigzag form along the circumferential direction of the tread, each groove having a width of 3–10% based on the width of the tread; and said at least four lands having a pair of first group lands which are formed at the outermost sides of the tread and are substantially continuous along the circumferential direction of the tire; notches arranged at least at the edge portions of the lands which edge portions are other than those adjacent to the main grooves defining the above described first group lands, and being opened to the main grooves in an opening width of 0.5–4% in each notch based on the width of the tread such that the land near the center portion of the tread has a shear resistance in circumferential and axial directions less than that of the land near the side portion of the tread, each of a pair of second group lands arranged adjacent to and at the inner side of the main grooves defining the above described first group lands being softer at the inner portion thereof than at the outer portion thereof, and the notch, which is arranged on the second group land and is opened to the main groove adjacent to and at the inner side of the second group land, is increased in its depth from the center portion towards the edge portion of the land and is opened to the main groove.

4,515,198
MEANS FOR DETACHABLY CONNECTING A CHAIN LINK TO A SKIDDER RING
Emilien Labonville, R.F.D. #1, Berlin, N.H. 03570
Filed Apr. 30, 1984, Ser. No. 605,148
Int. Cl.³ B60C *27/20, 27/06*
U.S. Cl. 152—223 **6 Claims**



1. A skidder ring having means at four spaced locations for connection with the end links of tag chains,

each said means comprising a hook integral with said ring and extending away from said ring generally in the plane of said ring,

each said hook having a base portion attached to the ring, an intermediate section and an end portion,

said end portion being spaced from said ring a distance greater than the thickness of the link to be connected thereto,

the vertical cross sectional shape of said end portion being such as to permit the passage of said link thereover only when said link is held in substantially vertical position,

the transverse horizontal and vertical dimensions of said intermediate section being less than the transverse interior dimension of said link,

and the vertical dimension of said end portion being greater than the transverse interior dimension of said link.

4,515,199
COATING MATERIAL FOR USE ON SULFUR VULCANIZED RUBBER
Michael Kaniecki, Kent; Samuel P. Landers, Uniontown, and Thomas J. Botzman, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 13, 1984, Ser. No. 620,346
Int. Cl.³ B60C *5/00, 11/00, 13/00, 15/00*
U.S. Cl. 152—353 R **8 Claims**

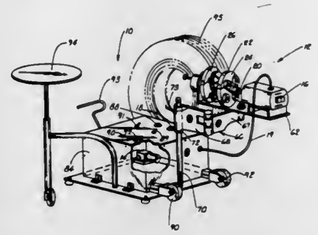
1. A method of manufacturing an article having indicia or an ornamental design thereon comprising the steps of:

(a) providing an article comprising at least an outer layer of pre-vulcanized rubber containing free sulfur therein;

(b) applying a coating between 0.001 and 0.010 inches thick of a liquid coating material to a surface of said pre-vulcanized rubber, said liquid coating material comprising a rubber cement that contains unvulcanized diene rubber, the total weight of said rubber being not greater than 10% of the weight of said liquid coating material; 0.1 to 10 phr of a sulfur rubber vulcanization accelerator; and 1 to 500 phr of particulate metallic particles that can pass through a number 325 mesh U.S. Standard Sieve, said liquid coating material being substantially free of carbon black and free sulfur; and

(c) allowing the rubber contained in said coating material to be auto-vulcanized.

4,515,200
APPARATUS FOR WHITEWALLING VEHICLE TIRES
Roy L. Williams, 6212 Nora St., Metairie, La. 70003
Filed May 24, 1983, Ser. No. 497,648
Int. Cl.³ B29H *21/08*
U.S. Cl. 157—13 **4 Claims**



1. An apparatus for grooving the wall portions of vehicle tires, which comprises:

a. a movable frame:

b. tire rotating means mounted on said frame for rotating the vehicle tire in contact with said means;

c. a buffing assembly mounted on said frame and swivelly positioned against at least one of said walls of said tire for removing material in an annular groove around one wall of said tire upon rotation of said tire; said buffing assembly means, including:

i. a central shaft member;

ii. a plurality of buffing blades, each of said blades rotatable about an indepedent axis;

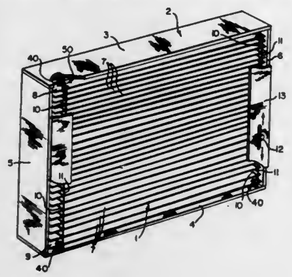
iii. means for selectively interconnecting at least one of said buffing blades in driving engagement with said shaft member so that rotation of said shaft member imparts rotation to said interconnected buffing blade; and

d. switching means for imparting selective rotation speed to said tire rotating means and selective rotation speed to each of said driven buffing blades.

4,515,201
SUSPENSION MEANS FOR SUSPENDING VENETIAN BLIND HANGER PIVOT MEMBERS
Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.
Division of Ser. No. 387,035, Jun. 10, 1982, Pat. No. 4,458,740, which is a continuation-in-part of Ser. No. 332,809, Dec. 21, 1981, abandoned. This application May 17, 1984, Ser. No. 611,207
Int. Cl.³ E06B *9/38*
U.S. Cl. 160—174 **2 Claims**

1. A combination of a venetian blind hanger pivot member connected to an end slat of an assemblage of venetian blind slats where the hanger pivot member includes a pivot bearing

portion having a pivot axis and a suspension means in the form of a wire bracket having an arm including an inturned end



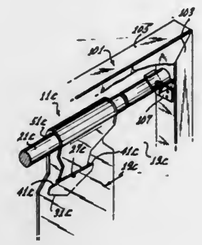
engaging in the bearing portion and a base extending perpendicularly to said arm adapted to be affixed to a part of a frame opening.

4,515,202

ENVIRONMENTAL CURTAIN

Bradford W. Wilson, 1642-A Coriander, Costa Mesa, Calif. 92626

Filed Nov. 26, 1979, Ser. No. 97,483
Int. Cl.³ A47H *13/00, 23/05*
U.S. Cl. 160—332 **2 Claims**



1. A strip curtain attachable to supporting structure having an open region at least partially closable by the strip curtain, said strip curtain comprising:

a plurality of elongated flexible strips;

an elongated curtain support;

means for attaching the curtain support to the supporting structure adjacent the open region;

each of said strips having an upper end portion terminating in an upper end;

at least a portion of each of said upper end portions being formed into a loop, each of said loops receiving the curtain support whereby the flexible strips can be suspended from the curtain support in side-by-side relationship;

at least one of said upper end portions being on a first of said strips and including releasable means responsive to a pulling force of at least about a predetermined magnitude on the first strip for allowing at least the portion of said first strip below said upper end portion thereof to fall from the curtain support;

said predetermined force being less than the pulling force on said first strip which is required to pull the curtain support down from the attaching means;

said attaching means attaching the curtain support to the supporting structure with the curtain support being spaced over a major portion of its length from the supporting structure and said releasable means being responsive to a pulling force of about at least said predetermined magnitude on the first strip for opening the loop of said first strip whereby said first strip can fall from the curtain support; and

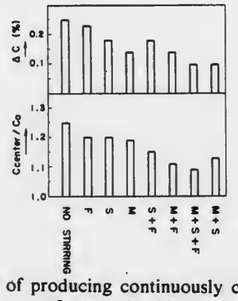
an opening in said end portion of said first strip with the opening being spaced from said end of said first strip by a segment of said first strip and a head and a neck on said segment of said first strip, said neck being of less width than the head and being between the head and said opening of said first strip, said head being insertable through said opening of said strip to place the neck in said opening of said first strip to form at least a portion of said segment into the loop for said first strip, said head being wider than said opening of said first strip whereby the head must be distorted to insert the head through the opening of said first strip, and said releasable means including said head being withdrawable through said opening in response to a pulling force on said first strip of about said predetermined magnitude.

4,515,203

CONTINUOUS STEEL CASTING PROCESS

Kiichi Narita, Kobe; Takasuke Mori, Ashiya, and Kenzo Ayata, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 250,041, Apr. 1, 1981, abandoned. This application Dec. 14, 1983, Ser. No. 561,149
Claims priority, application Japan, Apr. 2, 1980, 55-43339; Apr. 2, 1980, 55-43340; Apr. 2, 1980, 55-43341
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—468 **15 Claims**



1. A method of producing continuously cast steel strands which have outer surfaces and which are greater than 200 mm×200 mm in cross-section by a continuous casting process in which molten steel is fed into a casting mold having an inner wall surface through a submerged nozzle and continuously drawn out downwardly of the casting mold, said method comprising the steps of:

(a) electromagnetically stirring the molten steel at a position within said casting mold by application of a magnetic field induced by an alternating current of a frequency f=1.5 to 10 Hz and having a magnetic flux density G at the inner wall surface of said casting mold in the range of $195\times e^{-0.18f}$ to $1{,}790\times e^{-0.2f}$ gauss and also

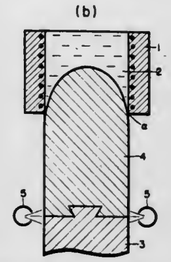
(b) electromagnetically stirring the molten steel at a position in the final solidifying zone of each of said continuously cast strands by application of a magnetic field induced by an alternating current of a frequency f=1.5 to 10 Hz and having a magnetic flux density G at the outer surface of each of said continuously cast strands in the range of $895\times e^{-0.2f}$ to $2{,}137\times e^{-0.2f}$ gauss, said final solidifying zone being defined as the zone where the molten steel in each of said continuously cast strands is present as a molten steel pool having a generally circular or ovular cross-sectional shape and where the shorter diameter of the molten steel pool is less than 100 mm in length.

4,515,204

CONTINUOUS METAL CASTING

Atsumi Ohno, Chofu, Japan, assignor to Nippon Light Metal Company Limited and O.C.C. Company Limited, both of Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,650
Int. Cl.³ B22D *11/10, 27/04*
U.S. Cl. 164—483 **12 Claims**



1. A continuous metal casting process comprising:

supplying a molten metal into a mold provided with an inlet and an outlet opening in such a manner that the pressure of said molten metal is maintained in the range of 0 to 0.005 kg/cm² at said outlet opening, while said mold has an inner wall maintained at a temperature sufficiently higher than the solidifying temperature of said metal so that the contiguous surface of the metal remains liquid while within the mold;

bringing a dummy bar having a temperature maintained lower than said solidifying temperature into contact with said molten metal at said outlet opening; and

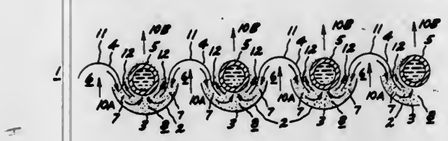
moving said dummy bar away from said outlet opening, whereby a solidified body of said metal is formed continuously on the end of said dummy bar as the metal body leaves the wall opening.

4,515,205

METHOD FOR FLUIDIZED PARTICLE TRAY HEAT EXCHANGE

Masayoshi Kuwata, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 314,817, Oct. 26, 1981, Pat. No. 4,442,888. This application Dec. 12, 1983, Ser. No. 560,651
Int. Cl.³ F28C *3/16*
U.S. Cl. 165—1 **6 Claims**



1. A method of extracting heat from a heat-laden gas stream comprising the steps of:

(a) providing a fluidization tray unit wherein each unit includes at least two elongated fluidization trays being imperforate and having upturned sides, each tray containing a shallow bed of particulate matter having substantially no resistance to gas flow and each tray being laterally disposed and spaced from one another such that the shallow bed of particulate matter contained therein is not transferred therebetween;

(b) providing means for extracting heat wherein said heat extraction means is spaced from said elongated fluidization trays;

(c) passing the heat-laden gas stream through the fluidization tray unit in order to fluidize each elongated tray of particulate matter such that the fluidized particulate matter is brought in heat flow communication with said heat extraction means only when said particulate matter is fluidized; and

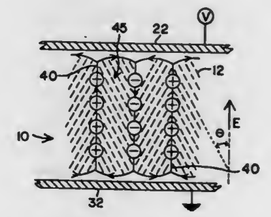
(d) extracting heat from the fluidized bed of particulate matter via said heat extraction means.

4,515,206

ACTIVE REGULATION OF HEAT TRANSFER

Edward F. Carr, Orono, Me., assignor to Board of Trustees of the University of Maine, Bangor, Me.

Filed Jan. 24, 1984, Ser. No. 573,140
Int. Cl.³ F28F *13/16*
U.S. Cl. 165—1 **24 Claims**



1. Apparatus for regulating heat transfer between a first body and a second body comprising:

a fluid layer of mesomorphic phase liquid crystal material interposed between and thermally coupling the first body and the second body; and

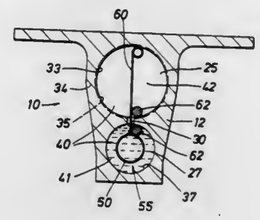
means for establishing an electric field across the fluid layer.

4,515,207

MONOGROOVE HEAT PIPE DESIGN: INSULATED LIQUID CHANNEL WITH BRIDGING WICK

Joseph P. Alario, Hauppauge; Richard F. Brown, East Meadow, and Robert L. Kosson, Massapequa, all of N.Y., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1984, Ser. No. 615,505
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—1 **18 Claims**



10. In a method for preserving the continuity of the fluid flow within the liquid channel to the evaporation section of a heat pipe, the heat pipe having an elongated, sealed envelope, the envelope having a condensing section for operation at a relatively low temperature, an evaporation section for operation at a relatively high temperature, separate vapor and liquid channels extending between the condensing and evaporation sections, the vapor and liquid channels being in a substantially longitudinally parallel side-by-side relationship at least in the evaporation and condensing sections, wall capillary means on the inside surface of the vapor channel in at least the condensing and evaporation sections, slot capillary means extending longitudinally within the envelope at least in the evaporation and condensing sections thereof for providing fluid communication between the vapor and liquid channels, a vaporizable

working fluid in the envelope, the fluid having a liquid phase and a vapor phase at the operating temperature of the heat pipe for evaporating in the high-temperature evaporation section and condensing in the low-temperature condensing section to transfer heat from the evaporation to the condensing section by phase change of the fluid, the liquid phase substantially filling the liquid channel at the operating temperature and flowing from the condensing section to the evaporation section, and the vapor phase flowing substantially independently along the vapor channel from the evaporation section to the condensing section, the improvement comprising:

(a) retaining a continuous liquid column of the working fluid within an artery located within at least the evaporation section of the liquid channel,

(b) supporting the artery spaced from and substantially free of thermal contact with the inside surface of the liquid channel to define an annulus surrounding the artery between the artery and the inside surface of the liquid channel, such that during a period in which excessive heat transfer to the evaporation section of the heat pipe causes boiling and loss of liquid from the surrounding annulus, the resultant vapor in the annulus then serves to insulate and thermally isolate the artery from further liquid loss through vaporization therewithin, thereby retaining the continuous liquid column in the artery, and hence in the core of the liquid channel, and preserving the continuity of the fluid flow within the liquid channel to the evaporation section, and

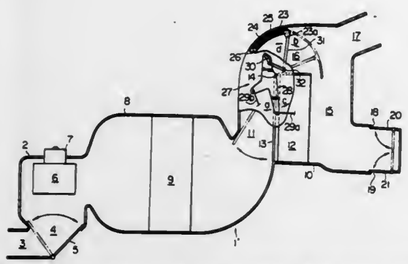
(c) feeding liquid from the artery to the wall capillary means on the inside surface of the vapor channel in the evaporation section, during such an excessive heat transfer period, through an auxiliary liquid flow path from the artery to the slot capillary means in the evaporation section of the envelope.

4,515,208

AIR CONDITIONING SYSTEM

Yukio Sakurai, Atsugi, and Akihiko Yamamoto, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 28, 1982, Ser. No. 343,471
Claims priority, application Japan, Feb. 12, 1981, 56-19329
Int. Cl.³ F28F *27/02;* **B60H** *3/00;* **B61D** *27/00*
U.S. Cl. 165—43 **3 Claims**



1. An air conditioning system comprising in combination:

a duct structure having at least one air inlet end and at least one air outlet end;

a refrigerant evaporator unit positioned downstream of the air inlet end thereof;

an air heater unit positioned downstream of the evaporator unit;

the duct structure having a wall portion formed with an air entrance chamber between said evaporator unit and said air heater unit and wall portion formed with an air distribution chamber between the air heater unit and said air outlet end of the duct structure;

an air-flow proportioning door positioned between said air entrance chamber and said air heater unit and angularly movable about an axis fixed in said duct structure between a first angular position fully shutting off a flow of air from the air entrance chamber to the air heater unit and a second angular position allowing the air heater unit to be fully open to the air entrance chamber;

the duct structure further having a wall portion formed with a bypass passageway leading from the air entrance chamber to the air distribution chamber and bypassing said air heater unit;

a vane guide member secured to said duct structure and formed with a slot which is arcuately curved about an axis fixed in the duct structure,

an air-flow guide vane positioned aside said bypass passageway and arcuately curved in conformity to said slot of said vane guide member, the arcuately curved guide vane being movable between a first limit angular position withdrawn from the bypass passageway and a second limit angular position moved into the bypass passageway;

a stationary guide vane positioned downstream of said air heater unit and arcuately curved and extending from said bypass passageway toward said air distribution chamber, the stationary guide vane having a corresponding edge thereof with said air-flow guide vane when the air-flow guide vane is held into abutment with said stationary guide vane, and

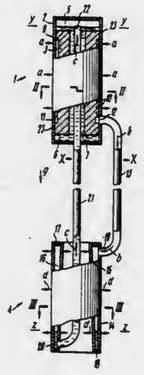
vane drive means intervening between said air-flow proportioning door and said air-flow guide vane and operative to translate the movement of the air-flow proportioning door between the first and second angular positions thereof into the movement of the first and second limit angular positions, respectively, of the guide vane, said vane drive means comprising a control lever angularly movable with said air-flow proportioning door about said axis, and a bell-crank lever angularly movable about an axis fixed in said duct structure and substantially parallel with the axis about which the air-flow proportioning door is angularly movable, the bell-crank lever being pivotally connected to said control lever and to said air-flow guide vane.

4,515,209

HEAT TRANSFER APPARATUS

Jury F. Maidanik; Sergei V. Vershinin, both of Sverdlovsk; Valery F. Kholodov, Zhukovsky, and Jury E. Dolgirev, Sverdlovsk, all of U.S.S.R., assignors to Otdel Fiziko-Tekhnicheskikh Problem Energetiki Uralskogo Nauchnogo Tsentra Akademi Nauk SSR, U.S.S.R.

Filed Apr. 3, 1984, Ser. No. 596,444
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.22 **11 Claims**



1. A heat transfer apparatus comprising:

an evaporating chamber;

a side wall of said evaporating chamber;

two end face walls of said evaporating chamber;

a vaporizer of capillary material permeable to a heat transfer fluid and arranged coaxially inside said evaporating chamber to maintain a thermal contact with a heat source;

a first end cavity defined by one end surface of said vaporizer, said side wall and one of the two said end face walls of said evaporating chamber;

a second end cavity defined by another end surface of said vaporizer, said side wall and the other of the two said end face walls of said evaporating chamber;

a longitudinal axial passage arranged in said vaporizer and communicable with said first end cavity and said second end cavity;

smooth annular projection provided on the outer surface of said vaporizer adjacent ends thereof to prevent the heat transfer fluid in a vapor phase from flowing into said first and second end cavities;

a vapor header to collect the heat transfer fluid in a vapor phase arranged on the outer surface of said vaporizer;

vapor release passages provided on the outer surface of said vaporizer interposed between said smooth annular projections defined by longitudinal recesses and a plurality of annular recesses intersecting with the longitudinal recesses, said vapor release passages being communicable with said vapor header;

a condenser chamber;

a first shell defining an outer wall of said condenser chamber;

a second shell defining an inner wall of said condenser chamber, said second shell being secured inside said first shell coaxially therewith to form between the wall of said first shell and the wall of said second shell a space isolated from the outside, the cross-section of said space reducing in the direction of vapor travel path therealong;

a first pipe connecting said vapor header to a zone of said condenser chamber containing the heat transfer fluid in a vapor phase;

a second pipe connecting said evaporating chamber to a zone of said condenser chamber containing the heat transfer fluid in a liquid phase and passing inside said longitudinal axial passage;

an inlet port of said second pipe communicable with said space in an area thereof having the least cross-section;

an outlet port of said second pipe disposed inside said first end cavity of said evaporating chamber furtherst from said condenser chamber.

4,515,210

HEAT EXCHANGER HAVING A PLASTICS MEMBRANE

John Smith, Cardiff, and David A. Boiston, Nuneaton, both of England, assignors to Courtaulds PLC, London, England

PCT No. PCT/GB82/00006, § 371 Date Aug. 12, 1982, § 102(e) Date Aug. 12, 1982, PCT Pub. No. WO82/02427, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 14, 1982, Ser. No. 414,340
Claims priority, application United Kingdom, Jan. 15, 1981, 8101262; European Pat. Off., Jan. 13, 1982, 82300170.6
Int. Cl.³ F23F *13/02*
U.S. Cl. 165—133 **6 Claims**

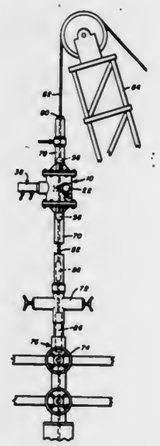
1. In a heat exchanger having means for separately introducing and withdrawing two fluids between which heat is to be transferred, said fluids being separated in said exchanger by heat exchange membrane through which heat is transferred from one fluid to the other, the improvement which comprises employing as said membrane a polyolefin or polyester film, at least one surface of which has been given greater wettability by having been treated with an oxidizing agent selected from the group consisting of sulphur trixoide, ozone, oleum, chlorosulphonic acid and chromosulphuric acid, whereby the fluid in contact with said treated surface of said film flows over said surface as a liquid film.

4,515,211

TOOL CABLE FEEDING SYSTEM

Michael R. Reed, and Daniel E. Hoffman, both of Bakersfield, Calif., assignors to Petro Tool, Inc., Bakersfield, Calif.

Filed Nov. 25, 1983, Ser. No. 555,143
Int. Cl.³ E21B *19/08*
U.S. Cl. 166—77 **3 Claims**



1. In a cable feeding system for a well, a cable feed device, said feed device including a cable drive wheel, a gripping roller mounted for selective movement toward and away from said drive wheel for the engagement of a cable against said drive wheel, a hydraulic motor in direct driving engagement with said drive wheel, a hydraulic cylinder unit engaged with said gripping roller for a selective positioning thereof relative to said drive wheel, a remote source of pressurized hydraulic fluid, hydraulic lines communicating said source with said motor and said cylinder unit, and control means controlling flow of pressurized fluid through said hydraulic lines, said control means being located remote from said hydraulic motor and said hydraulic cylinder unit, said cable feed device further including a vertical housing, said housing having a peripheral wall about a central axis and defining upper and lower ends, an upper plate member overlying and closing said upper end, a lower plate member overlying and closing said lower end, each of said plate members defining a central opening therethrough into the housing and generally aligned along the axis of said housing, said drive wheel and said gripping roller aligning to the opposite sides of the housing axis, upper and lower guides each having a cable receiving passage therethrough, said guides extending inward from said plate members with the cable receiving passages aligned with the respective openings, said guides having outer ends fixed to the respective plate members and inner ends aligned along the housing axis at points immediately above and below the drive wheel and gripping roller for the guided passage of a cable therebetween.

4,515,212

INTERNAL CASING WIPER FOR AN OIL FIELD WELL BORE HOLE

Michael E. Krugh, Casper, Wyo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jan. 20, 1983, Ser. No. 459,566
Int. Cl.³ E21B *31/03, 31/06, 31/08*
U.S. Cl. 166—99 **3 Claims**

1. An improved internal casing wiper tool connected to a drill string (**20**) for wiping the casing sides (**40**) of a well bore hole (**30**) to remove debris (**60**) contained thereon, said bore hole (**30**) having fluid (**50**) with debris (**60**) contained therein, said tool being capable of collecting larger sized pieces (**430**) of debris in a first chamber (**210**) and collecting smaller sized

pieces (440) of debris in a second collection chamber (300) as said drill string (20) is lowered into said well bore hole, said improved tool comprising:

a crossover joint (330) having one end (340) connected to the lower end (350) of the drill string (20) and having a formed internal fluid passageway (410), said crossover joint comprising:

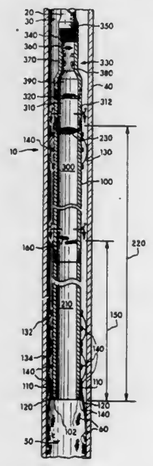
(a) a drill pipe float (360) inserted in said passageway (410) and contacting said lower end (350) for preventing said fluid (50) from entering said drill string (20), and

(b) a plurality of formed ports (380) around the mid-section (370) of said crossover joint (330) to allow fluid (50) to flow out from said passageway (410),

a check valve (320) contacting said crossover joint located in said passageway (410) below said plurality of formed ports (380) for permitting the flow of fluid upwardly through said passageway (410) into said ports (380), said check valve (320) being capable of preventing the flow of said fluid (50) downwardly in said passageway (410),

an elongated pipe (100) having its upper end (310) connected to the second end (390) of said crossover joint (330) for extending said fluid passageway (410),

a plurality of centralizers (130) disposed around the outer periphery of said pipe (100) for supporting said pipe substantially in the center of said bore hole (30),



a petal basket (110) connected to the lower end (102) of said pipe (100) having a plurality of outwardly extending petals (120) around its periphery, said petals (120) under pressure of said fluid (50) being capable of abutting and wiping said casing sides (30) to dislodge said debris (160),

a first filter (60) located a first predetermined distance (150) from said lower end (102) of said pipe (100) for collecting said larger pieces (430) of debris (60) in a first chamber (210) located in said pipe (100) between said first filter (160) and said petal basket (110), and

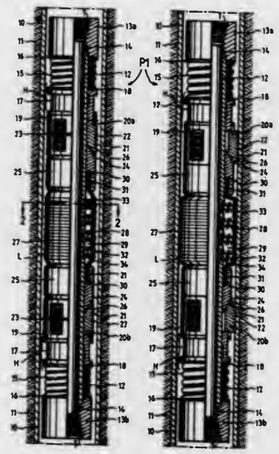
a second filter (230) located a second predetermined distance (220) from said lower end (102) of said pipe (100) for collecting said smaller pieces (440) of debris (60) in a second chamber (300) located in said pipe (100) between said first filter (160) and said second filter (230) so that as said tool is lowered in said well bore hole (30) said fluid (50) is entrained upwardly into said passageway (410) through said first filter (160), through said second filter (230), through said check valve (320) and out said ports (380) and back into said well bore hole (30), said larger pieces (430) of debris (60) in said fluid (50) being collected in said first chamber (210) and said smaller pieces (440) of debris (60) being collected in said second chamber (300).

4,515,213

PACKING TOOL APPARATUS FOR SEALING WELL BORES

Neil E. Rogen, and Dewa N. Adnyana, both of Houston, Tex., assignors to Memory Metals, Inc., Stamford, Conn.

Filed Feb. 9, 1983, Ser. No. 464,787
Int. Cl.³ E21B 33/12
U.S. Cl. 166—123 23 Claims



1. An improved packing tool for sealing spaces between the wall of a well bore, and

means defining an elongate member disposed longitudinally in the well bore comprising,

substantially cylindrical metal sealing means supportable peripherally about said elongate member and a plurality of helical spring elements extending between said elongate member and the inside surface of said sealing means

said sealing means and said helical spring elements containing a shape memory alloy material which maintains a radially contracted condition at below a predetermined temperature—corresponding to the transition temperature of said shape memory alloy—to enable introduction of said sealing means into said well bore and which responds to the temperature thereof rising above said transition temperature by transforming into a radially expanded condition to urge said sealing means to make sealing contact with the wall of said well bore.

4,515,214

METHOD FOR CONTROLLING THE VERTICAL GROWTH OF HYDRAULIC FRACTURES

John L. Fitch, Dallas, and Malcolm K. Strubhar, Irving, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,815
Int. Cl.³ E21B 47/00, 43/267
U.S. Cl. 166—250 18 Claims

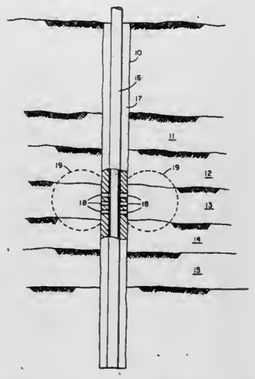
1. A method of fracturing a subterranean formation that is located adjacent another formation in which fracturing is to be inhibited, comprising the steps of:

a. determining the fracturing gradient in the subterranean formation to be fractured,

b. determining the fracturing gradient in the adjacent formation wherein fracturing is to be inhibited,

c. determining from said fracturing gradients the fracturing fluid density necessary to inhibit the propagation of fracturing into said adjacent formation more than a specified vertical distance,

d. selecting a fracturing fluid with the necessary density for inhibiting the propagation of said fracturing into said adjacent formation more than said specified vertical distance, and



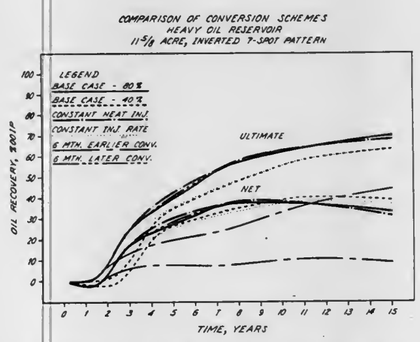
e. fracturing said subterranean formation with said fracturing fluid.

4,515,215

STEAM INJECTION METHOD WITH CONSTANT RATE OF HEAT

Chester E. Hermes, and Wann-Sheng Huang, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,922
Int. Cl.³ E21B 43/24
U.S. Cl. 166—272 8 Claims



1. A method for recovering hydrocarbons from an underground hydrocarbon formation penetrated by at least one injection well and at least one production well, which comprises: p0 (a) injecting steam of a relatively high quality into the formation through an injection well;

(b) reducing the quality of the steam being injected to a quality of about 25% to about 50% at about the time of steam breakthrough at a production well;

(c) increasing the rate of steam injection simultaneously with reducing the quality of the steam to maintain a constant input of heat into the formation; and

(d) recovering hydrocarbons and other fluids at a production well.

4,515,216

METHOD OF USING THIXOTROPIC CEMENTS FOR COMBATING LOST CIRCULATION PROBLEMS

Jerry Childs; Fred Sabins, both of Duncan, and Mary J. Taylor, Sterling, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 11, 1983, Ser. No. 540,741
Int. Cl.³ E21B 33/138
U.S. Cl. 166—293 14 Claims

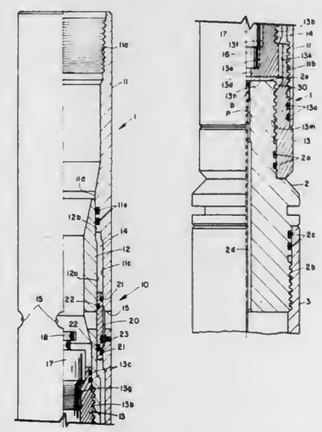
1. A method for combating lost circulation in a zone during cementing of oil, gas, and water wells comprising pumping a thixotropic cement slurry into said zone, terminating pumping, and allowing said static slurry to set, wherein said slurry comprises water, hydraulic cement, an effective amount of crosslinking agent selected from the group consisting of titanium chelates and an effective amount of crosslinkable agent selected from the group consisting of water-soluble cellulose ethers; polyvinyl alcohol; homopolymers, copolymers and terpolymers of AMPS (2-acrylamido - 2-methlypropane sulfonic acid), sodium vinylsulfonate, acrylamide, N,N dimethylacrylamide and acrylic acid; and mixtures thereof.

4,515,217

PERFORATING GUN PRESSURE ACTIVATED SLIDING SLEEVE

Gregg W. Stout, Montgomery, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Dec. 27, 1983, Ser. No. 565,361
Int. Cl.³ E21B 34/08, 43/116
U.S. Cl. 166—297 9 Claims



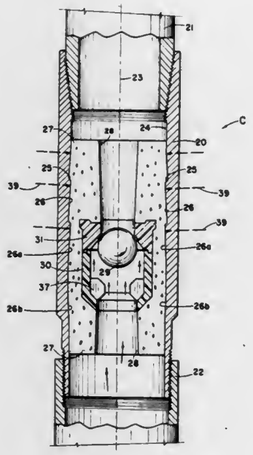
1. Apparatus for underbalanced perforating of a well casing and adjoining formation comprising: a tubing string communicable to a perforating gun housing disposed in a well casing, said tubing string including a ported housing above said perforating gun housing; said ported housing above said perforating gun housing; said ported housing having radially spaced walls defining an axially extending, annular fluid pressure chamber and at least one radial port traversing said walls; a sleeve sealably insertable in said annular fluid pressure chamber and axially movable between a closed position crossing at least a portion of said radial port and a non-overlapping open position relative to said radial port; means selectively securing said sleeve in said port closing position, whereby the fluid pressure in said perforating gun housing may be maintained below anticipated formation fluid pressure; and conduit means in said ported housing for applying casing annulus fluid pressure produced by firing the perforating gun to one axial end of said sleeve to shift same to said port opening position.

4,515,218

CASING STRUCTURES HAVING CORE MEMBERS UNDER RADIAL COMPRESSIVE FORCE

Harold S. Bissonnette, Broken Arrow, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 27, 1984, Ser. No. 584,194
Int. Cl.³ E21B *33/13*
U.S. Cl. 166—328 7 Claims



1. A casing structure designed for lowering into a borehole filled with fluids, the casing structure includes:

a longitudinal axis, as defined by an imaginary straight line which extends through the center of the casing structure;

an inner wall surface defined by several primary sections, each primary section has a long side and a short side, the short side of each primary section is joined to the long side of an adjacent primary section, and the long side of each primary section slopes away from the longitudinal axis of the casing structure, to define an outward slope angle;

the inner wall surface is further defined by at least one secondary section, each secondary section has two long sides, one long side of each secondary section slopes away from the longitudinal axis of the casing structure, to define an outward slope angle, and the other long side slopes toward the longitudinal axis of the casing structure, to define an inward slope angle;

a core member defined by a solid material, the core member has a lengthwise bore therein which defines a passage for fluids to pass through the casing structure, an upper face of the core member is defined at one end of the bore, and a lower face of the core member is defined at the opposite end of the bore, the outer surface of the core member is in continuous contact with the inner wall surface of the casing structure, to provide means for retaining the core member within the casing structure;

a closure member is positioned in the bore of the core member, and the closure member has open and closed positions for controlling the flow of fluids through the casing structure;

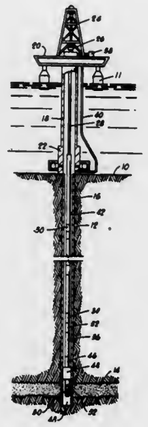
wherein, in operation, the casing structure is lowered into a borehole filled with fluids, the closure member moves to its closed position, the fluids exert a hydraulic force against the upper and lower faces of the core member, and the outward and inward slope angles of the inner wall surface of the casing structure cause the core member to be placed under a radial compressive force.

4,515,219

LOW PRESSURE RESPONSIVE DOWNHOLE TOOL WITH FLOATING SHOE RETARDING MEANS

Harold K. Beck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 19, 1983, Ser. No. 533,901
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—374 20 Claims



1. An annulus pressure responsive downhole tool apparatus, comprising:

a tool housing;

a power piston slidably disposed in said housing;

a first pressure conducting passage means for communicating a well annulus with a first side of said power piston;

a second pressure conducting passage means for communicating said well annulus with a second side of said power piston;

said tool housing including inner and outer concentric tubular members defining an annular cavity therebetween, said second pressure conducting passage means being at least partially defined by said annular cavity;

retarding means, disposed in said second pressure conducting passage means, for delaying communication of a sufficient portion of an increase in well annulus pressure to said second side of said power piston for a sufficient time to allow a pressure differential from said first side to said second side of said power piston to move said power piston from a first position to a second position relative to said housing, said retarding means including an annular floating shoe closely received in said annular cavity, said floating shoe including resilient friction means snugly engaging both said inner and outer tubular members of said tool housing; and

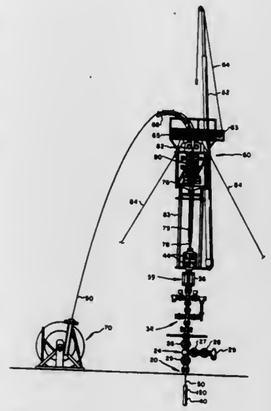
pressure relief means, communicated with a first portion of said second pressure conducting passage means between said second side of said piston and said retarding means, for relieving from said first portion of said second pressure conducting passage means a volume of fluid sufficient to permit said power piston to travel to its said second position.

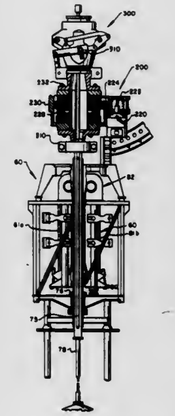
4,515,220

APPARATUS AND METHOD FOR ROTATING COIL TUBING IN A WELL

Phillip S. Sizer, Farmers Branch; Don C. Cox, Roanoke, and Malcolm N. Council, Richardson, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 12, 1983, Ser. No. 560,866
Int. Cl.³ E21B *19/22*
U.S. Cl. 166—384 39 Claims





1. Apparatus for injecting coil tubing into a well for performing a downhole operation which requires rotation thereof, comprising:

a. means for injecting coil tubing into a well;

b. quill means for surrounding said coil tubing and being movable longitudinally by said injecting means;

c. means for releasably gripping said coil tubing, said gripping means being rotatably supported by said quill means and movable therewith; and

d. means for rotating said gripping means relative to said quill means.

20. A method of servicing a well, comprising:

a. installing a length of coil tubing in the well through use of a coil tubing injector; and

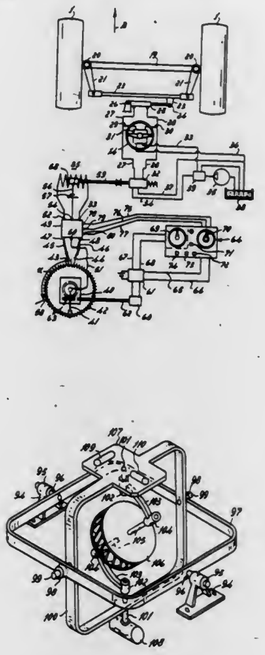
b. rotating said length of coil tubing to perform a downhole operation in the well.

4,515,221

TRACTOR HAVING GUIDANCE SYSTEM

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation-in-part of Ser. No. 004,541, Jan. 18, 1979, abandoned. This application Sep. 24, 1981, Ser. No. 305,271
Claims priority, application Netherlands, Jan. 19, 1978, 7800648
Int. Cl.³ A01B *69/04*
U.S. Cl. 172—3 19 Claims



1. An agricultural tractor having an automatic steering device including at least one accelerometer which generates signals responsive to side-to-side motion of the tractor, said accelerometer carried by said tractor in a horizontal position transverse to the tractor's normal direction of travel, said accelerometer being stabilized in its horizontal position by at least one gyroscope, the axis of rotation of said gyroscope being virtually parallel to the earth's axis of rotation.

4,515,222

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Dec. 7, 1982, Ser. No. 447,613
Claims priority, application Netherlands, Dec. 8, 1981, 8105506
Int. Cl.³ A01B *29/04*
U.S. Cl. 172—68 12 Claims

13

1. A soil cultivating implement comprising a frame and a rotatable elongated roller mounted on said frame, said roller having an outer periphery defined by elongated outwardly directed projections, these projections being spaced apart from one another along the length of the roller and being positioned in side-by-side relationship, neighboring projections having inner parts with relatively facing inner side-surfaces which are substantially parallel to the implement's usual direction of

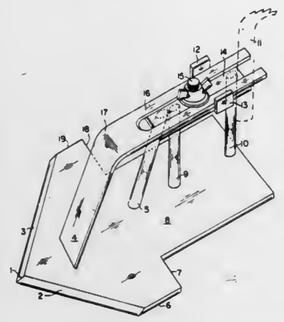
travel and which skeletally define planes diverging outwardly with respect to said roller's axis of rotation towards the outermost circumference of said roller, each of said neighboring projections further having outer ground-engaging parts extending outwardly from said inner parts, said inner parts being substantially in a plane radial with respect to the axis of rotation of the roller, said outer parts being bent over away from a plane radial to said axis, each said inner part converging as it extends outwardly both seen in a direction parallel to the roller's axis of rotation and as seen in a direction which is radial with respect to said axis, a scraper being mounted spaced above the ground surface and to extend between said neighboring projections, said scraper cooperating with said outwardly diverging side-surfaces to dislodge soil and debris from said roller during said roller's rotation.

4,515,223

HAND OPERATED WEEDING DEVICE WITH OPERATING DEPTH STABILIZER PLATE AND WEED DISPLACER STRIP

Wade A. Erickson, 120 E. 3rd St., Box 125, Yankton, S. Dak. 57078

Filed Aug. 22, 1983, Ser. No. 524,901
Int. Cl.³ A01B *1/16*
U.S. Cl. 172—372 **2 Claims**



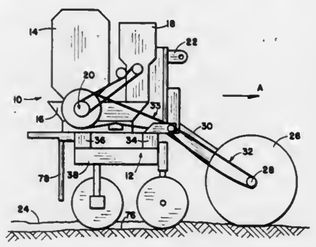
1. A hand operated weeding device comprising:
(a) flat stabilizer plate, said stabilizer plate including an upper surface, a forward cutting edge, and a rearward edge opposite to said cutting edge;
(b) a row of upright rods fixedly attached to the upper surface of said stabilizer plate, said row of rods extending from near said rearward edge forwardly toward but spaced from said cutting edge, the one of said rods nearest said cutting edge being slanted with the top thereof touching the one of said rods next nearest to said cutting edge;
(c) an elongated handle shank, said shank being fixedly attached to the rearmost one of said rods with an orientation such that the trailing portion of said shank extends upwardly and rearwardly from said stabilizer plate;
(d) a platform plate fixedly attached to the top of said rods;
(e) a weed displacer strip mounted on top of said platform plate and extending forwardly and downwardly therefrom so as to touch said upper surface of said stabilizer plate between said cutting edge and said rod nearest said cutting edge, said weed displacer strip adapted to shove weeds away which have been cut by said stabilizer plate as said stabilizer plate is shoved forwardly during the weeding process, said stabilizer plate acting as a self-stabilizer of its operating depth when it is operating in soil.

4,515,224

SEED DRILL WITH IMPROVED SEED DISC MEANS

Corliss H. Currie, Rte. 2, Box 154, Bennington, Okla. 74723

Filed May 2, 1983, Ser. No. 490,778
Int. Cl.³ A01C *5/06*; A01B *35/28*
U.S. Cl. 172—572 **6 Claims**



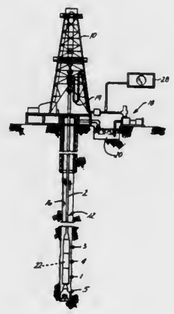
1. A seed drill apparatus comprising wheeled main frame means, at least two rod members slidably and rotatably secured to the main frame means in tandem relation with respect to one another, a seed disc means journalled at the lower end of each rod member for rotation about its own longitudinal axis, yieldable means disposed around the outer periphery of each rod member for constantly urging the respective seed disc independently in a downward direction for engagement with the surface of the earth, the plane of each seed disc being canted with respect to the direction of travel of the seed drill apparatus whereby a combined plowing and groove action is produced at the surface of the ground to provide at least one seed receiving groove during movement of the seed drill apparatus.

4,515,225

MUD ENERGIZED ELECTRICAL GENERATING METHOD AND MEANS

Patrick E. Dailey, Torrance, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jan. 29, 1982, Ser. No. 343,871
Int. Cl.³ E21B *47/00*
U.S. Cl. 175—40 **4 Claims**



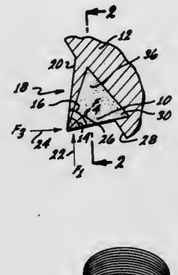
1. A drilling instrument having electrical generating means for use in the passage of a conduit through which mud is forced to flow, the instrument comprising:
at least one passage for containing a fluid separate from the mud in the conduit passage;
means for forming a pressure pulse in the mud flowing in the passage of the conduit;
an upstream reservoir for containing the separate fluid and for positioning at an upstream position in the flow of mud from the means for forming a pressure pulse, the upstream reservoir being characterized in that it provides pressure from the adjacent mud to the separate fluid therein;
an accumulator for the separate fluid and comprising a movable piston biased in one direction in the accumulator;
the at least one passage comprising a passage portion coupled for receiving separate fluid from the upstream reservoir and the accumulator;
the separate fluid flowing from the upstream reservoir, responsive to the pressure pulse in the mud, into the accumulator for moving the piston against the bias, and along said passage portion, energy stored from the movement of the piston against the bias subsequently forcing the biased piston to move and force the separate fluid to flow out of the accumulator and along the passage portion;
the movable piston in the accumulator comprising a spring biased piston for storing energy when separate fluid is received therein from the upstream reservoir and for moving the piston to thereby move the fluid through the passage portion;
an electrical generator; and
means responsive to the movement of the separate fluid in the at least one passage for providing a mechanical movement to the electrical generator, the electrical generator being responsive to the movement for generating electrical energy.

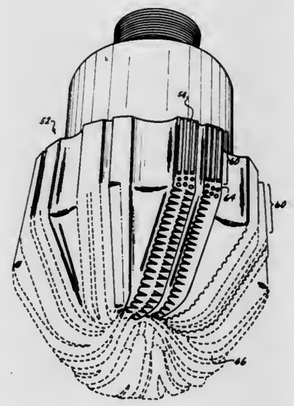
4,515,226

TOOTH DESIGN TO AVOID SHEARING STRESSES

Hans-Eckhard Mengel, and Hermann Munzel, both of Celle, Fed. Rep. of Germany, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 7, 1983, Ser. No. 473,021
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—57 **12 Claims**





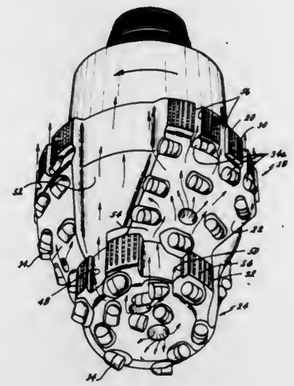
1. An improvement in a rotating bit including a plurality of teeth, wherein each tooth includes a synthetic geometrically shaped polycrystalline diamond cutting element, said improvement comprising a selected inclination of each tooth disposed on said bit, each tooth being subjected to an average vertical loading force and an average radial force, said radial force and vertical loading force vectorially adding to form a first resultant force on said tooth, wherein said selected inclination of said tooth is particularly characterized by orientation of said tooth so that said first resultant force as applied to said diamond cutting element included within said tooth is in a predetermined direction to minimize shearing stress by said resultant force on said diamond cutting element, wherein said diamond cutting element has a triangular prismatic shape including an apical edge extending from said bit to form the outermost cutting portion of said diamond cutting element and wherein said tooth is inclined on said bit so that said first resultant force lies approximately along the direction of the bisector of the angle of said apical edge of said diamond cutting element.

4,515,227

NOZZLE PLACEMENT IN A DIAMOND ROTATING BIT INCLUDING A PILOT BIT

Jerry Cerkovnik, Salt Lake City, Utah, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Apr. 27, 1983, Ser. No. 489,197
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—65 **6 Claims**



2. An improvement in a rotating bit including at least one reamer lobe, and a pilot bit portion also defined in said bit characterized by a longitudinal axis, said pilot bit portion provided with drilling fluid from at least one orifice defined therein,
a jet nozzle defined in said bit to provide drilling fluid to said bit face, said jet nozzle particularly characterized by disposition on said lobe, said jet nozzle including an outlet orifice disposed on said lobe so that drilling fluid exiting said outlet orifice flows across said lobe, said lobe providing a substantially flush surface in the proximity around said orifice, said jet nozzle disposed at an upward acute angle with respect to said longitudinal axis;
means defining a fluid filled channel communicating with the proximity of said lobe wherein said nozzle is disposed, said channel in fluidic communication with fluid flow across said pilot bit portion, and wherein said nozzle is disposed in the proximity of said channel so that drilling fluid ejected by said nozzle entrains drilling fluid provided by said channel thereby tending to draw said drilling fluid from said channel into the flow of drilling fluid ejected from said nozzle.

4,515,228

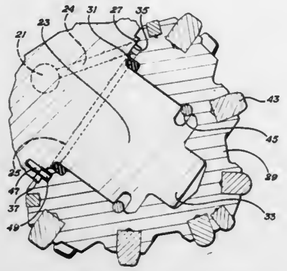
AIR GROOVE SCRAPER

George E. Dolezal, Friendswood, and Joseph L. Kelly, Jr., Houston, both of Tex., assignors to Hughes Tool Company - USA, Houston, Tex.

Filed Nov. 28, 1983, Ser. No. 555,735
Int. Cl.³ E21B *12/06*
U.S. Cl. 175—313 **4 Claims**

1. An improved earth boring bit having a body with a hol-

low interior, a leg with a depending shaft to support a bearing, a rotatable cutter on the bearing, an annular seal between the cutter and the shaft, an annular groove formed in a radial surface at the end of the cutter and shaft adjacent to, and



exterior of, the annular seal, with an air exit port, and a gas passage extending from an opening in the annular groove to the interior of the bit, wherein the improvement comprises:

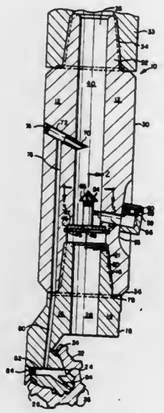
a scraper in the annular groove to prevent the annular groove from becoming plugged.

4,515,229

DRILL BIT ASSEMBLY WITH FLUID SEPARATOR

Donald D. Drummond, 801 7th St. West, Jasper, Ala. 25501; Walter F. Johnsey, P.O. Box 1237, 831 First Ave., North, Birmingham, Ala. 35201, and Roy W. Wood, 119 Persimmon St., Birmingham, Ala. 35214

Filed Jun. 10, 1983, Ser. No. 503,322
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—337 **15 Claims**



1. A bit assembly for drilling into a hard material comprising:

an elongated housing having a drill end adapted for attachment to a rotary drill and a tool end for receiving a tool having at least one cutting cone for engaging and cutting a drill hole into material to be drilled;

a plenum chamber within the housing for receiving pressurized gaseous fluid of air and water from a fluid source;

pressure reducing means comprising a flow restricting orifice in the plenum chamber to provide a reduced pressure and reduced quantity of flow;

first conduit means communicating with said flow restricting orifice for receiving the reduced flow from the pressure reducing means and for directing the reduced flow from the plenum chamber out of the housing into the area of the cutting cone in the drill hole and into impingement upon the material being drilled to pick up and remove dust and cuttings from the vicinity of the cutting cones;

separator means supported within the plenum chamber on housing walls defining the plenum chamber in a position for separating water out of the flow of pressurized fluid prior to the pressurized fluid flow through the pressure reducing means; and

second conduit means comprising at least one passage through the wall of the housing downstream of the separator means and above the orifice and having a nozzle outlet positioned for discharging a flow of the pressurized fluid toward the drill end of the housing and away from the cutting cone, the flow of gaseous fluid to pass through the second conduit means picking up the water separated by the separator means for exhaust through the second conduit means;

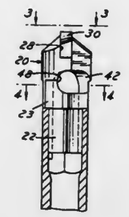
the relative sizes of the flow restricting orifice and the nozzle outlet being such that the first fluid flow is sufficient in quantity and velocity for conveying the dust and cuttings removed from the vicinity of the cutting cone into the second flow of fluid, and the second fluid flow is of a high velocity from the nozzle outlet and a quantity sufficient to combine with the first flow for conveying the dust and cuttings out of the drill hole.

4,515,230

ROOF DRILL BIT

Thomas C. Means, Versaille, and Kenneth C. Emmerich, Lexington, both of Ky., assignors to Fansteel Inc., North Chicago, Ill.

Continuation of Ser. No. 436,582, Oct. 25, 1982, abandoned. This application Aug. 21, 1984, Ser. No. 642,886
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—410 **1 Claim**



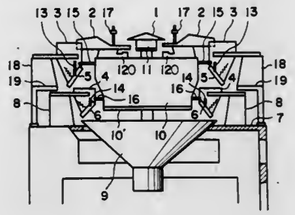
1. A mining drill bit for rotary and percussion drilling of hard materials such as rock, coal, concrete and the like which includes a generally cylindrical metal body with an axis of rotation and having an acircular driving surface axially disposed on a driving end of the body and a central cooling passage within said body, support prongs extending axially from a working end on said body in diametrically opposed quadrants with aligned ledge surfaces to support the bottom of a cutting insert and axially extending spaced parallel surfaces in contact with the trailing sides of said insert on opposite sides of the center of said body, the remaining quadrants being formed to provide chip slash openings extending toward the driving end of said body to form ports connecting to the central cooling passage of the body, that improvement in which said support prongs have flat axially extending surfaces substantially at right angles to each other extending axially from the working end of the body to form side edges of a wall port opening between the working end and the driving end into the central cooling passage, one of said support prongs on the trailing side of each said port being cut away radially to form an arcuate, semicircular entrance at one side of a wall port underlying the respective outer ends of the cutting insert to substantially increase the circumferential extent of said wall ports to 180°.

4,515,231

COMBINATORIAL WEIGHING APPARATUS WITH SERIAL WEIGHING OPERATIONS

Takehisa Ishida, Uji, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jan. 21, 1983, Ser. No. 459,944
Int. Cl.³ G01G *19/22, 19/32, 15/00*
U.S. Cl. 177—25 **12 Claims**



1. A combinatorial weighing apparatus for weighing articles comprising:

a supply device for supplying articles;

a plurality of pool hoppers positioned adjacent to said supply device for receiving articles from said supply device;

a plurality of weighing units respectively associated with said pool hoppers for weighing the articles contained in each pool hopper to provide in each pool hopper a batch of articles having a predetermined weight; and

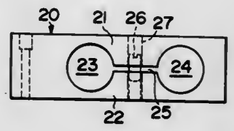
a plurality of weighing hoppers, positioned below and respectively associated with said pool hoppers, for receiving the batches of articles from said pool hoppers, respectively, and combinatorially weighing the batches of articles.

4,515,232

PLATFORM TRANSDUCER BEAMS

Randall B. Rubinstein, Sharon, Mass., assignor to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Nov. 7, 1983, Ser. No. 548,989
Int. Cl.³ G01G *23/02, 3/14*
U.S. Cl. 177—154 **6 Claims**



1. A device for protecting a platform load cell having at least one slot between two load cell sections, against damage, comprising a threaded hole having axially aligned hole portions on both sides of said slot in each load cell section, and a removable safety screw in both hole portions, said removable safety screw extending through said slot to interconnect said load cell sections substantially rigidly with each other prior to any sensing function to be performed by said load cell.

4,515,233

UNIVERSAL AUTOMOTIVE BATTERY HOLDDOWN SYSTEM

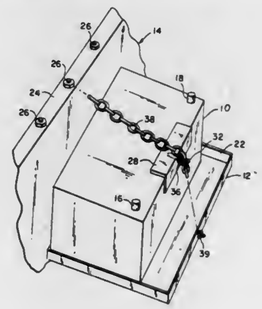
Joseph D. Silverstein, 51 Sagebrush La., S. Hauppauge, N.Y. 11722

Filed Sep. 20, 1982, Ser. No. 420,039
Int. Cl.³ B62D *25/00*
U.S. Cl. 180—68.5 **3 Claims**

1. In a motorized vehicle, apparatus for clamping in place a battery resting on a platform secured to a vertical body portion of said vehicle, said battery abutting one side of said platform comprising:

a. means for straddling one upper edge of said battery opposite the abutting side of said battery;

b. means for retaining said battery securely in place on said platform comprising a single, elongated, flexible member, one end of said member being attached to one edge of said platform on the same side of said battery as said straddling means, the other end of said member being attached to a point on the body portion of said vehicle spaced above said battery and located such that said elongated member passes over said straddling means; and



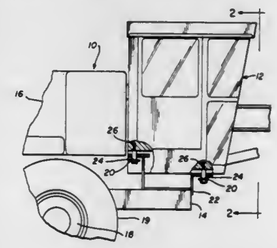
c. means on said straddling means for engaging said elongated member and including means for rendering said elongated member taut so as to maintain said battery firmly and securely in place, said straddling means being an L-shaped bracket mounted on said edge of said battery, and said engaging means comprising a threaded bolt fixedly connected at one end to the top of said bracket and extending horizontally past the edge of said bracket, and a nut thereon for contacting said elongated member, said elongated member straddling said bolt and being rendered taut by the rotation of said nut outwardly along said bolt.

4,515,234

STABILIZING AND ISOLATION SYSTEM FOR A VEHICLE CAB

Robert E. Loy, Bucyrus; Dale R. Phillips, Crestline, both of Ohio, and Paul E. Willis, Orrstown, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 15, 1983, Ser. No. 514,115
Int. Cl.³ B62D *27/04*
U.S. Cl. 180—89.12 **4 Claims**



1. A stabilizing and isolation system for mounting an operator cab on a vehicle frame comprising:

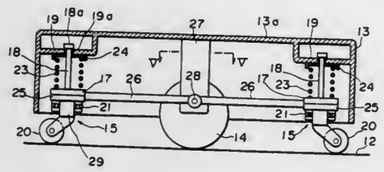
means disposed between the underside of the cab and the frame for resiliently supporting the cab on the frame;

a stabilizer linkage assembly connected to said frame and said cab for restraining rolling and pitching motion of said cab relative to said frame, said assembly including resilient means to permit relative vertical motion between said cab

and said frame, said stabilizer linkage assembly comprising an essentially triangularly shaped plate extending in a horizontal plane between said cab and said frame, the apex of the plate being secured to a side of said cab and the base of the plate being secured to said frame; and

motion limiting means connected to the frame and the cab for restraining vertical displacement of the cab relative to the frame in the event said resilient support means and said stabilizer linkage assembly should fail during a catastrophic event.

4,515,235
DRIVERLESS GUIDED VEHICLE
Kiwamu Yamamoto, and Tsuyoshi Tanaka, both of Tokyo, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed May 25, 1982, Ser. No. 381,884
Int. Cl.³ B62D *1/28*
U.S. Cl. 180—168 **3 Claims**



1. A driverless guided vehicle movable along a guide path on a floor which vehicle comprises:

(a) an elongated body including a pair of drive wheels disposed intermediate opposite ends thereof;

(b) a pair of wheel support devices mounted on the opposite ends of said body, respectively, each of said wheel support devices comprising a base supporting a driven wheel for rotation about a horizontal axis, and a coil spring interposed and acting between said body and said base for permitting vertical movement of said wheel support device relative to said body, said driven wheel being in the form of a caster rotatable about a vertical axis;

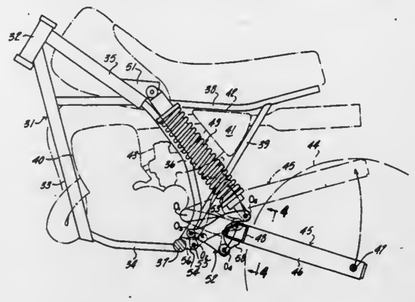
(c) a pair of arms extending horizontally along the length of said body and fixedly secured at their one ends to said bases, respectively;

(d) a mounting plate mounted on said body intermediate opposite ends thereof, said pair of arms being connected together at their other ends and pivotally mounted on said mounting plate by a horizontally-disposed pin extending through the other ends of said arms and said mounting plate; the axis of said pin being disposed in a vertical plane in which the axis of each drive wheel lies, and said vertical plane being disposed perpendicular to the longitudinal axis of said body; and

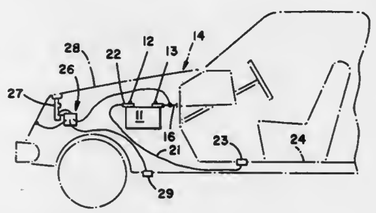
(e) a detecting means for detecting the guide path and sensible markings along the guide path, said detecting means being mounted on one of said bases.

4,515,236
REAR SUSPENSION FOR MOTORCYCLES
Takashi Kanamori, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Dec. 28, 1982, Ser. No. 453,934
Claims priority, application Japan, Dec. 29, 1981, 56-214668
Int. Cl.³ B62K *25/04*
U.S. Cl. 180—227 **3 Claims**

1. A rear suspension for a motorcycle comprising a suspension arm supported for pivotal movement about a first pivot axis that extends transversely to said motorcycle, a rear wheel journalled by said suspension arm for rotation about an axis that is parallel to said first axis, and a suspension element for yieldably resisting pivotal movement of said suspension arm, the improvement comprising linkage means for loading said suspension element upon pivotal movement of said suspension arm comprising a bellcrank having its intermediate pivotal connection to said suspension arm for pivotal movement about a second pivot axis that is disposed rearwardly from said first pivot axis and below a line interconnecting said first pivot axis with said wheel axis of rotation, one arm of said bellcrank having a pivotal connection to one end of said suspension element about a third pivot axis for loading said suspension element upon pivotal movement of said bellcrank about said second pivot axis, said third pivot axis being disposed rearwardly of said second pivot axis and above the line connecting said first pivot axis with said wheel axis of rotation, the other arm of said bellcrank having a connection to one end of a link at a fourth pivot axis, said fourth pivot axis lying forwardly of said second and third pivot axis and being disposed below the line interconnecting said first pivot axis with said wheel rotational axis, and means connecting the other end of said link to said motorcycle for pivotal movement about a fixed fifth pivotal axis that is disposed below the line connecting said first pivot axis and said rear wheel axis and to the rear of said fourth pivot axis when said vehicle is unladened.



4,515,237
AUTOMOBILE SECURITY SYSTEM
Jose Gonzalez, and Benito Gonzalez, both of 2676 Cromwell Row, South San Francisco, Calif. 94080
Filed Dec. 27, 1982, Ser. No. 453,285
Int. Cl.³ B60R *25/04*
U.S. Cl. 180—287 **4 Claims**



1. An automobile security system comprising,

an elongated insulated cable adapted for connection to a ground terminal of the automobile battery in place of the ground wire thereof,

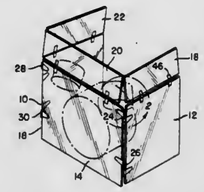
an operating unit adapted for physical and electrically connection at a first electrically conducting portion thereof through a metal portion of an automobile body,

such operating unit having a second electrically conducting portion electrically insulated by a hollow insulator from said first portion and electrically connected to said cable,

an interior electrically conducting movable element disposed for movement into and out of electrical connection between said first and second portions through said hollow insulator by threaded engagement with the interior of said first portion to controllably engage a surface of said second portion and

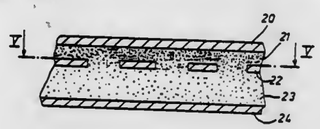
an operator adapted for insertion into said operating unit engaging said movable element for movement thereof into and out of electrical connection with said second portion of said operating unit to controllably disable all electrical circuits of said automobile.

4,515,238
PORTABLE ACOUSTICAL SHIELD AND SOUND ENHANCING CLOSURE
Warren N. Baker, 3763 Lanier Dr., Baton Rouge, La. 70814
Filed Oct. 20, 1983, Ser. No. 543,773
Int. Cl.³ F04B *1/99*
U.S. Cl. 181—30 **9 Claims**



1. An acoustical shield and sound enhancing enclosure comprising a plurality of lower panel sections adapted to be arranged vertically at a desired angle to each other, said lower panel sections being provided on their front and rear surfaces with a plurality of strips of hook and loop material, each of said lower panel sections being connected to the next adjacent lower panel section by means of at least a pair of rotatable hinge bodies, each of said hinge bodies being provided on their interior surfaces with a layer of hook and loop material, said layers being adapted to communicate with said strips located on said lower panel sections, and a plurality of upper panel sections adapted to be disposed above said lower panel sections at a desired angle thereto, said upper panel sections being connected to said lower panel sections by means of a plurality of padded clamps, each of said padded clamps including two interconnected rigid bodies, each of said rigid bodies being provided with padding material on their interior surfaces.

4,515,239
NOISE REDUCTION LINING
Georg Blatt, Ingolstadt; Johannes van den Boom, Kösching; Geert Kuipers, and Heinz Hollerweger, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union A.G., Ingolstadt, Fed. Rep. of Germany
Filed Sep. 14, 1983, Ser. No. 531,946
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1982, 3235539
Int. Cl.³ E04B *1/82*
U.S. Cl. 181—290 **6 Claims**



1. Noise reduction lining, comprising: a base layer for supporting the lining, a cover layer extending in substantially parallel relationship to the base layer, and an absorption layer interposed between the base layer and the cover layer for absorbing noise impinging upon the base layer, wherein there is embedded within the absorption layer an extinction layer having at least one major surface extending in substantially parallel relationship to the cover layer and being provided with perforations, the absorption layer being such that its stiffness is different at another surface of the extinction layer than at the major surface of the extinction layer.

4,515,240
PERSONAL SAFETY DEVICE
John Curtis, 79 Baker Ave., Dover, N.J. 07801
Filed Feb. 14, 1983, Ser. No. 465,908
Int. Cl.³ A62B *1/14, 1/20*
U.S. Cl. 182—6 **8 Claims**



1. An escape device for allowing controlled descent by an escapee down a rope comprising:

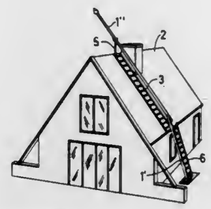
a base;

at least one transverse handlebar mounted on said base, said handlebar having a threaded bore;

manually operable means mounted on said base for adjustably gripping said rope, said manually operable means including means threadably mounted on said base for setting the extent of gripping of said rope, said manually operable means comprising a threaded rod screwed into said bore of said handlebar; and

support means suspended from said base for supporting said escapee, said support means comprising a stirrup suspended from said base.

4,515,241
FLAG-POLE
Sven R. V. Gebelius, Drottningholmsväg 195, Bromma, Sweden S-161 36
Continuation of Ser. No. 355,562, Feb. 17, 1982,. This application Mar. 21, 1984, Ser. No. 591,897
Claims priority, application Sweden, Jun. 23, 1980, 8004633; Sep. 1, 1980, 8006099
Int. Cl.³ E06C *1/38;* E04H *12/32*
U.S. Cl. 182—96 **8 Claims**



1. A flag-pole comprising:

an elongated tubular lower portion extending from the ground;

first pivot means to pivotably attach said lower portion adjacent to the ground plane so that said lower portion is tiltable from a substantially vertical first position to a second inclined position toward an adjacent building

where the upper end of said lower portion is adjacent the outer edge of a roof surface of the building;

an elongated upper portion;

second pivot means to pivotably attach said lower and upper portions together adjacent their upper and lower ends, respectively, so that said upper portion is tiltable about said second pivot means from a first position substantially aligned with said lower portion to a second inclined position at an angle to said lower portion extending in a direction substantially parallel to the roof of the building, said upper portion in said second inclined position functioning as a handrail for persons walking on the roof;

support means on the roof operatively engageable with said upper portion when in said second inclined position to support said upper portion during use as a handrail; and

means cooperatively associated with said lower portion to facilitate elevating a person along said lower portion from the ground to the roof.

4,515,242

MOVABLE HAND RAILING AND TRAY FOR LADDERS

Paul LaChance, 100 Division St., Rockland, Mass. 02370

Filed Nov. 23, 1983, Ser. No. 554,786

Int. Cl.³ E06C *7/14, 7/18*

U.S. Cl. 182—106 **19 Claims**



1. A movable utility bracket for ladders comprising:

a sleeve contacting and conforming to a side rail of a ladder, wherein the sleeve extends over a length of the side rail equal to a distance between at least two ladder rungs and the sleeve covers a top edge and an external side of the side rail from the top edge to the bottom edge, and further covers, an interior side of the side rail to an edge of each of the rungs;

at least two hooks protruding interiorly from the sleeve, each of which hooks partially encircles one of the rungs over a top of the rung thereby providing a bracket which slides onto a ladder hooked over the rungs of the ladder securely but instantly removable to other rungs on the ladder;

a means of securing a utility device to the bracket for use by a person on the ladder, wherein the utility device comprises a handrail secured to the exterior of the bracket and protruding upwardly above the ladder for grasping by the person using the ladder, wherein the hand rail comprises a substantially U-shaped member with each of two arms of the U rigidly attached flat against the side of the sleeve.

4,515,243

SAWHORSE BRACKET

Herbert E. Prior, 17045 Arnold Dr., Sonoma, Calif. 95465

Filed Sep. 9, 1983, Ser. No. 530,516

Int. Cl.³ B27B *21/00;* **F16M** *11/00*

U.S. Cl. 182—155 **7 Claims**

1. A trestle comprising:

a beam of lumber;

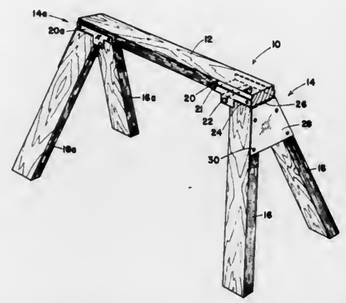
a leg assembly secured near each end of said beam;

each said leg assembly comprising:

first and second rigid plates;

said second plate being bent to form a depending portion at the outboard end thereof;

a hinge connecting the inboard end of said second plate to said first plate;



means securing said first plate to the underside of said lumber beam;

said depending portion being shaped as a trapezoid; and

a pair of lumber legs secured to and along the edges of said depending portion to depend therefrom.

4,515,244

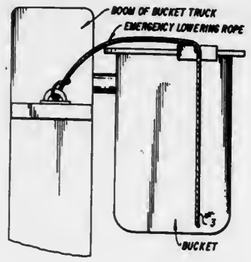
DIRECTION ALTERING DEVICE

Edward T. Kramer, R.D.-1, Box 401, Ashland, Pa. 17921

Filed Mar. 26, 1984, Ser. No. 593,113

Int. Cl.³ A62B *1/20*

U.S. Cl. 182—230 **3 Claims**



1. An apparatus for holding a rope or cable in a fixed position on a mounting surface which comprises:

a base panel having an upward extension;

a first side panel;

a second side panel;

said first and second side panels parallel to each other and each lying in a horizontal plane, said base panel and upward extension lying in a vertical plane;

said first side panel having its rear edge connected to the bottom edge of said base panel and said second side panel having its rear edge connected to the said base panel, so that the said three panels form a channel, into which said mounting surface may be inserted, with the said base panel having a connected upward base panel extension beyond the area of connection of the second side panel with the said base panel;

said upward base panel extension having a slot or groove in the top edge of said upward base panel extension, said slot or groove having such form that a rope or cable may pass through it;

tightening means mounted in one of the side panels and being movable in a plane perpendicular to the planes of the said side panels, so that when said mounting surface has been inserted into the said channel formed by the said three panels, the said tightening means can be moved so

that it bears against one side of the mounting surface and causes the other side panel to bear against the other side of the said mounting surface, resulting in a secure attachment of the said apparatus with the said mounting surface.

4,515,245

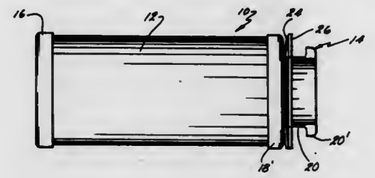
OIL FILLER EXTENSION

Dennis E. Salmon, Cedar Springs, Mich., assignor to Rockford Enterprises, Inc., Rockford, Mich.

Filed Aug. 15, 1983, Ser. No. 522,962

Int. Cl.³ B67C *11/00;* **F01M** *11/04*

U.S. Cl. 184—105 R **1 Claim**



1. A sheet metal oil filler extension for providing an extended passageway to an opening of a conventional engine valve lifter cover having a cap connector, said cap connector including said opening at its periphery having a plurality of cut outs for receiving the bosses on the neck portion of a conventional cap and a depending flange providing camming ramps with tapered undersurfaces over which the bosses of said cap cam and follow to retain the cap on said valve lifter cover comprising:

an elongated substantially rigid sheet metal tube;

an annular sheet metal fitting secured to one end of said tube, said fitting including a cylindrical collar fitted on and secured to one end of the tube; a flange extending radially inwardly from said collar and defining a central opening communicating with the opening through said tube; a neck extending from said flange and having a smaller diameter than the diameter of said tube, said neck corresponding in shape to the neck portion of said conventional cap thereby having a plurality of bosses extending radially therefrom for attachment of said fitting and tube to a conventional oil filler opening of an engine valve lifter cover;

seal means for sealing said fitting within the valve lifter cover;

a second annular sheet metal fitting comprising a cap connector secured on the other end of said tube, said cap connector having a U-shaped cross-sectional configuration at its periphery thereby providing two concentric inner and outer flanges connected together by a bight portion and defining a central opening communicating with the opening through said tube; said outer flange being secured to said other end of said tube and said inner flange having tapered under surfaces providing camming ramps;

said bight portion and said inner flanges having a plurality of cut outs for receiving the bosses on the neck portion of a conventional cap and said camming ramps providing tapered undersurfaces over which the bosses of said cap cam and follow to retain a conventional removable cap on said metal tube.

4,515,246

APPARATUS FOR CONTROLLING THE ARRIVAL OF AN ELEVATOR CAGE AT AN ELEVATOR FLOOR

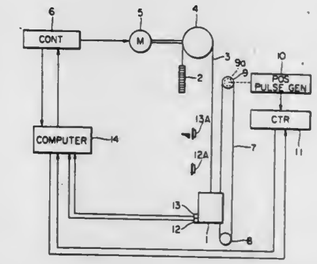
Ryuichi Kajiyama, Inazawa, and Masashi Yonemoto, Nagoya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,514

Claims priority, application Japan, Feb. 23, 1982, 57-27689

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **10 Claims**



1. Apparatus for controlling the arrival of an elevator cage at an elevator floor including a computer in which the present position of the elevator cage is calculated according to pulses generated whenever the cage runs a certain distance, the present position of said cage is subtracted from the position of a target floor where the cage is to be stopped and stored in advance as the absolute position from a reference position calculated as the remaining distance to said target floor, and a calculated deceleration instruction value corresponding to the calculated remaining distance is produced to control the running speed of the cage to decelerate and stop said cage at said target floor, said target floor having a position detecting means disposed to be activated when said cage arrives at a predetermined distance before said target floor, and said computer including an arithmetic unit for maintaining said calculated deceleration instruction value until said position detecting means is activated.

4,515,247

ELEVATOR SYSTEM

William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1984, Ser. No. 578,338

Int. Cl.³ B66B *1/30*

U.S. Cl. 187—29 R **8 Claims**

1. An elevator system, comprising:

a building having a plurality of floors and a hatchway,

an elevator car mounted for movement in the hatchway of said building to serve the floors,

motive means for said elevator car,

landing zone means mounted in the hatchway of said building to establish a landing zone adjacent to each floor served by said elevator car,

landing zone detector means mounted on said elevator car,

said landing zone means and said landing zone detector means cooperatively detecting the position of said elevator car as the elevator car approaches a floor at which it is going to stop,

said landing zone means establishing spaced absolute car position points in each landing zone,

said landing zone detector means detecting each of said spaced absolute car position points and providing a predetermined absolute car position signal in response thereto,

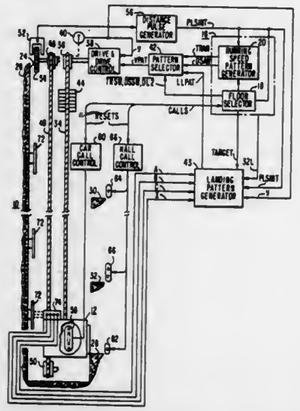
storage means storing a discrete landing speed pattern value for each absolute car position point of said landing zone means,

said means providing a landing speed pattern for said motive means,

said landing speed pattern including a discrete landing speed pattern value obtained from said storage means in response to the generation of each predetermined absolute car position signal,

said discrete landing speed value being modified by additional landing speed pattern values provided in the interval between the generation of successive absolute car position signals,

said additional landing speed values being generated as a function of the latest discrete landing speed pattern value, the next discrete landing speed pattern value, and the distance traveled by the elevator car between the latest and the next absolute car position points.

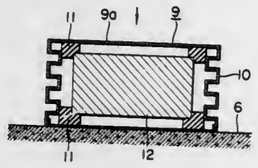


4,515,248

BUFFER DEVICE FOR ELEVATOR

Kazutoshi Ohta, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,085
Claims priority, application Japan, Oct. 8, 1981, 56-160770
Int. Cl.³ B66B *5/28*
U.S. Cl. 187—67 **12 Claims**



1. An elevator comprising:

a cage frame having a floor, spaced vertical support posts, and a buffer receiver opposed to said floor; and

a buffer having an upper surface below and aligned with a lower surface of said buffer receiver so as to mate therewith and uniformly receive the weight of said cage frame when said cage frame falls vertically downwardly thereon;

said buffer including

a box formed of thin non-combustible material having said upper surface,

a compressible box-shaped buffer member formed of foamed plastic material accommodated in said box, spaced from the peripheral walls thereof, and

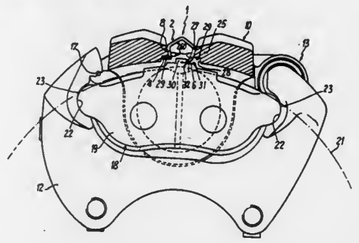
heat-insulating material disposed between said peripheral walls of said box and said foamed plastic material.

4,515,249

SPRING FOR PADS OF A DISC BRAKE WITH A SLIDING CALLIPER, AND DISC BRAKE EQUIPPED WITH SUCH A SPRING

Gislain Escarabajal, Clichy s/Bois, and Jean-Charles Maligne, Aubervilliers, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jul. 11, 1983, Ser. No. 512,826
Claims priority, application France, Jul. 22, 1982, 82 12805
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.38 **13 Claims**



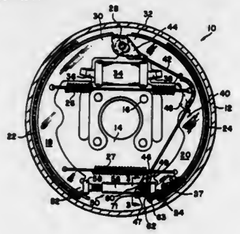
1. A spring for a disc brake of the type comprising a calliper mounted so as to slide on a fixed support, and incorporating an arch portion having, vertically above the two friction brake pads, an opening passing through, the spring being intended to be interposed between the arch portion of the calliper and the friction pads so as to exert on the latter at least a radial force directed essentially towards the axis of the disc and consisting of a central portion arranged to be entered into the opening in the arch portion, extended by lateral portions capable of cooperating with an inner face of the arch for elastic mounting on the calliper, and a bearing portion cooperating, in the operating position of the brake, with adjacent upper edges of the friction pads, characterized in that the spring is shaped to take the form of two parallel hoops each essentially in the shape of a letter C, constituting said central portion, each hoop having end zones extended by first and second feet, respectively, folded angularly in the same direction relative to the plane of the hoop, the feet of the two hoops extending in opposite directions and constituting said lateral portions, the first feet of the hoops being joined to one another by a tiebar extending perpendicular to the plane of the hoops and constituting said bearing portion.

4,515,250

SPRING CLUTCH FOR DUO-SERVO DRUM BRAKE

Robert Spaargaren, Granger, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Jan. 20, 1984, Ser. No. 572,489
Int. Cl.³ F16D *65/38*
U.S. Cl. 188—79.5 GT **12 Claims**



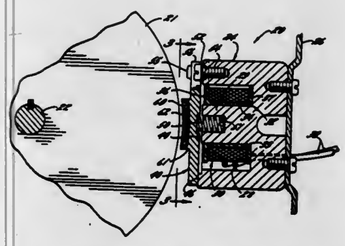
1. In a drum brake, a backing plate for mounting on a non-rotating portion of a vehicle, a drum mounted for rotation with a member to be braked, a pair of brake shoes slidably mounted on said backing plate and in end-to-end relationship, fluid motor means for urging said brake shoes into frictional engagement with said drum, resilient means for yieldably urging said brake shoes away from said drum, an extendible adjusting strut between adjacent ends of said shoes, said adjusting strut including means for effecting extension of said strut upon actuation of the extension means which includes first and second clutch means engaging said strut, a force transmitting member interconnecting the backing plate, one of said shoes, and the extension means, the force transmitting member including an adjuster connector, and means for returning the adjuster connector toward an initial position, whereby movement of said one shoe toward the drum and in excess of a predetermined amount effects an actuating force through the force transmitting member and connector to actuate the first clutch means which engages the strut to effect rotation in one direction thereof and thereby extend the strut and adjacent ends of said shoes, and movement of said one shoe away from the drum effects rotatable disengagement of the first clutch means from said strut substantially simultaneously with the second clutch means engaging said strut to prevent rotation of the strut in an opposite direction.

4,515,251

ELECTROMAGNETIC BRAKE WITH IMPROVED ARMATURE MOUNTING

Thomas J. Wruk, Belvidere, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jan. 26, 1983, Ser. No. 461,115
Int. Cl.³ B60T *13/04*; H01F *7/14, 7/16*
U.S. Cl. 188—171 **11 Claims**



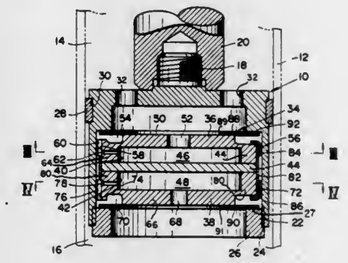
1. An electromagnetic brake for retarding a rotary member adapted to rotate about a predetermined axis, said brake comprising a field shell having at least two magnetic poles, an armature, spring means for urging said armature away from said poles and into braking engagement with the rotary member, and an electric coil supported by said shell and operable when excited to produce magnetic flux for drawing said armature away from the rotary member and toward said poles, the improvement in said brake comprising, a substantially flat and resiliently flexible leaf spring having a longitudinal axis which extends substantially parallel to the axis of the rotary member, said leaf spring having end portions fixed to said shell and having an intermediate portion fixed to one end portion of said armature, the intermediate portion of said leaf spring being capable of twisting relative to the end portions of the leaf spring to mount said armature for swinging toward and away from said poles about an axis coinciding with the longitudinal axis of the leaf spring.

4,515,252

PISTON STROKE RESPONSIVE VORTEX-FLOW SHOCK ABSORBER

Kunihiko Hidaka, Yokohama; Naoto Fukushima, Kamakura, and Kazuro Iwata, Zushi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 25, 1983, Ser. No. 498,135
Claims priority, application Japan, May 31, 1982, 57-92604
Int. Cl.³ F16F *9/34*
U.S. Cl. 188—282 **7 Claims**



1. A vortex-flow shock absorber for damping relative displacement of two components, comprising:

a hollow cylinder filled with a working fluid and fixed to one of said components for movement therewith;

a piston sealingly disposed within said hollow cylinder for axial movement and defining upper and lower fluid chambers in said cylinder; said piston being fixed to the other of said components for movement therewith;

means defining a fluid passage through said piston through which working fluid may pass between said upper and lower fluid chambers; said fluid passage comprising a first vortex chamber for producing vortex fluid flow which creates a damping force during a piston expansion stroke and a second vortex chamber for producing vortex fluid flow which creates a damping force during a piston compression stroke;

means responsive to a working fluid pressure difference between said upper and lower fluid chambers exceeding a first predetermined value for permitting a flow of working fluid through said piston to bypass one of said vortex chambers; and

means responsive to a working fluid pressure difference between said upper and lower fluid chambers exceeding a second predetermined value greater than said first value for permitting a flow of working fluid through said piston to bypass the other of said vortex chambers.

4,515,253

DAMPING FORCE GENERATING DEVICE FOR AN OIL DAMPER

Hidekuni Itoh, Shizuoka, Japan, assignor to Kabushiki Kaisha Showa Seisakusho, Tokyo, Japan

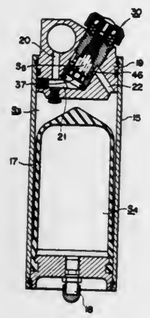
Filed Apr. 7, 1983, Ser. No. 482,876
Claims priority, application Japan, Apr. 16, 1982, 57-63627
Int. Cl.³ F16F *9/44*
U.S. Cl. 188—314 **7 Claims**

1. A damping force generating device for an oil damper including a hydraulic cylinder, a sub-tank having in the interior thereof an oil chamber and a gas chamber, and a first oil passage which hydraulically connects said hydraulic cylinder to said oil chamber in said sub-tank, comprising:

a valve seat disposed in an end plate of said sub-tank forming part of said first oil passage, said valve seat having at least one second oil passage for passing therethrough an operating oil when it is flowing in a first direction from said hydraulic cylinder toward said oil chamber in said sub-tank and at least one third oil passage for passing therethrough said operating oil when it is flowing in a second

direction from said oil chamber in said sub-tank toward said hydraulic cylinder;

first valve means for opening said second oil passage when said operating oil flows in said first direction and closing said second oil passage when said operating oil flows in said second direction;



second valve means for closing said third oil passage when said operating oil flows in said first direction and opening said third oil passage when said operating oil flows in said second direction; and

said first and second valve means each being disposed in said end plate of said sub-tank.

4,515,254

DEVICE FOR DAMPING IMPACT LOAD

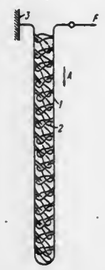
Vladimir A. Markov; Vladimir N. Filatov; Ilya S. Kernasovsky, and Ljudmila V. Gorina, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Textilno-Galanterelnoi Promyshlennosti, Moscow, U.S.S.R.

PCT No. PCT/SU82/00008, § 371 Date Sep. 30, 1983, § 102(e) Date Sep. 30, 1983, PCT Pub. No. WO83/02903, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 24, 1982, Ser. No. 552,180

Int. Cl.³ A62B *35/00*

U.S. Cl. 188—371 **9 Claims**



1. A device for damping impact load in a safety system, comprising a flexible band (1) having two free ends and made up to two layers, which are formed by said band being folded back, which band is associated with an energy-absorbing means, characterized in that the energy-absorbing means is fashioned as a plurality of loops (2) from an elastic long-sized material, said loops being fastened on the band (1) throughout its length on one side thereof and being interposed between the layers of the band, all the loops (2) of the band layers being interlinked consecutively through tricot knit capable of unknitting in a direction opposite to the direction of load application.

4,515,255

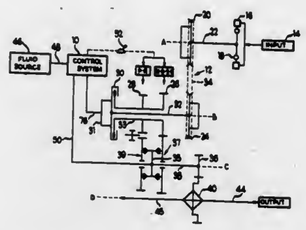
HYDRAULIC CONTROL SYSTEM FOR A CLUTCH AND TRANSMISSION

William J. Haley, and Guenter J. Neumann, both of Sterling Heights, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 6, 1982, Ser. No. 405,797

Int. Cl.³ B60K *41/22*

U.S. Cl. 192—3.57 **10 Claims**



1. A fluid control system for use in the combination which includes an input member, a continuously variable transmission connected to drive the input member, an output member, first and second drive trains, a fluid-actuated clutch engageable for coupling said input member with the selected one of said drive trains, and means for selectively engaging one of said drive trains with said output member to establish a torque delivery path from said input member to said output member, said fluid control system comprising:

a first fluid control valve, a second fluid control valve, a pressure modulator valve with a first end and a second end, a first conduit communicating between said first and second control valves, an input conduit communicating between a source of fluid at a line pressure and said modulator valve, a sump for receiving fluid at a second pressure lower than said line pressure, a second conduit communicating between said modulator valve and said first fluid control valve, a third conduit communicating between said sump and said first and second fluid control valves, a fourth conduit communicating between said second fluid control valve and said fluid actuated clutch, a fifth conduit communicating between said fluid actuated clutch and said modulator valve first end, and a sixth conduit communicating between said second conduit and said second end of said modulator valve;

a fluid motor including a housing, a slidable piston positioned in said housing to define a first variable volume chamber on one side of said slidable piston and a second variable volume chamber on the other side of said slidable piston, connecting means operatively connecting said piston to said selective engaging means and to said second fluid control valve;

a seventh and an eighth conduit communicating between said first fluid control valve and said fluid motor first and second variable volume chambers, respectively, to supply fluid under pressure to move said fluid motor, said second fluid control valve, and said engaging means to effect selective engagement of one of said drive trains,

movement of said second fluid control valve initially interrupting fluid flow to said clutch and thereafter completing a fluid flow path for fluid communication from said input conduit through said modulator valve and said first and second fluid control valves to move said fluid-actuated clutch to engagement only after selective engagement of one of said drive trains for completion of said torque delivery path between said input and output members, and fluid pressure from said fluid actuated clutch providing, through said fifth conduit, a biasing force to said modulator valve first end to control flow through said modulator valve.

4,515,256

CLUTCH AND BRAKE UNIT

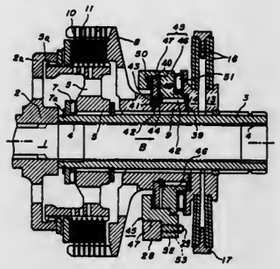
Selichi Kitano, Shijyonawate, and Yukio Ono, Katano, both of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Dec. 29, 1981, Ser. No. 335,330

Claims priority, application Japan, Jan. 20, 1981, 56-7113

Int. Cl.³ F16D *67/02*

U.S. Cl. 192—18 R **4 Claims**



1. A clutch and brake device comprising:

an input shaft having an axis,

an output shaft aligned with said axis,

a clutch hub rotationally connected to said input shaft,

a clutch case spline mounted on said output shaft and axially movable therealong between a first position engaging said clutch hub and a second position not engaging said clutch hub,

spring means urging said clutch case towards said first position, said spring means including a first spring guide spline fitted on and axially movable along said output shaft, first springs urging said first spring guide towards said clutch case, and a second spring interposed between said first spring guide and said clutch case urging said clutch case towards said first position, a spring means side end surface of said clutch case contacting said second spring,

an annular friction plate having a frictional surface extending radially and axially therewith,

non-rotating means for moving said clutch case from said first position to said second position against the urging of said spring means, said non-rotating means including an axially-movable release sleeve having a frictional surface formed thereon facing said frictional surface of said annular friction plate with a clearance therebetween when said clutch case is in said first position,

a thrust bearing interposed between a spring means side end surface of said release sleeve and said first spring guide,

whereby when said non-rotating means is operated to move said clutch case from said first to said second position disengaging said clutch case from said clutch hub, said frictional surfaces contact each other to brake said clutch case and said output shaft.

4,515,257

CONTROL SYSTEM FOR AN ELECTROMAGNETIC CLUTCH FOR AUTOMOBILES

Toshio Takano, Hamuramachi, and Ryuzo Sakakiyama, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1982, Ser. No. 445,298

Claims priority, application Japan, Dec. 4, 1981, 56-195390

Int. Cl.³ B60K *41/02;* **F16D** *27/00*

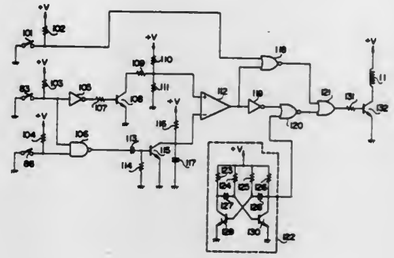
U.S. Cl. 192—0.075 **18 Claims**

1. A control system for a belt-drive automatic transmission for an engine of the type which comprises a driving pulley, a driven pulley and a belt engaged with both pulleys, transmission ratio of which is automatically varied by changing effective diameters of both said pulleys, comprising

an electromagnetic clutch having a coil, said electromagnetic clutch being operatively connected between said engine and an input shaft of said automatic transmission,

said electromagnetic clutch being engaged by exciting said coil for transmitting output of said engine to the input shaft of said automatic transmission,

means comprising a switch for being operated when an accelerator pedal of said engine is rapidly released to an idling position,



gate circuit means opened depended on operation of said switch for a predetermined time period,

circuit means for allowing the current to flow periodically through said coil during the opening of said gate circuit means, and wherein

said gate circuit means includes a time constant circuit for producing a signal to open a gate for a predetermined time period.

4,515,258

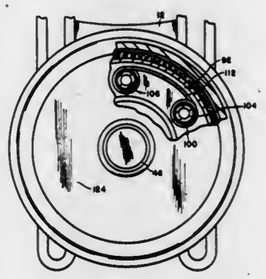
CLUTCH DRIVE WITH LINK SPRING

Duane R. Johnson, Oberlin, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 9, 1983, Ser. No. 473,425

Int. Cl.³ F16D *3/14, 13/30, 25/08*

U.S. Cl. 192—91 A **8 Claims**



1. Clutch drive comprising a spindle having an axis, a driving member and a driven member mounted for rotation about the axis of the spindle, pressure responsive means for effecting engagement and disengagement of the driving and driven members to effect a driving connection between the driving and driven members when said members are engaged and to break said driving connection when the members are disengaged, one of said members, including a portion movable parallel to the axis of said spindle and another portion fixed against axial movment relative to said spindle, first and second bearing means rotatably supporting said parallel movable portion and said fixed portion respectively for rotation about said spindle, and resilient means yieldably urging said parallel movable portion into driving engagement with said other member, said resilient means being disposed between said parallel movable portion and said fixed portion of said one member to provide a drive path solely through said resilient means to

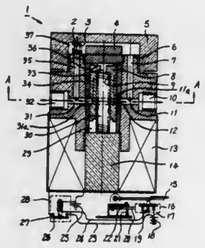
transmit rotation between the portions of said one member, whereby said resilient means act both to transmit rotation between the portions of said one member and to yieldably urge said parallel movable portion into driving engagement with said other member, said portions having circumferentially spaced bosses extending parallel to the axis of said spindle and projecting toward corresponding bosses on the other portion but being separated therefrom, said resilient means comprising circumferentially spaced coiled springs having opposite open ends receiving a corresponding boss on each of said portions, and a drive link interconnecting one of the coils of each of said springs with one of the coils of an adjacent spring.

4,515,259

CLUTCH-OPERATED HILL HOLDER BRAKE SYSTEM

Jung Y. Ha, Seoul, Rep. of Korea, assignor to KIA Industrial Co., Inc., Rep. of Korea

Filed Jul. 7, 1982, Ser. No. 396,012
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—3 H **13 Claims**



1. A brake control device for preventing backward movement of a vehicle on an uphill road during operation of a clutch pedal of the vehicle after release of a brake pedal of the vehicle which is connected to a master cylinder and wheel cylinders of the vehicle, said brake control device comprising:

a cylinder body provided with first and second lateral oil passages, a first brake line connecting port in flow communication with said first oil passage for connection to the master cylinder, and a second brake line connecting port in flow communication with said second oil passage for connection to the wheel cylinders;

said cylinder body having a longitudinal opening in flow communication with each of said first and second oil passages;

a hollow plunger reciprocably received within said longitudinal opening of said cylinder body, said hollow plunger being provided with an annular groove around a periphery thereof;

spring means extending into said hollow plunger to force said hollow plunger into a first position with said annular groove in alignment with each of said first and second oil passages to provide flow communication therebetween so that oil can flow from the master cylinder through said first brake line connecting port, said first oil passage, said annular groove, said second oil passage, said second brake line connecting port, respectively, to the wheel cylinders when the brake pedal is actuated;

first means to move said hollow plunger against the force of said spring means into a second position with said annular groove out of alignment with each of said first and second oil passages to prevent flow communication therebetween so that the oil is prevented from returning from the wheel cylinders when the clutch pedal is actuated upon release of the brake pedal;

said first means including an electromagnetic core provided with an electromagnetic coil wound therearound, said electromagnetic core being mounted on said cylinder body for acting on said hollow plunger;

micro switch means electrically connected to said electromagnetic coil and positioned under the clutch pedal for energizing said electromagnetic coil when the clutch pedal is actuated; and

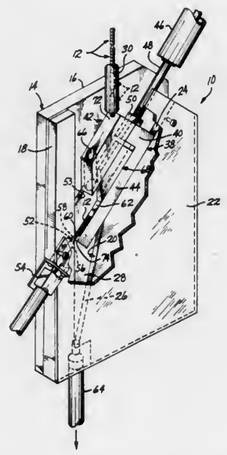
second means provided in said cylinder body to provide a second oil path from the master cylinder to the wheel cylinders to supply additional oil to the wheel cylinders when said hollow plunger is in said second position and the brake pedal is reactuated for an increased braking force.

4,515,260

ESCAPEMENT ORIENTING MECHANISM

David L. Wagner, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 28, 1983, Ser. No. 479,379
Int. Cl.³ B65G *11/20*
U.S. Cl. 193—44 **4 Claims**



1. An apparatus for aligning fasteners having a deep recess on one end and a shallow recess on the other end, with the apparatus comprising: means for introducing one fastener at a time onto a reciprocally movable inclined surface, a movable pin located to contact a lower end of the fastener, means for retracting the inclined surface a predetermined amount to clear the fastener to permit the fastener to rotate on the end of the pin into a shallow recessed end down position provided a deep recessed end of the fastener was resting on the pin and provided the shallow recessed end of the fastener was resting on the pin to support the fastener adjacent the other end, and means for rapidly retracting the pin to permit the shallow recessed end to drop down.

4,515,261

MOUNTING MEANS FOR DROP COIN MECHANISM

Simon Prisant, San Francisco, Calif., assignor to Coinamatic Leasing Corporation, Quebec, Canada

Filed Jan. 10, 1983, Ser. No. 456,822
Int. Cl.³ G07F *9/00*
U.S. Cl. 194—1 A **11 Claims**

1. In combination:

first and second plates adapted to sandwich between them a panel to which they are to be affixed,

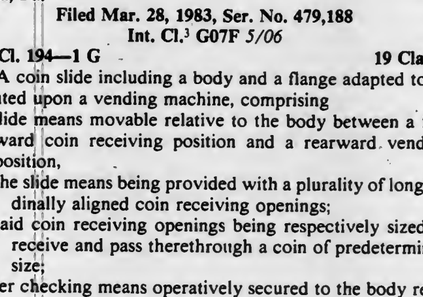
the first plate having at least one boss projecting from one face thereof, and a threaded stub shaft spaced from said boss, the boss defining a lip spaced from said one face, at least part of said lip being directed generally toward said threaded stub shaft,

the second plate defining a first edge adapted to be received under said lip, and a second edge adapted to lie adjacent said threaded stub shaft,

the combination further including a threaded nut for engagement with said threaded stub shaft, the threaded nut having a conical shoulder portion adapted to bear against said second edge of the second plate in such a manner as (1) to urge the second edge toward the first plate, and (2) to retain the first edge under said lip.

9. A method of affixing a drop coin mechanism to a panel of a coin-operated machine, the drop coin mechanism including a mounting plate through which are provided a coin insertion slot and a coin return slot, the method comprising the steps:

(a) providing an outer plate having at least one boss projecting from one face thereof, and a threaded stub shaft spaced from said boss, the boss defining a lip spaced from said one face, at least part of said lip being directed generally toward said threaded stub shaft, the outer plate having slots for registry with the slots of the mounting plate,



(b) providing on said mounting plate a first edge adapted to be received under said lip, and a second edge adapted to lie adjacent said threaded stub shaft,

(c) providing the panel with removed portions for registry with the slots, said at least one boss and said threaded stub shaft,

(d) in any order:

(1) placing the outer plate against one face of the panel with said at least one boss projecting across the panel,

(2) placing the mounting plate against the other face of the panel with said first edge received under said lip and said second edge lying adjacent said threaded stub shaft,

(e) engaging with said stub shaft a nut member having a conical shoulder portion, such that the conical shoulder portion comes into bearing engagement with said second edge of the mounting plate in such a manner as (1) to urge the second edge toward the outer plate, and (2) to retain the first edge under said lip.

4,515,262

COIN SLIDE

Evan C. Wilfong, and Tesfaye Anno, both of Philadelphia, Pa., assignors to Equipment Systems & Devices, Inc., Philadelphia, Pa.

Filed Mar. 28, 1983, Ser. No. 479,188
Int. Cl.³ G07F *5/06*
U.S. Cl. 194—1 G **19 Claims**

1. A coin slide including a body and a flange adapted to be mounted upon a vending machine, comprising

a slide means movable relative to the body between a forward coin receiving position and a rearward vending position,

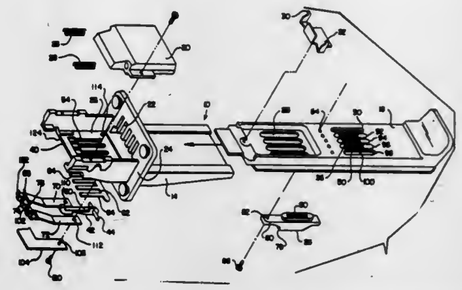
the slide means being provided with a plurality of longitudinally aligned coin receiving openings;

said coin receiving openings being respectively sized to receive and pass therethrough a coin of predetermined size;

lever checking means operatively secured to the body rearwardly of the flange, the lever checking means comprising pivotal levers,

the levers of the lever checking means being contacted by coins as the slide means is moved rearwardly toward the said vending position; and

coin stripper means secured to the body in partial registry with the lever checking means,



coin stripper means comprising a coin stop and a spring arm secured to the coin stop,

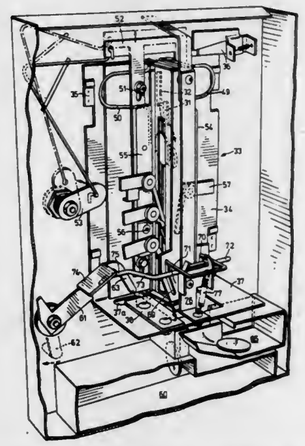
the coin stop being positioned forwardly of the coins when the slide means is moved to the vending position, whereby the coins cannot be urged forwardly of the coin stop after the slide means has been moved to the vending position prior to dropping into a cash box.

4,515,263

COIN OPERATED MECHANISM FOR OPENING THE DOOR OF A CABINET

Archibald R. Facto, 17 Lormar Dr., Toronto, Ontario, Canada M9B 4V7

Filed May 19, 1983, Ser. No. 496,019
Int. Cl.³ G07F *9/04*
U.S. Cl. 194—1 D **25 Claims**



1. Coin-responsive mechanism for opening the door of a cabinet, comprising:

an accepted-coin tray and a coin-return tray;

at least one coin-chute;

a manually operable coin-return means;

the door of the cabinet being normally latched closed, unlatching means being provided to unlatch the door in dependence upon the presence of correct coinage in the chute;

a combined chute closure member and latch member,

mounted on a pivot which is itself mounted on the door, so that when the door moves the combined member is constrained to move in unison;

wherein the combined member is normally disposed in position at the bottom of the chute such that a coin placed in the chute falls down the chute and comes to rest against the combined member;

wherein the combined member is engageable with a complementary latch member mounted on the fixed part of the cabinet, engageable normally to hold the door latched closed;

wherein the combined member is spring-biassed upwards about its pivot against the bottom of the chute;

at least one coin check valve being so positioned in the chute that correct coinage placed in the chute is trapped therein and prevented from moving back up the chute by the valve;

wherein a camming surface is formed on the combined member;

wherein the combined member is movable to open the bottom of the chute in two modes of movement, namely:

wherein the coin-chute itself is not movable to a position over the coin-return tray; and

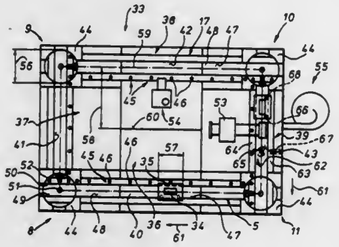
wherein the manually operable coin-return means includes a movable member having a tappet which is engageable with the combined member upon operation of the coin-return means and is effective to press the combined member downwards away from the bottom of the chute, against the spring biassing.

4,515,264

ASSEMBLY LINE

Walter Sticht, Attnang, Austria, assignor to Stiwa-Fertigungstechnik Sticht Gesellschaft M.B.H., Attnang, Austria

Filed Feb. 22, 1983, Ser. No. 468,168
Claims priority, application Austria, Mar. 5, 1982, 868/82
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—344 **10 Claims**



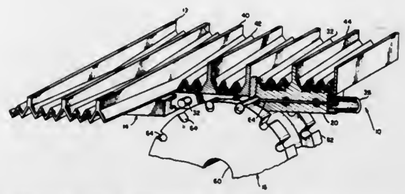
1. An assembly apparatus with a succession of work stations for assembling, or working on, workpieces and parts, which comprises a conveyor means for conveying pallets carrying the workpieces and parts along an elongated path to the succession of work stations, each pallet having a length extending in the direction of said path, the elongated conveyor means path having two parallel path portions, a connecting path portion extending substantially perpendicularly to the parallel path portions and pivotal conveyor means sections arranged between the parallel and connecting path portions, the length of the pivotal conveyor means sections corresponding substantially to the pallet length, each work station being equipped with its own conveyor means drive means and manipulating means for assembling, or working on, the workpieces and parts, the pivotal conveyor means sections being equipped with conveyor means drive means constituted by conveyor rollers rotatable about a vertical axis, a pivoting drive for each one of the pivotal conveyor means sections, and motion-transmitting means connecting the conveyor rollers and the pivoting drive of each pivotal conveyor means section.

4,515,265

BELT CONVEYER SYSTEM AND CONVEYER BELT USABLE THEREWITH

Daryl G. Hill, P.O. Box 9308, Yakima, Wash. 98909

Filed Aug. 18, 1982, Ser. No. 409,179
Int. Cl.³ B65G *15/08, 15/40*
U.S. Cl. 198—821 **21 Claims**



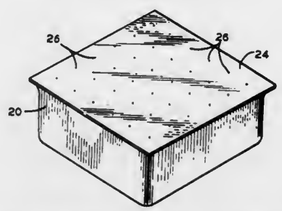
1. A conveyer belt comprising a central substantially inextensible flexible spine and an upper load carrying portion supported by said central spine, said load carrying portion having longitudinally extending side edges spaced outwardly from side edges of said central spine and being inclined upwardly from the center part to said side edges of the load carrying portion and said load carrying portion comprising a plurality of transversely extending pleats and a plurality of transversely extending ribs, each rib being mounted on top of a different one of said pleats, said ribs having their upper edge located higher than the top edge of said pleats, at least one of said pleats being disposed between adjacent ribs.

4,515,266

MODIFIED ATMOSPHERE PACKAGE AND PROCESS

Richard A. Myers, Dallas, Tex., assignor to St. Regis Corporation, New York, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,710
Int. Cl.³ B65D *81/20, 85/34*
U.S. Cl. 206—205 **6 Claims**



4. A package for preserving produce in a wholesome condition for an extended period of time which comprises a sealed container enveloping the produce, filled with a preservative gas which inhibits bacterial growth, and formed by a high barrier film which is so perforated as to provide a gas pressure within the container sufficient to inhibit air inflow into the container and to assure gas outflow from the container to prevent its distortion.

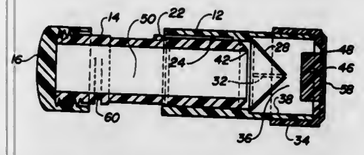
4,515,267

DENTAL MIXING AND EXTRUSION CAPSULE

Richard E. Welsh, Milford, Del., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Nov. 16, 1983, Ser. No. 553,250
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 **7 Claims**

1. A combination dental mixing and extrusion capsule including a pair of slidably telescoping sleeves, initially in partial telescopic relationship, the outer sleeve having a frangible diaphragm intermediately of its ends and a closure on one end having an integral frangible piston-like section and defining with said diaphragm a compartment for a first ingredient, the inner sleeve having a removable closure at the outer end defining with said frangible diaphragm of the outer sleeve another compartment for a second ingredient, the inner sleeve being movable telescopically inward to cause the inner end thereof to fracture the diaphragm and cause intermingling of the first and second ingredients to effect mixing thereof when the capsule is vibrated, and a nozzle optionally exchangeable for the



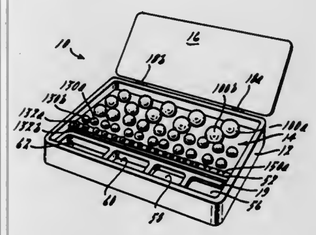
removable closure on the inner sleeve to permit discharge of mixed material therethrough when said frangible piston-like section of the closure on the outer sleeve is severed by a plunger and is moved inward piston-like against the mixed material in the compartment of the inner sleeve, said frangible piston-like section having a diameter complementary to the inner diameter of said inner sleeve and also has a rim portion connected to the closure on the outer sleeve by a weakened integral configuration readily fractured when said piston-like section is engaged by an external plunger of a dispensing gun or the like and is moved against said piston-like section.

4,515,268

BALL CASE FOR STORING AND ORGANIZING GAGE BALLS

Reginald O. Telly, 40002 Tothill, Sterling Hgts., Mich. 48078

Filed Aug. 22, 1983, Ser. No. 525,304
Int. Cl.³ B65D *85/38*
U.S. Cl. 206—305 **23 Claims**



1. A ball case for storing and organizing gage balls of a plurality of predetermined sizes, said ball case comprising:

a housing;

a base member for said housing, said base member having an upper surface including at least a first sloping surface; and

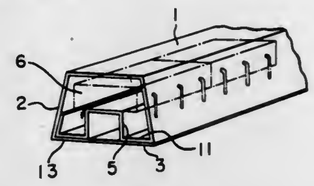
a plurality of partial spherical cavities formed in said base member below said first sloping surface, each of said cavities having predetermined portions for engaging one of said gage balls and predetermined depths such that said gage balls, when engaged in their respective cavities, extend upwardly therefrom to together define a single predetermined horizontal planar surface thereabove tangential to each of said gage balls.

4,515,269

MAGAZINE FOR ELECTRONIC DEVICES

Tadashi Hashimoto, Nagahama, Japan, assignor to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 452,898
Claims priority, application Japan, Dec. 29, 1981, 56-198679; Aug. 4, 1982, 57-118439; Aug. 4, 1982, 57-118440; Sep. 24, 1982, 57-144540
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—334 **16 Claims**



1. A tubular magazine for containing one or more electronic devices, said tubular magazine:

(a) having a uniform quadrilateral cross-section along its axial length;

(b) said uniform quadrilateral cross-section being defined by a bottom wall, two side walls, and a top wall;

(c) all four of said walls being formed from a single continuous, thin, transparent, flexible, quadrilateral, plastic sheet;

(d) a stand to support one or more electronic devices thereon being formed on said bottom wall along a lengthwise portion thereof;

(e) one end of said sheet overlapping the opposite end of said sheet;

(f) said stand being formed from the inward one of said one end of said sheet and said opposite end of said sheet, said inward one of said one end of said sheet and said opposite end of said sheet making planar engagement with the outward one of said one end of said sheet and said opposite end of said sheet over a first longitudinal strip of said bottom wall and being spaced therefrom to define said stand over a second longitudinal strip of said bottom wall adjacent to said first longitudinal strip of said bottom wall; and

(g) said one end of said sheet overlapping and being laminated to said opposite end of said sheet over the entire surface of said bottom wall except for said second longitudinal strip of said bottom wall, thereby giving said tubular magazine a resistance to deflection or twisting which it would not have without the overlap.

4,515,270

SURGICAL GLOVE CARTON AND TRASH RECEPTACLE

Alfredo Alvarado, 1974 Heritage Rd., Huntingdon Valley, Pa. 19006

Filed Mar. 15, 1984, Ser. No. 589,827
Int. Cl.³ B65D *45/06*
U.S. Cl. 206—438 **4 Claims**

1. A collapsible carton for containing a pair of sterilized surgical gloves comprising:

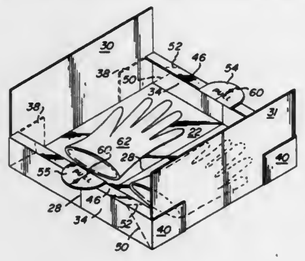
(a) a generally rectangular floor, said floor being formed by a pair of opposing main body panels joined by a center fold line bisecting said floor, each main body panel restingly supporting a surgical glove;

(b) a pair of generally rectangular side flaps foldably connected to opposite edges of the floor by side flap fold lines perpendicular to said center fold line, said side flaps bisected by a continuation of the center fold line and being collapsible into the floor;

(c) a pair of generally rectangular end flaps foldably connected to opposite lateral edges of the body panels by end flap fold lines parallel to the center fold line, said end flaps being collapsible into the floor and said side flaps, said end

flaps and side flaps being foldably connected at their edges to form a four-sided collapsible enclosure around said floor;

(d) a generally rectangular cuff foldably connected to the lateral edge of each side flap, said cuff being bisected by an



extension of the center fold line and folded over 90° such that it lies in a plane parallel to the carton floor; and

(e) a pull tab affixed by adhesive means to each cuff for grasping, said pull tab being disposed outwardly from the carton in a plane parallel to the floor.

4,515,271

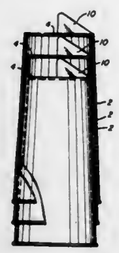
INSERT MEANS FOR FORMING VOIDS IN CONCRETE AND METHOD OF APPLYING SAME

Michael J. Auciello, Haverhill, and Anthony R. Auciello, Scituate, both of Mass., assignors to Auciello Iron Works, Inc., Hudson, Mass.

Continuation-in-part of Ser. No. 420,547, Sep. 20, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 552,627

Int. Cl.³ B65D *85/62, 21/02;* **B28B** *7/28*

U.S. Cl. 206—519 **6 Claims**



1. Insert means for use in forming voids in poured concrete comprising a tubular body of sheet material insertable in poured concrete while the concrete is in a plastic state, upper and lower closure elements detachably secured in top and bottom portions of the tubular body, the inner surface of the tubular body being formed with a helical line of scoring extending between the upper and lower closure elements, said upper closure element being formed integrally with the tubular sheet material and constructed at an upper side thereof with upperwardly extending holder tab means for lifting the upper closure element and also pulling away the tubular structure along the said line of scoring to leave a void in hardened concrete.

4,515,272

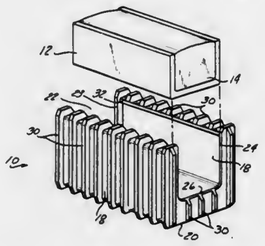
ROSIN BAR HOLDER

Denis P. Newhouse, 18439 Algonac, Detroit, Mich. 48234

Filed Mar. 29, 1983, Ser. No. 480,100

Int. Cl.³ B65D *81/02, 85/00*

U.S. Cl. 206—592 **6 Claims**



1. A rosin bar holder comprising:

a body having sidewalls, end walls, a bottom and an open top defining an internal cavity for removably receiving a rosin bar, the internal cavity having a shape complementary to the shape of the rosin bar;

inwardly extending lips formed at the upper ends of the sidewalls overlaying the internal cavity in the body to secure a rosin bar therein; and

aligned aperture means formed in the end walls of the body and extending from the open top for enabling an article to be used for its intended purpose while being housed in the body, said aperture being of less width and height than the internal cavity to further secure a rosin bar therein; and

the body being formed of a shock absorbing and resilient material for protecting the rosin bar housed here in from damage from external forces and to enable the sidewalls to be resiliently urged outward for removable insertion of a rosin bar into the body.

4,515,273

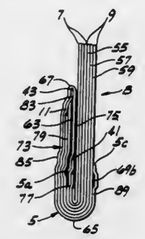
BAG WITH TAB AND METHOD OF FORMING

Roger K. Jacobson, Ramsey, and Ronald W. Munson, Minneapolis, both of Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Mar. 30, 1983, Ser. No. 480,573

Int. Cl.³ B65D *33/00*

U.S. Cl. 206—604 **13 Claims**



1. A bag having a pinch closure at one end and a tab for opening it at said end, the bag being formed from a bag tube having first and second walls, the second wall having an extension beyond the first at said end, the closure comprising a flap constituted by an end portion of the tube at said end folded over on a fold line spaced inwardly from the end edge of the first wall at said end, said flap thereby comprising the end portion of the first wall from said fold line to said end edge of the first wall, a portion of the second wall coextensive with said end portion of the first wall and said extension of the second wall, the tab having an inner end portion between said

portions of the walls, an intermediate portion underneath said extension, and an outer portion projecting out from under said extension, said flap being adhered to the outside face of the first wall, the intermediate portion of the tab being adhered to the outside face of the first wall, characterized in that the outer portion of the tab has a first part folded over on a fold line adjacent the end edge of the second wall at said end of the bag overlying said flap and a second part folded over on a fold line generally coincident with the first-mentioned fold line and overlying the second wall of the bag, said second part being releasably adhered to said second wall of the bag and having a free portion enabling it to be grasped and pulled to tear the bag open.

9. The method of making a bag with a pinch closure at one end and a tab for opening it at the closure from a bag tube having first and second walls with an extension of the second wall beyond the first at said one end of the tube, each wall having an inside face and an outside face, an end portion of the tube at its said one end being adapted to be folded over on the first wall of the tube on a first fold line spaced inwardly from the end edge of said first wall at said one end of the tube to form a closure flap, said method comprising:

applying a tab to the tube at its said one end with part of the tab on the portion of the inside face of the second wall included in said extension and an outer part of the tab extending out beyond the end edge of said extension a distance greater than the spacing of said first fold line from the end edge of said extension, and adhering the tab to said extension;

folding said outer part of the tab over on a second fold line adjacent said end edge of the extension to overlie the outside face of said second wall, and releasably adhering said outer part of the tab to the outside face of said second wall with the outer end of the tab adapted to be grasped and pulled away from the second wall; and

folding said closure flap over on said first fold line to overlie said first wall of the tube and adhering it thereto to form a pinch closure at said one end of the tube, that part of the tab between said first and second fold lines folding over with the flap and being adhered along with the flap to said first wall, said outer part of the tab being folded on said first fold line as the flap is folded over and ending up with a portion on the outside of the flap and a portion on the outside of the second wall releasably adhered to the second wall and adapted to be torn away from the second wall and pulled to tear the bag open at the closure.

4,515,274

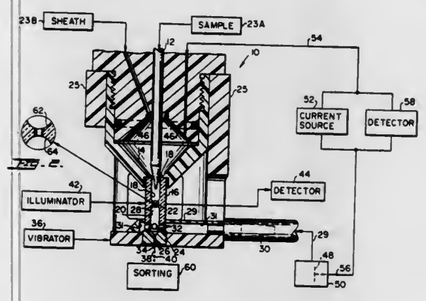
PARTICLE ANALYZING AND SORTING APPARATUS

John D. Hollinger, and Raul I. Pedroso, both of Miami, Fla., assignors to Coulter Corporation, Hialeah, Fla.

Filed Dec. 2, 1981, Ser. No. 326,734

Int. Cl.³ B07C *5/02*

U.S. Cl. 209—3.1 **8 Claims**



1. A particle analyzing and sorting apparatus for studying particles in suspension, said apparatus including a flow cell having a particle sensing aperture through which a stream of said particles in suspension is passed, means for passing an electric current through said sensing aperture simultaneously with passage of a particle through said sensing aperture, first detecting means responsive to electrical impedance variations for generating a particle pulse signal with the passage of said particle through said aperture, illumination means for providing radiation to illuminate said particle in said particle sensing aperture, second detecting means responsive to optical effects caused by the passage of said particle through said radiation for generating an analog electrical signal, said flow cell having an upstream channel and a downstream channel formed in opposed ends of said flow cell, said particle sensing aperture being disposed in fluid connecting relationship between said channels, said apparatus being further characterized by:

a nozzle, including an exit orifice, mounted at the end of said flow cell adjacent said downstream channel so that said downstream channel and said nozzle defines a flow chamber;

means for introducing a sheath liquid into said flow chamber, proximate said exit orifice and proximate to the downstream end of the downstream channel, to hydrodynamically focus said stream of particles as said stream proceeds from said particle sensing aperture to said exit orifice and for jetting said stream in a liquid jet from said nozzle;

means for periodically disturbing said liquid jet to produce droplets containing said particles; and

means for sorting said droplets based on said signals.

4,515,275

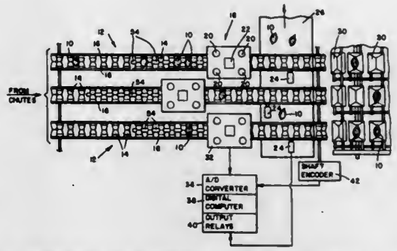
APPARATUS AND METHOD FOR PROCESSING FRUIT AND THE LIKE

George A. Mills, and Gerald R. Richert, both of Three Rivers, Calif., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 30, 1982, Ser. No. 430,068

Int. Cl.³ B07C *5/10, 5/342*

U.S. Cl. 209—558 **35 Claims**



1. Apparatus for processing items such as fruit and the like; comprising:

video signal means for examining an item and developing a plurality of discrete data signals, each said data signal being representative of a condition of a respective portion of said item;

storage means for storing said data signals as they are generated, thereby generating a stored batch of item data corresponding to said item;

batch processing means for processing said batch of data to generate one or more batch reference signals representative of the batch of item data, and process signal generation means for generating at least one process signal by processing at least some of the data of said batch as a function of said one or more batch reference signals; and

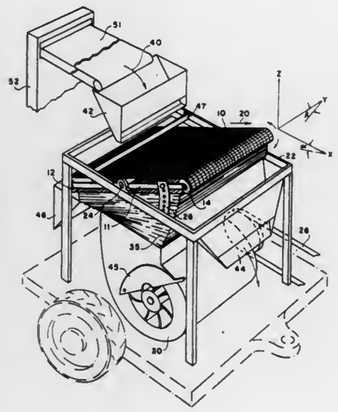
means for processing said item as a function of said one or more process signals.

4,515,276

SEPARATION DEVICES EMPLOYING FORCED AIR THROUGH CONVEYOR BELT MEANS

Ron Feller, Ramat Efal, and Amos Mizrach, Holon, both of Israel, assignors to The State of Israel, Ministry of Agriculture, Jerusalem, Israel

Continuation-in-part of Ser. No. 278,392, Jun. 29, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 515,684
Int. Cl.³ B07B *3/08*
U.S. Cl. 209—693 17 Claims



1. An apparatus for use in an agricultural field for at least separating particles of one agricultural product having a first specific density from particles of matter having a different specific density, comprising:

moveable endless conveyor means inclinable with respect to a horizontal plane from a lower to an upper end and defining an upper forward portion which is moveable upwardly and a lower return portion which is moveable downwardly,

gate means juxtaposed said forward portion near the lower end thereof and extending a direction perpendicular to the direction of travel of said forward portion;

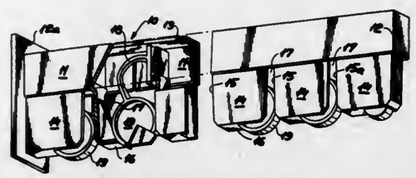
an air directing housing means below said conveyor means defining an opening of adjustable dimensions including air suction means for sucking into said housing means through said opening field air with any contaminants therein and for directing said contaminated air toward the conveyor means through a top opening of housing means, whereby the air passes through the return portion to the forward portion of said conveyor means to cause said particles thereon to be stratified with the particles of higher specific density being closest to said forward portion and travelling upwardly with it toward the upper end and the particles of lower density being stratified above the heavier particles and sliding downwardly toward said gate means, while contaminants in the air are blocked by said return portion from passing to said forward portion and are carried downwardly beyond the top opening of said housing means.

4,515,277

HOLDER WITH A PLURALITY OF SPRING CLIPS FOR SUSPENSION OF SHEET MATERIAL

Thomas Leth-Sorensen, Gabelsparken 259, DK-6740 Bramming, Denmark

PCT No. PCT/DK82/00076, § 371 Date Apr. 4, 1983, § 102(e) Date Apr. 4, 1983, PCT Pub. No. WO83/00423, PCT Pub. Date Feb. 17, 1983
PCT Filed Aug. 11, 1982, Ser. No. 486,957
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—45 4 Claims



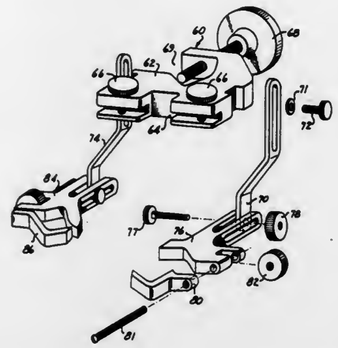
1. A holder for suspension of sheet material, comprising an elongated support member formed integrally with a plurality of spaced apart, downwardly projecting spring members each of which carries at its free end a clamping disc, a box-shaped case member having a bottom portion and a pair of side walls, said box-shaped case member being connectable to the support member and having a plurality of compartments with partitions therebetween for receiving respective clamping discs, each partition having an abutment against which the clamping disc in an adjacent compartment is positioned, and said box-shaped case member having openings in its bottom portion through which a portion of respective clamping discs extend and slots formed in its side walls for receiving the sheet material to be suspended.

4,515,278

MANIFOLD FOR MONITORING HEMODYNAMIC PRESSURE

William A. DeVroom, Glendora, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 310,016, Oct. 13, 1981,. This application Nov. 14, 1983, Ser. No. 551,661
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—107 3 Claims



1. A manifold mounting clamp for mounting a hemodynamic pressure monitoring manifold to a support, the clamp comprising:

a body having at least one slot extending therealong for receiving a manifold, the body having a generally U-shaped configuration for receiving a support to which the manifold is clamped;

a threaded knob assembly extending through the body and cooperating with the U-shaped configuration to provide means for securing the clamp to a support;

fastening means on the body, cooperating with the slot for securing a manifold positioned within such slot to the body;

a pair of arms releasably fastened to the body and extending therefrom;

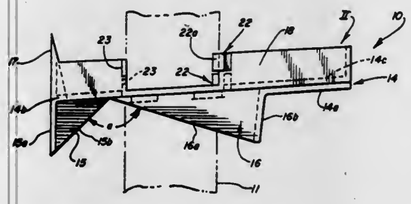
transducer support means releasably attached to each of the arms for releasably supporting a pair of transducers to the body.

4,515,279

DISPLAY SHELF CONSTRUCTION

Homer F. King, Elmhurst, Ill., assignor to H. King & Associates, Ltd., Elmhurst, Ill.

Filed Aug. 2, 1982, Ser. No. 404,016
Int. Cl.³ A47F *5/16*
U.S. Cl. 211—153 14 Claims



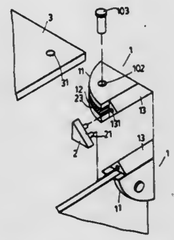
1. A removable display shelf adapted to be selectively mounted in either of two modes between at least a pair of spaced, substantially parallel, upright supports, said shelf comprising a panel section for disposition intermediate the upright supports and projecting outwardly therefrom when said shelf is in either mode; an end section disposed at a peripheral segment of the panel section and adapted to engage a supporting member disposed rearwardly of the upright supports when said shelf is mounted in either mode on the upright supports; an angularly and rearwardly extending first ramp section mounted on one surface of said panel section; an angularly and forwardly extending second ramp section mounted on said panel section one surface forwardly of said first ramp section, said first and second ramp sections, when said shelf is in a first mode, coacting to supportingly engage an article in an upwardly tilted position relative to the panel section one surface; and support-engaging means extending outwardly from and spaced from said end section and coacting therewith for retaining said shelf in either mode between the upright supports.

4,515,280

COUPLING DEVICE

Roung-Hwang Sheu, No. 18, Lane 191, Sec. 1, Nan-Ko Rd., Changhua City, Taiwan

Filed May 31, 1984, Ser. No. 615,904
Int. Cl.³ F16B *5/06*
U.S. Cl. 211—189 1 Claim



1. In a display case of the type having a plurality of rectangular boards coupled to one another to define compartments, a device for coupling boards comprising:

a flat member having two adjacent first sides forming a right angle, a second side opposite to the right angle having a groove for receiving one corner of the board, two projecting portions extending outwards from said first sides respectively, each of said projecting portions having isosceles right-angled triangle shaped cross-section with a hypotenuse contiguous to said first side; and

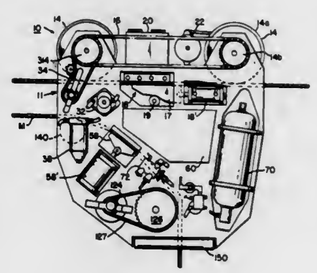
means for connecting each said projecting portion to the projecting portion of another coupling device when said projecting portions are in side by side adjacent relationship.

4,515,281

RADIO-CONTROLLED SKYLINE CARRIAGE

William Maki, Star Rte. 60, Pierce, Id. 83546

Filed Jul. 21, 1982, Ser. No. 400,761
Int. Cl.³ B66C *21/00*
U.S. Cl. 212—76 7 Claims



1. A carriage for moving along a suspended skyline, which comprises:

a body;

a pair of skyline wheels rotatably mounted on the body, the skyline wheels rollably suspending the carriage from the skyline when the skyline wheels are placed on the skyline;

means for receiving remotely transmitted signals;

a hydraulically actuated carriage component activated by the receiving means; and

a hydraulic system for supplying hydraulic pressure to the carriage component, the hydraulic system including:

a reservoir containing hydraulic fluid;

a first hydraulic pump for pressurizing fluid from the reservoir, the first pump having an impeller coupled to a skyline wheels for rotation when the carriage is moving uphill along the skyline;

a second hydraulic pump for pressurizing fluid from the reservoir, the second pump smaller than the first pump, the second pump having an impeller coupled to a skyline wheel for rotation when the carriage is moving downhill along the skyline; and

an accumulator for storing pressurized hydraulic fluid.

4,515,282

ROTATABLE CRANE APPARATUS FOR A RESCUE VEHICLE

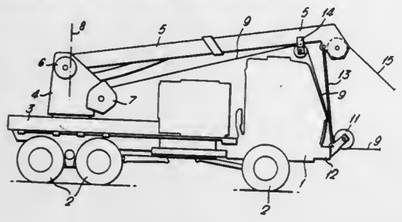
Sverre Falch, Moelv, Norway, assignor to A/S Moelven Brug, Moelv, Norway

Continuation of Ser. No. 332,834, Dec. 21, 1981, abandoned. This application Jun. 26, 1984, Ser. No. 625,172
Claims priority, application Norway, Mar. 9, 1981, 810792
Int. Cl.³ B66C *23/26;* B60D *3/12*
U.S. Cl. 212—254 1 Claim

1. A rescue vehicle having a wheeled frame, a front bumper attached to said frame, a crane apparatus including a crane turret mounted on said frame for rotation about a vertical axis,

a crane boom having an inner and an outer end with the inner end mounted on said crane turret, a block mounted on said outer end, a hoist winch means for providing vertical pulling power mounted on said turret adjacent the inner end of the boom and a hoist cable wound thereon running substantially along said boom and over said block; a rescue winch means for providing horizontal pulling power and having 10–20 times greater power than said hoist winch means mounted on said turret adjacent to and substantially below said inner end of said boom;

a rescue cable operatively wound on said rescue winch means and extending therefrom beneath said boom in the general direction toward said block;



a detachable first rescue cable block mounted on said boom near said outer end thereof at a distance from said axis less than said block; said rescue cable running over said first rescue cable block to be guided thereby;

a second rescue cable block mounted on said front bumper and over which said rescue cable extends after passing over said first-mentioned rescue cable block in a general horizontal direction extending outwardly from the vehicle; and

a Y-shaped stay bar means mounted on said second rescue cable block for engaging said boom near the outer end thereof and to support said boom.

4,515,283

BUNG FOR JARS

Hiro Suzuki, 109 Wicks Rd., North Ryde, N.S.W. 2113, Australia

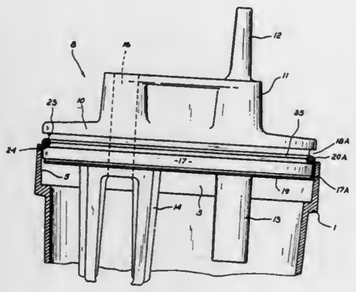
PCT No. PCT/AU82/00188, § 371 Date Jul. 12, 1983, § 102(e) Date Jul. 12, 1983, PCT Pub. No. WO83/01767, PCT Pub. Date May 26, 1983

PCT Filed Nov. 15, 1982, Ser. No. 519,771

Claims priority, application Australia, Nov. 13, 1981, PF1551; Jun. 2, 1982, PF4250

Int. Cl.³ A61M *1/00*

U.S. Cl. 215—270 **6 Claims**



1. An aspirator apparatus comprising a collection jar having an open mouth and an internal shoulder joined to the mouth by a wall portion, and a bung closing said mouth and being moulded in shell-form from thermoplastic material, said bung comprising an outwardly domed top, a peripheral skirt depending from said top and being within said mouth and closely adjacent said wall portion, a circumferential recess in the outer face of said skirt, and a resilient O-ring accommodated within said recess and bearing against said wall portion to provide a primary seal between said jar and said bung, said apparatus includes the thermoplastic material of said bung being resilient to permit said domed top to depress inwardly with sub-atmospheric pressure within said jar to cause said skirt to press said O-ring and an inner end of said skirt against said wall portion to increase the sealing pressure between the jar and the bung.

4,515,284

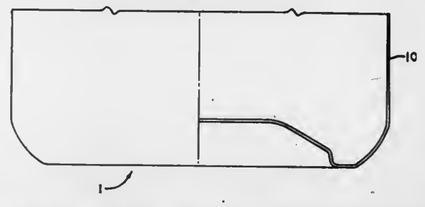
CAN BODY BOTTOM CONFIGURATION

Harry W. Lee, Jr., and Joseph W. Wallace, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Aug. 21, 1980, Ser. No. 180,121

Int. Cl.³ B65D *1/16, 1/42, 1/46*

U.S. Cl. 220—70 **27 Claims**



1. In a metallic can body comprising a sidewall and a bottom closing structure, the improvement wherein said bottom closing structure comprises a first semi-torroidal portion having one end thereof directly attached to said sidewall, said first semi-torroidal portion being convex with respect to the exterior of said can body and having a radius r_1 and an angle α; a second semi-torroidal portion having one end thereof directly attached to the other end of said first semi-torroidal portion, said second semi-torroidal portion being convex with respect to the exterior of said can body and having a radius r_2 and an angle β, r_2 being greater than r_1; a third semi-torroidal portion having one end thereof directly attached to the other end of said second semi-torroidal portion, said third semi-torroidal portion being convex with respect to the exterior of said can body and having a radius r_3 and an angle μ, r_3 being less than r_2; a ring portion upon which said can body rests having one end thereof directly attached to the other end of said third semi-torroidal portion, said ring portion having a length L_1, said length L_1 ranging between about 0.020 to 0.175 inches (0.051 to 0.445 centimeters), and said ring portion being radially inwardly directed with respect to the exterior of said can body at an angle ν; a fourth semi-torroidal portion having one end thereof directly attached to the other end of said ring portion, said forth semi-torroidal portion being convex with respect to the exterior of said can body and having a radius r_4 and an angle γ; a first frustoconical portion having one end thereof directly attached to the other end of said fourth semi-torroidal portion, said first frustoconical portion being radially inwardly directed with respect to the exterior of said can body and having a length L_2 and an angle ρ; a fifth semi-torroidal portion having one end thereof directly attached to the other end of said first frustoconical portion, said fifth semi-torroidal portion being concave with respect to the exterior of said can body and having a radius r_5 and an angle λ; and a bottom closing portion directly attached to the other end of said fifth semi-torroidal portion.

4,515,285

VALVE PLATES FOR CONTAINER VALVES AND METHOD OF MANUFACTURING SAME

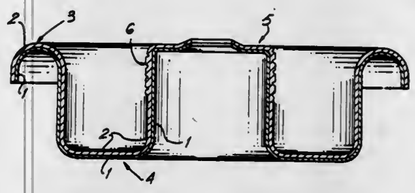
Werner Euscher-Klingenhagen, Bielefeld; Horst Griemla, Steinhagen, and Hartmut Rodekamp, Bielefeld, all of Fed. Rep. of Germany, assignors to Ewald Euscher, Bielefeld, Fed. Rep. of Germany

Filed May 10, 1984, Ser. No. 609,034

Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317809

Int. Cl.³ B21D *39/00*; B65D *51/20*

U.S. Cl. 220—288 **6 Claims**



1. In a valve plate for a container valve and having a threaded dome, the improvement wherein the valve plate comprises two plies formed by deforming two blanks together, and wherein only the outer ply has the threading in the vicinity of the dome.

4,515,286

CAP AND A CAP OPENING AND CLOSING DEVICE

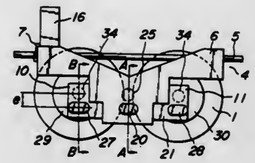
Masao Ushikubo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Dec. 19, 1983, Ser. No. 563,070

Claims priority, application Japan, Dec. 22, 1982, 57-194699[U]; Dec. 22, 1982, 57-194700[U]

Int. Cl.³ B65D *45/28*

U.S. Cl. 220—314 **12 Claims**



1. A cap for sealing airtightly an opening of a liquid container to prevent evaporation of a liquid contained therein, comprising a plurality of projections formed in a bottom surface of the cap which is to be urged against a upper surface of a mouthpiece defining the opening of a liquid container, said projections comprising an elastic material such that said projections are elastically deformable to airtightly seal said opening and such that a force employed to so elastically deform said projections can be substantially recovered to aid in breaking said seal when said cap is removed from said mouthpiece.

4,515,287

PRESSURE ACTIVATED CLOSURE LOCK

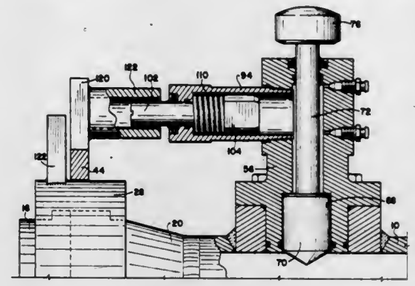
Richard Baudoux, Nivelles, Belgium, and Anthony J. Webb, Wiltshire, England, assignors to T.D. Williamson, Inc., Tulsa, Okla.

PCT No. PCT/US82/01341, § 371 Date Apr. 27, 1984, § 102(e) Date Apr. 27, 1984, PCT Pub. No. WO84/01354, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 28, 1982, Ser. No. 619,166

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—316 **8 Claims**



1. Safety apparatus for use to close an opening in a pressure containment vessel comprising:

a door sealably engageable with an opening in a pressure containment vessel, the door being pivotally supported to move to and away from a closed position;

a handle pivotally supported relative to the opening and moveable to and away from a locked position in which said door seals the opening;

a pressure lock housing affixed to and extending from the pressure containment vessel, the housing having a cylindrical opening therein the axis of which intersects the plane of pivotation of said handle, a fluid communication channel connecting the cylindrical opening with the interior of the vessel;

a piston member reciprocally received in said cylindrical opening and having a portion extending sealably exteriorly of said housing;

means of biasing said piston inwardly; and

means carried by said handle engageable by said piston whereby when the handle is in said locked position such means is engaged by said piston member when the pressure within said vessel is above a preselected level and said handle can be moved from the locked position only when the pressure in the vessel is below the preselected level.

4,515,288

CURRENCY-DISPENSING METHOD AND APPARATUS

Martin M. Atalla, Atherton, Calif., assignor to Atalla Corporation, San Jose, Calif.

Filed Dec. 1, 1982, Ser. No. 446,074

Int. Cl.³ B65H *5/28*

U.S. Cl. 221—1 **9 Claims**

1. Currency-dispensing apparatus comprising:

a transport medium;

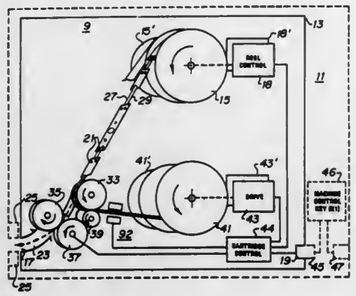
a supply of currency units adhesively attached to said transport medium in substantially coplanar relationship therewith at successive locations therealong, with each adhesive attachment of a currency unit being disposed at at least one isolated, discontinuous region that is spaced inwardly from a forward edge of the currency unit;

a work station for altering the coplanar relationship of the transport medium and currency attached thereto for separating the forward edge of a currency unit from said transport medium in advance of encountering said region of adhesive attachment therealong;

motive drive control means for selectively advancing the

transport medium through the work station in response to applied electrical control signals to separate the currency unit from the transport medium at said region of adhesive attachment; and

detector means including conductive roller means disposed



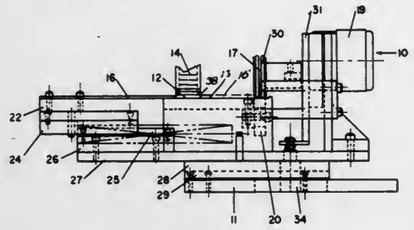
in conductive contact, said conductive roller means positioned relative to said work station to receive therebetween a currency unit separated from the transport medium to produce in response thereto a detector signal which is indicative of a currency unit being separated from the transport medium.

4,515,289

HOPPER FEED MECHANISM FOR RADIAL LEAD DEVICES

Merlin Lawrence, Fairview, Pa., assignor to Automated Industrial Systems, Erie, Pa.

Filed Sep. 30, 1982, Ser. No. 431,036
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—13 **16 Claims**



12. A mechanism used to feed articles into other process equipment, comprising,

a frame having a track,

a feedwheel and an idler wheel rotatably supported on said frame to rotate about axes generally perpendicular to said track,

means to mount said frame on said process equipment,

a hopper for a stack of said articles,

means on said mechanism to move said drive wheel and said feedwheel to a position spaced from each other,

a shuttle blade adapted to successively push the lower most of said articles out of said hopper and axially of said wheels and between said idler wheel and said feedwheel when said idler wheel and said feedwheel are moved to spaced position from one another,

means to power said shuttle blade and means for movably supporting said shuttle blade on said frame,

a means to detect interruptions of feed of said articles,

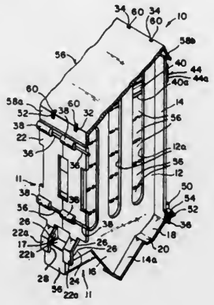
and means in contact with said means to power said shuttle blade, to stop feeding process and to reverse said shuttle blade.

4,515,290

ARTICLE DISPENSING APPARATUS

Jay Fishler, 39 Artisan Ave., Huntington, N.Y. 11743

Filed Jun. 6, 1983, Ser. No. 501,263
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—124 **12 Claims**



1. A dispenser for articles comprising a plurality of planar partition means,

means for joining said plurality of partition means in spaced side-by-side ganged array whereby when joined, the space between adjacent ones of said partition means defines a column to store in stackable array the articles to be dispensed therefrom,

each of said partition means being formed with an extension so that when said partition means are joined adjacent extensions provide an area into which the articles to be dispensed are loaded and also hold the last-to-be-loaded article in display and dispensing positions,

means in each column applying a pressure to the articles loaded into the column so that the last-to-be-loaded article is held in the display position for partial ejection therefrom under the application of said pressure applying means and for manual removal and dispensing from the column,

said pressure applying means operating to cause the selected article to eject from the display position to the dispensing position when moved slightly relatively thereto,

said means for joining said partition means together being releasable and being complementary positioned on adjacent partitions to engage with each other such that when adjacent partitions are placed side by side said joining means engage to lock the same together and release their engagement to enable separation of the partitions upon the application of a separating force to the partitions.

4,515,291

SEED PLANTER, PLANTER ASSEMBLY AND METHOD OF PICKING UP AND DISCHARGING SINGLE SEEDS

Robert G. Holmes, Columbus, Ohio, assignor to The Ohio Agricultural Research and Development Center, Wooster, Ohio

Filed Sep. 29, 1982, Ser. No. 428,097
Int. Cl.³ A01C *5/00*; B65G *59/04*
U.S. Cl. 221—211 **12 Claims**

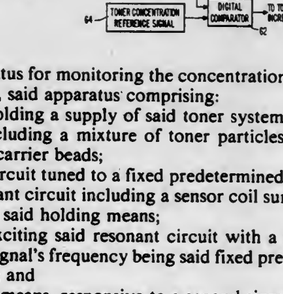
1. A seed planter comprising:

a seed transport member having a surface in the form of a wall, means forming at least one depression therein, said depression means being able to accommodate a seed, the deepest portion of said depression means forming a tapering seed retaining section having its narrowest cross-section at its deepest part, said retaining section having the form of a solid of revolution having an axis, said axis being at an angle not perpendicular to said wall surface, said depression means also defining a ramp surface sloping downwardly from the wall surface into said seed retaining section, a gas supply conduit means in fluid communication with said seed retaining section of said depression adjacent the deepest part thereof;

a seed loading station;

a seed unloading station;

drive means for moving said depression means past said seed loading station such that said ramp surface passes said seed loading station ahead of said seed retaining section, and for thereafter moving said depression past said seed unloading station;



gas supply means for passing a stream of gas through said gas supply conduit means into said depression as said depression passes said seed loading station; and

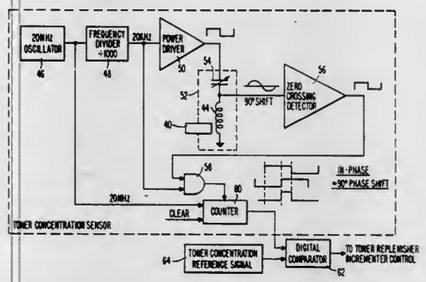
pressurizing means for increasing the pressure within the narrowest part of said seed retaining section after said depression has passed said seed loading station but not later than the time at_which said depression passes said seed unloading station.

4,515,292

DIGITAL IMPLEMENTATION OF TONER CONCENTRATION SENSING APPARATUS

William M. Koos, Jr., Orlando, Fla., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 19, 1983, Ser. No. 496,156
Int. Cl.³ B67D *5/14*
U.S. Cl. 222—52 **20 Claims**



1. An apparatus for monitoring the concentration of toner in a toner system, said apparatus comprising:

means for holding a supply of said toner system, said toner system including a mixture of toner particles and ferromagnetic carrier beads;

a resonant circuit tuned to a fixed predetermined frequency, said resonant circuit including a sensor coil surrounding a portion of said holding means;

means for exciting said resonant circuit with a first signal, said first signal's frequency being said fixed predetermined frequency; and

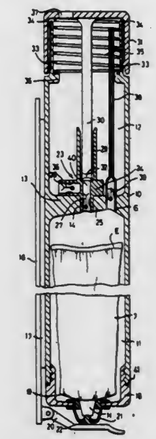
logic circuit means, responsive to a second signal from said exciting means, said second signal's frequency also being said fixed predetermined frequency, said logic circuit means further being responsive to an output from said resonant circuit, said logic circuit means for generating at its output a signal representative of a phase shift between said second signal and the output from said resonant circuit, the amount of said phase shift indicative of the actual concentration of the toner in said toner system.

4,515,293

DISPENSER FOR COLLAPSIBLE CONTAINERS WITH HYDRAULIC ACTUATION

Henry R. Hill, and Christine R. Hill, both of 72 Homer Rd., Solihull, West Midlands B91 3QH, England

PCT No. PCT/GB82/00154, § 371 Date Jan. 26, 1983, § 102(e) Date Jan. 26, 1983, PCT Pub. No. WO82/04238, PCT Pub. Date Dec. 9, 1982
PCT Filed May 28, 1982, Ser. No. 464,502
Claims priority, application United Kingdom, May 30, 1981, 8116595
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—95 **14 Claims**



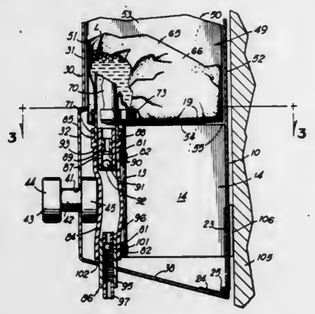
1. A dispenser having a housing adapted to hold a deformable container which contains an extrudable material and has a nozzle through which said material can be discharged by squeezing the container, the dispenser being operable to squeeze the container to discharge a predetermined amount of material wherein the housing is elongate and has a longitudinal axis and defines first and second chambers which are disposed longitudinally adjacent to each other and are separated by adjacent end walls, the first chamber being arranged to receive the container and having an opening at the end thereof distant from the second chamber for discharge of the material from the nozzle of the container, the second chamber providing a reservoir for hydraulic fluid and there being a pump, comprising a piston slidable in a pump chamber, disposed in the housing and operable to pump hydraulic fluid from the second chamber into the first chamber, the pump being operable by a plunger slidably mounted on the housing, at the end thereof distant from the first chamber, for movement parallel to the longitudinal axis of the housing.

4,515,294

LIQUID DISPENSER, VALVE THEREFOR AND PROCESS OF PRODUCING THE VALVE

Raymond E. Udall, Atlanta, Ga., assignor to Southern Chemical Products Company, Macon, Ga.

Filed Mar. 31, 1982, Ser. No. 363,966
Int. Cl.³ B65D *35/56*
U.S. Cl. 222—105 **9 Claims**



1. A cartridge assembly for use within a liquid dispenser comprising:
(a) a box-like fiberboard housing having a hole in its bottom portion;
(b) a flexible bag within said housing; said bag having a corner and an opening provided at said corner;
(c) liquid within said bag for being dispensed from said cartridge assembly;
(d) a discharge tube having an intermediate portion and an inner portion protruding through said opening and received within said bag, said bag being gathered around said intermediate portion said tube having an outer end portion;
(e) a compression clamp surrounding a portion of the gathered portion of said bag and said intermediate portion of said tube, the outer portion of said gathered portion extending below said clamp;
(f) adhesive means for securing said outer portion of said gathered portion of said bag between the inner surface of said housing and said clamp, said outer end portion of said tube protruding out of said opening in said housing; and
(g) a ball check valve extending through a hole in a screw cap and communicating with the interior of said tube, a flexible dispensing tube secured to said ball check valve, and a second ball check valve on the end of said dispensing tube, said first mentioned ball check valve being normally open and said second ball check valve being normally closed.

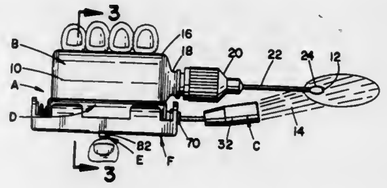
4,515,295

EYE DROPPER WITH LIGHT SOURCE

Delford O. Dougherty, Shaker Heights, Ohio, assignor to St. Luke's Hospital, Cleveland, Ohio

Filed Sep. 6, 1983, Ser. No. 529,357
Int. Cl.³ A61M *1/00*
U.S. Cl. 222—113 **5 Claims**

1. In combination, an eye drop dispenser including a compressible plastic container for the drops to be dispensed and an elongated, small diameter tubular dispensing member communicating with said container and having a dispensing orifice spaced therefrom,
and a device for illuminating said dispensing orifice, said device comprising:
(a) a body member,
(b) a self-contained energy source carried by said body member,
(c) a light source mounted to said body member at a position located away from said dispensing orifice to provide an unobstructed area along a major portion of said tubular dispensing member, said light source being capable of projecting a collimated beam of light,
(d) a switch carried by said body member, said switch being operable to selectively connect said energy source to said light source, and



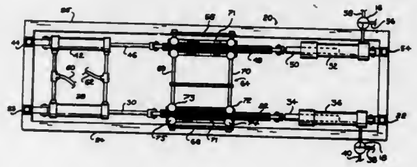
(e) aligned surfaces forming a channel-way receiving said container to provide a stable orientation of said container with respect to said device while permitting shifting movement therebetween in a direction generally aligned with said tubular dispensing member.

4,515,296

VARIABLE RATIO LIQUID METERING DISPENSER

Silverio B. Surdilla, 32400 Lois Way, Union City, Calif. 94587

Filed Sep. 23, 1982, Ser. No. 422,072
Int. Cl.³ G01F *11/06*
U.S. Cl. 222—134 **3 Claims**



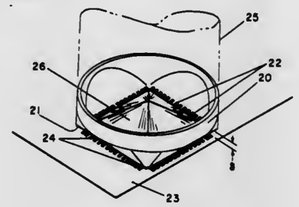
1. A system for dispensing a plurality of liquids in predetermined ratios, said system comprising:
a plurality of displacement cylinders, each having a displacement piston longitudinally movable within its respective cylinder for dispensing a liquid from the displacement cylinder;
a corresponding plurality of hydraulic driving cylinders, each coupled to the same hydraulic pressure source and each having a driving piston longitudinally movable in response to hydraulic pressure applied to its respective driving cylinder, each one of said plurality of driving pistons being coaxial with, and interconnected by a rack gear to one of said plurality of displacement pistons; and
a variable speed transmission having rack engaging pinion gears for coupling said transmission to each rack gear for controlling the longitudinal velocity of each of said displacement pistons within its respective displacement cylinder upon the application of hydraulic pressure to said plurality of driving cylinders, said transmission including coarse change gears having a first meshing gear for meshing with a first one of said rack engaging pinion gears, and fine change gears having a second meshing gear for meshing with a second one of said rack engaging pinion gears, said coarse and fine change gears including, respectively, third and fourth pinion gears mounted for rotation upon a common rotatable splined shaft that interconnects said coarse and fine change gears, said first and second meshing gears in said coarse and fine change gears being disengaged from their repsective rack engaging pinion gears for gear ratio changes and reengaged thereto by first and second pneumatic cylinders having pistons coupled to first and second pivotable arms supporting said first and second meshing gears.

4,515,297

METHODS FOR MULTIPOINT DISPENSING OF VISCOUS MATERIAL

David Schoenthaler, Lower Makefield Township, Bucks County, Pa., and Thaddeus Wojcik, Hopewell Township, Mercer County, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 26, 1983, Ser. No. 498,350
Int. Cl.³ B67D *5/64*
U.S. Cl. 222—160 **17 Claims**



1. A method for multipoint dispensing of viscous material onto a substrate, comprising the steps of:
positioning a viscous material dispenser, having a plurality of orifices, at a predetermined distance from the substrate surface;
during a first time interval, increasing the pressure within the dispenser to a predetermined value thereby forcing viscous material out of the dispenser orifices onto the substrate surface;
at the end of the first time interval, increasing the distance between the dispenser and the substrate at a substantially constant velocity while maintaining the dispensing pressure substantially at said predetermined value for a predetermined second time interval; and
removing the pressure within the dispenser at the end of the second time interval to stop the flow of the viscous material from the dispenser.

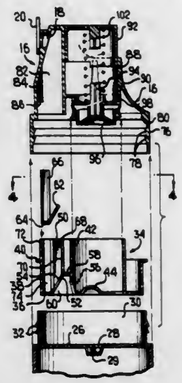
4,515,298

DISPENSER FOR PASTE-LIKE PRODUCTS WITH MANUALLY ACTUABLE PISTON INCLUDING INSERT DEVICE

Joachim Czech, Jahnstrasse 19, D-8405 Donaustauf, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,694
Int. Cl.³ G01F *11/02*
U.S. Cl. 222—380 **23 Claims**

1. An insert for mounting on a dispensing container beneath a separate head member, said insert comprising a base, walls extending from said base in a direction normal to said base and defining a pump chamber and a dispensing duct, said pump chamber and dispensing duct being open at their ends remote said base to permit a piston carried by said head member to be introduced into said pump chamber through its open end and to permit a discharge passage in said head member to be coupled to said dispensing duct, an outlet opening in said pump chamber and an inlet opening in said duct adjacent said base and in communication with each other for transferring a flowable product from said pump chamber to said duct, an inlet flow control valve carried by said insert for controlling product flow into said pump chamber from an opening in said container, and a back flow control valve in said duct for preventing back flow of a flowable product from said duct towards said pump chamber.

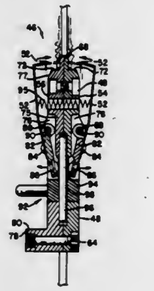


4,515,299

METHOD FOR HANDLING HOSIERY

James H. Sewell, Charlotte, N.C.; Hans Gaede, Fort Mill, S.C., and Curtis R. Ritch, High Point, N.C., assignors to Intech Corporation, Charlotte, N.C.

Division of Ser. No. 250,636, Apr. 3, 1981, Pat. No. 4,421,259.
This application Oct. 5, 1983, Ser. No. 539,297
Int. Cl.³ D06C *5/00*
U.S. Cl. 223—76 **20 Claims**



1. A method of handling hosiery comprising the steps of:
(a) placing a piece of hosiery on a form;
(b) moving a clamp mechanism upward along the length of the form until a portion of the clamp mechanism contacts and moves a bottom portion of the hosiery upward;
(c) closing clamp jaws of the clamp mechanism onto the bottom portion of the hosiery after performing step (b); and
(d) moving the closed clamp jaws, and the bottom of the hosiery held thereby, downward.

4,515,300

MULTIPLE-USE SPORTS BAG AND METHOD OF CONVERTING IT TO A BACKPACK

Carole Cohen, 6 Kingwood Dr., Poughkeepsie, N.Y. 12601

Filed Apr. 30, 1984, Ser. No. 605,390
Int. Cl.³ A45C *9/00*; **A45F** *3/04*
U.S. Cl. 224—151 **13 Claims**

1. A multiple-use sports bag comprising:
a pouch-like body having an exterior and an interior surface

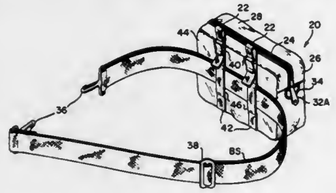
of six substantially rectangular walls, and also having an interior space being divided into a first open storage space on one side and an adjacent space next to a wall of the interior surface;

a backpack folded into the adjacent space;

a first strip means, attached to the backpack, and a second strip means, attached to the wall of the interior surface, for securing together the backpack folded into the adjacent space;

a zipper means, secured between the exterior surface and the interior surface of the pouch-like body, for providing access to the first open storage space and the adjacent space; and

a first tab means, secured to the zipper means on the exterior surface of the pouch-like body, and a second tab means, secured to the zipper means on the interior surface of the pouch-like body, for opening and closing the zipper means;



whereby, when the backpack is removed from the adjacent space, and unfolded into a use position, the pouch-like body is inverted so that the interior and exterior surfaces are reversed.

13. A method of converting a multiple-use sports bag to a backpack, comprising the steps of:

a. providing a pouch-like body with an exterior and an interior surface;

b. dividing the interior of the pouch-like body into a first open storage space and an adjacent space;

c. unzipping a first zipper secured between the exterior and the interior surface of the pouch-like body to provide an opening in the pouch-like body;

d. turning the pouch-like body inside out through the opening in the pouch-like body so that a backpack in a folded condition is accessible;

e. separating a first strip means from a second strip means in order to unsecure the backpack from a wall of the interior surface, now turned out of the pouch-like body; and

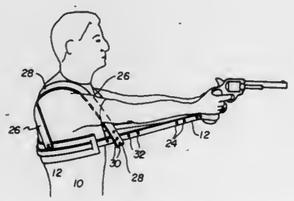
f. unfolding the backpack from the adjacent space.

4,515,301

HANDGUN ACCURACY CONTROL HARNESS

Anthony A'Costa, 2216 7th Ave., Apt. C 301, Pueblo, Colo. 81003

Filed Sep. 29, 1982, Ser. No. 426,341
Int. Cl.³ F41C *33/00*; A45F *5/00*
U.S. Cl. 224—204 **3 Claims**



1. A handgun accuracy control harness which comprises:

a wide, elongated, back strap, having right and left ends, in which said back strap extends linearly across a user's back,

a narrow strap secured to said back strap, and having a much greater length than said back strap,

said narrow strap including a loop on one end in which a handle of a handgun is to be placed during firing, and a non-looped end,

fastening means secured to said non-looped end of said narrow strap for securing said non-looped end of said narrow strap to said looped end of said strap inwardly of said loop,

a first shoulder strap secured at one end to said back strap inwardly of said right end and includes an unsecured end,

a second shoulder strap secured at one end to said back strap inwardly of said left end and includes an unsecured end,

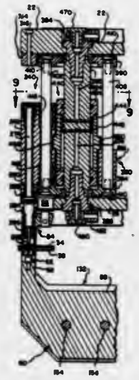
said first and second shoulder straps including equally spaced fastening means along said unsecured ends said fastening means securing said first and second shoulder straps to said narrow strap inwardly of said non-lopped end and inwardly of said looped end, respectively.

4,515,302

RIVETING MACHINE

John W. Davern, North Tonawanda, and Daniel D. Cook, Lancaster, both of, assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,824
Int. Cl.³ B21J *15/20, 15/30*
U.S. Cl. 227—58 **19 Claims**



1. In riveting apparatus comprising a frame having a main body portion and having a front end portion disposed in a first plane, means for defining a drilling and riveting axis in said frame closely adjacent and substantially parallel to said first plane, drilling means carried by said frame main body portion for drilling a rivet-receiving hole in the workpiece, and rivet inserting and forming means carried by said frame main body portion for inserting a rivet in the hole drilled in the workpiece and forming a head on the inserted rivet in co-operation with said holding and force applying means: means carried by said frame for holding a workpiece relative to said frame in a second plane substantially perpendicular to said first plane during drilling and riveting and for applying force for heading a rivet inserted in the workpiece, said holding means comprising a ram and clamp means movably carried by said frame main body portion and moved by motive means carried by said frame into and out of operative contact with one side of the workpiece, said ram and clamp means having a first section connected to said motive means, movably mounted in said frame main body portion and extending in a direction substantially parallel to said drilling and riveting axis, a second section extending from said first section at substantially a right angle thereto and toward said drilling and riveting axis, and a third section extending from said second section at substantially a

right angle thereto and toward said workpiece, said third section being located so as to be in positional alignment with said drilling and riveting axis and so as not to extend beyond said first plane through said frame front end portion.

2. In riveting apparatus comprising a frame, drilling means movably carried by said frame for drilling a rivet-receiving hole in a workpiece, and rivet inserting and forming means movably carried by said frame for inserting a rivet in the hole drilled in the workpiece and forming a head on the inserted rivet;

(a) a single fluid-operated motive means carried by said frame for selectively engaging and moving said drilling means and said rivet inserting and forming means toward and away from the workpiece;

(b) fluid circuit means for supplying fluid to operate said motive means;

(c) flow control means in said circuit for slowing the rate of fluid flow when said motive means is moving said drilling means toward said workpiece such that the rate of travel of said drilling means toward said workpiece is reduced within a predetermined distance from said workpiece;

(d) fluid by-pass means in said circuit for by-passing said flow control means when said motive means is moving said rivet inserting and forming means relative to said workpiece; and

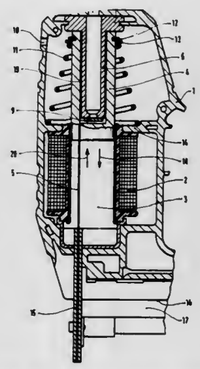
(e) control means connected in controlling relation to said flow control means and to said fluid by-pass means and responsive to which of said drilling means and said rivet inserting and forming means is engaged and moved by said motive means for operating said flow control means only when said drilling means is engaged and moved by said motive means and for operating said fluid by-pass means only when said rivet inserting and forming means is engaged and moved by said motive means.

4,515,303

ELECTRIC HAMMERING APPARATUS WITH AIR-CUSHIONED ARMATURE

Fritz Schädlich, Leinfelden-Echterdingen; Werner Rieker, Steinenbronn; Rainer Thaler, Stuttgart, and Klaus Klingenstein, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,176
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232120
Int. Cl.³ B25C *1/00, 5/02, 5/06*
U.S. Cl. 227—131 **14 Claims**



1. Electric hammering tool apparatus, particularly nailing or stapling gun, having

a housing (**1**);

a plunger element (**4**) positioned for reciprocating movement in the housing;

a solenoid coil (**2**) and a return spring (**11**) forming a motive means (**2, 11**) respectively reciprocating the plunger element in the housing,

the plunger element forming an armature (**4**) in electromagnetic cooperation with said solenoid coil;

and comprising, in accordance with the invention,

an air throttle path (**19**) located in the path of movement of the plunger element and including a check valve (**9**) permitting free movement of the plunger element independently of throttling of the plunger element in a hammering direction (**18**), under power of the motive means, while damping movement of the plunger element in a return direction and rendering effective said air throttling path;

and a hollow cylinder (**6**) forming a guide means for said armature;

means (**7**) for securing one end (**7**) of the hollow cylinder in the housing;

an air vent opening communicating the interior of the hollow cylinder with ambient air outside of the housing;

and wherein the check valve (**9**) is located at the other end of the hollow cylinder, the plunger element being a cup-shaped piston element surrounding said hollow cylinder, with clearance, said clearance defining a narrow gap forming an air throttle path (**19**).

8. Electric hammering tool apparatus, particularly nailing or stapling gun, having

a housing (**1**);

a hollow cylinder (**6**) secured at one end (**7**) in the housing;

an air vent opening (**8**) communicating the interior of the hollow cylinder with ambient air;

a solenoid coil (**2**) and a return spring (**11**);

a plunger element (**4**) positioned for reciprocating movement in the housing,

the plunger element comprising a cup-shaped armature (**4**) in electromagnetic cooperation with said solenoid coil, closely surrounding the outside of said cylinder (**6**) leaving only a narrow gap, and guided by the cylinder in its reciprocating movement,

said narrow gap defining an air throttling path (**19**);

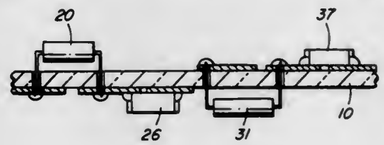
and a check valve (**9**) closing off air flow communication between the interior of the hollow cylinder (**6**) and said air vent opening (**8**) for permitting free movement of the plunger element in a hammering direction, while damping movement of the plunger element in a return direction under force of the return spring, and rendering effective said air throttling path by permitting escape of air sucked through the hollow cylinder into the interior of the cup-shaped armature only through said narrow gap defining said air throttling path (**19**).

4,515,304

MOUNTING OF ELECTRONIC COMPONENTS ON PRINTED CIRCUIT BOARDS

Jean P. Berger, Stittsville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 424,031
Int. Cl.³ H05K *3/34*
U.S. Cl. 228—136 **11 Claims**



1. A method of mounting electronic components on printed circuit boards, comprising;

inserting leaded components on a first side of a circuit board, the leads passing through holes in the circuit board, said first side being uppermost;

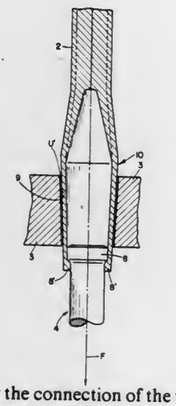
clinching the leads on a second side of the circuit board;
turning the circuit board over;
applying solder paste at the ends of the leads and on solder pads at predetermined positions on a circuit pattern on said second side through individual applicator nozzles;
positioning surface mounting components on said second side, contact positions on said components aligned with said solder pads;
reflow soldering to solder both said leads and said surface mounting components to said circuit pattern;
inserting further leaded components in said circuit board, said further components inserted on said second side of said circuit board, the leads passing through holes in the circuit board, said second side being uppermost;
clinching the leads of the further leaded components on the first side of the circuit board;
turning the circuit board over;
applying solder paste to the ends of the leads of the further leaded components through individual applicator nozzles; and
reflow soldering to solder the leads of the further leaded components to a circuit pattern on said first side, the soldering to the circuit pattern on said first side being carried out at a lower temperature than the soldering of leads and components to the circuit pattern on said second side.

4,515,305

CONNECTION OF THE TUBULAR ENDS OF A HEAT EXCHANGER MATRIX TO THE ASSOCIATED BOTTOM OF THE HEAT EXCHANGER

Klaus Hagemeister, Ebenhausen, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 445,709
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149285
Int. Cl.³ B23K *1/18*
U.S. Cl. 228—173.2 **19 Claims**



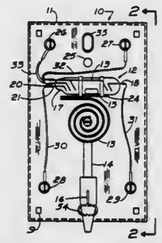
1. In a method for the connection of the tubular ends of tubes or hollow flow sections associated with a cross-countercurrent matrix of a heat exchanger to a suitably preperforated heat exchanger bottom of at least one manifold formed for the infeed or discharge of fluid into or from the respective heat exchanger matrix; the improvement comprising: deforming said tubular end by swaging or forging around an annular section of a mandrel; coating said tubular end with brazing alloy, inserting said tubular end and mandrel into an associated opening in the heat exchanger bottom, and pressing said tubular end against the adjacent wall of the opening and the upper and lower edges thereof and concurrently withdrawing the mandrel, and imparting localized heating to produce a metallurgical bond between the tubular end and the contacting portions of the heat exchanger bottom.

4,515,306

FOUR-TERMINAL ZONE THERMOSTAT

Willie T. Grant, 400 S. Simms St., Lakewood, Colo. 80228

Filed May 13, 1983, Ser. No. 494,411
Int. Cl.³ G05D *23/19*
U.S. Cl. 236—9 A **12 Claims**



1. Thermostatic means electrically interlocking fuel control means of heating/cooling means to motor means of automatic damper means, said damper means regulating and controlling a heating/cooling medium flowing from said heating/cooling means; said thermostatic means simultaneously operating said fuel control means and damper means; said thermostatic means comprising:

(a) switch means, said switch means having thermostatic switch means, said thermostatic switch means having four terminals, said terminals being electrically interconnected in selective combinations by a movable switch operator; said switch means, having connection to and, operating said fuel control means and said motor means in cooperation with motor control means;

(b) sensing means, said sensing means having a heat sensing element attaching to a movable shaft and an electric heater operable by current flow through said switch means;

(c) support means, said support means comprising a mountable base and hardware; said support means supporting said sensing means, said switch means and covering means; said covering means having temperature measuring means, light reflecting means, and temperature setting indicating means; said base having a separate plate mountable on an external surface and supporting said base;

(d) indicating means, said indicating means comprising light means electrically interconnecting with said switch means and communicating the operational status of said heating/cooling means; said temperature measuring means communicating a present room temperature; said temperature setting indicating means communicating a boundary condition.

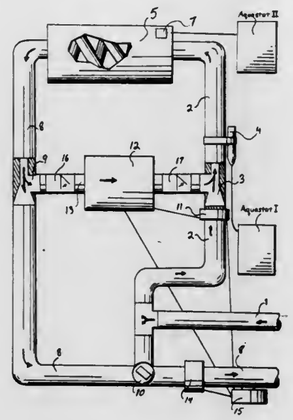
4,515,307

HOT WATER CONTROL SYSTEM

Andrew Ribaudo, Jr., 1213 Hyman Ave., Bay Shore, N.Y. 11706

Filed Dec. 12, 1983, Ser. No. 560,244
Int. Cl.³ F22B *27/00;* **F24D** *3/08*
U.S. Cl. 236—25 R **4 Claims**

1. A control system for a domestic hot water heating system having an input conduit, a cold water source to said input conduit, an output conduit, and a heating unit for heating water from said input conduit and providing hot water to said output conduit, a bypass conduit for the diversion of hot water from said output conduit to said input conduit, a first temperature detecting means located in said input conduit downstream from said bypass conduit connected to a mechanism for turning on and off said heating unit in response to detection of a predetermined first temperature level, a diverting means for diverting hot water from the output conduit, through the bypass conduit to the input conduit, a pressure switch located



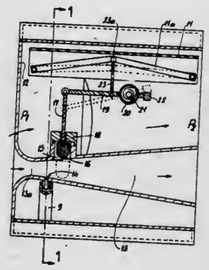
in said output conduit for detecting a first predetermined pressure level indicating a low demand for hot water from said output conduit.

4,515,308

FLOW STABILIZER FOR A VENTILATION DUCT

Pierre Jardinier, Gournay, and Jack Simonnot, Ozoire la Ferriere, both of France, assignors to Societe d'Etudes et de Recherches de Ventilation et d'Aerauliques, Gournay, France

Filed Feb. 1, 1983, Ser. No. 462,951
Claims priority, application France, Feb. 5, 1982, 82 01903
Int. Cl.³ F24F *13/08*
U.S. Cl. 236—49 **7 Claims**



1. A flow stabilizer for a ventilation duct, of the type comprising a body mountable in the duct, having at least a main duct, a chamber including therein a deformable bag in the main duct and a spring associated with the bag to nomally maintain the chamber in a state of minimum volume, a seat supporting the chamber and having an opening for entrance and exit of air into and out of the chamber, and means for fitting the seat to the body, the respective dimensions of the chamber and of the crosswise sections of the main duct being such that, under the action of pressure differences existing upstream and downstream, the variations of volume of the chamber which result therefrom modify the section for passage of the air in the space made between the walls of the chamber and those of the main duct, the improvement comprising:

a pressure sensor exposed to the flow of air in said main duct;

said opening for the chamber being interconnected by auxiliary pipe means to said pressure sensor, said pressure sensor including means for amplifying dynamic pressure resulting from the flow of air,

means, sensitive to the variations of a predetermined parameter other than pressure, for affecting at least one of the amplifying means or the position of the sensor, and

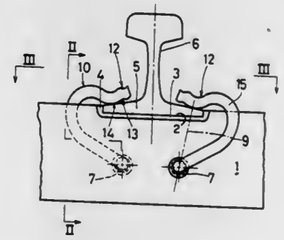
means, positioned downstream of said pressure sensor and coupled to said affecting means, for modifying volume of the deformable bag and hence the flow rate through the main duct of said body.

4,515,309

RAIL FASTENER ASSEMBLY AND COMPONENTS THEREOF

Erich F. Gehrke, Krugersdorp, South Africa, assignor to BTR South Africa Limited, Randburg, South Africa

Filed Apr. 28, 1982, Ser. No. 372,832
Claims priority, application South Africa, Apr. 29, 1981, 81/2832
Int. Cl.³ E01B *9/28*
U.S. Cl. 238—349 **13 Claims**



1. A rail fastener assembly comprising a sleeper having an upper support surface defining a bearing zone for receiving transversely extending rails, two transverse sockets extending from an outer end thereof to an inner end thereof into the sides of the sleeper at positions spaced downwardly from the upper support surface thereof, and wherein the sockets are each located beneath the portion of the sleeper supporting said rail such that the axis of each socket is located inwardly of a line extending at right angles to the upper surface within the bearing zone on the appropriate rail flange of the rail foot adjacent its outer extremity, a spring clip co-operating with each socket and having a spigot end rotatably received within the associated socket and a shaped region connected to said spigot end by an interconnecting length, said shaped region adapted to bear on the upper surface of the rail foot above the socket and outside the upper surface of said sleeper in which said rail is supported and wherein the interconnecting length of spring steel is of arcuate shape and designed to provide a required degree of resilience, said spring clip being rotatable about the axis of said spigot end between operative and inoperative positions.

4,515,310

SPRAYING APPARATUS AND METHOD

Robert W. Hengesbach, 27331 Tungsten Rd., Euclid, Ohio 44132

Continuation-in-part of Ser. No. 313,456, Oct. 21, 1981, abandoned. This application Jun. 1, 1983, Ser. No. 499,821
Int. Cl.³ B05B *7/30*
U.S. Cl. 239—8 **25 Claims**

1. A spraying apparatus, comprising:

(a) a vessel defining a pressurizable chamber having a lower region for receiving a quantity of liquid to be sprayed, and an upper region for receiving pressurized carrier gas for pressurizing the contents of the chamber;

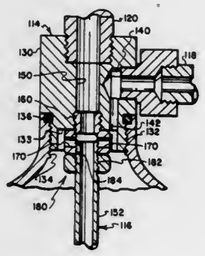
(b) inlet means for communicating the upper region with a source of pressurized carrier gas;

(c) nozzle means for receiving a mixture of pressurized

carrier gas and liquid from the vessel for discharge as a spray,

(d) outlet means for ducting a pressurized mixture of liquid from the lower region and carrier gas from the upper region along a common path of flow for discharge through the nozzle means as a spray, the outlet means including:

(i) elongate tubular means defining a tubular passage extending from the lower region into the upper region, the tubular means having at least one liquid entry opening communicating the tubular passage with the lower region for admitting liquid under pressure from the lower region into the tubular passage, and having at least one gas entry opening communicating the tubular passage with the upper region for admitting carrier gas under pressure from the upper region into the tubular passage;



(ii) passage-defining means cooperating with the tubular means for defining a common path of flow for liquid admitted to the tubular passage through the liquid entry opening, and for gas admitted to the tubular passage through the gas entry opening, the common flow path extending from the location of the gas entry opening to the nozzle means; and,

(e) adjustment means for controlling the effective size of the gas entry opening to selectively vary the rate at which liquid is ducted along the common flow path, the adjustment means including first and second means which are threadably interconnected and which are relatively movable, with the gas entry opening being defined between portions of the relatively movable first and second means to enable the effective size of the gas entry opening to be controlled by threading the first and second means to move the portions toward and away from each other for controllably obstructing the flow of pressurized carrier gas through the gas entry opening.

4,515,311

LIQUID WASTE APPLICATION SYSTEM WITH SLUDGE GUN

Harry H. Takata, Edina, Minn., assignor to Ag-Chem Equipment Co., Inc., Minneapolis, Minn.

Filed May 6, 1983, Ser. No. 492,475

Int. Cl.³ A01G *25/09*

U.S. Cl. 239—172 **8 Claims**

6. Distribution apparatus for surface applying relatively viscous liquid soil treatment materials comprising in combination:

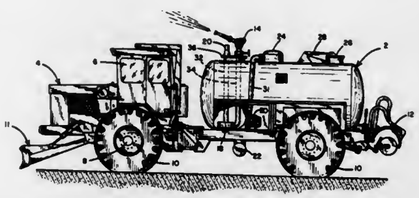
a. a mobile distribution tank for containing a quantity of soil treatment materials, including in excess of 10% solids, under positive and negative pressure conditions;

b. means for transporting said tank over a variety of ground conditions and terrains;

c. air pump means selectively operable during a loading mode for vacuum loading said tank and for alternatively pressurizing said tank, during a distribution mode;

d. an inlet port coupled to said tank for receiving treatment materials from an external source during said loading mode;

e. pump means operative during said distribution mode for pumping said treatment materials from said tank at flow rates of several hundreds of gallons per minute; and



f. a turret mounted, hydraulically directionally controllable sludge gun for receiving the pumped materials and ejecting the treatment materials over distances in excess of one hundred feet during said distribution mode in a clog and cavitation free manner.

4,515,312

APPARATUS FOR DISPOSAL OF SLUDGE IN A FLOATING ROOF TYPE OIL TANK

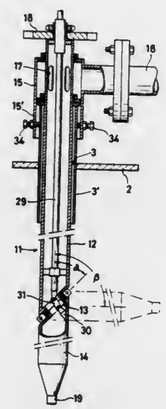
Nobuyuki Manabe, Fujisawa, and Takahiro Goto, Yachiyo, both of Japan, assignors to Taiho Industries Co. Ltd. and O.P.E. Co. Ltd., both of Tokyo, Japan

Division of Ser. No. 366,319, Apr. 7, 1982, Pat. No. 4,426,233. This application Jan. 3, 1984, Ser. No. 567,881

Claims priority, application Japan, Sep. 11, 1981, 56-142446; Dec. 28, 1981, 56-209734

Int. Cl.³ B05B *3/12*

U.S. Cl. 239—227 **19 Claims**



1. Fluid spurting apparatus, comprising:

support means;

means mounting a first cylindrical member within said support means for axial and rotary movement relative to said support means;

means rotatably mounting a second cylindrical member upon said first cylindrical member for movement between two extreme positions, and second cylindrical member having a fluid spurting nozzle mounted thereon, wherein when said second cylindrical member is disposed in a first one of said two extreme positions, said first and second cylindrical members are coaxially aligned, and when said second cylindrical member is disposed in a second one of said two extreme positions, said first and second cylindrical members are not coaxially aligned; and

means for rotating said second cylindrical member relative to said first cylindrical member between said two extreme positions comprising a control rod extending substantially axially within said first cylindrical member and operatively connected to said second cylindrical member.

4,515,313

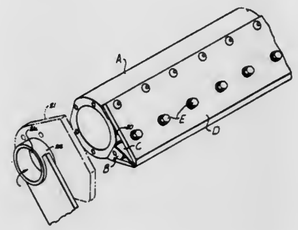
AIR KNIFE APPARATUS

Kenneth M. Cavanagh, Warwick, R.I., assignor to Marshall and Williams Company, Greenville, S.C.

Filed Dec. 27, 1982, Ser. No. 452,884

Int. Cl.³ B05B *1/32*

U.S. Cl. 239—455 **2 Claims**



1. An air knife including an elongated plenum having a longitudinal opening comprising:

a longitudinal support on one side of said opening;

a longitudinal plate forming a flexible baffle extending on said one side of said opening and being fixed across said support adjacent said opening forming one side of a longitudinal orifice opposite said opening;

a longitudinal flexible blade fixed to said plenum, along the other side of said opening presenting a free edge portion opposite said baffle;

threaded means spaced along said opening extending between said blade and said support for drawing the free edge portion of said blade toward and away from said baffle varying the size of said orifice permitting adjustment therealong; and

said baffle and said blade presenting a converging substantially streamlined flow path.

4,515,314

LIQUID SPRAY APPARATUS

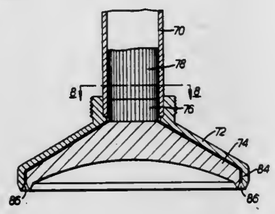
William J. P. Currall, Swindon, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Nov. 1, 1982, Ser. No. 438,388

Claims priority, application United Kingdom, Nov. 3, 1981, 8133077; Nov. 14, 1981, 8134383

Int. Cl.³ B05B *1/34*

U.S. Cl. 239—466 **10 Claims**



1. Liquid spray apparatus comprising a liquid supply duct, a surface at one end of the duct onto which the liquid is adapted to impinge, a nozzle for distributing the liquid after it has passed over the surface, means for imparting a swirling motion to the liquid and means for varying the flow rate of liquid through the liquid spray apparatus, in which the means for varying the flow rate of liquid through the liquid spray apparatus comprises first and second splined members located within a hollow portion of the liquid supply duct, the second splined member abutting the end of the first splined member, the outer ends of the splines of each splined member cooperating with the walls of the duct so that the liquid is constrained to flow along the spaces between the splines, the first and second splined members being relatively rotatable such that the splines on the first and second members can be moved in and out of alignment whereby the rate of flow of liquid through the spaces is varied.

4,515,315

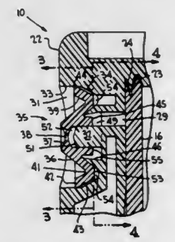
NOZZLE INSERT FOR A FLUID DISPENSER

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Jun. 8, 1983, Ser. No. 502,275

Int. Cl.³ B05B *1/34*

U.S. Cl. 239—491 **5 Claims**



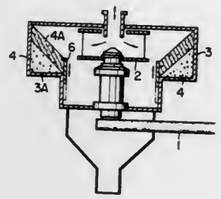
1. An actuator head for a fluid dispenser, the head comprising a body having an open bore and a discharge passage leading to said bore, said body being of a material of predetermined hardness and having a cylindrical probe concentric to said bore, a nozzle insert seated within said bore on said probe and defining a swirl chamber with said probe, said bore being defined by a smooth cylindrical wall of constant diameter, said insert comprising a circular body having a central portion containing a discharge orifice in communication with said swirl chamber, an annular, conical flange diverging in an outward direction of said bore and being connected to said central portion along a circular hinge line for radial flexing movement about said hinge line and without deformation upon being seated within said bore, an inner conical surface of said flange forming an acute angle with a confronting outer surface of said central portion, a terminal end wall and an outer conical surface of said flange together defining an acute angle therebetween which presents a sharp outer peripheral edge of a diameter slightly greater than said constant diameter in a relaxed condition of said flange such that said flange is caused solely by said wall of said bore to flex radially inwardly about said hinge line, without deformation, upon seating said insert within said bore, and said insert body being of a harder material than that of said head body material such that in a seated position of said insert within said bore said sharp outer edge penetrates into said head body material as said flange flexes by itself, without deformation, radially outwardly about said hinge line, said conical flange thereby defining a circular, self-locking pawl for alone positively locking and sealing said insert in said seated position within said bore, and any force applied in said outward direction of said bore tending to further penetrate said sharp edge into said body material.

4,515,316

METHOD OF WITHDRAWING PARTICULATE MATERIAL FROM DEAD-BED OF CENTRIFUGAL CRUSHER AND CENTRIFUGAL CRUSHER SUITABLE FOR CARRYING THE METHOD INTO PRACTICE

Mitsuru Kawaguchi, Kure, Japan, assignor to Kotobuki Engineering & Mfg Company, Ltd., Kure, Japan

Filed Apr. 22, 1983, Ser. No. 487,467
Claims priority, application Japan, Apr. 27, 1982, 57-71964
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—5 **9 Claims**



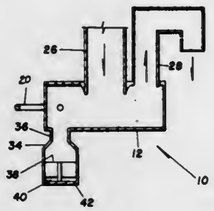
1. A method for crushing material, comprising:
feeding material to be crushed to a rotor within and spaced from an annular crushing chamber;
throwing said material tangentially from said rotor by centrifugal force to collide with a dead-bed of particulate material in the crushing chamber;
retaining said thrown material in the crushing chamber for a time period sufficient so that said thrown material serves as a dead bed for further material thrown from said rotor and is crushed further by said further thrown material; and
discharging said thrown material after said retaining step, substantially all of the material thrown from the rotor being subjected to said retaining step.

4,515,317

METHOD OF AND APPARATUS FOR GRINDING SOLID ORGANIC WASTE MATERIAL ENCOUNTERED IN SEWAGE WASTE AND WASTE WATER RECLAMATION

David M. Sparkman, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 344,849, Feb. 1, 1982, abandoned. This application Nov. 18, 1983, Ser. No. 553,201
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—5 **5 Claims**



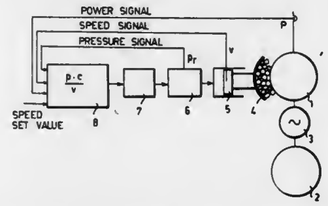
1. A process for grinding solid organic waste material encountered in sewage waste treatment and waste water reclamation into homogeneous sized particles suitable for pumping and further processing in a waste treatment system comprising,
tangentially injecting into a shallow cylindrical processing zone at a plurality of positions spaced around the periphery thereof jet streams of incompressible fluid thereby to form within the processing zone a substantially planar fluid vortex having a low pressure region at the center thereof, the axis of the cylindrical processing zone being disposed in a generally vertical direction and being substantially coincident with the center of the vortex,
introducing under the force of gravity only influent containing solid waste material to be ground into the low pressure region of the vortex thereby to cause the waste material to be drawn and swept up into the vortex and spun around the cylindrical processing zone and to allow centrifugal force to force the waste material to the peripheral region of the processing zone so that the waste material is repeatedly passed directly through the jet streams of fluid and is cut up into progressively smaller particles as the waste material is towed around the chamber by laminar frictional drag of the waste material in the flow stream of the vortex until the surface areas of the particles of waste material are reduced to a size such that frictional drag forces are at or below molecular adhesion forces which tend to bind the particles of waste material to the flow stream of the vortex, and
discharging against the force of gravity from a peripheral region of the cylindrical processing zone, in a fluid suspension, particles of waste material having surface areas of such reduced size.

4,515,318

METHOD FOR CONTROLLING A PISTON FED WOOD GRINDER

Aslak Savonjousi, Espoo, Finland, assignor to Kymi-Stromberg Oy, Helsinki, Finland

PCT No. PCT/FI80/00005, § 371 Date Jul. 1, 1981, § 102(e) Date Jul. 1, 1981, PCT Pub. No. WO81/01303, PCT Pub. Date May 14, 1981
Continuation of Ser. No. 280,006, Jul. 1, 1981, abandoned. This PCT application Nov. 5, 1980, Ser. No. 561,139
Claims priority, application Finland, Nov. 8, 1979, 793500
Int. Cl.³ B02C *25/00*
U.S. Cl. 241—28 **5 Claims**



1. A method for controlling a piston fed wood grinder, wherein a plurality of wood charges are fed by pressure media driven pistons against a motor driven grinding stone comprising the steps of driving each of said pistons toward said grinding stone, determining a value for the actual speed of movement between selected positions of each of the pistons by direct digital measurement and comparing the value of the actual speed with a predetermined value indicative of a desired speed, simultaneously comparing the consumption of power by the motor driving grinding stone with a predetermined limit value indicative of the overload of the motor driving said grinding stone, controlling the pressure media driving said piston as a function of the difference between the value of the actual speed of the piston and said desired speed value to maintain said piston at a substantially constant speed so long as the power consumption is below the predetermined overload limit and upon said power consumption reaching the overload limit automatically shifting the control of the pressure media driving said piston as a function of the power consumption to vary the speed of said piston until the power consumption falls below the predetermined overload limit and thereafter returning control of said pressure media driving said piston as a function of the difference between the value of the actual speed of said piston and the predetermined value of the desired speed.

4,515,319

DUAL-INCLINED LIFTERS FOR AUTOGENOUS MILLS

Yun-Song Wei, 1005 Dana Ave., Apt. 9, Cincinnati, Ohio 45229

Continuation-in-part of Ser. No. 396,494, Jul. 8, 1982, abandoned. This application Feb. 10, 1984, Ser. No. 578,870
Int. Cl.³ B02C *17/22*
U.S. Cl. 241—284 **9 Claims**



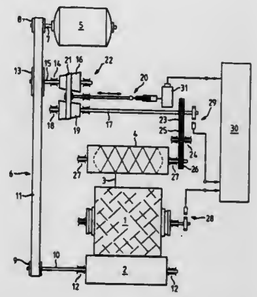
1. In an autogenous mill including a casing and a number of lifters on both shell and liners within a casing, the improvement comprising said lifters having (1) rock lifter bars which are inclined along the direction of motion of the mill, said rock lifter bars having center lines which will substantially coincide with the mean locus of the falling rocks within the mill, said mean locus being substantially a logarithmic spiral, and said center lines being straight for better resistance to buckling and (2) carriers for withdrawal of crashed fines, said carriers having an angle of inclination smaller than that of said rock lifter bars, further in said carriers having their surfaces which will allow the mean locus of the crashed fines to pass through the center of the mill or the suction pipe.

4,515,320

TRAVERSE WINDING FRAME FOR PRODUCING THE WINDING OF A PACKAGE

Walter Slavik, Horgen, and Arthur Rebsamen, Sellenburen, both of Switzerland, assignors to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Sep. 27, 1983, Ser. No. 536,323
Claims priority, application Switzerland, Sep. 27, 1982, 5689/82
Int. Cl.³ B65H *54/08, 54/28*
U.S. Cl. 242—18 DD **5 Claims**



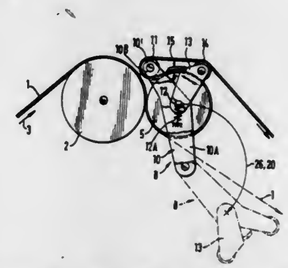
1. A transverse winding frame for precision winding of thread into a package, comprising:
package support means for rotatably supporting a package to be wound with thread;
a rotatably mounted friction roller for rotatably driving the package;
a rotatably mounted cam shaft supporting a thread laying device;
a single constant-speed drive motor for powering rotation of said friction roller and said cam shaft;
a belt transmission coupling said drive motor to said friction roller and said cam shaft;
infinitely variable transmission means, coupling said belt transmission to said cam shaft, for varying rotation speed of said cam shaft, said variable transmission means including a servomotor for operating said variable transmission means;
first and second tachometers operatively coupled to said package support means and said cam shaft, respectively, for generating output signals representative of rotation speeds of the package and said cam shaft; and
control means, coupled to said tachometers and said servomotor, for comparing said output signals of said tachometers and for transmitting a control signal to said servomotor dependent upon said output signals and upon preprogrammed helix angle tolerances and winding ratios.

4,515,321

METHOD TO CUT OFF A PREFERABLY BAND SHAPED RUNNING WEB OF TEARABLE MATERIAL AND MEANS TO CARRY OUT THE METHOD

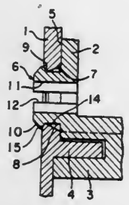
Sture Kahlman, Strandvägen 22, 666 00 Bengtsfors, Sweden

Filed Mar. 15, 1983, Ser. No. 475,480
Claims priority, application Sweden, Mar. 15, 1982, 8201606
Int. Cl.³ B65H *19/20, 35/10;* B26D *1/12;* B26F *3/02*
U.S. Cl. 242—56 R **9 Claims**



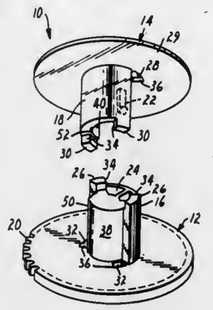
1. A method of cutting off a band-shaped running web of tearable material and feeding an end of the web of material to the reel around which the web of material shall be wound and on which it shall be supported respectively, comprising the steps of moving a reel into contact with said running web, deviating a portion of said running web which is out of contact with said reel around at least one deviation means at a predetermined distance from the reel whereby said web of material is wound around the reel, moving a cutting apparatus so that it can act upon a portion of the web of material which runs between the reel and said deviation means, said cutting apparatus having a point for perforating the web of material at the center portion of the web, moving said cutting apparatus towards said web of material in the direction of the movement of the web along the reel at a speed which is lower than the speed of the forward feed of the web to perforate said web, so that the web of material during its continued forward feed around the reel toward the deviation means is torn apart from the area of perforation of the material backwards against the movement of the web of material in a direction towards the respective two lateral edges of the web of material, and guiding a free end of the web of material thus cut-off by said cutting apparatus along the reel so that it is introduced between the reel and a portion of the web of material which runs to the reel.

4,515,322
REEL FOR A MAGNETIC TAPE
Haruo Shiba; Yoshiya Sakata, and Kimio Tanaka, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Sep. 8, 1983, Ser. No. 530,356
Claims priority, application Japan, Sep. 22, 1982, 57-142583[U]
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—71.8 **7 Claims**



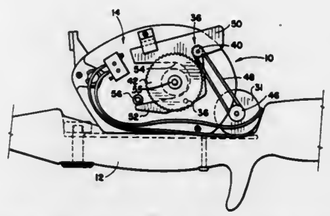
1. A reel for magnetic tape, said reel comprising:
(a) a flange having at least one fitting hole extending therethrough from a first side thereof to a second side thereof, said at least one fitting hole having a certain shape and certain dimensions at the first side of said flange, having a first tapered peripheral surface which tapers radially inwardly from the first side of said flange until the radial dimensions of said at least one fitting hole are less than they are at the first side of said flange and a second tapered surface which tapers radially outwardly until said at least one fitting hole reaches the second side of said flange, and
(b) a reel hub having a peripheral surface on which a magnetic tape is wound during use of the reel, said reel hub having a planar surface which bears forcibly against the first side of said flange and a boss which extends into said at least one fitting hole, said boss having a first tapered peripheral surface which bears forcibly against the first tapered peripheral surface of said at least one fitting hole during assembly of said hub and said flange and a second tapered peripheral surface which bears forcibly against the second tapered surface of said at least one fitting hole once said reel hub and said flange have been assembled, said boss being sized and shaped to fit through said at least one fitting hole but having maximum radial dimensions between its first and second tapered surfaces which exceed the minimum radial dimensions of said at least one fitting hole between its first and second tapered surfaces, said boss having at least two at least generally radially oriented, axially extending dividing slots therein which divide said boss into segments and which permit the segments of said boss to flex radially inwardly as said boss is forced through said at least one fitting hole during assembly, the axial distance between the planar surface of said reel hub and the second tapered surface of said boss being such that the segments of said boss are flexed radially inwardly when said flange and said reel hub are in their assembled condition,
whereby said flange and said reel hub are firmly held together in their assembled condition by engagement of the second tapered surface on said boss with the second tapered surface in said at least one fitting hole and by engagement of the first side of said flange and the planar surface of said reel hub.

4,515,323
TAPE SPOOL
Robert M. Rood, Woodbury, and James J. Wulfing, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 17, 1983, Ser. No. 542,415
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—74.1 **12 Claims**



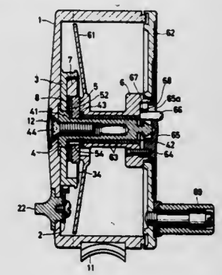
9. A tape spool having a cylindrical tape-winding surface and comprising two hub parts and means for wedging said hub parts together to define a narrow passage that opens through the tape-winding surface and pinches an end of a tape member, wherein the improvement comprises:
a tubular member defining one of said hub parts and having a generally circular interior wall, an exterior wall defining said cylindrical tape-winding surface and a slot which connects said interior and exterior walls to partially define said passage that opens through said tape-winding surface;
a cylindrical member defining the other of said hub parts and having an exterior surface spaced from said interior surface of said tubular member, when said hub parts are wedged together, to define the remainder of said passage; and
at least one tongue extending from said exterior surface of said cylindrical member and at least one corresponding groove in said interior wall of said tubular member, said tongue and said groove being tapered axially with respect to said tubular and said cylindrical members to progressively pinch said end of said tape member as said hub parts are wedged together.

4,515,324
BATTERY POWERED FISHING REEL
Felix R. Barton, 123 E. 11th, Pawhuska, Okla. 74056
Filed Jun. 24, 1983, Ser. No. 507,348
Int. Cl.³ A01K *89/017, 87/06*
U.S. Cl. 242—84.1 A **6 Claims**



1. A fishing reel comprising spool means having a line wound thereon, drive means operably connected with the spool means for selective actuation thereof to facilitate winding of the line thereon, said drive means comprising power means secured in the proximity of the spool means, gear train means interposed between the power means and the spool means and having alternate engaged and disengaged positions for providing the selective activation of the spool means in one direction upon energization of the power means, switch means operably connected with the power means for energization thereof, lever means interposed between the power means and switch means and operably connected with the gear means, the lever means being selectively movable for providing the engaged and disengaged positions of the gear train means and intermittent actuation of the switch means for intermittent energization of the power means, and wherein the lever means carries at least one gear of the gear train means and includes means for engaging the switch means whereby the one gear is brought into operative engagement with the gear train prior to engagement of the switch means.

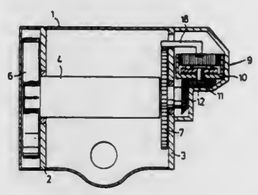
4,515,325
FLY REEL
Takeshi Ito, Nagano, Japan, assignor to Coret & Co. Ltd., Tokyo and Machine Engineering Co., Ltd., Nagano, both of, Japan
Filed Oct. 25, 1982, Ser. No. 436,478
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—84.51 R **3 Claims**



1. In a fly reel wherein a brake is supported on a frame, a brake wheel and a spool are coaxially supported on a shaft, and a one way clutch is interposed between the brake wheel and the spool, the improvement comprising; a clutch wheel rotating integrally with the spool, a recessed portion inside the brake wheel, said clutch wheel being positioned inside said recessed portion, at least one of the outer periphery of the clutch wheel and the peripheral wall of the recessed portion of the brake wheel including recessed and protruded portions, so that the width of an annular gap formed therebetween varies to become larger and smaller, roller means having an intermediate width with respect to the minimum and maximum widths of said annular gap and being inserted into said gap, reversible spring means for urging said roller means in the small width direction of said gap, and mounting means on said brake wheel for selectively mounting said spring means in one of two positions for right-handed and left-handed, respectively, operation of the reel, the directions of urging being in opposite directions for the two positions, whereby in one rotational direction the clutch wheel is engaged by the brake wheel, and in the opposite rotational direction the clutch wheel is disengaged from said brake wheel, the rotational directions being different for said two positions of said spring means.

4,515,326
ARRANGEMENT FOR LOCKING THE WINDING DEVICE OF A VEHICLE SAFETY-BELT
Hans I. R. Karlsson, Vintervägen 17, S-175 40 Järfälla, Sweden
Filed Aug. 25, 1983, Ser. No. 526,361
Claims priority, application Sweden, Sep. 13, 1982, 8205212
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **16 Claims**

1. A locking arrangement for a winding device of a vehicle safety-belt, said winding device including a spindle journalled for rotation in two, mutually opposite directions, a strap which forms a part of said belt, being connected to said spindle and arranged to be wound onto and unwound from said spindle, and spring means coupled to said spindle so as to be tensioned when the spindle rotates in the strap-unwinding direction and to drive the spindle in the opposite direction to wind the strap thereonto,
said locking arrangement comprising:
a first body arranged for rotation in two mutually opposite directions around a stationary rotary axis and connected to said spindle so as to rotate about said rotary axis with rotation of the spindle, said first body having a side surface extending at right angles to said rotary axis;
a second, circular-cylindrical body arranged for free movement in all directions relative to said first body and having a side surface located adjacent to and parallel with said side surface of said first body, and subjected to a force acting in a direction towards said first body;
said side surface of one of said bodies being provided with a plurality of recesses which are symmetrically located in relation to the center axis of said surface, each of said recesses having a substantially circular configuration and a depth which decreases gradually in all directions from the center of said recess;
a spherical ball having a diameter exceeding the greatest depth of said recesses being located in each of said recesses;

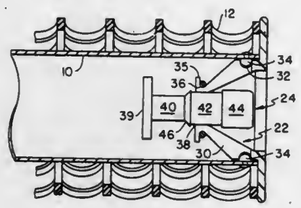


said side surface of the other one of said bodies being provided with a recess for accommodating a respective one of said balls, said recess being arranged to accommodate part of that portion of the ball protruding beyond said side surface of said one body;
a stationary cylindrical surface coaxially surrounding said moveable, second body at a distance from the cylindrical surface of said body, said stationary cylindrical surface and the cylindrical surface of said moveable body being so arranged that the moveable body is prevented from rotating in a direction corresponding to the direction in which said strap is unwound from said spindle, when said cylindrical surface of the moveable body is brought into contact with said stationary cylindrical surface;
a locking mechanism which can be activated to lock said spindle against rotation in said direction corresponding to the direction in which said strap is unwound; and
coupling means operatively coupling said moveable second body to said locking mechanism in a manner activating said locking mechanism when said second body is moved axially through a given shortest distance away from said rotatably journalled first body.

4,515,327
YARN BOBBIN
Fred C. Ashley, Columbus, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Mar. 26, 1984, Ser. No. 593,675
Int. Cl.³ B65H *75/10, 75/14*
U.S. Cl. 242—118.3 **9 Claims**

1. A yarn take-up apparatus comprising: a hollow, elongated cylinder with an upstanding flange on one end, a plurality of detents on the inside of said cylinder at the other end, a yarn winding tube telescoped over and substantially coextensive with said cylinder and an end cap secured in said other end of said cylinder preventing said yarn winding tube from being

removed from said cylinder, said end cap having a body portion and a locking member slidably mounted in said body portion, said body portion having a first upstanding flange engaging the end of said cylinder and a second portion extending into the interior of said cylinder, said second portion having a groove in the periphery thereof engaging said detents, said second portion having a plurality of fingers forming collectively a circular opening around said locking member, said locking member in one position spreading said fingers to secure said groove against said detents and in a second position allowing the end to be removed from said cylinder.

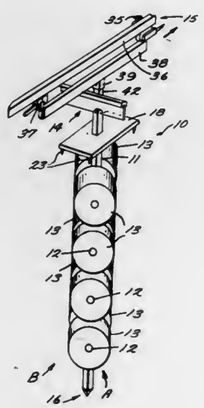


4,515,328

INCREMENTAL MODULAR CREEL SYSTEM

William M. Payne, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 17, 1983, Ser. No. 552,799
Int. Cl.³ B65G *7/00;* **B65H** *49/14, 67/02;* **D01H** *9/00*
U.S. Cl. 242—131 **21 Claims**



11. A creeling system comprising:

a plurality of creel modules, each module having one or a plurality of yarn package-receiving creel pins associated therewith, formed in at least one row;

means for loading yarn packages onto said creel pins at a loading station;

means for conveying said modules to and from said loading station;

a stationary creel frame for receipt of a plurality of said modules;

means for transferring said modules from said conveying means to said stationary creel frame, and from said creel frame to said conveying means; and

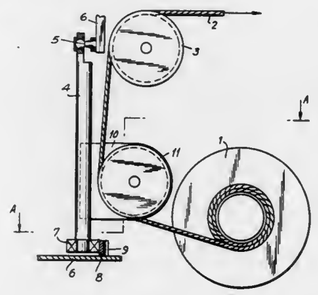
cooperating mounting means on each of said modules and said creel frame for holding said modules in position on said creel frame for removal of yarn from the yarn packages received by said modules.

4,515,329

FEED DEVICE FOR GUIDING A ROPE ONTO A WINDING DRUM

Johannes Sandvik, Stokke, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Nov. 7, 1983, Ser. No. 549,168
Claims priority, application Norway, Nov. 15, 1982, 823804
Int. Cl.³ B65H *57/28*
U.S. Cl. 242—157.1 **4 Claims**



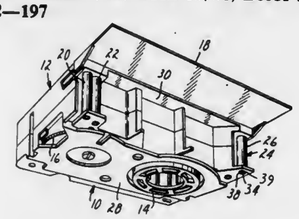
1. A feed device for guiding a rope from a fixed frame pulley onto a winding drum mounted on a frame wherein said device comprises a fixed frame pulley, a pendulum which is spherically pivoted at one end to the frame and at its second end has secured a roller which rolls on a curved path on a flange mounted on the frame said pendulum having mounted thereon at least one guide pulley for the rope whereby the guide pulley may be moved along the axis of rotation of the winding drum and toward and away from said axis to maintain a substantially constant distance of rope between said fixed frame pulley and winding drum.

4,515,330

TAPE ROLLER FOR A TAPE CASSETTE

James J. Wulfing, Afton, and Robert M. Rood, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1983, Ser. No. 542,416
Int. Cl.³ G03B *1/04;* **G11B** *15/32;* **B65H** *17/22*
U.S. Cl. 242—197 **7 Claims**



1. Tape roller for a tape cassette defined by a housing having two broad parallel walls, said roller comprising:

two coaxial bearings extending toward each other from said housing walls, said bearings each including a taper which narrows with increasing distance from its respective wall;

at least one of said housing walls including a transverse wall surrounding its associated bearing to define a housing wall hole having dimensions which afford a clearance between said transverse wall and said associated bearing;

a plurality of resilient bridge members connecting said transverse wall defining said hole and said associated bearing, said bridge members permitting resilient movement of said associated bearing in a direction perpendicular to the planes of said housing walls while restricting movement of said associated bearing parallel to the planes of said housing walls;

a sleeve including tubular ends each having an inner diameter sized to contact each of said bearing tapers, said sleeve having a length sufficient to cause said resilient movement of said associated bearing when said housing walls are assembled to define said tape cassette;

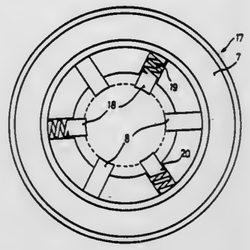
said resilient movement of said associated bearing creating a force which maintains said tapers in contact with said sleeve.

4,515,331

HUB FOR MAGNETIC TAPE CASSETTES, ESPECIALLY COMPACT CASSETTES, AND MAGNETIC TAPE CASSETTE POSSESSING ONE OR MORE SUCH HUBS

Werner Stümpfl, Ludwigshafen; Günter Bettinger, Schifferstadt; Friedrich Engel, Frankenthal; Horst Fitterer, Mannheim; Norbert Kreimes, Ludwigshafen; Dietmar Pfefferkorn, Hemsbach; Norbert Schäffer, Diedesheim, and Kurt Schmidts, Kehl, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 316,072
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 8028933[U]; Feb. 19, 1981, 8104557[U]; Feb. 19, 1981, 8104556[U]
Int. Cl.³ G11B *23/04*
U.S. Cl. 242—199 **12 Claims**



1. A hub for magnetic tape cassettes, especially for compact cassettes, for use with a transport apparatus having a drive spindle provided with projecting keys, said hub being displaceable in said cassette in at least the radial direction, and comprising a ring member on whose inner periphery there are arranged teeth for driving engagement by said projecting keys on the drive spindle,

wherein said teeth include, in circumferentially spaced relation, a plurality of immovable teeth which are radially spaced from the spindle, and also, in the same plane with said immovable teeth, at least one movable tooth which is spring-biased against the ring member to exert radial pressure on the drive spindle, so as to resiliently couple said hub to said spindle and thereby counteract abrupt displacements of the hub relatively to the cassette and hence reduce corresponding fluctuations in pitch during the operation of the cassette.

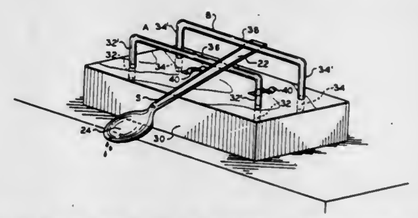
4,515,332

CULINARY UTENSIL SUPPORT

Madelon L. Scharfy, P.O. Box 249, Lake Arrowhead, Calif. 92352

Filed Jan. 25, 1982, Ser. No. 342,158
Int. Cl.³ A47G *21/14*
U.S. Cl. 248—37.3 **3 Claims**

1. The combination of a support and a culinary utensil wherein said utensil includes a food manipulating portion and an interconnected handle portion; and said support includes a pair of parallel spaced apart horizontally extending, substantially coextensive support members, one of the support members having a horizontally extending upwardly facing utensil engaging portion of straight line configuration and the other of the support members having a horizontally extending downwardly facing utensil engaging portion of straight line configuration, the downwardly facing utensil engaging portion being at a level higher than the level of the upwardly facing utensil engaging portion, and a body means for maintaining said support members and including a bottom surface for supporting said support members in spaced relation above a supporting surface, and each support member including downwardly extending columnar members at ends thereof releasably interconnected with said body means, whereby said utensil is disposed at a substantially right angle to said support members with the handle portion thereof adapted to extend between said support members with the handle portion thereof most adjacent the food manipulating portion supported on the upwardly facing utensil engaging portion of one of said support members and the handle portion most removed from the food manipulating portion supported by the downwardly facing portion of the other of said support members thereby causing the food manipulating portion of said utensil to be disposed in spaced relation from said support.

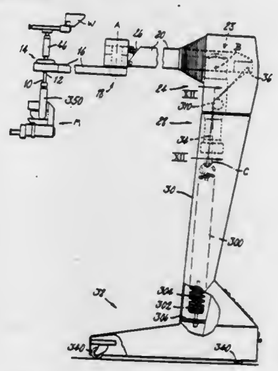


4,515,333

ADJUSTABLE SUPPORT FOR AN OPTICAL OR OTHER INSTRUMENT

Stuart Pugh; Douglas G. Smith, both of Loughborough, England; Chee M. Lee, Jurong Town, Singapore; Leslie R. Parr, Leicester; John N. Birkett, Aylesbury, both of England; Richard G. Stibbs, Glasgow, Scotland, and Tet C. Tai, Petaling Jaya Selangor, Malaysia, assignors to University of Technology, Leicestershire, England

PCT No. PCT/GB81/00068, § 371 Date Dec. 14, 1981, § 102(e) Date Dec. 14, 1981, PCT Pub. No. WO81/03054, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 14, 1981, Ser. No. 333,870
Claims priority, application United Kingdom, Apr. 15, 1980, 8012388
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—122 **11 Claims**



1. An adjustable support for an optical or other instrument (M) including a linkage system (**16,20**) rotatably supported about a column (**30**), which linkage system permits adjustment of the position of the instrument in a predetermined spatial

envelope, and means comprising a ball joint arrangement, comprising a ball (12) and a ball-supporting member (102), for carrying the instrument on a free end portion of said linkage system (16,20) remote from said column (30), which instrument-carrying means permits adjustment of the orientation of the instrument at any given position within said spatial envelope, clamping means (110) which normally clamps the ball (12) against rotation relatively to the ball-supporting member (102) but which may be caused to unclamp the ball on actuation of a switch (or like) device, and means (300) for counterbalancing the linkage system (16,20) about a horizontal pivot (22) in the vicinity of the column (30), characterized in that the instrument-carrying means comprises:

a rod-like member (10) extending through and secured to said ball (12) of said ball joint arrangement (14), one end portion of said rod-like member being arranged to have said instrument (M) mounted thereon and the other end portion of the rod-like member having adjustable counterbalancing means (W) mounted thereon, which counterbalancing means is adjutable to counterbalance the weight of the instrument carried by the rod-like member (10) about the center of the ball joint arrangement (14).

4,515,334

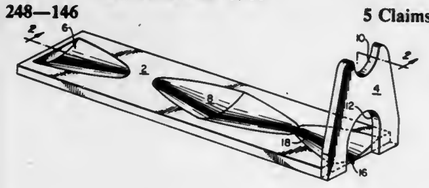
CONTAINER RACK

Edward A. Horne, 3059 Oak Leaf Ct., Woodbridge, Va. 22192

Filed May 4, 1982, Ser. No. 374,777

Int. Cl.³ A47B *73/00*

U.S. Cl. 248—146 **5 Claims**



1. A rack for a container having a neck, shoulder, and bottom comprising:

a base comprising shoulder receiving means for receiving said shoulder and bottom receiving means for receiving said bottom, said shoulder receiving means and said bottom receiving means being substantially coplanar, and

support means at one end of said base extending transversely to said base for receiving the neck of said container in either an upper or a lower end of said support means, said shoulder receiving means being intermediate said support means and said bottom receiving means,

said upper end of said support means comprises means for receiving said neck when said bottom is received by said bottom receiving means, and said lower end of said support means comprises means for receiving said neck when said shoulder is received by said shoulder means, whereby said neck is elevated when received in said upper end and depressed when received in said lower end.

4,515,335

CANOE LANTERN HOLDER

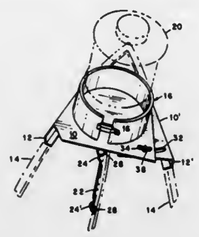
William P. DeRosett, Rte. 4, Box 236A, Livingston, Tenn. 38570

Filed Aug. 16, 1982, Ser. No. 523,708

Int. Cl.³ B63B *17/00*

U.S. Cl. 248—231.5 **1 Claim**

1. A holder for mounting lanterns on boats comprising: a base plate assembly formed from weatherproof material and defining a generally trapezoid-shaped surface, said base plate assembly having a first larger trapezoid-shaped surface with a narrower forward end and a second smaller trapezoid-shaped surface with a narrower forward end, said larger base plate portion being pivotally mounted at said narrower forward end to said narrower forward end of said smaller base plate portion; a bolt mounted in said first surface, said bolt aligned to move through a slot in said second surface whereby said first and second surfaces are adjustable to conform to the end configuration of the gunwales of the boat and whereby said holder is secured by a nut on said bolt; a compressible cylindrical receptacle vertically mounted upon said base plate assembly, a latch within a spaced opening in said cylindrical receptacle being



operable to compressibly retain a lantern therewithin; and two channel edges on the opposite nonparallel sides of said base plate assembly, said channel edges turned downward and inward to conform to the shape of the gunwales of the boat, said channel edges, together with a strap adapted to be attached from the aft portion of the holder to an eyelet in a floor of the boat, being operable to retain said holder thereon.

4,515,336

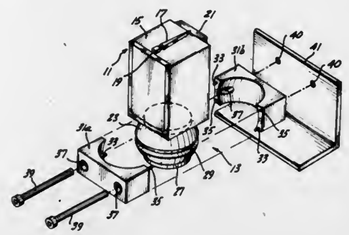
BALL AND SOCKET MOUNT FOR OPTICAL SENSING SYSTEM SOURCE AND/OR DETECTOR DEVICES

William H. Fischer, Everett, Wash., assignor to Opcon, Inc., Everett, Wash.

Filed Apr. 14, 1983, Ser. No. 484,859

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—288.3 **12 Claims**



1. A ball and socket mount for a component for an optical sensing system such as a source and/or detector device comprising:

a ball affixed to the component to be mounted, said ball having a circumferential groove; and,

a collar surrounding said ball, said collar including a pair of spaced apart, parallel holes suitable for receiving mounting bolts, said holes positioned such that said circumferential groove in said ball can be aligned with said holes so as to allow said mounting bolts to pass through a portion of said groove as well as said holes.

4,515,337

SELF-LEVELING VEHICLE SEAT MOUNT

Robert M. Torras, Brunswick, Ga., assignor to Kut-Kwick Corporation, Brunswick, Ga.

Filed Jun. 17, 1982, Ser. No. 378,632

Int. Cl.³ A47G *29/00*

U.S. Cl. 248—371 **15 Claims**

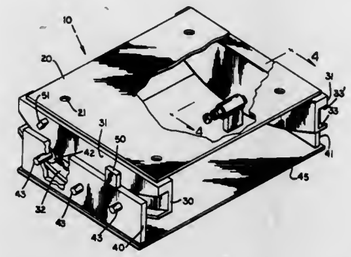
1. A self-leveling seat support for a vehicle, comprising:

a seat platform for supporting a seat member;

mounting means supported on the vehicle and having a first set of surfaces extending across the length of the vehicle;

said seat platform having a second set of surfaces extending across the length of the vehicle in confronting relation with the first set of surfaces, so that the confronting surfaces allow the seat platform to move in only one plane with respect to the mounting means;

means defining an arcuate open-ended track on one of said confronting surfaces;



a plurality of support elements disposed on the other of said confronting surfaces and engaging said arcuate track, so that said seat support platform is movably supported by said support elements and said arcuate track for angular movement in said one plane relative to said mounting means; and

said open ends of said track allowing some of said supporting elements to move off and on the track as the seat platform undergoes said angular movement relative to the mounting means, so that the maximum range of available angular movement is not limited by the length of the track.

4,515,338

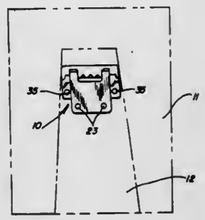
COMBINATION EASEL HINGE AND HANGING DEVICE

Marshall Schneider, Newton Highlands, Mass., assignor to Hallmark Cards, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 369,981, Apr. 19, 1982, abandoned. This application Dec. 15, 1982, Ser. No. 450,120

Int. Cl.³ A47B *97/04*

U.S. Cl. 248—460 **16 Claims**



1. An article support device comprising two detachably engageable components which when assembled in engaged position are adapted for supporting a framed article on a horizontal surface in an easel-type display arrangement, a first component being adapted for attachment to an easel stand and being comprised of a bracket portion having mounting apertures therein and a generally cylindrical shaft element attached thereto, a second component being adapted for attachment to the back of a frame for retaining an article to be displayed and being adapted for use by itself as a hanging device for a framed article or in engagement with said first component to form an easel-type support device, said second component having a generally flat base having mounting apertures therein and a mantle element spaced from and overhanging the top portion of said base, said mantle element being provided with a longitudinal bearing therein for receiving the cylindrical shaft element on said first component and having a saw-toothed hanger portion for engagement on a surface projection.

4,515,339

HEIGHT ADJUSTMENT ARRANGEMENT FOR SEATS, PARTICULARLY MOTOR VEHICLE SEATS

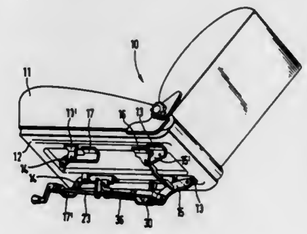
Bernd Klüting, Radevormwald, and Bernd Engels, Remscheid, both of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG., Remschied, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,097

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046886

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—543 **6 Claims**



1. A height adjustment arrangement for a seat, particularly a motor vehicle seat with a seat portion raisable and lowerably relative to a vehicle floor and having a frame and a longitudinal side, the arrangement comprising

a guide track device fixable on the vehicle floor and having a track runway;

a plurality of pivotable supports, each having one end portion arranged at a fixed height relative to a vehicle floor and another end portion hingedly connectable with a seat portion, each of said supports having an upper end and a lower end;

means for moving said pivotable supports and including a rotatable threaded spindle and a non-rotatable nut engaging with said spindle;

a plurality of pairs of separate supporting elements including a first supporting element pivotally connected with said upper end of each of said supports and mounted on said seat portion and a second supporting element pivotally connected with said lower end of each of said supports and arranged at a fixed height relative to the vehicle floor, said second supporting elements being mounted on said track runway of said guide track device, said first and second seat supporting elements being formed as first and second angular supporting claws, respectively, said first supporting claws being pivotally mounted on one end of the respective pivotable supports and connectable with the frame of the seat portion, said second supporting claws supporting said pivotable supports and being mountable on the track runways of the guide track; and

a bearing block connected with said second supporting claws, said threaded spindle being axially immovably retained on the longitudinal side of the seat in said bearing block.

4,515,340

TAXIDERMY MANNIKIN MOLD WITH RECESSES FOR SUPPORTING ARTIFICIAL EYES

John R. Rinehart, 3232 McCormick Dr., Janesville, Wis. 53545

Division of Ser. No. 363,263, Mar. 29, 1982, Pat. No. 4,432,919. This application Jan. 12, 1984, Ser. No. 570,227

Int. Cl.³ B29D *27/04, 3/00;* **B22D** *19/04*

U.S. Cl. 249—96 **3 Claims**

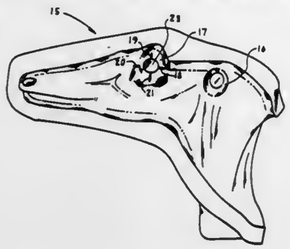
1. A mold for forming a taxidermy aninial head mannikin

with artificial eyes molded therein in proper position, comprising:

a pair of mold cavity half parts, each of the half parts having:

a cavity surface contoured for correct anatomical formation of features of half of the mannikin including the features immediately surrounding the eye;

a semi-spherical eye socket recess in the cavity surface shaped for snugly receiving the front portion of an artificial eye and leaving the rear portion projecting into the mold cavity with the surface of the mold cavity having



correctly contoured anatomical features right up to the edge of the eye socket recess; and

reference indicia in the cavity surface near the edge of the eye socket recess comprising at least two indicia markings on opposite sides of the eye socket recess, whereby an artificial eye may be inserted in the eye socket recess and correctly positioned by aligning the pupil of the eye with the indicia markings prior to introducing liquid foamable hardenable material into the cavity between the mold half parts.

4,515,341

INGOT MOULD HAVING A HOT-TOP INSIDE THE UPPER PART OF THE MOULD

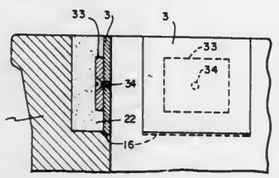
Enn Vallak, and Hannes Vallak, both of Geneva, Switzerland, assignors to International Ferrox Co., Establishment, Vaduz, Liechtenstein

Division of Ser. No. 285,112, filed as PCT EP 80/00131, Nov. 11, 1980, published as WO 81/01377, May 28, 1981, § 102(e) date Jul. 10, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,743

Claims priority, application United Kingdom, Nov. 13, 1979, 7939186; Mar. 13, 1980, 8008629

Int. Cl.³ B22D *7/10*

U.S. Cl. 249—106 **18 Claims**



1. An ingot mould comprising a hot-top positioned inside the upper part of the mould, wherein said hot-top comprises an inner wall formed by a plurality of plates made of a material selected from the group consisting of graphite and metallic materials capable of withstanding contact with a molten metal poured into the ingot mould, without being melted or fused, the thickness of said plates being less than that of the wall of the mould, the plates being capable of expanding at a higher rate than the wall of the mould due to the heat of poured molten metal, a plurality of recesses being provided inside the upper part of the mould, said recesses extending over the parts of relatively large radius of curvature, of the wall of the mould, and being separated from each other by the parts of relatively small radius of curvature of the wall of the mould, and each of said plates being disposed in a corresponding recess, with its inner surface being flush and aligned with the corresponding part of the inner surface of the mould, said plates being laterally maintained in contact with the parts of the mould separating the recesses from each other, the outer surface of each plate being spaced from the confronting surface of the corresponding recess and the thus formed space being at least partially filled with a heat insulating material and wherein a further plate, having a thickness of the same order as that of the plates forming the inner wall of the hot-top and a length and width less than those of said plates, is fixed to the surface of each of said plates facing said recesses, by means of fixing means placed in the center of said further plate and of each plate forming the inner wall of the hot-top.

4,515,342

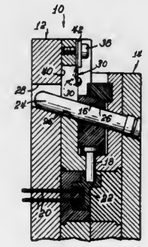
SLIDE RETAINER

Borislav Boskovic, 2102 Bannockburn, Inverness, Ill. 60067

Filed Apr. 6, 1984, Ser. No. 597,719

Int. Cl.³ B29C *1/00*; B29F *1/022*

U.S. Cl. 249—122 **17 Claims**



1. In a mold having a normally stationary mold part and a mating mold part which is moved against and apart from the stationary mold part respectively during closing and opening of the mold, and having a slide attached to a core element for moving the core element laterally inwardly and outwardly during closing and opening of the mold, the improvement comprising

a. retainer means for said slide to position said slide in a laterally offset position when the mold is opened, said retainer means comprising

i. an elongated, resilient arm,

ii. a retention element at one end of said arm, and

iii. means securing said arm to said stationary mold part with said retention element proximate said slide and in the path of said slide as said slide moves outwardly during opening of the mold, and

b. means in said slide engaging said slide retention element to hold said slide laterally outwardly when the mold is opened.

12. A retainer for a slide of a mold having two mating mold parts and a slide for moving a core element laterally inwardly and outwardly during closing and opening of the mold, the retainer being positioned to hold the slide in a laterally offset position when the mold is opened and comprising,

a. an elongated, resilient arm,

b. a retention element at one end of said arm,

c. an aperture through the other end of said arm, and

d. means passing through said aperture securing said arm to one of said mold parts.

4,515,343

ARRANGEMENT FOR ELECTROMAGNETICALLY OPERATED ACTUATORS

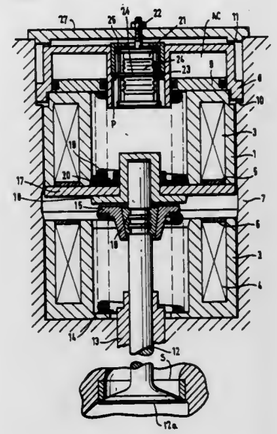
Franz Pischinger, and Peter Kreuter, both of Aachen, Fed. Rep. of Germany, assignors to Fev Forschungsgesellschaft für Energietechnik und ver Brennungsmotoren mbH, Aachen, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,121

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 3311280; Mar. 28, 1983, 3311250

Int. Cl.³ F16K *31/04*

U.S. Cl. 251—48 **23 Claims**



1. An arrangement for an electromagnetically operated actuator for a displacement type engine having a spring-mass valve actuating oscillatory system which includes a valve operable relative to its valve seat within a housing, an armature connected to said valve, a pair of electromagnets on opposite sides of said armature for maintaining said valve in at least first and second final operational positions of the maximum amplitude of vibration, dampening means comprising said armature and at least one of said electromagnets, a hydraulic length-compensating element for mounting said one electromagnet on said housing for adjusting the distance between said valve seat and the pole area of said one electromagnet so that it corresponds to the distance between said valve head and the pole face of said armature, whereby substantially consistent dampening is effected as said armature approaches said one electromagnet and said valve head approaches said valve seat both with substantially the safe velocity.

4,515,344

BLOCKING VALVE

Francois Gémignani, Zone Industrielle la Palunette, Bouches-du-Rhone, Chateauneuf les Martigues, France

Filed Jan. 22, 1982, Ser. No. 341,829

Claims priority, application France, Feb. 17, 1981, 81 03481

Int. Cl.³ F16K *31/122*

U.S. Cl. 251—635 **6 Claims**

1. A high-pressure valve for isolating a portion of a fluid path, comprising:

a two-part valve body formed in a first part with a passage connectable in said fluid path and provided between opposite sides of said passage with a valve seat, a bore defined by both parts of said body and aligned with said seat, and means for tightening said parts together;

a guide sleeve received in said bore;

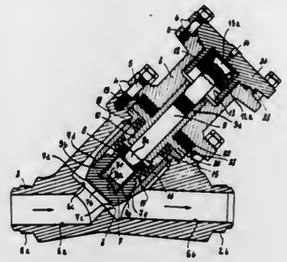
a valve rod axially shiftable and guided in said sleeve for displacement toward and away from said seat;

a valve member juxtaposed with and engageable with said seat at one end of said rod;

a control piston in either one of said parts acting upon an opposite end of said rod and displaceable in a cylinder formed in said other part of said body said valve member having a cross section greater than the cross section of said rod;

a bellows surrounding said rod and secured to said valve member at a face therof turned away from said seat at one end of said bellows while being retained fixedly with respect to said sleeve at another end of said bellows;

a tubular element received in said body coaxially surrounding said body at least at an end thereof connected to said valve member and surrounding said bellows to form an



abutment engaging said valve member in a retracted position thereof to stabilize same against forces applied to said valve member by fluid traversing said passage in said open position of said valve member wherein direct flow of fluid is permitted through said seat along said passage in said open position; and

means including annular flanges braced against a stack of thermally insulating annular gaskets for sealing said parts of said body together and to said sleeve upon operation of said means for tightening while providing a thermal barrier along said sleeve.

4,515,345

SOLENOID VALVE

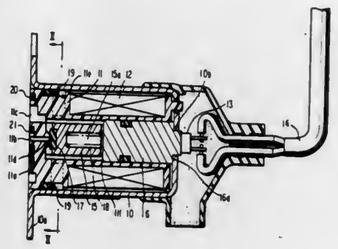
Masahiro Inden, and Kazutaka Kuwana, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 27, 1983, Ser. No. 545,978

Claims priority, application Japan, Oct. 27, 1982, 57-162807[U]

Int. Cl.³ F16K *31/02*; H01F *3/00*

U.S. Cl. 251—141 **3 Claims**



1. In a solenoid valve comprising:

a cup-shaped housing,

a bobbin disposed in the housing and having a coil wound thereon,

a core firmly fixed in the bobbin,

a plunger provided with a valve at one end thereof moveably disposed in said housing,

a flange on one end of said bobbin and having a valve seat disposed so as to be opposite to the valve of the plunger,

a spring biasing the plunger in such a direction as to abut on the valve seat, and

a yoke disposed intermediate said coil and said flange to couple the housing to the plunger magnetically,

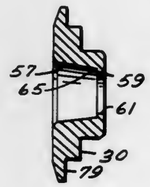
the improvement wherein said yoke is divided into a plurality of sections substantially surrounding said bobbin, and wherein said valve seat and said flange are molded integrally with said bobbin.

4,515,346

VALVE SPRING RETAINER ASSEMBLY

William C. Gaterman, III, Fort Lauderdale, Fla., assignor to Crane Cams Incorporated, Hallandale, Fla.

Filed Apr. 15, 1983, Ser. No. 485,466
Int. Cl.³ F01L 3/00
U.S. Cl. 251—337 **8 Claims**



1. A valve spring retainer assembly comprising:

a valve stem for reciprocation with respect to an engine head;

a valve spring positioned about said valve stem;

a keeper fixed with respect to said valve stem and having a fustro-conical outer surface;

a retainer positioned between said keeper and said valve spring about said stem,

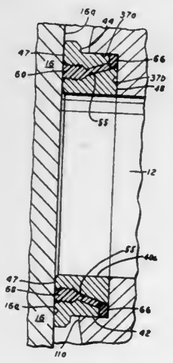
said retainer having at least one surface for engaging and retaining said spring, a conical inner surface for mating engagement with said keeper, and an integrally formed locking portion positioned below said keeper, said locking portion extending inwardly toward said valve stem below said keeper for preventing the extrusion of said keeper through said retainer.

4,515,347

VALVE SEAT STRUCTURE

Willard J. Sitton, and William L. Whaley, both of Houston, Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 27, 1982, Ser. No. 453,845
Int. Cl.³ F16K 3/02
U.S. Cl. 251—328 **4 Claims**



1. In a gate valve structure comprising a valve body with a valve chamber and inlet and outlet flow passages communicating with the valve chamber and defining a flow way through the valve body, a gate member mounted in the valve body for movement between open and closed positions relative to said flow passages, and a pair of internal annular recesses opening to the valve chamber with one of said recesses in concentric surrounding relation to the inlet flow passage and the other of said recesses in concentric surrounding relation to the outlet flow passage, each said recess being defined by an annular bottom end wall residing in a plane disposed substantially radially of the axis of the flow passage and a circumferential cylindrical side wall;

a valve seat assembly adapted to be fitted within either of said recesses, each valve seat assembly comprising a metallic seat ring having an annular rear face for abutting engagement with the bottom end wall of the recess in which it is disposed and an annular corner notch formed at the rear of the seat ring which opens to said rear face and the cylindrical side wall of the seat ring whereby an annular resilient sealing member may be disposed in said corner notch for sealing between the valve body and said seat ring;

said seat ring having an annular planar front face disposed towards the gate member and provided with an annular groove in coaxial relation to the ring axis and in surrounding relation to the flow way through the valve, said annular groove being provided with a plurality of serrations in the side walls thereof and having an inner diameter which is less than the inner diameter of said corner notch;

said metallic seat ring having a plurality of passages formed therein which are spaced in equiangular relation about the ring and extend from the annular groove in the front face of the seat ring to the corner notch at the rear of the seat ring, said passages and said annular groove being filled with a single mass of elastomer sealing element which is molded within the walls of said annular groove and said passages and adhesive bonded throughout the area extent of said groove and passages, said elastomer sealing element being formed at the front face of the seat ring to provide an annular projection with a rounded surface which projects slightly beyond the front face of the seat ring towards said gate member, said annular face groove of the seat ring having a widened opening at the face of the seat ring as defined by a pair of annular bevelled surfaces at the two sides of the annular groove whereby said elastomer sealing element is adapted to provide a fluid-tight seal with the gate member when said annular projection is compressed by the gate member in the open and closed conditions of the gate member and the deformed elastomer material provided by the compression of its annular face projection is accommodated by the widened opening of the annular face groove to thereby enhance its resistance to abrasion by the gate member.

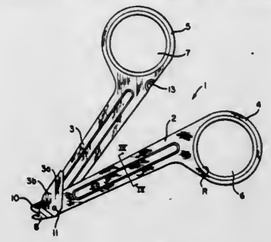
4,515,348

SKIN STAPLE EXTRACTOR

Joseph W. Blake, 88 Main St., New Canaan, Conn. 06840

Filed Oct. 15, 1981, Ser. No. 311,882
Int. Cl.³ B25C 11/00
U.S. Cl. 254—28 **8 Claims**

1. A manually operable extractor for surgical staples, comprising a first handle element having a first rear portion provided with a finger-receiving ring end, and a first front portion having a bifurcated forward end, said bifurcated forward end comprising first and second extensions of said first portion in overlapping parallel relationship to each other and separated by a space therebetween, a bight section joining said first and second extensions along one side thereof and extending parallel to a longitudinal edge of said first handle portion whereby said first and second extensions and said bight section define a U-shaped channel, said first and second extensions terminating in a pair of elongated anvil sections in parallel spaced relationship, said anvil sections having rearward ends with notches, and steep upwardly and rearwardly sloping edges from said notches to said bight section thereby defining a slot between said anvil sections; a second handle element having a second rear portion also provided with a finger-receiving ring end, and a second front portion terminating in a blade section, said second front portion pivotally mounted within said U-shaped channel of said first front portion with said blade section located between and parallel to said anvil sections and movable



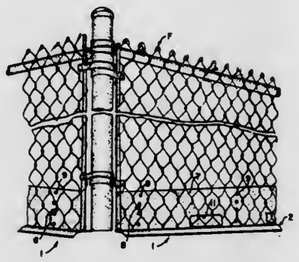
through said slot, said anvil sections being spaced apart throughout their length by a distance greater than the thickness of said blade section; rivet means for pivotably connecting said second handle element to said first handle element within said bifurcated forward end; and said finger-receiving ring ends comprising the sole means for spreading said rear portions of said handle elements apart and for bringing said rear portions toward each other.

4,515,349

INTEGRAL VEGETATION BARRIER

George D. Groves, Jefferson County, Mo., assignor to B. & G. Consultants, Inc., Arnold, Mo.

Filed Dec. 27, 1983, Ser. No. 565,410
Int. Cl.³ E04H 17/06
U.S. Cl. 256—1 **8 Claims**



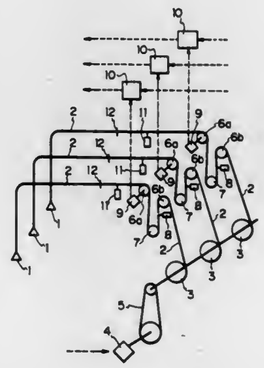
1. An integral fence associated vegetation barrier for eliminating the growth of grass, weeds, or the like, in the vicinity of the lower edges of fencing, comprising a base member designed to locate under the lower edge of such fencing and upon the ground and said base member having a width for extending laterally to either side of the fence to allow clearance for any lawn mower or other cutter to at least partially override thereon during lawn trimming, an upstanding leg integrally formed approximately near the upper center of the base member and extending upwardly for a distance to allow its fixation of the fence, said upstanding leg having at least one apperture provided therethrough to facilitate its tying of the said barrier to any associated fence.

4,515,350

SIMULTANEOUS MULTI-POINT SOUNDING APPARATUS

Yoichi Shibata, Yokohama; Ryosuke Kimura, Tokyo; Takashi Sumigama, Yokohama, and Masaro Izumi, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 273,447, Jun. 15, 1981, abandoned.
This application Nov. 7, 1983, Ser. No. 534,579
Claims priority, application Japan, Jun. 16, 1980, 55-82933[U]
Int. Cl.³ C21B 7/24
U.S. Cl. 266—92 **5 Claims**



1. A simultaneous multiple points sounding apparatus comprising

a plurality of weights to be suspended above burden charged in a furnace;

a plurality of wire ropes attached to respective ones of said weights at one end thereof and extending at the other end thereof outside of said furnace;

a plurality of drums disposed outside of said furnace for coiling respective ones of said plurality of wire ropes;

a single driving device connectable to said plurality of drums for concurrently driving said plurality of drums;

a plurality of first pulleys, each fixedly in a position between said furnace and said drums;

a plurality of second pulleys, each fixedly in a position between said first pulley and said drums;

a plurality of third pulleys, each movably positioned between said first fixed pulley and said second fixed pulley, whereby each said wire rope is threaded, in order, between said weight, said first pulley, said third pulley, said second pulley and said drum; and

detector means for detecting downward movement of said third pulley;

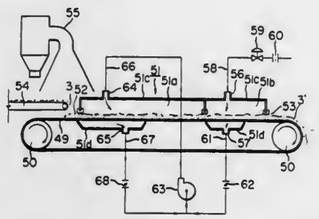
whereby said plurality of weights are all concurrently wound upon with their respective connected wire ropes to a top position by said single driving device concurrently driving all of said drums, whereupon said driving device is stopped, and whereupon said plurality of weights are subsequently allowed to travel downwardly until one or more thereof hits a charged burden, whereupon the respective connected wire rope has tension thereon lessened temporarily and the rotation of said respective first pulley is concurrently stopped and said respective third pulley connected thereto thereupon travels downward to make up the lessened tension on said wire rope; said downward movement of said third pulley is then detected by said detector means, thereby to indicate the dispersion of said burden within said furnace.

4,515,351

METHOD AND APPARATUS FOR MANUFACTURING NON-FIRED IRON-BEARING PELLET

Michio Nakayama, Kawasaki; Osamu Tajima, Kamakura; Seiji Matsui, Kawasaki; Hideyuki Yoshikoshi, Hino, and Hiroshi Fukuyo, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 366,199, Apr. 7, 1982, Pat. No. 4,432,788.
This application Dec. 6, 1983, Ser. No. 558,758
Claims priority, application Japan, Apr. 23, 1981, 56-60640; Apr. 23, 1981, 56-60641
Int. Cl.³ C22B *1/08*
U.S. Cl. 266—177 **3 Claims**



1. An apparatus for manufacturing non-fired iron-bearing pellets which comprises:

a treating furnace having a green iron-bearing pellet inlet at one end thereof and a non-fired iron-bearing pellet outlet at the other end thereof, said treating furnace comprising:

a source of preheating gas;

a preheating zone coupled to said preheating gas source for preheating green iron-bearing pellets which are continuously supplied from said green iron-bearing pellet inlet into said treating furnace to a temperature of from 40° to 90° C.;

a source of heating gas;

a heating zone following said preheating zone and coupled to said heating gas source, for heating the thus preheated green iron-bearing pellets by means of said heating gas which contains saturated steam under atmospheric pressure and has a temperature of from 50° to 100° C., said heating gas converting said green iron-bearing pellets into non-fired iron-bearing pellets, the green iron-bearing supplied from said green iron-bearing pellet inlet into said treating furnace passing sequentially and continuously through said preheating zone and said heating zone;

said preheating zone comprising a preheating gas blowing port through which said preheating gas is blown into said preheating zone to thereby preheat the green iron-bearing pellets therein, and a preheating gas discharge port through which said preheating gas after the completion of said preheating of the green iron-bearing pellets in said preheating zone is discharged;

said heating zone having a heating gas blowing port through which said heating gas is blown into said heating zone to heat the green iron-bearing pellets therein, and a heating gas dischrge port through which said heating gas after the completion of said heating of the green iron-bearing pellets in said heating zone is discharged;

means for blowing said heating gas from said heating gas blowing port into said heating zone of said treating furnace; and

a blower (**37,63**) for blowing said preheating gas from said preheating gas blowing port into said preheating zone of said treating furnace, said blower having a suction port and a blowing port;

means including a first valve means (**36,62**) coupling and communicating said suction port of said blower (**37,63**) with said heating gas discharge port (**29,57**) of said heating zone (*22b,53b*);

means including a second valve means (**40,68**) coupling and communicating said suction port of said blower (**37,63**) with said preheating gas discharge port (**31,65**) of said preheating zone (*22a,51a*); and

means for communicating said blowing port of said blower (**37,63**) with said preheating gas blowing port (**30,64**) of said preheating zone (*22a,51a*);

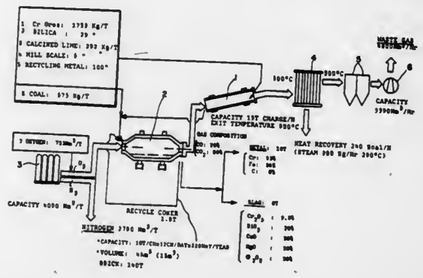
whereby said heating gas which had been used to heat the green iron-bearing pellets (**3**) in said heating zone (*22b,51b*) and said preheating gas which had been used to preheat the green iron-bearing pellete (**3**) in said preheating zone (*22a,51a*) are mixed in said blower (**37,63**) at a ratio sufficient to give the desired preheating temperature to prepare the preheating gas which is used to preheat the green iron-bearing pellets (**3**) in said preheating zone (*22a,51a*) by controllably operating said first valve means (**36,62**) and said second valve means (**40,68**) to form said preheating gas which is recirculated into said preheating zone (*22a,51a*) by means of said blower (**37,63**) to preheat the greeb iron-bearing pellets (**3**) in said preheating zone (*22a,51a*).

4,515,352

ROTARY FURNACE USED FOR THE PRODUCTION OF FERROCHROMIUM

Tsutomu Fukushima; Kiyoshi Kawasaki, and Sadayuki Sasaki, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 403,049, Jul. 29, 1982, Pat. No. 4,414,026.
This application Aug. 3, 1983, Ser. No. 519,901
Claims priority, application Japan, Jul. 30, 1981, 56-118500; Jul. 31, 1981, 56-119291
Int. Cl.³ C21C *5/48*
U.S. Cl. 266—218 **8 Claims**



1. A horizontal or a non-steeply inclined rotary furnace used for smelting reduction or refining of metal alloys, said furnace comprising:

a furnace shell having inner and outer walls;

a refractory lining disposed on said inner wall, said lining defining a furnace inner surface;

a plurality of openings arranged in spaced relation on the circumference of the furnace outer wall, said openings extending through said furnace shell and said refractory lining, thereby defining a corresponding plurality of openings on the furnace inner surface;

said furnace defining an upper zone and lower zone during rotation, said upper zone being a free-space zone devoid of material at all times, and said lower zone comprising metal, slag, reducing agents and other materials; and

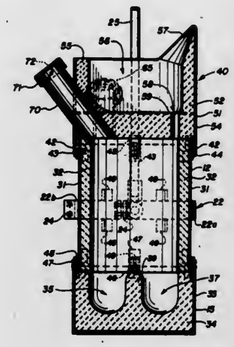
each of said openings communicating with a source of fuel or fuel-oxygen mixture during the melting period in which the ores and other materials in the furnace are melted for yielding metal and slag, said fuel or fuel mix being introduced into said lower zone, thereby promoting the smelting of the raw materials.

4,515,353

TUNDISH COVER FOR DUCTILE IRON TREATMENT

Gerry E. Isenberg, Cassville; Terry L. Forshey, Calvin, and Robert D. Keller, Jr., Belleville, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Division of Ser. No. 478,393, Mar. 24, 1983, Pat. No. 4,488,711.
This application Jul. 16, 1984, Ser. No. 631,286
Int. Cl.³ C21C *1/06*
U.S. Cl. 266—236 **17 Claims**



1. A tundish cover engagable with a treating ladle to control the emission of exhaust gases from the treating ladle during operation thereof comprising:

a lid portion engagable with said treating ladle;

a receiving box mounted on said lid portion to form a generally open-topped basin receptacle, said receiving box having an orifice therein and extending through said lid portion to permit the introduction of molten iron into said treating ladle and the removal of treated iron from within said treating ladle;

a pressure exhaust port formed in said lid portion to permit a controlled escape of exhaust gases from said treating ladle through said lid portion; and

a charging tube forming a passageway through said lid portion for the introduction of a treatment alloy into the treating ladle without effecting a removal of said lid portion from said treating ladle, said charging tube having a removable cover to prevent the escape of exhaust gases from said charging tube, yet permit the selective introduction of treatment alloy into the treating ladle.

4,515,354

FIXTURE FOR ASSEMBLING PINS INTO A SHUTTLE

Donald E. Chandler, Colonial Heights; William M. Chisholm, Midlothian, and Ralph T. Lechner, Richmond, all of Va., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,717
Int. Cl.³ B23Q *3/00*
U.S. Cl. 269—15 **3 Claims**

1. A fixture for facilitating the assembly of end-carried terminal pins into a shuttle having securing means for securing terminal pins within the shuttle upon actuation of the securing means, comprising:

a work surface;

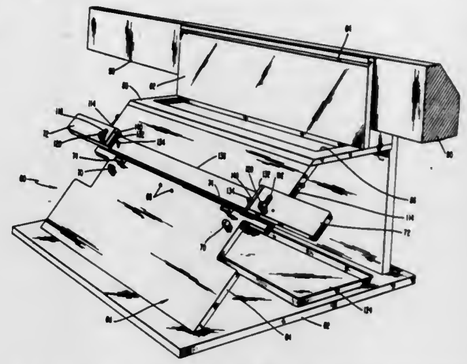
a locking bar slidably mounted on the work surface for limited movement in a path toward and away from the shuttle on the work surface, and for actuation of the securing means upon movement toward the shuttle;

at least two lateral locating pins on the fixture arranged to engage two surfaces of recesses in the shuttle to limit movement of the shuttle in a direction perpendicular to the path of movement of the locking bar;

at least one orthogonal locating pin on the fixture to engage at least one surface within a recess of the shuttle to limit movement of the shuttle in a direction parallel with the path of movement of the locking bar;

a plurality of hold-down clips for engaging a hold-down groove of the shuttle;

a terminal-pin-holding tray mounted with respect to the work surface;



a groove for breaking end carriers from shuttle-mounted pins; and

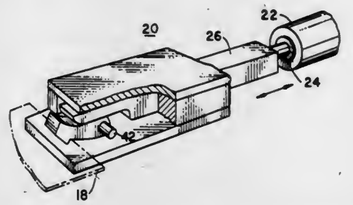
a pin-end-carrier-receiver chute located under the end-carrier-breaking groove.

4,515,355

SHEET METAL WORKHOLDER UTILIZING LINEAR WEDGE ACTION

James R. Hunter, Chadds Ford, Pa., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,150
Int. Cl.³ B23Q *3/18*
U.S. Cl. 269—234 **1 Claim**



1. A clamp assembly for holding a sheet of material during operation of a machine tool, said clamp assembly comprising a box structure having parallel upper and lower walls and a pair of parallel side walls extending between the upper and lower walls, said lower wall of said box structure having an outer end portion which forms a fixed jaw engageable with a lower side surface of the sheet of material, a movable jaw, means for pivotally mounting said movable jaw on the side walls of said box structure, said movable jaw having an outer end portion with a lower side which engages an upper side of the sheet of material at a location above said fixed jaw, said outer end portion of said movable jaw having an upper side with an arcuate cam surface which curves upwardly to a location above where the outer end portion of the movable jaw engages the sheet of material, a reciprocatable slide member disposed within said box structure, said slide member having flat parallel upper and lower surfaces disposed in abutting engagement with inner side surfaces of said upper and lower walls of said box structure and having flat parallel side surfaces disposed in abutting engagement with inner side surfaces of said side walls of said box structure, said slide member having a leading end portion with an upper side surface disposed in abutting engagement with the upper wall of said box structure and having a

lower side surface which is spaced from the lower wall of said box structure and faces downwardly toward the lower wall of said box structure, said lower side surface on the leading end portion of said slide member being movable into abutting engagement with said arcuate cam surface on the upper side of said movable jaw at a location above where said fixed jaw engages the sheet of material, and motor means for moving said slide member outwardly toward said movable jaw to press the lower side surface on the leading portion of said slide member against the arcuate cam surface on said movable jaw to thereby press said movable jaw downwardly against the sheet of material to clamp the sheet of material between said fixed and movable jaws and for moving said slide member rearwardly away from said movable jaw to move the leading end portion of said slide member out of engagement with the arcuate cam surface on said movable jaw to thereby release the sheet of material.

4,515,356

SPRING BIASED CRANK ARM DRIVE FOR TRAY MOUNTED STAPLER

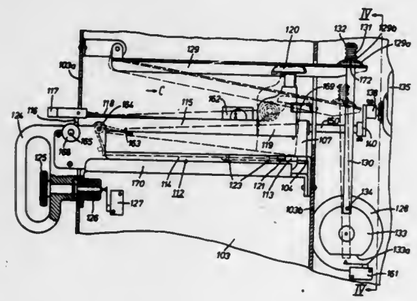
Ludwig Müllritter, Munich; Günther Schnall, Eching, and Franz Fruth, Germering, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,531

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304875

Int. Cl.³ B42B *1/02*

U.S. Cl. 270—53 **6 Claims**



1. A copy-receiving device for receiving copies in a copying machine, comprising a copy-receiving table connected to the copying machine and receiving therefrom a continuous succession of copies and including at least one copy-receiving plate on which sets of copies to be stapled are collected, said plate being inclined to a horizontal at a predetermined angle; a stapling device insertable into said table to staple the copies in the set on said plate together; means for actuating said stapling device, said actuating means comprising a drive motor, a crank drive connected to said motor, a compression spring on said crank drive, and an actuating arm cooperating with the stapling device to actuate the latter, said motor driving said actuating arm via said crank drive under the interposition of said compression spring; and a microswitch cooperating with said crank drive for switching said drive motor off when the crank drive is in a termination position, said crank drive including a crank disc, a crank pin, and an elongated pulling bar, said bar being pivotally connected to said disc by said crank pin, said actuating arm having an end and being formed at said end with a bulge-like projection.

4,515,357

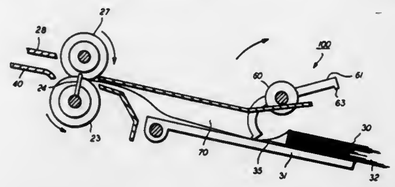
PADDLE RETARD FEEDER

Thomas J. Hamlin, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1982, Ser. No. 446,740

Int. Cl.³ B65H *3/06*

U.S. Cl. 271—120 **13 Claims**



1. An inertia friction retard feeder, comprising in combination:

tray means for holding a stack of sheets to be fed, said tray means being positioned at an angle of about 10° to 15° with respect to a horizontal plane;

friction surfaced means along the bottom of said tray means extending partially under the stack of sheets in said tray means and adapted to allow the stack of sheets to be placed thereon for feeding;

paddle wheel means positioned a predetermined distance in front of the stack and located in driving relation to all sheets in the stack, said paddle wheel means includes a plurality of blades mounted on a hub such that as said paddle wheel is rotated, said blades initially contact the top sheet in the stack in a first position and by inertial separation moves the top sheet in the stack along the stack and away from the other sheets in the stack and in a second position deflects downward in front of the stack to retard multi-feeding of the other sheets from the stack;

registration means for receiving a sheet fed from said stack and deskewing and registering the sheet for subsequent transport; and

negative buckle chamber means adapted to provide an urging force to sheets buckled therein in order to positively position sheet against said registration means.

4,515,358

SHEET FEEDING APPARATUS

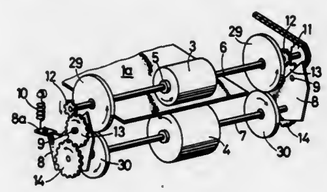
Kazuyuki Fukui, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 8, 1982, Ser. No. 447,770

Claims priority, application Japan, Dec. 21, 1981, 56-207697

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—122 **6 Claims**



1. A sheet feeding apparatus for feeding stacked sheets one by one, comprising:

a prefeed member adapted to act on the uppermost sheet of the stack for feeding the sheet,

a feed roller rotatable in the sheet feeding direction and mounted on a shaft,

a separating roller rotatable in a sheet returning direction and mounted on a shaft,

means for transmitting drive power from opposite ends of the shaft of one of the rollers to opposite ends of the shaft of the other roller, the drive power being delivered to the shaft of said one roller from a drive source,

means for pressing the feed roller and the separating roller into contact with each other, and

disks mounted on the shafts of the two rollers respectively and positionable in contact with each other at their peripheries, the disks being slightly smaller in combined diameter than the rollers, for regulating the contact with each other by the pressing means to a level not higher than a specified value.

4,515,359

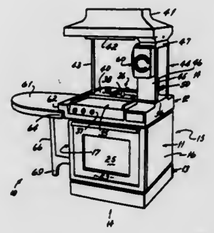
TOY KITCHEN PLAY CENTER

James F. Mariol, 481 Deanview Dr., Cincinnati, Ohio 45224

Filed Jan. 19, 1983, Ser. No. 459,207

Int. Cl.³ A63H *33/30*

U.S. Cl. 272—1 R **4 Claims**



1. A toy kitchen play center device embodied in a compact unitary structure comprising:

a simulated stove, the stove also serving as a base for the kitchen play center, the stove having a top, bottom and sides,

a simulated oven formed in the stove, the oven having an internal cavity and a door for accessing the cavity,

a cabinet/simulated refrigerator formed in the stove having an internal cavity and a door for accessing the cavity,

the oven cavity and cabinet/simulated refrigerator being located in back-to-back relationship in the stove, the door for accessing the oven and the door for accessing the cabinet/simulated refrigerator opening in opposite directions on opposite sides of said stove,

a simulated cooking range, the cooking range located on a portion of the top of the stove,

a simulated kitchen sink, the sink located on another portion of the top of the stove, the sink including simulated plumbing fixtures,

the simulated range and simulated kitchen sink being located on the stove top in substantially back-to-back relationship,

an upright wall panel structure, the wall panel located on yet another portion of the top of the stove,

a simulated telephone, the telephone being mounted on the upright wall panel structure,

a kitchen canopy and simulated ventilation unit extending over the stove top, the kitchen canopy being carried at one end by the wall panel structure and at the other end by a vertical upright extending from the stove top,

a folding table, the folding table being pivotally connected along one side of the stove and pivotable between an upright and open position wherein the table extends substantially perpendicular to the stove side, the table presenting a generally planar upwardly facing table surface in the open position, and a closed position wherein the table extends downwardly and substantially parallel to the stove side, the folding table including a vertically extending support member pivotably connected to the same stove side, the table support in use contacting the underside of the table to thereby support the table in an open and raised position, the table support pivotable between a table support position and a closed and folded position, the support in the closed position being folded against the side of the stove and between the table and the same side.

4,515,360

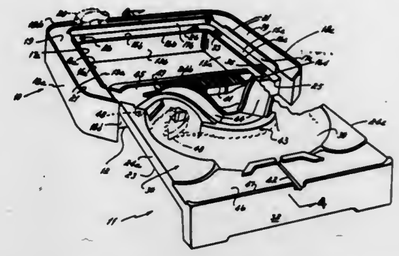
SANDBOX WITH PLAY DECK COVER

James F. Mariol, 481 Deanview Dr., Cincinnati, Ohio 45224

Filed Dec. 12, 1983, Ser. No. 560,553

Int. Cl.³ A63G *31/00;* **A63H** *18/00, 23/16*

U.S. Cl. 272—1 A **6 Claims**



1. A sandbox for recreational play comprising,

a base having upright sidewalls and a bottom, the sidewalls and the bottom forming a container for sand, and

a rigid cover for the container, the cover being slidably received in channels formed in the base sidewalls for movement between a first generally horizontal position wherein the container is covered to a second generally horizontal position wherein the container is uncovered, the cover further including a downwardly depending portion which serves as a support for one end of the cover when in the second position, the opposite end of the cover being supported by the base in the second position such that the cover functions as a play deck for the sandbox when in the second position, said cover having a depression formed therein for receiving water and water toys in both the first and second positions of the cover.

4,515,361

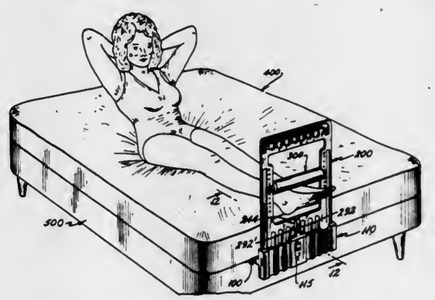
EXERCISING APPLIANCE

Anthony Melillo, Bernardsville, and Louis Gabriele, Livingston, both of N.J., assignors to Michael Codella, Parsippany, N.J., a part interest

Filed Feb. 4, 1983, Ser. No. 463,992

Int. Cl.³ A63B *23/02*

U.S. Cl. 272—93 **20 Claims**



1. An exercising appliance comprising a first generally planar portion and a second generally planar portion, said first and second portions being pivotally connected to one another

at a pivot axis located at respective ends of said portions, said first portion including:

(a) a first means adapted to assist in frictionally retaining said first portion in a substantially fixed position when said first portion is placed in a confined space;

(b) stop means adjacent said pivotally connected end for limiting the movement of said first portion into said confined space to a pre-determined distance; and

(c) slot means formed at an end opposite said pivotally connected end which forms handle means;

said second portion including

(a) guide means on opposed sides thereof;

(b) spaced retention means formed adjacent each guide means, and

(c) bar means mounted on said second portion including:

(i) second means interengaging with said guide means to allow slidable movement of said bar means on said guide means with respect to the pivot axis; and

(ii) third means in each said second means, said third means adapted to be aligned with said spaced retention means at pre-determined positions of movement of said bar means; and

(iii) locating means adapted to interengage with said spaced retention means and said third means to lock said bar means into pre-determined fixed positions.

4,515,362

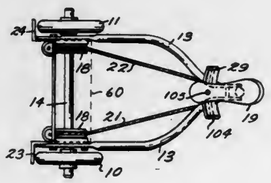
EXERCISE TRICYCLE

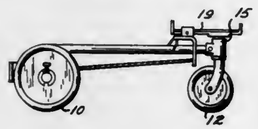
Chin-Lung Lin, No. 692, Shan-Hsing-Chiao, Shiang-Shan Shiang, Hsing Chu Hsien, Taiwan

Filed Jun. 11, 1982, Ser. No. 387,749

Int. Cl.³ B62M *1/16*; A63B *23/00*

U.S. Cl. 272—114 **5 Claims**





1. A vehicle for moving across a surface, said vehicle adapted for supporting a standing rider, said vehicle comprising:

a frame;

support means, journaled to said frame, for supporting a first foot of a standing rider;

three wheels, rotatably journaled to said frame, for supporting said frame and for moving said frame across said surface;

drive means, operatively coupled to at least a first of said three wheels and operable by the hands of a standing rider, for rotating at least said first wheel to propel said vehicle across said surface with force exerted by the hands of the rider; and

pedal means, journaled to said frame and operatively connected to at least a second of said three wheels, for supporting the second foot of said standing rider, for controlling the axial orientation of said second wheel with respect to said frame to control the direction in which said vehicle moves across said surface, and for braking said vehicle.

4,515,363

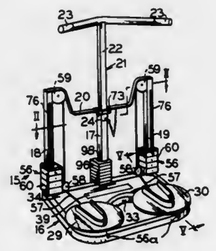
WEIGHT LIFTING EXERCISER

John J. Schleffendorf, 2312 Crescent Ave., Waukegan, Ill. 60084

Filed Mar. 10, 1982, Ser. No. 356,635

Int. Cl.³ A63B *21/06*

U.S. Cl. 272—118 **16 Claims**



1. An exercising machine, comprising:

(a) a base;

(b) a pair of support tables rotatably carried on said base, and each adapted to support a single human foot, respectively;

(c) a vertical standard supported on said base and having means at its upper end for transmitting a reactive force to the human body, said transmitting means including a seat at its upper end secured to a post telescopically and releasably engaging said vertical standard, said post being lockable thereto at a plurality of heights, and said standard being disposed at a common lateral side of said support tables; and

(d) a pair of resistance means supported on said base and respectively independently connected to said support tables for providing a reactive rotary force to support table rotation as each table is moved out of a neutral position.

4,515,364

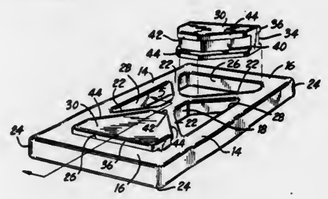
COMPACT EXERCISE DEVICE

Thomas B. Rotella, 22 E. 7th St., Clifton, N.J. 07011

Filed Jul. 7, 1983, Ser. No. 511,472

Int. Cl.³ A63B *11/02, 21/00*

U.S. Cl. 272—143 **20 Claims**



14. In an exercise device:

a frame having at least a frame portion of resilient material;

a lifting handle integral with the frame, the lifting handle having opposite ends and extending from said frame portion;

a resiliently dilatable opening in the frame portion adjacent at least one of the opposite ends of the lifting handle, the opening having a given peripheral configuration; and

a weight having a periphery with a peripheral configuration including at least a portion complementary to a corresponding portion of the peripheral configuration of the opening;

the relative dimensions of the corresponding portions of the opening and the weight being such that the opening will dilate resiliently to admit the weight and will contract resiliently to interengage the corresponding portions of the weight and the opening and secure the weight within the frame adjacent said one of the opposite ends of the lifting handle for manipulation of the frame and the weight therein.

4,515,365

DEVICE FOR MEASURING SWING DATA OF BASEBALL BAT

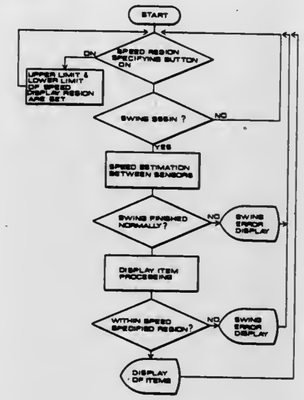
Hiroshi Horikoshi; Akio Arai; Sadayuki Tsukagoshi, and Junichi Sakamoto, all of Gumma, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,456

Claims priority, application Japan, Mar. 23, 1983, 58-41520[U]; Mar. 23, 1983, 58-41522[U]; Mar. 23, 1983, 58-41523[U]; Mar. 23, 1983, 58-41524[U]; Mar. 23, 1983, 58-41525[U]

Int. Cl.³ A63B *71/02*

U.S. Cl. 273—25 **4 Claims**



1. A swing data measuring device wherein swing data of bat swing performed by a baseball player, including level of a swing plane, inclination of the swing plane with respect to the horizontal plane and speed of the bat, is optically detected and the swing data is displayed in digital form, comprising:

a first light emitting/receiving means composed of a first light emitting means for forming a first light beam in approximately vertical direction with respect to the earth and a first light receiving means for receiving a first reflection light beam of the first light beam reflected of the surface of the bat;

a second light emitter/receiving means composed of a second light emitting means for forming a second light beam in parallel to the first light beam and a second light receiving means for receiving a second reflection light beam of the second light beam reflected off the surface of the bat;

a third light emitting/receiving means composed of a third light emitting means for forming a third light beam intersecting the first light beam and a third light receiving means for receiving a third reflection light beam of the third light beam reflected off the surface of the bat;

a fourth light emitting/receiving means composed of a fourth light emitting means for forming a fourth light beam intersecting the second light beam and a fourth light receiving means for receiving a fourth reflection light beam of the fourth light beam reflected off the surface of the bat;

a processing means for processing the swing data based on output signals from the four light receiving means;

a collection means including means for collecting past swing data obtained by swings performed already and means for analyzing the swing data collected;

a display means for displaying the processing result of the processing means and the collection means;

said processing means comprising means for setting lower limit speed and upper limit speed of the bat; and

a cancel means for stopping the measurement of swing data when speed of the bat is outside the speed region between set values of the lower limit speed and the upper limit speed.

4,515,366

SLOT MACHINE WITH PATTERN CONFIRMATION AND CORRECTION MEANS

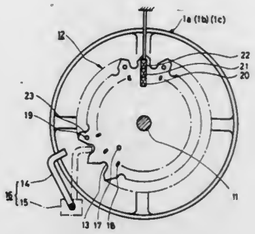
Junichi Hamano, 24-13, Koshienkitamachi, Nishinomiya-Shi, Hyogo 633, Japan

Filed Mar. 23, 1983, Ser. No. 478,186

Claims priority, application Japan, Aug. 12, 1982, 57-140722

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—143 R **12 Claims**



1. A slot machine comprising a plurality of rotary drums on the periphery of which plural frames of patterns are depicted, detecting plates connected to each rotary drum and provided with pattern detecting means whose number corresponds to the number of frames, said detecting plates having grooves, reader means which detect passing of said pattern detecting means during drum rotation, stopping means engaging said grooves in said detecting plates and operable to stop said detecting plates, said stopping means causing reverse rotation of said detecting plate and drum depending on the position of said groove when initially engaged by said stopping means, a control means which counts the output of said reader means and specifies the pattern positioned on a stop line based on the counted value after the drum stops, pattern confirming means on said detecting plates which discriminate the pattern positioned on the stop line at least from the preceding and following frames of patterns when the drum is stopped such that said pattern confirming means detects an increase of said counted value resulting from said reverse rotation of said drum and consequent passing of said pattern detecting means again past said reader means, and correction means providing for correcting said increased counted value in response to said pattern confirming means detecting said increased counted value.

4,515,367

CARD SHUFFLER HAVING A RANDOM EJECTOR

Robert Howard, 1800 NE. 114th St. Penthouse #10, Miami, Fla. 33181

Filed Jan. 14, 1983, Ser. No. 457,959

Int. Cl.³ A63F *1/12*

U.S. Cl. 273—149 R **31 Claims**

1. Playing card apparatus comprising:

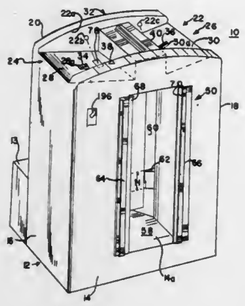
a vertically aligned compartment for receiving and stacking a large number of playing cards;

tray means arranged above said compartment for receiving playing cards to be shuffled;

shuffling means for shuffling playing cards delivered to said shuffling means from said tray means and for delivering shuffled cards downwardly into said compartment;

detection means responsive to emptying of said tray means for generating an output;

pusher means responsive to said output for pushing a portion



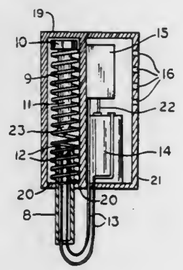
of the stack in said compartment to displace said portion a predetermined distance from the remainder of the cards in the stack to facilitate gripping and manual removal of said displaced portion of the stack.

4,515,368

GOLF CLUB SWING TRAINING DEVICE

Donald L. Petitjean, 217 Cardinal Dr., Bloomingdale, Ill. 60108

Filed Feb. 25, 1983, Ser. No. 469,964
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A **3 Claims**



1. A golf club swing training device comprising the combination of a golf club and an attachment therefor, said attachment comprising, housing means attachable to said shaft, electrically operated means within said housing actuated by centrifugal force generated by swinging the club, said electrically operated means having audbile signal emitting means for emitting a continuous audible signal for as long as the club speed achieved during the swing generates a centrifugal force equal to or greater than a predetermined minimum, the housing attachment means being positionable on the club shaft approximately at the swing weight point on the club as determined by a swing weight machine such that there is no substantial change in the swing weight of the club with the device attached.

4,515,369

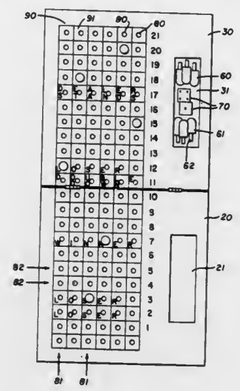
DICE AND BLACKJACK GAME BOARD

Ernest L. Johnson, Box 44, Fraser, Colo. 80442

Filed Nov. 22, 1982, Ser. No. 443,706
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—243 **8 Claims**

1. An amusement device comprising a dice and blackjack game board and game pieces comprising:

a game board comprising two rectangular segments that are pivotally connected together, wherein each segment is provided with a plurality of parallel aligned rows of apertures and each row contains eleven apertures, at least one said aligned rows of apertures on each of the segments being provided with consecutive numbering from "one" to "twenty-one", and printed legends associated with the dice game commonly known as "craps" and the card game commonly known as "blackjack" appear adjacent to selected numbers; wherein said printed legends located



adjacent said numbers indicate the result obtained by having said numbers in the games of "craps" and "blackjack";

a pair of dice adapted to be thrown across the length of at least one of said segments; and

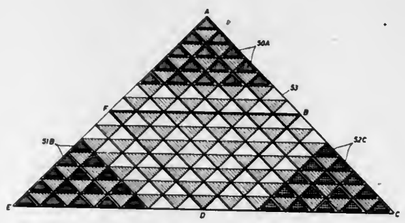
a plurality of elongated game pieces dimensioned to be received within said apertures, and to provide obstacles to the path of travel of said thrown dice.

4,515,370

BOARD GAME

Manuel E. Garcia, 3431 Walnut Bend La. #2402, Houston, Tex. 77042

Continuation-in-part of Ser. No. 269,485, Jun. 2, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 505,415
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—258 **19 Claims**



5. A method of playing a board game including opposing sets of triangular-shaped playing pieces and a game board having a plurality of first and a plurality of second triangular areas arranged on said board, with each of said fist triangular areas having its sides parallel to corresponding sides of other of said first triangular areas, each of said second triangular areas having its sides parallel to corresponding sides of other of said second triangular areas, each of said first triangular areas having two or more adjacent first triangular areas and having one or more adjacent second triangular areas, and each of said second triangular areas. having two or more adjacent second triangular areas and having one of more adjacent first triangular areas, said method comprising:

linearly moving a selected one of said playing pieces in a selected direction from one of said first triangular areas to another of said first triangular areas;

linearly moving a selected one of said playing pieces in a selected direction from one of said second triangular areas to another of said second triangular areas;

positioning two of said playing pieces from the same set in adjacent triangular areas for forming a parallelogram-shaped united playing member; and

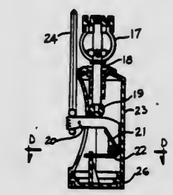
linearly moving said parallelogram-shaped united playing member independently of said other playing pieces.

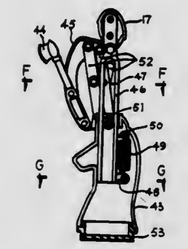
4,515,371

INSTRUCTIONAL CHESS GAME

Licinio Basevi, c/o Mr. I. Cesana, 12218 E. Greenwood Ave., Cerritos, Calif. 90701

Filed Jun. 13, 1983, Ser. No. 503,671
Int. Cl.³ A63F *3/02*
U.S. Cl. 273—260 **13 Claims**





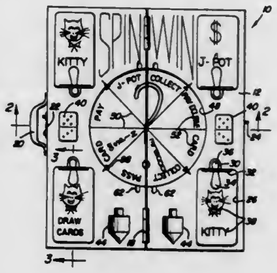
1. A chess set comprising an eight by eight pattern of sixty four playing squares on a chess game playing board and two sets of visually distinct playing pieces each comprising eight pawns, two knights, two bishops, two rooks/castles, one queen and one king, said playing board having each of the sixty four playing squares characterised by a centrally situated and substantially square recess of equal size, shape and alignment in all said playing squares, and in cooperative relation with each of the playing pieces, said playing pieces having means such that each playing piece is animated to display and act a diverse bellicose activity appropriate to the character of each type of playpiece by activation by a player-person to cause each distinct play piece when activated to physically attack an opposing playpiece that is to be "taken" during a move of the game; each playpiece further characterised in that the bases of each playing piece and the recesses of each of the playing board playing squares have an interdependent co-operating relationship such that, at least, the bases of the kings, queens, rooks/-castles, bishops and knights playpieces cannot establish the cooperating relationship with any playing squares of the playing board when facing a direction that is unallowable in accordance with the traditional rules of the game of chess, whilst all the bases of the playiing pieces in their inter-dependent relationships with the playing squares are characterised by the centrally situated recesses whereby the base of each of the playing pieces rest on the playing squares' recessed configurations which recessed configurations allow the directional positioning of the playing pieces so that they will establish only correct directional attitudes that the playpieces' representational and activatable animated means may be aimed correctly and only in the directions to which directions the playpieces are permitted to move in accordance with the rules of the game of chess, each play piece animated means being able to physically reach and strike any of the opponent playpieces anywhere about the playing board in accordance with the permitted moves as allowed by the traditional rules of the game of chess.

4,515,372

GAME DEVICE

Jose M. G. Gonzales, 8520 Summer, Albuquerque, N. Mex. 87112

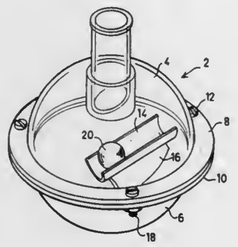
Filed Dec. 9, 1982, Ser. No. 448,231
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—274 **8 Claims**



1. A game device comprising a game board having a generally planar upper surface, a centrally disposed, generally circular recess in the planar upper surface defining a compartment with the bottom surface of the compartment being divided into a plurality of radial segments by radial dividing lines with the radial segments being distinguishably colored and provided with indicia and chance control means movably supported in relation to the compartment for designating one of the radial segments of the bottom surface of the compartment, said chance control means including a top type spinner having a tapered lower end and a plurality of flat peripheral surfaces with the number of flat peripheral surfaces corresponding to the number of radial segments formed in the bottom surface of the compartment, the flat surfaces on the spinner including distinguishable colors and indicia corresponding with the colors and indicia on the bottom surface of the compartment, the periphery of the compartment defining a barrier for retaining the spinner therein when it is rotated and spun upon the tapered lower end, said upper surface of the game board also including a plurality of compartments located adjacent the periphery thereof for receiving simulated money or cards having instructional indicia associated therewith, each of said compartments including a lift device for elevating one end of the cards or simulated money placed in the compartments to facilitate access thereto, a pair of standard dice rollable in the compartment for indicating the results of the chance control means, said upper surface of the game board including compartment means receiving the dice for storage, said game board being foldable along a center line and provided with substantial thickness with the hinge axis being at the upper surface of the game board and above the bottom of the compartment whereby the compartment will have an open area when the game board is folded, and a partition forming a closure for the compartment when the game board is folded, said partition including projecting ends having one surface offset inwardly, said compartment having recesses in the periphery thereof along a line parallel to and adjacent the hinge axis for receiving the offset projecting ends for detachably mounting the parti-

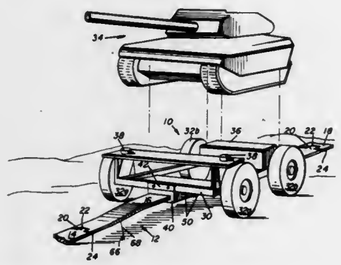
tion across the compartment with one surface thereof aligned with the hinge axis to form a closure for the compartment when the game board is folded.

4,515,373
HAND-HELD BALL GAME
Uri Hirshfeld, Kibbutz Malkia, Israel, assignor to Orda Industries Ltd., Kibbutz Malkia, Israel
Filed Jan. 23, 1984, Ser. No. 572,909
Claims priority, application Israel, Feb. 1, 1983, 67807
Int. Cl.³ A63F 7/00
U.S. Cl. 273—317 **17 Claims**



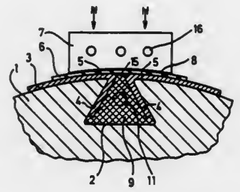
1. A hand-held ball game, comprising: an enclosure, at least the upper end of which is transparent to permit viewing its interior; a ball within said enclosure; an opening through the upper end of said enclosure of a slightly larger diameter than said ball to permit ejection of the ball therethrough by a quick manipulation of the enclosure while held in an upright position; and a channel of substantially semi-cylindrical configuration disposed within said enclosure and constraining the movement of the ball to a line intersected by the longitudinal axis of said opening through the upper end of the enclosure.

4,515,374
MOVEABLE TARGET ASSEMBLY
Thomas W. Herren, Jr., 6611 Dearborn Dr., Falls Church, Va. 22044
Filed Nov. 21, 1983, Ser. No. 553,975
Int. Cl.³ F41J 9/02; B61B 13/04
U.S. Cl. 273—359 **11 Claims**



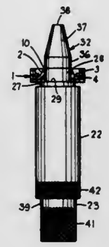
1. A moveable target system comprising:
target means for aiding in marksmanship practice including a frame, a target fixed to said frame, front and rear pairs of wheels journalled to said frame for supporting said target above the terrain surface for rolling movement thereacross, and power means for driving said front or rear pairs of wheels to rollingly propel said frame over said terrain surface;
track means for establishing a prescribed course of movement for said target means, said track means including plural elongated flexible track members connected in an end to end manner to establish said course, each of said members defining substantially planar upper and lower surfaces and being flexibly displaceable along said prescribed course between (a) a terrain-engaging position wherein said lower surface of said track means is engaged with said terrain and (b) a displaced position wherein said lower surface is vertically spaced above the terrain surface; and
connecting means fixed to and carried with said frame and defining a cavity vertically spaced above said terrain at a position substantially corresponding to said displaced position of said track means, said cavity for slidably receiving said track means, said conncting means for sequentially flexibly displacing said successive portions of said segments from said terrain-engaging position to said displaced position as said target means is propelled along said prescribed course and for permiting the sequential return of said successive portions from said displaced position to said terrain-engaging position, wherein said track means is flexibly displaced into said displaced position only in the vicinity of said connecting means; and wherein
said track means includes plural anchor means axially separated from one another along said prescribed course for anchoring said track means to the terrain and yet permitting said portions of said track means to be upwardly flexibly displaced to said displaced position above said terrain surface.

4,515,375
PROCESS AND ARRANGEMENT FOR SEALING THE GAP BETWEEN THE ENDS OF A GRAVURE PRINTING PLATE MOUNTED ON A PRINTING CYLINDER
Gerhard Bleckmann, Lampertheim; John Lynch, Monsheim, and Heinz Mohr, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 8, 1984, Ser. No. 587,671
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308807
Int. Cl.³ F16J 15/16; B41F 27/06, 27/12
U.S. Cl. 277—1 **24 Claims**



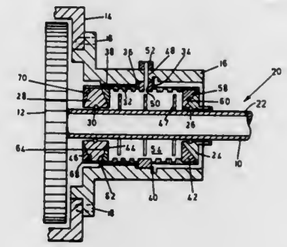
1. A process for sealing the gap between the ends of a gravure printing plate mounted on a printing cylinder of a sheet-fed or reel-fed rotary gravure printing machine, one or both ends of the gravure-printing plate being folded over and hooked into a groove running parallel to or obliquely to the printing cylinder axis, the process comprising
placing a sheet over the gap and the adjoining two end portions of the surface of the gravure printing plate,
pressing the sheet against the surface of the gravure printing plate so that the gap is covered in a flush manner by the sheet,
filling the resulting gap cavity with a thermoplastic and/or hardenable material,
solidifying the filling material and
removing the sheet after the filling material has hardened.

4,515,376
SEAL INSTALLATION DEVICE WITH COAXIAL HANDLE PARTS
James A. Okamuro, Kalamazoo, Mich., assignor to Borroughs Tool & Equipment Corporation, Kalamazoo, Mich.
Filed Aug. 8, 1984, Ser. No. 639,643
Int. Cl.³ F16J 15/00; B23P 19/02
U.S. Cl. 277—9.5 **4 Claims**



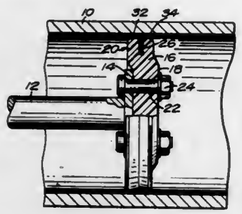
1. A cup seal installation device, comprising:
an elongate first handle part having means defining a first axially extending hole therethrough;
an elongate second handle part relatively reciprocally mounted in said opening in said first handle part, said first and second handle parts having generally coaxial longitudinal axes;
coupling means for coupling said first and second handle parts together and for limiting the amount of relative reciprocal movement therebetween to first and second limits, said second handle part having first and second portions each extending beyond opposite ends of said first handle part, said first portion having a first outside diameter portion and means defining a second axially extending hole concentric to said first axially extending hole, said first outside diameter portion on said first portion terminating in a first shoulder and a second outside diameter portion larger than said first outside diameter portion, said first shoulder extending beyond the same end of said first handle part as said first portion when said first and second handle parts are oriented at said first limit, said first shoulder being oriented inside said first hole in said first handle part when said first and second handle parts are oriented at said second limit; and
an elongate guide member having a stem at one end thereof removably received in said second hole, said guide member having a second shoulder thereon and an outside surface of larger diameter than said stem and generally equal in diameter to said first outside diameter portion so that a smooth and unobstructed transition surface means exists between said outside surface and said first outside diameter, the end of said guide member remote from said stem having a guide surface converging in a direction away from said stem, whereby said cup seal having a conical lip portion resiliently compressible to a diameter equal to said first outside diameter portion is first oriented so that the capacity of said lip conforms to the converging direction of said guide surface and is then guided onto said guide surface and slid along the length of said guide member to a position snugly encircling said first outside diameter portion to thereby enable said stem of said guide member to be removed from said second hole, the resilient compressibility of said lip portion effecting a snug holding of said cup seal on said first outside diameter portion of said second handle part and to thereby ready said cup seal for installation.

4,515,377
ROTARY SEAL ASSEMBLY HAVING A LIQUID FILLED BELLOWS
Leslie V. Johnson, P.O. Box 34137, Jeppestown 2043, Transvaal, South Africa
Filed Jul. 15, 1983, Ser. No. 514,087
Claims priority, application South Africa, Aug. 6, 1982, 82/5715; Sep. 9, 1982, 82/6622
Int. Cl.³ F16J 15/36, 15/48
U.S. Cl. 277—27 **5 Claims**



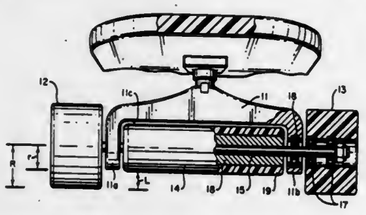
1. A pump seal for a pump used to pump difficult liquids such as slurries and corrosive liquids, the seal in use sealing the shaft of the pump relative to the casing of the pump through which the shaft passes rotatably from the interior to the exterior of the casing which defines, during pumping, a fluid space containing the difficult liquid under pressure, the seal being located within a housing fixed to the casing and surrounding the shaft, and the seal comprising:
first and third annular spaced sealing elements locatable fast with the shaft within the housing and each having a sealing surface;
an axially extensible annular bellows fixed non-rotatably at a point between its ends to the housing, the bellows being spaced radially from and surrounding the shaft to define an annular space between the bellows and shaft;
a second, annular sealing element carried at an end of the bellows away from the fluid space, the second sealing element having a sealing surface complemental in shape to that of the first sealing element and being located adjacent the first sealing element on the side thereof towards the fluid space;
a fourth annular sealing element carried at the opposite end of the bellows towards the fluid space, the fourth sealing element having a sealing surface complemental in shape to that of the third sealing element and being located adjacent the third sealing element on the side thereof away from the fluid space, the first and second sealing elements in combination, and the third and fourth sealing elements in combination defining respective ends of a service liquid compartment existing in the annular space between the bellows and shaft, the bellows resiliently urging the second and fourth sealing elements axially in opposite directions towards the first and third sealing elements respectively; and
a radial inlet communicating with the interior of the service liquid compartment for the introduction of a fixed volume of pressurized service liquid into the compartment, the pressurized liquid in the compartment forcing the second and fourth sealing elements axially in opposite directions to seal against the first and third sealing elements respectively and creating a service liquid barrier preventing the difficult liquid from entering the service liquid compartment, getting between sealing surfaces of the sealing elements and deteriorating those surfaces.

4,515,378
DOUBLE CUP SEALING MEMBER FOR DOUBLE ACTION PISTON PUMP
Charles R. Marshall, Warwick, R.I., assignor to Dixon Industries Corporation, Bristol, R.I.
Filed May 17, 1984, Ser. No. 611,212
Int. Cl.³ F16J *15/32, 9/08*
U.S. Cl. 277—152 **18 Claims**



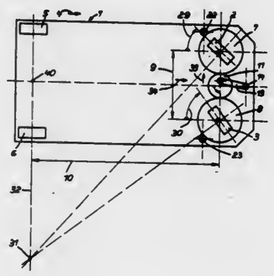
1. A one-piece, self-lubricating, thermoplastic sealing member suitable for mounting on a piston located within a piston and cylinder assembly that operates under differential pressure and providing sealing engagement between the piston and the cylinder in a double action piston pump, said sealing member comprised of an annular shaped body, a peripheral wall portion of which is radially cut into two flexible and resilient flanges of preselected length and thickness, said flanges being substantially in registry with one another, in radial alignment with a transverse axis of said sealing member in an initial position and can be bent in the vicinity of their respective bases in opposite directions from said initial position to a preselected angle below about 20° relative to said transverse axis of said sealing member, said flanges having a memory which urges them to return to their initial prebent position, said sealing member adapted for disposition in an annular space between said piston and said cylinder so that: (1) the peripheral positions of said flanges are placed in continuous contact under tension with the annular surface of the inner walls of said cylinder, providing two discrete sealing engagements therebetween in seriatim, the memory of said flanges causing their peripheral portions to be urged radially against the annular surface of the inner walls of said cylinder so as to continuously compensate for any irregularities of the annular surface of the inner walls of said cylinder and maintain said sealing engagements during reciprocal movement of the piston within the cylinder, and (2) the peripheral portion of said sealing member which is oppositely disposed to said flanges is fixedly secured in said piston.

4,515,379
WHEEL TRUCK AND ROLLER ASSEMBLY
Christian Pasques, P.O. Box 5397, Santa Monica, Calif. 90405
Filed Aug. 5, 1983, Ser. No. 520,545
Int. Cl.³ A63C *17/26*
U.S. Cl. 280—11.27 **6 Claims**



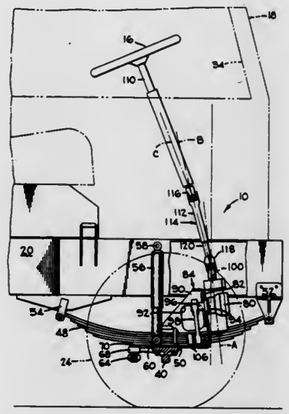
1. A wheel truck and roller assember for a skate platform including:
(a) an axle housing secured to the underside of said platform, said axle housing having left and right legs defining an open channel between the legs;
(b) an axle passing through the legs and across the channel;
(c) left and right skate wheels;
(d) a roller; and
(e) means for mounting said skate wheels and roller in coaxial alignment with the roller between the skate wheels in said open channel and the skate wheels receiving the opposite end portions of the axle extending from the left and right legs respectively of said axle housing, and wherein the roller can rotate independently of the skate wheels.

4,515,380
VEHICLE WITH TWO STEERABLE WHEELS
Karl Schumacher, Tübingen, Fed. Rep. of Germany, assignor to Ernst Wagner KG-Fördertechnik, Fed. Rep. of Germany
Filed Jun. 21, 1983, Ser. No. 506,346
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223196
Int. Cl.³ B62D *7/08*
U.S. Cl. 280—93 **7 Claims**



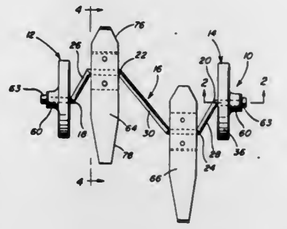
1. A vehicle for travel in a travel direction, comprising:
a frame;
a pair of gears pivotally mounted to said frame on swivel axes at laterally spaced positions with respect to the travel direction, said gears being spaced from each other transversely to the travel direction;
a pinion having a central axis, meshed with each of said gears and disposed in the space between said gears;
a swing arm pivotally connected to said frame at an arm axis and rotatably connected to said pinion at an eccentric axis with respect to said central axis, said arm axis being forward of said eccentric axis in the travel direction;
a steerable wheel rotatably mounted to each gear about a rotation axis which is at an angle to said swivel axis of each respective gear, said swivel axis of each gear extending through a center of a respective steerable wheel;
said swing arm having a longitudinal axis which extends parallel to the travel direction with said rotation axes of each steerable wheel extending transversely to said travel direction for straight ahead travel of the vehicle, said eccentric axis lying in a plane containing said swivel axes of said gears with said longitudinal axis extending parallel to the travel direction, said central axis of said pinion lying rearward of said eccentric axis and in a common plane with said eccentric axis and said arm axis with said longitudinal axis of said swing arm lying parallel to the travel direction when said rotation axes lie transversely to the travel direction, and said central axis of said pinion lying forward of said eccentric axis and in a common plane with said eccentric axis and said arm axis with said longitudinal axis lying parallel to the travel direction when said rotation axes lie at a maximum steering angle to the travel direction; and
drive means engaged with at least one of said gears for rotating said at least one gear to rotate said pair of gears about said swivel axes to steer the vehicle;
said pinion comprising a pair of superimposed pinion parts each having teeth which are superimposed to form composite teeth that are meshed with said gears and form composite tooth spaces, and biasing means connected between said pinion parts for biasing said pinion parts to reduce the size of said composite tooth spaces whereby at least one of said composite teeth firmly meshes with each of said gears at any angular position of said pinion.

4,515,381
STEERING CONTROL MECHANISM
Arne N. Gunnarsson, Upland, Calif., assignor to FMC Corporation, Chicago, Ill.
Filed Sep. 9, 1983, Ser. No. 530,834
Int. Cl.³ B62D *1/20*
U.S. Cl. 280—96 **5 Claims**



1. A steering control system for a vehicle having a narrow cab secured to a chassis connected by springs to an axle having knuckle joints pivoted to the opposite end of the axle with the levers projecting outwardly from the knuckles and pivotally interconnected by a tie rod, and with a steerable wheel journaled on each of said knuckles; the improvement comprising:
a sub-frame rigidly secured to said axle between said wheels and having a front wall extending forwardly of said axle and angled upwardly and rearwardly;
a steering gear box rigidly secured to said front wall at substantially the midpoint between said wheels and spaced forwardly and above said axle, said gear box having an upwardly and rearwardly directed input shaft having a first longitudinal axis angled at about 7° relative to a vertical plane and having an output shaft normal to said input shaft and directed rearwardly of said vehicle;
a steering lever rigidly secured to said output shaft;
a steering arm rigidly secured to one of said knuckles;
a steering rod pivotally connecting said steering lever to said steering arm;
a steering wheel and steering wheel shaft journaled for rotation in said narrow cab and lying in a longitudinal plane at approximately the transverse midplane of said cab and vehicle and having a second longitudinal axis; and
means defining a slip joint having a third longitudinal axis lying in said longitudinal plane and universal joints on opposite ends thereof connecting said steering wheel shaft in driving engagement to said input shaft for steering said wheels in response to turning said steering wheel and for accommodating movement of the chassis axially and transversely of said second axis for minimizing damage to said gear box and minimizing transmission of shock forces to said steering wheel due to driving over rough roads.

4,515,382
OCCUPANT PROPELLED WHEELED DEVICE
Harold L. Boese, Galveston, Tex., assignor to HKC, Inc., Houston, Tex.
Filed Jan. 28, 1983, Ser. No. 462,019
Int. Cl.³ B62M *1/08*
U.S. Cl. 280—221 **3 Claims**



1. A wheeled device comprising two parallel, spaced and aligned wheels, an axle interconnecting said wheels, said axle including a pair of opposed offset portions oriented between axially aligned end portions, and one-way drive connecting means between each of the wheels and the end portions of the axle, an elongated pedal rotatably connected to each of the offset portions of the axle to facilitate an occupant or user balancing himself while moving the offset portions in a circular path to propel the device across a supporting surface said one-way drive connecting means including an axially oriented ratchet mechanism associated with each of the wheels and the corresponding end portion of the axle, each ratchet mechanism including a plurality of ratchet teeth circumferentially arranged on the wheel and facing axially therefrom, a sleeve axially slidable on the axle and spring biased toward the wheel, a pin and slot driving connection between the sleeve and the axle, and a ratchet pawl extending axially from the sleeve for engagement with the teeth on the wheel, wherein said pedals are substantially planar and define forward and rearward end portions relative to the offset portions of said axle, said rearward end portion being substantially longer than said forward end portion and having a transverse end edge for frictionally engaging the supporting surface to provide a drag brake when in contact with the supporting surface, thereby enabling steering control of the device by controlling the downward force exerted on the rearward end portion of each pedal.

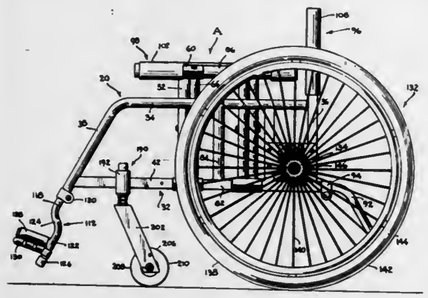
4,515,383
WHEELCHAIR CONSTRUCTION
Jeffrey P. Minnebraker, Van Nuys, Calif., assignor to Quadra Wheelchairs, Inc., Westlake Village, Calif.
Continuation of Ser. No. 378,433, May 14, 1982, Pat. No. 4,477,098, which is a continuation-in-part of Ser. No. 206,346, Nov. 13, 1980, Pat. No. 4,351,540. This application May 24, 1984, Ser. No. 613,464
Int. Cl.³ A61G *5/02*
U.S. Cl. 280—242 WC **26 Claims**

1. A wheelchair which is foldable and collapsible for storage and transport and which is openable for use, said wheelchair comprising:
(a) a pair of opposed first and second frame sections,
(b) a seat structure connected between said first and second frame sections and each capable of being juxtaposed relative to one another when the wheelchair is in the folded position,
(c) a first pair of spaced apart connecting rods with each pivotally connected to a lower portion of said first frame section at spaced apart locations between the front and rear of the wheelchair, said first pair of connecting rods also being connected to said seat structure at a pair of spaced apart points generally upwardly of the second frame section,

(d) a second pair of spaced apart connecting rods pivotally connected to a lower portion of said second frame section at spaced apart locations between the front and rear of the wheelchair, said second pair of connecting rods also being connected to said seat structure at a pair of points generally upwardly of said first frame section,

(e) first pivot means for pivotally connecting one of the first connecting rods to one of the second connecting rods intermediate their upper and lower ends,

(f) second pivot means for pivotally connecting the other rod of the first pair of connecting rods to the other rod of the second pair of connecting rods intermediate their



upper and lower ends, whereby said frame sections can be shifted apart to the opened position for use and shifted together to the folded position,

(g) first telescoping connecting means located between said pairs of connecting rods between the front and rear of the wheelchair and operatively connecting a side of the seat structure above the first frame section to the first frame section, and

(h) a second telescoping connecting means located between said pairs of connecting rods between the front and rear of the wheelchair and operatively connecting a side of the seat structure above the second frame section to the second frame section.

4,515,384

FRONT WHEEL SUSPENSION SYSTEM FOR A MOTORCYCLE

Kenji Honma; Toshio Asami; Masayuki Baba, all of Saitama, and Sumio Nakayama, Shizuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Showa Manufacturing Co., Ltd., both of Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,291

Claims priority, application Japan, Sep. 19, 1981, 56-148029

Int. Cl.³ B60G *17/08;* **B62K** *25/08*

U.S. Cl. 280—276 **12 Claims**

1. A front wheel suspension system for a motorcycle, comprising:

a fork pipe and a bottom case;

an oil pressure generating chamber defined by said fork pipe and said bottom case;

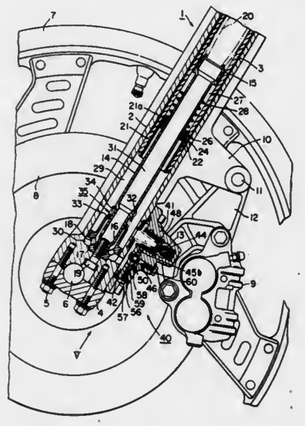
a reservoir chamber communicating with said oil pressure generating chamber;

a main oil passage connected with said oil pressure generating chamber and said reservoir chamber for conducting oil from said oil pressure generating chamber into said reservoir chamber upon a contracting motion between said fork pipe and said bottom case; and

a contraction restraining mechanism cooperating with a brake mechanism of said motorcycle, said contraction restraining mechanism comprising:

a valve mechanism interposed in said main oil passage and operatively connected with said brake mechanism for intercepting said main oil passage upon braking of said motorcycle;

a bypass oil passage connected to said valve mechanism and communicating with said reservoir chamber; and



adjustable orifice means, interposed in said bypass oil passage, for adjusting a resistance to flow of said oil.

4,515,385

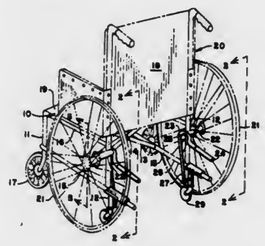
WHEELCHAIR AND ATTACHMENT THEREFOR

Dixon W. Christian, 34 Old Mill Rd., Richmond, Va. 23226

Continuation-in-part of Ser. No. 271,135, Jun. 8, 1981, abandoned. This application Jun. 15, 1983, Ser. No. 504,499

Int. Cl.³ A61G *15/00*

U.S. Cl. 280—289 WC **6 Claims**



1. In a wheelchair comprised of a frame having paired front and rear vertical posts which define an interior region of said frame and paired upper and lower horizontal connecting means extending between front and rear posts, paired front caster wheels mounted on said frame adjacent said front posts, seating means disposed within said interior region generally behind and above said front caster wheels, and a pair of drive wheels rotatably supported by said rear vertical posts on the exterior of said frame on opposite sides of said seating means and adapted to rotate in vertical planes about horizontally disposed axles, said drive wheels being equipped with quick disconnect means, said front caster and drive wheels being adapted to support said wheelchair at four sites for rolling motion upon an underlying substantially planar support surface, the improvement comprising jacking apparatus associated with each rear vertical post, said apparatus being comprised of

a rear caster wheel which engages said frame in a manner to be vertically positionable between uppermost and lowermost positions, a lever having an active portion, and a handle portion positioned within reach of a seated occupant of said wheelchair,

said active portion being associated with said frame by first pivot means permitting about 90° of movement of said lever in a vertical plane between upright and lower positions, vertical connecting means having an upper extremity attached by second pivot means to said active portion and a lower extremity associated by third pivot means with said caster wheel, and locking means which act to cause said lever to be maintained in said lower position, whereby

when said lever is in its lower position, said rear caster wheel is displaced downwardly by said connecting means to its lowermost position, and when said lever is in its upright position, said rear caster wheel is in its uppermost position, said lowermost position of said rear caster wheel being such as to cause the associated drive wheel to be lifted out of contact with the support surface while placing said rear caster wheel in contact with said support surface, the movement of said lever between said lower and upright positions being achievable by said seated occupant and whereby, when said lever is in its lower position, the seated occupant can unaidedly remove said drive wheels from the frame and return them thereto.

4,515,386

GUARD FOR CHAIN WHEEL

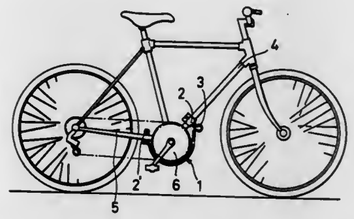
Kanji Tsujimura, 6-16, 4-chome, Ikunonishi, Ikuno-ku, Osaka, Japan

Filed Aug. 10, 1983, Ser. No. 521,919

Claims priority, application Japan, Jun. 27, 1983, 58-100538[U]

Int. Cl.³ B62H *1/02*

U.S. Cl. 280—289 G **2 Claims**



1. A guard for a chain wheel on a bicycle for use in the mountains, comprising an arcuate body extending along substantially the lower half of the outer periphery of the chain wheel so as to cover it, metal fittings for securing said guard at each end thereof to the bicycle frame, and a shock absorbing portion.

4,515,387

HITCH WITH SWIVELING TONGUE

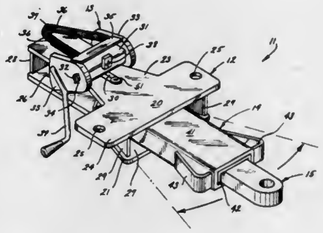
Howard L. Schuck, 705 Meadowview Dr., Celina, Ohio 45822

Filed Mar. 25, 1983, Ser. No. 478,649

Int. Cl.³ B60D *1/00*

U.S. Cl. 280—478 A **14 Claims**

1. A hitch assembly comprising: a mounting member adapted to be attached to a propelled vehicle, a tongue member adapted to be connected to a vehicle to be towed, and pivotal connection means attached to said mounting and tongue members for allowing relative movement between said mounting and tongue members whereby said tongue member can be moved relative to the propelled vehicle to a position for attachment to the vehicle to be towed and including selectively actuatable latching means attached to said mounting member for latching said mounting member and said tongue member in a first position the prevent relative pivotable movement between said members wherein said tongue member includes a wedge and said latching means includes a cam for



engaging said wedge to prevent said relative pivotal movement.

4,515,388

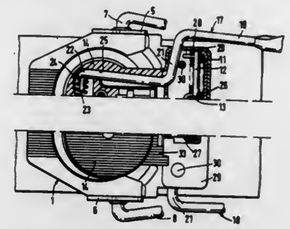
SKI BRAKE

Anton Emert, Oberau; Walter Knabel, Murnau, and Manfred Richert, Munich, all of Fed. Rep. of Germany, assignors to Marker International, Salt Lake City, Utah

Filed Aug. 11, 1982, Ser. No. 407,098

Int. Cl.³ A63C *7/10*

U.S. Cl. 280—605 **5 Claims**



1. A brake for a ski, comprising:

a pair of laterally spaced wire levers, each wire lever being of predetermined diameter and comprising a pivot shaft intermediate a lower arm and an upper arm, said lever being rotatable between a braking position in which said lower arm extends below the ski and outboard from the ski and a non-braking position in which said lower arm does not extend below the ski;

a coil spring disposed between said wire levers for biasing said lower arms outboard from the ski, said coil spring having a diameter no larger than the diameter of either of said levers;

actuating means for urging each lever into said braking position;

a generally circular pedal being rotatable about an axis perpendicular to said pedal and having a thickness about equal to the predetermined diameter of said wire levers, said pedal further having a downwardly facing recess containing the coil spring and receiving the upper arms of each of said wire levers, said pedal receiving pressure from the sole of a ski boot, said pedal being movable by the pressure of the ski boot from a non-skiing position to a skiing position, said levers being rotated into said non-braking position when said pedal means is moved into said skiing position; and

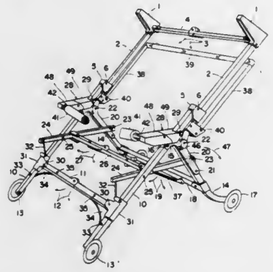
positioning means for holding each of said lower arms in an inboard position against the bias of said coil spring when said levers are in said non-braking position, said positioning means comprising a guide surface on said pedal for engaging and urging inward said upper arms when said pedal is in said skiing position.

4,515,389

BABY CARRIAGE AND ARMREST FOR SUCH BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed May 2, 1983, Ser. No. 490,489
Claims priority, application Japan, May 21, 1982, 57-86935
Int. Cl.³ B62B *7/06*
U.S. Cl. 280—642 **5 Claims**



1. A baby carriage with armrests, said baby carriage including a main body, said armrests projecting forwardly from said baby carriage main body and positioned on each side of a baby sitting in the baby carriage, comprising an armrest front member (**48**) including horizontal and vertical first wall elements, and an armrest rear member (**49**) including horizontal and vertical second wall elements, first connecting means (**29**) operatively securing said rear member (**49**) to said main body (**10**) of said baby carriage, second connecting means (**50, 53**) for operatively connecting said front member (**48**) in a pivotable manner to said rear member (**49**), said second connecting means including an armrest pivot pin (**50**) extending widthwise of the baby carriage, said first wall elements of said armrest front member (**48**) and said second wall elements of said armrest rear member (**49**) forming respective channel components partially overlapping each other, third connecting means including a pivot control pin (**53**) secured to one of said vertical first wall elements (**51**) of said armrest front member (**48**) in a position spaced a predetermined distance apart from said armrest pivot pin (**50**) and extending substantially parallel to said armrest pivot pin (**50**), wherein said armrest rear member (**49**) comprises a first elongated guide cam track (**54**) extending in one of said vertical second wall elements of said armrest rear member (**49**) along an arc having a center of curvature located at said armrest pivot pin (**50**), said arc having a radius equal to said predetermined distance, said pivot control pin (**53**) being received in said elongated guide cam track (**54**), said third connecting means further including an interlocking lever (**15**) connected to said main body in a position for cooperation with said pivot control pin (**53**), said interlocking lever (**15**) comprising a second cam guide track (**55**) for engagement with said pivot control pin (**53**), whereby said pivot control pin (**53**) cooperates with said first and second cam tracks (**54, 55**), thereby making said armrest (**28**) itself collapsible.

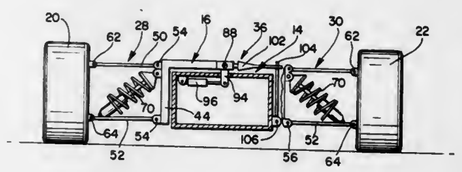
4,515,390

CHASSIS AND SUSPENSION SYSTEM FOR VEHICLES

William H. Greenberg, 23 Sylvia La., Lincoln, R.I. 02865

Filed Apr. 11, 1983, Ser. No. 483,910
Int. Cl.³ B60G *21/00*
U.S. Cl. 280—675 **16 Claims**

1. A chassis and suspension system for a vehicle and the like comprising:
(a) a chassis;
(b) a front subchassis;
(c) a rear subchassis;
(d) right and left front wheels;
(e) right and left rear wheels;
(f) front wheel connecting means rotatably mounting said front wheels on the right and left sides of said front subchassis, respectively, for supporting said front subchassis on a supporting surface, said front wheels being pivotable to effect steering of said vehicle and being independently resiliently upwardly movable relative to said front subchassis;
(g) rear wheel connecting means rotatably mounting said rear wheels on the right and left sides of said rear subchassis, respectively, for supporting said rear subchassis on a supporting surface, said rear wheels being independently resiliently upwardly movable relative to said rear subchassis;
(h) pivot means pivotally suspending the front and rear portions of said chassis, from said front and rear subchas-



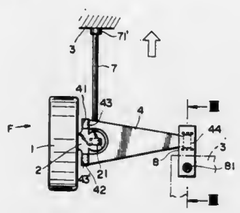
sis, respectively, so that said chassis is pivotable about a substantially longitudinal axis in said vehicle which is above the longitudinal center-of-gravity axis of said chassis;
(i) means interconnecting said chassis to said front subchassis to resiliently restrict the pivotal movement of said front subchassis relative to said chassis, said chassis to front subchassis interconnecting means being independent of and unconnected to said front wheel connecting means; and
(j) means interconnecting said chassis to said rear subchassis to resiliently restrict the pivotal movement of said rear subchassis relative to said chassis, said chassis to rear subchassis interconnecting means being independent of and unconnected to said rear wheel connecting means.

4,515,391

VEHICLE SUSPENSION WITH LATERAL MEMBER

Masaru Koide, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 21, 1983, Ser. No. 487,155
Claims priority, application Japan, May 31, 1982, 57-80457[U]
Int. Cl.³ B60G *3/00*
U.S. Cl. 280—690 **16 Claims**



9. In a vehicle suspension for a land vehicle with non-steerable road wheels aligned at a toe angle which is normally near the direction of travel of the vehicle, a support for carrying a road wheel on the vehicle body comprising:
(a) a lateral wheel suspending member having a first end supporting a road wheel at at least two points separated in the direction of travel in a fixed spatial relationship and extending toward the body of the vehicle in a direction

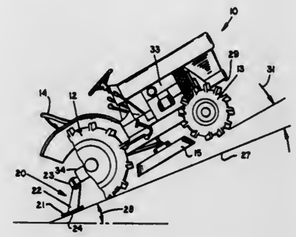
predominantly perpendicular to the direction of travel; and
(b) a lever arm pivotably supported by the vehicle body and supporting a second end of said wheel suspending member, said lever arm extending in the direction of travel, an assembly connected to said vehicle body supporting said lever arm for free pivotable movement about a vertical axis to pivot within a horizontal plane in response to transverse forces acting on the road wheel to cause said wheel suspending member both to pivot and move twoard the body of the vehicle and cause the road wheel to toe in.

4,515,392

SLOPE MOWER

Robert M. Torras, Brunswick, Ga., assignor to Kut-Kwick Corporation, Atlanta, Ga.

Continuation of Ser. No. 385,817, Jun. 7, 1982, Pat. No. 4,453,739. This application Jun. 8, 1984, Ser. No. 618,428
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.³ B60R *27/00*
U.S. Cl. 280—755 **4 Claims**



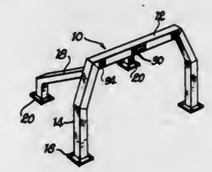
1. In a tractor vehicle intended for moving or otherwise normally functioning on sloped surfaces while traveling on the sloped surface, the vehicle having a rear axle, front wheels, and having a normal center of gravity forward of the rear axle at a location which establishes the proportion of vehicle weight on the front wheels and thereby normally establishes the maximum angle of forward ascent the vehicle can reach when moving up a sloped surface before tipping back over the rear axle, the method comprising the steps of:
providing weight means on said vehicle in back of said normal center of gravity so as to relocate the center of gravity of the vehicle toward the rear axle at a new center of gravity aft of said normal center of gravity, which allows the front wheels of the vehicle to lift away from the sloped surface when the vehicle exceeds a critical angle of forward ascent substantially less than said maximum angle of forward ascent which the normal vehicle otherwise could reach, thereby causing the front of the vehicle to lift away from the sloped surface in a relatively gradual and controlled manner when the vehicle exceeds said critical angle of forward ascent, so as to signal to the vehicle operator that the critical angle of forward ascent has been reached and to inhibit the normal functioning of the vehicle until the angle of forward ascent is reduced below the critical angle, whereby the vehicle returns to a normal stance and functions with all wheels on the sloped surface; and
limiting the maximum amount of tipping back over the rear axle which the vehicle with said relocated center of gravity is capable of undergoing when said critical angle of forward ascent is exceeded, so that the front wheels of the vehicle can lift no more than a limited amount, assuring that the vehicle cannot tip back over its rear axle and overturn when exceeding the critical angle of forward ascent and while the normal functioning of the vehicle is inhibited,
thereby enabling the driver of the vehicle to regain contact between the front wheels of the vehicle and the sloped surface by reducing the angle of forward ascent of the vehicle on the sloped surface, and allowing the vehicle thereafter to resume its normal function on the sloped surface.

4,515,393

NEON LIGHTED ROLL BAR

Gary E. Sauter, 6957 Wtoming, La Mesa, Calif. 92041

Filed May 12, 1983, Ser. No. 493,776
Int. Cl.³ B60R *27/00*
U.S. Cl. 280—756 **5 Claims**



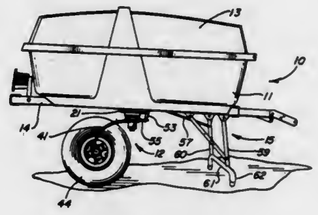
1. A roll bar for a motor vehicle comprising:
(a) An arched bar having depending ends adapted to mount to a motor vehicle and defining a crossbar positioned substantially over said vehicle when said depending ends are mounted thereto;
(b) A cavity defined in the crossbar portion of said arched bar, and a neon light installed in said cavity and being visible from at least one side of said bar;
(c) said arched bar being generally hollow tubing and said cavity being defined by a cutaway front portion of said crossbar to define a frontally open cavity;
(d) a shatter resistant transparent plate mounted over said cutaway front portion;
(e) said hollow tubing being generally square in cross section and said removed portion comprising a portion of the front side of said tubing;
(f) a pair of rearward braces adapted to mount to rearward portions of said arched bar, said rear braces also being substantially square in cross section; and,
(g) including a plurality of pass-through openings in said braces, said openings being lined with cylinders.

4,515,394

WHEEL LOCK AND STAND ASSEMBLY FOR TRAILER

David J. Zwick, Stoystown, Pa., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Sep. 29, 1982, Ser. No. 428,384
Int. Cl.³ B60S *9/02*
U.S. Cl. 280—764.1 **6 Claims**



1. A wheel lock and stand assembly for a trailer comprising a wheel having a horizontal axis, swivel means for mounting the wheel on the trailer so that the wheel can swivel about a vertical axis and rotate about said horizontal axis, a shaft rotatably mounted on the trailer and a pair of spaced-apart locking

arms directly mounted on the shaft and fixedly secured thereto for rotation therewith, a crank mounted on the shaft for rotating the shaft and the locking arms into a locking position in which the locking arms engage the swivel means and rotate the swivel means and the wheel until said horizontal wheel axis extends generally parallel to said shaft and thereafter prevents rotation of the swivel means, the shaft and the locking arms being movable by the crank to an unlocked position in which the locking arms are not engaged with the swivel means and do not prevent rotation of the swivel means, a stand assembly pivotably mounted on the trailer and movable between a support position in which the stand assembly supports the trailer and a storage position in which the stand assembly is stored underneath the trailer, and link means connecting the stand assembly and the crank for moving the shaft to its locking position as the stand assembly moves to its support position and for moving the shaft to its unlocked position as the stand assembly moves to its storage position.

4,515,395

ADJUSTABLE VEHICLE SEAT BELT ANCHORAGE

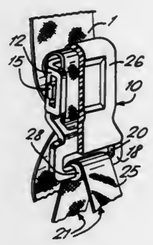
Michael Patterson, Carlisle, England, assignor to Kangol Magnet Limited, Carlisle, England

Filed Apr. 28, 1983, Ser. No. 489,325

Claims priority, application United Kingdom, Apr. 28, 1982, 8212301

Int. Cl.³ B60R *21/10;* **A62B** *35/00*

U.S. Cl. 280—808 **12 Claims**



1. An adjustable shoulder anchorage device for a vehicle seat belt, comprising:

a flexible elongate member;

means mounting said flexible elongate member to extend generally upright between upper and lower securement means in the region of the shoulder of an occupant of a vehicle seat belt with which said vehicle seat belt system is associated;

connector means having spaced generally parallel bar means engaged with said flexible elongate member whereby said connector means can be retained in a selected position along said flexible elongate member; and

support means for supporting said vehicle seat belt said support means being carried by said connector means,

wherein said bar means comprise first, second and third bars with said second bar between said first and third bar, and wherein said elongate member extends from one of the said securement means past said first bar to said second bar, reverses the direction thereof around said second bar, extends between itself and said first bar, reverses the direction thereof around said first bar, and extends to the other of said securement means between said second and said third bar.

4,515,396

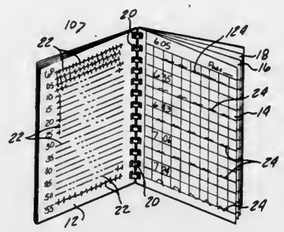
METHOD AND APPARATUS FOR DISPLAYING RECORDS

Daniel A. DuVal, 6765 Griffore Dr., Saginaw, Mich. 48604; Roger N. Kahn, 4680 Ashland, Saginaw, Mich. 48603, and David E. Myers, 2823 Wiles St., Saginaw, Mich. 48602

Filed Apr. 15, 1983, Ser. No. 485,356

Int. Cl.³ B42D *15/00, 11/00;* **G01D** *9/00;* **G01R** *13/00*

U.S. Cl. 281—15 R **10 Claims**



1. A graphic record of electrical measurements of a biological subject made over a first relatively large period of time, the display comprising:

a first set of a plurality of display trace records of such electrical activity, each trace record representing the measured electrical activity of the subject over a second, relatively short period of time which is a devisor of said first period of time, with the first trace records being arranged in sequential order representative of their sequence of occurrence and cumulatively displaying the electrical activity over said entire first period of time; and

a second set of display trace records each representative of a selected section of one of the first trace records, the scale of recording of the second trace records being substantially greater than the scale of the first trace records; and

display means for arranging the second trace records in substantial opposition to the first trace records from which they were derived to allow analysis of the micro-activity represented by the second trace records in comparison to the macro-activity represented by the first trace records.

4,515,397

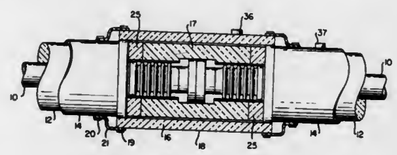
VACUUM INSULATED CONDUIT

Jeffert J. Nowobilski, Orchard Park, and Kenneth C. Kather, Tonawanda, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 1, 1983, Ser. No. 481,237

Int. Cl.³ F16L *59/14*

U.S. Cl. 285—47 **18 Claims**



1. A conduit having reduced thermal leakage at a joint area comprising:

(A) a first pipe having an end thereof;

(B) a second pipe having a diameter greater than that of said first pipe, positioned circumferentially around and axially along said first pipe, terminating at a point short of said first pipe end to define an axial distance from said point to said first pipe end;

(C) bellows, attached at one axial end thereof to said first pipe, having a diameter greater than that of said first pipe but less than 25 percent of the distance between the first and second pipes, positioned circumferentially around and axially along said first pipe along, at least a part of, said axial distance; and

(D) a plate having a solid radial dimension from the furthest radial extent of said bellows to said second pipe, substantially perpendicular to said pipes, connecting said bellows, at the other axial end thereof, with said second pipe and free from contact with said first pipe.

4,515,398

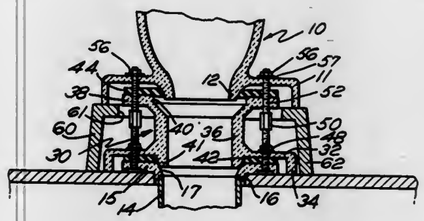
DEVICE FOR ELEVATING CLOSET BOWL

William P. Machon, Sr., 95 Walnut Rd., Barrington, R.I. 02806

Filed Mar. 7, 1983, Ser. No. 472,484

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—59 **7 Claims**



1. A toilet closet bowl device for elevating the bowl above an existing floor flange having upstanding studs, comprising an extender pipe with upper and lower ends having upper and lower flanges extending radially outward and fixed thereto at each end thereof, said lower flange engaging the existing floor flange, a support means embracing the extender pipe and the lower and floor flanges, said support means having an upper surface of a size to allow the bearing rim of a closet bowl to rest thereon, said upper surface of the support means having a height above the floor flange whereby the upper flange of the extender pipe lies above the upper surface thereof.

4,515,399

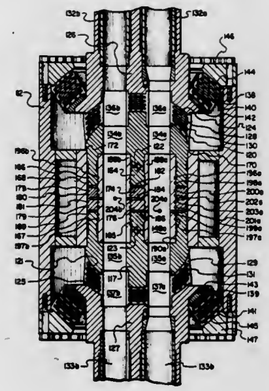
SYMMETRICALLY LOADED FLEXIBLE CONNECTOR HAVING MULTIPLE PASSAGEWAYS

Paul E. Sullivan, Euless, and George W. Peppel, Arlington, both of Tex., assignors to Lockheed Corporation, Burbank, Calif.

Filed Dec. 27, 1982, Ser. No. 453,634

Int. Cl.³ F16L *17/00*

U.S. Cl. 285—95 **5 Claims**



1. A flexible connector having multiple passageways comprising:

a housing defining a bore oriented about a first longitudinal axis;

an angularly deflectable nipple defining a plurality of first passageways oriented essentially parallel to a second axis, said first passageways extending from an inner end of said nipple assembly to an outer end of said nipple assembly, with the radial and circumferential orientation of said first passageways with respect to said second axis defining a first pattern;

a seat having an inner end adapted to slide within said bore along said first longitudinal axis, said seat defining a plurality of second passageways oriented generally parallel to said first longitudinal axis and extending from an outer end of said seat to said inner end of said seat, with said second passageways oriented radially and circumferentially with respect to said first axis in a second pattern substantially identical to said first pattern, whereby when said first axis and said second axis are maintained in a co-axial relationship with the inner end of said nipple adjacent said outer end of said seat, each of said first passageways may be essentially aligned with a corresponding one of said second passageways;

a plurality of sleeves oriented generally parallel to said first longitudinal axis with each of said sleeves defining a respective continuation passageway from a respective one of said second passageways to a respective one of a third plurality of passageways;

first sealing means for accommodating longitudinal movement of said seat with respect to said housing while maintaining a fluid-tight relationship between the respective one of said continuation passageways within said sleeve and the respective ones of said second and third passageways;

a piston plate having a cross-sectional shape and dimension such that when placed within said bore of said housing, adjacent said inner end of said seat and said sleeves, whereby there is defined between said piston plate, said seat said sleeves and the inner diameter of said bore a first pressure chamber which will expand in volume as said piston plate is slid along said first longitudinal axis away from said seat;

second sealing means for maintaining a pressure and fluid-tight seal between said piston plate and said central bore as said piston plate is slid longitudinally with respect thereto;

third sealing means between said first piston plate and said sleeves for maintaining a pressure and fluid-tight seal therebetween as said piston plate moves longitudinally with respect to said seat; and

first aperture means between the interior of a first one of said sleeves and said first pressure chamber for equalizing the pressure therebetween; and means to hold the joint elements in an assembled and functional relationship.

4,515,400

WELLHEAD ASSEMBLY

Jerry D. Smith, Houston, and Edward J. Szymczak, Spring, both of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Mar. 15, 1982, Ser. No. 358,445

Int. Cl.³ F16L *7/00*

U.S. Cl. 285—141 **8 Claims**

1. A wellhead assembly comprising

a wellhead member having a central bore therethrough and an internal shoulder tapered upwardly and outwardly,

a wellhead hanger within the central bore of said wellhead member and having a downwardly facing external shoulder and means for supporting a tubular string from the lower end of said hanger,

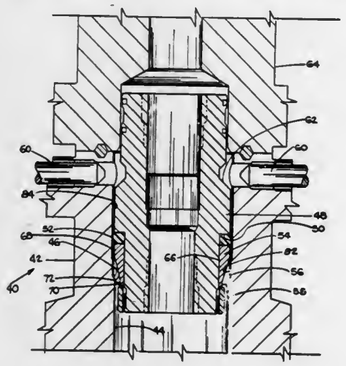
an energizing ring surrounding said hanger below said shoulder and having an external downwardly and inwardly extending tapered surface,

a support ring seated on said wellhead member shoulder and having an external vertical surface with phonographic

grooves therein and an internal downwardly and inwardly extending tapered surface substantially mating with said external tapered surface on said energizing ring,

the tapered surfaces on said energizing ring and said support ring having an angle substantially less than 45° with respect to vertical,

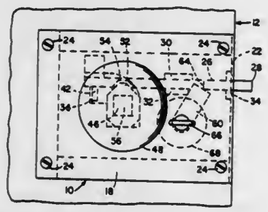
the lower end of said energizing ring extending below said support ring when they are in supporting engagement between said hanger and said wellhead member, and



means on the lower exterior surface of said hanger for engaging and supporting said rings thereon during running and pulling of said hanger,

the tapered surfaces of said rings coacting when supporting said hanger to transfer at least a portion of the hanger load through said support ring vertical grooved surface to the surface of the bore of said wellhead member above its internal shoulder.

4,515,401
DOOR LOCK
William F. Klay, 541 Seale Ave., Palo Alto, Calif. 94301
Division of Ser. No. 103,882, Dec. 17, 1979,. This application May 14, 1981, Ser. No. 263,433
Int. Cl.³ E05C *1/12*
U.S. Cl. 292—170 **5 Claims**



1. A lock for a door having a recess formed in the end thereof intermediate its top and bottom margins comprising: a U-shaped member having a pair of spaced sides and an end wall interconnecting the sides; means engageable with the sides for mounting the member on the door with the sides and end wall enclosing said recess, said end wall having an opening therethrough; a lock bolt; means on the inner surfaces of the sides for mounting the lock bolt in the space therebetween for movement from an extended, locked position with the end of the lock bolt extending through and projecting laterally from the outer face of said end wall to a retracted, unlocked position with said one end of the lock bolt inwardly of the outer face of the end wall; a flat plate accessible from either side of said member and extending into the space between the sides for moving the lock bolt from said extended position to said retracted position, each side having a slot therethrough for shiftably receiving the plate, the slots of said sides being horizontally aligned with each other, said lock bolt having a slot therethrough defining an inclined edge extending transversely of the path of travel of said lock bolt, said plate being adjacent to the lock bolt and having a pin thereon within the space between the sides, the pin extending into the slot in the lock bolt and normally engaging said inclined edge means biasing said lock bolt toward said extended position; and means shiftably mounted on at least one of the sides within said space for releasably holding said lock bolt in said extended position.

4,515,402
GOLF BALL RETRIEVER
Jack D. Sedan, 245 Portola Rd., Carmel Woods, Calif.
Filed Aug. 1, 1983, Ser. No. 519,281
Int. Cl.³ A63B *47/02*
U.S. Cl. 294—19.2 **19 Claims**



1. A golf ball retriever, comprising:

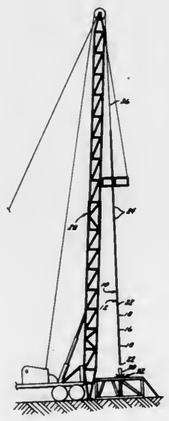
a looped structure to hold the golf ball for retrieval defining an opening to receive the ball; and

means for extending said looped structure from a golf club generally long the direction of the shaft of the club to position the looped structure substantially away from an end of the club and substantially extend the reach of the club for retrieval;

said extending means defining an opening to receive the golf club to support the retriever for said extending;

said extending means opening being oriented to pass through said extending means substantially perpendicularly to said extending direction, in substantially the same orientation as said opening to receive the ball.

4,515,403
OVERSHOT
Alton E. Cheek, 1949 Vuelta Grande Ave., Long Beach, Calif. 90815
Filed Jul. 16, 1982, Ser. No. 399,139
Int. Cl.³ E21B *31/02*
U.S. Cl. 294—86.31 **12 Claims**



1. An overshot which comprises:

an elongated, generally cylindrical body having a lower portion defining downwardly opening receptacle cavity means;

at least one elongated locking arm generally longitudinally disposed in said body, said arm having a lower gripping finger portion located in said lower body portion with upwardly facing locking shoulder means therein exposed to the inside of said receptacle cavity means, and said arm having an upper portion exposed externally of the body for manipulation of the arm,

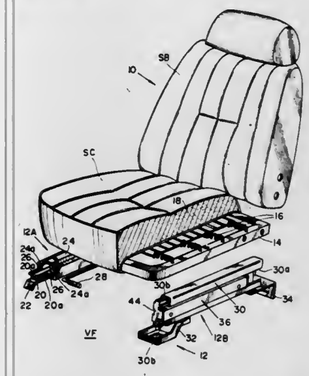
said arm being both longitudinally slidable and radially tiltable in said body between a lower locking position in which said shoulder means is radially inwardly positioned within said receptacle cavity means and an upper release position in which said shoulder means is substantially radially outwardly displaced from said receptacle cavity means,

generally longitudinally directed biasing means within said body and operable between said body and said arm to bias said arm toward its said lower locking position, and,

cam means on said body and cooperating cam follower means on said arm for radially tilting said arm so as to move said shoulder means radially inwardly to its said locking position upon downward sliding movement of the arm from its said upper position to its said lower position under the influence of said biasing means,

said externally exposed upper portion of said arm enabling the arm to be manipulated from its said locking position to its said release position.

4,515,404
SEAT SLIDING DEVICE
Shinichi Nishimura, Zama; Saburo Mizuno, and Kiyoshi Miyamoto, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited and Ohio Seisakusho Co., Ltd., both of Yokohama, Japan
Filed Dec. 6, 1982, Ser. No. 447,132
Claims priority, application Japan, Jan. 21, 1982, 57-6739
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 R **7 Claims**



1. A seat sliding device for moving a seat relative to a floor, comprising:

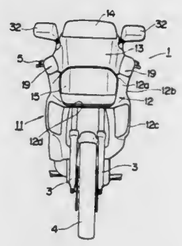
a stationary rail secured to said floor;

a movable rail secured to said seat and slidable on and along the stationary rail to achieve the movement of said seat; and

a slide block of plastics moulded on a selected one of said stationary and movable rails in such a manner that the slide block is disposed between the two rails thereby improving the sliding characteristics of the movable rail relative to the stationary rail,

wherein said slide block is divided into two sections in the longitudinal direction of the selected rail, leaving a predetermined clearance between these two sections, and wherein the two sections of said slide block cover the longitudinal both ends of the selected rail respectively.

4,515,405
FAIRING DEVICE FOR MOTORCYCLES
Tetsuo Ogishima, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 379,324, May 18, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 629,752
Claims priority, application Japan, May 18, 1981, 56-71709[U]; May 18, 1981, 56-71710[U]; May 18, 1981, 56-71711[U]
Int. Cl.³ B62J *17/02*
U.S. Cl. 296—78.1 **14 Claims**



1. In a fairing device for a motorcycle, including a fairing assembly, a pair of rear mirrors mounted on respective sides of said fairing assembly and a pair of blinker units mounted on respective sides of said fairing assembly, wherein said fairing assembly is mounted on a frame of said motorcycle so as to cover a front portion of said motorcycle and has at a front end portion thereof a recess in which a headlight is disposed, the improvement wherein:

said fairing assembly comprises a fairing body defining a lower part thereof, an upper member combined with and disposed above said fairing body and a windscreen fixed with said upper member, said fairing body and said upper member defining said front end recess therebetween and having mating ends which extend on each side of said fairing assembly toward said front end recess;

each of said blinker units comprises a lens member, a base member for holding said lens member, and a blinker bulb disposed in a space defined by said lens member and said base member;

each of said blinker units has a streamlined external shape substantially contiguous with the external shape of said fairing assembly;

each of said blinker units is secured to said fairing assembly in close proximity to said mating ends of said fairing body and said upper member, behind said headlight and below said rear mirror and said lens members of said pair of blinker units are positioned at the rightmost portion and at the leftmost portion, respectively, of said fairing assembly in front of a grip portion at the corresponding side of a handlebar of said motorcycle whereby said blinker units guide wind outwardly and prevent it from directly blowing against said grip portions.

4,515,406
HEADREST FOR MEDICAL TREATMENT CHAIR
Kunio Fujiyama; Kei Okamoto, both of Osaka, and Noriyuki Yoshikawa, Ueno, all of Japan, assignors to Takara Company, New York, Inc., Somerset, N.J.
Filed Sep. 28, 1982, Ser. No. 425,310
Int. Cl.³ A61G *15/00*; A47C *7/38*
U.S. Cl. 297—409 **10 Claims**

1. A chair for human dental or medical treatment and having an improved adjustable headrest support, which comprises:

a. a chair, said chair having a frame,

b. a seat, mounted on said frame;

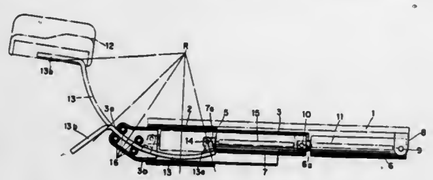
c. a headrest;

d. a bearing race rotatably mounted to a first transverse supporting shaft,

e. a flat curved strip member, one end of said strip member being attached to said headrest, said strip member defining part of a circle, and means mounting said strip member for circular movement around the center of the circle, the other end of said strip member being attached to said bearing race, whereby movement of said strip member corresponds to the natural movement of a human neck,

f. said mounting means comprising at least one pair of opposed cylindrical guide rollers on said frame, said rollers straddling said strip member and extending contiguously across the surface of said strip member substantially transverse to the linear longitudinal axis of said strip member, so as to guide the motion of said strip member along said longitudinal axis,

g. a hydraulic mechanism, said hydraulic mechanism comprising a fluid pressure cylinder pivotally linked at one end to said frame by a second transverse supporting shaft,



said cylinder containing a piston plunger having a piston head, the outer end of said piston plunger being pivotally attached to the other end of said strip member by said first transverse supporting shaft and said bearing race, wherein said piston plunger moves in a horizontal path causing said curved strip member to move in a circular path in conjunction with said bearing race, resulting in the different positioning of said headrest without placing of a human body in a strained position,

h. means to pass a hydraulic fluid into said cylinder, so that said piston head and piston plunger may be displaced in said cylinder, and said headrest may be positioned in said way;

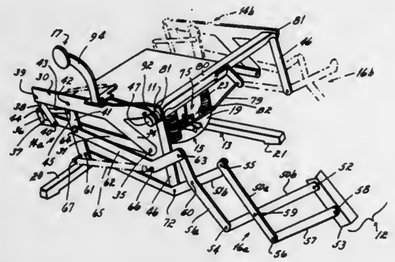
i. a spring, said spring extending between said first shaft and said second shaft, to produce substantially smooth backdown of said piston plunger and piston head when fluid pressure in said cylinder is reduced.

4,515,407

LATCH FOR A CHAIR'S FOOTREST ASSEMBLY

Michael A. Crum, LaGrange, Ky., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Jul. 22, 1982, Ser. No. 400,982
Int. Cl.³ A47C 7/50, 1/02
U.S. Cl. 297—429 **22 Claims**



1. A footrest assembly for a chair, said footrest assembly comprising

a footrest mechanism for opening and closing a foot rest between full extend and full retract positions, said footrest mechanism being connectable to said chair,

a friction latch connected with said footrest mechanism, said friction latch being manually movable by a chair's occupant between latch and release positions when the occupant is seated in said chair, said friction latch functioning to permit said footrest to be restrained in any position desired by the chair's occupant between said full extend and full retract positions and, said friction latch functioning to prevent closing movement of said footrest from any extend position back toward said full retract position in response to a minor force exerted against said footrest as created by the legs of the chair's occupant when those legs are resting on said footrest comfortably while the occupant is sitting in the chair, but said friction latch also functioning to permit closing movement of said footrest from any extend position back toward said full retract position in response to a major closing force exerted against said footrest as created by the legs of the chair's occupant when those legs are drawn thereagainst while the occupant is sitting in the chair, that major closing force imparted by the legs of the chair's occupant to said footrest being substantially greater than the minor closing force imparted to said footrest when the legs of the chair's occupant are simply resting thereon with no leg effort being made to close the footrest, and

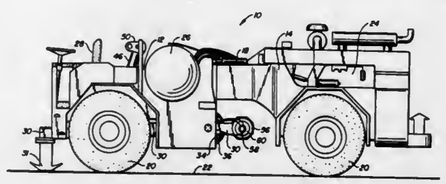
a footrest extension motor connected with said footrest mechanism, said motor functioning to open said footrest toward said full extend position from said full retract position, as well as from any partial extend position, when said friction latch is in said release position, said motor providing an opening force less than that of said major closing force.

4,515,408

COUNTERWEIGHT SUPPORT FOR RESONANTLY DRIVEN TOOL

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.

Continuation-in-part of Ser. No. 329,149, Dec. 10, 1981, Pat. No. 4,402,629, which is a continuation-in-part of Ser. No. 157,138, Jun. 5, 1980, Pat. No. 4,340,255. This application Apr. 13, 1983, Ser. No. 484,395
Int. Cl.³ E01C 23/12
U.S. Cl. 299—37 **17 Claims**



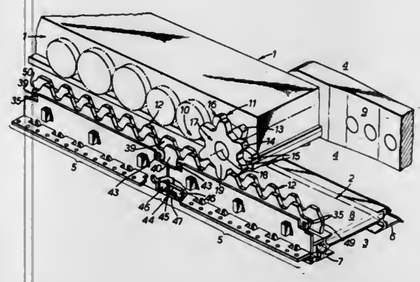
1. In a resonantly driven power tool including a frame, a resonant beam having a pair of nodes spaced inwardly from the ends of the beam and input and output antinodes at respective input and output ends of the beam, means for pivotably attaching the resonant beam to the frame at the node proximate the input end of the beam, a weight superimposed over the node proximate the output end of the beam, an oscillator at the input end of the beam for vibrating the beam at at least near its resonant frequency, and a working tool at the output end of the beam, improved means for positioning the weight relative to the resonant beam comprising means for linking the weight to the resonant beam at the node proximate its output end, a member fastened to the weight and extending to a position adjacent the node of the beam proximate its input end, and means for pivotably mounting the member to the frame at said node proximate the input end of the beam so that the member and attached weight are rotatable about the same axis as the resonant beam.

4,515,409

MINING MACHINE

George A. Parrott, Wakefield, England, assignor to Dresser Europe S.A., Brussels, Belgium

Filed Jul. 17, 1981, Ser. No. 284,516
Claims priority, application United Kingdom, Jul. 18, 1980, 802356
Int. Cl.³ E21C 29/22
U.S. Cl. 299—43 **11 Claims**



1. A haulage system for a mining machine, comprising at least one mining machine mounted on and/or guided by an armoured, scraper chain conveyor and reciprocable with respect to said conveyor, said conveyor extending along a mineral face and comprising a plurality of individual pans secured together end-to-end, a face side sidewall and a goaf side sidewall incorporated in each of said pans, a deck plate interconnecting said sidewalls of each said pan, one of said sidewalls being provided with a rack having two rows of laterally spaced rack teeth of identical pitch, said rack teeth of one said row being staggered with respect to said rack teeth of the other of said rows, an articulated joint securing together adjacent rack ends of adjacent pans, while teeth of one of said rows terminate short of said teeth of the other row to create a space between adjacent ends of adjacent shortened rack rows of adjacent pans, and a bridging tooth located in said created space and forming part of said articulated joint, said bridging tooth being provided with elongated mounting holes through which said bridging tooth is connected to said toothed plates to provide for tooth space compensation, and said machine further comprising at least one power driven haulage sprocket having two sets of peripherally arranged teeth of identical pitch, said sets being laterally spaced from one another and one of said sets being angularly staggered with respect to the other of said sets such that one of said sets is engageable with each of said rows of teeth of said rack.

4,515,410

RACK ASSEMBLY

Thomas Trumper, Werne; Gunther-Dietmar Schoop, Ottmarsbocholt; Fritz Borgschulte, and Friedrich Krummnack, both of Lünen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,801
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230382
Int. Cl.³ E21C 35/20
U.S. Cl. 299—43 **22 Claims**



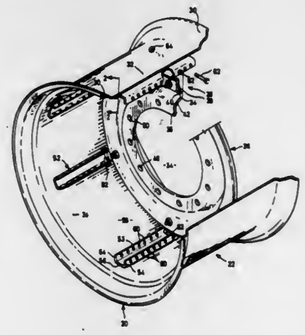
1. A rack assembly for a mine winning machine drive arrangement, the rack assembly being associated with a longwall conveyor along which a mine winning machine is movable by said drive arrangement, the rack assembly comprising a plurality of rack sections and a plurality of support members for connecting the rack sections to the longwall conveyor, wherein each of the rack sections has a respective downwardly-extending coupling pin at each end thereof, each of the coupling pins extending through an aperture in a respective support member with a predetermined amount of play, and each of the coupling pins having a retaining member for preventing that coupling pin from moving out of the associated aperture, the rack sections of each adjacent pair of rack sections being relatively pivotable in vertical and horizontal directions and being relatively movable to a predetermined extent in the longitudinal direction of the rack assembly.

4,515,411

WHEEL HAVING ADJUSTMENT FOR AXIAL POSITION OF RIM RELATIVE TO DISC

Maurice Taylor, 1409 Kensington, Grosse Pointe Park, Mich. 48230

Filed Aug. 16, 1982, Ser. No. 408,403
Int. Cl.³ B60B 23/12
U.S. Cl. 301—9 TV **8 Claims**

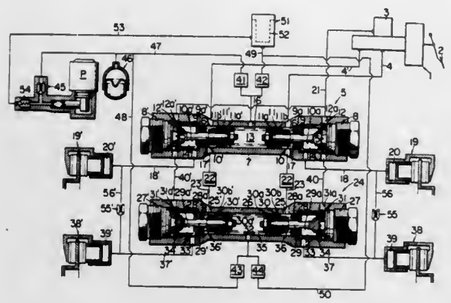


1. A wheel for a vehicle, said wheel comprising a wheel disc lying transverse to the rotational axis of said wheel and having a radially outer peripheral portion, a wheel rim extending around the peripheral portion of said wheel disc and having a pair of circumferentially extending bead seats spaced apart along said rotational axis and interconnected by a rim base having an inwardly directed peripheral portion, and connecting means to connect said rim to said wheel disc at a selected one of a plurality of locations spaced along said rotational axis, said connecting means including a plurality of channel members connected to one of said peripheral portions at circumferentially spaced locations, each channel member comprising a pair of circumferentially spaced abutment surfaces extending radially from said one peripheral portion with each of said pairs of surfaces defining a channel extending parallel to said rotational axis, a plurality of connecting members each snugly received in a respective one of said channels between said abutment surfaces and displacable relative to said abutment surfaces along said channel, said members extending toward the other of said peripheral portions and being attached thereto by fastening means and releasable stop means acting between said channels and said connecting members to secure said connecting members at a selected position in said channels with said connecting members in abutment with said abutment surfaces to transmit torque applied to rotate said wheel about said rotational axis, release of said stop means permitting relative movement between said disc and said rim along said axis of rotation to vary the track of the vehicle upon which the wheel is mounted.

4,515,412
DUAL TYPE ANTILOCK BRAKING DEVICE FOR FOUR-WHEELED VEHICLES

Makoto Sato, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,818
Claims priority, application Japan, Jul. 22, 1982, 57-111123[U]
Int. Cl.³ B60T 8/02
U.S. Cl. 303—6 R
1 Claim

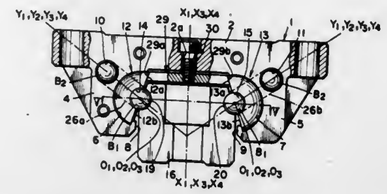


1. In an antilock braking device wherein braking wheel cylinders for a four-wheeled vehicle are connected with each other in the form of X to provide first and second braking hydraulic systems independent of each other, a dual type antilock braking device for four-wheeled vehicles comprising; cylinders (**7**) and (**26**) each closed at both ends thereof and divided into a central cylinder chamber and a pair of end cylinder chambers adjacent through first and second partition walls (**9**, **9'**) or (**28**, **28'**) which are located on both sides of said central cylinder chamber and spaced from each other in the axial direction; and pairs of rods (**10**, **10'**) and (**29**, **29'**) each pair capable of slidably penetrating through said partition walls (**9**, **9'**) or (**28**, **28'**), having first pistons (**11**, **11'**) or (**30**, **30'**) disposed in said central cylinder chamber and having second pistons (**12**, **12'**) or (**31**, **31'**) disposed in said corresponding end chambers, wherein primary braking hydraulic chambers (**6**) and (**25**) formed between said first partition wall (**9**), (**28**) and said corresponding first pistons (**11**), (**30**) are communicated with a hydraulic source in said first braking hydraulic system, secondary braking hydraulic chambers (**14**) and (**33**) formed between said first partition walls (**9**), (**28**) and said corresponding second pistons (**12**), (**31**) are respectively communicated with wheel cylinders (**19**) and (**38**) for front and rear wheels in said first braking hydraulic system, primary braking hydraulic chambers (**6'**) and (**25'**) formed between said second partition walls (**9'**), (**28'**) and said corresponding first pistons (**11'**), (**30'**) are communicated with a hydraulic source in said second braking hydraulic system, secondary braking hydraulic chambers (**14'**) and (**33'**) formed between said second partition walls (**9'**), (**28'**) and said corresponding second pistons (**12'**), (**31'**) are respectively communicated with wheel cylinders (**19'**) and (**38'**) for front and rear wheels in said second braking hydraulic system, antilock controlling hydraulic chambers (**13**) and (**32**) respectively formed between said paired first pistons (**11**) and (**11'**) and between said paired second pistons (**30**) and (**30'**) are communicated with an antilock controlling hydraulic system adapted to regulate output oil pressure from said secondary braking hydraulic chambers (**14**, **14'**, **33**, **33'**), and said rods (**10**, **10'**, **29**, **29'**) are respectively formed with communicating grooves (**10***a*, **10***a'*, **29***a*, **29***a'*) through which said adjacent primary and secondary braking hydraulic chambers (**17**, **14**; **17'**,**14'**; **36**, **33**; **36'**, **33'**) are communicated with each other when said rods are moved toward said antilock controlling hydraulic chambers (**13**) or (**32**) by a distance exceeding a given amount.

4,515,413
LINEAR SLIDE BEARING

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed May 24, 1984, Ser. No. 613,617
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C
4 Claims



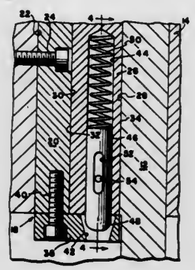
1. A linear slide bearing comprising:
a main body being an integral member constituted by right and left skirt portions defining a central cavity therebetween, each skirt portion being provided in its inner surface with a race-receiving groove opened to said central cavity, said race-receiving groove having a stopper projecting at its lower arcuate end, and each skirt portion further having a non-loaded ball passage bored therethrough;
a pair of right and left bearing races each constituted by an arcuate member of semicircular cross-section having a barrel-like outer peripheral surface and rockably mounted within the corresponding race-receiving groove formed in said main body, said arcuate member being provided in its inner surface center with a loaded ball groove having a curvature center which is coincident with that of said race-receiving groove;
a race-pressing member constituted by a wedge member adjustably screwed to the inner surface of a ceiling portion of said main body, said race-pressing member being adapted to press said bearing races toward said stoppers with its wedge surfaces which are simultaneously made to abut on one of the inner side surfaces of said bearing races;
a track shaft adapted to be fitted in said central cavity of said main body and provided on its right and left side surfaces with loaded ball grooves each having a curvature center which is coincident with that of the corresponding loaded ball groove on each bearing race;
a pair of front and rear end covers constituted by cover members adapted to be secured to the longitudinal end surfaces of said main body, each cover member being provided in its inner surfaces with ball turning grooves providing communication between loaded ball passages, which are defined by said loaded ball grooves on said bearing races and track shaft, and said non-loaded ball passages formed through said main body, as well as race retaining grooves for supporting one of the ends of said bearing races; and
balls adapted to be recirculated through said loaded ball passages and non-loaded ball passages respectively communicated with each other.

4,515,414
AUTOMATIC ADJUSTING GIB ASSEMBLY

Carl H. Werth, Jr., Bridgeport, Mich., assignor to Werth Engineering, Inc., Bridgeport, Mich.

Filed Oct. 21, 1983, Ser. No. 544,208
Int. Cl.³ F16C 29/12
U.S. Cl. 308—3 R
6 Claims

1. In a device for a machine tool slide assembly or the like comprising a first member having an elongate guide rail with flat parallel longitudinal exterior side walls, a second member having an elongate guide rail receiving slot therein having flat parallel longitudinal interior side walls, the transverse width of said slot being greater than the transverse width of said rail to define a space between one pair of adjacent side walls of said rail and said slot when the other pair of adjacent side walls are in face-to-face engagement with each other, and an elongate gib disposed within said space and engaged between said one pair of adjacent side walls of said slot and rail, said gib comprising a first elongate gib element fixedly mounted on the side wall of one of said members and a second elongate gib element slideably engaged between said first gib element and the adjacent side wall of the other of said members, said gib elements

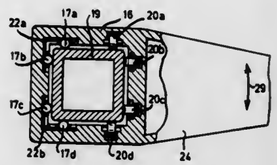


engaging each other in face-to-face engagement along complementary flat longitudinal side surfaces inclined relative to said side walls whereby relative sliding movement of said gib elements transversely of said inclined side surfaces in one direction exerts a wedging action urging said one pair of adjacent side walls away from each other; the improvement comprising a cap fixedly secured to each end of said first gib element and projecting transversely from said first gib element across the corresponding end of said second gib element, and spring loaded cam means engaged between said second gib element and at least one of said caps resiliently biasing said second gib element in said first direction relative to said first gib element.

4,515,415
PLAIN BEARING

Franz Szenger, Konigsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stuftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 29, 1983, Ser. No. 537,022
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237085
Int. Cl.³ F16C 29/02, 29/06
U.S. Cl. 308—6 R
6 Claims

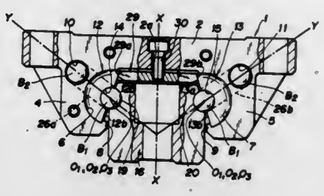


1. Plain bearing for a part guided longitudinally on a guide rail (**9**, **19**), rollers (**25** to **28**; **17**, **18**) being used at least in part in the bearing as plain-bearing elements whose longitudinal axes are aligned parallel to the direction of guidance, characterized by the fact that the rollers are resiliently retained on the guided part (**4**; **16**) perpendicular to the direction of guidance.

4,515,416
LINEAR SLIDE BEARING

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,139
Claims priority, application Japan, May 13, 1983, 58-83828
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C
5 Claims



1. A linear slide bearing comprising:
a main body of channel-like cross-section having a ceiling portion and a pair of skirt portions defining a central cavity therebetween, each skirt portion being provided in its inner surface with a race-receiving groove of semi-circular cross-section opening to said central cavity, said race-receiving groove having a stopper projected at its lower arcuate end, each skirt portion further having a non-loaded ball passage longitudinally formed therethrough;
a pair of right and left bearing races each in the form of an arcuate member of semi-circular cross-section mounted in each of said race-receiving grooves in said main body, said arcuate member being provided in the center of its inner surface with a loaded ball groove having a center of curvature coincident with that of said race-receiving groove;
a race-pressing member in the form of a wedge member adjustablly screwed to the inner surface of said main body ceiling portion, said race-pressing member having wedge surfaces adapted to be simultaneously placed into abutting engagement with one side surface of each of said bearing races for pressing said bearing races toward said stoppers;
a track shaft adapted to be fitted in said central cavity in said main body and provided on its right and left side surfaces with loaded ball grooves each having a center of curvature coincident with that of the corresponding one of said bearing races;
a pair of front and rear end covers secured to front and rear end surfaces of said main body, each cover having race retainer grooves for supporting one end of said bearing races, and being provided in its inner surfaces with ball turning grooves for connection between loaded ball passages, which are defined by said loaded ball grooves in said bearing races and in said track shaft, and said non-loaded ball passages, formed in said main body; and
balls adapted to recirculate through said loaded ball passages and non-loaded ball passages connected with each other.

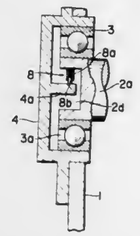
4,515,417
GROUNDING DEVICE FOR PREVENTING ELECTROLYTIC CORROSION IN THE BEARINGS OF ROTARY ELECTRIC MACHINES

Akiyoshi Shiraishi, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,592
Claims priority, application Japan, Nov. 24, 1982, 57-178622[U]
Int. Cl.³ F16C 41/04
U.S. Cl. 384—445
3 Claims

1. A rotary machine having a grounding device for preventing electrolytic corrosion in the bearings thereof, comprising:
a stator having means for being grounded;
a rotor having a shaft, in said stator;

a bearing rotatively supporting said shaft;
an electrically conductive end cover mounted on said stator so as to surround said bearing; and
a centrifugal contact point mounted on said shaft, said contact point being responsive to rotation of said shaft so



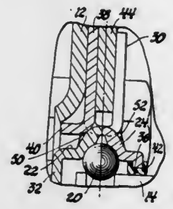
as to be in contact with said end cover when said shaft is standing still or rotating at low speeds to short-circuit said shaft and said end cover, and separated from said end cover to break the short-circuited condition as the speed of rotation of said shaft increases.

4,515,418

BEARING ASSEMBLY WITH STAMPED RACES

Martin J. Hogan, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1983, Ser. No. 519,184
Int. Cl.³ F16C *33/60, 33/72, 43/00*
U.S. Cl. 384—502 **4 Claims**



1. A bearing assembly incorporating stamped races of the type having at least one angular contact raceway formed of two raceway halves, each raceway half being integral with a race and terminating on a ball circle of a ball complement, comprising,
a series of flanges disposed circumferentially about a terminus of each raceway half on either side of the ball circle, the flanges of each race interfitting and alternating with the flanges of the other race and overlying the raceway half of the other race when the two races are placed together with the ball complement therebetween,
and biasing members, receivable between the interfitted flanges of the races and being of a thickness sufficient to bias the flanges of each raceway half apart, said biasing serving to maintain the races together as an assembly.

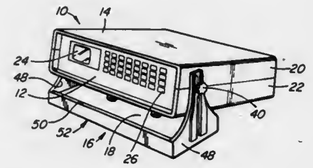
4,515,419

ELECTRONIC INSTRUMENT WITH STAND DOUBLING AS CONSOLE COVER

Herbert J. Hampel, Feasterville, Pa., and Arthur G. Willers, Delran, N.J., assignors to Northern Telecom Limited, Ontario, Canada

Filed Jun. 22, 1982, Ser. No. 390,970
Int. Cl.³ A47B *81/06;* **B65D** *25/24*
U.S. Cl. 312—7.1 **2 Claims**

1. An electronic instrument having a cabinet, a front console with a plurality of input/output elements visible thereat, a flat cover/stand having a handle attached at one side and first and second arms integral with the cover/stand and extending from the other side thereof, a shaft axis extending through said cabinet and an elongated slot formed in a respective arm, said shaft axis passing through each said slot to permit pivotal and translational movement between said cabinet and said cover/stand about said shaft axis, wherein a part of the arm defining each said slot has a first region laterally adjacent a central part of the slot and second regions laterally adjacent flanking parts of the slot, the arm having a surface relief such that the first region is higher than the second regions thereby to form abutment surfaces, a shaft at each side of the cabinet aligned on said shaft axis and a knob mounted on each shaft, each knob having a shank portion, and means for movably biasing each knob along said shaft axis to produce a positive abutment between the shank portion of said each knob and the abutment surface of a respective slot such that said respective slot can be moved



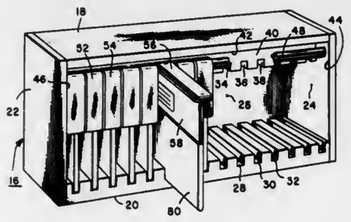
along said respective shank portion to position opposite sides of said respective central part to lock the cabinet, respectively, in a carriage position or an operating position such that, in the carriage position, the cover/stand is held against the console with a positive abutment existing between the knob shank portions and respective abutment surfaces on one side of said central parts to prevent movement of the cover/stand away from the cabinet when the instrument is lifted by the handle, and, in the operating position, the cover/stand is held away from the console and positioned to rest against an instrument supporting surface and to support the cabinet in an inclined position with a positive abutment existing between the knob shank portions and respective abutment surfaces on the opposite sides of said central parts to prevent movement of the cabinet towards the cover/stand.

4,515,420

STORAGE CONTAINER WITH MOVABLE IDENTIFICATION TABS

Peter T. Grosch, 2070 Wharton Rd., Glenside, Pa. 19038

Filed Jun. 24, 1983, Ser. No. 507,746
Int. Cl.³ A47B *81/06*
U.S. Cl. 312—12 **13 Claims**



1. A storage container for multiple articles which have two straight, narrow, opposed parallel edges, such as magnetic storage diskettes, audio cassettes, phonorecords and the like, comprising:
a box;
means within the box for holding a plurality of said articles in side-by-side fashion in said box, with each article in one of a plurality of predetermined article storage positions,

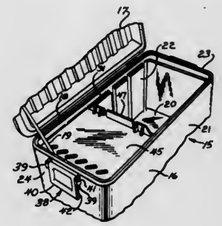
said holding means permitting movement of said articles into and out of the box in directions parallel to said opposed parallel edges;
said box having an access opening permitting articles which are capable of being held by said holding means to be inserted into and withdrawn from the box;
a series of tabs, each tab being associated with one of said predetermined article storage positions, and each tab having means for carrying indicia for identifying the article belonging in its associated article storage position;
means on said box for supporting said tabs so that each tab is movable, independently of the other tabs in the series, from a closed position in which the tab prevents articles from being moved into and out of its associated article storage position, to an open position in which the tab permits articles to be moved into and out of its associated article storage position;
a bar fixed to the box and extending across said access opening in a direction perpendicular to the plane defined by said two opposed parallel edges of each article when stored in the box, each of the tabs in the series having means grasping said bar and being swingable thereon from its closed position to its open position; and
cooperable means, on the grasping means of said tabs and on said bar, for retaining said tabs in one of their closed and open positions until said tabs are forcibly moved therefrom manually.

4,515,421

MULTIPLE USE SHELF FOR COOLER

William J. Steffes, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Nov. 7, 1983, Ser. No. 548,978
Int. Cl.³ A47B *96/02*
U.S. Cl. 312—351 **7 Claims**



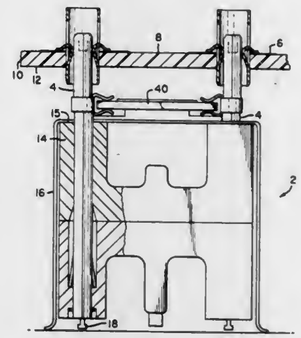
7. In combination:
a cooler having a horizontally extending bottom wall, parallel front and back walls extending upwardly from the bottom wall, and parallel end walls extending oetween the front and back walls, each of the front and back walls having an inside surface which is provided with vertically extending retaining means for holding a shelf in a vertical position and horizontally extending supporting means for holding a shelf in a horizontal position, and
a generally flat shelf having a pair of side edges, the side edges being engageable with the retaining means on the front and back walls of the cooler when the shelf is retained in a generally vertical position, the side edges being engageable with the supporting means on the front and back walls of the cooler when the shelf is supported in a generally horizontal position, the shelf including at least one tongue which extends generally perpendicularly to the generally flat surface of the shelf so as to engage one of the vertically extending retaining means whereby the shelf is restrained from horizontal movement when in the horizontal position.

4,515,422

PIN RECEPTACLE INTENDED FOR MOUNTING IN A CIRCUIT BOARD

James Prituisky, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 19, 1983, Ser. No. 543,210
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 C **7 Claims**



7. An electrical assembly of a contact pin received in a pin receptacle mounted in a circuit board hole in a circuit board having first and second surfaces and having at least one conductor on the first surface which extends to the circuit board hole, the pin receptacle being a hollow tubular stamped and formed member having a first end and a second end, the pin receptacle being mounted in the circuit board hole with the first end proximate the first surface and with the second end proximate the second surface and the contact pin being received in the receptacle through an end, the pin receptacle having a pin contacting portion and a conductor contacting portion for contacting an inserted pin and for contacting the circuit board conductor, the pin receptacle being characterized in that:
the tubular member has a contacting arm extending therefrom, the contacting arm having a fixed end which is integral with the tubular member proximate to the second end of the tubular member, an intermediate portion, and a free end portion, the intermediate portion extending into the interior of the tubular member, the pin contacting portion being on the intermediate portion, the free end portion extending laterally from the intermediate portion, laterally outwardly of the tubular member and away from the axis of the tubular member, the conductor contacting portion being on the free end portion whereby
engagement of the contact pin with the pin contacting portion urges the conductor contacting portion of the contacting arm against the circuit board conductor to effect electrical termination therewith.

4,515,423

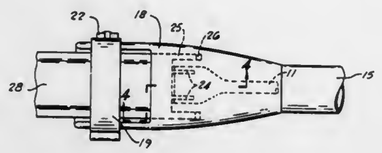
EXTENSION DEVICE FOR ELECTRICALLY POWERED TOOLS

Jerry R. Moore, 12111 Cullman, Whittier, Calif. 90604, and C. Peter Van Dusseldorp, 560 E. Second St., La Habra, Calif. 90631

Filed Apr. 4, 1983, Ser. No. 481,898
Int. Cl.³ H01R *11/00*
U.S. Cl. 339—28 **13 Claims**

1. An extension device for use with electrically powered hand held tools such as hedge trimmers, said device comprising:
a hollow extension pole having a held end and a tool end, said extension pole having an electrical conductor passing through the majority of the length thereof;

a female plug affixed to the end of the electrical conductor which is nearest the tool end of the extension pole;
a male plug affixed to the other end of the electrical conductor;
first hand grip means attached to the held end of the extension pole;
second hand grip means on the extension pole intermediate its ends;
electrical switch means connected near one of said first and second hand grip means; and



tool gripping means affixed to the tool end of the extension pole, said tool gripping means having strap means moveable from a closed position where it is capable of holding a hand gripping part of a tool to an open position in which the tool may be removed and wherein said tool gripping means includes a recess having an annular groove which surrounds the female plug which is connected to the electrical conductor.

4,515,424

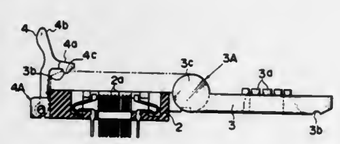
SUPPORT STRUCTURE FOR IC PACKAGE AND HAVING REMOVABLE CLOSURE

Toshihiro Sakurai, Tokyo, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 432,096, Sep. 29, 1982, abandoned. This application Jun. 6, 1983, Ser. No. 501,394

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—75 MP **7 Claims**



1. A supporting structure for an IC package, which comprises:
a socket for receiving an IC package;
a cover member rotatably attached to one end of said socket;
a locking lever member rotatably attached to the other end of said socket for locking the cover member to the socket when the cover member is in the closed position on the socket; and
a first coupling means having:
at least two bearing couplings projecting from one end of one of the socket and one of said members and spaced from each other in the direction of the axis of rotation of said one member and each bearing coupling having a hole therethrough in said direction;
at least two shaft couplings projecting from the base end of the other of the socket and said one member and spaced from each other in said direction and each having a shaft which projects from the side thereof in the said direction; and
at least two keys projecting from the base end of the one of said socket and said one member having the shafts thereon and disposed respectively at the free ends of the shafts;
the two bearing couplings each having a key groove in the circumferential surface thereof parallel to the axes of said holes and adapted to have said keys slidably fitted therein.

4,515,425

IC SOCKET WITH IC PACKAGE PRESSING MEANS

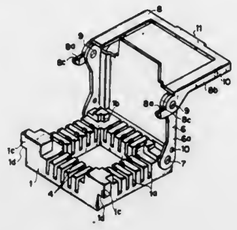
Hidetaka Nakano, Tokyo, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 585,217

Claims priority, application Japan, Feb. 28, 1983, 58-28836[U]

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—75 MP **4 Claims**



1. An IC socket with IC package pressing means, which comprises:
a socket substrate provided therein with contact accommodation grooves, on the upper surface thereof with an attachment portion for attaching an IC package thereto, and on opposite sides of one end thereof with a pair of receiving portions;
an IC package pressing plate having one end thereof link-connected pivotally to the other end of said socket substrate with first pivots as fulcrums to be rotated about said first pivots and raised and laid down relative to the upper surface of said socket substrate, and
an operative lever having one end thereof link-connected pivotally to the other end of said IC package pressing plate with second pivots as fulcrums to be rotated about said second pivots and raised and laid down relative to the upper surface of said IC package pressing plate, and having a pair of engaging claw pieces disposed on the side of said second pivots to extend in a direction opposite to the other end of said operative lever and adapted to collide against and engage with the lower surfaces of said pair of receiving portions of said socket substrate,
whereby said operative lever is rotated about said second pivots in a state wherein the upper surfaces of said pair of engaging claw pieces are brought into collision with the lower surfaces of said pair of receiving portions to be laid down on the upper surface of said IC package pressing plate, and said other end of said IC package pressing plate is given downward force by the rotation of said operative lever to allow said IC package pressing plate to be rotated about said first pivots and laid down on the upper surface of said socket substrate, and thereby said operative lever and said IC package pressing plate are laid down on the upper surface of said socket substrate as overlapping each other with said pair of engaging claw pieces brought into engagement with said pair of receiving portions to press the upper surface of said IC package attached to said attachment portion of said socket substrate.

4,515,426

HEAVY DUTY CLAMPING ELECTRICAL CONNECTOR

Reinhard Bager, House-No. 125, 8999 Ellhofen, Fed. Rep. of Germany

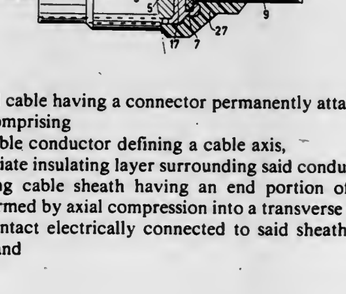
Filed Mar. 5, 1984, Ser. No. 586,280

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308178

Int. Cl.³ H01R *13/637*

U.S. Cl. 339—42 **16 Claims**

1. A quickly-connected and detached electrical terminal device of an electric conductor which comprises, a housing, an entry bore defining a latching chamber in said housing for introducing a bare end portion of the electric conductor therein, said entry bore extending backwardly along said housing to define a control chamber therein; a slidable control element operatively positioned in and normally urged within said bore to a forward position therein for engagement by the bare end portion of the conductor when it is inserted within said bore, and under further inward movement of said end portion of the conductor, for backward movement within said bore; an inlet passageway along said housing connected to a back end of said latching chamber and adapted to receive an operating fluid under pressure, an operating chamber within said housing open at its forward end to said latching chamber forwardly of said control element, a clamping plunger operatively positioned in said operating chamber and normally



urged to a backward position therein, said clamping plunger being adapted for movement into and out of latching engagement with an inserted bare end portion of the conductor, means connecting said inlet passageway to said operating chamber, and said slidable control element having means for diverting fluid flow under pressure from said inlet passageway to said operating chamber when said control element is in a forward position within said bore and for causing fluid flow under pressure from said inlet passageway along said connecting means to said operating chamber for advancing said clamping plunger forwardly into latching engagement with an inserted bare end portion of the electrical conductor when said control element is moved backwardly within said bore by the inserted bare end portion of the conductor.

4,515,427

COAXIAL CABLE WITH A CONNECTOR

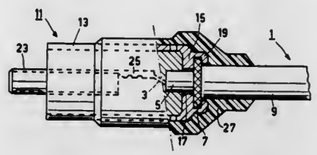
Hermanus Smit, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,408

Claims priority, application Netherlands, Jan. 6, 1982, 8200018

Int. Cl.³ H01R *17/18*

U.S. Cl. 339—177 E **6 Claims**



1. A coaxial cable having a connector permanently attached at one end, comprising
a central cable conductor defining a cable axis,
an intermediate insulating layer surrounding said conductor,
a conducting cable sheath having an end portion of the sheath formed by axial compression into a transverse disk,
a sheath contact electrically connected to said sheath end portion, and
a central contact electrically connected to said central conductor,
characterized in that said sheath contact consists of a one-piece unitary article comprising a transverse wall having at least one substantially planar surface, a coaxial sleeve extending in a first direction from said substantially planar surface and having an edge portion remote from said surface, and a socket portion extending coaxially in the direction opposite said first direction,
said transverse wall extends upwardly from an inner peripheral surface of said socket portion and forms a common wall between the socket portion and the coaxial sleeve,
said transverse wall has a passage therethrough, at least said central conductor passing through said passage,
said transverse disk extends parallel to said substantially planar surface, interiorly of said sleeve, and
said sleeve edge portion is bent inwards to clamp said disc against said surface so as to establish electrical and mechanical connection between the conducting sheath and the sheath contact.

4,515,428

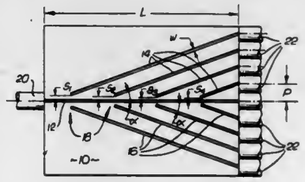
INTEGRATED OPTICAL STAR COUPLER

Talal K. Findakly, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 13, 1982, Ser. No. 417,734

Int. Cl.³ G02B *5/174*

U.S. Cl. 350—96.12 **8 Claims**



1. A single-mode integrated optical star coupler comprising:
a substrate;
an input single-mode waveguide on said substrate and having an end portion into which input light is launched;
a plurality of output single-mode waveguides on said substrate, each having an output end portion forming an output port, said output end portions being substantially parallel and uniformly spaced in a linear array; and
wherein said input and output single-mode waveguides are coupled together at a plurality of interaction regions at which at least one of said waveguides is located with an end thereof at a preselected spacing from and tilt angle relative to another of said waveguides, the spacing and tilt angles being chosen to effect a predetermined division of power among the output ports.

4,515,429

NONLINEAR AND BISTABLE OPTICAL WAVEGUIDE DEVICES

Peter W. Smith, Colts Neck, and Walter J. Tomlinson, III, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

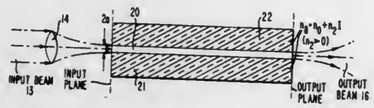
Filed May 27, 1980, Ser. No. 153,255

Int. Cl.³ G02B *5/174*

U.S. Cl. 350—96.13 **2 Claims**

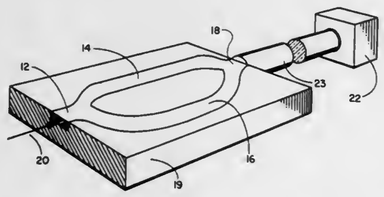
1. A nonlinear optical device comprising at least two optical materials structurally arranged to provide an optical waveguide having a predetermined length, L, one of said two materials being bounded by the other of said two materials, at least one of said two materials having a dominant nonlinear effect over the length, L, of said waveguide characterized in that said at least one of said two materials has an index of refraction

which changes by n_2I with changes in light intensity, I, where n_2 is defined as a Kerr coefficient, and the length, L, of said waveguide is less than L_R, the threshold length for stimulated Raman scattering, which is approximately $16/gI_c$, where I_c is



the light intensity at which the index of refraction of said at least one of said two materials equals the index of refraction of the other of said two materials, and g is the peak Raman gain for said at least one of said two materials.

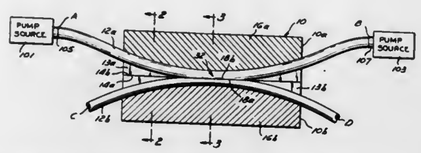
4,515,430
INTEGRATED OPTICAL TRANSDUCERS
Leonard M. Johnson, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation of Ser. No. 187,041, Sep. 15, 1980, abandoned. This application Jun. 10, 1983, Ser. No. 502,348
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.13 **20 Claims**



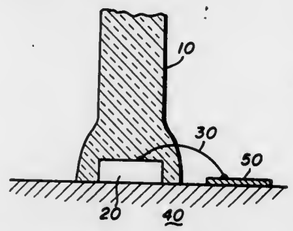
3. An optical transducer for measuring a physical quantity comprising:
- a single mode input optical waveguide for transmitting an optical signal;
- at least two single mode optical waveguide branches having different physical lengths and in which said optical signal diverges, the difference in physical lengths being many times greater than the wavelength of the optical signal and the optical path length of each branch being a function of said physical quantity;
- an output optical waveguide into which the optical signals reconverge; and
- means for providing an indication of the modal power distribution in the output optical waveguide as an indication of said physical quantity.

4,515,431
FIBER OPTIC AMPLIFIER
Herbert J. Shaw; Marvin Chodorow, both of Stanford, and Michel J. F. Digonnet, Menlo Park, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Aug. 11, 1982, Ser. No. 407,136
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.15 **14 Claims**

10. A fiber optic amplifier, comprising:
- first and second strands of single-mode fiber optic material, one of said strands formed of material which will lase, said first strand having an end portion for coupling said first strand to a source of a light signal to be amplified, said second strand having an end portion for coupling said second strand to a source of pumping illumination for said material which will lase; and
- means for accurately positioning said strands together in close facing relationship to form a planar region of interaction in which said light signal and said pumping illumination within said strands interact through their evanescent fields to cause one of said light signal and said pumping illumination to be transferred between the core portions of the strands an odd number of times, while the other of said light signal and said pumping illumination is transferred an even number of times.



4,515,432
FIBER OPTICS HEAT FORMED ASSEMBLY
James S. Sherwin, Hillsborough, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Dec. 31, 1980, Ser. No. 221,948
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **2 Claims**

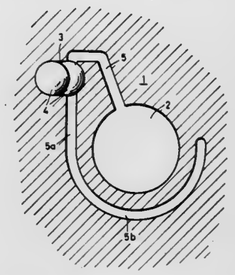


1. A fiber optical assembly comprising an optical fiber attached to an optical device by melting one end of the optical fiber, pressing the melted fiber against the optical device, and cooling the assembly.

4,515,433
COUPLING ARRANGEMENT FOR OPTICAL WAVEGUIDES AND METHOD OF MANUFACTURING THE SAME
Bernhard Schmidt, Neunkirchen, Fed. Rep. of Germany, assignor to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Continuation of Ser. No. 280,507, Jul. 6, 1981, abandoned. This application Mar. 30, 1984, Ser. No. 596,153
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025384; Mar. 21, 1981, 3111267
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **8 Claims**

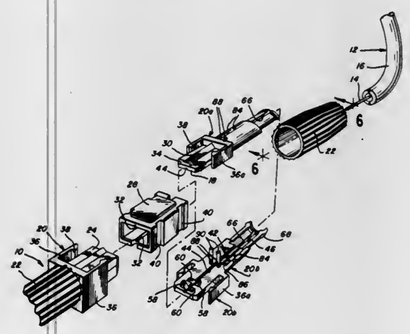
1. An arrangement for coupling optical waveguide ends mounted in respective connectors, comprising a housing body having at least one first passage dimensioned for receiving the connectors of the optical waveguide ends in an end-to-end alignment, and at least one second passage parallel to and coextensive with said first passage; means for defining in said housing body at least one slot interconnecting said first and second passages and extending along an arcuate course therebetween to partially separate a clamping portion situated between said first and second passages from the remainder of the

housing body; and a plurality of pressing bodies accommodated in said second passage and operative for pressing said



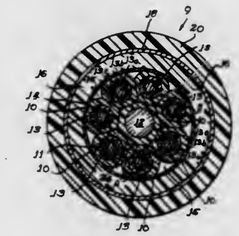
clamping portion into clamping engagement with the connectors accommodated in said first passage.

4,515,434
FIBER OPTIC CONNECTOR
Mark Margolin; Igor Grois, both of Lincolnwood; Peter K. Herdeg, Forest Park, and John P. Nijman, Wheaton, all of Ill., assignors to Allied Corporation, Morris Township, N.J.
Filed Mar. 9, 1983, Ser. No. 473,415
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **35 Claims**



1. A fiber optic connector for optically coupling a pair of fiber optic cables or coupling a single fiber optic cable and a light source or detector, said cable having an outer coating about an inner fiber core, comprising: a terminal member defined by a pair of matching halves having complementary groove means defining a through hole extending axially therethrough, said through hole having a first portion extending between forward mating end portions of said matching halves and sized to snugly receive a length of said fiber core stripped of said outer coating and properly positioning said core with respect to the mating end of the terminal member, said through hole having a second portion extending between rear end portions of said matching halves and sized for receiving said outer coating of said fiber optic cable, means in said second portion of said through hole for clamping said outer coating to prevent lengthwise movement of said fiber optic cable relative to said terminal member, and means positionable over said rear ends of said matching halves for biasing said clamping means against said outer coating of said fiber optic cable.

4,515,435
THERMALLY STABILIZED FIBER OPTIC CABLE
Gene S. Anderson, Elburn, Ill., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 10, 1982, Ser. No. 406,777
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **20 Claims**



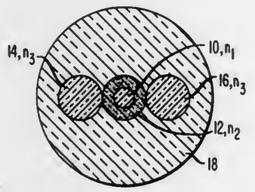
1. A fiber optic cable for directly transmitting a visible optical signal comprising
- a plurality of relatively large diameter optical fibers each having a light-transmitting core and means therearound providing an interface that reflects incident light back into said core,
- a sheathing layer of elastomeric polymeric material around each optical fiber in intimate contact with the outer surface of said optical fiber, said elastomeric polymeric material being resiliently compressible, having a modulus of elasticity of between about 63 and about 78 kg/cm² at 23° C., having a Shore A of between about 64 and about 68 at 23° C., 10 sec and having a dynamic temperature range of from about −20° C. or below to about 105° C. or above,
- an axial core including a rigid, substantially non-compressible axial member having a coefficient of thermal expansion closely matched to the coefficient of thermal expansion of said optical fibers, said axial core being located along the center axis of the cable and extending longitudinally along the center axis of the cable, said sheathed optical fibers being cabled around said axial core in a lay length of between about 15 and about 50 cm,
- said sheathing layers being compressed against said axial core to be deformed thereby over an extended surface contact with the axial core, said sheathing layers being compressed against adjacent sheathing layers to be deformed from a circular cross section, and
- a jacket surrounding said sheathed fibers formed of polymeric material substantially more rigid than said elastomeric polymeric material having a Shore D of between about 34 and about 39 at 23° C., 10 sec and a dynamic temperature range of from about −20° C. or below to about 105° C. or above, said sheathed fibers being held in compression against said axial core by said jacket, whereby said axial core stabilizes said polymeric material layers against differential thermal expansion and contraction relative to said optical fibers.

4,515,436
SINGLE-MODE SINGLE-POLARIZATION OPTICAL FIBER
Richard E. Howard, Holmdel; William Pleibel, Matawan; Jay R. Simpson, Fanwood, and Rogers H. Stolen, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 4, 1983, Ser. No. 464,059
Int. Cl.³ G02B *5/14, 5/172*
U.S. Cl. 350—96.33 **17 Claims**

1. An optical fiber for propagating a single polarization of a single mode wave comprising
- a central core region comprising a first refractive index (n_1);
- a cladding layer surrounding the central core region and

comprising a refractive index (n_2) less than said refractive index of said central core region;

a surrounding region formed in intimate contact with said cladding layer and comprising a refractive index (n_3) greater than said refractive index of said cladding layer and less than said refractive index of said central core region; and



means for inducing a stress birefringence capable of separating said single mode wave into a pair of orthogonally polarized waves wherein a first orthogonally polarized wave is propagated down said central core region and a second orthogonally polarized wave is attenuated by tunneling through said cladding layer.

4,515,437

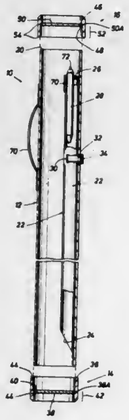
APPARATUS FOR FACILITATING VISUAL METER READINGS

Allan Story, P.O. Box 310, Houston, Tex. 77036

Filed May 11, 1983, Ser. No. 493,436

Int. Cl.³ G02B *5/00*

U.S. Cl. 350—114 **9 Claims**



1. Apparatus for facilitating readings from a meter face by a human observer, comprising:

(a) center tube means, having a proximal end and a distal end, for providing a shaded viewing path therethrough between said observer and said meter face;

(b) distal end cap assembly means disposed about said distal end of said center tube means for sealing off said center tube means at said distal end and permitting said viewing of said meter face therethrough, said distal end cap assembly means including

a distal lens cap; and

a distal lens disposed within said distal lens cap, said distal lens cap including

a distal spacer means for abutting engagement with said meter face and for providing spacing between said meter face and said distal lens upon said abutting engagement;

(c) a light assembly means internal of, and carried by, said center tube means for illuminating said meter face; and

(d) pivotal mounting means interconnecting said center tube means and said light assembly means for retainedly adjusting the position of said light assembly means relative to said center tube means.

4,515,438

LENS BARREL

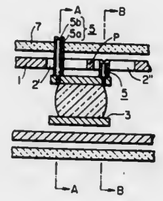
Mitsuo Ohnuki, Sagamihara, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,918

Claims priority, application Japan, Apr. 1, 1981, 56-47250

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—255 **5 Claims**



1. A lens barrel comprising a movable frame which is displaceable in a direction of an optical axis while being guided by a guide frame, a first set of engaging members, a second set of guide slots each engaged with a corresponding one of said engaging members, wherein one of said sets is provided on the movable frame and the other set is provided on the guide frame, said engaging members and guide slots being provided at more than two locations which are spaced apart circumferentially at an angle other than only 180° and spaced apart in the direction parallel to the optical axis, said guide slots extending in the direction of the optical axis, whereby the movable frame is held and guided relative to the guide frame for movement in the direction of the optical axis, and without play in a direction at a right angle to the optical axis.

4,515,439

ATTACHMENT OF MICROSCOPE OBJECTIVES

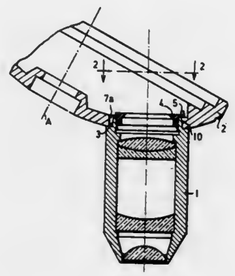
Karlheinz Esswein, Aalen-Unterkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,860

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202461

Int. Cl.³ G02B *7/02*; F16D *1/00*

U.S. Cl. 350—257 **15 Claims**



1. In combination, a microscope having an objective mount on an objective axis, and an objective having a housing adapted

at one end for detachable assembly to said mount in centered relation to said axis, said mount being characterized by angularly spaced concave conical seat portions of a single geometric cone that is concentric with said axis, thereby establishing angularly spaced axial passages between said seat portions, said one end of said objective housing being characterized by a circumferentially continuous convex conical seat conforming to said geometric cone and coaxial with the axis of said objective, said convex conical seat being near but at axial offset from said one end, and radially outward bayonet-locking lugs at said one end of said objective housing, said lugs being radially and angularly limited to permit axial insertion of said one end into said mount and via said passages to the extent limited by convex-to-concave conical-surface engagement, and said mount being adapted to accept locking engagement with said lugs upon partial rotation of said objective housing in said mount when said conical surfaces are engaged.

4,515,440

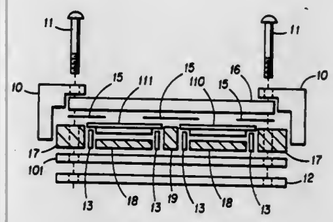
MOUNTING STRUCTURE FOR MULTIPLE LIQUID CRYSTAL DISPLAYS

Donald E. Mosier, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 28, 1983, Ser. No. 489,652

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—334 **3 Claims**



1. A liquid crystal display apparatus comprising:

a. a plurality of liquid crystal displays disposed in a proximal coplanar configuration, each display having an annunciator region on a viewing surface thereof and a plurality of electrical contacts on a surface opposite said viewing surface;

b. a mask in contact with said viewing surfaces in regions opposite said electrical contacts and voided in regions corresponding to said annunciator regions;

c. a printed circuit board providing structural support for said apparatus and electrical communication thereto disposed in a parallel relationship with said liquid crystal displays;

d. a plurality of elastomeric connectors intermediate said printed circuit board and said liquid crystal displays providing electrical contact there between; and

e. a cover window in contact with said mask on a surface thereof opposite said liquid crystal displays and further having securing means for rigidly attaching said liquid crystal displays, elastomeric connectors, and mask to said printed circuit board.

4,515,441

DIELECTRIC POLARIZER FOR HIGH AVERAGE AND HIGH PEAK POWER OPERATION

John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 13, 1982, Ser. No. 434,191

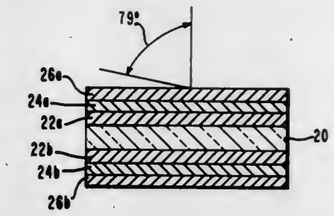
Int. Cl.³ G02B *5/30*

U.S. Cl. 350—395 **6 Claims**

1. An optical polarizer which operates at high peak and average power density operation, with a high Brewster angle of greater than 75 degrees for incident radiation to permit such operation without damage to the polarizer, with the efficiency of transmission of the polarized radiation being greater than about 95%, and the efficiency of reflection for the orthogonally polarized radiation being greater than about 95%, which polarizer comprises;

an optically transmissive substrate having a predetermined index of refraction,

a plurality of quarter wavelength thick optically transmissive dielectric parallel layers disposed on at least one side of the substrate, with a first dielectric layer disposed on the substrate and having a high index of refraction relative to the substrate, with a second dielectric layer atop the first layer and having a relatively low index of refraction relative to the index of the first dielectric layer, and a third dielectric layer atop the second layer which third comprises the same dielectric material as the first layer.



4,515,442

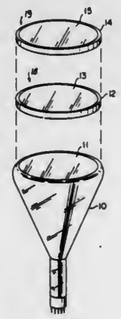
OPTICAL FILTER DEVICE

Mitchell Aron, Harrington Park, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 1, 1982, Ser. No. 344,658

Int. Cl.³ G02B *5/20*; H04N *5/72*

U.S. Cl. 350—397 **7 Claims**



1. An optical filter device passing therethrough in a specified direction light having predetermined wavelengths within a predetermined range of incidence angles while substantially blocking light which originally is travelling in the opposite direction to said specified direction and is reflected back to travel in said specified direction, from passing therethrough comprising:

a first optical filter for converting light passing therethrough in said opposite direction to a first predetermined sense, said first optical filter substantially passing only light having said first sense;

a second optical filter, in a cooperative relationship with said first optical filter, which passes light within a specified range of wavelengths and rejects light having wavelengths other than said specified range of wavelengths, said specified range of wavelengths shifting in accordance with the angle of incidence of the light and the design of said second optical filter, wherein light travelling opposite

to said specified direction passes first through said first optical filter and is converted to said first predetermined sense before impinging upon said second optical filter, and wherein the first predetermined sense light, having wavelengths other than said predetermined wavelengths of light, is reflected from said second optical filter and is thereby converted to a second predetermined sense wherein it is unable to pass back through said first optical filter;

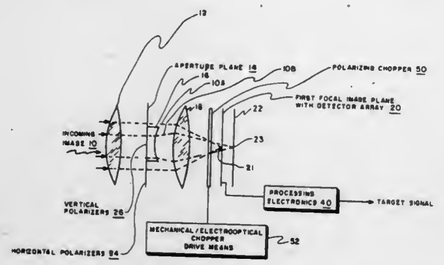
wherein said second optical filter has a wavelength shifting characteristic as a function of incidence angle sufficient to ensure that, light which has been scattered and reflected and is incident on said second optical filter in the specified direction will be substantially blocked thereby as a result of said shifting.

4,515,443

PASSIVE OPTICAL SYSTEM FOR BACKGROUND SUPPRESSION IN STARRING IMAGERS

Vincent T. Bly, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 29, 1982, Ser. No. 454,305
Int. Cl.³ G02B *27/28*
U.S. Cl. 350—396 **19 Claims**



1. A passive optical system for background suppression in staring array imagers, said system comprising:

a dual focus objective lens and polarizing means for providing a linearly polarized image in a first focal image plane and an opposite linearly polarized image in a second focal image plane;

a detector array positioned in said first focal image plane closest to said objective lens for receiving a sharp focused linearly polarized image of a high spatial frequency feature target and low spatial frequency background therein and an unsharp defocused opposite linearly polarized image in said second focal image plane which contains a blurred image of said high spatial frequency feature target and an image that contains a faithful reproduction of said low spatial frequency background as in said sharp focused linearly polarized image in said first focal image plane, said focused and defocused images received in each pixel site of said detector array;

difference sensing means for sensing said focused and defocused images at each pixel site to provide output signals proportional to the difference between said focused and defocused opposite linearly polarized images; and

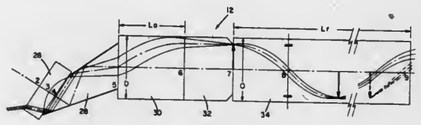
means for electronically processing said output signals from each of said pixel sites to algebraically subtract said backgrounds and produce an enhanced contrast target signal for said staring array imager.

4,515,444

OPTICAL SYSTEM

Rochelle Prescott, Arlington, and Dennis C. Leiner, Andover, both of Mass., assignors to Dyonics, Inc., Andover, Mass.

Filed Jun. 30, 1983, Ser. No. 509,946
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—413 **20 Claims**



1. An optical system comprising

at least two gradient index lenses of predetermined diameter, and spacer means between said lenses for increasing the light throughput transmitted through said lenses by substantial maximization of the optical invariant of said system,

the image transmitted through said system being represented by a chief ray and an axial ray,

a first said gradient index lens disposed uplight of said spacer means having a length preselected whereby at the downlight surface of said first lens a first of said rays has a slope of essentially zero and a second of said rays has a negative slope,

said spacer means being of substantially homogeneous substance and affixed to the downlight surface of said first gradient index lens, said spacer means being adapted to transmit said rays received through said first lens essentially without refraction, and said spacer means having a length preselected to cause said ray that has a negative slope to intersect the center axis of said optical system approximately at the downlight surface of said substantially homogeneous spacer means,

a second said gradient index lens affixed to the downlight surface of said substantially homogeneous spacer means, the transmitted image received at the first surface of said second gradient index lens thereby having a height substantially approaching the radius of said optical system,

whereby the optical invariant of said second gradient index lens is substantially maximized for increased light throughput.

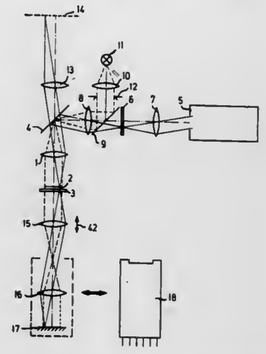
4,515,445

OPTICAL SYSTEM FOR TRANSMITTED-LIGHT MICROSCOPY WITH INCIDENT ILLUMINATION

Gerhard Müller, Aalen, and Jürgen Schwarz, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 460,036
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204686
Int. Cl.³ G02B *21/06*
U.S. Cl. 350—524 **8 Claims**

1. An optical system for microscopy on light-transmitting objects having a retroreflection device by which the light coming from an incident-light illuminating device and transmitted by the object is reflected back onto the rear side of the object, characterized by the fact that the retroreflection device contains an optical system (**15–17**; **35–37**) which images the object, unreversed and upright, on itself, and further characterized by the fact that the optical system comprises at least one objective arranged between the object (**3**) and a flat mirror



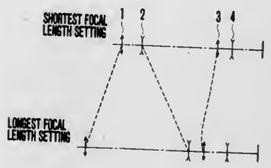
(**17**), said objective imaging the object and the mirror one on the other.

4,515,446

ZOOM OBJECTIVE

Sadatoshi Takahashi, Tokyo; Sadahiko Tsuji, Kanagawa; Akira Tajima, Kanagawa; Toshiaki Asano, Kanagawa, and Setsuo Minami, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,122
Claims priority, application Japan, Dec. 29, 1981, 56-212994
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—427 **5 Claims**



1. A zoom objective comprising:

from front to rear, a first positive lens component, a second negative lens component, a third positive lens component and a fourth lens component;

said first, second and third lens components moving independently of one another when zooming, and said fourth lens component being held stationary during zooming;

said first and third lens components lying more toward the front when in the telephoto side than when in the wide angle side, and said second lens component lying more toward the rear when in the telephoto side than when in the wide angle side; and

said second lens component being arranged to move in such a way that its magnification power varies to exceed unity.

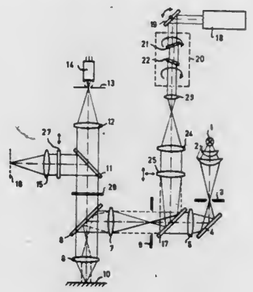
4,515,447

OPTICAL ADJUSTMENT DEVICE

Eugen Weimer, Essingen, and Gerhard Müller, Aalen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed Apr. 15, 1983, Ser. No. 485,213
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214268
Int. Cl.³ G02B *27/12, 7/18, 27/17*
U.S. Cl. 350—527 **11 Claims**

1. An optical adjustment device comprising two transparent parallel plates which are inclined relative to an optical axis, both of said plates (**21, 22**) being mounted for rotation around said optical axis with constant angle of inclination relative to said optical axis, and means for coupling a monochromatic parallel beam of rays into an optical microscope, said coupling means including an expansion lens system (**23, 24**) and a displaceable intermediate lens (**25**) which focuses the beam of rays in an image plane (**6**) which is conjugated to an object plane (**10**) of the microscope, said parallel plates being located in said beam of rays between a source thereof and said expansion lens system.

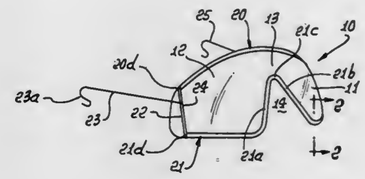


4,515,448

SUNGLASSES

George Tackles, Livermore, Calif., assignor to Oakley, Inc., Irvine, Calif.

Filed Mar. 28, 1983, Ser. No. 479,836
Int. Cl.³ G02C *7/00, 7/16, 7/12*
U.S. Cl. 351—41 **7 Claims**



1. In protective eyeglasses having left and right sides, the combination comprising

(a) transparent panes located to extend in the path of the wearer's field of vision, frontwardly and sidewardly,

(b) said panes shaped frusto-conically,

(c) said panes merging together at a bridge region adapted to extend over the wearer's nose, thereby to define one pane which extends continuously and generally frusto-conically across the wearer's field of vision between said left and right sides,

(d) and including a top frame bounding upper edges of said panes, and a bottom frame bounding lower edges of said panes, said frames being removable from said panes, and being everywhere spaced apart between said left and right sides, and also at said bridge region.

4,515,449

HEAD HARNESS FOR GLASSES

Katharine H. Davidson, 74 E. 2500 North, Vernal, Utah 84078

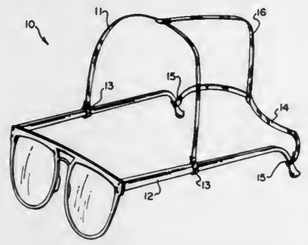
Filed Feb. 16, 1983, Ser. No. 467,148
Int. Cl.³ G02C *3/00*
U.S. Cl. 351—156 **1 Claim**

1. A head harness for eyeglasses comprising:

a first elongated strap in a preadjusted length position for engagement over the head of a person, said elongated

strap containing closed loops at each end for engaging the midsections of respective temples of a pair of eyeglasses;

a second elongated strap in a preadjusted length position for engagement around the rear of the head of a person, said elongated strap containing closed loops at each end for engaging the back ends of respective temples of a pair of eyeglasses; and



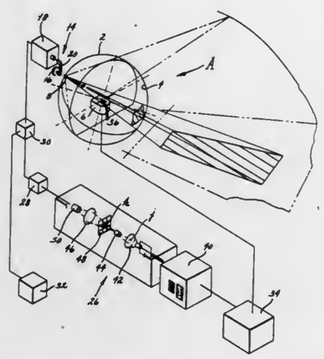
an elongated strap in a preadjusted length, said strap sewn at one of its ends to the mutually respective midsections of the first and second elongated straps, whereby the said straps provide a harness extending from the midsections of eyeglass temples over a user's head, from the free ends of eyeglass temples around the back of a user's head and from the midsections of the first and second straps across the top rear of a user's head.

4,515,450

TRANSPARENCY FOR USE WITH A FLYING SPOT SCANNER TO GENERATE IMAGES

Ignacio M. Arrazola, Barranquilla, Colombia, assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 428,169
Int. Cl.³ G03B *21/28*
U.S. Cl. 353—5 **12 Claims**



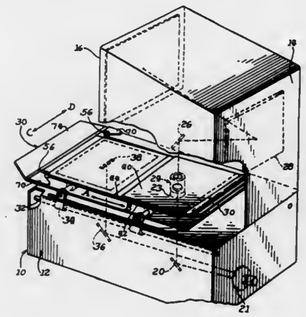
1. In combination with an apparatus for visually simulating flight and including a source of light which is designed to be projected on and to scan over an illustration of terrain or simulated terrain, the source of light being capable of indexing instantaneously from one region of the illustration to another region, and means for producing an image of the region of the illustration illuminated by the source of light, an improved illustration of the terrain positioned where the source of light will illuminate it and may scan over it, said illustration comprising: a center section having opposite boundaries along which the terrain features generally correspond so that the two opposite boundaries if brought together will illustrate continuous terrain features, and peripheral side sections located along the opposite boundaries of the center section, each peripheral side section along that of its boundaries where it is contiguous to the center section having terrain features that correspond with the terrain features along the adjacent boundary of the center section, so that the peripheral side sections blend into the center section at the common boundaries between the center and peripheral side sections, the illumination from the source of light upon moving to a point on one of the opposite boundaries of the center section, instantaneously transposing to the corresponding point along the opposite boundary of the center section and continuing the movement therefrom through the center section, whereby the image produced by the means for producing an image provides an illusion of continuous flight.

4,515,451

INDEXING MICROFILM

Harold H. Benham, Jr., Timonium, Md., and Thomas R. Wells, Des Plaines, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed May 27, 1983, Ser. No. 498,619
Int. Cl.³ G03B *23/08*
U.S. Cl. 353—120 **9 Claims**



1. A microfilm card adapted to be used with a microfilm reading device, the card comprising:

an image area containing a plurality of images arranged in rows and columns, at least one of the images containing an expanded index of the images on the image area,

a translucent index area adjacent to the image area containing indexes thereon,

the index area precisely and accurately positioned with respect to the image area,

the indexes relating to their respective expanded index on the image area and viewable directly by a person using the device without the need for magnifying or projecting on a screen the index while the related expanded index is viewable on the reading device, and

a pair of tab members extending outward from the card, the tab members adapted to be received by upstanding locating pins on the microfilm reading device, whereby the tab members and the upstanding locating pins cooperate to accurately and positively position the microfilm card in the same precise location each time it is to be viewed.

4,515,452

DATA INSERTING DEVICE FOR CAMERA

Hiroyoshi Tsuzuki, Kanagawa, Japan, assignor to Canon Kabushuki Kaisha, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,662
Int. Cl.³ G03B *17/24*; H05B *37/03*
U.S. Cl. 354—106 **11 Claims**

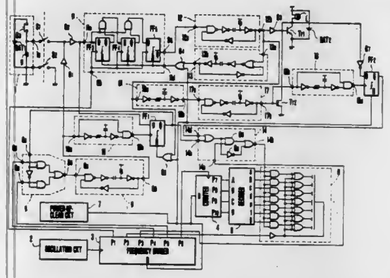
1. A data inserting device for a camera, comprising:

data inserting circuit means;

transmitting means for transmitting a data insertion trigger signal from a camera body to said data inserting circuit means;

display means for displaying data on the outside of the camera; and

abnormity detecting means which supplies a current to said transmitting means and detects an abnormity by a change



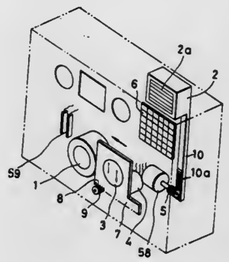
of impedance occurred at said transmitting means, said abnormity detecting means being arranged to indicate that data insertion is impossible by varying the display state of said display means when an abnormity is detected.

4,515,453

CAMERA HAVING A FLASH UNIT BUILT THEREIN

Hiroshi Wakabayashi, Yokohama; Nobuo Okabe, Tokyo, and Koichi Daitoku, Sagamihara, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 10, 1984, Ser. No. 608,718
Claims priority, application Japan, May 14, 1983, 58-83502
Int. Cl.³ G03B *15/03, 3/00*
U.S. Cl. 354—149.1 **9 Claims**



1. A camera for exposing a film to the image of an object to be photographed, including:

(a) housing means;

(b) flashlight emitting means having a light-emitting portion for applying light toward the object to be photographed, said light-emitting portion being movable between a first position in which it is projected from said housing means and a second position in which it is received in said housing means; and

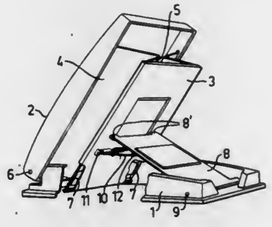
(c) an optical member provided in said housing means so as to be positioned between said light-emitting portion and the object to be photographed when said light-emitting portion is in said second position, said member having an optical characteristic for an area in which light is applied to the object to be photographed from said light-emitting portion through said optical member to change relative to an area in which light is directly applied to the object to be photographed from said light-emitting portion.

4,515,454

FOCUSING HOOD FOR CAMERAS

Lennart G. O. Dahlgren, V. Frölunda, Sweden, assignor to Victor Hasselblad Aktiebolag, Gothenburg, Sweden

Filed Sep. 28, 1983, Ser. No. 536,857
Int. Cl.³ G03B *11/04*
U.S. Cl. 354—287 **7 Claims**



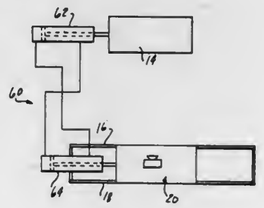
1. A focusing hood for a camera having a box comprising a cover hingedly attached to the camera box and adapted to be folded-up, and a lateral piece and a back piece mounted to the cover, the lateral piece being divided into a front lateral piece portion and a rear lateral piece portion pivotally connected to said front lateral piece portion, and the back piece pivotally connected to said rear lateral piece portion and connected to the box by a link hinged at the box and back piece, characterized in that the link comprises a first link portion hingedly mounted at the box, and a second link portion hingedly mounted on the back piece at a level vertically beneath the center of the back piece, and said second link portion being hingedly mounted to the first link portion at a pivot point substantially on a level at half the height of the back piece when said first link portion is substantially perpendicular to said back piece.

4,515,455

CAMERA MOVEMENT SYNCHRONIZING APPARATUS

James E. Northmore, 28207 Grand Duke Dr., Farmington Hills, Mich. 48018

Filed Apr. 4, 1983, Ser. No. 481,729
Int. Cl.³ G03B *15/00*
U.S. Cl. 354—293 **2 Claims**



1. An apparatus for synchronizing movement of a camera with movement of an object to be photographed to be comprising:

a horizontal track disposed parallel to the path of movement of the object;

means for movably mounting a camera on the track; and

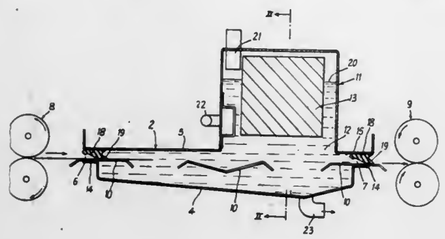
pressure energy transfering means, connected between the object and the camera mounting means and responsive to displacement of the object, for transfering a flow of fluid pressure upon displacement of the object to cause a direct linear displacement of the camera mounting means.

4,515,456

TANK FOR THE TREATMENT OF OFFSET PLATES BY ULTRASOUNDS

Mario Ferrante, Maxeville, France, assignor to Photomeca S.A., Maxeville

Filed May 15, 1984, Ser. No. 610,578
Claims priority, application France, Jun. 2, 1983, 83 09144
Int. Cl.³ G03B *3/04*
U.S. Cl. 354—320 **10 Claims**



1. A tank incorporating an ultra-sound generator for the treatment, in a bath of developer stirred by ultra-sounds, of plates with photosensitive layer passing through this bath,

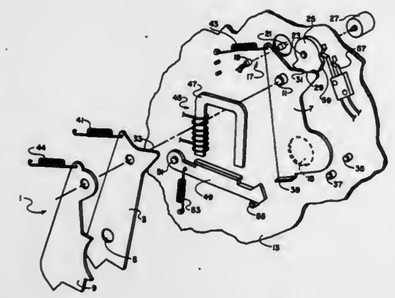
wherein it comprises an elongated rectilinear passageway having a lower wall and an upper wall containing therebetween the developer bath, with an inlet opening at one end and an outlet opening at the opposite end, these openings being spaced apart by a length shorter than the length of the shortest plate to be treated, at least one supple lip seal being disposed in each of these openings, at least one bath reservoir containing the ultra-sound generator being in communication with this elongated rectilinear passageway by a communicating opening, means for propelling the plates along the passageway being placed near the inlet and outlet openings.

4,515,457

EXPOSURE CONTROL MECHANISM

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1984, Ser. No. 611,578
Int. Cl.³ G03B *7/097, 9/00*
U.S. Cl. 354—443 **8 Claims**



1. In a camera of the type provided with (a) a diaphragm for reducing the effective size of an exposure aperture, (b) a shutter including an opening blade for uncovering the exposure aperture and a closing blade for re-covering the exposure aperture, and (c) means for urging said diaphragm to reduce the effective size of the exposure aperture and for urging said opening and closing blades to uncover and re-cover the exposure aperture, the improvement comprising:

electromechanical means, including a single electromagnet, activatable alternatively (i) at one time before said diaphragm reduces the effective size of the exposure aperture, for retaining said diaphragm and said closing blade to prevent said diaphragm from reducing the effective size of the exposure aperture and to prevent said closing blade from re-covering the exposure aperture, or (ii) at another time after said diaphragm reduces the effective size of the exposure aperture, for retaining only said closing blade, and de-activatable to release said diaphragm and said closing blade or merely said closing blade; and

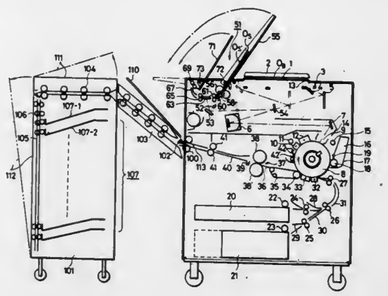
ambient light-regulated circuit means for activating said electromechanical means before said opening blade uncovers the exposure aperture (i) at said one time during relatively dim ambient light or (ii) at said other time during relatively bright ambient light, and for de-activating said electromechanical means after said opening blade uncovers the exposure aperture for a duration related to the intensity of ambient light.

4,515,458

IMAGE FORMING APPARATUS

Shunichi Masuda, Tokyo; Toshiaki Yagasaki, Hino, and Yukio Kasuya, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,166
Claims priority, application Japan, May 21, 1981, 56-75641; May 21, 1981, 56-75642
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **8 Claims**



1. An image forming apparatus comprising:

an image forming unit for forming an image on a record medium, said image forming unit being operable in selected one of two different operation modes to form the image on said record medium, said operation modes of said image forming apparatus comprising a first mode for exposing while an original is moved and a second mode for exposing while the original is fixed;

an accommodation unit having a plurality of bins for distributing and accommodating therein record medium fed from said image forming unit, said accommodation unit being operable in selected one of two different operation modes to distribute and accommodate said record medium, said operation modes of said accommodation unit comprising a collator mode for accommodating the record medium sequentially in one bin and a sorter mode for accommodating the record medium in different bins for each record medium; and

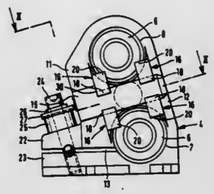
control means for selecting the operation mode of said accommodation unit in accordance with the operation mode selected for said image forming unit, wherein said control means selects said collator mode for said accommodation unit when said first mode is selected for said image forming unit.

4,515,459

PRESS FIXING APPARATUS WITH THREE PRESSING ROLLERS

Kurt Moser, Gerlingen, and Rolf Hofmann, Leonberg, both of Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH & Co., Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,036
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212147
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **20 Claims**



1. Pressing roller arrangement for the fixing of toner images in a photocopying machine, or the like, comprising:

three pressing rollers disposed in substantially a common plane and forming clamping gaps for accommodating travel therethrough of paper or foil and the like, said pressing rollers including two outer pressing rollers and a middle pressing roller,

and a common bearing block at each respective end of the rollers, said bearing blocks forming resiliently biased bearing seats for the outer pressing rollers and being provided with a guide for the bearing of the middle pressing roller,

wherein the bearing blocks are formed as respective unitary building parts which exhibit two oppositely disposed somewhat half cylindrical bearing seats for the bearings of the outer pressing rollers,

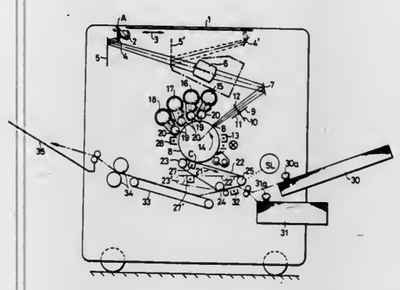
one of the bearing block portions forming the respective bearing block being divided into two sections with a separating slot therebetween, and wherein at least one spring is provided for resiliently tensioning said sections with respect to one another at said slot.

4,515,460

DEVICE FOR TRANSFERRING COLOR TONER IMAGES

Wilhelm Knechtel, Biebertal, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,136
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214677
Int. Cl.³ G03G *15/01, 15/16*
U.S. Cl. 355—3 TR **4 Claims**



1. A device for transferring toner images onto an image transfer material which comprises:

(a) a latent image holding member;

(b) latent image forming means for forming electrostatic latent images on said latent image holding member;

(c) developing means for toner-developing the electrostatic latent images formed on said latent image holding member;

(d) an intermediate image transfer member, onto which a plurality of toner images developed by said developing means are sequentially transferred in superposed relationship;

(e) image transfer means for transferring the plurality of toner images transferred to said intermediate image transfer member onto an image transfer material in a single transfer step; and

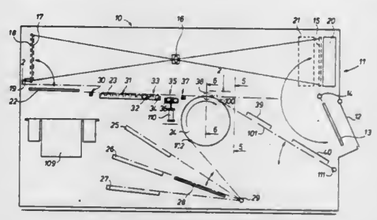
(f) means for moving said intermediate image transfer member into contact with said latent image holding member only during image transfer.

4,515,461

APPARATUS FOR TRANSFERRING ELECTROPHOTOGRAPHIC IMAGES

Leo N. Vackier, 's-Gravenwezel, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

Filed May 25, 1983, Ser. No. 498,156
Claims priority, application United Kingdom, May 26, 1982, 8215316
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 TR **13 Claims**



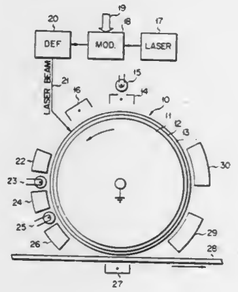
1. Apparatus for transferring an electrophotographic toner image from the surface of a first image-donating element to the surface of a second image-receiving element, said apparatus comprising a rotatable member having a cylindrically curved periphery for supporting one of said elements in cylindrically curved condition, concentric with the axis of rotation of said rotatable member, and means for conveying the other element, synchronously with said one element, through an image transfer station traversed by the path of motion of said curved periphery of said rotatable member, said station comprising means for forming an electrical potential gradient for effecting such toner image transfer, said conveying means comprising a bodily displaceable carriage having a holder for holding said one element in substantially flat condition; means for guiding said carriage for movement along a path extending in close spaced proximity to said rotatable member for conveying said one element through the image transfer station; and spacer strips of predetermined thickness located adjacent the lateral end edges of one of the cylindrically curved periphery of said rotatable member or the flat surface of said sheet holder for making contact at the image transfer station with the other of said holder surface or said rotatable member periphery and thereby establish a predetermined gap between the said image-donating and image-receiving surfaces; and means for biasing said holder toward said member periphery to maintain said spacer strips under contact pressure during passage through the image transfer station.

4,515,462

METHOD AND APPARATUS FOR FORMING MULTICOLOR IMAGE

Hitoshi Yoneda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1983, Ser. No. 469,753
Claims priority, application Japan, Feb. 26, 1982, 57-29949
Int. Cl.³ G03G *13/01, 15/01*
U.S. Cl. 355—4 **18 Claims**



4. A method for forming an n-color image, comprising the steps of:

performing primary charging of a first polarity for a photoconductive drum having a conductive substrate, and a photoconductive layer and a transparent insulating layer formed on said conductive substrate, thereby producing a carrier of a first polarity on said transparent insulating layer and a carrier of a second polarity in said conductive substrate, and setting said photoconductive drum at a predetermined potential;

performing a first entire-surface exposure of said photoconductive drum so as to move said carrier of a second polarity from said conductive substrate to said photoconductive layer;

performing secondary charging of said photoconductive drum to invert a surface potential of said photoconductive drum;

radiating light beams onto n color image formation portions of said photoconductive drum, inverting a potential of a first surface portion of said photoconductive drum to a potential of the first polarity, and setting a potential of remaining surface portions of said photoconductive drum to a potential of the second polarity at a predetermined potential, said light beams having light amount levels corresponding to n-color image data, said first surface portion corresponding to a first color image formation portion, said remaining surface portions corresponding to (n−1) color image formation portions;

applying a first color toner of the second polarity to said first surface portion of said photoconductive drum, and developing the first color image;

performing a kth (k=2, . . . , n) entire-surface exposure of said photoconductive drum to set a kth surface portion of said photoconductive drum at a potential of the first polarity; and

applying a kth color toner of the second polarity to said kth surface portion of said photoconductive drum, and developing the kth color image.

13. An apparatus for forming an n-color image, comprising:

a photoconductive drum which has a conductive substrate, and a photoconductive layer and a transparent insulating layer sequentially formed on said conductive substrate;

first charging means disposed at a predetermined position above said photoconductive drum to perform primary charging, thereby producing a carrier of a first polarity on said transparent insulating layer and a carrier of a second polarity in said conductive substrate, and setting said photoconductive drum at a predetermined potential;

first light source means disposed in front of said first charging means along a rotational direction of said photoconductive drum to expose an entire surface of said photoconductive drum, thereby transferring said carrier of a second polarity from said conductive substrate to said photoconductive layer;

second charging means disposed in front of said first light source means along the rotational direction of said photoconductive drum to secondarily charge said photoconductive drum at the second polarity;

second light source means disposed in front of said second charging means along the rotational direction of said photoconductive drum to emit light, an amount of which is controlled to have n levels in accordance with n-color image data, thereby radiating the light onto n prospective color image formation portions of a surface of said photoconductive drum, said second light source means being adapted to invert a potential of a surface portion of said photoconductive drum which corresponds to said prospective first-color image formation portion to the first polarity, and to set remaining surface portions of said photoconductive drum at predetermined potentials of the second polarity;

a first developing unit disposed in front of said second light source means along the rotational direction of said photoconductive drum to develop the first color image;

(k+1)th (k=2, . . . , n) light source means disposed in front of a (k−1)th developing unit along the rotational direction of said photoconductive drum to perform a kth entire-surface exposure of said photoconductive drum, thereby setting a surface portion of said photoconductive drum which corresponds to a prospective kth-color image formation portion at a potential of the first polarity; and

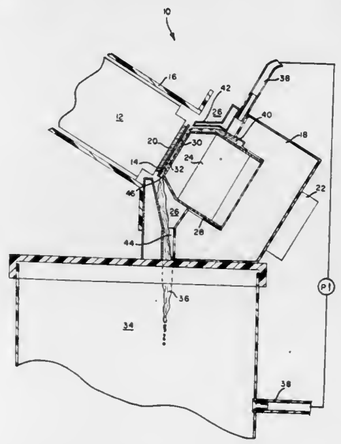
a kth developing unit disposed in front of said (k+1)th light source means along the rotational direction of said photoconductive drum to develop the kth color image.

4,515,463

INCLINED TONER FLOW CONTROL SYSTEM FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE UPON AN ELECTROPHOTOGRAPHIC FILM

John D. Plumadore, Westfield, Mass., assignor to Photon Chroma, Inc., Westfield, Mass.

Filed Jul. 30, 1982, Ser. No. 403,806
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 **13 Claims**



1. Toner flow control apparatus for developing individual electrophotographic latent images upon an electrophotographic film, comprising:

a development electrode;

an electrophotographic film having an upper edge portion, a lower free edge portion, and a predetermined longitudinal extent with said electrostatic latent images disposed thereon in a serial arrangement along said predetermined extent, and disposed adjacent to said development electrode such that said electrostatic latent images face said development electrode;

said electrophotographic film and said development electrode defining a channel therebetween; and

means for introducing toner into said channel in a direction transverse to said longitudinal extent of said electrophotographic film whereby said toner flows across said electrophotographic film from within the vicinity of said upper edge portion of said electrophotographic film to said lower free edge portion of said electrophotographic film for development of said individual electrostatic latent images,

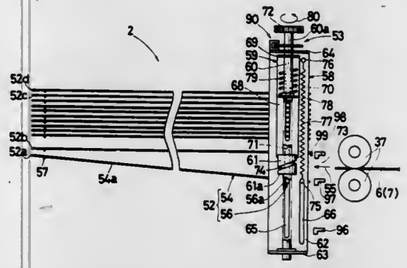
said development electrode, said electrophotographic film, and said toner channel being disposed within parallel planes inclined with respect to a horizontal plane such that said toner flows through said channel and over the facing surfaces of said electrophotographic film and said development electrode in a controlled manner along said transverse direction across said electrophotographic film from within the vicinity of said upper edge portion of said electrophotographic film to said lower free edge portion of said electrophotographic film so as to be discharged from said channel and said lower free edge portion of said electrophotographic film within a vertical plane under the influence of gravity.

4,515,464

COPYING APPARATUS HAVING A COPY SHEET SORTER

Yutaka Shigemura; Hiroshi Kimura; Masahiko Hisajima; Isao Yada; Yoichiro Irie; Kiyoshi Morimoto; Yasubiko Yoshikawa, and Takashi Nagashima, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Sep. 28, 1982, Ser. No. 426,156
Claims priority, application Japan, Oct. 9, 1981, 56-162205
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **14 Claims**



1. In a copying apparatus equipped with a sorter which sorts a plurality of copy paper sheets, which correspond to an original document and which are discharged from a main body of the copying apparatus, into a plurality of bins which are successively shifted to a sheet discharge position by shifting means, the improvement wherein said sorter comprises:

copy number preset key means for setting the number of copies to be made by the copying apparatus;

memory means for memorizing said preset number of copies to be made;

first counter means for counting the number of copied paper sheets for each copying operation of the copying apparatus;

second counter means for counting the number of copy paper sheets discharged from the copying apparatus;

means for stopping the copying operation of the copying apparatus when the counted value of said first counter means equals said preset number of copies memorized by said memory means;

sort key means for selecting a mode of operation wherein the copy paper sheets are sorted into said bins one sheet into each bin; and

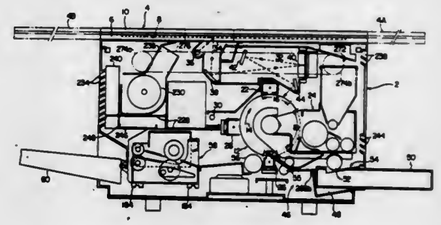
electrical circuit means for applying signals to said shifting means for changing the direction of shifting of said bins when the counted value of said second counter means equals the memorized preset number of copies in the sort mode.

4,515,465

ELECTROSTATIC COPYING APPARATUS

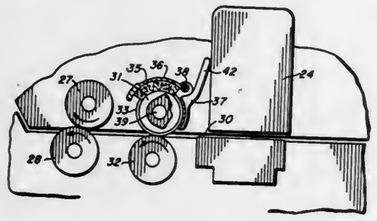
Hideo Miyoshi, Habikino; Tadashi Umeda, Yamato Takada, and Takashi Aoki, Kusatsu, all of Japan, assignors to Mita Industrial Company Limited, Japan

Division of Ser. No. 250,829, Apr. 3, 1981, abandoned. This application Feb. 8, 1983, Ser. No. 464,833
Claims priority, application Japan, Apr. 15, 1980, 55-49497
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **4 Claims**



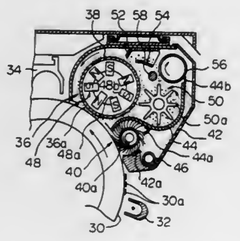
1. In an electrostatic apparatus comprising a housing, a photosensitive member disposed within the housing, a main electric motor driving connected to the photosensitive member for free movement of the photosensitive member through an endless moving path defined within the housing, an original-support mechanism disposed on the top surface of the housing and including a transparent plate on which to place an original document to be copied, a charging corona-discharge device for applying corona discharge to the photosensitive member in a latent electrostatic image-forming zone located along the moving path of the photosensitive member, an optical unit for projecting the image of the original document placed on the transparent plate onto the photosensitive member in the latent electrostatic image-forming zone, a copying paper transfer unit for transferring a copying paper through a predetermined transfer passage extending through a transfer zone located along the moving path of the photosensitive member and downstream of the latent electrostatic image-forming zone in the moving direction of the photosensitive member, a paper jamming detecting means for detecting the jamming of the copying paper in the transfer passage and thus producing a paper jamming signal, an emergency stopping means for stopping the copying process in response to the paper jamming signal, and a manually operable release switch for releasing the stopping action of the emergency stopping means; the improvement wherein the apparatus further comprises a preparatory driving means which, upon the releasing of the stopping action of the emergency stopping means by the operation of the release switch, energizes the main electric motor, thereby moving the photosensitive member through at least one rotation through said endless moving path, and (b) cleaning means responsive to releasing of the stopping action of the emergency stopping means by the operation of the release switch for cleaning said photosensitive member during the at least one rotation of said photosensitive member through said endless moving path.

4,515,466
SHEET DELIVERY STATION FOR COPYING APPARATUS
Carl B. Heisler, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 27, 1982, Ser. No. 382,514
Int. Cl.³ G03G *21/00, 15/20*
U.S. Cl. 355—15 **14 Claims**



1. Reproducing apparatus comprising a frame having upper and lower portions, means for forming a dry toner image on a supporting sheet, means for fixing a toner image to said sheet, said fixing means including heating means to elevate the temperature of the toner to a level at which it at least softens, sheet delivery means for delivering said sheet from said fixing means to an output station, said sheet delivery means being positioned adjacent said fixing means and comprising a pair of transport rolls through which the sheet with said toner image is transported, said fixing means and the lower one of said transport rolls being mounted to the lower portion of the reproducing apparatus frame and the upper one of said transport rolls being mounted to the upper portion of the reproducing apparatus frame, said upper and lower frame portions being pivotally mounted relative to each other at one end, said upper roll in contact with the side of the sheet bearing the toner image having associated therewith a cleaning pad for cleaning the surface thereof of toner and debris, said cleaning pad being pivotally supported by a frame member about the axis of the upper roll, said cleaning pad comprising an inflammable pad of resiliently compressible flexible abrasive fibers forming a network of intercommunicating voids to scrape toner off the surface of said upper transport roll whereby said toner penetrates the voids of said cleaning pad.

4,515,467
MAGNET BRUSH CLEANING APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE
Kohji Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 12, 1983, Ser. No. 457,548
Claims priority, application Japan, Jan. 20, 1982, 57-6991
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **30 Claims**



1. A magnet brush cleaning apparatus for removing residual toner left non-transferred on a photoconductive element, comprising:

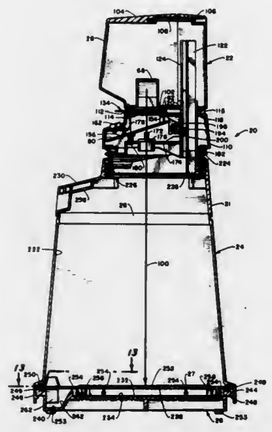
rotatable magnet brush means for cleaning the surface of the photoconductive element by forming a magnet brush by a cleaning agent and attracting the residual toner to support the residual toner on said magnet brush;

means for removing the cleaning agent and residual toner from the magnet brush and feeding the cleaning agent and residual toner into a circulatory cleaning agent supply path;

electric field producing means for producing an electric field in the circulatory cleaning agent supply path and separating the toner collected after the cleaning by the magnet brush means and the cleaning agent from each other; and

cleaning agent supply means for supplying the cleaning agent separated from the toner to the magnet brush means.

4,515,468
COMBINED PHOTOGRAPHIC ENLARGER AND PRINT DEVELOPING TRAY
Charles E. Taylor, Westlake Village; Anton Gattiker, Playa Del Rey, and Gary B. Krantz, Reseda, all of Calif., assignors to Phase One Products, Corp., Westlake Village, Calif.
Filed Mar. 25, 1983, Ser. No. 479,037
Int. Cl.³ G03B *27/32, 27/52;* **G03D** *17/00*
U.S. Cl. 355—27 **36 Claims**



1. A combined photographic enlarger and print developing tray comprising:

a slide housing, a light source mounted within said slide housing, said light source emitting light along a specific path, a slide receiving station formed within said slide housing;

a slide holder, said slide holder having an opening within which there is adapted to be located a photographic transparency, said slide holder to be located in a close fitting relationship with said slide receiving station, said opening to intersect said specific path, said slide holder and said opening being adjustable relative to said path and fixable in an established position;

a primary base;

a lens housing fixed to said slide housing, a lens mounted on said lens housing, said lens intersecting said specific path, said lens housing being connected by connecting means to said primary base, said connecting means permitting movement along said specific path of said slide housing in respect to said primary base;

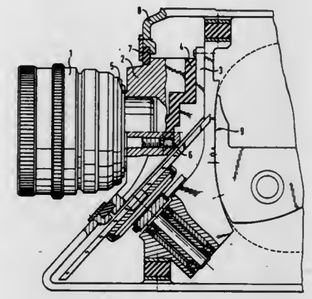
a secondary base having an enlarged internal chamber, said secondary base having a top and a bottom which are interconnected by a side wall assembly, said primary base being connected by interlocking means to said secondary base at said top,

a view port formed within said primary base, said view port being spaced from said specific path;

a print tray assembly connected to said secondary base at said bottom, said print tray assembly having print receiving means, said print receiving means adapted to contain an unexposed photographic print which is to intersect said specific path, a panel normally covering said print receiving means to prevent premature exposure of the print, said panel having a focusing target, said focusing target accurately representing the size and position of the photographic print, said panel being movable between a first position covering said print receiving means to a second position permitting access to said print receiving means, said second position being spaced further from said lens than said first position, whereby a user can observe through said view port to magnify and focus the desirable image of the photographic transparency on said focusing target by moving of said slide housing relative to said base and then by physically moving of said slide holder select the desired position of the photographic transparency to achieve the desired photographic print and then removing said panel and then activating said light source to expose the photographic print; and

when using said view port said lens being unrestricted to pass the maximum amount of light therethrough producing a clear image on said focusing target with said panel in said first position, said lens being restricted during passing of light therethrough to expose the photographic print with said panel in said second position causing an automatic shift in focus producing a clear image on the photograph print.

4,515,469
MOTION PICTURE CAMERA HAVING AN INTERCHANGEABLE LENS
Otto Blaschek, Aschheim, Fed. Rep. of Germany, assignor to Arnold & Richter Cine Technik GmbH. & Co. Betriebs KG, Munich, Fed. Rep. of Germany
Filed Oct. 30, 1981, Ser. No. 316,689
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041161
Int. Cl.³ G03B *27/72, 27/76*
U.S. Cl. 355—35 **2 Claims**



1. A motion picture camera comprising:

a camera housing;

a camera mechanism including a film gate, said camera mechanism being suspended from said camera housing for preventing a transmission of structure-borne noise from said camera mechanism to said camera housing;

a lens adapter including a lens mount member and a flange, said flange being fixed to said camera mechanism;

an opening defined by said camera housing, said lens mount member being mounted in said opening and adapted to hold an interchangeable lens;

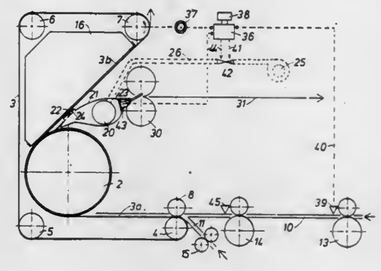
resilient mounting means for mounting said lens mount member in said opening;

a lens supporting plane defined by said lens mount member;

noise absorbing means interposed between said lens mount member and said flange for absorbing structure-borne noise generated by said camera mechanism; and

at least one adjustable stop mounted in said lens mount member and engaging said flange for maintaining a constant distance between said lens supporting plane and said film gate and for absorbing structure-borne noise generated by said camera mechanism.

4,515,470
APPARATUS FOR EXPOSING AND THEN SEPARATING SUPERPOSED ORIGINAL AND LIGHT-SENSITIVE SHEETS
Albert T. Deckers, Maasbree, and Arie Leppink, Venlo, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands
Filed Sep. 22, 1983, Ser. No. 534,742
Claims priority, application Netherlands, Oct. 18, 1982, 8204012
Int. Cl.³ G03B *17/24*
U.S. Cl. 355—105 **6 Claims**



1. In an apparatus for exposing to light and thereafter separating superposed original and light-sensitive sheets, including an exposure station, transport means for feeding an original sheet and a light-sensitive sheet, each in its own separate feed path, toward and then onto one another and then feeding said sheets one upon the other in a path through the exposure station, and means beyond the exposure station for leading one of said sheets away from the other sheet and thus separating the sheets automatically, the combination which comprises detector means for sensing and for delivering a signal upon the movement, past a certain location in its own feed path, of a said sheet that is to be led away by said separating means and means responsive to said signal to activate said separating means after a time delay equal to the period of time required for said transport means to feed up to said separating means the leading edge of a sheet sensed by said detector means.

4,515,471
SCANNING LASER RADAR
Dayton D. Eden, Dallas, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.
Filed Aug. 25, 1981, Ser. No. 296,074
Int. Cl.³ G01C *3/08;* **G01J** *1/20, 1/00;* **G02F** *1/29*
U.S. Cl. 356—5 **3 Claims**

1. An optical radar comprising:

a scanning transmitter for generating a collimated first coherent signal having a variable angular position which comprises a scanning laser oscillator having:

an optically resonant cavity;

a variable reflectance surface at one end of said resonant cavity;

an output reflector at the other end of said resonant cavity, said output reflector reflecting a percentage of

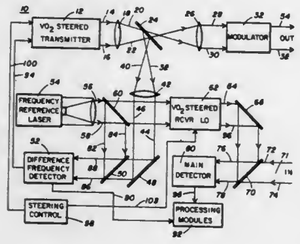
incident light and transmitting the remaining portion thereof;

a transmitter electron beam impinging the surface of said variable reflectance surface wherein the reflectivity of a selected portion of said variable reflectance surface increases thereby producing a transmitter pixel having a high reflectance that reflects light in a diffracted pattern;

an active laser medium between said variable reflectance surface and said output reflector;

a first focusing lens for collimating the diffracted pattern reflected from said transmitter pixel through said active medium;

a second focusing lens for condensing the collimated light that passes through and is output by said active medium, said second focusing lens condensing the collimated



light on said output reflector wherein an oscillating mode is sustained within said resonant cavity, the direction of which is varied by adjusting the position of said electron beam impinging upon said variable reflectance surface to change the position of said transmitter pixel; and

a collimating lens for collimating the output of said output reflector, said collimating lens disposed external to said resonant cavity; and a scanning receiver having:

a scanning local oscillator for generating a second coherent signal having a variable angular position;

mixing means for mixing the reflected portion of said first coherent signal that is returned as a return signal with second coherent signal; and

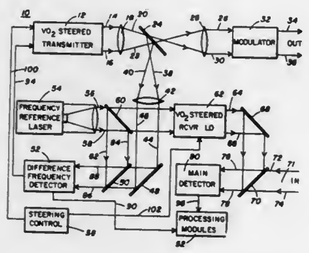
signal detection means for receiving the output of said mixing means and generating a signal in response to the presence of said return signal.

4,515,472

AGILE RECEIVER FOR A SCANNING LASER RADAR

Albert B. Welch, Dallas, Tex., assignor to LTV Aerospace and Defense Co., Dallas, Tex.

Filed Aug. 25, 1981, Ser. No. 296,075
Int. Cl.³ G01C *3/08;* **G01J** *1/20, 1/00;* **G02F** *1/29*
U.S. Cl. 356—5 **11 Claims**



1. A coherent optical receiver for receiving a coherent return signal comprising:

a variable reflectance surface;

means for generating a linearly polarized coherent signal;

directing means for directing said coherent signal to uniformly illuminate said variable reflectance surface;

steering means for increasing the reflectance of said variable reflectance surface in a plurality of selected small areas to reflect said coherent signal that is incident on each of said selected small areas in a diffracted pattern having a conical shape, said steering means simultaneously increasing the reflectance in each of said selected small areas;

collimating means for receiving and collimating the reflected portion of said coherent signal reflected from each of said selected small areas to form a plurality of local oscillator beams at the output of said collimating means;

a summation means for summing said coherent return signal with the plurality of said local oscillator beams wherein said steering means selectively directs one of said local oscillator beams to overlap said return signal; and

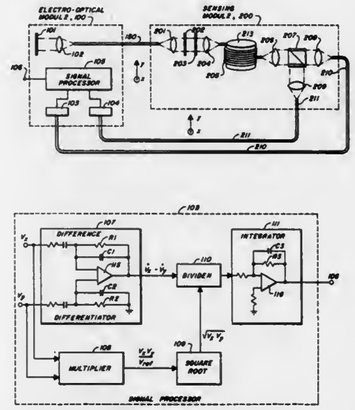
detecting means for receiving the output of said summing means and providing a detected output signal in response to one of said local oscillator beams overlapping said return signal.

4,515,473

PHOTOELASTIC STRESS SENSOR SIGNAL PROCESSOR

Marc D. Mermelstein, Chevy Chase, Md., assignor to Geo-Centers, Inc., Newton Upper Falls, Mass.

Filed Sep. 13, 1984, Ser. No. 650,229
Int. Cl.³ G01B *11/18*
U.S. Cl. 356—33 **2 Claims**



1. In a photoelastic polarimetric stress sensor of the type having

(a) a photoelastic element,

(b) means for directing polarized light into the photoelastic element,

(c) stress imposing means responsive to a phenomenon to be measured for stressing the photoelastic element,

(d) beam splitter means for splitting the polarized light passed through the photoelastic element into a plurality of beams each of which has a different polarized component of the light transmitted through the photoelastic element, and

(e) means responsive to the light intensities of the split beams for providing an output that is a measure of the stress on the photoelastic element,

the improvement wherein the means responsive to the light intensities of the split beams comprises

(i) a pair of photodetectors, each photodetector providing an electrical output signal in response to a different one of the split beams,

(ii) a difference differentiator responsive to the outputs of the pair of photodetectors for providing an output proportional to the difference between derivatives of its inputs,

(iii) a multiplier responsive to the outputs of the pair of photodetectors for providing an output related to the product of its inputs,

(iv) a square rooter responsive to the output of the multiplier for providing an output that is the square root of its input,

(v) a divider responsive to the output of the difference differentiator as the numerator and the output of the square rooter as the divisor for providing an output signal, and

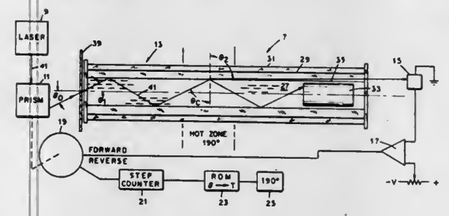
(vi) an integrator responsive to the output of the divider for providing an output signal that is a measure of the imposed stress.

4,515,474

METHOD AND APPARATUS FOR DETERMINING PEAK TEMPERATURE ALONG AN OPTICAL FIBER

Richard J. Fox, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,278
Int. Cl.³ G01J *5/08, 5/28*
U.S. Cl. 356—44 **10 Claims**



1. Temperature-sensing apparatus, comprising:

an optical fiber capable of supporting multimodal propagation of light and including (a) a core whose refractive index decreases with increasing temperature, (b) a cladding therefor having a lower refractive index than said core, and (c) a jacket for said cladding having a lower refractive index than said cladding,

a light source mounted to launch into said core a light beam defining with the core axis a launch angle of progressively changing magnitude, said light beam being selected to establish substantially single-mode light propagation in said core,

light-responsive means associated with said cladding for generating a first output indicative of onset of light refraction therein from said core,

means responsive to the first output for generating a second output indicative of the value of the launch angle coincident with said onset, and

means responsive to the second output for generating an output indicative of the fiber temperature corresponding to said value.

4,515,475

MEASUREMENT OF REFRACTIVE INDEX PROFILE

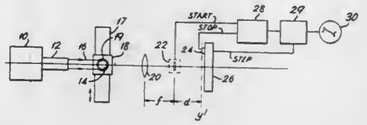
David N. Payne; Issei Sasaki, and Michael J. Adams, all of Southampton, England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB81/00040, § 371 Date Oct. 1, 1981, § 102(e) Date Oct. 1, 1981, PCT Pub. No. WO81/02634, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 11, 1981, Ser. No. 308,542
Claims priority, application United Kingdom, Mar. 11, 1980, 8008158
Int. Cl.³ G01N *21/47*
U.S. Cl. 356—73.1 **15 Claims**

1. A method of sensing the optical deflection function of an approximately cylindrical object comprises:

illuminating the object over its width to be tested with a collimated beam of light;

sensing the light transmitted by the object so that in the focal plane the distance of transmitted light from the optical axis in a direction perpendicular to the cylindrical axis of the object is linearly proportional to the angle through which light has been deviated by the object;



passing the focused light through a modulator to cause a parameter of the light by means of a modulator to vary as a function of said distance; and

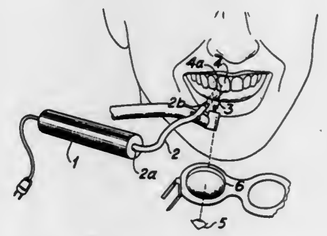
receiving the modulated light in an image plane, and measuring said parameter at a plurality of positions in said image plane, whereby the deflection function of the object can be derived.

4,515,476

DEVICE FOR THE OCULAR DETERMINATION OF ANY DISCREPANCY IN THE LUMINESCENCE CAPACITY OF THE SURFACE OF A TOOTH FOR THE PURPOSE OF IDENTIFYING ANY CARIED AREA ON THE SURFACE TO THE TOOTH

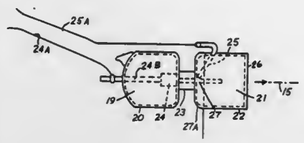
Bjelkhagen H. Ingmar, Hagagatan 54, 113 47 Stockholm, Sweden

Filed Mar. 31, 1982, Ser. No. 363,788
Claims priority, application Sweden, Apr. 1, 1981, 8102103
Int. Cl.³ G01N *21/64;* **A61B** *6/00*
U.S. Cl. 356—318 **10 Claims**



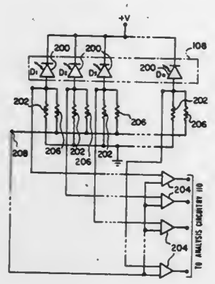
1. A device for the ocular determination of any discrepancy in the luminescence capacity of the surface of a tooth for assessing the extent of a caried or another defective area of the surface of the tooth, comprising a light generating device for generating light limited at least within a predetermined wavelength range for illuminating the surface of the tooth, and for causing luminescence of the surface of the tooth, the wavelength range of the light being visible to the human eye, an absorption filter for eliminating reflections and luminescence within the wavelength range of the light generating device such that ocular determination of any discrepancy in the luminescence capacity of the tooth surface occurs outside the wavelength range wherein the absorption filter eliminates light only within the wavelength range emitted by the device, whereby every area with a luminescence capacity differing from the luminescence capacity of the surface of a sound tooth will be perceived as a dark area.

4,515,477
VISIBILITY METER AND COMPONENTS USED THEREIN
Frank Früngel, Im Glockenacker 2, 8053 Zürich, Switzerland
Continuation of Ser. No. 196,145, Oct. 10, 1980, abandoned.
This application Jul. 5, 1983, Ser. No. 510,743
Claims priority, application Switzerland, Feb. 10, 1979, 8850/79
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—338 **1 Claim**



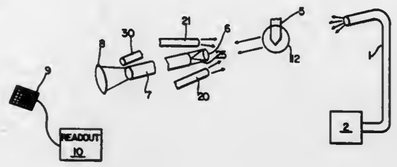
1. A visibility meter using a forward scatter of light pulses in an atmospheric sample, comprising a pulse light transmitter for transmitting a downwards directed beam of light pulses and having a light source in the form of a point-shaped, end-on capillary spark; a light receiver arranged opposite said transmitter; and a V-shaped heated diaphragm being arranged between said transmitter and receiver to interrupt optical contact therebetween.

4,515,478
COHERENT LIGHT DETECTING SYSTEM INCLUDING PASSIVE AVERAGING NETWORK
Paul T. Ballard, and Gordon R. Little, both of Kettering, Ohio, assignors to Systems Research Laboratories, Inc., Dayton, Ohio
Filed Nov. 5, 1982, Ser. No. 439,475
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—345 **11 Claims**



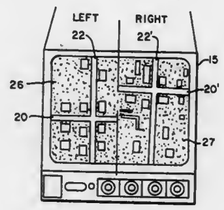
1. Apparatus for detecting temporally coherent light comprising:
an interferometer for receiving light to be analyzed;
an array of photosensitive elements upon which interference patterns generated by said interferometer in response to temporally coherent light incident thereon are directed, said photosensitive elements being connected to generate signals representative of optical energy respectively incident thereon;
signal averaging means comprising a passive resistor network coupled to said elements for deriving an average signal from the signals generated by said elements; and
comparator means for comparing each of the signals generated by said elements to said average signal.

4,515,479
ELECTRO-OPTICAL SENSORS WITH FIBER OPTIC BUNDLES
Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Ontario, Canada
Division of Ser. No. 173,370, Jul. 29, 1980,. This application Mar. 22, 1983, Ser. No. 477,775
The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.
Int. Cl.³ G01B *11/14*
U.S. Cl. 356—375 **71 Claims**



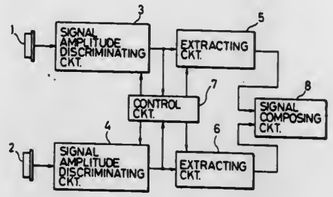
1. A method of determining the dimension, location, orientation, presence, or identity of at least a portion of an object, said method comprising the steps of:
imaging at least a portion of an object onto an end of an at least partially non-coherent optical fiber bundle whereby the image incident on said end of said fiber bundle is transmitted to the other end thereof;
transferring said image from said other end of said non-coherent optical fiber bundle onto a photodetector comprising a plurality of discrete photodetector elements;
determining, from the output of said photodetector elements, a characteristic of the lighted or unlighted portion at the other end of said non-coherent fiber bundle; and
determining, from said characteristic, said dimension, location, orientation, presence, or identity of at least said portion of said object.

4,515,480
PATTERN ALIGNMENT SYSTEM AND METHOD
William I. Miller, Campbell, and Robert D. Reimiller, Sunnyvale, both of Calif., assignors to Micro Automation, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 151,418, May 19, 1980, abandoned.
This application Apr. 7, 1982, Ser. No. 366,368
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—400 **8 Claims**



1. An object alignment system comprising
means for optically scanning an object to generate first data signals representing the reflected light level of said scanned object,
integrator means connected to receive said first data signals for averaging said first data signals to form second data signals representing electronically smeared data signals for each scan line of said scanned object, and
means for determining the best match between said averaged data signals and predetermined stored data signals without regard or dependence upon the sharpness of said averaged data signals.

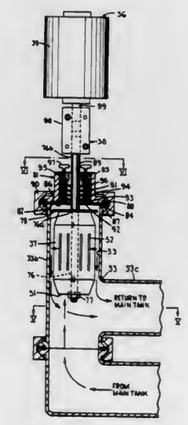
4,515,481
APPARATUS FOR PROCESSING A SIGNAL FOR ALIGNING
Yasuyoshi Yamada, Kawasaki, and Ryozo Hiraga, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 17, 1982, Ser. No. 419,511
Claims priority, application Japan, Sep. 24, 1981, 56-151530
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—400 **9 Claims**



1. A signal processing apparatus operable in cooperation with a first object having at least one standard mark thereon and a second object having at least one reference mark thereon, said apparatus comprising:
first sensing means for sensing said standard mark and generating a first signal stream containing a desirable signal concerning said standard mark and an undesirable signal concerning said reference mark;
second sensing means for sensing said reference mark and generating a second signal stream containing a desirable signal concerning said reference mark and an undesirable signal concerning said standard mark;
extracting means for forming a timing signal from at least one of said first and said second signal streams, for extracting the desirable signal concerning said standard mark from said first signal stream by means of said timing signal, and for extracting the desirable signal concerning said reference mark from said second signal stream by means of said timing signal; and
signal composing means for composing the extracted desirable signal concerning said standard mark and the extracted desirable signal concerning said reference mark.

4,515,482
STERILE SUSPENSION AND SOLUTION HOLDING AND MIXING TANK
Frederic H. Schadewald, Ross Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation of Ser. No. 522,434, Aug. 11, 1983, abandoned.
This application Feb. 28, 1984, Ser. No. 583,781
Int. Cl.³ B01F *15/00*
U.S. Cl. 366—136 **19 Claims**

1. A mixing apparatus for preparing suspensions, emulsions and solutions, comprising:
container means adapted for holding a mixture of materials to be formed into a suspension, emulsion or solution;
inlet means for feeding said materials into said container means;
outlet means for withdrawing a product from said container means;
an external recirculation loop having a first end communicating with said container means near to the bottom of said container means, and having a second end communicating with said container means near to the bottom of said container means but above said first end, said external recirculation loop comprising a continuous, elongated conduit which extends from said first end to said second end and forms a flow path between said first and second ends so that successive portions of the mixture of materials in said container means can be continuously flowed in series through said external recirculation loop, said external recirculation loop having a branch portion which adjoins and communicates with said continuous, elongated conduit at one end of said branch portion; and
mixing means including a rotatable, hollow mixer head substantially completely disposed in said branch portion, said mixer head having wall means defining an internal cavity having a centrally located inlet opening at one end thereof and a plurality of circumferentially spaced-apart radial slots extending from said cavity and defining outlets therefrom, means for rotating said mixer head to draw said mixture from said container means into said first end of

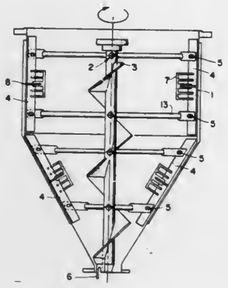


said external recirculation loop, then into said internal cavity of said mixer head through said inlet opening, the impel said mixture radially outwardly from said internal cavity through said slots, whereby said mixture is intensely mixed and subjected to high fluid shear effective to homogenize said mixture, said mixture then flowing through said external recirculation loop to said second end thereof, then out of said second end into the interior of said container means, whereby said mixture is continuously recirculated and mixed to form a homogeneous product.

4,515,483
APPARATUS FOR REMOVING SUBSTANCES FROM THE INNER WALLS OF VESSELS
Rudolf Müller; Hans-Jürgen Radeklau; Harald Döfke, and Detlef Krieger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed Aug. 16, 1983, Ser. No. 523,557
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1982, 3230763
Int. Cl.³ B01F *7/24*
U.S. Cl. 366—303 **9 Claims**

1. An apparatus for removing substances from the inner walls of a vessel, comprising:
vertically extending agitating shaft means arranged in a vessel, and having agitator arms for agitating materials in said vessel;
displaceable scraper means displaceably attached to said agitator shaft means at said agitator arms, and adapted for being positioned in sufficient proximity to the walls of said vessel effective to scrape off material accumulated on the walls upon operation of said vertically extending agitating shaft means, and said scraper means comprising plural

parts, which are interconnected by a comb, in a manner providing a spacing between the scraper means parts; and



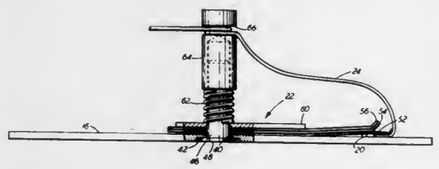
webs attached to the vessel walls so as to extend into said spacing between the scraper means parts when the scraper is put into operation.

4,515,484

TEMPERATURE TESTING APPARATUS FOR AN ELECTRONIC CIRCUIT SUBSTRATE

James H. Gilley, Swepsonville, N.C., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,697
Int. Cl.³ G01K *11/00*
U.S. Cl. 374—137 **7 Claims**



1. An apparatus for testing the reflow-soldering temperature profile on an electronic circuit substrate having a heated surface exposed to a source of heat and a test surface where the reflow soldering is to take place and which has the temperature profile to be tested, comprising:

an aperture extending through the substrate between the two surfaces, with a recess surrounding the aperture and adjacent to the heated surface;

a bolt having a head, the bolt extending through the aperture in the substrate and beyond, with the head of the bolt located in the recess;

screw threads on a portion of the bolt extending beyond the test surface of the substrate;

a flat spring having an aperture therethrough, the flat spring oriented to bear against the test surface of the substrate, with the bolt extending through the aperture in the flat spring;

a pressure plate having an aperture therethrough, the pressure plate oriented to press the flat spring against the test surface of the substrate, with the bolt extending through the aperture of the pressure plate;

a coil spring positioned around the bolt and oriented to press the pressure plate toward the test surface of the substrate;

a nut having internal threads engaging the threads of the bolt, the threaded engagement being sufficient for the nut to deflect the coil spring by an arbitrary amount;

a wire-guiding groove extending around the nut;

a thermocouple having at least one electrical wire extending therefrom, the thermocouple located between the substrate and the flat spring, the flat spring being deflected sufficient to accommodate and exert a force upon the thermocouple to hold the thermocouple in place, the thermocouple wire being wrapped about the wire-guiding groove; and

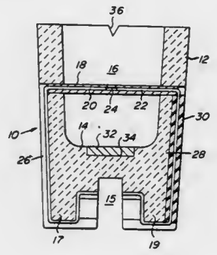
a flexible thermal and electrical insulator located between the flat spring and the thermocouple.

4,515,485

MOLTEN METAL SAMPLE CUP

John E. Cassidy, Churchville, and L. Raymond Jones, Jr., Huntingdon Valley, both of Pa., assignors to Electro-Nite Co., Philadelphia, Pa.

Filed Jan. 21, 1983, Ser. No. 459,904
Int. Cl.³ G01K *1/08*
U.S. Cl. 374—157 **15 Claims**



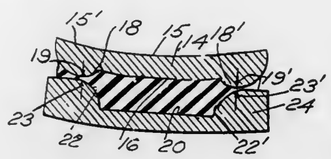
1. A molten metal sample cup for use in determining phase change of molten metal comprising a refractory cup having a cavity for receiving molten metal, temperature sensing means in said cavity and supported by said cup, a blob which includes a material which promotes the formation of carbides, said blob being disposed within said cavity, and means within said cavity for limiting the surface area of said blob exposed to said cavity to a predetermined uniform amount which is less than one half the total surface of the blob.

4,515,486

ELASTOMERIC SUPPORTED HYDRODYNAMIC BEARING

Russell D. Ide, 28 Daniel Dr., Coventry, R.I. 02816

Filed Feb. 3, 1984, Ser. No. 576,570
Int. Cl.³ F16C *32/06*
U.S. Cl. 384—117 **6 Claims**



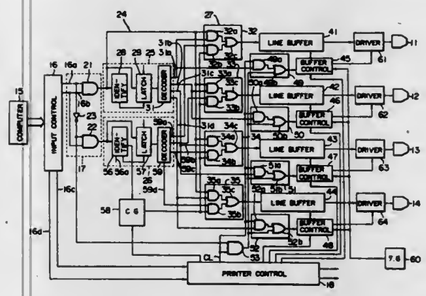
1. A fluid bearing for supporting an opposing moving part, a plurality of bearing pads, each pad having a face member and a support member separated by and bonded to an elastomeric material, said face member having a load engaging surface and a back surface with at least one arcuate point of inflection, which at rest opposed an arcuate point of inflection located on said support member, and which under fluid lubricant friction and pressure forces, move to form a wedge for hydrodynamic lubrication; said friction causing lateral pad motion and misalignment of the opposing points of inflection, said pressure force causing tilting of the pad to develop a lubricant wedge.

4,515,487

MULTICOLOR PRINTER

Hitoshi Minami, Soka, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,647
Claims priority, application Japan, Mar. 29, 1982, 57-50676; Mar. 29, 1982, 57-50677
Int. Cl.³ B41J *3/12, 35/16*
U.S. Cl. 400—121 **4 Claims**



1. A multicolor printer for moving together and driving at predetermined timing a plurality of dot system printing heads provided for each color of three primary colors, yellow, magenta and cyan, to effect multicolor printing, comprising:

a plurality of line buffers for storing dot patterns for one line portion to be printed by color in correspondence to each of the printing heads;

a plurality of head driving circuits for individually driving the printing heads in accordance with output data of said line buffers; and

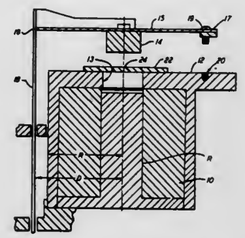
data selector means for selectively putting out dot pattern data with color information of three primary colors to a predetermined line buffer designated by said color information, said data selector means comprising a discrimination circuit for detecting said color information from said dot pattern data and printing data, and a decoder circuit for actuating said line buffer as required by said color information from said discrimination circuit to render said remaining line buffers inoperable.

4,515,488

ASSEMBLING DOT MATRIX PRINT HEADS

Royden C. Sanders, Jr., Burton Hwy., Wilton, N.H. 03086, and John L. Forsyth, Newton Junction, N.H., assignors to Royden C. Sanders, Jr., Wilton, N.H.

Filed Jul. 2, 1984, Ser. No. 626,668
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **13 Claims**



1. The method of assembling a dot matrix print pin driving spring in relation to a solenoid having an axial hole, said spring carrying an armature and said hole being designed for receiving said armature, said solenoid being carried by a housing, positioning a plastic sheet adjacent the hole, with an edge of the plastic sheet overlying the hole, inserting the armature into the hole thereby partially drawing the plastic sheet into the hole so that it engages more than 180° of surface of the armature as measured around the axis of the hole to center the armature in the hole.

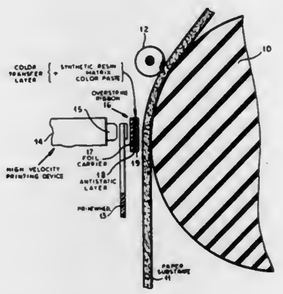
10. A partially assembled dot matrix print head comprising a dot matrix print pin driving spring in relation to a solenoid having an axial hole, said spring carrying a cylindrical armature and said hole being designed for receiving said cylindrical armature, said solenoid being carried by a housing, a plastic sheet removably inserted in the hole to center the cylinder so that the sheet engages portions of the interior of the hole spaced about more than 180° of circumference, means for rigidly securing said armature spring to a portion of a housing bearing a predetermined relation to the hole.

4,515,489

OVERSTRIKE RIBBON FOR PRINT WHEELS

Ulrich Kohle, Burgdorf, and Hans Paffhausen, Hanover, both of Fed. Rep. of Germany, assignors to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,871
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125782; Apr. 19, 1982, 3214305
Int. Cl.³ B41J *31/02*
U.S. Cl. 400—241.2 **5 Claims**



1. An overstrike ribbon capable of being advance with each printing of a letter between a high velocity printing device and a substrate through a fraction of the character width, said ribbon comprising:

a synthetic-resin foil carrier; and

a color-transfer layer on said carrier and bonded thereto, said color transfer layer comprising:

a synthetic-resin matrix; and

a color paste dispersed in said matrix, said color paste comprising:

an oil vehicle consisting of a mineral oil containing 25–50% by weight of aromatic-hydrocarbons and 30–40% of the saturated bonded carbon atoms being cycloaliphatically bonded;

a coloring pigment distributed in said vehicle;

a cationic wetting agent in the form of at least one fatty amine salt of a fatty propylene diamine of the formula $R—NH—(CH_2)_3—NH_2$, where R is a long-chain fatty acid residue; and

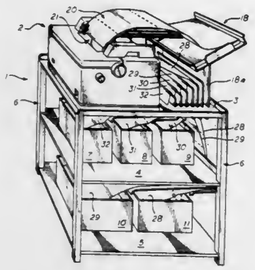
a finely divided solid filler with a high specific surface area and a particle size distribution of 0.2 to 20 microns.

4,515,490

COMPUTER PRINTER STAND WITH MULTIPLE PAPER WEB GUIDE SLOTS

Franklin Marker, III, 28 Cooper, Houston, Tex. 77076

Filed Jan. 27, 1984, Ser. No. 574,414
Int. Cl.³ B41J *15/04*
U.S. Cl. 400—613.2 **11 Claims**



1. A stand for supporting a printer and containers for different sizes and types of continuous printing stock for feeding the printing stock to the printer comprising:

a plurality of vertically extending legs,

a plurality of horizontally positioned shelves supported on said legs in vertically spaced relation,

the top shelf having one end portion for supporting a printer,

a support member supported on and extending upward from the other end of said top shelf,

a tray supported on said support member for receiving and storing printed output from said printer,

a plurality of guide slots in said top shelf between said one end portion and said support member,

a plurality of plate shaped guide members centered one in each of said guide slots,

at least one shelf being positioned below said top shelf to support containers of printing stock in selected positions, and

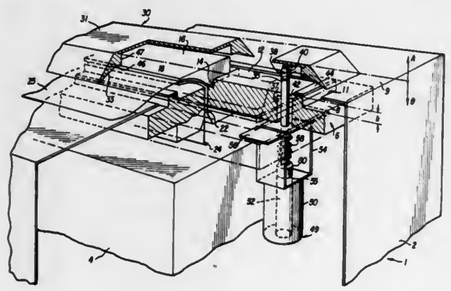
at least some of said guide members extending downwardly below said guide slots to said selected positions above said containers for guiding printing stock through said slots for selective introduction into the printer.

4,515,491

DEVICE FOR OPENING AND CLOSING AN EXIT SLIT FOR A DATA CARRIER AND A PRINTER UTILIZING SUCH DEVICE

Roger Chevrel; Michel Attard, and Michel Leviandier, all of Paris, France, assignors to Compagnie d'Informatique Militaire Spatiale & Aeronautique-CIMSA-25, Paris, France

Filed Jul. 6, 1983, Ser. No. 511,239
Claims priority, application France, Jul. 6, 1982, 82 11842
Int. Cl.³ B41J *29/12*
U.S. Cl. 400—693 **10 Claims**



1. A device for opening and closing an exit slit for a data carrier, said slit being formed in a part providing passage of said carrier through said slit, comprising:

a mobile door disposed at a level of said slit so as to cover the latter;

means for raising and lowering said door, including first and second mobile pistons aligned along a longitudinal axis of said slit, said pistons being disposed on each side of said slit and fixedly mounted at one end thereof to said door, each of said pistons having a shoulder portion;

electromagnetic means for controlling operation of each of said first and second pistons wherein said electromagnetic means further comprises a coil and a core which are fixed to an end opposite said one end of said pistons; and

means for energization and de-energization of said coil of said electromagnetic means such that each assembly formed by said core and an associated piston moves vertically so as to raise and lower said door wherein said electromagnetic means further comprises a spring mounted about each said piston, one end of each spring being fixedly disposed on a part forming a base through which passes each said piston, and a second end of each spring being disposed on said shoulder portion of each piston so that, by de-energization of the coil of each said electromagnetic means, each assembly formed by said core and the associated piston moves downwardly while causing relaxation of each said spring so that said door obtains a lowered position in which said exit slit is closed;

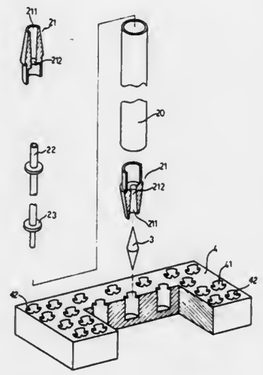
further comprising first and second support parts each having a U shape in cross-section and each having a horizontal arm which includes a central opening through which slides said assembly formed by said core and the associated piston and having two vertical arms which are interlocked with said base; the coil of each of said electromagnet means being fixedly mounted to the horizontal arm of each U-shaped support part.

4,515,492

WRITING IMPLEMENT AND KIT

Chen J. Shan, No. 2, Chung-Nei Rd., Cho-Yun Village, Yuan-chang, Hsiang, Yun-Lin Hsien, Taiwan

Filed Jun. 1, 1983, Ser. No. 499,940
Int. Cl.³ B43K *31/00, 29/20*
U.S. Cl. 401—52 **4 Claims**



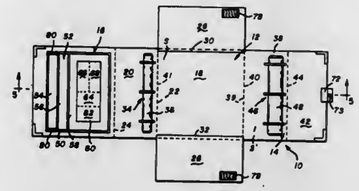
1. A writing kit comprising, a plurality of leads each having a pair of tapered portions tapering from the central portion toward two opposite points, a stand having a plurality of holes therein for selectively receiving said leads, a writing implement including an elongated barrel having an opening therethrough and opposite ends, a pair of collet means engaging said ends of said elongated barrel so as to be oppositely oriented with respect to one another, each of said collet means having a conical internal surface for engaging and gripping said tapered portions of said leads and having an opening therein which is generally aligned with said opening through said elongated barrel, a push rod means disposed within said elongated barrel and being movable through said opening in said collet means, said push rod means having means for limiting the movement of said push rod means within said elongated barrel, and with respect to each of said opposite ends thereof, said push rod means being operable to urge a lead from engagement with either of said collet means.

4,515,493

PORTABLE DESK AND BRIEFCASE

Albert F. Radovich, 54 Southlite Cir., Sacramento, Calif. 95831

Continuation-in-part of Ser. No. 282,392, Jul. 13, 1981, abandoned. This application Nov. 28, 1983, Ser. No. 555,900
Int. Cl.³ B42F *13/12;* **D45F** *3/00;* **D47B** *3/10*
U.S. Cl. 402—4 **3 Claims**



1. A portable desk and briefcase apparatus comprising:

a stiff rectangular back member having an inside surface defining a first plane;

stiff rectangular left and right side members having outside surfaces, said members being hingedly attached to said inside surface of said back member in spaced relation to first and second side edges thereof and respectively foldable from open positions with said outside surfaces lying substantially in said first plane to closed positions lying in second and third planes perpendicular to said first plane and lying inwardly of said first and second side edges, said left and right side members being respectively provided with first and second fastening means;

a stiff rectangular bottom member having a first edge hingedly attached to a third edge of said back member and foldable from an open position with an inside surface thereof lying in said first plane to a closed position lying in a fourth plane perpendicular to said first, second and third planes and with side edges thereof disposed outside of said second and third planes;

a stiff rectangular front member having a first edge hingedly attached to a second edge of said bottom member and foldable from an open position with an inside surface thereof lying in said first plane to a closed position lying in a fifth plane parallel to said first plane and with side edges thereof disposed outside of said second and third planes, said front member being provided with third and fourth fastening means respectively disposed proximate second and third edges of said front member, said front member being also provided with a first latching means;

pocket means affixed to the surface of said front member facing said inside surface of said back member when said members are in said closed position, the sides of said pocket means being disposed inwardly of said second and third edges of said front member and forming stops for limiting inwardly folding movement of said side members and providing means for carrying said third and fourth fastening means;

a stiff rectangular top member having a first edge hingedly attached to a fourth edge of said back member and foldable from an open position with an inside surface thereof lying in said first plane to a closed position lying in a sixth plane perpendicular to said first, second and third planes and with side edges thereof disposed outside of said second and third planes;

a rectangular flap member having a first edge hingedly attached to a second edge of said top member, said flap member having second latching means;

binder means affixed to at least one of said top and bottom members for holding work papers; and

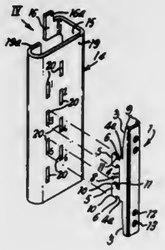
handle means attached to said top member, whereby when all of said members are in said open position, access is provided to papers affixed to said binder means, and when said members are in said closed positions, said back member, said bottom member, said front member and said top member are held in such positions by the engagement of the inside surfaces thereof with the four edges of said side members and by the engagement of said first and third fastening means, the engagement of said second and fourth fastening means and the engagement of said first and second latching means, and the closed aparatus may be carried by said handle means.

4,515,494

FRAMEWORK CONNECTION MEANS

Leonard T. Robilliard, 13, Brickfield Ave., Leverstock Green, and Alan R. Hewitt, 26, Crossways, Leverstock Green, both of Hemel Hempstead, Hertfordshire, England

Filed Apr. 19, 1982, Ser. No. 369,876
Claims priority, application United Kingdom, Apr. 22, 1981, 8112487
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—187 **3 Claims**



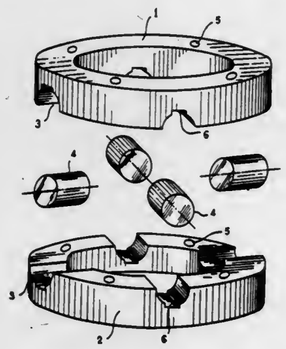
1. Connection means for the attachment, to a framework upright member, of another framework member by means of a clip device, said connection means comprising a bracket consisting of a vertically elongated angle section separate from the upright member and provided with vertically oriented hook formations by which it can be detachably engaged by relative vertical movement with openings in the said upright member, said bracket having vertical slots which are selectively engageable by parts of the clip device, the said hook formations being provided on a first wall part of said bracket and the said slots being provided in a second wall part of said bracket, said first and second wall parts of said bracket being oriented at right angles to each other and being so disposed as to be mutually unobstructive, the said hook formations extending from said first wall part of said bracket at right angles to said first wall part in a plane parallel to the plane of said second wall part of the bracket, said hook formations extending from said first wall part in spaced relation to said second wall part at positions that are not located opposite to the slots in the second wall part of said bracket, and the said second wall part of said bracket having a distancing abutment in the form of a return flange on the edge of said second wall part remote from said first wall part, said return flange extending from said edge of said second wall part toward said first wall part in a plane that is parallel to and spaced from said second wall part, the spacing between said return flange and said second wall part being sufficient to receive said parts of the clip device and being less than the spacing between said hook formations and said second wall part.

4,515,495

LINKING ARRANGEMENT FOR A SHAFT AND A FLY-WHEEL

Jean Trouillet, Fontaine-Valmont, Belgium, assignor to Jeumont-Schneider Corporation, Puteaux, France

Filed Sep. 27, 1982, Ser. No. 424,519
Claims priority, application France, Sep. 25, 1981, 81 18074
Int. Cl.³ F16B *00/00*
U.S. Cl. 403—336 **4 Claims**



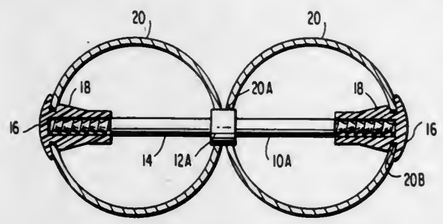
1. A linking arrangement for a shaft and a moving part rotatable about the same axis, comprising two rigid coaxial rims having the same diameter and which are respectively fastened to the shaft and the moving part with opposed surfaces of the coaxial rims fixed in contact with one another and having radial cylindrical notches therein containing respective cylindrical pins which fit the cylindrical notches when the rims are fixed in contact with one another, there being stress-relieving grooves along the entire length of the notches so as to define, for each notch, two essentially equal cylindrical surface portions at opposite sides of each groove, whereby rotary motion can be transmitted between the shaft and the moving part without producing significant axial stress therebetween as a result of torsion and while maintaining constant contact between the opposed surfaces of the rims regardless of differential expansion which may affect either rim.

4,515,496

SECURING ASSEMBLY

Stewart K. McKay, National Park Rd., Canungra, Queensland, Australia 4275

Filed Mar. 15, 1983, Ser. No. 475,652
Int. Cl.³ B25G *3/36*
U.S. Cl. 403—388 **5 Claims**



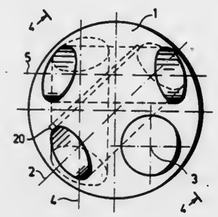
1. A securing assembly for securing together a pair of adjacent round tubular frame members having two pairs of coaligned apertures defining two outer apertures and two inner adjoining apertures comprising an elongated fastener element for interconnecting said tubular frame members having a plurality of retaining projections at each end thereof and an intermediate raised portion adapted to engage the two inner adjoining apertures in said tubular frame members, said intermediate raised portion having external dimensions substantially identical to the internal dimensions of said inner adjoining apertures and a pair of cap members each having an arcuate head portion and a shank adapted to be located in each of said 2 outer apertures, each shank having an internal blind bore in which the respective end of said elongated fastener element is secured by means of said retaining projections whereby said arcuate head portion of each cap member is adapted to abut a curved adjacent surface of a respective tubular frame member and said intermediate raised portion inhibits any shearing action by the elongated fastener element and maintains said securing assembly in a state of compression.

4,515,497

CLAMPING ELEMENT FOR THE RELEASABLE FASTENING OF SPATIALLY ARRANGED, OR PARALLEL BARS, TUBES AND SIMILAR OBJECTS

László Gillemot; János Prodán; Endre Pataki, and Ernö Zuckermann, all of Budapest, Hungary, assignors to Magyar Aluminiumipari Tröszt, Budapest, Hungary

Filed Oct. 12, 1982, Ser. No. 433,574
Claims priority, application Hungary, Oct. 26, 1981, 3139
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—391 **9 Claims**



1. A clamping element for the releasable interconnection of spatially arranged bars or tubes comprising:

a basic body including at least one fixing hole for receiving a clamping insert, and at least two inlet holes for receiving bars or tubes, said inlet holes being arranged in parallel or by-pass relationship with respect to each other and disposed to penetrate said fixing hole, and

(b) a clamping insert arranged in said fixing hole, said clamping insert being tightenable in its axial direction; the surface of said clamping insert being provided with curved recesses cut into said surface, said recesses being shaped to cradle and to contact along its whole surface said bars or tubes that are arranged in said inlet holes, said clamping insert having a profile with parallel generatrix.

4,515,498

SLOTTED DRAINAGE GRATE WITH SUPPORT

Roland Thomann, and Markus Amann, both of Langnau, Switzerland, assignors to Polydrain, Inc., Troutman, N.C.

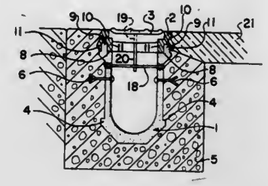
Filed Jun. 20, 1983, Ser. No. 506,244
Claims priority, application Switzerland, Nov. 23, 1982, 6827/82
Int. Cl.³ E01F *5/00*
U.S. Cl. 404—4 **8 Claims**

1. A support for a grate of the type comprised of a strip of sheet metal having transverse water drainage slots therein, the edges of said sheet metal being bent twice along its longitudinally extending edges to form two U-shaped side channels whose open sides are mutually opposed, said support comprising:

(a) a U-shaped arch open on each end and adapted to be positioned transversely across said grate in contact with opposite sides thereof and intermediate at least some of the slots to provide support to the width of the grate;

(b) each end of said arch defining a shoulder having a width and depth sufficient to be positioned in said opposing side channels and provide support to the side of said grate; and

(c) said support including a mid-section intermediate its ends, wherein the shoulder depth of the mid-section of the support is greater than at the end sections so that the mid-section extends downwardly from said two U-shaped side channels and bears against and supports the innermost shoulder of the mutually opposed, inwardly facing side channels.

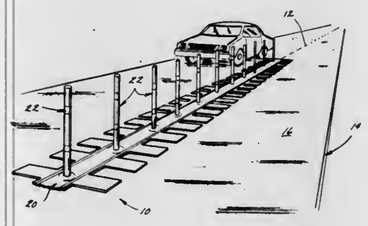


4,515,499

TRAFFIC LANE DELINEATOR

David L. Furiate, 7805 Marion Twp., Rd. #237, Findlay, Ohio 45840

Filed Apr. 19, 1983, Ser. No. 486,359
Int. Cl.³ E01F *15/00*
U.S. Cl. 404—6 **13 Claims**



7. A traffic lane delineator for placement on the surface of a vehicle pathway comprising, in combination,

an elongate, flexible planar assembly for disposition on such surface, said assembly including a base portion having substantially planar upper and lower surfaces and a plurality of spaced-apart tabs extending from at least one edge of said base portion for providing an audible warning to vehicles moving thereover, said tabs having an upper surface coplanar with said upper surface of said base portion,

means for securing said tabs on the surface of such vehicle pathway, and

a plurality of spaced-apart vertically oriented dividers disposed generally medially along said base portion, said dividers including a cylindrical member, a mounting base associated with each said cylindrical member and means for selectively securing such dividers to said base portion.

4,515,500

COMBUSTION POWERED WAVE GENERATOR

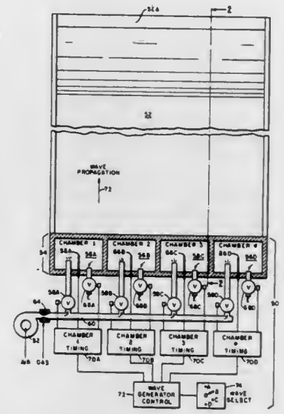
Dirk Bastenhof, Langerak, Netherlands, assignor to Ecopool Design Limited, Channel Islands, Channel Islands

Filed Nov. 15, 1983, Ser. No. 551,951
Int. Cl.³ E04H *3/16*; F04D *35/00*
U.S. Cl. 405—79 **14 Claims**

1. A wave generator system for generating waves in a swimming pool comprising:

at least one chamber communicative with said swimming pool through a below-the-water passage and having a sealed portion extending above the water level of said pool, each chamber comprising:

means for selectively introducing combustive elements into said chamber; and



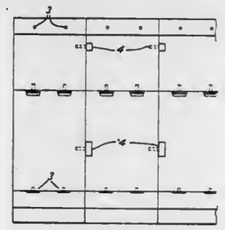
means for selectively igniting said combustive elements within said chamber according to the waves to be generated.

4,515,501

TUNNEL LININGS

Norman S. Thomas, Drayton, England, assignor to Fairclough Civil Engineering Limited, London, England

Filed Aug. 16, 1982, Ser. No. 408,574
Claims priority, application United Kingdom, Dec. 15, 1981, 8137819
Int. Cl.³ E21D *11/08*
U.S. Cl. 405—153 **12 Claims**



1. A method of joining together arcuate concrete segments of a tunnel lining which comprises providing an edge of one segment with a recess accessible from the inside of the tunnel and a pair of abutment members projecting into the recess to define a constriction therein with the abutment members forming a pair of abutment surfaces facing inwardly of the constriction, providing an edge of an adjacent segment with a screw-threaded socket and a screw-threaded headed bolt in the socket projecting beyond said edge of the adjacent segment, positioning the segments edge-to-edge and inserting the bolt of the adjacent segment into the recess and moving the adjacent segment relative to said one segment thus moving the bolt to within the constriction, and tightening the bolt head in the socket to urge the bolt head against the abutment surfaces.

4,515,502

MARINE FENDERS

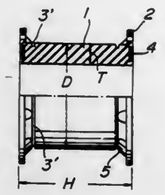
Shinichi Kajigaya, Yokosuka, and Mitsuo Nakaya, Yokohama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,064

Claims priority, application Japan, Oct. 27, 1980, 55-152108[U]

Int. Cl.³ E02B *3/22*

U.S. Cl. 405—215 **9 Claims**



1. A marine fender comprising; a hollow cylindrical body composed of rubber or rubbery elastic material, one end of which having a securing flange for a quay wall, the other end of which having a fitting flange for a shock receiving member, an annular rigid reinforcing plate embedded in each of both the flanges, a fillet reinforcement provided on a foot portion of each of said flanges in said body and an annular groove formed in an outside wall of said hollow cylindrical body in a region adjacent to said fillet reinforcement at each end of said body within a range of 0.07H to 0.2H, wherein H is a distance between said flanges, as measured from each flange.

4,515,503

METHOD AND APPARATUS FOR UNBLOCKING CONVEYING PIPES FOR PARTICULATE MATERIAL

Brian Snowdon, Doncaster, England, assignor to Macawber Engineering Limited, Doncaster, England

PCT No. PCT/GB82/00078, § 371 Date Nov. 5, 1982, § 102(e) Date Nov. 5, 1982, PCT Pub. No. WO82/03066, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 9, 1982, Ser. No. 441,517

Claims priority, application United Kingdom, Mar. 9, 1981, 8107284

Int. Cl.³ B65G *53/66*

U.S. Cl. 406—11 **4 Claims**



1. Apparatus for unblocking conveying pipes for particulate material comprising:

means for injecting air into the pipe, said air injection means being located at positions along the pipe which are spaced apart by a distance less than the critical particulate material plug length to conveying pipe diameter ratio that will result in a pipe blockage that cannot be moved by application of pressure on the end of the particulate material plug; and

a plurality of pressure sensing means for detecting a pressure increase in the pipe above a predetermined level located at spaced apart positions along the conveying pipe, each air injection means being coupled to a first pressure sensing means, at a position upstream of the air injection means, and to a second pressure sensing means at a position downstream of the air injection means, the air injection means operating when the pressure detected by the first pressure sensing means is above the predetermined level, but not operating when the pressure detected at both the first and the second pressure sensing means is above said predetermined level;

the arrangements being such that the air injection means operate to ensure the reduction of the length of the particulate material blockage into lengths such that the critical ratio is not reached and such that, each air injection means is only operated when a particulate material blockage is located in the pipe in the region of the air injection means.

4,515,504

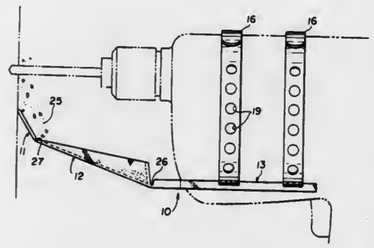
DEBRIS COLLECTOR

Ted E. Moore, Sr., 2310 SW. 34th Ave., Fort Lauderdale, Fla. 33312

Filed May 12, 1983, Ser. No. 493,941

Int. Cl.³ B23B *47/00*

U.S. Cl. 408—67 **5 Claims**



1. A debris collector adapted to be fitted to a drill comprising a collection portion having a blade portion resiliently flexibly connected to a first end and an attachment portion resiliently flexibly connected to a second opposite end, said blade portion comprising a first flat rectangularly shaped surface, said collection portion comprising a flat truncated triangularly shaped surface having means associated therewith for retaining drilling debris, said attachment portion comprising a second flat rectangularly shaped surface having a "U" shaped cutout, therein emanating from the edge opposite said edge connected to said collection portion said cutout being adapted to be fitted to the body of said drill and means connected to said attachment portion for connecting said debris collector to said drill whereby said flexible connections allow the debris collector to collapse when said drill is being advanced into a work surface thereby allowing simultaneous collection of drilling debris.

4,515,505

PRESSURE FOOT ASSEMBLY FOR AN END MILL DELETE CUTTER

Richard C. Frisbie, Vestal; David E. Houser, Apalachin; Richard J. Morenus, Endwell, and Edwin L. Thomas, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,421

Int. Cl.³ B23C *1/06, 9/00*

U.S. Cl. 409—163 **3 Claims**

1. A pressure foot assembly for a rotatable end mill delete cutter mounted on a vertically movable slide assembly used to delete circuit land pads which are connected to circuit lines on a printed circuit panel, comprising:

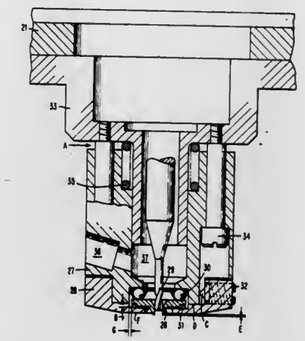
pressure foot means attached to said slide assembly for receiving a cutter means therein, a cavity being defined by the boundaries of said pressure foot means in the bottom thereof;

spring biased pressure ring means including a hole disposed through the approximate center thereof and retained within said cavity of said pressure foot means for holding said circuit lines in place while said cutter means deletes at least a portion of the circuit line pad connected thereto, an inner surface of said hole being in substantial contact with said cutter means when said cutter means is disposed therein,

the periphery of said pressure ring means and an inner surface of said pressure foot means defining a clearance area,

said pressure ring means utilizing said clearance area to float within said cavity in order to maintain a concentric position with respect to said cutter means and to firmly hold said cutter means,

said pressure ring means floating into said concentric position with respect to said cutter means when said pressure



ring means contacts said circuit lines and maintaining said lines in place while the circuit land pad connected thereto is being deleted by said cutter means;

thrust ball bearing assembly means contained within said cavity and disposed between said pressure ring means and said pressure foot means for permitting said pressure ring means to float laterally within said cavity;

retainer ring means attached to the bottom of said pressure foot means; and

spring means disposed and compressed between said pressure ring means and said retainer ring means for supporting said pressure ring means up against said ball bearing assembly means.

4,515,506

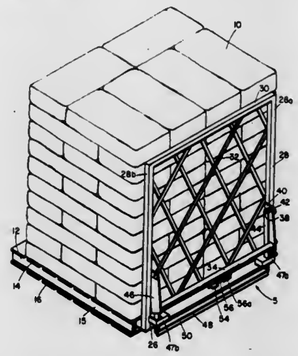
PALLET CARGO RESTRAINING DEVICE

James Van Gompel, Fremont, Ind., and Ronald R. Akey, Footville, Wis., assignors to N P Marketing Corporation, Neenah, Wis.

Filed Apr. 20, 1982, Ser. No. 370,131

Int. Cl.³ B60P *1/64, 7/10;* B61D *45/00*

U.S. Cl. 410—46 **19 Claims**



1. A cargo restraining device for restraining a palletized cargo load on the underlying support floor of a vehicular carrier; said device comprising:

(a) a platform for receiving a pallet with a cargo load thereupon, said pallet being of the type including an upper load supporting surface and a lower surface separated from the upper surface by cross-ties, said platform being adapted for receipt between said upper and lower surfaces;

(b) a substantially vertical frame extending upwardly from one end of said platform;

(c) a horizontally-extending frictional member being pivotally connected to said frame and movable at the side of said frame which faces away from said platform, between a withdrawn position whereat the bottom of said member resides above the bottom of said pallet, and an extended position whereat the bottom of said frictional member extends beneath the bottom of said pallet and is displaced laterally away from said vertical frame and platform, the engagement of said member with said underlying support floor thereby effecting vertical tipping of said device away from the zone of engagement of said member with said floor, to thereby generate an increased contact force between the underlying support floor and the said horizontal frictional member, thereby restraining lateral relative movement between said pallet-carrying device snd said floor;

(d) handle means movable between first and second positions, for moving said horizontally-extending frictional member between said withdrawn and extended positions, said handle means being connected to said frame and said horizontally-extending member by a double pivot, which locks said member in its extended position when said handle means is at said second position; and

(e) means for releasably engaging said pallet, when said pallet is placed on said platform, thereby preventing movement of said pallet with respect to said platfrom and restraining device.

4,515,507

METHOD AND APPARATUS FOR HOLDING AND CENTERING ELECTRONIC COMPONENT

Koichi Asai, Nagoya; Mamoru Tsuda, Okazaki; Kunio Oe, and Yasuo Muto, both of Chiryu, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., Japan

Filed Aug. 22, 1983, Ser. No. 525,392

Claims priority, application Japan, Jun. 1, 1983, 58-97363

Int. Cl.³ B65G *47/91;* H05K *13/02*

U.S. Cl. 414—226 **20 Claims**

4. An apparatus for holding and centering an electronic component, comprising:

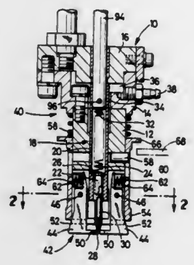
(a) a holder assembly including a holder body, and a sucker supported in engagement with said holder body for longitudinal movement relative to the same, said sucker having an air sucking passage open at an end face thereof for holding through suction said electronic component on said end face;

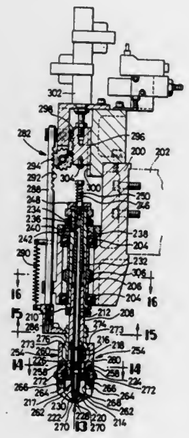
(b) sucker drive means for moving said sucker along a longitudinal centerline thereof between an advanced position at which said electronic component is sucked by said sucker, and a retracted position which is distant from said advanced position toward said holder body along said centerline;

(c) a first positioning unit including a first pair of positioning members which are supported by said holder body and movable from spaced-apart positions thereof toward each othr in a first direction substantially normal to said centerline of said sucker, in symmetrical relation with each other with respect to said centerline, said first pair of positioning members holding said electronic component on opposite sides thereof while the component is sucked by said sucker

at said retracted position, and thereby pushing said electronic component into alignment with said centerline of the sucker in said first direction;

(d) a second positioning unit including a support body which is separate from said holder body, said support body and said holder being movable relative to each other for temporary alignment with each other, said second positioning unit further including a second pair of positioning members which are supported by said support body and movable, upon said temporary alignment of said holder body with said support body, from spaced-apart positions thereof toward each other in a second direction substantially normal to said centerline of said sucker and said first direction, in symmetrical relation with each other with respect to said centerline, said second pair of positioning





members holding said electronic component on the other opposite sides thereof, and thereby pushing said electronic component into alignment with said centerline of the sucker in said second direction; and

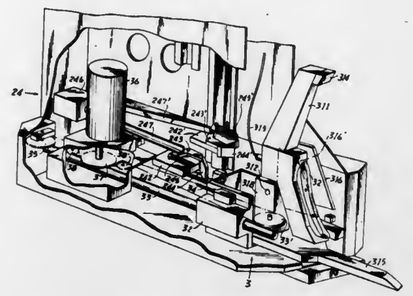
(e) positioning drive means associated with said first and second positioning units for moving said first pair of positioning members toward each other at one timing while said sucker is placed in said retracted position, and for moving said second pair of positioning members toward each other at another timing while said temporary alignment is established between said holder body and said support body, said drive means actuating each one of said first and second pairs of positioning members at least once while the other pair of positioning members are held in said spaced-apart positions.

4,515,508

ARTICLE AUTOMATIC STORAGE AND RETRIEVAL SYSTEM

Shunicti Takamatsu, Osaka, Japan, assignor to Itoki Kosakusho Co. Ltd., Osaka, Japan

Continuation of Ser. No. 252,349, Apr. 9, 1981, abandoned, which is a division of Ser. No. 889,522, Mar. 23, 1978, abandoned. This application Nov. 1, 1983, Ser. No. 547,457
Claims priority, application Japan, Mar. 26, 1977, 52-32794
Int. Cl.³ B65G *65/00;* **A47B** *97/00*
U.S. Cl. 414—280 **4 Claims**



1. A commodity retrieval and storage arrangement of the type having at least one shelf for holding a plurality of the commodity, the shelf having an elongated configuration whereby the plurality of the commodity is arranged along the elongated configuration, and a carriage displaceable along the elongated dimension of the shelf, the arrangement further comprising:

holding means for holding the commodity in place as the carriage is displaced, said holding means including a frame forming an enclosure which at least partially encloses the commodity held by said holding means, said frame including an opening therein facing said shelf, actuatable clamping mechanism mounted within said enclosure and having means for selectably engaging the commodity within the holding means for securing the commodity during displacement of the carriage said clamping mechanism comprising a pair of bias lever means pivotally mounted within said enclosure to engage opposite vertical sides of the commodity; and

retrieval means including guide means and a slide member with a forwardly extending arm displaceable along said guide means from a first position within said enclosure of said holding means to a second position exterior of said enclosure where contact is made with the commodity, said retrievel means including engagement means for engaging the commodity for transferring the commodity from the shelf to said holding means where the commodity is clamped by said actuatable clamping mechanism, said engagement means including an arm pivotally mounted to said slide member, a vacumm head pivotally mounted to the lower portion of said arm, a support pad mounted to the upper portion of said arm, said extending arm being located below said vacuum head and means located on each side of said vacuum head to prevent lateral displacement of the commodity.

4,515,509

METHOD AND APPARATUS FOR OPENING A LOADED PLASTIC BAG AND REMOVING THE CONTENTS THEREOF

James O. Frisz, 921 Pear St., Brea, Calif. 92621

Filed Feb. 17, 1983, Ser. No. 467,437
Int. Cl.³ B65B *69/00*
U.S. Cl. 414—412 **8 Claims**

1. A method of removing the contents from a flexible-walled baglike container, which comprises the steps of:

moving the container along a define path on a surface;

moving a plurality of fingerlike members along a closed path including a first part extending transversely of the definite path and a consecutively adjacent second part extending vertically upward from the definite path;

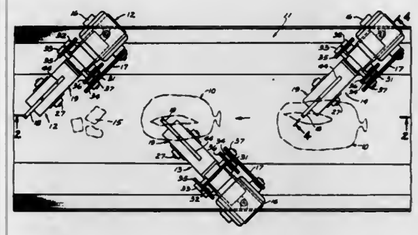
intercepting the container with the fingers as the container moves therepast to rupture the baglike container and initiate release of the contents onto said surface;

lifting the baglike container along the second part of the closed path while allowing the contents to fall from the ruptured container to said surface; and

dropping the baglike container back onto said surface to further rupture the bag and further release the contents.

4. Apparatus for removing the contents from a sealed baglike container, comprising:

a conveyor for moving the container along a predetermined path, said conveyor having an upwardly facing surface on which the container is received; and



a container treatment station located along the conveyor including,

a closed loop of sprocket chain mounted on sprocket wheels in a plane generally vertical to the conveyor flat surface, a plurality of finger means pivotally connected to the sprocket chain, means for driving the sprocket wheels to move the chain transversely across at least a portion of the conveyor flat surface and then vertically away from said surface at a predetermined point directly opposite said conveyor upwardly facing surface, and means for extending the finger means outwardly from the chain toward the conveyor during the transverse movement across conveyor portion to intercept and pierce the container with said finger means and lifting the intercepted and then pierced container during movement away from said conveyor surface so as to enable the contents to fall onto said conveyor.

4,515,510

SKIP TRAILER

Peter D. Heward, Islington via St. Germans, England; Valerie A. Jones, and John C. Jones, both of Johannesburg, South Africa, assignors to Crowcroft Engineering Limited, Ipswich, England

Filed Jul. 15, 1982, Ser. No. 398,622
Claims priority, application United Kingdom, Jul. 17, 1981, 8122104
Int. Cl.³ B65G *65/23*
U.S. Cl. 414—422 **12 Claims**

1. A trailer for towing by motorized vehicle, the trailer comprising:

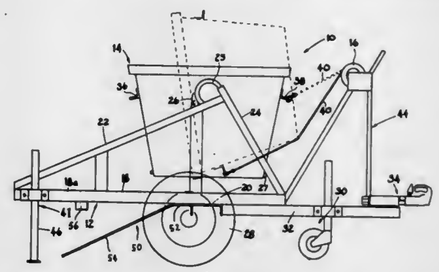
a frame;

a pair of road wheels mounted on said frame;

a receptacle for receiving a load being pivotably mountable on the frame; said receptacle having respective spaced apart bearing surfaces for supporting said receptacle on the frame;

means for enabling said receptacle to be mounted onto and demounted from the trailer comprising respective ramp means fixedly mounted on said frame at each side of said frame for engaging beneath said respective bearing surfaces and enabling said receptacle to be lifted and drawn onto said frame to a position wherein said receptacle is fully supported by said frame, and lowered from said frame;

and means connectible to a first position on said receptacle



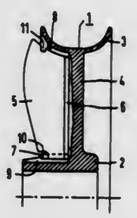
for assisting mounting and demounting of said receptacle and connectible to a second position on said receptacle for enabling said assisting means to pivot said receptacle relative to said ramp for discharging said load therefrom.

4,515,511

AXIAL FAN WITH BLADES THAT AUTOMATICALLY ADJUST TO THE DIRECTION OF ROTATION

Manfred Heerlein, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,209
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1982, 3248760
Int. Cl.³ F04D *29/36*
U.S. Cl. 416—131 **3 Claims**



1. In an axial fan of the type having a fan wheel having a hub, outwardly extending spokes aligned on said hub, a fan blade attached by a film hinge to each of said spokes with freedom to swivel whereby the freedom of said blades to swivel is limited by stops provided by the fan wheel, the improvement comprising:

said fan wheel being made of one piece of plastic material wherein said hub is centrally located as part of said one-piece fan wheel and a plurality of spokes are integrally connected to and extend outwardly from said hub and part of said one-piece fan wheel;

a guide ring circumferentially located to said spokes and said hub and integrally connected to said spokes;

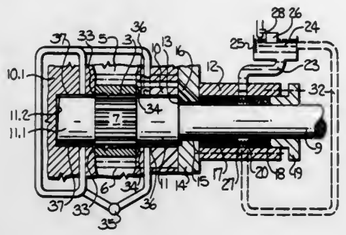
two first locking elements are integrally connected to said hub and said stops located symmetrically on either side of each said spoke; and

two second locking elements are integrally connected to said guide ring located symmetrically on either side of said spokes, said first and second locking elements engaging said fan blades in either of two positions limited by said stops providing a position lock with said blades in an axial direction.

4,515,512
SEAL FOR HIGH PRESSURE PUMP OR THE LIKE

Siegfried Hertell, Radevormwald, and Artur Hager, RS-Lüttringhausen, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,408
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034371; Mar. 17, 1981, 3110241
Int. Cl.³ F04C *2/18, 15/00;* **F16J** *15/40;* **B29F** *3/08*
U.S. Cl. 418—1 **28 Claims**



1. A method of sealing the drive shaft in the housing of a gear pump or the like, and which is adapted to convey melted polymeric materials, and comprising the steps of

feeding a heated and melted polymeric material to the pump, while

rotating the drive shaft to convey the material through the pump under a relatively high pressure, while

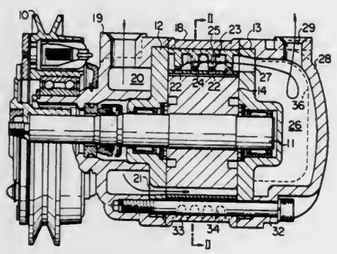
supplying heat to the pump to maintain the heated and melted condition of the polymeric material,

maintaining an annular zone of relatively low pressure between the drive shaft and housing adjacent the inner end of the shaft, maintaining an annular packing seal between the shaft and housing immediately adjacent the outer side of said low pressure zone, maintaining an annular liquid filled chamber between the shaft and housing immediately adjacent the outer side of said packing seal, with said liquid in said chamber being a solvent for the polymeric material, and maintaining the liquid in the annular chamber at a pressure greater than the pressure in the low pressure zone.

4,515,513
ROTARY COMPRESSOR WITH INNER AND OUTER CYLINDERS AND AXIAL INSERT TYPE DISCHARGE VALVES

Isao Hayase; Masao Mizukami, and Atsuo Kishi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 16, 1983, Ser. No. 495,147
Claims priority, application Japan, May 19, 1982, 57-83124
Int. Cl.³ F04C *18/00, 29/00, 29/04*
U.S. Cl. 418—101 **9 Claims**



1. A rotary compressor comprising:

a rotor;

a cylinder having an inner surface slidably contacting said rotor at one or more portions thereof;

side plates disposed on both sides of said cylinder for supporting a rotor driving shaft;

one or more compression chambers defined by said rotor, said cylinder and said side plates;

axial openings formed in said cylinder; and

axial insert type discharge valves disposed inside said axial openings,

wherein said cylinder includes an inner cylinder having an inner surface slidably contacting said rotor, and an outer cylinder surrounding the whole of an outer periphery of said inner cylinder,

said inner cylinder and said outer cylinder are inseparably connected with each other,

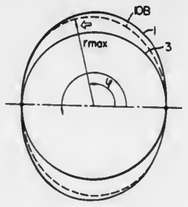
said axial openings each include an inner surface defined by said inner cylinder and said outer cylinder, and

said inner cylinder is formed with discharge bores for providing communication between said axial openings and said compression chambers.

4,515,514
VANE-TYPE ROTARY MACHINE

Isao Hayase, Katsuta; Atsushi Suginuma, Mito; Atsuo Kishi, Katsuta, and Kenichi Kawashima, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,647
Claims priority, application Japan, Aug. 12, 1981, 56-125226
Int. Cl.³ F03C *2/00;* **F04C** *18/00*
U.S. Cl. 418—150 **2 Claims**



1. A vane-type rotary machine comprising: a cam ring having an inner peripheral surface contour expressed by an epitrocoid-like curve having n lobes; a cylindrical rotor having a plurality of vane grooves and contacting the inner peripheral surface contour of said cam ring; and vanes slidably received by said vane grooves and adapted to slide on the inner peripheral surface contour of said cam ring as said rotor rotates, the inner peripheral surface contour of said cam ring is constructed such that a center angle formed around a center of said rotor and between a point at which said rotor contacts said cam ring at a point forming a position of maximum projection of the vane located at a leading side of the point of contact, as viewed in a direction of rotation of the rotor, exceeds an angle π/n by an amount increasing with an amount of offset of said vanes so as to enable a smooth substantially sinusoidal movement of the vanes upon rotation of the rotor.

4,515,515
COMPRESSOR SERVOMECHANICAL REGULATOR

Jean-Marc Segonne, Meyzieu, France, assignor to 501 Maco Meudon Chemin de Genas, France

Filed Oct. 27, 1982, Ser. No. 436,909
Claims priority, application France, Oct. 27, 1981, 81 20542
Int. Cl.³ F04B *49/02*
U.S. Cl. 417—26 **20 Claims**

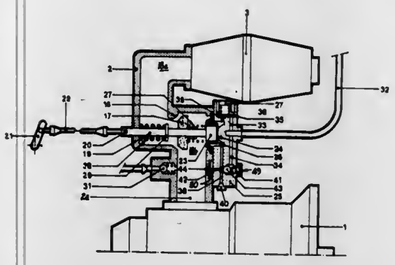
1. An intake regulator for a compressor having a compressor inlet, a compressor outlet, a compressor motor, and compressor means selectively operable to draw fluids from said inlet, pressure said fluid and direct said pressurized fluid to said compressor outlet, said regulator comprising:

a main body;

a main passageway extending through said main body and having a passageway inlet and a passageway outlet, said passageway outlet being interconnected with said compressor inlet for fluid flow therebetween;

valve means disposed along said main passageway selectively operable to close said main passageway, said valve means being biased upon in response to the operation of said compressor means;

a stem member movably mounted in said main passageway, said stem member having a first portion extending from and passing through said valve means, said stem member further having a second portion extending from said main



body such that reciprocation of said second portion of said stem member controls the operation of said compressor motor;

abutment means disposed on said stem member;

biasing means for biasing said valve means towards a closed condition such that the amount of fluid flowing through said valve means is dependent on the suction created by said compressor means at said compressor inlet;

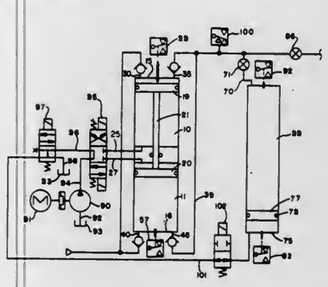
biasing means adjustment means selectively operable to adjust said biasing means in response to changes in the pressure at said compressor outlet; and

a flexible diaphragm interposed said main passageway and said biasing means adjustment means, said abutment means being biased by said diaphragm against the force of said biasing means in response to the pressure level of said biasing means adjustment means.

4,515,516
METHOD AND APPARATUS FOR COMPRESSING GASES

Paul M. Perrine, and Carol-Anne Perrine, both of Salt Lake County, Utah, assignors to Champion, Perrine & Associates, Englewood, Colo.

Filed Sep. 30, 1981, Ser. No. 306,890
Int. Cl.³ F04B *35/02*
U.S. Cl. 417—38 **36 Claims**

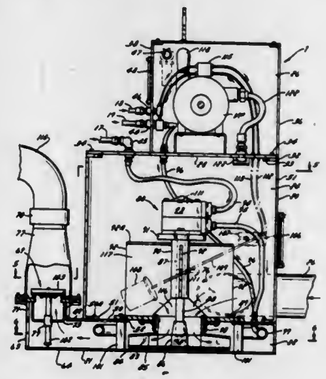


1. A high pressure compression system for compressing natural gas to a pressure sufficient for filling the pressure tank of a vehicle adapted to run on natural gas comprising a gas storage tank having the capability to transfer substantially its entire contents of stored gas to the pressure tank; an inlet-outlet for compressed gas at one end of the storage tank; at least one closed container; gas inlet means for filling the container with gas to be compressed; gas outlet means connected to the inlet of the gas storage tank for allowing the gas to leave the container as it is being compressed and enter the storage tank; means for forcing a compression fluid into the container to fill the container, thereby compressing the gas and forcing it through the gas outlet means, such forcing means having a variable rate of forcing the compression fluid into the container so that a greater flow rate into the container is obtained when the fluid is forced against relatively low pressures compared to the maximum desired pressure and a lesser flow rate into the container is obtained when the fluid is forced against relatively high pressures; means for draining the container of the compression fluid while again filling the container with gas to be compressed; means for alternately operating the forcing means and draining means until a desired pressure of gas has been obtained in the gas storage tank; means for connecting the outlet of the gas storage tank to the pressure tank to be filled; and means for progressively lessening the storage area of the storage tank while gas is allowed to leave the storage tank, thereby forcing the gas stored in the storage tank out of the tank and into the pressure tank.

4,515,517
WELL POINT SYSTEM AND APPARATUS

Albert H. Sloan, 4201 Kean Rd., Fort Lauderdale, Fla. 33314

Filed May 25, 1983, Ser. No. 497,838
Int. Cl.³ F04B *49/04, 23/08*
U.S. Cl. 417—46 **22 Claims**



1. A hydraulic well point pumping system comprising conduit means extending over an area of ground to be drained of water and having well point means extending into the ground for extracting water therefrom, water pump apparatus connected to said conduit means for pumping water from said conduit means, said apparatus comprising

an enclosed tank locatable adjacent said well point means and having a water inlet and a water outlet,

a closed impeller type water pump assembly in said tank and including a pump having an impeller and a shaft fixed thereto and rotatable about a vertical axis, said pump having an inlet eye facing in an upward direction for the reception of gravity-fed water downwardly into said impeller, said impeller shaft extending upwardly and having an upper end, and a hydraulically driven fluid motor secured to said shaft upper end for rotatably driving said impeller about said vertical axis,

fluid passage means between the discharge of said pump impeller and said outlet of said tank, one-way check valve means at said discharge of said impeller,

said tank also including a vacuum pump chamber in said tank and having a vacuum pump therein for creating said vacuum in said tank to thereby induct water into said tank through said inlet, and means for driving said vacuum pump, a remote speed control valve for regulating the speed of said vacuum pump, float control means in said tank, for actuating said remote speed control valve,

and a power source means locatable remotely from said tank and including a power driven hydraulic pump, and conduit means connected between said power driven hydraulic pump and said fluid motor of said impeller in said tank whereby said pump can remotely drive said motor.

4,515,518

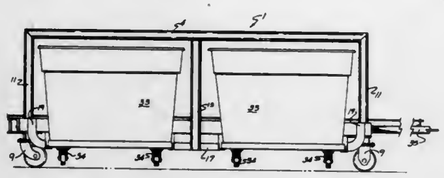
TOWABLE, HYDRAULICALLY POWERED LIFTING AND TRANSPORT TRAILER

Jerry R. Gilbert; Robert C. Millikan, both of Macon; Charles H. Wysowski, Warner Robins, and John R. Pyburn, Jr., Macon, all of Ga., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jun. 6, 1983, Ser. No. 501,578

Int. Cl.³ B60P *3/00*

U.S. Cl. 414—459 **2 Claims**



1. A transport assembly arrangement comprising: a plurality of caster mounted containers, each having horizontal support members extending outwardly from opposite sides thereof at a position spaced from the bottom plane thereof; a longitudinally extending movable carriage frame having a longitudinally extending lower central rib member located on the longitudinal axis of the carriage frame, two elongated structural end members each one of which is located at the opposite ends of the lower central rib member disposed symmetrically and transversely to the lower central rib member, and an elongated center guide disposed symmetrically and transversely to the lower center rib in parallel relationship to and equally spaced from the structural end members; the central rib member, structural end members and center guide mutually cooperating to define a plurality of recesses extending along opposite sides of the longitudinal axis thereof and open to the longitudinal sides of the carriage frame, each recess being sized to receive one of said containers moved from stations located on opposite sides of the line of movement of said carriage frame; horizontal rail support members extending along the elongated structural end members and projecting inwardly of the adjacent recess toward the center guide and two horizontal support members extending along the central rib member on opposite longitudinal sides thereof and projecting inwardly of the adjacent recess toward the rail support member to the opposite side of the recess therefrom so that each of said recesses has spaced opposed elongated rail support members mounted on said carriage frame along the longitudinal sides of each said recess sloping downwardly in a direction toward the central rib member and positioned to extend below said support members of one of said containers when positioned in said recess; a set of spaced casters, each of said casters being disposed at the free end of each one of the horizontal support members such that a caster is located at each corner of said carriage frame; a pair of horizontal, longitudinally extending spaced parallel side bars located to each longitudinal side of the lower center rib, each side bar being located above the free ends of the rail support members and center guide by a distance greater than the height of the container; a vertical corner riser extending from each free end of each horizontal support member to said side bar located thereabove to support said horizontal support member, and a vertical hanger bar extending from each free end of said center guide to said side bar located thereabove to support said horizontal support member; a set of vertically extensible and collapsible lift assemblies, one for each caster including inner and outer telescoping sleeves, one of which sleeves is connected to the free end of each of said horizontal support members of said carriage frame and the other to one of said casters; an hydraulic system to simultaneously activate said lift assemblies, including a set of hydraulically operated cylinders and pistons, each of said pistons cooperating with one end of each of said vertically extensible and collapsible lift assemblies to simultaneously extend and collapse the same; and a set of resilient stops mounted to said lower central rib member to extend into each of said recesses to cushion the bump of a container inserted in said recess.

4,515,519

RAKING APPARATUS

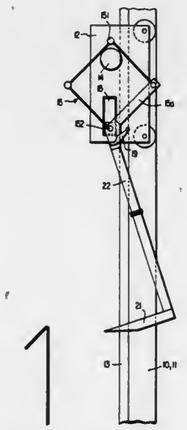
Heinrich Bachmann, Erlenstrasse 6, D-7542 Schömberg-Bieselsberg, and Ulrich Kollmar, Auf dem Berg 17, D-7531 Pforzheim-Würm, both of Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,124

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1981, 8133468[U]

Int. Cl.³ B66C *23/02*

U.S. Cl. 414—680 **7 Claims**



1. A raking apparatus comprising:

(a) a generally vertically oriented guide track;

(b) a carriage supported on the guide track for displacement thereon along a traveling path;

(c) means for displacing said carriage on said guide track;

(d) a linkage assembly supported on said carriage and comprising an upper lever having opposite upper and lower ends, a lower lever having opposite upper and lower ends, a stationary first joint pivotally mounting said upper lever to said carriage at the upper end of said upper lever, a second joint attached below said first joint; the lower end of said lower lever being pivotally secured to said second joint; said upper and lower levers being articulated to one another at their respective lower and upper ends;

(e) a rake supported on said carriage and rigidly affixed to said lower lever for varying angular positions of said rake by said linkage assembly upon pivotal motion of said levers with respect to one another;

(f) a slide track mounted on said carriage and receiving said second joint for guiding said second joint for sliding motion towards or away from said first joint upon said pivotal motion of said upper and lower levers;

(g) locking means mounted on said carriage and cooperating with said lower lever; said locking means having a released position permitting said pivotal motion of said levers and a locking position immobilizing said levers with respect to one another in a predetermined angular position of said rake; and

(h) stop means stationarily supported along said guide track at a predetermined location for abutting said second joint and displacing said second joint upwardly along said slide track with respect to said carriage during travel of said carriage through a predetermined length and location of said traveling path, whereby pivotal motion of said levers is effected for pivoting said rake into said predetermined angular position.

4,515,520

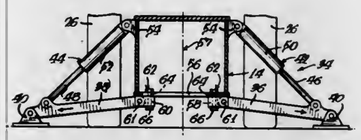
STABILIZER ASSEMBLY

Donald J. Parquet, Burlington; Thomas R. Brown, Yarmouth, and Eldon R. Edwards, Burlington, all of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Sep. 13, 1982, Ser. No. 417,328

Int. Cl.³ E02F *9/00*

U.S. Cl. 414—718 **4 Claims**



1. In a mobile heavy vehicle having a frame with a load lifting boom, an improved stabilizer assembly having a pair of stabilizers positioned one on each side of the vehicle to provide stabilization against tipping of the vehicle comprising: an anchor for stabilizing each of said stabilizers, means mounting each of said anchors to a lower portion of said frame so as to permit selective transverse positioning thereof on either side of the longitudinal center line of the vehicle including cooperating slot means defined by said frame and retaining means for positively positioning each anchor relative to the frame in a preselected position on either side of said longitudinal center line; first and second stabilizer legs having inboard ends which are pivotally secured to its respective stabilizer anchor and outboard ends which are respectively pivotally secured to first and second stabilizer pads; first and second stabilizer cylinders having first ends which are pivotally secured to upper portions of said frame, one on each side of said longitudinal center line, and second ends which are respectively pivotally secured to said first and second stabilizer legs for selectively moving the outboard ends of said stabilizer legs between raised and lowered positions, wherein said transverse positioning of said stabilizer anchors permits positioning of said first and second stabilizer pads between a retracted position nearer said longitudinal center line and an extended position farther from said longitudinal center line.

4. In a mobile heavy vehicle having a frame with a load lifting boom, an improved stabilizer assembly having a pair of stabilizers positioned one on each side of the vehicle to provide stabilization against tipping of the vehicle; comprising: a stabilizer anchor slidably mounted on a transverse rail member secured to a lower portion of said frame so as to permit selective transverse positioning thereof on either side of the longitudinal center line of the vehicle; first and second stabilizer legs having inboard ends which are pivotally secured to said stabilizer anchor and outboard ends which are respectively pivotally secured to first and second stabilizer pads; first and second stabilizer cylinders having first ends which are pivotally secured to upper portions of said frame, one on each side of said longitudinal center line, and second ends which are respectively pivotally secured to said first and second stabilizer legs for selectively moving the outboard ends of said stabilizer legs between raised and lowered positions; and retaining means including a hydraulic clamp means including a clamp piston associated with said stabilizer anchor for clamping the stabilizer anchor to said rail member for selectively retaining said stabilizer anchor in a preselected position on either side of said longitudinal center line, wherein said transverse positioning of said stabilizer anchor permits positioning of said first and second stabilizer pads between a retracted position nearer said longitudinal center line and an extended position farther from said longitudinal center line.

4,515,521

WELDING TORCH APPARATUS

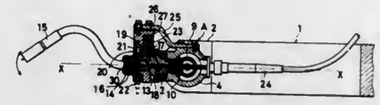
Tadashi Takeo, Sakado; Toru Yamamoto, and Sachihiro Yamashito, both of Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 346,935

Claims priority, application Japan, Feb. 6, 1981, 56-14923; Feb. 6, 1981, 56-15824

Int. Cl.³ B23K *9/12*

U.S. Cl. 414—735 **4 Claims**



1. In a welding torch in combination with an industrial robot, the industrial robot having an arm and a wrist means at one end thereof, the wrist means including a rotary casing means having a rotary shaft extending in a direction along the axis of said arm and a pair of sprocket members disposed on the sides of said rotary shaft said rotary casing means having a conduit cable attached to a rear surface thereof, said conduit cable disposed coaxially with said rotary shaft; the improvement comprising a first central core wire guide means within said rotary shaft and extending along the axis thereof said first central core guide means being coaxial with said conduit cable and extending to cover the portion of the conduit cable attached to said rotary casing means, and a second central core wire guide means within said welding torch and fixed to said rotary shaft, said second central core wire guide means being axially aligned and colinear with and in communication with said first central core wire guide means such that no corners are present in the path of a welding core wire and such a welding core wire disposed within said first and second wire guide means may travel along the lengths thereof without being severely twisted between said first and second central core wire guide means, despite the motion of the welding torch.

4,515,522

PIPELAYING APPLIANCE

John T. Sonerud, Vintervägen 30, Hudiksvall, Sweden

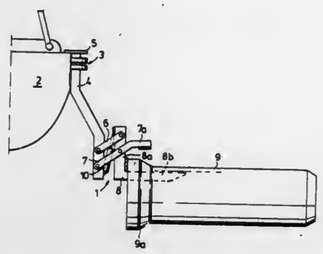
Filed Jan. 19, 1983, Ser. No. 459,118

Int. Cl.³ E02F *5/00*

U.S. Cl. 414—747 **6 Claims**

1. A pipelaying appliance, connected to a raisable and lowerable apparatus such as an excavator or a crane, and including a gripping means for removable engagement with a pipe, said means comprising a first member projecting into the pipe and an opposing second member on the outside of said pipe, said first and second members being movable to and from each other and connected to said appliance so that the clamping force provided by said first and second members on the wall of said pipe will be proportional to the weight of said pipe carried by said gripping means, characterized by a spring means exerting a force on both said first and second members for the mutual displacement thereof when they are not in engagement with said pipe, the weight of which substantially exceeds this

force, wherein the first member is L-shaped with a substantially horizontal arm engaging said pipe and a substantially vertical arm parallel to a third member on said appliance, said



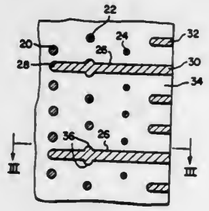
third member being connected to said raisable and lowerable apparatus and movably connected to said vertical arm via a link and a portion of said second member parallel to said link.

4,515,523

COOLING ARRANGEMENT FOR AIRFOIL STATOR VANE TRAILING EDGE

William E. North, Concord Township, Delaware County; Paul C. Holden, Newtown, and Kent G. Hultgren, Swarthmore, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 28, 1983, Ser. No. 547,292
Int. Cl.³ F01D *5/14*
U.S. Cl. 415—115 **3 Claims**



1. In a turbine airfoil-shaped stator vane of thin wall design having internal pin fins in staggered rows extending between the opposite walls of the vane in the area closely upstream from spanwise openings formed in the trailing edge of the vane, the improvement comprising:

a series of first ribs having a height to extend completely between and to connect said opposite walls of said vane to each other and extending longitudinally in a flowwise direction in intersecting relation to said staggered rows of pin fins but out of intersecting relation with any individual ones of said pin fins, said ribs including spanwise protruding means thereon for inducing turbulent air flow at locations therealong corresponding to the locations of pin fins displaced by the presence of said ribs.

4,515,524

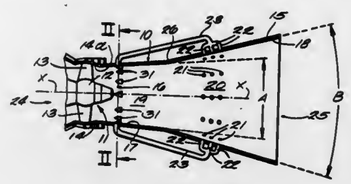
DRAFT TUBE FOR HYDRAULIC TURBINE

Richard K. Fisher, Jr., Jacobus, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 27, 1982, Ser. No. 423,534
Int. Cl.³ F04D *29/40*
U.S. Cl. 415—219 R **5 Claims**

1. A draft tube for discharging water from a hydraulic turbine having a turbine runner rotatable about an axis of rotation; said draft tube having a wall defining a discharge passage diverging from said runner to a discharge opening; said draft tube having a first region downstream of said runner with said first region having a rate of divergence less than that at which boundary layer separation occurs; said draft tube also having a second region downstream of said first region and continuously connected thereto with said second region having a rate of divergence greater than that at which boundary layer separation would normally occur; said draft tube wall surrounding said discharge passage in said second region being provided with a plurality of orifices therethrough;

a plurality of nozzles disposed within said first region; said nozzles having a fluid inlet in water flow communication with said orifices; said nozzles having fluid outlets in



communication with said discharge passage in said first region with said fluid outlets opening away from said runner;

said nozzles are disposed on said wall surrounding said discharge passage in said first region and closely adjacent said runner

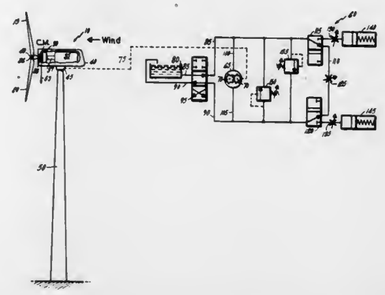
whereby fluid along said wall within said second region is conducted to said first region and re-admitted to said discharge passage thereby reducing boundary layer separation in said second region.

4,515,525

MINIMIZATION OF THE EFFECTS OF YAW OSCILLATIONS IN WIND TURBINES

Glidden S. Doman, Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 8, 1982, Ser. No. 440,056
Int. Cl.³ F03D *7/04*
U.S. Cl. 416—11 **12 Claims**



1. In a wind turbine comprising a plurality of airfoil blades mounted on a rotatable hub, said wind turbine being mounted on a flexible cantilever tower and having a center of mass longitudinally offset therefrom and being pivotable about a yaw axis through said tower, the improvement characterized by:

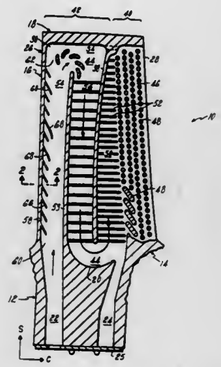
drive means mounted on said tower, means connecting said drive means to said wind turbine whereby said wind turbine may be positively driven in yaw by said drive means, said drive means including as an integral part thereof, driven means connected to said wind turbine, said driven means at selected yaw conditions of said wind turbine being drivable through said connecting means by yaw oscillations of said wind turbine resulting from lateral bending of said tower for the damping of such yaw oscillations by the dissipation of energy associated therewith.

4,515,526

COOLABLE AIRFOIL FOR A ROTARY MACHINE

James L. Levengood, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,616
Int. Cl.³ F01D *5/18*
U.S. Cl. 416—96 R **8 Claims**



1. In a coolable airfoil adapted for use in a rotary machine of the type having a cooling air passage and a wall in the leading edge region bounding the passage for cooling air, the improvement which comprises:

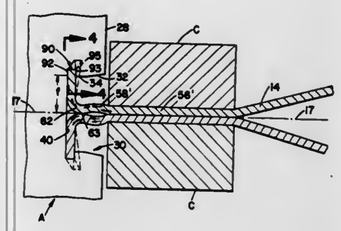
at least one trip strip which extends across the passage and from the wall in the leading edge region which is canted towards the approaching flow and which forms an acute angle with respect to the wall, the trip strip having a vortex generator integrally formed with the trip strip which increases the height of the strip, which permits flow over the vortex generator and which is spaced chordwisely from the wall in the leading edge region to permit flow by the vortex generator over the trip strip.

4,515,527

CENTER PLATE-BLADE INTERCONNECTION ON A CENTRIFUGAL BLOWER WHEEL

Harold L. Baker, Cleveland, Ohio, assignor to Morrison Products, Inc., Cleveland, Ohio

Filed Jun. 18, 1982, Ser. No. 389,757
Int. Cl.³ F04D *29/28*
U.S. Cl. 416—184 **14 Claims**



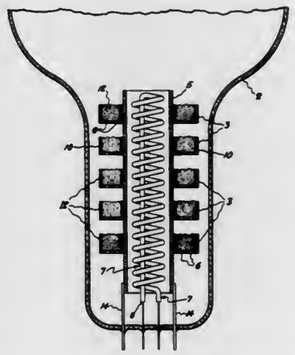
1. In a centrifugal type blower wheel comprised of a plurality of axially-extending, circumferentially-spaced blower blades and a central supporting plate comprised of a pair of axially abutting discs, each blade having on its inner edge of T-shaped notch consisting of a T-leg defined by a radially extending opening and a T-head defined by a radially inwardly facing side surface, spaced opposed axially facing base surfaces, and axially spaced radially outwardly facing side surfaces one on each side of said T-leg, said surfaces forming an axially extending slot at the base of the notch, the improvement which comprises: radially outer portions of the discs abutting within the notch and having further outer portions extending generally parallel to the axis into said slots.

4,515,528

HYDROCARBON GETTER PUMP

James R. Young, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 5, 1983, Ser. No. 511,061
Int. Cl.³ F04B *37/02*
U.S. Cl. 417—51 **5 Claims**



1. A hydrocarbon getter pump for use within a vacuum or inert atmosphere, comprising:

getter material comprising an active metal alloy capable of gettering hydrogen;

a nickel catalyst for dissociating hydrocarbons selected from the group consisting of powdered passivated nickel and granular passivated nickel; and

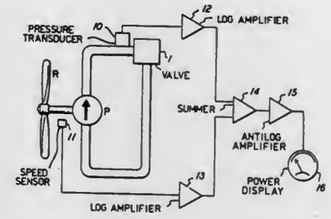
means for heating said getter material and said nickel catalyst to approximately 300°–500° C.

4,515,529

ENERGY TRANSDUCER FOR HYDRAULIC WIND POWER CONVERSION SYSTEM AND INSTRUMENTATION THEREFOR

William M. Woodhull, 1815 Ridge Rd., Ontario, N.Y. 14519

Filed Oct. 21, 1982, Ser. No. 435,773
Int. Cl.³ F04B *21/00*
U.S. Cl. 417—63 **1 Claim**



1. A system for determining and optimizing the power developed in an associated wind rotor operatively connected to a hydraulic pump to motivate hydraulic fluid through an orificed hydraulic system, including:

speed sensing means to measure operating speed N of said pump and to transmit speed signal information,

pressure sensing means to measure hydraulic pressure P

developed by said pump and to transmit pressure signal information,

multiplication means to multiply said speed signal information and said pressure signal information to thereby generate a product power signal N×P indicative of the power W developed in said pump according to the relationship:

Power WαSpeed N×Pressure P,

readout means responsive to said power signal to indicate the power developed in said pump,

said orifice in said hydraulic system being adjustable to vary said hydraulic pressure and said operating speed to thereby vary the power developed in said pump, and

means to set said orifice at the size corresponding to the maximum of power developed.

4,515,530

DISABLING ARRANGEMENT FOR A RECIPROCATING PISTON COMPRESSOR

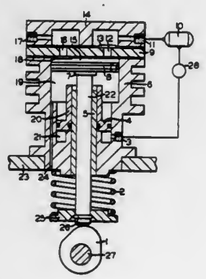
Arno Christoleit, Hanover, Fed. Rep. of Germany, assignor to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,935

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243165

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—214 **9 Claims**



1. An arrangement for disabling the movement of a reciprocating piston of a pneumatic compressor comprising, a cylinder housing having a compression chamber, a compression piston disposed in said compression chamber and having an operating tappet, a rotating cam engaging said operating tappet for driving said compression piston through a compression stroke, a restoring spring biasing said operating tappet against said rotating cam for driving said compression piston through a suction stroke, and an auxiliary piston concentrically disposed about said operating tappet and cooperatively associated with said compression piston and acted upon by a control pressure to disable said compression piston by holding said compression piston in its top dead center position.

4,515,531

SWASH RING DRIVEN DIAPHRAGM PUMP

Erich Roser, Dorfstrasse 17, 7777 Salem-Grasbeuren, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,670

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233987

Int. Cl.³ F04B *1/16*; F16H *23/04*

U.S. Cl. 417—269 **6 Claims**

1. A diaphragm pump driven by a swash ring, comprising:

a drive shaft having an axis;

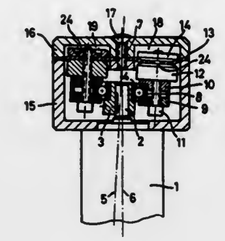
a ball bearing having an axis, said ball bearing including inner and outer races;

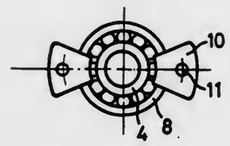
a hub-like bearing member mounting said inner race to said shaft so that the axis of said shaft and the axis of said ball bearing intersect, at a small angle, at a first point spaced apart from said ball bearing;

a tightly clamped diaphragm;

a plurality of wobble fingers operationally connected to said diaphragm, each wobble finger including an elongated connecting element which has an axis that penetrates said diaphragm at a second point; and

clamping means acting in the direction of the ball bearing axis for mounting said wobble fingers to said outer race of said ball bearing so that said second points move along





paths having center positions and so that said second points, at their center positions, lie in a plane that is perpendicular to the axis of said shaft and that passes through said first point,

wherein said clamping means individually mounts said wobble fingers and includes, for each wobble finger, a pair of radially disposed clamping claws which are tightened against said outer race of said ball bearing by said elongated connecting element, each claw of the pair having an inner end with a flange which extends between said inner and outer races of said ball bearing.

4,515,532

SINGLE ACTION PNEUMATIC POWERED SPRING RETRACTABLE PUMP

John B. Walling, P.O. Box 16266, Fort Worth, Tex. 76133

Division of Ser. No. 344,359, Feb. 1, 1982, Pat. No. 4,445,819.

This application Dec. 12, 1983, Ser. No. 560,315

The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.

Int. Cl.³ F04B *41/08*

U.S. Cl. 417—318 **4 Claims**

1. A downhole pump for pumping well production fluids and the like from a well, said pump comprising:

an elongated housing adapted to be inserted in a well, said housing defining an elongated cylindrical bore;

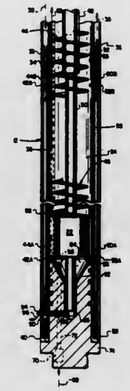
a piston reciprocably disposed in said bore and dividing said bore into a power fluid chamber and a production fluid chamber, said piston being movable through an extension stroke and a retraction stroke with respect to said production fluid chamber to discharge and intake fluid with respect to said production fluid chamber, respectively;

means forming an inlet port opening into said production fluid chamber for admitting fluid to said production fluid chamber, and means forming a discharge port for conducting fluid out of said production fluid chamber;

first valve means for introducing power fluid into said power fluid chamber for causing said piston to move through said production fluid chamber on an extension stroke to deliver a charge of fluid through said discharge port;

second valve means for venting power fluid from said power fluid chamber;

means operable to be actuated by said piston at a predetermined point on said extension stroke to cause said first valve means to close off communication of power fluid to said power fluid chamber, and to cause said second valve means to vent power fluid from said power fluid chamber;



an end block of said housing including a sand trap chamber formed therein;

third valve means for venting said sand trap chamber, said third valve means being actuated by means during an extension stroke of said piston to vent fluid from said sand trap chamber; and,

said piston including a piston part operable to extend into said sand trap chamber during an extension stroke of said piston to substantially isolate said sand trap chamber from said production fluid chamber and to displace fluid in said sand trap chamber through said third valve means.

4,515,533

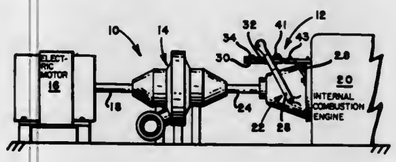
CLUTCH LEVER RETAINING MECHANISM

Abelicio Gomez, 5738 Wood Dr. SW., Albuy, N. Mex. 87615

Filed Feb. 16, 1984, Ser. No. 580,978

Int. Cl.³ F04B *49/10, 9/00*

U.S. Cl. 417—319 **8 Claims**



1. In a pumping system having a pump, an electric motor operably connected to said pump for normally operating said pump, an internal combustion engine operably connected to said pump for operating said pump during nonoperation of said electric motor, a clutch mechanism operably interconnected between said pump and said internal combustion engine, and said clutch mechanism including a housing and a clutch lever for selectively engaging or disengaging said clutch mechanism, the improvement therein being in the form of a clutch lever retaining mechanism, said retaining mechanism comprising a mounting bracket secured to said clutch mechanism housing adjacent said clutch lever; a support bracket adjustably mounted on said mounting bracket; a latch member pivotally secured to said support bracket, said latch member having a notch therein, and being positioned such that said notch engages said clutch lever in a preselected position; and means interconnected between said support bracket and said latch member for selectively maintaining said latch member in said preselected position in order to prevent the movement of said clutch lever and for selectively releasing said latch member for movement to another position in which said clutch lever is free to move.

4,515,534

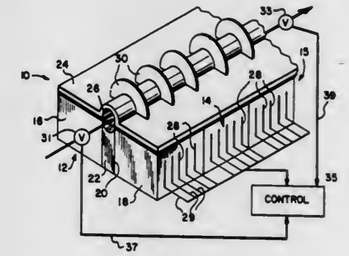
MINIATURE SOLID-STATE GAS COMPRESSOR

William N. Lawless, 518 Illinois Ct., Westerville, Ohio 43081; Leslie E. Cross, 401 Glenn Rd., State College, Pa. 16801, and William A. Steyert, c/o Oakhurst Dr., R.D. 1, Box 99, Center Valley, Pa. 18034

Filed Sep. 30, 1982, Ser. No. 431,447

Int. Cl.³ F04B *35/04, 45/08*

U.S. Cl. 417—322 **16 Claims**



1. An apparatus for compressing a gas, comprising:

a block of electrostrictive or piezoelectric ceramic material having a first end;

an elastomer disposed along said first end of said block;

means defining a channel having said elastomer as at least one wall thereof;

means for selectively applying an electric field to said block; and

means constraining said block such that application of said electric field to said block causes displacement thereof against said elastomer, extruding said elastomer into a closed relationship with said channel defining means.

4,515,535

PERISTALTIC PUMP QUICK DISCONNECT ROTOR ASSEMBLY

Edmund D. D'Silva, Round Lake Beach, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 15, 1983, Ser. No. 523,496

Int. Cl.³ F04B *17/00, 43/12*

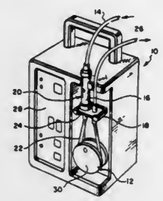
U.S. Cl. 417—360 **3 Claims**

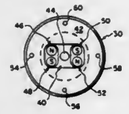
1. An improved quick disconnect rotor assembly for peristaltic pumps, comprising:

a carrier having a first configuration and being attachable to a pump drive shaft, said carrier being formed with first magnetic means; and

a rotor having means defining a second configuration which mates with said first configuration when said carrier and said rotor are mounted together in either a first orientation or a second orientation spaced 180 degrees from said first orientation, said rotor mating means further having second magnetic means therein for magnetically coupling with said first magnetic means when said carrier and said rotor are mounted together in one of said first and second orientations, said second magnetic means including first and second magnets, each presenting a north magnetic

pole, and third and fourth magnets, each presenting a south magnetic pole, said magnets being equally radially spaced from the center of said rotor mating means with





said first magnet diametrically oppositely spaced from said second magnet and said third magnet diametrically oppositely spaced from said fourth magnet.

4,515,536

PERSTALTIC PUMP

Cornelis J. van Os, Emmen, Netherlands, assignor to Noord-Nederlandsche Machinefabriek B.V., Winschoten, Netherlands

Continuation-in-part of Ser. No. 167,354, Jul. 10, 1980, Pat. No. 4,424,009. This application Jul. 28, 1983, Ser. No. 518,747

Int. Cl.³ F04B *43/10, 43/12*

U.S. Cl. 417—394 **8 Claims**



1. A peristaltic pump comprising:

a pump housing having a supply end and a discharge end;

a pump hose having an outer wall, a supply end, and a discharge end and disposed within said pump housing, said supply and discharge ends of said pump hose being sealingly attached all around to said supply and discharge ends of said pump housing, respectively, said pump hose having a substantially circular cross-section at said supply end and a substantially elliptic cross-section over a portion thereof adjacent said supply end which, starting at said substantially circular cross-section, bcomes gradually flatter and broader to a given minimal value and subsequentially in the direction extending towards said discharge end of said pump hose becomes increasingly less flat and broad until the cross-section of said pump hose again becomes substantially circular, said pump hose having a substantially constant wall thickness along the entire length thereof between said supply end and said discharge end and a substantially constant inner cross-sectional circumference, and said pump hose and said pump housing defining a hollow space therebetween; and

means provided in said pump housing for supplying a pressure medium to said hollow space and for discharging the pressure medium therefrom, whereby pressure is intermittently exerted on the outer wall of said pump hose.

4,515,537

DOSING PUMP

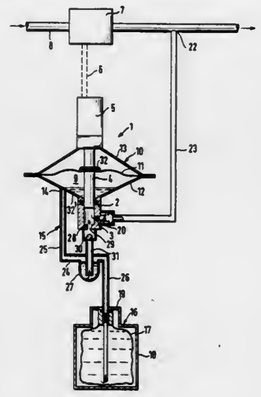
Hans Arens, Wertingen, Fed. Rep. of Germany, assignor to Grunbeck Wasserauebereitung GmbH, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,394

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134940

Int. Cl.³ F04B *7/04, 23/04*

U.S. Cl. 417—489 **9 Claims**



1. A dosing pump comprising pump cylinder means having a first inlet, a second inlet, and an outlet, a suction valve means and a discharge valve means being provided at the second inlet and the outlet, respectively, dosing piston means cooperating with the pump cylinder means,

diaphragm means connected with the dosing piston means and disposed within a diaphragm chamber and a fluid connection line connecting the diaphragm chamber and an opening thereof with a dosed medium tank,

wherein the diaphragm chamber is disposed at a level above the pump cylinder means and connected with the pump cylinder means via a connection forming the first inlet of the pump cylinder means,

the dosing piston means extending through this connection and allowing fluid to enter the pump cylinder means from the diaphragm chamber when the dosing piston means emerges from the pump cylinder means,

and wherein the second inlet is connected with a suction pipe and the fluid connection line is connected with a pump sump, the suction pipe extending into the pump sump.

4,515,538

CEILING FAN

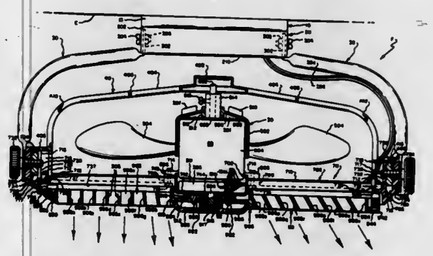
Hung Y. Shih, Tainan, Taiwan, assignor to DeGeorge Ceilings, Inc., Clearwater, Fla.

Filed Oct. 7, 1983, Ser. No. 540,176

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—572 **24 Claims**

1. An electric ceiling fan including fan motor means and rotatable fan blade means mounted around and adapted to be driven by said motor means, wherein the improvement comprises: wheel-like frame means mounting said motor means; support means adapted to be attached to the ceiling; hangar arm means connecting said support means and said frame means, said support means comprising a circular base plate for direct attachment to the ceiling and a circular adaptor removably connected to said hangar arm means, said base plate and said adaptor each having upper peripheral walls and said base plate further having a lower end wall extending from said base upper peripheral wall, said lower end wall being reduced for nesting within said adaptor upper peripheral wall, and interengageable means for removably securing said adaptor upper peripheral wall against said base plate end wall, said interengageable means including diametrically opposite bayonet slots extending through said adaptor upper peripheral wall and upwardly open outstanding struts having threaded openings formed therethrough depending from said base plate end wall whereby said bayonet slots are rotatingly engageable with said struts, and threaded fastener means passing through said adaptor upper peripheral wall and engageable in said strut openings; air pervious upper guard means mounted on said frame means and enclosing said fan blade means and motor means, while permitting air flow to said fan blade means; step motor



means mounted on said frame means; air pervious lower guard means mounted on and adapted to be driven by said step motor means beneath said frame means and including vane means for controlling air flow direction from said fan blade means; and control means adapted to be connected across a power source and including switch means having electrical connections to said fan motor means and step motor means for energizing and deenergizing the same; said fan having a maximum overall axial depth, from said support means to said lower guard means inclusive, of not more than about 10 inches, for maximizing headroom.

4,515,539

SCROLL-TYPE HYDRAULIC MACHINE WITH TWO AXIALLY SPACED SCROLL MECHANISMS

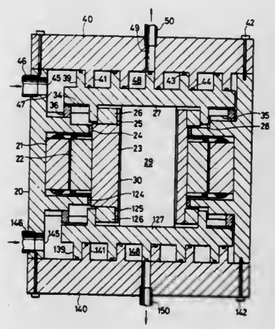
Etsuo Morishita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,438

Claims priority, application Japan, Sep. 1, 1983, 58-162131

Int. Cl.³ F01C *1/04, 11/00, 17/06*

U.S. Cl. 418—55 **5 Claims**



1. A scroll-type hydraulic machine, comprising:

a first fluid volume changing mechanism comprising a first stationary scroll having a first scroll wrap, and a first orbiting scroll having on one surface thereof a second scroll wrap and on the other surface thereof a first orbiting scroll shaft, said first orbiting scroll being assembled with said first stationary scroll such that, when said second scroll wrap orbits with respect to said first scroll wrap, fluid introduced therebetween is changed in volume and discharged;

a second fluid volume changing mechanism comprising a second stationary scroll having a third scroll wrap, and a second orbiting scroll having on one surface thereof a fourth scroll wrap and on the other surface thereof a second orbiting scroll shaft, said second orbiting scroll being assembled with said second stationary scroll such that, when said fourth scroll wrap orbits with respect to said third scroll wrap, fluid introduced therebetween is changed in volume and dischanged;

a crank mechanism comprising a crankshaft having an eccentric through-hole extending therethrough, a first crank portion formed at one end thereof for rotatably supporting said first orbiting scroll shaft, and a second crank portion formed at the other end thereof for rotatably supporting said second orbiting scroll; and

a thrust-cancelling shaft disposed in said eccentric through-hole of said crankshaft for supporting at one end thereof said first orbiting scroll and at the other end thereof said second orbiting scroll, thrust forces exerted on said first and second orbiting scrolls cancelling each other through said thrust-cancelling shaft.

4,515,540

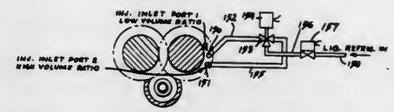
VARIABLE LIQUID REFRIGERANT INJECTION PORT LOCATOR FOR SCREW COMPRESSOR EQUIPPED WITH AUTOMATIC VARIABLE VOLUME RATIO

Joseph W. Pillis, Hagerstown, Md., assignor to Frick Company, Waynesboro, Pa.

Filed Nov. 22, 1983, Ser. No. 554,477

Int. Cl.³ F01C *21/06, 1/16*

U.S. Cl. 418—97 **5 Claims**



1. In a screw compressor having meshing helical rotors on parallel axes and mounted in a housing having intersecting cylindrical bores, whereby the rotors and housing provide an interlobe volume which varies with the rotation of the rotors, said housing having a high pressure end wall at one end of said housing and a low pressure end wall at the other end thereof, the low pressure end wall having an inlet opening for the inlet of the compressor and the high pressure end wall having a discharge opening for the outlet of the compressor, means for varying the internal volume ratio of said compressor, first and second ports in said housing, said ports being located in said housing for exposure to the interlobe volume at selected positions of the rotors, said first port being located so that the interlobe volume is relatively large when the interlobe volume is first exposed to it, and said second port being located so that the interlobe volume is relatively small when the interlobe volume is first exposed to it, whereby the interlobe volume varies when said rotors initially communicate with either of said ports, and means for selectively introducing liquid refrigerant into one or the other of said ports.

4,515,541

DEVICES FOR VULCANIZING TIRES

Bruno Salvadori, Milan, Italy, assignor to Societa Pneumatici Pirelli, Milan, Italy

Filed Jan. 11, 1984, Ser. No. 569,916

Claims priority, application Italy, Jan. 12, 1983, 19067 A/83

Int. Cl.³ B29H *5/02*

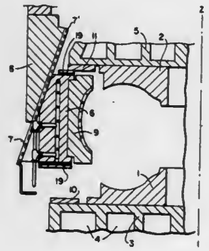
U.S. Cl. 425—47 **6 Claims**

1. A device for molding and vulcanizing a vehicle tire made of elastomeric material comprising:

two continuous and coaxial annular sections, axially radially

and reciprocally movable, corresponding to tire sidewalls, and

a plurality of sectors, corresponding to a perimeter zone outside of said tire, interposed between said annular sections and axially movable with respect thereto, said sectors being fixed to the radially inner surface of a containing-ring co-axial with said annular sections and axially movable with respect thereto, said sectors being radially shiftable with respect to the axis of said sections and axially shiftable with respect to at least one of said sections, each sector being provided on its radially inner surface with a matrix suited for molding of said outer perimeter zone of said tire, a corresponding portion of the tread design, and being provided on its radially outer surface with surfaces that are inclined with respect to the axis of said ring and coupled with a corresponding portion of the radially inner surface of said containing-ring, with reciprocal sliding means for the realization of said radial shifting of said sectors, said device being characterized by the



fact that said sectors are provided with cavities which constitute a part of a circuit that is permanently closed to the outside ambient, suited for allowing the circulation of a fluid for directly heating said sectors, said cavities constituting a network of channels that present points of entry from the outside of the sector, for the inlet and outlet of said fluid, said network of channels comprising a plurality of axial blind-channels, having their axes parallel to that of the device, connected one to the other by a plurality of transverse blind-channels, each transverse blind-channel connecting at least two axial channels, said network of channels being connected with the radially outer surface of the sector by means of two substantially radial channels, respectively below and above, connected to at least one of said axial channels, the lower radial channel being disposed in correspondence to the axially lower extremity of said axial channels, each of said transverse and radial channels having its axis inclined, with respect to the axis of the corresponding axial channel, at an angle of about 90°.

4,515,542

APPARATUS FOR THE PRODUCTION OF A RECONSTITUTED TOBACCO FOIL

Johann Peschetz, Enzersdorf an der Fischa, Austria, assignor to Austria Tabkwerke Aktiengesellschaft vorm. Osterreischische Tabakregie, Vienna, Austria

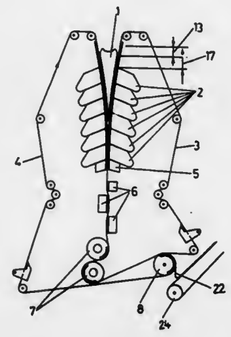
Filed Jul. 3, 1984, Ser. No. 627,658

Claims priority, application European Pat. Off., Jul. 5, 1983, 83106530.5

Int. Cl.³ B28B *1/26*

U.S. Cl. 425—84 **7 Claims**

1. An apparatus for the production of a reconstituted tobacco foil by precipitating from an aqueous suspension films consisting predominantly of tobacco particles, comprising two movable endless screens which approach one another in the film forming region, a wedge-shaped box being arranged between the screens and dehydrating means being provided beneath the screens in said region, wherein the screens subsequently extend parallel to one another and at a spacing small enough to combine the two films to a single foil, characterized in that the upper side of the wedge-shaped box forms a reser-



voir limited by longitudinally extending side-walls with horizontal upper rim, and having conduits for conducting the aqueous suspension into said reservoir.

4,515,543

IN-MOLD COATING PART EJECTION SYSTEM

James R. Hamner, Sterling Heights, Mich., assignor to The Budd Co., Troy, Mich.

Filed Sep. 2, 1983, Ser. No. 528,947

Int. Cl.³ B29C *1/00;* **B29G** *1/00*

U.S. Cl. 425—112 **10 Claims**

1. Apparatus for compression molding parts so as to provide them with extremely smooth finishes, said apparatus comprising:

a male mold member and a female mold member having complimentary surfaces defining a cavity approximating the shape of the desired part, said part being characterized by an enlarged generally flat major surface which is desired to be provided with the smooth finish, said male mold member including a ledge portion formed in at least one side to define a down turned flange on outer extremities of the part, said male mold member further including an undercut portion in the mold side adjacent said ledge extending at an angle to the path of relative travel between the female and male mold members;

means for moving the mold members to a closed position for curing the part into a solid state, with the part including a lip on the flange due to the provision of the undercut portion in the male mold member;

means for separating the mold members to a partially opened condition, with said lip of the flange serving to retain the part onto the male mold;

injector means for injecting a coating material onto the top surface of the part;

means for subsequently moving the mold members back to said closed position to cure the coating material;

means for opening the mold members; and

ejection means for pressing upwardly on the down turned flange to lift the part from the male mold in such manner so as to not destroy the smooth finish on the coated major surface of the part.

4,515,544

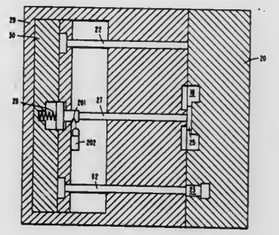
MOLD PROTECTION DEVICE

Russell W. Boehm, Longmont, Colo.; Robert P. Rippstein, Hopewell Junction, N.Y., and David R. Stone, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,666

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—129 R **6 Claims**



1. In an injection molding apparatus having first and second mold cavity-forming elements movable between open and closed positions and insert means placed into the mold cavity of said first element when said elements are in the open position, the improvement comprising:

plunger means mounted within said second cavity-forming element;

resilient biasing means for retaining said plunger means in an orientation for engaging said insert in said first element before closure is completed by said elements;

means for detecting movement of said plunger means as said elements close; and

means responsive to said detecting means for indicating whether movement of said plunger means exceeded a predetermined value before said elements reached the closed position.

3. A system for indicating incorrectly placed inserts in a molding apparatus, the molding apparatus having two or more mold elements which close to form a closed cavity and inserts placed within said cavities, comprising, in combination:

means for supplying a closure command signal;

movement detector means for supplying a first signal indicating that an insert has been detected;

closure detector means for supplying a second signal for indicating that the mold elements have closed;

sequence detector means for supplying a correct sequence signal when said second signal occurs before said first signal; and

gate means responsive to said closure command signal and to said correct sequence signal for supplying a signal to cause said elements to close.

4,515,545

CONTROL SYSTEM FOR PROCESSING COMPOSITE MATERIAL

Richard J. Hinrichs, Cerritos, and Judy Thuen, Capistrano Beach, both of Calif., assignors to Applied Polymer Technology, Inc., Carlsbad, Calif.

Division of Ser. No. 281,877, Jul. 9, 1981, Pat. No. 4,455,268. This application Jun. 15, 1984, Ser. No. 620,861

Int. Cl.³ B29G *7/00*

U.S. Cl. 425—143 **10 Claims**

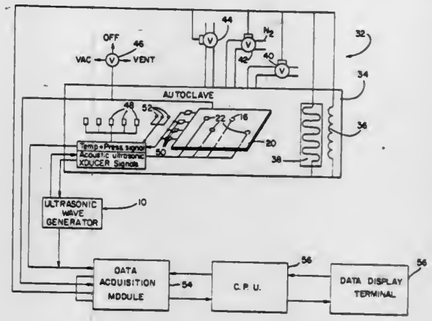
1. A system for controlling the curing process of a structure formed of fiber-reinforced resin composite materials and the like, wherein said structure is cured in an autoclave having temperature and pressure regulating means, said system comprising:

first temperature sensitive means proximate the surface of said structure for producing a first temperature indicative signal;

second temperature sensitive means in said autoclave for producing a second temperature indicative signal;

pressure sensitive means in said autoclave for producing a pressure indicative signal;

data processing means, receptive to said first and second temperature indicative signals and to said pressure indica-



tive signal, for (a) comparing said first and second temperature indicative signal to a first preselected temperature datum, (b) comparing said second temperature indicative signal to a second preselected temperature datum, (c) comparing said pressure indicative signal to a preselected pressure datum, and (d) producing at least one output signal indicative of the result of each of said comparisons, and

control means receptive to said output signals for controlling said temperature and pressure regulating means in accordance with the results of said comparisons.

4,515,546

MOLDING APPARATUS PROVIDED WITH SEPARABLE MOLD PARTS

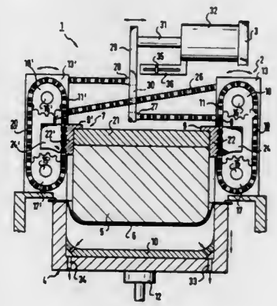
Emmerich Medwed, Wolfertschwenden, Fed. Rep. of Germany, assignor to Multivac Sepp Haggenmuller, KG, Fed. Rep. of Germany

Continuation of Ser. No. 242,355, Mar. 10, 1981, abandoned. This application Oct. 11, 1983, Ser. No. 498,391

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 8007087[U]

Int. Cl.³ B29C *1/16, 3/00*

U.S. Cl. 425—195 **7 Claims**



1. A molding die for shaping thermoplastic sheet material

and means for reciprocating said molding die along a moving path comprising first engagement means provided laterally on said molding die and cooperating second engagement means provided laterally of said moving path and opposite said first engagement means, said second engagement means comprising chain drive means and said first engagement means comprising drive members formed with teeth to mesh with the link members of said chain drive means when in position laterally adjacent thereto, said moving die being movable into a retracted position at one end of said moving path in which said first and second engagement means are disengageable, whereas said first and second engagement means are in driving engagement when said molding die is moved along said moving path and wherein said chain drive means comprises sprocket members on which an endless chain is mounted and wherein said moving path of said molding die extends along a linear part of said chain terminating in an arcuate part of said sprocket member, and wherein disengagement between said chain link members and said driving members is provided by moving said driving members into a position generally opposite to said sprocket members and to said arcuate part of said chain.

4,515,547

APPARATUS FOR THE MANUFACTURE OF CONICAL HOLLOW POLES OF FIBER REINFORCED SYNTHETIC RESIN

Brüno Rother, Neumarkt, and Hartmut Trommen, Postbauer-Heng, both of Fed. Rep. of Germany, assignors to G.A. Pfleiderer GmbH & Co. KG, Neumarkt, Fed. Rep. of Germany

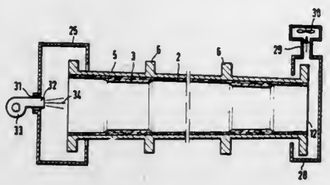
Filed Feb. 2, 1983, Ser. No. 463,084

Claims priority, application European Pat. Off., Dec. 30, 1982, 82112108.4

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ B29C *5/04*

U.S. Cl. 425—215 **10 Claims**



1. Apparatus for manufacturing conical hollow poles of fiber reinforced synthetic resin comprising an elongated mold having an interior surface receiving a fiber reinforcement, said interior surface of said elongated mold being a generally conical surface, injection nozzle means disposed at one longitudinal end of said mold for introducing synthetic resin generally longitudinally into said elongated mold, a light source disposed at one longitudinal end of said mold for illuminating the interior of said mold, ring means mounted on the longitudinal end of said mold having the larger interior diameter, said ring means having an inner diameter corresponding to the interior diameter of said conical hollow pole at the larger diameter bottom of said conical hollow pole, whereby excess resin passes out of said elongated mold past said ring means, and a first housing disposed about the longitudinal end of said mold and said ring means for receiving said excess synthetic resin.

4,515,548

APPARATUS FOR FORMING AND CUTTING LATEX BLOCKS INTO STRIPS

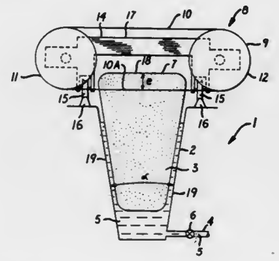
Robert Mioche, Durtol, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Mar. 10, 1983, Ser. No. 474,124

Claims priority, application France, Apr. 7, 1982, 82 06226

Int. Cl.³ B29H *3/06*

U.S. Cl. 425—308 **15 Claims**



1. An arrangement for obtaining strips from a material, characterized by the fact that it comprises a tank, means for introducing a latex into the tank, means for introducing a coagulating agent into the latex to coagulate the latex and form a block of latex coagulum, means for introducing a fluid into the tank to cause the block to float in the fluid, and means for cutting the block into strips from an emergent portion of the floating block.

4,515,549

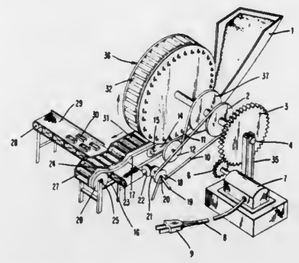
HIGH SPEED AUTOMATIC BRICK MAKING MACHINE

Der C. Yang, 298 Chung Hwa Rd., Ta Yuan, Tao Yuan, Taiwan

Filed Nov. 18, 1980, Ser. No. 207,919

Int. Cl.³ B28B *3/12, 5/02*

U.S. Cl. 425—350 **1 Claim**



1. A high speed automatic brick making machine comprising:

(a) a pressure wheel having at its circumference brick pressing tongues said tongues being free to rotate and each being attached to said wheel by means of an axle passing through the tongue, the ends of the axle being fixed to the circumference of the pressure wheel;

(b) a plurality of moulds disposed on an endless belt, said moulds having a pair of side-walls and a pair of expandable end walls, said moulds corresponding to said press tongues the press tongues reducing the height of the material in the moulds by about one half, the railing for the endless belt having an expanded portion whereat the end walls expand to release the compressed brick contained within the mould after compression;

(c) a hopper for feeding clay to the moulds; and

(d) driving means for said pressure wheel and endless belt.

4,515,550

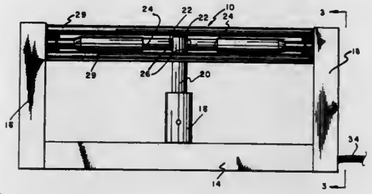
TUBE CRIMPING DEVICE

Lowell A. Miller, Denver, Colo., assignor to Scientific Laboratories, Inc., Denver, Colo.

Filed Mar. 9, 1984, Ser. No. 587,949

Int. Cl.³ B29C *17/02*

U.S. Cl. 425—392 **9 Claims**



1. An apparatus for forming a tube comprising

a base;

a pair of legs secured to the ends of said base;

a holder base attached to said base;

a tube holder means for holding said tube and connected to said holder base, said tube holder having a structure defining a pair of diametrically opposed openings;

a pair of soldering irons means oppositely secured with respect to each other in proximity to the top of said pair of legs, each soldering iron means having a hot end that generally registers with one of the opposed openings such as to be in close proximity to the tube being held by the tube holder means in order to soften the material of the tube in the area contiguous to the openings;

power means for conducting and supplying electrical power to each of the soldering irons means;

vacuum means connected to the top of the tube to suck or pull inward the tube in the spots being softened from the heat of the pair of soldering irons means;

means for cooling the material of the tube in the spots being softened and simultaneously for ceasing the inward movement of the softened spots.

4,515,551

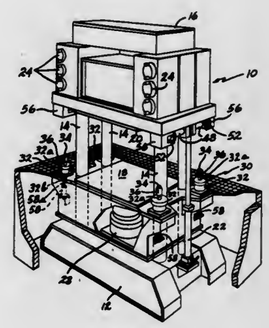
CLOSED LOOP HYDRAULIC/MECHANICAL LEVELING SYSTEM

Myron I. Korytko, Erie, Pa., assignor to EFCO, Inc., Erie, Pa.

Filed Jul. 11, 1984, Ser. No. 629,608

Int. Cl.³ B30B *15/16;* **B29C** *3/00*

U.S. Cl. 425—406 **17 Claims**



1. In a fluid powered press, a first platen, a second platen, at least one of said platens being reciprocably movable along a predetermined axis relative to the other platen, motor means for so moving said movable platen, a plurality of leveling hydraulic piston and cylinder units, each of said leveling units including a projecting rod member connected to the piston of the respective leveling unit and movable with the piston thereof axially relative to the cylinder of the respective leveling unit, said leveling units being mounted on one of said platens, and means for selectively coupling said rod members to the other of said platens, means coacting with said leveling units in said press for maintaining said leveling unit cylinders filled with hydraulic fluid, conduit means providing hydraulic fluid communication between said leveling units, and means coacting with said maintaining means in and means said press for isolating said maintaining means from said leveling unit cylinders whereby said leveling units and said conduit means are maintained as a closed loop system for preventing tilting movement of said platens relative to one another during said relative axial movement.

4,515,552

RELEASE AND CARRY-OUT APPARATUS

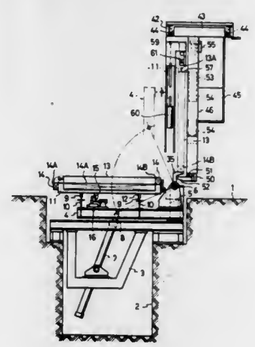
Takao Kataishi, and Iwazou Seo, both of Tokyo, Japan, assignors to Misawa Home Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,132

Claims priority, application Japan, Apr. 17, 1981, 56-57941

Int. Cl.³ B28B *7/08*

U.S. Cl. 425—436 RM **9 Claims**



1. An apparatus for releasing a molded article from a mold and transporting the molded article to another location, comprising:

a base;

a mold including a mold bed and a plurality of frame members disposed thereon and defining the perimeter of a mold cavity, said mold bed having a plurality of wheels mounted on the bottom thereof;

means for transporting said mold in a substantially horizontal position after forming a molded article in the mold cavity, the molded article having lifting hooks projecting from one edge thereof;

an erectable frame, horizontal pivot means at one end portion of said frame, said pivot means mounting said frame on said base for pivotal movement with respect to said base between a substantially horizontal position and an upright position, said mold transporting means comprising a pair of rails formed on the upper side of said erectable frame in alignment with said wheels whereby said mold can be moved along said rails until said mold bed is in position to be secured to said erectable frame, said mold transporting means being adapted to bring said mold onto said erectable frame in a substantially horizontal position;

means for moving said erectable frame between said horizontal and upright positions;

means for releasably securing said mold bed to said erectable frame so that said mold bed carrying a molded article thereon can be transported onto said erectable frame when said frame is in its horizontal position, then secured to said erectable frame, and then moved to an upright position with said erectable frame, said one edge of the

molded article being the upper edge when the molded article is in the upright position so that said lifting hooks project upwardly;

a receiving mechanism adapted to receive and support the molded article in the upright position thereof when said mold bed is removed from the molded article and said erectable frame is moved from the upright position to the substantially horizontal position;

a clamp mechanism for clamping said lifting hooks to releasably secure the upper edge of the molded article when it is supported upright on said receiving mechanism;

a support frame provided above said clamp mechanism; and

a carrier movably mounted on said support frame adapted to support and maintain the molded article in an upright position when the molded article is released from said receiving mechanism and said clamp mechanism, and to transport the molded article along said support frame.

4,515,553

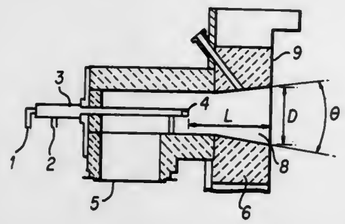
COMBUSTION METHOD FOR REDUCING THE EMISSION OF NITROGEN OXIDES

Kotaro Morimoto, and Tomio Suzuki, both of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Continuation of Ser. No. 138,757, Apr. 10, 1980, abandoned. This application Dec. 1, 1982, Ser. No. 446,037

Int. Cl.³ F23C 5/00

U.S. Cl. 431—8 **3 Claims**



1. A combustion method for reducing emission of oxides of nitrogen in an industrial furnace comprising a combustion chamber, a fuel supply, a burner for burning said fuel with a combustion air, and a port block, wherein said burner further comprises a burner tip, wherein said port block further comprises an inner furnace end surface exposed to said combustion chamber and a bore formed within said port block, wherein said bore includes a conical injection opening defining a spread angle, wherein said method comprises:

introducing said combustion air into said bore coaxially around said burner such that the total combustion air flow into said bore is symmetric about a first axis;

injecting said fuel through said burner tip into said bore such that the total fuel flow into said bore is symmetric about a second axis;

mixing said combustion air and said fuel within said bore;

directing said air and said fuel into said furnace in a substantially diverging conical pattern included within said spread angle;

maintaining said spread angle below 45° such that said air and said fuel form a diverging flow pattern;

maintaining the distance of said burner tip from said inner furnace end surface at less than 1.3 times the diameter of said bore measured at said inner furnace end surface; and

maintaining said total fuel flow through said burner tip such that said second axis of said total fuel flow forms an angle between 5° and 45° with respect to said first axis of said total flow of said combustion air, whereby said burning of said fuel is delayed so as to reduce said emission of oxides of nitrogen.

4,515,554

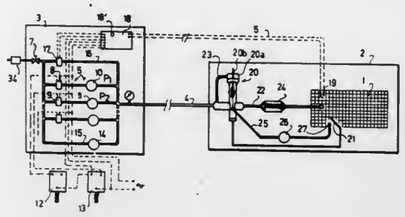
IGNITION AND FUEL SUPPLY SYSTEM FOR A GAS-FUELED HEAT-RADIATOR

Joseph Sirand, Laplume, France, assignor to S.A.R.L Centre d'Etude et de Realisation d'Equipment et de Materiel C.E.R.E.M., Laplume, France

Filed Jan. 5, 1983, Ser. No. 454,004

Int. Cl.³ F23N 5/00

U.S. Cl. 431—78 **13 Claims**



1. A supply and ignition system for gas-fueled heater-radiators comprising upstream feed means for connection to a source of gas and for supplying the gas within a pressure range Pi corresponding to the heating mode requirements of said heat radiator, said upstream feed means comprising at least two parallel branch lines each provided with a controlled valve and with a gas-expanding device, the expanding devices of different branch lines being at different discharge pressures within said range Pi, and said controlled valves being controlled by thermostatic means for assuring heating modes as a function of sensed temperature, said controlled valves comprising electric valves, and one of said electric valves being normally open in the absence of energization so as to enable the supply of gas in the event of power failure, a gas burning heat-radiator remote from said feed means, a safety valve in proximity to said heat-radiator and having a gas discharge conduit connected to said heat radiator by a gas injection conduit, temperature sensing means for controlling the opening of said safety valve, pilot means mounted on said heat radiator for ignition thereof and operatively connected to said temperature sensing means whereby said safety valve is maintained in the open position when said pilot means is lit, a pilot flame conduit in parallel with said gas injection conduit for connecting said safety valve with said pilot means, means for conveying gas from said feed means to said safety valve, upstream gas expanding means connected in parallel with said feed means for continuously supplying gas to said conveying means at a pressure pv less than the presures Pi of the heating modes, a gas pressure responsive selector valve in said gas injection conduit adapted to open at pressures equal to or greater than Pi and thereby permit gas flow to said heater-radiator and to close at the pressure pv and thereby only permit gas flow to said pilot flame conduit, said pilot flame conduit including gas expanding means for reducing the gas pressure at said pilot means to a substantially constant value.

4,515,555

VAPOR BURNER FOR LIQUID FUEL

Jorgen H. Petersen; Peter J. M. Clausen, and Hilmar O. Rasmussen, all of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Oct. 26, 1983, Ser. No. 545,528

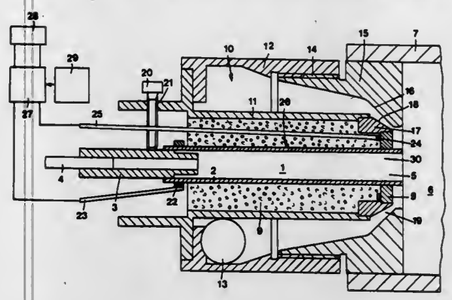
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 3243396

Int. Cl.³ F23D 11/44

U.S. Cl. 431—208 **31 Claims**

1. A vapor burner for a liquid fuel, comprising, an elongated fuel gasifying chamber, a combustion chamber connected to said gasifying chamber, said fuel gasifying chamber having an inlet for liquid fuel and an outlet through which ignited gasified fuel is fed to said combustion chamber, said

fuel gasifying chamber being formed so that no forced air is admissible thereto through said inlet end thereof, electrical heating means for heating said gasifying chamber to a gasifying temperature, air passage system means for supplying air of



combustion to said combustion chamber, heating means surrounding the outlet end of said fuel gasifying chamber to form a glow zone heatable to the fuel mixture ignition temperature by said heating means.

4,515,556

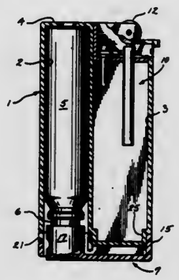
COMBINED LIGHTER AND MOUTH SPRAY

Johnny Vanelli, La Guna Nigel, Calif., assignor to Optimum Manufacturing Inc., Denver, Colo.

Filed Jul. 28, 1983, Ser. No. 517,471

Int. Cl.³ F23Q 1/02

U.S. Cl. 431—253 **5 Claims**



1. A combined lighter and breath spray which comprises:

an elongated case which defines a pair of side-by-side chambers that extend along substantially the entire length of the case;

a lighter attached to the case and disposed in one of the chambers with its operating end extending from one end of the case; and

a breath spray unit disposed in the other chamber and having an operating end which extends from the other end of the case, said breath spray unit including a container which may be removed from the case and replaced by another similar container, in which the container is retained in said other chamber by an actuator cap attached to said other end of the case, and

in which the container includes a valve having a valve stem which extends along an operating axis toward said other end of the case, and the actuator cap includes a valve actuator which engages the valve stem and which may be depressed by a user to operate the valve in the breath spray unit and convey the atomized fluid emitted from the stem through an opening in the valve actuator.

4,515,557

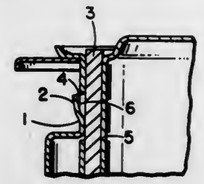
KEROSENE COMBUSTION APPARATUS

Hideo Nishikawa; Kenzo Okamoto; Koichi Sakai, and Fumihiko Kitada, all of Osaka, Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co.), Osaka, Japan

Filed Jan. 19, 1984, Ser. No. 572,192

Int. Cl.³ F23D 3/02

U.S. Cl. 431—302 **9 Claims**



1. Kerosene combustion apparatus of a type in which ignition, extinction and control of caloric power are effected by vertically moving a wick material comprising:

inner and outer cylinders coaxially disposed relative to one another and defining a gap therebetween; a wick material disposed within the gap between the cylinders, the outer cylinder being provided in the vicinity of its upper end with outwardly strip-shaped projections extending circumferentially, each having a slit.

4,515,558

ENCAPSULATED PHOTOFLASH DEVICE HAVING A RADIANT ENERGY-ACTIVATED DISCONNECT SWITCH AS PART OF THE CIRCUITRY THEREOF

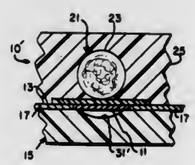
Harold H. Hall, Jr., Marblehead, and Andre C. Bouchard, Peabody, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 6, 1982, Ser. No. 337,354

The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.

Int. Cl.³ F21K 5/02

U.S. Cl. 431—359 **9 Claims**



1. A photoflash device comprising:

a substrate member including at least one depression therein;

lamp-firing circuitry located on a first surface of said substrate member;

at least one radiant energy-activated disconnect switch located on said first surface of said substrate member and electrically connected to said lamp-firing circuitry;

a thin, light-transmitting member positioned on said disconnect switch and secured to said first surface of said substrate member substantially about said disconnect switch to provide a protective cover for said switch in such a manner that said switch is able to move independently of said thin, light-transmitting member;

at least one photoflash lamp positioned on said substrate member and including a glass envelope located in contact with an upper surface of said thin, light-transmiting member and adjacent said disconnect switch, said light-transmitting member thereby providing a predetermined spac-

ing between said lamp and said disconnect switch, said photoflash lamp adapted for activating said switch through said light-transmitting member upon ignition thereof, said disconnect switch located between said photoflash lamp and said depression and bridging said depression; and

a quantity of light-transmitting, solid polymer material located in contact with said substrate member and said thin, light-transmitting member and further contacting substantially the entire outer periphery of said glass envelope of said photoflash lamp to thereby surround said glass envelope and provide a protective covering therefor, said photoflash device not including a curved reflector located adjacent said photoflash lamp.

4,515,559

HEAT TREATMENT METHOD AND APPARATUS

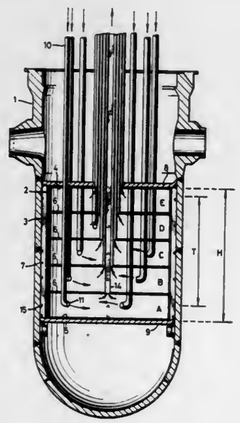
Gary F. Parker, Southport, England, assignor to Cooperheat, Merseyside, England

Filed Aug. 5, 1983, Ser. No. 520,811

Claims priority, application United Kingdom, Dec. 16, 1982, 8235905

Int. Cl.³ F27D *5/00*; F24J *3/00*; F24H *3/00*

U.S. Cl. 432—10 **16 Claims**



1. Apparatus for heat treating a vessel, the apparatus comprising a plurality of inlet ducts; a plurality of exhaust ducts; and wall means defining a plurality of compartments for containing a heated fluid, said wall means preventing heated fluid in a compartment from contacting the vessel; each of said compartments having an exterior wall portion and being provided with at least one of said inlet ducts and at least one of said exhaust ducts for supplying and removing the heated fluid to and from the interior of the compartment, and said wall means being such that the exterior wall portion of each of said compartments is adjacent the exterior wall portion of at least one other one of said compartments whereby the wall portions form respective parts of a radiating surface for radiating heat onto a confronting interior wall or wall portion of the vessel; the apparatus further including means for supplying heated fluid to each of said inlet ducts and for controlling the thermal input of the heated fluid supplied to the respective inlet ducts, each of said compartments being independent of the other so that their internal temperatures may be individually controlled by controlling the thermal inputs of the heated fluid supplied to the respective inlet ducts, said means for supplying heated fluid and for controlling the thermal input of the heated fluid being operable to maintain a predetermined temperature profile across said radiating surface during the heat treatment process.

4,515,560

GRILL ELEMENT OF CAST METAL FOR SOLID-FLUID HEAT EXCHANGE AT VERY HIGH TEMPERATURE COMPRISING A LATCHING DEVICE WHICH IS INTEGRATED IN THE GRILL STRUCTURE

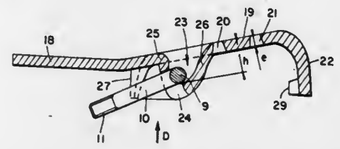
Claude Jacquemin; Florent Provost, and André Seinera, all of Ugine, France, assignors to Ugine Aciers, Paris, France

Filed Dec. 27, 1983, Ser. No. 565,724

Claims priority, application France, Dec. 30, 1982, 82 22236

Int. Cl.³ F27D *15/02*; F27B *9/14*; F26B *9/00*

U.S. Cl. 432—80 **8 Claims**



1. A fixed or movable grill element for heat exchange between a divided solid at very high temperature and a fluid at lower temperature which grill element is adapted to be at least releasably fixed to a support by a connecting member including a head and a leg attached thereto, comprising a plate of cast refractory steel having upper and lower faces, said upper face receiving the grains or particles of the solid which are displaced along said upper face, said plate comprising an array of through perforations defining holes through which the fluid passes in an upward direction, the upper face of the plate comprising at least one recessed region in which a portion of said upper face is at a depth relative to the remainder of said upper face, which depth is greater than the height of the connecting member that it contains, and wherein said portion of said upper face at the region of greatest depth is below said lower face in the region surrounding the recessed region, the bottom of this recessed region comprising at least one through perforation defining a hole in which the leg of the connecting member is engaged, the head of the connecting member being retained within said recessed region in a position of bearing against the edge portions defining the hole in which the leg is engaged.

4,515,561

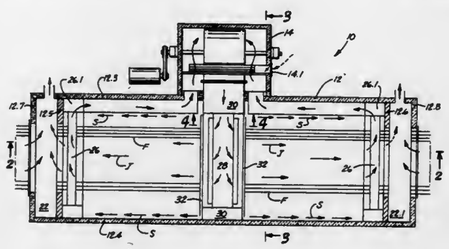
FIBER TREATMENT OVEN

Hans L. Melgaard, Minneapolis, Minn., assignor to Despatch Industries, Inc., Minneapolis, Minn.

Filed Mar. 7, 1983, Ser. No. 473,076

Int. Cl.³ F27B *9/00*

U.S. Cl. 432—136 **15 Claims**



1. A fiber-treatment oven for heating fibers by contact thereof with hot gas and comprising housing means defining a plurality of spaced, parallel pathways for a plurality of fibers to traverse the interior of the housing in the direction of and along said pathways, and means providing a source of hot gas; the oven being characterized by including hot gas emission means carried within the housing and oriented to provide a plurality of parallel streams of hot gas parallel to and between said fiber pathways longitudinally of the direction of fiber travel to gently contact said fibers; and hot gas exhaust means spaced from the emission means and oriented to receive hot gases emitted parallel to and between the fiber pathways.

4,515,562

APPARATUS FOR APPLYING HEAT TO A PORTION OF A PIPELINE

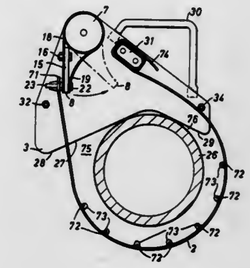
John P. Williams, Williton, Nr. Taunton, England, assignor to British Gas Corporation, London, England

Continuation of Ser. No. 433,645, Oct. 12, 1982, abandoned. This application Aug. 29, 1984, Ser. No. 645,341

Claims priority, application United Kingdom, Oct. 12, 1981, 8130701

Int. Cl.³ F28F *7/00*; F24J *3/00*

U.S. Cl. 432—225 **15 Claims**



1. Apparatus for applying heat to a portion of a pipeline, the apparatus comprising an elongate manifold for mounting on the pipeline, the manifold having an inlet for receiving hot gas and an outlet for discharging the gas along the portion of the pipeline to be heated, means for releasably mounting the manifold on the portion of the pipeline to be heated and a flexible blanket of heat insulated material which is wrappable around the portion of the pipeline to be heated at a spacing therefrom so that a heat shroud encircling at least a major part of the pipeline circumference is formed between the blanket and the adjacent surface of the pipeline, the opposite ends of the blanket being attachable respectively to the manifold and the manifold mounting means in such a manner that the heat shroud has at the manifold end an opening for receiving hot gas from the manifold and at the manifold mounting means end an opening for discharging the gas after circulation around the surface of the pipeline, and one of said ends of said blanket being releasably attachable so as to permit the blanket to be readily wrapped around and unwrapped from the pipeline, wherein those edges of the blanket forming the edges of the heat shroud are gathered so that their length is reduced in comparison to the actual length of the blanket to enable the edges to grip the walls of said pipeline.

4,515,563

AMALGAM CARRIER

Kenneth F. Dungill, 2049 Hall St., SE., East Grand Rapids, Mich. 49506

Filed Feb. 23, 1983, Ser. No. 468,884

Int. Cl.³ A61C *5/04*

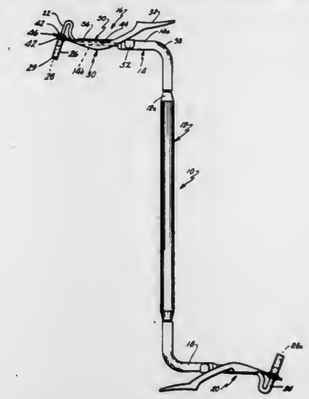
U.S. Cl. 433—90 **10 Claims**

1. An amalgam carrier comprising:

an elongated generally linear handle;

a support portion extending generally perpendicularly from said handle and terminating in a plunger end, said handle and said support portion connected so as to define an elbow; and

an amalgam release mechanism supported on said support portion, said release mechanism defining an amalgam bore located at said plunger end, said bore opening away from said support portion in a direction generally common and parallel with said handle whereby said bore can be aligned with a cavity in a distal or lingual tooth surface, said release mechanism including a plunger slidably received within said bore to expel amalgam therefrom and lever means for shifting one of said bore and said plunger relative one another, said lever means including an actuating



member generally parallel to said support portion and reciprocable in a direction generally axially aligned with said handle, said actuating member including an actuated position substantially adjacent said elbow wherein said plunger protrudes from said bore to expel amalgam therefrom.

4,515,564

DENTAL HANDPIECE

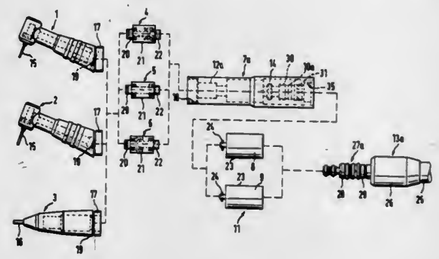
Gerd Löhn, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Volgt GmbH & Co., Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,218

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215207

Int. Cl.³ A61C *1/08*

U.S. Cl. 433—126 **26 Claims**



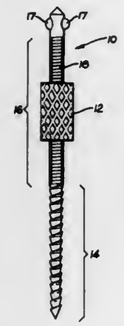
1. A dental handpiece comprising a universal holder sleeve member providing for the universal mounting therein of different types of motor units and drive trains, means provided at one end of the sleeve member to mount a dental implement, an interchangeable motor unit, interchangeable between electric motor units and pneumatic motor units, arranged in the sleeve member, a power supply member releasably coupled to an opposite end of the sleeve member and arranged to provide power to operate the selected motor unit, an interchangeable drive train, interchangeable between different gearing ratios, extending within the sleeve member from the motor unit to said one end of the sleeve member to enable the motor unit to operate the dental implement when the latter is mounted in the handpiece, at least one supply line extending within the sleeve member and arranged to supply a fluid medium to a treatment

region adjacent to the dental implement, a socket provided in one of said members, a generally cylindrical guide pin provided on the other of said members to be received by the socket in a freely rotatable manner when the members are coupled together, and a power supply line extending from the power supply member to the motor unit via said pin and said socket, said guide pin and socket having a plurality of axially spaced rotational fluid connections therebetween, with a plurality of axially spaced sealing rings being provided for fluid sealing of the rotational fluid connections, and said guide pin and socket also having a plurality of axially spaced slip rings and associated electrical contacts thereon to also provide for rotational, electrically insulated electrical connections, with the rotational fluid connections and rotational electrical connections providing for connections to different types of motor units and dental implements.

4,515,565
DENTISTRY

Peter H. Winter-Moore, 43 Dunton Hall Rd., Shirley, Solihull B90 2RA, England, and Fernando J. Sanchez, 52 Wellington Rd., Edgbaston, Birmingham B15 2ER, England

Filed Mar. 22, 1983, Ser. No. 477,766
Claims priority, application United Kingdom, Mar. 24, 1982, 8208575; Feb. 4, 1983, 8303200
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—221 **4 Claims**



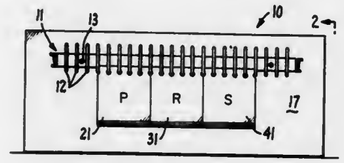
1. A dental post assembly comprising a post which
(a) has its lower end tapered and provided with a barbed self-tapping screwthread having its trailing face reentrant for self-anchoring in an inwardly-tapering hole in a tooth root, and
(b) has a bush threaded on its upper end for engagement in a counterbore in said hole to serve as a lock nut in cooperation with said self-anchoring screwthread.

4,515,566
FLIP CARD APPARATUS FOR FORMING UNITS OF SPEECH

Robert S. Sprague, 446 La Prenda Rd., Los Altos, Calif. 94022

Filed Oct. 27, 1983, Ser. No. 546,030
Int. Cl.³ G09B *1/12, 17/00*
U.S. Cl. 434—172 **28 Claims**

1. A flip card apparatus for forming units of speech comprising in combination:
a ring binder means having equally spaced rings;
a plurality of card decks, each card of which is punched with a plurality of equally spaced holes inwardly of one card edge for attachment to said ring binder, each card of each deck having indicia for cooperation with indicia of the cards of the other card decks fo form a unit of speech, said holes in each of said cards spaced such that the number of complete holes is one less than the width of the card divided by the hole spacing, said indicia located on said cards substantially centered between a pair of said holes; and
support means connected to said ring binder for holding the cards of said decks in side-by-side relation whereby the

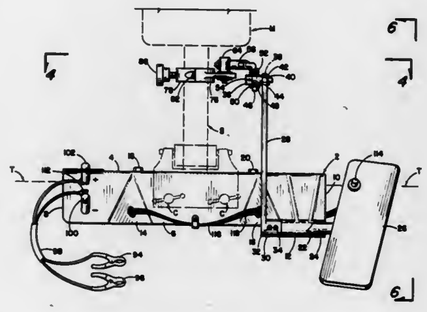


cards of each deck can be flipped over on said binder means on said support means for presenting a combination of the indicia of each card in each card deck with each card in every other deck.

4,515,567
TROLLING MOTOR FOOT CONTROL

Jay R. Wilson, P.O. Box 506, Dewey, Okla. 74029

Filed Oct. 5, 1983, Ser. No. 539,118
Int. Cl.³ B63H *25/00*
U.S. Cl. 440—7 **3 Claims**



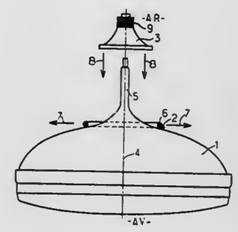
1. Steering and operating control means for a water craft provided with a trolling motor having a rotatable support shaft, the control means comprising frame means secured to the water craft, foot pedal means pivotally secured to the frame means, linkage means operably connected between the foot pedal means and the support shaft whereby pivoting of the foot pedal means in one direction rotates the support shaft in one direction for turning of the trolling motor in one direction and pivoting of the pedal means in another direction rotates the support shaft in another direction for turning of the trolling motor in another direction to effect the steering of the water craft, power means operably connected between the foot pedal means and the trolling motor whereby activation of the trolling motor may be selectively controlled by the foot pedal means, the power means comprising electrical terminal means operably connected with a power source, switch means secured to the foot pedal means and electrically connected with the electrical terminal means whereby depression of the switch means activates the trolling motor and release of the switch means deactivates the trolling motor, and wherein the linkage means comprises first substantially horizontally disposed pivotal shaft means secured to the foot pedal means, substantially vertically disposed arm means having one end pivotally secured to the first pivot shaft means for angular orientation thereof upon pivoting of the foot pedal means, second substantially horizontally disposed pivot shaft means operably secured at the opposite end of the arm means and between the arm means and the support shaft whereby angular orientation of the

arm means in one direction rotates the support shaft in one direction and angular orientation of the arm means in another direction rotates the support shaft in another direction, and yieldable means secured between the second pivot shaft means and the arm means for substantially continuously urging the arm means toward a normal neutral position therefor to provide a normal forward movement of the water craft, the rotation of the support shaft in said one direction moving the trolling motor for causing a left hand direction of movement for the water craft and the rotation of the support shaft in said another direction moving the trolling motor to cause a right hand direction of movement for the water craft.

4,515,568
PROCESS OF FIXING A DEFLECTION YOKE ONTO THE NECK OF A CRT

Ignazio Cormio, Montrouge, France, assignor to Videocolor S.A., Montrouge, France

Filed Jul. 8, 1982, Ser. No. 396,330
Claims priority, application France, Jul. 9, 1981, 81 13472
Int. Cl.³ H01J *9/236*
U.S. Cl. 445—3 **1 Claim**



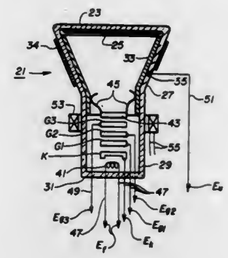
1. A method for fixing a deflection yoke on the neck of a cathode tube, comprising the successive steps of:
positioning a stressed elastic abutment on said tube;
positioning said deflection yoke on said neck of said tube;
adjusting the position of said yoke for maximum performance;
fixing a fixed and adjustable abutment on said neck and pressed against one end of said yoke; and
permitting said elastic abutment to elastically relax and press against a second end of said yoke, whereby said yoke is pressed between said fixed and elastic abutments and is held in said adjusted position.

4,515,569
METHOD OF ELECTRICALLY PROCESSING A CRT MOUNT ASSEMBLY TO REDUCE ARCING AND AFTERGLOW

Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 22, 1983, Ser. No. 487,462
Int. Cl.³ H01J *9/20*
U.S. Cl. 445—5 **7 Claims**

1. In a method of electrically processing a completed CRT having an electron gun including a focus electrode and a high-voltage electrode, said high-voltage electrode being closely spaced from said focus electrode, the steps comprising
(A) heating portions of said focus electrode that face said high-voltage electrode at temperatures above about 700°

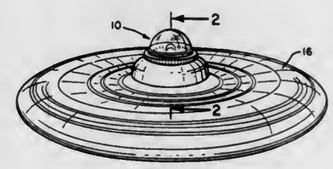


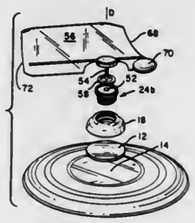
C. and simultaneously (B) spot-knocking said heated portions of said focus electrode.

4,515,570
ACCESSORY KIT FOR FLYING DISC TOY

Edward R. Beltran, 15 A. N. San Marcos Rd., Santa Barbara, Calif. 93111

Filed Dec. 29, 1983, Ser. No. 566,693
Int. Cl.³ A63H *27/00*
U.S. Cl. 446—47 **9 Claims**



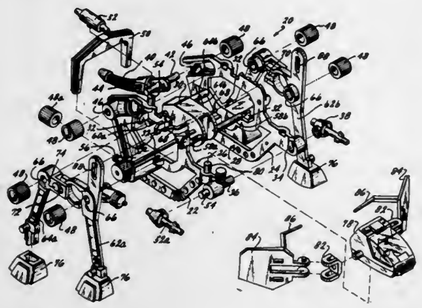


1. A kit for use with a flying disc toy comprising:
a flying disc;
a housing secured to the upper central portion of the flying disc with connector means, said housing including an opening in its top portion;
a plug means engaging said opening having a central aperture through which extends a pivot pin; and,
a rotatable aerodynamic fin member attached to said pivot pin being vertically disposed relative to the disc surface, said fin member including a leading edge and a trailing end with said leading edge having a counterbalance weight means, said pivot pin being connected to the fin member between the mid-point of said member and said leading edge.

4,515,571
MOVING TOY CAPABLE OF BEING NON-PERMANENTLY ASSEMBLED

Michihiro Kozuka, and Masayuki Tonokura, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Japan

Filed Nov. 22, 1982, Ser. No. 443,432
Claims priority, application Japan, Nov. 24, 1981, 56-174363[U]
Int. Cl.³ A63H *33/04*
U.S. Cl. 446—90 **7 Claims**



1. A toy which comprises:

a body, said body having a first and a second body section, each of said first and said second body sections including a mating face, each of said mating faces complementary to the other of said mating faces such that said first and said second sections can be positioned in association with one another with their respective complementary mating faces in a juxtaposed position with respect to one another;

a motor capable of producing an output;

a motor cradle means, a portion of said motor cradle means locate on said first body section and the remaining portion located on said second body section, said portion of said motor cradle means located on said first body section including a first aperture and a first plurality of cradle projection members positioned around the periphery of said first aperture, said portion of said motor cradle means located on said second body section including a second aperture and a second plurality of cradle projection members positioned around the periphery of said second aperture, said motor positionable in said motor cradle means when said mating faces of said first and said second body sections are juxtaposed with respect to one another and a first portion of said motor extends through said first aperture with said first portion of said motor engaged by and held by said first plurality of cradle projection members and a second portion of said motor extends through said second aperture with said second portion of said motor engaged by and held by said second plurality of cradle projection members, said motor releasable from said motor cradle means when said mating faces are distal from one another;

at least one fastening means capable of reversible fixing said mating faces of said first and said second body sections in said juxtaposed position with respect to one another, said fastening means including said second body section having an opening through its mating face and further including a first and second joining member, said first joining member comprising an elongated means integrally formed as a part of said first body section, said elongated means located on said first body section in a position so as to pass through and partially extend beyond said opening in said second body section when said mating faces are juxtaposed to one another;

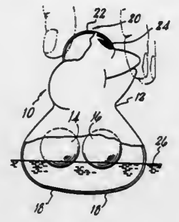
said second joining member comprising a push on cap having a cavity therein and a single orifice opening into said cavity, said cavity capable of frictionally engaging said portion of said elongated means which extends beyond said opening in said second body section when said elongated means is positioned within said opening in said second body section;

at least one appendage member movably connected to said body and operatively associates with said motor, said appendage member capable of moving with respect to said body in response to said output of said motor, movement of said appendage member with respect to said body moving said toy with respect to a support medium.

4,515,572
FLOATABLE TOYS

Norman R. Emms, Codicote, England, assignor to Hestair Kiddicraft Limited, Surrey, England

Filed May 8, 1984, Ser. No. 608,303
Claims priority, application United Kingdom, May 12, 1983, 8313140
Int. Cl.³ A63H *23/00*
U.S. Cl. 446—153 **8 Claims**



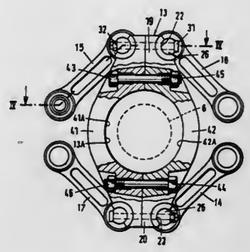
1. A floatable toy comprising a hollow body formed with spaced apertures to let water and air pass into and out of the body, and at least one movable floatation member located within said body, the arrangement being such that on immersing said hollow body in water the water rises within said body and said floatation member rises and is retained by the body to cause said body to float in a partially submerged condition with the said movable floatation member retained in the region of an upper portion of said hollow body, a hollow cavity being formed within said hollow body to define a socket in said upper portion of said hollow body which receives said floatation member in said partially submerged condition of said hollow body, said socket forming part of the body shape of the toy and being so constructed that said floatation member is visible when it is in said socket in said partially submerged condition of said hollow body.

4,515,573
DIFFERENTIAL COUPLING

Johann Eichinger, Vaterstetten, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 312,070, Oct. 16, 1981, abandoned. This application Feb. 3, 1984, Ser. No. 576,641
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049054
Int. Cl.³ F16C *1/02*
U.S. Cl. 464—69 **1 Claim**

1. In a drive arrangement which includes: a rotatably supported drive axle; a drive sleeve provided around said drive axle approximately coaxial therewith and supported for rotation independently thereof, said drive sleeve having an inner diameter which is substantially larger than the outer diameter of said drive axle, and said drive sleeve and drive axle being supported for radial movement relative to each other; and joint coupling means for operatively coupling said drive sleeve and said drive axle, said joint coupling means including radially extending first flange means on said drive sleeve, radially extending second flange means on said drive axle, a floating intermediate member having an opening therethrough which has an inner surface and has a diameter substantially larger than that of said drive axle, said drive axle extending through said opening in said intermediate member, first and second link elements which each have one end pivotally supported on said first flange means and a further end pivotally supported on said intermediate member at a location spaced radially outwardly from said opening therethrough, and third and fourth link elements which each have one end pivotally supported on said second flange means and a further end pivotally supported on said intermediate member at a location spaced radially outwardly from said opening therethrough, said further ends of said first and second link elements respectively being near said further ends of said third and fourth link elements; the improvement comprising wherein said intermediate member includes first and second parts which each have thereon a respective portion of said inner surface of said opening through said intermediate member, said intermediate member being divided into said first and second parts along a dividing plane which extends approximately radially and axially of said drive axle and which extends between said further ends of said first



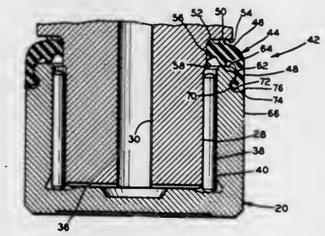
and third link elements and between said further ends of said second and fourth link elements, and wherein said intermediate member includes fastening means for releasably securing said first and second parts to each other, said fastening means including first and second bolts which extend through aligned openings in said first and second parts of said intermediate member approximately perpendicular to said dividing plane on diametrically opposite sides of and at locations spaced radially from said opening through said intermediate member, said first bolt being located in the region of said further ends of said first and third link elements and said second bolt being located in the region of said further ends of said second and fourth link elements, and said fastening means further including third and fourth bolts which extend through aligned openings in said first and second parts of said intermediate member approximately perpendicular to said dividing plane on diametrically opposite sides of and adjacent to said opening through said intermediate member, said third and fourth bolts substantially preventing deformation of said first and second parts of said intermediate member in response to operational forces applied to said intermediate member by said link elements during operational use of said drive arrangement.

4,515,574
UNIVERSAL JOINT SEAL WITH MULTIPLE LIPS

Philip J. Mazziotti, Toledo, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Filed Feb. 16, 1983, Ser. No. 467,131
Int. Cl.³ F16D *3/33*; F16C *33/78*; F16J *15/34*
U.S. Cl. 464—131 **3 Claims**

1. In combination, a universal joint seal, a cross, and a bearing cup, said cross having a body and a trunnion, said cross also having an annular shoulder and an adjacent surface of circular cross section at the juncture of said body and said trunnion, said adjacent surface being between said shoulder and said trunnion, said bearing cup having an annular groove portion near an open end of said cup which receives said trunnion and having a substantially planar, annular surface at the open end, said seal comprising a resilient sealing member having at least two spaced lips engaging said annular shoulder and a third lip engaging said adjacent surface, said sealing member also having additional lips engaging said annular surface of said bearing cup and the groove portion of said bearing cup, a first of said additional lips engaging said annular surface along a narrow annular area, said first additional lip being substantially aligned

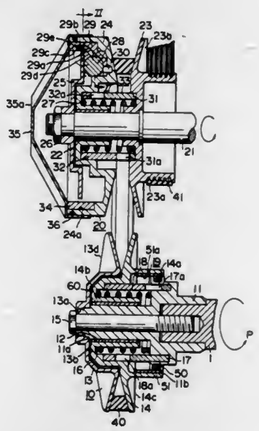


with one of said two lips engaging said annular shoulder, at least one of said additional lips engaging the annular groove portion of said bearing cup along a narrow, annular area, and an additional one of said additional lips being spaced from said one additional lip and engaging the side of said annular groove portion opposite the open end of said cup along a narrow, annular area.

4,515,575
TORQUE TRANSMISSION SYSTEM

Hiroji Kinbara, Aichi; Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Hideyuki Hayakawa, Nishio; Masaaki Takizawa, Mishima; Masaru Tamura, and Yasunobu Jufuku, both of Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 11, 1981, Ser. No. 291,946
Claims priority, application Japan, Aug. 22, 1980, 55-116112
Int. Cl.³ F16H *11/06*
U.S. Cl. 474—13 **16 Claims**



1. A torque transmission system including: a pulley unit comprising a fixed pulley part fixed to a shaft for rotation therewith a movable pulley part disposed in axially opposite relationship to said fixed pulley part to cooperate therewith to define a circumferential belt-receiving groove and being movable in the axial direction of said shaft toward and away from said fixed pulley part to vary the width of said belt-receiving groove; a V-belt received in said belt-receiving groove; circumferentially spaced holders fixed to the side of said movable

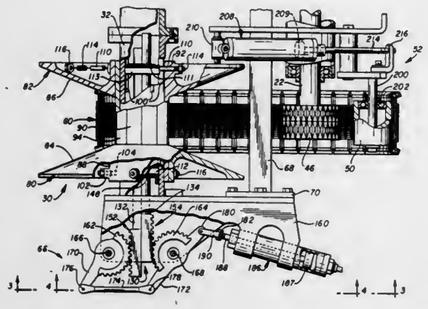
pulley part opposite to the side thereof which is contacted by said V-belt; a fixed plate fixed to said shaft against axial movement and disposed axially outwardly of said holders; at least one fly weight disposed between each of said holders and said fixed plate and being centrifugally movable in the radial direction of said shaft to axially displace said holder and said movable pulley part relative to said fixed pulley part; one of each holder, said fixed plate and said movable pulley part providing a holding surface substantially parallel to said shaft, said holding surface being adapted to radially support said fly weight when the same is centrifugally moved to its radially outermost position; each of said holders being provided with substantially radially extending side edges and with flanges extending along said side edges for guiding radial movement of said fly weight; adjacent flanges of each circumferentially adjacent pair of holders defining therebetween a generally radially extending space and being provided with means for communicating the interiors of said holders with said radially extending space; said communicating means disposed in said flanges adjacent to said holding surface; said movable pulley part being provided with a lubricant guiding wall faced to each of the radially extending spaces and circumferentially adjacent pair of holders for centrifugally guiding lubricant to said communicating means.

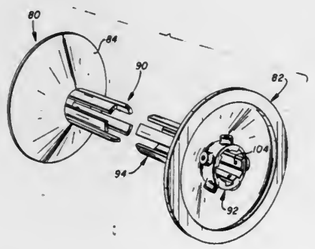
4,515,576

VARIABLE SPEED TRANSMISSION

William S. Wiens, 5508 Bent Tree Dr., Lake Kiowa, Tex. 75248

Continuation of Ser. No. 234,436, Feb. 13, 1981, abandoned.
This application Mar. 1, 1984, Ser. No. 583,797
Int. Cl.³ F16H *9/18*
U.S. Cl. 474—29 **24 Claims**





1. A variable speed transmission for transmitting rotational forces between a first shaft and a second shaft comprising:

chain-belt engagement means communicating with the first shaft;

a variable effective diameter pulley communicating with the second shaft, said pulley comprising a pair of pulley halves having opposed inclined belt engaging faces and a centerline defined by a plane between the pulley halves and equally spaced therefrom, said pulley halves further having a continuous belt engaging surface;

means for varying the effective diameter of said pulley comprising a split shaft having two half shafts extending within said pulley, each half shaft engaging one of said pulley halves such that as said half shafts of said split shaft are moved relative to one another, said pulley halves are moved one relative to the other, and controls for engaging the exterior of each shaft half for moving said half shafts of the split shaft simultaneously such that the center line of said pulley remains fixed as said pulley halves move together or apart; and

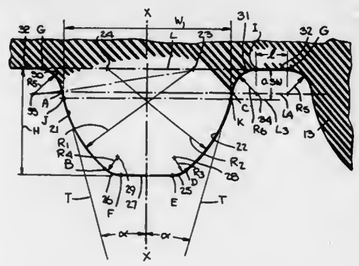
an endless chain-belt assembly encompassing said chain-belt engagement means and the variable effective diameter pulley to transmit rotation between the first and second shafts.

4,515,577

LOW BACKLASH-HIGH-TORQUE POWER TRANSMISSION SYSTEM AND TOOTHED BELT USED THEREIN

Thaddeus F. Cathey, Woodbury; John C. Gaynor, Wolcott, and Rodney J. Nelson, Southbury, all of Conn., assignors to Uniroyal, Inc., Middlebury, Conn.

Filed Oct. 20, 1982, Ser. No. 435,435
Int. Cl.³ F16G *5/20, 1/28*
U.S. Cl. 474—204 **36 Claims**



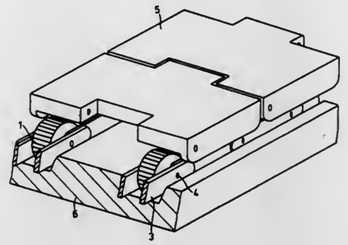
1. A flexible power transmission belt having a plurality of teeth, said belt teeth being separated by belt cavity portions, each belt tooth in longitudinal cross-section being symmetrical about a belt tooth center line, said belt tooth including a root portion, a tip portion and opposite convex arcuate flank portions extending from said tip portion, each said belt cavity portion being symmetrical about a belt cavity center line, said belt tooth root portion being defined at least partly by first and second arcs approximating the arc of a circle on opposite sides of said belt tooth center line extending into the corresponding flank portions of the belt tooth and said belt cavity having a base portion connecting said first arc of each tooth with said second arc of the next consecutive tooth, said base portion which in longitudinal cross-section is a line coinciding with a belt land line which is colinear with base portions of other belt cavities on said belt, said belt tooth having a height dimension measured between the extremity of said tooth tip portion and said belt land line and having a width dimension measured between said opposite flank portions along a line parallel to such belt land line and including the points at which said first and second arcs intersect said flank portions, said belt tooth having a height to width relation within a first predetermined range, each said opposite flank portion being formed of a curve which approximates the arc of a circle whose center of curvature lies substantially on said belt land line on the side of the belt tooth center line which is opposite that of the flank portion in question and which curve is such that a tangent line drawn to it at the point thereon which is at a distance from the belt land line equal to 0.3 times the width dimension of the belt tooth forms an angle with respect to the tooth center line which is within a second predetermined range, wherein said first predetermined range is from 0.50 to 0.67 and said second predetermined range is from 18 degrees to 23 degrees.

4,515,578

ROLLER CHAIN AND ITS USE FOR THE MOVEMENT OF ONE SURFACE IN BEARING RELATION WITH ANOTHER

Raymond Burger, 7, place de la Fleur, Sainte-Marie-Aux-Mines (Haut-Rhin), France

Filed Sep. 1, 1982, Ser. No. 413,620
Claims priority, application France, Sep. 1, 1981, 81 16738
Int. Cl.³ F16G *13/02*
U.S. Cl. 474—231 **6 Claims**



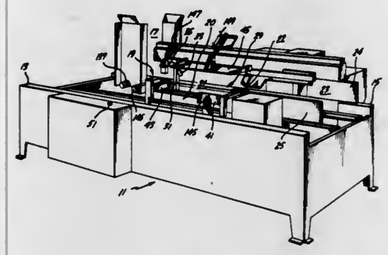
1. A roller chain disposed in compression between a movable plate and a fixed frame, comprising rollers (1) mounted on sleeves (2) on axles (4) and spaced apart by links (3), and guide means for the chain provided on at least one of said plate and frame, said plate and frame contacting opposite sides of the peripheries of the same said rollers.

4,515,579

PROGRAMMABLE CASE SET-UP AND BOTTOM SEALING MACHINE

Joel M. Beckett, Eatonville, Wash., assignor to Marq Packaging Systems, Inc., Yakima, Wash.

Filed Oct. 20, 1982, Ser. No. 435,363
Int. Cl.³ B31B *3/00*
U.S. Cl. 493—1 **39 Claims**



1. A programmable case set-up and bottom sealing machine comprising:

(A) conveyor means for receiving flattened cases from a hopper and sequentially moving said cases first to a case set-up station and, then, to a mandrel station;

(B) erecting means located at said case set-up station for erecting flattened cases moved to said case set-up station by said conveyor means;

(C) flap folding means located at said case set-up station for selectively folding the bottom minor and major flaps of cases erected by said erecting means;

(D) compression means located at said mandrel station for pressing together the folded bottom minor and major flaps of an erected case moved from said case set-up station to said mandrel station by said conveyor means;

(E) a control/display unit for receiving programming information and instructions entered by an operator and displaying operator usable alphanumeric information;

(F) a plurality of sensing devices coupled to said conveyor means, said erecting means, said flap folding means and said compression means for sensing the operation of said conveyor means, said erecting means, said flap folding means and said compression means;

(G) a plurality of controlled devices coupled to said conveyor means, said erecting means, said flap folding means and said compression means for controlling the operation of said conveyor means, said erecting means, said flap folding means and said compression means; and,

(H) a central processing unit coupled to said control/display unit, said plurality of sensing devices and said plurality of controlled devices for:

(1) receiving and storing said programming information and instructions entered by an operator;

(2) receiving information reagrding the operation of said conveyor means, said erecting means, said flap folding means and said compression means sensed by said sensing means; and,

(3) controlling said conveyor means, said erecting means, said flap folding means and said compression means via said plurality of controlled devices such that:

(a) flattened case are moved by said conveyor means to said case set-up station;

(b) flattened cases moved to said case set-up station by said conveyor means are erected at said case set-up station by said erecting means;

(c) the bottom minor and major flaps of erected, cases at said case set-up station are selectively folded by said flap folding means;

(d) erected and bottom flap folded cases are moved by said conveyor means to said mandrel station; and,

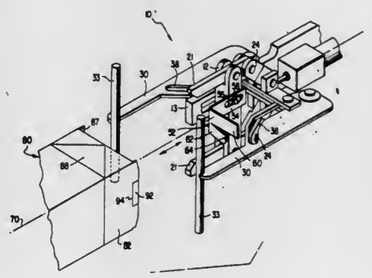
(e) the bottom minor and major flaps of cases at said mandrel station are compressed by said compression means.

4,515,580

BOTTOM SEALING TAB PREBREAKING APPARATUS

Harold Lovelace, Saraland, Ala., assignor to International Paper Company, New York, N.Y.

Filed May 25, 1982, Ser. No. 381,680
Int. Cl.³ B31B *5/74*
U.S. Cl. 493—183 **9 Claims**



1. A bottom end closure pre-breaking apparatus for a container having two opposed pairs of bottom closing and forming flaps which are folded towards each other to define the container bottom, one bottom end defining flap having an integral tab positioned along one free edge thereof, the free edge of said tab carrying flap being received by a mouth defined by both its opposite and its two adjacent flaps, the said tab defined by two spaced cuts extending from the free edge of said tab flap, the tab initially lying in the plane of the flap from which it is formed, the tab being foldable about a fold line defined by the connection of the tab with the remainder of the tab flap, the apparatus including means for positioning a container having bottom flaps which are to be folded from an initial position to form a container bottom, said apparatus also including means

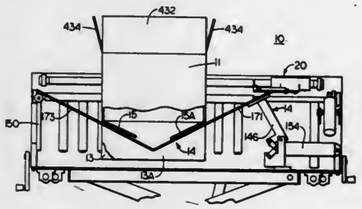
for folding said tab flap towards its bottom forming position, the improvement comprising, means forming an abutment positioned in the path of the tab as its respective tab flap swings towards its bottom forming position from an initial position, whereby said tab is broken out from the plane of its flap and towards its bottom forming position, the mouth subsequently receiving the tab and its flap to fold the tab back against its flap to thereby form a container bottom having no raw paperboard edges through which wicking would occur, said abutment means comprising a bracket, said bracket having two legs at an angle to each other, the first leg having an aperture extending therethrough for the reception of a fastening element, the second leg including a curved abutment portion and a planar abutment portion, the curved abutment portion adapted to strike said tab out of the plane of the flap from which it is formed, the planar abutment adapted to abut a free end of a bottom flap and thereby assist in positioning a carton on a bottom forming machine.

4,515,581

MACHINE FOR ERECTING, HOLDING AND DISCHARGING A FOLDING CASE

Edwin A. Molitor, Miami Township, Clermont County; Edward Crain, Blue Ash, and Guy W. Lampe, Anderson Township, Hamilton County, all of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Sep. 28, 1983, Ser. No. 536,766
Int. Cl.³ B31B *5/60*
U.S. Cl. 493—183 **5 Claims**



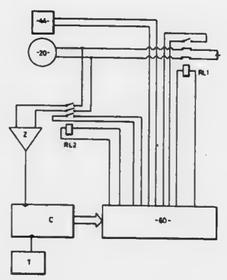
1. A device for erecting a folding carton having lower end flaps and lower side flaps and for holding the folding carton which comprises two parallel side members, a table intermediate the side members which includes an elongated input segment and an elongated output segment, means on the segments for hinging an output edge of the input segment to an input edge of the output segment, an anchor support member supporting an input end of the input segment, the input segment extending cantilever-fashion from the anchor support member, an output support underlying an output end portion of the output segment, the output end portion of the output segment being movable upwardly from the output support, means connected to the anchor support member for moving the anchor support member between a lowered position in which the segments of the table form a V-shape and a raised position in which the segments of the table are substantially horizontally aligned, the lower end flaps of the carton being engageable with the segments when in lowered position to partially fold the lower end flaps, the lower end flaps being further folded when the segments of the table are advanced from the lowered position to the raised position, side flap folding members hingedly mounted by hinge means or respective side members on opposite sides of the table, the hinge means for the side flap folding members being substantially horizontal and parallel to the table segments and at substantially a horizontal plane of the table segments when the table segments are in a raised position, means connected to the side flap folding members for swinging the side flap folding members between a lowered position free of the table segments and a raised position underlying and supporting the lower side flaps in closed position, and means connected to one of the side members for sliding the carton with folded lower flaps off the output end of the output segment to remove the carton from the table segments.

4,515,582

METHOD OF INITIATING AN OPERATION

Peter Cox-Smith, Bletchley; Colin Calvert, Ampthill, and John Wesley, Wavendon, all of England, assignors to Hoccum Developments Limited, Slough, England

Filed Feb. 22, 1983, Ser. No. 468,563
Claims priority, application United Kingdom, Feb. 22, 1982, 8205154.
Int. Cl.³ B04B *13/00*
U.S. Cl. 494—7 **13 Claims**



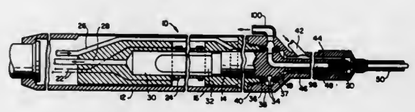
1. A method of initiating an operation in dependence upon the combined mass of an element and matter which is in or on the element, comprising the steps of applying a driving force to the element, passing a flow of matter over or through the element so that there is an interchange between the element and the flow varying the driving force so as to substantially change the speed at which the element is driven, measuring the rate of change of speed, and initiating the operation when the rate of change of speed is above or below a predetermined value.

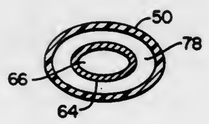
4,515,583

OPERATIVE ELLIPTICAL PROBE FOR ULTRASONIC SURGICAL INSTRUMENT AND METHOD OF ITS USE

Richard A. Sorich, Santa Ana, Calif., assignor to CooperVision, Inc., Menlo Park, Calif.

Filed Oct. 17, 1983, Ser. No. 542,435
Int. Cl.³ A61B *17/20*
U.S. Cl. 604—22 **15 Claims**





1. In an ultrasonic surgical aspirator for breaking apart and removing tissue from an operative site recessed within a body, the aspirator including a transducer for converting high-frequency electrical energy to mechanical vibrations, an elongated vibration transmitting body having one end operably associated with the transducer and its other end adapted to

threadably receive and support an operative probe, and a housing for supporting the transmitting body and the transducer and providing an inlet and outlet for irrigation fluid to be circulated over the operative site, the improvement wherein said operative probe comprises,

a threaded mounting base portion adapted to be threadably mounted onto said transmitting body and an elongated slender body portion means having a longitudinal axis adapted to be inserted into a tissue body, said elongated portion terminating in an open end having free end surface means defining an operative tip for engaging and breaking apart tissue at the recessed operative site,

an axial opening extending through said probe to enable the removal of broken-up tissue from the operative site through the probe,

said free end surface means extending in a plane disposed at an acute angle relative to the longitudinal axis of the slender body portion,

said slender body portion means having a substantially elliptical cross section defining a major axis and a minor axis from said free end surface means throughout at least a major portion of its length, and vibrating along said longitudinal axis, and

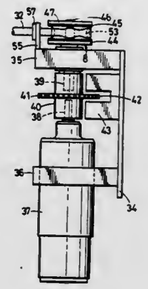
a plane containing the longitudinal axis of the slender body portion means and the major axis of the substantially elliptical cross section thereof intersecting the plane of said free end surface means along the major axis of the oval or elliptical open end at said tip, wherein ultrasonic cutting time is reduced by the removal of said tissue in furrows corresponding in width to the major axis of said free end surface means and wherein wound spreading is reduced along the minor axis of said free end surface means of the slender body portion means.

4,515,584

ARTIFICIAL PANCREAS

Hiroshi Abe, Nishinomiya; Motoaki Shichiri, Osaka; Ryuzo Kawamori, Kobe; Tasuku Ichoh, Suita; Kenji Iwatani, Takatsuki; Mamoru Higuchi, Suita; Kiyotaka Takagi, Kyoto; Norihiko Okamoto, Ikeda, and Toshiyuki Okudaira, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 29, 1983, Ser. No. 508,910
Claims priority, application Japan, Jul. 6, 1982, 57-118114; Jul. 9, 1982, 57-120078
Int. Cl.³ A61J *7/00*
U.S. Cl. 604—66 **11 Claims**



1. An artificial pancreas comprising a blood sugar determination unit for measuring the blood sugar of the living body, an injection unit including a container for a hypoglycemic agent, a container for a hyperglycemic agent, a feed pump for the hypoglycemic agent and a feed pump for the hyperglycemic and is adapted to inject the hypoglycemic agent or the hyperglycemic agent into the living body, and an arithmetic control unit for calculating the dose of the hypoglycemic agent and the hyperglycemic agent based on the blood sugar measurement and controlling the pumps of the injection unit in accordance with the result of said calculation;

the artificial pancreas being characterized in that the blood sugar determination unit has an electrode means to be inserted into the living body for measuring the blood sugar, the feed pump including a plurality of rollers rotatably mounted on a rotatable roller holder along the outer periphery of the holder and an elastic tube having an intermediate portion reeved around some of the rollers under tension, the arithmetic control unit including a microcomputer;

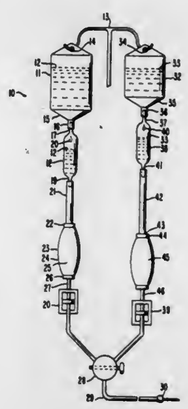
wherein the blood sugar measuring electrode means comprises a bar-like anode insulated except at its front end serving as an electrode reaction portion and at its rear end serving as a lead wire connecting portion, and a cylindrical cathode having said anode fixedly provided therein, the surface of the front end of said anode being covered with a hydrophilic semipermeable membrane permeable to hydrogen peroxide, then with an immobilized glucose oxidase membrane and further with a hydrophilic semipermeable membrane permeable to glucose, oxygen and hydrogen peroxide by lamination.

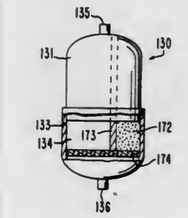
4,515,585

SYSTEM FOR PARENTERAL ADMINISTRATION OF AGENT

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 381,402, May 24, 1982, Pat. No. 4,432,754. This application Oct. 31, 1983, Ser. No. 547,427
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—85 **7 Claims**



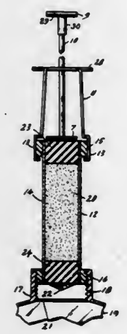


1. A parenteral delivery system for administering a beneficial agent formulation to an animal, the system comprising:

(a) a primary path for the flow of a parenterally acceptable fluid therethrough;

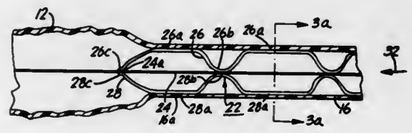
(b) a formulation chamber in the primary path, the formulation chamber comprising:
(1) a wall surrounding a lumen;
(2) an inlet for letting fluid from the primary path into the formulation chamber;
(3) a beneficial agent in the formulation chamber that forms an agent formulation with fluid that enters the formulation chamber;
(4) a film extended from the top to the bottom of the formulation chamber in the formulation chamber; said film separating said agent from the flow path and comprising releasing means that aids in controlling the rate of release of beneficial agent from the formulation chamber;
(5) an outlet for letting an agent formulation leave the formulation chamber;
(c) a secondary path for the flow of a parenterally acceptable fluid therethrough;
(d) a formulation chamber in the secondary path, the formulation chamber comprising:
(1) a wall surrounding a lumen;
(2) an inlet for letting fluid from the secondary path into the formulation chamber;
(3) a beneficial agent in the formulation chamber that forms an agent formulation with fluid that enters the formulation chamber;
(4) a film extended from the top to the bottom of the formulation chamber in the formulation chamber, said film separating said agent from the flow path and comprising releasing means that aids in controlling the rate of release of beneficial agent from the formulation chamber;
(5) an outlet for letting an agent formulation leave the formulation chamber; and,
(e) a common path in communication with the primary path and in communication with the secondary path for receiving agent formulation, which common path when the system is in use is in communication with the animal for administering beneficial agent formulation thereto.

4,515,586
POWDER SYRINGE MIXING SYSTEM
Douglas W. Mendenhall, Libertyville, and Ping Li, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Nov. 30, 1982, Ser. No. 445,399
Int. Cl.³ A61J *1/00*
U.S. Cl. 604—87 **8 Claims**



1. A mixing system for first storing and subsequently transferring a powdered medicament to a solution container comprising:
a hollow chamber member;
a piston plug slidably mounted in sealing engagement with one end of said hollow chamber member;
a stopper member slidably mounted in the opposite end of said hollow chamber member from said piston plug, said stopper member having a piercing tip on one side thereof;
external rotatable engagement means extending from said hollow chamber member substantially adjacent said stopper member;
complementary internal rotatable engagement means in the neck portion of the solution container;
removable means for exerting force on said piston plug in a direction substantially parallel to the axis of said hollow chamber member;
a rupturable diaphragm positioned in the neck portion of the solution container so that rotatable engagement of said external and internal rotatable engagement means will cause said piercing tip to rupture said pierceable diaphragm;
whereby the exertion of force on said piston plug by said removable means for exerting force after the rupturing of said rupturable diaphragm by said piercing tip will effect a transfer of the powdered medicament from said hollow chamber member into the solution container.

4,515,587
IAB HAVING APPARATUS FOR ASSURING PROPER BALLOON INFLATION AND DEFLATION
Peter Schiff, Cookeville, Tenn., assignor to SMEC, Inc., Cookeville, Tenn.
Filed Feb. 14, 1983, Ser. No. 466,063
Int. Cl.³ A61M *29/02*
U.S. Cl. 604—96 **24 Claims**

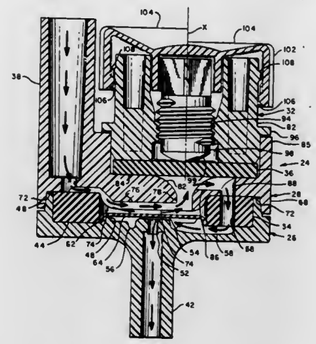


1. An intra-aortic balloon assembly comprising:
an inflatable balloon formed of a non-stretchable plastic material and having a distal end terminating in a tip and having an open proximal end and a longitudinal axis extending between the proximal end and the tip;
an elongated catheter tube having a distal end communicating with and air-tightly joined to the open proximal end of said balloon and having a proximal end for receiving positive and negative pressure pulses for selectively inflating and deflating said balloon;
elongated resilient means located within said balloon assembly for selectively preventing collapse of said balloon;
operating means extending into said catheter tube and coupled to said resilient means; said operating means being movable in a first direction for effecting expansion of said resilient means to prevent collapse of said balloon and movable in a second direction for effecting compression of said resilient means to enable said balloon to substantially fully collapse.

4,515,588
I.V. FLOW REGULATOR
Pasquale J. Amendolia, St. James, N.Y., assignor to Health Care Concepts, Inc., Allamuchy, N.J.
Filed May 16, 1983, Ser. No. 495,058
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—118 **11 Claims**

1. Apparatus for administering liquid to a patient at a selected constant rate of flow comprising:
a. means for being connected to said patient for the administration of said liquid;
b. reservoir means for containing a supply of said liquid supported at an elevation sufficient to obtain gravitational force for the flow of said liquid;

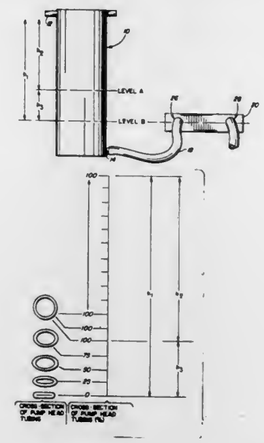
c. tube means for delivering said liquid from said reservoir means to said administration means; and
d. regulator means in said tube means for selecting and maintaining a constant rate of flow of said liqid, comprising, a housing with inlet and outlet means for receiving and discharging said liquid, respectively, diaphragm means having a thickened rim with a central thin membrane within said housing for separating said inlet means from said outlet means and forming inlet and outlet chambers, respectively, said membrane having a surface contiguous with a surface on said thickened rim, means in said housing comprising an annular bulge contacting said surface on said membrane adjacent said thickened rim for stretching said membrane and insuring proper location and tautnesss of said membrane, said inlet means receiving



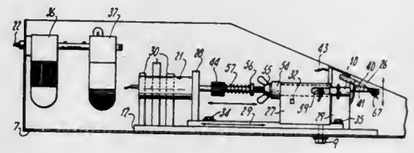
said liquid from said reservoir means, said outlet means delivering said liquid to said administration means, orifice means for directing liquid from said outlet chamber into said outlet means, said diaphragm means supported within said housing to that said membrane effectively controls flow through said orifice means into said outlet means, passageway means bypassing said membrane for permitting flow of said liquid from said inlet chamber to said outlet chamber, and valve means for controlling flow through said passageway means, said valve means establishing the flow rate through the regulator means, said membrane in response to differential pressures exercised by liquid in said inlet and outlet chambers maintaining constant the flow rate of said liquid as selected by said valve means.

4,515,589
PERISTALTIC PUMPING METHOD AND APPARATUS
Jon W. Austin, 1909 E. Camino de Los Ranchos, Phoenix, Ariz. 85022, and Cecil C. Vaughn, 421 N. 18th St., Phoenix, Ariz. 85006
Continuation-in-part of Ser. No. 246,408, Mar. 23, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,656
Int. Cl.³ A61M *5/00*; F04B *43/12*
U.S. Cl. 604—122 **3 Claims**

1. A system for pumping liquid from a source, said system including a reservoir for fluid, a peristaltic pump in communication with said reservoir, said peristaltic pump having a raceway and a rotor rotatable along said raceway, said pump having an inlet and outlet and flexible pumping means connectable between said inlet and outlet and successively compressible by said rotor, said pumping means comprising:
(a) an outer flexible tube defining an interior passageway extending between said inlet and outlet;
(b) connectors at either end of said tube at said inlet and outlet;
(c) an inner flexible tube having an inlet and outlet, said inner flexible tube having a lumen concentrically disposed within said outer tube, the exterior of said inner tube and the interior of said outer tube defining an annular space extending substantially from said inlet to said outlet, said inner tube being elastomeric and being selected to flatten in cross-section under decreasing hydrostatic pressure;
(d) means for venting said annular space to atmosphere whereby said inner tube will begin to collapse when the fluid level in said reservoir approaches a first pre-determined level and whereby said inner tube collapses when the liquid level of said reservoir reaches approximately the elevation of the inlet of said pump whereby flow of liquid is halted and infusion of air is prevented; and
(e) inlet occluding valve means at the inlet to said inner flexible tube having a normally closed position and openable in response to a positive pressure head.



4,515,590
AUTOMATIC INJECTION APPARATUS
Nisim Daniel, Kiriat Tivon, Israel, assignor to Abic Ltd., Israel
Filed Feb. 3, 1983, Ser. No. 463,559
Claims priority, application Israel, Feb. 16, 1982, 65031
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—144 **17 Claims**



1. An automatic injection apparatus, comprising
a housing formed by a plurality of walls,
one of said walls extending obliquely and constituting an injection wall,
a aperture formed in said injection wall,
a syringe disposed within said housing,
an injection needle disposed on one end of said syringe,
a support disposed within said housing upon which said syringe is tightly mounted and adapted to slide therealong, so that said needle protrudes through said aperture,
means for introducing injection fluid into said syringe,
a two-way, fluid-actuated, double action piston coupled to said syringe for moving the latter in both a forward and a backward direction along said support,
means for fluidly connecting said piston to a source of fluid under pressure, said fluid connecting means including
means for introducing pressurized fluid on one side of said

piston, to cause the same and said syringe to move in the forward direction, and

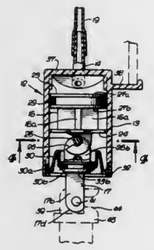
means for introducing pressurized fluid on another side of said piston to cause the same and said syringe to move in the backward direction.

4,515,591

DISPOSABLE SYRINGE CARTRIDGE FOR FLUID DELIVERY APPARATUS

Karl J. Hemmerich, Del Mar; Donald L. Millerd, and Anthony B. Semedo, both of San Diego, all of Calif., assignors to IVAC Corporation, San Diego, Calif.

Filed Sep. 28, 1982, Ser. No. 425,534
Int. Cl.³ A61M *5/20*
U.S. Cl. 604—152 **27 Claims**



1. For use in a syringe pump, a disposable plastic syringe cartridge, comprising:

a hollow cylinder having an open end and a closed end, said cylinder having a pair of inlet and outlet nipples projecting from said closed end of said cylinder, each of said nipples adapted for connection to an I.V. tube;

a piston head slidably received within said cylinder;

a sealing ring disposed around said piston head for forming a circumferential sealing relationship with said cylinder;

a piston rod for reciprocating said piston head along the longitudinal axis of said cylinder;

means for pivotally connecting one end of said piston rod to said piston head; and

means for engaging the other end of said piston rod to the mounting means of a piston drive system.

4,515,592

CATHETER SHIELD

Paul L. Frankhouser, Reading, Pa., assignor to Arrow International, Inc., Reading, Pa.

Continuation of Ser. No. 149,478, May 13, 1980, Pat. No. 4,327,723. This application May 3, 1982, Ser. No. 374,480
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—163 **8 Claims**



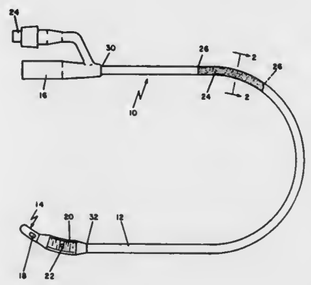
2. A method of catheterization which provides protection for a segment of the catheter against contamination, said method comprising providing a protective shield assembly for the catheter, said shield assembly having front and rear hub members, and guide tube means having a lumen, the guide tube means releasably interconnecting said front and rear hub members so as to provide a disconnectible assembly including the rear hub member, the front hub member and the guide tube means, an elongated transparent plastic sheath covering said guide tube means and sealingly interconnecting said front and rear hub members, said transparent sheath being substantially longer than said guide tube means, and being collapsible when the guide tube means interconnects the front and rear hub members, said front and rear hub members having openings coaxially aligned with said guide tube means when the guide tube means interconnects the lumen of the hub members, the guide tube means and said openings being adapted to receive and pass a catheter through the rear hub member, through the guide tube means and out through the front hub member when the guide tube means interconnects the hub members, the steps which comprise first passing the catheter through the rear hub member, the lumen of the guide tube means, the front hub member and then disconnecting the front and rear hub members and extending the sheath over a substantial length of the catheter by relative displacement of the front and rear hub members along the catheter thereby providing isolation of a substantial length of catheter from contaminants.

4,515,593

MEDICAL TUBING HAVING EXTERIOR HYDROPHILIC COATING FOR MICROBIOCIDE ABSORPTION THEREIN AND METHOD FOR USING SAME

William J. Norton, Berkeley Heights, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Dec. 31, 1981, Ser. No. 336,291
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—265 **8 Claims**



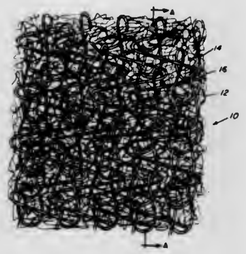
1. A catheter for indwelling introduction into a body opening and comprising an elongated relatively flexible body portion formed of a hydrophobic polymer and normally having a hydrophobic exterior surface and including a hydrophilic coating on a predetermined longitudinally extending portion of the exterior surface only of the body portion intermediate the ends thereof, a portion of said hydrophilic coating defining an aqueous-base microbiocide absorption zone which absorption zone will in use straddle an opening through which the catheter enters the body with only a minor portion of the hydrophilic coating indwelling for preventing entry of pathogenic organisms at the in use site of the body opening through which the catheter passes, and said hydrophilic coating within the body only being coextensive with a minor portion of the catheter that is subjected in use to physiological fluid-dissolved compounds wherein in use indwelling incrustation of the catheter is generally obviated.

4,515,594

SURGICAL SPONGE

John E. Pendergrass, Seneca, and David T. Melton, Walhalla, both of S.C., assignors to The Kendall Company, Boston, Mass.

Filed Jan. 10, 1983, Ser. No. 457,092
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—384 **11 Claims**



1. A surgical dressing or surgical sponge material having enhanced absorbance and capillarity characteristics, comprising:

a nonwoven fabric component; and a

crochet knitted array component;

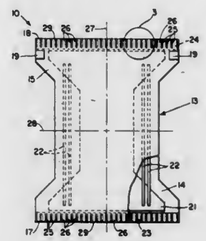
said crochet knitted array component being interlaced in intimate physical contact by means of stitching through said centrally-disposed nonwoven fabric component.

4,515,595

DISPOSABLE DIAPERS WITH ELASTICALLY CONTRACTIBLE WAISTBANDS

David J. Kievit, North College Hill, and Thomas F. Osterhage, Green Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 26, 1982, Ser. No. 444,543
Int. Cl.³ A61F *13/20*
U.S. Cl. 604—385 A **5 Claims**



1. A disposable diaper having at least one waistband, said diaper comprising a topsheet, a backsheet, and an absorbent element interposed between said topsheet and said backsheet wherein at least one waistband comprises an elastic element interposed between said topsheet and said backsheet and contractibly affixed to said topsheet and to said backsheet by essentially regular transverse regions of securement defining therebetween transverse regions of nonsecurement extending from the outer margin of said waistband across essentially the entire width of said elastic element.

4,515,596

PROCESS FOR AFTERTREATING DYED FIBROUS MATERIAL MADE OF OR CONTAINING CELLULOSE

Hans-Ulrich Berendt, Allschwil, and Mariellse Pacher, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,071

Claims priority, application Switzerland, Jul. 27, 1982, 4558/82; May 9, 1983, 2522/83

Int. Cl.[3] D06L *3/02;* D06P *3/40, 5/02*

U.S. Cl. 8—107 19 Claims

1. A process for treating unbleached cellulose fiber material comprising the steps of

(i) dyeing said material with a vat, direct or reactive dye which is stable to the liquor used in step (ii) and subsequently

(ii) bleaching and washing the dyed material in a liquor containing a bleaching agent and a stabilizer selected from the group consisting of

(a) an adduct of an aminoalkanediphosphonic acid and an epihalogenohydrin,

(b) a phosphonate oligomer, and

(c) a reaction product of phosphorous acid and a carboxylic acid anhydride or halide,

or a mixture of said stabilizers.

4,515,597

MAGNESIUM COMPLEXES OF OLIGOMERIC PHOSPHONIC ACID ESTERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS STABILIZERS IN ALKALINE, PEROXIDE-CONTAINING BLEACH LIQUORS

Christian Guth, Basel, and Paul Schäfer, Riehen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Dec. 1, 1983, Ser. No. 557,012

Claims priority, application Switzerland, Dec. 10, 1982, 7216/82; Jan. 25, 1983, 400/83

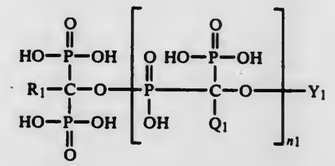
Int. Cl.[3] C07F *9/40;* C11D *3/39;* D06L *3/02*

U.S. Cl. 8—107 13 Claims

1. An alkaline bleach liquor containing

(a) a peroxide bleach

(b) a magnesium complex which contains, as ligands, oligomeric phosphonic acid esters of the formula



in which Y_1 is hydrogen or $-COT_1$, R_1, Q_1 and T_1 are each alkyl having 1 to 4 carbon atoms and n_1 is 1 to 16, and

(c) a polyhydroxy compound containing at least 2 hydroxyl groups.

4,515,598

PROCESS FOR DYEING AND PRINTING FIBER MATERIALS CONTAINING HYDROXY AND/OR CARBONAMIDE GROUPS WITH REACTIVE DYE CONTAINING BOTH VINYL SULPHONYL AND FLUORO-TRIAZINYL GROUPS

Fritz Meininger, Frankfurt am Main; Joachim W. Otten, deceased, late of Offenbach am Main; by Ursula Otten, heir, Heidelberg, and by Anna G. Rudolph née Otten, heir, Dillenburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 465,509, Feb. 10, 1983, abandoned, which is a continuation of Ser. No. 340,846, Jan. 20, 1982, abandoned, which is a continuation of Ser. No. 267,780, May 22, 1981, abandoned. This application Nov. 10, 1983, Ser. No. 550,727

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019960

Int. Cl.[3] C09B *62/04;* D06P *1/38, 3/66*

U.S. Cl. 8—549 3 Claims

1. A process for dyeing or printing a fibre material containing hydroxy groups, carbonamide groups or both hydroxy and carbonamide groups, which comprises

applying to the fibre material a water-soluble dyestuff containing at least one sulfonic acid group and containing one or more radicals selected from the group consisting of radicals of the formulae

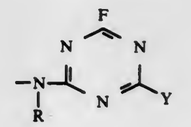
$SO_2—CH=CH_2$

$SO_2—CH_2—CH_2—Hal$

and

$SO_2—CH_2—CH_2—A$

wherein Hal is halogen and A is an acyloxy radical of a monobasic or polybasic acid, and containing a 6-fluoro-1,3,5-triazin-2-ylamino radical of the formula



wherein

Y is a group of the formula

$O—R^1$

$S—R^1$

or



in which

R^1 is alkyl of from 1 to 4 carbon atoms unsubstituted or substituted by one or two substituents selected from the group consisting of acetylamino; hydroxy; sulfato; B-sulfatoethylsulfonyl; B-thiosulfatoethylsulfonyl; lower alkoxy; sulfo; carboxy; phenyl; naphthyl; phenyl which is substituted by substituents selected from the group consisting of sulfo, carboxy, β-sulfatoethylsulfonyl, β-thiosulfatoethylsulfonyl, methyl, ethyl, methoxy, ethoxy, chlorine, sulfamoyl and carbamoyl; and naphthyl which is substituted by substituents selected from the group consisting of sulfo, carboxy, β-sulfatoethylsulfonyl, β-thiosulfatoethylsulfonyl, sulfamoyl and car-

bamoyl; or R^1 is phenyl or naphthyl or phenyl substituted by substituents selected from the group consisting of carboxy, sulfo, lower alkyl, lower alkoxy, hydroxy, chlorine and β-sulfatoethylsulfonyl, or is naphthyl substituted by substituents selected from the group consisting of carboxy, sulfo, lower alkyl, lower alkoxy, hydroxy, chlorine and β-sulfatoethylsulfonyl;

R^2 is hydrogen or lower alkyl or lower alkenyl or lower alkyl substituted by one or two substituents selected from the group consisting of acetylamino; hydroxy; sulfato; β-sulfatoethylsulfonyl; β-thiosulfatoethylsulfonyl; lower alkoxy; sulfo; carboxy; phenyl; naphthyl; phenyl which is substituted by substituents selected from the group consisting of sulfo, carboxy, β-sulfatoethylsulfonyl, β-thiosulfatoethylsulfonyl, methyl, ethyl, methoxy, ethoxy, chlorine, sulfamoyl and carbamoyl; and naphthyl substituted by substituents selected from the group consisting of sulfo, carboxy, β-sulfatoethylsulfonyl, β-thiosulfaoethylsulfonyl, sulfamoyl and carbamoyl; or R^2 is cyclohexyl; and

R^3 is hydrogen or lower alkyl or lower alkenyl or lower alkyl substituted by one or two substituents selected from the group consisting of acetylamino; hydroxy; sulfato; β-sulfatoethylsulfonyl; β-thiosulfatoethylsulfonyl; lower alkoxy; sulfo; carboxy; phenyl; naphthyl; phenyl which is substituted by substituents selected from the group consisting of sulfo, carboxy, β-sulfatoethylsulfonyl, β-thiosulfatoethylsulfonyl, methyl, ethyl, methoxy, ethoxy, chlorine, sulfamoyl and carbamoyl and naphythyl substituted by substituents selected from the group consisting of sulfo, carboxy, β-sulfatoethylsulfonyl, β-thiosulfatoethylsulfonyl, sulfamoyl and carbamoyl; or R^3 is phenyl or naphthyl or phenyl substituted by substituents selected from the group consisting of carboxy, sulfo, lower alkyl, lower alkoxy, hydroxy and chlorine, or is naphthyl substituted by substituents selected from the group consisting of carboxy, sulfo, lower alkyl, lower alkoxy, hydroxy and chlorine; or R^3 is lower alkoxy, cyano or the group —C-S—NH_2 or is amino, lower alkylamino, di-(lower alkyl)-amino, N-methyl-N-phenylamino or phenylamino or phenylamino substituted in the phenyl moiety by substituents selected from the group consisting of sulfo, carboxy, chlorine, lower alkyl and lower alkoxy; or

R^2 and R^3, together with the nitrogen atom, form a heterocyclic ring containing lower alkyl or containing lower alkyl and one or two hetero atoms;

and then fixing said dyestuff on the fibre material at room temperature or at a temperature up to 230° C. in the absence or in the presence of an agent having an alkaline reaction.

4,515,599

PROCESS FOR DYEING PAPER

Adolf Käser, Bottmingen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

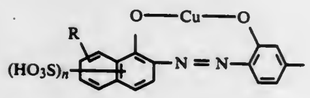
Continuation of Ser. No. 338,725, Jan. 11, 1982, abandoned, which is a continuation of Ser. No. 182,747, Aug. 29, 1980, abandoned. This application Sep. 9, 1983, Ser. No. 530,916

Claims priority, application Switzerland, Jun. 3, 1980, 4287/80

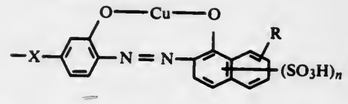
Int. Cl.³ D06P *1/10, 3/60;* D21H *1/46*

U.S. Cl. 8—685 **3 Claims**

1. A process for dyeing paper which comprises applying to the paper a dye of the formula



-continued



wherein R is hydrogen, hydroxyl or amino, X is azoxy or azo, and n is 1 or 2, and the bond of the complexing oxygen atom in the α-position and the bond of the azo group in the β-position at each of the naphthalene nuclei are interchangeable.

4,515,600

PROCESS FOR THE REMOVAL OF THE SLAG PORTION FROM MOLTEN MIXTURES OF SLAG AND SILICON USING A SEMIPERMEABLE SEPARATING WALL

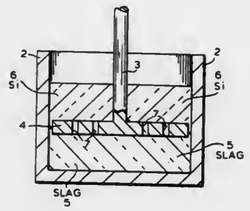
Josef Dietl, Neuötting, and Jörg Kotilge, Burghausen, both of Fed. Rep. of Germany, assignors to Hellotronic Forschungs- und Entwicklungsgesellschaft für Solarzellen-Grundstoffe m.b.H., Burghausen, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,980

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208877

Int. Cl.³ C01B *33/02*

U.S. Cl. 23—293 R **5 Claims**



1. A process for the removal of the slag portion from a molten mixture of silicon and slag, comprising the steps of:

subjecting a molten mixture of silicon and slag to a hydrostatic pressure difference with respect to a space separated from it by at least one semipermeable separating wall, provided with apertures of from about 0.1 to 10 mm inside width, so as to make said separating wall permeable to both said slag and to said silicon when present alone, but permeable only to said slag when a molten mixture of said slag and silicon is present, and permitting the slag to be drawn through said apertures of said separating wall, and to collect in said space, with said silicon being held back.

4,515,601

CARBONACEOUS BRIQUETTE

John E. Charters, 61 W. Delta Green, Port Hueneme, Calif. 93041

Filed May 3, 1982, Ser. No. 373,878

Int. Cl.³ C10L *5/12, 5/14*

U.S. Cl. 44—19 **11 Claims**

1. A method for forming carbonaceous briquettes which comprises,

(a) obtaining carbonaceous material such as from coal, lignite, and or petroleum coke as pulverized fine particle material,

(b) dry blending the pulverized carbonaceous material with a finely divided inorganic sulfur scavenger material selected from alkali metals, alkaline earth carbonates, bicarbonates, metal oxides, hydroxides and salts,

(c) mixing an asphaltene binder material of deep solvent deasphalting below its softening point and providing a ring and ball softening point in the range of 200° F. to 400° F. with said dry mixture of carbonaceous material and said inorganic sulfur scavenger material, and

(e) compressing the mixture thus formed in the absence of external heating to form briquettes of said mixture.

3. The method of claim 1 wherein from 5 to 20 wt.% of the asphaltene binder material is employed.

6. The method of claim 1 wherein the product briquette comprises from 50 to 80 wt.% of coke, from 5 to 20 wt.% of asphaltene binder material and from 10 to 30 wt.% of said inorganic scavenger material.

4,515,602

COAL COMPOSITIONS

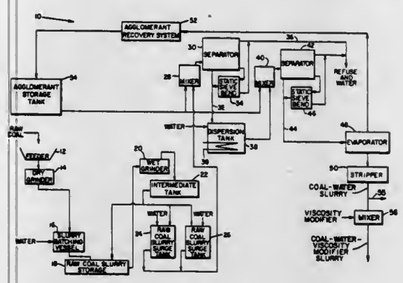
Douglas V. Keller, Jr., Lafayette, and Frederick J. Simmons, Syracuse, both of N.Y., assignors to Otisca Limited, Ltd., Syracuse, N.Y.

PCT No. PCT/US82/00790, § 371 Date Jun. 10, 1982, § 102(e) Date Jun. 10, 1982, PCT Pub. No. WO83/04416, PCT Pub. Date Dec. 22, 1983

PCT Filed Jun. 10, 1982, Ser. No. 406,730

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **10 Claims**



1. A composition of matter useful as a fuel and for other purposes, said composition consisting essentially of particulate coal and water, said composition having a solids content of at least 50 weight percent based on the total weight of the composition, a particle size distribution of at least 95 percent ≦30 μm×0, and an ash content of not more than 1.5 weight percent based on the dry weight of the coal in the composition.

4,515,603

ANTI-STATIC COMPOSITIONS

J. Irvine Knepper, Manchester, and Dennis C. Sallee, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 968,327, Dec. 11, 1978, Pat. No. 4,356,002. This application Sep. 14, 1982, Ser. No. 418,111

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.³ C10L *1/14*

U.S. Cl. 44—62 **6 Claims**

1. An antistatic composition comprising an oxyalkylated phenol-aldehyde resin and an antistatic agent other than a surfactant.

4,515,604

PROCESS OF PRODUCING A SYNTHESIS GAS WHICH HAS A LOW INERT GAS CONTENT

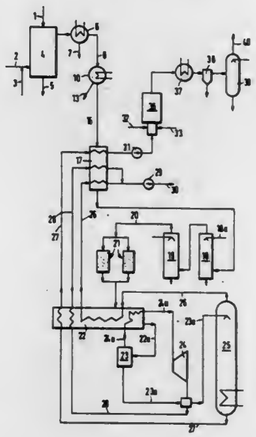
Karl-Heinz Eisenlohr, Dreieich; Hans Gaensslen; Manfred Kriebel, both of Frankfurt, and Heiner Tanz, Dreieich, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,472

Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217366

Int. Cl.³ C10J *3/00;* C10K *1/00*

U.S. Cl. 48—197 R **1 Claim**



1. A process for producing synthesis gas having a low inert gas content and useful in the synthesis of alcohols, especially methanol and the synthesis of hydrocarbons which comprises:

(A) gasifying coal or a heavy hydrocarbon under pressure with a gasifying agent to obtain a raw gas;

(B) cooling the resultant raw gas to a temperature of about 20° to 50° C. in first indirect heat exchange;

(C) removing H_2S and CO_2 from the so-cooled raw gas by scrubbing the same with methanol at a temperature below −25° C. in a multistage scrubbing process to obtain a cold gas mixture containing CO, H_2 and methane;

(D) removing methanol from said cold gas mixture by passing said mixture through a molecular sieve containing bed;

(E) cooling the gas mixture from said molecular sieve containing bed in a second indirect heat exchange to a temperature in the range of −150° to −195° C. and liquifying a portion thereof, separating the liquified portion containing methane and withdrawing a first partial stream of synthesis gas composed of CO and H_2, pressure relieving said first partial stream to effect a further cooling thereof;

(F) feeding said liquified portion to a distillation zone having temperatures in the upper portion of −160° to −195° C. and temperatures in the bottom portion of −120° to −170° C., said distillation zone being maintained at a pressure of 1 to 10 bar, withdrawing as an overhead product from said distillation zone a second partial stream of synthesis gas composed mainly of CO and H_2 with a low methane content, withdrawing a liquid methane-rich fraction from the bottom portion of said distillation zone;

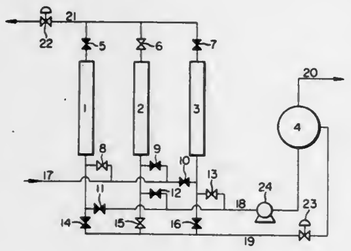
(G) in said second and afterwards in said first indirect heat exchange heating said pressure relieved first partial stream of synthesis gas and said second partial stream of synthesis gas and said liquid methane-rich fraction and vaporizing said fraction;

(H) compressing said vaporized methane-rich fraction and reacting the same with steam and oxygen to produce a product rich in carbon monoxide and hydrogen, said product gas containing CO_2; and

(I) combining at least a portion of said product gas

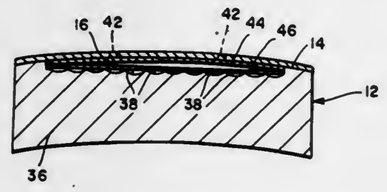
(i) either with said first partial stream of synthesis gas;
(ii) or with said raw gas from said first indirect heat exchange.

4,515,605
SEPARATION PROCESS FOR A GAS MIXTURE
Takehisa Inoue, Tokyo, and Kishio Miwa, Kamakura, both of Japan, assignors to Toray Industries, Incorporated, Japan
Filed Nov. 28, 1980, Ser. No. 211,250
Claims priority, application Japan, Dec. 7, 1979, 54-158126
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **7 Claims**



1. In a separation process for a gas mixture using at least three adsorption columns each packed with an adsorbent having capacity to adsorb a selectively adsorbable component contained in the gas mixture and involving successively repeated following steps as fundamental steps, an adsorption step for the gas mixture carried out by increasing pressure, a purge step using a purge gas enriched with the selectively adsorbable component and a desorption step carried out by reducing pressure, the improvement characterized in that in the adsorption step the starting gas mixture is introduced at a pressure lower than that of the purge gas and, after completion of the adsorption step, at least a portion of the effluent gas from an adsorption colnmn under execution of the purge step is introduced into the adsorption column which has just completed the adsorption step and is about to enter upon the purge step, thereby pressurizing the latter adsorption column.

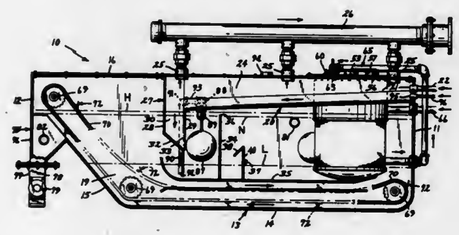
4,515,606
GAS SEPARATING AND VENTING FILTER
Dirk M. de Winter, Solana Beach, Calif., assignor to Brunswick Corporation, Skokie, Ill.
Filed Mar. 19, 1981, Ser. No. 245,444
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—159 **9 Claims**



1. A gas separating and venting filter that is capable of separating gases and liquids and of venting the gases from the filter, comprising:
a housing having walls defining an interior chamber, with inlet means in the housing for the flow of liquid into said chamber, and outlet means in the housing downstream of said inlet means for the flow of liquid out of said chamber;
hydrophobic filter means adjacent one wall of said chamber between said inlet means and said outlet means for passing gas but not liquid therethrough, with vent means for venting gas which has passed through said hydrophobic filter means;
a flexible hydrophobic filter membrane along a second wall of said chamber for passing liquid only therethrough; and
at least one passageway in said second wall extending generally parallel to and along said filter membrane and leading toward said outlet means, said at least one passageway having an open side along its length facing said membrane, and an opposite side defining a smooth surface engageable by the membrane under pressure, and the passageway having a depth within the elastic limits of said flexible membrane, whereby the flexible membrane balloons into the passageway in response to a buildup of pressure in said chamber to restrict the flow of liquid through the passageway, until the membrane ultimately engages the smooth surface of said opposite side of the passageway under extreme pressure to completely shut off the flow of liquid to said outlet means.

9. A gas separating and venting filter that is capable of separating gases and liquids and of venting the gases from the filter, comprising:
a housing having walls defining an interior chamber, with inlet means in the housing for the flow of liquid into said chamber, and outlet means in the housing downstream of said inlet means for the flow of liquid out of said chamber;
hydrophobic filter means adjacent one wall of said chamber between said inlet means and said outlet means for passing gas but not liquid therethrough, with vent means for venting gas which has passed through said hydrophobic filter means;
a flexible hydrophilic filter membrane along a second wall of said chamber for passing liquid only therethrough; and
a plurality of open-sided passageways in said second wall extending generally parallel to each other and parallel to and facing said filter membrane and leading toward said outlet means, each of said passageways comprising a longitudinal cylindrical section of less than 180° presenting a smooth concave surface facing said membrane, the composite depth of said passageways being within the elastic limits of said flexible membrane, whereby the flexible membrane balloons into the passageways in response to a build-up of pressure in said chamber to restrict the flow of liquid through the passageways, until the membrane ultimately engages the concave sides of the passageways under extreme pressure to completely shut off the flow of liquid to said outlet means.

4,515,607
GAS, FLUID AND MINERAL SOLIDS SEPARATION AND RECLAMATION SYSTEM
Girma Wolde-Michael, Little Canada, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Apr. 13, 1984, Ser. No. 600,348
Int. Cl.³ B01D *19/00;* **E21B** *21/06*
U.S. Cl. 55—166 **10 Claims**



1. A hermetic system for the separation and reclamation of a

gas, an aqueous fluid, and solids from a slurry mixture, said system comprising:
an enclosure for a mixture of gas, aqueous fluid and solids, said enclosure being constructed and arranged to create a substantially hermetic interior therein;
inlet means in said enclosure for releasing the mixture into said enclosure interior along a defined passageway, with gas released by the mixture contained therein and solids settlement being augmented therein;
means, in said enclosure, for venting gas released from the mixture to a first location remote from said enclosure;
means, in said enclosure interior, for separating solids from the mixture, said separating means including baffle means for augmenting settling of solids downwardly and a filter assembly constructed and arranged to separate and reclaim an aqueous fluid from the mixture;
outlet means, connected to said filter assembly, for releasing the reclaimed aqueous fluid from said enclosure apart from the gas and for transferring the fluid to a second remote location;
solids dragout means positioned along a lowermost portion of said enclosure for transferring settled solids from said enclosure, said dragout means including means for releasing the solids from said enclosure to a third remote location;
means for introducing a supply of make-up water into said enclosure through said filter assembly;
means in said enclosure for controlling the supply of make-up water, said means including means external to said filter assembly for determining the surface level of the mixture contained in said enclosure;
means, in said enclosure, for skimming the surface level of the mixture contained in said enclosure, said means being external to said filter assembly;
means, connected to said skimming means, for transferring the skimmed mixture portion to said solids releasing means; and
mixture outlet means, in said enclosure for releasing a portion of the mixture from said enclosure interior when a pre-determined level of mixture contained in said enclosure is reached, said mixture outlet means including means for determining when said pre-determined level has been reached.

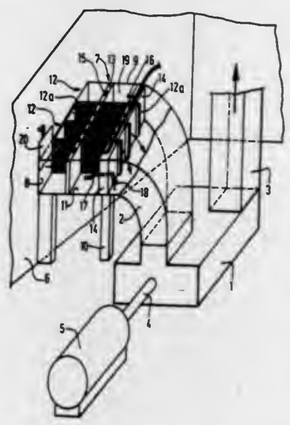
4,515,608
MULTI-CHAMBER GAS ANCHOR
Joe D. Clegg, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Mar. 4, 1982, Ser. No. 354,875
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—193 **4 Claims**

1. A gas anchor for use with a reciprocating well pump for producing fluid from a subterranean reservoir, comprising;
an internal liquid discharge tube in fluid communication with the suction chamber of the pump;
a substantially concentric sleeve surrounding the discharge tube;
a plurality of vertically elongated chambers formed between the discharge tube and the sleeve by means of substantially flat, radially-extensive baffles that extend from the discharge tube to close enough to the sleeve to impede the flow of fluids between the baffles and the sleeve, with each elongated chamber having a volume at least equalling that the suction chamber of the pump; and,
in each elongated chamber, an outlet opening for liquid through the discharge tube wall near the bottom of the chamber and at least one combination fluid inlet and gas outlet opening through the sleeve wall at a location near the top of the chamber, each outlet opening for liquid being relatively small but large enough to resist plugging by solids entrained in the fluid produced from the reservoir, and the combination fluid inlet and gas outlet openings being large enough so that within each elongated



chamber the fluid inflow resistance is significantly less than the outflow resistance.

4,515,609
FLUID CLEANER DEVICE
Leon Cuvelier, Hamme-Mille, Belgium, assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Sep. 14, 1983, Ser. No. 532,018
Int. Cl.³ B01D *46/04, 46/44*
U.S. Cl. 55—270 **7 Claims**



1. A fluid cleaner device, comprising:
a housing including partitions therein defining a plurality of separate cleaning cells arranged in parallel between an inlet and an outlet;
a main filter disposed in each cell of said housing adjacent the inlet for filtration of dust and contaminants from the fluid to be cleaned; and,
a safety filter disposed in each cell of said housing in spaced relationship with the respective main filter and adjacent the outlet, said safety filter being constructed so as to have the characteristics of relatively high permeability and high face flow velocity with a low charge of dust and contaminants thereon so that cleaned fluid from said main filter is allowed to pass through without significant pressure losses during routine operations, but so that, in the event of a fissure in said main filter, said safety filter rapidly

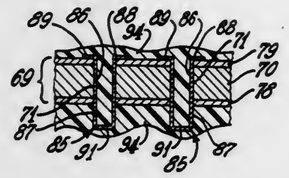
clogs and thus isolates the respective cleaning cell from the other cleaning cells in said housing.

4,515,610

METHOD OF MAKING AND USING GLASS FIBER FORMING FEEDERS

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 398,536, Jul. 15, 1982, Pat. No. 4,472,248. This application Dec. 19, 1983, Ser. No. 562,947
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.³ C03B *37/095, 37/08*
U.S. Cl. 65—2 **5 Claims**



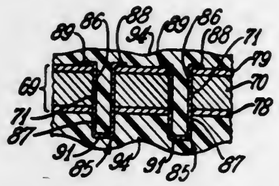
1. In a method of making glass filaments wherein a plurality of streams of molten glass issuing from an orificed discharge wall of a feeder are attenuauted into filaments, the improvements comprising said feeder being fabricated by:
positioning elements in apertures in a member;
providing a layer of elastomeric material about said member and elements positioned therein, said layer being capable of transmitting pressure isostatically and being effective to prevent the migration of working fluid of an after-defined pressing unit between the member and elements;
locating said member and elements having said layer thereabout within a pressing unit having a body of working therein;
applying isostatic pressure to the layer containing the elements and member to mechanically seal the elements to the member;
joining the pressed member and elements to sections to form said feeder;
installing said feeder at a fiber forming position to receive molten glass; and then
energizing the feeder to fuse the elements to the member to prevent an unwanted passage of molten glass between said elements and said member, said elements having an orifice to permit the passage of molten glass therethrough to establish said streams.

4,515,611

METHOD OF MAKING GLASS FIBERS

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 486,777, Apr. 20, 1983, Pat. No. 4,441,904. This application Nov. 19, 1983, Ser. No. 562,948
The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.
Int. Cl.³ C03B *37/08, 37/095*
U.S. Cl. 65—2 **4 Claims**



1. In a method of making glass filaments wherein a plurality of streams of molten glass issuing from an orificed discharge wall of a feeder are attenuauted into filaments, the improvements comprising said feeder being fabricated by:
positioning elements in apertures in a member;
providing a layer of elastomeric material about said member and elements positioned therein, said layer being capable of transmitting pressure isostatically and being effective to prevent the migration of working fluid of an after-defined pressing unit between the member and elements;
locating said member and elements having said layer thereabout within a pressing unit having a body of working therein;
applying isostatic pressure to the layer containing the elements and member to mechanically seal the elements to the member;
joining the pressed member and elements to sections to form said feeder;
installing said feeder at a fiber forming position to receive molten glass; and then
energizing the feeder to fuse the elements to the member to prevent an unwanted passage of molten glass between said elements and said member, said elements having an orifice to permit the passage of molten glass therethrough to establish said streams.

4,515,612

METHOD FOR OPTICAL FIBER FABRICATION INCLUDING DEUTERIUM/HYDROGEN EXCHANGE

Charles A. Burrus, Jr., Fair Haven, and Julian Stone, Rumson, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 369,605, Apr. 19, 1982, abandoned, which is a continuation of Ser. No. 194,882, Oct. 7, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 469,830
Int. Cl.³ C03B *20/00*
U.S. Cl. 65—3.12 **7 Claims**

1. Method for fabrication of an optical fiber preform comprising silica-based glassy material, the method comprising
(a) chemically reacting at least some of the constituents of a moving stream of gas mixture comprising at least one glass-forming precursor compound and an oxidizing medium, the reaction resulting in the formation of a glassy silica-based reaction product,
(b) forming a body by depositing at least a part of the reaction product on a substrate, at least part of the material of the body containing hydrogen bonded to oxygen, and
(c) consolidating at least part of the deposited product by means of a hot zone produced by a heat source external to the body,
characterized in that the method further comprises
(d) replacing at least part of the hydrogen bonded to oxygen with deuterium in a deuterium/hydrogen exchange step carried out subsequent to step (b).

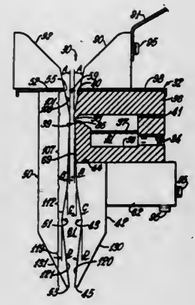
7. Method for fabrication of an optical fiber comprising glassy silica-based material, the method comprising
(a) forming a tubular body by depositing silica-based glassy material in substantially porous, unconsolidated form on the inside surface of a tube comprising silica, at least part of the material of the tubular body containing hydrogen bonded to oxygen,
(b) consolidating the deposited material by means of a hot zone produced by a heat source external to the tubular body,
(c) drawing the optical fiber from a preform formed from the consolidated tubular body,
characterized in that the method further comprises
(d) exposing, prior to carrying out step (a), at least a part of the tube to an atmosphere having a partial pressure of at least about 10 Torr of deuterium, and maintaining at least substantially the part of the tube at a temperature above about 300 degrees C. for a period sufficient to result in substantial deuterium/hydrogen exchange in at least some of the material of the tube.

4,515,613

METHOD AND APPARATUS FOR PRODUCING A CONTINUOUS GLASS FILAMENT MAT

David V. Stotler, and Fred S. Coffey, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 4, 1983, Ser. No. 520,096
Int. Cl.³ C03B *37/06*
U.S. Cl. 65—4.4 **7 Claims**



1. Apparatus for producing a mat of continuous glass filaments comprising:
feeder means for supplying a plurality of streams of molten glass;
pull roll means for drawing streams into said filaments, said pull roll having an axis of rotation;
a collection surface for collecting said filaments as said mat;
distribution means having (a) an inlet adapted to receive said plurality of filaments arranged as a substantially planar band, said inlet being oriented substantially parallel to the axis of rotation of the pull roll, (b) a blower section adapted to supply a substantially planar high velocity gaseous stream to contact said filaments, (c) a first control surface extending from said blower section and, (d) a second control surface opposite said first control surface, said first and second control surfaces and said blower section forming (a) a throat section to receive said planar gaseous stream from said blower section; (b) a pre-outlet divergent section extending from said throat section; and (c) a convergent outlet section extending from said diverging section, said convergent outlet section having divergent lateral edges, said divergent pre-outlet section, convergent outlet section and lateral edges being oriented to (i) reduce the velocity of the gaseous stream and advancing filaments and (ii) impart lateral movement to some of the gaseous streams and filaments to advance said filaments as a diverging planar array having a width at said collection surface at least about 4 times the width of the band of filaments entering said inlet; and
means for moving said distribution means to deposit the array filaments discharged from distribution means across the width of the mat being formed.

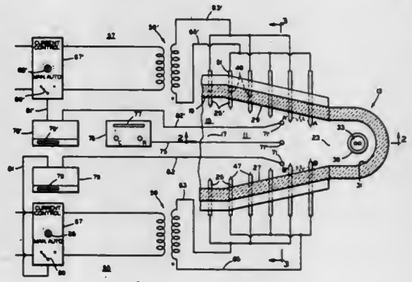
7. The method of forming a mat of continuous glass filaments comprising:
supplying a substantially planar band of substantially parallel bundles of filaments;
contacting said band of filaments with a substantially planar gaseous stream;
providing a first control surface and a second control surface, said control surface having a shovel shaped recess forming a pre-outlet divergent section and a convergent outlet section to reduce the velocity of the gaseous stream and to impart lateral movement to some of said bundles to advance said filaments as a diverging planar array having a width at an after-defined collection surface at least 6 times the width of the band at the point of initial contact with said gaseous stream;
moving the diverging planar array back and forth across the width of the mat; and
collecting said filaments as said mat.

4,515,614

ELECTRICALLY HEATED FOREHEARTH AND METHOD OF CONTROLLING MOLTEN GLASS TEMPERATURE THEREIN

Marvin L. Barkhau, Elmore; Philip D. Perry; Donald H. Poundstone, both of Toledo, all of Ohio, and James E. Sherman, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 20, 1984, Ser. No. 572,287
Int. Cl.³ C03B *5/02*
U.S. Cl. 65—29 **19 Claims**



15. The method of equalizing the temperature across the cross section of a molten glass flow path through a forehearth comprising immersing electrodes in the molten glass along the opposed sides of its flow path, passing electrical current for Joule effect heating through the glass between electrodes on common sides of the molten glass flow path, and separately controlling the magnitude of the electrical current passed by electrodes on each side of the molten glass flow path to separately control the Joule effect heating of the glass on each side of the flow path.

4,515,615

MANUFACTURING AND USING NITROGEN FERTILIZER SOLUTIONS ON A FARM

John A. Eastin, P.O. Box 389, Lincoln, Nebr. 69140

Division of Ser. No. 379,551, May 18, 1983, Pat. No. 4,427,434, which is a continuation-in-part of Ser. No. 100,825, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 824,289, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 728,788, Oct. 1, 1976, abandoned, which is a division of Ser. No. 581,050, May 27, 1975, abandoned. This application Jun. 23, 1983, Ser. No. 507,718
Int. Cl.³ C05C *3/00, 5/00*
U.S. Cl. 71—54 **24 Claims**

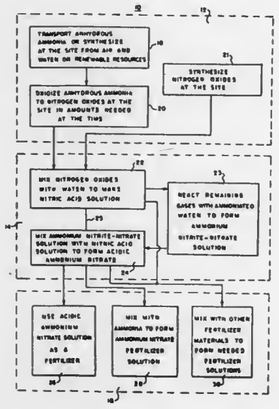
1. Apparatus for nitrogeneous fertilizing comprising:
at least one well;
conduit means for guiding water from said well to areas that are to be irrigated and fertilized;
pump means for pumping water from said well into said conduit means;
a source of ammonia;
first reactor means adapted to communicate with said source of ammonia for continuously burning ammonia in air at a rate of less than 146 pounds of nitrogen per hour at a concentration of between 10% and 25% by volume of ammonia to air at a temperature of between 1,000 and 2,000 degrees Fahrenheit in a continuous process at a pressure between atmospheric pressure and a vacuum pressure of ¼ of an atmosphere to form a continuous stream of nitrogen oxides at a fixed location;
tank means, communicating with said first-reactor means, for oxidizing the nitrogen oxides until at least equimolar

quantities of nitrogen dioxide and nitric oxide are obtained;

mixing means in communication with said conduit means and tank means for continuously mixing at least some of the nitrogen oxides with the flowing water from said well at a rate of less than 12 gallons per minute to form a dilute solution of nitric acid as the nitrogen oxides are formed for application to said areas to be irrigated with the water flowing through said conduit means;

said first reactor means including means for oxidizing ammonia at a rate sufficiently slow to permit cooling by air circulation and single-pass water flow of less than 12 gallons per minute;

second reactor means, communicating with said mixing means, for reacting the remaining oxides with ammonium hydroxide in a continuous process at a pressure between atmospheric pressure and a vacuum pressure of ½ of an atmosphere in a stream flowing in the range of less than



0.5 gallon each minute of ammoniated water per square foot of reactor means cross section sufficiently ammoniated to provide a pH in the range of 8.0 to 8.4 passing through a mixture of nitrogen oxides in which the ratio of nitric oxide to nitrogen dioxide is greater than one to form am ammonium nitrite liquid solution at a pH above 6.7;

means, communicating with said mixing means and second reactor means, for mixing the ammonium nitrite rapidly with the nitric acid at a pH of less than 2 to form a dilute solution of liquid nitrogen fertilizer containing ammonium nitrate;

said means for mixing said ammonium nitrite and nitric acid including means for converting between 300 and 3,500 pounds of nitrogen to oxides from ammonia and into the form of dilute nitrogen fertilizer solution each day; and

said pump means including means for pumping a total of between one gallon per minute and twenty-five gallons per minute into said mixing means and said second reactor means.

4,515,616

TRIAZOLYL KETONE-OXIMES AND TRIAZOLYL DIOXIMES, THEIR PREPARATION AND THEIR USE AS PLANT GROWTH REGULATORS

Costin Rentzea, Heidelberg; Wolfgang Spiegler, Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

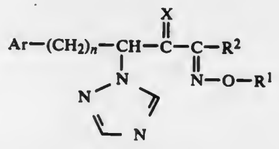
Filed May 27, 1983, Ser. No. 498,757

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220183

Int. Cl.³ A01N *43/64, 47/24;* **C07D** *249/08;* **C07F** *1/00*

U.S. Cl. 71—76 **5 Claims**

1. Triazolyl ketone-oximes and triazolyl dioximes of the formula



I

where Ar is an aryl radical from the group consisting of biphenylyl, naphthyl and phenyl, which radical can be substituted by halogen, nitro, cyano or trifluoromethyl, by alkyl, alkoxy or alkenyl, each of not more than 5 carbon atoms, or by phenoxy, and n is 1 or 2, X is oxygen or =N—OR³, R³ being hydrogen, unsubstituted, halogen-substituted or alkoxy-substituted alkyl, alkenyl or alkynyl, each of not more than 5 carbon atoms, or benzyl which is unsubstituted or substituted by halogen, nitro, cyano or trifluoromethyl, or by alkyl or alkoxy, each of not more than 4 carbon atoms, or is —CO—R⁴, R⁴ being unsubstituted, halogen-substituted or alkoxy-substituted alkyl of not more than 5 carbon atoms, phenyl, benzyl or —NH—R⁵, R⁵ being alkyl of not more than 4 carbon atoms, R¹ is unsubstituted or alkoxy-substituted alkyl of not more than 8 carbon atoms or benzyl, chloro-benzyl, bromo-benzyl or phenylethyl, and R² is alkyl of not more than 8 carbon atoms or plant tolerated salts and metal complexes thereof.

5. A composition for regulating plant growth which comprises a solid or liquid carrier and an effective amount of at least one compound of the formula I of claim 1.

4,515,617

BENZYL-PYRIMIDINYLALKYL-ETHERS AS PLANT GROWTH REGULATORS AND FUNGICIDES, AND CORRESPONDING PYRIMIDINYLCARBINOLS

Graham Holmwood, Wuppertal; Klaus Lürssen, Berg.-Gladbach, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

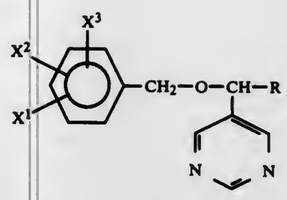
Division of Ser. No. 344,261, Jan. 28, 1982, Pat. No. 4,436,907. This application Aug. 2, 1983, Ser. No. 519,609

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105374

Int. Cl.³ A01N *43/54*

U.S. Cl. 71—76 **5 Claims**

1. A fungicidal or plant-growth stunting composition comprising a plant compatible diluent in admixture with a fungicidally or plant-growth-stunting effective amount of a benzyl-pyrimidinylalkyl-ether of the formula



in which

R is alkyl having 1 to 8 carbon atoms; cycloalkyl which has 3 to 7 carbon atoms and which is optionally substituted by alkyl having 1 to 4 carbon atoms; or phenyl which is optionally substituted by halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms and/or halogenoalkyl having 1 or 2 carbon atoms and 1 to 5 halogen atoms,

X¹ is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, halogenoalkyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy having 1 to 4 carbon atoms and 1 to 5 halogen atoms, halogenoalkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, phenyl which is optionally substituted by halogen and/or by alkyl having 1 to 4 carbon atoms, phenoxy which is optionally substituted by halogen and/or by alkyl having 1 to 4 carbon atoms, phenylalkyl which has 1 to 4 carbon atoms in the alkyl part and which is optionally substituted in the phenyl part by halogen and/or by alkyl having 1 to 4 carbon atoms, or phenylalkoxy which has 1 to 4 carbon atoms in the alkoxy part and which is optionally substituted in the phenyl part by halogen and/or by alkyl having 1 to 4 carbon atoms, and

X² and X³ each independently is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms or halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 4 carbon atoms and 1 to 5 halogen atoms,

or an acid addition salt or metal salt complex thereof.

4,515,618

5-DEOXY-3-O-THIENYLMETHYL OR FURYLMETHYL-1,2-O-ALKYLIDENE-ALPHA-D-XYLOFURANOSE HERBICIDE DERIVATIVES

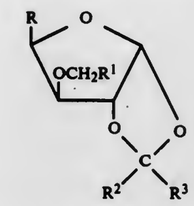
William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 7, 1983, Ser. No. 559,053

Int. Cl.³ A01N *43/14;* **C07H** *17/04*

U.S. Cl. 71—88 **27 Claims**

1. A compound having the formula:



(I)

wherein R is lower alkyl having 1 through 4 carbon atoms or alkenyl having 2 through 4 carbon atoms;

R¹ is thienyl, furyl, or substituted thienyl or furyl having one or two substituents selected from the group of lower alkyl having 1 through 4 carbon atoms; lower alkoxy, having 1 through 4 carbon atoms, halo, trifluoromethyl, or cyano; and

R² and R³ are independently selected from the group consisting of hydrogen, lower alkyl, lower haloalkyl having 1 through 3 halo substituents, aryl having 6 through 10 carbon atoms or substituted aryl having 1 through 4 substituents independently selected from the group of lower alkyl, lower alkoxy and halo or R² and R³ together with the carbon atom to which they are joined form a cycloalkyl group having 5 to 6 carbon atoms.

26. A plant growth regulating composition comprising a compatible carrier and a plant growth regulating effective amount of a compound of claim 1 and mixtures thereof.

4,515,619

1,2,3-THIADIAZOLE-5-YL-UREA DERIVATIVES, AGENTS CONTAINING THESE COMPOUNDS WITH PLANT GROWTH REGULATING AND DEFOLIATING ACTIVITY

Hans-Rudolf Krüger; Friedrich Arndt, and Reinhard Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

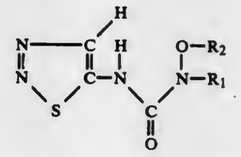
Filed Sep. 27, 1982, Ser. No. 424,990

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139505

Int. Cl.³ C07D *285/06;* **A01N** *43/82*

U.S. Cl. 71—90 **30 Claims**

1. A 1, 2, 3-thiadiazole-5-yl urea derivative having the formula



wherein R_1 is selected from the group consisting of phenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2-methylphenyl, 3-methylphenyl, 4-methylphenyl, 2-fluorophenyl, 2-nitrophenyl and 2-methoxyphenyl, and R_2 is a member selected from the group consisting of hydrogen, an alkali metal atom, an equivalent of a member selected from the group of calcium and magnesium atoms, methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, tert.-butyl, 2,2-dimethyl-1-propyl, n-pentyl, n-hexyl, 2-chloreothyl, 3-chloropropyl, 2-bromopropyl, 3-bromopropyl, 2-phenoxyethyl, 2-propenyl, 2-methyl-2-propenyl, 2-propinyl, benzyl, 2-chlorobenzyl, 3-chlorobenzyl, 4-chlorobenzyl, 3,4-dichlorobenzyl and the group



wherein R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, n-butyl, tert.-butyl, n-haphthyl, n-nonyl, n-decyl, chloromethyl, fluoromethyl, 2-chloroethyl, 1-chloroethyl, dichloromethyl, phenoxyethyl, 2-phenoxyethyl, (2,4-dichlorophenoxy)-methyl, 2-butenyl, vinyl, 2-methyl-2-propenyl, propene-1-yl, ethinyl, benzyl, 4-chlorobenzyl, cyclopropyl, cyclopentyl, cyclohexyl, methylcyclohexyl, phenyl, 3-chlorophenyl, 2-chlorophenyl, 3-methylphenyl, 4-methylphenyl, 3-nitrophenyl, 4-nitrophenyl, 2-methoxyphenyl, 4-methoxyphenyl, 1-naphthyl, 2-furyl,-methoxy, ethoxy, propoxy, isopropoxy, n-butoxy, 2-propenyloxy, 2-butenyloxy, 2-propinyloxy, phenoxy, 4-chlorophenoxy, methylthio, ethylthio, propylthio, phenylthio, 4-chlorophenylthio and an amino group



wherein R_4 and R_5 are the same or different and are each

selected from the group consisting of hydrogen, methyl, phenyl and 4-chlorophenyl.

4,515,620

TRIAZA COMPOUNDS

Beat Böhner, Binningen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

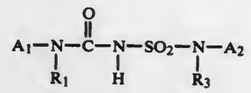
Filed Jan. 3, 1983, Ser. No. 454,950

Claims priority, application Switzerland, Jan. 12, 1982, 153/82

Int. Cl.³ C07D *239/46, 251/42, 239/47;* **A61K** *47/36*

U.S. Cl. 71—91 **11 Claims**

1. A compound selected from the group consisting of (i) a sulfamoylurea of the formula



wherein

A_1 is pyrimidin-2-yl or 1,3,5-triazin-2-yl, each of which is unsubstituted, monosubstituted in the 4-position or disubstituted in the 4- and 6-positions with the same or different substituents selected from the group consisting of halo, cyano, alkyl of 1 to 3 carbon atoms, haloalkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, haloalkoxy of 1 to 3 carbon atoms, alkylamino of 1 to 3 carbon atoms and dialkylamino of 1 to 3 carbon atoms in each alkyl group;

A_2 is phenyl, naphthyl or indanyl, each of which is unsubstituted or substituted by one or two members selected from the group consisting of halo, alkyl of 1 to 3 carbon atoms, haloalkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, haloalkoxy of 1 to 3 carbon atoms, alkylthio of 1 to 3 carbon atoms, alkoxycarbonyl of 1 to 3 carbon atoms in the alkoxy group, and nitro; and

each of R_1 and R_3 independently is hydrogen or alkyl of 1 to 4 carbon atoms; and (ii) the alkali metal, alkaline earth metal and quaternary ammonium salts thereof.

4,515,621

SHEET ROLLING MACHINE

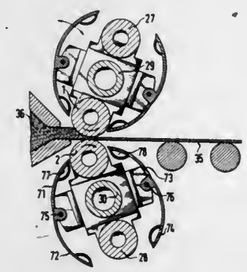
Frantz Günthner, Mainz-Lerchenberg, Fed. Rep. of Germany, assignor to JENAer Glaswerk, Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 572,079

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302664

Int. Cl.³ C03B *13/16*

U.S. Cl. 65—171 **5 Claims**



1. A rolling machine for continuously manufacturing a strip of plastic material, the machine comprising an outlet gap and a pair of co-operating shaping rolls, one being disposed above and the other below the web of material for shaping, so that both rolls can be replaced independently, either simultaneously or successively by substitute rolls without the flow of material for shaping being interrupted or changed during the replacement, one roll and one replacement roll on each occasion being mounted on either side in a change-over device rotatable around a shaft disposed symmetrically with respect to the rolls, so that when the change-over device rotates, the roll axes move along the same imaginary cylinder surface without intersecting the plane of the web of material to be shaped, cylindrical metal plates being disposed between the bottom roll and the corresponding replacement roll(s) concentrically to the axis of rotation of the bottom change-over device and at a distance therefrom somewhat less than the distance from the axis to the most distant generatrix of the bottom roll, characterized in that the change-over device for the top roll is equipped with a device for rapidly raising and lowering the change-over device and consequently the top roll and characterized in that the cylindrical metal plates disposed between the bottom roll and the replacement roll are divided into segments mounted pivotably around a common joint so that the gap between the free ends of the segments and the roll surface can be adjusted as required.

4,515,622

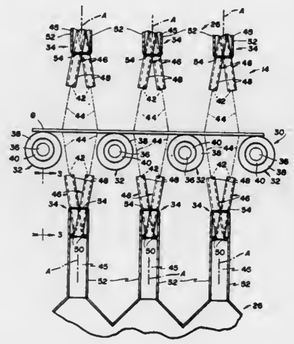
GLASS SHEET QUENCH INCLUDING OPPOSITELY ANGLED JETS

Harold A. McMaster, Woodville; Robert G. McMaster, Elmore, and Ronald A. McMaster, Woodville, all of Ohio, assignors to Glasstech, Inc., Perrysburg, Ohio

Filed May 9, 1983, Ser. No. 492,687

Int. Cl.³ C03B *27/04*

U.S. Cl. 65—351 **17 Claims**



1. In a glass sheet low pressure quench including opposed blastheads each of which includes elongated plenum housings which are spaced from each other and supply pressurized quenching gas to a heated glass sheet positioned between the blastheads, the improvement comprising: each elongated plenum housing having a central plane and including a pair of planar side walls that extend parallel to the central plane thereof and to each other; an end member that extends between the planar side walls of each plenum housing; and openings positioned along the end member of each plenum housing in a spaced relationship to each other and oriented to supply jets of quenching gas angularly in both directions with respect to the central plane from the plenum housing toward the heated glass sheet for impingement therewith to cool the glass sheet.

4,515,623

CONTROL OF UNWANTED PLANT GROWTH WITH 2-ARYLOXY-2-AZOLYLALKANECARBOXAMIDES

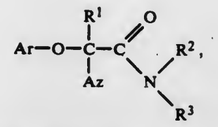
Gerd Husslein, Bad Duerkheim; Eberhard Ammermann, Ludwigshafen; Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 9, 1981, Ser. No. 310,402

Int. Cl.³ A01N *43/64, 43/50, 43/56*

U.S. Cl. 71—12 **3 Claims**

1. A process for combating unwanted plants, wherein the plants, seed or the soil are treated with a herbicidally effective amount of a compound of the formula



I

where Ar denotes unsubstituted phenyl, dichlorophenyl, trichlorophenyl, dimethychlorophenyl or trifluoromethylphenyl, R^1 denotes hydrogen or methyl, R^2 denotes hydrogen or C_1–C_{10}-alkyl, R^3 denotes C_1–C_{10}-alkyl, cyclopropyl, cyclohexyl, cyclopropylmethyl, allyl, methallyl, crotyl, 2-methylbut-2-en-1-yl, 2-methylbut-1-en-3-yl, hex-5-en-1-yl, 2-methylbut-1-en-4-yl; propargyl, but-1-yn-3-yl, but-2-yn-1-yl, 3-methylbut-1-yn-3-yl, unsubstituted or halogen-substituted benzyl and α-phenylethyl, and Az denotes unsubstituted or halogen- or methyl-substituted triazole, or a metal complex thereof.

4,515,624

HERBICIDAL SULFONAMIDES

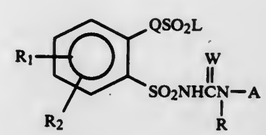
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 23, 1983, Ser. No. 477,969

Int. Cl.³ C07D *239/42;* **A01N** *47/36*

U.S. Cl. 71—92 **23 Claims**

1. A compound of the formula:



wherein

W is O or S;

R is H or CH_3;

Q is O or NR_3;

L is NR_5R_6 or $N(OCH_3)CH_3$,

R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;

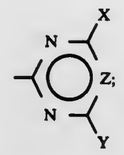
R_2 is H or Cl;

R_3 is H or C_1–C_3 alkyl;

R_5 and R_6 are independently C_1–C_3 alkyl, or R_5 and R_6 may be taken together to be $-(CH_2)_4-$, $-(CH_2)_5-$ or $-(CH_2)_2O(CH_2)_2-$;

R_7 is H, F, Cl, Br, CH_3, CF_3, NO_2 or OCH_3;

A is



A-1

X is CH_3, OCH_3, Cl, CH_2CH_3, OCH_2CH_3 or OCF_2H;

Y is H, NH_2, $NHCH_3$, $N(CH_3)_2$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of (a) F, (b) Cl or (c) Br, CH_2OCH_3, $CH_2OCH_2CH_3$, C_1–C_4 alkoxy, C_1–C_2 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$, $CH(OCH_2CH_3)_2$,



OCH_2CF_3, OCH_2CH_2F, OCH_2CH_2Cl, OCH_2CH_2Br or GCF_2T wherein G is O or S and T is H, CHClF, CHBrF, CF_2H or $CHFCF_3$;

Z is CH, CCH_3, CBr, CCl, CF or CCH_2CH_3,

provided that

(1) when X is Cl, then Z is CH and Y is NH_2, $NHCH_3$, $N(CH_3)_2$, CH_3, OCH_3 or OCF_2H;

(2) when W is S, then R is H; and their agriculturally suitable salts.

4,515,625

BENZAMIDES, COMPOSITIONS AND AGRICULTURAL METHOD

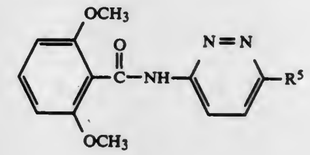
Kenneth W. Burow, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 302,323, Sep. 14, 1981, Pat. No. 4,416,683, which is a continuation-in-part of Ser. No. 187,675, Sep. 16, 1980, abandoned. This application Jul. 5, 1983, Ser. No. 510,699

Int. Cl.³ A01N *43/58*

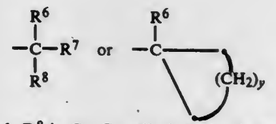
U.S. Cl. 71—92 **10 Claims**

1. A herbicidal composition comprising an effective amount of a benzamide herbicide of the formula



I

wherein R^5 is



or C_1–C_4 alkyl, R^8 is C_1–C_{13} alkyl, and y is an integer from zero to four, and the agronomically acceptable salts thereof, admixed with an agronomically-acceptable carrier, diluent, or adjuvant therefor.

4,515,626

N-(CYCLOPROPYL-TRIAZINYL-N'-(ARYLSULFONYL) UREAS HAVING HERBICIDAL ACTIVITY

Henry Szczepanski, Wallbach, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

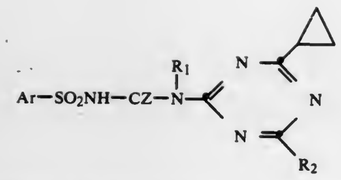
Filed Sep. 26, 1983, Ser. No. 535,527

Claims priority, application Switzerland, Oct. 6, 1982, 5874/82

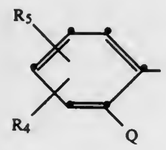
Int. Cl.³ C07D *251/18, 251/42, 251/16;* **A01N** *43/66*

U.S. Cl. 71—93 **13 Claims**

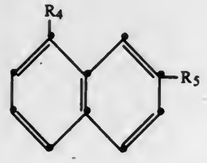
1. An N-(cyclopropyl-triazinyl-)-N'-(arylsulfonyl)urea of the formula I



wherein Ar is a phenyl group



or a
naphthyl group



and
Q is a group X-A or R_3,
A is a C_3–C_6-alkynyl group, a C_1–C_6-alkyl group which is unsubstituted or substituted by halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulfinyl, C_1–C_4-alkylsulfonyl, C_1–C_4-haloalkoxy, C_1–C_4-haloalkylthio, C_1–C_4-haloalkylsulfinyl or C_1–C_4-haloalkylsulfonyl, or a C_2–C_6-alkenyl group which is unsubstituted or substituted by the groups given in the foregoing for C_1–C_6-alkyl, or A is a phenyl or benzyl group,
X is oxygen, sulfur, or a sulfinyl or sulfonyl bridge,
Z is oxygen or sulfur,
R_1 is hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,
R_2 is halogen, C_1–C_3-alkyl, C_1–C_3-haloalkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkoxy, amino, C_1–C_3-alkylamino, di-(C_1–C_3-alkyl)amino, C_3–C_6-cycloalkyl or C_2–C_6-alkoxyalkyl,
R_3 is hydrogen, halogen, C_1–C_5-alkyl, C_2–C_5-alkenyl, C_1–C_4-haloalkyl, or a group —X—R_6, —$COZR_{11}$, —NO_2 or —CO—NR_8R_9, —CN, —COR_{10}, —NR_1R_7 or —NR_1—COR_{12},
R_4 is hydrogen; C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, halogen, or alkoxyalkyl having at most 4 carbon atoms,
R_5 is the same as R_3 but independent thereof,
R_6 and R_7 are each C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,
R_8 and R_9 independently of one another are each hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,
R_{10} is hydrogen, C_1–C_4-alkyl or C_1–C_3-haloalkyl,
R_{11} is hydrogen, C_1–C_4-alkyl, C_1–C_3-haloalkyl, C_3–C_5-alkenyl, C_3–C_5-alkynyl, phenyl or benzyl, and
R_{12} is the same as R_1 but independent thereof.

9. A herbicidal and plant-growth-reducing composition which contains, as active ingredient, an effective amount of an N-phenylsulfonyl-N'-triazinyl-urea according to claim **1**, together with a carrier.

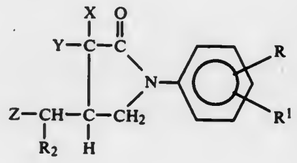
4,515,627
DICHLORO ETHYL BENZYL ACETAMIDE HERBICIDE ANTIDOTE

Laddie L. Green, San Jose, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

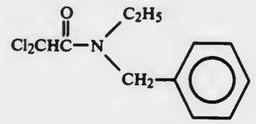
Continuation of Ser. No. 335,788, Dec. 30, 1981, abandoned. This application Apr. 19, 1983, Ser. No. 486,606
Int. Cl.³ A01N *43/36, 37/18*
U.S. Cl. 71—95 **4 Claims**

1. A composition comprising:
(a) an herbicidally effective amount of a pyrrolidone compound of the formula

(I)



in which
X is hydrogen;
Y is chlorine or bromine;
Z is chlorine or bromine;
R is hydrogen, chlorine, bromine, fluorine, or iodine;
R_1 is trifluoromethyl; and
R_2 is hydrogen; and
(b) a non-phytotoxic antidotally effective amount of a compound of the formula



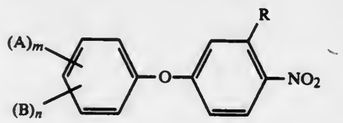
4,515,628
DIPHENYL ETHER DERIVATIVES AND HERBICIDES CONTAINING SAME

Takeo Yoshimoto; Akira Hosono; Joh Miki; Kengo Oda; Masaaki Ura; Naoki Sato; Teruhiko Toyama; Hajime Tachibana; Yuji Enomoto; Yasunobu Funakoshi; Takashi Fujita, and Yoshikata Hojo, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

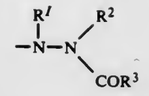
Continuation of Ser. No. 91,858, Nov. 6, 1979, abandoned. This application Jul. 28, 1981, Ser. No. 287,654
Claims priority, application Japan, Nov. 8, 1978, 53-136769
Int. Cl.³ A01N *37/48;* **C07C** *79/46*
U.S. Cl. 71—111 **19 Claims**

1. A diphenyl ether compound represented by the general formula I.

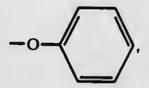
(I)



wherein;
A and B are each selected from the group consisting of a chlorine atom, a fluorine atom, —CH_3 and —CF_3;
m and n each represent an integer 0—3 and m+n=0—3;
R represents



wherein;
R^1 represents hydrogen atom, —CH_3, —C_2H_5 or —C_3H_7(n);
R^2 represents hydrogen atom, —CH_3 or —C_2H_5;
R^3 represents an alkoxy group having 1 to 4 carbon atoms,

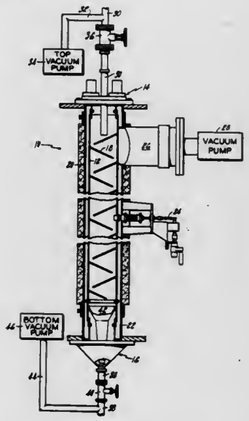


a carboxyalkyl group, a carbalkoxy group, a carboxyalkenyl group, a carbalkoxy-alkyl group or
a carbalkoxyalkenyl group.

4,515,629
DEGASSING METAL POWDER

Frederick A. Dizek, Westfield, Mass.; Eric S. Vogel, Manchester, Conn.; C. John Tiedeman, Jr., East Hartford, Conn., and Robert A. Herold, Tolland, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 12, 1981, Ser. No. 233,726
Int. Cl.³ C21D *1/00*
U.S. Cl. 75—0.5 B **2 Claims**

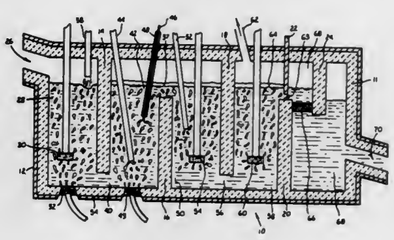


1. The method of degassing a metal powder in an enclosed vertical shell containing a plurality of opposing inclined baffle plates fixed to the shell and positioned to cause powder to drop alternately in a downward direction from one baffle plate to the next along the vertical length of a region of the shell, characterized by measuring the static angle of repose of the the powder with respect to a horizontal and fixing the incline of the baffle plates at an angle with respect to the horizontal which is less than said static angle of repose; evacuating said region and heating said region to at least 500° F.; vibrating said region and the baffle plates contained therein to control the rate of powder flow across the baffles and along the said vertical length; and collecting the powder at the bottom of the shell.

4,515,630
PROCESS OF CONTINUOUSLY TREATING AN ALLOY MELT

Derek E. Tyler, Cheshire, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 15, 1983, Ser. No. 523,328
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—53 **16 Claims**

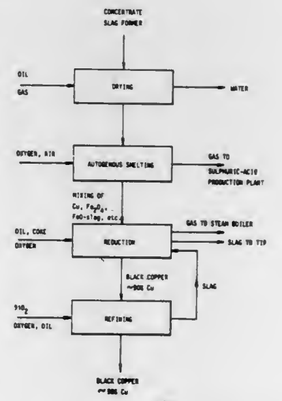


1. A process of continuously treating an alloy melt comprising the steps of:
a. transferring said melt through a plurality of interconnected treatment zones;
b. decarburizing said melt to between about 0.5% to about 0.001% of the alloy melt in a first treatment zone;
c. deoxidizing the decarburized melt to lower the oxygen content of said melt to less than about 0.01% by adding a deoxidizing agent to said melt in a second treatment zone;
d. desulfurizing the deoxidized melt to lower the sulfur content of said melt to less than about 0.01% by adding active sulfide forming agents to said melt in a third treatment zone;
e. degassing said desulfurized melt to lower the gas content of said melt to less than about 0.0005% H_2 by flushing said melt with a gas in a fourth treatment zone; and
f. removing particulates and films from said melt by filtering the degassed melt in a fifth treatment zone.

4,515,631
METHOD FOR PRODUCING BLISTER COPPER

Björn K. V. Lindquist, and Stig A. Petersson, both of Skellefteharnn, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 16, 1984, Ser. No. 580,614
Claims priority, application Sweden, Mar. 4, 1983, 8301187
Int. Cl.³ C22B *15/06*
U.S. Cl. 75—73 **4 Claims**



1. A method for producing blister copper from copper-iron

sulphide concentrates, including concentrates whose sulphur contents are insufficient to autogenously smelt the concentrate to matte, characterized by autogenously smelting the concentrate, together with a slag former which contributes to forming a slag phase, with oxygen gas or air rich in oxygen in a top-blown rotary converter, to form a mixture of a black copper phase, magnetite and fayalite slag; subsequently charging a reductant to the furnace for the reduction of formed magnetite while supplying heat; separating the flag formed from the resultant copper metal phase; and by refining the copper metal phase to blister copper.

4,515,632

ACTIVATED AMMONIUM POLYPHOSPHATE, A PROCESS FOR MAKING IT, AND ITS USE

Alexander Maurer, Hürth, and Horst Staendeke, Lohmar, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,131

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 3238443

Int. Cl.³ C09D *5/18*

U.S. Cl. 106—18.16 **5 Claims**

1. Ammonium polyphosphate adapted to undergo decomposition at an increased rate at temperatures within the range 300° to 600° C., the ammonium polyphosphate having been obtained by subjecting a long chain ammonium polyphosphate with a mean chain length of 100 to 1000 and melamine or dicyandiamide or mixtures or derivatives thereof to tempering treatment with intensive agitation at 100° to 200° C. over a period of 10 minutes to 2 hours.

4. A process for improving the 300°–600° C. decomposition rate of an ammonium polyphosphate, said ammonium polyphosphate having a mean chain length of about 100 to 1000 and being a compound of the formula

$$H_{(n-m)}(NH_4)_mP_nO_{3n+1}$$

in which m/n is at least about 0.7 but m is less than n+2, so that a minor amount of acid groups, relative to the amount of NH_4 groups, are available, said process comprising:

reacting a minor amount of melamine or dicyandiamide or their derivatives which are thermally stable up to a temperature of about 220° C., or mixtures thereof, with said ammonium polyphosphate, whereby the melamine or dicyandiamide or derivative thereof becomes superficially fixed to acid groups on the surface of said ammonium polyphosphate, thereby obtaining a reaction product with said improved decomposition rate but essentially without apparent increase in the water soluble proportion of said reaction product, said reaction being effected with continuous thorough mixing at a temperature of about 100° to 200° C. and over a period of about 10 minutes to 2 hours, and cooling the resulting reaction product.

4,515,633

POLYMERIC MATERIALS COMBINED WITH MODIFIED HYDRATED MAGNESIUM ALUMINOSILICATES

Mamerto M. Cruz, Jr., Pennington, N.J., assignor to Morca, Inc., Pennington, N.J.

Continuation-in-part of Ser. No. 196,308, Oct. 14, 1980, Pat. No. 4,400,297. This application Jun. 27, 1983, Ser. No. 507,723

Int. Cl.³ C09D *5/16;* **C08L** *89/00, 1/00*

U.S. Cl. 106—18.26 **20 Claims**

1. An article of manufacture comprising a natural or synthetic polymeric material and a self adherent aqueous acidic modified, heat exfoliated hydrated magnesium aluminosilicate in particulate form consisting of groups of non-colloidal platelets capable of hydrogen bonding with hydrophilic materials and compatible with hydrophobic polymers and being further characterized in forming slurries in aqueous media, the slurries being non-sensitive to electrolytes and in forming separable, coherent, continuous sheets upon drying of the slurries in contact with a hydrophobic surface.

4,515,634

CASTABLE GLASS-CERAMIC COMPOSITION USEFUL AS DENTAL RESTORATIVE

Jenn-Ming Wu, Tainan, Taiwan; Warren R. Cannon, East Brunswick, and Carlino Panzera, Belle Mead, both of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed Oct. 17, 1983, Ser. No. 542,798

Int. Cl.³ C03C *3/22;* **C09K** *3/00*

U.S. Cl. 106—35 **4 Claims**

1. A glass-ceramic having high strength and a high softening temperature, consisting essentially of the following constituents, on a mole percent basis:

Li_2O	28.5–30.5
SiO_2	57–62
Al_2O_3	1–2
CaO	5–7
P_2O_5	1–2.5
TiO_2	0.5–1.5
ZrO_2	0.5–1.5

wherein the crystalline phase is lithium disilicate, said glass ceramic having a flexural strength of from about 40,000 psi to about 52,000 psi, and a softening temperature of from about 750° C. to about 825° C.

2. A dental restoration comprising the glass-ceramic of claim 1.

4,515,635

HYDROLYTICALLY STABLE POLYMERS FOR USE IN OIL FIELD CEMENTING METHODS AND COMPOSITIONS

S. Prabhakara Rao, and John F. Burkhalter, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 23, 1984, Ser. No. 592,989

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **10 Claims**

1. A cementing composition for use in oil, gas and water well cementing operations comprising water, hydraulic cement, and a copolymer of N,N, dimethylacrylamide and 2-acrylamido, 2-methyl propane sulfonic acid wherein said copolymer has a N,N, dimethylacrylamide to 2-acrylamido, 2-methyl propane sulfonic acid ratio from about 1:4 to about 4:1 and a molecular weight such that a 1000 ppm aqueous solution of said copolymer has a Brookfield viscosity reading at 5 rpm of the U.L. Adapter Spindle in the range of between about 30 and about 250 centipoise.

4,515,636

REINFORCED CEMENT

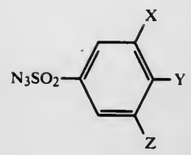
Thomas E. Carney; Allan R. Champion, both of Wilmington, and Francis M. Logullo, Sr., Hockessin, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 17, 1984, Ser. No. 641,860

Int. Cl.³ C04B *7/02, 7/35*

U.S. Cl. 106—90 **7 Claims**

1. A fiber-cement product comprising a cement matrix reinforced with fibers selected from the group consisting of p-aramid and acrylic fiber, said fiber being coated with a sulfonyl azide of the formula



where X, Y and Z, which may be the same or different, are selected from the group consisting of hydrogen, carboxyl and hydroxyl, with the proviso that at least one but not all of X, Y and Z is hydrogen, said coating being in an amount sufficient to improve adhesion of the fiber to the cement matrix.

4,515,637

COLLAGEN-THROMBIN COMPOSITIONS

Gheorghe Cioca, Coatesville, Pa., assignor to Seton Company, Newark, N.J.

Filed Nov. 16, 1983, Ser. No. 552,110

Int. Cl.³ C08L *89/06;* **A61K** *35/14;* **C08H** *1/06*

U.S. Cl. 424—94 **10 Claims**

1. A method of forming a collagen-thrombin hemostatic composition consisting essentially of:

forming a homogeneous aqueous admixture of collagen and thrombin at a basic pH, wherein the ratio of collagen to thrombin is about 0.1 gram of collagen to about 300 units or greater of thrombin; and

lyophilizing said collagen-thrombin admixture to form a stable collagen sponge having thrombin distributed uniformly throughout and wherein said collagen is absorbable when placed in vivo.

4,515,638

STABILIZATION OF THE B-SIDE

Richard B. Kennedy, Ridgefield, Conn., assignor to Richard J. Fricke and Patrick J. Crehan, both of Ridgefield, Conn.

Filed Jul. 26, 1984, Ser. No. 634,786

Int. Cl.³ C08G *18/14*

U.S. Cl. 106—162 **15 Claims**

1. A mixture useful for the preparation of polyurethane foams comprising an untreated carbohydrate in which substantially all of the hydroxyl groups are free, water, and a polyurethane producing amine catalyst, the pH of said mixture being at least 9 because of the presence of an alkaline reagent.

4,515,639

AZO PIGMENT FORMULATIONS

Peter Dopfer, Frankfurt am Main; Johann Ostermeier, and Siegfried Schwerin, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,143

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104257

Int. Cl.³ C09B *67/00, 67/20, 67/42;* **C09D** *11/02*

U.S. Cl. 106—288 Q **1 Claim**

1. An azo pigment formulation which contains a long-chain aliphatic primary amine selected from the group consisting of coconut fatty amine, oleylamine, stearylamine, tallow fatty amine and diamines of the formula

$$alkyl—NH—CH_2—CH_2—CH_2—NH_2$$

wherein said alkyl is of from 14 to 18 carbon atoms, and a diamine of the formula

$$H_2N—A—N—H_2$$

in which A is an aliphatic or cycloaliphatic hydrocarbon radical of from 6 to 30 carbon atoms free from acetylenic linkages.

4,515,640

FLUOROALIPHATIC-THIO,-SULFINYL, OR SULFONYL SUBSTITUTED BICYCLOALIPHATIC AMIC ACID AMINE SALTS, AND COMPOSITIONS AND USE THEREOF

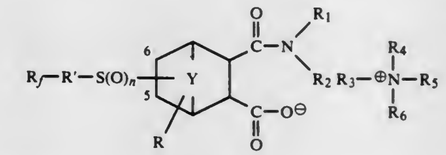
Jürgen Kaschig, Freiburg, Fed. Rep. of Germany; Eduard K. Kleiner, Pound Ridge, N.Y.; Karl F. Mueller, New York, N.Y., and Thomas W. Cooke, Mahopac, N.Y., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,435

Int. Cl.³ C09K *3/00;* **C08K** *5/35*

U.S. Cl. 106—287.25 **18 Claims**

1. A fluoroaliphatic substituted bicycloaliphatic amic acid amine salt of the formula



(I)

wherein

R_f is straight or branched chain perfluoroalkyl of 4 to 18 carbon atoms or perfluoroalkoxy-perfluoroalkyl of 4 to 18 carbon atoms;

R′ is straight or branched chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 2 to 12 carbon atoms, alkyleneoxyalkylene of 2 to 12 carbon atoms, a alkyleneiminoalkylene of 2 to 12 carbon atoms where the imino nitrogen atom contains as a third substitutent, hydrogen or alkyl of 1 to 6 carbon atoms;

n is 0, 1 or 2;

Y is lower alkylene or —O—;

R_1 and R_2 are independently hydrogen, lower alkyl, hydroxy-lower alkyl, or together with the nitrogen to which they are attached, represent morpholino;

R_3, R_4 and R_5 independently represent hydrogen, lower alkyl, or hydroxy-lower alkyl,

R_6 is lower alkyl, benzyl, lower alkyl substituted by hydroxy, carboxy or sulfo, or together with R_5 and the nitrogen to which they are attached represent morpholino;

R is hydrogen or methyl; and

wherein the $R_f—R'—S(O)_n—$ group is in the 5- or 6-position.

4,515,641

CLEANING CONTROL THROUGH MEASUREMENT OF ELECTRICAL CONDUCTIVITY

Rüdolf Juenger, Kreuzau, Fed. Rep. of Germany, assignor to Akzona Incorporated, Asheville, N.C.

Filed Jun. 21, 1983, Ser. No. 506,496

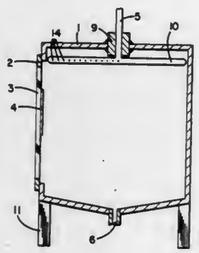
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 3224016

Int. Cl.³ B08B *7/04, 9/00, 9/02*

U.S. Cl. 134—5 **10 Claims**

1. A process for cleaning the interior wall of a contaminated metal vessel or pipe comprising flooding or turbulently impacting the interior wall of said vessel or pipe with a strongly alkaline or strongly acidic cleaning fluid, simultaneously measuring the conductivity of the cleaning fluid between two electrodes located in the interior of said vessel or pipe, said electrodes being electrically insulated and separated from each other and with at least one of said electrodes having been

subjected to contamination while located in the interior of said vessel or pipe, and terminating said flooding or impacting



when the measured conductivity has been substantially restored to a reference level.

4,515,642

METHOD OF FORMING DEEP ALUMINUM DOPED SILICON BY IMPLANTING AL AND SI IONS THROUGH ALUMINA LAYER AND DEVICE FORMED THEREBY

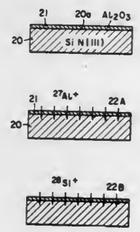
Takashi Ajima, Kamakura; Jiro Ohshima, Kawasaki, and Yutaka Koshino, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 22, 1983, Ser. No. 525,484

Claims priority, application Japan, Aug. 23, 1982, 57-145980

Int. Cl.³ H01L *17/00*

U.S. Cl. 148—1.5 **8 Claims**



1. A method of producing a semiconductor device comprising the steps of:

forming an alumina layer directly on a principal surface of a silicon substrate;

ion-implanting aluminum through said alumina layer into said substrate;

ion-implanting silicon through said alumina layer into said substrate; and

annealing said substrate into which aluminum and silicon have been ion-implanted.

4,515,643

METHOD FOR DETERMINING AND ADJUSTING THE POTENCY AND EFFECTIVENESS OF A METAL PHOSPHATE CONVERSION COATING PROCESS

Mark Knaster, Ambler, Pa., assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,481

Int. Cl.³ C23F *7/08, 7/10, 7/12*

U.S. Cl. 148—6.15 Z **5 Claims**

1. A method for determining and adjusting the potency and effectiveness of a metal phosphate conversion coating solution comprising the steps of

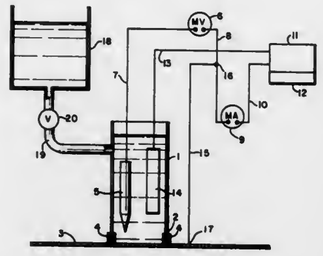
(A) forming a phosphate conversion coating on a metal substrate by contacting the metal substrate with said phosphate conversion coating solution;

(B) determining the crystallinity and thickness of the phosphate conversion coating on the metal substrate by

a. measuring the steady state potential of the coated surface thereof through a dilute electrolyte solution in contact therewith;

b. measuring the direct current amperage obtained when a small positive or negative voltage differential compared to the steady state potential is applied to the electrolyte solution;

c. measuring the direct current amperage obtained when a small voltage differential compared to the steady state potential opposite to that employed in step b. is applied to the electrolyte solution; and



d. comparing the measurement results obtained in a., b. and c. with the corresponding results obtained from use of the above identified method with a similar coated surface from a conversion coating solution of known potency;

e. where one or more of said compared measurements are different from the measurement obtained with said similar coated surface, then adjusting the composition of the phosphate conversion coating solution as need based on the results obtained in step (B) d.

2. A method in accordance with claim 1 wherein the conversion coating solution contains both zinc ions and phosphate ions.

4,515,644

METHOD FOR PRODUCING FERRITIC STAINLESS STEEL SHEETS OR STRIPS CONTAINING ALUMINUM

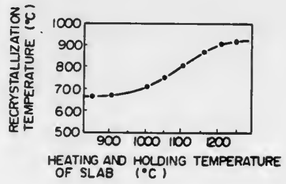
Tadashi Sawatani, Tokyo; Mitsuo Ishii, Hikari; Hirofumi Yoshimura, and Jirou Harase, both of Munakata, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Oct. 19, 1981, Ser. No. 312,848

Claims priority, application Japan, Oct. 21, 1980, 55-146377; Oct. 21, 1980, 55-146378

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 EA **13 Claims**



1. A method for producing ferritic stainless steel sheets or strips with reduced ridging, which comprises:

heating a slab of a ferritic stainless steel containing up to 0.2% of Al, the Al content being at least twice the N content, at a temperature of not more than 1200° C., and, then,

hot rolling said slab of ferritic stainless steel at at least one pass of screw down at a draft of not less than 20% pass, whereby precipitation of AlN and partial recrystallization of said ferritic stainless steel occurs.

4,515,645

PROCEDURE FOR BRIGHT ANNEALING OF METALLIC WORK PIECES USING NITROGEN AS PROTECTIVE GAS

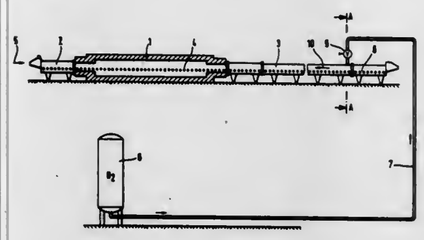
Gottfried Böhm, Mühlheim-Ruhr, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,748

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3234863

Int. Cl.³ C21D *1/62*

U.S. Cl. 148—16 **2 Claims**



1. In a process for bright annealing of metallic work pieces in a bright annealing furnace with subsequent cooling line and using nitrogen as protective gas, the improvement being spraying the nitrogen in liquid form onto the material to be annealed in the exit end zone of the cooling line.

4,515,646

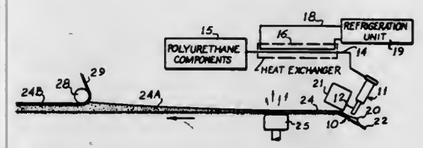
METHOD FOR APPLYING POLYURETHANE BACKING

Paul Walker, 2606 W. Lake Park, Rocky Face, Ga. 30740; Glen F. Hamrick, 3200 Summer Rd., Tunnel Hill, Ga. 30755, and B. Lamar Sosebee, Resaca, Ga., assignors to Paul Walker, Rocky Face and Glen F. Hamrick, Tunnel Hill, both of, Ga.

Filed Nov. 22, 1983, Ser. No. 554,210

Int. Cl.³ B05D *3/10, 5/00*

U.S. Cl. 156—78 **17 Claims**



1. A method for forming a blown polyurethane coating on porous sheet material, said polyurethane coating being formed by reaction of urethane forming components including at least a polyol, an isocyanate and water, said reaction requiring heat for initiation, said method including the steps of cooling said components to a temperature substantially below the temperature for initiation of the reaction, preparing a formulation of said urethane forming components having an excess of the isocyanate relative to the water compared to the desired coating formulation to provide a liquid mix, placing a quantity of said liquid mix on said porous sheet material in a puddle, leveling said puddle to provide a uniform coating of said liquid mix on said porous sheet material, passing steam through said sheet material and into said uniform coating for adding water to said liquid mix for reaction with said excess of isocyanate and for heating said liquid mix to start said reaction.

4,515,647

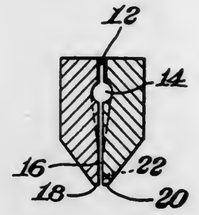
METHOD AND APPARATUS FOR FORMING AN INTEGRAL CLOSURE FOR A THERMOPLASTIC CONTAINER

Raymond D. Behr, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 464,828, Feb. 8, 1983, abandoned, which is a continuation of Ser. No. 255,007, Apr. 17, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 586,163

Int. Cl.³ B32B *7/04*

U.S. Cl. 156—91 **5 Claims**



1. A method for forming an integral thermoplastic fastener element on a mainstream thermoplastic film or sheet extruded from a cast die having die lips at its exit, said method comprising the steps of extruding said film or sheet through said die lips, extruding at least one fastening element and a profile base in said die in open communication with said film and sheet, and width of said mainstream of thermoplastic film or sheet being several times wider than said fastener element, whereby said profile base with said fastener element is joined with said film or sheet before the same leaves the die lips, and cooling said joined film or sheet and fastener element outside the die lips.

4,515,648

METHOD OF MAKING A GASTIGHT MULTIPLE-WALLED PLASTIC PANEL

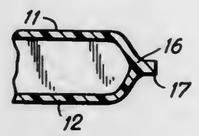
Klaus Kolbe, Reinheim; Walter Hellmann; Otmar Krajec, both of Rossdorf; Hartmut Schikowsky, Darmstadt, and Heinz Vetter, Rossdorf, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,016

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 8137938[U]

Int. Cl.³ B29D *23/04*; B32B *31/02*

U.S. Cl. 156—196 **14 Claims**



1. A method of making a gastight multiple-walled panel, formed from a synthetic resin, which method comprises the steps of:

(a) heating a portion of a multiple-walled panel formed from a synthetic resin, said panel having at least two substantially parallel outer walls and at least two partition walls disposed transversely thereto to form a hollow cell, at least to a temperature at which the resin in said heated panel portion is in a thermplastic state;

(b) joining the outer walls of said heated panel portion to form a gastight seal;

(c) maintaining said heated panel portion comprising said gastight seal at a temperature in the range from about 10° C. below to about 70° C. above the Vicat softening temperature of said resin, said panel being heated for a period

of at least one minute at higher temperatures within this range to about 15 minutes or more at lower temperatures in this range until internal stresses in the region of said gastight seal are relieved; and then

(d) cooling the heated panel portion and gastight seal therein to room temperature, whereby a panel free of cracks in the region of the gastight seal is obtained

---

4,515,649

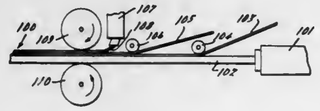
THERMOPLASTIC ELASTOMER MOLDING

Joel H. Nussbaum, Farmington Hill, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 350,762, Feb. 22, 1982, abandoned, Division of Ser. No. 169,772, Jul. 17, 1980, Pat. No. 4,349,592. This application Aug. 24, 1983, Ser. No. 525,806

Int. Cl.³ B29D *7/02*

U.S. Cl. 156—244.11 **7 Claims**



1. The method of making a laminate construction, said method comprising the steps of:

laminating a first sheet of a first material to a second sheet of a second material to form a tie sheet using sheet lamination techniques, said sheet lamination techniques including pressing said first and second sheets together with adhesive means therebetween;

extrusion laminating with heat a first body comprising a thermoplastic elastomer material onto said first sheet, said thermoplastic elastomer material being compatible for lamination with said first material of said first sheet without the use of adhesives;

extrusion laminating with heat a second body comprising a second thermoplastic onto said second sheet, said second thermoplastic being compatible for lamination with said second material without the use of adhesives and being incompatible for lamination with said thermoplastic elastomer material by said extrusion lamination with heat, at least one of said first and second bodies being substantially thicker than either of said first or second sheets.

4,515,650

METHOD FOR PRODUCING LARGE GRAINED SEMICONDUCTOR RIBBONS

Praveen Chaudhari, Briarcliff Manor, N.Y., and René Müller, Fislisbach, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 150,257, May 15, 1980, abandoned. This application Dec. 31, 1981, Ser. No. 336,486

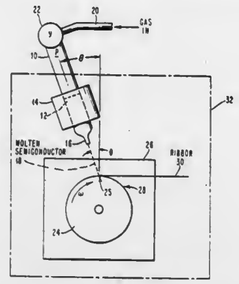
Int. Cl.³ C30B *19/00*

U.S. Cl. 156—622 **7 Claims**

1. In a method for fabricating a ribbon of semiconductor material wherein the semiconductor material in a molten state is discharged as a stream onto the cylindrical surface of only one rotating cylinder comprised of conducting material to form said ribbon by ribbon casting from said cylindrical surface, the improvement comprising:

discharging said material at an angle of incidence with respect to said cylindrical surface to a point of contact on said surface such that there is a component of said stream in the direction of a tangent to said cylinder at said surface in the direction of rotation thereof, and

rotating said cylinder at a surface linear velocity in the range of about 8 meters/sec to about 36 meters/sec to obtain



crystalline semiconductor ribbon having an average grain size of about 20 microns and greater.

4,515,651

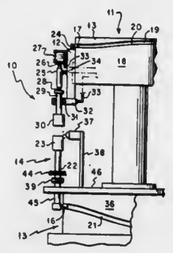
APPARATUS FOR OSCILLATORY BONDING OF DISSIMILAR THERMOPLASTIC MATERIALS

Donald N. MacLaughlin, Midland, Mich., and Vincent E. Fortuna, Huntington Beach, Calif., assignors to Vercon Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 371,363, Apr. 23, 1982, Pat. No. 4,462,849. This application Aug. 27, 1984, Ser. No. 644,189

Int. Cl.³ B29C *27/08*

U.S. Cl. 156—423 **20 Claims**



1. Apparatus for oscillatory friction welding a thermoplastic polymer component to a component made of a dissimilar material, said apparatus comprising:

a first holder adapted for securing a first component to be welded, comprising first holding means and a first receptacle for receiving said first component;

said first holder being mounted on a tool adapted for axial sliding movement;

said tool being mounted on a carrier assembly;

oscillator means connected to said first tool and said carrier assembly and arranged to oscillate said first tool axially with respect to said carrier assembly;

a second holder secured to a spindle mount and adapted for holding a second article to be welded to said first article, said second holder being axially aligned with said first holder in close proximity thereto, and comprising a receptacle for receiving said second article;

means for moving said first and second holders in axially reciprocating movement toward and away from each other; and

an external heat generator mounted in close proximity to at least one of said holders and arranged to direct heat against a welding surface of a component held in said close proximity holder.

4,515,652

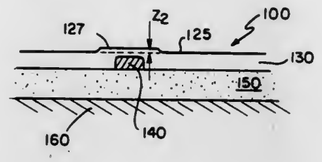
PLASMA SCULPTURING WITH A NON-PLANAR SACRIFICIAL LAYER

George E. Gimpelson, Indialantic, and Cheryl L. Russo, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 20, 1984, Ser. No. 591,597

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **B29C** *17/08*

U.S. Cl. 156—643 **19 Claims**



1. A method of plasma planarization of a topographically rough surface layer comprising:

selecting a sacrificial layer having an etch rate different from the etch rate of said surface layer in a given plasma environment;

applying said sacrificial layer over said surface layer; and

plasma etching said sacrificial layer and said surface layer to produce a planar surface layer.

4,515,653

METHOD FOR PRODUCTION OF A MOISTURE SENSOR

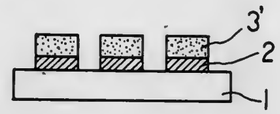
Hisatoshi Furubayashi, Yamatokoriyama; Junichi Tanaka; Masanori Watanabe, both of Tenri, and Masaya Hijikigawa, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 27, 1984, Ser. No. 604,386

Claims priority, application Japan, Apr. 30, 1983, 58-77807; May 7, 1983, 58-79731

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **B29C** *17/08*

U.S. Cl. 156—643 **6 Claims**



1. A method for production of a moisture sensor comprising forming a moisture sensitive polymer film on a substrate, disposing a patterned masking material on said moisture sensitive polymer film, and etching said moisture sensitive film by means of an oxygen plasma.

4,515,654

METHOD FOR MAKING SEMICONDUCTOR DEVICES UTILIZING EUTECTIC MASKS

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 395,761, Jul. 6, 1982,. This application May 25, 1984, Ser. No. 614,173

Int. Cl.³ C23F *1/02;* **H01L** *7/44;* **B44C** *1/22;* **C03C** *15/00*

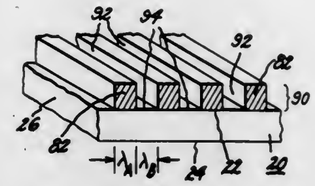
U.S. Cl. 156—656 **25 Claims**

1. A method for making self aligned doped regions in a body of semiconductor material comprising the steps of:

(a) providing a body of semiconductor material suitable for the manufacture of semiconductor devices, said body having substantially parallel upper and lower major surfaces and a peripheral edge area interconnecting said major surfaces;

(b) forming a thin film lamellar metallic eutectic on at least a portion of said upper major surface of said body;

(c) selectively removing one of the lamellar phases of said thin film lamellar metallic eutectic, forming thereby a spaced array of substantially parallel metallic elements of the remaining phase with substantially parallel spaces in-between said elements and exposing thereby segments



of said upper major surface beneath the selectively removed phase and in-between said elements; and

(d) forming at least first doped regions directly beneath the exposed segments of said upper major surface in-between said elements by introducing a first concentration of atoms of a first impurity type through the exposed segments of said upper major surface in-between said elements.

4,515,655

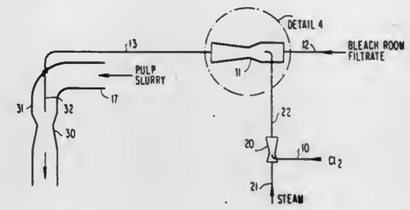
METHOD OF BLEACHING PAPER PULP BY BLENDING CHLORINE WITH A FLOW VOLUME OF PAPER PULP SLURRY

Ernst H. Schaefer, Darien, Conn., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 15, 1983, Ser. No. 522,793

Int. Cl.³ B01F *3/04;* **D21C** *9/12*

U.S. Cl. 162—57 **1 Claim**



1. A method of bleaching paper pulp by blending chlorine with a flow volume of paper pulp slurry comprising the steps of:

A. combining a predetermined flow rate of chlorine gas with an approximately four times greater volumetric flow rate of steam to provide a mixed gas flow stream;

B. entraining a liquid phase carrier flow stream comprising approximately one third of the pulp slurry flow volume with bubbles formed from said mixed gas flow stream;

C. condensing the steam constituent of each bubble within said carrier stream to leave a substantially pure chlorine gas bubble of reduced volume;

D. releasing the reduced volume bubble entrained carrier stream with the center of said paper pulp slurry flow volume at a velocity of two to eight times greater than the flow velocity of said slurry flow volume to distribute the bubbles throughout the slurry by shear induced turbulence; and,

E. reacting the chlorine with the pulp slurry to bleach the paper pulp.

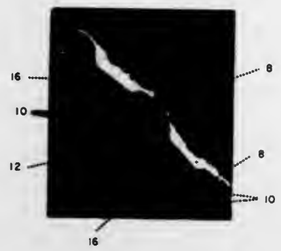
4,515,656
LOW DENSITY NONWOVEN SHEETS

Wesley Memeger, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 297,271, Aug. 28, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,543

Int. Cl.³ D21F *11/00*

U.S. Cl. 162—101 **35 Claims**



1. Process for preparing a coherent expanded adhesive-free wet laid nonwoven sheet comprised of fibrids of a wholly synthetic polymer and optionally up to 80% by weight floc, the sheet having an apparent density of less than 0.16 g/mL and being comprised of a plurality of paper-like layers of membranous elements which join and separate at random throughout the thickness of the sheet to form expanded macroscopic cells, the expanded sheet further comprising up to 50%, based on the total area of the sheet, of discrete areas which are not expanded, the process comprising preparing a wet mixture of fibrids of a wholly synthetic polymer, and optionally up to 80% by weight floc, forming a wet-laid nonwoven sheet of the fibrids on paper-forming equipment, maintaining water in the sheet, adding additional water if needed to increase the water content of the sheet to at least 60% by weight, and heating the wet sheet under such pressure and for such time to vaporize the water rapidly and, simultaneously, to expand the wet-laid nonwoven sheet to provide the aforesaid expanded sheet.

4,515,657
WET STRENGTH RESINS

William W. Maslanka, London-Britain Township, Chester County, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 488,893, Apr. 27, 1983, Pat. No. 4,487,884. This application Jul. 2, 1984, Ser. No. 627,258

Int. Cl.³ D21H *3/48*

U.S. Cl. 162—164.3 **4 Claims**

1. A paper product having wet and dry strength and improved repulpability comprising sheeted cellulose fibers treated with from about 0.2 to about 3% by weight, based on dry weight of fibers, of a water-soluble, cationic thermosetting resin derived by reacting N-bis(aminopropyl)-methylamine saturated dicarboxylic acid component comprising oxalic acid to form a polyaminopolyamide containing tertiary amine groups, the mole ratio of N-bis(aminopropyl)-methylamine to the acid component being from about 0.9:1 to about 1.2:1 and then reacting the polyaminopolyamide, in aqueous solution with from about 1 mole to about 1.5 moles of epihalohydrin per mole of tertiary amine groups present in said polyaminopolyamide.

4,515,658
RETENTION AIDS

Dodd W. Fong, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 20, 1984, Ser. No. 642,280

Int. Cl.³ D21H *3/38*

U.S. Cl. 162—168.4 **5 Claims**

1. A method for improving fine and filler retention of paper during its manufacture into a sheet from pulp which comprises treating the pulp prior to sheet formation with a fine and filler retention retaining amount of a copolymer which contains between 2–50 mole percent of a lower alkyl quaternary ammonium salt of 1-acryloyl-4-methyl piperazine which has a molecular weight of at least 1,000,000.

4,515,659
PYROLYTIC CONVERSION OF PLASTIC AND RUBBER WASTE TO HYDROCARBONS WITH BASIC SALT CATALYSTS

Robert C. Wingfield, Jr.; Jacob Braslaw, both of Southfield, and Roy L. Gealer, West Bloomfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 429,586

Int. Cl.³ C10B *53/00, 57/04, 57/12*

U.S. Cl. 201—2.5 **11 Claims**

1. A process for pyrolytic conversion of waste selected from the group consisting of plastic and rubber to olefinic hydrocarbons, said process being characterized by comprising:

introducing into a pyrolysis zone particles of said waste and at least about 1 weight percent basic salt catalyst based on the weight of said waste;

heating said waste/salt mixture in said pyrolysis zone to a temperature of between about 400° C. and about 700° C. while flowing inert gas therethrough;

maintaining said temperature of said pyrolysis zone and said flowing gas for a time sufficient to pyrolyze said waste to char and volatile hydrocarboncontaining products;

cooling said volatile products so as to separate said products into a gas fraction and oil fractions; and

recovering said fractions.

4,515,660
APPARATUS FOR REMOVING CHARGING HOLE COVERS AND FOR CLEANING SEALING SURFACES IN A COKE OVEN

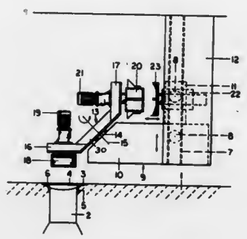
Hans-Jurgen Kwasnik, Herne; Hans-Gunter Piduch, and Heinz-Dieter Bruske, both of Bochum, all of Fed. Rep. of Germany, assignors to C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,234

Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316936

Int. Cl.³ C10B *25/20*

U.S. Cl. 202—241 **7 Claims**



1. An apparatus carried by a coal-charging car movable along an oven roof of a battery of horizontal coke oven chambers for removing charging hole covers and for cleaning sealing surfaces, said apparatus including the combination of a support member having guide means for vertical movement on a charging car, a support head carried by a shaft to pivot about a first axis on said support member, a magnetic gripper carried by a shaft rotatable about a second axis on said head, and a charging hole frame cleaner including a cleaning tool carried by a shaft to rotate about a third axis on said support head, said first axis bisecting the angle between said second and third axes which are disposed in a plane at an angle to one another on opposite sides of said first axis.

4,515,661
PROCESS FOR SEPARATING HIGHLY PURE BUTENE-1 AND BUTENE-2

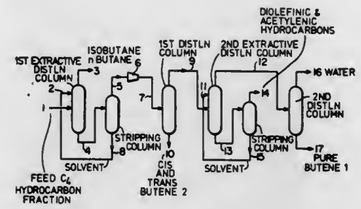
Shunichiro Ogura, Tokyo, and Masamichi Soumai, Yokohama, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,871

Claims priority, application Japan, Oct. 13, 1981, 56-163073; Oct. 13, 1981, 56-163074

Int. Cl.³ B01D *3/40;* C07C *7/04*

U.S. Cl. 203—60 **3 Claims**



1. A process for separating highly pure butene-2 and highly pure butene-1 substantially free from diolefinic and acetylenic hydrocarbons from a C_4 hydrocarbon fraction containing isobutane, n-butane, butene-1, butene-2, and at least one hydrocarbon selected from diolefinic hydrocarbons and acetylenic hydrocarbons, which comprises

(1) as a first extractive distillation step, treating the C_4 hydrocarbon fraction with a polar solvent in a first extractive distillation column to separate it into an overhead product containing isobutane and n-butane as main ingredients and a bottoms product containing butene-1, butene-2 and said at least one hydrocarbon as main ingredients,

(2) as a first distillation step, introducing the bottoms product from step (1) into a first distillation column to obtain a fraction containing butene-1, and said at least one hydrocarbon as main ingredients from the top of the column and purified butene-2 from the bottom of the column,

(3) as a second extractive distillation step, introducing the fraction obtained in step (2) containing butene-1 as main ingredients into a second extractive distillation column and treating it with a polar solvent to separate it into an overhead product containing butene-1 as a main ingredient and a bottoms product containing said at least one hydrocarbon as main ingredients, and

(4) as a second distillation step, introducing the overhead product obtained in step (3) into a second distillation column to remove a tiny amount of water from the top of the column and obtain purified butene-1 from the bottom of the column.

4,515,662
PROCESS FOR FABRICATING PRECISION OPTICAL SPACERS FOR IMAGE SENSOR FILTERS

William S. Phy, Los Altos Hill, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 233,347, Feb. 11, 1981, Pat. No. 4,388,525. This application Feb. 7, 1983, Ser. No. 464,187

Int. Cl.³ C25D *5/02*

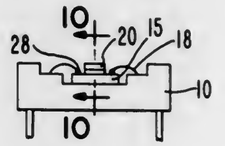
U.S. Cl. 204—15 **14 Claims**

1. A process for fabricating spacers of a desired thickness for separating a filter from an underlying integrated circuit structure, comprising the steps of:

forming a pattern of an electrically conductive material on one surface of the filter, the pattern being substantially thinner than the desired thickness;

depositing a selected material over all of the filter except on the electrically conductive material, the selected material being deposited to substantially the desired thickness;

depositing additional electrically conductive material on at least the pattern such that the pattern and the selected



material cooperate to ensure that the electrically conductive material deposits substantially uniformly to the desired thickness; and

removing the selected material.

4,515,663
ACID ZINC AND ZINC ALLOY ELECTROPLATING SOLUTION AND PROCESS

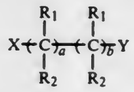
Alice M. Strom, Warren; R. Wilbur Herr, Troy, and Sylvia Martin, Utica, all of Mich., assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 9, 1984, Ser. No. 568,361

Int. Cl.³ C25D *3/22, 3/56*

U.S. Cl. 204—44.2 **19 Claims**

1. An aqueous acid electroplating solution containing zinc ions in an amount effective to electrodeposit zinc, and optionally cobalt and/or nickel ions in an amount effective to electrodeposit a zinc-cobalt, zinc-nickel, and zinc-cobalt-nickel alloy; boric acid and the bath soluble compatible salts thereof present in an amount of about 2.5 g/l to 25 g/l calculated as boric acid, hydrogen ions present inn an amount to provide a pH on the acid side, and a bath soluble and compatible polyhydroxy additive agent containing at least 3 hydroxyl groups and at least 4 carbon atoms of the structural formula:

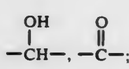


Wherein:

R_1 is —H, —CH_2—OH, an alkyl group containing 1–4 carbon atoms, a bridging group defined by —R_3—;

R_2 is —H, —OH, —CH_2OH, a bridging group defined by —R_4—;

—R_3— is —CH_2—,



—R_4— is —$(CH_2)_c$—, or —CH_2—O—CH_2—;

X and Y are the same or different and are

—NR_5; —SO_3H, an alkyl, alkenyl, alkynyl group containing 1 to 4 carbon atoms; an hydroxy alkyl group containing 1–4 carbon atoms, and hydroxy alkenyl and hydroxy alkynyl group containing 3 to 5 carbon atoms;

R_5 is —H, an alkyl, alkenyl, alkynyl, or hydroxy alkyl group containing 1–4 carbons;

a is an integer ranging from 0–6;

b is an integer ranging from 0–6;

c is an integer ranging from 1–5; and

a+b is an integer from 1–6;

as well as the compatible bath soluble Group IA and IIA, zinc and ammonium salts thereof and mixtures thereof.

4,515,664

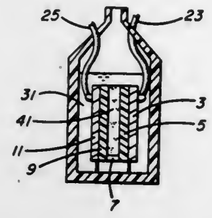
ELECTRO ORGANIC METHOD

Malcolm Korach, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 478,930, Mar. 25, 1983, Pat. No. 4,445,983. This application Jan. 27, 1984, Ser. No. 574,502

Int. Cl.³ C25B *1/30, 3/04*

U.S. Cl. 204—62 **6 Claims**



1. A method of electrolytically forming hydrogen peroxide in a solid polymer electrolyte electrolytic cell having an anode, a cathode, and solid electrolyte means therebetween whereby to divide the cell into an anode compartment and a cathode compartment, which method comprises providing a non-aqueous media containing a quinone chosen from the group consisting of 2-alkyltetrahydroanthraquinone, 2-alkylanthraquinone, and mixtures thereof to the cathode compartment, passing an electrical current from the anode to the cathode whereby to evolve a reduced form of the quinone, and thereafter oxidizing the reduced form of the quinone by the introduction of oxygen whereby to regenerate the quinone and produce hydrogen peroxide.

4,515,665

METHOD OF STABILIZING METAL-SILICA COMPLEXES IN ALKALI METAL HALIDE BRINES

David L. Fair, Chattanooga; David D. Justice, Cleveland, and Pilar P. Kelly, Knoxville, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 24, 1983, Ser. No. 544,677

Int. Cl.³ C25B *1/46*

U.S. Cl. 204—98 **12 Claims**

1. A process for stabilizing a complex of metal and silica in an alkali metal halide brine used as an anolyte feedstock in an electrolytic membrane cell having an anolyte compartment and a catholyte compartment, said process comprising

(a) adjusting the pH of said brine to a level of between about 4 and about 12; and

(b) passing said pH adjusted brine into said anolyte compartment while operating said cell under conditions which maintain the pH of said brine during electrolysis at a value above about 3.5, said operating conditions comprising

(i) initially charging said catholyte compartment with a caustic solution having an alkali metal hydroxide concentration of between about 26% to about 30% at the startup of said cell; and

(ii) changing the concentration of the caustic solution in said catholyte compartment so that, over a period of from about 15 to about 35 days, said alkali metal hydroxide concentration builds up to between about 32% and about 40%.

4,515,666

RADIATION-STABLE POLYOLEFIN COMPOSITIONS CONTAINING AROMATIC KETONE COMPOUNDS

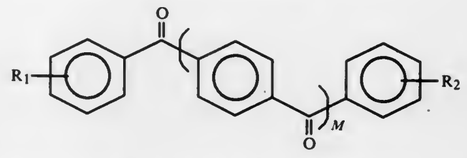
John W. Rekers, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 28, 1983, Ser. No. 470,189

Int. Cl.³ C08K *5/13, 5/07*

U.S. Cl. 204—159.2 **2 Claims**

1. A method for sterilizing a shaped article made from an olefinic polymer composition which comprises subjecting said shaped article to high energy radiation in an amount sufficient to sterilize said shaped article; said olefinic polymer composition comprising an olefinic polymer selected from homopolymers and copolymers made from aliphatic, ethylenically unsaturated monomers containing from 2 to about 10 carbon atoms; from about 100 to about 3,000 parts per million based upon the weight of the total composition of a hindered phenolic stabilizer; and from about 100 to about 10,000 parts per million based upon the weight of the composition of a stabilizer selected from compounds of the formula:



wherein M is 0 or 1; R_1 and R_2 are each independently selected from hydrogen or an alkyl group containing from 1 to about 20 carbon atoms.

4,515,667

NOVEL CATALYSTS AND PROCESSES FOR THE PHOTOCHEMICAL DECARBOXYLATION OF ALPHA-HYDROXY CARBOXYLIC ACIDS

Rosemary Bartoszek-Loza, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 19, 1983, Ser. No. 515,233

Int. Cl.³ C07C *3/24*

U.S. Cl. 204—162 R **13 Claims**

1. A process for the photochemical decarboxylation of an alpha-hydroxy carboxylic acid to the corresponding alcohol which process comprises irradiating a mixture of (a) a solution of an alpha-hydroxy carboxylic acid and (b) a metal titanate.

4,515,668

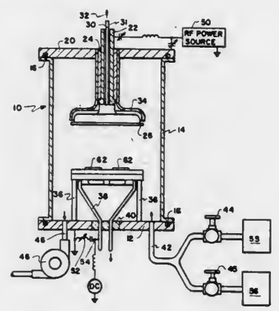
METHOD OF FORMING A DIELECTRIC LAYER COMPRISING A GETTERING MATERIAL

David J. Brownell, Maple Grove, and Jon A. Roberts, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 25, 1984, Ser. No. 603,858

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 D **27 Claims**



1. A method of forming a thin film dielectric layer on a substrate, comprising:

providing a sputtering chamber having a dielectric target disposed on a target electrdode;

introducing into the sputtering chamber a substrate to be covered with a thin film dielectric layer and locating the substrate on a substrate holder electrode spaced from the target electrode;

evacuating the chamber;

introducing into the chamber a sputtering atmosphere comprising an inert gas and a gas containing an element of a gettering material, the gas containing an element of a gettering material being transferred into the chamber through a metering valve from a container outside the chamber; and

applying an RF potential across the target electrode and the substrate holder electrode to establish a glow discharge in the region between the electrodes in order to deposit a thin film dielectric layer doped with a gettering material formed by a chemical reaction in the chamber.

4,515,669

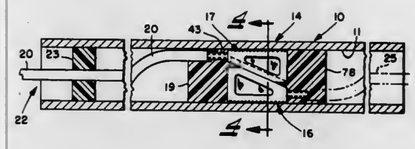
ANODE AND CONNECTION

James R. Dimond, Burton, and James B. Bushman, Medina, both of Ohio, assignors to Harco Corporation, Medina, Ohio

Continuation of Ser. No. 302,855, Sep. 16, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 526,459

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—196 **38 Claims**



1. A tubular cathodic protection anode including a tubular anode member with outside surface means for transmitting a flow of electricity between said anode member and a surrounding medium and an inside surface, an internal electrical connection, said connection comprising at least two opposed wedge blocks, said wedge blocks being adapted relatively to be driven axially to be wedged tightly radially against said inside surface of said tubular anode member, said blocks being of such dimensions that a sealant flow passage open at both axial ends of the wedge blocks to facilitate sealing of the wedge blocks in the anode member is formed interiorly of the anode member along a side of the blocks, and an electrical lead connected to at least one of said blocks.

4,515,670

DEVICE FOR GALVANICALLY APPLYING A METAL COATING

Harry C. Piepers, Eindhoven, and Gerard J. van Poele, Drunen, both of Netherlands, assignors to Meco Equipment Engineers, B.V., Netherlands

Filed Feb. 24, 1984, Ser. No. 582,993

Int. Cl.³ C25D *17/28, 17/06*

U.S. Cl. 204—199 **15 Claims**

1. An electroplating device for applying a coating of metal, particularly precious metal, to separate objects comprising:

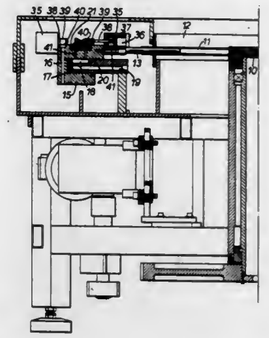
(A) a wheel-shaped member;

(B) a driving source coupled to said wheel-shaped member to rotate said member about a rotary axis;

(C) a plurality of holder means arranged one behind the other and fastened to said wheel-shaped member, each of said holder means defining grooves for receiving a predetermined number of said objects arranged side by side and which further includes masking members arranged so as to be movable transversely of the rotary axis of said wheel for at least partly covering said objects received in said holder;

(D) means on said holder for supporting said objects;

(E) at least one reservoir arranged below said wheel-shaped member and having at least one opening on its top side and being in sealing relationship at least around said opening with the underside of said wheel-shaped member; and



(F) means for supplying pressurized electrolyte to said reservoir, said wheel-shaped member and said holder having passages for guiding electrolyte from said reservoir to said objects supported by said holder.

4,515,671

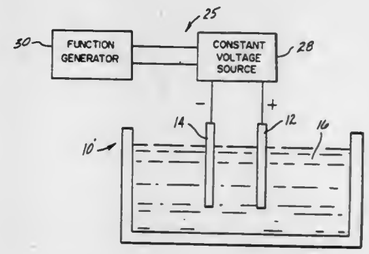
ELECTROCHEMICAL TREATMENT OF COPPER FOR IMPROVING ITS BOND STRENGTH

Ned W. Polan, Madison, and Chung-Yao Chao, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 460,630, Jan. 24, 1983, Pat. No. 4,468,293, which is a continuation-in-part of Ser. No. 355,053, Mar. 5, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 575,240

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—228 **3 Claims**



1. An apparatus for treating metal foil for enhancing its ability to adhere to a substrate, said apparatus comprising:

means for containing an electrolytic bath solution containing a concentration of metal;

an anode and a cathode immersed in said solution;

said cathode comprising said metal foil;

means for providing a non-zero base cathodic current having a desired frequency and a desired waveform comprising recurring pulses with each said pulse comprising a first portion having a first current density for a first time period, a base portion having a second current density for a second time period, said first current density being greater than the limiting current density and substantially larger than said second current density, said second current density being less than the limiting current density, and said first time period being less than about 0.125 seconds;

said current providing means comprising a source of direct current and a function generator for modifying the direct current signal from said source to produce said current with said desired waveform; and

means for applying said current to said cathode and anode so that said foil is subjected to more than 10 of said pulses so

that metal from said solution is deposited onto said foil as a fine dendritic plating having improved peel strength, improved resistance to wear and stress, and improved powder transfer characteristics.

4,515,672

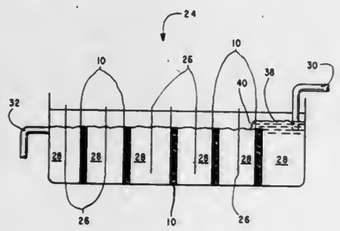
RETICULATE ELECTRODE AND CELL FOR RECOVERY OF METAL IONS

Gary F. Platek, Concord, and Geoffrey P. Krug, Painesville, both of Ohio, assignors to Eltech systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 319,480, Nov. 9, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 516,867

Int. Cl.³ C25C *7/00, 7/02;* **C25B** *11/12, 11/03*

U.S. Cl. 204—269 **5 Claims**



1. In an electrolytic cell having no separator between an anode and cathode of a cell pair for removal of a metal ion contained in a waste water stream comprising,

a non-conductive cell box including inlet and outlet means to introduce said stream into said cell box and lead it away therefrom, respectively;

plural anodes and alternating reticulate cathodes in spaced-apart relationship removably disposed in said cell box normal to the direction of flow of said solution, and bus bars disposed horizontally above said anodes and cathodes; the improvement comprising,

each said reticulate cathode formed by electroplating an electrically conductive open cell foam having a resistivity in the range from about 40 ohm-cm to about 1000 ohm-cm with a single deposit of metal in an amount sufficient to render said foam substantially as conductive as said metal, and to produce a relatively rigid reticulate through which said waste water stream initially flows with substantially negligible resistance so as to deposit said metal on said cathode.

4,515,673

ELECTRODE WITH ANODE ACTIVE LAYER

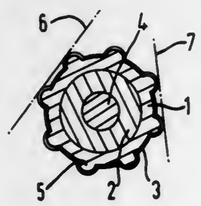
Peter C. S. Hayfield, Church Garth, England, assignor to Marston Palmer Limited, Wolverhampton, England

Filed Oct. 11, 1983, Ser. No. 540,856

Claims priority, application United Kingdom, Oct. 29, 1982, 8231029; Jun. 21, 1983, 8316808

Int. Cl.³ C25B *11/00*

U.S. Cl. 204—290 F **12 Claims**



1. An electrode comprising a metal substrate of a metal chosen from the group titanium and niobium with an anodically active layer, the anodically active layer having been produced by heating in an oxidising atmosphere at temperatures in excess of 350° C., there being provided a layer of tantalum or an alloy containing more than 50% of tantalum in metallic form between the anodically active layer and the substrate.

4,515,674

ELECTRODE FOR CATIONIC ELECTRODEPOSITION COATING

Yoshinobu Takahashi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 3, 1982, Ser. No. 404,659

Claims priority, application Japan, Aug. 7, 1981, 56-117574[U]; Aug. 12, 1981, 56-119556[U]

Int. Cl.³ C25B *11/04*

U.S. Cl. 204—292 **6 Claims**



1. An electrode for cationic electrodeposition coating which comprises:

(a) a cylindrical body with one end thereof closed, said body being made of a sintered metal oxide comprising 30 to 50 mole percent of FeO and 50 to 70 mole percent of Fe_2O_3 or 95 to 60 mole percent of Fe_2O_3 and 5 to 40 mole percent of at least one metal oxide of Mn, Ni, Co, Mg, Cu, Zn or Cd, said sintered metal oxide having a volume specific resistance of not more than 100,000 ohms-cm; and

(b) a core material of a metal member inserted into said cylindrical body by means of a bonding agent of a conductive material, wherein said cylindrical body comprises at least two divided cylindrical bodies, a cylindrical hollow member of hard resin being fitted bridging over the joint between the adjacent divided cylindrical bodies, with the divided cylindrical bodies being integrated by means of a curable resin.

4,515,675

MAGNETRON CATHODE FOR CATHODIC EVAPORTION APPARATUS

Jörg Kieser, Albstadt; Reiner Kukla, Hanau, and Gerd Deppisch, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 624,940

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324248

Int. Cl.³ C23C *15/00*

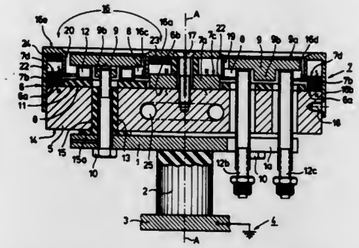
U.S. Cl. 204—298 **11 Claims**

1. A magnetron cathode for cathodic evaporation apparatus, comprising:

a target holder for releasably securing a plate-like target having a target face;

magnet means having pole faces parallel to the target face for producing at least one tunnel of magnetic field lines, which is circumferentially closed and overlaps the target and;

at least one housing for said magnet means, said housing being of non-ferromagnetic material which extends over the pole faces, the projections of said target and said pole faces in a common plane parallel to the target face being non-intersecting with respect to each other, in the zone of



the pole faces said housing being extended in the atomization direction at least to the plane of said target face, and said housing together with said magnet means being electrically insulated as regards both said target holder and ground.

4,515,676

CELL UNIT FOR OBSERVING ELECTROPHORESIS

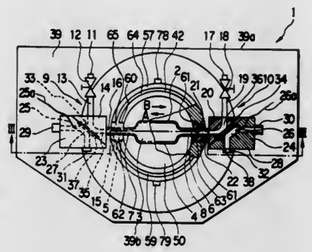
Yoshio Kawai, Musashino, and Kiyoshi Kitagawa, Komae, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,322

Claims priority, application Japan, Dec. 10, 1982, 57-216540

Int. Cl.³ G01N *27/28*

U.S. Cl. 204—299 R **16 Claims**



1. A cell unit for observing electrophoresis, said cell unit comprising:

(a) an electrophoretic measurement cell;

(b) first fluid conduit means for introducing a fluid specimen into said electrophoretic measurement cell;

(c) second fluid conduit means for removing a fluid specimen from said electrophoretic measurement cell;

(d) first and second enclosure means for enclosing said electrophoretic measurement cell;

(e) a gasket seal means in the form of an endless loop disposed between said first and second enclosure means and providing a fluid-tight seal therebetween, said gasket seal means having penetrating holes therethrough through which said first and second fluid conduit means pass in a fluid-tight fashion, and;

(f) said first and second enclosure means and said gasket seal means together defining a space in thermal contact with said electrophoretic measurement cell for accomodating a fluid used to control the temperature of a liquid specimen in said electrophoretic measurement cell.

4,515,677

APPARATUS FOR ELECTROCOATING

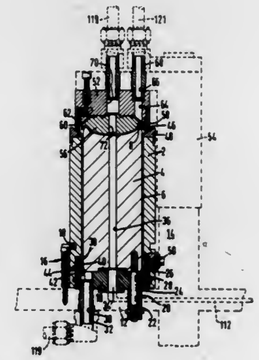
Michael J. Heathcoat, Faringdon; Douglas H. Jackson; Frederick W. Jowitt, both of Wantage; Jack R. Madley, Garsington, and Ian C. E. Stuart, Nr. Abingdon, all of England, assignors to Metal Box Limited, Reading, England

Continuation of Ser. No. 309,350, Oct. 7, 1981,. This application Jul. 29, 1983, Ser. No. 517,740

Claims priority, application United Kingdom, Oct. 15, 1980, 8033282

Int. Cl.³ C25D *13/14*

U.S. Cl. 204—300 EC **8 Claims**



1. Apparatus for electrocoating internal and external surfaces of a can, said apparatus comprising: a cell including a cylindrical housing (2) having a fixed base and a movable lid (52), a mandrel (4) extending axially within said housing, the mandrel (4) forming a first electrode having a surface of substantially the same shape as the internal surface of a can to be electrocoated, a first fluid passage (36) extending axially through said mandrel, a second electrode (56) carried by said cylindrical housing, the second electrode having a surface of substantially the same shape as an external surface of a can to be electrocoated, a second fluid passage (72) extending through said second electrode coaxially of said housing, and guide means (40, 44) carried by said housing and arranged to positively locate a can in an inverted position in the housing such that the first electrode is uniformly spaced from the internal surface of the can and the second electrode is uniformly spaced from the external surface of the can, said guide means also forming contact means (40, 50) arranged to make electrical contact with a can received within the housing, wherein said guide means comprises an annular metal seal (40) carried by said housing and dimensioned such that the free edge of a can to be electrocoated is a push fit therewithin whereby said metal seal positively locates the can and makes electrical contact therewith, and wherein said contact means also comprises a contact (50) electrically connected to said metal seal, means for flowing an electrocoating fluid between each surface of the can and the corresponding surface of the first and second electrodes, and means for applying at least one electrocoating pulse between each of said first and second electrodes and the can, the total duration of electrocoating pulses being in the range 10 msec to 500 msec.

4,515,678
PROCESS AND CATALYST FOR THE HYDROGENATION OF COAL

Hans J. Wernicke, Wolfratshausen-Waldram, and Heinz Zimmerman, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,431
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **4 Claims**

1. The process of coal hydrogenation consisting essentially of combining a flowable mixture of blast furnace flue dust, finely divided coal particles and liquid hydrocarbons, pressurizing the mixture to high pressure and heating the mixture with hydrogen so that the blast furnace flue dust acts as a hydrogenation catalyst, separating gaseous products and liquid and solid reaction products, separating by boiling the liquid products under atmospheric pressure and under vacuum and passing the remaining residue to partial oxidation, partially oxidizing the residue, producing hydrogen and slag containing the blast furnace flue dust catalyst, drawing off the slag containing the flue dust catalyst from the partial oxidation slag, returning slag resulting from the partial oxidation and

containing the catalyst to a blast furnace, and reusing the blast furnace flue dust catalyst from the hydrogenation in the blast furnace.

4,515,679
PROCESS FOR RETORTING OIL SHALE WITH FLUIDIZED RETORTING OF SHALE FINES

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 451,602, Dec. 20, 1982, Pat. No. 4,448,668. This application Jul. 5, 1983, Ser. No. 510,402
Int. Cl.³ C10G *1/02*
U.S. Cl. 208—11 R **63 Claims**

1. A retorting process comprising:

retorting hydrocarbon-containing particles of a size not readily fluidizable by contact with heated gases in a retorting zone;

crushing hot, uncombusted particles removed from said retorting zone in a crushing zone to a size more readily fluidizable;

maintaining hot, crushed, uncombusted particles removed from said crushing zone in a fluidization zone as a fluidized bed under substantially non-combustive conditions;

retorting raw hydrocarbon-containing fines introduced into said fluidization zone so as to educe hydrocarbon vapors from said fines;

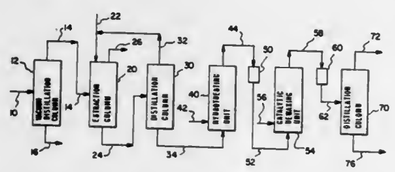
recovering the educed hydrocarbon vapors; and

recovering retorted particulates from said fluidization zone.

4,515,680
NAPHTHENIC LUBE OILS

William P. Hettinger, Jr., Russell, Ky.; Frank H. Turrill, Huntington, W. Va.; George J. Rozman, and H. Wayne Beck, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 16, 1983, Ser. No. 494,739
Int. Cl.³ C10G *55/00, 55/02*
U.S. Cl. 208—87 **11 Claims**



11. A process for preparing a high quality lubricating oil base stock having a viscosity in the range of about 700 to 1,000 SUS at 100° F., having a pour point of less than about 20° F., and containing at least about 50 volume % naphthenic hydrocarbons which consists essentially of:

(a) vacuum distilling a reduced crude cut having an atmospheric boiling point greater than about 650° F. and recovering therefrom an overhead fraction having a boiling point range (corrected to atmospheric pressure) of about 675 to 1100° F.

(b) contacting the overhead fraction from step (a) with furfural to extract therefrom a hydrocarbon mixture containing at least about 50 volume % aromatic hydrocarbons, less than about 10 volume % paraffinic hydrocarbons and at least a portion of the naphthenic hydrocarbons originally present in said overhead fraction,

(c) recovering the hydrocarbon mixture from the furfural employed in step (b),

(d) hydrotreating the hydrocarbon mixture from step (c) with hydrogen at a temperature in the range of about 620 to 750° F under a pressure in the range of about 1500 to 2500 psi at a LHSV in the range of about 0.25 to 1.0 in the presence of cobalt-molybdenum or a nickel-molybdenum catalyst supported on a refractory inorganic oxide,

(e) catalytically dewaxing the product of step (d) by treating said product with hydrogen at a temperature in the range of about 500 to 1000° F. under a pressure of about 1000 to 3000 psi at a LHSV of about 0.1 to 10 in the presence of a noble metal, or a Group VI-B metal, or a Group VIII metal supported on an acidic zeolite support,

(f) distilling from the product of step (e) materials boiling below about 650° F., and

(g) distilling the product from step (f) under vacuum to remove additional low boiling fractions and recovering as a bottoms fraction a lubricating oil base stock having a viscosity of about 700 to 1,000 SUS at 100° F., containing at least about 50 volume % naphthenic hydrocarbons and less than about 40 volume % aromatic hydrocarbons and having a pour point of less than about 20° F.

4,515,681
CATALYTIC DEWAXING USING COLLAPSED LARGE PORE ZEOLITES

Ian A. Cody, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 8, 1982, Ser. No. 416,092
Int. Cl.³ C10G *47/16*
U.S. Cl. 208—111 **31 Claims**

1. A hydrocracking process for reducing the pour point and wax content of waxy hydrocarbon oils comprising contacting said waxy hydrocarbon oil under hydrocracking conditions with a very low crystallinity (VLC) metal-containing catalyst made from a large-pore zeolite having a low SiO_2/Al_2O_3 ratio made by the process comprising:

(a) exchanging more than about 50% of exchangeable cations from said zeolite with a material that produces hydroxyl groups during calcination,

(b) calcining the exchanged zeolite at a temperature above about 300° C. in a substantially dry atmosphere to reduce crystallinity in said zeolite by at least about 50%, and

(c) loading a catalytic metal either before or after said calcination.

4,515,682
CATALYSIS OVER ACTIVATED HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 375,076, May 5, 1982, Pat. No. 4,444,900. This application Feb. 17, 1984, Ser. No. 581,498
Int. Cl.³ C10G *11/05, 47/08, 47/16*
U.S. Cl. 208—111 **17 Claims**

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a crystalline zeolite having an initial silica:alumina mole ratio greater than about 100:1 and having been synthesized from a reaction mixture comprising a diamine, said zeolite being treated by the squential steps of reacting said zeolite with a dilute aqueous solution of hydrogen fluoride of from about 0.1 to about 5 Normal at a temperature of from about 0° C. to about 30° C. for a time of less than about 60 minutes, contacting said hydrogen fluoride reacted zeolite with aluminum chloride vapor at a temperature of from about 100° C. to about 850° C., and converting said aluminum chloride contacted zeolite to hydrogen form.

4,515,683
PASSIVATION OF VANADIUM ACCUMULATED ON CATALYTIC SOLID FLUIDIZABLE PARTICLES

H. Wayne Beck; Charles F. Lochow, Jr., both of Russell, and Charles W. Nibert, Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 15, 1983, Ser. No. 532,252
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—113 **8 Claims**

1. In a process for catalytic cracking of hydrocarbon feed materials boiling above about 316° C. (600° F.) comprising vanadium contaminants with fluidizable particle material and wherein regeneration of the particle material to remove hydrocarbonaceous deposits by combustion converts deposited vanadium to low melting oxides whereby the oxides of vanadium flow across the particle material surface causing pore plugging and agglomeration of fluid particle material beyond fluidization capability, the improvement for passivating deposited vanadium to reduce its degrading characteristics which comprises nonionic deposition of lanthanum or lanthanum-rich rare earths on said particle in an amount sufficient to passivate deposited vanadium prior to or during contact between said particle material and said feed material.

4,515,684
OIL RECLAMATION PROCESS AND APPARATUS THEREFOR

Edward G. Brown, Beverly Hills, Calif., assignor to CBM-Oil Reclamation Systems, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 310,895, Oct. 13, 1981, abandoned. This application Oct. 26, 1983, Ser. No. 545,466
Int. Cl.³ C10M *11/00*
U.S. Cl. 208—180 **43 Claims**

37. A batch process for reclamation of oil from emulsified mixtures of oil, water and particulate solids which comprises:

(a) providing at least one settling tank having an internal mixing centerwell formed of an indirect annular heat exchange zone defined by annular inner and outer walls of the first centerwell and having a fluid inlet and outlet for passage of a heating or cooling fluid therethrough, in open downward flow communication with a surrounding quiescent settling zone of the first settling tank;

(b) at least substantially filling said settling zone with said emulsified mixture;

(c) introducing flow of a heating fluid to said annular heating zone to internally heat the contents thereof to a predetermined temperature below the oil-oxidation temperature, with agitation, substantially confined to said mixing centerwell while adding a demulsifying agent to said mixing centerwell in a quantity sufficient to cause demulsification of the emulsified mixture of oil, water and particulate solids;

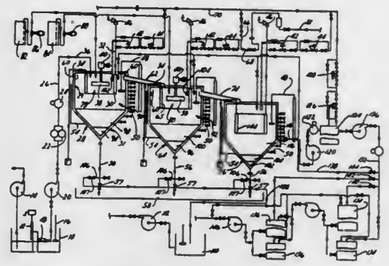
(d) discontinuing agitation and forming from the demulsified emulsion a clarified-oil phase, a water phase, and a sludge phase; and

(e) water-displacing the clarified oil from the settling zone to an oil-surge tank.

41. A system for reclaiming oil from emulsion mixtures comprising oil, water and particulate solids which comprises:

(a) at least one insulated settling tank having:

(i) a removable lid, a vertically-oriented internal mixing centerwell of a given volume forming indirect heat exchange having at least two connected concentric cylindrical annular surfaces having a fluid inlet and outlet for passage of at least a heating fluid there-



through, said mixing centerwell extending downward from the lid communicating in open downward flow relation with an annularly surrounding settling zone of the settling tank formed of a cylindrical side and a conical base having an outlet for discharge of at least sludge and a first internal annular overflow weir at the upper end of said cylindrical side adjacent the removable lid; and

(ii) agitation means adjustably extending into said vertically-oriented internal mixing centerwell, said agitation means having a vertically-adjustable agitator for control of agitator extension into the vertically-oriented mixing centerwell for selectively confining agitation to said mixing centerwell;

(b) means to introduce emulsion mixtures and demulsifying agent to said vertically-oriented mixing centerwell;

(c) a surge tank in flow communication with said annular overflow weir and internal means for heating or cooling the contents thereof.

4,515,685
TREATMENT AND SEPARATION OF PETROLEUMS AND RELATED MATERIALS

George C. Yeh, 2 Smedley Dr., Newtown Square, Pa. 19073

Continuation of Ser. No. 399,853, Jul. 19, 1982, abandoned. This application May 8, 1984, Ser. No. 608,263
Int. Cl.³ C10C *3/00, 3/08*
U.S. Cl. 208—309 **18 Claims**

1. A method for treating a liquid hydrocarbon feedstock containing asphaltenes having resins and heavy aromatic compounds associated therewith to remove said asphaltenes which comprises

(A) intimately mixing said feedstock with asphaltenes which are substantially free of resins and heavy aromatic compounds while maintaining said feedstock at a temperature below the boiling point of said feedstock, the amount of said asphaltenes combined with said feedstock being sufficient to break the equilibrum existing between the asphaltenes initially present in said feedstock and the resins and

heavy aromatic compounds associated therewith to cause precipitation of substantially all of the asphaltenes initially present in said feedstock and added asphaltenes,

(B) separating precipitated asphaltenes from said feedstock by subjecting said feedstock containing added asphaltenes to a mechanical separation, and

(C) recovering a liquid hydrocarbon fraction of substantially reduced asphaltenes content.

4,515,686
METHOD FOR THE OPERATION OF AN AIR SEPARATOR, AND AN AIR SEPARATOR FOR THE PRACTICE OF THE METHOD

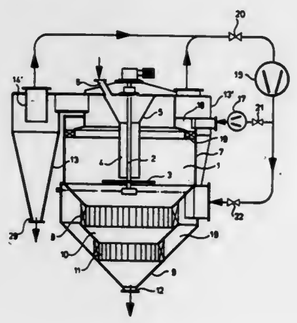
Hans-Jürgen Janich, Neubeckum, Fed. Rep. of Germany, assignor to PKS-Engineering GmbH & Co. KG, Neubeckum, Fed. Rep. of Germany

Filed Jun. 15, 1983, Ser. No. 504,652

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222878

Int. Cl.³ B07B *7/10*

U.S. Cl. 209—139 A **21 Claims**



1. Method for the operation of an air separator, prefereably a circulating air separator, which is equipped with a separating chamber terminating at its bottom in a coarse material collector provided with a discharge spout into which collector the feedstock is delivered in dispersed form and is seized by an upward stream flowing through the separating chamber rotatingly from bottom to top, the coarse material being moved towards the separating chamber casing periphery and the fines being removed from the separating chamber by a removal air stream, characterized in that to the upward air stream a flow rotating in the same sense is delivered adjacent the casing periphery (7) and seizes and carries away the coarse material.

4,515,687
ORE FLOTATION AND FLOTATION AGENTS FOR USE THEREIN

Clarence R. Bresson, and Rector P. Louthan, both of c/o French, Hughes and Doescher, P.O. Box 2443, Bartlesville, Okla. 74005

Filed May 10, 1984, Ser. No. 608,825

Int. Cl.³ B03D *1/06;* **C09K** *3/00;* **C22B** *3/00;* **C07C** *154/02*

U.S. Cl. 209—167 **34 Claims**

11. A process for producing a novel composition of matter comprising:

reacting H_2S with a composition having the formula

$$R^1R^2NR^3OCX, \quad \text{(I)}$$

wherein R^1 is selected from the group consisting of alkyl radicals each having no more than 6 carbon atoms, R^2 is selected from the group consisting of alkylene radicals each having no more than 6 carbon atoms, and X is selected from the group consisting of alkenyl radicals each having no more than 6 carbon atoms, to form a composition having the formula

$$R^1R^2NR^3OCR^4SH, \quad \text{(II)}$$

wherein R^4 is selected from the group consisting of alkylene radicals each having no more than 6 carbon atoms.

14. A process in accordance with claim 11 characterized further to include reacting the composition of formula (II) with CS_2 and a hydroxide having the formula

$$MOH \quad \text{(III)},$$

wherein M is selected from the group consisting of ammonium and alkali metals to form a composition having the formula

$$R^1R^2NR^3OCR^4S{-}C(=S){-}S{-}M, \quad \text{(IV)}$$

and recovering the composition of formula (IV) as the product of the process.

22. A process for recovering minerals comprising:

(a) mixing crushed ore containing minerals, water and a composition having the formula

$$R^1R^2NR^3OCR^4S{-}C(=S){-}S{-}M,$$

wherein R^1 is selected from the group consisting of alkyl radicals each having no more than 6 carbon atoms, R^2 is selected from the group consisting of alkyl radicals each having no more than 6 carbon atoms, R^3 is selected from the group consisting of alkylene radicals each having no more than 6 carbon atoms, R^4 is selected from the group consisting of alkylene radicals each having no more than 6 carbon atoms, and M is selected from the group consisting of ammonium and alkali metals, to establish a pulp;

(b) aerating said thus established pulp to produce a froth containing said minerals; and

(c) recovering said minerals from said thus produced froth.

4,515,688
PROCESS FOR THE SELECTIVE SEPARATION OF BASE METAL SULFIDES AND OXIDES CONTAINED IN AN ORE

Alfredo P. Vargas, La Paz, Bolivia, assignor to South American Placers, Inc., Peru

Continuation-in-part of Ser. No. 410,127, Aug. 20, 1982, abandoned. This application Mar. 18, 1983, Ser. No. 476,611

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—167 **22 Claims**

1. A process for the separation for the mineral components of an ore, said ore comprising base metal sulfides including pyrite, by sequential flotation, said process comprising in sequence:

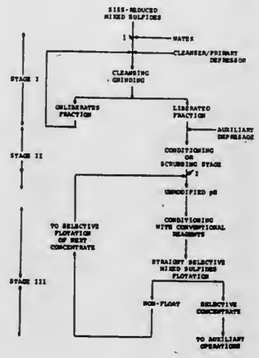
(a) grinding said ore to form ore pulp and mixing said pulp with sulfide ions and cyanide ions at amounts:

(i) sufficient to depress pyrite and to inhibit flotation of all the other base metal sulfides contained in said ore except the sulfides of the metal which will be floated first, but

(ii) insufficient to cause overdepression of said other base metal sulfides; said ions having been introduced into said pulp at predetermined times in a predetermined sequence prior to flotation;

said sulfide ion amounts ranging between about 8 and about 82 g/ton of ore and said cyanide ion concentration ranging between about 11 and about 110 g/ton of ore;

(b) adding a collector, for the sulfides of the metal which were not inhibited in said step (a)(i); to said ion-containing pulp and



(c) floating the sulfides of the metal which were not inhibited in said step (a)(i); wherein said process takes place at a pH essentially determined by the ore composition and the quality of the water used to form said pulp, said pH, as so determined, ranging between about 5.5 and about 8.5, without addition of substantial amounts of alkaline or acid pH modifiers, sufficient to change the pH.

4,515,689
CLASSIFYING MEANS

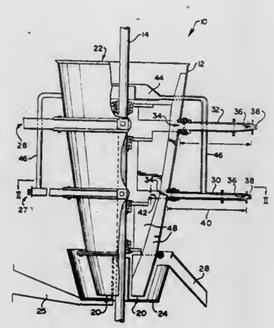
Jacobus L. Vivier, Verkeerdevlei, South Africa, assignor to Clasicon (Proprietary) Limited, Bloemfontein, South Africa

Filed Dec. 2, 1983, Ser. No. 557,545

Claims priority, application South Africa, Dec. 3, 1982, 82/8920

Int. Cl.³ B03B *5/58;* **B04B** *1/10*

U.S. Cl. 209—453 **25 Claims**



1. A centrifugal classification apparatus for separating particulate solids in a fluid mixture into fractions having common physical characteristics, the apparatus including

an open-ended hollow shell rotatable about a longitudinal rotation axis and having an inlet opening at one axial end for receiving the fluid mixture to be separated, an outlet opening at its other axial end, and a wall extending between the inlet opening and the outlet opening;

a discharge aperture in the shell intermediate its inlet and outlet openings through which the solids may pass;

a collecting compartment fast with the shell and located about the discharge aperture for collecting a fraction of the solids having common physical characteristics, the compartment extending radially outwardly from the shell and having a radial depth greater than the maximum longitudinal width of the aperture and a closable discharge orifice at its radially outer end;

a flow causing means for causing fluid mixture fed into the shell at its inlet opening to flow along the wall of the shell towards and past the discharge aperture and towards the outlet opening;

a valve at the orifice for controlling discharge of solids from the compartment;

a flushing means for introducing a counter-current flushing fluid into the collecting compartment between its discharge orifice and the aperture; and

a splitting member extending circumferentially across the discharge aperture and projecting inwardly from the wall of the shell, so that the aperture is divided into an upstream aperture, longitudinally closer to the inlet opening, and a downstream aperture, longitudinally closer to the outlet opening.

4,515,690
FUEL SUPPLY SYSTEM FOR DIESEL ENGINES

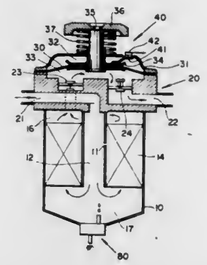
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jul. 19, 1983, Ser. No. 514,796

Claims priority, application Japan, Aug. 6, 1982, 57-120147[U]; Aug. 31, 1982, 57-131383[U]; Mar. 10, 1983, 58-34795[U]

Int. Cl.³ B01D *27/10*

U.S. Cl. 210—90 **24 Claims**



1. Apparatus for use in a fuel supply system supplying controlled amounts of fuel into a diesel engine, said fuel supply system including a source of fuel, a fuel injection pump, and a fuel passage connected between said fuel source and said fuel injection pump, said apparatus comprising:

(a) a filter for filtering out contaminants from fuel, said filter positioned in said fuel passage upstream of said fuel injection pump;

(b) a priming pump for priming fuel to said fuel injection pump, said priming pump including:

a casing;

a priming pump diaphragm provided in said casing to form first and second chambers on opposite sides of said diaphragm, said first chamber communicating with the atmosphere, said second chamber forming a part of said fuel passage between said filter and said fuel injection pump, said priming pump diaphragm being moveable to direct fuel from said second chamber into the fuel injection pump; and

resilient means for urging said diaphragm towards said first chamber;

valving means for permitting fuel flow only in a direction (1) from said filter to said second chamber and (2) from said second chamber to said fuel injection pump;

(c) a switch operable between first and second states in response to movement of said priming pump diaphragm caused by variations in pressure in said second chamber, said switch being in said first state when the pressure in said second chamber is above a predetermined value, said

switch changing to said second state when the pressure in said second chamber decreases to said predetermined pressure value; and

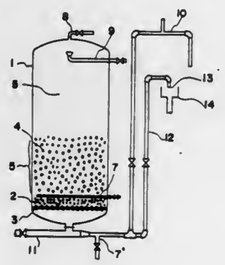
(d) an indicator responsive to said second state of said switch for providing an indication informing that said filter is clogging.

4,515,691

FILTRATION APPARATUS

Hiroaki Ida, Uji; Masahiro Fujii, Kyoto, and Toshio Haruta, Nagaokakyo, all of Japan, assignors to Unitika, Ltd., Hyogo, Japan

Filed Jun. 25, 1982, Ser. No. 392,361
Claims priority, application Japan, Jul. 13, 1981, 56-109838
Int. Cl.³ B01D *29/08*
U.S. Cl. 210—274 **13 Claims**



1. A filtration apparatus comprising a filter tank, a support at least at a lower interior portion of the filter tank, a filter medium layer formed above the support and comprising accumulated but unconnected lumps of interlocked short fibers 5 to 50 mm in fiber length, said lumps being composed without a binder connecting the individual fibers thereof, the filter medium layer being composed without a binder interconnecting the individual lumps so that there is no binder in the spaces between the lumps, a filter medium moving zone provided within the filter tank above the support and having a height at least one half the thickness of the filter medium layer for rendering the fiber lumps free to move therein independently of each other during washing of the filter medium layer, air injecting means disposed under the filter medium layer, prefilt inlet means disposed at one of an upper portion of the filter tank and a lower portion thereof, and filtrate outlet means disposed at the other of the filter tank upper portion and lower portion.

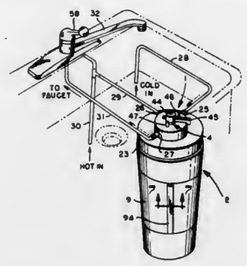
4,515,692

WATER FILTER

James W. Chandler, and William D. Chandler, both of Ashland, Ohio, assignors to Water Soft, Inc., Ashland, Ohio

Filed May 6, 1983, Ser. No. 492,359
Int. Cl.³ B01D *23/14, 23/24*
U.S. Cl. 210—278 **19 Claims**

12. A water filter adapted to be installed in separate cold and hot water supply lines comprising a housing containing a granular activated carbon filtration bed, valve means on said housing to control water flow through said filtration bed, said valve means including a valve body and a movable valve disk cooperating with said valve body, said valve body having three ports only, the first port being adapted for connection to and positioning in said cold water supply line, the second port being adapted for connection to a branch of the hot water supply line and the third port being adapted for connection to an effluent water line leading from the housing, said valve disk having flow control means therein selectively cooperating with said three ports to permit cold water from the cold water line to flow through the filtration bed in one direction and then out the effluent water line when said valve disk is in a first position for service and alternatively to permit hot water from the hot water branch to flow through the filtration bed in an



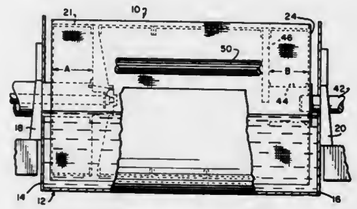
opposite direction and then out the effluent water line when said valve disk is moved to a second position for backwashing.

4,515,693

FIBERGLASS-REINFORCED SOLID PLASTIC DRUM

Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 20, 1981, Ser. No. 294,461
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—402 **2 Claims**



1. A rotary drum filter comprising: a fiberglass-reinforced plastic drum having a plastic deck, a first plastic head extending across one end of the plastic deck and supporting said one end and a second plastic head extending across the other end of the plastic deck and supporting said other end; a single central coaxial plastic pipe extending from the first plastic head a predetermined distance into the plastic drum; a plurality of radial fiberglass-reinforced plastic drainage conduits longitudinally-separated from the first plastic head a predetermined distance extending from the fiberglass-reinforced plastic deck to the single central coaxial plastic pipe, the longitudinal separation between the plastic drainage conduits and the first plastic head and the dimensions of the first plastic head being such that the first plastic head is strong enough to withstand the radial force, drive torque, and hydraulic end force.

4,515,694

CABLE LIFTING MECHANISM FOR SEDIMENTATION DEVICE

Ralph B. Haymore, and Heinz W. Winter, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed May 2, 1983, Ser. No. 490,741
Int. Cl.³ B01D *21/18*
U.S. Cl. 210—531 **26 Claims**

1. A lifting mechanism for a raking structure in a solids-liquid sedimentation tank comprising:

a fixed center column adapted to extend from the bottom of a sedimentation tank to above the upper level of liquid to be contained in said tank;

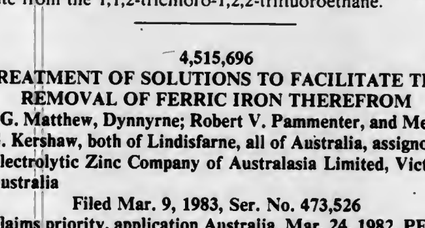
a concentric movable column in telescoping relation with said center column, said movable column being adapted to mount said raking structure; and

means for moving said movable column telescopically with respect to said center column, said means including:

a first series of sheaves fixed to said movable column;

a second series of sheaves in fixed relation with said fixed center column;

drum means in fixed relation to one of said columns;



a continuous cable extending threadably between each of the sheaves in said first and second series of sheaves; and

means including said drum means for pulling and shortening the effective span length of said cable between said first and second series of sheaves to raise said movable column with respect to said fixed column.

4,515,695

EXTRACTION OF SUBSTANCES FROM AQUEOUS SOLUTION

John L. Knupp, Jr., Newark, Del., assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 28, 1983, Ser. No. 555,487
Int. Cl.³ A23F *3/20*
U.S. Cl. 210—634 **2 Claims**

1. In a process for extracting solute from an aqueous solution by contacting the solution with an immiscible solvent in which said solute is soluble, the improvement which comprises contacting said aqueous solution containing a solute that is insoluble in 1,1,2-trichloro-1,2,2-trifluroethane with a mixture of 10 to 90 wt % monochlorodifluoromethane and 90 to 10 wt % 1,1,2-trichloro-1,2,2-trifluoroethane at a pressure sufficient to maintain the mixture in the liquid state, allowing the contacted liquids to return to a quiescent state after said contact thus forming separate liquid layers, separating the liquid layers, vaporizing the monochlorodifluoroethane in the fluorocarbon solvent phase by reducing pressure thereby causing the solute to precipitate or form a second liquid layer, and separating said solute from the 1,1,2-trichloro-1,2,2-trifluoroethane.

4,515,696

TREATMENT OF SOLUTIONS TO FACILITATE THE REMOVAL OF FERRIC IRON THEREFROM

Ian G. Matthew, Dynnyrne; Robert V. Pammenter, and Mervyn G. Kershaw, both of Lindisfarne, all of Australia, assignors to Electrolytic Zinc Company of Australasia Limited, Victoria, Australia

Filed Mar. 9, 1983, Ser. No. 473,526
Claims priority, application Australia, Mar. 24, 1982, PF3282
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—713 **28 Claims**

1. A process for treatment of an acidic sulphate solution containing ferric iron and at least one non-ferrous metal, prior to removal of ferric iron therefrom, characterised by:

(a) adding at least one neutralizing agent in amounts such that the total amount added lies in the range X_1 to X_2 grams per liter of the said solution, where—

$$X_1[(A-3.0)+0.088\ (F_1+F_2)]/N,$$

$$X_2[(A-0.1)+2.20\ (F_1+F_2)]/N,$$

A=acidity (expressed as grams per liter) of the said solution,

F_1=ferric iron (grams per liter) in the said solution,

F_2=ferric iron (grams per liter) dissolved from the neutralizing agent or agents added during neutralization, and

N=the weighted average amount of acid which can be neutralized by one gram of the neutralizing agent or agents added during neutralization, and

(b) separating off from the solution any residue or undissolved neutralizing agent remaining after neutralization, thereby producing a solution possessing a negative acidity and still containing substantially all the dissolved ferric iron in solution and subsequently removing ferric iron with the generation of less acid compared to that generated from solutions partially neutralized according to the prior art.

4,515,697

METHOD FOR FLOCCULATING MICROSCOPIC PARTICLES IN SUSPENSION IN A LIQUID AND APPLICATION TO THE COLLECTION OF PHYTOPLANKTON MICROALGAE AND ZOOPLANKTON AND FOR THE PURIFICATION OF USED WATER

Samuel Elmaleh, Clapiers, and Alain D. Grasmick, Montferrier, both of France, assignors to David Gozal, Madrid, Spain

Filed Jan. 27, 1983, Ser. No. 461,628
Int. Cl.³ B01D *23/10*
U.S. Cl. 210—768 **14 Claims**



1. Method of treating microscopic particles comprising micro-organisms in suspension in a liquid, comprising: passing a first liquid containing said microscopic particles in suspension through a fixed granular layer up to partial or complete clogging of said granular material by said microscopic particles; passing a second liquid through said fixed layer to be partially unclogged by the passing of said second liquid therethrough; said second liquid moving in the same direction as the first liquid, but at a higher speed so as to recover below said layer in the direction of passage of said liquid, flocculated aggregates of said microscopic particles and an outflow of a liquid which is freed of said particles.

4,515,698

LIQUID CLARIFYING APPARATUS AND METHODS

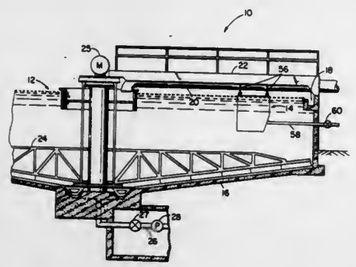
William E. Stewart, 12 Brow Hill Rd., Somers, Conn. 06071

Filed Jan. 23, 1984, Ser. No. 572,765
Int. Cl.³ B01D *21/06*
U.S. Cl. 210—802 **24 Claims**

1. The combination comprising a liquid clarifying apparatus and at least one clarifier module, said liquid clarifying apparatus having a tank containing waste effluent, means for supplying waste effluent to said tank, means for discharging clarified liquid from the tank, and means for removing sludge from a lower portion of the tank, said one clarifier module disposed

within said tank and having a settling region partially defined by a plurality of parallel spaced apart and vertically inclined plates, means defining a clarified effluent chamber forward of said settling region, means for separating said chamber from said region, means providing fluid communication through said separating means between each said settling region and a rear portion of said chamber, a weir within said chamber and separating a front portion of said chamber from said rear portion thereof, means for maintaining said clarifier module within said tank with said weir disposed below the level of the waste effluent in said tank, and means for withdrawing clarified effluent from said front portion and discharging it externally of said tank.

15. A method for improving the performance of a liquid clarifying apparatus having a tank for receiving and containing



a quantity of waste effluent, said method comprising the steps of providing at least one clarifier module having a settling region partially defined by a plurality of parallel spaced apart and vertically inclined plates, means defining a clarified effluent chamber forward of said settling region, means for separating said chamber from said separating region, means providing fluid communicating through said separating means between said settling region and the rear portion of said chamber, and a weir within said chamber and separating a front portion of said chamber from said rear portion thereof, positioning said one module within said tank with said weir disposed below the level of liquid within said tank, withdrawing clarified effluent from the front portion of said chamber, and discharging the clarified effluent withdrawn from said front portion externally of said tank.

4,515,699

CHEMICALLY CLEANING DRILLING/COMPLETION/PACKER BRINES

John E. Oliver, Jr., 3752 Del Monte, Houston, Tex. 77019, and Arnold M. Singer, 3042 Las Palmas, Houston, Tex. 77027

Continuation-in-part of Ser. No. 310,653, Oct. 13, 1981, Pat. No. 4,456,537. This application Dec. 17, 1982, Ser. No. 450,519

The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.

Int. Cl.³ E21B *43/00*; C09K *7/02*

U.S. Cl. 252—8.55 R **6 Claims**

1. In a process to produce a solid-free aqueous well fluid of high density type having one or more of the sodium, calcium or zinc salts with chloride and bromide, and mixtures thereof, including the steps of:

(a) introducing in small effective amounts an aliphatic alcohol with between 5 to 8 carbon atoms and a surface active chemical aid into the fluid; and

(b) seaparating the agglomerated solids from the fluid before introduction into a well bore in a solids free state, wherein the surface active chemical aid includes a surfactant having a molecular weight in the range of from about 150 to about 500 with predominant hydrophobic characteristics and the surfactant is selected from a group consisting of aliphatic amines, amides and aliphatic amine oxides with the amine and amide and amine oxide constituents having an alkyl group with between 8 and 18 carbon atoms, the improvement comprising in step (a) employing as the alcohol 2-ethyl hexanol.

4,515,700

GELLED ACID COMPOSITION

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 21, 1983, Ser. No. 487,367

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 R **13 Claims**

1. A stabilized polysaccharide gelled acid composition produced by the process which comprises:

(a) heating an aqueous solution of at least one polysaccharide sellected from the group consisting of xanthan, dextrans, levans, pullulans, glucans, mannans, glucosylglucan and phosphomannan which has not been previously heated to temperatures above about 60° C. at a temperature in the range of 60° C. to the boiling point of said solution for about 5 minutes to 2 hours; and

(b) thereafter adding from about 0.4 to about 60 weight percent of at least one acid selected from a non-oxidizing mineral acid of the group consisting of hydrochloric acid, hydrofluoric acid and phosphoric acid or a C_1 to C_6 organic acid.

4,515,701

LOW COST, BRINE TOLERANT SULFONATE AND SULFATE SURFACTANTS HAVING 1,3-DIHYDROCARBOXY-2-PROPYL HYDROPHOBIC TAILS

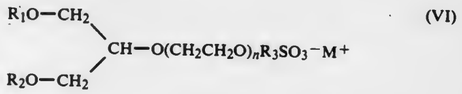
Dennis H. Hoskin, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 413,591, Aug. 31, 1982, Pat. No. 4,446,079. This application Feb. 24, 1984, Ser. No. 583,513

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **10 Claims**

1. A fluid for the secondary recovery of oil comprising brine and a surfactant which is a compound of the formula



(VI)

where R_1 and R_2 are the same or different and are C_1-C_{15} hydrocarbyl, R_3 is C_{0-5} alkyl, M is a cation and n is a rational number from 2 to 6 said surfactant being present in said brine in an amount sufficient to enhance secondary or tertiary recovery of oil from subterranean reservoirs.

4,515,702

HEAT-RESISTANT SILICONE FLUID COMPOSITIONS

Shigeru Mori, Gunma; Yoshiaki Kudo, Tokyo, and Satoshi Kuwata, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 597,455

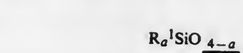
Claims priority, application Japan, Apr. 12, 1983, 58-64095

Int. Cl.³ C10M *1/50*

U.S. Cl. 252—49.6 **2 Claims**

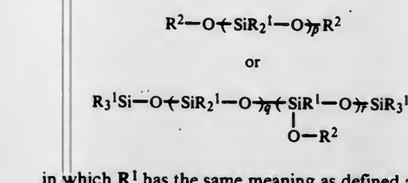
1. A heat-resistant silicone fluid composition which comprises:

(a) 100 parts by weight of an organopolysiloxane represented by the average unit formula

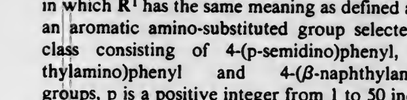


in which R^1 is an alkyl group or a phenyl group and a is a positive number from 0.95 to 2.25, and having a viscosity in the range from 10 to 1,000,000 centistokes at 25 ° C.; and

(b) from 0.01 to 5 parts by weight of an aromatic amino-modified organopolysiloxane represented by the general formula



or



in which R^1 has the same meaning as defined above, R^2 is an aromatic amino-substituted group selected from the class consisting of 4-(p-semidino)phenyl, 4-(α-naphthylamino)phenyl and 4-(β-naphthylamino)phenyl groups, p is a positive integer from 1 to 50 inclusive, q is zero or a positive integer not larger than 47 and r is a positive integer from 1 to 10 inclusive with the proviso that q+r is in the range from 1 to 48.

4,515,703

ARTICLE CARRYING ACTIVE MATERIAL

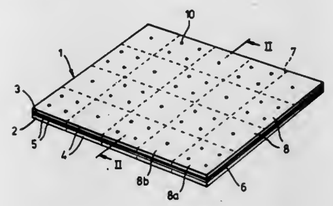
Zia Haq, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed May 27, 1982, Ser. No. 382,500

Claims priority, application United Kingdom, Jun. 1, 1981, 8116743; Jan. 11, 1982, 8200647

Int. Cl.³ C11D *17/00*

U.S. Cl. 252—92 **14 Claims**



1. An article in the form of a substrate carrying a releasable active material, said article comprising first and second substrates each comprising an outer layer of a paper or nonwoven fabric completely surrounding and having laminated thereto or coated thereon an inner layer of active liquid-impermeable thermoplastic material, said inner layers being so bonded together as to create a plurality of compartments therebetween, at least some of said compartments containing said releasable active material and each of said compartments carrying active material being provided with one or more perforations having diameters within the range of from 0.2 to 1.2 mm in one or each of the substrate walls defining said compartments, the distribution of perforations being within the range of from 0.5 to 3/cm$_2$, said perforations providing the means for release of said releasable active material.

4,515,704

POURABLE NON-SEDIMENTING AQUEOUS BASED DETERGENT COMPOSITION HAVING AN ORGANIC LAMELLAR STRUCTURAL COMPONENT

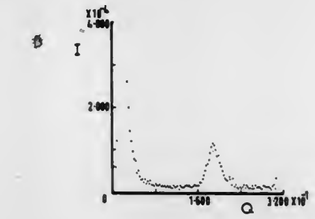
Brian J. Akred, Whitehaven; Edward T. Messenger, Workington, and William J. Nicholson, Whitehaven, all of United Kingdom, assignors to Albright & Wilson Limited, Oldbury, England

Filed Feb. 4, 1983, Ser. No. 464,019

Claims priority, application United Kingdom, Feb. 5, 1982, 8203398; Apr. 13, 1982, 8210670; Jul. 2, 1982, 8219227; Dec. 23, 1982, 8236664

Int. Cl.³ C11D *1/12, 7/14, 7/16*

U.S. Cl. 252—135 **31 Claims**



1. A Pourable, Non-sedimenting, aqueous based detergent composition containing Active Ingredient and Builder, having at least 25% by weight Pay Load and comprising a first, predominantly aqueous, liquid phase, containing dissolved surfactant desolubilising Electrolyte, at least one Dispersed solid phase comprising said Builder, the concentration of said dissolved Electrolyte being sufficient to provide at least one other phase, comprising more than 25% by weight of the Active Ingredient Interspersed with said first phase, but separable therefrom by centrifuging at 800 times normal Earth gravity for 17 hours at 25° C., the proportion of water being sufficient to provide a Pay Load which is greater than the threshold for non-sedimentation but which is below the ceiling for Pourability.

4,515,705

COMPOSITIONS CONTAINING ODOR PURIFIED PROTEOLYTIC ENZYMES AND PERFUMES

Robert W. Moeddel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 551,378, Nov. 14, 1983, abandoned. This application Mar. 20, 1984, Ser. No. 591,622

Int. Cl.³ C11D *7/42, 3/50*

U.S. Cl. 252—174.12 **10 Claims**

1. A composition of matter comprising:

(a) a proteolytic enzyme in an amount sufficient to provide an activity of from about 0.005 to about 0.1 Anson units per gram of composition, said enzyme having no detectable odor at a concentration of less than about 0.002 Anson units per gram per liter of distilled water; and

(b) from about 0.001% to about 2% by weight of a perfume selected from the group consisting of phenyl ethyl alcohol, linalool, geraniol, citronellol, cinnamic alcohol, iso bornyl acetate, benzyl acetate, para-tertiary-butyl cyclohexyl acetate, linalyl acetate, dihydro-nor-dicyclopentadienyl acetate, dihydro-nor-dicyclopentadienyl propionate, amyl salicylate, benzyl salicylate, para-iso-propyl alpha-octyl hydrocinnamic aldehyde, hexyl cinnamic aldehyde, hydroxy citronellal, heliotropin, anisaldehyde, citral, dextro limonene, coumarin, ionone gamma methyl, methyl beta naphthyl ketone, gamma undecalactone, eugenol, musk xylol, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethylcyclopenta-gamma-2-benzopyrane, 4-acetyl-6-tertiarybutyl-1,1-dimethyl indan, 6-acetyl-1,1,3,4,4,6-hexamethyl tetrahydro naphthalene, beta naphthyl ethyl

ether, methyl eugenol, methyl cedrenyl ketone, patchouli, lavandin, geranyl nitrile, alpha ionone, alpha beta ionone, benzyl iso eugenol, amyl cinnamic aldehyde, beta gamma hexenol, orange CP, orthotertiary-butyl cyclohexyl acetate, 2-methyl-3-(para-iso-propylphenyl)propionaldehyde, trichloro methyl phenyl carbinyl acetate, nonane diol-1,3-acetate, methyl dihydro jasmonate, phenoxy ethyl iso butyrate, citronella, citronellal, citrathal, tetrahydromuguol, ethylene brassylate, musk ketone, musk tibetine, phenyl ethyl acetate, oakmoss 25%, hexyl salicylate, eucalyptol, and mixtures thereof.

4,515,706

RARE EARTH OXYFLUORIDE BARIUM FLUORIDE HALIDE PHOSPHOR

Takeshi Takahara; Tsutomu Ishii, and Yasuhiro Shirakawa, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 30, 1984, Ser. No. 615,370

Claims priority, application Japan, May 31, 1983, 58-94808; Jun. 8, 1983, 58-100869

Int. Cl.[3] C09K *11/477*

U.S. Cl. 252—301.4 H **4 Claims**

1. A phosphor having the formula

$$aReOF.(1-a)Ba_{(1-x)}M_xFX:Eu_y,$$

where:

Re is one element selected from the group consisting of Lu and Y;

M is at least one element selected from the group consisting of Be, Mg, Ca, Sr, Zn, and Cd;

X is at least one element selected from the group consisting of Cl, Br, and I;

a is greater than zero but less than or equal to 0.6;

x is in the range from 0 to 0.5, inclusive;

y is in the range from 10^{-6} to 2×10^{-1}, inclusive; and where "a" is an amount such that the phosphor exhibits a higher luminous intensity than said phosphor absent ReOF when stimulated by light having a wavelength of 550 nm after being exposed to X-ray radiation.

4,515,707

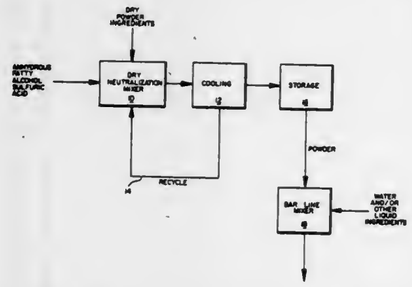
INTERMEDIATE PRODUCT FOR USE IN PRODUCING A DETERGENT BAR AND METHOD FOR PRODUCING SAME

Burton Brooks, Bellevue, Wash., assignor to The Chemithon Corporation, Seattle, Wash.

Filed Jun. 27, 1983, Ser. No. 508,131

Int. Cl.[3] C11D *3/065, 11/021, 1/12*

U.S. Cl. 252—368 **19 Claims**



1. A method for producing a laundry detergent bar containing (a) a salt of a sulfuric acid selected from the group consisting of $C_{8\text{-}20}$ fatty alcohol sulfuric acids and ethoxylated $C_{8\text{-}20}$ fatty alcohol sulfuric acids and (b) a plurality of other ingredients at least some of which are provided in dry, powdered form, said method comprising the steps of:

producing, by a sulfation reaction, an anhydrous sulfuric acid selected from the group consisting of $C_{8\text{-}20}$ fatty alcohol sulfuric acids and ethoxylated $C_{8\text{-}20}$ fatty alcohol sulfuric acids;

dry neutralizing said anhydrous sulfuric acid with a neutralizing agent comprising dry, powdered sodium carbonate to produce a neutralized product in the form of a dry, free-flowing powder containing a salt of said sulfuric acid, said salt being stable during storage;

said dry neutralizing step comprising mixing said anhydrous sulfuric acid with a laundry detergent bar ingredient which is in dry, powdered form and avoiding free water in the neutralized product;

said neutralizing step being performed with sufficient immediacy, following the completion of said sulfation reaction, to prevent the breakdown of said anhydrous sulfuric acid;

storing said powder formed in said dry neutralizing step;

subsequently removing said neutralized powder from storage;

and then subjecting said neutralized powder to further processing into a detergent bar after the neutralized powder has been removed from storage.

4,515,708

CORROSION INHIBITORS

John A. Haslegrave, and Daniel S. Sullivan, both of Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

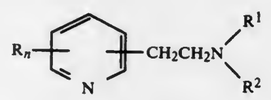
Filed Nov. 16, 1983, Ser. No. 552,402

Claims priority, application United Kingdom, Nov. 24, 1982, 8233563

Int. Cl.[3] C09K *3/00*

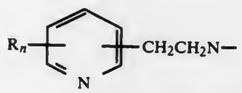
U.S. Cl. 252—390 **8 Claims**

1. A method of inhibiting corrosion of metals, which method comprises treating a metal containing system where metals are susceptible to corrosion with a corrosion-inhibiting amount ranges from 1 to 10,000 ppm (by weight) of the fluid within the system of a substituted β-pyridylethylamine or a salt thereof of the general formula:



(I)

wherein R is an alkyl, aryl, aralkyl, alkaryl, halo or amino group or a group —COX where X is hydrogen, alkyl, aryl, hydroxy, alkoxy, aryloxy, amino or halo group, n is zero or an integer from 1 to 4, and R^1 and R_2, which may be the same or different, each represent a hydrogen atom, an optionally substituted hydrocarbyl radical, an alkylamino radical, a heterocyclic radical or a group



or R1 and R2 with the intervening nitrogen atom together represent a saturated or unsaturated heterocyclic ring optionally containing one or more additional heteroatoms.

4,515,709

TERNARY INTERCALATION COMPOUND OF A GRAPHITE WITH AN ALKALI METAL FLUORIDE AND FLUORINE, A PROCESS FOR PRODUCING THE SAME, AND AN ELECTRICALLY CONDUCTIVE MATERIAL COMPRISING THE TERNARY INTERCALATION COMPOUND

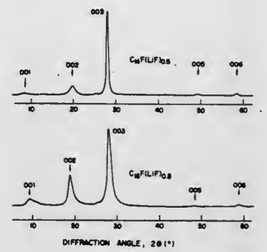
Nobuatsu Watanabe; Tsuyoshi Nakajima, both of Kyoto, and Masayuki Kawaguchi, Wakayama, all of Japan, assignors to Central Glass Co., Ltd., Ube, Japan

Filed Mar. 9, 1983, Ser. No. 474,202

Claims priority, application Japan, Sep. 10, 1982, 57-156600

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—509 **5 Claims**



1. A ternary intercalation compound of a graphite with an alkali metal fluoride and fluorine represented by the formula $C_xF(MF)_y$ wherein M is an alkali metal selected from the group consisting of Li, Na, K, Rb and Cs, x is about 2 to about 100 and y is about 0.001 to about 0.80.

4,515,710

IN-MOLD COATING COMPOSITION

David S. Cobbledick, Kent, Ohio, assignor to GenCorp Inc., Akron, Ohio

Continuation-in-part of Ser. No. 514,415, Jul. 18, 1983, , which is a division of Ser. No. 435,026, Oct. 25, 1982, Pat. No. 4,414,173, which is a continuation-in-part of Ser. No. 316,572, Nov. 2, 1981, abandoned. This application Apr. 5, 1984, Ser. No. 597,149

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—511 **10 Claims**

1. A composition useful as a thermosetting coating composition comprising

(a) 100 parts by weight of at least one polymerizable epoxy based oligomer having at least two acrylate groups and a weight average molecular weight of from about 500 to 1,500,

(b) from about 80 to 160 parts by weight of at least one copolymerizable ethylenically unsaturated monomer,

(c) from about 10 to 120 parts by weight of at least one copolymerizable monoethylenically unsaturated compound having —CO— group and a —NH_2, —NH— and/or —OH group,

(d) from about 20 to 90 parts by weight of carboxylated polyvinyl acetate having an acid number of from about 1.5 to 4,

(e) from about 0.2 to 5 parts by weight of at least one zinc salt of a fatty acid having at least 10 carbon atoms,

(f) from about 0.01 to 1.0 part by weight of at least one accelerator for a peroxide initiator,

(g) from about 5 to 30 parts by weight of conductive carbon black,

(h) from about 50 to 155 parts by weight of a filler,

(i) a copolymerizable or cocurable diacrylate compound having a weight average molecular weight of from about 250 to 5,000 and being at least one polyoxyalkylene glycol oligomer having two acrylate groups and

(j) at least one copolymerizable tri or tetra acrylate having an average molecular weight of from about 250 to 1,000, the total of (i) and (j) being from about 5 to 120 parts by weight and the weight ratio of (i) to (j) being from about 10:1 to 1:10 and

(k) at least one calcium salt of a fatty acid having at least 10 carbon atoms in an amount of from about 0.2 to 5 parts by weight.

4,515,711

ALKENOXY OCTADIENES AS ODORANTS

Alan J. Chalk, Kinnelon, and Kenneth L. Purzycki, Lake Parsippany, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Sep. 27, 1982, Ser. No. 423,901

Int. Cl.[3] A61K *7/46*

U.S. Cl. 252—522 R **4 Claims**

1. A fragrance composition comprising an olfactorily effective amount of the compound 1-(2-propenoxy)-2,7-octadiene and at least one other olfactory substance.

4,515,712

MACROCYCLIC CARBONATES AND ORGANOLEPTIC USES THEREOF

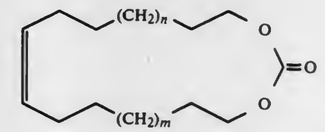
Wilhelmus J. Wiegers, Red Bank, N.J.; Augustinus G. Van Loveren, Rye, N.Y.; Marie R. Hanna, Hazlet, N.J.; Domenick Luccarelli, Jr., Neptune, N.J.; David R. Bowen, Red Bank, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 511,909, Jul. 8, 1983,. This application Jun. 22, 1984, Ser. No. 623,448

Int. Cl.[3] A61K *7/46;* C11B *9/00*

U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed polymer comprising the step of adding to said consumable material, an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein n and m are the same or different and each represents an integer of from 1 up to 8.

4,515,713

DECARBOXYLATION OF ROSIN ACIDS

Lawson G. Wideman, Tallmadge, and Joseph A. Kuczkowski, Munroe Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 6, 1984, Ser. No. 568,965

Int. Cl.[3] C09F *1/00, 5/00*

U.S. Cl. 260—106 **10 Claims**

1. An extender oil for rubber prepared by decarboxylating wood rosin acids by heating at temperatures from 300° C. to 450° C. in the presence of high sulfur tall oil rosin, dark thermoplastic resins derived from crude wood rosin, fatty acids, and organic and inorganic sulfides to accelerate the decarboxylation.

4,515,714

METHOD FOR PURIFICATION OF HEPATITIS B VIRUS SURFACE ANTIGEN

Tetsuo Kawahara; Hiroshi Mizokami; Kyosuke Mizuno, and Sadao Susumi, all of Kumamoto, Japan, assignors to Juridicial Foundation, The Chemo-Semo-Sero-Therapeutic Research Institute, Kumamoto, Japan

Filed Mar. 6, 1984, Ser. No. 586,702

Claims priority, application Japan, Mar. 9, 1983, 58-39837; May 28, 1983, 58-94495

Int. Cl.[3] A61K *39/12, 39/00, 39/42;* **C07G** *7/00*

U.S. Cl. 260—112 R **8 Claims**

1. In a method for the purification of hepatitis B virus surface anitgen comprising subjecting a heptitis B virus surface anitgen-containing solution to column chromatography, the improvement comprising using a sulfuric acid ester of a crosslinked polysaccharide or cellulose as a gel for the chromatography, said sulfuric acid ester being prepared by treating a gel of crosslinked polysaccharide or cellulose with a sulfating agent in an organic solvent.

4,515,715

L-ALANYL-D-ISOGLUTAMINE ADAMANTYLAMIDE

Martin Flegel; Milan Krojidlo; Jirí Kolínský; Karel Masek, and Jaroslav Seifert, all of Prague, Czechoslovakia, assignors to SPOFA, spojene podniky pro zdratvonickou vyrobu, Prague, Czechoslovakia

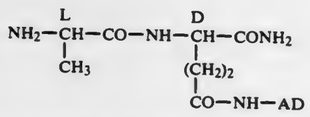
Filed Jun. 29, 1983, Ser. No. 509,293

Claims priority, application Czechoslovakia, Jun. 29, 1982, 4908-82

Int. Cl.[3] C07C *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. L-Ananyl-D-isoglutamine adamantylamide of the formula



wherein AD represents a residue of adamantane bound in the number 1 position.

4,515,716

2,6-DIAMINOPYRIDINE-BASED AZO DYES FOR CELLULOSE-CONTAINING FIBERS

Toshio Niwa, and Toshio Hihara, both of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries Limited, Japan

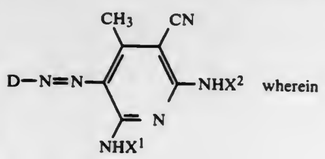
Filed Sep. 3, 1982, Ser. No. 414,733

Claims priority, application Japan, Sep. 16, 1981, 56-145943; Dec. 23, 1981, 57-208498; Feb. 9, 1982, 57-19289

Int. Cl.[3] C09B *62/06, 62/085, 62/09;* **D06P** *1/382*

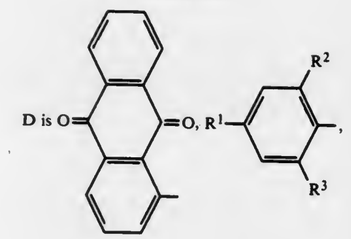
U.S. Cl. 534—635 **3 Claims**

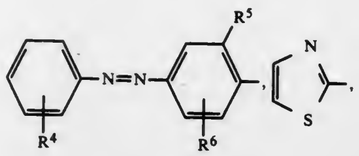
1. A diaminopyridine-based azo dye for cellulose-containing fibers, represented by the following formula:

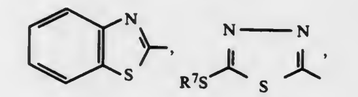


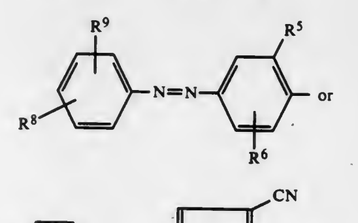
wherein

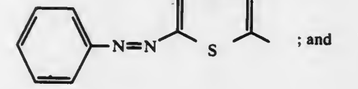
-continued

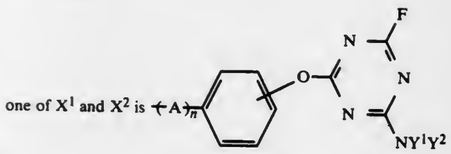












and the other is hydrogen, phenyl, benzyl, allyl, or alkyl which are unsubstituted or substituted by hydroxyl or lower alkoxy (wherein

A is methylene, ethylene, propylene, or 1,3-butylene;

n is 0 or 1;

Y^1 and Y^2, which are the same or different, are hydrogen, alkyl, alkenyl, cyclohexyl, aryl, or aralkyl which are unsubstituted or substituted by cyano, hydroxy, lower alkoxy, or dialkylamino, or Y^1 and Y^2 together form a 5- or 6-membered heterocyclic ring (NY^1Y^2) containing one nitrogen, the total number of carbon atoms of Y^1 and Y^2 being 18 or less:

R^1 is nitro, cyano, methylsulfonyl, phenylsulfonyl, mono-lower alkylaminosulfonyl, di-lower alkylaminosulfonyl, acetyl, or benzoyl;

R^2 and R^3, which are the same or different, are hydrogen, trifluoromethyl, halogen, or cyano;

R^4 is hydrogen, lower alkyl, mono- or di-lower alkylaminosulfonyl, mono/or di-lower alkylcarbamoyl, or acetylamino;

R^5 *and* $R6$, which are the same or different, are hydrogen, halogen, or lower alkyl;

R^7 is lower alkyl;

R^8 is trifluoromethyl, or halogen; and R^9 is hydrogen, or halogen).

4,515,717

THIA-AZA COMPOUNDS WITH A β-LACTAM RING

Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

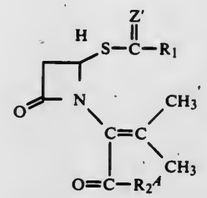
Division of Ser. No. 353,288, Mar. 1, 1982, , which is a division of Ser. No. 902,639, May 4, 1978, Pat. No. 4,331,676. This application Sep. 24, 1982, Ser. No. 423,351

Claims priority, application Luxembourg, May 9, 1977, 77306

Int. Cl.[3] C07D *205/08, 401/12, 405/12, 409/12*

U.S. Cl. 260—239 A **2 Claims**

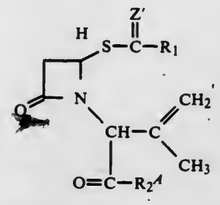
1. Compounds of the formula



(XI)

in which Z′ represents oxygen, sulphur or a methylidene group optionally substituted by one or two substituents selected from the group consisting of lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, phenyl-lower alkyl and esterified carboxy, R_1 represents hydrogen, lower alkyl optionally mono-substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkylthio, carbamoyl, cyano, nitro, amino optionally mono- or di-substituted by lower alkyl, lower alkyleneamino or amino acylated by acetyl, tert.-butoxycarbonyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl or phenoxyacetyl; protected carboxyl; aminocarbonyl optionally mono- or di-substituted by lower alkyl; cycloalkyl; cycloalkyl-lower alkyl; phenyl; naphthyl; phenyl-lower alkyl; phenyl, naphthyl or phenyl-lower alkyl mono-substituted by lower alkyl, lower alkoxy, halogen, nitro, amino or di-lower alkylamino; pyridyl; thienyl; furyl; pyridyl-lower alkyl; thienyl-lower alkyl; furyl-lower alkyl; lower alkylthio; lower alkenylthio; cycloalkylthio; cycloalkyl-lower alkylthio; phenylthio; phenyl-lower alkylthio; or lower-alkylthio, lower alkenylthio, cycloalkylthio, cycloalkyl-lower alkylthio, phenylthio or phenyl-lower alkylthio mono-substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkylthio, carbamoyl, cyano, nitro, amino optionally mono- or disubstituted by lower alkyl, lower alkanoylamino or lower alkyleneamino; and $R^A{}_2$ together with the carbonyl group —C(=O)— to which it is attached represents a protected carboxyl group.

2. Compound of the formula



(Xa)

in which Z′ represents oxygen, sulphur or a methylidene group optionally substituted by one or two substituents selected from the group consisting of lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, phenyl-lower alkyl and esterified carboxy, R_1 represents hydrogen, lower alkyl optionally mono-substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkylthio, carbamoyl, cyano, nitro, amino optionally mono or di-substituted by lower alkyl, lower alkyleneamino or amino acylated by acetyl, tert.-butoxycarbonyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl or phenoxyacetyl; protected carboxyl; aminocarbonyl optionally mono- or di-substituted by lower alkyl; cycloalkyl; cycloalkyl-lower alkyl; phenyl; naphthyl; phenyl-lower alkyl mono-substituted by lower alkyl, lower alkoxy, halogen, nitro, amino or di-lower alkylamino; pyridyl; thienyl; furyl; pyridyl-lower alkyl; thienyl-lower alkyl; furyl-lower alkyl; lower alkylthio; lower alkenylthio; cycloalkylthio; cycloalkyl-lower alkylthio; phenylthio; phenyl-lower alkylthio; or lower-alkylthio, lower alkenylthio, cycloalkylthio, cycloalkyl-lower alkylthio, phenylthio or phenyl-lower alkylthio mono-substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, lower alkylthio, carbamoyl, cyano, nitro, amino optionally mono- or disubstituted by lower alkyl, lower alkanoylamino or lower alkyleneamino; and $R^A{}_2$ together with the carbonyl group —C(=O)— to which it is attached represents a protected carboxyl group.

4,515,718

AMIDINOUREAS

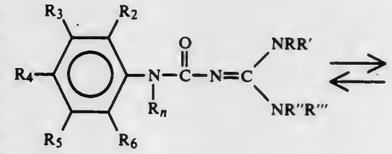
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Malvern, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 118,826, Feb. 5, 1980, Pat. No. 4,353,842, which is a continuation of Ser. No. 942,247, Sep. 14, 1978, Pat. No. 4,204,000, which is a continuation-in-part of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Sep. 30, 1982, Ser. No. 429,917

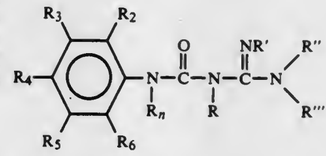
Int. Cl.[3] C07D *223/02, 221/00*

U.S. Cl. 260—239 B **3 Claims**

1. An amidinourea compound of the formula I or its tautomeric form II when R is hydrogen:



I



II

where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are hydrogen,
halo,
loweralkyl,
haloloweralkyl,
nitro,
loweralkoxy,
hydroxy,
cyano,
haloloweralkoxy, or
loweralkylsulfonyl,
provided at least three of R_2, R_3, R_4, R_5 and R_6 are hydrogen;

R and R′ are hydrogen or loweralkyl;

R'' and R''' together with nitrogen form a 5–7 atom ring consisting of 3–6 carbon atoms and 1–2 nitrogen atoms;
R_n is hydrogen or loweralkyl provided at least one of R, R', R'' and R''' is other than hydrogen; and the non-toxic acid addition salts thereof.

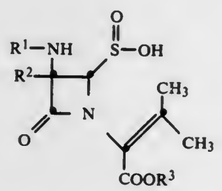
4,515,719

AZETIDINONE SULFINIC ACIDS FROM CEPHALOSPORIN SULFONES

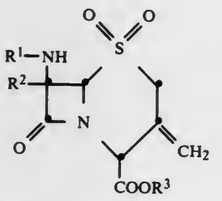
Lawrence J. McShane, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 22, 1983, Ser. No. 516,218
Int. Cl.³ C07D *205/08, 501/14, 403/12*
U.S. Cl. 260—239 A **4 Claims**

1. A process for preparing an azetidinone sulfinic acid of the formula



wherein:
R^1 is an acyl residue of a carboxylic acid;
R^2 is hydrogen, lower alkoxy or lower alkylthio; and
R^3 is a removable ester forming group; comprising reacting a 3-exomethylene sulfone of the formula



with activated zinc, magnesium, activated magnesium or magnesium amalgamated with mercury and a protonic acid in an unreactive solvent at a temperature of about 20° to about 100° C.

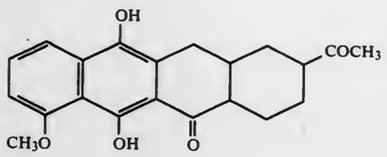
4,515,720

METHOD OF SYNTHESIZING A LATE-STAGE INTERMEDIATE TO 11-DEOXYDAUNORUBICIN AND 11-DEOXYADRIAMYCIN, AND TWO PRECURSORS TO THE OBJECT INTERMEDIATE

Frank M. Hauser, Portland, and Dipakranjan Mal, Beaverton, both of Oreg., assignors to Oregon Graduate Center for Study & Research, Beaverton, Oreg.

Filed Mar. 11, 1983, Ser. No. 474,491
Int. Cl.³ C07C *50/22, 50/36*
U.S. Cl. 260—351.1 **3 Claims**

1. The compound having the formula



4,515,721

PROCESS FOR THE PRODUCTION OF FATTY ACID ESTERS OF HYDROXYALKYL SULFONATE SALTS

Robert B. Login, Media; Ismail L. Walele, Aston, and Richard J. Otterson, Glenolden, all of Pa., assignors to Jordan Chemical Company, Folcroft, Pa.

Continuation-in-part of Ser. No. 424,281, Sep. 27, 1982, abandoned. This application Mar. 13, 1984, Ser. No. 589,170
Int. Cl.³ C07C *143/90;* **C11D** *1/28*
U.S. Cl. 260—400 **17 Claims**

1. In a process for preparing fatty acid esters of hydroxyalkyl sulfonic acid salts, said esters having the formula

$$RCOOR'SO_3M,$$

where:
R represents the aliphatic hydrocarbon residue of a fatty acid containing from 6 to 24 carbon atoms,
R' represents a divalent hydrocarbon radical containing from 2 to 4 carbon atoms, and
M represents an alkali metal cation, by condensing said fatty acid or a mixture of said fatty acids with a hydroxyalkyl sulfonate of the formula $HOR'SO_3M$, the steps comprising:
(a) heating a molecular excess of the said fatty acid with said hydroxylalkyl sulfonate, to a temperature of 200° to 250° C., in a substantially oxygen-free atmosphere for sufficient time to remove the water of condensation,
(b) quenching the hot crude reaction mixture resulting from step (a) by immersing said reaction mixture in a liquid which is at a temperature lower than said reaction mixture and in which said ester is substantially insoluble, but unreacted fatty acids are soluble, thereby to form a slurry wherein the solid phase comprises relatively pure ester of the above formula and the liquid phase comprises said quenching liquid and unreacted fatty acid, and
(c) separating the solid phase from the liquid phase of said slurry.

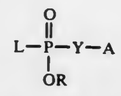
4,515,722

PHOSPHATIDYL INOSITOL ANALOGS USEFUL AS ANTI-INFLAMMATORY/ANALGESIC AGENTS

Shu S. Yang, Bridgewater; Thomas R. Beattie, Scotch Plains; Philippe L. Durette, New Providence; Timothy F. Gallagher, Metuchen, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

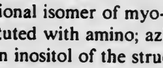
Filed Mar. 30, 1982, Ser. No. 362,632
Int. Cl.³ C07F *9/10, 9/08, 9/113;* **A61K** *31/66*
U.S. Cl. 260—403 **3 Claims**

1. A compound of formula:

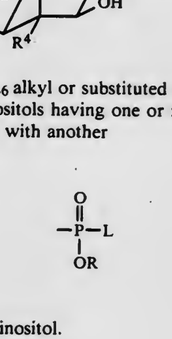


(I)

or a pharmaceutically acceptable acid, ester, ether or carbonate thereof, wherein:
L is
(a) hydrogen;
(b) R^1; where R^1 is
(1) straight or branched-chain alkyl having from 1 to 20 carbon atoms especially C_{1-6} alkyl;
(2) aryl having from 6 to 10 carbon atoms;
(3) cycloalkyl having from 3 to 8 carbon atoms;
(4) alkenyl having from 2 to 20 carbon atoms especially C_{8-20} alkenyl;
(5) cycloalkenyl having from 5 to 8 carbon atoms;
(6) aralkyl, alkaryl, aralkenyl, alkenylaryl wherein alkyl, aryl, and alkenyl are as previously defined; The above groups (1) to (6) are unsubstituted or substituted by hydroxy; alkoxy; halo; cyano; carboxy; amino; substituted amino; carbamoyl; sulfonyl; sulfinyl; thio; alkylthio; or nitro;
(c)



where R^2 and R^3 independently are:



n is an integer from 1 to 4; or
(d)

wherein R^2, R^3, and n are as defined previously;
R is
(a) hydrogen;
(b) loweralkyl;
(c) cycloalkyl having from 3 to 8 carbon atoms; or
(d) aralkyl; Y is oxygen or methylene; and A is a radical of
(a) myo-inositol or a configuration isomer thereof;
(b) branched chain myo-inositol;
(c) 2-,4 or 5-positional isomer of myo-inositol;
(d) inositol substituted with amino; azido; deoxy; halo; or
(e) branched-chain inositol of the structural formula (e);

(e)

where R^4 is C_{1-6} alkyl or substituted C_{1-6} alkyl;
(f) phosphoryl inositols having one or more of its hydroxy groups coupled with another

group; or
(g) epimeric myo-inositol.

4,515,723

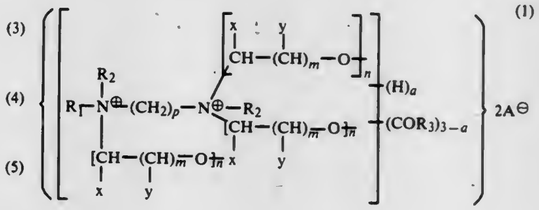
QUATERNARY N-ALKYL-N,N',N'-POLYOXYALKYL-α,ω-DIAMINO-ALKYLENE FATTY ACID ESTERS, AND THEIR USE

Siegfried Billenstein; Herbert Hartung, both of Burgkirchen; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,131
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127239
Int. Cl.³ C09F *5/00, 7/00;* **C11C** *3/00*
U.S. Cl. 260—404.5 **3 Claims**

(1)
(2) **1.** Quaternary N-alkyl-N,N',N'-polyoxyalkyl-α, ω-diamino-alkylene fatty acid esters of the formula (1)

(3)
(4)
(5)



(1)

(6) in which
R_1 is C_8–C_{30}-alkyl, or C_8–C_{30}-alkenyl,
R_2 is C_1–C_4-alkyl
R_3 is C_7–C_{29}-alkyl or C_7–C_{29}-alkenyl,
x and y each are hydrogen or methyl with the proviso that x and y are not simultaneously methyl,
a is 0, 1 or 2,
n is an integer of from 1 to 11,
m is 1 or 2,
p is an integer of from 1 to 5, and
A is an anion.

4,515,724

BORON ALKYL COMPOUNDS AND PROCESSES FOR THEIR MANUFACTURE AND USE

Wolfgang Ritter, Düsseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,518
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1982, 3207264
Int. Cl.³ C09F *5/08, 7/10;* **C11C** *3/00*
U.S. Cl. 260—410 **30 Claims**

1. A boron alkyl compound comprising the addition product of an unsaturated ester, having double bonds of which about 30 to 100% are hydroborated with a boron compound;
said ester being either (a) comprised within at least one naturally occurring unsaturated fat or oil or mixture thereof having about 12 to 22 carbon atoms, or (b) at least one synthetic reaction product of a C_{12-22} hydroxy or non-hydroxy fatty acid or alcohol which has at least one olefinic double bond with a complementary polyfunctional alcohol or carboxylic acid containing from 2 to 10 carbon atoms in addition to any carboxyl radicals present; and said ester (a) or (b) having an iodine number between about 5 and 130;
said boron compound being at least one borane or organoborane having at least one alkyl, cycloalkyl or aryl radical with from 1 to 25 carbon atoms;
and wherein said boron alkyl compound has enhanced stability in the presence of air and is soluble in reaction systems containing monomers having polymerizable double bonds.

4,515,725

PROCESS FOR PREPARING BORIC ESTERS OF GLYCEROL FATTY ACID ESTERS

Tatsuro Tsuneno, Wakayama, and Masaaki Takaku, Oosaka, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,439
Claims priority, application Japan, Aug. 3, 1982, 57-135374
Int. Cl.³ C11C *3/02*
U.S. Cl. 260—410.7 **3 Claims**

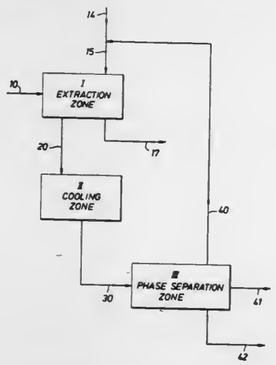
1. A process for preparing a boric ester of a glycerol fatty acid ester which consists essentially in reacting 3 mols of boric acid, 1 to 2 mols of at least one long-chain fatty acid triglyceride, and 4 to 5 mols of glycerol under neutral or acidic conditions at a temperature of 240° to 280° C.

4,515,726

OILSEED EXTRACTION PROCESS

Don A. Sullivan, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 28, 1984, Ser. No. 625,491
Int. Cl.³ C11B *1/00*; C07F *5/02*
U.S. Cl. 260—412.4 **7 Claims**



1. A process for the solvent extraction of oil and of lecithin and/or related phosphatide compounds from soybeans, comprising steps for (a) continuously contacting in an extractor the soybeans with an isopropanol-based extraction solvent containing a recycle solvent and, optionally, a make-up solvent to obtain a miscella extract and a seed meal (b) substantially draining liquid from the seed meal and withdrawing the drained seed meal from the process, (c) cooling the miscella to a temperature in the range from about 30° to 80° F., (d) phase separating the cooled miscella, (e) recovering from the phase separation an upper solvent-rich phase, an intermediate lecithin/phosphatide-rich phase, and a lower crude oil phase, and (f) directly and continuously recycling the solvent-rich phase to the extractor as the recycle solvent, with the provision that the quantity of isopropanol contained in the recycle solvent is at least about 90% of the total isopropanol in the extraction solvent.

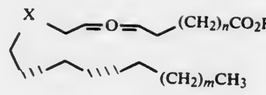
4,515,727

ALLENE CONTAINING ARACHIDONIC ACID DERIVATIVES

John W. Patterson, Jr., Mountain View, and Jurg R. Pfister, Los Altos, both of Calif., assignors to SYNTEX (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 13, 1982, Ser. No. 434,206
Int. Cl.³ C11C *1/00*
U.S. Cl. 260—413 **13 Claims**

1. A compound of the formula



I

wherein

R is hydrogen, an alkyl group of 1 to 6 carbon atoms or a pharmaceutically acceptable salt;

X is CH=CH, CH_2S, SCH_2, or S;

n is 1 or 2 but is 1 when X is CH=CH;

m is 0–6; and the dotted lines represent a single or double bond.

4,515,728

SYNTHESIS OF HETERONUCLEAR OSMIUM CARBONYL HYDRIDES UNDER GASEOUS HYDROGEN

Sheldon G. Shore, Columbus, and Wen-Liang Hsu, Copley, both of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 322,447, Nov. 18, 1981, Pat. No. 4,389,347. This application Jun. 15, 1983, Ser. No. 504,479
Int. Cl.³ C07F *15/00*
U.S. Cl. 260—429 CY **27 Claims**

7. A process for producing $H_4(\eta^5\text{—}C_5(CH_3)_5)RhOs_3(CO)_9$ and $H_2(\eta^5\text{—}C_5(CH_3)_5))Rh_2Os_2(CO)_7$, which comprises establishing, in the presence of gaseous hydrogen, a reaction mixture comprising $Rh(\eta^5\text{—}C_5(CH_3)_5)(CO)_2$, $H_2Os_3(CO)_{10}$ and a solvent which at least partially solubilizes one of said $Rh(\eta^5\text{—}C_5(CH_3)_5)(CO)_2$ and said $H_2Os_3(CO)_{10}$, said reaction mixture being established in the substantial absence of molecular oxygen and water, thereby forming $H_4(\eta^5\text{—}C_5(CH_3)_5)RhOs_3(CO)_9$ and $H_2(\eta^5\text{—}C_5(CH_3)_5)Rh_2Os_2(CO)_7$ in said reaction mixture and recovering said $H_4(\eta^5\text{—}C_5(CH_3)_5)RhOs_3(CO)_9$ and $H_2(\eta^5\text{—}C_5(CH_3)_5)Rh_2Os_2(CO)_7$ from said reaction mixture.

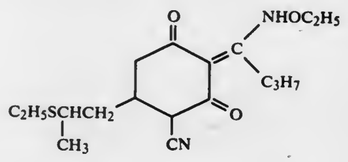
4,515,729

CYCLOHEXANE DERIVATIVES

Isao Iwataki; Kagari Fujita; Hisao Ishikawa; Hideo Hosaka, and Kenichi Kohara, all of Kanagawa, Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Continuation of Ser. No. 269,468, Jun. 2, 1981, abandoned. This application Jan. 26, 1983, Ser. No. 461,000
Claims priority, application Japan, Jun. 12, 1980, 55-78397
Int. Cl.³ C07C *121/46*
U.S. Cl. 260—464 **1 Claim**

1. A compound having the structural formula



also known as 2-(1-ethoxyaminobutylidene)-5-(2-ethylthiopropyl)-4-cyanocyclohexane-1,3-dione.

4,515,730

COMPOUNDS FOR DETERMINING THE PH VALUE IN THE INTERIOR OF A CELL

Günter Valet, Gräfelfingerstrasse 79a, D-8000 Munich; Gerhard Ruhenstroth-Bauer, Spitzelbergerstrasse 11, D-8302 Gräfelfing; Erich Wünsch, Midgardstrasse 16, D-8132 Tutzing, and Luis Moroder, Lena-Christ-Strasse 12, D-8033 Martinsried, all of Fed. Rep. of Germany

Continuation of Ser. No. 346,094, Feb. 5, 1982, abandoned. This application Jul. 2, 1982, Ser. No. 394,784
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104078
Int. Cl.³ C07C *121/75*
U.S. Cl. 260—465 D **2 Claims**

1. 1,4-dibutyryloxy-2,3-dicyanobenzene.

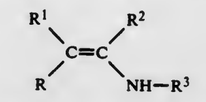
4,515,731

ASYMMETRIC CATALYSIS

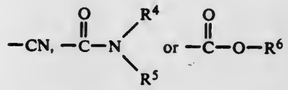
Gerald L. Bachman, Des Peres, and Billy D. Vineyard, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 274,976, Jun. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 854,447, Nov. 23, 1977, abandoned, which is a continuation of Ser. No. 607,304, Aug. 25, 1975, abandoned. This application Jul. 8, 1983, Ser. No. 512,282
Int. Cl.³ C07C *121/78*
U.S. Cl. 260—465 D **20 Claims**

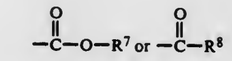
1. An asymmetric hydrogenation process comprising hydrogenating an olefinic substrate consisting essentially of the Z geometric isomer of a compound of the formula



wherein at least one of R and R^1 represents hydrogen and the other independently represents hydrogen, unsubstituted or substituted lower alkyl or aryl; R^2 represents



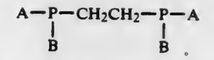
wherein R^4 and R^5 each independently represent hydrogen, unsubstituted or substituted lower alkyl or unsubstituted or substituted aryl, R^6 represents hydrogen, unsubstituted or substituted lower alkyl or unsubstituted or substituted aryl; and R^3 represents



wherein R^7 and R^8 each independently represent unsubstituted or substituted lower alkyl or unsubstituted or substituted aryl; provided that when R^3 represents



R^2 represents —CN, in the presence of a catalytic amount of a homogeneous, coodination complex of rhodium, iridium or ruthenium in combination with an optically active bis phosphine ligand represented by the formula



wherein A and B each independently represent substituted and unsubstituted alkyl of from 1 to 12 carbon atoms, substituted and unsubstituted cycloalkyl having from 4 to 7 carbon atoms, substituted and unsubstituted aryl; provided that such substituents provide no significant interference with the steric requirements around the phosphorus atom and A and B are different.

4,515,732

CONVERSION OF ACETONITRILE TO GLYCOLONITRILE AND/OR GLYCOLAMIDE

James F. Brazdil, Jr., Mayfield Village; William A. Marritt, Cleveland Heights, and Michael D. Ward, South Euclid, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed May 29, 1984, Ser. No. 614,609
Int. Cl.³ C07C *121/36, 103/167*
U.S. Cl. 260—465.6 **3 Claims**

1. The vapor oxidation of acetonitrile with molecular oxygen in the presence or absence of water vapor and in the presence of a solid heterogeneous oxidation catalyst to produce glycolonitrile or glycolamide, wherein (1) glycolamide is produced only when water is present and (2) said acetonitrile, oxygen and water are the sole reactants present.

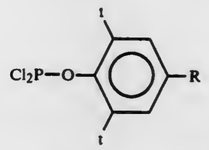
4,515,733

METHOD FOR MAKING 1,3,5,2,4,6-TRIOXATRIPHOSPHORINANES

Dwight W. Chasar, Northfield, and Perry D. Matheny, Doylestown, both of Ohio, assignors to The B. F. Goodrich Co., Akron, Ohio

Filed Nov. 7, 1983, Ser. No. 548,910
Int. Cl.³ C07F *9/15*
U.S. Cl. 260—988 **6 Claims**

1. A method for making 2,4,6-tris(substituted phenoxy)-1,3,5,2,4,6-trioxatriphosphorinanes comprising reacting together substituted phenylphosphorodichloridites having the formula



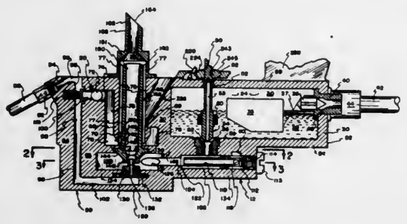
wherein t is t-butyl or t-pentyl, R is hydrogen, a primary, secondary, or tertiary alkyl radical containing 1 to 9 carbon atoms, cycloalkyl radicals containing 3 to 6 carbon atoms, a halogen radical, a cyano radical, alkoxy radicals containing 1 to 8 carbon atoms, phenyl, $—COOR_2$, $—CH_2CHO_2COOR_3$ and $—C(CH_3)_2CON(R_4)_2$ radicals wherein R_2 and R_3 are alkyl radicals containing 1 to 18 carbon atoms, and R_4 is an alkyl radical containing 1 to 9 carbon atoms, with water and a trialkylamine wherein the alkyl group contains 4 to 8 carbon atoms, in acetone.

4,515,734

FUEL EFFICIENT, LOW POLLUTION CARBURETOR AND METHODS

Howard P. Rock, and Kelly P. Rock, both of 5034 Del Rio, Salt Lake, Utah 84117

Filed Jan. 28, 1983, Ser. No. 461,847
Int. Cl.³ F02M *23/12*
U.S. Cl. 261—50 R **7 Claims**



1. A method of atomizing, vaporizing and homogenizing fuel within a carburetor for an internal combustion engine comprising the steps of:

selectively controlling the flow of fuel along a fuel atomizing, vaporizing and homogenizing carburetor flow path;

continuously delivering air into the flow path at a plurality of spaced sites therealong;

turbulently and vortically comingling air introduced into the flow path with the pre-existing flow at each site for atomizing and vaporizing the fuel and homogenizing the fuel-/air mixture without the specific application of heat to the mixture;

vortically causing the unvaporized fuel to impinge as a liquid upon a separating surface;

re-introducing the separated liquid fuel directly into the atomizing, vaporizing and homogenizing carburetor flow path; and

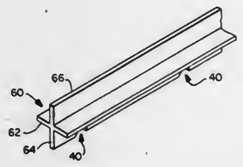
delivering a homogenous mixture of fuel vapor and air into the engine without the specific application of heat to the mixture.

4,515,735

SLOTTED SPLASH BARS FOR GAS LIQUID CONTACT APPARATUS

Peter M. Phelps, 15 Buckeye Way, Kentfield, Calif. 94904

Continuation-in-part of Ser. No. 428,438, Sep. 29, 1982, abandoned. This application Nov. 4, 1983, Ser. No. 548,691
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—111 **9 Claims**



1. A cross-shaped splash bar for a cooling tower, said splash bar including an elongate generally flat splash plate section and at least two structural rib sections longitudinal to said splash plate section, said rib sections being integral with and projecting along the axis of said splash plate section, one of said rib sections projecting to one side of said splash plate section and the other rib section projecting to the opposite side of said splash plate section, said two rib sections being aligned with each other, said one rib section defining multiple spaced apart open slots adapted to receive a transverse horizontal string wire of a cooling tower on the lower side of said splash bar, said slots extending from the free edge of said one rib section inwardly toward said splash plate section, each of said slots being sloped at a substantial angle off perpendicular to the longitudinal direction of said one rib section, said slots serving to stabilize the splash bar against wind updrafts when said splash bars are disposed in a cooling tower.

4,515,736

METHOD FOR ENCAPSULATING MATERIALS INTO LIPOSOMES

David W. Deamer, Woodland, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 12, 1983, Ser. No. 493,952
Int. Cl.³ A61K *9/52*; B01J *13/02*
U.S. Cl. 264—4.3 **13 Claims**

1. A method for encapsulation materials into liposomes comprising:

providing a single phase, polar solution, the polar solution having initial liposomes dispersed therein and having a quantity of material to be encapsulated dispersed therein, the initial liposomes and the quantity of material being in a mass ratio of from about 2:1 to about 50:1 in the polar solution;

drying the initial liposomes in the presence of the quantity of material by removing substantially all of the polar solution therefrom and forming a highly viscous, concentrated admixture; and,

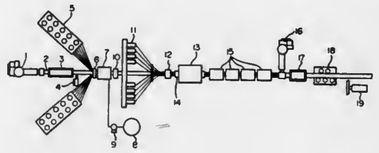
hydrating the concentrated admixture to form resultant liposomes, the resultant liposomes having a portion of the quantity of material previously dispersed in the polar solution of the providing step encapsulated therein, the portion of material encapsulated in the resultant liposomes being at least about 1 wt. % with respect to the quantity of material previously dispersed in the polar solution of the providing step.

4,515,737

PROCESS FOR PRODUCING COMPOSITE PLASTIC PIPE

Saburo Karino, Osaka, and Yoshiaki Ishida, Nara, both of Japan, assignors to Dainippin Ink and Chemicals Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 267,769, May 28, 1981, abandoned. This application Nov. 23, 1983, Ser. No. 554,816
Claims priority, application Japan, May 28, 1980, 55-70073; May 28, 1980, 55-70076
Int. Cl.³ H05B *3/00*
U.S. Cl. 264—22 **12 Claims**



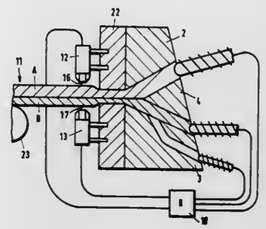
1. A process for producing a composite plastic pipe, which comprises producing a thermoplastic resin pipe (I) by an extruder, covering the surface of the pipe (I) uniformly with a continuous fibrous reinforcing material (II) impregnated with a thermosetting resin selected from the group consisting of unsaturated polyester resins and unsaturated carboxylic acid-modified vinyl ester in its axial direction by a draw molding method, helically winding a continuous fibrous reinforcing material (III) impregnated or not impregnated with the thermosetting resin uniformly on the layer of the resin fibrous reinforcing material (II) by a filament winding method, thereafter curing the thermosetting resin by irradiation of ultraviolet light and coating a thermosplastic resin (IV) on the resulting product within a crosshead die in an extruder.

4,515,738

METHOD OF MONITORING THE PRODUCTION OF EXTRUDED PROFILES AND AN APPARATUS INCORPORATING MEANS FOR EFFECTING SUCH MONITORING

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,708
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315184
Int. Cl.³ B29F *3/00*
U.S. Cl. 264—40.7 **8 Claims**



1. A method of monitoring the formation of composite profiles from mixtures of rubber or thermoplastics materials comprising the steps of

(a) supplying components of said mixture to an extrusion head from individual worm extruders;

(b) extruding said mixture through a nozzle outlet of an extrusion head to form a profile;

(c) permitting said profile to swell;

(d) scanning both sides and the top and bottom of said profile emerging from the extrusion head by means of spacing measurement devices located immediately downstream of the nozzle outlet of the extrusion head;

(e) comparing said measured spacing with a desired value, and

(f) modifying the worm speed of one or more of the individual extruders to cause said measured spacing to return to said desired value.

2. An extrusion apparatus for producing composite profiles having at least three parts including a base, a tread strip, and separate lateral strips at the sides of said tread strip, from mixtures of rubber or plastics materials comprising:

(a) at least three worm extruders, each said extruder conveying one component of said composite profile;

(b) a drive mechanism associated with and driving each said extruder;

(c) an extrusion head into which each said extruder conveys its component, said extrusion means comprising profile nozzle means, said composite profile being extruded from said extrusion head through said profile nozzle means;

(d) spacing measurement means disposed downstream of said nozzle means, said spacing measurement means being located at both sides and the top and bottom of said profile and being located at a pre-selected spacing from the base, tread strip and lateral strips emerging from said nozzle means;

(e) support means located downstream of said spacing measurement means for supporting the extruded composite profile, and

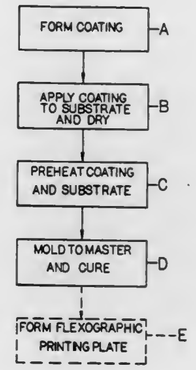
(f) a regulating means connected to each said drive mechanism for each said individual extruder, said regulating means acting on each of said drive mechanisms to modify the flow rate from said individual extruders in response to signals transmitted from said spacing measurement means to said regulating means.

4,515,739

MATRIX COATING SYSTEM AND METHOD OF MANUFACTURE THEREOF

Richard L. Maine, Willimantic, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Oct. 27, 1983, Ser. No. 546,208
Int. Cl.³ B32B *5/18, 5/20*; B41B *5/02*; B41D *7/00*
U.S. Cl. 264—45.3 **36 Claims**



1. A method of making a matrix for molding printing plates including the steps of:

combining a matrix coating and at least one chemical blowing agent to form a slurry;

applying said slurry to a substrate to form a wet coating;

drying said wet coating whereby a porous partially expanded matrix coating which is moldable and curable under heating conditions is formed on said substrate.

23. A matrix for molding printing plates including:

a substrate;

a matrix dried, porous partially expanded coating applied to said substrate;

said matrix coating containing chemical blowing agents and being moldable and curable under heating conditions.

4,515,740

METHOD OF FORMING SOLID FORM FUEL ADDITIVES

Alexander D. Schuettenberg, and James T. Gragson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 197,457, Oct. 16, 1980, ,
Continuation-in-part of Ser. No. 112,363, Jan. 15, 1980, abandoned. This application Aug. 2, 1982, Ser. No. 403,981
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—50 **23 Claims**

1. A method of forming solid form fuel additives comprising:

heating together a structural agent effective, upon cooling, to provide dimensional stability to the solid form fuel addititive, the structural agent being soluble and dispersible in gasoline, and a normally liquid fuel additive to at least the melting point temperature of the structural agent;

allowing the thus-formed mixture of additive and structural agent to cool;

stirring the thus formed mixture of additive and structural agent;

foaming the mixture by dispersing a gaseous phase as fine bubbles in the mixture, said mixture being close to and above a solidification temperature of the mixture; and

forming the thus formed foam into solid pellets soluble and dispersible in gasoline.

4,515,741

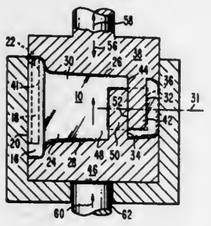
METHOD FOR MAKING AMBIDIRECTIONAL PRESSED CERAMIC SLIP-ON SUPPORT FOR A TOWEL BAR

Pekka Korpijaakko, Rocky Hill, N.J., assignor to Willette Corporation, New Brunswick, N.J.

Filed Apr. 1, 1982, Ser. No. 364,553

Int. Cl.³ B28B *1/44, 3/00, 7/16*

U.S. Cl. 264—62 **7 Claims**



1. A method for making an ambidirectional pressed ceramic slip-on support for a towel bar comprising:

(a) forming a first mold member defining a first cavity therein and including a first mold protruding means extending upwardly therefrom adjacent a side wall defining the first cavity to define a first wiping surface therealong;

(b) forming a second mold member defining a second cavity therein and including a second mold protruding means extending downwardly therefrom adjacent a side wall defining the second cavity to define a second wiping surface therealong extending parallel with respect to said first wiping surface;

(c) depositing ceramic material into the first mold member;

(d) pressing the first mold member and the second mold member together and the first cavity and the second cavity together to press the ceramic material into the desired shape within the cavities, the direction of said pressing being parallel with respect to the planes of said first and second wiping surfaces;

(e) wiping the first wiping surface against the second wiping surface during said pressing to define by the first and second mold protruding means a laterally facing external opening within the pressed ceramic material which is perpendicular to the direction of pressing movement;

(f) removing said first mold member from contact with said second mold member to facilitate removal of the pressed ceramic support; and

(g) ejecting of the pressed ceramic support from the first mold member.

4,515,742

CONTINUOUS INORGANIC FIBERS AND PROCESS FOR PRODUCTION THEREOF

Seishi Yajima, deceased, late of Higashihiroshima (by Mantaro Yajima, heir); Akiko Noda, heir, Tokyo; Kiyohito Okamura, Oharai; Yoshio Hasegawa, Oharai, and Takemi Yamaura, Oharai, all of Japan, assignors to UBE Industires, Ltd., Yamaguchi, Japan

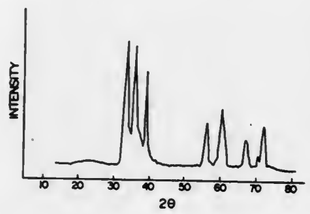
Filed Dec. 15, 1981, Ser. No. 330,999

Claims priority, application Japan, Dec. 18, 1980, 55-178112; Dec. 25, 1980, 55-182817

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.³ D01D *5/04*

U.S. Cl. 264—63 **12 Claims**



1. A process for producing continuous inorganic fibers consisting substantially of Si, Zr and C and optionally of O, which comprises a first step of preparing a semi-inorganic block copolymer comprising polycarbosilane blocks having a main chain skeleton composed mainly of carbosilane units of the formula —Si—CH_2—, each silicon atom of said carbosilane units having bonded thereto a side-chain group selected from the group consisting of hydrogen, lower alkyl and phenyl, and zirconoxane units of the formula —Zr—O—; a second step of preparing a spinning dope of said semi-inorganic block copolymer and spinning the dope; a third step of subjecting the resulting fibers to a treatment of rendering them infusible under tension or under no tension; and a fourth step of firing the infusible fibers at a temperature of 800° to 1800° C. in a vacuum or in an atmosphere of an inert gas or a reducing gas.

4,515,743

METHOD OF PRODUCING A REINFORCED TOOTHED BELT HAVING A FABRIC COVER

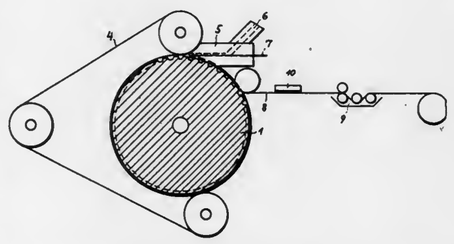
Rudolf Breher, Porta Westfalica, Fed. Rep. of Germany, assignor to BRECO Kunststoffverarbeitungs- GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,637

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1982, 3200063

Int. Cl.³ B29C *5/00;* **B29H** *3/08, 3/10*

U.S. Cl. 264—135 **3 Claims**



1. A method of producing a toothed belt of extrudable material having a tension-proof reinforcing insert relative to which a strip of extensible fabric in a substantially unextended state is also introduced continuously into a mold hollow chamber beginning, such fabric strip being placed upon teeth of a mold wheel depression so that the fabric strip in the hollow mold chamber is pressed into the mold wheel by plasticized synthetic material whereby the fabric strip is pressed into tooth grooves of the mold wheel depression, said belt having a fabric cover on the toothed side of said belt, and a reinforcing insert which extends in the longitudinal direction of said belt and which serves for tension-proof stiffening of the toothed belt synthetic material; said method in combination comprising the steps of:

providing a molding wheel which can be driven continuously and which, on its periphery, is provided with an annular depression which, in the manner of a gear wheel, includes alternating teeth and grooves, and which corresponds in cross section to the cross section of said belt which is to be produced;

providing a cover which closes said annular depression over a portion of the periphery of said molding wheel;

forming a mold cavity between said molding wheel and said cover;

continuously introducing said extrudable material, at a plasticizing temperature, into the beginning of said mold cavity;

wetting, in its substantially unextended state, the strip of extensible fabric, which however during said wetting also is resiliently extensible in its longitudinal direction, by applying thereto a liquid adhesive agent which is adapted to enter into an adhesive connection with said extrudable material and which adhesive agent hardens and stiffens the strip of fabric by being dried and which together therewith softens again at said plasticizing temperature used for said introduction of said extrudable material;

drying and thus hardening said strip of fabric with said adhesive agent applied thereto;

then after said hardening thereof placing said strip of fabric onto said teeth ahead of said introduction of said extrudable material warmed at said plasticizing temperature into said mold cavity;

thereupon making said strip of fabric, as it rests on said teeth, resiliently extensible, accompanied by heating thereof and accompanied by purposeful resoftening of said adhesive agent, by encountering warmth of plasticizing temperature of said extrudable material as it enters said mold cavity;

subsequent to said resoftening thereupon pressing said resiliently extensible strip of fabric into said grooves to form said fabric cover specifically on only the alternating teeth and grooves on the toothed side of said belt; and

finally introducing said reinforcing insert into said mold cavity between said cover and said strip of fabric.

4,515,744

VINYL CHLORIDE POLYMER LAMINATE

Richard W. Stamper, Lambertville, Mich., and Robert C. Hultz, Toledo, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jul. 28, 1983, Ser. No. 518,247

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—171 **3 Claims**

1. The method which comprises coating on a release substrate:

(A) a first layer having a thickness of from about 12 to 50 mils and of a compounded and stabilized vinyl chloride polymer plastisol composition containing antimony trioxide and being free of a curing agent and of a blowing agent and gelling said layer at a temperature of from about 170° to 250° F. and

(B) casting on the gelled layer of (A) a second layer having a thickness of from about 12 to 50 mils and of a compounded and stabilized vinyl chloride polymer plastisol composition containing titanium dioxide and being free of a curing agent and of a blowing agent and heating said layers at a temperature of from about 250° to 400° F. for from about one to five minutes to fuse said layers and to adhere said layers together to obtain a flexible vinyl chloride polymer laminate.

4,515,745

MODIFICATION OF ETHYLENE VINYL ACETATE COPOLYMER

Theodore Churma, Berwyn; Elwood D. Latimer, Jr., Naperville, and Stephen J. Vicik, Darien, all of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 18, 1983, Ser. No. 495,656

Int. Cl.³ D01F *1/02*

U.S. Cl. 264—211 **13 Claims**

1. In a process for manufacturing an extruded film having at least one layer of ethylene vinyl acetate copolymer, wherein the copolymer is melted, extruded through a die, and stretched; the improvement comprising the presence of an effective amount sufficient to lower the melt index and modify the rheology of the ethylene vinyl acetate copolymer, and insufficient to crosslink the ethylene vinyl acetate copolymer, of a crosslinking agent in the melted copolymer during extrusion of the ethylene vinyl acetate copolymer.

4,515,746

MICROCOMPOSITE OF METAL CARBIDE AND CERAMIC PARTICLES

Milivoj K. Brun, Ballston Lake; Minyoung Lee, and Lawrence E. Szala, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,783

Int. Cl.³ C04B *35/60*

U.S. Cl. 264—332 **14 Claims**



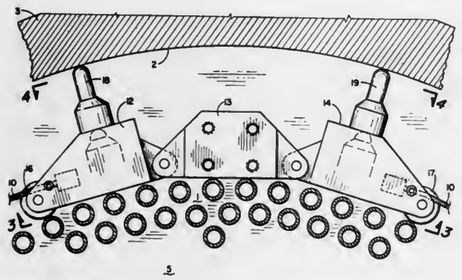
1. A process for producing a polycrystalline microcomposite consisting essentially of a continuous interconnecting phase of a carbide of a metal selected from the group consisting of hafnium, niobium, tantalum, titanium, vanadium, zirconium and mixtures thereof and a phase of ceramic particles, said phases being distributed at least significantly uniformly in said microcomposite, said microcomposite having a density greater than 95% of the theoretical density for said composite, which consists essentially of forming a particulate mixture of elemental or free carbon, a hydride of a metal selected from the group consisting of hafnium, niobium, tantalum, titanium, vanadium, zirconium and mixtures thereof, and a ceramic powder, hot pressing the particulate mixture under a pressure of at least about 200 psi at a temperature ranging from about 1200° C. to about 2000° C. decomposing said hydride of said metal producing said metal and by-product gas which vaporizes away and reacting said metal with said carbon producing the carbide of said metal as a continuous interconnecting phase, said continuous metal carbide phase encapsulating at least about 20% by volume of said ceramic particles and either encapsulating or being intermixed with the balance of said ceramic particles, said process having no significant effect on said ceramic particles, said continuous interconnecting metal carbide phase ranging from about 20% by volume to about 80% by volume of said microcomposite and the balance of said microcomposite consisting essentially of particles of said ceramic.

4,515,747

REMOTELY OPERATED MAINTENANCE AND INSPECTION EQUIPMENT TRANSPORTER

Ronald B. Creek; Charles T. Harden, both of Chattanooga, and Harold H. Harris, Harrison, all of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 27, 1982, Ser. No. 423,953
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—249 **3 Claims**



1. In a steam generator of a nuclear power installation wherein the generator is essentially a heat exchanger having a shell across the lower portion of which extends a horizontal tube sheet supporting a bundle of vertically extending tubes and surrounded by a wrapper extending downward from the upper portion of the shell to form an annulus with the inside of the shell and terminating a predetermined distance above the tube sheet, a system for cleaning and inspecting that portion of the tubes a predetermined distance above the tube sheet, including,

an opening to the annulus through the shell of the heat exchanger,

a transporter structure which can be disassembled and passed through the shell opening to a position beneath the lower end of the bundle wrapper and between the tube bundle and the internal wall of the shell where it is reassembled,

first wheel structures mounted on the transporter arranged to engage the upper surface of the tube sheet,

a cable connected to the ends of the transporter and extending around the periphery of the tube bundle and through the shell opening to a motor means operated externally to move the transporter along the periphery of the tube bundle,

inspecting and cleaning structure mounted on the transporter for removing foreign matter from the tube portions above the tube sheet and inspecting the cleaned tubes,

and extension structure mounted on the transporter and controlled in lateral movement to engage the inside of the shell wall and the tubes of the bundle for efficient operation of the inspection and cleaning structure mounted on the transporter.

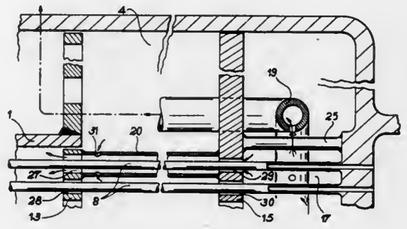
4,515,748

APPARATUS FOR DETECTION OF LOSSES IN A VAPOR GENERATOR

Jean-Pierre Fabregue, Athis-Mons, France, assignor to ELECTRICITE DE FRANCE Service National, Paris, France

Filed Jul. 8, 1982, Ser. No. 396,439
Claims priority, application France, Jul. 8, 1981, 81 13427
Int. Cl.³ G21C *17/00;* **F28F** *11/00*
U.S. Cl. 376—250 **7 Claims**

1. A device for the detection of leaks by sampling liquid sodium in a steam generator comprising a primary circuit constituted by an enclosure for circulating sodium between an introduction chamber and a discharge chamber, each chamber being bounded on the side of the circulation enclosure by a sodium distribution grid and on the other side by a tube plate, provided with a heat shield parallel to the tube plate and spaced therefrom by a space for the confinement of a volume of sodium for protecting the tube plate against thermal shocks, and a secondary circuit constituted by a plurality of water circulation tubes sealingly fixed at both their ends to the tube plates and issuing on the other side thereof respectively into a water supply chamber, the end portions of said tubes passing into each of the sodium introduction and discharge chambers, whilst non-sealingly traversing on the one hand the distribution chamber and on the other the heat shield corresponding



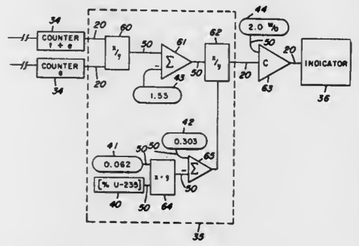
thereto, the detection device comprising means for the continuous sampling and analysis of a certain quantity of confined sodium located in the protection space, wherein the confined sodium sampling means is constituted by at least one tubular collector placed in the protection space on the periphery of the tube plate and along which are distributed a plurality of sampling openings, and a plurality of ducts issuing at one end into the protection space and at the other end into the sodium circulation enclosure, whereby in the protection space the ducts circulate the liquid sodium from the centre of said space towards its periphery.

4,515,749

SUBCRITICALITY MEASUREMENT APPARATUS AND METHOD

Frederick C. Schoenig, Jr., and James D. Landry, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 295,322, Aug. 24, 1981, abandoned.
This application Mar. 8, 1984, Ser. No. 587,445
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—254 **8 Claims**



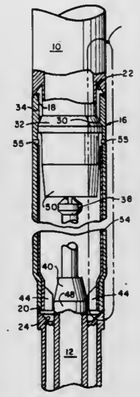
1. Apparatus for providing a subcriticality value SI as a function of the moderator concentration and enrichment concentration of a mass of uranium fuel material including the isotopes U-235 and U-238, comprising: a source of epithermal neutrons positioned for directing epithermal neutrons into said mass of uranium material, said epithermal neutrons having energy in a range above the range of thermal neutrons which would cause substantial fission of said U-235 and below the range of fast neutrons which would cause fission of said U-238 whereby fission of said isotopes and the extraneous neutrons that would result from such fission are substantially avoided; a first neutron detector positioned adjacent said uranium material and responsive to substantially only epithermal neutrons for providing a first detector signal e indicative of neutrons from said source traversing said mass of uranium material without substantial moderation; a second neutron detector positioned adjacent said uranium material and responsive to both thermal and epithermal neutrons for providing a second detector signal (t+e) indicative of the sum of the neutrons from said source traversing said mass of uranium material which are moderated to thermal energy by the moderator material in said mass of uranium material and the neutrons from said source traversing said mass of uranium material without substantial moderation; divider means connected to receive said first detector signal e and second detector signal (t+e) and responsive thereto for providing an output signal proportional to ratio of said second detector signal to said first detector signal, said ratio providing an indication of the concentration of moderator material in said mass; means for subtracting a factor (1+b) from said ratio of said detector signals (where b is the ratio of thermal neutrons to epithermal neutrons at zero moderator concentration) to provide a first factor; means for multiplying a factor n (the slope of the relationship between the curve of the ratio of thermal plus epithermal neutrons to epithermal neutrons versus moderator concentration) and the enrichment concentration of said mass of uranium material (expressed as the percent of U-235) to provide a second factor; means for subtracting from said second factor a factor p (which is the derivative of the enrichment concentration of the thermal to epithermal neutron ratio with respect to moderator concentration) to provide a third factor; and means for dividing said first factor by said third factor to provide said subcriticality value SI.

4,515,750

SEALING COUPLING

John A. Pardini, Brookfield; Robert C. Brubaker, Naperville, and John J. Rusnak, Orland Park, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 20, 1982, Ser. No. 420,070
Int. Cl.³ G21C *3/04, 3/12*
U.S. Cl. 376—446 **7 Claims**



1. A remotely operable releasable sealing coupling arrangement comprising:

a first conduit having a concave conical sealing surface, an inwardly tapered end portion, and a retaining collar disposed therebetween, said retaining collar having a camming surface;

a second conduit having a concave conical sealing surface; and

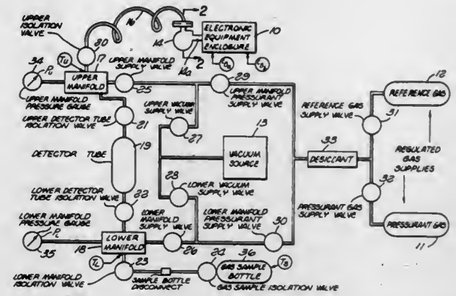
a cylindrical sleeve having a first sleeve end which includes an inside wall surface for contacting said inwardly tapered portion of said first conduit end so as to limit the lateral deflection thereof when said inwardly tapered end portion of said first conduit is inserted in said first sleeve end, said first sleeve end further including a rounded outside corner forming a convex spherical surface for sealing engagement with said concave conical surface of said first conduit, and an inwardly projecting lip on said inside wall surface of said first sleeve end, said inwardly projecting lip having a camming surface for engagement with said retaining collar of said first conduit to hold said sleeve captive on said inwardly tapered end portion of said first conduit end with an interference fit, while permitting a swiveling of said sleeve thereabout, said cylindrical sleeve further having a second sleeve end which includes a rounded outside corner forming a convex spherical surface for sealing engagement with said concave conical sealing surface of said second conduit.

4,515,751

MOISTURE CONTENT AND GAS SAMPLING DEVICE

Herman C. Krieg, Jr., Rancho Palos Verdes, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,471
Int. Cl.³ G01J *1/50*
U.S. Cl. 422—86 **11 Claims**



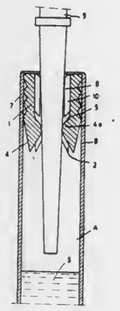
1. A test system for detecting a contaminant in a pressurant gas within the free internal space of an enclosure, said enclosure having a gas coupling and an externally operable valve for controlling gas admission and removal, comprising: a coupling device for mating to said enclosure gas coupling and having manual means for actuating said enclosure externally operable valve; a colometric detector tube comprising an elongated column of granular material subject to color change for visual qualitative and quantitative indication of said contaminant when gas containing said contaminant is passed through said detector tube; a vacuum source, a sample vessel and an interconnection system of gas-tight tubing and valves arranged to evacuate at least partially said coupling device, said detector tube, said sample vessel and said inter connection system when a predetermined setting of said valves is extant, said gas within said enclosure being at least partially withdrawn through said detector tube when a second predetermined combination of settings of said valves is extant, the amount of said contaminant drawn through said detector tube being indicated by the length of the color-changed portion of said column of material in said detector tube.

4,515,752

STOPPER FOR CONTAINERS FOR USE IN ANALYSES

Fernando X. Miramanda, Pau Casals 8-10, Caldes de Montbui (Barcelona), Spain

Filed Jun. 15, 1983, Ser. No. 504,432
Claims priority, application Spain, Jun. 18, 1982, 266.599[U]
Int. Cl.³ B65D *51/16, 39/00*
U.S. Cl. 422—99 **2 Claims**



1. A stopper for containers comprising: an integral single-piece body formed of a resilient material having a tubularly-shaped main portion and an inverted conically-shaped transverse end wall thereby defining an inner surface and an interiorly located cavity, said cavity containing a plurality of longitudinal ribs which extend radially inwardly from the inner surface of said tubularly-shaped main portion, the transverse wall being provided with at least one slit which defines segments of the transverse wall that abut one another to form a fluid tight seal, the transverse wall being perforatable by insertion of a tubular member into said interior cavity and through said at least one slit, the segments of the transverse wall resiliently closing to reseal said transverse wall when the tubular member is removed, and the longitudinal ribs providing vent passages when the tubular member is inserted through the transverse wall.

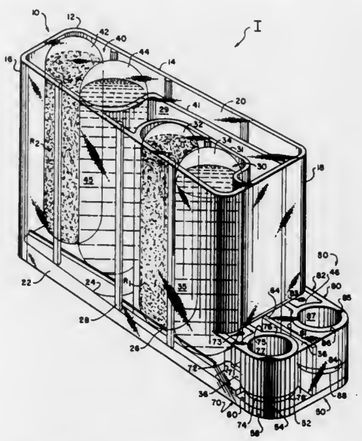
4,515,753

INTEGRAL REAGENT DISPENSER

John L. Smith, New City, and Vito F. Christiano, Port Chester, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,880
Int. Cl.³ G01N *1/00, 35/08*
U.S. Cl. 422—102 **38 Claims**

1. A unitary integral reagent container comprising:
(a) means defining a plurality of reagent wells, each having a first opening for withdrawal of liquid reagent from said well therethrough and a second opening for introduction of liquid reagent into said well;
(b) means for establishing a standing level of reagent in each of said reagent wells;
(c) means comprising a reagent well interior cross-sectional area for maintaining a lens of immiscible liquid on the surface of said reagent and within a defined area of said surface when said reagent is contained in said reagent wells;
(d) means defining a plurality of reagent reservoirs for containing a supply of liquid reagent in each, said reservoir defining means being integral with said reagent well defining means, wherein each such reagent reservoir cooperates with a selected reagent well;
(e) means for repeatedly releasing a controlled amount of reagent liquid from each of said reagent reservoirs through an opening between each such reagent reservoir and the reagent well with which it cooperates and for introducing the controlled amount of reagent so-released



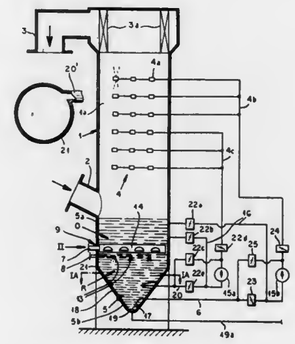
into said cooperating reagent well through said second opening thereof.

4,515,754

WASHING TOWER FOR THE DESULFURIZATION OF FLUE GASES

Werner Stehning, Dorsten, Fed. Rep. of Germany, assignor to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserrückkühlanlagen GmbH & Co. Kommanditgesellschaft, Essen, Fed. Rep. of Germany

Filed Jul. 20, 1983, Ser. No. 515,919
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227187
Int. Cl.³ C01B *17/05;* **B01D** *47/00, 53/34*
U.S. Cl. 422—168 **6 Claims**



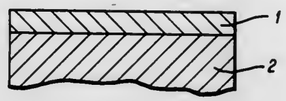
1. An apparatus for the desulfurization of a flue gas comprising:
a scrubbing column defining an upper portion provided as a washing zone and a downwardly tapering conical lower portion defining an upright sump which has an apex at its bottom, means for admitting flue gas to said upper portion, means for discharging flue gas from said upper portion, and means for contacting flue gas in said washing zone with a calcium-containing scrubbing liquid, wherein the scrubbing liquid collects in said sump;
means at an upper portion of said sump for introducing oxygen into said sump so as to define an oxidation zone, for oxidizing the SO_2 into SO_3, above said means for introducing oxygen and a reaction zone for forming calcium sulfate below said means for introducing oxygen
backwashing means including an intake conduit communicating with said sump at said oxidation zone, a pump connected to said intake conduit, a discharge conduit connected to said pump and also connected to both said apex of said sump below said intake conduit for recirculating scrubbing liquid so as to loosen deposited solids within said sump, and to a recirculation conduit which opens tangentially into said sump at said downwardly tapering lower portion.

4,515,755

APPARATUS FOR PRODUCING A SILICON SINGLE CRYSTAL FROM A SILICON MELT

Shuitsu Matsuo, Atsugi; Yasuhiro Imanishi, Tokyo; Hideo Nagashima, Ebina; Masaharu Watanabe, Yokohama; Toshiro Usami, Yokohama, and Hisashi Muraoka, Yokohama, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Apr. 14, 1982, Ser. No. 368,440
Claims priority, application Japan, May 11, 1981, 56-70474; May 11, 1981, 56-70475; May 11, 1981, 56-70476; May 11, 1981, 56-70477; May 11, 1981, 56-70478; May 11, 1981, 56-70479
Int. Cl.³ C30B *15/34*
U.S. Cl. 422—246 **11 Claims**



1. In an apparatus for production silicon single crystal by seed pulling from a melt contained in a crucible for molten silicon, the improvement which comprises on at least a portion of the surfaces of said crucible which comes in contact with said silicon melt include a layer comprised of silicon nitride precipitated from a gaseous phase and containing at least 20% of β phase.

4,515,756

PROCESS FOR EXTRACTING TUNGSTEN OR MOLYBDENUM FROM SOLUTION

David J. Blumer, Huntington Beach, Calif., assignor to Occidental Research Corporation, Los Angeles, Calif.

Filed Dec. 9, 1980, Ser. No. 214,810
Int. Cl.³ C01G *39/00, 41/00*
U.S. Cl. 423—54 **20 Claims**

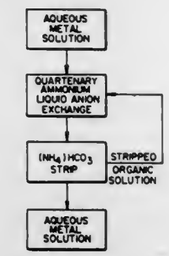
1. A process for the recovery of molybdenum and/or tungsten from a solution which comprises the steps of:
(a) passing said solution through a packed column containing an adsorbent,
(b) adsorbing tungsten and/or molybdenum on said adsorbent,
(c) passing a solution depleted in tungsten and/or molybdenum from said column,
(d) passing a stripping solution through said column containing tungsten and/or molybdenum on said adsorbent to remove tungsten and/or molybdenum with said stripping solution,
(e) repeating steps (a) through (d) until the stripping solution contains at least about 1 gram per liter of tungsten and/or molybdenum,
(f) passing said solution containing at least about 1 gram of tungsten and/or molybdenum per liter into a recovery zone,
(g) adjusting the pH of said stripping solution containing at least about 1 gram per liter of tungsten and/or molybdenum to approximately 13.0 by addition of a strong acid and thereby raising the temperature of said solution at least about 10° C.,
(h) adding a calcium ion-containing solution to said pH adjusted solution to precipitate calcium tungstate and/or calcium molybdate, and
(i) recovering said precipitate of tungsten and/or molybdenum as calcium tungstate and/or calcium molybdate.

4,515,757

STRIPPING A SOLUTION CONTAINING MOLYBDENUM, TUNGSTEN AND/OR VANADIUM VALUES

Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 422,814, Sep. 24, 1982, Pat. No. 4,434,140. This application Feb. 22, 1984, Ser. No. 582,365
The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.
Int. Cl.³ C01G *39/00, 31/00, 41/00*
U.S. Cl. 423—54 **10 Claims**



1. A method of stripping an organic extraction solvent containing
(a) a metal quaternary alkyl ammonium complex selected from the group consisting of molybdenum, vanadium and tungsten quaternary alkyl ammonium complex or mixture of molybdenum, vanadium and tungsten quaternary alkyl ammonium complexes
(b) a mixture of molybdenum and tungsten quaternary alkyl ammonium complexes,
(c) a mixture of vanadium and tungsten quaternary alkyl ammonium complexes comprising:
contacting said organic extraction solvent with an aqueous stripping solution maintained at a temperature of no more than 50° C., a pH between 7 and 9, and containing at least 75 grams per liter of a salt of a bicarbonate ion, for a time sufficient to convert said metal quaternary alkyl ammonium complex or mixtures thereof to an aqueous soluble metal complex; and
separating said organic extraction solvent and said aqueous stripping solution.

4,515,758

PROCESS AND CATALYST FOR THE REDUCTION OF THE IGNITION TEMPERATURE OF DIESEL SOOT FILTERED OUT OF THE EXHAUST GAS OF DIESEL ENGINES

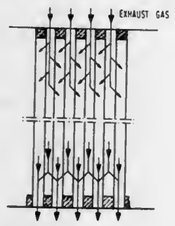
Rainer Domesle, Maintal; Edgar Koberstein, Alzenau; Hans-Dieter Pletka, Freigericht, and Herbert Voelker, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,292
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232729
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—213.2 **7 Claims**

1. A process for the reduction of ignition temperature of

Diesel soot filtered out of the exhaust gas of Diesel engines comprising passing the exhaust stream produced by a Diesel engine over a catalytically active substance consisting of an alkali metal perrhenate or silver perrhenate or an admixture of an alkali metal perrhenate or silver perrhenate with one or more of lithium oxide, copper (I)-chloride, vanadium pentoxide with 1-30% by weight of an alkali metal oxide and a vanadate of lithium, sodium, potassium or cerium.

7. A process for the reduction of ignition temperature of Diesel soot filtered out of the exhaust gas of Diesel engines comprising passing the exhaust stream produced by a Diesel engine over a first and a second catalytically active substance, the first active substances being selected from the group consisting of lithium oxide, copper (I)-chloride, vanadium pentoxide with 1-30% by weight of an alkali metal oxide, a vanadate of lithium, sodium, potassium or cerium or admixtures thereof and the second active substance being noble metal, whereby



both first and second catalytically active substances or their combinations with a carrier material are deposited on different areas of a temperature stable filter element serving as structural reinforcer, disposing said filter element in the flow cross section of the exhaust gas stream, said filter element being a monolithic ceramic body having two oppositely disposed end surfaces and numerous flow channels passing through it and having macroporous walls, the openings of the channels being provided at the opposite front surfaces with closing means in such a way that a channel is open on one end surface thereof and is closed on the opposite end surface thereof, the first catalytically active substance being applied in the area of the inlet side of the filter and the second catalytically active substance being applied in the area of the outlet side of the filter, both said active substances thus covering opposite sides of the area of each macroporous flow channel wall of the monolithic ceramic body.

4,515,759

PROCESS OF REMOVING HYDROGEN SULFIDE FROM GAS MIXTURES

Edward E. Burnes, Arroyo Grande, Calif., and Kishan Bhatia, Katy, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Nov. 3, 1983, Ser. No. 549,274

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—220 **9 Claims**

1. A process for removing hydrogen sulfide from a gas mixture comprising treating said gas mixture with an aqueous medium containing an effective amount of a inorganic water soluble metal nitrite at a pH of about 5.5 or greater.

4,515,760

NON-PRECIPITATING REGULATION OF AMMONIA CONTENT IN SOUR GAS SOLVENT SCRUBBING SYSTEMS

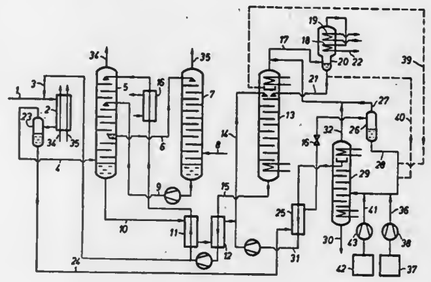
Roland Lang, Wolfratshausen, and Heinz Karwat, Pullach, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 563,839

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247876

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—220 **12 Claims**



1. In a method for regulating the NH_3 content in methanol in a process comprising using methanol to scrub out at least CO_2 from a gaseous mixture containing sour gas and a trace amount of NH_3 and/or to prevent ice formation prior to the scrubbing step, and after the scrubbing process, separating the absorbed gaseous components and/or water from the methanol and reusing the resultant regenerated methanol in the cycle as scrubbing liquid and/or for preventing ice formation, the improvement in the method of regulating the NH_3 content, which comprises adding a sufficient amount of a strong acid to the methanol in order to form a water-soluble ammonium salt without precipitating any ammonium salt, transferring said water-soluble salt to an aqueous phase, and removing said aqueous phase from the scrubbing cycle.

4,515,761

PROTECTIVE GARMENT OR COVER, COMPOSITE SEMIPERMEABLE BARRIER FABRIC, AND USE IN DETOXIFICATION

Irene G. Plotzker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

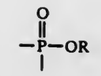
Filed Jul. 7, 1981, Ser. No. 281,197

Int. Cl.³ A61L *9/00;* **B32B** *27/28;* **C01B** *7/00*

U.S. Cl. 423—240 **20 Claims**

1. A protective garment fabricated at least in part from a composite fabric, said fabric containing as the essential component thereof a continuous film of a highly fluorinated ion exchange polymer having sulfonic acid metal ion salt functional groups, said metal ion having a valence of 2, +3 or +4, there being at least one fluorine atom attached to each carbon atom to which each said functional group is attached, said polymer having an equivalent weight no greater than about 2000.

14. A process wherein (a) water permeates from a first space adjacent a first side of a barrier to a second space adjacent the second side of said barrier, said barrier having as the essential component thereof a continuous film of a highly fluorinted ion exchange polymer having sulfonic acid metal ion salt functional groups, said metal ion havinga valence of +2, +3 or +4, there being at least one fluorine atom attached to each carbon atom to which each said sulfonic acid group is attached, said polymer having an equivalent weight no greater than about 2000, and (b) a hazardous substance, said substance being a toxic organophosphorus compound having a



moiety wherein R is a C_1 to C_{10} alkyl group, or a blistering agent which contains two or more chloroethyl groups, present in said second space (i) permeates only slowly into said barrier and (ii) that portion of said hazardous substance which permeates into said barrier is detoxified at least in part by said polymer, whereby the rate of penetration of said hazardous substance into said first space is substantially decreased.

4,515,762

PROCESS FOR PROCESSING WASTE GASES RESULTING DURING THE PRODUCTION OF SILICON

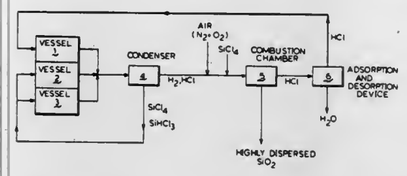
Rudolf Griesshammer, Burghausen; Franz Köppl, Altötting, both of Fed. Rep. of Germany; Winfried Lang, Ach, Austria; Ernst Mühlhofer, Sulzberg/Allgäu, and Michael Schwab, Neuötting, both of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft Für Elektronik-Grundstoffe mbH, Burgenhausen, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,145

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203743

Int. Cl.³ C01B *33/113;* **C01G** *17/02, 23/07*

U.S. Cl. 423—337 **4 Claims**



1. A process for processing waste gases comprising a gas mixture including chlorosilanes, hydrogen and hydrogen chloride, comprising the steps of:

(a) removing the chlorosilanes contained in the waste gas mixture by condensation;

(b) adding to the remaining gas mixture an oxygen-containing gas;

(c) adding at least one chloride selected from the group consisting of germanium chloride, titanium chloride and silicon tetrachloride to the gas mixture resulting from step (b) and subjecting the same to combustion for the pyrogenic formation of oxide particles; and

(d) recovering the hydrogen chloride remaining in the gas mixture following step (c) for reuse.

4,515,763

HIGH SPECIFIC SURFACE AREA CARBIDES AND NITRIDES

Michel Boudart, Stanford; Shigeo T. Oyama, Palo Alto, and Leo Volpe, Redwood City, all of Calif., assignors to Board of Trustees of Leland Stanford Jr. Univeristy, Stanford, Calif.

Continuation of Ser. No. 283,587, Jul. 15, 1981, abandoned. This application Dec. 14, 1982, Ser. No. 449,809

Int. Cl.³ C01B *21/26, 31/34*

U.S. Cl. 423—409 **12 Claims**

1. A method for preparing high specific surface area molybdenum and vanadium carbides and nitrides from an oxide, said carbides and nitrides having at least a 5-fold increase in surface area over said oxide,

which method comprises:

in a first heating, heating said oxide to a temperature prior to significant reduction and formation of said carbide or nitride;

in a second heating following said first heating, continuing heating of said oxide substantially uniformly and continuously at a rate in the range of about 0.1° to 5° K./min in the presence of a reducing environment and a source of carbon or nitrogen from a time at least 20 minutes prior to the time of completion of formation of said carbide or nitride and at a temperature at least 25° K. prior to substantial completion of formation of said carbide or nitride, and through a temperature range where reduction of said oxide and reaction with carbide and nitrogen occurs to form a carbide or nitride respectively, said heating continuing until said reaction is substantially complete as evidenced by the substantial absence of change in the effluent composition; and

quenching the reaction by lowering the temperature within the lesser of about one hour or about 50 percent of the time of said second heating.

4,515,764

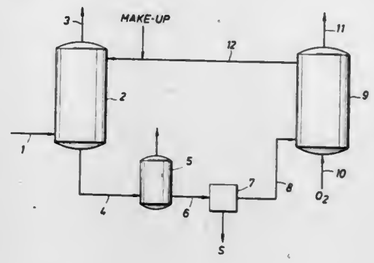
REMOVAL OF H_2S FROM GASEOUS STREAMS

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1983, Ser. No. 563,477

Int. Cl.³ B01D *53/34;* **C01B** *17/05*

U.S. Cl. 423—573 R **15 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) vigorously contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution comprising an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, or mixture of such chelates, and an amount of phosphate and thiosulfate ions effective to improve sulfur quality, said phosphate and thiosulfate ions being present in a molar ratio of from about 0.5 to 3:1, and producing a sweet gas stream and an aqueous solution containing crystalline sulfur and the reduced polyalent metal chelate or chelates of said acid;

(b) removing crystalline sulfur from the aqueous solution;

(c) regenerating the aqueous solution in a regenerating zone and producing a regenerated reactant in said solution; and

(d) returning regenerated solution from step (c) to the contacting zone.

4,515,765

METHOD FOR THE PRODUCTION OF ANTIMONY OXIDE

Robert J. Zellner, Shaker Heights, Ohio, assignor to McGean-Rohco, Inc., Cleveland, Ohio

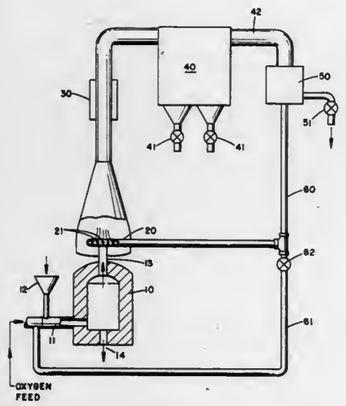
Filed Dec. 23, 1983, Ser. No. 564,926

Int. Cl.³ C01B *27/00*

U.S. Cl. 423—617 **6 Claims**

1. A process for the production of antimony oxide from antimony sulfide which comprises the steps of comminuting the antimony sulfide to form a plurality of antimony sulfide containing particles, mixing the antimony sulfide containing particles with substantially pure oxygen, reacting the antimony

sulfide with said oxygen to form a gaseous stream of antimony oxide and sulfur dioxide, cooling the gaseous stream below the boiling point of antimony oxide, separating the condensed antimony oxide from sulfur dioxide, further cooling the separated sulfur dioxide and utilizing at least a portion of the cooled sulfur dioxide to cool the gaseous stream of antimony oxide and sulfur dioxide, whereby disposition of substantially all of the sulfur dioxide is controlled so as to prevent substantial venting into the open atmosphere.



4,515,766

LABELED PHOSPHONIC ACID COMPOSITIONS FOR INVESTIGATIONS OF IN VIVO DEPOSITS OF CALCIUM

Frank P. Castronovo, Burlington; Harry W. Strauss, Newton Center, and Majic S. Potsaid, Hanover, all of Mass., assignors to The Massachusetts General Hospital, Mass.

Continuation-in-part of Ser. No. 162,370, Jun. 23, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,540

Int. Cl.³ A61K *43/00, 49/00;* **C07F** *9/02*

U.S. Cl. 424—1.1 **16 Claims**

1. A composition of matter comprising a radiolabeled, with a radioisotope, diphosphonic acid, said diphosphonic acid represented by the formula:

wherein: R_1 is aryl and is labeled with a halogen and R_2 is hydrogen, alkyl, alkenyl, amine, benzyl, hydroxyl, —CH-$_2PO_3H$ —$CH_2CH_2PO_3H_2$ and is labeled with halogen, said radiolabel selected from the group consisting of a radioactive halogen and both a radioactive halogen and a technetium-99m.

4,515,767

RADIOACTIVE METALS COMPLEXED WITH PHOSPHONATE DERIVATIVES OF DICYCLOPENTADIENEBIS(METHYLAMINE)

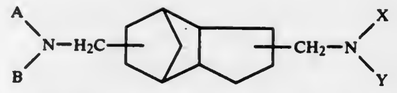
Jaime Simón, Angleton; David A. Wilson, Richwood, both of Tex., and Wynn A. Volkert, Columbia, Mo., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 20, 1983, Ser. No. 505,665

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1.1 **20 Claims**

1. A bone seeking complex of a radioactive nuclide and a compound having the structural formula



wherein substituents A, B, X and Y are each independently selected from radicals including hydrogen, hydroxyalkyl (wherein the alkyl group contains 2–6 carbon atoms) methylenephosphonic, methylene-, ethylene- and propylene-sulfonic, carboxylic acid radicals (having 2–4 carbon atoms) and the alkali or alkaline earth metal, ammonia and amine salts, thereof and wherein at least one A, B, X and Y is methylenephosphonic acid or a salt thereof.

4,515,768

INSECTICIDAL VAPORS-EMITTING COMPOSITION ON A PYRETHRINOID BASE

Claude Hennart, Seraincourt, and René Blanc, Ligugé, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Continuation of Ser. No. 239,713, Mar. 2, 1981, abandoned. This application Dec. 3, 1982, Ser. No. 446,539

Claims priority, application Luxemburg, Mar. 5, 1980 82225

Int. Cl.³ A01N *25/18*

U.S. Cl. 424—40 **6 Claims**

1. A composition which emits insecticidal vapors upon being heated comprising at least 5%, by weight, of an insecticidal substance of the family of pyrethrinoids susceptible to thermal decomposition and O,O-diethyl (3,5-ditert-butyl-4-hydroxybenzyl)phosphonate as a stabilizer for retarding the decomposition thereof;

said stabilizer being present in a concentration of from about 5–100 parts, by weight, for each 100 parts of insecticidal substance.

4,515,769

ENCAPSULATED FLAVORANT MATERIAL, METHOD FOR ITS PREPARATION, AND FOOD AND OTHER COMPOSITIONS INCORPORATING SAME

Carleton G. Merritt, Syracuse; Winston H. Wingerd, Camillus, and David J. Keller, Weedsport, all of N.Y., assignors to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 326,188, Dec. 1, 1981, Pat. No. 4,386,104. This application Feb. 2, 1983, Ser. No. 463,336

The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.

Int. Cl.³ A23L *1/221;* **A61K** *7/16;* **A24C** *5/47*

U.S. Cl. 424—49 **57 Claims**

1. A method for preparing a solid encapsulated flavorant material for use in compositions intended to be placed in the mouth, the method comprising steps of:

(a) preparing an aqueous emulsion of a flavorant ingredient, which flavorant ingredient comprises water distillable components, in an at least partially hydrophilic gelatin-based encapsulation material selected from the group consisting of a mixture of gelatin, a natural gum and a plasticizer, and a mixture of gelatin, an albumin and a plasticizer;

(b) drying said emulsion to produce a uniform solid matrix product having the flavorant ingredient containing substantially all of its water distillable components within a solid emulsion matrix of said encapsulation material;

(c) milling said dried solid matrix to a particle size of less than 20 mesh to produce solid powder; and

(d) coating said solid powder with a water insoluble material selected from the group consisting of polyvinyl acetate, shellac, polyvinyl alcohol, zein, high Bloom gelatin having a Bloom of over 100 to 300 and ethylcellulose to produce an encapsulated flavorant material having a relatively thin water insoluble coating which delays release of said flavorant ingredient within the mouth for a controlled period of time and yet which will thereafter release substantially all of said flavorant ingredient's original flavor notes at desired flavor levels and over a sustained period of time without having significant amounts of said flavorant ingredient dissolved in the water insoluble coating material.

4,515,770

FOOD MATERIALS FOR PREVENTION OF CARIOUS DEGRADATION OF TEETH

Frank C. Besic, Manitowoc, Wis., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 139,199, Apr. 11, 1980, Pat. No. 4,405,600, which is a continuation-in-part of Ser. No. 46,314, Jun. 7, 1979, abandoned. This application Sep. 19, 1983, Ser. No. 533,750

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ A23L *1/30;* **A61K** *7/16;* **C13F** *3/00*

U.S. Cl. 424—49 **4 Claims**

1. Sucrose in crystalline form having a soluble source of calcium ions uniformly distributed therethrough as a result of dissolution of the sucrose and soluble source of calcium ions in water and the subsequent evaporation of the water solvent, said calcium ion source being present in a quantitative weight ratio such that upon dissolution of one gram of sucrose there is also dissolved a sufficient quantity of said soluble source of calcium ions to supply to the resulting solution at least 3.25 mg of calcium ions.

4,515,771

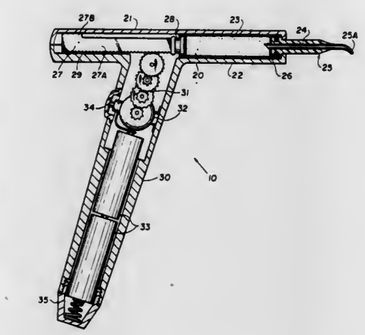
COMPOSITION AND METHOD FOR THE PREVENTATIVE TREATMENT OF DENTAL DISEASE AND APPARATUS FOR DISPENSING SAID COMPOSITION

Daniel H. Fine, 41 Brook Ter., Leonia, N.J. 07605

Filed Apr. 11, 1983, Ser. No. 483,660

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **14 Claims**



1. An oral composition for the preventative treatment of dental disease, said composition including:

ascorbic acid in an amount between about 5% and about 30% by weight and pyridoxine hydrochloride in an amount up to about 3% by weight as active ingredients, both calculated based on the weight of the total composition;

a gelling agent in an amount between about 1% and about 20% by weight based on the weight of the total composition; and a vehicle.

4,515,772

ORAL COMPOSITIONS

John J. Parran, Jr., Cincinnati, and Nabil Y. Sakkab, Loveland, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 391,040, Jun. 22, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 591,228

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—57 **8 Claims**

1. An oral composition in the form of a toothpaste comprising:

(a) from about 10% to about 70%, of a dental abrasive selected from the group consisting of insoluble metaphosphates, alumina, thermosetting polymerized resins and silica;

(b) an amount of a fluoride ion source sufficient to supply from about 50 ppm to about 3500 ppm of fluoride ions;

(c) an amount of a pyrophosphate salt selected from the group consisting of dialkali metal and mixtures of dialkali metal and tetraalkali metal pyrophosphate salts sufficient to provide at least 1.5% $P_2O_7^{-4}$.

(d) the remainder water; wherein the pH of said composition is from about 6.0 to about 10.0 and the composition does not contain more than about 4.0% $K_4P_2O_7$.

4,515,773

SKIN TANNING COMPOSITION AND METHOD

Walter C. Herlihy, Cambridge, Mass., assignor to Repligen Corporation, Cambridge, Mass.

Filed Jul. 5, 1983, Ser. No. 510,777

Int. Cl.³ A61K *7/42, 7/44, 7/021*

U.S. Cl. 424—59 **6 Claims**

1. A skin tanning composition which imparts color to the human epidermis which comprises a cosmetic base in the form of a lotion, a cream or an ointment, an effective amount of a dye precursor selected from the group consisting of tyrosine, 3,4-dihydroxy phenylalanine (dopa), D-dopa, catechol, 5-hydroxyindole, tyramine, dopamine, m-aminophenol, o-aminophenol, p-aminophenol, 4-aminocatechol, 2-hydroxy-1,4-naphthaquinone (henna), 4-methyl catechol, 3-methyl catechol, 3-isopropyl 6-methyl catechol, 3,4-dihydroxybenzylamine, 3,4-dihydroxybenzoic acid, 1,2-dihydroxynaphthalene, gallic acid, resorcinol, 2-chloroaniline, p-chloroanisole, 2-amino-p-cresol, 4,5-dihydroxynaphthalene 2,7-disulfonic acid, o-cresol, m-cresol, p-cresol, or other related melanin precursors or analogs which are capable of being oxidized to tan, brown, or black compounds capable of dyeing the skin distributed through said base, and an effective amount of tyrosinase.

4,515,774

LIQUID, CINNAMAL DIALKYL MALONATES AS SOLE ORGANIC SUNSCREENS

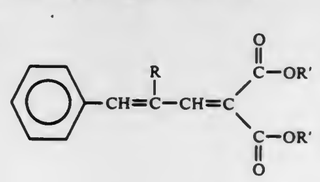
Donald E. Conner, Clifton, and Kenneth Klein, Fairlawn, both of N.J., assignors to Van Dyk & Company Inc., Belleville, N.J.

Filed Jun. 18, 1984, Ser. No. 621,454

Int. Cl.³ A61K *7/42*

U.S. Cl. 424—59 **6 Claims**

1. A sunscreening composition adapted for application to the human skin comprising a non-polar cosmetic oil carrier, containing distributed therein an effective amount to provide substantial protection against erythemal and tanning radiation of between 290 and 400 nanometers of a liquid, cinnamal dialkyl malonate corresponding to the formula,



wherein R is selected from the group consisting of hydrogen, and an alkyl radical having from 1 to 8 carbon atoms, and R^1 is an alkyl radical having from 1 to 2 carbon atoms, as the sole sunscreen.

4,515,775

POLYHYDROXYL NON-IONIC SURFACTANT, PROCESS FOR PREPARING THE SAME AND COSMETIC COMPOSITION CONTAINING THE SAME

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 796,232, May 12, 1977, abandoned, which is a division of Ser. No. 629,904, Nov. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 307,524, Nov. 17, 1972, abandoned. This application Aug. 21, 1979, Ser. No. 68,390

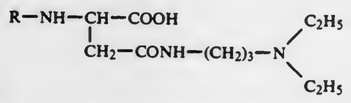
Claims priority, application Luxembourg, Nov. 18, 1971, 64289

Int. Cl.³ A61K *7/06*

U.S. Cl. 424—70 **6 Claims**

1. A shampoo composition comprising an aqueous carrier and a water-soluble polyhydroxyl non-ionic surfactant prepared by condensing at a temperature of 50°–120° C. glycidol and a hydroxy fatty chain reactant in a condensation reaction mixture consisting essentially of an acid catalyst selected from the group consisting of boron trifluoride and tin tetrachloride, glycidol and a hydroxy fatty chain reactant having the formula $R—CH_2—CHOH—CH_2OH$ wherein R is a 55:45 mixture of C_9H_{19} and $C_{11}H_{23}$, the molar ratio of glycidol to said hydroxy fatty chain reactant being 2.7:1, said surfactant being present in an amount of about 5–60 percent by weight of said composition and said composition having a pH ranging from about 3 to 9.5.

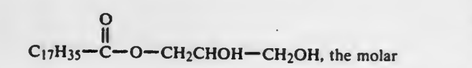
2. The shampoo composition of claim 1 which also includes a compound of the formula



wherein R is alkyl derived from copra fatty acids.

3. A foam bath composition comprising an aqueous carrier and a water-soluble polyhydroxyl non-ionic surfactant prepared by condensing at a temperature of 50°–120° C. glycidol and a hydroxy fatty chain reactant in a condensation reaction mixture consisting essentially of an acid catalyst selected from the group consisting of boron trifluoride and tin tetrachloride, glycidol and a hydroxy fatty chain reactant having the formula $R—CH_2—CHOH—CH_2OH$ wherein R is a 55:45 mixture of C_9H_{19} and $C_{11}H_{23}$, the molar ratio of glycidol to said hydroxy fatty chain reactant being 2.7:1, said surfactant being present in an amount of about 5–80 percent by weight of said composition and said composition having a pH from about 5.5 to 8.

5. A beauty milk composition consisting of an oil-in-water emulsion comprising an oil phase, a water phase and water-soluble polyhydroxyl non-ionic surfactant prepared by condensing at a temperature of 50°–120° C. glycidol and a hydroxy fatty chain reactant in a condensation reaction mixture consisting essentially of an acid catalyst selected from the group consisting of boron trifluoride and tin tetrachloride, glycidol and a hydroxy fatty chain reactant having the formula



ratio of glycidol to said hydroxy fatty chain reactant being 5:1, said surfactant being present in an amount of about 0.1–80 percent by weight of said composition so as to form said emulsion and said composition having a pH ranging from about 3 to 10.5.

4,515,776

METHOD OF PREPARING GAMMA GLOBULIN SUITABLE FOR INTRAVENOUS ADMINISTRATION

Nobuhiro Taniguchi, and Tomohiro Endo, both of Tokyo, Japan, assignors to Fujirebio Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,324

Claims priority, application Japan, Apr. 16, 1982, 57-62366

Int. Cl.³ A61K *39/395, 35/16*

U.S. Cl. 424—85 **9 Claims**

1. A method of preparing gamma globulin suitable for intravenous administration, which comprises the steps of:

dissolving (a) a gamma globulin composition selected from the group consisting of Cohn Fraction II and Cohn Fraction III, said composition containing aggregates of gamma globulin, in (b) a buffer solution having a pH in the range of 4.0 to 8.0, to obtain a solution;

adding to said solution (1) at least 0.1 to 15% of polypropylene glycol having a molecular weight in the range of 2000 to 10,000 and (2) a dispersing agent in an amount effective to disperse said polypropylene glycol in said solution, said dispersing agent being selected from the group consisting of monosaccharides, amino acids, inorganic salts, and mixtures thereof, thereby to obtain a dispersion liquid;

and filtering said dispersion liquid to obtain a filtrate containing said gamma globulin suitable for intravenous administration.

4,515,777

VACCINES

Peter Apontoweil, Leersum, and Manfred M. Krasselt, De Bilt, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 103,583, Dec. 14, 1979, abandoned. This application Nov. 10, 1982, Ser. No. 440,640

Claims priority, application Netherlands, Dec. 20, 1978, 78-12359

The portion of the term of this patent subsequent to Jan. 18, 2004, has been disclaimed.

Int. Cl.³ A61K *39/17, 39/295*

U.S. Cl. 424—89 **5 Claims**

1. In a combined inactivated vaccine ready for use against symptoms in poultry caused by avian reo viruses and by Newcastle disease virus (NDV), characterized in that the vaccine contains an inactivated Newcastle disease virus containing liquid having a titre of $10^{9.8}$ –$10^{10.5}$ EID_{50}/ml, and an inactivated reo virus containing liquid derived from reo virus strain LZ 671 deposited with Collection d'Institut Pasteur, Paris under No. 1.092 having a titre of $10^{5.5}$ –$10^{7.5}$ EID_{50}/ml, the improvement consisting essentially of the volume ratio between the Newcastle disease virus containing liquid and the reo virus containing liquid being from 3:4 to 5:1, and wherein an oil phase with essential components selected from the group consisting of at least light paraffinic mineral oils (FDA quality), plant oils and naphthenic mineral oils and at least one emulsifier in the form of non-ionic surface-active compounds derived from esters or esterethers of alkylene oxide and/or hexahydric alcohols and/or higher natural fatty acids of 10 to 20 carbon atoms, the volume ratio between the aqueous phase formed by both virus liquids and the oil phase being from 7:13 to 3:7.

4,515,778

PREPARATION FOR CONDITIONING AND GROOMING THE HAIR

Wolfgang Kastell, Milchstrasse 19, Hamburg, 13, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 339,419, Jan. 15, 1982, abandoned. This application Apr. 27, 1983, Ser. No. 489,066

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109420

Int. Cl.³ A01N *63/02*

U.S. Cl. 424—95 **7 Claims**

1. A process for preparing a hair conditioner, comprising the following steps:

(1) cleaning a bovine heart, including removing fatty residues;

(2) mincing the cleaned heart, to form a pasty mixture;

(3) adding distilled water in approximately the same quantity as the heart;

(4) stirring the pasty mixture and allowing it to stand for approximately 24 hours in a sealed vessel at approximately 4° C.;

(5) filtering the mixture, and separating it into

(a) a filtrate, and

(b) meat residues;

(6) briefly heating the filtrate to boiling until a fine precipitate forms;

(7) filtering the fine precipitate formed in step (6) and recovering the filtrate;

(8) adding approximately the same quantity of ether to the meat residue separated in step (5) (b);

(9) storing the mixture prepared in step (8) for several hours in a sealed vessel at ambient temperature;

(10) filtering the ethereal mixture obtained in step (9), and separating into (a) filtrate and (b) meat residues;

(11) separating the ethereal phase from the filtrate obtained in step (10) (a);

(12) distilling the ether from the ethereal phase obtained in step (11), to obtain a residue;

(13) suspending in water the residue comprising phosphatidyl inositol, phosphatide and phosphatidic acid;

(14) combining the aqueous suspensions or solutions prepared in steps (7) and (13);

(15) adding vegetable lecithin in approximately 2 to 15% by weight to the suspension of step (14);

(16) adding absolute ethanol in approximately the same weight as the suspension of step (15).

4,515,779

SKIN TUMOR REMOVAL AND HEALING COMPOSITIONS AND PROCESSES

John Q. Elliott, Blytheville, Ark., assignor to Arkansas Medical Research & Development Corporation, Blytheville, Ark.

Filed Oct. 23, 1981, Ser. No. 314,241

Int. Cl.³ A61K *33/00, 35/78*

U.S. Cl. 424—145 **10 Claims**

1. An ointment for treating epitheliomal growth on the human skin comprising substantially equal proportions by weight of bloodroot, ginger root and zinc chloride.

4,515,780

ANIMAL NUTRITION

Sebastian M. Laurent, Greenwell Springs, La., and Wilson G. Pond, Hastings, Nebr., assignors to Ethyl Corporation, Richmond, Va. and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 24, 1983, Ser. No. 497,657

Int. Cl.³ A61K *33/06*

U.S. Cl. 424—154 **12 Claims**

1. A method of inhibiting the formation of urinary calculi in animals, wherein a small amount of synthetic zeolite A up to about five percent by weight is added to the regular feed composition fed to the animals and said feed composition is subsequently regularly fed to the animals.

4,515,781

2',5'-RIBOADENYLATE-MORPHOLINOADENYLATE NUCLEOTIDES

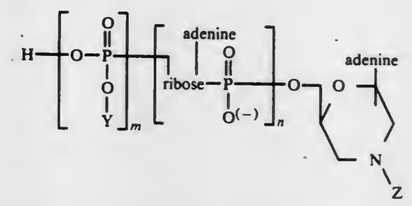
Paul F. Torrence, Gaithersberg, Md.; Margaret I. Johnston, Washington, D.C., and Jiro Imai, Kensington, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Feb. 23, 1983, Ser. No. 468,950

Int. Cl.³ A61K *31/70;* **C07H** *15/12, 17/00*

U.S. Cl. 514—46 **10 Claims**

9. A method of blocking the action of interferon produced by animal cells comprising using as an antagonist an effective amount of a nucleotide compound with a 2,5-internucleotide linkage having 1 to 15 ribose-adenine unit and a terminal morpholine unit, having the formula



wherein:

Y is always H except on the terminal phosphate where Y may be H, adenosine, or a C_{1-20} primary or secondary alcohol;

m is 0, 1, 2, 3 or 4;

n is an integer from 1 to 15; and

Z is H or a C_{1-50} hydrocarbon or substituted hydrocarbon bonded through one of its C atoms to the N of the morpholino ring.

4,515,782

SUBSTITUTED PHENYL-1-THIO(POLY-O-SULFO)-α(OR β)-D-GLUCOPYRANOSIDES

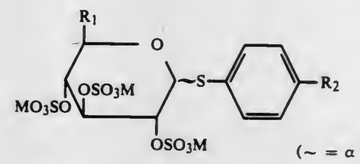
Robert E. Schaub, Upper Saddle River, N.J.; Thomas G. Miner, Chester, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 29, 1983, Ser. No. 527,615

Int. Cl.³ A61K *31/70;* **C07H** *15/00, 15/20*

U.S. Cl. 514—24 **19 Claims**

1. A compound selected from those of the formula:



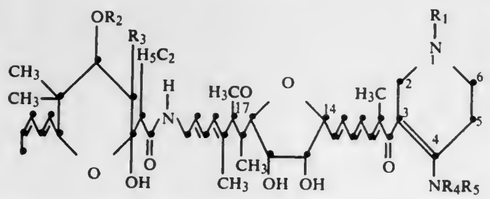
wherein M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, zinc, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); R_1 is selected from the group consisting of $—COOCH_3$ and $—CH_2OSO_3M$; and R_2 is selected from the group consisting of $—OCH_3$, $—NH_2$, $—NHCOCH_3$ and $—NHSO_3M$.

4,515,783
4-AMINO-4-DEHYDROXY DERIVATIVES OF EFROTOMYCIN AND RELATED COMPOUNDS

Bruce O. Linn, Bridgewater, and Aino Lusi, Rahway, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

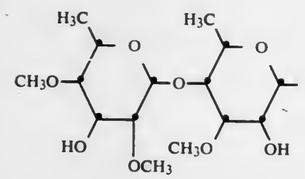
Filed Oct. 24, 1983, Ser. No. 544,350
Int. Cl.[3] A61K *31/71;* C07H *3/06*
U.S. Cl. 514—27 20 Claims

1. A compound having the formula:



wherein the broken line, R_1, R_2 and R_3 have the following combinations of substituents:

(a) the broken line represents a double bond, R_1 is methyl, R_3 is hydroxy and R_2 is:



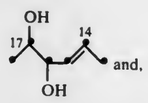
(b) the broken line represents a double bond, R_1 and R_2 are hydrogen and R_3 is hydroxy;

(c) the broken line represents a single bond, R_1 and R_2 are hydrogen and R_3 is hydroxy;

(d) the broken line represents a double bond, R_1 is methyl, R_2 is hydrogen, and R_3 is hydroxy;

(e) the broken line represents a double bond, R_1 is methyl, R_2 and R_3 are hydrogen;

(f) the broken line represents a single bond, R_1 is methyl, R_2 and R_3 are hydrogen and the furan ring at the 14–17 positions is replaced by



for all of the above groups of compounds R_4 and R_5 have the following meanings: R_4 and R_5 are independently hydrogen, loweralkyl, phenyl, phenylloweralkyl, loweralkoxycarbonyl, phenoxycarbonyl, benzyloxycarbonyl, aminocarbonyl, mono- or di(alkylphenyl or phenylalkyl-)aminocarbonyl; dialkoxy or diphenoxyphosphinyl; substituted phenylloweralkyl, substituted loweralkyl wherein the substituent is hydroxy, loweralkoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, cyano, mono- or dimethylamino, carbamoyl, carboxy or loweralkoxycarbonyl; or R_4 and R_5 may be connected to form a heterocyclic ring of 3 to 6 members unsubstituted or substituted with hydroxy, carbonyl, loweralkoxy, loweralkylthio, loweralkylsulfonyl, loweralkylsulfinyl or mono- or diloweralkylamino; and the heterocycle may contain a second heteroatom of oxygen, nitrogen or methyl substituted nitrogen.

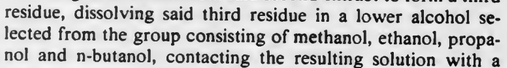
17. A method for promoting the growth of ruminant and monogastric animals which comprises administering an effective amount of a compound of claim 1.

4,515,784
REDUCING SEBUM SPREADING

Rodger E. Bogardus, Trumbull; Jon D. Packer, Stamford, and James P. SaNogueira, Newtown, all of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Nov. 16, 1983, Ser. No. 552,473
Int. Cl.[3] A61K *31/695*
U.S. Cl. 514—63 25 Claims

1. A method of treating human skin, characterized by an exessive secretion of sebum or by acne, to improve the condition thereof by reducing the spreadability of sebum on the skin surface which comprises topically applying to human skin so characterized a composition for topical skin application comprising, as an active component to reduce sebum spreading, an effective amount of a dimethyl silicone polymer having the formula:



wherein n is a positive integer sufficient to provide a silicone polymer having a molecular weight of 50,000 or more and a viscosity of 10,000 centistokes or more.

4,515,785
NEEM BARK EXTRACTS

Masaki Shimizu, Tokyo; Tadashi Sudo, Honmachi, and Takeo Nomura, Hino, all of Japan, assignors to Terumo Corporation, Tokyo, Japan

Continuation of Ser. No. 290,877, Aug. 7, 1981, abandoned. This application Sep. 13, 1983, Ser. No. 531,591
Claims priority, application Japan, Aug. 19, 1980, 55-113784; Sep. 8, 1980, 55-124351; Sep. 24, 1980, 55-131669
Int. Cl.[3] A61K *35/78*
U.S. Cl. 424—195.1 9 Claims

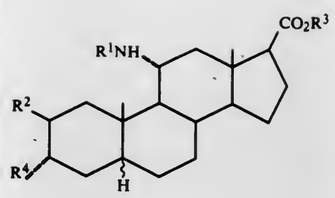
1. A neem bark extract which is characterized by being active against mouse L-5178y cells and against transplanted sarcoma 180 tumors produced by contacting the bark of neem which is *Melia azadirachta* with an organic solvent selected from the group consisting of benezene, toluene, xylene, n-hexane, chloroform, carbon tetrachloride and ethylacetate for a time sufficient to form a first liquid extract and a first residue, subjecting said first residue to extraction with a hydrophilic organic solvent selected from the group consisting of methanol, ethanol, propanol, n-butanol, pyridine and acetone for a time sufficient to form a second residue and a second liquid extract comprising solvent and dissolved second extract and removing said solvent from said second extract to form a third residue, dissolving said third residue in a lower alcohol selected from the group consisting of methanol, ethanol, propanol and n-butanol, contacting the resulting solution with a non-polar porous polymer resin having a macroreticular structure in adsorption chromatography whereby said solids of said third residue which are dissolved in said solution are adsorbed on said resin, treating said adsorption resin containing said solids with 10% aqueous methanol followed by elution with from 30 to 50% solutions of methanol and removing the solvent from said eluates to provide said neem bark extract.

4,515,786
11α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt, and Barry A. Coomber, Pinner, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 383,338, May 28, 1982, abandoned. This application Jun. 30, 1983, Ser. No. 509,667
Claims priority, application United Kingdom, May 29, 1981, 8116409
Int. Cl.[3] C07J *3/00*
U.S. Cl. 514—182 15 Claims

1. Compounds of the formula



(I)

wherein

R^1 is a C_{3-8} alkyl group or a C_{3-7} cycloalkyl group;

R^2 is a hydrogen atom, a C_{1-6} alkoxy group or a C_{2-5} alkanoyloxy group;

R^3 is a C_{1-6} alkyl group or a C_{3-7} cycloalkyl group; and

R^4 is a group $—OR^5$ or $—OCOR^6$ where

R^5 is an alkyl or alkenyl group which may contain up to 6 carbon atoms (or such a group substituted by halogen, C_{1-6} alkoxy, carboxy, phenyl, phenyl substituted by nitro, halo, C_{1-4} alkoxy or C_{1-4} alkyl), a C_{3-7} cycloalkyl group, a phenyl group (or such a group substituted by nitro, halo, C_{1-4} alkoxy or C_{1-4} alkyl), or a carbon-attached 5–7 membered heterocyclic ring in which the heteroatom is selected from nitrogen, oxygen and sulphur, and

R^6 is a hydrogen atom or a group R^5 as defined above;

provided that when the compounds contain a 5β-hydrogen atom, R^2 is a hydrogen atom;

and salts thereof.

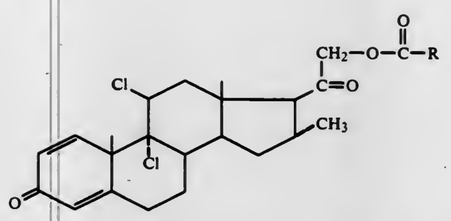
11. A method of therapy or prophylaxis of a human or animal body suffering from or liable to cardiac dysrhythmias which method comprises administering to the said body an effective amount of a compound of formula (I), or a physiologically acceptable salt thereof as claimed in claim 1.

4,515,787
STEROIDS

Jean G. Teutsch, Pantin; Roger Deraedt, Pavillons-sous-Bois, and Josette Benzoni, Livry Gargan, all of France, assignors to Roussel Uclaf, Paris, France

Filed Sep. 15, 1983, Ser. No. 532,739
Claims priority, application France, Oct. 5, 1982, 82 16668
Int. Cl.[3] C07J *5/00;* A61K *31/56*
U.S. Cl. 514—180 18 Claims

1. A 9α,11β-dichloro-16α-methyl-$\Delta^{1,4}$-pregnadiene-3,20-dione of the formula



(I)

wherein R is selected from the group consisting of trimethylsilylphenyl, cyclododecyloxy, dicyclopentylmethoxy and cyclohexylmethoxy.

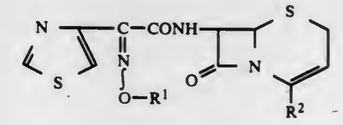
13. A method of treating inflammation in warm-blooded animals comprising topically applying to warm-blooded animals an anti-inflammatorily effective amount of at least one compound of claim 1.

4,515,788
CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Hamaguchinishi, and Hideaki Yamanaka, Hirakata, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 27, 1982, Ser. No. 402,256
Claims priority, application United Kingdom, Aug. 3, 1981, 8123683; Oct. 16, 1981, 8131261
Int. Cl.[3] C07D *501/20*
U.S. Cl. 514—202 6 Claims

1. A compound of the formula:



wherein

R^1 carboxy(lower)alkyl or protected carboxy(lower)alkyl, and

R^2 is carboxy or protected carboxy, and pharmaceutically acceptable salts thereof.

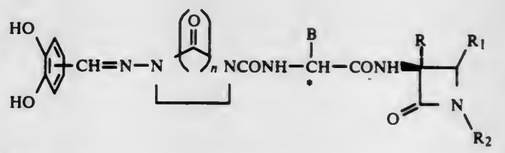
6. An antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable substantially nontoxic carrier or excipient.

4,515,789
β-LACTAM ANTIBIOTICS

Karl G. Metzger; Wilfried Schröck; Dieter Häbich; Paul Naab, all of Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 7, 1983, Ser. No. 483,062
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3215085
Int. Cl.[3] C07D *499/68, 499/70, 501/34, 501/56*
U.S. Cl. 514—196 18 Claims

1. A compound of the formula



in which

B represents optionally substituted phenyl or cyclohexadienyl, or an unsaturated, optionally substituted heterocyclic ring;

R represents hydrogen or methoxy;

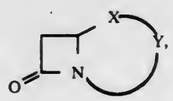
n is 1 or 2;

R_1 is hydrogen or optionally substituted alkyl;

R_2 is $SO_3\ominus M\oplus$; and

$M\oplus$ is a proton or a cation;

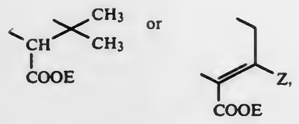
or R_1 and R_2, together with the azetidinone ring to which they are bonded, represent



wherein

X represents S, O, SO, SO_2 or CH_2; and

Y represents



or

in which the carbon atom which carries the —COOE group is bonded to the nitrogen atom of the β-lactam ring, and

Z represents hydrogen, halogen, alkoxy or —CH_2—T,

T denotes hydrogen, alkyl-CO—O—, pyridinium, carboxamidopyridinium, aminopyridinium, carbamoyloxy, azido, cyano, hydroxyl, the group —S—phenyl which can be substituted, or the group —S—het, in which het represents an optionally substituted 5-membered or 6-membered heterocyclic ring;

and wherein

E represents hydrogen, a pharmaceutically usable ester grouping, a salt-forming cation or a suitable protective group;

or a hydrate thereof.

10. An antibiotically active composition comprising an antibiotically active amount of a compound according to claim **1** in admixture with a diluent.

4,515,790

ANTIPROTOZOAL 2-NITROIMIDAZOLE COMPOUNDS

Werner Hofheinz, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

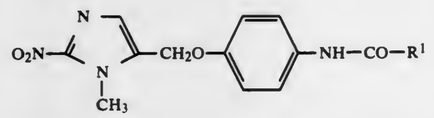
Filed Nov. 24, 1982, Ser. No. 444,106

Claims priority, application Switzerland, Nov. 30, 1981, 7657/81; Sep. 28, 1982, 5701/82

Int. Cl.[3] **A01N** *43/50, 43/60, 43/84;* **C07D** *413/12*

U.S. Cl. 514—234 **11 Claims**

11. A method for the treatment of protozoal infections which comprises administering to a host requiring such treatment an effective amount of a compound of the formula



I

wherein R^1 is 1-methyl-2-pyrrolidinyl or a group —CH_2—NR^2R^3 in which R^2 and R^3 each represent C_{1-4}-alkyl or —NR^2R^3 is the residue of a five-membered or six-membered saturated hetrocyclic ring system selected from the group consisting of pyrrolidine, piperidine, piperzine and morpholine, or a physiologically acceptable acid addition salt thereof.

4,515,791

SUBSTITUTED PHENYL-1,2,4-TRIAZOLO[2,3-b]PYRIDAZIN-3(2H)ONES AS ANTI-ASTHMA AGENTS

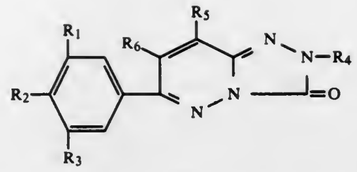
George R. Allen, Jr., Old Tappan, N.J.; John W. Hanifin, Jr.; Daniel B. Moran, both of Suffern, N.Y., and Jay D. Albright, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 156,009, Jun. 3, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,818

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/50*

U.S. Cl. 514—248 **3 Claims**

1. The method of meliorating asthmatic conditions in a mammal which comprises administering to said mammal an effective amount of a compound of the formula:



wherein R_1, R_2 and R_3 are each individually selected from the group consisting of hydrogen, fluoro, chloro, bromo, cyano, nitro, amino, alkoxy having up to 6 carbon atoms, trifluoromethyl and thiocarbamoyl with the proviso that at least one of R_1, R_2 and R_3 must be other than hydrogen; and R_4, R_5 and R_6 are each individually selected from the group consisting of hydrogen and alkyl having up to 6 carbon atoms.

2. The compound 6-(3,4-5-trimethoxyphenyl)-1,2,4-triazolo[4,3-b]pyridazin-3(2H)-one.

3. The compound 6-(3-fluoro-4-methoxyphenyl)-1,2,4-triazolo[4,3-b]pyridazin-3(2H)-one.

4,515,792

TETRACYCLIC HETEROCYCLES AND ANTIDEPRESSANT COMPOSITIONS THEREOF

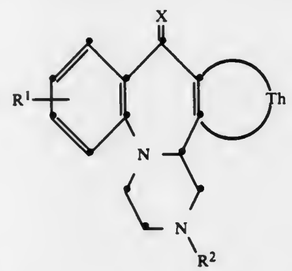
Jeffrey W. H. Watthey, Chappaqua, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,637

Int. Cl.[3] **C07D** *495/14;* **A61K** *31/55*

U.S. Cl. 514—214 **9 Claims**

1. A pyrazinothienobenzazepine of the general formula



(I)

wherein Th represents the divalent radical of the formula —S—CH=CH—, X represents two hydrogens, oxo or hydrogen together with hydroxy, R^1 represents hydrogen, lower alkyl, lower alkoxy, chloro, bromo or trifluoromethyl, and R^2 represents hydrogen, lower alkyl, hydroxy-lower alkyl or aryl-lower alkyl, or an acid addition salt thereof.

9. An antidepressant pharmaceutical composition comprising an antidepressively effective amount of a compound as claimed in claim **1** together with a pharmaceutical excipient.

4,515,793

PHENYLPIPERAZINES WHICH ARE USEFUL IN THE TREATMENT OF SCHISTOSOMIASIS

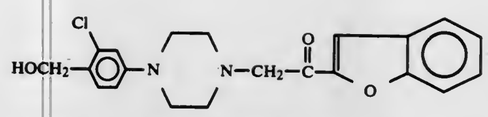
Leslie M. Werbel, Ann Arbor; Norman Colbry, Gregory; William Turner, Ypsilanti, and Donald F. Worth, Ann Arbor, all of Mich., assignors to Edna McConnell Clark Foundation, New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,883

Int. Cl.[3] **A61K** *31/495;* **C07D** *241/04, 405/06*

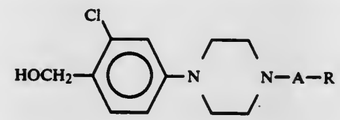
U.S. Cl. 514—252 **4 Claims**

2. 2-(4-(3-Chloro-4-hydroxymethylphenyl)-1-piperazinyl)-1-(2-benzofuranyl)-ethanone of the formula



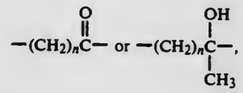
or a pharmacologically acceptable salt thereof.

3. A method of combating a schistosomal infection in a patient which comprises administering to such patient an anti-schistosomal effective amount of a compound of the formula



in which

A is



n is 1, 2 or 3, and

R is phenyl optionally substituted with halogen, alkyl, phenyl, cyano, hydroxy, alkoxy, mercapto, sulfinyl, sulfonyl, amino, nitro, trifluoromethyl and/or naphthyl radicals; or a furan, thiophene, pyridine, benzofuran, dibenzothiophene or thianthrene radical optionally substituted by halogen and/or alkyl of up to 4 carbon atoms,

or a pharmaceutically acceptable salt thereof.

4,515,794

MITOTIC INHIBITORS PREVENTING POSTERIOR LENS CAPSULE OPACIFICATION

Jared M. Emery, Houston, Tex., and Raymond Y. Chan, San Diego, Calif., assignors to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 310,159, Oct. 9, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 516,166

Int. Cl.[3] **A61K** *31/505*

U.S. Cl. 514—249 **3 Claims**

1. A mitotic inhibitor effective to prevent posterior lens capsule opacification when instilled into the anterior chamber of the eye after extracapsular extraction comprising,

an osmotically balanced solution containing a minimum concentration of 0.0454 mg of methotrexate per cc of solution.

4,515,795

PHARMACEUTICAL COMPOSITIONS

Heinz-Joachim Hinze, Auringen; Alfons Söder, Frankfurt-Schwanheim, and Kurt Popendiker, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

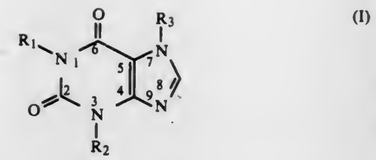
Continuation-in-part of Ser. No. 485,870, Jul. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 330,653, Feb. 8, 1973, abandoned. This application Mar. 4, 1977, Ser. No. 774,648

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1972, 1810705; Feb. 19, 1972, 2207860; Jul. 11, 1973, 2335170

Int. Cl.[3] **A61K** *31/52*

U.S. Cl. 514—263 **5 Claims**

1. A cerebral-blood-flow increasing pharmaceutical composition containing, as one of plural components and as sole active ingredient, an effective amount of a compound of the formula



(I)

wherein

R_1 is a member selected from the group consisting of ω-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, unbranched (ω-1)-hydroxyalkyl having 5 to 8 carbon atoms, branched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, methyl and —H;

R_2 is a member selected from the group consisting of ω-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, unbranched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms, branched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, and methyl; and

R_3 is a member selected from the group consisting of ω-hydroxyhexyl, unbranched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms, branched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, methyl and —H;

one and only one of R_1, R_2 and R_3 being ω- or (ω-1)-hydroxyalkyl.

4,515,796

CERTAIN NAPHTHALENYL IMIDAZO COMPOUNDS AND THEIR PHARMACEUTICAL USE

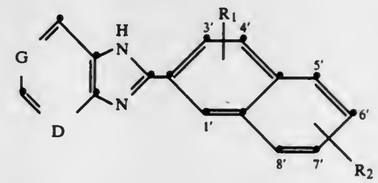
David W. Robertson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 8, 1983, Ser. No. 530,315

Int. Cl.[3] **A61K** *31/435, 31/52;* **C07D** *471/04, 473/00*

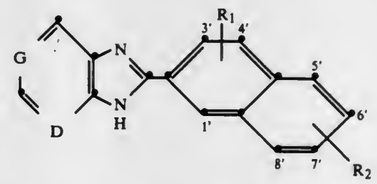
U.S. Cl. 514—303 **20 Claims**

1. A compound of the formulas



I

and



Ia

and their pharmaceutically acceptable salts, wherein:

each of R_1 and R_2 is independently hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, allyloxy, propargyloxy, benzyloxy, (C_1–C_4 alkyl)thio, (C_1–C_4 alkyl)sulfinyl, (C_1–C_4 alkyl)sulfonyl, hydroxy, halo, cyano, nitro, amino, mono- or di-(C_1–C_4 alkyl)amino, trifluoromethyl or Z-Q-substituted C_1–C_4

alkoxy, wherein Q is oxygen, sulfur, sulfinyl, sulfonyl, or a bond, and Z is C_1–C_4 alkyl, phenyl or phenyl substituted with halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, nitro, amino, (C_1–C_4 alkyl)thio, (C_1–C_4 alkyl)sulfinyl, or (C_1–C_4 alkyl)sulfonyl; and

G and D are each independently N or CH with the proviso that G and D may not both be CH at the same time.

12. A method of producing a positive inotropic effect, delaying coagulation of the blood, causing bronchodilation, or causing vasodilation in a warm-blooded mammal, which comprises administering to said mammal an effective amount of a compound of claim **1**.

4,515,797

3-AMINO-5-(HYDROXY- AND/OR AMINOPHENYL)-6-(LOWER-ALKYL)-2(1H)-PYRIDINONES AND CARDIOTONIC USE THEREOF

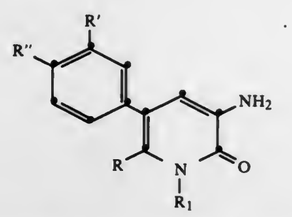
George Y. Lesher; Chester J. Opalka, Jr., both of Schodack, and Donald F. Page, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 300,294, Sep. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 348,450, Feb. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 248,840, Mar. 30, 1981, abandoned. This application Mar. 5, 1982, Ser. No. 355,229

Int. Cl.³ A61K *31/44;* **C07D** *211/72*

U.S. Cl. 514—349 **13 Claims**

1. A 1-R_1-3-amino-5-(3-R′-4-R″-phenyl)-6-R-2(1H)-pyridinone having the formula



or acid-addition salt thereof, where R_1 is hydrogen, lower-alkyl or lower-hydroxyalkyl, R is lower-alkyl, and, R′ and R″ are each hydrogen, amino or hydroxy at least one of R′ or R″ being other than hydrogen.

5. A cardiac composition for increasing cardiac contractility, said composition comprising a pharmaceutically acceptable carrier and, as the active component thereof, a cardiotonically effective amount of 1-R_1-3-amino-5-(3-R′-4-R″-phenyl)-6-R-2(1H)-pyridinone or pharmaceutically acceptable acid-addition salt thereof, where R_1 is hydrogen, lower-alkyl or lower-hydroxyalkyl, R is lower-alkyl, and R′ and R″ are each hydrogen, amino or hydroxy at least one of R′ and R″ being other than hydrogen.

8. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a composition comprising a pharmaceutically acceptable carrier and, as active component thereof, a cardiotonically effective amount of 1-R_1-3-amino-5-(3-R′-4-R″-phenyl)-6-R-2(1H)-pyridinone or pharmaceutically-acceptable salt thereof, where R_1 is hydrogen, lower-alkyl or lower-hydroxyalkyl, R is hydrogen or lower-alkyl, R′ and R″ are each hydrogen, amino or hydroxy at least one of R′ and R″ being other than hydrogen.

13. 3-Amino-5-(4-methoxyphenyl)-6-methyl-2(1H)-pyridinone or acid-addition salt thereof.

4,515,798

BENZOYLPARABANIC ACIDS

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

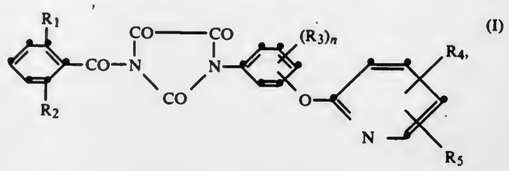
Filed Jun. 23, 1983, Ser. No. 507,257

Claims priority, application Switzerland, Jun. 25, 1982, 3924/82; May 26, 1983, 2870/83

Int. Cl.³ C07D *401/12;* **A61K** *31/44*

U.S. Cl. 514—341 **16 Claims**

1. A compound of the formula I



(I)

wherein R_1 is hydrogen, halogen or C_1–C_4alkyl; R_2 and R_3, each independently of the other, are halogen or C_1–C_4alkyl; R_4 is hydrogen or halogen; R_5 is halogen or C_1–C_4alkyl which is halogenated by fluorine and/or chlorine; and n is 0, 1 or 2; and the pyridyloxy group is linked to the phenyl group in the 3- or 4-position.

4,515,799

DIHYDROPYRIDINE ANTI-ISCHAEMIC AND ANTIHYPERTENSIVE AGENTS

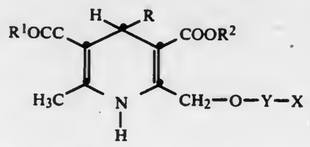
Simon F. Campbell, Deal; Peter E. Cross, Canterbury, and John K. Stubbs, Nordelph, all of England, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 463,095, Feb. 2, 1983, abandoned. This application Jul. 19, 1983, Ser. No. 515,231

Int. Cl.³ A61K *31/44;* **C07D** *401/12*

U.S. Cl. 514—341 **22 Claims**

1. A 1,4-dihydropyridine compound having the formula:



or a pharmaceutically acceptable acid addition salt thereof wherein:

R is aryl;

R^1 and R^2 are each independently C_1–C_4 alkyl or 2-methoxyethyl;

Y is $—(CH_2)_n—$, $—CH_2CH(CH_3)—$ or $—CH_2C(CH_3)_2—$; n is an integer from 1 to 3; and

X is imidazolyl or imidazolyl substituted by one or more C_1–C_4 alkyl, phenyl, benzyl, cyano, $—N(R^3)_2$, $(CH_2)_mCO_2H$, $(CH_2)_mCO_2(C_1$–C_4 alkyl) or $(CH_2)_mCON(R^3)_2$ groups wherein each R^3 is independently H or C_1–C_4 alkyl and m is 0 or 1; with the proviso that if the imidazolyl is linked to Y by a ring nitrogen atom n is 2 or 3.

4,515,800

METHOD OF LOWERING INTRAOCULAR PRESSURE USING PHENYLIMINO-IMIDAZOLES

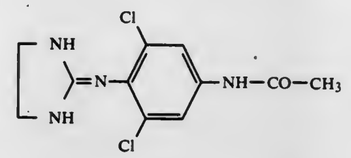
Icilio Cavero, 8 rue Gabriel Fauré94000 Creteil; Salomón Z. Langer, 81, rue Jouffroy, 75017 Paris, both of France, and Billie M. York, Jr., 3828 Winifred Dr., Fort Worth, Tex. 76153

Continuation-in-part of Ser. No. 323,369, Nov. 20, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 520,071

Int. Cl.³ A61K *31/415*

U.S. Cl. 514—392 **3 Claims**

1. A method for lowering intraocular pressure comprising topically applying to the eye an effective amount for lowering such intraocular pressure of a compound of the formula



or a pharmaceutically acceptable salt thereof.

4,515,801

FUNGICIDALLY ACTIVE PYRANO-PYRAZOLE DERIVATIVES

Hartmut Stegelmeier, Hilden, and Wilhelm Brandes, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

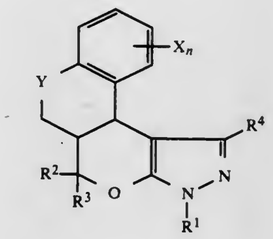
Filed Nov. 8, 1983, Ser. No. 550,076

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243714

Int. Cl.³ A01N *43/90;* **C07D** *487/02*

U.S. Cl. 514—403 **10 Claims**

1. A pyrano-pyrazole derivative of the formula



in which

R^1 represents hydrogen, straight-chain or branched alkyl, alkanoyl or alkoxycarbonyl with in each case up to 4 carbon atoms in the alkyl part, phenyl which is optionally monosubstituted or polysubstituted by identical or different substituents or phenylalkyl which has 1 or 2 carbon atoms in the alkyl part and is optionally monosubstituted or polysubstituted by identical or different substituents, possible substituents on the phenyl in each case being: halogen, cyano, nitro, alkyl with up to 4 carbon atoms, alkoxy, alkylthio and dialkylamino with 1 or 2 carbon atoms in the particular alkyl parts, and halogenoalkyl with 1 or 2 carbon atoms and up to 5 identical or different halogen atoms,

R^2 and R^3, which can be identical or different, represent hydrogen, straight-chain or branched alkyl with up to 4 carbon atoms or phenyl which is optionally monosubstituted or polysubstituted by identical or different substituents from the group comprising halogen and alkyl with up to 4 carbon atoms,

R^4 represents straight-chain or branched alkyl or alkoxycarbonyl with in each case up to 4 carbon atoms in the alkyl part, cyano or phenyl which is optionally monosubstituted or polysubstituted by identical or different substituents from the group comprising halogen and alkyl with up to 4 carbon atoms,

Y represents oxygen, sulphur or the methylene group,

X represents halogen, cyano, nitro, straight-chain or branched alkyl with up to 4 carbon atoms, alkoxy, alkylthio or dialkylamino with 1 or 2 carbon atoms in the particular alkyl parts or halogenoalkyl with 1 or 2 carbon atoms and up to 5 identical or different halogen atoms, and

n represents a number from 0 to 3.

9. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim **1**.

4,515,802

ANALGESIC PREPARATIONS

Dietmar Römer, Allschwil, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed Mar. 8, 1984, Ser. No. 587,571

Claims priority, application United Kingdom, Mar. 9, 1983, 8306473

Int. Cl.³ A61K *31/48, 31/165, 31/415, 31/475*

U.S. Cl. 514—288 **15 Claims**

1. A pharmaceutical preparation comprising tizanidine and paracetamol wherein the weight ratio of tizanidine to paracetamol is from about 1:50 to about 1:500.

4,515,803

SUBSTITUTED DERIVATIVES OF OCTAHYDROINDOLE-2-CARBOXYLIC ACIDS

Rainer Henning, Frankfurt am Main; Hansjörg Urbach, Kronberg; Rolf Geiger, Frankfurt am Main; Volker Teetz, Hofheim am Taunus, and Bernward Schölkens, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschafat, Frankfurt am Main, Fed. Rep. of Germany

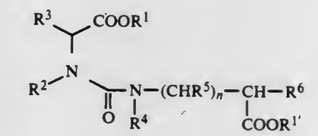
Filed Sep. 1, 1982, Ser. No. 413,663

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 3134933

Int. Cl.³ A61K *51/405;* **C07D** *209/12*

U.S. Cl. 514—338 **13 Claims**

1. A compound of the formula I



I

in which

n is a whole number between 0 and 3 inclusive;

R^1 and $R^{1'}$, being the same or different, are hydrogen; alkyl or alkenyl having 1–8 C atoms; phenyl or benzyl, each unsubstituted or monosubstituted by methyl, halogen, methoxy or nitro;

R^2 and R^3 together with the C and N atoms carrying them form an octahydroindole ring system, which is unsubstituted, monosubstituted or disubstituted by hydroxyl, alkoxy having 1–3 C atoms, alkyl having 1–3 C atoms or phenyl;

R^4 is hydrogen; alkyl, alkenyl, alkadienyl, alkinyl, alkeninyl or alkadiinyl having 1–8 C atoms; cycloalkyl having 3–6 C atoms; phenyl, benzyl, phenethyl or phenylpropyl, each of which is unsubstituted, monosubstituted or disubstituted by halogen, hydroxyl, acetoxy, carboxy, carboxamido, sulfonamido, nitro, methyl, ethyl, methoxy, ethoxy or methylenedioxy;

R^5 is hydrogen; alkyl having 1–5 C atoms; hydroxyl or alkoxy having 1–3 C atoms;

R^6 is hydrogen; alkyl having 1–12 C atoms; cycloalkyl having 3–12 C atoms; alkenyl having 2–12 C atoms; phenyl or naph-

thyl, each of which is unsubstituted, monosubstituted or disubstituted by halogen, hydroxyl, acetoxy, carboxy, carboxamido, sulfonamido, nitro, methyl, ethyl, methoxy, ethoxy or methylenedioxy; alkyl having 1-6 C atoms, which is monosubstituted by halogen, hydroxyl, alkoxy having 1-3 C atoms, phenoxy, amino, dialkylamino having 1-6 C atoms, alkanoylamino having 1-3 C atoms, mercapto, alkylthio having 1-3 C atoms, phenylthio, phenylsulfinyl, phenylsulfonyl, phenyl, biphenylyl, or naphthyl, the phenyl or naphthyl each being unsubstituted, monosubstituted or disubstituted by halogen, methyl, ethyl, methoxy, ethoxy, nitro, amino, methylamino, dimethylamino, acetylamino, cyano, methylenedioxy or sulfonamido; heteroaryl selected from the group consisting of pyridyl, thienyl, indolyl, benzothienyl, imidazolyl, pyrazolyl and thiazolyl, said heteroaryl being unsubstituted, monosubstituted or disubstituted by halogen, methyl, ethyl, methoxy, ethoxy, nitro, amino, methylamino, dimethylamino, acetylamino, cyano, methylenedioxy, sulfonamido or phenyl; or physiologically tolerable salts thereof.

13. A method of treatment which comprises administering to a patient suffering from hypertension a hypotensively effective amount of a compound defined in claim 1.

4,515,804

CRYSTAL MODIFICATIONS OF (+)-CATECHIN AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Erwin Marti; Oskar Heiber, both of Basel; Alexandre Gumma, Commugny; Gustave Huber, Crans, all of Switzerland; Isamu Utsumi; Hiroshi Nakagawa, both of Kyoto, Japan; Tatsuhiko Miyata, and Koichi Akimoto, both of Osaka, Japan, assignors to Zyma SA, Nyon, Switzerland

Filed Feb. 17, 1983, Ser. No. 467,540

Claims priority, application United Kingdom, Feb. 24, 1982, 8205453

Int. Cl.³ A61K *31/35;* C07D *311/62*

U.S. Cl. 514—456 **3 Claims**

1. (+)-Catechin α-monohydrate in a crystal form, which is free of substantially free from other known crystalline forms of (+)-catechin, and which is characterized by having an X-ray powder diffraction spectra obtained by using Cu:$K_{\alpha 1}$-rays, the following seventeen lattice distances and relative intensities:

Lattice Distance in Å	Relative Intensities
7.17 ± 0.10	very strong
6.17 ± 0.06	medium
5.95 ± 0.06	medium
4.49 ± 0.04	strong
4.39 ± 0.04	medium
4.20 ± 0.04	strong
4.13 ± 0.04	strong
3.97 ± 0.03	medium
3.84 ± 0.03	strong
3.78 ± 0.03	medium
3.75 ± 0.03	medium
3.65 ± 0.03	very strong
3.58 ± 0.03	medium
3.41 ± 0.02	medium
3.37 ± 0.02	medium
3.24 ± 0.02	medium
3.19 ± 0.02	medium.

2. In a method of treating hepatitis with an effective amount of a crystalline form of (+)-catechin, the improvement wherein the (+)-catechin is a crystal modification of (+)-catechin monohydrate according to claim 1.

4,515,805

SOLUBLE SODIUM CROMOGLYCATE COMPOSITIONS

Peter M. Newman, Keyworth, and Anthony W. Jenkins, Loughborough, both of England, assignors to Fisons plc, Ipswich, England

Continuation of Ser. No. 315,958, Oct. 28, 1981, abandoned. This application Jul. 21, 1983, Ser. No. 515,608

Claims priority, application United Kingdom, Nov. 5, 1980, 8035457

Int. Cl.³ A61K *31/35*

U.S. Cl. 514—460 **10 Claims**

1. A water-soluble composition for treatment of a condition of a gastro-intestinal tract comprising:

a particulate water-soluble pharmaceutically acceptable carrier consisting essentially of sucrose and having a particle size of 200–1000 microns; and

particulate sodium cromoglycate having a mass median diameter of 2–30 microns forming a coating on said carrier particles.

the proportion of carrier to sodium cromoglycate in the coated particles being 2–20 parts by weight of carrier to 1 part of sodium cromoglycate.

4,515,806

FURAN DERIVATIVES AND ADDITION SALTS THEREOF PHARMACEUTICAL COMPOSITIONS AND THE THERAPEUTICAL APPLICATIONS THEREOF

José M. Calderó Ges, and Eusebio M. Fabá, both of Barcelona, Spain, assignors to Inke, S.A., Barcelona, Spain

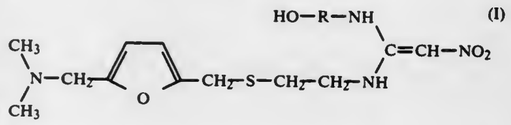
Filed Mar. 23, 1983, Ser. No. 478,052

Claims priority, application Spain, Apr. 16, 1982, 511.896; May 21, 1982, 512.419; Jan. 26, 1983, 519.286; Jan. 26, 1983, 519,287

Int. Cl.³ A61K *31/34;* C07D *307/52*

U.S. Cl. 514—471 **5 Claims**

1. Furan derivatives having the general formula:



(I)

and the acid addition salts thereof with pharmaceutically acceptable acids, where R is a straight or branched alkylene chain of 1 to 6 carbon atoms.

4,515,807

THIOGLYCINE DERIVATIVES AND USE AS FUNGICIDES

Jean-Claude Debourge, Champagne au Mont d'Or, and Guy Lacroix, Lyons, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

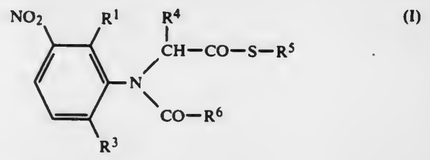
Filed Sep. 29, 1982, Ser. No. 427,304

Claims priority, application France, Oct. 6, 1981, 81 18915

Int. Cl.³ C07C *153/023;* A01N *37/14*

U.S. Cl. 514—513 **14 Claims**

1. A product of the formula:



(I)

in which:

R^1 and R^3, which are identical or different, represent an alkyl radical having from 1 to 4 carbon atoms and are preferably the methyl radical,

R^4 represents the hydrogen atom or a methyl radical,

R^5 represents the hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms,

R^6 represents an optionally monohalogenated or dihalogenated alkyl radical having from 1 to 6 carbon atoms, a cycloalkyl radical having from 3 to 6 carbon atoms or a radical —CH_2—X—R^7,

X represents the oxygen or sulphur atom, and

R^7 represents an alkyl radical having from 1 to 4 carbon atoms.

7. A composition which is useful in protecting plants against fungal diseases, which composition comprises a fungicidally effective amount of a compound of claim 1 as the active ingredient, in association with an agriculturally acceptable inert carrier, surface-active agent or mixture thereof.

13. A process for combating fungal diseases in plants, which comprises applying to the plant a fungicidally effective amount of the composition of claim 7.

4,515,808

PESTICIDES

Michael Elliott, Stevenage; Norman F. Janes, Luton, and Bhupinder P. S. Khambay, Harrow Weald, all of England, assignors to National Research Development Corporation, London, England

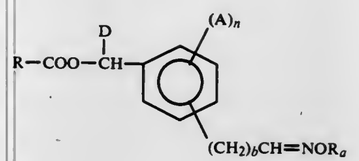
Filed Jul. 26, 1983, Ser. No. 517,441

Claims priority, application United Kingdom, Jul. 26, 1982, 8221501

Int. Cl.³ A01N *53/00;* C07C *121/78*

U.S. Cl. 514—521 **22 Claims**

1. A compound of the formula:



I

wherein

D represents hydrogen or a cyano group or an ethynyl group;

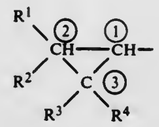
R_a represents an alkyl group;

A represents an alkyl group or a halogen or trifluoromethyl group;

n is 0 or an integer of 1–4,

b is 0 or 1; and

R is selected from the group consisting of:



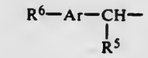
(a)

wherein

R^3 and R^4 each represent an alkyl group which may be the same or different;

R^2 represents hydrogen or an alkyl group; and

R^1 represents hydrogen or a substituted or unsubstituted acyclic or carbocyclic group; and



(b)

wherein

Ar represents an aryl residue;

R^5 represents a saturated or unsaturated straight chain or branched acyclic or cyclic hydrocarbon residue; and

R^6 represents hydrogen or at least one alkyl, alkoxy, substituted alkoxy or halogen substituent; the R^6 groups, when more than one is present, being the same or different.

4,515,809

DERIVATIVES OF BENZOYLPHENOXYALKANOIC ACIDS HAVING NORMOLIPEMIZING ACTIVITY

Valerio Borzatta; Manlio Cristofori; Mauro Morotti, all of Bologna, and Giuseppe Mascellani, Calderino di M.S. Pietro, all of Italy, assignors to Alfa Farmaceutici S.p.A., Bologna, Italy

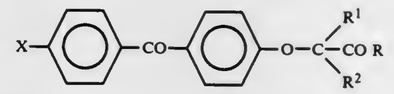
Division of Ser. No. 123,454, Feb. 21, 1980, , which is a continuation of Ser. No. 29,006, Apr. 11, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,431

Claims priority, application Italy, May 9, 1978, 3426 A/78; Dec. 21, 1978, 3630 A/78

Int. Cl.³ A61K *31/235;* C07C *69/616*

U.S. Cl. 514—533 **9 Claims**

1. A compound of the formula:

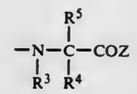


wherein:

X represents an atom of chlorine, bromine, iodine or an alkyl group having 1 to 4 carbon atoms;

R^1 and R^2, equal or different from each other, represent a hydrogen atom or an alkyl group or a hydroxyalkyl group, said groups having 1 to 6 carbon atoms;

R represents a group selected from:



wherein:

R^3 represents a hydrogen atom or an alkyl group,

R^4 and R^5, equal or different from each other, represent a hydrogen atom or an alkyl, an hydroxyalkyl, mercaptoalkyl, alkylphenyl, or phenyl group, wherein the alkyl groups have up to 6 carbon atoms and each phenyl group may have an OH substituent and

Z represents an alkoxy group having 1 to 6 carbon atoms; and

—O—CH_2—COZ

wherein Z has the meaning given above;

or a pharmaceutically acceptable salt of said compound.

9. A pharmaceutical preparation useful in the therapy of hyperlipaemia and of hypercholesterolemia, characterized in that it contains a hypolipaemic or hypocholesterolemic effective dose of at least one of the compounds of claim 1 associated or combined with one or more usual excipients or solvents.

4,515,810

COMPOSITION OF MATTER

San-Laung Chow, Nanuet, and Bernard Sims, Monsey, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 6, 1983, Ser. No. 539,450

Int. Cl.³ A61K *31/22*

U.S. Cl. 514—530 **15 Claims**

5. A pharmaceutical composition of matter useful as a topical medicament which comprises a therapeutically effective

amount of a water unstable E-type prostaglandin compound, 10–20% of emulsifying wax, N.F., 70–90% of mineral oil and 5–20% of diisopropyl adipate.

15. A method of making a pharmaceutical composition of matter according to claim **5**, comprising the steps of mixing together the emulsifying wax and mineral oil on a steam bath at 55° C. until a clear solution is obtained, dissolving 7-[2β-(4-butyl-4-hydroxy-1,5-hexadienyl)-3α-hydroxy-5-oxo-1α-cyclopentyl]-5-heptenoic acid, methyl ester in the diisopropyl adipate on a steam bath at 55° C., mixing the emulsifying wax/-mineral oil mixture with the diisopropyl adipate containing the active ingredient on a steam bath at 55° C. until a clear solution is obtained and cooling to room temperature.

4,515,811

PROCESS FOR THE RESOLUTION OF D,1 2-(6-METHOXY-2-NAPHTHYL)PROPIONIC ACID

Percy G. Holton, Menlo Park, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 55,258, Jul. 6, 1979, abandoned, and a continuation-in-part of Ser. No. 97,118, Nov. 26, 1979, Pat. No. 4,246,193. This application Jun. 4, 1980, Ser. No. 156,250

Int. Cl.³ C07C *91/00;* **A61K** *31/19*

U.S. Cl. 514—554 **9 Claims**

1. A diastereomeric mixture of the salts of d and l 2-(6-methoxy-2-naphthyl)propionic acid with N-R-D-glucamine, wherein R is cycloalkyl having 3 to 8 carbon atoms.

3. A method of treating inflammation, pain or pyrexia in mammals which comprises administering to a mammal suffering therefrom a therapeutically effective amount of a salt of d 2-(6-methoxy-2-naphthyl)propionic acid with N-R-D-glucamine, where R is cycloalkyl having 3 to 8 carbon atoms.

4,515,812

COMBATING FUNGI WITH N-SULPHENYLATED UREAS

Engelbert Kühle, Berg.-Gladbach; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

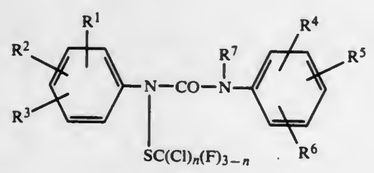
Division of Ser. No. 290,899, Aug. 7, 1981, Pat. No. 4,397,869. This application Apr. 4, 1983, Ser. No. 481,700

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032327

Int. Cl.³ C07C *127/19;* **A01N** *47/28*

U.S. Cl. 514—592 **13 Claims**

1. An N-sulphenylated urea of the formula



in which

R^1 to R^6 each independently is hydrogen, halogen, nitro, cyano, alkyl, alkoxy, alkylmercapto, trihalogenomethyl-, trihalogenomethoxy or trihalogenomethylmercapto,

R^7 is hydrogen or alkyl, and

n is 0, 1 or 2,

both of the phenyl rings being substituted by other than hydrogen.

12. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim **1**.

4,515,813

LEPIDOPTERICIDAL ISOTHIOUREA COMPOUNDS

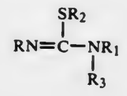
Llewellyn W. Fancher, New Castle, and Herbert B. Scher, Moraga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 185,462, Sep. 9, 1982, Pat. No. 4,357,351. This application Sep. 29, 1982, Ser. No. 426,366

Int. Cl.³ C07C *127/26;* **A01N** *47/42*

U.S. Cl. 514—563 **24 Claims**

1. A compound having the formula

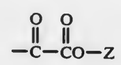


wherein

R and R_1 are independently selected from the group consisting of C_2–C_{10} alkyl, C_2–C_{10} alkoxyalkyl, and phenyl and R and R_1 together contain from 12 to 22 carbon atoms;

R_2 is selected from the group consisting of C_1–C_{14} alkyl, C_3–C_{10} alkenyl, and C_3–C_4 alkynyl; and

R_3 is selected from the group consisting of



wherein Z is selected from the group consisting of —C-$_1$–C_{18} alkyl, hydrogen, Al^{+++}, NH_4^+ and Ca^{++}.

17. A method for controlling lepidoptera comprising applying said lepidoptera or the locus or feedstuffs thereof a lepidopericidally effective amount of the compound of claim **1**.

4,515,814

3-PHENOXYPROPAN-2-OL DERIVATIVES FOR TREATING GLAUCOMA

Alexander E. Wick, Saint Nom La Breteche, and Jean Binet, Breuillet, both of France, assignors to Synthelabo, Paris, France

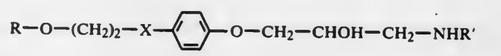
Filed Aug. 30, 1982, Ser. No. 412,962

Claims priority, application France, Sep. 10, 1981, 81 17137

Int. Cl.³ A61K *31/135;* **C07C** *91/32, 91/34*

U.S. Cl. 514—652 **5 Claims**

1. A method for the treatment of a patient with glaucoma which comprises administering to such patient a 3-phenoxypropan-2-ol derivative, in the form of a racemate or an enantiomer, of the formula:



wherein

R is a cycloalkyl radical having 5 or 6 carbon atoms,

X is an oxygen atom or a bond, and

R′ is isopropyl or tert.-butyl or a pharmaceutically acceptable acid addition salt thereof, in an amount effective to alleviate the glaucoma condition.

4,515,815

LOW SODIUM CHLORIDE RIPENED RENNET CHEESES BY ULTRAFILTRATION

Frank V. Kosikowski, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,926

Int. Cl.³ A23C *19/05*

U.S. Cl. 426—40 **10 Claims**

1. In a process of making a ripened rennent cheese selected from the group consisting of a Cheddar, low moisture Mozzarella, Swiss and Blue wherein a milk component is coagulated and ripened, the improvement which comprises

(a) employing as the starting milk component a milk containing an enriched protein level wherein the enriched protein level to original milk protein level is about 1.3:1 to about 1.9:1, where said protein level is obtained by ultrafiltration of milk, and

(b) employing reduced levels of sodium chloride in the cheese making process sufficient to reduce the level of sodium chloride in the resultant ripened cheese by at least about 10% from the levels present in the conventional cheese, thereby providing a cheese without significantly affecting flavor, body and texture properties.

4,515,816

PROCESSING OF LIGNOCELLULOSE MATERIALS

Wilson B. Anthony, Riesel, Tex., assignor to Agro-Systems, Inc., Muscle Shoals, Ala.

Filed Feb. 23, 1983, Ser. No. 469,131

Int. Cl.³ A23K *1/22*

U.S. Cl. 426—69 **11 Claims**

1. A process for treating lignocellulose-containing material to render it amenable to digestion by ruminant animals comprising: adding dilute aqueous acid to the material to form a wet mass in which the pH is in the range of about 2–3, the concentration of the added acid being sufficient to effect acid hydrolysis of the lignocellulose-containing material without charring thereof; storing the wet acidified mass in a low oxygen environment in a closed vessel for a time period of about 5 to about 21 days under ambient conditions of temperature and pressure; and drying the wet acidified mass thereby enhancing the effect of the acid on the mass.

4,515,817

METHOD FOR PRODUCING UNDULATED DOUGH PRODUCTS

Mario Pavan, Via Montegrappa, 10, Galliera Veneta, Italy

Filed May 11, 1981, Ser. No. 262,725

Claims priority, application Italy, May 15, 1980, 22096 A/80

Int. Cl.³ A23L *1/00;* **A23C** *3/00*

U.S. Cl. 426—106 **3 Claims**

1. A method for producing a pre-cooked shaped dough product, comprising the steps of continuously producing a sheet of fresh dough having a widthwise extension and a longitudinal extension, advancing said sheet in the longitudinal direction thereof, pre-cooking said sheet of fresh dough, forming undulations extending substantially widthwise of said pre-cooked sheet of dough while simultaneously drying said dough sheet to stabilize said undulations and further drying and cutting said dough sheet to size.

4,515,818

PROCESS FOR PREPARING SUNFLOWER BUTTER SPREAD FROM PRETREATED SUNFLOWER SEEDS

Bruce E. MacDonald; Geoffrey Galloway, both of Saskatoon, and Yukio Kakuda, Guelph, all of Canada, assignors to CSP Foods Ltd., Saskatoon, Canada

Filed Mar. 3, 1982, Ser. No. 354,378

Int. Cl.³ A23L *1/20, 1/36*

U.S. Cl. 426—268 **9 Claims**

1. In a process for the preparation of sunflower butter from dehulled sunflower seeds which contain phenolic compounds producing discoloration thereof including forming butter from the seeds and deaerating, chilling and tempering the butter, the improvement comprising prior to the forming of the butter applying to the seeds a solution containing 0.05% to 5.0% by weight of a reducing agent selected from the group consisting of ascorbic acid, erythorbic acid, hydroquinone, formaldehyde and ascorbyl palmitate to the seeds at a temperature above 1° C. such that the seeds absorb between 40% and 70% by weight of the solution, following which prior to any reformation of the discoloration, drying the seeds and roasting at a temperature and time at least sufficient and up to 240° C. to produce a light brown color.

4,515,819

PROCESS OF MAKING ENCRUSTED BAKERY PRODUCTS

Tatsuo Shinriki, Chiba, Japan, assignor to Height Inc., Chiba, Japan

Continuation-in-part of Ser. No. 357,314, Mar. 11, 1982, Pat. No. 4,446,160, which is a division of Ser. No. 224,833, Jan. 13, 1981, Pat. No. 4,334,464. This application Oct. 14, 1983, Ser. No. 542,194

Claims priority, application Japan, Jan. 16, 1980, 55-3197

The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.

Int. Cl.³ A23P *1/00*

U.S. Cl. 426—297 **7 Claims**



1. A process of covering a ball of sticky edible paste material to form an edible product, comprising the steps of:

(1) depositing a ball of edible pasty filling onto a film of thin, flexible edible material such that the film sticks to and covers the lower portion of the ball so as to prevent the ball from undesirably sticking to other surfaces during said process;

(2) merging the composite of the ball and the film with a sheet of flattened glutenous dough by depositing the sheet of dough on the ball and film so as to cover the ball, such that the sheet of dough includes a skirt portion draped over the ball and film; and

(3) gathering the skirt portion of the dough sheet underneath the ball and film such that the margins of the skirt portion are brought together and the ball and film are enclosed.

5. A process of covering a ball of sticky edible paste material to form an edible product, comprising the steps of:

(1) depositing a ball of edible pasty filling onto a sheet of flattened glutenous dough;

(2) depositing a film of thin, flexible edible material onto the ball to as to stick to and cover at least the upper portion of the ball to prevent the ball from sticking undesirably to other surfaces during said process;

(3) inverting and depositing onto a conveyor belt, the composite of the ball of pasty filling, the sheet of dough, and the film, such that the film is on the conveyor belt, the ball is on the film, and the sheet of dough covers the ball and film such that the sheet of dough includes a skirt portion draped over the ball and film; and

(4) gathering the skirt portion of the sheet of dough underneath the ball and film such that the margins of the skirt are brought together and the ball and film are enclosed.

4,515,820

METHOD FOR COATING AND INFUSING NUT PRODUCTS WITH HONEY-SUCROSE SOLUTION FOR ROASTING

Charlene Tang, 2300 Wilcrest #78, Houston, Tex. 77042

Filed Dec. 16, 1982, Ser. No. 450,219

Int. Cl.³ A23L *1/36*

U.S. Cl. 426—309 **7 Claims**

1. A method for preparing nut products by applying a crispy, golden-brown glaze to the outer surface, consisting essentially of the steps of:

(a) preparing a solution comprising 50%–70% by weight sucrose, 10%–20% by weight honey and the balance water;

(b) heating said solution to no greater than the soft-ball stage;

(c) coating shelled nuts with said solution until the nuts become at least partially saturated with the solution;
(d) drying the coated nuts at least to where there is no excess solution left to interrupt a subsequent roasting process;
(e) roasting the coated nuts until they have a golden brown transparent glaze.

4,515,821
CALCINED SILICAS AND THEIR USE IN BEER CLARIFICATION

Brian H. Armstead, Cheshire, and James P. Quinn, Merseyside, both of England, assignors to Internationale Octrooi Maatschappij "Octropa", Rotterdam, Netherlands

Filed Sep. 8, 1983, Ser. No. 530,363
Claims priority, application United Kingdom, Sep. 8, 1982, 8225651
Int. Cl.³ C12H *1/04*
U.S. Cl. 426—330.4 **6 Claims**

1. A process for the treatment of beer, which comprises contacting the beer with a calcined silica xerogel having a surface area in the range 100 to 450 m^2/g, a pore volume of at least 0.66 cc/g and an MPD greater than 100 A and having, in its infra-red spectrum, a peak at 3760 cm^{-1}, indicating the presence of single surface silanol groupings, to produce, in the ratio absorbence at 3760 cm^{-1} over absorbence at 1890 cm^{-1}, a number above 2.2, the amount of silica being effective to clarify the beer, and separating the silica from the beer.

4,515,822
HOLLOW, PUFFED FRUIT PRODUCTS AND METHODS OF PREPARATION

Leon Kraig, Plymouth, and Mathew Langenfeld, Eagan, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Aug. 29, 1983, Ser. No. 526,942
Int. Cl.³ A23L *1/04, 1/18*
U.S. Cl. 426—445 **16 Claims**

1. A method for preparing a dried, simulated hollow fruit product comprising in sequence the steps of:
(A) contacting a solution with a bath to form encapsulated pieces, said solution comprising
(1) about 40 to 70% moisture
(2) about 1 to 6% sweeteners, and
(3) about 0.5 to 2.0% hydrophilic colloid (wet basis) said bath containing a gel setting agent capable of causing the hydrophilic colloid to set up an encasement around said pieces; immediately thereafter,
(B) first drying the pieces with forced convection drying with hot air at about 220° to 280° F. to a moisture content of less than about 20%, to form hollow cored pieces; and
(C) finish drying the hollow cored fruit pieces to a moisture content of about 5 to 10% to form a hollow centered dried simulated fruit piece having a density of about 0.15 to 0.40 g./cc.

4,515,823
PROCESS FOR SEPARATION OF RAW MILK INTO CREAM AND SKIM MILK WHICH IS PASTEURIZED

Bernd R. G. Kirschenmann, Hamburg, Fed. Rep. of Germany, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 31, 1983, Ser. No. 480,882
Claims priority, application Sweden, Mar. 31, 1982, 8202048
Int. Cl.³ A23C *1/00*
U.S. Cl. 426—491 **3 Claims**

1. In the processing of milk by centrifugally separating a flow of raw milk into a stream of skim raw milk and a stream of cream, heating said milk flow to a separating temperature prior to said centrifugal separating, heating said skim milk stream in a first heat exchanger section and then further heating it to pasteurization in a second heat exchanger section by heat exchange with a hot medium, cooling the pasteurized skim milk stream by heat exchange in said first heat exchange section, then further cooling said pasteurized skim milk stream in a third heat exchanger section, and cooling said cream stream in an additional heat exchanger section, the improvement which comprises dividing said raw milk flow into first and second partial streams prior to said centrifugal separating, heating said first partial stream in said third heat exchanger section, heating said second partial stream in said additional heat exchanger section, and then combining said partial streams and subjecting them to said centrifugal separating.

4,515,824
PREPARATION OF CAKES AND NO-STIR DRY MIX FOR THEIR PREPARATION

Jon R. Blake, Brooklyn Center; Richard K. Knutson, Corcoran, and Glenn J. VanHulle, Brooklyn Park, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Aug. 18, 1982, Ser. No. 409,204
Int. Cl.³ A23D *10/04*
U.S. Cl. 426—554 **14 Claims**

1. A dry mix for cakes, comprising flour, sugar, leavening, flavor, and color in the form of granules, said granules having:
A. a particle size of from about 0.9 to 3.0 mm.;
B. a bulk porosity of from about 0.55 to 0.64;
C. a density of from about 0.45 to 0.7 g./cc.;
D. an initial rate of moisture absorption of from about 0.055 to 0.075 gram of water per gram of mix per second; and
E. a moisture content of less than about 5%.

4,515,825
LOW FAT SPREAD AND PROCESS FOR PRODUCING SAME

David P. J. Moran, Covington, and David G. Sharp, Putnoe, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,986
Claims priority, application United Kingdom, Oct. 7, 1981, 8130323
Int. Cl.³ A23D *3/00, 3/02*
U.S. Cl. 426—603 **27 Claims**

1. In a low fat spread comprising 20 to 60 wt.% fat, which comprises:
(i) a dispersed phase consisting of a cream comprising a protein, an oil which is present as droplets of an average diameter ranging from 0.1 to 2 microns and an effective amount of a thickening agent sufficient to impart creaminess to the resulting spread; and
(ii) a continuous fat phrase wherein the improvement consists of using heat denatured whey protein in the dispersed phase, the whey protein having been obtained by membrane filtration.

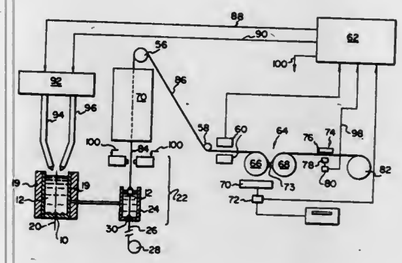
4,515,826
METHOD OF PRODUCTION OF DIELECTRIC INSULATION LAYERS UPON ELECTRICAL CONDUCTORS

John N. Garner, Kingston, and Michael A. Shannon, Glenburnie, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1984, Ser. No. 597,394
Int. Cl.³ B05D *3/14*
U.S. Cl. 427—8 **8 Claims**

1. A method of monitoring net inherent bipolar orientation of magnetically permeable particles in a dry dielectric carrier layer surrounding an electrical conductor comprising:
passing the conductor carrying the layer through a magnetic field to cause the orientation of the particles to affect the magnetic flux strength in at least one certain part of the field; and
inducing an electrical property in a sensing conductor placed in said certain part of the field, and sensing with said sensing

conductor any change in the value of the electrical property, said change corresponding to a change in the net orientation

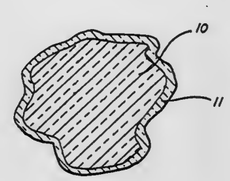


of the particles which affect the flux strength in said certain part of the field.

4,515,827
METHOD OF VAPOR COATING PHOSPHOR PARTICLES

Robert E. Dodds, San Diego, Calif., and David J. Harrigan, Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 188,634, Sep. 19, 1980, Pat. No. 4,398,119.
This application Jun. 17, 1982, Ser. No. 389,203
Int. Cl.³ C09K *11/08*
U.S. Cl. 427—68 **7 Claims**



1. A method for producing a composite article of manufacture comprising a phosphor particle and a continuous coating on the surface of the particle, the method comprising:
(a) evacuating a chamber containing: phosphor particles; means to rotate the phosphor particles; a color modifying material; and heating means to vaporize the color modifying material;
(b) rotating the phosphor particles while;
(c) heating the color modifying material to vaporize it,
whereby the color modifying material is vapor deposited on the rotating phosphor particles to form a continuous coating.

4,515,828
PLANARIZATION METHOD

James Economy, and Mary A. Flandera, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1981, Ser. No. 222,195
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—82 **8 Claims**

1. A method of providing a planarized coating on a surface comprising the steps of
applying a uniform coating of a prepolymer material selected from the group consisting of diacetylenic prepolymers, novolaks, epoxies and polyimides to said surface,
heating said prepolymer to melt said prepolymer to a low viscosity, maintaining said low viscosity prepolymer in a melted phase for a sufficient length of time to permit said prepolymer to flow to form a planarized layer on said surface, and
curing said planarized prepolymer into a planarized layer.

4,515,829
THROUGH-HOLE PLATING

Cheryl A. Deckert, Framingham; Edward C. Couble, Brockton, and William F. Bonetti, Boston, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Oct. 14, 1983, Ser. No. 542,036
Int. Cl.³ H05K *3/42, 3/46*
U.S. Cl. 427—97 **20 Claims**

1. A process for the manufacture of a printed circuit board having a plurality of metal plated holes interconnecting at least two circuits comprising the steps of, in either order, forming holes in an epoxy printed circuit board material and forming the circuits and thereafter, metallizing the holes, said metallization comprising a pretreatment sequence between the steps of forming the holes and metal plating including the steps of contact of the holes with a first aqueous alkaline solution of an oxygenated epoxy solvent at a pH greater than 10 and at a temperature and for a time sufficient to soften the hole walls, contact with a second solution comprising an aqueous alkaline solution of permanganate ions maintained at an elevated temperature and a pH in excess of 13, and contact with a third solution of a reducing agent for permanganate ions at a temperature and for a time sufficient to remove any manganese residues remaining on the walls of the holes.

4,515,830
SOLVENT-CAST CAPACITIVE HIGH DENSITY INFORMATION DISC

Louis A. DiMarco, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1983, Ser. No. 556,355
Int. Cl.³ B05D *5/12;* **C04B** *35/00;* **C09K** *3/00*
U.S. Cl. 427—122 **10 Claims**

1. A method of forming a conductive, high density information disc suitable for capacitive readout which comprises:
(a) blending a composition comprising from about 70 to about 85 percent by weight of a thermoplastic resin, from about 12 to about 20 percent by weight of finely divided particulate conductive carbon black, and stabilizers, processing aids and lubricants compatible therewith;
(b) thermally processing said composition by heating under high shear to form a melt having the carbon particles uniformly dispersed therein;
(c) mixing the thermally processed composition with a suitable organic solvent to form a dispersion of the conductive carbon black in a solution of the remaining ingredients;
(d) filtering said dispersion to remove particles larger than 25 micrometers;
(e) coating the dispersion onto a core disc;
(f) drying the coating to form a conductive layer from about 5 to about 40 micrometers in thickness; and
(g) embossing the conductive layer with an information track.

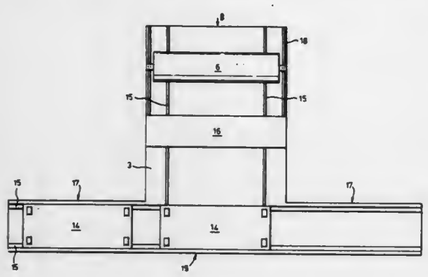
4,515,831
COATING RECOVERABLE SHEETS

Marc Wille, Baal, Belgium, assignor to N. V. Raychem S. A., Belgium

Filed Oct. 19, 1982, Ser. No. 435,158
Claims priority, application United Kingdom, Oct. 23, 1981, 8130259
Int. Cl.³ B05D *3/08, 3/02, 1/28;* **C23C** *13/08*
U.S. Cl. 427—223 **30 Claims**

1. A method of sealant-coating heat-recoverable polymer sheet, comprising heating the heat-recoverable polymer sheet

to an elevated temperature, and subsequently applying a solid sheet of heat-activatable sealant to the heated polymer sheet



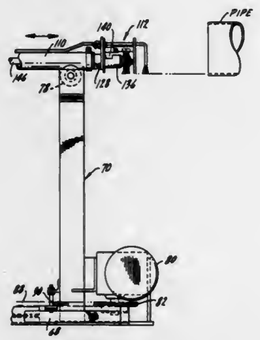
while the polymer sheet is at a temperature capable of activating the sealant so as to adhere it to the polymer sheet.

4,515,832

METHOD FOR COATING THE INSIDE OF PIPE

Charles L. Roeder, Glendale; William J. Siefert, Waukesha, and Frederik Theijsmeijer, Racine, all of Wis., assignors to Rexnord, Inc., Milwaukee, Wis.

Filed Jun. 24, 1977, Ser. No. 809,570
Int. Cl.³ B05D *7/22*
U.S. Cl. 427—233 **3 Claims**



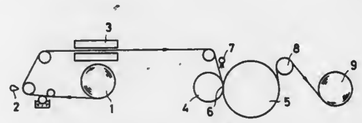
1. A method of coating the inside of a pipe to increase its resistance to wear, including the steps of providing a coating material including a matrix composed of a cross-linkable thermo-setting resin, a curing agent for the resin, and abrasion-resistant particles in the form of chips, disposing the pipe about a generally horizontal axis, supplying the matrix and the chip-like particles to the inside of the pipe, intermixing the matrix and chiplike particles inside of the pipe and applying the mixture to the inner surface of the pipe, rotating the pipe about a generally horizontal axis, and relating the speed of rotation of the pipe, and the fluidity of the mixture such that the centrifugal force applied to the matrix and particles will cause at least a substantial proportion of the chips to be oriented in the matrix, as it cures, in a nonradial direction so that when the matrix is fully cured, the maximum area of the chips will be exposed to the abrasive material flowing through the pipe in use.

4,515,833

METHOD OF PRODUCING CAST COATED PAPER AND PRODUCT THEREOF

Kazuhiro Nojima; Hiroyuki Fujimoto, and Mikio Takahashi, all of Amagasaki, Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,336
Claims priority, application Japan, May 18, 1983, 58-88212
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—362 **8 Claims**



1. A method of increasing the rate of production of cast coated paper which comprises applying to a web of base paper an aqueous coating composition, the pigment component of which contains 30% to 80% by weight of cubic calcium carbonate having a mean particle size of 0.1 to 1.0 microns, and finishing the surface of the coating layer by bringing it into contact with a finishing surface of a cast coating drum at a temperature above 90° C., said cast coated paper having a gloss of above 88%.

4,515,834

RTV POLYORGANOSILOXANE COMPOSITIONS YIELDING PAINTABLE ELASTOMERS

Miyoji Fukayama, and Chikara Ichijo, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Division of Ser. No. 560,705, Dec. 12, 1983,. This application Aug. 13, 1984, Ser. No. 639,565
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—387 **7 Claims**

1. A method for preparing a painted, cured silicone elastomer, said method comprising the steps of

I. mixing under conditions which exclude moisture

(A) 100 parts by weight of a hydroxyl-terminated polyorganosiloxane exhibiting a viscosity of from 0.02 to 1,000 Pa·s at 25° C.;

(B) from 0.5 to 30 parts by weight of at least one organosilicon compound containing at least two silicon-bonded groups per molecule selected from the group consisting of amide, aminoxy and combinations thereof; and

(C) from 0.05 to 15 parts by weight of a dialkoxysilane of the general formula $X'R^1SiR^2(OR^3)_2$ or a partial hydrolysis condensation product thereof, where X' represents an amino, $(CH_3CH_2)_2N-$, $H_2NCH_2CH_2(H)N-$, mercapto, acryloxy, methacryloxy, or epoxy group, R^1 represents an alkylene, haloalkylene or oxyalkylene radical, and R^2 and R^3 are individually selected from the group consisting of monovalent hydrocarbon radicals, monovalent alkoxyhydrocarbon radicals, and monovalent halohydrocarbon radicals;

II exposing the resultant composition to room temperature and atmospheric moisture for a sufficient time to form a cured silicone elastomer; and

III. applying a paint to the surface of said cured silicone elastomer.

4,515,835

HIGH SOLIDS THERMOSETTING COATING COMPOSITIONS, CURED COATINGS, COATED ARTICLES, AND PROCESSES

Robert R. Kuhn, Lansdale; John D. Whiteman, Churchville, and William H. Brendley, Jr., Hatboro, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 23, 1982, Ser. No. 452,546
Int. Cl.³ B05D *7/16;* **C08L** *61/28*
U.S. Cl. 427—388.3 **33 Claims**

1. High solids, thermosetting coating composition comprising a soft, low molecular weight, hydroxy-functional addition polymer resin having a GPC $\overline{M}_w$ of less than about 20,000, having a glass transition temperature (Tg) of below about 25° C., a low molecular weight polyether reactive diluent having (a) two or three aliphatic hydroxyl groups per molecule, (b) the property of remaining essentially nonvolatile under curing conditions to minimize emissions, and (c) a molecular weight of about 250 to 1000, the weight ratio of resin to diluent being greater than 1, and an inert organic solvent for said resin and said diluent, said coating composition, when combined with aminoplast crosslinking agent, being of sprayable, roller coatable, or dip coatable viscosity.

4,515,836

PROCESS FOR COATING SUBSTRATES WITH AQUEOUS POLYMER DISPERSIONS

Walter H. Cobbs, Jr., Amherst, and William R. Rehman, Vermillion, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 399,047, Jul. 16, 1982, abandoned. This application Jun. 3, 1983, Ser. No. 500,877
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—425 **28 Claims**



1. A process for coating a substrate with a uniform polymeric coating comprising

providing a substrate having a surface to be coated,

impacting said surface with a stream of a stabilized dispersion of polymer in water,

initially forming on said surface a gel coating layer bonded to said surface and caused by destabilization of said dispersion upon said impact,

thereafter continuing to expose the gelled coating layer to said stream of stabilized polymer dispersion to produce a wet integral coating including a covering layer of polymer dispersion completely covering said gel layer, said gel layer serving as an interfacial layer to adhere said covering layer of polymer dispersion to said substrate,

heating said wet integral coating to form a substantially completely gelled coating throughout its thickness on said surface, and

further heating said gelled coating to coalesce said polymer into a substantially uniform coating on said substrate.

4,515,837

RIBBON FOR FORMING A DECORATIVE BOW

Peter S. C. Cheng, 32 Wyndham St., Flat 10-C, Hong Kong, Hong Kong

Filed Feb. 29, 1984, Ser. No. 584,630
Int. Cl.³ D04D *7/10*
U.S. Cl. 428—4 **9 Claims**



1. A bow-forming ribbon comprising at least one longitudinally-extending decorative flexible ribbon member, a series of relatively stiff retainer members spaced apart at intervals along the length of the ribbon member and each being restrained against movement relative to the ribbon member and defining an aperture extending generally transversely across the ribbon member at an angle with respect to the transverse direction, each retainer member being located relative to the ribbon member by locating means disposing the retainer member at an angle with respect to the transverse direction different from that of the adjacent preceding retainer member, and at least one drawstring member running freely through the apertures defined by the successive retainer members.

4,515,838

FANCY ARTICLE FOR USE AS A GREETING GIFT SUCH AS A GREETING CARD

Yukio Miyajima, 23, Aza-Chohai, Oaza-Nagakute, Nagakute-cho, Aichi-gun, Aichi-ken, Japan

Filed Jan. 12, 1984, Ser. No. 570,243
Int. Cl.³ B32B *3/04;* **G09F** *1/12*
U.S. Cl. 428—14 **17 Claims**

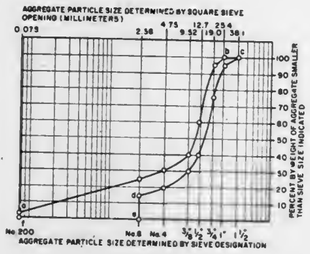


1. A fancy article for use as a greeting gift such as a greeting card, comprising:

a metal sheet having on a flat front surface thereof an imprint of an image including at least one of pictures, designs and other visible representations, said imprint being printed in plural colors, said metal sheet including a peripheral rib formed along the entire periphery thereof and protruding from a back surface thereof in a direction away from said

front surface, said peripheral rib cooperating with said back surface to define a receptacle of a small depth;
a filler occupying a substantive volume of said receptacle and having a rear surface which protrudes away from an edge of said peripheral rib in said direction; and
a planar writing medium provided on said rear surface of said filler and made of a material suitable for writing thereon.

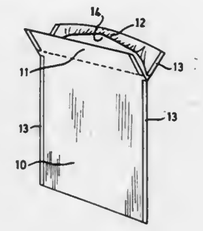
4,515,839
PERMEABLE ASPHALTIC CONCRETE BASE FOR ARTIFICIAL TURF
Wayne R. Broaddus; Khalil N. Jaber, and Thomas A. Orofino, all of Whitfield County, Ga., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 31, 1983, Ser. No. 546,801
Int. Cl.³ B32B *3/02, 33/00*
U.S. Cl. 428—17 **10 Claims**



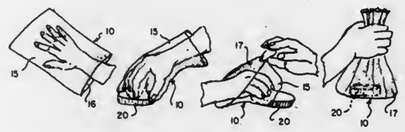
5. A playing field comprising a layer of permeable artificial turf and a base comprising an asphaltic concrete composition having a permeability sufficient to accommodate at least 40 centimeters per hour of rainfall at 25 mm of thickness of concrete comprising asphaltic cement, anti-stripping agent, and a gradated mixture of bulky aggregate rock having a size gradation such that the percentage by weight of the mixture passing through a sieve having square openings of
(a) 38.1 millimeters is 100 percent,
(b) 25.4 millimeters is 95–100 percent,
(c) 19.0 millimeters is 75–95 percent,
(d) 12.7 millimeters is 40–60 percent,
(e) 9.52 millimeters is 30–40 percent,
(f) 4.75 millimeters is 20–30 percent,
(g) 2.36 millimeters is 15–25 percent, and
(h) 0.075 millimeters is 0–3 percent.

4,515,840
SHEET MATERIAL
Douglas K. Gatward, 1212 Great Cambridge Rd., Enfield, Middlesex, England
Filed Feb. 23, 1982, Ser. No. 351,543
Claims priority, application United Kingdom, Feb. 23, 1981, 8105649
Int. Cl.³ B32B *27/10;* **B65D** *65/02*
U.S. Cl. 428—35 **11 Claims**

1. A laminate wrapping material comprising a sheet of smooth, calendared on at least one side, machine-glazed kraft or sulphite paper in the order of 15 to 35 grams per square meter, and a coextensive sheet of thermoplastic film in the order of 8 to 35 microns in thickness discontinuously attached to each other at regular or irregular intervals along lines of bonding such as to define between the sheets a plurality of channels or pockets on the order of 1 to 5 millimeters in width in the plane of the laminate isolated from one another by said lines of bonding, said paper sheet embodying deadfold characteristics of such magnitude as to impart deadfold characteristics to the composite laminate and said thermoplastic film containing microperforation of such magnitude as to permit transmission of water vapor and hot air through the laminate and to constitute a barrier to the transmission of grease through the laminate and wherein at least some of the microperforations perforate the thermoplastic film into the channels or pockets.

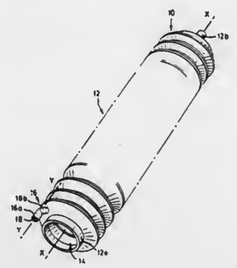


4,515,841
PORE FORMING STERILIZATION BAG
Denis G. Dyke, Edinboro, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Dec. 30, 1983, Ser. No. 567,234
Int. Cl.³ B32B *1/02*
U.S. Cl. 428—35 **10 Claims**



1. A receptacle for handling contaminated waste for steam sterilization and subsequent disposal comprising:
a bag formed from an air and water impervious thermoplastic film, said film having means embedded therein to form pores therethrough upon exposure to steam sterilization.

4,515,842
BLOW MOLDED ARTICLE
Steve A. Kovacs, Weston, Canada, assignor to Supreme Casting & Tooling, Rexdale, Canada
Division of Ser. No. 259,320, Apr. 30, 1981, Pat. No. 4,396,574. This application Sep. 29, 1982, Ser. No. 427,030
Int. Cl.³ B32B *3/26, 3/28*
U.S. Cl. 428—36 **2 Claims**

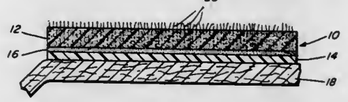


1. A blow molded plastic article having a body portion of corrugated form which is molded in one piece and which defines: an internal space; a main opening at a first end of said portion communicating with said space and extending about a first axis; a passageway defining a secondary opening adjacent said main opening; and a further opening at a second end of said body portion opposite said first end; said passageway including an outer portion which extends about a second axis spaced from and generally parallel to said first axis, and an inner portion which is inclined inwardly towards said first axis and communicates with said internal space, said article being formed by blow molding in a single operation.

4,515,843
DISC-SHAPED INFORMATION CARRIER HAVING A HIGH STORAGE DENSITY
Heinz Borchard, Nortorf; Herbert Knothe, Neumünster, and Bruno Rybka, Nortorf, all of Fed. Rep. of Germany, assignors to Teldec Telefunken-Decca Schallplatten GmbH, Hamburg, Fed. Rep. of Germany
Filed Apr. 23, 1979, Ser. No. 32,480
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818490
Int. Cl.³ B29D *17/00;* **B32B** *3/02;* **G06K** *19/02;* **G11B** *23/00*
U.S. Cl. 428—64 **5 Claims**

1. A rigid disc-shaped information carrier produced by thermoplastic deformation comprising a pressed mass including a co-polymer of vinyl chloride having additives incorporated therein, said additives comprising a stabilizer system comprised of amino crotonic ester, calcium stearate, and carbon black and a lubricant system comprised of partial esters of glycerin in combination with amino fatty acid esters with epoxide groups, a rigid disc information carrier being thereby produced having hygroscopic properties and relief-like surface portions which are sufficiently yielding to permit pressure scanning.

4,515,844
DELSOLITE
Thomas E. Coughlin, Tyngsboro, Mass., assignor to Nylco Corporation, Nashua, N.H.
Filed Mar. 19, 1984, Ser. No. 590,960
Int. Cl.³ B32B *3/02, 5/06, 5/22*
U.S. Cl. 428—82 **17 Claims**



1. A footwear insulating composition which comprises:
a polyurethane membrane;
a layer of polyurethane foam adhesively engaged thereto;
a plurality of fibers secured to the membrane extending through and beyond the foam to form a napped surface, the composition having a moisture vapor transmission factor of from 0.35 to 0.60 and a thermal insulation factor of from R15 to R22.

4,515,845
PILE DAMPER MECHANISM
Gerald A. Annis, Pittsford, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.
Filed May 16, 1983, Ser. No. 494,783
Int. Cl.³ D03D *27/00*
U.S. Cl. 428—86 **18 Claims**

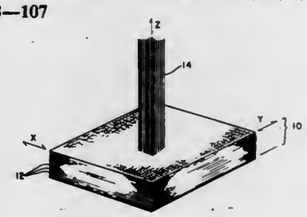


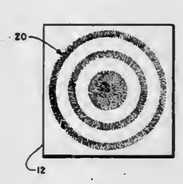
1. A damper comprising first and second relatively movable rigid members having first and second spaced-apart opposing surfaces, means for limiting the relative movement of said members to lateral movement parallel to said surfaces; first and second pile layers on said first and second surfaces, respectively, the fibers of said pile layers at least partially interlocking or overlapping for damping relative movement between said elements.

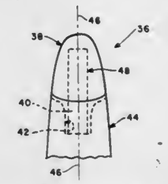
4,515,846
POLYURETHANE BACKED CARPET FORMED WITH TWO CATALYSTS
Linda M. McKinney, and Osborne K. McKinney, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 9, 1984, Ser. No. 598,106
Int. Cl.³ B32B *3/02, 33/00*
U.S. Cl. 428—95 **10 Claims**

1. In a synthetic primary backed carpet substrate backed with, as a secondary backing, a urethane composition prepared from a composition comprising one or more polyols, one or more polyisocyanates, one or more catalysts and optionally one or more fillers and/or thermoplastic polymers; the improvement which comprises employing as the catalyst therefor a combination consisting of (1) at least one delayed action, heat activated catalyst which exhibits a tack-free time of not greater than about 8 minutes and (2) at least one conventional catalyst which exhibits a tack-free time of greater than about 8 minutes and which provides a viscosity for a mixture of the catalysts, polyol, isocyanate and filler and/or thermoplastic polymer, if present, of less than about 20000 cps in 5 to 6 minutes at 37°–42° C. so as to provide an improvement in at least one of the properties selected from tack-free time, edge curl and tuft lock.

4,515,847
EROSION-RESISTANT NOSETIP CONSTRUCTION
Arthur R. Taverna, Lexington, and Warren S. Thompson, Stoneham, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Aug. 22, 1984, Ser. No. 643,140
Int. Cl.³ B32B *1/00, 1/10;* **B64G** *1/00, 1/22*
U.S. Cl. 428—107 **12 Claims**







1. In a process for fabricating a reentry carbon-carbon nosetip structure comprising the steps of:
(a) stacking a plurality of layers of X-Y woven fabric;
(b) piercing said stack of layers of woven fabric in the Z direction with a plurality of rigidized carbon rods to form a preform;
(c) impregnating said preform with a material convertable to carbon by heat treatment;
(d) carbonizing the impregnated preform;
(e) graphitizing the carbonized preform;
(f) repeating steps (c) through (e) to achieve a desired bulk density; and
(g) machining the resulting densified composite structure to a desired configuration;
the improvement comprising selectively loading the said layers of woven fabric with a heat-resisting particulate material to provide a desired ablative performance in said nosetip structure.

8. A mutually orthogonal three-directional reinforcement

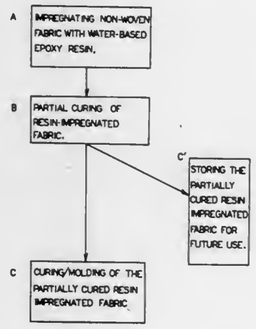
structure for a composite material which comprises a plurality of layers of X-Y woven fabric pierced by a plurality of rigid carbon rods in the Z direction, wherein at least a portion of the said fabric layers is loaded with a heat-resisting particulate material.

4,515,848

MATERIALS AND METHODS FOR MAKING RESIN-RIGIDIFIED ARTICLES

Carl V. Leunig, Glenmont, N.Y., and Robert F. Kovar, Wrentham, Mass., assignors to Gates Formed Fibre Products Inc., Auburn, Me.

Filed Sep. 23, 1983, Ser. No. 535,320
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—172 **18 Claims**



4. A porous resin-rigidified shaped article permeable to gas, which comprises:

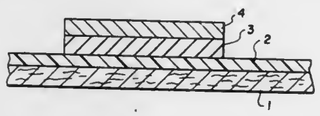
a non-woven fabric comprised of synthetic organic filaments entangled together, partially impregnated with a cured thermoplastic or thermosetting water-based epoxy resin to impart the desired porosity and permeability to the article, and mold formed in a desired shape retaining configuration.

4,515,849

TRANSFER PRINTING SHEET, PRINTING METHOD AND PRINTED ARTICLE

Goro Keino; Yosuke Kitagawa, both of Ohtsu, and Yoshimi Hayashi, Kyoto, all of Japan, assignors to Matsui Shikiso Chemical Co. Ltd., Japan

Filed Jun. 1, 1983, Ser. No. 499,911
Int. Cl.³ B32B *3/10, 7/06;* B44C *1/16*
U.S. Cl. 428—201 **12 Claims**



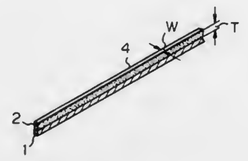
1. Transfer printing sheet for transferring a pattern onto an article of synthetic fibers, comprising a base sheet having a coatable surface, a releasing resin layer at least partially coating the coatable surface of the base sheet, a pattern in the form of a pattern layer printed on the releasing resin layer and comprising an elastic high polymer resin and a pigment in admixture, and a dissolving agent layer containing an agent of monomeric organic compound constitution or of inorganic compound constitution for dissolving adjacent surface portions of synthetic fibers of an article onto which the pattern is to be transferred, the dissolving agent layer covering the entire surface of the pattern layer, whereby the pattern of the pattern layer can be transferred onto the article of synthetic fiber when the sheet is subjected to heat and printing pressure with the dissolving agent layer in contact with the article.

4,515,850

COMPOSITE FERRITE TEXTILE

Ken Ishino; Yasuo Hashimoto; Kenichi Ichihara, and Yoshikazu Narumiya, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Sep. 7, 1983, Ser. No. 529,992
Claims priority, application Japan, Sep. 13, 1982, 57-158218; Nov. 24, 1982, 57-204616
Int. Cl.³ D03D *3/00*
U.S. Cl. 428—225 **20 Claims**



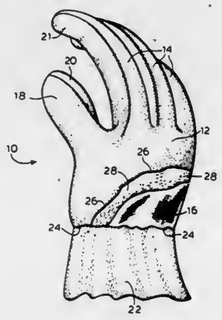
1. A composite ferrite cloth woven from textile, said textile including a composite ferrite textile containing composite ferrite, said composite ferrite comprising a mixture of a ferrite powder and a binder, said binder bonding said ferrite powder together to form said composite ferrite, wherein the volume ratio of ferrite powder to said mixture in said composite ferrite is in the range between 0.2 and 0.8.

4,515,851

SLIP RESISTANT SURFACES

Michael D. Johnson, Coshocton, Ohio, assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Oct. 25, 1982, Ser. No. 436,253
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—246 **6 Claims**



1. A laminate for providing a garment having an exposed slip resistant gripping surface for use in a grease, oil or water work environment, characterized by

(a) a substrate, said substrate being a member selected from the group consisting of a non-woven fibrous web, a woven web, and a knitting web;

(b) a foamed layer applied to one surface of said substrate;

(c) said foamed layer forming the outer gripping surface for a garment made from such laminate; and

(d) said foamed layer having an air content within the range of between about 10 to 65 percent.

4,515,852

LEATHER-LIKE SHEET MATERIAL HAVING LOW SLIP CHARACTERISTICS

Kenichi Katabe, Wakayama, and Takeo Nishimura, Okayama, both of Japan, assignors to Kuraray Co., Ltd., Okayama and Kao Soap Co., Ltd., Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,451
Claims priority, application Japan, May 10, 1982, 57-78877
Int. Cl.³ B32B *7/00, 15/00;* D03D *3/00*
U.S. Cl. 428—246 **8 Claims**

1. A leather-like sheet material having low slip characteristics comprising:

sheet material having a fibrous substrate consisting of a fibrous mat,

a surface layer consisting of a polymer mainly composed of a polyurethane elastomer, and

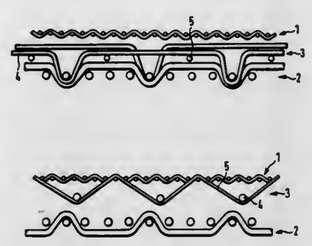
an acryl-modified polyurethane resin spread on the surface layer, said acryl-modified polyurethane resin spread on the surface layer, said acryl-modified polyurethane resin being made by polymerization of an ethylenically unsaturated compound in the presence of a polyurethane emulsion.

4,515,853

COMPOSITE FABRIC FOR USE AS CLOTHING FOR THE SHEET FORMING SECTION OF A PAPERMAKING MACHINE

Georg Borel, Reutlingen, Fed. Rep. of Germany, assignor to Hermann Wangner GmbH & Co. KG, Reutlinger, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 571,817
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301810
Int. Cl.³ D03D *11/00, 13/00;* D21F *7/08*
U.S. Cl. 428—257 **9 Claims**



1. A composite fabric for use as clothing for the sheet forming section of a papermaking machine, said fabric comprising at least two fabric layers interconnected by binder threads and being characterized in that part of the binder threads extend in the warp direction and part of said threads extend in the weft direction and said threads form an elastic interlayer, and in that each binder thread is woven into not more than one of the at least two fabric layers.

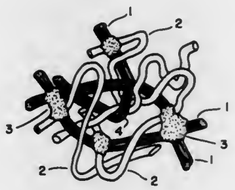
4,515,854

ENTANGLED FIBROUS MAT HAVING GOOD ELASTICITY AND METHODS FOR THE PRODUCTION THEREOF

Kunio Kogame; Yoshihiro Tanba, and Masaru Makimura, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Apr. 30, 1984, Ser. No. 605,642
Claims priority, application Japan, May 13, 1983, 58-84481; May 13, 1983, 58-84482
Int. Cl.³ D04H *1/58*
U.S. Cl. 428—288 **13 Claims**

1. An entangled fibrous mat comprising a fiber A consisting essentially of an elastic polymer and a fiber B consisting essentially of a nonelastic polymer, said fiber A formed by removing, after entanglement with fiber B, nonelastic polymer from a fiber comprising a nonelastic polymer and an elastic polymer,



thereby forming axially extending long voids therein, said fiber A being in a taut condition within the mat and said fiber B being in a slack condition.

4,515,855

PROCESS FOR SIZING TEXTILE MATERIALS

Chi-Fei Ling, Edison, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 268,924, Jun. 1, 1981, abandoned. This application Mar. 11, 1983, Ser. No. 474,627
Int. Cl.³ B32B *27/00;* B05D *3/02*
U.S. Cl. 428—290 **9 Claims**

1. A process for sizing a textile substrate material comprising applying to the textile material a composition comprising an aqueous solution of at least 3% by weight solids content of a copolymer of acrylamide and at least one hydrophobic vinyl, or vinylidene, polymerizable monomer, the amount of the polymerizable monomer in the composition being at a concentration from about 1% to 40%, based on the weight of acrylamide in the composition, and thereafter drying the treated substrate, the composition being applied in an amount and the drying being at a temperature, respectively, sufficiently high to impart a high order of abrasion resistance to the textile material, the composition being capable of being removed from said textile substrate material by aqueous washing.

4. The process according to claim 1 wherein the textile material is a cotton yarn.

9. The treated textile material of claim 4.

4,515,856

MAGNETIC RECORDING MEDIA COMPRISING TITANIUM MONOXIDE AND CARBON BLACK POWDERS IN A MAGNETIC RECORDING LAYER

Ikuo Matsumoto, Mito, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Aug. 8, 1983, Ser. No. 521,173
Claims priority, application Japan, Aug. 9, 1982, 57-137335
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—323 **6 Claims**

1. A magnetic recording medium comprising a support, and a magnetic recording layer formed on at least one side of said support, said magnetic recording layer comprising a dispersion of magnetic particles, and a mixture of about 0.1 to 20 weight percent of a titanium monoxide powder and about 1 to 10 weight percent of a carbon black powder, both based on said magnetic particles, in a resin binder, wherein the titanium monoxide and carbon black powders have average particle sizes of from 0.01 to 5 microns and from 13 to 50 millimicrons, respectively.

4,515,857

MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed May 6, 1982, Ser. No. 375,690
Claims priority, application Japan, May 7, 1981, 56-67640
Int. Cl.³ G11B *5/70;* **B32B** *5/30*
U.S. Cl. 428—328 **11 Claims**

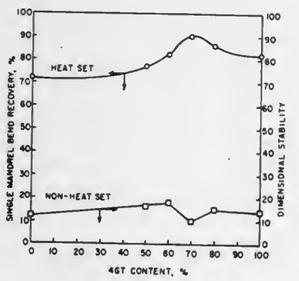
1. A magnetic recording medium having a high signal-to-noise ratio in high density recording and a low noise level in short wavelength recording and comprising a non-magnetic support and a magnetic recording layer coated directly thereon, the magnetic recording layer comprising ferromagnetic particles dispersed in a non-magnetic binder, wherein the ferromagnetic particles are cubic particles of at most 0.3 micron and are subjected to a magnetic orientation treatment in the vertical direction to the recording surface.

4,515,858

POLYESTER HAIRBRUSH BRISTLE

Ghawamedin Bayan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 28, 1983, Ser. No. 555,496
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—364 **2 Claims**



1. A monofilament suitable for use as a brush bristle having a diameter of about 5–10 mils and being oriented about 3.0–5.0 times in a longitudinal direction, the polymeric components of the monofilament consisting essentially of, complementally, about 65–75 weight percent polybutylene terephthalate and about 35–25 weight percent polyethylene terephthalate, and wherein the monofilament exhibits a Mandrel Bend Recovery after ten cycles of at least about 80%.

4,515,859

HYDROPHILIC, WATER-ABSORBING ACRYLONITRILE POLYMER FIBER

Francesco De Maria, Gulf Breeze, Fla., and William E. Streetman, Cincinnati, Ohio, assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 16, 1982, Ser. No. 418,863
Int. Cl.³ D02G *3/00;* **D01F** *6/18*
U.S. Cl. 428—398 **8 Claims**

1. A melt-spun, hydrophilic, moisture-absorbing acrylonitrile polymer fiber structured from an acrylonitrile copolymer comprising from about 85 to 89 weight percent of acrylonitrile, from about 1 to 3 weight percent of one or more comonomers which provide hydrophilic moieties and the balance of one or more hydrophobic comonomers, said polymer having a number average molecular weight in the range of about 6000 to 14,750, the fiber structure having a continuous water-hiding cavity extending throughout the entire fiber length and constituting between about 10% and 40% of the corresponding fiber free of said cavity, said cavity being open, and said fiber being characterized by a filament denier of about 0.75 to 2.0, a dye intensity of at least about 45%, a shade change due to hot-wet processing of less than about 15, a moisture absorption of at least about 12%, a straight tenacity of at least about 2.5 grams per denier and a wicking index of at least about 100, said fiber exhibiting a comfortable feel to the wearer when formed into a garment.

4,515,860

SELF PROTECTING CARBON BODIES AND METHOD FOR MAKING SAME

Robert A. Holzl, La Canada, Calif., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Sep. 10, 1982, Ser. No. 416,628
Int. Cl.³ C23C *11/00, 11/08;* **B32B** *9/00*
U.S. Cl. 428—408 **9 Claims**

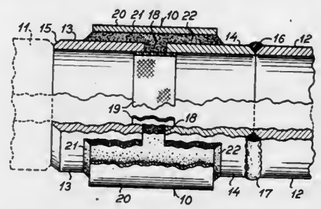
1. A coated article comprising a body of carbon material in monolithic or composite form upon which has been thermochemically deposited a silicon alloy coating comprising one or more alloying elements selected from the group consisting of carbon, oxygen, aluminum and nitrogen in the form silicon carbide, silicon nitride, silicon oxynitride, or sialon, said coating having a non-columnar grain distribution with substantially equiaxial grains of an average diameter of less than one micron and forming a correspondingly fine crack mosaic upon stressing due to differences in thermal coefficients of expansion between said coating and said body, and wherein the amount of silicon is in excess of stoichiometry to an extent sufficient to confer crack healing characteristics at temperatures of the order of the melting point of silicon.

4,515,861

ARTICLES PROTECTED AGAINST CORROSION AND METHODS FOR PROTECTING ARTICLES AGAINST CORROSION

Hans Arup, Lyngby, Denmark, assignor to Aktieselskabet Aalborg Portland-Cement-Fabrik, Aalborg, Denmark

PCT No. PCT/DK81/00069, § 371 Date Mar. 5, 1982, § 102(e) Date Mar. 5, 1982, PCT Pub. No. WO82/00302, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 8, 1981, Ser. No. 359,658
Claims priority, application Denmark, Jul. 11, 1980, 3030/80
Int. Cl.³ C23F *15/00*
U.S. Cl. 428—450 **6 Claims**



1. A method of protecting a steel article against corrosion by being completely or partially coating it with a material showing resistivity of at least about 0.1 MΩcm and comprising a coherent binder matrix which comprises:

(A) homogeneously arranged inorganic solid particles of a size of from about 50 Å to about 0.5 μm, or a coherent structure formed from such homogeneously arranged particles, and

(B) densely packed solid particles having a size of the order of about 0.5–100 μm and being at least one order of magnitude larger than the respective particles stated under (A), or a coherent structure formed from such densely packed particles; the particles A or the coherent structure formed therefrom being homogeneously distributed in the void volume between the particles B, the dense packing being substantially a packing corresponding to the one obtainable by gentle mechanical influence on a system of geometrically equally shaped large particles in which locking surface forces do not have any significant effect;

the particles A being substantially densely packed in the voids between densely packed particles B and being present in a volume of 5–50% by volume, calculated on the combined volume of the particles A+B; the particles B comprising Portland cement particles conferring corrosion protection to the steel due to the alkaline nature of the hardened Portland cement.

4,515,862

COATED SURFACES CAPABLE OF DECOMPOSING OILS

Masao Maki, Nabari; Yasunori Kaneko, Ikoma, and Ikuo Kobayashi, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 480,380, Apr. 5, 1983, Pat. No. 4,471,027, which is a continuation of Ser. No. 263,177, May 13, 1981, abandoned, which is a continuation of Ser. No. 85,059, Oct. 12, 1979, abandoned. This application Mar. 5, 1984, Ser. No. 586,144
Claims priority, application Japan, Oct. 16, 1978, 53-127543; Feb. 13, 1979, 54-15743; Jul. 26, 1979, 54-95381
The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.
Int. Cl.³ B32B *9/06, 15/04*
U.S. Cl. 428—450 **4 Claims**

1. A coated metal substrate of aluminum having a surface capable of decomposing oils at about 200° to 300° C. through a gasification cracking reaction, said surface being produced by a process consisting essentially of applying a paint to said metal substrate and sintering said paint, said paint including a catalyst consisting of at least one or more oxides selected from the group consisting of:

(A) oxides of Group 1A or 2A of the Periodic Table, and

(B) compounds represented by the formula $(MA)_x(MB)_y(O)_z$

where

MA: element of Group 1A or 2A

MB: element of Group 3A or 4A

O: oxygen

x, y, z: interger said catalyst being the sole effective catalyst for decomposing oils and being present in an amount sufficient to effect such decomposition and an inorganic binder, a hardening agent, and a pigment.

4,515,863

POLYESTER FILM PRIMED WITH PHOSPHORUS-CONTAINING POLYESTER

R. Scott Caines, Greer, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 16, 1984, Ser. No. 590,399
Int. Cl.³ B32B *27/06, 27/36*
U.S. Cl. 428—480 **22 Claims**

1. An oriented self-supporting polyester film having a thin continuous primer coating having a thickness within the range of about 0.0098 to 0.059 grams per square meter on one or both sides thereof, said coating comprising a second polyester comprising the condensation product of:

(a) a dicarboxylic reactant consisting of isophthalic acid, the corresponding ester, acyl halide, and mixtures thereof or said dicarboxylic reactant in optional admixture with up to equal parts on a molar basis of (1) at least one aliphatic dicarboxylic acid, a corresponding acid anhydride, ester and acyl halide or mixtures thereof, (2) at least one other aromatic dicarboxylic acid, a corresponding acid anhydride, ester and acyl halide, or (3) mixtures of (1) and (2),

(b) at least one diol or polyoxyalkylene glycol, and

(c) a phosphorus acid reactant, wherein said second polyester is solid, branched, and contains repeating carbonyl-oxy units and phosphate units wherein each of said units is an integral part of said polyester primer coating chain.

4,515,864

SOLID METAL ARTICLES FROM BUILT UP SPLAT PARTICLES

Alfred R. E. Singer, Swansea, Wales, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom, London, England

Division of Ser. No. 92,956, Nov. 9, 1979, abandoned, which is a continuation of Ser. No. 921,761, Jul. 3, 1978, abandoned, which is a continuation of Ser. No. 754,844, Dec. 27, 1976, abandoned, which is a continuation of Ser. No. 589,599, Jun. 23, 1975, abandoned. This application Jul. 30, 1982, Ser. No. 403,413
Claims priority, application United Kingdom, Jun. 28, 1974, 28769/74
Int. Cl.³ B22F *3/06*
U.S. Cl. 428—546 **3 Claims**

1. A solid metal article consisting of a plurality of splat particles built up one upon another by a spray deposition process, said article being in the physical condition as deposited by the said process, such that

(i) the article as cast is substantially free from porosity;

(ii) the microstructure of the article exhibits crystal growth across the original splat particle boundaries;

(iii) the microstructure of the article exhibits a minimum of segregation of constituent materials; and

(iv) any oxides and other impurities present are distributed within the article, such that they are not concentrated at the boundaries of the constituent splat particles or crystal grains.

4,515,865

CORROSION-RESISTANT COATED FERROUS BODY

Dong-Sil Park, and Robert J. Zabala, both of Schenectady, N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 24, 1983, Ser. No. 525,780
Int. Cl.³ H01M *10/39;* **B32B** *15/18*
U.S. Cl. 428—610 **4 Claims**

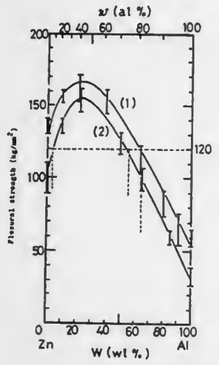


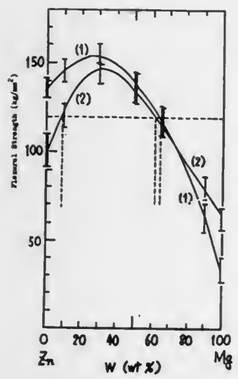
1. A coated ferrous metal body consisting essentially of a ferrous metal body having a diffusion bonded coating, said coated body being significantly resistant to corrosion and free of any significant polarization, said coated body being useful as a component in a sodium sulfur cell wherein said coating is in contact with said sulfur, the bulk of said coating consisting essentially of an alloy ranging from about 70% by weight to about 98% by weight molybdenum, up to about 5% by weight iron balance of at least about 1% by weight chromium, the outside surface of said coating or outside surface portion extending from said bulk portion consisting essentially of an alloy ranging from about 30% by weight to about 80% by weight chromium, up to about 1% by weight iron balance molybdenum, said outside surface or outside surface or outside surface portion being significantly richer in chromium than said bulk portion and containing sufficient chromium to make said coated body free of any significant polarization, and a diffusion bonding layer extending from said bulk portion into the ferrous metal body consisting essentially of MoCrFe alloy containing at least about 10% by weight molybdenum, at least about 5% by weight chromium and at least about 10% by weight iron.

4,515,866
FIBER-REINFORCED METALLIC COMPOSITE MATERIAL

Hideho Okamoto; Kohji Yamatsuta, both of Otsu, and Ken-ichi Nishio, Shiga, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 364,515, Mar. 31, 1982, abandoned. This application May 6, 1983, Ser. No. 492,048
Claims priority, application Japan, Mar. 31, 1981, 56-49019
Int. Cl.[3] C22C *1/09, 21/00*
U.S. Cl. 428—614 9 Claims



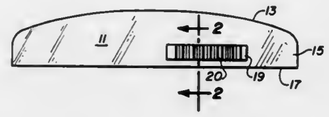


1. A fiber-reinforced metal composite material consisting essentially of a reinforcing material and matrix, said reinforcing material being an inorganic fiber containing at least two components selected from the group consisting of carbon, metal oxides, metal carbides, metal nitrides and metal borides, and said matrix being metal alloys comprising not less than 10% by weight of zinc and not more than 90% by weight of one element selected from the group consisting of aluminum and magnesium, provided that a metal alloy containing 94 to 96% by weight of zinc and 4 to 6% by weight of aluminum, a metal alloy containing 77 to 79% by weight of zinc and 21 to 23% by weight of aluminum, and a metal alloy containing 59 to 61% by weight of zinc and 39 to 41% by weight of aluminum are excluded.

4,515,867
METHOD FOR ABLATING A CODED MARKING INTO A GLASS WORKPIECE AND PRODUCT THEREOF

John N. Bleacher, Lititz, and Barry M. Cushman, Lancaster, both of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 20, 1982, Ser. No. 420,495
Int. Cl.[3] B32B *3/10, 5/16, 7/00, 19/04*
U.S. Cl. 428—204 10 Claims



1. In a method for producing a machine-readable coded marking in a surface of a glass workpiece, said method including

(a) coating a selected surface area of said glass workpiece with an undercoating comprising a first aqueous suspension of first pigment particles and a first alkali silicate binder,

(b) drying said undercoating,

(c) coating said dry undercoating with an overcoating comprising a second aqueous suspension of second pigment particles and a second alkali silicate binder,

(d) drying said overcoating, and

(e) recessing a plurality of related marks through said overcoating by selectively ablating said overcoating with a laser beam,

the improvement wherein said first suspension includes an operative proportion of mica particles, said proportion of mica being operative to reduce the tendency to spalling of said glass workpiece by said laser beam, and said second suspension is essentially free from mica particles.

4,515,868
HOMOGENEOUS, DUCTILE COBALT BASED HARDFACING FOILS

Debasis Bose, Randolph; Amitava Datta, Mendham; Nicholas J. DeChristofaro, Chatham, all of N.J., and Claude Henschel, Redwood City, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 285,882, Jul. 22, 1981, abandoned. This application Jul. 21, 1983, Ser. No. 515,679
Int. Cl.[3] B32B *15/01;* C22C *19/07*
U.S. Cl. 428—656 1 Claim

1. A hardfaced metal article, said article having been hardfaced with a homogeneous, ductile hardfacing foil composed of metastable material having at least 50 percent glassy structure and a composition consisting essentially of 0 to about 30.9 atom percent nickel, 0 to about 7.3 atom percent iron, 0 to about 26.3 atom percent chromium, 0 to about 1.3 atom percent tungsten, 0 to about 4 atom percent molybdenum, about 8 to about 13 atom percent boron, 1.7 to about 13 atom percent silicon, 0 to about 1.3 atom percent manganese, 0 to 4.5 atom percent carbon, and 39.4 to 70.3 atom percent cobalt plus incidental impurities with the proviso that the total of iron, cobalt, nickel, chromium, tungsten and molybdenum ranges from about 70 to 88 atom percent and the total of boron, silicon and carbon ranges from about 12 to 30 atom percent.

4,515,869
HOMOGENEOUS, DUCTILE NICKEL BASED HARDFACING FOILS

Debasis Bose, Randolph; Amitava Datta, Mendham; Nicholas J. DeCristofaro, Chatham, all of N.J., and Claude Henschel, Redwood City, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 285,883, Jul. 22, 1981, now abandoned. This application Jul. 21, 1983, Ser. No. 515,677
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.[3] C22C *19/05*
U.S. Cl. 428—656 1 Claim

1. A hardfaced metal article, said article having been hardfaced with a homogeneous, ductile hardfacing foil composed of metastable material having at least 50 percent glassy structure and a composition consisting essentially of 0 to about 22 atom percent cobalt, 0 to about 4 atom percent iron, 7 to about 23.3 atom percent chromium, 0 to about 16 atom percent tungsten, 0 to about 5 atom percent molybdenum, about 2.5 to about 20 13 atom percent boron, 0 to about 8 atom percent silicon, 0 to 3.68 atom percent carbon and 38 to 68 atom percent nickel plus incidental impurities with the proviso that the total of iron, cobalt, nickel, chromium, tungsten and molybdenum ranges from about 70 to 88 atom percent and the total of boron, silicon and carbon ranges from about 12 to 30 atom percent.

4,515,870
HOMOGENEOUS, DUCTILE IRON BASED HARDFACING FOILS

Debasis Bose, Randolph; Amitava Datta, Mendham; Nicholas J. DeCristofaro, Catham, all of N.J., and Claude Henschel, Redwood City, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 515,678, Jul. 21, 1983, abandoned, which is a continuation of Ser. No. 285,884, Jul. 22, 1981, abandoned. This application Sep. 19, 1984, Ser. No. 652,167
Int. Cl.[3] B22F *5/00;* C23C *1/10, 17/00*
U.S. Cl. 428—656 1 Claim

1. A hardfaced metal article, said article having been hardfaced with a homogeneous, ductile hardfacing foil composed of metastable material having at least 50 percent glassy structure and a composition consisting of 0 to about 25 atom percent cobalt, 0 to about 30 atom percent nickel, 0 to about 30 atom percent chromium, 0 to 5 atom percent tungsten, 0 to about 4 atom percent molybdenum, 4 to 17 atom percent boron, 0 to about 15 atom percent silicon, and 0 to about 5 atom percent carbon, the balance being iron plus incidental impurities with the proviso that the total of iron, cobalt, nickel, chromium, tungsten and molybdenum ranges from about 70 to 88 atom percent and the total of boron, silicon and carbon ranges from about 12 to 30 atom percent.

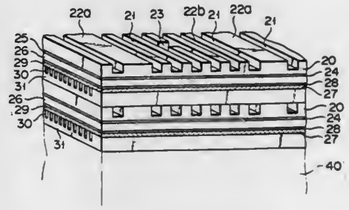
4,515,871
ELECTROCHEMICAL POWER GENERATOR

Tamotsu Shirogami, Yamato, and Mitsushi Ueno, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 16, 1983, Ser. No. 523,598
Claims priority, application Japan, Aug. 31, 1982, 57-149985
Int. Cl.[3] H01M *2/00*
U.S. Cl. 429—34 10 Claims

1. An electrochemical power generator which is comprised of a plurality of unit cells stacked with interconnectors interposed therebetween, said unit cells each being comprised of an anode comprising a porous carbon plate having on its one surface a purality of grooves constituting gas passages and on its other surface an anode catalyst layer; a cathode comprising a plate having opposed first and second surfaces, and having on said first surface a cathode catalyst layer and applied on its said second surface the powder of hydrophobic material comprising a fluoropolymer resin; and an electrolyte layer interposed betweeen said anode and said cathode in such a manner that it is in contact, on opposite surfaces, with said anode catalyst layer and said cathode catalyst layer; said electrolyte being prepared by impregnating an acidic electrolyte into an inorganic compound powder exhibiting heat and chemical resistance; said interconnectors each consisting of a high density carbon plate and having, on one surface which is in contact with said cathode, a plurality of grooves constituting gas passages for a gas consisting essentially of hydrogen as an anode-active material and an oxidizing gas as a cathode-active material; said electric chemical power generator characterized in that first and second ribs, which said second ribs are wider than said first ribs, are formed between adjacent grooves of said anode substrate, said second ribs being present for every 5-10 of said first ribs; and wherein catalyst is dispersed in said cathode substrate over a range extending from the surface of said cathode substrate bearing said catalyst layer to a point within said cathode substrate.

6. An electrochemical power generator comprising a plurality of unit cells stacked with interconnectors interposed therebetween said unit cells each being comprised of an anode which comprises a porous carbon plate having opposed surfaces and bearing on one surface a plurality of grooves constituting gas passages and on its opposed surface an anode catalyst layer; a cathode defining two opposed surfaces and having on one said surface a cathode catalyst layer and on the surface opposed thereto a hydrophobic material powder comprising a fluoropolymer resin; and an electrolyte layer interposed between said anode and said cathode in such a fashion that it is in contact, at opposed surfaces, with said anode catalyst layer and said cathode catalyst layer, said electrolyte being prepared by impregnating an acidic electrolyte into an inorganic compound powder which exhibits heat and chemical resistance; said unit cells being further characterized by said interconnectors each comprising a high density carbon plate defining opposed surfaces and having, on said surface in contact with said cathode a plurality of grooves defining gas passages for an anode-active material consisting essentially of hydrogen and a cathode-active material consisting essentially of an oxidizing gas and wherein first and second ribs wider than said first ribs, are formed between adjacent grooves in said anode substrate, said second ribs each being formed with a groove closed at both ends, said groove being filled with a paste formed by impregnating an inorganic compound powder exhibiting heat and acid resistance with a concentrated acid solution; and wherein said cathode catalyst is dispersed in said cathode substrate over a range extending from said cathode catalyst surface to a point located inside said cathode substrate.



4,515,872
BATTERY PACK

Shizuo Okano, Hyogo, Japan, assignor to Sanyo Electric Co., Ltd., Japan

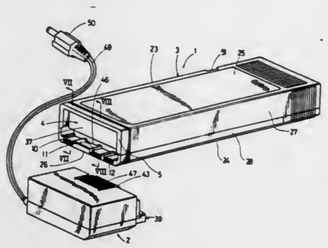
Filed Aug. 26, 1983, Ser. No. 526,854
Claims priority, application Japan, Sep. 9, 1982, 57-137507[U]
Int. Cl.[3] H01M *2/06*
U.S. Cl. 429—65 20 Claims

1. A battery pack comprising:

a case defining a chamber therein and having an end periph-

eral wall defining a recess having an opening at one end thereof on the exterior,

a battery assembly composed of a plurality of interconnected unitary cells and housed in the chamber of said case, said battery assembly having two terminals of opposite polarities, and



contact terminal means electrically connected to the terminals of said battery assembly and mounted on the inner surface of said end peripheral wall within the recess of the case.

4,515,873

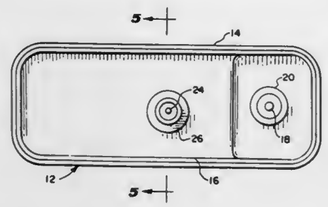
LITHIUM CELL HAVING CONTINUOUS DEPLETION GAUGE

Abel DeHaan, Pembrook Pines, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jul. 28, 1983, Ser. No. 518,200

Int. Cl.³ H01M *10/48*

U.S. Cl. 429—91 **4 Claims**



1. A lithium cell comprising:

an outer conductive housing;

at least one cathode member being positioned within the conductive housing and having two major surfaces one of which is in direct electrical contact with the conductive housing;

an insulative separator being positioned against the other major surface of the cathode member;

a lithium anode having first and second major surfaces, said first surface thereof is positioned adjacent to the insulative separator;

an anode lead electrically connected to the lithium anode, said lead extending out of the conductive housing and being electrically insulated from the housing;

an elongate electrically resistive sensing element formed of a material which exhibits a resistance which is dependent upon the length thereof and having an electrical resistance greater than the electrical resistance of lithium, said elongated sensing element being disposed within said lithium anode so as to extend generally in a direction from the first major surface of said lithium anode to the second major surface of said anode, said sensing element comprising an electrically resistive strip member and an insulative strip member, said electrically resistive strip member having an outer surface and an inner surface, said outer surface facing in a direction toward said first major surface of said lithium anode and said inner surface facing in a direction toward said second major surface of said lithium anode, said outer surface being in direct electrical contact with said lithium anode until said lithium anode is consumed, and said insulative strip member being disposed on said inner surface of said electrically resistive strip member and insulating said electrically resistive strip member from said lithium anode; and,

an electrical conductor connected to said sensing element and extending out of said conductive housing and being electrically insulated from said housing so that as the lithium anode is consumed by discharge of the cell the electrical resistance between the conductive housing and the electrical conductor provides a positive indication of the level of discharge of the cell.

4,515,874

ELECTROCHEMICAL STORAGE CELL

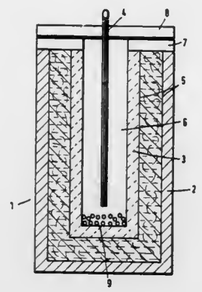
Günther Steinleitner, Schriesheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Ag, Mannheim, Fed. Rep. of Germany

Filed Apr. 15, 1982, Ser. No. 368,645

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117382

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—104 **6 Claims**



1. In an electrochemical storage cell of the alkali metal and chalcogen type with at least one anode space for the alkali metal anolyte, and a cathode space for the chalcogen catholyte, with the anode space and the cathode space separated from each other by an alkali ion-conducting solid electrolyte wall, the improvement comprising the addition in the anode space of sodium and of a capturing material with O_2-getter properties in an amount sufficient to absorb oxygen bound to water which is dragged in the cell with the hygroscopic solid electrolyte or oxygen which is diffused into the anodic space, wherein the capturing substance is a metal selected from the group consisting of metals of the third main group of the periodic system of the elements, and the amount of capturing agent relative to the sodium is a mass ratio between 1:10 and 1:100.

4,515,875

INORGANIC RECHARGEABLE NON-AQUEOUS CELL

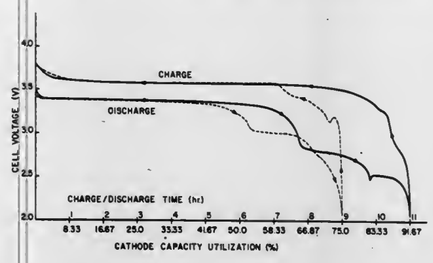
William L. Bowden, Nashua, N.H., and Arabinda N. Dey, Needham, Mass., assignors to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 330,128, Dec. 14, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,690

Int. Cl.³ H01M *6/14, 4/36*

U.S. Cl. 429—196 **7 Claims**

6. A totally inorganic rechargeable non-aqueous electrochemical cell comprising a lithium anode and an electrolyte consisting essentially of $LiAlCl_4$ dissolved in SO_2 characterized in that said cell contains a cathode comprised of at least 60% by weight of $CuCl_2$ with said $CuCl_2$ being admixed with a conductive carbon material and wherein said $CuCl_2$ discharges in preference to said sulfur dioxide.



4,515,876

X-RAY LITHOGRAPHY MASK AND METHOD FOR FABRICATING THE SAME

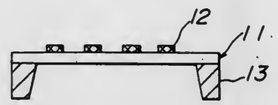
Hideo Yoshihara, Yokohama; Akira Ozawa, Ebina; Misao Sekimoto, Yokohama, and Toshiro Ono, Isehara, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Jul. 15, 1983, Ser. No. 513,954

Claims priority, application Japan, Jul. 17, 1982, 57-124714; Jun. 24, 1983, 58-112916

Int. Cl.³ G03F *9/00*

U.S. Cl. 430—5 **13 Claims**





7. A method for fabricating an X-ray lithography mask, comprising

a first step which includes placing a specimen having an X-ray mask substrate on a specimen table in a sputtering apparatus having means for supplying a rare gas and means for controlling the pressure of the rare gas so that the specimen is electrically insulated from ground potential so that said specimen is electrically floating with respect to ground potential;

a second step which includes forming a layer of a metal having a high melting point directly on said X-ray mask substrate in said apparatus while subjecting said specimen to an RF power field and exposing said specimen to the rare gas and maintaining the flow rate and pressure of the rare gas at values selected to cause the layer of high melting point metal to contain granular crystal graips in the direction of the thickness of that layer, the granular crystal grains causing the layer to have a substantially zero internal stress, said step of forming including controlling the RF power field and the pressure of the rare gas for maintaining the surface of said specimen at a floating potential in the range of −10 to −20 V; and

a third step of forming an X-ray absorber layer with a predetermined pattern from said high melting point metal by reactive sputter etching.

4,515,877

IMAGE-RECORDING MATERIALS AND IMAGE-RECORDING CARRIED OUT USING THESE TO PRODUCE AN OPTICAL MASK

Helmut Barzynski, Bad Durkheim, and Klaus Holoch, Bobenheim-Roxheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,327

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243943

Int. Cl.³ G03F *9/00*

U.S. Cl. 430—5 **7 Claims**

1. A resist film which comprises a dimensionally stable base (B), which is transparent to actinic light in the wavelength range from 300 to 420 nm, and a mask-forming layer (ML) which is applied on the base, wherein the said layer (ML) is sensitive to heat radiation and contains a thermochromic system which, when irradiated with an IR laser having a wavelength greater than 1.00 μm, undergoes an irreversible change in its absorption spectrum in the range from 300 to 420 nm so that the optical density of the mask-forming layer (ML) in this wavelength range changes by not less than 1.3 units.

7. A process for the production of an optical mask, wherein a resist film consisting of a dimensionally stable base (B), which is transparent to actinic light in the wavelength range from 300 to 420 nm, and a mask-forming layer (ML) as claimed in claim 1 is exposed imagewise to an IR laser having a wavelength greater than 1.00 μm.

4,515,878

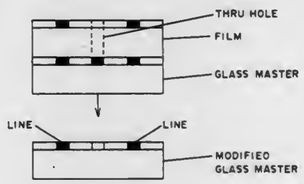
PRINTED CIRCUIT BOARD MODIFICATION PROCESS

Douglas J. Hall, Newark Valley; Robert F. Langley, Vestal, and Edwin L. Thomas, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 412,653, Aug. 30, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 587,727

Int. Cl.³ G03F *9/00*

U.S. Cl. 430—5 **5 Claims**



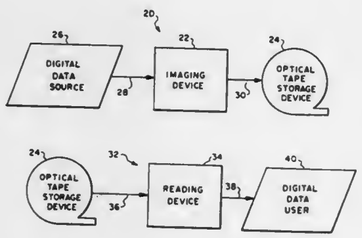
1. A process for modifying at least a portion of a pattern of circuit lines and lands on a printed circuit board in accordance with engineering change data, said pattern of circuit lines and lands on said circuit board being produced from a glass master having an emulsion pattern corresponding to said circuit lines and lands, comprising the steps of:

making a film copy of said glass master, said film copy including a complete image of said pattern of circuit lines and lands on said circuit board;

drilling a hole through a portion to be modified of said image of said pattern of circuit lines and lands on said film copy under control of the engineering change data, said portion of said image corresponding to said portion to be modified of said emulsion pattern on said glass master;

verifying the accuracy of the drilled hole;
registering said film copy over said glass master with said hole in said film copy in alignment with said portion to be modified of said emulsion pattern of said glass master;
changing said portion of said emulsion pattern on the glass master by using said hole in said film copy thereby producing a modified glass master;
verifying the accuracy of the modified glass master; and
using the modified glass master to produce a modified printed circuit board.

4,515,879
OPTICAL MASS MEMORY SYSTEM USING ELECTROPHOTOGRAPHY
Manfred R. Kuehnle, New London, N.H.; Lysle D. Cahill, Dayton; John C. Butler, Centerville, both of Ohio, and Lawrence J. Bassuk, Des Plaines, Ill., assignors to Coulter Systems Corporation, Bedford, Mass.
Filed Apr. 28, 1983, Ser. No. 489,309
Int. Cl.³ G03G *13/22*
U.S. Cl. 430—31 **23 Claims**



1. For use in an optical mass memory system, a device for recording digital data, comprising:
a source of radiant energy providing a beam of radiant enery;
modulator means for modulating said beam in response to said digital data to form at least one ray of radiant energy representing said digital data;
electrophotographic imaging means for producing a toned image representing said digital data, the imaging means including an electrophotographic member having substrate means carrying thin film coatings at least one of which is a thin film coating of a photoconductive material less than 1 micron in thickness, and means contiguous to the coating to facilitate uniform charging thereof before exposure, said coating being very dense, wholly inorganic, microcrystalline, the crystals of said coating being generally uniformly oriented vertically relative to the surface of the substrate means, substantially free of effective barrier layers between the crystals, the coating having light transmissivity of at least 70 percent, having a dark resistivity of at least 10^{12} ohm-centimeters and a ratio between dark and light resistivity of at least 10^4 and being electrically anisotropic whereby said coating is capable of accepting a rapid charge and retaining same sufficient to enable toning, the imaging means further including charging, imaging, toning and transfer stations located sequentially adjacent said member, the surface of said member being charged at said charging station with a uniform electrical charge, the charged surface then being exposed to said rays at said exposing station to form an electrostatic latent image of discharged elements on the surface of said member, the elements representing said digital data, and the latent image being developed at said toning station with toner particles to result in a toned image that is an optically discernible physical representation of said digital data;
a storage medium in the form of a tape of at least partially resinous material, a portion of which is arranged adjacent said electrophotographic member at said transfer station, said transfer station including transfer means for heating and urging said medium against said member to transfer the toned image to the medium with the transferred toned image retaining its representation of the digital data after transfer to said medium; and
means for moving said member and medium relative to one another so that said toned image continuously is transferred to fresh portions of said medium and the portions of said member from which said toned image is transferred is reused for forming said toned image.

4,515,880
REFLEX IMAGING PROCESS WITH MAGNETIC IMAGES
Stephen L. Gaudioso, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 24, 1980, Ser. No. 190,112
Int. Cl.³ G03G *19/00*
U.S. Cl. 430—39 **10 Claims**

1. A method of developing latent magnetic images obtained by reflex thermomagnetic recording comprising the steps of:
(a) erasing and then magnetizing a reflex imaging member having a support transparent to light and particulate hard magnetic material opaque to said light dispersed in discrete areas bound to said support;
(b) placing a document to be copied in contact with said imaging member;
(c) directing light through said imaging member to said document and back to said imaging member by imagewise reflection from said document to expose said magnetic material in said imaging member and imagewise demagnetize said imaging member;
(d) separating said document from said imaging member; and
(e) contacting said imaging member with magnetizable toner particles which have been subjected to a D.C. magnetizing field having a magnetic strength of between about 200 gauss and about 5,000 gauss whereby said toner particles retain a residual internal magnetic field after removal of said magnetizing field.

4,515,881
ELECTROPHOTOGRAPHIC BISAZO PHOTOSENSITIVE MEMBER
Kiyoshi Sawada; Satoshi Goto; Akira Kinoshita, and Osamu Sasaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1983, Ser. No. 549,589
Int. Cl.³ G03G *5/06, 5/14*
U.S. Cl. 430—58 **23 Claims**

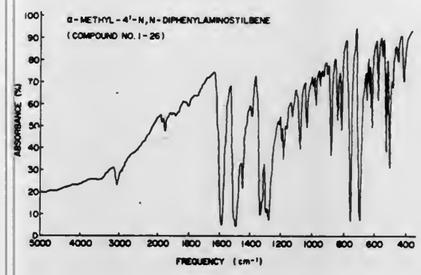


1. An electrophotographic photosensitive member comprising an electroconductive support and a photosensitive layer on said support,
R_2 is an aryl group; and
R_3 and $R_{3'}$ are each an alkyl group, an alkenyl group, an aralkyl group or an aryl group.
2. The electrophotographic photosensitive member according to claim 1, wherein the photosensitive layer comprises a carrier generating layer and a carrier transporting layer, and said carrier generating layer contains the bisazo compound.

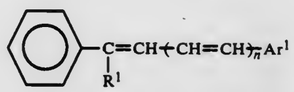
4,515,882
OVERCOATED ELECTROPHOTOGRAPHIC IMAGING SYSTEM
Joseph Mammino, Penfield; Donald S. Sypula; Dennis A. Abramsohn, both of Pittsford; Martin A. Abkowitz, Webster, and Merlin E. Scharfe, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 3, 1984, Ser. No. 567,840
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—58 **15 Claims**

1. An electrophotographic imaging member comprising at least one photoconductive layer and an overcoating layer comprising a film forming continuous phase comprising charge transport molecules and finely divided charge injection enabling particles dispersed in said continuous phase, said overcoating layer having a thickness between about 1 micrometer and about 15 micrometers and being substantially transparent to activating radiation to which said photoconductive layer is sensitive and substantially electrically insulating at low electrical fields.

4,515,883
STILBENE DERIVATIVES, DISTYRYL DERIVATIVES AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING AT LEAST ONE OF THE DERIVATIVES
Masaomi Sasaki, Susono, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 30, 1984, Ser. No. 595,022
Claims priority, application Japan, Apr. 14, 1983, 58-64526; Apr. 14, 1983, 58-64527; Apr. 14, 1983, 58-64528; Apr. 14, 1983, 58-64529
Int. Cl.³ G03G *5/06, 5/14*
U.S. Cl. 430—58 **9 Claims**

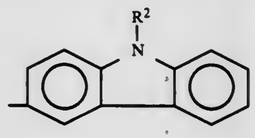


1. An electrophotographic photoconductor comprising an electroconductive support material and a photosensitive layer overlayed thereon containing at least one compound selected from the group consisting of:
(i) stilbene derivatives of formula (I)

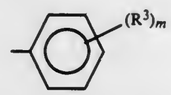


(I)

wherein R^1 represents an alkyl group or an aralkyl group, Ar^1 represents an unsubstituted or substituted naphthyl group, an unsubstituted or substituted anthryl group, or



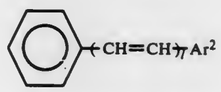
(in which R^2 represents an alkyl group or an unsubstituted or substituted phenyl group), or



(in which R^3 represents hydrogen, an alkyl grup, an alkoxy group, an alkylenedioxy group, halogen or a substituted amino group represented by

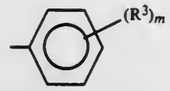


wherein R^4 and R^5 each represent an alkyl group, an unsubstituted or substituted aralkyl group, or an unsubstituted or substituted aryl group, m is an integer of 1, 2 or 3, and when m is an integer of 2 or 3, R^3's may be the same or different), and n is an integer of 0 or 1, and
(ii) distyryl derivatives of formula (II)



(II)

wherein Ar^2 represents an unsubstituted or substituted naphthyl group,



(in which R^3 represents hydrogen, an alkyl group, an alkoxy group, an alkylenedioxy group, halogen or a substituted amino group represented by

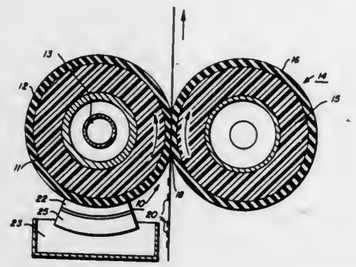


wherein R^4 and R^5 each represent an alkyl group, an unsubstituted or substituted aralkyl group, or an unsubstituted or substituted aryl group, m is an integer of 1, 2 or 3, and when m is an integer of 2 or 3, R^3's may be the same or different), and l is an integer of 2 or 3.

4,515,884
FUSING SYSTEM WITH UNBLENDED SILICONE OIL
John R. Field, Red Creek; Haribhajan S. Kocher, Penfield, and Arthur C. Martellock, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 21, 1982, Ser. No. 420,996
Int. Cl.³ G03G *13/20*
U.S. Cl. 430—99 **19 Claims**

1. The method of fusing toner images to a substrate comprising providing a fusing member having a silicone elastomer fusing surface, heating said fuser member to an elevated temperature to fuse said toner to said substrate,
applying directly to said silicone elastomer fusing surface in non-emulsified form an unblended polydimethyl siloxane

having a kinematic viscosity of from about 7,000 centistokes to about 20,000 centistokes, and contacting the



toner image on said substrate with said heated fusing member to thereby fuse said toner image to said substrate.

4,515,885

DIAZO VESICULAR IMAGING FILMS WITH NITRATE SALT

Kenneth G. Gatzke, Lake Elmo, and John M. Winslow, South Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 1, 1983, Ser. No. 518,955
Int. Cl.³ G03C *1/60*
U.S. Cl. 430—175 **18 Claims**

1. A vesicular imaging film comprising a transparent or translucent substrate having on at least one surface thereof a photosensitive layer at a pH level which is not above 8.5 comprising on a weight basis of said photosensitive layer:

a. 70–95% by weight of a water-soluble binder consisting essentially of poly(vinyl alcohol)

b. 0.08 to 3.5% by weight of a photosensitive diazo material, and

c. 4.5 to 25% by weight of a nitrate salt.

4,515,886

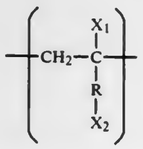
PHOTOSENSITIVE COMPOSITIONS

Tsuguo Yamaoka, Chiba, and Mitsutoshi Fukuda, Yamaguchi, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,872
Claims priority, application Japan, Feb. 16, 1983, 58-22873; Feb. 17, 1983, 58-23764
Int. Cl.³ G03C *1/71, 1/72*
U.S. Cl. 430—270 **17 Claims**

1. A photosensitive composition consisting essentially of a solution of:

(A) a photosensitive high polymer or copolymer consisting essentially of repeating units of the formula:



wherein X_1 is hydrogen, a halogen atom, C_1–C_4 haloalkyl group, or a C_1–C_4 alkyl group; X_2 is a halogen atom or a C_1–C_4 haloalkyl group; and R is an aromatic or heterocyclic ring; and

(B) a photosensitizing organic compound selected from the group consisting of p-methoxybenzoic acid, p-amyloxybenzoic acid, anthraquinone, 3-chloroanthraquinone, hexane diamine, acetanilide, aromatic nitro compounds, arylamines, alicyclic amino compounds, and heterocyclic compounds.

4,515,887

PHOTOPATTERNABLE DIELECTRIC COMPOSITIONS, METHOD FOR MAKING AND USE

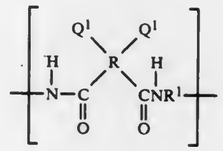
Gary C. Davis, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.

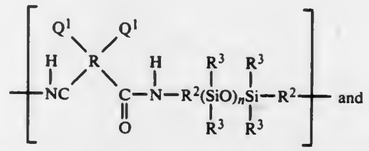
Filed Aug. 29, 1983, Ser. No. 527,581
Int. Cl.³ G03C *1/70*
U.S. Cl. 430—283 **4 Claims**

1. A photosensitive silicone-polyamide acid composition comprising by weight,

(A) up to 95% of an inert organic solvent,

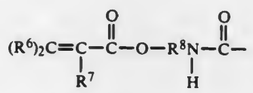
(B) at least 5% of a modified silicone-aromatic polyamide acid consisting essentially of chemically combined units of the formulas,





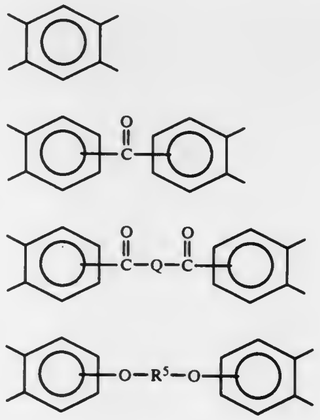
and

(C) an effective amount of sensitizer, where Q^1 is a monovalent radical selected from carboxy and acrylate amide groups of the formula,



and there are at least 10 mole percent of the acrylate amide groups based on the total carboxy and acrylate amide groups in the silicone-aromatic polyamide,

where R is a tetravalent $C_{(6-30)}$ aromatic radical selected from



R^1 is a divalent $C_{(2-13)}$ organic radical, R^2 is a divalent $C_{(2-8)}$ organo radical, R^3 is selected from $C_{(1-3)}$ monovalent hydrocarbon radicals and substituted $C_{(1-13)}$ monovalent hydrocarbon radicals, Q is a divalent radical having the formula,

$$-ZR^4Z-,$$

Z is selected from —O— and —NH—, R^4 and R^5 are selected from $C_{(2-13)}$ organic radicals, R^6 and R^7 are selected from hydrogen and $C_{(1-8)}$ alkyl radicals, R^8 is a $C_{(1-13)}$ divalent organo radical and n is an integer equal to 1 to 20 inclusive.

4,515,888

CYANINE DYES FOR SENSITIZING SILVER HALIDE EMULSIONS TO INFRARED RADIATION AND PHOTOGRAPHIC ELEMENTS INCLUDING THEM

Paolo Beretta, Ferrania, Italy, and Jonathan P. Kitchin, Ware, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 30, 1983, Ser. No. 509,347
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—584 **17 Claims**

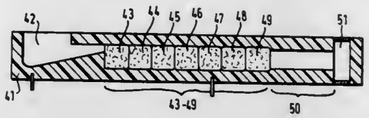
1. A photographic emulsion including gelatin and silver halide grains dispersed therein having grains associated with sensitizing dyes to make them sensitive to infrared rays, characterized by the sensitizing dyes being cyanine dyes including two nitrogen-containing heterocyclic nuclei linked to each other through a rigidized conjugated methine chain to form an amidinium-ion resonance system, said chain having 7, 9 or 11 carbon atoms and at least one of said nuclei is 5-methyl-6-methoxy-benzothiazole.

4,515,889

METHOD FOR CARRYING OUT ANALYTICAL DETERMINATIONS

Sigmar Klose, Berg; Fritz Stähler, Tutzing; Hans Lange, Lampertheim, and Wolfgang Kleemann, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,205
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044385
Int. Cl.³ G01N *33/48, 33/54, 21/07*
U.S. Cl. 435—4 **7 Claims**



1. A method of carrying out an analytical determination on a liquid sample, comprising:

(a) predisposing at least one dry reagent which is soluble in the liquid sample in at least some of a plurality of interconnected small hollow spaces;

(b) centrifugally forcing the liquid sample into and through the plurality of interconnected small hollow spaces;

(c) selecting the centrifugal force and the flow resistance of the plurality of interconnected small hollow spaces with regard to one another and so centrifuging for a period of time sufficient to allow the dry reagent to dissolve substantially in the liquid sample and to mix as reaction components in the plurality of interconnected small hollow spaces before they pass therefrom;

(d) centrifugally passing the reaction components from the plurality of interconnected small hollow spaces to a measuring chamber; and

(e) measuring a parameter of the reaction components in the measuring chamber to form the analytical determination.

4,515,890

IMMUNOASSAY OF TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE

George L. Manderino, Gurnee, and Adoracion F. Suarez, Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 440,129
Int. Cl.³ C12Q *1/66;* G01N *33/54, 33/58*
U.S. Cl. 435—7 **10 Claims**

1. A method for quantitatively determining terminal deoxynucleotidyl transferase (TdT) antigen in a sample comprising:

(a) extracting the TdT antigen from the sample by treating the sample with an effective amount of an extractant composition comprising a nonionic surfactant, anticoagulant and a reducing agent which stabilizes TdT by preventing intermolecular disulfide bond formation of the TdT and preventing oxidation of TdT in a buffered medium;

(b) contacting the extracted TdT antigen with a solid support coated with anti-TdT thereby forming an antigen-anti-TdT complex on the solid support;

(c) treating the antigen-antibody complex on the solid support with a labeled anti-TdT antibody specific for TdT antigen to form an antibody-antigen-anti-TdT complex on the solid support; and

(d) determining the amount of antibody-antigen-anti-TdT complex formed as a measure of TdT antigen present in the sample.

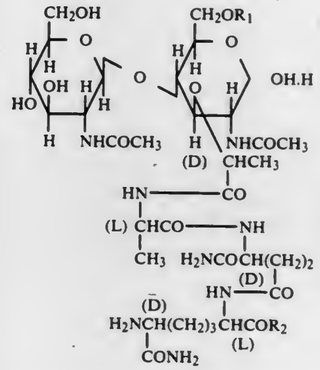
4,515,891

PROCESS FOR THE PRODUCTION OF DISACCHARIDE-TRIPEPTIDE AND DISACCHARIDE-TETRAPEPTIDE

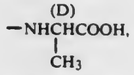
Kanae Yokogawa, Nara; Shozo Kotani, Monoh; Shigeo Kawata, Kobe, and Yoshiyuki Takase, Amagasaki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 4, 1983, Ser. No. 455,581
Claims priority, application Japan, Jan. 22, 1982, 57-9237
Int. Cl.³ C12P *21/02, 21/06;* C12N *9/48, 9/52*
U.S. Cl. 435—69 **13 Claims**

1. A process for the production of a disaccharide-tripeptide and disaccharide-tetrapeptide of the formula:



wherein R_1 is hydrogen or acetyl, R_2 is hydroxy or



and (D) and (L) designate configuration, which comprises applying a purified endo-N-acetylmuramidase from *Streptomyces globisporus* and a purified D-alanyl-meso-2,6-diaminopimelic acid endopeptidase from *Streptomyces nitroporeus* SK

(FERM BP-216) or *Streptomyces globisporus,* to hydrolyze selectively cell walls of *Lactobacillus plantarum* or *Corynebacterium diphtheriae,* which cell walls contain a muramic acid moiety wherein the amino group is acetylated, isoglutamine and meso-2,6-diaminopimelic acid having an amidated carboxyl group as constituents of cell wall peptidoglycan, and isolating the resultant product in the form of a single compound.

4,515,892

FERMENTATION PROCESS

Nai Y. Chen, Titusville, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 230,461, Feb. 2, 1981, Pat. No. 4,420,561. This application Oct. 28, 1983, Ser. No. 546,331

The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.

Int. Cl.³ C12P *7/06*

U.S. Cl. 435—161 **9 Claims**

1. In an ethanol fermentation process in which an aqueous solution of fermentable sugar is converted by an ethanol-producing microorganism to a dilute aqueous solution of ethanol with the ethanol being present in the solution at a concentration which does not exceed a predetermined maximum level, said predetermined maximum level of ethanol being selected to be that which is below the level of ethanol causing fermentation to selectively cease, an improvement is provided which comprises selectively sorbing ethanol present in the solution during fermentation with a hydrophobic crystalline aluminosilicate zeolite having a silica to alumina ratio of greater than about 12 and a constraint index within the range of 1 to 12 so that the non-sorbed ethanol present in the solution does not exceed the predetermined maximum level of concentration therein, and thereafter desorbing sorbed ethanol from the zeolite by stripping said zeolite with carbon dioxide obtained from the ethanol fermentation process.

4,515,893

HYBRID CELL LINE FOR PRODUCING COMPLEMENT-FIXING MONOCLONAL ANTIBODY TO HUMAN T CELLS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 33,669, Apr. 26, 1979, Pat. No. 4,361,549. This application Oct. 4, 1982, Ser. No. 432,452

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.³ C12N *5/00, 15/00*

U.S. Cl. 435—240 **7 Claims**

1. An IgG monoclonal-antibody-producing hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human T cells, which antibody:

(a) reacts with essentially all normal human peripheral T cells and cutaneous T lymphoma cells, but not with normal human peripheral B cells, null cells or macrophages;

(b) reacts with from about 5% to about 10% of normal human thymocytes;

(c) reacts with leukemic cells from humans with T cell chronic lymphoblastic leukemia but does not react with leukemic cells from humans with T cell acute lymphoblastic leukemia, null cell acute lymphoblastic leukemia, or B cell chronic lymphatic leukemia;

(d) reacts weakly with the human T cell line HJD-1 but does not react with CEM, Laz 191, or HMl;

(e) does not react with the Epstein-Barr virus-transformed human B cell lines Laz 007, Laz 156, Laz 256, or SB; and

(f) fixes complement.

4,515,894

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO HUMAN T CELLS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 22,132, Mar. 20, 1979, Pat. No. 4,363,799. This application Oct. 4, 1982, Ser. No. 432,453

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.³ C12N *5/00, 15/00*

U.S. Cl. 435—240 **7 Claims**

1. An IgG monoclonal-antibody-producing hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human T cells, which antibody:

(a) reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells or macrophages;

(b) reacts with from about 5% to about 10% of normal human thymocytes;

(c) reacts with leukemic cells from humans with T cell chronic lymphoblastic leukemia but does not react with leukemic cells from humans with T cell acute lymphoblastic leukemia;

(d) exhibits a pattern of reactivity with the human T cell lines HJD-1, CEM, and HSB-2 shown in FIG. 4; and

(e) does not react with Epstein-Barr virus-transformed human B cell lines.

4,515,895

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO HUMAN HELPER T CELLS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 33,639, Apr. 26, 1979, Pat. No. 4,381,295. This application Oct. 4, 1982, Ser. No. 432,459

Int. Cl.³ C12N *5/00, 15/00*

U.S. Cl. 435—240 **7 Claims**

1. An IgG monoclonal-antibody-producing hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human T cells, which antibody:

(a) reacts with essentially all normal human peripheral helper T cells (being about 55% of all normal human peripheral T cells), but not with normal human peripheral B cells, null cells or macrophages;

(b) reacts with about 80% of normal human thymocytes;

(c) does not react with leukemic cells from humans with T cell chronic lymphoblastic leukemia, B cell chronic lymphoblastic leukemia, T cell acute lymphoblastic leukemia, or null cell acute lymphoblastic leukemia;

(d) reacts with the human T cell line CEM, but not with HJD-1, Laz 191, or HM1;

(e) does not react with Epstein-Barr virus-transformed human B cell lines Laz 007, Laz 156, Laz 256, or SB;

(f) reacts with about 55% of Rhesus monkey peripheral T cells;

(g) fixes complement; and

(h) defines a T cell population ($OKT4^+$) which is unreactive with anti-TH_2 serum and is only minimally cytotoxic.

4,515,896

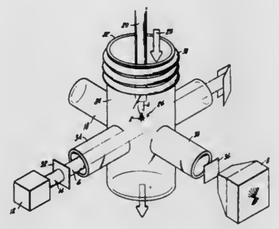
FLUORESCENT ADDITIVES FOR THE DETERMINATION OF CONDENSED AND VAPOR PHASES IN MULTIPHASE SYSTEMS

Lynn A. Melton, Richardson, Tex., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1983, Ser. No. 560,729

Int. Cl.³ G01N *21/63, 21/64*

U.S. Cl. 436—2 **4 Claims**



1. A method for determining the spatial and phase distribution of a liquid-vapor multiphase fluid comprising:

adding a fluorescent monomer and a quencher to a fluid,

dispersing the fluid to produce a liquid-vapor multiphase fluid,

exciting the monomer by directing an energy source of a proper wavelength at the dispersed fluid, the excited monomer then combines with the quencher to produce a fluorescent exciplex in the dispersed fluid, determining the spatial and phase distribution of the dispersed fluid by detecting the relative fluorescence of both the fluorescent monomer and exciplex in the dispersed fluid, said fluorescent monomer being present primarily in the vapor phase and said fluorescent exciplex being present primarily in the liquid phase.

4,515,897

CRYSTALLIZING GLASS SOLDERS AND STRIPPING FILMS WITH SUCH GLASS SOLDER IMPRINTED THEREON

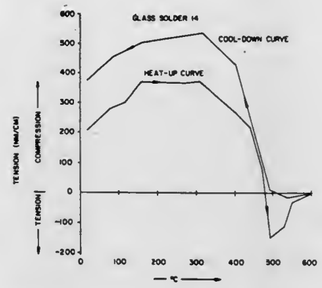
Werner Sack, and Werner Kiefer, both of Mainz, Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jan. 23, 1984, Ser. No. 572,998

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302774; Jan. 28, 1983, 8302243[U]

Int. Cl.³ C03C *7/02, 3/22, 3/10, 3/04*

U.S. Cl. 501—15 **5 Claims**



1. A partially crystallizing glass solder, exhibiting, after having been sintered at a temperature of greater than 850° C. from glass powder larger than 100 μm, thermal expansion coefficients in the range of 20°–500° C. from −23.5 to $34.3 \cdot 10^{-7} \cdot K^{-1}$, differential thermoanalysis $peak_{max}$ temperatures (at a heating rate of 2.7 K/min or 6 K/min) lying below 710° C. and crystal phases consisting predominantly of h-quartz mixed crystal phase, and consisting essentially of, calculated as oxide weight percents, the following:

SiO_2	23.0–44.0 Wt. %,
Al_2O_3	20.0–37.0 Wt. %,
Li_2O	5.5–11.0 Wt. %,
B_2O_3	3.0–20.0 Wt. %,
PbO	0–36.0 Wt. %,
Na_2O	0–1.0 Wt. %,
K_2O	0–1.5 Wt. %,
F	0–0.1 Wt. %,
TiO_2	0–4.0 Wt. %,
MgO	0–3.5 Wt. %,
CoO	0–2.0 Wt. %,
$B_2O_3 + PbO + Na_2O + K_2O + F + TiO_2$	8.5–50.0 Wt. %.

4,515,898

GLASS BONDING MEANS AND METHOD

Earl K. Davis, Tempe; James E. Drye, and David J. Reed, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 298,435, Sep. 1, 1981, abandoned. This application May 25, 1984, Ser. No. 614,573

Int. Cl.³ C03C *3/10, 3/12*

U.S. Cl. 501—15 **3 Claims**

1. A glass material consisting essentially of a composition by weight percent of:

GeO_2	4–14
SiO_2	0–4
PbO	50–80
PbF_2	0–7
B_2O_3	11–17
Al_2O_3	4–9
ZnO	0–7
V_2O_5	0.6–3
CdO	0–7

and having a coefficient of thermal expansion in the range $84–87 \times 10^{-7}$/°C. from 25° to 300° C.

4,515,899

STEAM REGENERATION OF PHOSPHORUS TREATED VANADIUM-PHOSPHORUS-OXYGEN CATALYSTS

Gaylon T. Click, Pearland, and Bruno J. Barone, Houston, both of Tex., assignors to Denka Chemical Corporation, Houston, Tex.

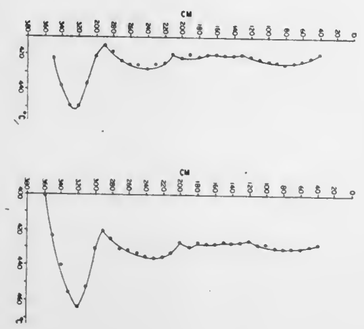
Filed Dec. 14, 1983, Ser. No. 561,320

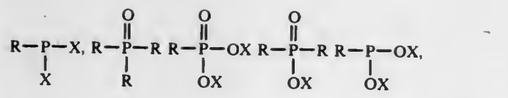
Int. Cl.³ B01J *27/28;* **C07D** *307/60*

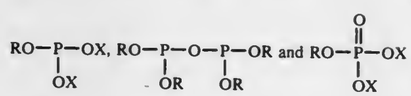
U.S. Cl. 502—35 **16 Claims**

1. In a method for regenerating a vanadium-phosphorus-oxygen vapor phase oxidation catalyst used in the production of maleic anhydride from n-C_4 hydrocarbons containing P:V in an atomic ratio of ½ to 3:1 comprising contacting said catalyst with phosphorus compound of phosphorus halide, phosphorus oxyhalide, organic phosphines, organic phosphites, organic phosphates or mixtures thereof at a temperature in the range of about 0° to 600° C., whereby said catalyst exhibits a first yield wherein the improvement comprises thereafter contacting said catalyst with a flow of steam at a temperature in the range of about 300° C. to about 600° C. in an amount and for sufficient duration such that said catalyst exhibits a second yield greater than said first yield.

10. The method according to claim 1 wherein said phosphorus compound is an organo-phosphorus compound selected from the group consisting of







wherein R is phenyl or an alkyl radical of one to 6 carbon atoms and X is H or R.

14. The method according to claim 1 wherein said phosphorus compound is an alkyl ester of phosphoric acid having the formula $(R'O)_3P{=}O$ wherein R' is hydrogen or an alkyl radical having one to six carbon atoms at least one R' being an alkyl radical.

4,515,900

SORBENT USEFUL IN A VISBREAKING TREATMENT OF CARBO-METALLIC OILS

William P. Hettinger, Jr., and Hubert W. Beck, both of Russell, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 281,797, Jul. 9, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,100

Int. Cl.³ B01J *21/16*

U.S. Cl. 502—63 **8 Claims**

1. A composition of matter comprising a clay of at least 0.4 cc/g pore volume prepared by slurring kaolinite clay with a high pore volume producing dispersant material which will thermally decompose, spray drying the slurry of clay and dispersant to form microspherical solids, heating said microspherical solids to an elevated temperature over a time period up to about 3 hours and thereafter slowly cooling the heated solids to about 300° F. over a time period up to about 16 hours.

2. The composition of claim 1 wherein the thermally decomposable dispersant material is a material selected from the group of materials comprising, sugar, carbon black, a thermally decomposable organic material, a thermally decomposable inorganic material such as salts of a molecular weight and structure providing desired pore size upon decomposition.

4. A method for preparing a solid sorbent clay particles of at least 0.4 cc/g pore volume which comprises,

forming a slurried mixture of kaolinite and sodium pyrophosphate in water,

adding alpha monhydrate alumina to said slurry during agitated mixing of the slurry,

adding sulfuric acid and water slowly to the stirred slurry to provide the slurry with a pH of about 3, spray drying the pH adjusted slurry at a temperature up to about 750° F. to form microspherical solids, heating the microspherical solids to an elevated temperature, and recovering a cooler clay sorbent particle material comprising an alumina binder and a pore volume of at least 0.5 cc/gm.

6. The solid clay sorbent particles of claim 4 to which one or more metals for immobilizing vanadium is added during preparation of the solids.

4,515,901

METHOD OF PREPARING PILLARED, INTERLAYERED CLAY CATALYST USING SOLUBLE CARBOHYDRATES

Azza A. Elattar, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 17, 1983, Ser. No. 552,900

Int. Cl.³ B01J *21/16*

U.S. Cl. 502—63 **24 Claims**

1. A method of preparing an interlayered pillared clay comprising the steps of mixing a clay with a polar solvent, a soluble carbohydrate, and a soluble pillaring agent; drying said mixture and then heating said mixture at a temperature between 100° to 600° C. to decompose said carbohydrate and form said interlayered pillared clay.

6. The method of claim 1 wherein said pillaring agent comprises a metallic or organometallic compound.

7. The method of claim 6 wherein said metallic compound is selected from the compounds of boron, sillicon, aluminum, phosphorus, zinc and magnesium.

8. The method of claim 6 wherein said pillaring agent is selected from the group consisting of soluble siloxane disilanes, trisilanes, silicates, metal isopropoxides, soluble metal salts of acetate, carbonate, and oxalate.

9. The method of claim 8 wherein said pillaring agent is selected form the group consisting of boric acid, diethoxydisilane, hexaethoxydisilane, methysilicate, ethylsilicate, hexaethoxydisiloxane, other alkyl silicates, and aluminum isopropoxide.

4,515,902

HYDROCARBON CONVERSION CATALYST AND PROCESS FOR PREPARING SAME

Tomonori Shioiri, Yokohama, and Takashi Ino, Kawasaki, both of Japan, assignors to Research Association For Residual Oil Processing, Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 578,104

Claims priority, application Japan, Feb. 16, 1983, 58-22901

Int. Cl.³ B01J *29/06, 21/00*

U.S. Cl. 502—64 **5 Claims**

1. A hydrocarbon conversion catalyst consisting essentially of 3 to 40 weight percent of a crystalline aluminosilicate zeolite and 60 to 97 weight percent of an alumina-magnesia matrix having a magnesia content of 2 to 50 weight percent, wherein the crystalline aluminosilicate zeolite is supported on the alumina-magnesia matrix.

4. A process for preparing a hydrocarbon conversion catalyst comprising 3 to 40 weight percent of zeolite and 60 to 97 weight percent of alumina-magnesia matrix, which process comprises adding an alkali to a mixture of an alumina hydrate and a magnesia hydrate to adjust the pH of said mixture into a weak alkaline side of pH 9 to 12, ageing said mixture with stirring at a temperature of 50° to 100° C. to form an alumina-magnesia hydrogel slurry, then mixing said hydrogel slurry with a crystalline aluminosilicate zeolite slurry and thereafter drying the resultant mixture.

lyst by the addition of butane or another hydrocarbon feedstock and a phosphorus compound at a temperature of about 300° C. to about 500° C.

4,515,903

CRACKING CATALYST

Jan-Erik A. Otterstedt, Surte; Sven G. Järas, Kungälv; Roland Pudas, Nödinge, and Lawrence L. Upson, Gothenburg, all of Sweden, assignors to Katalistiks B.V., Delfzijl, Netherlands

Continuation of Ser. No. 349,087, Feb. 12, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,272

Claims priority, application Sweden, Jun. 30, 1980, 8004825

Int. Cl.³ B01J *29/06, 33/00*

U.S. Cl. 502—68 **9 Claims**

6. A metal-poisoning-resistant cracking catalyst for hydrocarbons in a fluidized bed catalylic cracker, the catalyst being particulate and for fluidization, said catalyst including two components, the first component being an active cracking catalyst having a zeolite content of at least 20% and the second component consisting of particles having a matrix of kaolin and amorphous alumina-silica and being relatively inactive as a cracking catalyst as compared to said first component, said first and second components being intermixed and having a zeolite content in the catalyst as a whole of up to 50%, said first component having a mean particle size of from 80 to 125 μm and the second component having a mean particle size of from 30 to 75 μm, and said second component including a substance having CO conversion capacity.

4,515,904

CATALYSTS FOR THE PRODUCTION OF MALEIC ANHYDRIDE BY THE OXIDATION OF BUTANE

Robert C. Edwards, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 30, 1983, Ser. No. 537,983

Int. Cl.³ B01J *27/14;* **C07D** *307/60*

U.S. Cl. 502—209 **36 Claims**

1. A process for the manufacture of a phosphorus-vanadium oxide catalyst suitable for use in the manufacture of maleic anhydride from butane which process comprises reacting at a temperature of about 0° C. to about 200° C. a vanadium compound in an organic ether solvent having from about 2 to about 10 carbon atoms, with a phosphoryl halide in the presence of water or an aliphatic alcohol having from about 1 to about 8 carbon atoms, eliminating the solvent and activating the cata-

---

4,515,905

PROCESS FOR FORMING A CATALYST AND THE CATALYTIC PRODUCT PRODUCED BY THE PROCESS

Jan Uytterhoeven, Louvain; Pierre Jacobs, Gooik; Ludo Adriaensen, Deerlijk, and Jan Geerts, Sint-Katelijne-Waver, all of Belgium, assignors to N. V. Bekaert S.A., Zwevegem, Bulgaria

Filed Nov. 4, 1983, Ser. No. 548,827

Claims priority, application Netherlands, Nov. 18, 1982, 8204477

Int. Cl.³ B01J *21/06, 23/26, 23/74, 35/02*

U.S. Cl. 502—309 **12 Claims**

1. A process for forming a catalyst having great heat conductivity and mechanical strength comprising a metallic carrier having a catalytically active metal-containing surface layer, the catalytic metal being other than a noble metal, including the steps of:

(a) taking wires comprised of a first non-noble metal to provide a carrier therefrom,

(b) initially coating said carrier with a matrix comprised of a second non-noble metal,

(c) subsequently diffusing said non-noble metal of said matrix into an underlying layer of said carrier by heating and drawing said wires thereby forming reduced diameter fibers,

(d) etching with an inorganic oxidizing acid as much as possible said matrix from the surface of said carrier thus exposing and oxidizing said underlying carrier layer, and,

(e) subsequently reducing said exposed oxidized carrier layer at a temperature sufficient to reduce said metals in said oxidized layer to form said catalytically active metal-containing surface layer on said metallic carrier.

4,515,906

ANISOTROPIC MICROPOROUS SUPPORTS IMPREGNATED WITH POLYMERIC ION-EXCHANGE MATERIALS

Dwayne Friesen; Walter C. Babcock, and Mark Tuttle, all of Bend, Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Filed Feb. 28, 1983, Ser. No. 470,371

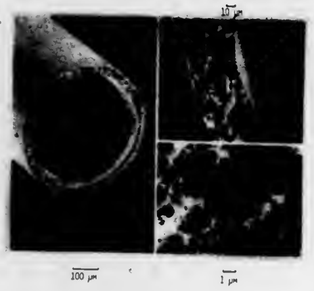
Int. Cl.³ C08D *5/20*

U.S. Cl. 521—28 **7 Claims**

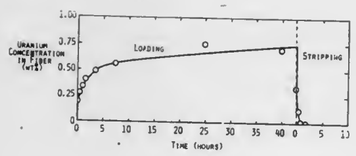
1. A composition of matter useful as ion-exchange media comprising a polymeric microporous support selected from the group consisting of polysulfones, polyvinylchlorides, polyacetonitriles, polyamides, polyphenylene oxides, polyvinylacetates, polyetherimides, polyvinylidene flourides, and derivatives and mixtures thereof, having an anisotropic pore

structure of small pores of less than 0.1 micron in diameter at the surface and large pores of from about 2 to about 200 microns in diameter in the interior, said large pores containing a polymeric ion-exchange or ion-complexing material and said









small pores being sufficiently small to substantially prevent loss of said ion-exchange or ion-complexing material from said support, said polymeric ion-exchange or ion-complexing material being formed from polymerizable compounds that, following polymerization, contain a functional group selected from amides, amines, beta-dietones, hydroxyoximes, alkylphosphate esters, hydroxyquinolines, thiophosphate esters, hydroxyls, ethers, carboxyls and macrocyclic ethers and amines and alkyl-, aryl-, halogen-, and amino-substituted derivatives and mixtures thereof.

4,515,907

STYRENE POLYMER FOAM MADE WITH ALPHA-POLYOLEFIN ADDITIVES

Thomas W. McCullough, Newark, and Bradley D. Stevens, Frazeysburg, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 352,668, Feb. 26, 1982,. This application Mar. 16, 1984, Ser. No. 590,381

Int. Cl.³ C08J *9/00;* **B29D** *27/00*

U.S. Cl. 521—139 **2 Claims**

1. A foamable polyvinyl aromatic composition comprising a major amount of vinyl aromatic polymer and a compatible amount of an alpha-olefin polymer, wherein the alpha-olefin polymer is a mixture of alpha-olefin polymers which comprises from about 0.5 to about 40 weight percent, based on the mixture of alpha olefin polymer weight, of a copolymer of ethylene and vinyl acetate having polymerized therein from about 8.5 to about 28 percent by weight vinyl acetate, based on copolymer weight, and from about 100 to about 60 weight percent, based on mixture weight, of a blend of ethylene homopolymers and copolymers, the blend comprising from about 68 to about 75 weight percent of a copolymer of ethylene and a higher alkene having from 3 to 20 carbon atoms, based on the blend of alpha olefin polymer weight, and from about 32 to about 25 weight percent low density polyethylene, based on the blend of alpha olefin polymer weight said composition containing a blowing agent.

4,515,908

LIQUID FOAMS OF REINFORCED UNSATURATED POLYESTER RESINS AND PROCESS FOR MAKING THE SAME

Massimo Mazzola, Segni, and Aldo Cipriani, Colleferro, both of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

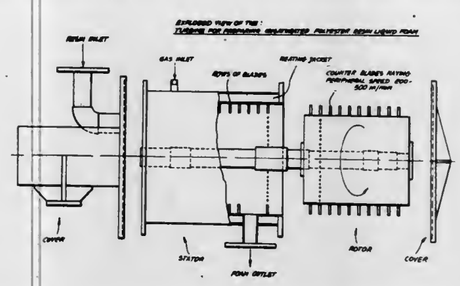
Division of Ser. No. 457,632, Jan. 13, 1983, Pat. No. 4,440,876, which is a continuation-in-part of Ser. No. 145,251, Apr. 30, 1980, abandoned. This application Apr. 2, 1984, Ser. No. 595,743

Claims priority, application Italy, Oct. 5, 1979, 22578 A/79

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—182 **3 Claims**

1. Fiber-reinforced liquid foams suitable for transforming into solid reinforced cellular materials having a density lower than 0.7 kg/l if no inert fillers are present or a density lower than 1 kg/l if inert fillers are present as well, said liquid foam being produced by a process comprising (1) mixing together an unsaturated polyester resin, a reinforcing material and, optionally an inert filler, said reinforcing material being selected from the group consisting of synethetic fibers, vegetable fibers and mineral fibers having a maximum length of 3 mm, whereby a liquid mixture is obtained; (2) transferring said liquid mixture of reinforcing material, unsaturated polyester resin and, optionally, said inert filler to a turbine having a free internal volume of at least 2 liters and comprising a rotor and a stator, both having either prismatic or cylindrical projections, said turbine rotor having a peripheral speed of greater than 200 m/min.; (3) introducing a gas into said turbine at a pressure of from 1.1 to 10 absolute atmospheres, said turbine operating to distribute said gas in the form of small bubbles homogeneously



and uniformly throughout said mixture, thereby producing a reinforced foam of unsaturated polyester resin; thereafter discharging said reinforced foam from said turbine.

4,515,909

RESINOUS COMPOSITION FOR THE PROLONGED RELEASE OF FRAGRANT SUBSTANCES

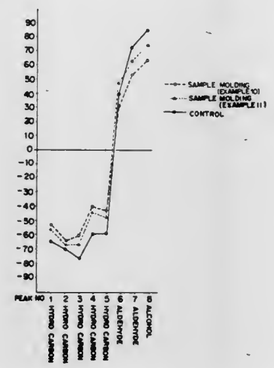
Kiyohito Sawano, 11-19, Hadeshikogahara, Hiratsuka-shi, Kanagawa-ken; Ryujiro Kouichi, 83-75, Oodonoi, Noda-shi, Chiba-ken; Hideaki Oota, 4-3-3, Takeyama, Midori-ku, Yokohama-shi, Kanagawa-ken; Masashi Takano, 8-15-13, Sugita, Isogo-ku, Yokohama-shi, Kanagawa-ken, and Michio Moroe, 2-28-9, Shimorenjaku, Mitaka-shi, Tokyo, all of Japan

Filed Sep. 29, 1982, Ser. No. 426,799

Claims priority, application Japan, Feb. 16, 1982, 57-23455

Int. Cl.³ A61L *9/01, 9/04*

U.S. Cl. 523—102 **13 Claims**



1. A fragrant article, comprising an ethylene-vinyl acetate copolymer impregnated with a diffusing agent and a fragrant substance, said copolymer comprising from about 15% to about 30% of vinyl acetate monomer, by weight, and about 85% to about 70% of ethylene monomer, by weight, said diffusing agent being selected from the group consisting of benzyl benzoate, benzyl salicylate, and mixtures thereof, and being absorbed in the copolymer in an amount of from about 1% to about 10% by weight of the copolymer.

4,515,910

INTERPOLYMERIC RESIN FOR TREATMENT OF TEETH

Henry R. Rawls, 3245 DeSoto St., New Orleans, La. 70119; Allan E. Querens, 5652 Marcia Ave., New Orleans, La. 70124, and Barbara F. Zimmerman, 632 Phosphor Ave., Metairie, La. 70005

Filed Jan. 26, 1983, Ser. No. 461,026

Int. Cl.³ A61K *7/18;* **C08L** *27/12*

U.S. Cl. 523—115 **22 Claims**

1. An acrylic controlled fluoride releasing interpolymer comprising the reaction product of:

a. an anion-exchange-site bearing monomer carrying a fluoride ion in an amount sufficient to provide a caries-inhibiting amount of fluoride;

b. a copolymerizable acrylic monomer selected from the group consisting of alkyl acrylates and methacrylates wherein the alkyl group contains no more than about 12 carbon atoms; and

c. a monomer which is a crosslinker in the resulting interpolymeric resin.

4,515,911

SELF-CROSSLINKABLE ELECTROCOAT RESINS PREPARED BY ROOM TEMPERATURE REACTIONS BY EPOXY RESINS AND POLYAMINES CONTAINING PRIMARY AND TERTIARY AMINE GROUPS

Robert A. Swider, Livonia, and Martha E. Horsch, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01711, § 371 Date Oct. 31, 1983, § 102(e) Date Oct. 31, 1983

PCT Filed Oct. 31, 1983, Ser. No. 563,422

Int. Cl.³ C08L *63/00, 63/02;* **C09D** *3/58, 5/40*

U.S. Cl. 523—414 **20 Claims**

1. A cathodically electrodepositable coating composition characterized in that it comprises an aqueous dispersion of self-crosslinkable resin bearing amine and epoxide functionalities and being prepared by reacting:

(A) epoxy resin having (a) on average, more than one and up to about two epoxide groups per molecule, and (b) an epoxide equivalent weight of between about 400 and about 4000; and

(B) polyamine containing at least one primary amine group and at least one tertiary amine group per molecule and no other groups capable of reacting with epoxide groups,

(1) in a reaction mixture comprising between (i) a total of about 70 and about 25 weight percent of reactants (A) and (B) and (ii) between about 30 and about 75 weight percent organic solvent for said reactants, (2) in amounts so as to provide between about 0.25 and about 1.0 primary amine groups of (B) per each epoxide group of (A), (3) at a reaction mixture temperature of between about 18° and about 33° C., and (4) for a period of time sufficient to react between about 20 and about 50 percent of said epoxide groups with active amine hydrogens to form an amine and epoxide functional, partially crosslinked resin having a weight average ($\overline{M}_w$) molecular weight of between about 1300 and about 12,000, and

subsequently neutralizing amine groups present in said reaction mixture with water soluble acid in an amount sufficient to neutralize at least about 50 percent of said amine groups present therein, and thereafter dispersing said resin in water.

4,515,912

CURE SHRINK-RESISTANT MISSILE MOTOR CASES

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1984, Ser. No. 628,001

Int. Cl.³ F42B *1/00;* **C09B** *5/06;* **C06B** *45/10;* **C08K** *5/15*

U.S. Cl. 523—456 **4 Claims**

1. A matrix resin composition comprising:

a. about 100 parts by weight of a first component which is a two component mixture of approximately equal parts by weight of a diglycidyl ether of bisphenol A and an epoxidized dimer of oleic acid;
b. about 25 parts by weight of a second component of butanediol diglycidyl ether;
c. about 20 parts by weight of a third component of a curing agent of o-phenylenediamine-boron trifluoride etherate; and,
d. about 15 parts by weight of a fourth component of the bisspiroortho carbonate
3,9-bis(5'-norbornene-2'-yl)-1,5,7,11-tetraoxaspiro[5.5]undecane, said bisspiroortho carbonate being an expandable component during polymerization or curing phase of said matrix resin composition which achieves a conversion of said first three components of said matrix resin composition from a shrinkable matrix resin composition to an expanded matrix resin composition during polymerization or curing phase of said matrix resin composition.

4,515,913
DENTAL IMPRESSION COMPOSITION

Michael A. Pellico, Los Angeles, Calif., assignor to Laclede Professional Products, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 490,294, May 2, 1983, Pat. No. 4,468,484, which is a continuation-in-part of Ser. No. 378,917, May 17, 1982, Pat. No. 4,381,947, which is a continuation-in-part of Ser. No. 220,303, Dec. 29, 1980, abandoned. This application Nov. 14, 1983, Ser. No. 550,809
Int. Cl.³ A61K *6/08*
U.S. Cl. 523—109 **11 Claims**

1. In a powdered alginate, dental impression composition that is adapted to be mixed with water and is orally settable said powdered alginate composition containing:
from about 6 to about 10 wt.% of an alkali metal alginate selected from the group consisting of sodium alginate, potassium alginate and mixtures thereof,
from about 6 to about 12 wt.% of a calcium sulfate reactant,
from about 0.6 to about 1.2 wt.% of a reaction rate retarder selected from the group consisting of phosphate, pyrophosphate and tripolyphosphate salts of sodium, potassium and mixtures thereof, and a
filler,
the improvement which comprises polyacrylamide in said powdered alginate composition in an amount from about 0.5 to about 6.0 wt.% to thereby effect a smooth admixture of the powdered alginate composition with water.

4,515,914
CROSSLINKED LATEXES ENCAPSULATED WITH LINEAR POLYMERS

Michio Tsurumi, Yokohama, Japan, and Do I. Lee, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 19, 1983, Ser. No. 543,198
Int. Cl.³ C08L *9/00*
U.S. Cl. 523—201 **9 Claims**

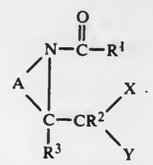
1. A process for preparing coalescence-capable and deformable aqueous polymer latexes having controlled crosslinking density wherein the dispersed polymer particles are heterogeneous, which process comprises:
(a) preparing by emulsion polymerization a core domain comprising the polymerization product of a portion of a first stage monomer mixture comprising at least one monovinyl aromatic monomer and at least one open chain conjugated diene monomer and
(b) contacting said first stage monomer mixture at a point at which said mixture is partially polymerized with a second stage monomer mixture comprising at least one monovinyl monomer and substantially noncrosslinkable monomers wherein said second stage monomer mixture is introduced when the rate of conversion of monomer to polymer is such that (1) the latex particles so formed are not highly crosslinked, and (2) the second stage monomer mixture is polymerized to yield essentially noncrosslinked linear polymers to encapsulate the core domain as a shell and is partially covalently bonded to the partially polymerized core domain.

4,515,915
POLYAMIDE ACID COMPOSITION FOR PREPARING POLYIMIDE

Junji Uda; Tsuneo Yamamoto, both of Otsu, and Takumi Kosugi, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

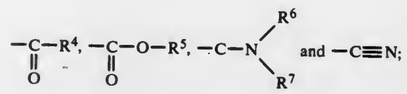
Filed Jan. 13, 1984, Ser. No. 570,313
Claims priority, application Japan, Jan. 14, 1983, 58-4395
Int. Cl.³ C08L *79/08*
U.S. Cl. 524—87 **3 Claims**

1. A polyamide acid composition for preparing a polyimide comprising a solution of a polyamide acid in an organic solvent which is a precursor of the polyimide and an N-substituted heterocyclic compound of the formula (I):



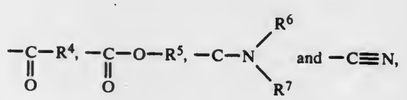
(I)

wherein A is a resisue of a N-heterocyclic ring containing only nitrogen and carbon atoms; X is a member selected from the group consisting of



and $-C\equiv N$;

Y is a member selected from the group consisting of



and $-C\equiv N$,

hydrogen, an aliphatic group having 1 to 12 carbon atoms and an aromatic group; and R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are the same or different and each is hydrogen atom, an aliphatic group having 1 to 12 carbon atoms or an aromatic group.

4,515,916
STABILIZERS FOR HALOGEN CONTAINING POLYMERS COMPRISING ZINC MERCAPTOESTERS, BASIC INORGANIC ALKALI OR ALKALINE EARTH METAL COMPOUNDS AND, SUBSTITUTED DIHYDROPYRIDINES

Kenneth R. Molt, Cincinnati, Ohio, assignor to Morton Thiokol Inc., Chicago, Ill.

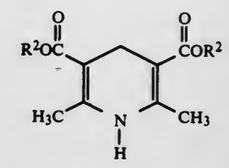
Continuation of Ser. No. 379,426, May 18, 1982, , and a continuation-in-part of Ser. No. 269,085, Jun. 2, 1981, abandoned. This application Feb. 6, 1984, Ser. No. 577,472
Int. Cl.³ C08K *5/36*
U.S. Cl. 524—99 **7 Claims**

1. A composition for stabilizing halogen containing polymers against the deteriorate effects of heat comprising:
A. at least one zinc mercaptoester having the formula:



(I)

where
x=1 or 2; and
R is C_1 to C_{20} straight or branched-chain saturated or unsaturated alkyl radical;
B. at least one basic inorganic alkali or alkaline earth metal compound; and
C. at least one substituted dihydropyridine having the formula:



where R^2 is a C_1 to C_{20} straight or branched-chain saturated or unsaturated alkyl radical wherein the composition comprises about 15% to about 85% zinc mercaptoester, about 15% to about 85% basic inorganic alkali or alkaline earth metal compound, and about 1% to about 50% substituted dihydropyridine, all percentages being by weight based on the total weight the composition.

6. A polymer composition stabilized against the deteriorative effects of heat comprising a halogen containing polymer and a stabilizingly effective amount of the composition according to claim 1.

4,515,917
ADHESIVE COMPOSITION

Kazuhito Yamamoto, and Toshio Takenaka, both of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 1, 1983, Ser. No. 528,659
Int. Cl.³ C08K *5/57*
U.S. Cl. 524—178 **5 Claims**

1. An adhesive composition which consists essentially of a main component and an activating component, said main component comprising (A) at least one of acrylic and methacrylic monomers, (B) chlorosulfonated polyethylene or a mixture of chlorinated polyethylene and a sulfonyl chloride, (C) an organic peroxide, (D) a stabilizer selected from at least one member of the group consisting of hydroquinone, hydroquinone monomethyl ether, and 2,6-di-t-butyl-4-methyl-phenol and (E) an organic tin compound selected from the group consisting of di and tri(C_1-C_{18})alkyl or benzyl tin mono- and di-aliphatic carboxylates.

4,515,918
THERMOPLASTIC MOULDING COMPOSITIONS BASED ON POLYCARBONATE, POLYALKYLENE TEREPHTHALATE AND, OPTIONALLY, ONE OR MORE POLYMERS

Werner Nouvertné; Volker Serini; Dieter Neuray; Rudolf Binsack, all of Krefeld; Hans-Georg Gehrke, Odenthal; Dieter Rempel, Leverkusen, and Sivara Krishnai, Moers, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 518,071, Jul. 28, 1983, abandoned, which is a continuation of Ser. No. 375,390, May 6, 1982, abandoned. This application Apr. 20, 1984, Ser. No. 602,596
Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118697
Int. Cl.³ C08L *67/02, 69/00*
U.S. Cl. 524—504 **5 Claims**

1. Thermoplastic moulding compositions comprising
(A) from 1 to 80 parts, by weight, of polybutylene terephthalate,
(B) from 20 to 99 parts, by weight, of bisphenol-A polycarbonate having an average molecular weight of from 10,000 to 200,000 as determined by measurement of the relative viscosity in dichloromethane at 25° C. using a concentration of 0.5%, by weight; polycarbonate (B) containing from 2 to 20%, by weight, based on (B), of o,o,o',o'-tetramethyl bisphenol-A polycarbonate and
(C) from 1 to 20 parts, by weight, of a polymer having a glass transition temperature below −20° C. selected from the group consisting of
(i) graft polymers obtained by grafting
(I) from 10 to 40%, by weight, based on the graft product, of monomers selected from the group consisting of (a) at least one (meth)acrylic acid ester, (b) a mixture of from 10 to 35%, by weight, based on the mixture, of acrylonitrile and from 65 to 90%, by weight, based on the mixture, of styrene, and mixtures of (a) and (b) on
(II) from 60 to 90%, by weight, based on the graft product, of a butadiene polymer containing at least 70%, by weight, based on (II), of butadiene residues as the graft base, the gel content of the graft base (II) amounting to ≧70% (as measured in toluene), the degree of grafting, G, to from 0.15 to 0.55 and the average particle diameter, d_{50}, of the graft polymer (C) to from 0.2 to 0.6 μm, and
(ii) graft polymers of
(a) from 25 to 98%, by weight, based on (C), of an acrylate rubber having a glass transition temperature below −20° C. as the graft base; and
(b) from 2 to 75%, by weight, based on (C), of at least one polymerisable ethylenically unsaturated monomer, of which the homo- or co-polymer(s) formed in the absence of (a) would have a glass transition temperature above 25° C., as the graft monomer, the quantities of components (A), (B), and (C) totalling 100 parts, by weight.

4,515,919
PROTECTIVE COATING COMPOSITION AND PROCESS FOR ALUMINUM AND ALUMINUM ALLOYS

Robert E. Bradley, Temple, Ga., and William R. Keithler, Kirkwood, Mo., assignors to Lockheed Corporation, Burbank, Calif.

Filed May 9, 1983, Ser. No. 493,062
Int. Cl.³ C08L *75/04*
U.S. Cl. 524—591 **10 Claims**

1. A protective coating composition for application to aluminum and aluminum alloy components during the sealing step of a typical anodizing process to seal and prime the component, said composition comprising:
(a) a colloidal, water-borne polyurethane elastomer resin;
(b) a cross-linking agent;
(c) a thermosetting catalyst; and

(d) a corrosion inhibiting agent.

4,515,920

SYNTHESIS OF PEPTIDES AND PROTEINS

Bruce W. Erickson, Closter, N.J., assignor to The Rockefeller University, New York, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,308
Int. Cl.³ C08F *210/00;* **C07C** *103/52*
U.S. Cl. 525—54.11 **4 Claims**

1. In the solid phase method for the synthesis of peptides or proteins in which an amino acid or protein is joined to a solid support and the desired peptide or protein is formed by stepwise addition of amino acid or peptide residues to produce the desired peptide or protein, the improvement comprising initially binding a trifunctional module to the solid support through one of its functional groups and thereafter synthesizing two identical peptides or proteins by stepwise addition of amino acid or peptide residues to each of the remaining pair of functional groups.

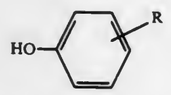
4,515,921

POLYCARBONATE COMPOSITIONS HAVING A HIGH IMPACT STRENGTH AND MELT FLOW RATE

Mark W. Witman, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 21, 1982, Ser. No. 400,548
Int. Cl.³ C08L *69/00*
U.S. Cl. 525—67 **5 Claims**

1. A composition comprising
(a) a polycarbon resin characterized in that its end groups are residues of



wherein R denotes a branched alkyl radical of 8 or 9 carbon atoms and in the alkyl radical the proportion of CH_3 protons is between 47% and 89% and the proportion of the sum of the CH and CH_2 protons is between about 53% and 11% and wherein R is in either the ortho or para position relative to the OH group, the upper limit of the ortho proportion being about 20%, and
(b) an impact modifier consisting of a rubber elastic polymer having a glass transition temperature below 0° C., said composition further characterized in that its melt flow rate per ASTM D-1238 at 300° C. is about 15 to about 19 gm/10 min. and in that said impact modifier is present at an amount of about 1 to 3 percent relative to the weight of said polycarbonate resin.

4,515,922

RUBBER COMPOSITIONS

Mitsuhiko Sakakibara; Masao Yoshizawa, both of Yokkaichi; Masaki Ogawa, Kodaira; Yasushi Hirata, Higashimurayama, and Shigeru Tomihira, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,427
Claims priority, application Japan, Jan. 31, 1983, 58-12886
Int. Cl.³ C08L *9/00, 47/00, 53/00*
U.S. Cl. 525—99 **9 Claims**

1. A rubber composition comprising (A) 10–90% by weight of polybutadiene rubber having a content of cis-1,4-bond of at least 80% and an average chain length of cis-1,4-bond of not less than 110, and (B) 10–90% by weight of random styrene-butadiene copolymer rubber obtained by copolymerization in the presence of an organic metal catalyst and having a content of bound styrene of not more than 40% by weight and a content of 1,2-bond in the total butadiene unit of 30–95%.

4,515,923

POLYAMINES AND A PROCESS FOR THEIR PRODUCTION

Rudolf Fauss, Cologne; Hans J. Meiners, Leverkusen; Werner Rasshofer, Cologne, and Holger Meyborg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,471
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223398
Int. Cl.³ C08G *18/18;* **C09K** *3/00*
U.S. Cl. 525—127 **12 Claims**

1. A single-stage process for the production of a polyamine containing aromatically bound primary amino groups comprising hydrolyzing
(a) a compound containing aromatically bound NCO-groups which has an NCO-content of from 0.5 to 40 wt % with
(b) an excess of water in the presence of
(c) a water-miscible polar solvent having a boiling point of from 56° to 250° C. and a dielectric constant of at least 10 which solvent is present in a quantity of at least 5 parts solvent for every 100 parts of isocyanate compound (a) at a temperature of from −10° to 150° C. in a manner such that the reaction mixture is kept substantially homogeneous.

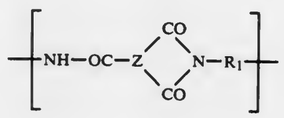
4,515,924

INJECTION MOLDABLE AMIDE-IMIDE POLYMERS AND COPOLYMERS CONTAINING SEMI-CRYSTALLINE AND AMORPHOUS POLYAMIDES

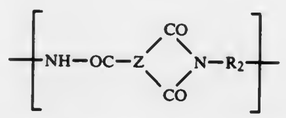
Gary T. Brooks, and Bill W. Cole, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 383,268, May 28, 1982, Pat. No. 4,467,011. This application May 6, 1983, Ser. No. 492,398
Int. Cl.³ C08L *77/00;* **B23B** *7/00*
U.S. Cl. 525—432 **9 Claims**

1. A composition of matter which comprises (A) an injection moldable copolymer comprising units of:



and units of:



wherein one carbonyl group of the injection moldable copolymer is meta to and one carbonyl group of the injection moldable copolymer is para to each amide group and wherein Z is a trivalent benzene ring or lower-alkyl-substituted trivalent benzene ring, R_1 and R_2 are different and are divalent aromatic hydrocarbon radicals of from about 6 to about 10 carbon atoms or two divalent aromatic hydrocarbon radicals of from about 6 to about 10 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, $—SO_2—$, and —S— radicals and wherein said R_1 and R_2 containing units run from about 10 mole percent R_1 containing unit and about 90 mole percent R_2 containing unit to about 90 mole percent R_1 containing unit and about 10 mole percent R_2 containing unit; and (B) about 0.1 to about 5 percent by weight of a polyamide selected from the group consisting of nylon 6, nylon 6/6, nylon 6/12, nylon 11 and nylon 12.

4,515,925

POLYCARBONATE/POLYBUTYLENE TEREPHTHALATE FILM

Frank Kleiner, Leverkusen; Rolf Kubens, Odenthal-Hahnenberg; Eckart Reese, and Joachim Wank, both of Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,616
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237477
Int. Cl.³ C08L *67/02*
U.S. Cl. 525—439 **6 Claims**

1. A film comprising a mixture of
A. from 50 to 90% by weight of aromatic polycarbonate, and
B. from 10 to 50% by weight of polybutylene terephthalate the % by weight, being based on the total of A and B where after said film is monoaxially stretched, then upon heating said film shrinks in the direction of stretching, but substantially not transverse thereto.

4,515,926

COATING COMPOSITION COMPRISING BIS-DIENE OLIGOMERS AND BIS-DIENEOPHILE OLIGOMERS

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 6, 1983, Ser. No. 456,067
Int. Cl.³ C08L *67/06, 71/06*
U.S. Cl. 525—449 **24 Claims**

1. A novel thermosetting, solvent-based crosslinkable coating composition comprising:
(A) bis-diene oligomer of number average molecular weight about 300–5000, having the general formula A—R—A′, wherein A and A′ are the same or different and each comprises a substituted or unsubstituted monovalent diene moiety;
(B) bis-dieneophile oligomer of number average molecular weight about 400–1200, having the general formula B—R′—B′, wherein B and B′ are the same or different and each comprises a substituted or unsubstituted dieneophile moiety reactive with said diene moieties A or A′ at elevated cure temperature; said R and R′ being the same or different and each being a bivalent hydrocarbon linking moiety which is substantially unreactive with A, A′, B and B′;
wherein said bis-dieneophile oligomer consists essentially of bis-ene epoxy oligomer which is the reaction product of ene-functional monohydroxy monocarboxylic acid with aromatic or aliphatic diepoxide reactant and wherein at least one of A—R—A′ and B—R′—B′ bears crosslinking functionality other than diene and dieneophile functionality;
(C) crosslinking agent substantially reactive with said crosslinking functionality at said elevated cure temperature, wherein said crosslinking agent is selected from the group consisting of polyisocyanates, aminoplasts and formaldehyde polymers; and
(D) organic solvent.

4,515,927

PROCESS TO COPOLYMERIZE VINYL CHLORIDE AND CHLOROTRIFLUOROETHYLENE

Norman G. Gaylord, 28 Newcomb Dr., New Providence, N.J. 07974

Filed Mar. 11, 1983, Ser. No. 474,371
Int. Cl.³ C08F *214/24*
U.S. Cl. 526—87 **10 Claims**

1. A process for the suspension copolymerization of vinyl chloride and chlorotrifluoroethylene to form a copolymer having a constant weight ratio of vinyl chloride to chlorotrifluoroethylene comprising the steps of:
suspension copolymerizing vinyl chloride and chlorotrifluoroethylene using an initial charge having a weight ratio of vinyl chloride to chlorotrifluoroethylene of 55/45 to 75/25 to form a copolymer having a constant weight ratio of 75/25 to 95/5 vinyl chloride to chlorotrifluoroethylene; and
adding sufficient additional vinyl chloride to reconstitute the initial ratio of the vinyl chloride to chlorotrifluoroethylene charge prior to reaching 20% conversion.

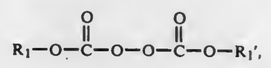
4,515,928

ORGANIC PEROXIDE COMPOSITION CONTAINING TRIHYDRIC ALCOHOL, ALKALI OR ALKALINE EARTH METAL CHLORIDE, OR MONOSACCHARIDE

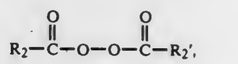
Richard A. Schwarz, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 20, 1982, Ser. No. 400,197
Int. Cl.³ C08F *2/00;* **C01B** *13/00, 15/00;* **C07K** *3/00*
U.S. Cl. 526—200 **7 Claims**

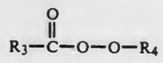
1. An organic peroxide composition consisting essentially of:
(a) an aqueous organic peroxide dispersion of from about 10 to 65 weight percent of an organic peroxide that is liquid at 0° C., water, and sufficient surfactant to provide a well dispersed peroxide, and
(b) between about 2 and about 30 weight percent, based on the amount of water in the organic peroxide dispersion, of a material selected from the group consisting of: (1) polyhydric paraffinic alcohols selected from the group consisting of pentaerythritol and 1,2,6-hexane triol, (2) monosaccharides, (3) metal chloride salts of the metals sodium, lithium, potassium and magnesium, and (4) mixtures of such materials, to provide a liquid peroxide composition which is pumpable at between about 0° C. and −20° C., said organic peroxide being selected from the group consisting of: (i) organic peroxydicarbonate esters represented by the graphic formula:



wherein R_1 and R_1' are each an alkyl radical of from 2 to 8 carbon atoms, (ii) diacyl peroxides represented by the graphic formula:



wherein R_2 and R_2' are each an alkyl radical of from 2 to 4 carbon atoms, and (iii) peroxyesters represented by the graphic formula:



wherein R_3 is an alkyl radical of from 2 to 12 carbon atoms and R_4 is alpha cumyl or an alkyl radical of from 4 to 5 carbon atoms.

4,515,929

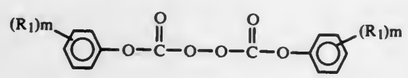
PEROXIDE COMPOSITION

Robert H. Tang, Norton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1983, Ser. No. 518,162
Int. Cl.³ C01B *13/00, 15/00;* **C09K** *3/00;* **C08F** *4/38*
U.S. Cl. 526—228 **22 Claims**

1. A peroxide composition comprising:
(a) from about 10 to about 65 weight percent organic peroxide dispersed in an aqueous medium containing sufficient surfactant to provide a stable dispersion, and
(b) from 0.05 to 1 mole percent, basis the organic peroxide,

of diphenyl peroxydicarbonate stabilizer represented by the graphic formula:



wherein R_1 is a C_1–C_4 alkyl and m is 0, 1, 2, or 3, said amount of diphenyl peroxydicarbonate being sufficient to reduce the rate of self induced homolytic decomposition of the organic peroxide at temperatures of from 0° C. to +5° C.

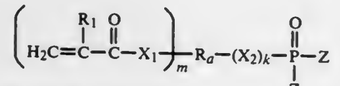
4,515,930

HIGHLY WATER-RESISTANT ADHESIVE

Ikuo Omura, and Junichi Yamauchi, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 20, 1984, Ser. No. 572,245
Claims priority, application Japan, Jan. 27, 1983, 58-12272
Int. Cl.³ A61C *5/00*; C08F *130/02*
U.S. Cl. 526—276 **18 Claims**

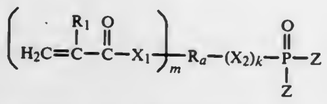
1. An adhesive which comprises a polymerizable composition consisting of (a) 1 part by weight of a monomer represented by the formula



where R_1 denotes H or CH_3; R_a denotes a $C_{6\text{-}40}$ organic residue having a valence of m+1; X_1 and X_2 denote O, S, or NR', (where R' denotes H or a $C_{1\text{-}6}$ hydrocarbon group), two of X_1 may be different from each other when m is 2; Z denotes a halogen; and m is 1 or 2 and k is 0 or 1, and (b) 0 to 199 parts by weight of a monomer selected from the group consisting of mono-, di-, tri-, and tetrafunctional (meth)acrylates, styrene, divinyl benzene, p-chlorostyrene, (meth)acrylamide or derivatives thereof, N-(hydroxymethyl)acrylamide, (meth)acrylic acid, isobutylvinyl ether, vinyl acetate, diethyl fumarate, diethyl maleate, maleic anhydride, methyl vinyl ketone, allyl chloride, vinyl naphthalene and vinylpyridine or combinations thereof.

14. A method for restoring a decayed tooth which comprises applying an adhesive to the surface of the tooth cavity and subsequently filling the cavity with a dental filling material composed of a polymerizable monomer, filler and curing agent, said adhesive comprising

(a) 1 part by weight of a polymerizable monomer represented by the formula



(where R_1 denotes H or CH_3; R_a denotes a $C_{6\text{-}40}$ organic residue having a valence of m+1; X_1 and X_2 denote O, S, or NR', two of X_1 may be different from each other when m is 2; Z denotes a halogen; and m is 1 or 2 and k is 0 or 1),

(b) 0 to 199 parts by weight of monomer which is copolymerizable with said monomer (a), and

(c) 0.01 to 20 parts by weight of curing agent for 100 parts by weight of the polymerizable monomers.

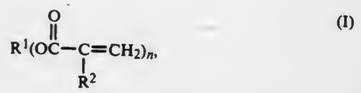
4,515,931

POLYFUNCTIONAL ACRYLATE MONOMERS AND POLYMERS THEREOF USEFUL AS CAPACITOR DIELECTRICS

Daniel R. Olson, and Timothy W. O'Donnell, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,894
Int. Cl.³ C08F *20/20*; C07F *69/54*
U.S. Cl. 526—323.2 **8 Claims**

1. A composition comprising at least one polyfunctional acrylate having the formula



(I)

wherein R^1 is an aliphatic or alicyclic radical having about 20–40 carbon atoms which contains from 0 up to about three non-conjugated olefinic linkages, R^2 is hydrogen or methyl, and n is from 2 to 4; at least about 40% of said polyfunctional acrylates containing alicyclic moieties.

4,515,932

END-CAPPING CATALYSTS FOR FORMING ALKOXY-FUNCTIONAL ONE COMPONENT RTV COMPOSITIONS

Rack H. Chung, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 427,930, Sep. 29, 1982, abandoned. This application May 8, 1984, Ser. No. 608,522
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—16 **65 Claims**

1. A one-package substantially anhydrous room temperature vulcanizable organopolysiloxane composition convertible to a tack-free elastomer, comprising: (1) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least 1 hydroxy radical; (2) an effective amount of cross-linking agent; and (3) an effective amount of end-capping catalyst comprising a combination of (i) a Lewis acid and (ii) a compound selected from the group consisting of substituted guanidines, amines and mixtures thereof.

4,515,933

ONE-COMPONENT POLYURETHANE ADHESIVE COMPOSITIONS

Eugene Y. C. Chang, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 11, 1983, Ser. No. 483,984
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.³ C08G *18/10, 18/22*
U.S. Cl. 528—57 **18 Claims**

1. A heat-curable one-component polyurethane composition, comprising: (a) a secondary or tertiary aliphatic diisocyanate prepolymer; (b) a polyol compound; (c) a chain extender selected from the group consisting of sucrose and sorbitol; and (d) a curingly effective amount of a catalyst selected from the group consisting of magnesium acetylacetonate, nickel acetylacetonate, magnesium stearate, cadmium stearate, and organic acid salts of 1,8-diazabicyclo[5.4.0]undec-7-ene.

4,515,934

VINYL ESTER RESINS CONTAINING TRIAZINE OR BOTH TRIAZINE AND OXAZOLINE GROUPS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1984, Ser. No. 590,819
Int. Cl.³ C08G *59/26*; C08F *20/34*
U.S. Cl. 528—92 **28 Claims**

1. A vinyl ester resin composition containing triazine groups or both triazine and oxazoline groups prepared by reacting (a) a polyepoxide containing triazine groups, or (b) a polyepoxide containing both triazine and oxazoline groups, or (c) a mixture of (a) and (b) above with (d) from about 0.75 to about 1 mole of a monounsaturated monocarboxylic acid or mixture of monounsaturated monocarboxylic acids per epoxide group in the presence of (e) an effective quantity of a suitable catalyst.

4,515,935

CATALYSTS FOR FOUNDRY CORE BINDERS

George S. Everett, Clarendon Hills, Ill., assignor to QO Chemicals, Inc., Chicago, Ill.

Continuation of Ser. No. 465,528, Feb. 11, 1983, abandoned, which is a division of Ser. No. 347,009, Feb. 8, 1982, abandoned, which is a division of Ser. No. 234,905, Feb. 17, 1981, Pat. No. 4,331,583. This application Jun. 22, 1984, Ser. No. 623,698
Int. Cl.³ C08G *85/00*
U.S. Cl. 528—141 **6 Claims**

1. A process for curing an acid curable thermosetting resin selected from the group consisting of phenolaldehyde resins, urea-aldehyde resins, furfuryl alcohol-urea resins, furfuryl alcohol-formaldehyde resins, furfuryl alcohol-resorcinol resins, furfuryl alcohol-melamine resins, furfuryl alcohol polymers and polymers of furfuraldehyde which comprises contacting said resin with a catalyst comprising the reaction product of polyphosphoric acid and an aliphatic alcohol containing not more than 12 carbon atoms.

4,515,936

CATALYZED INTERFACIAL POLYCONDENSATION POLYCARBONATE PROCESS

Subhas K. Sikdar, Clifton Park, and Yaw D. Yeboah, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,634
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—200 **16 Claims**

1. A method of producing aromatic polycarbonate by a catalyzed interfacial polycondensation polycarbonate process comprising

(1) forming an agitated two-phase admixture comprising

(i) an organic phase containing an inert organic solvent and a polycondensation catalyst,

(ii) an aqueous phase containing dissolved therein an aromatic dihydroxy compound, a strong base and an ionic surfactant in a quantity of from about 100 to 1,000 parts per million having a pH of at least 11 subject to the proviso that

(a) the volume ratio of inert organic solvent phase to aqueous phase is within the range of from about 0.04:1 to 0.20:1 and

(b) the mole ratio of base to aromatic dihydroxy compound is at least about 0.25:1,

(2) adding and reacting a carbonyl halide with the aromatic dihydroxy compound to form an aromatic polycarbonate having a weight average molecular weight of at least about 2000, and

(3) separating and recovering the solid aromatic polycarbonate particulate from the liquid aqueous phase.

4,515,937

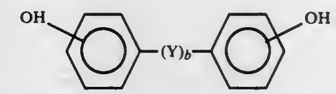
FLAME RESISTANT SULFUR-BEARING COPOLYCARBONATE

Arthur L. Baron, New Martinsville, W. Va., and Sivaram Krishnan, Moers, Fed. Rep. of Germany, assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 9, 1980, Ser. No. 185,632
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—204 **6 Claims**

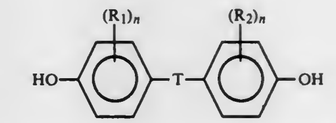
1. An aromatic high molecular weight copolycarbonate comprising the polymeric reaction product of solely

(i) an aromatic sulfur-free diphenol represented by the structural formula



wherein b is zero or 1, Y denotes an alkylene or alkylidene radical with 1 to 7 carbon atoms, a cycloalkylene or cycloalkylidene radical with 5 to 12 carbon atoms, —O— or —CO—;

(ii) a sulfur-containing diphenol represented by the formula



wherein R_1 and R_2 independently denote a lower alkyl selected from a group consisting of methyl, ethyl, propyl and butyl; n is equal to from 0 to 2 and T is either S, SO or SO_2;

(iii) a branching agent for polycarbonates;

(iv) a monophenol; and

(v) a carbonic acid derivative selected from a group consisting of phosgene, carbonyl bromide or bis-chloroformic esters of an aromatic dihydroxy compound;

characterized in that said branching agent comprises between 0.05 and 2%, relative to the molar sum of said (i) plus said (ii) and in that said copolycarbonate comprises at least 15 mol percent of said (ii) and in that they are classified V-O for 1/16" class specimens as evaluated by the procedure of Underwriter's Laboratories Bulletin 94.

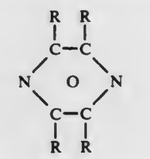
4,515,938

HYDROXYSTYRYLAZAPOLYMERS

Loren L. Swearingen, Clute, and Randy J. LaTulip, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 12, 1984, Ser. No. 588,597
Int. Cl.³ C08G *12/28, 12/26*
U.S. Cl. 528—252 **17 Claims**

1. A thermosetting prepolymer which comprises the resinous reaction product of one or more hydroxy aromatic aldehydes and a compound having the formula



where R is hydrogen, methyl, or ethyl,

whereby the total number of methyl groups substituted on the ring is in the range from 2–4.

5. A cured polymer which comprises the product obtained

by curing the prepolymer of claims **1**, **2**, **3** or **4** at a temperature in the range from about 180° to about 300° C. for a time sufficient to obtain a cure.

4,515,939

POLY(ESTER-AMIDE) HOT-MELT ADHESIVES

Charles R. Frihart, Lawrenceville, and Richard L. Veazey, East Windsor Township, Mercer County both of N.J., assignors to Union Camp Corporation, Wayne, N.J.

Filed May 31, 1983, Ser. No. 499,336
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—339.3 **18 Claims**

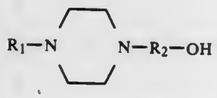
1. A poly(ester-amide) adhesive composition which comprises; the polymeric product of the polymerization of

(a) from 30 to 95 equivalent percent of a polymeric fatty acid; and

(b) from 5 to 70 equivalent percent of a dicarboxylic acid; and with a substantially equivalent amount of

(c) from 10 to 95 equivalent percent of an organic diamine; and

(d) from 5 to 90 equivalent percent of an alkanolamine of the formula:



(I)

wherein R_2 represents alkylene of 2 to 8 carbons, and R_1 is hydrogen.

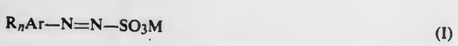
4,515,940

PROCESS FOR THE PREPARATION OF ARYLDIAZOSULFONATES

Rüdiger Berthold, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

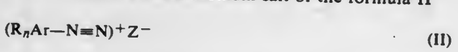
Filed Jun. 24, 1982, Ser. No. 391,855
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125104
Int. Cl.³ C07C *113/04*
U.S. Cl. 534—565 **10 Claims**

1. A process for the preparation of a compound of the formula I



(I)

in which Ar represents an aromatic isocyclic structure or heterocyclic structure, R are identical or different and represent alkyl, aryl, amino, hydroxyl, alkoxy, aryloxy, halogen, nitro, acylamino, carbamoyl, alkylcarbamoyl, arylcarbamoyl, dialkylamino, arylamino, sulfo or sulfamoyl, M represents hydrogen, an alkali metal or one equivalent of an alkaline earth metal, and n represents 0 or an integer from 1 to 5, by reacting an aqueous solution of the diazonium salt of the formula II



(II)

in which Ar, R and n have the abovementioned meanings and Z^- represents one equivalent of an anion, with a solution or suspension of an alkali metal sulfite or alkaline earth metal sulfite, which comprises substantially excluding the presence of an excess of one of the two reactants during the reaction and wherein the diazonium salt solution is added as rapidly as is technically possible to the very rapidly stirred solution or suspension of the sulfite.

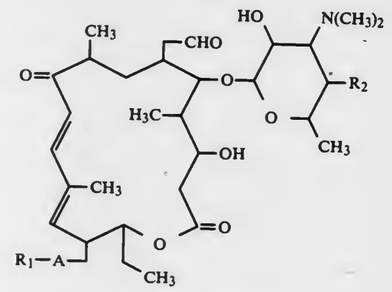
4,515,941

23-DEMYCINOSYLDESMYCOSIN DERIVATIVES

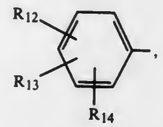
Tatsuro Fujiwara; Hideyuki Watanabe; Takao Hirano, and Hideo Sakakibara, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 30, 1983, Ser. No. 480,398
Claims priority, application Japan, Apr. 7, 1982, 57-58767; Nov. 27, 1982, 57-207950; Dec. 28, 1982, 57-227555
Int. Cl.³ C07H *17/08*
U.S. Cl. 536—7.1 **5 Claims**

1. A compound of the formula



or a non-toxic salt thereof, wherein A is oxygen or sulfur; R_1 is



in which R_{12}, R_{13} and R_{14} are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, nitro and di-lower alkylamino, or R_1 is



in which R_3 is phenyl and R_4 and R_5 are each independently selected from the group consisting of hydrogen, lower alkyl and phenyl; and

R_2 is hydrogen or hydroxyl.

4,515,942

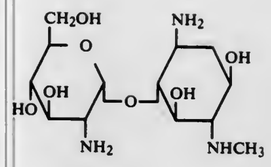
ANTIBIOTICS KA-6606 XII, XIII, XV, XVI AND XVII

Akio Iwasaki, Kawasaki; Takeo Deushi, Higashimurayama; Isamu Watanabe, Higashimurayama, and Toshihito Mori, Higashimurayama, all of Japan, assignors to Kowa Company, Ltd., Aichi, Japan

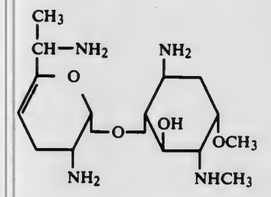
Division of Ser. No. 281,898, Jul. 9, 1981, Pat. No. 4,425,430. This application Oct. 11, 1983, Ser. No. 541,291
Claims priority, application Japan, Jul. 15, 1980, 55-95602; Dec. 27, 1980, 55-185087
Int. Cl.³ C07H *15/22*; C12P *19/48*
U.S. Cl. 536—16.8 **1 Claim**

1. A substantially pure material which is at least one member selected from the group consisting of antibiotics KA-6606 XII, XIII and XV to XVII of the following formulae

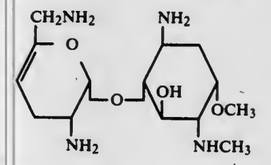
KA-6606 XII



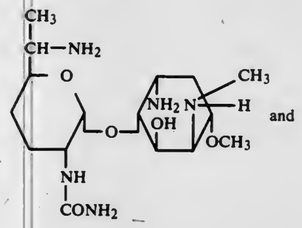
KA-6606 XIII



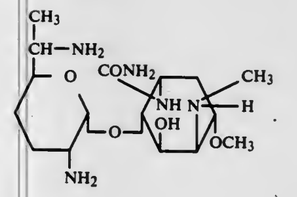
KA-6606 XV



KA-6606 XVI



and



KA-6606 XVII

4,515,943

CRYSTAL OF BETA-NICOTINAMIDE-ADENINE-DINUCLEOTIDE AND PROCESS FOR PREPARING THE SAME

Toyofumi Miya; Yukiharu Kobayashi, and Masao Yano, all of Saiki, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 309,467, Oct. 7, 1981, abandoned. This application Apr. 19, 1983, Ser. No. 486,935
Claims priority, application Japan, Oct. 12, 1980, 55-143012
Int. Cl.³ C07H *19/20, 21/02*
U.S. Cl. 536—27 **5 Claims**

1. A crystalline free acid type β-nicotinamide-adenine-dinucleotide tetrahydrate which is a triclinic system and has a space group of $P\bar{1}$ or P1 and lattice constants: a=8.861 Å, b=11.181 Å, c=8.630 Å, α=90.82°, β=103.40° and γ=109.71°.

4,515,944

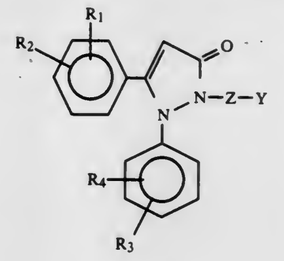
1,5-DIPHENYL-2-HALOALKYLPYRAZOLIN-3-ONE INTERMEDIATES

Henning Heinemann, Hanover, Fed. Rep. of Germany; Daniel Jasserand, Paris, France; Wolfgang Milkowski, Burgdorf, Fed. Rep. of Germany; Dimitri Yavordios, Chatillon sur Chalaronne, France, and Horst Zeugner, Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hannover, Fed. Rep. of Germany

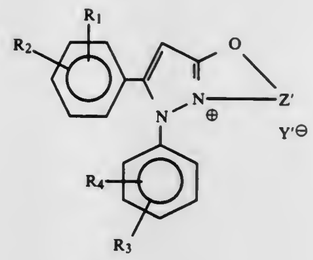
Division of Ser. No. 409,631, Aug. 20, 1982, Pat. No. 4,442,102. This application Dec. 22, 1983, Ser. No. 564,399
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132915
Int. Cl.³ C07D *231/08, 491/02*
U.S. Cl. 544—91 **1 Claim**

1. A compound corresponding to one of the isomeric formulae II or III

II



III



wherein

R_1 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxyl, trifluoromethyl or lower alkanoyloxy group,

R_2 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy group, or

R_1 and R_2 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy group,

R_3 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxy, trifluoromethyl or lower alkanoyloxy group,

R_4 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy group, or

R_3 and R_4 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy group, Z is an alkylene group with 2 to 6 carbon atoms,

Z′ is an alkylene group with 2 to 4 carbon atoms, Y is a halogen atom, and Y′ is a halogen atom, and acid addition salts thereof.

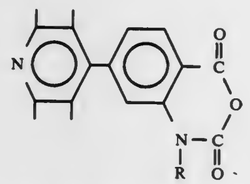
4,515,945

N-ALKYL-4-(4-PYRIDINYL)ISATOIC ANHYDRIDES

Paul F. Ranken, and Thomas J. Walter, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 15, 1983, Ser. No. 522,792
Int. Cl.³ C07D *265/26, 215/16*
U.S. Cl. 544—94 **3 Claims**

1. An N-alkyl-4-(4-pyridinyl)isatoic anhydride corresponding to the formula:



wherein R is an alkyl, haloalkyl, or hydroxyalkyl group containing 1–6 carbons.

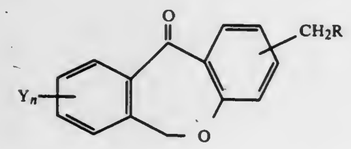
4,515,946

6,11-DIHYDRO-11-OXO-DIBENZ-[b,e]OXEPIN DERIVATIVES

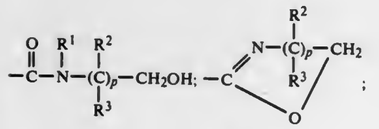
Lawrence L. Martin, Lebanon, and Linda L. Setescak, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

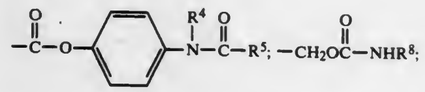
Filed Dec. 23, 1981, Ser. No. 333,835
Int. Cl.³ C07D *313/00;* **A61K** *31/42, 31/335*
U.S. Cl. 548—237 **27 Claims**

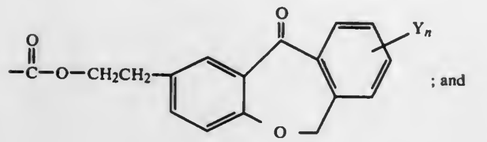
1. A 6,11-dihydrodibenz[b,e]oxepin acid derivative having the formula



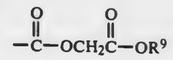
where Y is alkyl, alkoxy, halogen and trifluoromethyl, R is





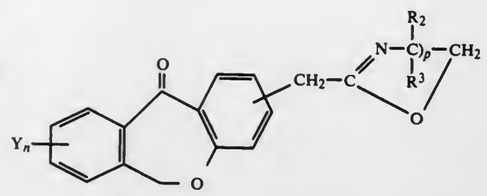


; and

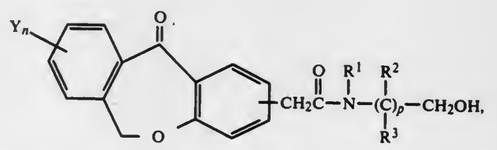


where n is 0, 1, 2 or 3; p is 1 or 2; q is 0, 1 or 2; R^1 to R^7 are the same or different and are hydrogen and alkyl; R^8 is hydrogen, alkyl and phenyl and R^9 is alkyl.

10. A method of preparing a compound of the formula

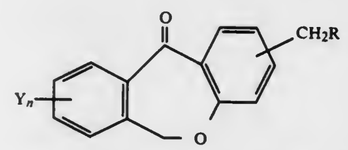


where Y is alkyl, alkoxy, halogen and trifluoromethyl, n is 0, 1, 2 or 3; p is 1 or 2; which comprises cyclizing a compound having the formula

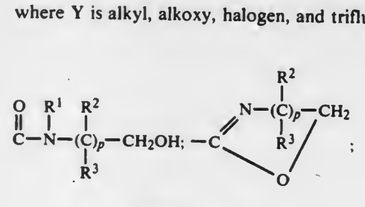


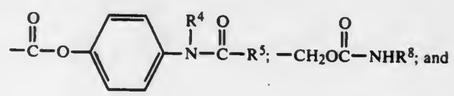
where R^1–R^3 are the same or different and are hydrogen and alkyl.

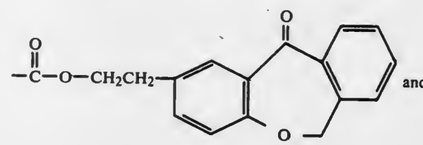
12. An antiinflammatory composition which comprises an effective antiinflammatory amount of a compound of the formula



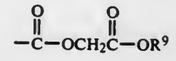
where Y is alkyl, alkoxy, halogen, and trifluoromethyl; R is







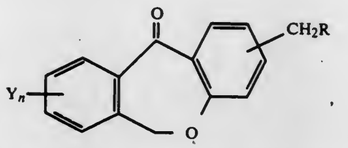
and



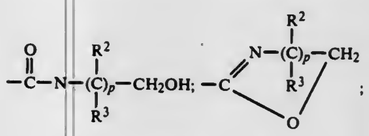
where n is 0, 1, 2 or 3; p is 1 or 2; q is 0, 1 or 2; R^1 to R^7 are the same or different and are hydrogen and lower alkyl and R^8 is hydrogen, lower alkyl and phenyl and R^9 is alkyl.

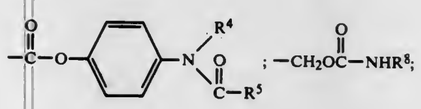
15. The composition as defined in claim **12** which comprises 2-(6,11-dihydro-11-oxodibenz[b,e]-oxepin-2-yl)methyl-4,4-dimethyloxazoline or a pharmaceutically acceptable salt thereof.

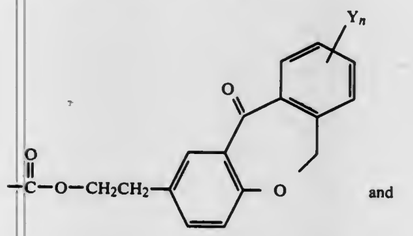
20. An analgesic composition which comprises an effective pain alleviating amount of a compound of the formula



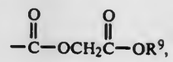
where Y is alkyl, alkoxy, halogen and trifluoromethyl; R is







and



where n is 0, 1 2 or 3; p is 1 or 2; q is 0, 1, or 2; R^1 to R^7 are the same or different and are hydrogen and lower alkyl, R^8 is hydrogen, lower alkyl and phenyl and R^9 is alkyl.

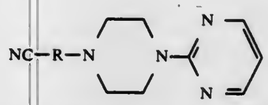
4,515,947

CYANOALKYLPIPERAZINES AND METHODS FOR THEIR PREPARATION AND USE

Louise O. Sandefur; Wojciech Slusarek, both of Rochester; Burton D. Wilson, Webster, and Cataldo A. Maggiulli, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1982, Ser. No. 407,216
Int. Cl.³ C07D *403/04*
U.S. Cl. 544—295 **22 Claims**

15. A method for preparing a 1(cyanoalkyl)-4-(2-pyrimidyl)-piperazine represented by the structural formula

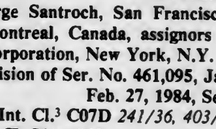


wherein R represents an alkylene group having from 1 to 5 carbon atoms, the method comprising the steps of:

(a) reacting piperazine with a haloalkylnitrile represented by the structural formula

X—R—CN

wherein X represents a halo group and R is as previously defined, in the presence of an acid acceptor to form a cyanoalkylpiperazine represented by the structural formula



wherein R is as previously defined, and

(b) reacting the cyanoalkylpiperazine with a 2-halopyrimidine in the presence of an acid acceptor to form the 1-(cyanoalkyl)-4-(2-pyrimidyl)piperazine.

4,515,948

2,4-DIAMINO-5-(4-AMINO AND 4-DIMETHYLAMINO-3,5-DIMETHOXY BENZYL)PYRIMIDINES

Ivan Kompis, Oberwil; Gérald Rey-Bellet, Basel, and Guido Zanetti, Füllinsdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 63,292, Aug. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 795,828, May 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 504,416, Sep. 9, 1974, abandoned. This application Jun. 30, 1981, Ser. No. 279,106
Claims priority, application Switzerland, Sep. 12, 1973, 13057/73; Jul. 22, 1974, 10063/74
Int. Cl.³ C07D *239/48*
U.S. Cl. 544—325 **4 Claims**

1. A compound, 2,4-diamino-5-(4-amino-3,5-dimethoxybenzyl)-pyrimidine or a pharmaceutically acceptable acid addition salt thereof.

4. A compound, 2,4-diamino-5-[4-(dimethylamino)-3,5-dimethoxy-benzyl]-pyrimidine, or a pharmaceutically acceptable acid addition salt thereof.

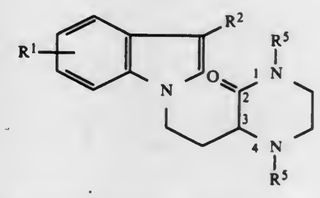
4,515,949

[2-(1H-INDOL-1-YL)ETHYL]-2-PIPERAZINE AND PYRIDO[1,2-a]INDOL-9-ONE AS INTERMEDIATES FOR PYRAZINO(2,3-3,4)PYRIDO(1,2-a) INDOLES WHICH ARE USEFUL FOR TREATING HYPERTENSION IN MAMMALS

George Santroch, San Francisco, Calif., and Ivo Jirkovsky, Montreal, Canada, assignors to American Home Products Corporation, New York, N.Y.

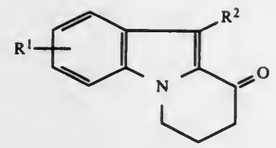
Division of Ser. No. 461,095, Jan. 26, 1983,. This application Feb. 27, 1984, Ser. No. 583,908
Int. Cl.³ C07D *241/36, 403/00, 451/00;* **A61K** *31/495*
U.S. Cl. 544—343 **6 Claims**

1. A compound of the formula



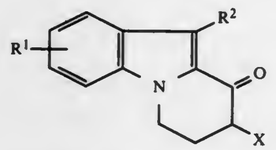
in which R^1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; R^2 is hydrogen or lower alkyl having one to three carbon atoms; and R^5 is benzyl or lower alkyl.

3. A compound of the formula



in which R^1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; and R^2 is hydrogen or lower alkyl having one to three carbon atoms.

5. A compound of the formula



in which R^1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; R^2 is hydrogen or lower alkyl having one to three carbon atoms; and X is bromo or chloro.

4,515,950

PROCESS FOR THE ISOMERIZATION OF ERGOVINE DERIVATIVES

Zdenek Brich, and Herbert Mühle, both of Binningen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

PCT No. PCT/CH81/00105, § 371 Date Apr. 26, 1982, § 102(e) Date Apr. 26, 1982

PCT Filed Sep. 23, 1981, Ser. No. 375,290

Claims priority, application Switzerland, Sep. 23, 1980, 7122/80

Int. Cl.³ C07D *519/02*

U.S. Cl. 546—67 **19 Claims**

1. A process for the production of an 8α-substituted ergoline having an electron withdrawing group as the 8α-substituent which comprises the steps of

(1) producing an anion of an ergoline having an electron withdrawing substituent in the 8β-position by deprotonating the ergoline under strongly basic conditions with a strong non-nucleophilic lithium amide base and

(2) thereafter protonating the resultant anion.

4,515,951

PREPARATION OF 5,6,7,7A-TETRAHYDRO-4H-THIENO[3,2-c]PYRIDIN-2-ONE COMPOUNDS

Robert Boigegrain; Jean-Pierre Maffrand, both of Portet-sur-Garonne, France; Norio Suzuki, Chiba, Japan; Kynichi Matsubayachi, Funabashi, Japan, and Shinichiro Ashida, Ichikawa, Japan, assignors to Sanofi, Paris, France

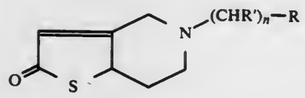
Division of Ser. No. 325,805, Nov. 30, 1981, abandoned. This application Jul. 25, 1984, Ser. No. 635,461

Claims priority, application France, Nov. 28, 1980, 80 25274

Int. Cl.³ C07D *495/04*

U.S. Cl. 546—114 **13 Claims**

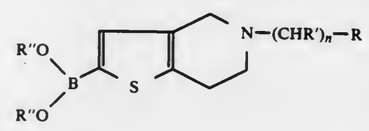
1. A process for the preparation of a compound of the formula:



(I)

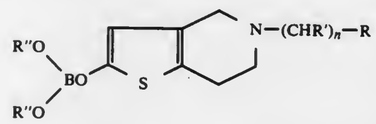
in which R is hydrogen or phenyl, R′ is hydrogen or a lower alkyl and n is 0, 1, 2, 3, or 4, which comprises the steps of:

(a) oxidizing a boronic acid derivative of the formula:



(V)

in which R, R′ and n are as hereinbefore described, and R″ is a hydrogen atom or a lower alkyl radical, so as to obtain the boric derivative of the formula;



(VI)

in which R, R′,R″ and n are as hereinbefore described, and then,

(b) hydrolyzing said boric acid derivative to obtain a compound of formula (I).

4,515,952

SYNTHESIS OF 2-PYRIDYLALKYLAMINES SUBSTITUTED ON THE PYRIDYL RING BY BROMINE

Brian M. Adger, Hildenborough near Tonbridge, and David J. O'Rourke, Cobham, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

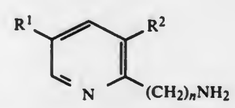
Filed Mar. 22, 1983, Ser. No. 477,037

Claims priority, application United Kingdom, Mar. 25, 1982, 8208749

Int. Cl.³ C07D *213/61*

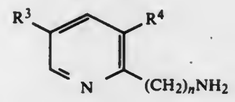
U.S. Cl. 546—329 **4 Claims**

1. A process for preparing a compound of formula (II):



(II)

and salts thereof where one of R^1 and R^2 is C_{1-4} alkyl, the other is bromo and n is from 3 to 5 which comprises reacting a salt of a compound of formula (III):



(III)

where one of R^3 and R^4 is C_{1-4} alkyl and the other is hydrogen with an electrophilic brominating agent in an oxidizing polar medium.

4,515,953

PRODUCTION OF POLYCHLORINATED PYRIDINE MIXTURES BY LIQUID PHASE CHLORINATION OF PYRIDINE OR PYRIDINE HYDROCHLORIDE

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Filed Apr. 22, 1983, Ser. No. 487,751

Int. Cl.³ C07D *213/61*

U.S. Cl. 546—345 **38 Claims**

1. The process of noncatalytically chlorinating pyridine or pyridine hydrochloride in the liquid phase without substantial formation of intractable nonvolatiles, said process comprising:

(a) establishing in a reactor means a diluent reactor charge which is made up of chlorinated pyridine and/or picoline compounds, said diluent reactor charge being essentially nonreactive with chlorine in the sense of forming one mole or less of hydrogen chloride per mole of diluent under the reaction conditions to which the reactants in the reactor means are subjected;

(b) while maintaining the reactor charge in the liquid phase and at a temperature of about 150° C. to 260° C., sparging chlorine and pyridine or pyridine hydrochloride into the reactor charge near the bottom thereof at a chlorine-to-pyridine feed ratio of at least about 4:1 by weight and at a feed rate low enough so that any separation of the reactor charge into a second, lighter phase composed of unchlorinated pyridine hydrochloride is minimized and is in any event less than about 10% of the reactor charge by volume, the excess of chlorine being fed to the reactor charge relative to the amount of pyridine being fed thereto providing enhanced agitation of the reaction mass and sufficient chlorine to ensure that the chlorine partial pressure in the vapor space over the reaction mass is greater than 50% of the total pressure; and

(c) continuing chlorine addition and maintaining such reaction conditions until substantial nuclear substitution of chlorine in the pyridine or pyridine hydrochloride has occurred.

4,515,954

METAL CHELATES OF ANTHRACENE-9,10-BIS-CARBONYLHYDRAZONES

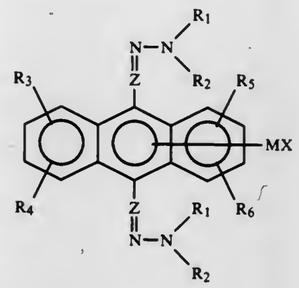
Stanley A. Lang, Jr., Blauvelt, and Keith C. Murdock, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 295,946, Aug. 24, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 500,225

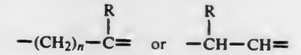
Int. Cl.³ C07D *233/06*

U.S. Cl. 548—109 **8 Claims**

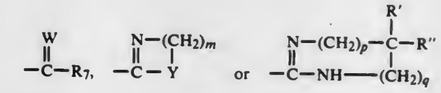
1. A chelated compound selected from the group consisting of those of the formula:



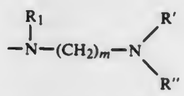
wherein Z is a trivalent moiety of the formulae:



wherein n is 0, 1, 2, or 3 and R is hydrogen or alkyl (C_1-C_4); R_1 is hydrogen or alkyl (C_1-C_4); R_2 is hydrogen, alkyl (C_1-C_4) or a monovalent moiety of the formulae:



wherein m is 2, 3, 4 or 5, p is 1, 2 or 3, q is 0, 1 or 2; R′ is hydrogen or alkyl (C_1-C_4); R″ is hydrogen or alkyl (C_1-C_4); R_7 is alkyl (C_1-C_4), amino, anilino, hydrazino, alkylamino (C_1-C_4), dialkylamino wherein each alkyl group has up to 4 carbon atoms, α-phenethylamino, β-phenethylamino, pyrrolidino, piperidino, N-methylpiperazino or a moiety of the formula:



wherein m, R_1, R′ and R″ are as hereinbefore defined and the moiety —NR′R″ may be pyrrolidino, piperidino, morpholino or N-methylpiperazino; W is oxo (O=), thioxo (S=) or imino (R′—N= wherein R′ is as hereinbefore defined) and Y is oxy (—O—), thio (—S—), or methylene (—CH_2—); and R_3, R_4, R_5 and R_6 are each individually selected from the group consisting of hydrogen, halogen (F, Cl, Br, I), hydroxy, nitro, amino, sulfonamido, alkyl (C_1-C_3) and alkoxy (C_1-C_3); M is platinum, copper, iron, zirconium, cobalt, chromium or zinc; X is sulfate, halogen (F, Cl, Br, I), nitrate, dicyclopentadienyl or amine ligand; and the nontoxic pharmaceutically acceptable acid-addition and quaternary ammonium salts thereof.

4,515,955

ISOINDOLINE CATIONIC DYES

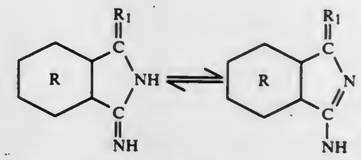
Robert F. Coles, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1982, Ser. No. 355,324

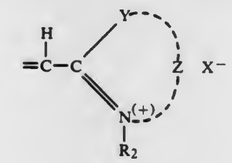
Int. Cl.³ C07D *413/06, 417/06, 403/06;* **D06P** *1/42*

U.S. Cl. 548—150 **13 Claims**

1. Isoindoline derivative monosubstituted in the 1-position corresponding to the formula



wherein the cyclic radical R is an aromatic ring, and R_1 is a substituent represented by the general formula



where Y is an oxygen, nitrogen, sulfur, or carbon atom, Z is the atom or atoms necessary to form a 5-membered or 6-membered heterocyclic ring, said heterocyclic ring consisting of atoms selected from the group consisting of carbon, nitrogen, sulfur, oxygen, and selenium ring atoms, R_2 is an alkyl, sulfoalkyl, or carboxyalkyl radical, and X^- is the anion for the cationic quaternary nitrogen.

4,515,956

SELECTIVE PREPARATION OF ISOMERS AND ENANTIOMERS OF CYCLOPROPANE CARBOXYLIC ACIDS

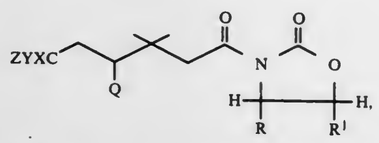
William A. Kleschick, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 450,500, Dec. 16, 1982, Pat. No. 4,479,005. This application Aug. 13, 1984, Ser. No. 639,768

Int. Cl.³ C07D *263/24, 263/26*

U.S. Cl. 548—230 **17 Claims**

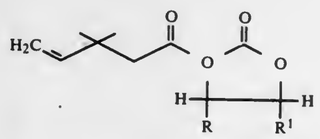
1. A compound corresponding to formula II



(II)

wherein X and Y are each independently halo, C_1 to C_4 perhaloalkyl, C_1 to C_4 alkyl, —CN, $—CO_2R''$ or $—CONR''_2$, wherein R'' at each occurrence is C_1 to C_4 alkyl, with the proviso that at least one of X or Y is halo or perhaloalkyl, Q and Z are each independently —Br or —Cl, and R and R^1 are each independently hydrogen, C_1 to C_4 alkyl, phenyl, benzyl or $—CH_2CH_2SCH_3$.

17. A compound corresponding to the formula V



(V)

wherein R and R^1 are each independently —H, C_1 to C_4 alkyl, phenyl, benzyl or $—CH_2CH_2SCH_3$.

4,515,957

PURIFICATION OF MERCAPTOBENZOTHIAZOLE

Chong-Kuang Shaw, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 20, 1982, Ser. No. 410,170

Int. Cl.³ C07D *277/72*

U.S. Cl. 548—177 **12 Claims**

1. In a process for purification of crude 2-mercaptobenzothiazole (MBT) which comprises dissolving crude MBT in an aqueous alkali metal hydroxide solution in a reactor by adding the alkaline solution to the crude MBT, and agitating contents of the reactor until essentially all MBT is converted to the MBT salt, the improvement comprising measuring pH of the salt solution when addition of the alkaline solution is made during which time an abrupt rise in pH takes place that follows a period of gradual pH increase, and stopping addition of the alkaline solution in response to the abrupt rise in pH in order to limit addition of the excess alkali metal hydroxide to about 5% or less.

4,515,958

PROCESS FOR PREPARING 1-ALKYL-5-MERCAPTOTETRAZOLES

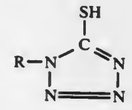
Ming Shen, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 25, 1983, Ser. No. 517,103

Int. Cl.³ C07D *257/04*

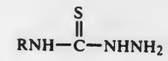
U.S. Cl. 548—251 **11 Claims**

1. A process for making 1-alkyl-5-mercaptotetrazoles of the formula:



wherein R is an alkyl group having 1 to 6 carbon atoms, comprising the steps of:

(a) reacting (i) the corresponding 4-alkylthiosemicarbazide of the formula:



wherein R is defined above with (ii) a base of the formula:

MB

wherein M is a metal cation selected from the group consisting of alkali metal cations and, B is selected from the group consisting of a hydroxide or an alkoxide and with (iii) an alkyl nitrite of the formula:

R_1ONO

wherein R_1 is an alkyl group having 1 to 8 carbon atoms to form a reaction mixture comprising the metal salt of 1-alkyl-5-mercaptotetrazole; and

(b) contacting said reaction mixture with sufficient acid to convert at least a major portion of said metal salt of said 1-alkyl-5-mercaptotetrazole into free 1-alkyl-5-mercaptotetrazole.

4,515,959

BIOLOGICALLY ACTIVE AMIDES

Ian T. Kay, Wokingham, and Robert A. Noon, Maidenhead, both of England, assignors to Imperial Chemical Industries PLC, London, England

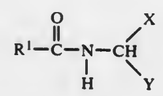
Filed Aug. 17, 1982, Scr. No. 408,894

Claims priority, application United Kingdom, Sep. 30, 1981, 8129521

Int. Cl.³ C07D *231/12, 249/08, 257/04, 405/12*

U.S. Cl. 548—378 **5 Claims**

1. Amide compounds of the formula (I)



(I)

wherein R^1 is (a) a phenyl group optionally substituted by one or more halogen atoms, cyano groups, alkoxy groups, methylene- or ethylene-dioxy groups, alkyl groups, or haloalkyl groups; or (b) a furyl or thiophenyl group optionally substituted by one or more alkyl groups, haloalkyl groups or halogen atoms; X is a pyrazolyl, tetrazolyl or 1,2,4-triazolyl radical linked by a ring nitrogen atom to the carbon atom bearing Y, and optionally substituted by one or more alkyl groups, and Y is a CN group; a $—CSNH_2$ group; or an amide group $—CONR^5R^6$ wherein each of R^5 and R^6 may be a hydrogen

atom or an alkyl radical, each alkoxy, alkyl and haloalkyl referred to above containing from 1 to 6 carbons.

4,515,960

SPIRO-2-AZA-ALKANE-3-CARBONITRILES, THEIR PREPARATION AND THEIR USE

Volker Teetz, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

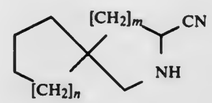
Filed May 16, 1983, Ser. No. 494,983

Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218540

Int. Cl.³ C07D *221/20, 223/32, 223/14, 225/06*

U.S. Cl. 548—408 **2 Claims**

1. Compound of the formula I



(I)

in which m is an integer of from 1 to 3 and n is an integer of from 1 to 4.

4,515,961

RESOLUTION OF (±)-1,8-DIETHYL-1,3,4,9-TETRAHYDROPYRANO[3,4-b] INDOLE-1-ACETIC ACID USING ENRICHMENT CRYSTALLIZATION

Christopher A. Demerson, Montreal, and Leslie G. Humber, Dollard-des-Ormeaux, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,986

Int. Cl.³ C07D *498/04*

U.S. Cl. 548—432 **3 Claims**

1. A process for preparing (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid, which comprises allowing a solution of benzene-petroleum ether or toluene-petroleum ether containing an enantiomeric mixture of (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole]-acetic acid having at least 70 percent of (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid to crystallize, and collecting substantially pure (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid.

3. A process for preparing (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid, which comprises dissolving one part by weight of an enantiomeric mixture of (+)- and (−)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid having at least 70 percent of (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid in about 4 to 5 parts by weight of toluene or benzene at about 50° to 100° C.; adding about 6 to 7 parts by weight of petroleum ether; seeding the solution with (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid; allowing the solution to crystallize for about one to four hours; and isolating substantially pure (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid.

4,515,962

ALLYL OR METHALLYL-BICYCLO[2.2.1]HEPT-5-ENE-2,3-DICARBOXYLIC ACID IMIDES AND BISIMIDES

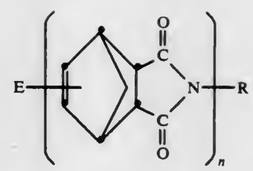
Alfred Renner, Muntelier, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,096

Int. Cl.³ C07D *209/94*

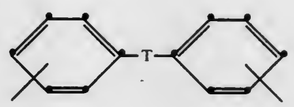
U.S. Cl. 548—435 **7 Claims**

1. An imide of the formula I



(I)

in which E is allyl or methallyl, n is 1 or 2 and, if n is 1, R is hydrogen, alkyl having 1–12C atoms, alkenyl having 3–6C atoms, cycloalkyl having 5–8C atoms, phenyl, tolyl, xylyl or naphthyl, or benzyl or, if n is 2, R is $—C_mH_{2m}—$, in which m=2–20, m-phenylene, p-phenylene, 1,3-naphthylene, 1,4-naphthylene or 1,5-naphthylene group having 6–10C atoms or a group of the formula II



(II)

in which T is methylene, isopropylidene, CO, O, S or SO_2.

4,515,963

PROCESS FOR PRODUCING 1,8-NAPHTHOLACTAM COMPOUNDS

Rainer Begrich, Rheinfelden, Switzerland, assignor to Ciba Geigy AG, Basel, Switzerland

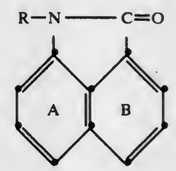
Filed Jan. 14, 1983, Ser. No. 458,394

Claims priority, application Switzerland, Jan. 22, 1982, 407/82

Int. Cl.³ C07D *487/00*

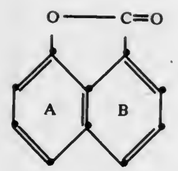
U.S. Cl. 548—437 **5 Claims**

1. A process for producing a 1,8-naphtholactam compound of the formula I



(I)

wherein R is hydrogen; a C_1–C_4-alkyl group optionally substituted by C_1–C_4-alkoxy, halogen, OH, CN, COOH, CON(alkyl C_1–C_4)$_2$ or phenyl; a cycloalkyl group or a phenyl group optionally substituted by halogen, C_1–C_4-alkyl, CN, C_1–C_4-alkoxy, COOH, CON(alkyl C_1–C_4)$_2$ or SO_2N-(alkyl C_1–C_4)$_2$, and the benzo rings A and/or B are unsubstituted or substituted once or several times by halogen, CN, NO_2, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-phenylsulfonyl, arylsulfonyl, alkyl(-C_1–C_4)-carbamoylamino, benzoylamino, COOH, COO-alkyl(-C_1–C_4), $CONH_2$, CONH(C_1–C_4-alkyl), CON(C_1–C_4-alkyl)$_2$, SO_2NH_2, SO_2NH(C_1–C_4-alkyl) or SO_2N(C_1–C_4-alkyl)$_2$, which process comprises reacting a 1,8-naphtholactone compound of the formula II



with an amine of the formula III

$NH_2—R$ (III),

optionally in the presence of bisulfite.

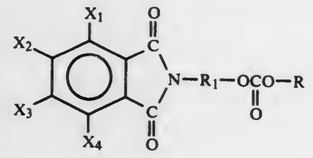
4,515,964

POLYHALOPHTHALIMIDOALKYL-FUNCTIONAL CARBONATES

Nicodemus E. Boyer, Schaumburg, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

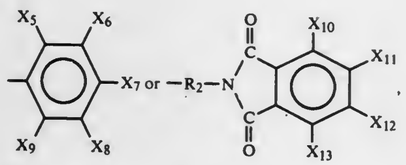
Division of Ser. No. 337,660, Jan. 7, 1982, Pat. No. 4,414,396.
This application Apr. 25, 1983, Ser. No. 488,462
Int. Cl.³ C07D *209/48; 403/12*
U.S. Cl. 548—463 **16 Claims**

1. A compound represented by the structural formula:



(I)

wherein
a. R is



b. R_1 and R_2 are each independently straight chain or branched alkylene having from about 2 to about 5 carbon atoms, and
c. X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, and X_{13} are each independently hydrogen, chloro or bromo, with the provisos that:
(1) at least three of X_1, X_2, X_3, and X_4 are each independently chloro or bromo,
(2) at least three of X_5, X_6, X_7, X_8, and X_9 are each independently chloro or bromo, and
(3) at least three of X_{10}, X_{11}, X_{12}, and X_{13} are each independently chloro or bromo.

4,515,965

PROCESS FOR PREPARING MALEIMIDE

Stephen S. Hupp, Dublin, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 10, 1984, Ser. No. 579,063
Int. Cl.³ C07D *207/448*
U.S. Cl. 548—548 **7 Claims**

1. A process for the preparation of maleimide consisting essentially of subjecting a mixture of succinimide, air and water to oxidative dehydrogenation at a temperature in the range of from 300° to 550° C. over a catalyst having the formula $FeP_xMe_yO_z$ wherein Me is one of more of the elements Li, Na, K, Rb, Cs, Mg, Ca, Sr and Ba; x is from 0.2–3.0; y is from 0–2 and z is the value corresponding to average valences of the elements in the oxidation states in which they exist in the catalyst. (II)

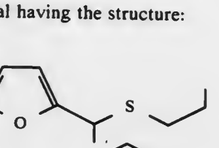
4,515,966

4,5-DIMETHYL-2-(2-METHYLTHIO)ETHYL)-1,3-OXATHIOLANE

Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,747
Int. Cl.³ C07D *327/04*
U.S. Cl. 549—30 **1 Claim**

1. 2-[2-(methylthio)ethyl]-1,3-oxathiolane having the structure:



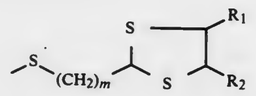
4,515,967

METHYL(METHYLTHIOALKYL)-1,3-DITHIOLANES

Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,748
Int. Cl.³ C07D *339/06*
U.S. Cl. 549—39 **4 Claims**

1. A compound defined according to the structure:



wherein R_1 and R_2 are the same or different and each represents methyl or hydrogen with a proviso that at least one of R_1 and R_2 is methyl; and wherein m represents an integer of 1 or 2 and with the further proviso that when m is 1, then both R_1 and R_2 are methyl.

4,515,968

FURYL AND PHENYL MERCAPTALS AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS

Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,151
Int. Cl.³ C02D *333/00;* **A23C** *3/00*
U.S. Cl. 549—39 **3 Claims**

1. The mercaptal having the structure:

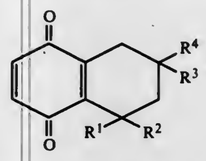
4,515,969

CYCLIC COMPOUNDS

Michael J. Broadhurst, Baldock; Cedric H. Hassall, Welwyn, and Gareth J. Thomas, Luton, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

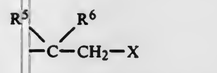
Continuation of Ser. No. 312,579, Oct. 19, 1981, abandoned, Division of Ser. No. 111,348, Jan. 11, 1980, Pat. No. 4,316,985.
This application Jan. 23, 1984, Ser. No. 573,260
Claims priority, application United Kingdom, Jan. 16, 1979, 7901537; Jul. 26, 1979, 7926151
Int. Cl.³ C07D *339/06, 317/26, 50/10*
U.S. Cl. 549—39 **9 Claims**

1. The compound of the formula



V

wherein one of R^1 and R^2 represents a hydrogen atom and the other represents a hydroxy group R^3 represents a hydroxy group and R^4 represents a lower alkyl or loweralkoxycarbonyl or benzyloxycarbonyl group or a group of the formula



a

in which R^5 and R^6 together form an oxo group or an ethylene ketal or ethylene thio ketal group and X represents a hydrogen atom or a hydroxy or lower alkanoyloxy group, or

$—(CH_2)_n—OY$ b

in which n stands for 1 or 2 and Y represents a hydrogen atom or an alkyl or lower alkanoyl group.

4,515,970

PROCESS FOR PREPARATION OF ALKANOIC ACIDS

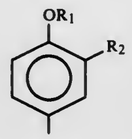
Yani Christidis, and Jean-Claude Vallejos, both of Paris, France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Apr. 17, 1984, Ser. No. 601,221
Claims priority, application France, Apr. 29, 1983, 83 07137
Int. Cl.³ C07D *333/24;* **C07C** *63/36*
U.S. Cl. 549—79 **10 Claims**

1. A process for preparation of substituted acetic acids having the general formula I:

$Ar—CHR—COOH$ I

in which R is selected from the group consisting of one hydrogen atom and C_1–C_4-alkyl radicals, and Ar is selected from the group consisting of radicals of aromatic nature selected from the following radicals: 2-thienyl, 2-methoxy-1-naphthyl, 3,4-methylenedioxy-phenyl, and the substituted phenyls of the general formula II:

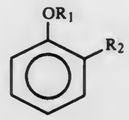


II

where R_1 is selected from the group consisting of hydrogen and C_1–C_4-alkyl groups, and R_2 is selected from the group consisting of hydrogen, halogen, alkyl, alkoxy and hydroxy-groups, such process comprising the step of reacting under heat in an acid medium, in the presence of red phosphorus and catalytic quantities of iodine or hydriodic acid, an alpha carbonylated carboxylic acid having the general formula III:

$R—CO—COOH$ III

in which R has the same meaning as above with an unsaturated derivative of aromatic nature selected from the group consisting in thiophene, 2-methoxynaphthalene, 1,2-methylenedioxybenzene, and the substituted aromatic hydrocarbons having the general formula IV:



IV

in which R_1, R_2 have the same meanings as above.

4,515,971

5′/6′-CARBOXYFLUORANS AND DERIVATIVES THEREOF

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Hilton-Davis Chemical Co., Cincinnati, Ohio

Continuation-in-part of Ser. No. 135,855, Mar. 31, 1980, Pat. No. 4,298,215, which is a continuation-in-part of Ser. No. 39,017, May 14, 1979, Pat. No. 4,274,660. This application Jul. 6, 1981, Ser. No. 281,027
Int. Cl.³ C07D *311/86*
U.S. Cl. 549—225 **7 Claims**

1. 2-Anilino-3-methyl-6-diethylamino5′/6′phenylmethoxycarbonylfluoran.

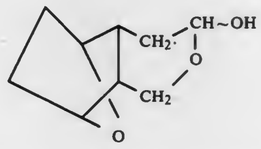
4,515,972

INTERMEDIATES AND METHOD FOR PRODUCING INTERMEDIATES USEFUL IN THE PREPARATION OF 7-OXABICYCLOHEPTANE PROSTAGLANDIN DERIVATIVES

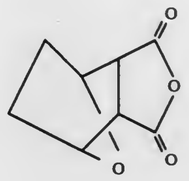
Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 19, 1983, Ser. No. 543,564
Int. Cl.³ C07D *493/08, 307/77*
U.S. Cl. 549—229 **17 Claims**

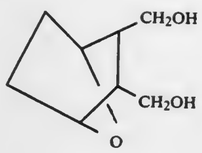
1. A method for preparing a hemiacetal of the structure



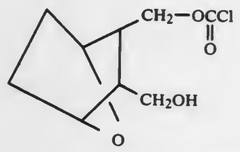
which comprises reducing a dione (mesoanhydride) of the structure



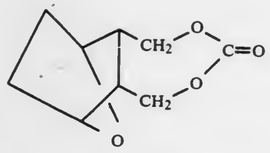
to form a diol of the structure



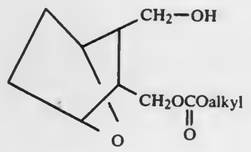
chloroformylating the diol by reacting same with phosgene to form the alcohol of the structure



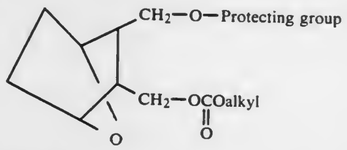
reacting the alcohol with pyridine to form the cyclic carbonate of the structure



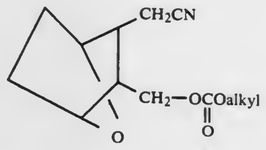
reacting the cyclic carbonate with an alkanol to form an alcohol of the structure



reacting the alcohol with a protecting compound containing a sulfonyl group to form the protected alcohol of the structure

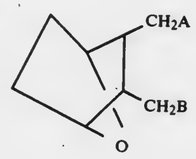


wherein "Protecting group" contains a sulfonyl moiety, reacting the protected alcohol with a cyanide to form the cyanocarbonate of the structure



and reducing the cyano carbonate to form the hemiacetal.

9. An intermediate for use in preparing 7-oxabicycloheptane prostaglandin derivatives, said intermediate having the structure



wherein

A is



OH, O-Protecting group, or CN and

B is OH where A is



and B is



wherein A is OH, O-Protecting group or CN and wherein "Protecting group" contains a sulfonyl moiety.

4,515,973

PROCESS FOR PRODUCING MALEIC ANHYDRIDE

James T. Wrobleski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1983, Ser. No. 566,378

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **26 Claims**

1. A process for the production of maleic anhydride by the oxidation of a nonaromatic hydrocarbon having at least four carbon atoms in a straight chain with molecular oxygen or a molecular oxygen containing gas in the vapor phase at a temperature from abut 300° C. to about 600° C. in the presence of a phosphorus-vanadium mixed oxide catalyst wherein the catalyst is prepared by:

(a) contacting a tetravalent vanadium compound, dissolved in an aqueous, non-oxidizing acid medium, with crystalline diphosphoric acid to form a phosphorus-vanadium mixed oxide catalyst precursor;

(b) crystallizing the catalyst precursor from the catalyst precursor aqueous solution in a controlled manner involving at least three cycles of concentrating/diluting wherein a fraction of the liquid from about 0.15 to about 0.85 is removed during the concentrating step and water is added during the diluting step in an amount sufficient to provide a water added/solvent removed volume ratio from about 0.10 to about 10.0, with the proviso that the final liquid-/initial liquid volume ratio is from about 0.20 to about 2.0;

(c) recovering the catalyst precursor crystals;

(d) drying the catalyst precursor;

(e) forming the dried catalyst precursor into structures, and

(f) calcining the catalyst precursor structures at a temperature from about 300° C. to about 600° C.

4,515,974

PROCESS FOR THE PREPARATION OF FUMARIC ACID MONOESTERS

Wilfried Zecher, and Rudolf Merten, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,037

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127432

Int. Cl.³ C07C *67/08, 69/60;* **C07D** *319/02, 319/04, 319/12, 307/46*

U.S. Cl. 549—372 **19 Claims**

1. A process for the preparation of a fumaric acid monoester which comprises contacting in the presence of a cis-trans catalyst an unsubstituted or substituted maleic anhydride in the form of a solution or in the form of a melt thereof with a hydroxyl compound at a temperature in the range of 100° C. to 220° C.

6. A process according to claim **1**, wherein the hydroxyl compound has the formula

$$R^3(OH)_n \quad \text{(II)}$$

in which

R^3 denotes alkyl, alkenyl, alkinyl, aralkyl, aryl, cycloalkyl, a 5-membered or 6-membered heterocyclic radical having 1 or 2 oxygen or nitrogen atoms, or the radical of a polyether, polyester, polyurea, polyurethane, polyimide or polyhydantoin and

n represents one of the numbers 1, 2 or 3.

14. A process according to claim **6**, wherein said 5-membered or 6-membered heterocyclic radical having 1 or 2oxygen atoms is furan or dioxane.

4,515,975

CHROMAN DERIVATIVES AND THEIR PREPARATION

Friedrich Vogel, Wachenheim, and Joachim Paust, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 315,856, Oct. 28, 1981, abandoned. This application Nov. 4, 1982, Ser. No. 439,625

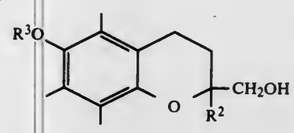
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044109

Int. Cl.³ C07D *311/22*

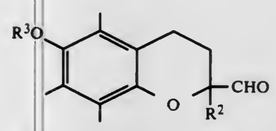
U.S. Cl. 549—411 **2 Claims**

1. A process for the preparation of a 2-hydroxy-methylchroman or a 2-formylchroman of the formula IIa or IIb

IIa



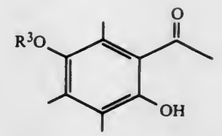
IIb



where R^2 is C_1-C_4-alkyl and R^3 is hydrogen or a protective group, which comprises

(a) reacting acetyl-trimethylhydroquinone IV

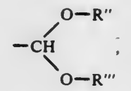
IV



with a ketone of the formula V

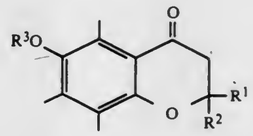
$$R^2\text{—CO—}R^1 \quad \text{V}$$

where R^1 is $-CH_2-O-R'$ or



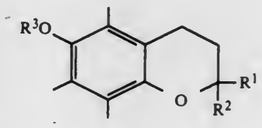
where R' is C_1-C_4-alkyl or arylmethyl and R'' and R''' are each C_1-C_4-alkyl, which can also be bonded to form a five-membered or six-membered cyclic acetal, in the presence of an optically active amine to give a chroman derivative Id

Id



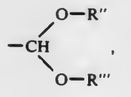
(b) hydrogenating Id under dehydrating conditions to give Ia

Ia



and

(c) converting R^1 in Ia to hydroxymethyl, if R^1 is $-CH_2-O-R'$, or to formyl, if R^1 is



by hydrolysis or hydrogenolysis.

4,515,976

METHOD FOR PREPARING ASYMMETRICAL DISILOXANES

Gerhard Preiner, and Johann Müller, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,389

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312737

Int. Cl.³ C07F *7/08*

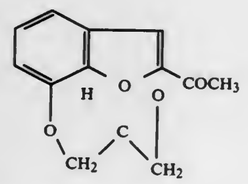
U.S. Cl. 556—453 **8 Claims**

1. A method for preparing asymmetrical disiloxanes which comprises reacting (a) a silane having three SiC-bonded monovalent organic radicals of which at least one may be substituted with Si-bonded hydrogen and an SiOC-bonded monovalent organic radical with (b) a symmetrical disiloxane which is

different from the disiloxane obtained from the hydrolysis of silane (a) in which at least two of the substituents of disiloxane (b) are the same in the presence of water and an acid.

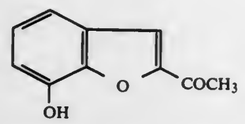
4,515,977
PROCESS FOR PREPARING OPTICALLY ACTIVE [S]-2-ACETYL-7-(2-HYDROXY-3-ISOPROPYLAMINO-PROPOXY)BENZOFURAN AND SALTS THEREOF
Jun Nakano, Moriyama; Teruo Nakanishi, Kyoto, and Kazuhiko Kimura, Otsu, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan
Filed Mar. 16, 1983, Ser. No. 475,925
Claims priority, application Japan, Mar. 16, 1982, 57-42145
Int. Cl.³ C07D *307/86*
U.S. Cl. 549—468 **2 Claims**

1. A process for preparing [S]-2-acetyl-7-(2,3-epoxypropoxy)benzofuran of the following formula:



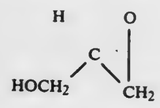
which comprises subjecting 2-acetyl-7-hydroxybenzofuran of the formula (I):

(I)



and [R]-glycidol of the formula (II):

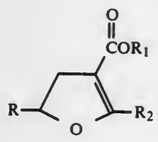
(II)



to redox dehydration condensation in an inert organic solvent in the presence of triphenylphosphine and a dialkyl azodicarboxylate.

4,515,978
DIHYDROFURANS
Eugene G. Harris, West Chester, and Richard G. Fayter, Jr., Fairfield, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Jun. 13, 1983, Ser. No. 503,974
Int. Cl.³ C07D *307/28*; A61K *7/46*
U.S. Cl. 549—484 **6 Claims**

1. A compound of the formula



wherein R is vinyl, R_1 is a C_{1-4} alkyl group and R_2 is a C_{3-8} alkyl or alkenyl group.

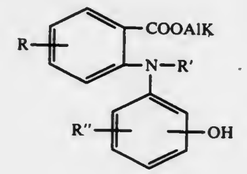
6. 4-Carbethoxy-5-phenyl-2-vinyl-2,3-dihydrofuran.

4,515,979
PREVENTION OF ODORS IN POLYORGANOSILOXANES
Masaaki Otsuki, and Shinji Kida, both of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan
Filed Jun. 21, 1984, Ser. No. 622,937
Claims priority, application Japan, Jul. 11, 1983, 58-124669
Int. Cl.³ C07C *7/04*
U.S. Cl. 556—445 **5 Claims**

1. A process for preventing odor in a polyoxyalkylene group-containing polyorganosiloxane comprising adding phytic acid to the polyoxyalkylene group-containing polyorganosiloxane during and/or after its production.

4,515,980
SUBSTITUTED AMINOBENZOATES, THEIR PREPARATION AND USE
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Filed Jul. 11, 1983, Ser. No. 512,843
Int. Cl.³ C07C *101/72*
U.S. Cl. 560—45 **4 Claims**

1. A compound of the formula

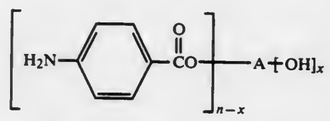


wherein:
R is lower-alkoxy;
R′ is hydrogen or lower-alkyl;
R″ is hydrogen, lower-alkyl or halo; and
Alk is lower-alkyl.

4. Ethyl 2-(4-hydroxyphenylamino)benzoate.

4,515,981
POLYETHERPOLYOL DERIVATIVE AND PROCESS FOR PREPARING THE SAME
Kozo Otani, Hyogo, and Yoshio Yamada, Osaka, both of Japan, assignors to Toyo Tire & Rubber Company, Limited, Japan
Filed Sep. 20, 1983, Ser. No. 533,871
Claims priority, application Japan, Sep. 21, 1982, 57-165447
Int. Cl.³ C07C *101/56*
U.S. Cl. 560—50 **1 Claim**

1. A polyetherpolyol derivative having at least one terminal amino group in which at least one hydroxyl group is substituted by a residue of para-aminobenzoic acid ester, and having the formula

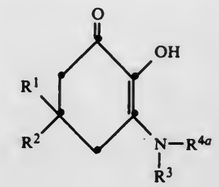


wherein n is an integer of 2 to 8, x is a positive number of 0.05n to (n−1), A is an n-valent radical obtained by removal of hydroxyl groups from an n-valent polyoxyalkylenepolyol having a molecular weight of 400 to 10,000.

4,515,982
AMINOREDUCTONES
Peter Lechtken, Frankenthal; Gerhard Mueller, Germersheim, and Klaus Schmieder, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 15, 1982, Ser. No. 450,097
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151534
Int. Cl.³ C07C *101/12*; C07D *265/36*
U.S. Cl. 560—125 **8 Claims**

1. An aminoreductone of the formula Ia

Ia



where
R^1, R^2 and R^3 are H, methyl or ethyl, and
R^{4a} is the radical, bonded to a primary amino group, selected from the group consisting of a naturally occurring α- or β-amino acid, a C_1 to C_{10}-alkyl ester thereof, and, in the case of an α-amino acid a radical in which the carboxyl group of the amino acid and the 2-hydroxyl group of the cyclohexenone ring form a lactone, 2-hydroxy-C_2 to 10-alkyl, C_1 to C_{20}-alkenyl, which hydroxy alkyl groups may carry a C_1 to C_4-alkoxy, or C_1 to C_2-acyloxy group, or a $-(CH_2-CH_2-O)_nH$ group where n is 2 to 10 which group may be etherified with a C_1 to C_4-alkanol or esterified with a C_1 to C_4-fatty acid, or a mineral salt thereof.

4,515,983
MANUFACTURE OF PHENYL ESTERS AND PHENOL
Anil B. Goel, Worthington, and Michael E. Pettiford, Dublin, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.
Filed Jun. 30, 1983, Ser. No. 509,476
Int. Cl.³ C07C *27/14, 39/04, 69/157, 69/22*
U.S. Cl. 560—130 **9 Claims**

1. A process for preparing phenyl esters and phenol consisting essentially of reacting in the vapor phase a feed of benzene, molecular oxygen and a carboxylic acid in the presence of a palladium carboxylate, an antimony carboxylate and a chromium carboxylate wherein the carboxylic acid and the carboxylates are the same and have from 2 to 6 carbon atoms at a temperature in the range of from 140° C. to 350° C. and at about atmospheric pressure.

4,515,984
PROCESS FOR THE PREPARATION OF ALKALI-METAL FORMYL ACID ESTERS
Moustafa El-Chahawi, Troisdorf, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Continuation of Ser. No. 217,597, Dec. 18, 1980,. This application Sep. 20, 1982, Ser. No. 419,898
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952070
Int. Cl.³ C07C *67/36*
U.S. Cl. 560—183 **11 Claims**

1. In a process for the preparation of an alkali metal formyl acetic acid alkyl ester by reaction of acetic acid alkyl ester, an alkali-metal alcoholate and carbon monoxide at elevated pressure, the improvement wherein at least 1.2 mols of acetic acid alkyl ester per mol of alkali metal alcoholate is employed, the reaction mixture consists essentially of said acetic acid alkyl ester, alkali metal alcoholate and carbon monoxide, the reaction is conducted at a temperature of 10° to 100° C. and the reaction is carried out in the absence of a substantial amount of added solvent.

4,515,985
PREPARATION OF CHLORINATED PHENOXYALKANOIC ACIDS
Gerd Husslein, Bad Durkheim; Gerhard Hamprecht, Weinheim; Karl-Heinz Koenig, Frankenthal; Walter Boehm, Kirchheim, and Manfred Gaeng, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 16, 1981, Ser. No. 331,457
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049541
Int. Cl.³ C07C *59/56*
U.S. Cl. 562—472 **2 Claims**

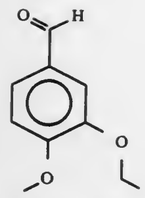
1. A process for the preparation of 2,4-dichloro- or 2-methyl-4-chlorophenoxyacetic acid or α-2,4-dichloro- or α-2-methyl-4-chlorophenoxypropionic acid by reacting phenoxyacetic or 2-methylphenoxyacetic acid or α-phenoxypropionic or α-2-methylphenoxypropionic acid with chlorine in water, wherein phenoxyacetic or 2-methylphenoxyacetic acid or α-phenoxypropionic or α-2-methyl-phenoxypropionic acid is precipitated from an aqueous solution thereof, chlorine gas is passed into the resulting suspension of the acid in water at from 30° to 70° C. at a rate not exceeding the rate at which it is consumed in the suspension, until from 100 to 110% of the theoretically required amount of chlorine gas has been taken up by the suspension, and the 2,4-dichloro- or 2-methyl-4-chlorophenoxyacetic acid or α-2,4-dichloro- or α-2-methyl-4-chloro-phenoxypropionic acid is isolated from the suspension.

4,515,986
PROCESS FOR PREPARING 3-DIMETHYLAMINO-2,2-DIMETHYLPROPANAL
Wolfgang Bernhagen, Mülheim; Volker Falk, Oberhausen; Helmut Springer, Oberhausen; Jürgen Weber, Oberhausen; Ernst Wiebus, Oberhausen, and Claus Kniep, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Aug. 19, 1981, Ser. No. 294,114
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031248
Int. Cl.³ C07C *85/00, 85/18*
U.S. Cl. 564—471 **11 Claims**

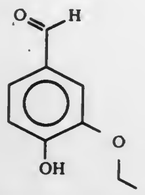
1. In a process for preparing 3-dimethylamino-2,2-dimethylpropanal from isobutyraldehyde, dimethylamine and a source of formaldehyde at 80° to 120° C., the improvement wherein the reaction is carried out at a pH-value of 9 to 11.

4,515,987
PROCESS FOR PREPARING A METHOXYBENZALDEHYDE FROM THE CORRESPONDING PHENOLIC BENZALDEHYDE
Richard M. Boden, Ocean; Theodore J. Tyszkiewicz, Sayreville; Michael Licciardello, Farmingdale; Manfred H. Vock, Locust; Joaquin F. Vinals, Rumson; Patrick Whalen, Matawan, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Division of Ser. No. 496,568, May 20, 1983, abandoned, which is a division of Ser. No. 384,924, Jun. 4, 1982, abandoned. This application Jun. 26, 1984, Ser. No. 624,757
Int. Cl.³ C07C *45/61*
U.S. Cl. 568—433 **1 Claim**

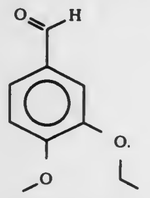
1. The process for preparing the compound having the structure:



comprising the step of reacting the compound having the structure:



with methyl chloroformate at reflux conditions in the presence of a phase transfer agent and a base and in the presence of an inert solvent for such a period of time as to convert the entire reaction product to the compound having the structure:



4,515,988

HERBICIDAL 4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS

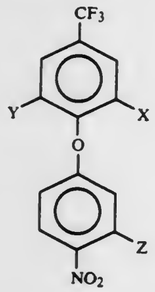
Horst O. Bayer, Levittown; Colin Swithenbank, Perkasie, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 939,086, Sep. 1, 1978, Pat. No. 4,350,522, which is a division of Ser. No. 808,415, Jun. 20, 1977, Pat. No. 4,185,995, which is a division of Ser. No. 617,562, Sep. 29, 1975, Pat. No. 4,046,798, which is a division of Ser. No. 331,719, Feb. 12, 1973, Pat. No. 3,928,416, which is a continuation-in-part of Ser. No. 234,651, Mar. 14, 1972, Pat. No. 3,798,276. This application Sep. 16, 1981, Ser. No. 302,916

Int. Cl.³ C07C *43/263*

U.S. Cl. 568—586 **4 Claims**

1. A compound of the formula



wherein

X is a hydrogen atom, a halogen atom, a trifluoromethyl group, or a (C_1–C_4)alkyl group,

Y is a hydrogen atom, a halogen atom, or a trifluoromethyl group, and

Z is a hydroxy group.

4,515,989

PREPARATION DECARBOXYLATION AND POLYMERIZATION OF NOVEL ACID FLOURIDES AND RESULTING MONOMERS

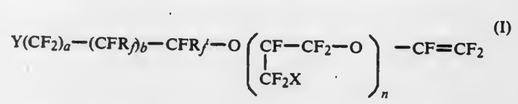
Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1980, Ser. No. 158,426

Int. Cl.³ C07C *41/01, 41/18*

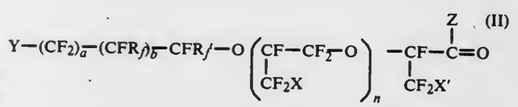
U.S. Cl. 568—674 **19 Claims**

1. In a method of preparing a compound of the formula



(I)

which comprises reacting a compound of the formula



(II)

for a sufficient time and at a sufficient temperature to form said compound (I);

where

a=is 0 or an integer greater than 0;

b=is 0 or an integer greater than 0;

R_f and R'_f are independently selected from the group consisting of F, Cl, perfluoroalkyl radicals and fluorochloroalkyl radicals;

X=F, Cl, Br, or mixtures thereof when n>1;

X'=Cl or Br;

n=0 or an integer greater than 0;

Z=F, OH, NRR' or OA, Cl, Br;

A=alkali metal, quaternary nitrogen, or R;

R and R' are independently selected from the group consisting of hydrogen, an alkyl having more than one carbon atom and an aryl;

Y=I, Br, Cl or F.

4,515,990

PREPARATION OF INDANES, TETRALINS AND PHENYL ALCOHOL IN FRIEDEL CRAFT REACTION

John G. Ferber, Essex; Peter J. Goddard, and Robert S. Holden, both of Cheshire, all of England, assignors to Bush Boake Allen Limited, London, England

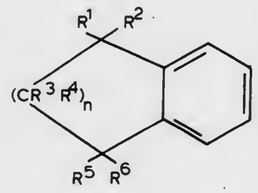
PCT No. PCT/GB83/00074, § 371 Date Nov. 7, 1983, § 102(e) Date Nov. 7, 1983, PCT Pub. No. WO83/03247, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 11, 1983, Ser. No. 555,876

Claims priority, application United Kingdom, Mar. 12, 1982, 8207229

Int. Cl.³ C07C *33/34*

U.S. Cl. 568—808 **21 Claims**



1. In a process for reacting a starting aromatic compound selected from the group consisting of indanes, tetralins, benzylic halides, 1-halo-2-aryl-alkanes, tertiary alkyl-substituted compounds, benzene and C_{1-4}alkyl-substituted benzenes with a Friedel Craft reactant selected from the group consisting of ethylene oxide and propylene oxide when the aromatic compound is selected from indanes, tetralins, benzene and alkyl-substituted benzenes; from the group consisting of acetyl chloride and acetic anhydride when the aromatic compound is selected from indanes and tetralins; and from the group consisting of alkenes when the aromatic compound is selected from benzylic halides, 1-halo-2-aryl-alkanes and tertiary alkyl-substituted compounds to form an end product selected from indanes, tetralins and phenyl alcohols by a heterogeneous exothermic Friedel Craft reaction in a reaction mixture that contains a Friedel Craft catalyst and a solvent for the reaction and that is cooled to a temperature at which substantial by-product formation is avoided and that is below 40° C., the improvement which comprises; in that cooling of the reaction mixture throughout the reaction is solely or mainly effected, and local over heating in the reaction mixture is substantially prevented, by continuously utilizing the heat of reaction to boil solvent from the reaction mixture.

4,515,991

ELECTRIC CABLE GLANDS

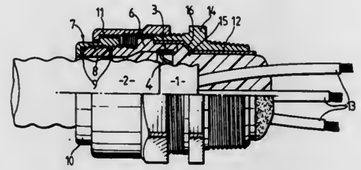
John B. Hutchison, Kingsley, England, assignor to BICC Public Limited Company, London, England

Filed Apr. 5, 1983, Ser. No. 482,144

Claims priority, application United Kingdom, Apr. 22, 1982, 8211669

Int. Cl.³ H02G *3/06*

U.S. Cl. 174—65 SS **5 Claims**



1. A cable gland comprising:

two tubular members each having a wider end and a narrower end and telescopically engageable at their respective wider ends to define, when a cable end is inserted through the telescoped members, an annular chamber around said cable ends, said chamber containing a hard setting compound in pasty or viscous condition;

means for urging said tubular members axially together to reduce the volume of said annular chamber and pressurize said hard setting compound;

and at least one resilient contact finger in electrical continuity with and projecting inwardly from one of said tubular members.

4,515,992

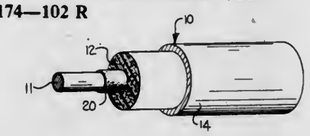
CABLE WITH CORROSION INHIBITING ADHESIVE

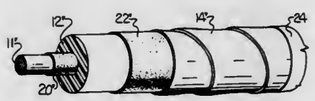
Chakra V. Gupta, Hickory, N.C., assignor to CommScope Company, Catawba, N.C.

Filed May 10, 1983, Ser. No. 493,375

Int. Cl.³ H01B *7/28*

U.S. Cl. 174—102 R **18 Claims**





10. A coaxial cable comprising

an inner conductor having an outer surface of copper,

a polymer dielectric material surrounding said inner conductor,

a tubular metallic sheath surrounding said polyolefin dielectric, and

a thin adhesive coating provided at the interface between said inner conductor and said dielectric, said coating comprising an amino functional silane reacted with the copper surface of said inner conductor to provide corrosion resistance thereto, and a polymer having linear hydrocarbon segments adhering to said dielectric and to said inner conductor and promoting adhesive bonding therebetween.

13. In a method of producing a cable of the type having at least one metallic inner conductor, a dielectric material surrounding the at least one inner conductor, and a metallic outer conductor surrounding the dielectric material and the at least one inner conductor, the improvement which comprises applying at the interface between at least one of said conductors and the dielectric an adhesive coating composition comprising a polyfunctional organosilane compound, said polyfunctional organosilane compound including organofunctional groups selected from the group consisting of amino, aminoalkyl, chloroalkyl, mercapto, vinyl, epoxy and methacryate, and reacting the polyfunctional organosilane compound with the metallic surface of the conductor to provide corrosion resistance thereto and to promote bonding between the conductor and the dielectric.

4,515,993

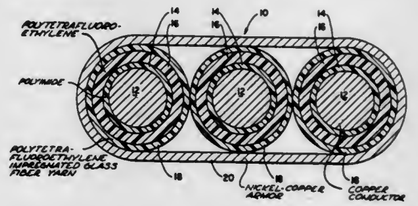
LOW PROFILE SUBMERSIBLE ELECTRICAL CABLE

Burton T. MacKenzie, Lawrence, Kans., assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 16, 1984, Ser. No. 571,315

Int. Cl.³ H01B *7/18, 7/28*

U.S. Cl. 174—102 R **11 Claims**



1. A multi-conductor electrical cable for use in a high temperature and high pressure corrosive environment, said cable comprising:

a plurality of electrical conductors sheathed in an array of separate layers of material comprising plastic materials proximate to the conductor and including outer layers of metal, at least the first of said proximate layers comprising a plastic insulating material having a high dielectric strength closely surrounding each conductor, a second of said proximate layers comprising a polymeric material which is mechanically and chemically stable to at least 400° F. closely jacketing said first layer by being directly extruded thereon, and an outer protective metal armor surrounding said plurality of insulated and jacketed electrical conductors.

4,515,994

COMBINATION ELECTRONIC ROAD GUIDANCE AND COMMUNICATION SYSTEM FOR VEHICLES

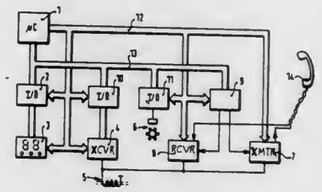
Günter Bolle, Diekholzen; Peter Brägas, Hildesheim-Itzum, and Bernd Eschke, Bad Salzdetfurth, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,532

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241022

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 R **16 Claims**



1. In a system for guiding road vehicles respectively to destinations selected by their owners or drivers, comprising inductive transmitter/receiver installations including subsurface inductive field generating and sensing loops set at various

locations in roadways, said installations being connected together in a traffic information system, and inductive transmitter/receiver apparatus installed in road vehicles, connected to vehicle-mounted inductive field generating/sensing means and associated with means for entering selected destination indicia for transmission and means for displaying recieved information, said transmitter/receiver installations and apparatus being constituted so as to transmit and receive digitally encoded signals, the improvement of providing in said system, for built-in access from said road vehicles to a telephone communication network, apparatus comprising:

at least some of said roadway transmitter/receiver installations set in parking and/or roadside pause areas for exchange of signals with temporarily stationary vehicles and including modulated wave transmitter/receiver equipment connected to said subsurface loops and activateable to establish two-way connections with a telephone communication network;

modulated wave transmitter/receiver equipment in said road vehicle connected to said vehicle-mounted loops of the respective vehicles and selectively activatable to supersede said transmitter/receiver apparatus for digitally encoded signals and to cooperate with said modulated wave transmitter/receiver equipment of said installations set in parking and/or roadside pause areas for establishing and holding telephone communications between a vehicle and said telephone communication network,

means being also provided for generation and response to telephone supervisory signals for initiating and terminating telephone calls and for generation of selective calling signals in said vehicles for directing telephone calls,

and means responsive to vehicle motion for blocking activation of said modulated wave transmitter/receiver equipment while said vehicle is traveling.

4,515,995

TELEPHONE ANSWERING MACHINE WITH APPARATUS FOR SELECTING PARTICULAR OUTGOING MESSAGE IN RESPONSE TO INCOMING CALL ON A PARTICULAR LINE

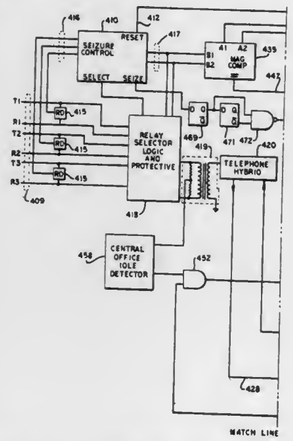
Fred C. Bolick, Jr., and Luther C. Plunkett, Jr., both of Atlanta, Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 78,231, Sep. 24, 1979, Pat. No. 4,319,290, which is a continuation-in-part of Ser. No. 970,357, Dec. 18, 1978, Pat. No. 4,247,876. This application Aug. 3, 1981, Ser. No. 290,951

Int. Cl.³ H04M *1/64, 11/10;* **G11B** *31/00*

U.S. Cl. 179—6.13

5 Claims



1. Audio signal recording apparatus for recording and reproducing audio information from one of a plurality of telephone trunks including connecting means for establishing an audio connecting path between a set of record/playback electronics and one of said plurality of trunks in response to an incoming call on one of said plurality of trunks wherein the improvement comprises:

a record medium transport connected to said record/-playback electronics;

a plurality of discrete recording media;

control means responsive to said incoming call and said plurality of trunks for providing a first indexing signal corresponding to said one of said plurality of trunks in response to said incoming call;

indexing means for placing a particular one of said plurality of recording media in operative relationship with said transport in response to said first indexing signal;

said control means being further responsive to said placing of said particular one of said plurality of record medium in operative relationship with said transport to provide a first control signal to said transport and said record/playback electronics to cause audio information recorded on said particular one of said plurality of discrete recording media to be provided to said audio connecting path;

said control means being further responsive to a predetermined signal recorded on said particular one of said plurality of discrete recording media to provide a second indexing signal; and

said indexing means being further responsive to said second indexing signal to place a second particular one of said plurality of discrete record media in operative relationship with said transport.

4,515,996

TELEPHONE CIRCUIT

Kenneth N. Burgin, Swindon, England, assignor to U.S. Philips Corporation, New York, N.Y.

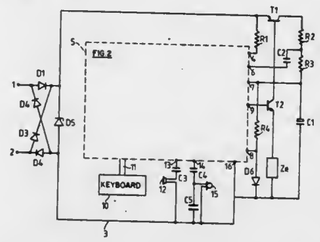
Filed Jul. 15, 1983, Ser. No. 513,941

Claims priority, application United Kingdom, Aug. 25, 1982, 8224346

Int. Cl.³ H04M *1/76*

U.S. Cl. 179—81 B

6 Claims



1. In telephone apparatus having an exchange battery, at least one subscriber telephone set having an integrated circuit and a subscriber line connecting said subscriber telephone set to said exchange battery so that said integrated circuit is powered thereby, whereby the energizing voltage for said integrated circuit varies in accordance with the length of said subscriber line, an improved subscriber telephone set comprising:

an earpiece amplifier and a microphone amplifier forming part of said integrated circuit, each of said amplifiers having an adjustable gain; and

automatic gain control means for controlling said adjustable gains of said microphone and earpiece amplifiers in accordance with said length of said subscriber's line, said automatic gain control means comprising means for generating a reference voltage, means for comparing said reference voltage to said energizing voltage and generating a control signal dependent on the difference therebetween, and means for applying said control signal to said microphone and earpiece amplifiers to control the gains thereof so that said gains increase with increases of said length of said subscriber's line.

4,515,997

DIRECT DIGITAL LOUDSPEAKER

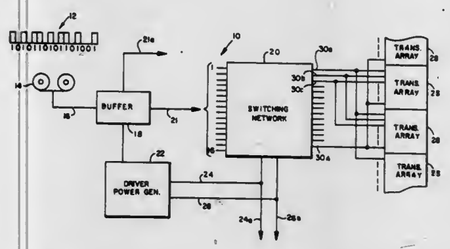
Walter E. Stinger, Jr., 423 Anthwyn Rd., Narberth, Pa. 19072

Filed Sep. 23, 1982, Ser. No. 422,219

Int. Cl.³ H04R *19/02;* **G08C** *9/02*

U.S. Cl. 179—111 R

22 Claims



5. A transducer for converting a digital signal, received serially by code word, to pulsed sound at a pulse rate corresponding to the digital signal encoding rate, with the decoding of the digital signal occurring by striking a listener's ear with the pulsed sound comprising:

a plurality of substantially identical sound pressure generating elements each having a driver individually associated therewith, and

means operative in response to each code word to selectively energize said drivers in a pulsed manner at the signal encoding frequency in a combination of drivers determined for each code word by the states of the individual bits thereof.

4,515,998

CONVERTIBLE DESK TO WALL MOUNTED TELEPHONE SET

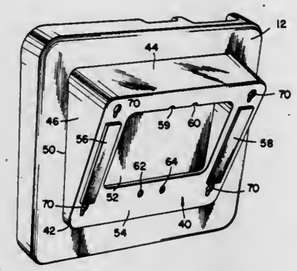
Edourd Pinede, Norwalk, and William J. Seidel, Stratford, both of Conn., assignors to PKS/Communications, Inc., Milford, Conn.

Filed Mar. 26, 1984, Ser. No. 593,581

Int. Cl.³ H04M *1/04*

U.S. Cl. 179—146 R

9 Claims



1. A convertible support for a telephone console comprising:

a base member including an upper edge, a lower edge and a pair of wedge-shaped side edges connecting said upper edge to said lower edge,

said upper edge being of greater width than said lower edge,

said base being hollow but including a top surface provided with:

means for securing said base to the rear surface of said console in a first position whereby said base can support said console on a substantially horizontal surface and an alternative second position defined by rotation of said base 180° relative to said console whereby said base can support said console on a substantially vertical surface, and means on said base for hanging said base and console upon a vertical surface.

4,515,999

FULL TRAVEL KEYBOARD

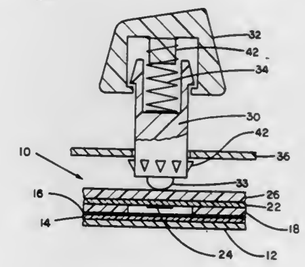
William P. Harper, Danielson, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Jan. 24, 1983, Ser. No. 460,370

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A

17 Claims



1. A keyboard including:

membrane switching means, said membrane switching means having:

(a) lower circuit sheet means comprising a first sheet of insulating material with first electrically conductive means thereon;

(b) upper circuit sheet means comprising a second sheet of insulating material with second electrically conductive means on one surface thereof, facing said first circuit means; and

(c) spacer means between said first and second circuit sheet means, said spacer means having a plurality of openings therein for mechanical and electrical connection of selective parts of said first and second circuit means defining switch sites;

a layer of compressible elastomeric material on said upper circuit sheet means on the other surface thereof, said elastomeric material constituting a spring system having a predetermined compressibility value; and

a plurality of key means for actuating the switch sites, each of said key means including:

(a) switch actuator means in contact with said elastomeric layer at the location of a switch site;

(b) a stem;

(c) a key cap; and

(d) spring means normally spacing said cap from said stem, said spring means of said key means having a predetermined compressibility value.

4,516,000

STARTER SWITCH ARRANGEMENT

Bertil Ryberg, Torslanda, and Kenth Mellgren, Kungsbacka, both of Sweden, assignors to Aktiebolaget Volvo Penta, Gothenburg, Sweden

Filed Sep. 9, 1983, Ser. No. 530,644

Claims priority, application Sweden, Sep. 16, 1982, 8205297

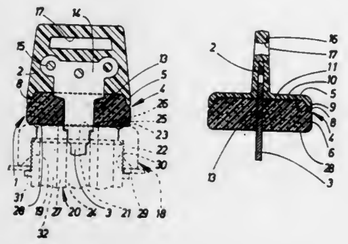
Int. Cl.³ E05B *19/26*

U.S. Cl. 200—44

14 Claims

1. A starter switch arrangement for environments where a switch may be subject to intrusion of water, such as for a boat or the like during its utilization, said switch arrangement including: a switch, a key having a gripping component, an insert component to be inserted into an aperture in the switch for opening and locking the switch, and a cover component integrated with and positioned between said gripping component and said insert component, said cover component having a portion which is resilient in axial direction of the key and

presents a soft resilient surface generally parallel to and provided to abut against a front surface of the switch in the inserted position of the key, said resilient surface being arranged



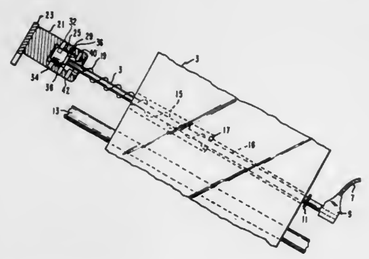
for sealingly supporting the cover component against the switch in the inserted position of the key and sealingly close at least a major portion of the front surface of the switch around said aperture.

4,516,001

AUTOMOBILE HORN CIRCUIT AND REPLACEMENT PART THEREFOR

Frank M. West, 113 Weston Pl., Eatontown, N.J. 07724

Filed May 26, 1983, Ser. No. 498,308
Int. Cl.³ H01H *9/00;* **H01R** *39/00*
U.S. Cl. 200—61.54 **7 Claims**



5. A partial automobile horn circuit comprising a horn wire which runs up the steering column of the automobile and is attached to the lower end of a spring loaded metal rod which passes through a plastic portion of a control yoke which is mounted just below the steering wheel of said automobile, the upper end of said spring loaded rod forming an electrical brush head which rides on a slip ring on the underside of said steering wheel, a hollow metal cap designed with a bore therein to accommodate the diameter of said brush head, said hollow metal cap being adapted to be slipped over said electrical brush head which has become worn and inoperative, said hollow metal cap providing a replacement brush head.

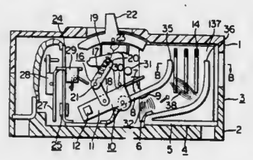
6. The partial automobile horn circuit of claim 5 wherein said hollow metal cap comprises a plurality of pairs of slots which communicate with the hollow portion thereof, one or more of said pairs of slots having spring clips inserted therein for securing said metal cap over said worn brush head.

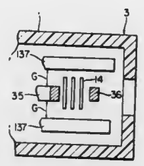
4,516,002

CIRCUIT BREAKER WITH ARC LIGHT ABSORBER

Shirou Murata; Hajimu Yoshiyasu, both of Itami; Fumiyuki Hisatsune, Fukuyama; Shinji Yamagata, Fukuyama, and Junichi Terachi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyodaku, Japan

Filed Apr. 14, 1983, Ser. No. 485,581
Claims priority, application Japan, Apr. 15, 1982, 57-64396; Apr. 15, 1982, 57-64397; Apr. 15, 1982, 57-64399
Int. Cl.³ H01H *33/00*
U.S. Cl. 200—144 C **9 Claims**





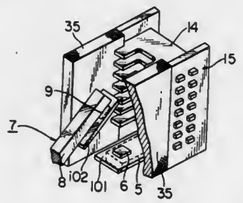
1. A circuit breaker with an arc light absorber comprising:
a pair of contactors contained in an insulating container for opening or closing an electric circuit;
electric conductors extending to said electric contactors and contacts and arc runners extending from said conductors away from said contactors; and
arc light absorbing side walls provided on both sides of said arc runners for absorbing the arc light energy irradiated directly from the arc produced between said contactors when said contactors open;
said side walls being formed of a heat resistant, electrically insulating, light absorbing material having more than 35% apparent porosity.

4,516,003

CIRCUIT BREAKER WITH ARC LIGHT ABSORBER

Hajimu Yoshiyasu; Shirou Murata, both of Itami; Fumiyuki Hisatsune, Fukuyama; Shinji Yamagata, Fukuyama, and Junichi Terachi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,582
Claims priority, application Japan, Jun. 15, 1982, 57-90604; Oct. 22, 1982, 57-186304; Oct. 29, 1982, 57-165390
Int. Cl.³ H01H *33/00*
U.S. Cl. 200—144 C **12 Claims**



1. A circuit breaker with an arc light absorber comprising:
a pair of electric contactors contained in an insulating container for opening or closing an electric circuit;
electric conductors extending to said electric contactors and contacts on said conductors; and

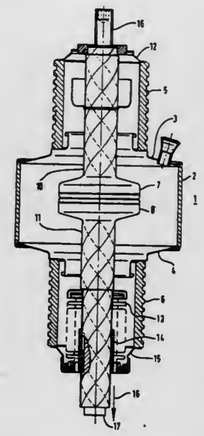
a pair of side walls provided on both sides of said contactors in spaced opposed relation to each other and having a size for absorbing light from the arc formed when said contactors open and close;
said side walls being formed of a heat resistant, electrically insulating, light absorbing material having more than 35% apparent porosity.

4,516,004

VACUUM SWITCHING TUBE WITH A HELICAL CURRENT PATH

Peter-Michael Bany; Wolfgang Berger; Hans Bettge; Gunter Bialkowski; Rafl Rozek; Norbert Steinemer, and Claus-Jurgen Volkmann, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,198
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232708
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **18 Claims**



1. In a vacuum switching tube including an evacuated housing, contacts movable relative to each other disposed within the housing and a current lead connected to at least one of the contacts, the improvement comprising the current lead comprising a core having a helical outer contour and a conductor surrounding the core, the core having a conductivity which is less than that of the conductor.

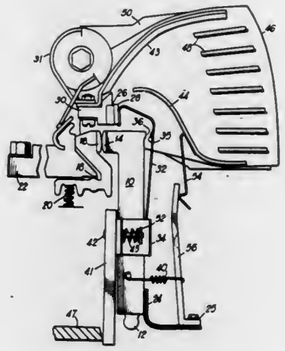
4,516,005

SEQUENCED INTERMITTENT BLOWOUT COIL CONTROLLER

Paul M. Gallatin, Picayune, Miss.; Henry J. Dyken, and Norbert F. Cvengros, both of Slidell, La., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 30, 1983, Ser. No. 537,708
Int. Cl.³ H01H *9/44*
U.S. Cl. 200—147 R **11 Claims**

1. In a circuit switch of the contactor type adapted to open and close a circuit carrying sufficient current to cause arcing to occur when the circuit is opened and having an arc chute for extinguishing the arc and magnetic pole plates for urging the arc into the arc chute,
a pair of main contact set comprising a fixed and a movable contact for carrying load current;
a pair of auxiliary contacts;
connecting means for coupling said auxiliary contacts in parallel with said main contacts to form a shunt circuit about said main contacts;
means for opening and closing said main contacts;
means for causing said first pair of auxiliary contacts to open after, and to close before, said main contacts open and close, respectively, and



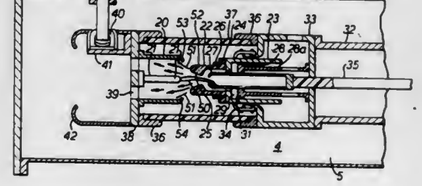
means for opening said shunt circuit subsequent to the closing of said main contacts.

4,516,006

PUFFER TYPE GAS-BLAST CIRCUIT BREAKER

Akio Kobayashi; Hitoshi Mizoguchi, both of Yokohama; Hisatoshi Ikeda, Zushi, and Hidekiyo Mayama, Yokohama, allof, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 2, 1983, Ser. No. 463,121
Claims priority, application Japan, Mar. 9, 1982, 57-35868
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **2 Claims**



1. A puffer type circuit breaker mounted in a tank containing an insulating gas, comprising:
a movable electrode and a fixed electrode disposed opposite each other, said electrodes being separable for implementing a circuit-breaking action;
a fixed current-carrying contact having an inside surface arranged around a periphery of said fixed electrode and having an extreme end portion defining an innermost portion on a side of said fixed current-carrying contact nearest said movable electrode;
said movable electrode having an end facing said fixed electrode and comprising an insulating nozzle surrounding said end;
a puffer chamber comprising a puffer piston and a puffer cylinder with which said movable electrode is connected for housing insulating gas;
wherein an arc extinction chamber is formed by said electrodes and insulating nozzle in the space between the electrodes;
wherein movement of the movable electrode during separation thereof from the fixed electrode compresses the insulating gas in the puffer chamber such that said gas is released towards said extinction chamber and blows out an

arc formed between the movable and fixed electrodes in the arc extinction chamber;

a cylindrical insulator having an inside surface surrounding said arc extinction chamber and supporting a ring at an end of said cylindrical insulator, said ring supporting said fixed electrode and including at least one hole through which insulating gas can pass;

said insulating nozzle having a tapered inside surface tapered to a throat portion in a direction from said stationary electrode to said movable electrode;

wherein in a circuit-breaking action, the line of extension of the inside surface of the insulating nozzle downstream, as regards the gas flow, from the throat portion of the said insulating nozzle, and extending in the direction of the fixed contact, lies within the innermost portion of the extreme end portion, on the side of the fixed contact nearest the movable electrode; and

wherein in a circuit breaking action, heated insulating gas is blow only in the inside surface of said fixed contact and through said hole in said ring to mix with and be cooled by insulating gas in said tank such that heated insulating gas is prevented thereby from being blown on the inside surface of the insulator.

4,516,007

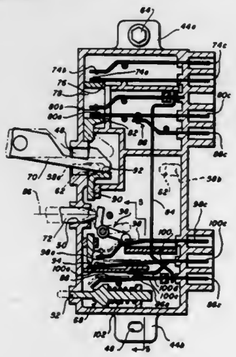
INTERLOCK SWITCH MODULE FOR A MICROWAVE OVEN

Mark G. Ringdahl, Chanhassen; Lambert L. Raymond, Robbinsdale, and Richard J. Scherer, Woodbury, all of Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 19, 1982, Ser. No. 409,685

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 D **19 Claims**



1. An interlock switch module for use in a microwave oven comprising:

(a) a unitary housing having a generally flat surface containing actuator apertures therein and having mounting means formed as a part thereof; and

(b) a plurality of interlock switches positively located in said housing such that such switches are fixed relative to said apertures and further that said switches are positionable only along an axis substantially perpendicular to said flat surface and only as a group with respect to actuators when said actuators are received in said apertures by positioning and securing said mounting means on an adjacent mounting surface.

4,516,008

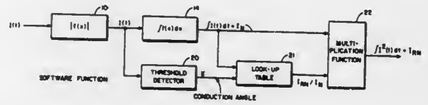
SYSTEM FOR CALCULATING THE ROOT MEAN SQUARE (RMS) CURRENT IN A RESISTANCE WELDING SYSTEM

Gary A. Jones, Chatsworth, Calif., assignor to Pertron Controls Corporation, Canoga Park, Calif.

Filed Mar. 14, 1983, Ser. No. 475,172

Int. Cl.³ B23K *11/24*

U.S. Cl. 219—109 **5 Claims**



1. A system for caluculating the RMS value of a sinusoidal current flowing in an inductive/resistance welding system, or the like, comprising: an input circuit for receiving a sinusoidal current I(t); a full-wave rectifier circuit connected to said input circuit for providing a current representing the absolute value of the sinusoidal current $|I(t)|$; an integrating circuit connected to said full-wave rectifier circuit for deriving a signal I_N representative of the integral $\int I(t)dt$ of the output of the full-wave rectifier circuit; circuitry including a threshold detector circuit connected to said full-wave rectifier circuit for producing a signal representing the conduction angle γ of the sinusoidal current; and a microprocessor means including a look-up table stored in its memory, said microprocessor means being connected to the integrating circuit and to said last-named circuitry and being responsive to the outputs I_N and γ of the integrating circuit and last-named circuitry for producing a signal derived from said look-up table representing the ratio of two signals I_{RN}/I_N, and said microprocessor means including means for performing a multiplication function for multiplying the output I_N of said integrating circuit and the output I_{RN}/I_N of said look-up table to obtain a signal I_{RN} representing the RMS value of the sinusoidal current.

4,516,009

CAPACITOR-TYPE HF POWER SUPPLY FOR ELECTRICAL MACHINING

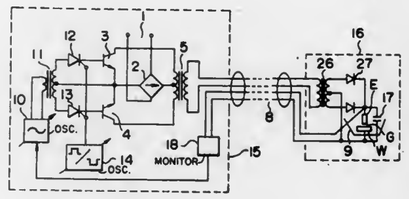
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 4, 1979, Ser. No. 45,177

Claims priority, application Japan, Jun. 14, 1978, 53-72446; Jun. 16, 1978, 53-53446; Jun. 21, 1978, 53-75117; Sep. 20, 1978, 53-115449

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 P **18 Claims**



1. A capacitor-type power supply for electrical machining, comprising:

a gap circuit disposed in the vicinity of a machining gap and including a capacitor connected across said machining gap via conductors of a minimum length;

a high-frequency power generator disposed remote from said machining gap for providing a high-frequency electric power at an output thereof; and

a feeder for connecting said output of said power generator with said gap circuit to permit said capacitor to be charged pulsively with said high-frequency electric power and to be discharged through said machining gap via said conductors of a minimum length to produce machining pulses at said machining gap, said conductors having a stray inductance not greater than 1 microhenry, said minimum length and said vicinity of said machining gap and said stray inductance being such that the conductors leading to said gap are free from significant loss of power and that the wave form of each of said machining pulses is substantially free from distortion, said gap circuit including a rectifier disposed in said vicinity to said machining gap and connected with said capacitor for rectifying the charging current therefor.

4,516,010

METHOD OF MANUFACTURING A RADIATION RECEIVER

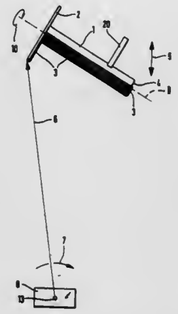
Hans P. Huber, and Jochen Weber, both of Neu-Ulm, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,601

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143652

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LJ **9 Claims**



1. A method of manufacturing a radiation receiver having a cup-shaped part with an outer surface and a plurality of sensor elements with respective electrical leads on the outer surface, comprising:

applying a metallic layer to at least a portion of the outer surface of the cup-shaped part;

generating a laser beam;

focusing the laser beam onto the outer surface of the cup-shaped part; and

deflecting the laser beam along the cup-shaped part to establish a pattern of conductor tracks from the metallic layer which form the electrical leads.

4,516,011

PORTABLE ELECTRIC APPLIANCE FOR STEAMING HAIR ROLLERS PRIOR TO USE

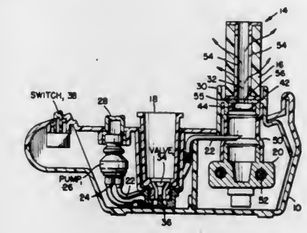
Ronald E. Jeffress, Monroe; David J. Wanat, Meriden, and Charles Z. Krasznai, Trumbull, all of Conn., assignors to Black & Decker, Inc., Newark, Del.

Filed Jul. 8, 1983, Ser. No. 511,834

Int. Cl.³ A45D *4/12;* H05B *3/02;* F22B *1/28*

U.S. Cl. 219—222 **7 Claims**

7. A vapor hairsetter including a housing; a water reservoir removably supported in said housing; boiler means supported in said housing; pump means supported in said housing and connected to transfer a measured charge of water from said reservoir to said boiler means; a hair roller supporting member in said housing, said supporting member having a steam outlet orifice therethrough connected to said boiler means to receive generated steam therefrom through a predetermined path to saturate a hair roller removably positioned on said supporting member; and valve means in said predetermined steam path



between said boiler means and said steam outlet orifice in said supporting member, said valve means permitting steam only to flow from said boiler means to said support member and roller.

4,516,012

DUAL FLOW HEATING APPARATUS

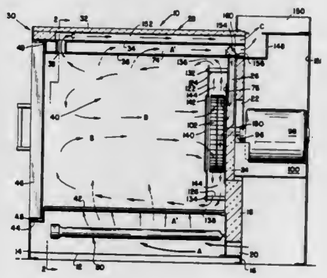
Robert C. Smith, Vergennes, and A. Benns Cox, II, North Ferrisburg, both of Vt., assignors to G. S. Blodgett Co., Inc., Burlington, Vt.

Division of Ser. No. 276,182, Jun. 22, 1981, Pat. No. 4,395,233. This application Jun. 22, 1983, Ser. No. 512,432

The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.

Int. Cl.³ A21B *1/26;* F24C *15/32;* F27D *11/02*

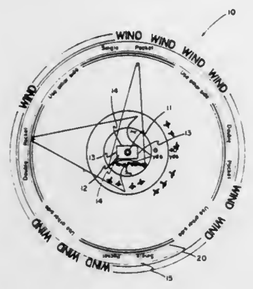
U.S. Cl. 219—400 **39 Claims**



1. In a forced air heating apparatus having a heating compartment and an associated air conduit means connected thereto; the improvement comprising heater means disposed within said conduit means for heating an intake ambient air stream drawn into said conduit means at a first location, said conduit means enabling transport of a heated air stream from said heater means into said heating compartment at a second location physically spaced from said first location, air flow means operable to forcibly draw said heated air stream through said air conduit means and for enabling establishment of a recirculated forced air flow internally within said heating compartment without entry of said internal forced air flow into said air conduit, a divider baffle positioned parallel to and spaced from a wall of said heating compartment, said divider panel having an opening centrally located therein for enabling the through flow of the recirculated forced air flow, said air flow means comprising an air fan positioned between said panel and said wall of said heating compartment and having its plane of rotation disposed parallel to said divider panel, and said air fan having means for drawing two air streams there into along opposite axial directions and for centrifugally ejecting and mixing the two air streams within said heating compartment in the space between said divider baffle and said

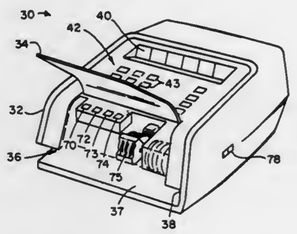
heating compartment to enable the outflow of heated air from said heating compartment.

4,516,013
DECOYING CALCULATOR
Robert W. Hester, Rte. 1, Box 1B, Fairfield, N.C. 27826
Filed Jun. 20, 1983, Ser. No. 505,901
Int. Cl.³ G06C *27/00*
U.S. Cl. 235—78 R **8 Claims**



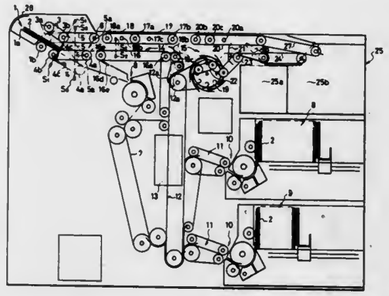
1. A means for illustrating a preferred decoy set comprising: a base; indicia in the central portion of said base for alignment with a physical location; a generally transparent disc rotatively mounted on said base with the center thereof disposed centrally of said base indicia; a point on said disc outwardly of its center to be disposed in the direction of ambient wind; and at least one indicia on said disc illustrating a preferred decoy deployment pattern whereby, relative to said physical location, proper placement of decoys can be determined relative to ambient wind direction.

4,516,014
DATE CHECKING DEVICE FOR ELECTRONIC POSTAGE METER
Alton B. Eckert, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 8, 1982, Ser. No. 447,911
Int. Cl.³ G07G *1/00*
U.S. Cl. 235—101 **6 Claims**



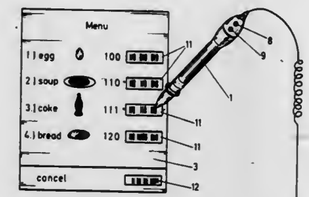
6. In a mailing machine housing, a power switch attached to said housing, means for supplying power connected to said power switch, a light on said housing and connected to said power switch, a microprocessor connected to said power switch, said microprocessor being operative to disable the mailing machine and turning on said light when said power switch is turned on, and a key mounted on said housing and connected to said microprocessor whereby said microprocessor turns off said light when said key is actuated and initializes the mailing machine.

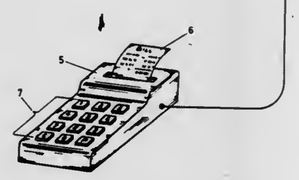
4,516,015
AUTOMATIC MONEY RECEIVING AND DISBURSING MACHINE
Isamu Uchida, deceased, late of Chigasaki, Japan (by Kazuko Uchida and Chigusa Fujii, heiresses); Eiichi Kokubo, Tokyo, Japan; Kyoichi Osako, Tokyo, Japan; Makoto Yamazaki, Tokyo, Japan; Shinichi Imura, Tokyo, Japan; Junichi Arikawa, Tokyo, Japan; Kowichi Goi, Tokyo, Japan; Hiroshi Hongou, Tokyo, Japan; Takashi Shinozaki, Tokyo, Japan, and Hiroshi Emori, Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Jun. 16, 1982, Ser. No. 388,984
Claims priority, application Japan, Jun. 16, 1981, 56-92541
Int. Cl.³ G07D *11/06*
U.S. Cl. 235—379 **7 Claims**



1. An automatic note receiving and disbursing machine having a receiving mode where notes are received therein and a disbursing mode where notes are disbursed therefrom, said machine comprising:
a transacting section for receiving and disbursing notes;
a first transfer passage for transferring notes;
a discriminating means located in the first transfer passage for making a first discrimination and determining whether notes passing through the first transfer passage are normal;
a second transfer passage positioned downstream from the transacting section and upstream from the first transfer passage for transferring notes from the transacting section to the first transfer passage;
a disbursing means for storing notes to be disbursed;
at least one third transfer passage located downstream from the disbursing means and upstream from the first transfer passage for transferring notes from the disbursing means to the first transfer passage;
a storage means located downstream from the first transfer passage for receiving and temporarily storing notes from the first transfer passage;
a note holding means located downstream from the storage means for receiving notes from the storage means;
a fourth transfer passage located downstream from the first transfer passage and adjacent to the storage means, said fourth transfer passage being in communication with the transacting section for transferring notes selectively from one of the first transfer passage and the storage means to the transacting section;
a circulation path defined by the fourth transfer passage, the second transfer passage, the first transfer passage and the storage means;
first means for transferring notes received from the transacting section through the second transfer passage, the first transfer passage, and the storage means to the note holding means and then storing said notes in the note holding means during the receiving mode;
second means for transferring notes from the disbursing means through the third passage, the first transfer passage and the fourth transfer passage and then discharging said notes from the transacting section during the disbursing mode; and
means for making a second discrimination of notes by passing notes through said discriminating means again in the circulation path when notes are judged to include abnormal notes during the disbursing mode.

4,516,016
APPARATUS FOR RECORDING AND PROCESSING GUEST ORDERS IN RESTAURANTS OR THE LIKE
Rudolf S. Kodron, D-6500 Mainz 1, Fed. Rep. of Germany
Filed Sep. 24, 1982, Ser. No. 423,004
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—472 **2 Claims**

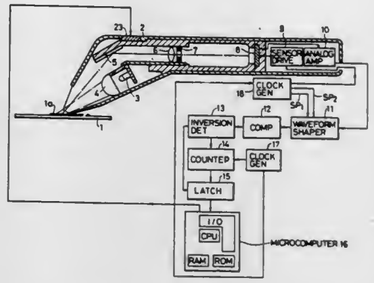




1. Apparatus for ascertaining and computing orders in gastronomic and similar establishments with input devices for data pertaining to the orders at the tables and with a central accepting location for the data pertaining to orders, characterized
by the provision at each table of a menu with a plurality of bar code patterns which are associated with the foods or beverages to be ordered,
in that a reading pencil is available at each table for optical scanning of the bar code patterns, each such pencil being provided with an activating key and an indicating device which, after scanning of a code pattern with the reading pencil, lights up in green color if the order can be fulfilled by the establishment and which intermittently lights up in red color if the order cannot be fulfilled by the establishment, and
in that a printer for checks is provided at the central accepting location.

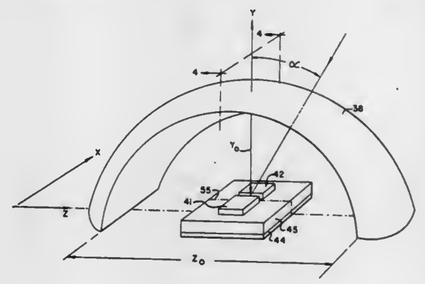
4,516,017
HIGH-SENSITIVE OPTICAL READING APPARATUS AND METHOD OF READING OPTICAL INFORMATION
Masahiro Hara, Kariya; Atsutoshi Okamoto, Aichi, and Toshiyasu Sakai, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 14, 1983, Ser. No. 458,022
Claims priority, application Japan, Jan. 20, 1982, 57-8142; Sep. 28, 1982, 57-169189
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—472 **13 Claims**

1. An optical reading apparatus for converting optically readable information into an electrical signal, comprising:
a charge transfer device image sensor for converting optical information into an electrical signal, said image sensor having a plurality of optical imaging elements arranged in an array, said optical imaging elements being electrically divided into two or more groups so that signal charges from one group can be derived simultaneously, said image sensor having an output circuit responsive to a plurality of electrical signals each produced by each of said two or more groups so that said plurality of electrical signals are combined as a single output signal;
means for driving said image sensor so that said image sensor performs electronic scanning by deriving signal charges from said optical imaging elements, said means producing



at least two clocks which are shifted by an amount of time from each other, said at least two clocks being fed to said image sensor in such a manner that at least two groups of said optical imaging elements are driven alternately; and
means responsive to said output signal from said image sensor for processing the same to produce an electrical signal indicative of the read information.

4,516,018
SOLAR SENSING ARRANGEMENT FOR USE IN A UNIAXIS SOLAR COLLECTOR TRACKING SYSTEM
Joseph S. Bodenheimer, and Naphtali Eisenberg, both of Jerusalem, Israel, assignors to Luz International Ltd., Los Angeles, Calif.
Filed Dec. 7, 1981, Ser. No. 328,183
Claims priority, application Israel, Sep. 4, 1981, 63740
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **10 Claims**



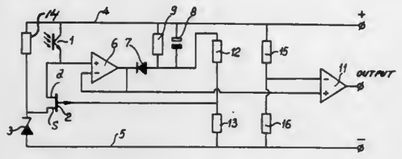
1. A solar collector system comprising:
a shaped concentrator means,
energy absorption means focally positioned with respect to said concentrator,
means for realigning said system to track the sun,
sensor means determining when the system must be realigned,
said sensor means comprising radiation detector means for providing a signal responsive to impinging radiation, and
said sensor means also comprising focusing means for focusing the radiation into an astigmatic image positioned on said detector means to generate said alignment signals.

4,516,019

LIGHT DETECTOR CIRCUIT

Bastiaan B. B. Eertink, Grubbenvorst, and Hendrikus J. van Esch, Veldhoven, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Jul. 16, 1982, Ser. No. 398,795
Claims priority, application Netherlands, Jul. 21, 1981, 8103439
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 RC **11 Claims**



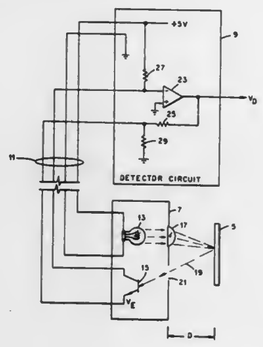
1. In a light detection circuit wherein a light detector is used and an output signal is produced indicative of the light incident upon the light detector with the output signal having a desired stabilizing level representative of light incident upon the light detector, said output signal being applied through a signal leveling circuit to a voltage stabilizing control circuit connected to stabilize the voltage of the output signal, the improvement which comprises a voltage stabilizing circuit including a voltage variable resistance element which is connected in series with the light detector across a voltage source and comparator means having a first input coupled to said output signal and having a second input coupled to the output of said signal leveling circuit, said comparator means producing an output when a light change of short duration is incident upon the light detector.

4,516,020

LIGHT-OPERATED PROXIMITY DETECTOR WITH LINEAR OUTPUT

Marc L. Simpson, Harriman, and David R. McNeilly, Maryville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1982, Ser. No. 453,982
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 L **6 Claims**



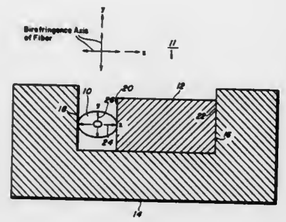
1. A light-operated proximity detector, comprising:
a light source;
focusing means for focusing a beam of light from said light source onto a surface whose proximity to said detector is to be gauged;
a phototransistor having emitter and collector electrodes and disposed to receive a reflected portion of said beam from said surface at a light-sensitive surface thereof;
biasing means for biasing said transistor to operate in a saturated state;
an operational amplifier having an inverting input connected to the collector of said phototransistor, a non-inverting input connected to ground potential and an output;
a resistance feedback network coupled between the output of said amplifier and said emitter electrode of said phototransistor so that a signal at the output of said amplifier is produced which is linearly proportional to the proximity of said surface to said detector.

4,516,021

FIBER OPTIC MAGNETIC FIELD SENSOR

Henry F. Taylor, 7839 Midday La., Alexandria, Va. 22306

Filed Aug. 9, 1982, Ser. No. 406,427
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **23 Claims**



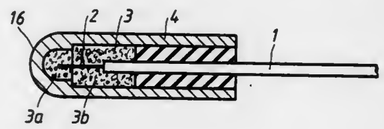
1. A magnetic field sensing field system comprising:
a length of birefringent optical fiber with an input end and an output end;
a light source for introducing light signals with polarization components in each of the birefringent axes into said input end of said optical fiber so that both light polarizations propagate therein;
a device for modulating the birefringence in a portion of said optical fiber in accordance with a magnetic field to be sensed;
a conversion element for converting the birefringence modulation to light intensity modulation; and
means for detecting the light output signal from said conversion element;
wherein said birefringent modulating device includes
a support structure;
a section of magnetostrictive material, which is large compared to the size of said portion of optical fiber, disposed relative to said portion of optical fiber and said support structure to cause a compression force to be exerted in the radial direction on the optical fiber in the presence of a magnetic field thereby changing its birefringence.

4,516,022

DETECTION OF LIGHT-PRODUCING EVENTS

Carl E. Lindgren, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 1, 1982, Ser. No. 413,828
Claims priority, application Sweden, Sep. 4, 1981, 8105259
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **10 Claims**



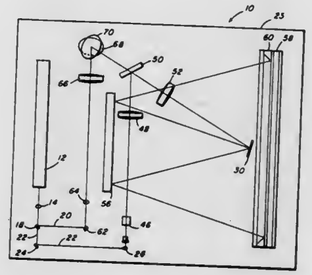
1. In a device for detecting an undesired, light-producing event in a protected installation, said device including a detector, a fiber optic means and a monitory unit, said detector being capable of directing at least part of the light produced by the undesired event into the field of view of a first end of the fiber optic means, the second end of the fiber optic means being connected to said monitoring unit, the improvement wherein said detector comprises at least one body surrounding said first end of said fiber optic means, each said body being composed of a material which defines therein a plurality of light-refracting surfaces which refract at least some of the light striking said material from the undesired event into the field of view of the first end of said fiber optic means.

4,516,023

SCANNER/PLOTTER OPTICAL SYSTEM

David R. Morrill, Salisbury; Mark T. Mason, Somerville, and Paul M. Green, Lowell, all of Mass., assignors to Klimsch/Optronics, Chelmsford, Mass.

Filed Jun. 3, 1982, Ser. No. 384,610
Int. Cl.³ H01J *5/16*
U.S. Cl. 250—235 **9 Claims**



1. A laser beam scanner comprising:
(1) laser light beam generating means;
(2) means for splitting the laser light beam into an encoder beam and a scan beam
(3) means including an oscillating mirror for: scanning the scan beam back and forth across a scan plane: and, scanning the encoder beam back and forth across an encoder grating comprising alternating laser light reflecting and absorbing elements;
(4) means for forming an image of the face of said oscillating mirror; and,
(5) photodetector means located at and being responsive to the image of said oscillating mirror face.

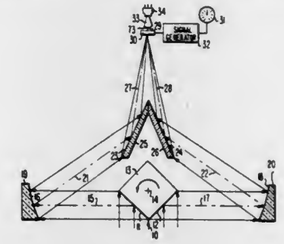
4,516,024

AUTOMATICALLY ADJUSTABLE APERTURE STOP FOR OPTICAL SCANNING SYSTEM

Kenneth C. Hudson, Philadelphia, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 23, 1982, Ser. No. 410,483
Int. Cl.³ H01J *3/14*; G01C *3/08*
U.S. Cl. 250—236 **23 Claims**

1. In an optical scanning system having a surface onto which converging light signals are focused, an apparatus for limiting the area of said surface exposed to said light signals, said apparatus comprising:
a first movable baffle positioned to occult a first area of said surface;
a second movable baffle positioned to occult a second area of said surface, said first and said second baffles being coupled to move in tandem;
means for generating a control signal indicative of one boundary of a range of positions from which said converging light signals are directed toward said surface; and



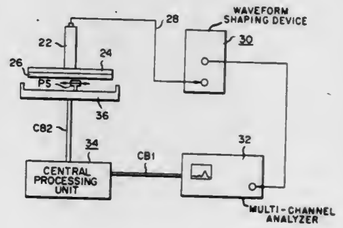
means for moving said first baffle in response to said control signal.

4,516,025

METHOD AND APPARATUS FOR CONTROLLING SCINTILLATION CAMERA

Tsutomu Yamakawa, Otawara; Mineki Nishikawa, Tochigi, and Tomohiko Kihara, Otawara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1981, Ser. No. 304,874
Claims priority, application Japan, Sep. 26, 1980, 55-134084
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—252.1 **5 Claims**



1. A scintillation camera control apparatus comprising:
means for forming visible light from radiation emitted from radioisotopes in a body;
means for converting the visible light from the radiation to electrical impulses including a two dimensional array of photomultiplier tubes which receive the visible light from common radiation and give electrical impulses as a result thereof, said photomultiplier tubes having their own response curve as a function of a distance from the center of sensitivity;
means for determining said own response curve relative to predetermined apparent radiations so as to obtain a measured response curve for calibrating;
means for calibrating said measured response curve by correcting the electrical impulses from said converting means, said calibrating means including a threshold circuit for removing from the electrical impulses those signals having a level lower than a predetermined threshold level, said predetermined threshold level being controlled in response to energy levels of the electric impulses;
a nonlinear circuit having a parameter for nonlinearity correction, said parameter being controlled in response to the measured response curve; and
a separating circuit connected between the threshold circuit and the nonlinear circuit, said separating circuit electrically separating the threshold circuit from the nonlinear circuit in such a manner that the control of both said predetermined threshold level of the threshold circuit and

said parameter of the nonlinear circuit can be independently performed.

4,516,026

SCANNING ELECTRON MICROSCOPE ASSEMBLY OPERATING IN SITU

Bernard Jouffrey; Jacques Trinquier, both of Toulouse, and Jean-Luc Franceschi, Castanet-Tolosan, all of France, assignors to Centre National de la Recherche Scientifique CNRS, Paris, France

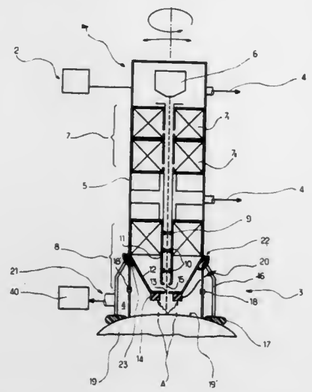
PCT No. PCT/FR82/00021, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/02796, PCT Pub. Date Aug. 19, 1982

PCT Filed Feb. 2, 1982, Ser. No. 432,918

Claims priority, application France, Feb. 4, 1981, 81 02152

Int. Cl.³ H01J *37/18, 37/20, 37/26*

U.S. Cl. 250—310 **7 Claims**



1. A scanning electron microscope assembly adapted to operate in situ comprising:

a column unitary microscope having a base and connection means adapted for connecting said microscope to a control and checking system and to a pumping system;

supporting means, connected to a lower part of the column, for supporting said column and for defining an internal chamber having a lower open portion adapted to be disposed in tight abutment with a surface integral to a portion of said surface to be observed;

sleeve means for communicating said internal chamber to said pumping system; and

adjusting means for adjusting the distance between a lower end of said column and said surface to be observed.

4,516,027

INFRARED DETECTOR

Wolfgang Schimmelpfennig, Schönau, and Heinz-Jürgen Siede, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

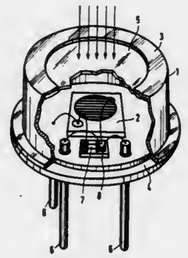
Filed Jan. 24, 1983, Ser. No. 460,568

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202819

Int. Cl.³ G01J *5/10*

U.S. Cl. 250—338 **8 Claims**

1. An infrared detector for absorbing and detecting infrared radiation comprising a system of multiple layers applied to a substrate wherein the uppermost layer is an infrared absorbing layer and comprises a chemically resistant and electrically conductive compound of a preselected metal and its oxide, said absorbing layer having a degree of surface roughness approxi-



mately equal to or greater than the wavelengths of the infrared radiation to be absorbed.

4,516,028

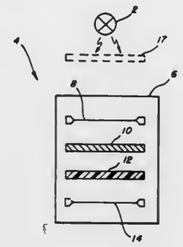
PULSE FLUX MEASURING DEVICE

William C. Riggan, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,283

Int. Cl.³ G01T *3/08, 3/02*

U.S. Cl. 250—370 **17 Claims**



1. A device for measuring particle flux comprising:

first and second sequentially arranged photodiode detector means for receiving flux from a source;

shield means, interposed between said first and second photodiode detector means, for shielding said second detector means from a portion of the flux received by said first detector means;

first and second output means for producing first and second output signals representative of the flux incident to said first and second photodiode detector means, respectively; and

compensation means for reducing said first output signal by a magnitude equivalent to a portion of said second output signal.

4,516,029

E BEAM STAGE WITH BELOW-STAGE X-Y DRIVE

Theodore W. Tucker, Lincoln, Mass., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 28, 1983, Ser. No. 489,666

Int. Cl.³ H10J *37/20*

U.S. Cl. 250—442.1 **6 Claims**

1. An electron beam X-Y coordinate positioning stage with below stage drive, comprising:

a base plate fixedly mounted and having a first central aperture and a pair of lateral guides;

an X plate slidably mounted on said base plate between said guides and constrained thereby to move in an X direction; said X plate having a first lateral aperture aligned in the X direction and a second central aperture aligned in the Y direction; said first lateral and said second central apertures intersecting at right angles;

said first lateral aperture having a pair of X wing slots mounted in said X plate at opposite ends of the aperture; said X plate having a second pair of lateral guides;

a Y plate slidably mounted on said X plate between said second guides and constrained thereby to move in an Y direction; said Y plate having a second lateral aperture aligned in the Y direction and having a pair of Y wing slots mounted in said Y plate at opposite ends of the aperture;

a theta plate mounted on said Y plate;

an X bearing mounted in said base plate;

a Y bearing mounted in said X plate;

a theta bearing mounted in said Y plate;

a theta drive shaft slidably mounted in said theta bearing and fixedly coupled to said theta plate from below;

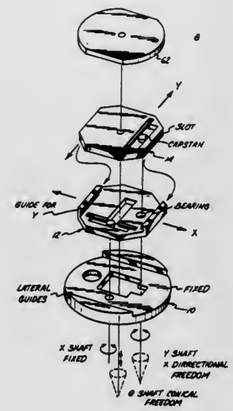
a Y drive shaft rotably mounted in said Y bearing;

a Y capstan fixedly mounted on said Y drive shaft in said second lateral aperture;

an X drive shaft rotably mounted in said X bearing;

an X capstan fixedly mounted on said X drive shaft in said first lateral aperture;

a Y band means looped mounted on said Y capstan and attached at its opposed ends to the Y plate in said Y wing



slots; an X band means looped mounted on said X capstan and attached at its opposite ends to the X plate in said X wing slots;

a theta universal joint coupled to said theta drive shaft;

a lower theta drive shaft coupled to said theta universal joint;

a Y universal joint coupled to said Y drive shaft;

a lower Y drive shaft coupled to said Y universal joint;

a bellows coupling mounted on said lower Y drive shaft;

an electron beam chamber bottom plate;

an X seal bearing means mounted in said bottom plate;

a Y seal bearing means mounted in said bottom plate;

a theta bearing means mounted in said bottom plate:

said X drive shaft rotably mounted in said X seal bearing means;

a Y connecting drive shaft rotably mounted in said Y seal bearing means and coupled to said bellows coupling;

said lower theta drive shaft rotably mounted in said theta seal bearing means;

means for driving said lower theta shaft in the vertical (Z) direction fixedly mounted below said bottom plate and coupled to said lower theta shaft;

means for rotating said X drive shaft fixedly mounted below said bottom plate and coupled to said X drive shaft; and

means for rotating said Y connecting drive shaft fixedly mounted below said bottom plate and coupled to said Y connecting plate.

4,516,030

SCANNING ELECTRON BEAM EXPOSURE SYSTEM

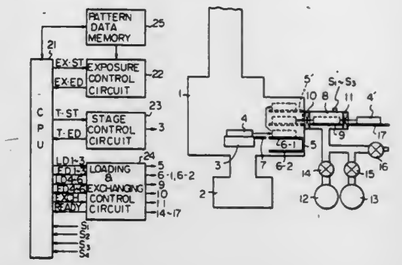
Haruo Tsuchikawa, Yokohama, and Junichi Kai, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1982, Ser. No. 423,644

Claims priority, application Japan, Sep. 26, 1981, 56-152661

Int. Cl.³ A61K *27/02;* **B65G** *65/30;* **H01J** *37/00*

U.S. Cl. 250—492.2 **3 Claims**



1. An electron beam exposure system, for exposing a workpiece and for receiving exposure interrupt signals, comprising:

a main chamber for projecting an electron beam onto the workpiece placed therein;

a first gate valve operatively connected to said main chamber;

a subchamber operatively connected to said first gate valve;

a second gate valve operatively connected to said subchamber;

vacuum pump means, operatively connected to said second gate valve, for decreasing the pressure in said subchamber;

a third gate valve operatively connected to said subchamber;

leaking means, operatively connected to said third gate valve, for increasing the pressure in said subchamber;

exposure control means, operatively connected to said subchamber, for controlling the projection of said electron beam onto the workpiece while the pressure in said subchamber is increasing or decreasing;

loading and exchanging control means, operatively connected to said subchamber, for controlling operations of said first, second, and third gate valves; and

central control means, operatively connected to said exposure control means and said loading and exchanging control means, for providing exposure start and exposure end signals to said exposure control means, while receiving the exposure interrupt request signals, before the opening and closing of at least one of said first, second, and third gate valves, for controlling said exposure control means, and for providing valve open and close permitting signals to said loading and exchanging control means to control said loading and exchanging control means, said central control means providing said exposure control means with a command to inhibit the projection of the electron beam onto the workpiece when noise generated by at least one of said first, second, and third gate valves substantially exists.

4,516,031

METHOD OF DETERMINING THE DEGREE OF WEAR OF BANK-NOTES AND A DEVICE FOR CARRYING OUT THIS METHOD

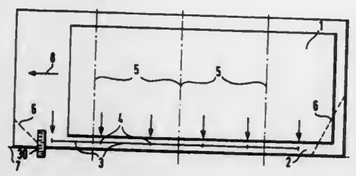
Wittich Kaule, Gauting; Walter Renz, Seefeld/Drössling, and Gerhard Stenzel, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,735

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139365

Int. Cl.³ G01H *21/88*

U.S. Cl. 250—562 **8 Claims**



1. A method of determining the degree of wear of banknotes wherein the banknotes are transported past a detection device having a plurality of juxtaposed photodiodes which detect light received from an edge of the banknote comprising the steps of:

(a) establishing an examination interval adjacent to one edge of the banknote;

(b) dividing the examination interval into a plurality of measurement sections, each measurement section being preceded by a selection section;

(c) selecting a single photodiode during passage of a selection section; and,

(d) using the output of the selected photodiode during passage of the subsequent measurement section to determine the wear of the banknote.

4,516,032

ELECTRO-OPTICAL IMAGING SYSTEM

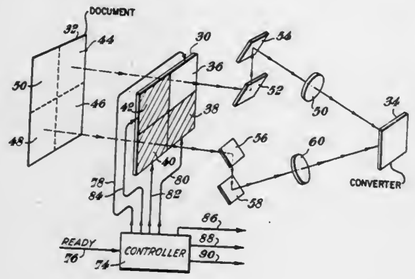
Colin Barr, Kildrum, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 21, 1981, Ser. No. 333,202

Claims priority, application United Kingdom, Dec. 22, 1980, 8041058

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—578 **26 Claims**



1. An optical imaging system for providing an electrical representation of an image, comprising:

image converter means for accumulating electrical charges representative of said image;

switch means, positioned between said image and said converter means, said switch means having a first state for allowing the incidence of said image onto said converter means and a second state for restricting the incidence of said image onto said converter means;

said converter means for accumulating said electrical charges frepresentative of said image only when said switch means is in said first state, said converter means further for moving said electrical charges to an output port of said converter means without accumulating further electrical charges when said switch means is in said second state; and

control means, coupled to said switch means, for providing a first command signal to switch said switching means to said first state for a first predetermined period of time and thereafter providing a second command signal to switch said switching means to said second state for a second period of time.

4,516,033

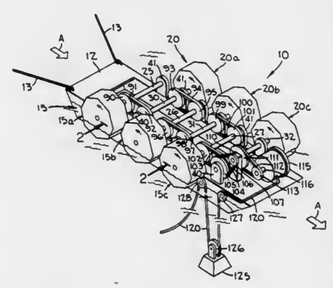
APPARATUS FOR CONVERTING FLOW OF WATER INTO ELECTRICAL POWER

Marvin Olson, 4457 Open Meadow Ct., San Jose, Calif. 95129

Filed May 31, 1983, Ser. No. 499,317

Int. Cl.³ F03B *7/00*

U.S. Cl. 290—54 **7 Claims**



1. Apparatus for converting the flow of water into electric power comprising:

(a) a floatable platform formed with opposite sides;

(b) a plurality of water wheels mounted on each side of said platform for rotation and adapted to be impelled by the flow of water for rotation;

(c) coupling means interconnecting said water wheels for transmitting hydrodynamic power, said coupling means comprising an axial shaft for each of said water wheels respectively, said axial shafts being rotatable in response to its associated water wheel being impelled to rotate by the flow of water, successive water wheels of said water wheels being located on said opposite sides of said platform, said coupling means interconnecting successive axial shafts of said axial shafts for transferring hydrodynamic power successively from axial shaft to axial shaft for progressively increasing the magnitude of transferred hydrodynamic power; and

(d) electric generating means responsive to the transmission of said hydrodynamic power for generating electric power.

4,516,034

CIRCUIT FOR OPERATING A DISPLACEABLE COMPONENT IN A MOTOR VEHICLE, IN PARTICULAR A MOTOR VEHICLE WINDOW

Axel Bier, Bad Rappenau, Fed. Rep. of Germany, assignor to Audi NSU Auto Union A.G., Fed. Rep. of Germany

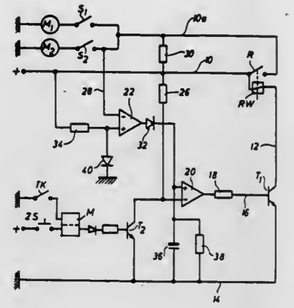
PCT No. PCT/DE83/00054, § 371 Date Nov. 7, 1983, § 102(e) Date Nov. 7, 1983, PCT Pub. No. WO83/03440, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 24, 1983, Ser. No. 555,877

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212324

Int. Cl.³ H02G *3/00*

U.S. Cl. 307—10 R **4 Claims**



1. A circuit for operating a displaceable component in a motor vehicle, by means of an electric motor which is connected to a voltage source by means of an operating switch in series with a contact of a relay with a coil the relay coil being actuated from the ignition switch and a door contact switch (TK) characterized in that a transistor (T1) is provided in the circuit of the relay coil (RW) whose base is connected with the output of a first comparator (20), the noninverting input of the first comparator (20) being connected with the output of a second comparator (22) and the inverting input of the first comparator is selectively grounded by closing the ignition switch (ZS) or by actuating the door contact switch (TK) or by an information storage (M) which is set by closing the ignition switch (ZS) and is cleared by actuating the door contact switch (TK), the inverting input of the second comparator (22) is connected to ground when the operating switch (S1 and/or S2) is closed and when the operating switch is open said inverting input of the second comparator being connected to the voltage source by means of a resistor (30); and a noninverting input of said second comparator (22) being connected with a reference voltage source, and an RC circuit (36, 38) is provided which influences the base of the transistor (T1) in a time delaying manner.

4,516,035

PHASE SYNCHRONIZATION AND CONTROL CIRCUIT

Paul M. Rhoads, Orlando, and Harold H. Cheffer, Longwood, both of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 22, 1983, Ser. No. 525,369

Int. Cl.³ H02J *9/00*

U.S. Cl. 307—66 **9 Claims**

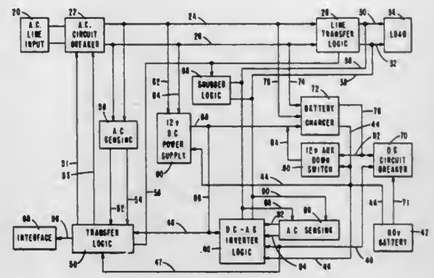
5. In an uninterruptible power supply which includes a main source of A. C. signals and an inverter for supplying A. C. signals from a D. C. source to a load upon failure of the main source to supply A. C. signals to the load, a circuit for generating control signals used to disable the main source from supplying A. C. signals to the load and for synchronizing the enabling of the main source to supply A. C. signals to the load comprising:

means for sensing the voltage level of the A. C. signals to the main source;

first means connected to said sensing means for comparing the voltage level of the A. C. signals to a zero voltage level for outputting a first control signal upon the occurrence of the coincidence;

oscillator means connected to said comparing means for outputting a plurality of first clock signals in response to receiving said first control signal;

a phase lock loop circuit connected to said oscillator means for outputting a plurality of second clock signals in response to receiving said first clock signals;



counting means connected to said phase lock loop circuit for outputting a count in response to receiving each of said second clock signals;

programmable memory means connected to said counting means for outputting a plurality of binary signals in response to receiving said count;

and means connected to said memory means for converting said binary signals to a referenced A. C. signal for use in detecting the failure of the main source to supply A. C. signals to the load.

4,516,036

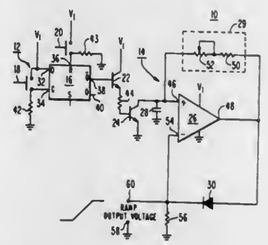
LINEAR RAMP VOLTAGE GENERATOR CIRCUIT

Richard D. Miller, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 23, 1982, Ser. No. 443,927

Int. Cl.³ H03K *4/08, 4/86*

U.S. Cl. 307—228 **2 Claims**



1. A generating circuit for producing a linear ramp output voltage comprising:

a logic chip having first and second input terminals, a reset terminal, and first and second output terminals;

a first transistor having a base, a collector, and an emitter, said base of said first transistor being connected to said first output terminal of said logic chip;

a second transistor having a base, a collector, and an emitter;

a first resistor connected between the emitter of said first transistor and the base of said second transistor;

a capacitor connected between said collector of said second transistor and ground;

an operational amplifier having first and second input terminals and an output terminal, said first input terminal being connected to said collector of said second transistor;

means for connecting said input terminals and said reset terminal of said logic chip, said collector of said first transistor, and said operational amplifier to a voltage source;

a feedback network connected between said first input terminal and said output terminal of said operational amplifier;

a feedback diode connected between said second input terminal and said output terminal of said operational amplifier; and

linear ramp output voltage means comprising a pair of output terminals connected across a load resistor, said load resistor having two terminals, one terminal of said load resistor being connected between said second input terminal of said operational amplifier and said feedback diode, the other terminal of said load resistor being connected to ground.

4,516,037

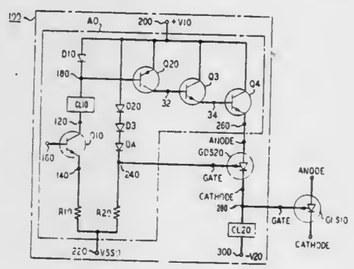
CONTROL CIRCUITRY FOR HIGH VOLTAGE SOLID-STATE SWITCHES

Peter W. Shackle, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 972,024, Dec. 20, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 158,054

Int. Cl.³ H03K *17/60*

U.S. Cl. 307—252 A **3 Claims**



1. Circuitry coupled to the gate of a first gated diode switch (GDS1, GDS3, GDS4, GDS10) which has a gate, an anode, and a cathode, comprising a second gated diode switch (GDS2, GDS20) which has a gate, an anode, and a cathode, the cathode of the second gated diode switch (GDS2, GDS20) being coupled to the gate of the first gated diode switch (GDS1, GDS3, GDS4, GDS10), a control circuit branch (A, A0) is coupled to the second gated diode switch (GDS2, GDS20) for controlling conduction between the anode and cathode thereof, and

being characterized in that:

the control circuit branch (A, A0) comprises:

a third switch branch (Q1, Q10) having a control terminal which is coupled to an input terminal (16, 160), and having first (12, 120) and second (14, 140) output terminals;

a fourth switch branch (Q2 and Q20, Q3, Q4) having a control terminal (18, 180) coupled to the first output terminal (12, 120) of the third switch branch and having first (26, 260) and second (20, 200) output terminals with the first output terminal (26, 260) being coupled to the anode of the second gated diode switch (GDS2, GDS20); and

a level shifting branch (D2, and D20, D3, D4) having a first terminal coupled to the second output terminal (20, 200) of the fourth switch circuit means (Q2 and Q20, Q3, Q4), and having a second terminal (24, 240) coupled to the gate of the second gated diode switch (GDS2, GDS20).

4,516,038

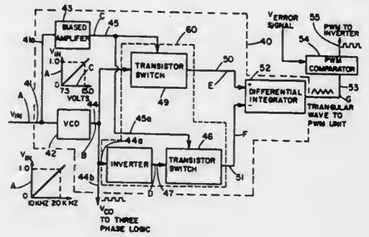
TRIANGLE WAVE GENERATOR

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 19, 1982, Ser. No. 442,928

Int. Cl.³ H03K *4/06, 4/48*

U.S. Cl. 307—264 **12 Claims**



1. A triangle wave generator for producing a constant amplitude triangle wave signal having a frequency proportional to an input voltage signal, said triangle wave generator comprising,

a square wave signal generating means to provide a square wave signal having a frequency proportional to said input voltage signal,

biased amplifier means having an input and an output, said input receiving said input voltage signal and said output coupled to a switching means,

said switching means coupled to said square wave signal generating means to receive said square wave signal and provide a pair of square wave signals to a positive and negative input terminal of a differential integrator, one of said pair of signals being the complemet of the other,

said differential integrator providing said constant amplitude triangle wave signal having constant amplitude and being proportional to said input voltage.

4,516,039

LOGIC CIRCUIT UTILIZING A CURRENT SWITCH CIRCUIT HAVING A NON-THRESHOLD TRANSFER CHARACTERISTIC

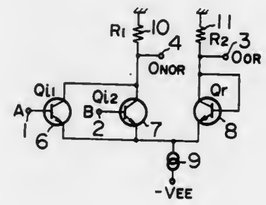
Isokazu Matsuzaki, Hiratsuka; Akira Yamagiwa, Kanagawa; Yutaka Watanabe; Takashi Matsumoto, both of Hadano, and Katsumi Yabe, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 840, Jan. 4, 1979, abandoned. This application Jan. 27, 1982, Ser. No. 343,379

Claims priority, application Japan, Jan. 9, 1978, 53-562

Int. Cl.³ H03K *19/086, 19/013*

U.S. Cl. 307—455 **17 Claims**



1. A non-threshold emitter-coupled logic current switch circuit comprising at least a pair of transistors, each of said transistors having a base, an emitter and a collector and being commonly connected to a constant current source on its emitter side, each of said transistors delivering an output signal at an output terminal on its collector side, an input signal being applied to the base of one of said transistors, each collector of said transistors being directly supplied with a constant voltage level through a respective resistor, said resistors being directly connected without any intervening elements to said collectors, and the collector and the base of the other transistor being d.c. coupled directly to each other, wherein said respective resistors of the transistors have resistance values near to each other and a voltage level of the collector of said other transistor changes linearly in accordance with said input signal so that current switching is achieved between said transistors to alternately deliver output signals at the output terminals on the collector side of said transistors in accordance with the level of said input signal.

4,516,040

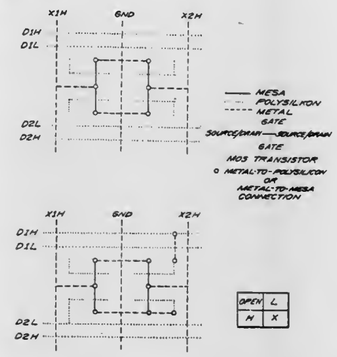
HIGH-SPEED MERGED PLANE LOGIC FUNCTION ARRAY

John M. Zapisek, Hauppauge, and Gus Giulekas, West Hempstead, both of N.Y., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Division of Ser. No. 388,160, Jun. 14, 1982, Pat. No. 4,409,499. This application Jun. 9, 1983, Ser. No. 502,724

Int. Cl.³ H03K *19/177, 19/094;* **G06F** *7/48*

U.S. Cl. 307—468 **3 Claims**



1. A method of programming a logic array including an "AND" plane and an "OR" plane, said method comprising the steps of (a) providing an array of parallel polysilicon input and output lines and a plurality of orthogonal metal ground and product-term lines, said input lines being grouped into closely spaced pairs, each of said input line pairs comprising input lines for carrying the true and complement of each input signal, said input line pairs being grouped to constitute an input row comprising input line pairs separated by a sufficient space to allow the formation of transistor pairs between the input line pairs, said output lines being grouped to constitute an output row comprising output lines separated by a sufficient space to allow the formation of transistor pairs between the output lines, said metal lines constituting a product-term column comprising two product-term lines and a central ground line separated by a sufficient space to allow transistor pair formation between at least one of said product-term lines and central ground line, (b) programming said "AND" plane by forming input transistor pairs within the intersections of said input rows and said product-term columns, said input transistor pairs comprising MOS transistors having grounded source terminals, separate gate terminals, and a common drain terminal, said grounded source terminals being connected to the central metal ground line of the containing product-term column, said gate terminal of each of said MOS transistors being connected to ground or to the true or complement input line of one of said input line pairs of the containing input row, said common drain terminal being connected to one of said product-term lines of the containing product-term column, and (c) programming said "OR" plane by forming output transistor pairs within the intersections of said product-term columns and said output rows, said output transistor pairs comprising MOS transistors having grounded source terminals, separate gate terminals, and a common drain terminal, said grounded source terminals being connected to the central metal ground line of the containing product-term column, said gate terminal of each of said MOS transistors being connected to ground or to one of the product-term lines of the containing product-term column, said common drain terminal being connected to one of the output lines of the containing output row.

4,516,041

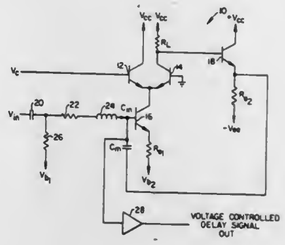
VOLTAGE CONTROLLED VARIABLE CAPACITOR

Ronald Quan, Cupertino, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,250

Int. Cl.³ H03K *5/00;* **G06G** *7/18*

U.S. Cl. 307—494 **6 Claims**



1. A voltage controlled capacitor circuit comprising an amplifier whose gain is voltage controllable and which has a circuit ground, an inverting signal, first input terminal, a first output terminal and a non-inverting control voltage input terminal and a capacitor connected between the first output terminal and the inverting, first input terminal of the voltage controlled amplifier, whereby the capacitance measured between the inverting, first input terminal of the amplifier and the circuit ground is variable as a function of control voltage applied to the control voltage input terminal.

4,516,042

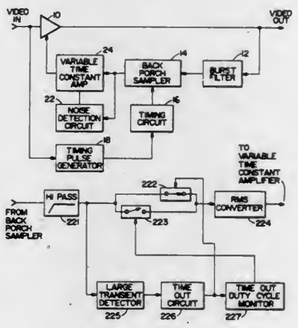
CLAMP CIRCUITS

Michael D. Nakamura, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 30, 1982, Ser. No. 393,966

Int. Cl.³ H03K *5/08*

U.S. Cl. 307—546 **7 Claims**



1. A circuit for providing a signal which is clamped to a desired DC voltage level, comprising:

amplifier means for receiving an input signal;

means for developing an offset signal for combination with

the input signal by the amplifier means to provide an output signal at the desired DC voltage level, the signal developing means having a variable time constant and operating, in use, to bring the output signal to the desired DC voltage level in an interval dependent upon the value of said time constant;

a noise detector which is operative, in use, to generate a first control signal representative of the deviation between the actual average absolute value of the output signal voltage during a predetermined interval and a predetermined nominal average absolute value of the output signal voltage during said interval, the signal developing means being responsive to the first control signal to adjust the time constant of the signal developing means;

means for providing a second control signal if the actual DC voltage level of the output signal during said interval exceeds a predetermined threshold value; and

means for responding to said second control signal by inhibiting application of the first control signal to the signal developing means.

4,516,043

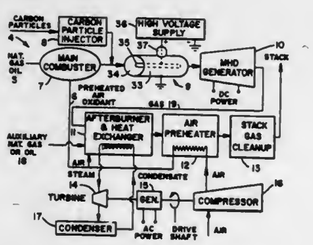
METHOD AND APPARATUS FOR GENERATING ELECTRICAL ENERGY FROM A HEATED GAS CONTAINING CARBON PARTICLES

Samuel A. Vigil, San Luis Obispo, Calif., and Rick B. Spielman, Albuquerque, N. Mex., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 197,550, Oct. 16, 1980, abandoned. This application Nov. 8, 1982, Ser. No. 440,170

Int. Cl.³ H02K *45/00*

U.S. Cl. 310—11 **10 Claims**



1. In apparatus for generating electrical energy having a magnetohydrodynamic generator which produces electrical energy from the kinetic energy of a gas flow by interaction with electrical charge carriers in said flow, a gas source which directs a gas flow into said magnetohydrodynamic generator, and means for entraining carbon particles within said gas flow, the improvement comprising:

means for establishing a gas flow in said magnetohydrodynamic generator having a temperature below the temperature at which thermal ionization of constituents of said gas flow occurs and wherein non-equilibrium ionization is insufficient to provide an adequate amount of said charge carriers within said magnetohydrodynamic generator, and

electrostatic charging means for providing said charge carriers in said gas flow by transferring electrical charge from a source of high voltage to said carbon particles to impart an electrostatic charge thereto as said gas flow travels into said magnetohydrodynamic generator.

4,516,044

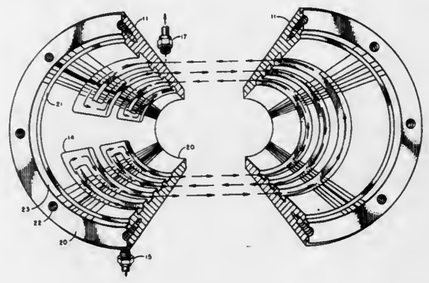
HEAT EXCHANGE APPARATUS FOR ELECTRIC MOTOR AND ELECTRIC MOTOR EQUIPPED THEREWITH

Kendall F. Bone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 31, 1984, Ser. No. 615,610

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—64 **2 Claims**



1. A heat exchange apparatus for cooling an electric motor comprising a wall defining a cylindrical cavity having a longitudinal axis wherein the wall comprises a continuous path fluid passageway for conveying a heat exchange fluid comprising a plurality of parallel circumferentially incomplete curvilinear passageway segments lengthwise oriented normal to the longitudinal axis connected together at their extremes in pairs by passageway sections lengthwise oriented normal to the passageway segments and parallel to the longitudinal axis, a fluid inlet means communicating with the passageway and a fluid outlet means communicating with the passageway.

4,516,045

ELECTRIC POWER MACHINE WITH PROTECTION AGAINST OVERSPEED

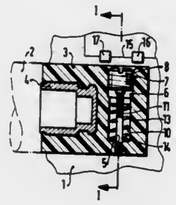
Erich Borst; Fritz Schädlich, and Manfred Stäbler, all of Leinfelden-Echterdingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 610,238

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323059

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 E **4 Claims**



1. An electric power machine having a housing enclosing the shaft of a driving electric motor, a power supply conduit for the motor and a centrifugal mechanism for protecting the machine against excessive rotary speed by severing the power supply conduit, the protecting mechanism comprising

a centrifugal severing blade in the form of a frame having two opposite bases defining a longer side and s shorter side, and a central opening between the bases;

a diametrical through bore in the driving shaft for slidably guiding the severing blade along a central axis;

a cylindrical blind bore formed in the driving shaft coaxially with the center axis of the through bore, the blind bore having a diameter which is larger than the shorter side but smaller than the longer side of the base of the severing blade;

a setting screw engaging an upper part of the blind bore above the severing blade;

a helical spring arranged in the center opening of the severing blade and resting on the bottom of the blind bore for biasing the severing blade against the setting screw; and

a power supply conduit extending along the driving shaft opposite the through bore at such a distance that in the case of overspeed the severing blade is displaced by centrifugal force in the range of the conduit to interrupt the same.

4,516,046

CONTINUOUS CURRENT ELECTRIC MACHINE WITH CYLINDRICAL AIR GAP AND PERMANENT MAGNET POLE PIECE

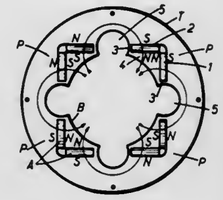
Rene Mercier, Dijon, France, assignor to CEM Compagnie Electro-Mecanique, Paris, France

Continuation of Ser. No. 404,409, Aug. 2, 1982, abandoned. This application Oct. 9, 1984, Ser. No. 659,031

Claims priority, application France, Aug. 6, 1981, 81 15289

Int. Cl.³ H02K *21/26*

U.S. Cl. 310—154 **7 Claims**



1. A continuous current electric machine with a cylindrical air gap and with permanent magnet stator excitation comprising:

a plurality of stacked sheets of magnetic metal forming the stator of the continuous current machine, said sheets having closed cut-outs of a polygonal contour extending therethrough such that the magnetic material completely surrounds each cut-out, and grooves separating adjacent cut-outs from one another and defining poles in the sheets, the polygonal contour of each closed cut-out extending into the immediate proximity of at least one of two ends of an effective region of a pole forming the air gap and leaving only a very narrow strip of the magnetic sheet material between the cut-out and the air gap; and

at least one magnetic plate for insertion in each cut-out to thereby form a permanent magnet pole.

4,516,047

ELECTRIC MOTOR WITH TWO DIRECTIONS OF ROTATION AND SHIFTABLE BRUSHES

Jean Duverger, Saint Pierre de Bressieuse, France, assignor to Black & Decker, Inc., Newark, Del.

Filed Apr. 18, 1984, Ser. No. 601,588

Claims priority, application France, Apr. 20, 1983, 83 06460

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—230 **15 Claims**

1. An electric motor, comprising:

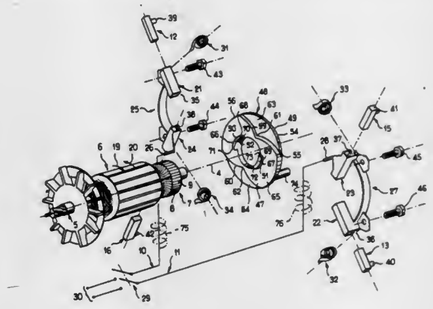
a stator;

an armature having a commutator, said armature being rotatable relative to said stator about an axis, said relative rotation being in either direction and determining the direction of rotation of the motor;

means for selecting the direction of rotation of the motor;

two pairs of brushes, one pair contacting said commutator in one direction of rotation of the motor, and the other pair being angularly displaced about said axis from said one pair and contacting said commutator in the opposite direction of rotation of the motor;

means for moving said other pair of brushes out of contact with said commutator when said one direction of rotation is selected, and for moving said one pair of brushes out of contact with said commutator when said other direction of rotation is selected;



said brush moving means comprising a cam rotatable about said axis;

said brushes having projections which are engageable by said cam for moving the respective pairs of brushes away from said commutator; and

said cam comprising two diametrically opposed lobes symmetrically disposed with respect to said axis.

4,516,048

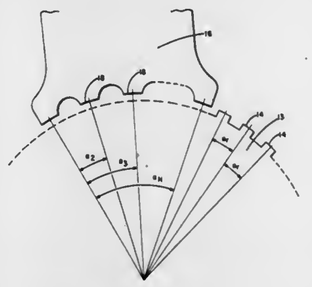
STATOR WITH NONUNIFORMLY SPACED TEETH FOR ROTATING ELECTROMAGNETIC DEVICE

Robert N. Brigham, Monroe, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Sep. 29, 1983, Ser. No. 536,839

Int. Cl.³ H02K *1/12*

U.S. Cl. 310—254 **16 Claims**



1. In an electromagnetic device of the type in which there is a rotor and a stator having toothed, electromagnetically coacting peripheries, the stator having poles and at least one winding comprising coils wound upon the poles to form magnetic poles upon energization of the winding, the improvement comprising having the stator teeth set at nonuniform spacing so that the vector sum of the values determined by the following relationship for each pole is zero:

$$\sum_{n=1}^{n=N} \cos(pn_r)\,[a_n - (n-1)a_r - R].$$

where

-continued

$$R = \sum_{n=1}^{n=N} \frac{a_n - (n-1)a_r}{N},$$

$$a_r = \frac{360° \text{ mechanical}}{n_r}.$$

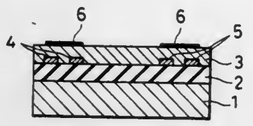
n_r=number of rotor teeth,
N=number of stator teeth on the pole,
a_1=0,
a_n=center-to-center distance from the tooth at one edge of the pole to the tooth designated by a numeral subscript, the tooth at the other edge of the pole being designated as N, in mechanical degrees, and
p=an integer.

4,516,049

MULTI-LAYER ACOUSTIC SURFACE WAVE DEVICE HAVING MINIMAL DELAY TIME TEMPERATURE COEFFICIENT

Nobuo Mikoshiba, 2-30-18 Yagiyama-Honcho; Kazuo Tsubouchi, 38-151, Aza-Hitokitayama, Moniwa, both of Sendai-shi, Miyagi-ken, Japan, and Kazuyoshi Sugai, Sendai, Japan, assignors to Nobuo Mikoshiba and Kazuo Tsubouchi, both of Sendai, Japan

Filed Sep. 28, 1983, Ser. No. 536,926
Claims priority, application Japan, Oct. 5, 1982, 57-175203
Int. Cl.³ H03H *9/42*
U.S. Cl. 310—313 A **22 Claims**



1. Acoustic surface wave device comprising:
a substrate made of an elastic material having a silicon monocrystal, said silicon monocrystal having a temperature coefficient of delay time for acoustic surface waves which is positive;
a multilayer structure which is disposed on a surface of said substrate and includes a silicon dioxide layer and an aluminum nitride layer, said aluminum nitride layer being formed on said silicon dioxide layer so that a piezoelectric axis of said aluminum nitride layer has a predetermined orientation, said silicon dioxide layer and said aluminum nitride layer each having a temperature coefficient of delay time for acoustic surface waves which is negative, said negative temperature coefficients being substantially equal to and substantially counteracting the effects of said positive temperature coefficient of said substrate; and
first electrode means for generating and second electrode means for detecting acoustic surface waves, said first and second electrode means being formed at predetermined positions on said multilayer structure.

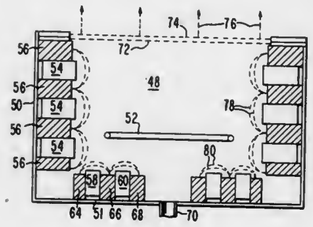
4,516,050

ION CHAMBER FOR ELECTRON-BOMBARDMENT ION SOURCES

Carl J. Russo, Ipswich, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 14, 1982, Ser. No. 397,962
Int. Cl.³ H01J *1/50;* **H05H** *1/00*
U.S. Cl. 313—359.1 **9 Claims**

1. An electron-bombardment ion source comprising:
an ion chamber having electrically conductive chamber walls;
a cathode in said chamber for emitting electrons;
anode means in said ion chamber for accelerating and collecting electrons;
magnetic means in said ion chamber for producing a magnetic field which increases the ionization efficiency of said ion source, said magnetic means comprising an electrically



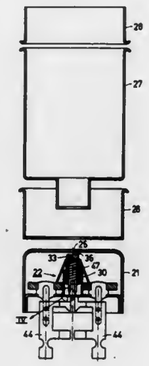
insulating, permanently magnetized material which mechanically supports said anode means and electrically isolates said anode means from said chamber walls;
means for introducing an ionizable gas into said chamber; and
means for accelerating ions out of said chamber.

4,516,051

CATHODE-RAY TUBE AND CATHODE UNIT FOR SUCH A CATHODE-RAY TUBE

Jozef A. M. Hooft van Huijsduijnen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 435,144
Claims priority, application Netherlands, Nov. 18, 1981, 8105222
Int. Cl.³ H01J *29/48, 19/48*
U.S. Cl. 313—446 **5 Claims**



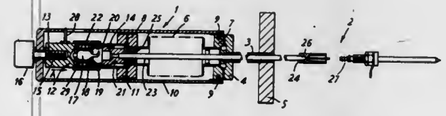
1. A cathode-ray tube comprising an evacuated envelope containing an electron gun for generating an electron beam, said electron gun including a cathode unit comprising a cup-shaped cathode shaft, a filament disposed within said shaft, and connection members to which ends of the filament are welded, said filament comprising a metal wire wound in the form of a first helical spiral which is wound into a second helical spiral having a larger diameter, characterized in that at least one of the first spiral's turns, near each end of the filament and spaced from the connection member to which the respective end of the filament is welded, is formed with a larger pitch than the other turns, and the turns of the first spiral located between the turn with the larger pitch and the respective connection member are filled with the material of the connection member.

4,516,052

DISPENSER FOR ION SOURCE

Phillip D. Prewett, Abingdon; Derek K. Jefferies, Didcot; Neil A. Pashley, Sutton Courtenay, and Thomas D. Cockhill, Newbury, all of England, assignors to Dublier Scientific Limited, Oxfordshire, England

Filed Jun. 1, 1982, Ser. No. 384,321
Claims priority, application United Kingdom, Jun. 2, 1981, 8116841
Int. Cl.³ H01J *17/26;* **B65D** *47/10*
U.S. Cl. 313—546 **9 Claims**



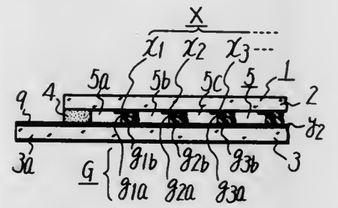
1. A dispenser for ion sources, comprising:
a capsule containing a metal to be ionized, said capsule being breakable to release the metal;
a container for containing said capsule, said container having means for opening said container to introduce the capsule into said container and means for breaking the capsule within said container in order to release the metal;
heating means for heating the metal within said container in order to vaporize the metal; and
conduit means for providing a fluid connection between said container and a reservoir in an associated source into which the metal is to be dispensed.

4,516,053

FLAT PANEL DISPLAY APPARATUS

Yoshifumi Amano, Kamakura, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,586
Claims priority, application Japan, Jan. 13, 1981, 56-3441
Int. Cl.³ H01J *17/49*
U.S. Cl. 313—584 **4 Claims**



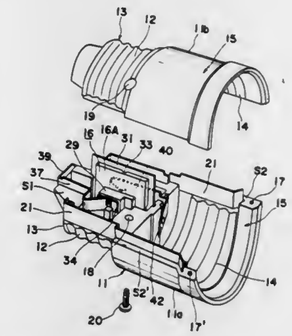
1. A flat panel display apparatus comprising:
first and second insulating plates with at least one of said plates being transparent;
a first plurality of parallel electrodes mounted on one side of said first plate;
a second plurality of parallel electrodes mounted on one side of said second plate and at a predetermined angle other than zero to said first electrodes;
said first electrodes being spaced from and opposed to said second electrodes to define a cross conductor matrix for locating glowing regions;
a plurality of parallel insulating barriers mounted on at least said one side of said first plate and extending parallel with said first electrodes and projecting toward said second plate,
said barriers having the same pattern, pitch and width as said first electrodes;
and a portion of each of said barriers overlapping a respective one side edge portion of one of said first electrodes; and
said first and second plates joined together with their outer edges sealed and gas capable of glowing filled between said plates.

4,516,054

LAMP PROTECTION ARRANGEMENT

Takashi Shikama, Yokaichi; Tomoyuki Yamamoto, Omihachiman, and Atsuo Yokota, Yokaichi, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 30, 1982, Ser. No. 393,794
Claims priority, application Japan, Jul. 31, 1981, 56-115213[U]
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—71 **15 Claims**



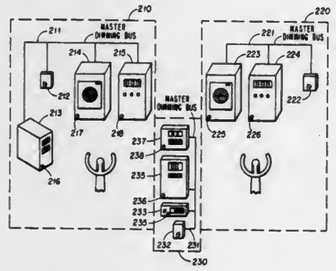
1. A light bulb protection arrangement including a light bulb having a central terminal and a peripheral terminal, a socket having a central terminal and a peripheral terminal, and a junction socket, said junction socket comprising:
a case provided with a base portion and a socket portion, said base portion being screwed into said socket and a base of said light bulb being screwed into said socket portion;
a connecting terminal which extends outside said base portion and inside said socket portion;
a first terminal which is brought into contact with said central terminal of said socket when said base portion has been screwed into said socket;
a second terminal which is brought into contact with said central terminal of said light bulb when said base of said light bulb has been screwed into said socket portion; and
a negative temperature coefficient thermistor having first and second electrodes electrically connected to said first terminal and said second terminal, respectively;
said first terminal, said second terminal and said negative temperature coefficient termistor being provided in said base portion, said thermistor being housed in a space in said base portion of said case, one end of said second terminal being located in said space and being elastically biased into contact with said second electrode whereby when said light bulb is attached to said socket through said junction socket, said peripheral terminal of said light bulb and said peripheral terminal of said socket are connected to said connecting terminal with said central terminal of said socket being connected to said central terminal of said light bulb through said first terminal, said negative temperature coefficient thermistor and said second terminal.

4,516,055

ELECTRONIC DISPLAY DIMMING CIRCUIT

David A. Nelson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 27, 1983, Ser. No. 499,084
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—151 **5 Claims**



1. A coordinated display brightness control system comprising:

a plurality of digital processor units disposed in a proximal relationship, each to the others, each having an emissive display and an ambient light intensity sensor means, said sensor means including a feedback amplifier having an impedance element coupled to, and further including, an analog-to-digital converter, wherein each display is responsive to modify emissive brightness as a function of the ambient light intensity sensed by the respective sensor means and controlled by the respective digital processor unit coupled to said analog-to-digital converter; and

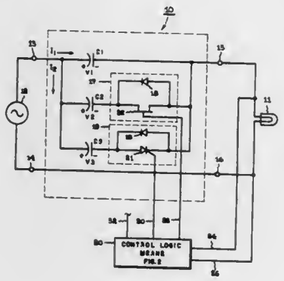
means for coordinating at least two of said plurality of units with respect to emissive brightness by interconnection of said respective impedance elements.

4,516,056

CAPACITIVELY BALLASTED LOW VOLTAGE INCANDESCENT LAMP

Paul T. Coté , Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 379,411, May 18, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 630,360
Int. Cl.³ H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—240 **7 Claims**



1. A ballast means controlling power from an alternating current source to an incandescent lamp, having a filament, at a voltage magnitude that is less than the alternating source voltage comprising:

(a) a first capacitive element electrically serially connected to said lamp which together are across the ballast means input terminal;

(b) at least one auxiliary capacitive element

(c) a control means connected across the filament of said lamp generating discrete control signals in response to conditions of the current flowing through the filament; and,

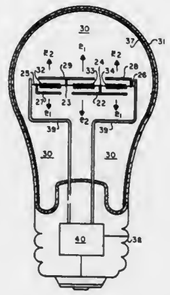
(d) transistor switching means capable of operating at a temperature of at least 130° C., responsive to said control means so as to be rendered conductive for one or more complete cycles of alternating current in response to said control signal, for selectively and individually electrically connecting each auxiliary capacitive element in parallel across said first capacitive element, wherein each auxiliary capacitive element has serially connected thereto a switching means comprising a unidirectional conducting device connected electrically in parallel with an active switching device.

4,516,057

MULTI-ELECTRODE ARRAY FOR A BEAM MODE FLUORESCENT LAMP

Joseph M. Proud, Wellesley Hills; Leslie A. Riseberg, Sudbury; Wojciech W. Byszewski, Arlington, and A. Bowman Budinger, Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 4, 1982, Ser. No. 337,048
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—260 **9 Claims**



1. A multi-electrode beam mode fluorescent lamp comprising:

a light transmitting envelope enclosing a fill material which emits ultraviolet radiation upon excitation;

a phosphor coating, which emits visible light upon absorption of ultraviolet radiation, on an inner surface of said envelope;

a thermionic cathode having a first and a second end located within said envelope for emitting electrons, said cathode including a plurality of thermionic cathode segments connected in series;

a plurality of anodes including an initial anode, at least one intermediate anode and a final anode, each of said anodes located within said envelope for accelerating electrons and simultaneously forming corresponding first and second pluralities of electron beams in response to a voltage applied between said anodes and said cathode, each of said anodes being spaced apart from said cathode by a distance which is approximately less than the electron range in said fill material and having a structure which permits said electron beams to pass thereby;

said initial anode being L-shaped and connected to said first end of said cathode and extending under a first cathode segment of said plurality;

said final anode being L-shaped, said final anode connected to said second end of said cathode and extending opposite to said initial anode;

said intermediate anode being T-shaped with first and second horizontal members, each of said intermediate anodes connected to one of said series connections of said cathode segments, said first horizontal member of each of said intermediate anodes extending over and to one of said series connected cathode segments and said second horizontal member extending over and to a next sequential of said series connected cathode segments;

each successive said intermediate anode having said first horizontal member oriented in spaced relationship with said cathode segment and opposite to said previous intermediate anode, and having said second horizontal member oriented in spaced relationship with said next sequential cathode segment and opposite to said previous intermediate anode;

a plurality of first and second drift regions, each located within said envelope through which said first and said second pluralities electron beams drift after passing through said plurality anodes, each of said drift regions having a dimension in the direction of travel of said respective electron beam which is greater than the electron range in said fill material, so that the electrons in each of said electron beams collide with the atoms of said fill material in said respective drift region, thereby causing excitation of a substantial portion of said fill material atoms and emission of ultraviolet radiation and causing ionization of another substantial portion of said fill material atoms and emission of secondary electrons, said secondary electrons causing emission of additional ultraviolet radiation and resulting in a substantial amount of visible light;

said electron beams being simultaneously produced in both said first and said second plurality of said drift regions;

a power source external to said envelope; and

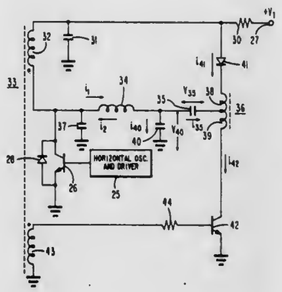
means for connecting said cathode and each of said anodes to said power source.

4,516,058

LINEARITY CORRECTED HORIZONTAL DEFLECTION CIRCUIT

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,516
Claims priority, application United Kingdom, May 11, 1981, 8114334
Int. Cl.³ H01J *29/56*
U.S. Cl. 315—370 **11 Claims**



1. A linearity-corrected deflection circuit comprising;

a deflection winding;

first switching means switched at a deflection rate and coupled to said deflection winding;

a capacitance coupled to said deflection winding and responsive to the switching of said first switching means for generating a deflection current in said deflection winding which defines a trace and retrace interval during a deflection cycle;

a source of voltage;

an inductance coupled to said voltage source and having first and second windings magnetically coupled to each other; and

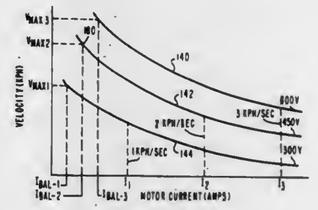
second switching means coupled to said inductance and to said capacitance for switching current from said capacitor alternately between said first and said second windings in order to provide substantial linearity correction to said deflection current, whereby the magnetic coupling between said first and second windings permits said current switching between said first and second windings to occur during significant levels of current flow in one of said first and second windings such that substantially instantaneous current switching occurs at all levels of current flow.

4,516,059

MOTOR CONTROL CHOPPER APPARATUS PHASE ANGLE LIMITING

Richard D. Roberts, South Park Township, Allegheny County; James H. Franz, Jr., Murrysville; Lester J. Hoffman, Churchill Borough, and Lalan G. Miller, Forest Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 19, 1981, Ser. No. 265,019
Int. Cl.³ H02K *27/20*
U.S. Cl. 318—301 **7 Claims**



1. In motor control apparatus operative with a power supply voltage including a chopper having a phase angle of operation and coupled with a vehicle propulsion motor having a first motor operation curve determined by said power supply voltage, said vehicle having a control device providing an effort request signal with a range of values and determining the desired movement of the vehicle, the combination of

means responsive to said effort request signal for determining a desired acceleration rate for said vehicle,

means responsive to said effort request signal within said range for establishing a phase angle limit for the chopper in accordance with a predetermined relationship to said effort request signal,

means responsive to the phase angle limit for establishing a voltage limit for said motor, and

control means coupled with said chopper and responsive to the effort request signal and the established motor voltage limit for providing for said motor a second motor operation curve for determining the desired movement of said vehicle.

4,516,060

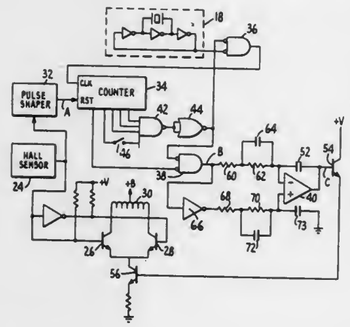
DIGITAL MOTOR SPEED CONTROL

Nahum Guzik, 224 Lassen Ave., Mountain View, Calif. 94043, and Gennady Mangeym, 2564 Downing Ave., San Jose, Calif. 95126

Filed Nov. 19, 1982, Ser. No. 443,116
Int. Cl.³ H02P *5/06*
U.S. Cl. 318—341 **4 Claims**

1. Apparatus for controlling the speed of a motor to a desired value, comprising; encoding means for generating a succession of indicator pulses, each pulse having a period T related to the rotational speed of the motor; a pulse burst generator responsive to each of said indicator pulses for generating a predetermined pattern of n pulses such that the sum of their widths $t_1 = t_2 \ldots t_n$ is directly related to a given value for T_0 corresponding to a desired speed of said motor; means for integrating said n pulses over said given period T relative to a reference signal to generate an output signal, including a differential integrator having the output of said pulse burst generator

as its first input and the logically inverted output of the pulse burst generator as its second input, said output signal being the



output of said differential integrator; and a motor drive circuit responsive to said output signal of said integrating means for controlling the speed of the motor to the predetermined speed.

4,516,061

SEWING MACHINE HAVING A MEMORY FOR GENERATING A SPEED SIGNAL IN RESPONSE TO OPERATING CONDITIONS

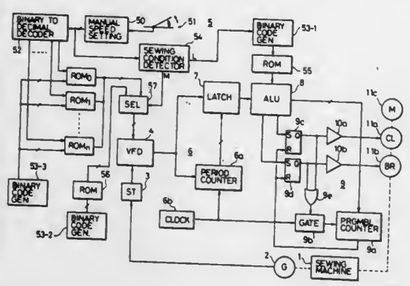
Shigeo Neki, Osaka; Nozomu Shinozaki, and Takashi Dohi, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 7, 1982, Ser. No. 386,784

Claims priority, application Japan, Jun. 10, 1981, 56-89044; Jun. 10, 1981, 56-89045; Jun. 11, 1981, 56-89872

Int. Cl.³ G05B *19/42*

U.S. Cl. 318—561 **10 Claims**



1. A sewing machine having a motor for transmitting its motive power to a drive shaft of the sewing machine under various operating conditions in accordance with the position of a manually operated pedal, comprising in a closed loop:

tachogenerator means for generating pulses at a frequency proportional to the speed of the sewing machine;

position detecting means for detecting the position of said manually operated pedal and generating therefrom a position indicating signal;

manually adjustable signal generating means for generating a first and a second speed range indicating signal when the sewing machine is to be operated at a speed in a first and a second speed range, respectively;

memory means for storing speed control signals respectively in locations addressible as a function of said position indicating signal and as a function of said first and second speed range indicating signals; and

means for processing the pulses generated by said tachogenerator means to control the amount of the motive power of said motor transmitted to the sewing machine in accordance with the speed control signal addressed from said memory means.

4,516,062

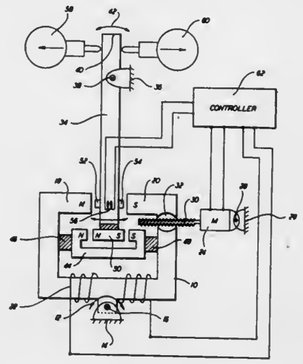
ACTUATOR

Carlo La Fiandra, New Canaan, and Peter B. Mumola, Huntington, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 27, 1983, Ser. No. 545,985

Int. Cl.³ G05B *19/36*

U.S. Cl. 318—676 **14 Claims**



1. An actuator comprising, in combination:

a housing mounted for movement on fixed base means, said housing being fabricated from magnetic material and being configured to have two spaced pole faces of opposite polarity;

a housing coil mounted on said housing to form an electromagnet in combination with said housing;

means having infinite reflected inertia for moving said housing;

a force arm mounted for movement on fixed base means, one portion of said force arm having an output drive pick-off and another portion of said force arm being disposed between the pole faces of said housing;

pole pieces mounted on said force arm adjacent said pole faces, respectively;

a force arm coil mounted on said force arm to form an electromagnet with said force arm and said pole pieces;

first permanent magnet means mounted on said housing and second permanent magnet means mounted on said force arm which coact to form a magnetic coupling between said force arm and said housing;

controller means for controlling said means for moving said housing to thereby control the course adjustment output from said force arm and provide low frequency integration of the force arm; and for controlling the flow of current to said housing coil and said force arm coil to provide a net force greater than the net force of the two permanent magnets thereby controlling the fine adjustment output from said force arm.

4,516,063

CONTROL APPARATUS

Arthur Kaye; Brian Carr, and Philip A. Latham, all of Lancashire, England, assignors to British Aerospace Public Limited Company, London, England

Filed Jan. 24, 1983, Ser. No. 460,559

Claims priority, application United Kingdom, Jan. 22, 1982, 8201907

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—685 **4 Claims**

1. A control device for enabling an operator to control

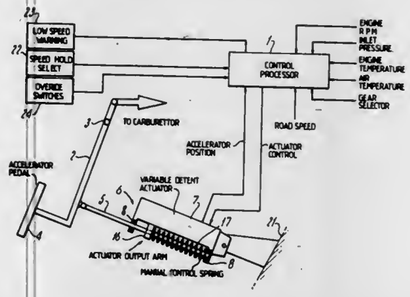
associated apparatus to which, in use, the control device is connected, the control device comprising:

a fixed support member;

a control member supported by the support member and movable with respect thereto by said operator;

output means connected to the control member and operable for transmitting to said associated apparatus control signals indicative of the position of said control member relative to the support member;

an electrical stepper motor of which the stator part is connected to said support member and the mover part is connected to said control member;



motor energization means which is connected to said stepper motor and which is operable for energizing said motor to generate, at least while said control member is at one or more discrete positions in its range of movement relative to the support member, an attractive force between the stator and mover parts of the motor tending to resist manual movement of the control member; and

transducer means connected to said motor energization means and operable to sense at least one physical parameter affecting said associated apparatus and for causing said motor energization means to change said attractive force in depedence upon said at least one parameter.

4,516,064

STEPPER MOTOR CONTROL DEVICE

Claude Oudet, and Danielle Régnier, both of Besancon, France, assignors to Portescap, La Chaux-de-Fonds, Switzerland

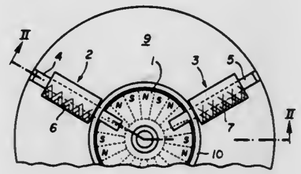
Filed Feb. 15, 1983, Ser. No. 466,542

Claims priority, application Switzerland, Feb. 16, 1982, 958/82

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—696 **3 Claims**



1. A control device for a diphase or polyphase stepper motor of the type comprising a permanent magnet rotor and at least two separate magnetic stator circuits each coupled with at least one electric coil (b_i, b_j), said control device comprising a source of electrical energy (V) adapted to be connected through a commutation circuit (CC) to the respective coils of each of the said separate stator circuits for supplying said coils with current pulses, a pulse generator circuit (PG) controlled by a clock signal source (G_1) for providing programmed control pulses (S_1 to S_4) being part of at least one programmed pulse series, a detection circuit (CD) at least one input of which is adapted to be connected through the said commutation circuit to the respective coils of each of the said separate stator circuits, said detection circuit comprising at least one integrating circuit (I) provided with a reset device (RS), at least a first comparator circuit (C_3) for comparing, at least temporarily, the output signal (C_3) of the said integrator circuit with a first position reference value (U_3) and providing a corresponding output signal, and a logic control circuit (CL_1, CL_2, CL_3) connected by its inputs to said clock signal source, to said pulse generator circuit and to the outputs of said detection circuit, said logic control circuit being arranged to supply through its outputs commutation control signals (D_1 to D_4, D_6 to D_{13}) to the inputs of said commutation circuit and detection control signals (rs, $Q_6+\overline{Q}_1$) to said detection circuit, said detection circuit further comprising at least a second comparator circuit (C_1) for comparing, at least temporarily, a speed signal (e_2) provided by said electric coils with a speed reference value (U_1), said logic control circuit being further arranged to control the commutation circuit in accordance with said output signals of said comparator circuits so as to supply at determined times driving current pulses of determined duration to the motor in accordance with a desired mode of operation of the motor.

4,516,065

CONTROL APPARATUS FOR AC MOTORS

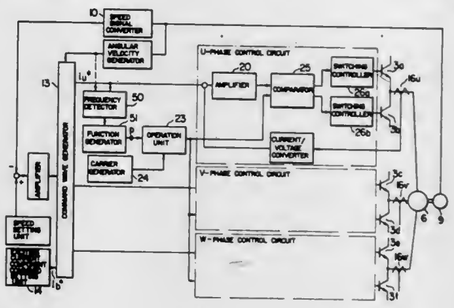
Hisakazu Ninomiya; Satoshi Ibori, both of Funabashi; Hiroshi Nagase, Hitachi; Sadayuki Igarashi, Funabashi, and Hiroshi Sugai, Sakura, all of Japan, assignors to Hitachi, Ltd. and Hitachi Keiyo Eng. Co., Ltd., both of Tokyo, Japan

Filed Sep. 7, 1983, Ser. No. 530,101

Claims priority, application Japan, Sep. 7, 1982, 57-154526; Sep. 7, 1982, 57-154527

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—811 **22 Claims**



1. A control apparatus for an AC motor in which the AC motor is connected to the output side of a pulse width modulation inverter, said apparatus comprising:

command wave generator means for producing an AC waveform of variable frequency;

current detection means for detecting the primary current of said AC motor;

operation means for producing a signal representative of the difference between the output of said command wave generator means and the output of said current detection means;

carrier signal generator means for generating a carrier signal;

pulse width modulation means receiving the outputs of said carrier signal generator means, said operation means and said command wave generator means and producing width modulated pulses by comparing one of the outputs of said carrier signal generator means and said operation

means with the other output after controlling the amplitude of at least one of the outputs of said carrier signal generator means and said operation means by a signal relating to the output of said command wave generator means; and

switching control means receiving the output of said pulse width modulation means, for controlling conduction of main switching elements of said pulse width modulation inverter;

said pulse width modulation means including:

an amplitude control circuit for changing the amplitude of the output of said carrier signal generator means according to a signal relating to the output frequency of said command wave generator means to produce a resultant output signal; and

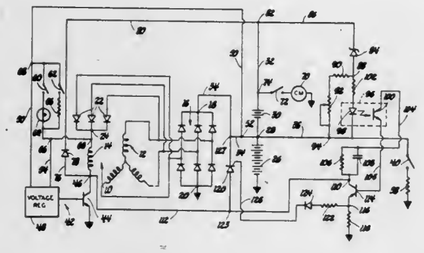
comparator means for comparing the output of said amplitude control circuit with the output of said operation means to produce said width modulated pulses.

4,516,066

DUAL-VOLTAGE BATTERY CHARGING SYSTEM

Robert J. Nowakowski, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1983, Ser. No. 518,669
Int. Cl.³ H02J *7/14*
U.S. Cl. 320—15 **6 Claims**



1. A battery charging system for a dual-voltage motor vehicle electrical system comprising, first and second series-connected batteries, a generator having an output winding connected in circuit with said first battery for charging said first battery and having a field winding, means for energizing said field winding comprising a switching means connected in series with said field winding, means for causing said switching means to switch between conductive and nonconductive states as a function of the magnitude of the voltage generated in said output winding, and circuit means connecting said field winding to the terminals of said second battery for charging said second battery by field discharge current produced by the voltage induced in said field winding when said switching means is switched to a nonconductive state.

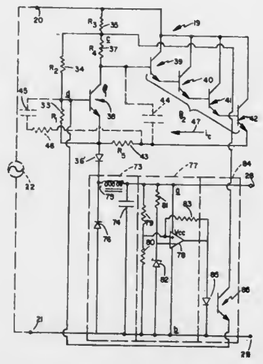
4,516,067

REGULATED POWER SUPPLY WITH CURRENT REGULATING CIRCUIT

Philip A. Hoffman, Towson, Md., assignor to Solid State Chargers Research and Development Limited Partnership, Lutherville, Md.

Continuation-in-part of Ser. No. 524,356, Aug. 18, 1983, , which is a continuation-in-part of Ser. No. 472,758, Mar. 7, 1983, Pat. No. 4,504,774. This application Feb. 29, 1984, Ser. No. 584,607
Int. Cl.³ G05F *1/44*
U.S. Cl. 323—265 **26 Claims**

1. A power supply comprising rectifying circuit means for supplying unfiltered rectified voltage, circuit means for producing current pulses and smoothing circuit means for providing D.C. voltage output connected in series, and D.C. voltage output sensing means coupled to said smoothing circuit and responsive to the D.C. voltage output for producing a control signal whenever the D.C. voltage output reaches or exceeds at least a given level, said circuit means for producing current pulses being responsive to the control signal and to instant amplitude of the unfiltered rectified voltage to block current pulses to said smoothing circuit whenever the control signal is present and to pass current pulses to said smoothing circuit



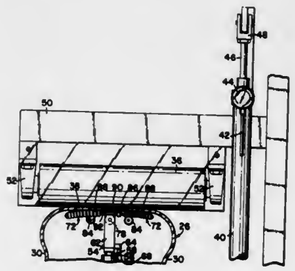
means in absence of the control signal during periods when the rectified voltage is between a first level defined at least in part by voltage across said smoothing circuit means and a higher second level and to block current pulses to said smoothing circuit means during periods when the rectified voltage is greater than the second level.

4,516,068

TIRE DEFECT TESTER

Raymond P. Hawkinson, Jr., Minneapolis, and Dennis W. Newman, Saint Paul, both of Minn., assignors to Paul E. Hawkinson Company, Minneapolis, Minn.

PCT No. PCT/US82/00479, § 371 Date Apr. 18, 1983, § 102(e) Date Apr. 18, 1983, PCT Pub. No. WO83/03681, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 16, 1982, Ser. No. 488,760
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **6 Claims**



1. In combination with apparatus for testing tires for structural defects and damage in the nature of holes in the tread portion thereof, wherein the apparatus includes means for mounting and rotating the tire, and a rotatable first electrode engagable with the outer tread portion of the tire:

(a) a second electrode movable between a first position within a circumference defined by the tire beads and a second position engaging an underside of the tread portion, comprising:

(i) an elongated member having a pivot bifurcating said member into first and second arm portions;

(ii) means mounting said member for rotation about said pivot; and

(iii) means normally biasing said member to an orientation spaced at an oblique angle relative to the tread portion with said first arm portion more closely proximate the underside of the tread portion than is said second arm portion;

(iv) wherein, as said second electrode is moved from its first position to its second position, said first arm portion engaging the underside of the tread portion of the tire causes said elongated member to rotate about said pivot until said member is in engagement, along its full dimension along its axis of elongation, with the underside of the tread portion; and

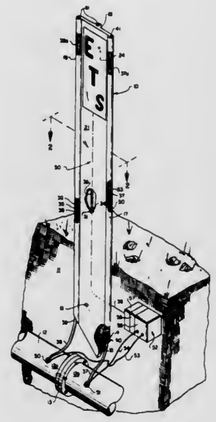
(b) means generating an electrical potential across said first and second electrodes.

4,516,069

ELECTROLYSIS TEST STATION TERMINAL AND SUPPORT

Donald W. Schmanski, Carson City, Nev., assignor to Carsonite International Corporation, Carson City, Nev.

Filed Apr. 4, 1983, Ser. No. 481,721
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71.1 **15 Claims**



1. An electrolysis test station terminal support for use in connection with measurement of voltage difference and/or current flow between an underground pipe and ground potential, said terminal support comprising:

a single, elongated, unitary structure formed of an impact-resistant, flexible, resilient, electrically nonconductive plastic material and having sufficient length and rigidity to enable implacement of a bottom portion of said structure below ground level and a top portion thereof above ground level in a stable, vertical orientation;

said structure being substantially comprised of a thin web section along its length to improve flexibility and having a width greater than approximately 5.0 cm to provide sufficient surface area for attachment of identification means at the top portion thereof;

said structure further including at least one longitudinal rib integrally formed as part of the single unitary structure and extending from the top portion to the bottom portion, said rib having a hollow core whose diameter is sufficiently large to house a conductive wire adapted for use as connecting wire to the underground pipe; and

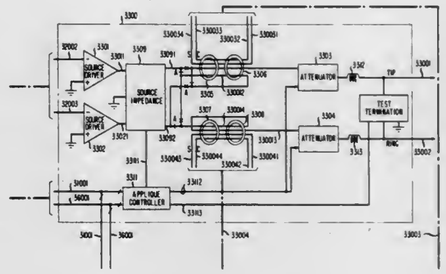
said longitudinal rib having sufficient wall thickness around said core to maintain the longitudinal rigidity and impact-resistance of the elongated structure, said wall structure including an opening in the bottom portion thereof to permit insertion of the conductive wire into said core, and further having an opening in the top portion of said wall structure to provide physical access to said wire when inserted therein to enable contact for voltage or current measurement.

4,516,070

MAGNETIC CURRENT SENSOR WITH OFFSET AND LOAD CORRECTION

James M. Brown, Chatham, and Kyran B. Kemper, Mendham, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,174
Int. Cl.³ G01R *19/00, 1/02;* **H04M** *3/26*
U.S. Cl. 324—117 R **7 Claims**
MICROFICHE APPENDIX INCLUDED
(17 Microfiche, 1042 Pages)



1. Circuitry (**3300,3400**) for measuring, over a predetermined frequency band (e.g., DC-3200Hz), current (I_L) supplied by a source (**3200**) to the input port (e.g., TIP) of a network (e.g., **180**), said circuitry comprising

a pair of substantially identical cores (e.g., **3307,3308**), each having line (L_1, L_2), sense (S_1, S_2) and control (C_1,C_2) windings,

said control windings being supplied with pulses (I_C) to produce magnetic fields of opposing orientations in said cores,

said sense windings, during periods of said pulses, being supplied with a sense signal (I_S) to produce magnetic intensities aiding one and opposing the other of said fields, and during intervals between said pulses, is connected to means (**34021,34024**) for cumulatively integrating the induced voltage to produce said sense signal, said cumulative voltage being proportional to said current after a preselected time period,

said line windings being serially connected to said source and each arranged to produce a field strength to oppose corresponding ones of said intensities,

buffer circuit means (e.g., **3309,3310,3312**), serially connected with said line windings and said input port, for providing a low impedance relative to the input impedance of said port over said band and a high impedance relative to said input impedance at the rate (e.g., 50 kHz) of said pulses, and

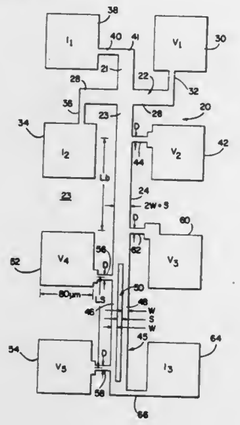
calibrate means (**3309,3310,34025,34026**) for determining a calibrate signal to correct for offsets in said circuitry during measurements, said calibrate signal being coupled to said sense windings and having a value proportional to said cumulative voltage obtained by replacing said network and said source with a calibrate load.

4,516,071

SPLIT-CROSS-BRIDGE RESISTOR FOR TESTING FOR PROPER FABRICATION OF INTEGRATED CIRCUITS

Martin G. Buehler, La Canada, Calif., assignor to The United States of America as represented by the Administration of the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 26, 1982, Ser. No. 402,205
Int. Cl.³ G01R *31/00, 27/02*
U.S. Cl. 324—158 R **10 Claims**



1. A testing apparatus for testing the accuracy of fabrication of circuit components on an integrated circuit comprising:
- a cross resistor having a first voltage contact pad and first and second current contact in electrical contact therewith;
- a bridge resistor electrically connected at one and thereof to the cross resistor and having first and second bridge resistor voltage contact pads in electrical contact therewith;
- a split-bridge resistor having first and second split conductor channels electrically connected to the other end of the bridge resistor and having first and second split conductor voltage contact pads electrically connected to the first split conductor channel, with the second split conductor channel spaced apart from the first; and,
- a current contact pad in electrical contact with the junction of the split conductor channels at the end thereof remote from the bridge resistor.

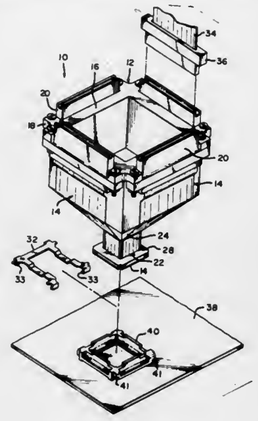
4,516,072

DEVICE FOR USE IN TESTING PRINTED CIRCUIT BOARD COMPONENTS

Gary R. Marpoe, Jr., Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 22, 1982, Ser. No. 443,358
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—158 F **2 Claims**

1. A device for use in testing and analyzing circuits and electronic components on a printed circuit board and used in conjunction with an active device substrate connector mounted on the board and having a recess with contact elements therein, said device comprising:
- a. an elongated housing having flexible film strip connectors at one end and plate attachment means at the other end;
- b. a plate for being received in the recess in the connector and attached to the other end of the housing and having four sides defined by a central opening; and
- c. four flexible film strips having conductive traces thereon extending from one end to another, one end of the film strips being terminated in the connectors at one end of the housing and the other ends being secured to the sides of the plate with the conductive traces facing away from the plate and housing so that with the plate positioned in the recess, the conductive traces on the film strips engage the contact elements to transmit signals from the board to



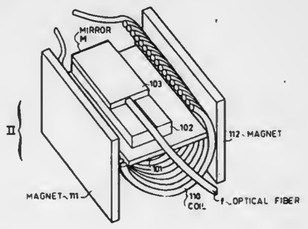
testing and analyzing equipment which may be connected to the film strip connectors.

4,516,073

MAGNETOMETER PROBE USING A THIN-FILM MAGNETIC MATERIAL AS A MAGNETO-OPTIC SENSOR

Gérard Doriath, and Roger Gaudry, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 27, 1982, Ser. No. 424,617
Claims priority, application France, Dec. 4, 1981, 81 22745
Int. Cl.³ G01R *33/02*
U.S. Cl. 324—244 **14 Claims**



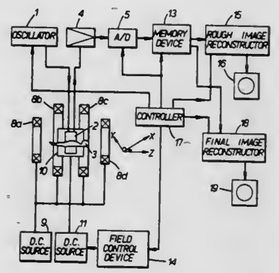
1. Measuring head for a magnetometer comprising:
- a plane layer of a magnetic material;
- laser diode means for producing a beam of linearly polarized light, said linearly polarized light beam directed to said plane layer for guided propagation of said beam within said plane layer parallel to the plane surfaces of said plane layer, said beam undergoing a rotation of the direction of polarization during said guided propagation within said plane layer;
- photodiode means for measuring said rotation of the direction of polarization;
- a common optical fibre for coupling said beam to a proximate edge of said plane layer;
- said plane layer comprising an extremity opposite said proximate edge at which is provided a means for reflecting the beam so as to cause the beam to travel outwards and back within the magnetic material plane layer before reinjection into the common optical fibre and transmission to the means for measuring the rotation of the direction of polarization; and
- optical means having a preferential optical axis, for coupling said laser diode means and said photodiode means, comprising,
- means for linearly polarizing the beam transmitted and inserting the linearly polarized beam into the common optical fibre,
- means for receiving from the common optical fibre the beam retransmitted by the magnetic material layer, and,
- means for separating the beam received into two components having polarizations which are respectively parallel and orthogonal to the said preferential optical axis and transmitting the orthogonal component to the photodiode means.

4,516,074

NUCLEAR MAGNETIC RESONANCE DIAGNOSTIC APPARATUS

Hiroshi Sugimoto, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 31, 1982, Ser. No. 413,425
Claims priority, application Japan, Aug. 31, 1981, 56-135424
Int. Cl.³ G01N *27/00;* **A61B** *5/05*
U.S. Cl. 324—309 **8 Claims**



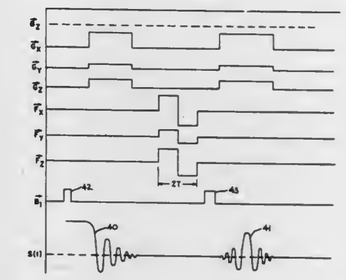
1. Nuclear magnetic resonance diagnostic apparatus wherein a uniform static magnetic field is generated, a first gradient magnetic field is superimposed on said static magnetic field in the direction of said static magnetic field, a second gradient magnetic field is superimposed on both said static magnetic field and said first gradient magnetic field in a direction perpendicular to said magnetic field direction, and the gradient direction of said second gradient magnetic field is rotationally shifted through a plurality of steps substantially equal to 360 degrees divided by some unit index angle rotated to acquire a tomographic image on the basis of nuclear magnetic resonance signals due to specified atomic nuclei existing within a slice of an object, the apparatus comprising:
- coil means for generating said second gradient magnetic field;
- means for controlling the operation of said coil means to rotationally shift in angular steps the gradient direction of said second gradient field in a slice of an object to be diagnosed where said angular step is a multiple of said index angle in a sequence to assume all of the gradient direction positions of said second gradient field;
- a memory device for storing nuclear magnetic resonance signals for each gradient direction of said second gradient magnetic field;
- a rough image reconstructor for reconstructing a rough tomographic image on the basis of nuclear magnetic resonance signals acquired during a rotation of the gradient direction of said second gradient magnetic field;
- a rough image display for depicting said rough tomographic image;
- a final image reconstructor for reconstructing a final tomographic image on the basis of nuclear magnetic resonance signals corresponding to all of the expected rotational shift positions acquired during a plurality of rotations; and
- a final image display for depicting said final tomographic image.

4,516,075

NMR SCANNER WITH MOTION ZEUGMATOGRAPHY

Paul R. Moran, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 4, 1983, Ser. No. 455,596
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **16 Claims**



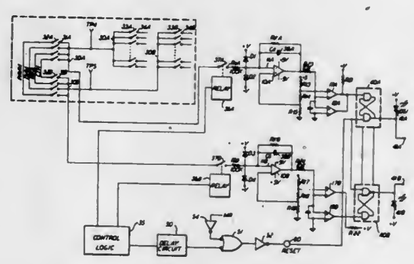
1. In a gyromagnetic resonance instrument which performs a measurement cycle by applying a transverse excitation signal to a gyromagnetic material and to thereby impart a transverse magnetic moment thereto, and which produces a FID signal responsive to emissions by the transversely magnetized gyromagnetic material, the improvement comprising:
- means for motion sensitizing a FID signal in which a motion sensitizing magnetic field gradient F is applied to the gyromagnetic material for a period of time 2T after its transverse excitation and prior to the production of the FID signal, and wherein the motion sensitizing magnetic field gradient F has alternating polarity with respect to the gyromagnetic material such that its integral over the time period 2T is substantially zero; and
- detector means for receiving the FID signal and producing therefrom a signal $S_1(t)$ which is phase-referenced to the cosine phase of the transverse excitation signal and a signal $S_2(t)$ which is phase-referenced to the sine phase of the transverse excitation signal.

4,516,076

FAULT DETECTION ARRANGEMENT FOR RELAY SWITCHING SYSTEM

Joseph C. Pillari, Little Ferry, and Arthur W. Willging, East Rutherford, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 17, 1982, Ser. No. 419,333
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—418 **5 Claims**



1. A fault detecting arrangement in an automatic test system (ATS) for detecting a fault condition on a plurality of relays in a bank of relays in the ATS, the relays each having first and second terminals for forming respective conductive paths therebetween in response to relay control signals, the first

terminals of the relays being connected to each other to form a relay bus, the second terminal of at least one of the relays having means for connection to an input of a test instrument, and the second terminals of selected others of the relays having means for connection to respective test points of a unit under test (UUT), the fault detecting arrangement further comprising:

sensing means (**10**, **11**, **12**, **13**, R_F, **17**, **18**, **19**, **20**) having sensing means input and output terminals for producing a fault signal at said sensing means output terminal responsive to an input signal at said sensing means input terminal; and

coupling means (**35**, **36**, **37**) having conductive and nonconductive states selectable in response to test mode control signals from the ATS for selectably connecting the relay bus to said sensing means input terminal during conductive states, wherein

said sensing means further comprises:

amplifier means (**10**, **12**) having a first amplifier input terminal for receiving a reference voltage signal, a second amplifier input terminal (**11**) connected to said sensing means input terminal, and an amplifier output terminal (**13**) for producing a signal responsive to a bus signal on said relay bus and said reference voltage signal; and

feedback means (R_F) connected across said second amplifier input and said amplifier output terminals, and wherein

said feedback means (R_F) forms a discharge path when said coupling means is in said conductive state for discharging the relay bus, and wherein

said sensing means further comprises threshold detector means (**17**, **18**) having a first detector input terminal connected to said amplifier output terminal, a second detector input terminal for receiving a threshold value, and a detector output terminal (**19**, **20**) connected to said sensing means output terminal, and wherein

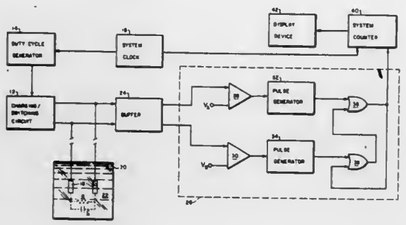
there is further provided latch means (**40A**, **40B**) connected to said sensing means output terminal for receiving said fault signal, said latch means further having a latch output terminal (**41A**, **41B**) for producing an interrupt signal for the ATS which disables the relay control signals.

4,516,077

APPARATUS FOR AND A METHOD OF MEASURING THE INTRINSIC TIME CONSTANT OF LIQUIDS

David B. Fenneman, Fredericksburg, Va.; Larry F. Rinehart, Albuquerque, N. Mex., and Leonard W. Hardesty, Jr., King George, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1983, Ser. No. 504,340
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—425 **9 Claims**



1. An apparatus, termed a "taumeter", for measuring the intrinsic time constant τ of liquids, said apparatus comprising:

a pair of electrodes for immersing in a particular one of said liquids in which the intrinsic time constant τ is to be measured;

first means for operatively connecting a charging voltage level across said pair of electrodes during a first time interval such that the voltage on said pair of electrodes exceeds a predetermined voltage V_A, and for operatively disconnecting the charging voltage level during a second time interval starting at a time after the voltage on said pair of electrodes has exceeded the predetermined voltage V_A;

second means operatively connected to said pair of electrodes and to said first means for comparing the discharging voltage level, attributable to an electrode-liquid system capacitance, C, and resistance, R, to the level of the predetermined voltage V_A and to the level of a predetermined voltage V_B, said second means outputting a gate pulse only when the discharging voltage level lies between the predetermined voltages V_A and V_B which occur at the times T_A and T_B, respectively, during the second time interval, the leading edge of the gate pulse occurring at the time T_A and the trailing edge of the pulse occurring at the time T_B; and

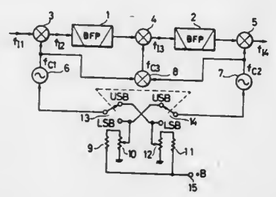
counter means operatively connected at one input to said first means and at another input to said second means for generating a binary number corresponding to the time interval between T_A and T_B, the intrinsic time constant τ of said particular one of said liquids being $\tau = T_B - T_A = RC$.

4,516,078

VARIABLE FREQUENCY PASSBAND CIRCUIT

Masaki Yanagihara, and Takashi Iimura, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Japan

Filed Feb. 4, 1983, Ser. No. 463,848
Claims priority, application Japan, Feb. 15, 1982, 57-18587[U]
Int. Cl.³ H03H *11/02, 11/04*
U.S. Cl. 328—167 **1 Claim**



1. A variable frequency passband circuit comprising:

first and second bandpass filters (e.g., **1**, **2**) connected in a cascade fashion for forming a synthetic filter in a signal path,

first and second oscillators (e.g., **6**, **7**) for respectively generating first and second frequency signals (e.g., f_{C1}, f_{C2}) which can be varied by control signals applied thereto,

first and second control means (e.g., **11**, **12**; **9**, **10**) for respectively producing said control signals to be applied to said first and second oscillators,

a frequency signal generator (e.g., **8**) for mixing said first and second frequency signals to produce a third frequency signal (e.g., f_{C3}),

a first mixer (e.g., **3**) for mixing an input signal (e.g., f_{I1}) to be applied to the circuit and said first frequency signal to produce a signal which is applied to said first bandpass filter,

a second mixer (e.g., **4**) for mixing an output signal of said first bandpass filter and said third frequency signal to produce a second frequency—converted input signal which is applied to said second bandpass filter,

a third mixer (e.g., **5**) for mixing an output of said second bandpass filter to produce a signal output of the circuit, and

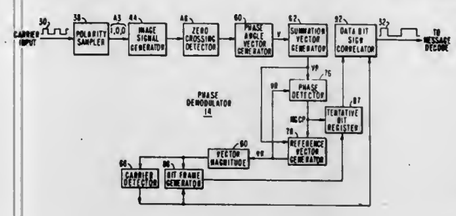
switching means (e.g., **113**, **14**) for connecting said first control means to said first oscillator and also said second control means to said second oscillator in a first operation mode, and alternatively connecting said first control means to said second oscillator and also said second control means to said first oscillator in a second operation mode.

4,516,079

COHERENT PHASE SHIFT KEYED DEMODULATOR FOR POWER LINE COMMUNICATION SYSTEMS

Theodore H. York, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1983, Ser. No. 465,232
Int. Cl.³ H04L *27/22*
U.S. Cl. 329—104 **22 Claims**



8. Demodulator apparatus for phase shift keyed carrier signals having binary baseband data symbols modulated thereon, said apparatus comprising:

first means for generating a plurality of phase vector signals representative of the phase of overlapping portions of incoming carrier signals, each of said portions extending over a time period equal to a data symobl interval;

second means connected to said phase vector signal generating means for generating a Carrier Detect signal indicative of the presence of a desired incoming carrier signal for use by associated message decode circuits, and for concurrently processing said phase vector signals to generate a synchronization signal to select one of said phase vector signals which corresponds to a single transmitted baseband data symbol; and

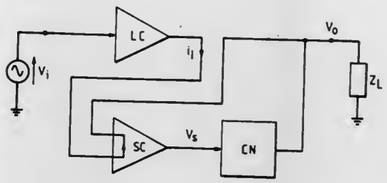
means for processing said selected phase vector signal to determine the transmitted baseband data symbol corresponding thereto.

4,516,080

HIGH-EFFICIENCY LOW DISTORTION PARALLEL AMPLIFIER

Peter Garde, Bronte, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed Mar. 30, 1983, Ser. No. 480,365
Claims priority, application Australia, Apr. 1, 1982, PF3423
Int. Cl.³ H03F *21/00*
U.S. Cl. 330—3 **32 Claims**



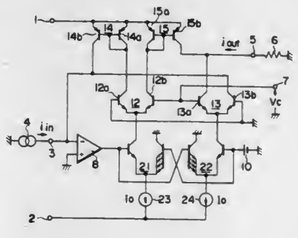
1. A high-efficiency low-distortion parallel regulator system comprising a high-efficiency switching circuit having a control input and an output, a low-distortion linear-amplification means having an output, a coupling network, a coupling node and a system output port, wherein a reference voltage is generated within said linear-amplification means, an output voltage signal which is a function of the reference voltage is produced at the output of the linear-amplification means and is adapted to be fed to a load via the system output port, a signal which is a function of a current flowing in the output of the linear-amplification means is used to control the switching circuit, via the control input and a switching output current flowing in the output of the switching circuit is fed predominantly to the coupling node which is disposed between the output of the linear-amplification means and the system output port, at which node the switching output current is combined with the current flowing in the output of the linear-amplification means to produce a system output current which flows via the system output port to the load, the coupling network being connected so as to limit the maximum time rate of change of the switching output current and said coupling network having high output impedance at high frequencies, and the regulator system being further characterised in that the system output current when averaged over a period of time is substantially supplied by the switching circuit when said averaged output current is large.

4,516,081

VOLTAGE CONTROLLED VARIABLE GAIN CIRCUIT

Masayuki Katakura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,406
Claims priority, application Japan, Oct. 2, 1981, 56-156096
Int. Cl.³ H03G *3/30;* **H03F** *3/45*
U.S. Cl. 330—254 **12 Claims**



1. A variable gain circuit comprising:

first current divider means including first and second transistors of a first conductivity type producing at least one output signal in response to a control signal;

second current divider means including third and fourth transistors of said first conductivity type producing at least one output signal in response to said control signal;

amplifier means for producing a first signal in response to an input signal and the at least one output signal from said first and second current divider means;

first current source means for producing a first constant current;

second current source means for producing a second constant current;

first differential amplifier means for controlling current flow to said first current divider means in response to said first signal and said first constant current so that steady state currents flowing through said first current divider means are controlled to a value less than one-half of the value of said first and second constant currents;

second differential amplifier means for controlling current flow to said second current divider means in response to said second signal and said second constant current so that steady state currents flowing through said second current divider means are controlled to a value less than one-half of the value of said first and second constant currents;

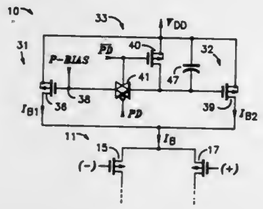
current mirror means receiving said output signals from said first and second current divider means; and

output means for producing an output signal in response to the at least one output signal from said first and second current divider means.

4,516,082
AMPLIFIER CIRCUIT FOR MINIMIZING OUTPUT VOLTAGE POWER-UP TRANSIENTS

Michael D. Smith, Lewisville, and Roger A. Whatley, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1984, Ser. No. 583,064
Int. Cl.³ H03F 3/16
U.S. Cl. 330—296 15 Claims



1. A circuit for minimizing output voltage transients in an operational amplifier resulting from powering up the operational amplifier, said operational amplifier providing an output voltage proportional to a differential between first and second input voltages coupled to a pair of differential input transistors, comprising:

first current source means coupled to the pair of input transistors, for selectively providing to said differential input transistors a first bias current proportional to a bias voltage;

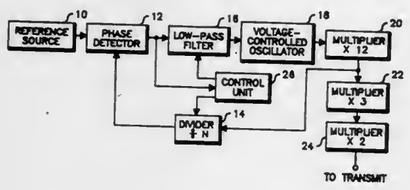
second current source means coupled in parallel to the first current source means, for constantly providing to the differential input transistors a predetermined minimal second bias current proportional to the bias voltage; and

switching means coupled to the first current source means, for selectively disabling the first current source means in response to a power control signal.

4,516,083
FAST LOCK PLL HAVING OUT OF LOCK DETECTOR CONTROL OF LOOP FILTER AND DIVIDER

William J. Turney, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 14, 1982, Ser. No. 378,458
Int. Cl.³ H03L 7/10, 7/18
U.S. Cl. 331—1 A 14 Claims



1. A method of increasing speed of recovery of phase lock in a phase locked loop of a frequency synthesizer having an output signal comprising the steps of:

sensing the difference in phase between a reference signal and another signal derived from said output signal;

detecting if said difference is within a predetermined range, is less than said range, or is greater than said range; said phase locked loop not being in lock when said difference is either less than or greater than said range;

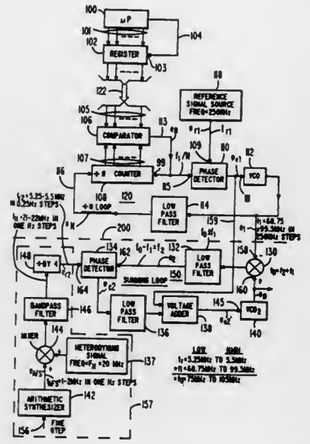
changing a divisor of a frequency divider in the phase locked loop to a first number if said difference is less than said range; and

changing said divisor to a second number different than said first number if said difference is greater than said range, said first and second numbers selected to cause said difference to rapidly come within said range thereby increasing the speed of recovery of phase lock.

4,516,084
FREQUENCY SYNTHESIZER USING AN ARITHMETIC FREQUENCY SYNTHESIZER AND PLURAL PHASE LOCKED LOOPS

Albert T. Crowley, Somerdale, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 18, 1983, Ser. No. 467,644
Int. Cl.³ H03L 7/00
U.S. Cl. 331—2 9 Claims



1. A frequency synthesizer comprising:

a phase locked loop comprising a first voltage controlled oscillator (VCO) for generating a signal e_1 of frequency f_1 and having a frequency control input, a divide-by-N divider to divide f_1 by N to produce a signal e_N of frequency f_1/N, a first phase detector responsive to e_N and to a reference signal e_{r1} of frequency f_{r1} to produce a control signal e_{c1}, and means coupling e_{c1} to the frequency control input of said first VCO;

a means for changing the value of N in said divider;

a summing phase locked loop comprising a second VCO for generating a signal e_0 of frequency f_0, and having a frequency control input, a subtractor for subtracting f_1 from f_0 to produce a signal e_2 of frequency $f_2=f_0-f_1$, logic means including a second phase detector responsive to e_2 and a second reference signal e_{r2} to produce a second frequency control signal e_{c2}, and filter means responsive to e_{c2} for supplying a filtered e_{c2}' to the frequency control input of said second VCO; and

means for generating said second reference signal e_{r2} comprising:

an accumulator containing digital data corresponding to the instantaneous phase of a waveform, said data contents being augmented by a selectable increment in response to each pulse of a clocking signal applied to said accumulator, said accumulator having overflow capability when said data contents are augmented beyond the capacity of said accumulator;

means responsive to said data contents of said accumulator for providing a signal of frequency f_{AFS}, said signal having said waveform and having period equal to the time between successive overflow occurrences of said accumulator;

source means for providing a heterodyning signal of predetermined frequency;

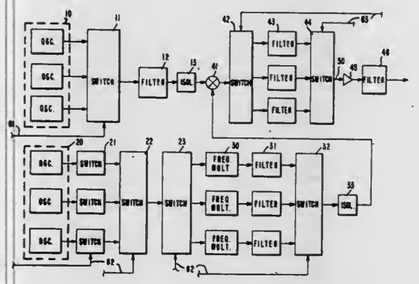
means responsive to said signal of frequency f_{AFS} and to said heterodyning signal for generating a heterodyned signal having frequency f_H which is the sum of f_{AFS} and the frequency of said heterodyning signal; and

means coupled to said heterodyned signal for dividing the frequency f_H of said heterodyned signal by an integer M to produce said second reference signal e_{r2} of frequency f_{r2}.

4,516,085
MICROWAVE FREQUENCY SYNTHESIZER USING PLURAL SWITCHABLE LOW NOISE OSCILLATORS

David D. Effinger, La Habra, and Richard Docter, Chino, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 2, 1982, Ser. No. 404,161
Int. Cl.³ H03B 21/01
U.S. Cl. 331—40 17 Claims



1. A microwave frequency synthesizer responsive to electrical control signals for providing a selected one of a plurality of low phase noise, synthesized microwave signals, comprising:

a free running, incoherent microwave frequency oscillator which produces a low phase noise signal of a substantially fixed frequency in the microwave frequency range;

a plurality of crystal controlled oscillators for providing low phase noise output signals having frequencies such that eight times the value of any one of the frequencies is in a lower frequency band than the frequency of the microwave oscillator signal;

first switch means responsive to the electrical control signals for electrically selecting one of the plurality of the signals provided by the plurality of crystal controlled oscillators while isolating the remainder;

a frequency multiplier for producing a signal whose frequency is a multiple of the frequency of the selected crystal controlled oscillator signal by receiving the selected crystal controlled oscillator signal and multiplying the frequency thereof by a factor no greater than eight and no less than two; and

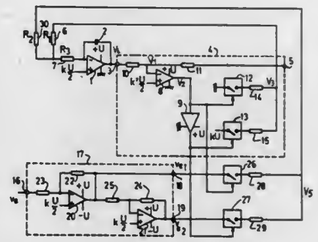
a mixer for processing the signal produced by the microwave frequency oscillator with the frequency multiplied signal and producing a synthesized signal having a frequency equal to the sum of the frequencies of the two processed signals.

4,516,086
FREQUENCY MODULATOR FOR THE TRANSMISSION OF ANALOG DATA

Robert Boudault, Limours, France, assignor to 501 Telecommunications Radioelectriques et Telephoniques, Paris, France

Filed Jul. 6, 1983, Ser. No. 511,379
Claims priority, application France, Jul. 7, 1982, 82 11925
Int. Cl.³ H03B 5/20; H03C 3/02; H04L 27/12
U.S. Cl. 332—16 R 4 Claims

1. A modulator for transmitting an analog data signal by variation of the frequency of an oscillator comprising a first operational amplifier combined with a capacitor to form an integrator whose output is connected to the input of a bistable circuit with trigger hysteresis, the output of the bistable circuit supplying a two-level voltage which is applied to one terminal of a first resistor whose other terminal is connected to the input of said integrator so as to produce at its output a triangular wave voltage whose frequency depends on the current flowing through said first resistor, said bistable circuit being formed by a second operational amplifier followed by an inverter, one input of this operational amplifier being connected to the intermediate terminal of a resistor bridge connected between the outputs of said integrator and said bistable circuit, characterized in that said two-level voltage at the output of said bistable circuit is formed from zero ground potential and a fixed positive potential lower than the supply voltage U, applied respectively to the inputs of a first and a second analog switch whose common outputs are connected to the output of said bistable

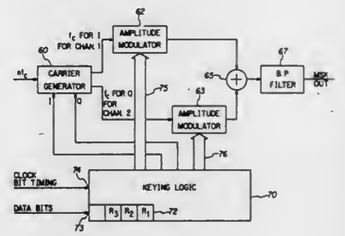


circuit, the input and output signals of said inverter being used respectively to control said first and second switches, said data signal being applied to the input of an analog data conversion circuit arranged so as to supply at its outputs a first and a second voltage which are variable as a function of the data signal and symmetrical with respect to the mean value of the third potentials at the inputs of said first and second switches, said first and second variable voltages being respectively applied to the inputs of a third and a fourth analog switch having their common outputs connected to one terminal of a second resistor whose other terminal is common with that of said first resistor, the input and output signals of said inverter being used respectively to control said third and fourth switches.

4,516,087
METHOD FOR REDUCING SIDE-LOBE ENERGY IN AN MSK DETECTABLE SIGNAL

Warren B. Bruene, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 12, 1982, Ser. No. 367,705
Int. Cl.³ H03C 3/00
U.S. Cl. 332—17 3 Claims



1. Means for generating an MSK detectable signal for transmission of a binary data signal having a sequence of mark and space data bits comprising:

a waveform generator for phase controlling a pair of orthogonally oriented waves in accordance with respective successive alternate data bits of said data signal and for amplitude modulating each of said orthogonally oriented waves with a waveform pair so that said modulated or-

thogonally oriented waves have continuously rounded phase transitions;

said waveform pair being selected in accordance with the states of three successive bits of said data signal according to the following table:

next bit	present bit	previous bit	waveform pair
Ø	Ø	Ø	lp-slr
Ø	Ø	1	slr-hp
Ø	1	Ø	lp-slr
Ø	1	1	slr-hp
1	Ø	Ø	slr-hp
1	Ø	1	lp-slr
1	1	Ø	slr-hp
1	1	1	lp-slr

wherein lp is a low-peak wave having a shape defined by 2 sin 45 $(1-(2/\pi)\cos 2\theta)$;

hp is a high-peak wave having a shape defined by 2 sin θ;

slr is a slope reversing wave having a shape defined by 2 sin 45 $(1-(2/\pi)\cos 2\theta)$;

slr is a sign reversing wave having a shape defined by 2 sin θ;

and means for combining said amplitude modulated signals into a combined signal to form said MSK detectable signal.

4,516,088

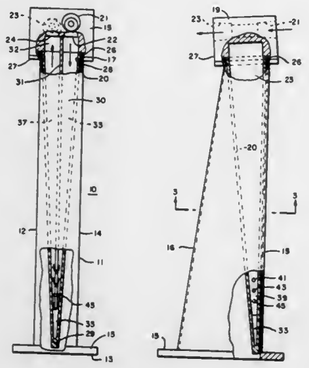
POWER ABSORBING TERMINATION FOR A WAVEGUIDE TRANSMISSION LINE

Ray M. Johnson, 6355 Scarlett Ct., Dublin, Calif. 94566, and George H. Dremann, 1940 Hopkins, Berkeley, Calif. 94707

Filed Nov. 30, 1981, Ser. No. 325,675

Int. Cl.³ H01P *1/26*

U.S. Cl. 333—22 F **17 Claims**



1. A power absorbing termination for a waveguide transmission line comprising

a section of waveguide having guidewalls, a power receiving end adapted to mate with said waveguide transmission line, and a base end opposite said power receiving end,

a dielectric taper, defined by a base and point end, extending through said waveguide section from the base end thereof and being inclined relative to the axis of said waveguide such that the point end of said dielectric taper lies substantially against the guidewall of said waveguide section,

said dielectric taper having fluid circulating passage means therein for circulating fluids through said taper from the base end to the point end thereof,

said waveguide section tapering from its power receiving end to its base end such that the cross-sectional area of the base end of the waveguide section decreases with the increased cross-sectional area of said dielectric taper, and

fluid inlet and fluid outlet means communicating with the fluid passage means of said taper.

4,516,089

SYSTEM FOR RECEIVING MICROWAVE SIGNALS HAVING ORTHOGONAL POLARIZATIONS

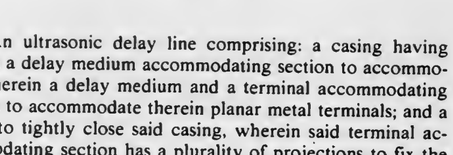
Michel Goscianski, Amfreville sur Iton, and Francois de Ronde, Lesigny, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1982, Ser. No. 358,754

Claims priority, application France, Mar. 18, 1981, 81 05406

Int. Cl.³ H01P *1/161*

U.S. Cl. 333—135 **5 Claims**



1. A system for coupling at least one of two orthogonally-polarized microwave signals from a reflector to at least one respective signal processing circuit, said system including a structure comprising two half-shells which are symmetrical with respect to a longitudinal plane of assembly,

said structure including, in succession, a waveguide portion, a mode separator and a housing containing at least one respective support plate for said at least one signal processing circuit,

said waveguide portion forming a horn and a bandpass filter, and said mode separator comprising means for coupling at least one of said signals from the waveguide portion to the at least one respective support plate in the housing.

4,516,090

ULTRASONIC DELAY LINE

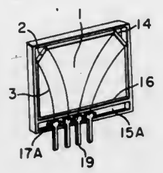
Toru Kambara; Michihiko Uemura, and Takeya Iwanaga, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,503

Claims priority, application Japan, Apr. 22, 1982, 57-57630[U]; Apr. 22, 1982, 57-57631[U]

Int. Cl.³ H03H *9/10, 9/25, 9/36*

U.S. Cl. 333—141 **6 Claims**



1. An ultrasonic delay line comprising: a casing having therein a delay medium accommodating section to accommodate therein a delay medium and a terminal accommodating section to accommodate therein planar metal terminals; and a cover to tightly close said casing, wherein said terminal accommodating section has a plurality of projections to fix the planar metal terminals, a partition frame is provided between said terminal accommodating section and said delay medium accommodating section to separate said both accommodating sections, the delay medium is accommodated in said delay medium accommodating section, the base part of said planar metal terminal is positioned and housed by means of projections in said terminal accommodating section, and one end of a lead wire, the other end of which has been connected with a transducer provided on the side surface of the delay medium, is connected with the base part of said planar metal terminals.

4,516,091

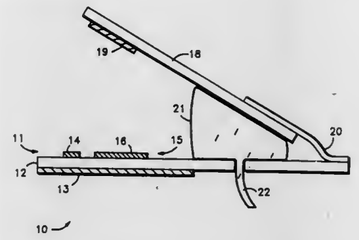
LOW RCS RF SWITCH AND PHASE SHIFTER USING SUCH A SWITCH

Bill H. Sasser, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1983, Ser. No. 563,329

Int. Cl.³ H01P *1/18, 1/10, 1/12*

U.S. Cl. 333—161 **11 Claims**



1. An RF switch conprising:

a first dielectric substrate;

an RF transmission line carried on said first substrate;

at least one device on said substrate to be one of coupled to and isolated from said RF transmission line;

a second dielectric substrate;

at least one bridge conductor carried on said second substrate, said at least one bridge conductor coupling said at least one device to said RF transmission line when said second substrate is in a first position and failing to so couple when said second substrate is in a second position, said second substrate being spring biased to one of said first and second positions and being pneumatically actuated to the other of said positions.

4,516,092

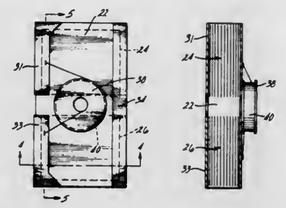
LEADLESS FILTER COMPONENT

Michael A. Rosenberg, Tarzana, Calif., assignor to SFE Technologies, San Fernando, Calif.

Filed Feb. 18, 1983, Ser. No. 467,605

Int. Cl.³ H03H *7/075, 7/01*

U.S. Cl. 333—184 **6 Claims**



1. A π-filter comprising a monolithic ceramic capacitor chip including at least two groups of parallel conductive plates embedded in a ceramic chip, the plates of each group forming two sets, the plates of the first set being interleaved with the plates of the second set, the plates of the first set of both groups extending to a first face of the chip but not the other faces, the plates of the second set of both groups extending to a second face of the chip opposite the first face but not the other faces, a first conductive layer on the first face in electrical contact with the first set of plates of both the first and second groups, second and third conductive layers on second face of the chip in electrical contact respectively with the second set of plates of the first group and of the second group, and an inductor including a bobbin secured to a third face of the chip and a conductor wound on the bobbin, opposite ends of the conductor being electrically connected respectively to the second and third conductive layers.

4,516,093

SURFACE ACOUSTIC WAVE FILTER

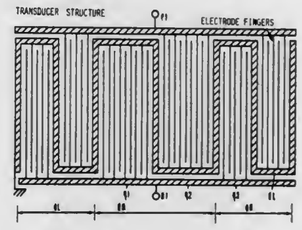
Felix Nyffeler, Affoltern, Switzerland, assignor to Siemens-Albis AG, Zurich, Switzerland

Filed Jul. 29, 1983, Ser. No. 518,562

Claims priority, application Switzerland, Sep. 7, 1982, 5310/82

Int. Cl.³ H03H *9/145, 9/64*

U.S. Cl. 333—193 **7 Claims**



1. A surface acoustic wave (SAW) filter formed by a piezoelectric substrate having a substrate surface and at least one transducer disposed on said surface; said transducer comprising, in combination a first plurality of spaced, generally parallel, electrically conductive finger electrodes which are connected to a first terminal and carried by said substrate, and a second plurality of spaced, generally parallel, electrically conductive finger electrodes which are connected to a second terminal and carried by said substrate; the finger electrodes of the first plurality being generally arranged in the intermediate spaces between the finger electrodes of the second plurality; a common terminal for each of said first and second plurality of finger electrodes, said common terminal comprising a strip of electrically conductive material spaced from and meandering through the spaces between said first and second plurality of finger electrodes; said first plurality having several finger electrodes arranged at distances from each other that have values B1, B2, B3, . . . , for which the following condition applies:

$$B1 \leqq B2 \leqq B3 \leqq \ldots$$

where the equal sign is omitted at least once.

4,516,094

ACOUSTIC SURFACE WAVE DEVICE

Ching W. Lee, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 23, 1983, Ser. No. 564,795

Int. Cl.³ H03H *9/64, 9/145*

U.S. Cl. 333—194 **8 Claims**

1. An acoustic surface wave device comprising

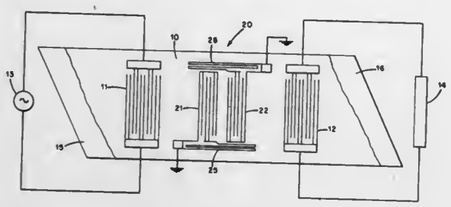
an acoustic surface wave propagating medium;

an input transducer for launching acoustic surface waves along a propagation path in said medium, the input transducer comprising two sets of interleaved electrodes disposed on the surface of the acoustic surface wave propagating medium with the electrodes extending transversely to the propagation path;

an output transducer across said propagation path for receiving and detecting acoustic surface waves propagated along the propagation path from the input transducer, the output

transducer comprising two sets of interleaved electrodes disposed on the surface of the acoustic surface wave propagating medium with the electrodes extending transversely to the propagation path;

a first attenuating transducer interposed across said propagation path between the input transducer and the output transducer for intercepting and attenuating acoustic surface waves propagated along said propagation path; and



a second attenuating transducer interposed across said propagation path between the input transducer and the output transducer for intercepting and attenuating acoustic surface waves propagated along said propagation path;

said first attenuating transducer and said second attenuating transducer being spaced apart by a distance so as to reflect acoustic surface waves along said propagation path 180° out of phase at the synchronous frequency of the device.

4,516,095

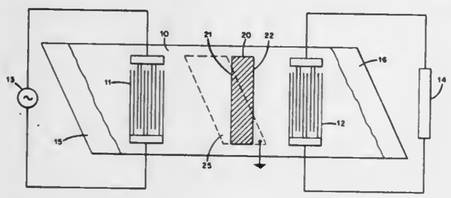
SURFACE ACOUSTIC WAVE DEVICE

Ching W. Lee, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 23, 1983, Ser. No. 564,796

Int. Cl.³ H03H *9/42, 9/64, 9/145*

U.S. Cl. 333—194 **7 Claims**



1. An acoustic surface wave device comprising:

an acoustic surface wave propagating medium;

an input transducer for launching acoustic surface waves along a propagation path in said medium, the input transducer comprising two sets of interleaved electrodes disposed on the surface of the acoustic surface wave propagating medium with the electrodes extending transversely to the propagation path;

an output transducer across said propagation path for receiving and detecting acoustic surface waves propagated along the propagation path from the input transducer, the output transducer comprising two sets of interleaved electrodes disposed on the surface of the acoustic surface wave propagating medium with electrodes extending transversely to the propagation path; and

an acoustic energy absorber of acoustic surface wave absorbing material interposed across said propagation path between the input transducer and the output transducer and extending across the entire transducer aperture for intercepting and attenuating acoustic surface waves propagated along said propagation path.

4,516,096

MAGNETIC CIRCUIT FOR AN YTTRIUM-IRON GARNET CRYSTAL RESONATOR FOR AN OSCILLATOR

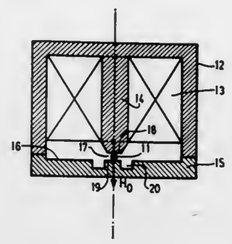
Daniel Doyen, Ozoir, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,146

Claims priority, application France, Nov. 22, 1982, 82 19525

Int. Cl.³ H01P *7/00*

U.S. Cl. 333—219 **2 Claims**



1. A magnetic circuit for an yttrium-iron garnet crystal resonator (**11**) for an oscillator, formed by a first cylindrical pole piece (**12**) comprising a coil (**13**) provided around an axial core (**14**) and a second cylindrical pole piece (**15**) having a flat bottom (**16**), the two cylindrical pole pieces (**12,15**) being joined together so as to close the magnetic circuit, and the yttrium-iron garnet crystal (**11**) being placed in a gap (**17**) defined by an end (**18**) of the axial core (**14**) and that part (**19**) of the flat bottom facing said end (**18**), characterized in that a circular groove (**20**) is arranged in the flat bottom (**16**) around the part (**19**) facing the end (**18**) of the axial core (**14**).

4,516,097

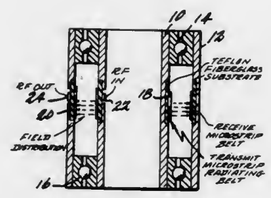
APPARATUS AND METHOD FOR COUPLING R.F. ENERGY THROUGH A MECHANICALLY ROTATABLE JOINT

Robert E. Munson, and Hussain A. Haddad, both of Boulder, Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Aug. 3, 1982, Ser. No. 404,655

Int. Cl.³ H01P *1/06;* **H01Q** *1/38*

U.S. Cl. 333—261 **31 Claims**



1. An r.f. rotary joint comprising:

a first cylindrical r.f. radiating structure having its radiation pattern directed outwardly;

a first single r.f. feed point and feed structure fixedly connected to feed r.f. energy to/from said first cylindrical radiating structure of substantially uniform amplitude and phase around its cylindrical circumference;

a second cylindrical r.f. radiating structure disposed concentrically around the first structure and having its radiation pattern directed inwardly;

a second single r.f. feed point and feed structure fixedly connected to feed r.f. energy to/from said second cylindrical radiating structure of substantially uniform amplitude and phase about its cylindrical circumference; and

rotary bearing means mounting said first and second structures for relative rotation.

4,516,098

OVERCURRENT PROTECTION SWITCH

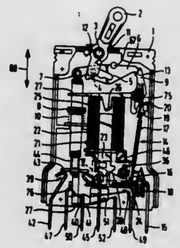
Fritz Krasser, Altdorf, and Josef Kinner, Burthann, both of Fed. Rep. of Germany, assignors to Ellenberger & Poensgen GmbH, Altdorf, Fed. Rep. of Germany

Filed Mar. 25, 1983, Ser. No. 478,983

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211246

Int. Cl.³ H01H *73/48*

U.S. Cl. 335—35 **17 Claims**



1. An overcurrent protection switch comprising:

a pair of switching contacts;

at least one trip element;

a mechanical switch latch composed of an actuating element (**2**) and a latching lever (**6**) which acts in conjunction with said actuating element and which has a first end and a second end;

a plunger (**8**) disposed to be acted upon by said first end and essentially guided, under an initial spring tension, at right angles to said latching level (**6**) for selectively connecting and disconnecting said pair of switching contacts;

a trip lever (**9**) movable between an untripped position and a tripped position and having a support area (**13**) on which said second end of said latching lever (**6**) rests, under the influence of the initial spring tension on said plunger (**8**), when said trip lever (**9**) is in its untripped position, said trip lever being disposed to be moved into its tripped position by said trip element; and

a housing containing said switching contacts, said trip element, said mechanical switch latch, said plunger and said trip lever;

wherein said trip lever:

is composed of two arms which extend from a common location to form an "L";

is provided, at the common location, with a pivot which is stationary with respect to said housing;

includes means biassing said trip lever toward its untripped position;

has one of its said arms extending essentially at right angles to said plunger; and

has the other of its arms extending essentially parallel to said plunger and toward said actuating element (**2**), with said support area (**13**) being disposed at the free end of said other arm; and further wherein:

said plunger (**8**) is provided with a longitudinal groove in which engages the free end of said one arm of said trip lever (**9**); and said longitudinal groove has an end constructed to act as a stop for said free end of said one arm of said trip lever (**9**).

4,516,099

ELECTROMAGNETIC RELAY

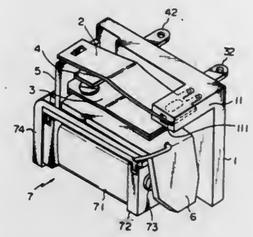
Kunihisa Fujii, Saku; Noboru Tomono, Usuda; Hajime Watanabe, Saku, and Yasushi Miyakoshi, Komoro, all of Japan, assignors to Takamisawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,584

Claims priority, application Japan, Apr. 17, 1981, 56-54587[U]

Int. Cl.³ H01H *51/08*

U.S. Cl. 335—135 **6 Claims**



1. An electromagnetic relay comprising a base block, an electromagnet, an armature, a card and a plurality of spring means, and means for fixing at least one of said spring means to said base block comprising:

a solid cubic protrusion formed on a predetermined portion of said base block, said protrusion having formed therein a slot for receiving said one of said spring means and a plurality of deep holes adjoining said slot and extending into said cubic protrusion therefrom, at least one cubic column being formed between said deep holes;

a plurality of side projections formed on a portion of said one of said spring means, said side projections being positioned to fit into said deep holes when said one of said spring means is inserted into said slot with the side edge portion of said one of said spring means abutting against the top of said cubic column;

whereby the end portion of said one of said spring means including said side projections is firmly fixed to said cubic protrusion.

4,516,100

MECHANICAL INTERLOCK FOR VERTICALLY MOUNTED CIRCUIT BREAKERS

James B. Wallace, Sarasota, Fla., and Glenn R. Thomas, Brighton, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1983, Ser. No. 562,502

Int. Cl.³ H01H *33/46*

U.S. Cl. 335—160 **7 Claims**

1. An interlock mechanism for preventing a pair of vertically mounted circuit breakers from being concurrently closed, each circuit breaker including a trip latch means operable between tripped and untripped positions that when tripped opens the circuit breaker when closed and prevents closing thereof and when untripped allows the circuit breaker when open to be closed, and a contact position indicator means for providing mechanical indication of the open position and the closed position of the circuit breaker, comprising:

a first bell crank assembly;

a second bell crank assembly;

a third bell crank assembly;

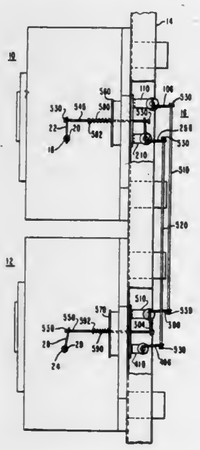
a fourth bell crank assembly, the first and second bell crank assemblies mounted adjacent the first circuit breaker with the third and fourth bell crank assemblies mounted adjacent to the second circuit breaker, the first and third bell crank assemblies being substantially parallel to one another and having one arm of each being in corresponding radial and vertical alignment with the other arm of the first bell crank assembly connected to the contact position

indicator means of the first circuit breaker, the arrangement of the fourth bell crank assembly on the second circuit breaker and that of the second bell crank assembly being substantially similar to that of the first and third bell crank assemblies, respectively;

a pair of bell crank assembly intraconnecting means, one bell crank assembly intraconnecting means connecting correspondingly aligned arms of the first and third bell crank assemblies and the second and fourth bell crank assemblies, respectively;

a pair of trip latch connecting means, one trip latch connecting means connected to the trip latch means of the first circuit breaker and the other arm on the second bell crank assembly with the other trip latch connecting means connected to the trip latch means of the second circuit breaker and the other arm on the third bell crank assembly; and

trip latch spring biasing means for returning each trip latch means to the untripped position, the interlock for the first



circuit breaker being actuated by the contact position indicating means thereof moving to the closed position causing the rotation of the first bell crank assembly via the arm thereof connected to the contact position indicating means, the rotation of the first bell crank assembly moving the bell crank assembly intraconnecting means connected thereto that in turn rotates the third bell crank assembly connected thereto moving the trip latch connecting means that moves the trip latch means of the second circuit breaker to the tripped position preventing the second circuit breaker from closing and upon opening of the first circuit breaker the trip latch spring biasing means moving the trip latch means of the second circuit breaker back to the untripped position allowing the second circuit breaker to be closed, the interlock for the second circuit breaker functioning in substantially the same manner with the first circuit breaker via the fourth and second bell crank assemblies thereby allowing only one of the two circuit breakers to be closed at any time.

4,516,101
AIR-FLOW-RATE SENSORS

Michio Nemoto; Kiyokazu Yoshida, and Tetsuro Baba, all of Sendai, Japan, assignors to Tohoku Metal Industries, Ltd., Miyagi, Japan

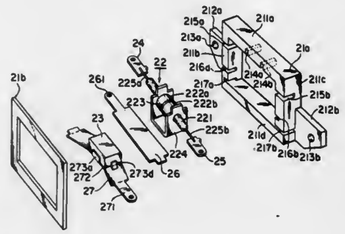
Filed Feb. 22, 1984, Ser. No. 582,530
Claims priority, application Japan, May 2, 1983, 58-66760[U]; May 14, 1983, 58-83485; May 14, 1983, 58-71138[U]
Int. Cl.³ H01H *37/58*
U.S. Cl. 335—208 **18 Claims**

1. An air-flow rate sensor for detecting whether the current air flow is less than a predetermined rate or not, which comprises:

an insulator frame having an opening chamber;

a thermo-magnetically operated switch comprising an assembly of a reed switch unit, at least one permanent magnet and at least one temperature sensitive ferromagnetic piece, said thermo-magnetically operated switch being mounted on said insulator frame to be fixedly disposed within said opening chamber;

first terminal plate means being in contact with said at least one temperature sensitive ferromagnetic piece of said



thermo-magnetically switch and being fixedly mounted on said insulator frame to extend within said opening chamber;

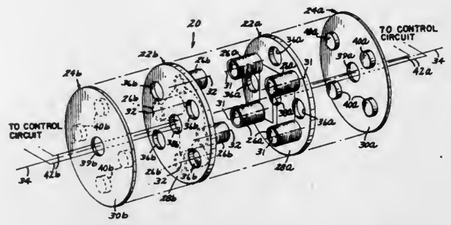
second terminal plate means being spaced from said first terminal plate means and being fixedly mounted on said insulator frame to extend within said opening chamber; and

positive temperature characteristic thermister means having two electrodes on its opposite side surfaces and fixedly held by said first and second terminal plate means, said two electrodes being in contact with said first and second terminal plate means, respectively.

4,516,102
ELECTRICALLY-POWERED EXPANSION/CONTRACTION APPARATUS

Mark C. Rask, 4205 - 46th Ave. North, Minneapolis, Minn. 55422

Filed Nov. 2, 1983, Ser. No. 548,214
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—267 **14 Claims**



1. An electrically controlled expansion and contraction device comprising a plurality of motor units, each of said plurality of motor units comprising:

(a) first electrically powered means for emanating a first force field;

(b) second electrically powered means for emanating a second force field;

(c) a first motor element movable with respect to said first force field emanating means and in response to said first force field emanated therefrom, said first force field emanating means and said first motor element comprising a first motor subunit, a first variable distance being between said first force field emanating means and said first motor element, an increase of said first variable distance being an expansion of said first motor subunit and a decrease of said first variable distance being a contraction of said first motor subunit;

(d) a second motor element movable with respect to said second force field emanating means and in response to said second force field emanated therefrom, said second force field emanating means and said second motor element comprising a second motor subunit, a second variable distance being between said second force field emanating means and said second motor element, an increase of said second variable distance being an expansion of said second motor subunit and a decrease of said second variable distance being a contraction of said second motor subunit;

(e) first stop means mechanically connecting said first force field emanating means to said first motor element for preventing said first variable distance from being greater than a first upper limit and preventing said first variable distance from being less than a first lower limit while substantially freely permitting said first variable distance to vary between said first upper limit and said first lower limit;

(f) second stop means mechanically connecting said second force field emanating means to said second motor element for preventing said second variable distance from being greater than a second upper limit and preventing said second variable distance from being less than a second lower limit while substantially freely permitting said second variable distance to vary between said second upper limit and said second lower limit;

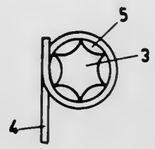
(g) motor subunit interconnecting means for mechanically connecting said first motor subunit to said second motor subunit; and

(h) motor unit interconnecting means for mechanically connecting said each motor unit to another one of said plurality of motor units, whereby the cumulative expansions and contractions of said first and second motor subunits provide expansion and contraction of said motor units and the cumulative expansions and contractions of said motor units provide expansion and contraction of said expansion and contraction device.

4,516,103
PLUG-IN ARRANGEMENT AND PROCESS FOR TIN PLATING CONTACTS OF A PLUG-IN ARRANGEMENT

Ernst Arnold, Buchs, Switzerland, assignor to Meteor AG, Ruschlikon, Switzerland

Filed Aug. 23, 1983, Ser. No. 525,645
Claims priority, application Switzerland, May 17, 1983, 2674/83
Int. Cl.³ H01F *15/02, 15/10*
U.S. Cl. 336—65 **15 Claims**

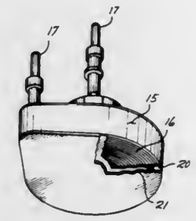


1. A plug-in arrangement for printed circuits, comprising electric coil windings surrounding a coil form having contact pins, the coil form and the contact pins being nonmetallic, end portions of the windings surrounding the contact pins, the contact pins being profiled and having continuous channels extending in the longitudinal direction along an axis of the contact pins, said channels creating spaces between said pins and said surrounding end portions which extend generally transverse to said channels, and solder beneath said end portions in said spaces.

4,516,104
COIL ASSEMBLY FOR HOT MELT INDUCTION HEATER APPARATUS

Arthur W. McDermott, Maple Valley, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 260,970, May 6, 1981, Pat. No. 4,420,876.
This application Oct. 29, 1982, Ser. No. 437,774
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—206 **2 Claims**

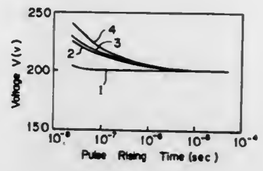


1. A coil assembly for use in induction heating apparatus comprising a plurality of windings of a flat shaped electrical conductor, said electrical conductor wrapped with a polyimide tape, said polyimide tape having two major side surfaces, each of said side surfaces having a coating of fluoroplastic material, and, including a fluoroplastic face sheet (**21**) supported by a major surface of said coil assembly and providing a non-stick surface for release of hot melt adhesive material and further including a fluoroplastic coated polyimide sheet (**20**) fused to and disposed between said face sheet (**21**) and said major surface of said coil.

4,516,105
METAL OXIDE VARISTOR WITH NON-DIFFUSABLE ELECTRODES

Motomasa Imai; Takashi Takahashi, both of Tokyo; Osamu Furukawa, Sagamihara, and Hideyuki Kanai, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1982, Ser. No. 395,278
Claims priority, application Japan, Jul. 16, 1981, 56-110028
Int. Cl.³ H01C *7/10;* **C04B** *35/00*
U.S. Cl. 338—21 **10 Claims**

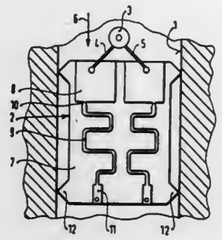


1. A metal oxide varistor which comprises (1) a sintered body containing (a) ZnO as a principal component, (b) Bi, Co and Mn each in amounts of about 0.05 to about 2 mole %, when calculated in terms of Bi_2O_3, Co_2O_3 and MnO_2, respectively, and (c) at least one selected from Al, In and Ga in amounts of about 1×10^{-4} to about 3×10^{-2} mole %, when calculated in terms of Al_2O_3, In_2O_3 and Ga_2O_3, respectively, said sintered body having been reheated at a temperature of about 700° to about 900° C. after sintering; and (2) a non-diffusible electrode provided on said sintered body after reheating of said sintered body.

4,516,106
TEMPERATURE SENSING MODULE

Peter Nolting, Buhlertal, Fed. Rep. of Germany, and Claude Bleger, Duttlenheim, France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 399,985, Jul. 19, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 586,651
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134166
Int. Cl.³ H01C 3/04
U.S. Cl. 338—28 13 Claims

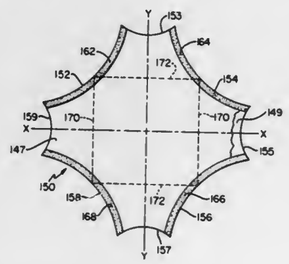


1. A gas temperature-sensing module for use in an air duct of a heating or air-conditioning system of a motor vehicle, including an electrical temperature-sensitive element provided with connection wires which simultaneously act as a support for the sensitive element, comprising a carrier body of an electrically insulating material having poor thermal conductivity; a pair of conductive webs arranged on said carrier body and each defining an enlarged end portion connected to an assigned connection wire, and a relatively narrow connection part having a meander-like configuration and being formed at its free end with a terminal contact area electrically connectable to said system; and supporting means attached to a minor part of said carrier body and being engageable with said air duct whereby said sensitive element together with major parts of said carrier body and said conductive webs are directly exposable to a gas stream in said air duct while only the minor part of said carrier body and the terminal contact area of said meander-like connection parts are in a direct mechanical contact with said duct and the rest of said system.

4,516,107
FUNCTION GENERATORS

Stephen D. Tritter, Fernwood La., Amherst, N.H. 03031

Filed Jan. 3, 1983, Ser. No. 455,238
Int. Cl.³ H01B 0/00; G01B 7/00
U.S. Cl. 338—89 9 Claims

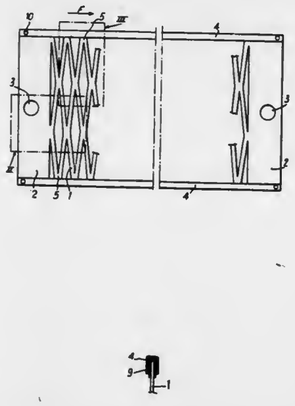


1. A potentiometer-type function generator comprising:
a resistance element formed of a sheet material comprising four short circuit and four open circuit boundaries with each open circuit boundary being terminated at each end by a short circuit boundary, said resistance element having a first non planar surface and a uniform known resistivity, and said open circuit and short circuit boundaries being arranged so that when said resistance element is electrified a non-uniform voltage distribution is provided along said first surface;
means for connecting some of said short circuit boundaries to a source of positive electrical potential and means for connecting others of said short circuit boundaries to a source of negative potential, so as to electrify said resistance element;
a contact member in contact with said first surface; and
means for mounting said contact member and resistance element for relative movement in two directions.

4,516,108
ELECTRICAL RESISTOR OF STRETCHED SHEET METAL

M. Maurice Buguet, Meudon la Foret, and M. Patrick Deruelle, Montbard, both of France, assignors to Le Metal Deploye, Clamart, France

Filed Nov. 22, 1982, Ser. No. 443,750
Claims priority, application France, Nov. 23, 1981, 81 21877
Int. Cl.³ H01C 10/14
U.S. Cl. 338—319 10 Claims



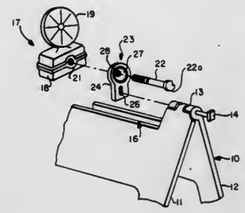
1. An electrical resistor having sides and ends and comprising, a metal sheet cut to form a generally planar pattern of integrally connected conductors extending between said ends and to edges of said sides, said conductors defining a plurality of current paths between said ends, said conductors being integrally joined in at least one node spaced from the sides and ends and comprising a junction of at least two conductors, and an electrically insulated U-shaped stiffener mounted on each side edge of said resistor, each stiffener being continuous and extending around the conductors at a side edge, said U-shaped stiffeners being fastened only to portions of said side edges at spaced apart locations and at least at locations adjacent the ends of the resistor, so that there are unfastened portions of the side edges between the fastening locations, and wherein said U-shaped stiffeners confine the unfastened portions of the edges between the fastening locations to prevent curving of the edges.

4,516,109
ROAD BARRICADE FLASHER LIGHT COMBINATION

Kurt W. Thurston, Reno, Nev.

Filed Feb. 1, 1983, Ser. No. 462,980
Int. Cl.³ E01F 9/01
U.S. Cl. 340—114 B 9 Claims

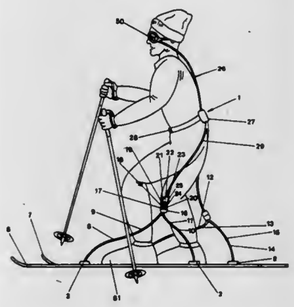
1. A road barricade flasher light combination where the barricade is in the form of a pair of legs each leg having a top bar and hinged together at the top by at least one hinge pin and having an adjacent saddle formed by a pair of the top bars of the barricade, the flasher light having a body portion containing a battery and a light source extending from the top of the body portion, the body portion having a socket for receiving a threaded bolt, the improvement comprising:
bracket means having an elongated lever with first and second aperture means at the two ends of the lever, said first aperture means being slotted and receiving said hinge pin which is freely slidable in said slot; fastening means for permanently attaching said bracket means to said barricade via said hinge pin; said second aperture means including a cup-shaped recess having an aperture through which said threaded bolt extends and is screwed into said socket in said body portion, the head of such bolt being recessed in said cup-shaped recess to prevent tampering; said body portion being rotatable on the axis of said threaded bolt, said first and second aperture means being spaced the approximate distance between the respective axes of said hinge pin and said socket in said body portion when the bottom of said body portion is resting on said saddle.



4,516,110
SKI STRESS SIGNALING DEVICE

Mark Overmyer, 3202 Prairie Rd., Rockford, Ill. 61102

Filed Aug. 9, 1982, Ser. No. 406,136
Int. Cl.³ G08B 23/00, 21/00; A63B 69/18
U.S. Cl. 340—323 R 3 Claims

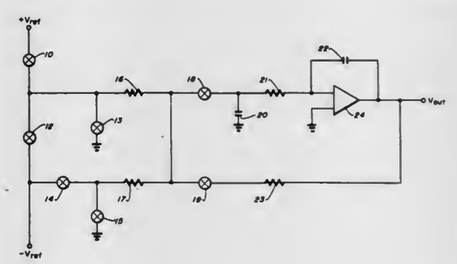


1. A ski stress signaling device comprising a plurality of strain gauges mounted on the top surfaces of a pair of skis and adapted to measure lengthwise strains in the said top surfaces of the said pair of skis; a plurality of electrical conductor wires adapted to connect the said plurality of strain gauges to form a Wheatstone bridge circuit; resistance compensation means adapted to compensate for any differences in the magnitudes of zero-stress resistances of the strain gauges of the said plurality of strain gauges; electrical conductor means adapted for connecting a direct current power supply to the said Wheatstone bridge circuit; first and second bridge output means;
a first amplifier means adapted to be connected to a direct current power source and adapted to amplify an output voltage of the said Wheatstone bridge circuit;
a second amplifier means adapted to be connected to a direct current power source and adapted to amplify an output voltage of the said Wheatstone bridge circuit;
a third amplifier means adapted to invert an output voltage of the said second amplifier means;
a first light emitting diode driver circuit adapted to be driven by an output voltage of the said first amplifier means and having a plurality of output means and adapted to be connected to a direct current power source wherein each of the said output means of the said plurality of output means is connected by electrical conductor means to an anode of a light emitting diode of a first plurality of light emitting diodes each having a cathode that is connected by electrical conductor means to a direct current power source;
a second light emitting diode driver circuit adapted to be driven by an output voltage of the said third amplifier means and having a plurality of output means and adapted to be connected to a direct current power and wherein each of the output means of the said plurality of output means is connected by electrical conductor means to an anode of a light emitting diode of a second plurality of light emitting diodes each having a cathode that is connected by electrical conductor means to a direct current power source;
a plurality of direct current power sources adapted to operate the aforesaid Wheatstone bridge circuit, the said first, second and third amplifier means, the said first and second light emitting diode driver circuits, and the said first and second pluralities of light emitting diodes; and a pair of goggles having mounted on a first portion of the perimeter thereof the said first plurality of light emitting diodes and having mounted on a second portion of the perimeter thereof the said second plurality of light emitting diodes.

4,516,111
PULSEWIDTH MODULATED, CHARGE TRANSFER, DIGITAL TO ANALOG CONVERTER

William R. Slump, Glen Rock, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

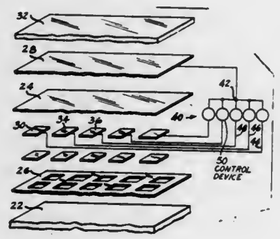
Filed Jul. 1, 1982, Ser. No. 394,233
Int. Cl.³ H03K 13/02
U.S. Cl. 340—347 DA 3 Claims



1. A pulsewidth modulated, charge transfer, digital to analog converter for use in sample data systems comprising in combination:
an operational amplifier operating in the summing (filter) mode,
a first capacitor connected between the input and output of said operational amplifier,
a second capacitor adapted to be connected to a data source during sample periods and being disconnected therefrom during hold periods,
circuit means for transferring the charge on said second capacitor to said first capacitor during said hold periods, and
a feedback circuit connecting the output of said operational amplifier to said second capacitor during sample periods

and disconnecting the output of said operational amplifier from said second capacitor during hold periods.

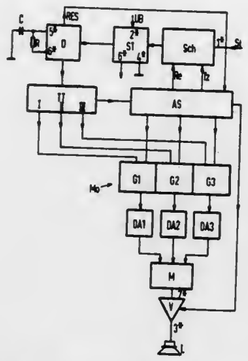
4,516,112
TRANSPARENT TOUCH SWITCHING SYSTEM
Chee G. Chen, Brown Deer, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 22, 1982, Ser. No. 351,081
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—365 R **3 Claims**



1. A transparent touch switching system comprising a display screen, a transparent flexible piezoelectric polymer film supported above said screen for selective localized bending depression by a user's finger or the like towards said screen, said film having transparent flexible conductive coatings on opposite sides thereof for voltage generation in response to bending depression of said film, wherein said transparent flexible conductive coating on one side of said film is a continuous sheet, and said transparent flexible conductive coating on the other side of said film comprises a plurality of separate discrete sheet segments at selected separate areas, and comprising spacer means formed by a nonconductive transparent sheet supporting said piezoelectric polymer film above said screen and having a plurality of apertures through said sheet forming a waffle-like grid or matrix with each aperture aligned beneath a designated said discrete sheet segment, and including circuit connection means connected to said coatings for using said voltage as a trigger signal to drive designated circuitry.

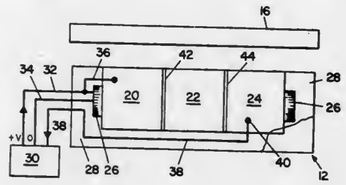
4,516,113
DIGITAL TONE GENERATOR FOR TONE SEQUENCES
Bruno Scheckel, and Ernst Wittenzellner, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Oct. 21, 1981, Ser. No. 313,253
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043505; Jun. 15, 1981, 3050148
Int. Cl.³ H03K *5/156;* **G08B** *3/00*
U.S. Cl. 340—384 E **17 Claims**

1. Digital tone generator comprising:
an oscillator generating a base frequency,
a frequency divider driven by said base frequency and generating a plurality of tone frequencies, said tone frequencies being sub-multiples of said base frequency,
a starting circuit operatively responsive to a start switch, said starting circuit operating to activate said oscillator and to activate a stable voltage supply,
a modulator comprising a plurality of modulator modules, said plurality equal to and corresponding to said plurality of tone frequencies, a general cycle control operatively responsive to said frequency divider to generate tone modulation control cycles,
a plurality of DA-converters, said plurality equal to and corresponding to said plurality of modulator modules, said frequency divider and said general cycle control jointly controlling said modulator to produce a plurality of modulated tone frequencies, said plurality equal to and corresponding to said plurality of modulator modules,
said plurality of DA-converters operatively responsive to said modulated tone frequencies to produce modulated analog tone frequencies, and a mixer for receiving said



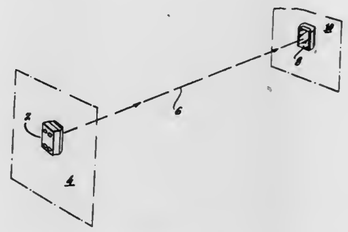
modulated analog tone frequencies to produce a sequence of modulated analog tones.

4,516,114
MAGNETIC LOCKING STATUS DETECTION SYSTEM
Robert C. Cook, Redondo Beach, Calif., assignor to Securitron-Magnalock Corp., Torrance, Calif.
Filed Mar. 7, 1983, Ser. No. 473,010
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—542 **10 Claims**



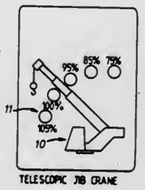
1. A magnetic lock and status detection system for a door or the like comprising:
an electromagnet having a core structure made of conductive magnetic material and having at least two separate core portions insulated from one another;
a magnetic strike plate made of conductive magnetic material;
means for mounting said electromagnetic and strike plate on a door and a door frame, respectively, for relative movement between a closed position wherein said strike plate engages both of said two separate core portions, and an open position wherein the door is open and said strike plate is spaced from said electromagnet;
an electrical control and sensing unit, said electrical control and sensing unit including door closure detection circuit means:
means for supplying power to said electromagnet from said electrical control and sensing unit; and
electrical connections from said detection circuit means of said control and sensing unit to each of said two separate core portions;
whereby the engagement of said strike plate with said two separate core sections and the resultant closure of an electrical path between said electrical connections indicates to said detection circuit means whether the door is open or closed.

4,516,115
INTRUSION DETECTION SYSTEM
Raymond A. Frigon, Watertown, and William G. Kahl, Jr., Brookfield, both of Conn., assignors to Cerberus AG, Switzerland
Filed Apr. 16, 1982, Ser. No. 369,227
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—556 **19 Claims**



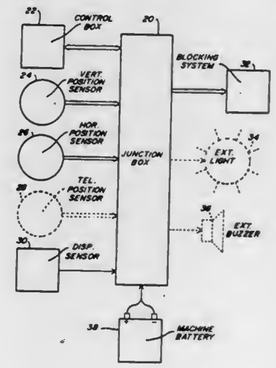
1. In an intrusion detector system of the type including a transmitter for transmitting a beam of electromagnetic energy, and a receiver including means for detecting said transmitted energy and means, including a first threshold detector, responsive to said detected energy for generating an alarm signal when the level of said detected energy does not exceed a first threshold value,
the improvement comprising:
a light source mounted in said receiver and coupled to said alarm signal generating means such that said source is continuously lighted when said generating means generates an alarm signal, and
flasher circuitry mounted within said receiver and interposed between said means for detecting and said light source and including a second threshold detector responsive to said detected energy for flashing said source when said detected energy does not exceed a second threshold value at least four times greater than said first threshold value.

4,516,116
APPARATUS FOR VISUALLY DISPLAYING THE LOAD-MOMENT, AXLE-LOAD, OR PAYLOAD OF A VEHICLE
Iain S. White, Leamington Spa, England, assignor to Safety Devices (Engineering) Limited, Suffolk, England
Filed Dec. 16, 1981, Ser. No. 331,154
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—685 **6 Claims**



1. A visual display unit for displaying variations in the quotient of applied load to safe working load for a mechanical handling vehicle, the visual display unit comprising display means, a representation of said vehicle on the display means, means for giving a primary visual indication of the quotient of applied load to safe load and including visual transducer means for providing different visual indications on the display means, and means for locating said visual transducer means in a predetermined position on said display relative to said representation of said vehicle to give a secondary visual indication depicting increasing and decreasing radius of applied load by the relative locations of successive visual indications on said display.

4,516,117
RANGE CONTROLLER FOR CONTINUOUSLY MONITORING THE POSITION OF THE BOOM OF HEAVY MACHINERY
Raymond Couture, 222 Pente du Moulin, Beauceville, County of Beauce, Canada G0S 1A0; Raynald Couture, Lac Etchemin, County of Bellechasse, Canada G0R 1S0, and Paul Poulin, 816 Principale St., St. Elzéar, County of Beauce, Quebec, Canada (G1V 4K1)
Filed Apr. 5, 1982, Ser. No. 365,488
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—685 **8 Claims**



1. A range controller for continuously monitoring the position of the boom of heavy machinery, comprising:
(a) position sensors mounted on the boom and on the machinery for continuously detecting the position of the boom with respect to a reference;
(b) control switches located in the cabin of the machinery for permitting the operator to set the position limits of the boom;
(c) a central control circuit mounted on the machinery and comprising a micro-processor circuit adapted for connection to the sensors and to the control switches and two memory devices connected to said micro-processor circuit for registering the position of the boom as well as the position limits set by the operator and for continuously comparing the actual position of the boom with the position limits;
(d) indicators located in the cabin of the machinery and responsive to said micro-processor circuit for warning the operator when a position limit is reached;
(e) a blocking system responsive to the micro-processor for blocking the operation of the boom when a position limit is reached;
(f) a main relay for operating said blocking system, said main relay being electrically energized during normal operation of the machine to release the blocking system so that, if there is a power failure, or a break in a wire, etc., the main relay is released to operate the blocking system; and
(g) additional relays for reversing the operation of the boom when the main relay is released so as to ensure safe stopping of the boom.

4,516,118
PULSE WIDTH MODULATION CONVERSION CIRCUIT FOR CONTROLLING A COLOR DISPLAY MONITOR
Clayton C. Wahlquist, West Valley City, Utah, assignor to Sperry Corporation, New York, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,689
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—703 **11 Claims**

1. A conversion circuit for a video display terminal having twenty-seven selectable colors comprising:

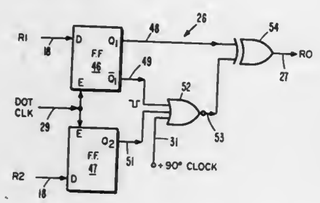
an eight-color CDM of the type having only three RGB video input lines,

a cathode ray tube controller of the type having six output color control signal lines capable of defining sixty-four logic states, each signal line having two logic states being defined by full width pulses or the absence of full width pulses,

said six output color control signal lines providing three RGB color pairs of output color control lines,

three pulse width modulation conversion circuits each having one of said three RGB color pairs of output control lines coupled to its input,

each said pulse width modulation conversion circuit having its output coupled to one of said three RGB video input lines of said eight-color CDM,



each output control line of said pulse width modulation conversion circuit having at least three possible pulse width modulation conditions in response to the two logic states on said control signal lines,

said logic states being full width pulses and the absence of full width pulses and said pulse width modulation conditions being partial width pulses, full width pulses and the absence of pulses, and

a dot clock generator coupled to said three pulse width modulation conversion circuits and to said cathode ray tube controller for synchronizing said pulses,

whereby said eight-color CDM is converted to display as many colors as a twenty-seven color CDM.

4,516,119

LOGIC SIGNAL DISPLAY APPARATUS

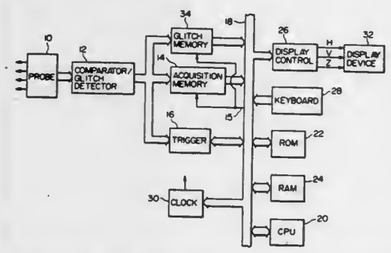
Minoru Fukuta, Tokyo, Japan, assignor to Sony/Tektronix Corporation, Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 420,141

Claims priority, application Japan, Dec. 17, 1981, 56/204170

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—722 **4 Claims**



1. An apparatus for displaying a logic signal waveform on a display device comprising:

means for storing a plurality of predetermined basic patterns corresponding to segments of said logic signal waveform, each of said basic patterns being M×N bits where M is an integer greater than or equal to three corresponding to the number of raster lines of said logic signal waveform and N is an integer corresponding to the width of each of said segments, the N logic levels of corresponding upper (M=1) and lower (M=M) raster lines of said basic pattern being determined according to the logic levels of said logic signal waveform, said upper and lower raster lines having reverse logic level with respect to each other, and the N logic levels of corresponding intermediate (M<M<1) raster lines being the same as the logic levels of one of said corresponding upper and lower raster lines;

means for selectively reading said basic patterns from said storing means determined by said logic signal waveform; and

means for generating an output signal based upon said basic pattern, said output signal having a transition output for said intermediate raster lines based upon a comparison of the present bit with the former bit of said intermediate raster line and having an output for said upper and lower raster lines based upon the logic levels of said upper and lower raster lines such that said logic signal waveform is displayed according to said output signal.

4,516,120

DISPLAY DEVICE

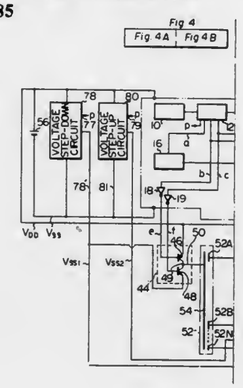
Masao Sakuyama, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,224

Claims priority, application Japan, Jan. 12, 1981, 56-2885; Feb. 24, 1981, 56-25732

Int. Cl.³ G09G *3/34*

U.S. Cl. 340—785 **7 Claims**



1. A display device, comprising:

an electrochromic display cell having a common electrode and at least one segment electrode with a display segment corresponding thereto;

common electrode drive circuit means for applying periodically varying drive voltages to said common electrode;

segment electrode drive circuit means operable to apply drive voltages to said segment electrode in a predetermined timing relationship with said common electrode drive voltages for thereby selectively applying a first potential difference between said common electrode and segment electrode of appropriate polarity and amplitude to produce coloration of said display segment and a second potential difference between said common electrode and segment electrode of opposite polarity to said first potential difference and appropriate amplitude to produce bleaching of said display segment, said segment electrode drive circuit means comprising a coloration drive transistor coupled to said segment electrode, operable to be selectively set in a conducting condition to establish said first potential difference between said common electrode and segment electrode and moreover comprising circuit means operable upon establishment of said coloration condition for coupling a control electrode of said coloration drive transistor to a bias potential of suitable polarity for biasing said coloration drive transistor into a non-conductive state and whose value is a negative quantity whose absolute amplitude is equal to or less than the sum of the absolute amplitudes of said first potential difference and second potential difference applied between said common electrode and segment electrode.

4,516,121

TRANSMISSION CONTROL SYSTEM

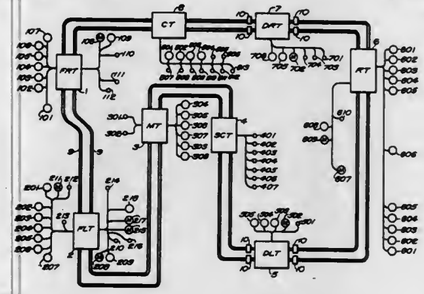
Masakazu Moriyama; Toshio Shinohara, both of Toyota; Kazuo Hirano, and Fumio Makino, both of Osaka, all of Japan, assignors to Toyota Motor Co., Ltd., Toyota and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Jun. 4, 1982, Ser. No. 385,318

Claims priority, application Japan, Jun. 18, 1981, 56-92968

Int. Cl.³ H04Q *9/00*; B60Q *1/00*

U.S. Cl. 340—825.05 **8 Claims**



1. In a transmission control system for data transmission wherein multiple devices share one circuit so that each of the devices may transmit data on the circuit according to a predetermined transmission sequence, the improvement wherein each device comprises a first detecting means to detect an immediately preceding transmission signal from another device in said predetermined transmission sequence, a second detecting means to detect a further preceding transmission signal from another device in said predetermined transmission sequence, and means for starting successive transmissions in response either to detecting, by said first detecting means, a transmission signal from said immediately preceding signal or after a predetermined time by detecting a next preceding transmission signal from still another device, whereby substantially continuous transmission is accomplished without delay due to failure of any device used in the sequential transmission of said signals.

4,516,122

COMMUNICATION SYSTEM WITH COLLISION DETECTION AND FORCED COLLISION

Masataka Tomikawa, Tokorozawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 1, 1982, Ser. No. 413,897

Claims priority, application Japan, Sep. 9, 1981, 56-141062

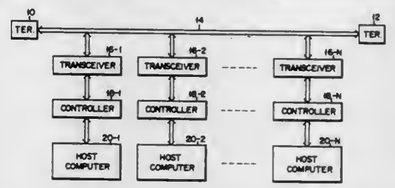
Int. Cl.³ H04Q *9/00*; H04J *3/00*

U.S. Cl. 340—825.5 **11 Claims**

1. A communication system for a local network interconnecting a plurality of computer units comprising:

a common bus line; and

controllers, each connected between a respective computer unit and said common bus, for controlling access to the bus line, each controller including a collision detector for detecting a frame collision on the bus line, each controller including means for transmitting, when a request for transmission is supplied and a collision is not detected, a text frame and a first dummy frame immediately following said text frame, said first dummy frame being transmitted until



a collision is detected, each of said controllers including means for transmitting, when a text frame is received, a second dummy frame from a time of completion of the text frame reception till a later one of the times when a collision state is no longer detected and when it is ready to transmit an acknowledgement frame and said acknowledgement frame is transmitted immediately after said second dummy frame.

4,516,123

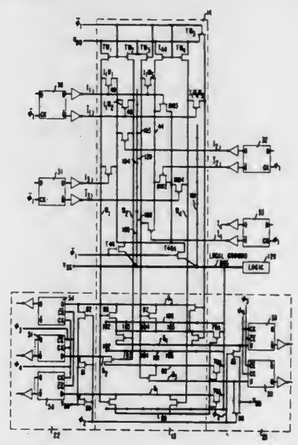
INTEGRATED CIRCUIT INCLUDING LOGIC ARRAY WITH DISTRIBUTED GROUND CONNECTIONS

Masakazu Shoji, Warren, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1982, Ser. No. 453,180

Int. Cl.³ H04Q *3/00*; H03K *19/20*

U.S. Cl. 340—825.86 **8 Claims**



5. An integrated circuit structure comprising a layer of semiconductor material and a first linear array of electrical conductors separated from said layer by a first insulating layer, said structure including a second linear array of electrical conductors oriented transverse to said first linear array, said first and second arrays including an insulating layer therebetween and defining cross-points with conductors of said first array, a pattern of transistors located at selected ones of said cross-points each having source, gate and drain electrodes, each of said transistors having its gate and source electrodes connected to a conductor of said first and second linear arrays, respectively, means for controllably raising said conductors of said second linear array to a first voltage level and means for

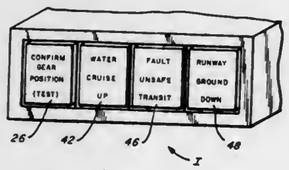
selectively activating ones of said pattern of transistors in a manner to discharge selected conductors of said second linear array, said structure also including a third linear array of conductors having conductors parallel to at least two conductors of said second linear array, and a plurality of ohmic connections between each conductor of said third array and said first layer.

4,516,124

CONVERTIBLE AMPHIBIOUS AIRCRAFT WHEEL POSITION WARNING SYSTEM

Harry D. Shannon, 105 Westwood Dr., Houma, La. 70360, and William P. Lutts, Richardson, Tex., assignors to Harry D. Shannon, Houma, La.

Filed Jul. 22, 1982, Ser. No. 400,973
Int. Cl.³ G08G *5/00*
U.S. Cl. 340—960 **11 Claims**



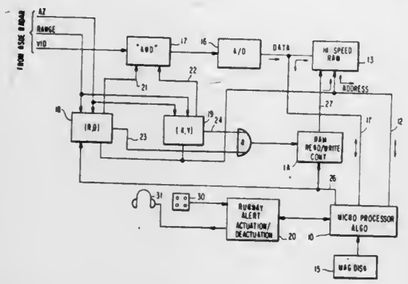
1. An apparatus for warning the pilot of an amphibious aircraft with retractable landing gear of the status of the landing gear comprising:
(a) prompting means for warning the pilot that the aircraft is in a speed transition;
(b) input means for receiving an indication from the pilot designating, in response to said prompting means, whether a landing is selected to be on land or on water;
(c) means for sensing the position of the landing gear;
(d) alarm means for indicating to the pilot if the retractable landing gear is properly placed for the selected landing.

4,516,125

METHOD AND APPARATUS FOR MONITORING VEHICLE GROUND MOVEMENT IN THE VICINITY OF AN AIRPORT

Carl E. Schwab, Huntington Station; David P. Rost, Malverne; William Hackenberg, Farmingdale, and Paul Holcombe, Huntington, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 419,886
Int. Cl.³ G01S *13/52*
U.S. Cl. 343—7.7 **17 Claims**



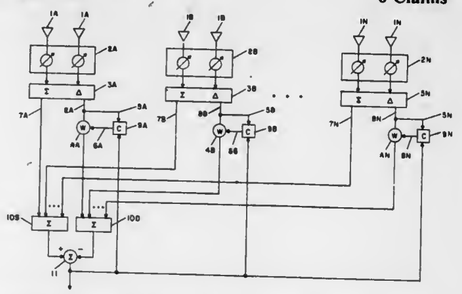
1. Apparatus for processing radar return video signals in the vicinity of an airport including at least one runway and at least one vehicle roadway intersecting said runway, said apparatus comprising:
first means responsive to a command input representing a selected function and a selected runway to select a set of geographical monitored locations from plural sets of monitored locations,
second means responsive to a real time video signal from a radar apparatus for repeatedly isolating radar returns from each geographic monitored location in said selected set,
third means for repeatedly comparing radar returns from each of plural geographic monitored locations with a simulated return for each corresponding location to detect a moving object at any of said geographical monitored locations, and
alarm means responsive to detection of a moving object by said third means for alerting an operator to the presence of said moving object.

4,516,126

ADAPTIVE ARRAY HAVING AN AUXILIARY CHANNEL NOTCHED PATTERN IN THE STEERED BEAM DIRECTION

Raymond J. Masak, East Northport, and Anthony M. Kowalski, Miller Place, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,543
Int. Cl.³ G01S *3/16, 3/28*
U.S. Cl. 343—383 **6 Claims**



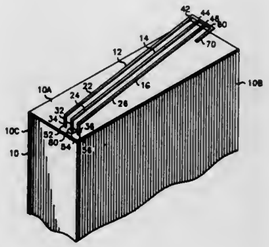
1. An apparatus for cancelling undesired signals affecting an antenna system having a plurality of antenna elements, said apparatus comprising:
(a) first, second, third and fourth ports, each said port for coupling one of said antenna elements of said system;
(b) first means coupled to said first and second ports for providing a first sum signal at a first sum port representing a first sum of signals provided to said first and second ports by the antenna elements coupled thereto and for providing a first difference signal at a first difference port representing a first difference of signals provided to said first and second antenna ports;
(c) a first adaptive control loop coupled to the first difference port and having an output providing a first difference output signal corresponding to the first difference signal; and
(d) second means coupled to said third and fourth ports for providing a second sum signal at a second sum port representing a second sum of signals provided to said third and fourth ports by the antenna elements coupled thereto and for providing a second difference signal at a second difference port representing a second difference of signals provided to said third and fourth antenna ports;
(e) a second adaptive control loop coupled to the second difference port and having an output providing a second difference output signal corresponding to the second difference signal;
(f) means for summing the first sum signal and the second sum signal and having an output providing a total sum signal;
(g) means for summing the first difference output signal and the second difference output signal and having an output providing a total difference signal; and
(h) means for adding the total difference signal and the total sum signal, said means for adding having an output port associated with said first and second control loops.

4,516,127

THREE ELEMENT LOW PROFILE ANTENNA

Kazimierz Siwiak, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1983, Ser. No. 489,893
Int. Cl.³ H01Q *1/48*
U.S. Cl. 343—702 **6 Claims**



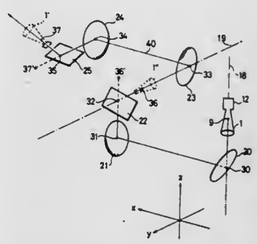
1. An antenna comprising:
a counterpoise of electrically conductive material having a first surface;
first, second, and third L-shaped elements, each of said elements having respective leg and foot portions and ends, the leg portions of each of said elements being oriented substantially parallel to each other and in a plane substantially parallel to, and a predetermined first distance above said first surface, said second element being situated between said first and third elements,
the ends of said first, second, and third elements situated on the leg portions thereof being electrically connected together,
the ends of said first and third elements situated on the foot portions thereof being electrically connected to said counterpoise and together with the end of said second element situated on the foot portion thereof constituting the feedpoint of said antenna.

4,516,128

BEAM WAVEGUIDE FEEDER

Fumio Watanabe; Yoshihiko Mizuguchi, and Matsuichi Yamada, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1983, Ser. No. 457,608
Claims priority, application Japan, Feb. 15, 1982, 57-22295
Int. Cl.³ H01Q *19/18, 3/12*
U.S. Cl. 343—761 **3 Claims**



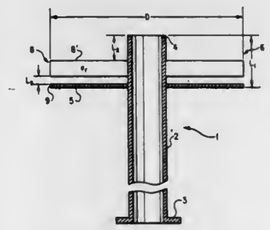
1. A beam waveguide feeder comprising a feed horn, a pair of revolution quadric surface reflectors facing each other, said quadric surface reflectors being identical in focal distance and off-set angle and having their focuses and the reflection points of center beams on the same plane, and at least one plane reflector, said reflectors being arranged relative to said feed horn to form a continuous electric wave path in sequence from said feed horn to one and then the other of said pair of quadric surface reflectors, and then from said other of said quadric surface reflectors to said plane reflector; said feeder further comprising means for moving said quadric reflectors toward and away from one another parallel to a line that passes through the focuses of said revolution quadric surface reflectors, means for turning said plane reflector in an arbitrary direction at an arbitrary position, and means for turning said pair of revolution quadric surface reflectors and said plane reflector as a unit around a revolution axis that is defined by the beam center axis of said feed horn.

4,516,129

WAVEGUIDE WITH DIELECTRIC COATED FLANGE ANTENNA FEED

Apisak Ittipiboon; Lotfollah Shafai, and Ernest Bridges, all of Winnipeg, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Jun. 4, 1982, Ser. No. 385,251
Int. Cl.³ H01Q *13/00*
U.S. Cl. 343—772 **2 Claims**



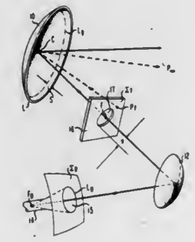
1. A feed for a reflector paraboloid antenna comprising:
a circular waveguide with a first end having an electrical coupler and a second radiating end:
an annular conductive planar flange having an outside diameter $D \geqq 5\lambda$ positioned about the waveguide at a distance $L_1 \geqq \lambda$ from the radiating end where λ is the wavelength of the operating frequency of the antenna; and
an annular dielectric element consisting of two layers of dielectric material and having an outside diameter $\geqq D$ positioned adjacent the flange between the flange and the radiating end to establish a predetermined surface impedance seen by the waveguide.

4,516,130

ANTENNA ARRANGEMENTS USING FOCAL PLANE FILTERING FOR REDUCING SIDELOBES

Corrado Dragone, Little Silver, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 9, 1982, Ser. No. 356,386
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—781 P **3 Claims**



1. An antenna arrangement having substantially reduced sidelobes comprising:
a plurality of reflectors arranged confocally in sequence

along a feed axis of the arrangement, each reflector comprising a curved focusing reflecting surface and at least one focal point where each focal point can be either one of a real and an imaginary form, one of the plurality of reflectors being a main reflector comprising a reflecting surface which forms an aperture of the antenna arrangement;

a feedhorn capable of launching a spherical beam comprising a central ray from the apex of the feedhorn disposed on a first focal point of the plurality of confocally arranged reflectors, the feedhorn including a predetermined aperture with a predetermined illumination; and

a filtering means disposed at one of the focal points of the plurality of reflectors, said one of the focal points being a real focal point disposed between two sequential reflectors, the filtering means being capable of passing therethrough, the central ray launched by the feedhorn for producing an image of the feedhorn aperture illumination at the aperture of the antenna arrangement which includes smoothened-out discontinuities at the edge of the image, said main reflector reflecting surface being oversized with respect to the diameter of the feedhorn image to intersect the image of the feedhorn aperture illumination in a manner to produce a predetermined level of edge intensity, A, as defined by the relationship $A/A_g = F(V,S)$ where A_g is a level of the feedhorn image edge illumination at the main reflector without the inclusion of the filtering means, V is a value of a normalized aperture of the filtering means, S is a value of a normalized increase in the main reflector diameter to generate A, and F is a function which is determined by the response of the filtering means.

4,516,131

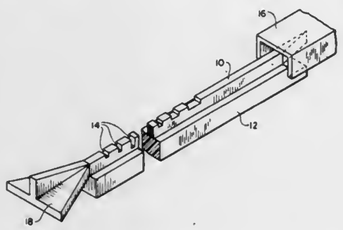
VARIABLE SLOT CONDUCTANCE DIELECTRIC ANTENNA AND METHOD

William T. Bayha; John Borowick, both of Bricktown; Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, all of N.J., assignors to The United States of America represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 4, 1983, Ser. No. 463,799

Int. Cl.³ H01Q *13/28*

U.S. Cl. 343—785 **9 Claims**



1. A variable slot conductance dielectric antenna comprising:

a section of dielectric waveguide having input and output ends; and

a plurality of periodic radiating slots formed in the surface of said waveguide as an array along the length of said waveguide, said slots having a predetermined uniform periodic spacing along said length, each slot having a predetermined width and depth dimension, said width and depth dimensions being selectively non-uniform to control the conductance of each of said slots and the radiation pattern along the length of said waveguide.

4,516,132

ANTENNA WITH A REFLECTOR OF OPEN CONSTRUCTION

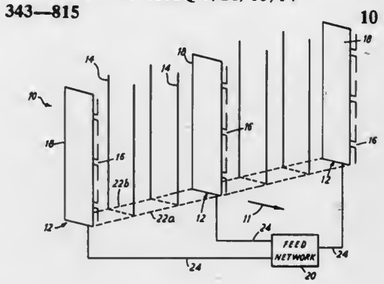
Kevin Bond, Harlow, and Brian W. Watson, Sawbridgeworth, both of England, assignors to Cossar Electronics Limited, Harlow, England

Filed Jun. 16, 1983, Ser. No. 505,372

Claims priority, application United Kingdom, Feb. 24, 1983, 8305196

Int. Cl.³ H01Q *9/28, 15/14*

U.S. Cl. 343—815 **10 Claims**



1. An antenna comprising a plurality of radiating columns and a plurality of conducting rods, said radiating columns being disposed in a line and extending transversely to said line, a first set of said conducting rods being parallel to said radiating columns and disposed in a line to form a first reflecting array, and a second set of said conducting rods being parallel to said radiating columns and disposed in a line to form a second reflecting array, said second array being spaced behind said first array relative to the look direction of the antenna.

4,516,133

ANTENNA ELEMENT HAVING NON-FEED CONDUCTIVE LOOP SURROUNDING RADIATING ELEMENT

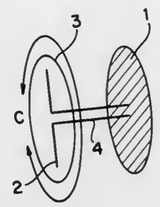
Shigeru Matsumoto; Yoshikatsu Okabe, and Yasuhiro Kazama, all of Mitaka, Japan, assignors to Japan Radio Company, Limited, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,343

Claims priority, application Japan, Sep. 9, 1981, 56-141831

Int. Cl.³ H01Q *1/52, 19/19*

U.S. Cl. 343—819 **7 Claims**



1. An antenna element adaptable for use as a primary antenna in a parabolic antenna system, comprising:

a feed dipole antenna,

a reflector having a finite length and supported in spaced-apart operative relation to said feed dipole antenna, and

a non-feed loop element stationarily disposed around said dipole antenna generally in parallel with said reflector and electrically insulated from both said dipole antenna and said reflector, said non-feed loop element being a closed and endless loop element of a wire-like thin conductor material in the plane of said dipole antenna,

wherein said non-feed loop element is of a shape and circumferential length selected to increase the H-plane directivity of said feed dipole antenna and said reflector in the absence of said non-feed loop element, in the proximity of the directions of extension of said reflector.

4,516,134

INK JET PRINTER SHUT-DOWN CONTROL

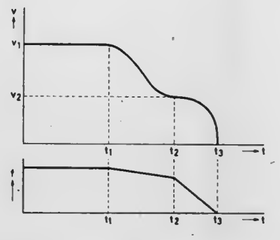
Masayoshi Tamai; Tetsuo Iyoda, and Yukihasa Koizumi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Filed Jul. 28, 1983, Ser. No. 518,261

Claims priority, application Japan, Oct. 22, 1982, 57-185863

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **3 Claims**



1. In an ink jet printer of the type including an ink supply and a drop forming device for receiving ink and for forming ink drops at a frequency in accordance with a control signal, a drop formation control device comprising:

ink jet means for conducting charge-to-deflect ink printing;

ink supply means for supplying ink to said ink jet means;

monitoring means for monitoring the flow of ink through said drop forming device; and

control means for gradually reducing the drop formation frequency from a normal operating value to a lower value at the end of a printing operation in response to a corresponding decrease in the monitored ink flow.

4,516,135

THERMAL PRINTER CAPABLE OF REPRODUCING HALFTONE IMAGE

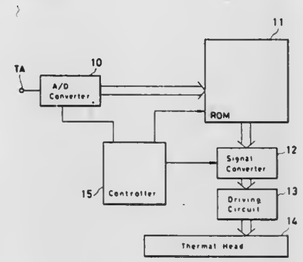
Hidemasa Todoh, Hongo Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,627

Claims priority, application Japan, Mar. 19, 1982, 57-44206

Int. Cl.³ B41S *3/02*

U.S. Cl. 346—76 PH **6 Claims**



1. A thermal printer capable of reproducing halftone images, comprising:

a heater element for outputting heat onto a receiving paper, the quantity of said heat

corresponding to the energy of an electric signal to be impressed thereto;

address signal forming means for forming an address signal corresponding to the content of tone gradation data;

memory means, having prestored therein at associated memory address locations a set of values of electric energy respectively required for reproducing image tone gradations corresponding to certain values of tone gradation data, for outputting the value of electric energy stored at the memory address location specified by said corresponding address signal;

signal generating means for generating said electric signal having energy corresponding to the value of electric energy outputted from said memory means; and

driving means for driving said heater element based on said electric signal.

4,516,136

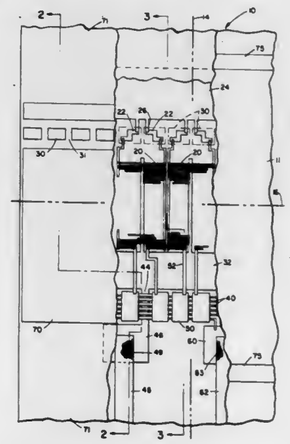
THERMAL PRINT HEAD

Charles R. Willcox, Buffalo Grove, Ill., assignor to AT&T Teletype Corporation, Skokie, Ill.

Filed Jun. 27, 1983, Ser. No. 508,315

Int. Cl.³ H05B *1/00*

U.S. Cl. 346—76 PH **5 Claims**



1. A thermal print head (**10**) for producing indicia on thermally sensitive paper, including a planar substrate (**12**) providing a support surface, the support surface having a first axis (**14**) and a second axis (**16**) generally perpendicular to the first axis (**14**), comprising:

a plurality of logic units (**50**) for receiving and storing input signals including signals representative of indicia to be produced on the paper, said logic units being positioned consecutively along a line parallel to said second axis (**16**);

a plurality of parallel conductors (**40**) connected to said logic unit and substantially parallel to said second axis (**16**) for supplying data to said logic unit (**50**);

a plurality of driver transistors (**20**), each of which includes a control element connected to one of said logic units and controlled by output signals from said logic units (**50**), said driver transistors (**20**) being positioned consecutively along a line parallel to said second axis (**16**);

a power source including first and secnd conductive busses (**24, 32**);

a plurality of heater resistors (**22**) connected to the output of said driver transistor (**20**), said driver transistor in response to said signals of said logic unit (**50**) provides a low impedance path through said heater resistor (**22**) between said busses (**24, 32**), said heater resistor (**22**) being positioned consecutively along a line substantially parallel to said second axis (**14**);

said first buss (**24**) being adjacent to and extending along said heater resistors (**22**) in a line parallel to said second axis (**16**), said second buss (**32**) being adjacent to and extending along said driver transistors (**20**) and connected to each of said driver transistors (**20**);

said second buss (**32**) is positioned between said logic units (**50**) and said driver transistors (**20**); and

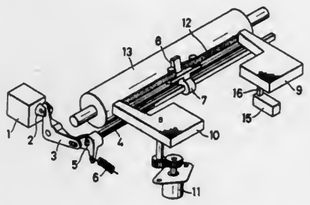
the control electrodes of said driver transistors (**20**) are connected to their respective logic units (**50**) by corresponding conductor (**52**) insulated from and passing over said second buss (**32**).

4,516,137

THERMAL PRINT HEAD FOR HEAT OR NON-HEAT-SENSITIVE PAPER

Tsuneo Yasui, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 22, 1983, Ser. No. 564,311
Claims priority, application Japan, Dec. 28, 1982, 57-231008
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **6 Claims**



1. A printing apparatus which has a thermal print head movable along a platen and which is adapted to hold a thermal ribbon having a thermally transferable ink layer, wherein a printing on a sheet of non-heat-sensitive paper is effected by said thermal print head through said thermal ribbon, while a printing on a sheet of heat-sensitive paper is effected directly by the thermal print head without using said thermal ribbon, said printing apparatus comprises:

a drive circuit for moving said thermal print head along said platen in selected one of opposite longitudinal directions of the platen upon each printing movement for printing each line of characters on the paper;

detector means for sensing the presence of said thermal ribbon at its predetermined position for checking if said thermal ribbon is usable or not, said detector means generating a signal according to the presence and absence of said thermal ribbon at said predetermined position; and

control means, responsive to said signal from said detector means, for selecting a unidirectional printing mode in which the printing movements of said thermal print head take place in a predetermined one of said opposite longitudinal directions for all lines of characters to be printed, or a bidirectional printing mode in which the printing movements of the same may take place in either one of said opposite longitudinal directions, said control means controlling said drive circuit to operate in said unidirectional printing mode while said thermal ribbon is sensed by said detector means, and to operate in said bidirectional printing mode while said ribbon is not sensed by said detector means.

4,516,138

TIME-CLOCK RECORDING AND COMPUTATION APPARATUS WITH OPTIONAL REST PROCESSING FUNCTION

Hiroshi Iwasawa; Masanori Numata, and Shinichi Mama, all of Yokohama, Japan, assignors to Amano Corporation, Yokohama, Japan

Filed Oct. 19, 1983, Ser. No. 543,941
Claims priority, application Japan, Oct. 20, 1982, 57-184082
Int. Cl.³ G06K *1/00*
U.S. Cl. 346—80 **12 Claims**

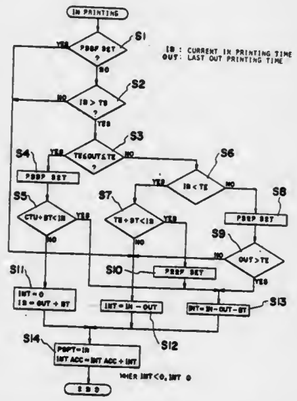
1. In a time-clock recording and computation apparatus including a card driving mechanism for guiding a time card inserted into a card pocket every entering and leaving to a predetermined portion located within the apparatus, card reader means for reading out preetermined identification codes, such as personal codes described on the time card guided thereto, and computation means including a data storage unit in which attendance data based on a predetermined attendance system are stored, and a processing unit effecting predetermined calculation on the basis of the data read out by the card reader means and the attendance data fed from the data storage unit, so as to thereby effect a desired printing on the time card on the basis of the output of the processing unit,

the improvement comprising means for effecting optional rest processing provided in said computation means,

said optional rest processing means operative to execute predetermined processing and including means for:

(a) storing parameters with respect to an optional rest in said data storage unit,

(b) effecting comparative judgement between the data indicative of entering and leaving with respect to each user and optional rest processing patterns determined by setting said parameters said proccessing unit,



(c) sequentially summing up in said data storage unit the processed results obtained by the comparative judgement effected in said processing unit, and

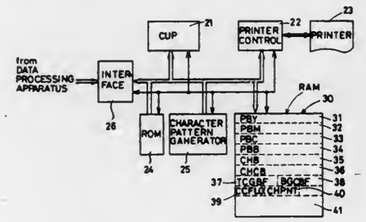
(d) determining whether or not the actual optional rest taken by each user is suitable with respect to said attendance system, and outputting a time condition with respect to optional rest on the basis of said summed up data.

4,516,139

PRINT CONTROL SYSTEM IN A COLOR IMAGE PRINTER

Masahiro Takiguchi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1983, Ser. No. 547,401
Claims priority, application Japan, Nov. 5, 1982, 57-195008; Nov. 5, 1982, 57-195009; Nov. 5, 1982, 57-195010
Int. Cl.³ G01D *15/16;* **H04N** *1/22*
U.S. Cl. 346—140 R **4 Claims**



1. A print control system for a color image printer having a printer head including a plurality of printing elements of different colors for printing multi-color image on a second receiving medium, said print control system comprising:

first storing means for storing image pattern information;

second storing means for storing character code information;

a pattern generator developing a character pattern data in accordance with the character code information stored in said second storing means;

third storing means for storing color data for each character code information;

a plurality of print buffers, each of the print buffers being associated with one of said plurality of printing elements;

selection means for selecting one of said print buffers in accordance with said color data stored in said third storing means;

first transferring means for transferring said character pattern data developed from said pattern generator to the print buffer selected by said selection means;

second transferring means for transferring an image pattern data to a selected print buffer in accordance with said image pattern information stored in said first storage means, thereby combining said character pattern data with said image pattern data;

said second transferring means including priority determining means for applying a priority to said character pattern data rather than said image pattern data when said image pattern data has an imaging point which overlaps a printing point determined by said character pattern data;

third transferring means for transferring a combined pattern data stored in said print buffers to said printer head;

background pattern forming means for providing a background pattern;

said background pattern forming means including inverting means for inverting said character pattern data developed from said pattern generator, thereby obtaining an inverted pattern data; and

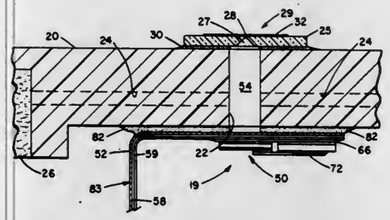
fourth transferring means for transferring said inverted pattern data to a selected print buffer in accordance with background color data, thereby combinining said combined pattern data with said inverted pattern data.

4,516,140

PRINT HEAD ACTUATOR FOR AN INK JET PRINTER

David B. Durkee, Arlington Heights; James P. Koller, Vernon Hills, and Robert M. Wentzel, Mundelein, all of Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

Filed Dec. 27, 1983, Ser. No. 565,570
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **15 Claims**



1. An actuator (**50**) for the print head of an ink jet printer (**10**) in which droplets of ink (**84**) are discharged through a nozzle orifice (**28**) in a wall of a chamber (**22**) for containing a small quantity of ink (**54**), the actuator (**50**) comprising:

a piezoelectric crystal plate (**60**) having first and second opposing surfaces, said piezoelectric plate (**60**) experiencing a dimensional change when placed in an electrical field;

first and second electrodes (**62, 64**) covering portions of said first and second opposing surfaces of said piezoelectric crystal plate (**60**);

a bending plate (**56**) with a first surface bonded to the surface of said first conductive electrode (**62**);

a thin flexible sheet of insulating material (**52**) having first and second surfaces;

a first surface of said sheet of insulating material (**52**) bonded to a second surface of said bending plate (**56**), said bending plate (**56**) resisting deformation by said piezoelectric crystal plate (**60**) in response to an electrical potential difference applied to said electrodes (**62, 64**);

said sheet of insulating material (**52**) being positioned so that said second surface of said sheet of insulating material (**52**) is disposed over an opening in the wall of said chamber (**22**); and

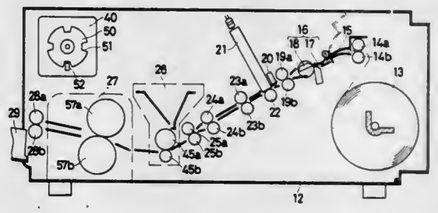
means (**82**) for securing said second surface of said sheet of insulating material (**52**) to the wall of said chamber (**22**) around the periphery of said opening whereby the actuator (**50**) decreases the volume of the chamber (**22**) in response to an electrical potential difference applied across said first and second electrodes (**62, 64**) causing the discharge of droplets of ink (**84**) through said nozzle orifice (**28**).

4,516,141

ELECTROSTATIC RECORDING APPARATUS

Yoshihiro Kawahara, and Kiyoshi Hayashi, both of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Nov. 23, 1982, Ser. No. 444,817
Claims priority, application Japan, Nov. 30, 1981, 56-192383
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **8 Claims**



1. An electrostatic recording apparatus for recording an image on a sheet of recording paper, said apparatus comprising:

an electrostatic recording head for forming an electrostatic image on a sheet of recording paper;

a roller engageable with said electrostatic recording head for pressing the sheet of recording paper against said electrostatic recording head to allow said electrostatic recording head to record an electrostatic image on the sheet of recording paper while the latter is being fed between said electrostatic recording head and said roller;

transport means, located at the downstream side of said electrostatic recording head with respect to the direction of feed of the sheet of recording paper for transporting the sheet of recording paper;

detector means, positioned at the upstream side of said electrostatic recording head with respect to the direction of feed of the sheet of recording paper, for detecting the presence of the latter; and

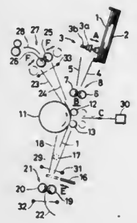
means, operable in response to said detector means, for rotating said roller immediately when or just before a leading edge of the sheet of recording paper is determined by said detector means to be sandwiched between said recording head and said roller, whereby the sheet is transported between said recording head and roller by said roller, and for stopping rotation of said roller during a period of time after said leading edge of the sheet of recording paper has passed from between said recording head and said roller and has started being transported by said transport means and before the trailing edge of the sheet has been determined by said detector means to have passed between said recording head and said roller, whereafter said roller then is rotated by the sheet being pulled by said transport means.

4,516,142

IMAGE SCANNING APPARATUS

Takaaki Yamamoto, and Yasuhiro Kawai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 5, 1983, Ser. No. 539,243
Claims priority, application Japan, Oct. 6, 1982, 57-175939
Int. Cl.³ G01D *15/00, 15/14*
U.S. Cl. 346—160 **4 Claims**



1. An image scanning apparatus comprising an auxiliary scanning rotary drum, light source means for emitting a main scanning light beam for scanning a sheet being conveyed by said drum, nip roll means disposed near said light beam scanning position on said drum for movement into and out of engagement with said drum, sheet supplying means for feeding a sheet to be scanned into the space between said drum and said nip roll means in such a manner that said sheet is disposed without any restraint, stopper means arranged downstream of said drum and said nip roller means in the sheet feeding direction for receiving a sheet to be scanned, first control means for controlling movement of said nip roller means into and out of engagement with said drum, second control means for rotating said drum in a direction opposite to the sheet feeding direction and sheet discharging means arranged downstream of said drum relative to the direction in which said sheet is moved by said drum.

4,516,143

SELF-ALIGNED POWER MOSFET WITH INTEGRAL SOURCE-BASE SHORT AND METHODS OF MAKING

Robert P. Love, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 336,972, Jan. 4, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,229
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23.4 **10 Claims**

1. A double diffused power MOSFET comprising:

a semiconductor substrate including a drain region of one conductivity type and having a principal surface;

a drain terminal electrically connected to said drain region;

a first region of opposite conductivity type formed in said drain region to define a base region, said first region being of limited lateral extent and having a periphery terminating at said principal surface;

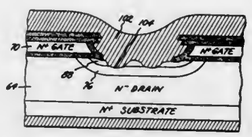
a second region of the once conductivity type formed entirely within and of lesser lateral extent and depth than said first region to define a source region, said second region having a periphery terminating at said principal surface within and spaced from the periphery of said first region such that at said principal surface said first region exists as a band of opposite conductivity type between said source region and said drain region;

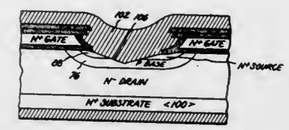
a source terminal electrically connected to said second region;

a gate insulating layer disposed on said principal surface at least over the band of said first region;

a conductive gate electrode disposed on said gate insulating layer at least laterally over the band of said first region;

a gate terminal electrically connected to said gate electrode; and





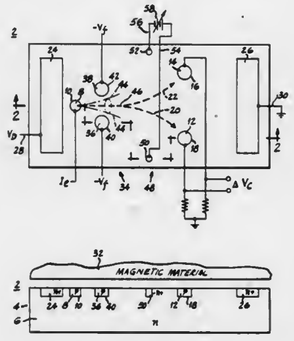
an ohmic short between said first and second regions formed below said principal surface.

4,516,144

COLUMNATED AND TRIMMED MAGNETICALLY SENSITIVE SEMICONDUCTOR

Stanley V. Jaskolski, Sussex; Herman P. Schutten, Milwaukee; Gordon B. Spellman, Mequon; Jan K. Sedivy, Elm Grove, and Maurice W. Jensen, Greendale, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1982, Ser. No. 421,942
Int. Cl.³ H01L *27/22;* **H03K** *17/90*
U.S. Cl. 357—27 **6 Claims**



1. In a magnetically sensitive semiconductor device comprising a substrate including a base region of one conductivity type, an emitter region of opposite conductivity type forming a junction with said base region, a pair of spaced collector regions of said opposite conductivity type each forming a junction with said base region, and means for applying a magnetic field to deflect carriers from said emitter region toward one or the other of said collector regions,

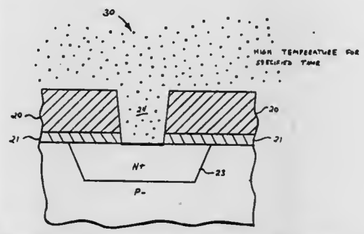
the improvement comprising columnating means between said emitter region and said collector regions for columnating the carriers emitted from said emitter region, said columnating means comprising a pair of spaced auxiliary collector regions of said opposite conductivity type each forming a junction with said base region such that carriers emitted from said emitter region outside a given central angle or cone are collected by said auxiliary collector regions and do not reach said first mentioned collector regions, and such that carriers emitted from said emitter region within said central angle or cone pass between said auxiliary collector regions and reach said first mentioned collector regions, whereby to afford a centralized columnated beam of carriers to be deflected by said magnetic field.

4,516,145

REDUCTION OF CONTACT RESISTANCE IN CMOS INTEGRATED CIRCUIT CHIPS AND THE PRODUCT THEREOF

Jenq S. Chang, and Tung S. Chang, both of Santa Clara County, Calif., assignors to Storage Technology Partners, Louisville, Colo.

Filed Aug. 31, 1983, Ser. No. 528,336
Int. Cl.³ H01L *21/324*
U.S. Cl. 357—42 **7 Claims**



1. A method for reducing the contact resistance of the surface area of an N^+ region of a CMOS integrated circuit (IC) chip, which N^+ region is accessed by plasma etching a via through an electrical insulating layer or layers that are deposited over said N^+ region during the manufacturing process of said CMOS chip, said method comprising the steps of:

(a) placing said IC in a relatively inert atmosphere;

(b) elevating the temperature of said inert atmosphere to a temperature range of 900–950° C., for a specified period of time; and

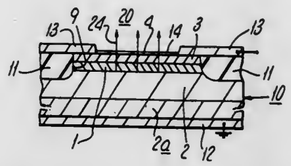
(c) removing said IC from said heated atmosphere and allowing the IC to cool.

4,516,146

ELECTRON SOURCES AND EQUIPMENT HAVING ELECTRON SOURCES

John M. Shannon, Whyteleafe, England; Arthur M. E. Hoeberechts, and Gerardus G. P. Van Gorkom, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,144
Claims priority, application United Kingdom, Nov. 6, 1981, 8133501
Int. Cl.³ H01L *29/34*
U.S. Cl. 357—52 **10 Claims**



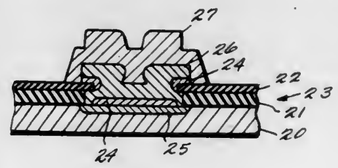
1. An electron source for emitting a flow of electrons, comprising a semiconductor body, an n-p-n structure formed in the body by a p-type first region between n-type second and third regions, electrons being generated in said n-p-n structure for emission from a surface area of said body after flowing from the second region through the first and third regions, characterized in that the n-p-n structure has electrode connections only to said n-type second and third regions, in that the first region provides a barrier region restricting the flow of electrons from the second region to the third region until a potential difference is applied between said electrode connections to bias the third region positive with respect to the second region and to establish a supply of hot electrons injected into said third region with sufficient energy to overcome the surface barrier at said surface area of the body, said barrier region forming depletion layers with both the n-type second and third regions and having such a thickness and doping concentration as to be depleted of holes by the merging together of said depletion layers in the barrier region at least when said potential difference is applied between said electrode connections to establish said supply of hot electrons.

4,516,147

SEMICONDUCTOR DEVICE HAVING A SUBSTRATE COVERED WITH A HIGH IMPURITY CONCENTRATION FIRST POLYCRYSTALLINE LAYER AND THEN A LOWER IMPURITY CONCENTRATION SECOND POLYCRYSTALLINE LAYER

Shigeru Komatsu, Yokohama, and Hiroshi Inoue, Kitakyushuu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 272,918, Jun. 12, 1981, abandoned. This application Feb. 24, 1984, Ser. No. 582,857
Claims priority, application Japan, Jun. 19, 1980, 55-83126
Int. Cl.³ H01L *29/04, 23/48, 29/34*
U.S. Cl. 357—59 **4 Claims**



1. A semiconductor structure comprising:

a semiconductor substrate being of a first conductivity type;

a first insulation layer formed on said substrate and having at least one opening exposing a portion of said substrate;

a second insulation layer formed on said first insulation layer and having at least one opening in a position corresponding to said opening in said first insulation layer, said first and second insulation layers being etchable with different etchants so that said second insulation layer is used as a mask for forming said opening in said first insulation layer by etching, a portion of said second insulation layer overhanging said first insulation layer as a result of said etching;

a first polycrystalline semiconductor layer formed on said exposed substrate and containing impurities associated with a second conductivity type opposite said first conductivity type at a first concentration sufficiently high to convert the conductivity type of said substrate upon diffusion;

a second polycrystalline semiconductor layer formed on said first polycrystalline layer, and containing impurities associated with said second conductivity type at a second concentration lower than said first concentration, the ratio of said first concentration and said second concentration being in the range of 1.5 to 100, said second polycrystalline semiconductor layer being three to ten times thicker than said first polycrystalline semiconductor layer;

a metal electrode formed on said second polycrystalline layer; and

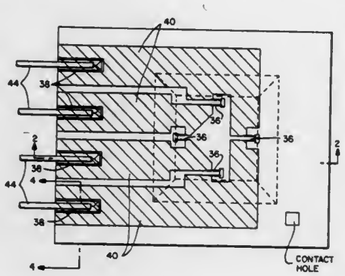
a diffused region being of said second conductivity type formed beneath said first polycrystalline layer in said substrate,

said second polycrystalline layer formed on said first polycrystalline layer prohibiting shorting between said metal electrode and said substrate and preventing breakage with respect to said overhanging portion of said second insulation layer.

4,516,148
SEMICONDUCTOR DEVICE HAVING IMPROVED LEAD ATTACHMENT

Phillip W. Barth, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford, Jr. University, Stanford, Calif.

Filed Aug. 30, 1982, Ser. No. 412,942
Int. Cl.³ H01L *21/60, 21/44*
U.S. Cl. 357—68 **7 Claims**

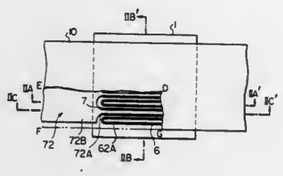


1. A semiconductor device comprising a semiconductor substrate having an electrical circuit formed therein, a plurality of recessed regions formed in peripheral surface portions of said substrate, a second substrate affixed to said semiconductor substrate and overlying said recessed regions, said recessed regions and said second substrate defining tunnels for receiving electrical leads, contact means in said recessed regions and extending to said electrical circuit, a plurality of external electrical leads with end portions positioned in said recesses, and means for bonding said end portions to said contact means.

4,516,149
SEMICONDUCTOR DEVICE HAVING RIBBON ELECTRODE STRUCTURE AND METHOD FOR FABRICATING THE SAME

Yoko Wakui, Ibaraki; Hiroaki Hachino, Hitachi; Mamoru Sawahata, Hitachi; Tasao Soga, Hitachi; Tomio Yasuda, Hitachi, and Michio Ooue, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,905
Claims priority, application Japan, Nov. 4, 1980, 55-153917
Int. Cl.³ H01L *29/74, 23/48, 29/44, 29/52*
U.S. Cl. 357—71 **1 Claim**

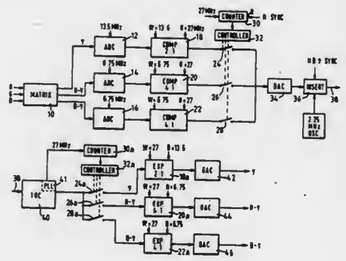


1. A semiconductor device comprising:
a semiconductor substrate having a pair of opposite major surfaces and including between said major surfaces a plurality of first semiconductor regions of one conductivity type exposed to one major surface of the substrate, and a second semiconductor region of another conductivity type opposite to said one conductivity type adjacent to said first semiconductor regions and exposed to said one major surface so that said first semiconductor regions are individually separated and surrounded by said second semiconductor region in said one major surface,
a plurality of first conductive members each disposed to have a lower surface thereof directly on and in ohmic contact with said first semiconductor regions, each of said first conductive members having an upper surface having an area of a predetermined shape, and
a second conductive member having a plurality of inner conductive portions which each have a lower surface disposed directly on and bonded conductively to corresponding upper surface portions of said first conductive members, wherein each said lower surface of each of said inner conductive portions has a region having a shape substantially corresponding to the shape of said upper surface of first conductive members to which it is bonded, said second conductive member further comprising a flexible outer conductive portion which is integrated with said inner conductive portions and which is not disposed directly on said first conductive members,
wherein said upper and lower surfaces of said plurality of first conductive members have substantially the same predetermined shape, and further wherein each of said first semiconductor regions is constructed to have an area in said first major surface which has a predetermined shape which substantially corresponds to said predetermined shape of said upper and lower surfaces of said first conductive member,
wherein said area of each of said first semiconductor regions in said first major surface is slightly greater than an area of either said upper or lower surfaces of said plurality of first conductive members, and
wherein an area of lower surfaces of each of said regions of said inner conductive portions is slightly less than an area of either said upper or lower surfaces of said plurality of first conductive members.

4,516,150
WORLDWIDE COMPATIBLE SYNCHRONIZING SIGNAL FOR ACCURATE TIME BASE CORRECTION IN AN ANALOG COMPONENT INTERFACE STANDARD

Thomas M. Gurley, Moorestown, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 509,786, Jun. 30, 1983, abandoned. This application Dec. 23, 1983, Ser. No. 565,128
Int. Cl.³ H04N *9/32*
U.S. Cl. 358—13 **14 Claims**

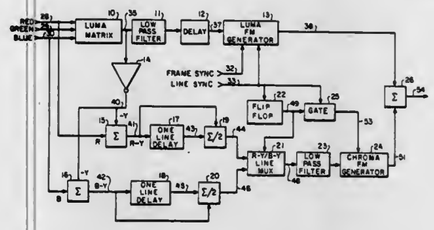


1. A method comprising serially transmitting through a channel time compressed component signals of a color video signal and a reference signal having a frequency of 2.25 MHz or an integer multiple thereof, receiving said signals from said channel, and processing the received component signals using said reference signal.

4,516,151
COLOR SLOW SCAN VIDEO SIGNAL TRANSLATION

John P. Stahler, San Diego, Calif., assignor to Robot Research, Inc., San Diego, Calif.

Filed May 28, 1982, Ser. No. 383,111
Int. Cl.³ H04N *9/40*
U.S. Cl. 358—14 **12 Claims**



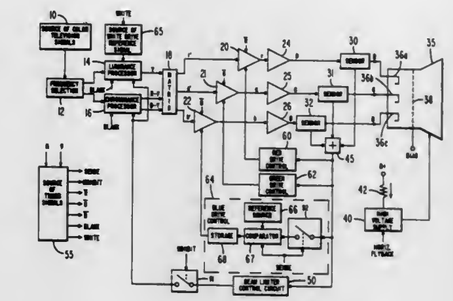
1. A system for translating into three complementary color component slow scan video signals, a composite color slow scan video signal containing a frequency modulated (FM) luminance information signal within a first frequency range of the slow scan video signal frequency band and an FM chrominance information signal within a separate second frequency range of the slow scan video signal frequency band, wherein the chrominance information signal includes a first color difference signal derived by subtracting the luminance information signal from one of three complementary color slow scan video signals and a second color difference signal derived by subtracting the luminance information signal from another of three complementary color slow scan video signals, said system comprising
means for filtering the composite video signal to separate the FM luminance information signal from the FM chrominance information signal;
means for demodulating the FM luminance information signal to retrieve the luminance information signal;
means for demodulating the FM chrominance information signal to retrieve the chrominance information signal;
means for processing the retrieved chrominance information signal to separate and retrieve the first and second color difference signals; and
means for combining the retrieved first and second color difference signals with the retrieved luminance information signal to provide three complementary color component slow scan video signals.

4,516,152
VIDEO SIGNAL PROCESSOR WITH AUTOMATIC KINESCOPE WHITE BALANCE AND BEAM CURRENT LIMITER CONTROL SYSTEMS

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed May 23, 1983, Ser. No. 497,157
Int. Cl.³ H04N *9/535, 9/18, 5/68*
U.S. Cl. 358—29 **6 Claims**

1. In a system including a video channel for processing a video signal containing image information, and an image display device responsive to signals coupled thereto via said video channel, apparatus comprising:
means for automatically limiting excessive beam currents conducted by said image display device in response to said video signal image information, said limiting means providing a beam current limiting control signal to said video channel for controlling the conductive condition of said video channel;
means coupled to said video channel and to said image display device for monitoring the current conduction of said image display device during prescribed monitoring intervals; and

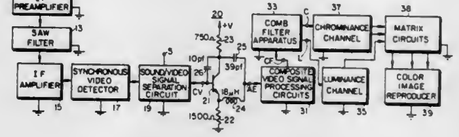


means for inhibiting said beam limiter control signal during said prescribed monitoring intervals.

4,516,153
COMPOSITE VIDEO SIGNAL PROCESSING APPARATUS PROVIDING AMPLITUDE EQUALIZATION

Donald K. Krull, and Saiprasad V. Naimpally, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 30, 1983, Ser. No. 480,507
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—31 **8 Claims**



1. In a signalling system, wherein (1) a luminance component indicative of the luminance of a color image and occupying a given band of frequencies, and (2) a chrominance component comprising sidebands of a color subcarrier modulated by color difference signals indicative of the coloring of said color image and sharing a portion of said given band adjacent to its high frequency boundary, comprise components of a composite color signal which is subject to processing by signal transfer means presenting an overall frequency response characteristic which exhibits a significant response decline with frequency over a high frequency segment of said band portion inclusive of the frequency of said subcarrier; signal processing apparatus comprising:
signal translating means for subjecting signals applied to its input to: (a) a frequency response characteristic exhibiting a peak response at a out-of-band frequency above said high frequency boundary of said band, and a response rise witth frequency over said high frequency segment of said band portion which is substantially complementary to said response decline, and (b) a group delay of substantially the same magnitude for frequencies throughout said given band;
means for applying the composite color signal output of said signal transfer means to the input of said signal translating means;
luminance component utilization means for controlling the luminance of a reproduction of said color image in accordance with a luminance component derived from the composite color signal output of said signal translating means; and

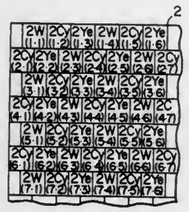
chrominance component utilization means for controlling the coloring of said reproduction of said color image in accordance with a chrominance component derived from the composite color signal output of said signal translating means.

4,516,154

SOLID STATE COLOR IMAGING SYSTEM

Shigeki Nishizawa, Kodaira; Shusaku Nagahara, Hachioji, and Naoki Ozawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,484
Claims priority, application Japan, Aug. 19, 1981, 56-128761
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—44 **10 Claims**



1. In a solid state color imaging system comprising a number of photoelectric devices arranged regularly and two-dimensionally, horizontal and vertical scanning circuits for controlling the sequential reading of charge signals representative of optical image information from said photoelectric devices onto a signal output line means, and a color filter having filter elements respectively associated with said photoelectric devices, the improvement in that the photoelectric devices in one of any two vertically adjacent photoelectric device rows are displaced with respect to those in the other row in the horizontal direction by half a horizontal pitch of the photoelectric devices, and the three filter elements respectively associated with three photoelectric devices adjacent to one another in said two vertically adjacent photoelectric device rows have transmission characteristics of cyan color transmission, yellow color transmission and panchromatic transmission respectively.

4,516,155

METHOD FOR PARTIALLY SMOOTHING RETOUCH IN ELECTRONIC COLOR REPRODUCTION

Eberhard Hennig, Ascheberg; Jürgen Klie, Toekendorf, and Klaus Wellendorf, Kitzeberg, all of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

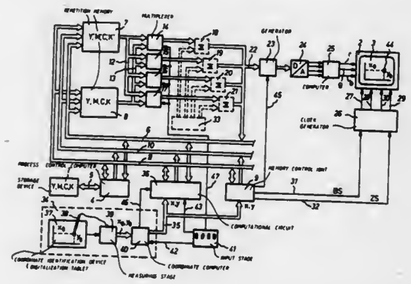
Filed Mar. 17, 1982, Ser. No. 358,850
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110222
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—80 **17 Claims**

1. A method for partially smoothing retouch of color images in electric color image reproduction, in which the color images are scanned opto-electronically and trichromatically, image point by image point, to obtain color signals, and in which the color signals are digitized into data representing color values (F_1; F_n) for each image point, with said data being stored in a storage device, comprising the steps of:

(a) identifying simultaneously a plurality of image points within a part of the color image to be smoothed, said plurality of image points forming an image point area, said image point area being displacable over the part of the color image to be smoothed;

(b) selecting at least one image point within said image point are, said selected image point forming at least one correction zone within said image point area;

(c) accessing from said storage device the data representing color values of said identified image points; and



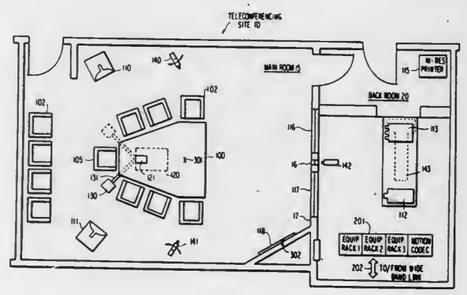
(d) changing the data representing color values of the image points within said correction zone in dependence on the color values of image points within sections lying adjacent to said correction zone within said image point area under visual control.

4,516,156

TELECONFERENCING METHOD AND SYSTEM

Alfonso V. Fabris, Oakton; Robert M. Strickland, Jr., and John T. Toth, both of McLean, all of Va., assignors to Satellite Business Systems, McLean, Va.

Filed Mar. 15, 1982, Ser. No. 358,548
Int. Cl.³ H04N *7/14*
U.S. Cl. 358—85 **14 Claims**



1. A teleconferencing system adapted to be connected by a wide band digital communication link for allowing relatively unskilled operators to control a teleconference; comprising at least a pair of teleconferencing site means for transmitting and receiving audio and video representing digital signals therebetween, each said site means comprising:

at least a pair of controllable video source means for deriving a video signal from controllable regions of the associated site,

audio signal source means for deriving an audio signal from the associated site,

at least a pair of video displays for controllably displaying either locally or remotely generated image,

audio transducer means responsive to a remotely generated audio signal for generating perceptible sound,

interface means for coupling digital representations of locally generated audio and video signals to said communication link and for coupling digital representations of remotely generated audio and video signals from said communication link,

control means including a digital microprocessor and video matrix switch means with plural video inputs and outputs

for controllably coupling at least a locally generated video signal to said interface means and for controllably coupling locally and/or remotely generated video signals to said video displays,

said control means, including a control video display and touch sensitive screen for controlling said video source means and video matrix switch means in response to touches on said touch sensitive screen by an operator, said control means including:

logic means for interpreting commands initiated by operator touches of said touch sensitive screen and for thereafter implementing said commands if elements of said commands are consistent with each other and with available resources, and message formatting means responsive to said logic means for formatting digital messages destined for said video source means and said video matrix switch means,

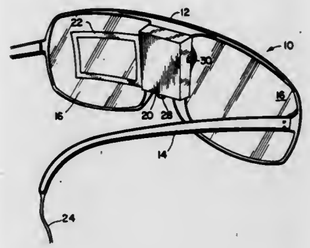
whereby unskilled operators can control said teleconferencing site means.

4,516,157

PORTABLE ELECTRONIC CAMERA

Malcolm G. Campbell, P.O. Box 8760, Ponsonby, Auckland, New Zealand

Filed Oct. 27, 1983, Ser. No. 546,194
Claims priority, application New Zealand, Nov. 23, 1982, 202578; Jan. 13, 1983, 203022
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—108 **9 Claims**



1. An electronic video device comprising:

(a) spectacle means adapted to be worn on a user's head and having a first field of view,

(b) a view-defining means on the spectacle means, through which the user can see the real world directly, and having a second field of view smaller than said first field of view,

(c) a video receptor associated with the spectacle means, and arranged to create a video signal in accordance with only said second field of view, and

(d) a transmitting means for transmitting the video signal from the receptor to a recording or display device.

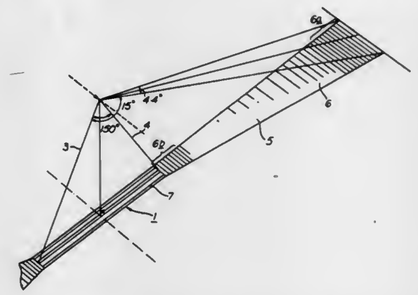
4,516,158

GROUND RECONNAISSANCE

Richard W. Grainge, and Rowland F. Humphries, both of Hertfordshire, England, assignors to British Aerospace Public Limited Company, London, England

Filed Jul. 30, 1982, Ser. No. 403,815
Claims priority, application United Kingdom, Jul. 31, 1981, 8123582
Int. Cl.³ H04N *5/33, 7/18*
U.S. Cl. 358—109 **7 Claims**

1. Reconnaissance equipment in or for use in an airborne craft or a spacecraft for scanning an area on the ground, and comprising first scanning means which is operable for scanning a part of said area lying beneath and to each side of the craft along lines transverse to the direction of movement of the craft, and second scanning means which is operable for scanning a part of said lying to one side of the craft along lines parallel to said direction of movement.

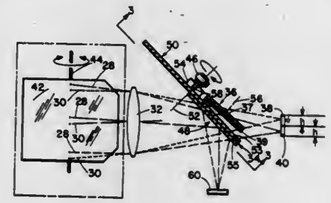


4,516,159

ELEVATION STEP SCANNER

Neal Diepeveen, Fairlawn, N.J., assignor to Magnavox Government and Industrial Electronics, Co., Ft. Wayne, Ind.

Filed Mar. 3, 1983, Ser. No. 471,616
Int. Cl.³ H04N *1/10, 3/08, 1/04*
U.S. Cl. 358—293 **11 Claims**



1. An optical image scanning device comprising:

means for focusing rays of light defining a field of view to produce an image of the field of view in an image plane;

means for detecting light rays, said detector means being arranged in the image plane;

means for scanning the image across the detector means in a scan direction;

a substantially planar disc having a front and a back and an axis perpendicular thereto, a first portion of the disc being reflective to the light rays from the field of view, a second portion of the disc being transmissive to the light rays from the field of view, said disc being arranged in the paths of the light rays from the field of view such that said light rays are incident on the front of the disc and are reflected by the reflective portion to produce an image at a first position in the image plane;

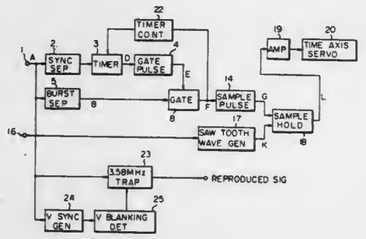
means for rotating the disc on its axis; and

a substantially planar member, reflective to the light rays from the field of view, said reflective member being arranged behind the disc in a fixed position relative thereto such that light rays which pass through the transmissive portion of the disc are incident on the reflective member and are reflected to produce an image at a second position in the image plane, said second position being shifted relative to the first position in a shift direction which is transverse to the scan direction.

4,516,160
INFORMATION RECORDING AND REPRODUCING SYSTEM

Hitoshi Kanamaru, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

PCT No. PCT/JP82/00019, § 371 Date Sep. 15, 1982, § 102(e) Date Sep. 15, 1982
PCT Filed Jan. 19, 1982, Ser. No. 420,255
Claims priority, application Japan, Jan. 19, 1981, 56-6907
Int. Cl.³ H04N *9/493*
U.S. Cl. 358—326 **8 Claims**



1. In a color video composite signal recording system, the improvement comprising:

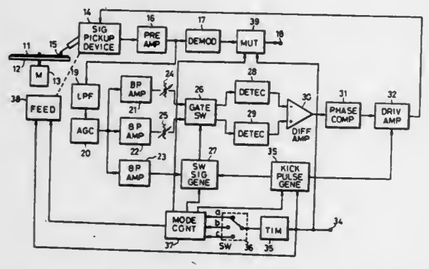
first means for receiving a color video composite signal including luminance, chrominance, and synchronous components; and

second means for adding an additional color burst signal at a predetermined sectional period of each horizontal period within each vertical blanking period of said color video composite signal, said additional color burst signal having the same frequency and phase as a color burst signal contained in the color video composite signal other than the vertical blanking period.

4,516,161
SYSTEM FOR PAUSING REPRODUCTION IN ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Hiroyuki Sigiyama, Isehara; Masaki Sakurai; Ryozo Abè, both of Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 23, 1982, Ser. No. 401,231
Claims priority, application Japan, Jul. 28, 1981, 56-111837[U]
Int. Cl.³ H04N *5/781*
U.S. Cl. 358—342 **4 Claims**



1. A system in a rotary recording medium reproducing apparatus for pausing reproduction of a rotary recording medium having an information signal recorded on a spiral track, said reproducing apparatus comprising a reproducing transducer having a reproducing element for reproducing a signal from the track on said rotary reproducing medium and kicking means for kicking said reproducing element to an adjacent track in response to a kick pulse applied thereto, said system comprising:

pause mode signal supplying means for supplying a pause signal when said reproducing apparatus is to be put into a pause mode, said reproducing apparatus generating said kick pulse in response to said pause mode signal being supplied thereto so that said reproducing element scans over the same track to carry out a pause operation;

timer means operating in response to the pause mode signal supplied from said pause mode signal supplying means for producing an output signal after a predetermined time period has elapsed; and

mode control means supplied with the output signal of said timer means for cancelling the scanning of the same track by said reproducing element,

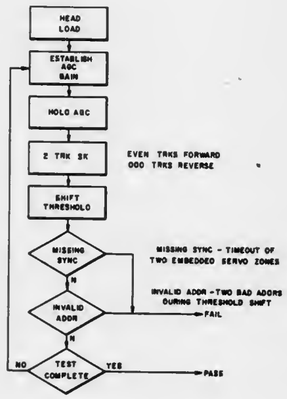
said timer means operating while said pause mode signal is being applied thereto and producing an output signal every time a predetermined time period elapses,

said mode control means advancing said reproducing element which is reproducing said same track turn by one track turn to carry out a frame advance operation every time the output signal of said timer means is applied thereto.

4,516,162
METHOD FOR VERIFYING SERVO DATA

David E. West, Oklahoma City, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Apr. 21, 1983, Ser. No. 487,341
Int. Cl.³ G11B *5/02*
U.S. Cl. 360—25 **8 Claims**



6. A method for verifying the integrity of servo data stored as a series of parallel servo tracks on a data storage medium, each track including automatic gain control data and servo data, said method comprising the steps of:

a. generating first automatic gain control pulses dependent upon the automatic gain control data on a first servo track;

b. establishing a first threshold level dependent upon the peak amplitudes of said first automatic gain control pulses;

c. shifting said first threshold level to an enhanced threshold level having an amplitude higher than that of said first threshold level;

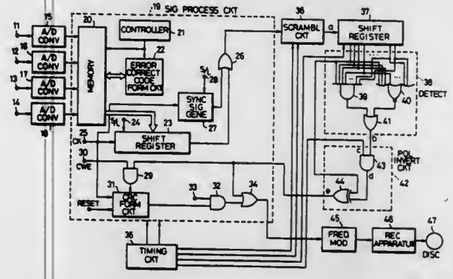
d. generating second servo data pulses dependent upon the servo data on a second servo track; and

e. detecting each of said second servo data pulses having an amplitude at least as high as that of said enhanced threshold level.

4,516,163
DIGITAL INFORMATION SIGNAL RECORDING SYSTEM

Isao Masuda, Sagamihara; Nobuaki Takahashi, Yamato; Kazunori Nishikawa, Machida; Yoshiki Iwasaki, Yokohama, and Shoji Ueno, Zama, all of Japan, assignors to Victor Company of Japan, Japan

Filed Jun. 28, 1983, Ser. No. 508,540
Claims priority, application Japan, Jul. 6, 1982, 57-117377
Int. Cl.³ G11B *5/00, 5/09*
U.S. Cl. 360—32 **6 Claims**



1. A digital information recording system comprising:

a randomized digital signal forming circuit for forming a randomized digital signal by carrying out modulo-2 addition of at least digital information signals of a plurality of channels in a digital signal and a random code sequence which is generated independently, said digital signal being constituted by a predetermined number of words from each of said digital information signals of a plurality of channels, a synchronizing signal, error correcting codes, and an error detecting code, which are time-sequentially multiplexed in terms of signals corresponding to one frame, said digital information signals of a plurality of channels being obtained by independently subjecting analog information signals of a plurality of channels to digital modulation;

a detector for successively detecting values of each of said predetermined number of words from each of said digital information signals of a plurality of channels in said randomized digital signal, in terms of one word, and generating a detection signal only when values of bits in said one word are all "1" or all "0";

a timing circuit for generating a timing signal for every period corresponding to a transmission period of a least significant bit in one word from each of said digital information signals of a plurality of channels;

polarity inverting circuit means for passing said randomized digital signal unchanged during a period in which said detection signal is not generated from said detector, and inverting the polarity of the least significant bit in one word from each of said digital information signals of a plurality of channels in said randomized digital signal when simultaneously applied with said detection signal and said timing signal; and

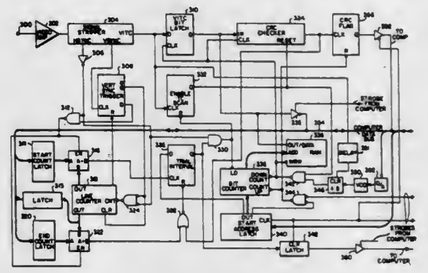
recording means for recording a digital signal obtained from said polarity inverting circuit means.

4,516,164
APPARATUS FOR DECODING VIDEO ADDRESS CODE SIGNALS

Edwin C. Moxon, Boxboro, Mass., assignor to Stypher Corporation, Hudson, Mass.

Filed Oct. 21, 1982, Ser. No. 435,689
Int. Cl.³ G11B *5/02, 5/09*
U.S. Cl. 360—53 **25 Claims**

1. In apparatus for reading coded information recorded on video magnetic tape, said apparatus having means for reading signals from said tape as said tape is run at different speeds, a local oscillator for generating sampling signals of various frequencies, means responsive to said sampling signals for sampling said signals read from said tape to produce received information and an error checking circuit responsive to said



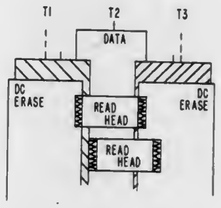
received information for generating a signal indicating an error in the reception of said information, the improvement comprising,

means responsive to said error signal for adjusting the frequency of said sampling signals to produce error-free reception of said information.

4,516,165
ERROR RECOVERY PROCEDURE USING SELECTIVE ERASURE

Earl A. Cunningham, and Dean C. Palmer, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,386
Int. Cl.³ G11B *21/10, 27/08*
U.S. Cl. 360—53 **14 Claims**



1. In a high density hard disk media storage device having a transducer head which reads and writes data, the method of recovering data from the device having magnetically recorded information in a series of adjoining parallel tracks wherein track misregistration has partially obscured the information on a given track comprising:

reading and storing the data from the tracks adjoining either side of said given track,

respectively erasing both of said adjoining tracks with said transducer head while offsetting the transducer head toward said given track relative to said adjoining tracks, and

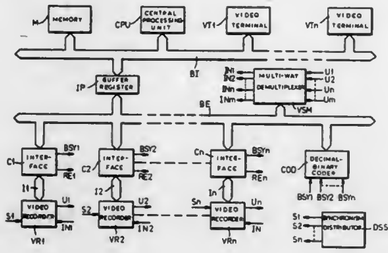
aligning said transducer with said given track and conducting a read operation to recover data from said given track.

4,516,166

DEVICE FOR THE AUTOMATIC COMPUTER-CONTROL OF THE OPERATION OF A PLURALITY OF VIDEORECORDERS

Mauro Tellone, Settimo Torinese, Italy, assignor to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Sep. 29, 1982, Ser. No. 427,319
Claims priority, application Italy, Dec. 7, 1981, 68586 A/81
Int. Cl.³ G11B *15/18*
U.S. Cl. 360—72.1 **8 Claims**



1. Apparatus for automatic computer control of the execution of a selected one of a plurality of determined operations in an operating range starting from an entrance frame and ending at an exit frame, by a selected one of a plurality of video recorders each having video tape carrying sequential frame identifying data identifying each television frame recorded thereon, said apparatus comprising:

computer means having stored data comprising a plurality of control unit addresses, digital entrance frame data, digital exit frame data, and operational data signifying said selected one of said determined operations; and

a plurality of control units, each connected to said computer means and to a corresponding one of said video recorders, each addressable by a respective one of said control unit addresses, each comprising:

motion control means for reading out then-present frame identification data from the respective one of said video tapes, receiving said digital entrance and exit frame data from said computer means, generating a tape control signal varying in dependence on the so read-out and received data, and applying said tape control signal to said selected one of said video recorders to control the speed and direction of motion thereof;

first error detecting means receiving said digital entrance frame data and said digital exit frame data from said computer means, for comparing the so-received data, generating a computer error signal when said digital entrance frame data is inconsistent with said digital exit frame data, and applying said computer error signal to said computer means;

and second error detecting means receiving said entrance and exit frame identification data, for applying a restart signal to said motion control means when said selected one of said video recorders is carrying out said selected one of said determined operations outside said operating range.

4,516,167

COMPRESSION OF THE DYNAMIC RANGE OF VIDEO SIGNALS

Donald F. Dion, Burlington, and Michael J. Cantella, Winchester, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,479
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—160 **8 Claims**

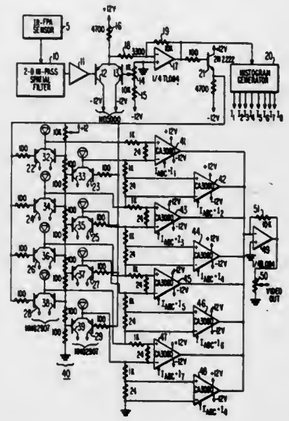
3. A piecewise-linear amplifier in which response is linear over each of a plurality of successive ranges of input signal amplitude, said ranges being n at least three in number, ordinally numbered first through n^{th} in order of increasing amplitude range, which piece-wise-linear amplifier comprises:

an input signal terminal;

an output signal terminal;

a plurality, n in number, of clippers ordinally numbered first through n^{th}, having respective input connections to said input signal terminal and having respective output connections at which are respectively supplied response to zones ordinally numbered with numbers equal to or lower than the ordinal numbers of the respective clippers; and

a plurality, n in number, of differential-input amplifiers with respective gains that at least at times differ from each other, said differential-input amplifiers being ordinally



numbered first through n^{th}, the first said differential-input amplifier having one of its inverting and non-inverting input connections connected to receive a level corresponding to the minimum signal level in said first range and the other of its input connections connected to the output connection of said first clipper, and each of the remaining ones of said differential-input amplifiers having one of its inverting and non-inverting input connections to the output connection of the clipper ordinally numbered the same as it is and the other of its input connections connected to the output connection of the clipper ordinally numbered one less than it is; and

means for summing the output responses of said differential-input amplifiers to obtain the overall response applied to said output signal terminal.

4,516,168

SHUTDOWN CIRCUIT FOR A SWITCHING REGULATOR IN A REMOTE CONTROLLED TELEVISION RECEIVER

James E. Hicks, New Palestine, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,776
Int. Cl.³ H04N *5/44, 3/18*
U.S. Cl. 358—190 **8 Claims**

1. A switching power supply with disabling circuitry, comprising:

a source of input voltage;

a power supply inductance coupled to said input voltage source;

a load circuit coupled to said inductance;

a power switch coupled to said inductance;

a regulator control circuit coupled to said power switch for producing the switching thereof to transfer energy from said input voltage source to said load circuit, said regulator control circuit being responsive to control voltages for

varying the switching duty-cycle of said power switch to control the transfer of energy to said load circuit;

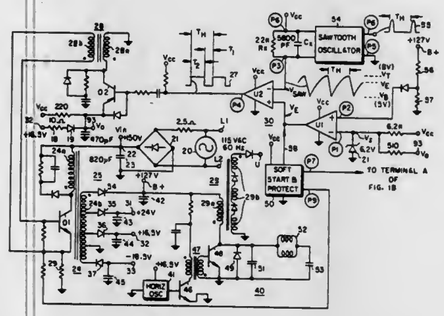
means for developing a first one of said control voltages representative of variations in an energy level of said load circuit to control said duty-cycle in a manner that regulates said energy level;

a disabling circuit coupled to said regulator control circuit and responsive to the voltage at a disabling control terminal for developing a second one of said control voltages that changes said duty-cycle in a manner that disables the normal transfer of energy to said load circuit, said second one control voltage being generated when the disabling control terminal is biased to a voltage that is beyond a given value;

a disabling switch coupled to said disabling control terminal;

a comparator coupled to said disabling switch;

a disabling input terminal coupled to an input terminal of said comparator and to said disabling control terminal;



a first signal generator responsive to a first condition requiring the disablement of said power supply for developing at said disabling input terminal a first bias voltage that exceeds a first value in a first direction in order to bias said disabling control terminal to a voltage that is beyond said given value; and

a second signal generator responsive to a second condition requiring the disablement of said power supply for developing at said disabling input terminal a second bias voltage that exceeds a second value in the direction opposite that of said first direction in order to bias the input terminal of said comparator beyond a first trigger level voltage in a first direction to activate said comparator, said disabling switch changing conductive states when said comparator is activated for biasing said disabling control terminal to a voltage that is beyond said given value.

4,516,169

SYNCHRONIZED SWITCHING REGULATOR FOR A MULTIPLE SCANNING FREQUENCY VIDEO MONITOR

Walter Truskalo, Titusville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 27, 1983, Ser. No. 498,767
Int. Cl.³ H04N *3/18*
U.S. Cl. 358—190 **8 Claims**

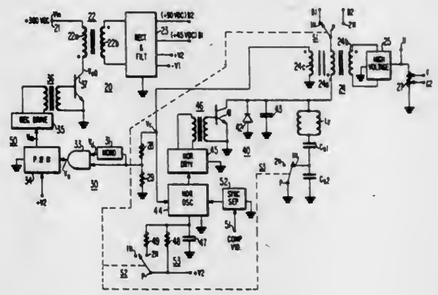
1. In a display system having a multiple rate scanning system, a synchronized switching power supply, comprising:

a deflection circuit for producing scanning current in a deflection winding and capable of being operated at either one of two selectable scanning frequencies;

means for generating a synchronizing signal synchronously related to said scanning circuit;

means responsive to said synchronizing signal for generating a control signal that is synchronously related to said scanning current and of a frequency that is unchanged when said deflection circuit is operated at either of said two scanning frequencies; and

a switching power supply for developing a supply voltage for said display system and which is responsive to said control signal for producing switching operation of said



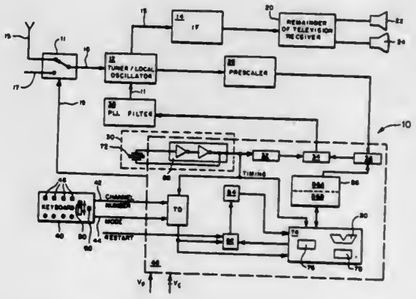
power supply at said unchanged frequency in synchronism with said scanning current.

4,516,170

DUAL MODE UHF TUNING SYSTEM

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Continuation of Ser. No. 367,656, Apr. 12, 1982, abandoned. This application Feb. 4, 1984, Ser. No. 564,177
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—191.1 **10 Claims**



1. A UHF tuning system for a television receiver including a phase locked loop circuit wherein the frequency of a voltage controlled oscillator is locked to a reference signal, said system comprising:

keyboard means for selecting a desired channel number from a first group of channels or from a second group of channels and generating output signals representing said selected channel number;

mode control means selectively operable for identifying either a first mode of operation for tuning to channels in said first group or a second mode of operation for tuning to channels in said second group and for generating first or second control signals in response to said first or second modes of operation, respectively;

signal processing means coupled to said keyboard means and said mode control means and responsive to said channel number output and said control signals respectively received therefrom and coupled to said voltage controlled oscillator for generating a local oscillator signal having one of a plurality of equally spaced first set of frequencies for tuning to a channel in said first group of channels in response to said first mode of operation or for generating a local oscillator signal having one of a plurality of equally spaced second set of frequencies for tuning to a channel in said second group of channels in response to said second

mode of operation, wherein the separation between adjacent frequencies in said first and second sets of frequencies is equal and wherein each of said first set of frequencies is offset from a corresponding one of said second set of frequencies by a predetermined amount, with said predetermined amount less than 6 MHz; and

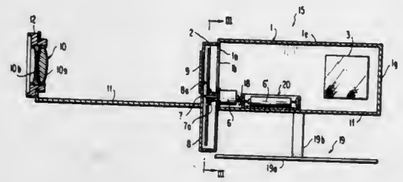
means for mixing the local oscillator signal with a received television signal for developing an intermediate frequency signal for processing in said television receiver.

4,516,171

VIDEO TRANSFER DEVICE

Shogo Yamazaki, Tokyo, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 419,900
Int. Cl.³ H04N *3/02*
U.S. Cl. 358—214 **5 Claims**



1. In a video transfer device comprising:

an elongated lightproof housing including opposite front and rear walls,

an aperture within said front wall,

a screen adjacent said front wall aperture,

a mirror within said housing remote from said front wall and inclined 45 degrees with respect to said front wall aperture and projecting light entering the housing through said front wall aperture towards the sidewall,

a sidewall aperture aligned with the mirror and opening to a video camera lens system for recording pictures projected on said screen from a moving film of a projector outside said housing and facing said front wall aperture and said screen adjacent thereto for projecting a transfer image onto said screen,

the improvement wherein said screen comprises a semi-transparent, thin, flexible film member, said device further includes means for moving said screen at a considerably faster speed than the moving film of the projector,

and a close-up lens molunted in front of the screen at a position such that the focal plane of said close-up lens is at the plane of the semi-transparent thin flexible film member and is of substantially reduced size to maintain the device small in size, relatively inexpensive and which considerably reduces the power necessary to move said screen.

4,516,172

SOLID STATE TELEVISION CAMERA WITH IRIS CONTROL

Katsuro Miyata, Yokohama; Takashi Asaida, and Fumio Nagumo, both of Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,571
Claims priority, application Japan, Aug. 10, 1981, 56-125062
Int. Cl.³ H04N *5/16*
U.S. Cl. 358—228 **7 Claims**

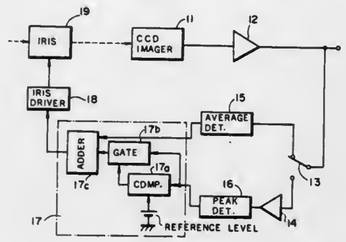
1. A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows and for sequentially generating an output signal corresponding to an image by transferring a charge generated by said light sensing units, said solid state television camera comprising,

(A) a synchronizing signal generator for generating horizontal and vertical synchronizing signals,

(B) a clock pulse generator controlled by said synchronizing signals and for generating various kinds of clock pulses controlling the transfer of the charge generated in said light sensing units,

(C) iris means for controlling the light amount from the image radiated on said light sensing units,

(D) driver means for controlling said iris means,



(E) smear signal detecting means for producing a smear output signal from the output signal of said solid state image sensing device, and

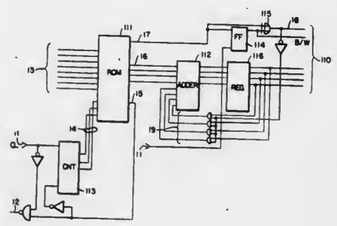
(F) means for supplying said smear output signal to said drive means such that the light amount is controlled by the level of said smear signal.

4,516,173

IMAGE DATA CONVERSION METHOD AND CHARACTER CODE/CHARACTER PATTERN CONVERSION APPARATUS

Susumu Abe, Kawasaki; Akio Munakata, and Takeshi Kitahara, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 1, 1982, Ser. No. 353,334
Claims priority, application Japan, Mar. 6, 1981, 56-32126; Mar. 11, 1981, 56-35034
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—261 **23 Claims**



1. An image data conversion method using a runlength conversion table, calculation means, register means, detecting means and adding means, said method comprising the steps of:

(a) converting the image data into a runlength code using the runlength conversion table where the runlength conversion table holds at least runlength codes in each of a plurality of storing areas corresponding to the image data, the runlength codes including black and white codes;

(b) calculating to output the contents of each of the plural storing areas, where the calculation means is controlled for performing calculations by the output of said runlength conversion table and produces a counting output used as a part of an access address of said runlength conversion table;

(c) storing the runlength code in the register means and temporarily holding the runlength code output from said runlength conversion table therein;

(d) detecting, using the detecting means the change between white and black codes output from said runlength conversion table; and

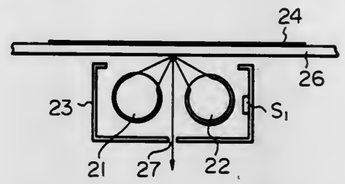
(e) adding, using the adding means which outputs the runlength codes to said register means, the content of said register means and the output of said runlength conversion table in accordance with a control by said detecting means when the same kind of runlength codes appear continuously, and thereby converting the image data to the runlength codes through reading once or several times the runlength codes from said runlength conversion table for the given image data signal and adding the runlength codes when the same type of runlength codes appear continuously.

4,516,174

VIDEO SIGNAL REGULATING APPARATUS

Yoshiaki Kammoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,464
Claims priority, application Japan, Mar. 10, 1980, 55-29887; Mar. 12, 1980, 55-31272; Apr. 10, 1980, 55-47367
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—282 **6 Claims**



1. A video signal regulating apparatus including a lamp for illuminating an original document, optoelectric scanning means for scanning the document and producing electrical video signals corresponding to an optical pattern thereof and amplifier means for amplifying the video signals, characterized by comprising:

sensor means comprising a single sensor which is disposed so as to simultaneously receive reflected light from the document and light from the lamp and being connected to the amplifier means, the amplifier means being constructed such that an amplification factor thereof varies in accordance with an output of the sensor means to regulate a level of the video signals to a constant valve.

4,516,175

SCANNING METHOD AND SCANNING DIAPHRAGM FOR SUPPRESSING MOIRé IN THE SCANNING OF RASTERED MASTERS

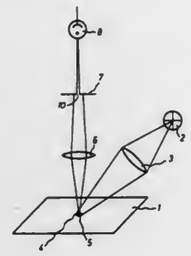
Eggert Jung, Schoenberg, and Heinrich Wadle, Neumuenster, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,999
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120030
Int. Cl.³ H04M *1/40*
U.S. Cl. 358—283 **6 Claims**

1. A method of scanning in the field of reproduction techniques, particularly in opto-electronic image scanning to prevent Moiré in a recorded image when scanning a rastered master comprising the steps of:

(a) Clamping a master with a raster grid with raster meshes,

(b) Providing an electronic light receiver having a light sensitive surface and a diaphragm with an aperture to allow light, which is emitted by an illuminated master to be received by said sensitive surface to generate an electronic signal for further processing, said aperture having a shape and size corresponding to an elementary cell of a plurality of cells with each of said cells having an arbitrarily contoured area of at least the area of one raster mesh, the raster grid of the master being covered without any overlapping and without gaps by the totality of said elementary cells and each single elementary cell being aligned in such a manner that the relative positioning of elementary cells and raster meshes is constant over the area of the whole master, said clamping of the master



positioning the master with the aperture of said diaphragm being aligned to execute the scanning process approximately parallel to the alignment of the elementary cells in the raster grid of the master, and

(c) Arbitrarily moving the diaphragm and master relative to each other to provide the scanning.

4,516,176

MAGNETIC HEAD CLEANING DISKETTE

Jeffrey B. Street, Sunnyvale, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed May 10, 1982, Ser. No. 376,272
Int. Cl.³ G11B *5/012, 5/41*
U.S. Cl. 360—75 **4 Claims**

1. A diskette for cleaning a magnetic read/write head of a flexible disk drive, said diskette comprising a thin flexible platter, and a mildly abrasive magnetic coating on at least one side of the platter for contacting the read/write head, said coating including magnetite (Fe_3O_4) having an internal crystalline form in the shape of octahedral crystals, conductive carbon black, a dispersing agent, a binder system, a cross linker, and a lubricant, said coating including data, magnetically recorded thereon, which is adapted for directing the read/write head across the diskette surface.

4,516,177

ROTATING RIGID DISK DATA STORAGE DEVICE

William G. Moon, Sunnyvale; Ronald R. Moon, Santa Clara; Bruce R. Peterson, San Jose, and Donald C. Westwood, Cupertino, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 424,914, Sep. 27, 1982, abandoned. This application Mar. 15, 1983, Ser. No. 475,599
Int. Cl.³ G11B *5/55, 5/58*
U.S. Cl. 360—77 **29 Claims**

1. In a data storage device including a base, a plurality of rotating rigid magnetic media data storage disks commonly journalled for rotation to said base, a plurality of read/write data transducers held in close proximity to the major surfaces of said disks by air-bearing effect, and a current operated rotary actuator carriage mechanism journalled to said base and having an axis of rotation parallel with the axis of rotation of said disks, for carrying said transducers and positioning them at one of a multiplicity of concentric data tracks during data read/write operations and for moving said transducers from track to track during track seeking operations of said device, the improvement comprising:

optical encoder means mounted between said carriage mechanism and said base, for providing a plurality of phase related signals indicating transducer position relative to said base;

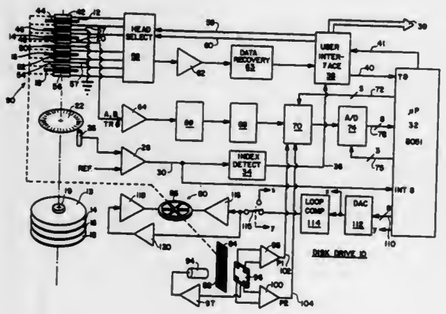
at least one surface of said disks containing a plurality of substantially identical, radially aligned and contiguous servo sectors, each sector prerecorded with a plurality of first bursts offset from track centerline in a first direction for odd numbered tracks and offset from track centerline in a second direction for even numbered tracks, and prerecorded with a plurality of second bursts spatially interleaved between said first bursts and offset from track centerline in said second direction for odd numbered tracks and offset from track centerline in said first direction for even numbered tracks, and wherein said bursts are not necessarily phase coherent;

at least one of said transducers being a servo burst transducer for reading every servo sector during track following of a said data track;

peak detection means connected to said servo burst transducer for detecting and putting out average peak amplitude values for each sector servo burst read by said servo burst transducer;

analog switch means connected to said optical encoder means and to said peak detection means for switching between said plurality of phase related position signals and said peak amplitude values of said servo bursts;

analog to digital converter means connected to said analog switch means for converting each analog signal received therefrom into a digital word;



user interface circuit means for receiving digital disk surface and track selection control data;

tachometer means coupled mechanically to said disks for generating clock signals representing sector boundaries;

programmed digital microprocessor means connected to said tachometer means, said analog to digital converter means, said analog switch means, for receiving digital words from from said analog to digital converter means and said data from said user interface circuit means, for calculating therefrom digital control data words: for commanding said rotary actuator to move from a departure track to a user defined destination track and to settle thereat based on information from said optical encoder means during track seeking, and for commanding said rotary actuator to maintain said data transducers in track centerline alignment based on information from said peak detection means during track following;

digital to analog converter means connected to said microprocessor means for receiving and converting said digital control data words into analog signal values,

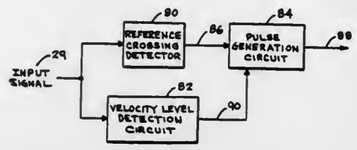
rotary actuator drive amplifier means connected to said digital to analog converter means for receiving said analog signal values, for amplifying them and putting them out to control said carriage mechanism during track following and during track seeking and settling.

4,516,178

CYLINDER CROSSING DETECTION CIRCUIT FOR DISC DRIVE OR THE LIKE

Patrick S. Lee, Campbell, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 15, 1982, Ser. No. 418,492
Int. Cl.³ G11B *21/08*
U.S. Cl. 360—78 **14 Claims**



7. A method for detecting position of a transducer moving with respect to tracks uniformly spaced on a medium and having information thereon, comprising the steps of:

moving the transducer with respect to said tracks, said tranducer generating a position signal with respect to the tracks;

detecting proximity of the transducer to said tracks having information for producing a first output;

detecting velocity of said transducer relative to said medium for generating a second output and regulating the value thereof;

initiating an indication in response to the first output; and,

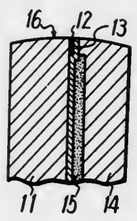
controlling the duration of the indication of the first output in response to the second output.

4,516,179

MAGNETIC TRANSDUCER HEAD UTILIZING MAGNETORESISTANCE EFFECT

Shigeyoshi Imakoshi, Atsugi; Yutaka Soda, Ebina; Hiroyuki Uchida, Atsugi; Junkichi Sugita, Ebina; Hiroshi Takino, Kodaira; Tetsuo Sekiya, and Hideo Suyama, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 408,025
Claims priority, application Japan, Aug. 17, 1981, 56-128337
Int. Cl.³ G11B *5/12*
U.S. Cl. 360—113 **5 Claims**



1. A magnetic transducer head utilizing magnetoresistance effect comprising:

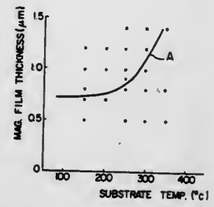
a thin film magnetoresistance effect element held between first and second substrates, at least one of said first and second substrates being formed of a electrically conductive material, and a biasing means for said magnetoresistance effect element to satisfy a potential relation $V_{MR}-V_S \leqq 0.2$ volt, wherein V_{MR} is a potential of said magnetoresistance effect element, and V_S is a potential of said conductive substrate.

4,516,180

THIN FILM MAGNETIC HEAD

Shinji Narishige; Tsuneo Yoshinari, both of Hitachi; Mituo Sato, Takahagi; Masayuki Takagi, Odawara, and Toshihiro Yoshida, Fujisawa, all of Japan, assignors to Computer Basic Technology Research Assoc., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,176
Claims priority, application Japan, May 15, 1981, 56-72327
Int. Cl.³ G11B *5/16*
U.S. Cl. 360—126 **18 Claims**



1. A thin film magnetic head, comprising:

(a) a lower magnetic member;

(b) an upper magnetic member stacked on said lower magnetic member and formed of laminate of magnetic thin film layers, each magnetic thin film layer having a thickness not higher than 0.8 μm, and non-magnetic thin film layers, each non-magnetic thin film layer having a thickness in a range of 20 Å to 0.04 μm, the magnetic and non-magnetic thin film layers being stacked alternately with each other and having one end portion disposed in opposition to one end portion of said lower magnetic member so as to define a magnetic gap therebetween and the other end portion brought into contact with the other end portion of said lower magnetic member so as to form a magnetic circuit in cooperation with said lower magnetic member;

(c) a coil conductor film constituting a coil of a predetermined number of turns having a portion extending between said lower magnetic member and said upper magnetic member so as to intersect said magnetic circuit;

(d) a first electrically insulating layer interposed between said lower magnetic member and said coil conductor film;

(e) a second electrically insulating layer interposed between said upper magnetic member and said coil conductor film and formed of a photo-sensitive resin; and

(f) a gap member disposed in said magnetic gap.

4,516,181

TAPE CASSETTE LINER SHEET ARRANGEMENT

Hideo Shirako, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1982, Ser. No. 411,279
Claims priority, application Japan, Sep. 9, 1981, 56-134073[U]
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 300—132 **8 Claims**

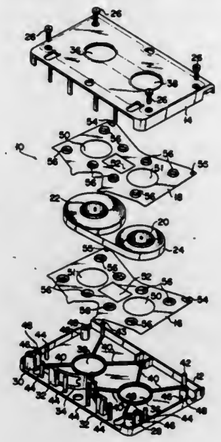
1. A tape cassette, comprising:

a pair of cassette halves each having a pair of reel shaft insertion holes and coupled with each other to form a housing, each said cassette half having a plurality of projections protruding toward the other cassette half from that surface thereof which faces the other cassette half;

a pair of reel hubs arranged for rotation in the region of the reel shaft insertion holes in the cassette halves;

a magnetic tape housed in the cassette halves and wound around the reel hubs; and

a pair of liner sheets, one of which is arranged between one of the cassette halves and the magnetic tape and the other of which is arranged between the other cassette half and the magnetic tape, each of said sheets having a plurality of hollow protrusions which protrude toward the associated cassette half and elastically abut the projections of the cassette half, so that the magnetic tape as wound on said reel hubs is supported elastically on both sides by substantial surface portions of said liner sheets at the central portion of said housing along the direction of the thickness of said housing, wherein the magnetic tape is prevented from being wound irregularly.

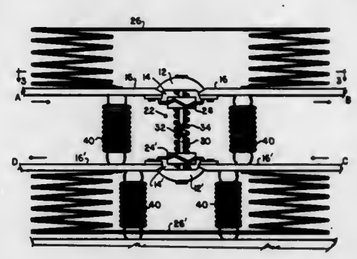


4,516,182

CURRENT LIMITING APPARATUS

LeRoy H. Franklin, Escondido, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 225,627, Jan. 16, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 424,839
Int. Cl.³ H02H *7/22*
U.S. Cl. 361—13 **4 Claims**



1. A current limiting apparatus comprising:

bridging electrical contact means for forming a first current path across a gap in a conductor;

means for breaking said first current path in response to the current in said conductor exceeding a predetermined value, said breaking means comprising:

(i) means for retaining said bridging electrical contact means against said conductor in opposition to mechanical forces applied to said bridging electrical contact means, including connecting means connecting said bridging electrical contact means to a fixed point with respect to said conductor; and

(ii) means for releasing said retaining means in response to current in said conductor exceeding a predetermined value, said mechanical forces causing in response thereto said bridging electrical contact means to break away from said conductor, said means for releasing said retaining means comprising a fusible wire means operatively attached to said connecting means such that when said fusible wire means is burned off, said connecting means separates from said fixed point, thereby enabling said

bridging electrical contact means to break away from said conductor;

fast-acting fuse means connected to said conductor in parallel with said bridging electrical contact means, operative to maintain current in a second current path for a predetermined length of time after said first current path formed by said bridging electrical contact means is broken, such that said bridging electrical contact means has sufficient time to physically move away from said conductor to suppress arcing across said gap; and

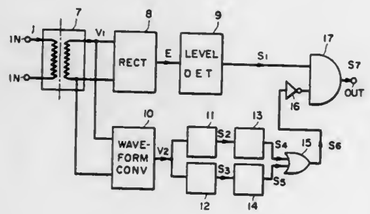
current limiting conductive means connected to said conductor in parallel with said bridging electrical contact means for providing a higher impedance third current path across said gap after said second current path formed by said fuse means is broken.

4,516,183

OVERCURRENT RELAY

Tadashi Matsuzaki, and Koji Sumi, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaishi, Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,603
Claims priority, application Japan, Dec. 2, 1981, 56-196156
Int. Cl.³ H02H *7/26*
U.S. Cl. 361—71 **12 Claims**



1. An overcurrent relay, comprising:

converting means for converting an AC input current into an AC signal voltage having positive and negative components,

rectifying means coupled to said converting means for rectifying said AC signal voltage into a DC signal voltage,

level detecting means coupled to said rectifying means for outputting an operation signal when said DC signal voltage exceeds a predetermined value,

determining means coupled to said converting means for determining the time period of at least one of the positive and negative components of said AC signal voltage for providing a determination signal when said determined time period exceeds a first predetermined time period,

blocking means coupled to said level detecting means and said determining means and responsive to said determination signal for blocking said operation signal from being output.

4,516,184

CIRCUIT DEVICE FOR DRIVING ELECTROMAGNETICALLY MOVABLE UNIT AT HIGH SPEED WITH SINGLE POWER SOURCE

Noboru Tominari, No. 19-9, Kamiyama-cho, Shibuya-Ku, Tokyo, Japan, assignor to Noboru Tominari and Mikuni Kohyo Co., Inc., both of, Japan

Filed Dec. 29, 1981, Ser. No. 335,578
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—152 **2 Claims**

1. A circuit device for driving an electromagnetically movable unit at a high speed with a single power source comprising:

positive and negative input lines,

first and third transistors, one being connected at an emitter thereof to said positive input line and another being connected at an emitter thereof to said negative input line,

second and fourth transistors, one being connected at an emitter thereof to said positive input line and another being connected at an emitter thereof to said negative input line,

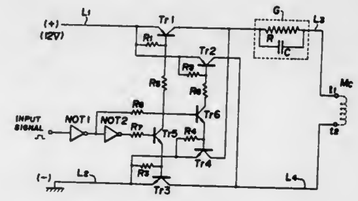
a control signal input line,

a fifth transistor connected at the collector thereof to the base of said first transistor and at the emitter therof to the base of said third transistor,

a sixth transistor connected at the collector thereof to the base of said second transistor and at the emitter thereof to the base of said fourth transistor,

a first NOT element connected at the input thereof to said control signal input line and at the output thereof to the base of said sixth transistor for inverting the input control signal applied thereto,

a second NOT element connected at the input thereof to the



output of said first NOT element and at the output thereof to the base of said fifth transistor for inverting the output from said first NOT element,

a first output line connected at one end to the collector of said first transistor and the collector of said fourth transistor,

a second output line connected at one end to the collector of said third transistor and the collector of said second transistor,

a first output terminal connected to the other end of said first output line,

a second output terminal connected to the other end of said second output line, and

an instantaneous double voltage generating means connected in series with said output line circuit and having a resistor and a capacitor connected in parallel with the resistor for inverting and doubling the voltage between the output lines when said input signal is inverted in polarity.

4,516,185

TIME RATIO CONTROL CIRCUIT FOR CONTACTOR OR THE LIKE

John C. Culligan, Kenner, La.; Frederick A. Stich, Milwaukee, Wis., and Conrad F. Williams, New Orleans, La., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 30, 1983, Ser. No. 537,705
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—154 **16 Claims**

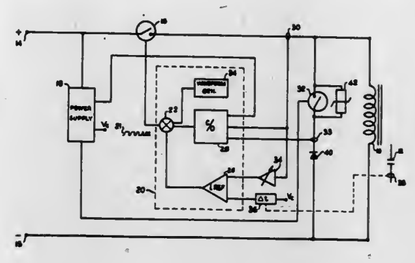
1. In an electromagnetic contactor including contacts for making an electric circuit, at least one of said contacts being movable, armature means coupled to said movable contact, and an electromagnetic coil for effecting movement of said armature means, means for causing current of a first, higher value to flow through said coil in order to cause said movable contact to complete a circuit and to cause current of a second, lower value to flow through said coil after said movable contact has completed the circuit, comprising:

a first solid state electronic switch in series circuit relationship with said coil;

oscillator means for outputting a signal;

means coupling said oscillator means to said first switch for operating said first switch in response to the oscillator signal;

means for causng said oscillator means to enable said first switch at a first, higher time ratio to provide said coil with a first, higher current flow for a period sufficient to allow



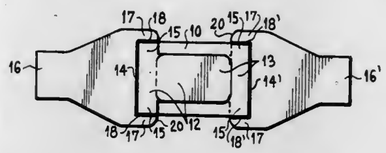
the contacts to operate, and for causing said oscillator means to enable said first switch at a second, lower time ratio to provide said coil with a second, lower current flow after said period, said second current flow being sufficient to maintain said contacts in an operated position.

4,516,186

MULTI-LAYER POWER CAPACITOR

Patrick Hardy, Auxonne; Michel Cantagrel, Ruffey-Les-Echirey, and Serge Guichard, Genlis, all of France, assignors to LCC.CICE-Compagnie Europeenne de Composants Electroniques, Paris, France

Filed Nov. 28, 1983, Ser. No. 555,621
Claims priority, application France, Nov. 26, 1982, 82 19926
Int. Cl.³ H01G *1/14, 4/10;* H05K *7/02*
U.S. Cl. 361—306 **7 Claims**



1. A multi-layered power capacitor comprising:

internal electrodes extending over a part of at least each of said layers;

connecting means for connecting said internal electrodes electrically and thermally in an alternate manner to junction edges of said capacitor;

a plurality of terminal means extending over a junction edge of said capacitor for providing an electrical surface for electrical contact to be made wherein said terminal means are single piece metalic members having a continuous surface adapted to extend an entire junction edge and at least on surface extending in part over at least one lateral edge and wherein said terminal means provides electrical and thermal conduction.

4,516,187

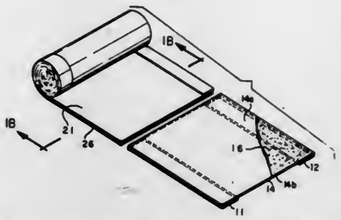
OUTER WRAPPING AND PLANAR TERMINATIONS FOR A METALLIZED WOUND CAPACITOR AND METHOD THEREFOR

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Filed Jul. 13, 1983, Ser. No. 513,271
Int. Cl.³ H01G *4/18, 1/14*
U.S. Cl. 361—309 **10 Claims**

1. A metallized wound capacitor comprising:

first and second elongated dielectric webs each having at least one electrode formed on at least one face thereof, the dielectric webs being convolutely arranged in a capacitor roll with the electrodes in superposed relation to each other; and



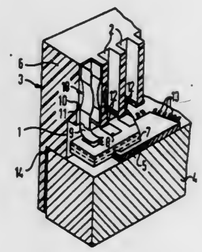
a third dielectric web wound about the capacitor roll to form a protective wrap, the third web having a first and a second metallic band terminal formed on the side of the third web remote from the capacitor roll and each band terminal disposed adjacent a respective end of the roll.

4,516,188

LOGIC CARD

Claus Kessler, Berg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,371
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236325
Int. Cl.³ H01R *9/00*
U.S. Cl. 361—408 **15 Claims**



1. A logic card and an electrical connector, in combination comprising:

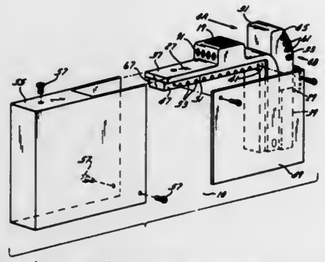
a logic card comprising a printed circuitboard including first and second surfaces, said first surface including contact pads, said second surface adapted for contact to at least one micromodule, and conductors within said logic card extending between said pads and said second surface; and

an electrical connector comprising a connector body, surfaces defining first and second recesses in said body, passage means defining a plurality of passages through said body in communication between said first recess and the exterior of said body, a plurality of contacts each in a respective one of said passages and each including a resilient section, said printed circuitboard disposed in said first recess with said pads aligned with said passages and bearing against respective resilient sections of said contacts, and pressure means in said second recess for contacting the micromodule on said second surface of said printed circuitboard and urging said contact pads against said resilient sections.

4,516,189
CONTROL APPARATUS HAVING MODULAR CONSTRUCTION

Charles E. Seaks, Jr., Greenfield, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Feb. 29, 1984, Ser. No. 584,752
Int. Cl.³ H05K *7/16*
U.S. Cl. 361—426 **11 Claims**

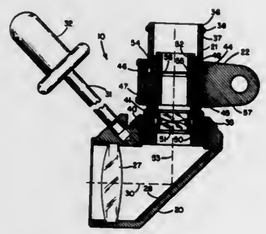


1. An electronic control module including:
a module frame swingably mounted to a rail member and including first, second and third electrical connection means, said module frame further including a latching lip engaging a first edge of a rail member and a resilient clip engaging a second edge of said rail member, said lip, said clip and said edges cooperating and forming means to permit said module to be swingably mounted to and removed from said rail member while avoiding movement of a module mounted adjacent thereto;
said first connection means including a plurality of bus conductors constructed and arranged to engage the bus conductors of adjacent modules when swingably mounting said frame;
said second connection means including a plurality of electrically conductive pads for engaging a circuit board attachable to said frame;
said third connection means including a plurality of terminals adapted for the connective termination of external wiring.

4,516,190
SURGICAL HEADLAMP

Jacobus Kloots, Sturbridge, Mass., assignor to Luxtec Corporation, Sturbridge, Mass.

Filed Dec. 29, 1983, Ser. No. 566,530
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—32 **10 Claims**

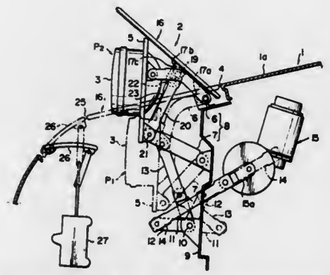


1. A surgical headlamp for use between the eyes comprising:
(a) a headband;
(b) an annular clamp supported from said headband;
(c) a cylindrical upper housing slideably mounted in said clamp;
(d) a condenser lens assembly in said upper housing;
(e) a sleeve secured in said housing clamping said lens assembly in place;
(f) a detent in said sleeve for securing a fiberoptic cable connector in position facing said lens assembly;
(g) a lower housing secured to said upper housing;
(h) a reflector mounted in said lower housing facing said lens assembly substantially at a 45° angle; and,
(i) a field lens mounted in said lower housing facing said reflector substantially at a 45° angle, said lens assembly, said reflector and said field lens being selected and positioned so that light entering through a fiberoptic cable at said sleeve is focussed and then collimated into a beam which passes out through said field lens with a predetermined spot diameter substantially at an angle of 90° from the axis of entry, said upper housing being slideably movable in said clamp for positioning between a wearer's eyes.

4,516,191
RETRACTABLE HEAD-LIGHT DEVICE FOR AUTOMOBILES

Naomune Moriyama, and Fumiyuki Ohtani, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 12, 1984, Ser. No. 599,342
Claims priority, application Japan, Apr. 15, 1983, 58-67612
Int. Cl.³ B60Q *1/06*
U.S. Cl. 362—65 **14 Claims**

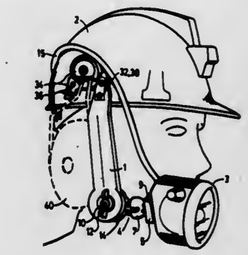


1. A retractable head-light device for automobiles comprising head lamp means mounted on an automobile body for movement between an extended position wherein the head lamp means is projected through opening means in the automobile body and directed substantially forwards and a retracted position wherein the head lamp means is retracted within the body, head lamp cover means having a rear end portion mounted on the body for vertical swingable movements between an extended position wherein the lamp cover means uncovers said opening means in the body and a retracted position wherein the lamp cover means closes said opening means to provide a substantially flush body surface, lamp driving means for driving said head lamp means between said extended and retracted positions of the head lamp means, cover driving means for driving said lamp cover means between said extended and retracted positions in response to movements of the head lamp means, said cover driving means including a pair of cover driving links disposed at the opposite sides of the lamp cover means, each of said cover driving links having one end connected with said lamp cover means and the other end with said lamp driving means so that the lamp cover means is driven together with the head lamp means, cover hinge means for pivoting the lamp cover means, said cover hinge means twisting when the lamp cover means is driven from the retracted position to the extended position to thereby maintain a front edge of the lamp cover means substantially horizontally.

4,516,192
LAMP CARRIAGE ARM FOR SAFETY HATS

Rolf W. Bolwig, Sudbury, Canada, assignor to Rotabo Industries Inc., Cooper Cliff, Canada

Filed Jan. 11, 1984, Ser. No. 569,849
Int. Cl.³ F21L *15/14*
U.S. Cl. 362—107 **21 Claims**

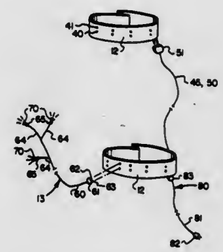


15. A miner's safety hat, comprising a safety hat, a lamp carriage arm attached at one end to one side of said safety hat and extending downwardly in spaced relationship to the safety hat wearer's head, and a lamp attached to the other end of the lamp carriage arm, the length of said lamp carriage arm being such that the lamp is positioned roughly in the area of above and in front of the safety hat wearer's collarbone.

4,516,193
LIGHTING SYSTEM FOR ARTIFICIAL CHRISTMAS TREE

James P. Murphy, 211 Executive Office Park, 4500 W. Illinois Ave., Midland, Tex. 79703

Filed Apr. 16, 1984, Ser. No. 600,947
Int. Cl.³ F21P *1/02*
U.S. Cl. 362—123 **6 Claims**

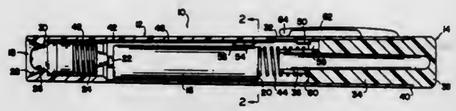


1. An electrical lighting system for a tree comprising: flexible electrical distribution strap means having opposite end means for mounting said strap means around a tree trunk and a plurality of spaced electrical connection means for male electrical plugs; electrical connection means for connecting said distribution strap means to a source of electrical power; and limb branch electrical circuit means for mounting on a tree limb and having male plug means on one end for connection with said distribution strap means and light means connected along said electrical circuit means including a socket for a light bulb.

4,516,194
PEN LIGHT

David L. Johns, Clearwater, Fla., assignor to Suncoast Medical Manufacturing Co., Clearwater, Fla.

Filed Jun. 11, 1984, Ser. No. 619,622
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—202 **18 Claims**

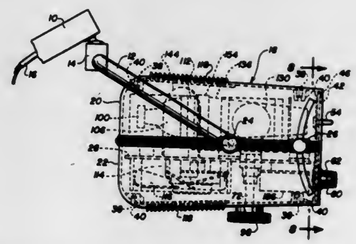


1. A pen light comprising a hollow housing having a retainer member secured to the rear portion thereof to house a voltage source in operative engagement with a light source, a first conductor member movable between a first and second position and a second conductor member each disposed within said hollow housing to operatively engage said light source and said voltage source respectively and an actuator clip attached to said hollow housing adjacent an actuator clip aperture formed on said hollow housing, said first conductor member comprising an elongated conductor strip including a first contact element to operatively engage said light source and a second contact element disposed to selectively engage said second conductor member when said first conductor member is in said second position, said hollow housing further includes a longitudinally disposed groove formed on the inner surface thereof corresponding to said elongated conductor strip to receive said elongated conductor strip therein to align said elongated conductor strip longitudinally relative to said actuator clip aperture and said actuator clip, said actuator clip being movable between a first and second position to selectively engage said first conductor member such that when said actuator clip is in said first position said first conductor member is separated from said second conductor member to form an open circuit and when said actuator clip is in said second position said actuator clip engages said first conductor member to move said first conductor member from said first position to said second position whereby said first conductor member engages said second conductor member to close the circuit and actuate said light source.

4,516,195
MULTI-FUNCTION DENTAL OPERATING LIGHT SOURCE

Donald I. Gonser, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

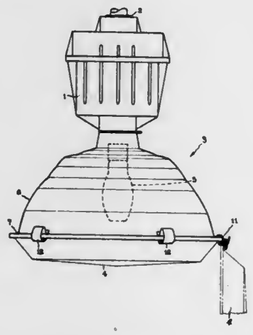
Filed Dec. 28, 1983, Ser. No. 566,235
Int. Cl.³ F21V *9/08*
U.S. Cl. 362—281 **25 Claims**



1. A multi-functional dental operative light having at least two optical filters supported upon means movably adapted selectively to position one of said filters relative to a stationary light source having a parabolic reflector adapted to columnate light beams therefrom, beam splitting reflectors also mounted

upon said means and positioned in the beam path from said light source and arranged to direct diverging light beams respectively to reflecting mirrors fixed to said means in spaced relationship and angled toward each other and operable to direct separate light beams in converging directions toward a dental target to be illuminated at a specified distance from said means by substantially preserving columnation of the light source in accordance with said selected optical filter, said filters of which at least two are included in the multi-functional light respectively are capable of producing white light beams substantially free of color for oral illumination, light beams in the yellow to orange range incapable of polymerizing visible light-curable material in an oral cavity, and light beams of reduced brightness and capable of effecting photocuring of a light-curable material.

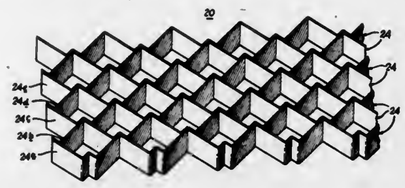
4,516,196
LUMINAIRE HINGE AND LATCH
Walter R. Blake, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 18, 1983, Ser. No. 514,736
Int. Cl.³ F21V *3/00*
U.S. Cl. 362—311 **6 Claims**



1. A separable latch arrangement in a luminaire comprising:
an upper housing assembly for a light source, said assembly having a rim with a radially projecting flange portion,
a plastic refractor adapted to close the underside of the housing assembly, said refractor having a rim portion overhung by and adapted to mate with said projecting flange portion of the rim of said assembly,
a plurality of latches disposed around the periphery of said refractor and dimensioned to span both rim portions for direct clamping action thereon, said latches being proportioned to press against the upper surface of said projecting flange portion and substantially perpendicularly against the lower surface of said plastic refractor rim portion over a substantial area whereby to avoid creating any high stress therein, and
retaining means attaching said latches directly to the underside of the rim of said plastic refractor in a manner allowing them to be pivoted into clamping position astride both rims, said means preventing disengaged latches from dropping off the refractor.

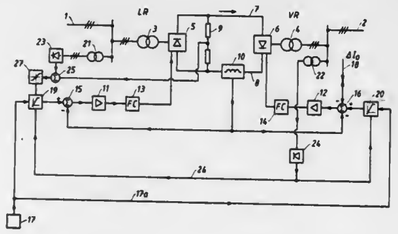
4,516,197
ANTIGLARE PANEL
Edward H. Yonkers, 905 Westerfield, Wilmette, Ill. 60091
Filed Aug. 9, 1984, Ser. No. 639,208
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—342 **5 Claims**

1. A cellular antiglare panel comprising a plurality of identical interlocked strips, each strip being formed of a series of "W" shapes having two connected short legs formed at right angles to each other defining a recessed right angle and two long legs each extending at right angles from a respective short leg to define the "W" shapes, the long legs of adjacent "W" shapes being formed at right angles with each other to define a projecting right angle, the exterior surface of the projecting



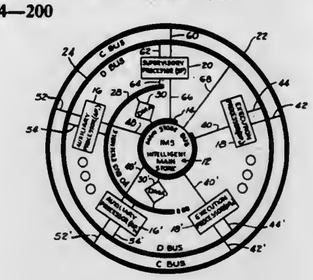
right angles of one strip being positioned within and against the interior surface of the recessed right angles of an adjacent strip, so that the short legs of said adjacent strip overlie the long legs of said one strip to provide contacting surfaces.

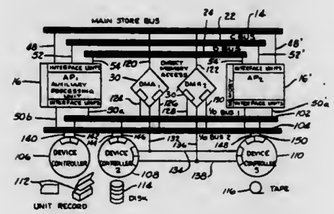
4,516,198
CONTROL SYSTEM FOR DC POWER TRANSMISSION
Göte Liss, Ludvika, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden
Filed Feb. 22, 1983, Ser. No. 468,606
Claims priority, application Sweden, Mar. 4, 1982, 8201341
Int. Cl.³ H02J *3/36*
U.S. Cl. 363—35 **6 Claims**



1. A DC power transmission system comprising
a rectifier station,
an inverter station,
an AC network for each station,
a DC line connecting said stations together,
control means for the system comprising a current control circuit for the transmission system which delivers a common current order to a current regulator for each station, and
a circuit in one of said stations for setting a current margin between the said two stations,
characterized in that
the control means comprises a device for sensing the voltage in the AC network of the inverter station and that
a current limiting circuit is provided in each said station for simultaneous limitation of the current order in both said stations in dependence on a reduction of the voltage in the AC network of the inverter station.

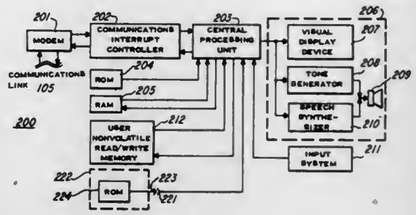
4,516,199
DATA PROCESSING SYSTEM
Gideon Frieder, Williamsville; David T. Hughes, Amherst; Mark H. Kline; John T. Liebel, Jr., both of Williamsville; David P. Meier, Orchard Park, and Edward A. Wolff, Tonawanda, all of N.Y., assignors to Nanodata Computer Corporation, Buffalo, N.Y.
Division of Ser. No. 83,677, Oct. 11, 1979,. This application Dec. 5, 1980, Ser. No. 213,380
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **10 Claims**





1. An input-output arrangement for a data processing system including a main store and at least one device controller, said arrangement comprising:
(a) at least one input-output bus connected to said device controller;
(b) a processor for controlling said input-output bus;
(c) first connecting means separate from said input-output bus for connecting said processor to said main store;
(d) second connecting means for connecting said processor to said input-output bus;
(e) a direct memory access controller;
(f) third connecting means for connecting said direct memory access controller to said main store;
(g) fourth connecting means for connecting said direct memory access controller to said input-output bus; and
(h) fifth connecting means separate from said input-output bus for connecting said direct memory access controller to said device controller;
(i) said first, second and fourth connecting means enabling said processor to initiate transfer of information through said direct memory access controller while itself simultaneously participating in information transfer and maintaining control over said direct memory access controller, said first, second, third, fourth and fifth connecting means allowing parallel transfers of information between said processor and said main store, between said direct memory access controller and said main store, between said processor and said device controller and between said direct memory access controller and said device controller.

4,516,200
DATA COMMUNICATIONS SYSTEM WITH HOST CHARACTER TERMINAL MODE
E. Earle Thompson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 18, 1981, Ser. No. 264,905
Int. Cl.³ H04J *6/00*
U.S. Cl. 364—200 **19 Claims**



1. A data communication system comprising:
a host data processing system having a condition data signal generating means for generating a set of a plurality of condition data signals each having a corresponding condition name signal, a condition name signal generating means for generating a sequence of condition name signals and for generating a repeat signal, a data transmission means for transmitting data, and a mode selection means connected to said data transmission means for entering a condition data transmission mode thereupon causing said data transmission means to transmit a condition data transmission mode signal and thereafter to transmit said set of condition data signals, and for entering a condition name transmission mode and thereupon causing said data transmission means to transmit a condition name transmission mode signal and thereafter to transmit said sequence of condition name signals and said repeat signal;
a data communication means connected to said data transmission means of said host data processing system for communication of said data transmitted by said data transmission means; and
a remote data processing system having a receiving means connected to said data communication means for receiving data from said host data processing system, a memory means having a plurality of memory locations for storing data, a memory access means for recalling data from selected memory locations of said memory means, mode determination means connected to said receiving means for entering a condition data transmission mode upon receipt of a condition data transmission mode signal whereupon the next received condition data signals are stored in memory locations of said memory means and for entering a condition name transmission mode upon receipt of a condition name transmission mode signal whereupon said memory access means recalls condition data signals from memory location is of said memory means corresponding to the next received condition name signals, an output means for generating an operator perceivable indication corresponding to said recalled condition data signals, a condition name signal storage means connected to said memory access means for storing received condition name signals therein, and a repeat means connected to said receiving means and said condition name signal storage means for initiating recall of said condition name signals stored therein for application to said memory access means to recall condition data signals from said memory means corresponding to said condition name signals recalled from said condition name signal storage means upon reception of said repeat signal, whereby said output means repeats said operator perceivable indication corresponding to said condition name signals stored in said condition name signal storage means.

4,516,201

MULTIPLEXED DATA COMMUNICATIONS USING A QUEUE IN A CONTROLLER

Robert G. Warren, Glasgow, and Michael A. Robertson, Stirling, both of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

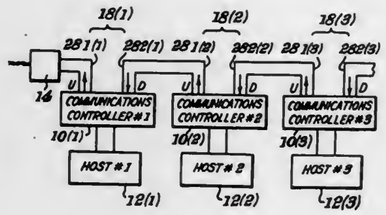
PCT No. PCT/GB80/00161, § 371 Date May 28, 1981, § 102(e) Date May 28, 1981, PCT Pub. No. WO81/01064, PCT Pub. Date Apr. 16, 1981

Continuation-in-part of Ser. No. 191,467, Sep. 26, 1980, abandoned. This PCT application Oct. 9, 1980, Ser. No. 269,058

Claims priority, application United Kingdom, Oct. 9, 1979, 7935042

Int. Cl.³ G06F *1/00, 5/04, 9/06*

U.S. Cl. 364—200 **19 Claims**



1. A communications controller for receiving and processing data from a data processor for use by a data link and for receiving and processing data from said link for use by said processor, said controller comprising;

a bus for receiving from said processor a mixed succession of data characters for transmission by said data link and command characters not for transmission by said data link, said command characters including a mixture of direct command characters for immediate, pre-emptive response thereto by said controller and queued command characters for response thereto by said controller subsequently to obeying the previously-received queued command character or to transmitting the previously received data character,

a queue, coupled to receive said characters on said bus, operable to be advanced to store the character present on said bus or to deliver up a previously stored character, stored characters being delivered up in the same serial order as that of their receipt, coupled to receive a first indication, from said processor, that said character on said bus is a queued command character and operable to respond thereto to store a flag in association therewith,

a gate, coupled to receive said delivered-up characters from said queue and operable in response to the receipt of said flag to separate out said queued command characters, and

a multiplexer, coupled to receive, from said processor, said first indication, a second indication that the character on said bus is a direct command character and third indication that the character on said bus is a data character, coupled to respond to said flag, delivered up by said queue, coupled to receive a first, fast clock signal, coupled to receive a second clock signal whose rate is sympathetic to the rate of data transmission by said link, and operable to supply a queue clock signal for controlling the advancing of said queue, where

when in receipt of said first indication, said multiplexer provides no queue clock signal, when in receipt of said second or said third indications said multiplexer provides said first, fast clock signal as said queue clock signal for the loading of the characters on said bus into said queue, when in receipt of said flag said multiplexer provides said first, fast clock signal as the queue clock signal for the rapid delivering up of a queued command from said queue, and when in receipt of none of said first, second or third indications nor of said flag said multiplexer provides said second clock signal as said queue clock signal for the delivering up of data characters for transmission by said link.

4,516,202

INTERFACE CONTROL SYSTEM FOR HIGH SPEED PROCESSING BASED ON COMPARISON OF SAMPLED DATA VALUES TO EXPECTED VALUES

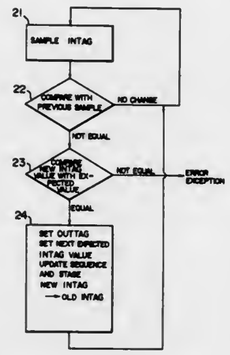
Yoshihiko Kadowaki, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,498

Claims priority, application Japan, Jul. 31, 1980, 55-105241

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—200 **19 Claims**



1. An interface control system comprising:

(a) means coupled to an interface for sampling an input control signal at said interface;

(b) first compare means connected to said sampling means for comparing a current sampled value of said input control signal sampled by said sampling means with an expected value for the input control signal;

(c) response means connected to said first compare means for generating a response signal in response to said input control signal and a next expected value signal representing the expected value of the next input control signal in accordance with a predetermined interface operation specification when said first compare means indicates an equality between the current sampled value and the expected value; and

(d) means connected to said sampling means for storing a sampled value to provide a previously sampled value signal, second compare means connected to said sampling means and said storing means for comparing the current sampled value of said input control signal with said previously sampled value signal, and means connected to said first and second compare means for generating an abnormal condition signal when both of said first and second compare means indicate compare unequal conditions.

4,516,203

IMPROVED APPARATUS FOR ENCACHING DATA WHOSE VALUE DOES NOT CHANGE DURING EXECUTION OF AN INSTRUCTION SEQUENCE

David A. Farber, Jamaica Plain, Mass.; Brett Bachman, Shaker Heights, Ohio; John F. Pilat, Raleigh, N.C., and Walter A. Wallach, Jr., San Jose, Calif., assignors to Data General Corporation, Westboro, Mass.

Filed Sep. 11, 1981, Ser. No. 302,000

Int. Cl.³ G06F *9/30*

U.S. Cl. 364—200 **21 Claims**

1. In an improved digital computer system including

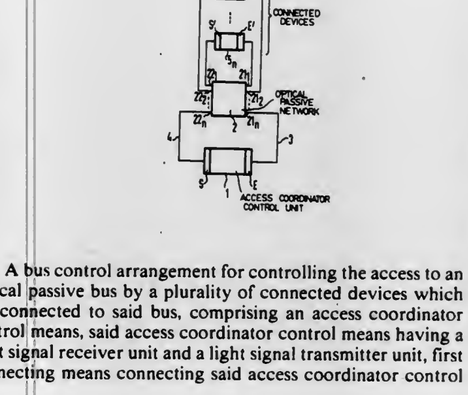
(A) memory means for performing memory operations including storing and providing items of data including instructions in response to memory commands, each one of said memory commands specifying one said memory operation and an address of one of said items of data in said memory means and

(B) processor means connected to said memory means for processing said items and providing said memory commands in response to said instructions, and wherein

said instructions are contained in instruction sequences of said items and

said items include operands associated with said instruction sequences and representing said items processed by said processor means while executing said instruction sequences,

encachement means comprising:



(2) an encacheable item of said items associated with an execution of one of said instruction sequences by said processor means, said encacheable item having a value which remains unchanged throughout said execution;

(2) a code specifying said encacheable item contained in certain said operands;

(3) cache means in said processor means for storing said encacheable item and outputting said encacheable item in response to said operands containing said code; and

(4) cache loading means for loading said encacheable item into said cache means.

4,516,204

OPTICAL PASSIVE BUS CONTROL SYSTEM

Anton Sauer, and Hans Thinschmidt, both of Germering, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,666

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123448

Int. Cl.³ G06F *3/04, 15/16*; G02B *5/14*

U.S. Cl. 364—200 **15 Claims**

1. A bus control arrangement for controlling the access to an optical passive bus by a plurality of connected devices which are connected to said bus, comprising an access coordinator control means, said access coordinator control means having a light signal receiver unit and a light signal transmitter unit, first connecting means connecting said access coordinator control means with said bus over a first light signal transmission line, whereby outputs of said connected devices are connected to said light signal receiver unit, second connecting means connecting said access coordinator control means with said bus over a second light signal transmission line, whereby the output of said light signal transmitter is connected to the light signal inputs of said connected devices, said first and second connecting means comprising light wave guides having the shortest possible length, said access coordinator control means having means responsive to specific operating conditions on said passive bus for selectively selecting an asynchronous of a synchronous operating mode for access to the bus by said connected devices.

4,516,205

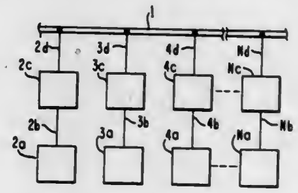
ACCESS CONTROL OF DATA TRANSMISSION NETWORK

Hubert I. Eing A., J. B. Pastene 3111, Santiago 10, Chile, and Rolf D. Klein, Strassberger Str. 34, 8000 Munchen 40, Fed. Rep. of Germany

Filed Nov. 9, 1982, Ser. No. 440,373

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **9 Claims**



1. In a system for transmission of message blocks from one of a plurality of data stations, each data station having a unique address, through one of a like plurality of communication units, each communication unit uniquely associated with one of the data stations, over a data bus, through another of the plurality of communication units, to another of the plurality of data stations, the improvement in which each communication unit comprises:

first means communicating with the associated data station for permitting transmission of message blocks between said communication unit and the data station;

second means coupling the communication unit to the data bus for permitting transmission of message blocks, synchronization signals, and control signals between the communication unit and the data bus;

third means, responsive to receipt by said second means of a synchronization signal at the time a message block is available at said first means for transmission by the communication unit by way of said second means to the data bus, for transmitting the logical ones of an unique encoded representation of the address of the associated data station to said second means for transmission to the data bus, said logical ones being transmitted to the data bus in sequence during respective bit intervals associated with such logical ones;

fourth means for monitoring the data bus for logical ones generated by any other of said plurality of communication units during respective bit intervals associated with the logical zeros of the unique encoded representation;

fifth means, responsive to monitoring of a logical one signal on the data bus by said fourth means, for terminating transmission of the logical ones of the encoded representation until receipt of the next synchronization signal by said second means; and

sixth means, responsive to the transmission of all of the logical ones of the complete encoded representation to the data bus without the monitoring of a logical one signal by said fourth

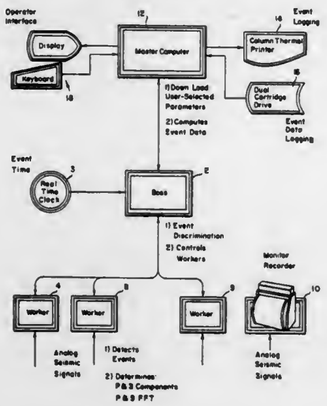
means and the accompanying termination of transmission of the encoded representation by said fifth means in response to the monitoring of a logical one by said fourth means, for initiating transmission from the communication unit to the data bus of a signal including the message block, a portion of said signal constituting a synchronization signal.

4,516,206

POST-PROCESSING OF SEISMIC PARAMETER DATA BASED ON VALID SEISMIC EVENT DETERMINATION

Thomas V. McEvilly, 733 Alvarado Rd., Berkeley, Calif. 94705

Filed Oct. 21, 1982, Ser. No. 435,596
Int. Cl.³ G01V *1/30*
U.S. Cl. 364—421 **4 Claims**



1. A method for detecting a valid seismic event, which comprises the steps of

(a) continuously monitoring in dedicated WORKER PROCESSORS each of a plurality of physically separated stations a seismic signal (X) corresponding with the ambient seismic background level, including the steps of

(1) digitizing the seismic signal and removing the mean therefrom to produce a first time series ($X(t_i)$);

(2) computing from the first time series a new time series in accordance with the formula:

$$X'(t_i) = \frac{\sum_{i=i-n}^{i} |X(t_j)|}{\quad};$$

(3) forming long-term (LTA) and short-term (STA) averages of the new time series ($X'(t_i)$); and

(4) producing a first abnormal-condition trigger signal when the ratio of short term average to long term average exceeds a first given value (C_1);

(b) determining, in response to said trigger signal, the first time of onset (PT) of the first abnormal condition;

(c) processing a primary segment (P) of said first time series($X(t_j)$) beginning at the onset time (PT) to determine amplitude (PA), quality (PQ), and polarity (PP) values, said primary segment being subsequently Fourier transformed to produce primary arrival spectral estimates of low-frequency level, corner-frequency value, and high-frequency slope;

(d) producing a second abnormal-condition trigger signal when the ratio of short term average (STA) to the P-amplitude (PA) exceeds a second given value (C_3);

(e) determining, in response to said second trigger signal, the second time of onset (ST) of the second abnormal condition;

(f) processing a secondary segment (S) of said first time series ($X(t_i)$) beginning at the second onset time (ST) to determine amplitude (SA) and quality (SQ) values, said secondary segment being subsequently Fourier transformed to produce secondary arrival spectral estimates of low-frequency level, corner-frequency value, and high-frequency slope;

(g) monitoring in a BOSS processor (2) the status of the dedicated WORKER processors to determine, upon the occurrence of a first abnormal-condition trigger signal in any one thereof, whether or not the first abnormal condition indicates a valid seismic event, including the step of determining whether a sufficient number of onset times (PT) are received during a given time window (TW);

(h) aborting, when the WORKER abnormal conditions are not a valid seismic event, the processing sequences underway in the various WORKER processors;

(i) collecting in the BOSS processor, when the WORKER abnormal conditions represent a valid seismic event, all the values computed by the WORKERS for the event, and returning the WORKER processors to their initial monitoring status; and

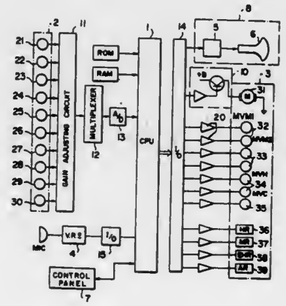
(j) transmitting the values collected in the BOSS processor to a MASTER computer for processing the valid seismic event.

4,516,207

APPARATUS FOR CONTROLLING AIR CONDITIONER BY VOICE

Masakazu Moriyama, and Takao Saito, both of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 24, 1982, Ser. No. 352,022
Claims priority, application Japan, Mar. 9, 1981, 56-33472
Int. Cl.³ G05D *23/00;* **B60H** *3/00;* **G06F** *15/20*
U.S. Cl. 364—424 **6 Claims**



4. Apparatus for controlling an air conditioner by voice commands, said air conditioner being controlled under a plurality of modes including a fresh air mode and a recirculated air mode, the apparatus comprising:

a voice recognizing means for recognizing predetermined voice commands announced by an operator to provide output signals corresponding to said voice commands, said predetermined voice commands corresponding to said modes of the air conditioner, respectively;

a central processing unit for changing the fresh air mode to the recirculated air mode in response to said output signal indicative of the recirculated air mode, for holding the recirculated air mode during a first predetermined period of time after the fresh air mode is changed to the recirculated mode, for changing the recirculated mode to the fresh-recirculated air mixture mode when the first predetermined period of time has elapsed, for

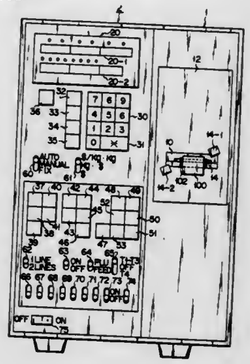
holding the fresh-recirculated air mixture mode during a second predetermined period of time after the recirculated air mode is changed to the fresh-recirculated air mixture mode, and for changing the fresh-recirculated air mixture mode to the fresh air mode when the second predetermined period of time is elapsed.

4,516,208

LABEL ISSUING APPARATUS WITH PROGRAMMABLE LABEL FEED

Yasuhiro Sakura, Mishima, Japan; Yasushi Nakajima, Richmond, England; Noriyasu Tajima, Mishima, and Hitoshi Nimura, Shizuoka, both of Japan, assignors to Tokyo Electric Co. Ltd., Tokyo, Japan

Filed Nov. 16, 1981, Ser. No. 321,395
Claims priority, application Japan, Nov. 21, 1980, 55-164248; Nov. 21, 1980, 55-164249; Nov. 21, 1980, 55-164250; Nov. 21, 1980, 55-164251
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—466 **10 Claims**



1. A label issuing apparatus comprising:

label feed means for feeding labels adhered on a label carrier;

separator means for peeling said label off said label carrier,

label detecting means disposed in the vicintity of said separator means for detecting that portion of said label which is peeled of said label carrier by said separator means;

printing means for printing said label;

data storing means having first and second memory areas for respectively storing first and second feed distance data;

keyboard means having a plurality of keys selectively operative to write first and second feed distance data into said first and second memory areas said keyboard means including a first key, a second key and a plurality of numeral entry keys, and wherein said first feed distance data is produced and written into said first memory area by operating said first and numeral entry keys, and said second feed distance data is produced and written into said second memory area by subsequently operating said second and numeral entry keys; and

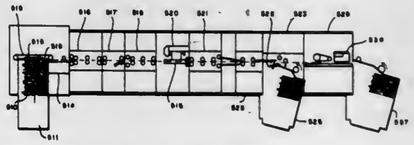
data processing means for controlling said label feed means to feed said label carrier through a first distance defined by the first feed distance data stored in said first memory area after said label detecting means has detected a peeled-off front edge of said label and to set at least one of said labels in a first printing position, and after the label is printed in the first printing position, to feed said label carrier through a second distance defined by the second feed distance data stored in said second memory area from the first printing position.

4,516,209

POSTAGE METERING SYSTEM HAVING WEIGHT CHECKING CAPABILITY

Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 9, 1983, Ser. No. 465,131
Int. Cl.³ G06F *15/20;* **G01G** *23/38*
U.S. Cl. 364—466 **15 Claims**



1. A postage metering system, comprising:

(a) a postage meter subsystem, said meter subsystem further comprising printing means for printing indicia corresponding to a particular postage value selected for an item to be mailed;

(b) weighing means for determining if the weight of said item is within a preselected range, said weighing means being operatively associated with said printing means so that said printing means may print said indicia only if the weight of such item is within said range;

(c) setting means for setting said printing means so that said indicia correspond to a particular selected postage value; and,

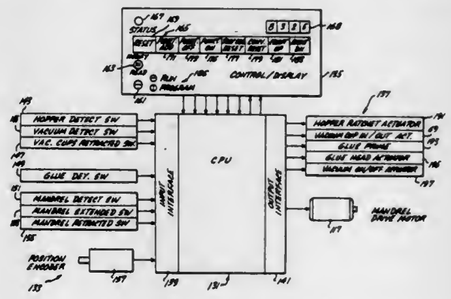
(d) determining means, operatively connected to said weighing means, for receiving data from which said particular selected postage value may be determined, and for determining said particular value, and for setting said preselected range as a predetermined function of said particular value.

4,516,210

PROGRAMMABLE TRAY FORMING MACHINE

Douglas F. Dahlke, Seattle, Wash., assignor to Marq Packaging Systems, Inc., Yakima, Wash.

Filed Apr. 18, 1983, Ser. No. 485,909
Int. Cl.³ G06F *15/46;* **B31B** *3/02*
U.S. Cl. 364—471 **16 Claims**



1. A programmable tray forming machine comprising:

(A) conveyor means for receiving tray blanks at a hopper station and moving said tray blanks from said hopper station through a glue station to a mandrel station;

(B) a hopper located at said hopper station for supplying tray blanks to said conveyor means;

(C) controllable tray blank loading means located at said hopper station for moving tray blanks one at a time from said hopper to said conveyor means;

(D) controllable glue means located at said glue station for

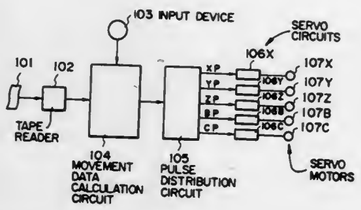
selectively applying glue to tray blanks moved through said glue station by said conveyor means;
(E) a forming die located at said mandrel station;
(F) controllable mandrel means located at said mandrel station and aligned with said forming die for pressing tray blanks moved to said mandrel station by said conveyor means into said forming die to form said tray blanks into trays;
(G) a control/display unit for receiving programming information and instructions entered by an operator and displaying operator usable alphanumeric information;
(H) a plurality of sensing devices located at said hopper, glue and mandrel stations for sensing the movement of said tray blanks by said conveyor means and for sensing the operation of said controllable tray blank loading means and said controllable mandrel means;
(I) a plurality of controlled devices coupled to said controllable tray blank loading means, said controllable glue means and said controllable mandrel means; and,
(J) a central processing unit coupled to said control/display unit, said plurality of sensing devices and said plurality of controlled devices for:
(1) receiving and storing said programming information and instructions entered by an operator;
(2) receiving from said plurality of sensing devices information regarding the movement of tray blanks by said conveyor means, the operation of said controllable tray blank loading means and the operation of said controllable mandrel means; and,
(3) controlling said controllable tray blank loading means, said controllable glue means and said controllable mandrel means via said plurality of control devices such that:
(a) tray blanks are moved from said hopper to said conveyor means one-a-time by said controllable tray blank loading means;
(b) said glue means selectively applies glue to said tray blanks as said tray blanks are moved through said glue station by said conveyor means; and,
(c) trays are formed by said mandrel means and said forming dies from said tray blanks are moved to said forming station by said conveyor means.

4,516,211

NUMERICAL CONTROL SYSTEM

Ryoichiro Nozawa, Shibuya; Tsuyoshi Nagamine; Hideaki Kawamura, both of, Hachioji, and Kentaro Fujibayashi, Musashino, all of Japan, assignors to Fujitsu Fanuc Limited, Minamitsuru, Japan

PCT No. PCT/JP81/00296, § 371 Date Jun. 18, 1982, § 102(e) Date Jun. 18, 1982, PCT Pub. No. WO82/01599, PCT Pub. Date May 13, 1982
PCT Filed Oct. 23, 1981, Ser. No. 394,914
Claims priority, application Japan, Oct. 23, 1980, 55-148759
Int. Cl.[3] G06F *15/46;* **G05B** *19/18*
U.S. Cl. 364—474 **5 Claims**



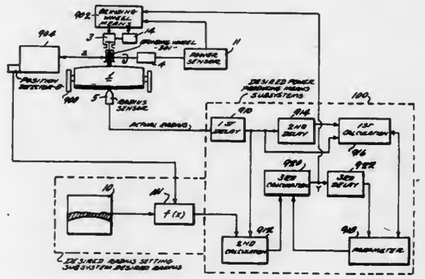
1. A numerical control method for a tool or a table which is rotated in at least one of a vertical and a horizontal direction so as to control the axial direction of the tool relative to a workpiece and where the tool or table is also moved in the directions of X-, Y- and Z-axes to subject the workpiece to desired three-dimensional machining, said numerical control method comprising the steps of:
entering command data which includes a position (X, Y, Z) of a front end of said tool and a vector (I, J, K) of the tool axis direction of said tool via first input means;
entering a tool length (l), measured from a center of rotation of said tool to the front end of said tool, via second input means separate from the first input means;
calculating orthogonal coordinate values (x, y, z) of the center of rotation of said tool and a position (b, c) of a rotational angle of said tool or said workpiece from the command data and the length (l) via a numerical control device; and
executing interpolation computations in accordance with the calculated resultant positional information of the tool so as to move said tool to a commanded position.

4,516,212

CONTROL SYSTEM FOR ROLL GRINDING MACHINE

Kazuo Nagashima, Shizuoka, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1982, Ser. No. 406,911
Claims priority, application Japan, Aug. 20, 1981, 56-130732
Int. Cl.[3] G06F *15/46;* **G05B** *19/18*
U.S. Cl. 364—475 **28 Claims**



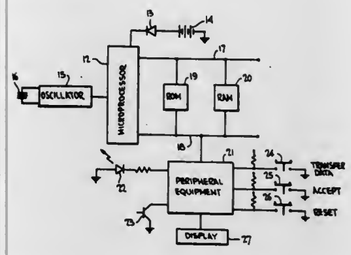
1. A control system for a roll grinding machine, comprising:
means for rotating a roll to be ground;
a grinding wheel for grinding the roll;
means for rotating the grinding wheel;
means for moving the grinding wheel longitudinally parallel to an axis of the roll;
means for sensing the power being expended by the grinding wheel rotating means and generating an actual power signal indicative thereof;
means for detecting an actual radius of the roll at the longitudinal position of the grinding wheel and providing an actual radius signal indicative thereof;
means for detecting the longitudinal position of the grinding wheel and generating a longitudinal position signal indicative thereof;
desired radius producing means for producing a desired radius signal representing a desired radius corresponding to the longitudinal position signal; and
desired power producing means for producing, responsive to a predetermined function of the actual and desired radius signals, a desired power signal; and
grinding wheel driving means for pressing said grinding wheel against said roll with a pressure that is a function of said desired power signal and said actual power signal so as to minimize any difference between actual and desired power.

4,516,213

MULTIPLE RATE METERING SYSTEM

Robert A. Gidden, Brampton, Canada, assignor to E. Grant Deans, Toronto, Canada

Filed Feb. 1, 1982, Ser. No. 344,500
Int. Cl.[3] G01R *21/00*
U.S. Cl. 364—483 **11 Claims**



1. A multiple rate metering system suitable for use with an existing single rate, electromechanical electricity meter employing an Eddy current disc mounted in a casing, comprising:
a first retrofit unit mountable inside the casing of the electricity meter;
and a second unit, which is portable so that it can be brought into close proximity with said first unit by a meter reader;
said first unit comprising a sensor for generating pulses in response to rotation of the Eddy current disc, a first microprocessor, a first read-only-memory for storing a program to control the operation of said first microprocessor, a random-access-memory, said first microprocessor being programmed to store data in said random-access-memory related to the pulses generated in different predetermined periods during which different electricity rates apply, and first coupling means for establishing non-contact communication through the casing with said second unit when said second unit is brought into close proximity with said first unit;
said second unit comprising second coupling means cooperating with said first coupling means to transmit and receive data to and from said first unit, a second microprocessor, a second read-only-memory for storing a program controlling the operation of said second microprocessor, a storage medium for storing data from said second microprocessor, display means, first actuator means operable by the meter reader to transmit a signal through said first and second coupling means to instruct said first microprocessor to transfer data relating to the pulses generated in said different predetermined periods to said second unit, said second microprocessor being programmed to display said data in said display means, and second actuator means operable by the meter reader to accept said data and instruct said second microprocessor to store said data in said storage medium with appropriate customer identification for subsequent retrieval at a central location.

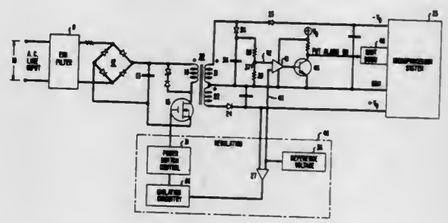
4,516,214

POWER FAILURE ALARM CIRCUIT PERMITTING ORDERLY SHUTDOWN OF MICROPROCESSOR LOAD

Richard C. Ray, Randolph Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 12, 1982, Ser. No. 441,108
Int. Cl.[3] G06F *15/56*
U.S. Cl. 364—483 **6 Claims**

1. A converter adapted to be energized from an AC line and including an alarm circuit for notifying a shutdown control of a microprocessor load that AC line power is about to fail comprising:
means for storing a replica of voltage of a primary side of the converter on the secondary side including capacitive storage means in a circuit shunting a secondary winding of a power transformer of the converter,
a comparator for comparing a voltage stored in the capacitive storage means with a reference voltage,
an input filter capacitor operative for providing hold over voltage capacity
means, responsive to the comparator, for generating an alarm signal, the alarm circuit being operative for generating an alarm signal indicating impending failure of the AC line power when voltage on the input filter capacitor



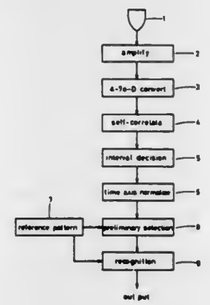
drops to a level at which a predetermined output regulated voltage cannot be maintained beyond a predetermined time,
means for coupling the alarm signal to the shutdown control, comprising a transistor switch coupled to gate a DC energizing voltage to the shutdown control of the microprocessor load, and
voltage regulation circuitry including an error voltage amplifier wherein the comparator and the error voltage amplifier utilize a common reference voltage.

4,516,215

RECOGNITION OF SPEECH OR SPEECH-LIKE SOUNDS

Mitsuhiro Hakaridani; Hiroyuki Iwahashi, both of Nara, and Yoshiki Nishioka, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1982, Ser. No. 416,165
Claims priority, application Japan, Sep. 11, 1981, 56-144449
Int. Cl.[3] G10L *1/00*
U.S. Cl. 364—513.5 **1 Claim**

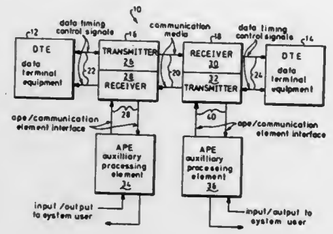


1. A method of speech recognition comprising the steps of creating self-correlation functions for input sound signals, deciding the intervals of the sound signals, normalizing the time axes in conjunction with the sound intervals, and conducting recognition of words or the like through decisions using said self-correlation functions as feature parameters where there is matching with reference patterns,
said method further comprising the step of effecting preliminary selection prior to the final recognition step by means of linear matching using said self-correlation functions of lower degrees.

4,516,216
IN-SERVICE MONITORING SYSTEM FOR DATA COMMUNICATIONS NETWORK

Thomas R. Armstrong, Largo, Fla., assignor to Paradyne Corporation, Largo, Fla.

Continuation of Ser. No. 230,456, Feb. 2, 1981, abandoned, which is a continuation of Ser. No. 17,042, Mar. 2, 1979, abandoned. This application May 10, 1982, Ser. No. 376,741
Int. Cl.³ H04B *3/14*
U.S. Cl. 364—514 **5 Claims**

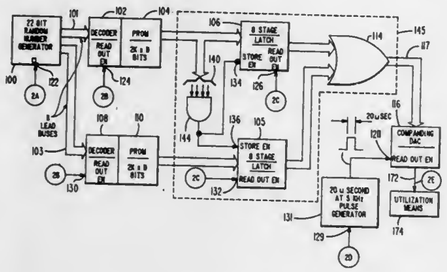


1. In a data communication network for exchanging quadrature amplitude modulated signals between two first and second data communication equipment over a communication channel at least one of said first and second data communication equipment having an auxiliary processing equipment comprising:
eye pattern means for receiving eye pattern signals corresponding to said quadrature amplitude modulated signals;
digital input means for receiving digital control signals from the corresponding digital communication equipment;
analog input means for receiving analog signals from the corresponding digital communication equipment;
signal processing means for analyzing and processing signals from said eye pattern means, digital input means, and analog input means and adapted to generate output signals indicative of the status of said data communication network; and
output means for selectively transmitting said output signals.

4,516,217
EVENT SELECTOR FOR WIDE RANGE PROBABILITY OF OCCURRENCE

Eugene R. Starner, Maple Shade, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 29, 1982, Ser. No. 428,432
Int. Cl.³ H03B *29/00*
U.S. Cl. 364—717 **8 Claims**

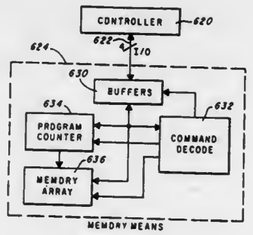


1. An event selector comprising:
a random number generator for randomly generating a first plurality of random number generator addresses, said plurality being equal to the digit two raised to an integer power, said integer being the sum of second and third integers;
first and second memory logic means each having input and output terminals and further having a second and third plurality of storage locations, respectively, said second plurality being equal to the digit two raised to said second integer power and said third plurality being equal to the digit two raised to said third integer power, with each storage location containing a predetermined stored word and each responsive to selected ones of said addresses to output onto said output terminals the contents of the storage locations accessed by said selected addresses;
first output means;
first gating means for gating only the outputted contents of all but a predetermined number of selected storage locations of said first memory means to said first output means and to gate only the outputted contents of said second memory means to said first output means when any of the contents of said predetermined number of selected storage locations are outputted.

4,516,218
MEMORY SYSTEM WITH SINGLE COMMAND SELECTIVE SEQUENTIAL ACCESSING OF PREDETERMINED PLURALITIES OF DATA LOCATIONS

Stephen P. Hamilton, Midland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1980, Ser. No. 163,025
Int. Cl.³ G06F *9/32, 13/06, 15/02*
U.S. Cl. 364—900 **11 Claims**

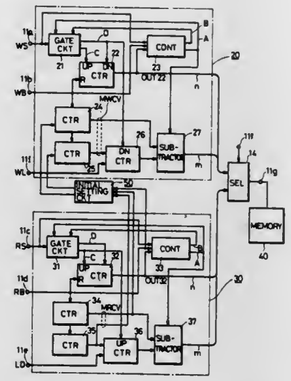


1. A memory system comprising:
a bidirectional bus means coupled to a source for providing command signals, address signals and data signals;
a command decode means coupled to said bus means for generating respective first, second and at least a third decode outputs in response to receipt of first, second and at least a third command signals;
a program counter means coupled to said bus means and to said command decode means for storing therein an address corresponding to an address signal received via said bus means upon receipt of said first decode output, for generating an address signal corresponding to said address stored therein upon receipt of said second decode output, and for sequentially and repetitively generating an address signal corresponding to said address stored therein and incrementing said address stored therein upon receipt of said third decode output, this sequential and repetitive operation being repeated a predetermined number of times corresponding to said third command signal; and
a memory array coupled to said bus means, said command decode means and said program counter means, having a plurality of multibit data words stored at memory locations therein corresponding to said address signals, for providing multibit data words as data signals to said bus means upon receipt of said address signals from said program counter means in response to either said second decode output or said third decode output from said command decode means.

4,516,219
ADDRESS DESIGNATING METHOD OF MEMORY AND APPARATUS THEREFOR

Masayuki Ishida, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,403
Claims priority, application Japan, Dec. 18, 1981, 56-205766; Jun. 21, 1982, 57-10807
Int. Cl.³ G06F *9/32*
U.S. Cl. 364—900 **18 Claims**



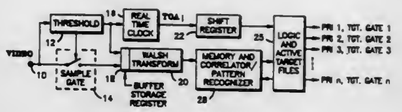
1. A method of designating addresses of a memory by dividing the addresses of the memory into row addresses of row addressing and column addresses of column addressing, said method comprising the steps of,
on the occasion of the writing of the data in said memory,
adding a predetermined integer value B in succession to said column addressing by maintaining said row addressing in a predetermined positive integer value A,
subtracting a predetermined integer value D from said row addressing responsive to reaching of said column addressing to a predetermined positive integer value C, and
subtracting in succession a predetermined integer value B from said row addressing while subtracting said predetermined integer value B in succession from said column addressing in accord therewith, and
on the occasion of the reading of the data from said memory,
adding said predetermined integer value E in succession to said row addressing obtained by subtracting a predetermined integer value F from said predetermined integer value A, while adding said predetermined integer value B in succession to said column addressing in accord therewith,
subtracting a predetermined integer value G from said row addressing responsive to reaching of said column addressing to said predetermined integer value C, and
subtracting said predetermined integer value B in succession from said column addressing by maintaining said row addressing in a predetermined positive integer value H.

4,516,220
PULSE DEINTERLEAVING SIGNAL PROCESSOR AND METHOD

William J. Baumann, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1982, Ser. No. 404,004
Int. Cl.³ G06F *15/336*
U.S. Cl. 364—715 **7 Claims**

1. A pulse deinterleaving signal processor comprising:
an amplitude threshold circuit providing an output signal in response to the application thereto of each input pulse exceeding a predetermined threshold;
a timing circuit connected to receive the output signals from said threshold circuit and provide a time of arrival signal at an output thereof in response to each output signal received from said threshold circuit;
a sampling device connected to receive the input pulses and provide a plurality of samples of each pulse exceeding the predetermined threshold in response to an output signal from said threshold circuit;
a transform circuit connected to receive the plurality of samples from said sampling device and provide a plural point transform, spectral signature of each sampled pulse at an output thereof;

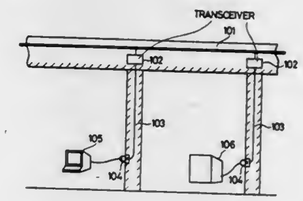


a memory coupled to the output of said transform circuit for receiving and storing each substantially different spectral signature;
a pattern recognizer/correlator connected to receive each spectral signature from said transform circuit and connected to said memory for comparing each received spectral signature with each stored spectral signature to determine pulses from a common source; and
logic circuitry coupled to said correlator and said timing circuit for determining the time interval between pulses from a common source.

4,516,221
DATA COMMUNICATION SYSTEM

Yukio Nakata, Kawasaki; Matsuaki Terada, Machida; Kaoru Suda, Ohmiya; Motoyoshi Morito, Iruma, and Osamu Shiotsu, Ohmiya, all of Japan, assignors to Hitachi, Ltd. and Yagi Antenna Co., Ltd., both of Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,642
Claims priority, application Japan, Jun. 26, 1981, 56-98217
Int. Cl.³ H04B *9/00*
U.S. Cl. 364—900 **8 Claims**



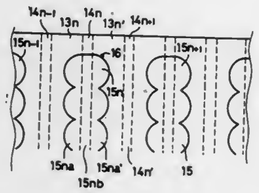
1. A data communication system comprising: first means for receiving and transmitting optical signals, including first light receiving means for receiving light modulated to communicate data and converting said light into an electric signal and first light emitting means for diffusing and radiating light modulated to communicate data in response to the electrical signal obtained from said first light receiving means; a plurality of second means for transmitting and receiving optical signals, each including second light emitting means disposed in optical communication through the air with said first means for converging and radiating light modulated to communicate data in accordance with a received transmission data signal and second light receiving means in optical communication through the air with said first means for receiving the light from said first light emitting means and converting it into an electrical signal representing receiving data; and third means for transmitting the transmission data signal to a second light emitting means and receiving the electric signal representing receiving data from a second light receiving means.

4,516,222

LAMINATED MAGNETIC BUBBLE DEVICE

Yoshifumi Sakurai, Osaka, and Takuhisa Numata, Hyogo, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 435,097
Claims priority, application Japan, Oct. 19, 1981, 56-166722
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—32 **15 Claims**



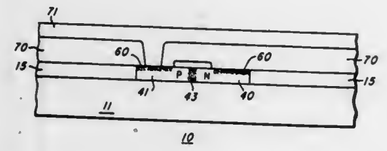
1. A laminated magnetic bubble device comprising at least one thin magnetic film having vertically oriented anisotropy and low coercive force and at least one thin magnetic film having vertically oriented anisotropy and high coercive force laminated with each other on a substrate, said thin film of high coercive force being magnetized to form a plurality of stable magnetic domains whose directions of magnetization are different from each other with their adjoining domains, said magnetic domains in said thin film of high coercive force being arranged in stripes, each stripe extending along a bubble transferring circuit pattern for defining bubble moving region to prevent the bubble from jumping out to another circuit pattern.

4,516,223

HIGH DENSITY BIPOLAR ROM HAVING A LATERAL PN DIODE AS A MATRIX ELEMENT AND METHOD OF FABRICATION

Donald A. Erickson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1981, Ser. No. 289,357
Int. Cl.³ G11C *11/36*
U.S. Cl. 365—175 **2 Claims**



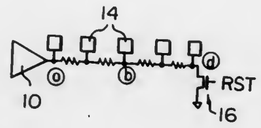
1. A semiconductor read-only memory comprising:
a silicon subtrate;
a first addressing means, comprising an N-type polysilicon region in said substrate;
a second addressing means, comprising a strip of conductive material on said substrate;
a laterial polysilicon PN junction diode, the P-type region being coupled to one of said addressing means, the N-type region being coupled to another of said addressing means, and the PN junction being located laterally between said P-type and N-type regions within said substrate.

4,516,224

SEMICONDUCTOR MEMORY

Keizo Aoyama, Yamato, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 28, 1982, Ser. No. 402,427
Claims priority, application Japan, Jul. 29, 1981, 56-118613
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **13 Claims**



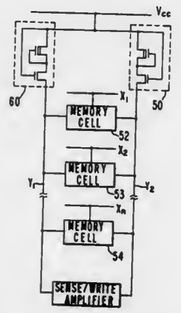
1. A semiconductor memory, comprising:
a plurality of memory cells arranged in a row;
a word line, operatively connected to said plurality of memory cells, for selecting said memory cells, said word line being switched from a selected state to a non-selected state and from the non-selected state to the selected state;
at least one transistor, operatively connected to said word line, for discharging said word line, said at least one transistor having a gate; and
means, operatively connected to said at least one transistor for generating a pulse having a predetermined width by detecting when said word line is switched from the selected state to the non-selected state and for turning on said at least one transistor for a predetermined period of time, thereby accelerating the discharge of the word line from the selected state to the non-selected state.

4,516,225

MOS DEPLETION LOAD CIRCUIT

Bruce A. Frederick, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 18, 1983, Ser. No. 467,676
Int. Cl.³ H03K *17/687;* **G11C** *7/00*
U.S. Cl. 365—203 **3 Claims**



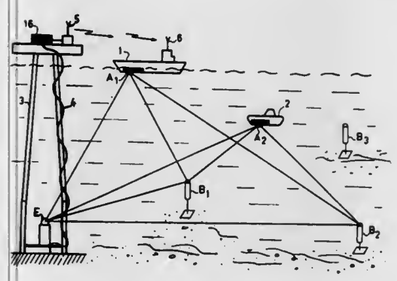
1. A memory circuit comprising:
memory means for storing data;
data input/output means coupled to said memory means by two sense lines for supplying data to and for receiving data from said memory means; and
load means coupled between a voltage source and said sense lines for charging said sense lines to a predetermined voltage, said load means including first enhancement and depletion mode field effect transistors coupled between one of said sense lines and said voltage source and second enhancement and depletion mode field effect transistors coupled between the other one of said sense lines and said voltage source, each of said enhancement mode field effect transistors having a source terminal connected to one of said sense lines, a gate terminal connected to said voltage source, and a drain terminal connected to an intermediate node, each of said depletion mode field effect transistors having a drain terminal connected to said voltage source, a source terminal connected to its corresponding intermediate node, and a gate terminal connected to one of said sense line or said corresponding intermediate node, whereby said predetermined voltage is substantially equal to the voltage of said voltage source minus the threshold voltage of said enhancement mode field effect transistor.

4,516,226

ACOUSTIC POSITIONING SYSTEM

Francois Peynaud; Jean Gosselin; André Farcy, and Bernard Grandvaux, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 24, 1982, Ser. No. 423,321
Claims priority, application France, Jan. 12, 1982, 82 00370
Int. Cl.³ G01S *1/72, 15/88*
U.S. Cl. 367—6 **6 Claims**



1. A system for determining the position of a vessel, comprising:
a beacon located at a first determined place for transmitting at determined times first acoustic pulses having a first frequency f;
at least two transponders located remote from said beacon at second separate determined places for transmitting under the control of said first pulses, second acoustic pulses having second frequencies f_i, each one of said second frequencies being related to one of said at least two transponders; and
computing means integral to said vessel for receiving said first and second acoustic pulses, for determining the elapsed times since the emissions of these pulses, and for computing the positions of the vessel from said elapsed times and from said first and second location places, respectively, of the beacon and said at least two transponders.

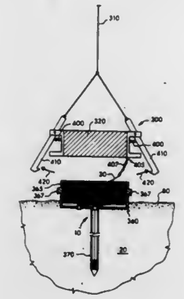
4,516,227

SUBOCEAN BOTTOM EXPLOSIVE SEISMIC SYSTEM

Kenneth R. Wener, and Anthony R. Tinkle, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 4, 1981, Ser. No. 327,315
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—15 **3 Claims**

1. A system utilized with a boat **210** for suboceanic seismic exploration of the earth formations (**20**) beneath the ocean bottom (**80**), said system comprising:
at least one subocean bottom seismic apparatus (**10**), said apparatus comprising:
(a) a seismic device (**340**),
(b) an elongated tube (**330**) for internally holding said seismic device (**340**) near the bottom end of said tube (**330**),
(c) a container (**360**) connected to the upper end of said tube (**330**),
(d) a signal cable (**30**) coiled in said container (**360**), said signal cable (**30**) electrically connected to said seismic device (**340**), and
(e) a plurality of catches (**367**) mounted on the sides of said container (**360**),
a weighted planting unit (**300**) selectively engaging said seismic apparatus (**10**) and having sufficient weight (**320**) for planting said tube (**330**) vertically into said ocean bottom (**20**) as said planting unit (**300**) is lowered, said weighted planting unit comprising:
holding arms (**410**) on said planting unit (**300**) and operatively engaging said catches (**367**) when said planting unit and said apparatus are lowered, and



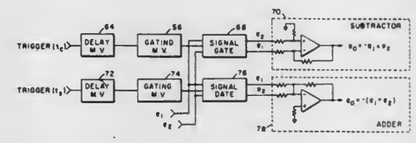
means (**400**) operative on said holding arms (**410**) for releasing said holding arms (**410**) from said catches (**367**) after said apparatus (**10**) has been implanted beneath said oceam bottom (**80**), and
means (**220**) on said boat (**210**) for lowering said planting unit (**300**) attached to said apparatus (**10**) into said ocean thereby planting said apparatus (**10**) into said ocean bottom (**80**) so that said planting unit automatically releases from said apparatus (**10**) after implantation, said lowering means (**220**) being further capable of raising said planting unit (**300**) and signal cable after said release to the surface of said ocean, said apparatus (**10**) also being capable of being retrieved from said ocean bottom by said lowering means through selective connection to said signal cable.

4,516,228

ACOUSTIC WELL LOGGING DEVICE FOR DETECTING COMPRESSIONAL AND SHEAR WAVES

Joseph Zemanek, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,199
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—75 **1 Claim**



1. A well logging device for continuously logging both the compressional and shear wave transmission characteristics of formations surrounding a borehole comprising:
(a) a multidirectional acoustic transmitter for imparting compressional waves into the formations surrounding the borehole,
(b) a point force acoustic transmitter for imparting shear waves into the formations surrounding the borehole,
(c) means for triggering said transmitters to alternately impart said compressional and shear waves into said formations,
(d) a receiver mounted on said logging device in spaced

relation from said transmitters, said receiver comprising a bender-type transducer having a single pair of opposed unrestricted piezoelectric planar surfaces, oriented along the longitudinal axis of said tool,

(e) means initiated by the triggering of said multidirectional transmitter for producing a first gating pulse during the expected arrival time of a compressional wave at said receiver,

(f) means responsive to said first gating pulse for subtracting the voltages produced across each of said piezoelectric planar surfaces of said receiver in response to a compressional wave,

(g) means initiated by the triggering of said point force acoustic transmitter for producing a second gating pulse during the expected arrival time of a shear wave at said receiver, and

(h) means responsive to said second gating pulse for adding the voltages produced across each of said piezoelectric planar surfaces of said receiver in response to a shear wave.

4,516,229

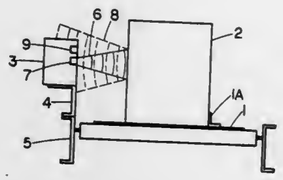
OSCILLATOR PROXIMITY SWITCH

William F. Kearns, 177 E. Weber Rd., Columbus, Ohio 43202

Filed Aug. 9, 1982, Ser. No. 406,309

Int. Cl.³ G01S *15/08, 7/52*

U.S. Cl. 367—95 **5 Claims**



1. An acoustic distance measuring system wherein a remote surface reflects acoustic waves from a transmitter back to a receiver, completing a feedback loop, inducing oscillation in the system when the reflected waves are generally in phase with and reinforcing the transmitted waves, said oscillations rapidly dying out when the reflected waves are roughly one-half wavelength out of phase with the transmitted waves, so that the reflected waves are generally cancelling the transmitted waves, the presence or absence of said oscillations being employed to detect a relatively small change in the position of the remote reflecting surface; comprising a transmitter means for generating acoustic waves; a receiver means oriented to receive acoustic waves from said transmitter after said waves are reflected by a remote surface; an amplifier means which receives its input from the said receiver means and passes its output to the said transmitter means and which oscillates at a characteristic frequency when the feedback path length between the said transmitter and the said receiver is such that the reflected waves are generally in phase with and reinforcing the transmitted waves, said amplifier ceasing to oscillate when the feedback path length between the said transmitter and the said receiver is such that the reflected waves are approximately one-half wavelength out of phase with the transmitted waves so that the reflected waves are generally cancelling the transmitted waves, the oscillations ceasing when the reflected waves are about one-quarter wavelength out of phase with the transmitted waves; a detector means responsive to the presence of said oscillations which changes the state of a relay means to control an external load.

4,516,230

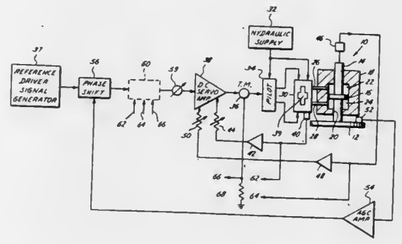
PROTECTIVE DRIVE-LEVEL LIMITER FOR AN ELECTRO-HYDRAULIC VIBRATOR

Kent J. Goodloe, and Ralph A. Landrum, Jr., both of Houston, Tex., assignors to Western Geophysical Company of America, Houston, Tex.

Continuation of Ser. No. 255,205, Apr. 17, 1981, abandoned. This application Aug. 5, 1983, Ser. No. 508,232

Int. Cl.³ G01V *1/04, 1/14, 1/16*

U.S. Cl. 367—190 **5 Claims**



1. An automatic protective drive-level limiting network for use with a seismic vibrator of the type having a ground contacting base plate coupled to a hydraulically-driven linear actuator that is controlled by an electrohydraulic servo mechanism consisting of at least a main servo valve having a valve spool, coupled in series with a pilot valve controlled by an electrical current-driven torque motor that is responsive to an input reference driver signal, said actuator and said valve spool having mechanical displacement limits, comprising:

means for generating first and second error signals when said valve spool and said actuator approach their respective mechanical displacement limits within a predetermined clearance;

means for monitoring the current flow through said torque motor;

means coupled to said monitoring means for generating a third error signal when said current flow in said torque motor exceeds a preselected upper limit; and

means coupled to said error signal generating means for attenuating said input reference driver signal as a function of the larger of said first, second, and third error signals.

4,516,231

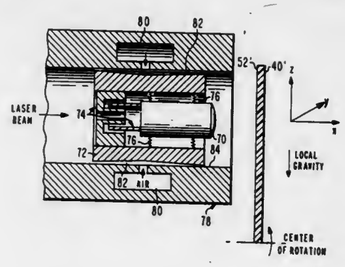
OPTICAL DISC SYSTEM HAVING MOMENTUM COMPENSATION

Theodore D. Michaelis, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,973

Int. Cl.³ G11B *7/12, 21/00*

U.S. Cl. 369—44 **12 Claims**



1. In a data processing system for use in recording or retrieving information, said information being recorded in tracks on a surface of a disc-shaped record medium, said system comprising support means for supporting said data processing system, transducer means for recording or retrieving said information in said tracks, motion establishing means for establishing relative motion between said transducer means and said record medium, and means for generating movement of said motion establishing means, said movement producing a counter movement, said counter movement tending to move said support means, an improvement for absorbing said counter movement from said support means, said improvement comprising:

a momentum compensation mass movably positioned intermediate said motion establishing means and said support means, said momentum compensation mass decoupling said motion establishing means from said support means, said momentum compensation mass reactively coupled to said motion establishing means for absorbing said counter movement produced by said movement of said motion establishing means;

said momentum compensation mass having weight greater than the weight of said motion establishing means;

said momentum compensation mass moving in reaction to movement of said motion establishing means, said momentum compensation mass moving in an opposite direction to, and with smaller velocity than, said motion establishing means.

4,516,232

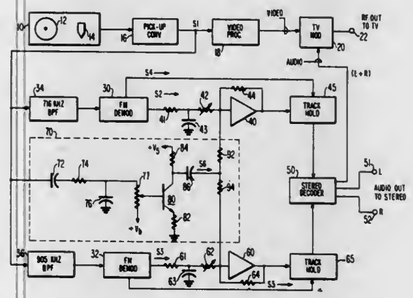
VIDEO DISC PLAYER WITH COMPENSATION FOR STYLUS HOLDER MECHANICAL RESONANCE

John A. van Raalte, and George H. N. Riddle, both of Princeton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 26, 1982, Ser. No. 382,199

Int. Cl.³ G11B *9/06;* **H04N** *5/76*

U.S. Cl. 369—126 **9 Claims**



1. A video disc player for playback of video disc records of the capacitive information storage type, comprising:

a capacitance sensing pick-up cartridge including a stylus supported by a stylus holder, said stylus holder being mechanically resonant at a frequency within an audio frequency range;

pick-up converter means coupled to said stylus for providing a broadband output signal inclusive of an audio FM carrier wave subject to modulation by said mechanically resonant stylus holder;

first means for demodulating the audio FM carrier wave to provide a baseband audio output signal inclusive of a noise component representative of the mechanical resonance of said stylus holder; and

second means for linearly combining said baseband audio output signal of said first means with an un-demodulated component of the broadband output signal produced by said pick-up converter means to provide a resultant audio output signal in which the mechanical resonance induced noise component is attenuated.

4,516,233

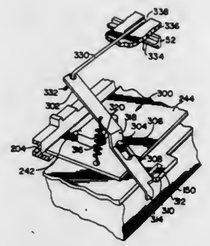
DISC RECORD PLAYER HAVING PLAYER CONTROL APPARATUS

Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1983, Ser. No. 556,254

Int. Cl.³ G11B *17/04, 25/04, 5/82*

U.S. Cl. 369—79 **7 Claims**



1. In a player for recovering prerecorded information from a turntable-supported disc record by a signal pickup when pickup/record relative velocity is established; said signal pickup being housed in a carriage, which is translatably mounted in said player between an off position out of registry with, and an end-of-play position in registry with said turntable-supported record; said record being removably received in a protective caddy comprising a jacket and a record retaining spine; said spine and an associated record forming a record/spine assembly; said player being further equipped with a record extraction mechanism which withdraws said record/spine assembly from said jacket for retention inside said player upon jacket retraction subsequent to caddy insertion into said player; said carriage being driven toward said record for playback, and, after playback, driven to a standby position near said off position; an empty caddy being inserted into said player for retrieving said retained record/spine assembly; said carriage being driven to said off position upon retrieval of said record/spine assembly from said player; player control apparatus comprising:

(A) a switch subject to conditioning in an off state and an on state to, respectively, turn off and turn on power to said player;

(B) a switch actuating lever movably mounted in said player between a first position and a second position; said lever being displaced to said second position in response to the presence of said spine in said player to turn on said switch; said lever, when occupying said second position thereof, allowing to-and-fro motion of said carriage without hindrance; said lever moving back to said first position thereof in the absence of said spine in said player during the motion of said carriage to said off position to turn off said switch.

4,516,234

OPTICAL RECORDING SYSTEM

Shiro Nakagawa, and Akihiko Kuroiwa, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,556

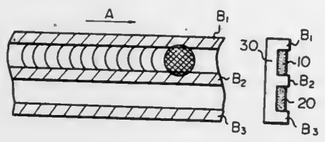
Claims priority, application Japan, Jun. 24, 1981, 56-96759

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—109 **5 Claims**

1. An optical recording system comprising a laser beam source; modulation means for modulating the intensity of the laser beam of said laser beam source; separation means which passes the beam from said laser beam source but separates a reflection beam in the opposite direction; means for converting optical energy to electrical energy to provide reproduced signal according to the separated reflection beam from said separation means; focusing lens for focusing the beam on the surface of the recording medium; wherein said recording medium is made of heat-meltable material which is melted by

illuminating a laser beam to provide a pit corresponding to data to be stored; and wherein relative movement of said recording medium to the laser beam is such that the spacing between each adjacent pit in the relative movement direction of a recording medium and a laser spot on the recording medium is less than a diameter of a laser spot, which is defined by the threshold value of the energy of the laser beam for melting the recording medium.

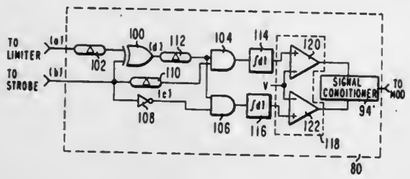


4,516,235

DYNAMIC RECORD LEVEL CONTROL FOR OPTICAL DISC RECORDER

Richard J. Tarzaiski, Magnolia, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 28, 1982, Ser. No. 437,264
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—116 **4 Claims**



1. In a data processing system for use in recording or retrieving information signals, said information signals being recorded in tracks on a surface of a record medium, an apparatus comprising:

recorder means for recording said information signals in said tracks on said record medium;

control means for controlling said recorder means to operate at a record level, said record level being controlled such that surface effects are produced on said record medium;

retrieve means for retrieving said information signals from said record medium, said retrieve means being arranged to read said information signals temporally after said information signals are recorded by said recorder means;

detector means for detecting variations in the content of said retrieved information signals, said detector means further including means responsive to said retrieved information signals for generating first and second derived information signals, and means for exclusively OR-ing said first derived information signals with said second derived information signals to effect said variations; and

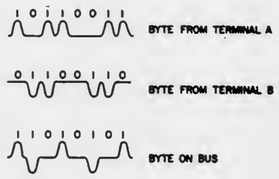
adjustment means responsive to said detector means for dynamically adjusting said control means to maintain said record level at a level such that said surface effects are representative of said information signals.

4,516,236

FULL-DUPLEX TRANSMISSION OF BIT STREAMS SERIALLY AND IN BIT-SYNCHRONISM ON A BUS BETWEEN TWO TERMINALS.

Faruk Hadziomerovi , Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 26, 1983, Ser. No. 535,423
Int. Cl.³ H04B *1/56*
U.S. Cl. 370—24 **6 Claims**



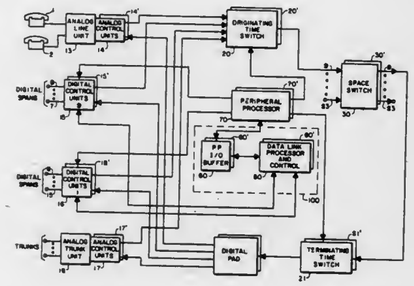
4. Apparatus comprising a bus and two terminals coupled thereto for full-duplex transmission of bit streams serially and in bit-synchronism therebetween, each terminal comprising means for supplying a bit stream to be transmitted to the bus in the form of a unipolar pulsed signal, the polarities of the unipolar pulsed signals supplied to the bus by the two terminals being opposite to one another, each terminal further comprising means responsive to pulses on the bus for producing a received bit stream, and an exclusive-OR gate responsive to the received bit stream and to the bit stream transmitted by the terminal to produce a recovered bit stream corresponding to the bit stream transmitted by the other terminal.

4,516,237

REMOTE DATA LINK CONTROLLER HAVING MULTIPLE DATA LINK HANDLING CAPABILITIES

Thomas J. Perry, Phoenix, and Muhammad I. Khera, Glendale, both of Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 22, 1983, Ser. No. 564,138
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 **8 Claims**



1. A remote data link controller for processing control data in a telecommunication switching system, said telecommunication switching system including a peripheral processor and a plurality of digital data links for sending data messages in the form of message bytes to a plurality of remote located telecommunication switching systems, said remote data link controller comprising:

peripheral processor output buffer means connected to said peripheral processor, said peripheral processor output buffer means including a plurality of transmit buffers, each transmit buffer associated with one of said plurality of digital data links, each transmit buffer arranged to store a plurality of control data in the form of data words from said peripheral processor;

formatting means connected to said peripheral processor output buffer means, said formatting means disposed to process sequentially one data word from each of said plurality of transmit buffers, assembling each data word into a message byte;

temporary memory means connected to said formatting means, said temporary memory means including a plurality of memory location areas, each memory location area associated with one of said plurality of digital data links, said temporary memory means arranged to receive and store in each memory location area a completed message byte and a partially completed message byte processed by said formatting means for each of said plurality of digital data links;

counter means connected to said temporary memory means, arranged to count the number of message bytes assembled for each of said plurality of digital data links and a count of the number of data bits contained in a partially completed message byte, said counter means outputting said count of message bytes and said count of the number of bits in a partially completed message byte to a respective one of said memory location areas associated with each of said plurality of digital data links;

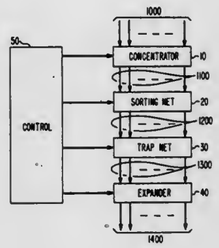
a plurality of data link output buffers connected to said temporary memory, each of said plurality of data link output buffers connected to a plurality of digital data links, each data link output buffer arranged to receive from said temporary memory in sequential order a message byte to be transmitted over a respective digital data link.

4,516,238

SELF-ROUTING SWITCHING NETWORK

Alan Huang, Ocean, and Scott C. Knauer, Englishtown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 28, 1983, Ser. No. 479,668
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—60 **15 Claims**



1. A switching network having a plurality of output ports with unique numerical designations, said switching network being responsive to simultaneously applied signals and each of said input signals containing one of said numerical designations to specify a particular one of said output ports to which said each input signal is to be switched, comprising:

a sorting network, responsive to said applied input signals, for sorting said applied input signals in ascending order of said contained numerical designations, forming thereby a sorted signal set; and

means, responsive to said numerical designations embedded in said sorted signal set, for switching each signal of said sorted signal set to the particular one of said output ports specified by said numerical designation contained in said each signal.

4,516,239

SYSTEM, APPARATUS AND METHOD FOR CONTROLLING A MULTIPLE ACCESS DATA COMMUNICATIONS SYSTEM INCLUDING VARIABLE LENGTH DATA PACKETS AND FIXED LENGTH COLLISION-FREE VOICE PACKETS

Nicholas F. Maxemchuk, Mountainside, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 15, 1982, Ser. No. 357,850
Int. Cl.³ H04J *3/02, 6/00*
U.S. Cl. 370—85 **8 Claims**



1. A method for controlling digital signals in a communications system, said system including a communications channel, a plurality of station sources, at least two of said sources being adapted to be coupled to said channel, said method including the steps of

receiving signals from said channel,

responsive to said received signals, detecting the busy/idle status of said channel,

responsive to said channel being detected as busy waiting for an idle channel and

at least one of said station sources is a station source of a first kind and at least one other of said station sources is a station source of a second kind, and

said method further comprises the steps of:

responsive to said channel being detected as idle, acquiring access to said channel;

responsive to acquiring said channel, transmitting a packet from a first source to a second source on said channel;

responsive to said packet being from a first source of said first kind, said transmitting step further including the steps of

including a preempt field in said packet, said preempt field comprising a delay signal, said delay signal lasting a predetermined time interval, and

continuing to transmit said packet without listening to said channel; and

responsive to said packet being from a first source of said second kind, said transmitting step further including the step of

listening to said channel while continuing to transmit said packet, said listening step further comprising the steps of

upon detecting a collision while listening to said channel, terminating any transmitting from said first source of said second kind within a time interval that is no more than the predetermined time interval of said preempt field delay signal, and

responsive to said terminating, waiting for said channel to become idle before retransmitting said packet.

4,516,240

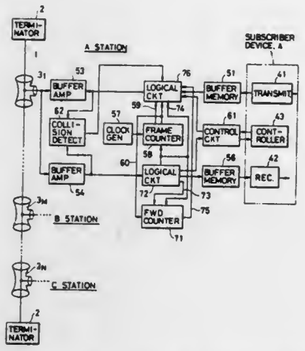
TIME DIVISION DIGITAL SIGNAL TRANSMISSION SYSTEM WITH BLOCK PACKING

Hiroshi Kume, and Yoichi Tan, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,235
Claims priority, application Japan, Dec. 3, 1982, 57/211472
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—85 **11 Claims**

1. In a multiple station communication network in which a station produced digital signal, transmitted over a communication cable, is fixedly positioned in a frame which is repeated periodically in time and is composed of a plurality of time blocks, the digital signals from the stations being transmitted in assigned time blocks, the first block in a frame being the master

block which carries a master station generated digital signal as a frame synchronization reference signal, the stations being connected through taps to said communication cable whereby digital signals are transmitted in a time division manner, the improvement comprising:



means for determining during each frame, the blocks which carry station produced digital signals, and

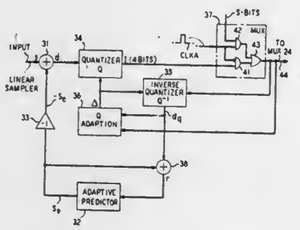
means for rearranging the digital signal carrying blocks such that all digital signal carrying blocks in a frame are arranged in a single group of contiguous blocks.

4,516,241

BIT COMPRESSION CODING WITH EMBEDDED SIGNALING

Robert L. Farah, Brooklyn, N.Y., and Stephen M. Walters, Aberdeen, N.J., assignors to AT&T Bell Laboratories, Murry Hill, N.J.

Filed Jul. 11, 1983, Ser. No. 512,329
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—110.1 **6 Claims**



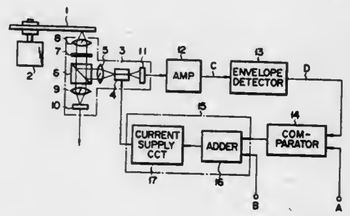
1. A bit compression coding circuit for converting a PCM input signal representative of PCM encoded speech or voiceband data into a bit compressed quantized differential PCM output signal with embedded signaling bits comprising a difference circuit (**31**) to which samples of the PCM input signal and a signal estimate of the same are coupled, said difference circuit providing an output difference signal indicative of the difference between the two inputs thereto, a predictor means (**32**) for producing said signal estimate, adaptive quantizing means (**34**) for receiving said difference signal and providing at its output a bit compressed quantized differential PCM version of the difference signal, multiplex means (**37**) coupled to the output of said quantizing means for periodically preempting the least significant bit of the bit compressed PCM signal and substituting a signaling bit therefor, means (**35, 38**) coupled to the output of said multiplex means for adding the signal therefrom with said signal estimate, the output of the adding means (r) being coupled to the input of the predictor means which in response thereto serves to generate the next signal estimate for comparison with the next input signal sample, and adaptation means (**36**) responsive to the output of said multiplex means for controlling the speed of adaptation of said quantizing means to produce a fast speed adaptation when the PCM input signal represents speech and a slow speed of adaptation for PCM encoded voiceband data.

4,516,242

OUTPUT STABILIZING DEVICE

Tsuneshi Yokota, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 14, 1982, Ser. No. 388,172
Claims priority, application Japan, Jun. 18, 1981, 56-94429; Mar. 15, 1982, 57-40601
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—29 **6 Claims**



1. An output stabilizing device for use in a semiconductor laser system including a semiconductor laser oscillator, said system having a record mode and a playback mode, said device comprising:

optical sensor means for detecting a record laser beam and for detecting a playback laser beam and for outputting a monitor signal corresponding to the detected record or playback laser beam;

means for detecting a difference between a signal component of said monitor signal, and a reference signal, said means for detecting being used for setting a level of the playback laser beam, to thereby produce a playback component difference signal; and

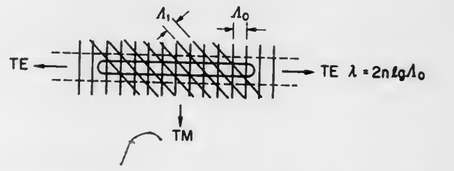
modulation drive means for adding a beam modulating signal to the playback component difference signal of said difference detecting means to generate an added signal and for providing a stabilized drive current output having an amplitude varied in accordance with the added signal to said semiconductor laser oscillator.

4,516,243

DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER

Katsuyuki Utaka, Musashino; Kazuo Sakai, and Shigeyuki Akiba, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1982, Ser. No. 436,928
Claims priority, application Japan, Oct. 29, 1981, 56-172061
Int. Cl.³ H01S *3/098*
U.S. Cl. 372—96 **5 Claims**



1. A distributed feedback semiconductor laser comprising, a semiconductor substrate, a plurality of semiconductor layers, first and second corrugations on said substrate for causing periodic refractive index variations in the travelling direction of light propagation in the laser for effectively causing loss of

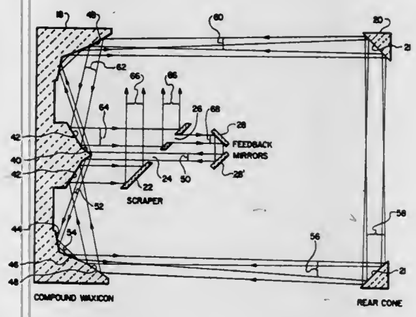
TM mode of oscillation and permitting oscillation in the TE mode alone, and electrodes on said substrate and on one of said semiconductor layers for injection of current into the laser.

4,516,244

COMMON-PASS DECENTERED ANNULAR RING RESONATOR WITH IMPROVED POLARIZATION CONTROL

Dale A. Holmes, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 1, 1983, Ser. No. 528,493
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—99 **8 Claims**



1. In a CPDARR in a laser, having a waxicon mirror reflector with mirror surfaces, a rear ring mirror with a reflecting surface facing the waxicon mirror surfaces, a scraper mirror with a central aperture for passing an input feedback beam to the waxicon and an offset aperture for passing an output feedback beam from the waxicon, and feedback mirror means for reversing the direction of the output feedback beam to direct it upon the inner central axicon mirror of the waxicon, the improvement comprising:

compound waxicon reflecting means having five mirror surfaces, each coated with a conventional high-reflectance coating; and

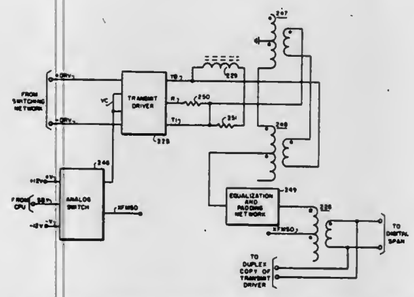
rear ring mirror means the mirror surface of which is coated with a conventional high-reflectance coating.

4,516,245

DIGITAL SPAN TRANSMISSION CIRCUIT

Thomas J. Perry, Phoenix, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,568
Int. Cl.³ H03K *5/01*
U.S. Cl. 375—17 **11 Claims**



1. In a telecommunications switching system having a CPU, a transmission circuit being connected to a digital span via a transformer and connected to a switching network via first and second input leads of said switching system for converting unipolar data of said switching network to bipolar data for said digital span, said transmission circuit comprising:

said switching network being operated to alternately transmit first and second input signals of a first value via said first and second input leads;

said transformer connected to said transmission circuit via first and second output leads;

first current control means connected between said first input lead and said second output lead and being operated in response to said first input signal of a first value to connect said first input lead to said second output lead;

second current control means connected between said first and second output leads, said second current control means being operated in response to said first input signal of said first value to permit a predetermined current to flow from said first to said second output lead via said transformer;

third current control means connected between said second input lead and said first output lead and being operated in response to said second input signal of a first value to connect said second input lead to said first output lead;

fourth current control means connected between said first and second output leads, said fourth current control means being operated in response to said second input signal of said first value to permit a predetermined current to flow from said second to said first output lead via said transformer; and

voltage control means connected to said second and to said fourth current control means and being operated to transmit a voltage to said second and fourth current control means for providing a voltage level of a first polarity or alternately to provide a voltage level of a second polarity;

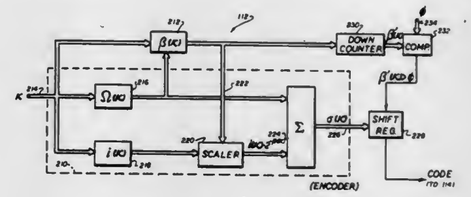
said first and second current control means being operated alternately with said third and fourth current control means in response to said first and said second input signals, respectively, to produce said bipolar data.

4,516,246

DATA COMPRESSION SYSTEM

James A. Kenemuth, Palo Alto, Calif., assignor to Prentice Corporation, Sunnyvale, Calif.

Filed Feb. 26, 1982, Ser. No. 352,681
Int. Cl.³ H04N *7/12*
U.S. Cl. 375—37 **21 Claims**



1. A data transmission system, comprising, in combination:

(a) transmitter means for creating codes as a function of a character based input data stream and including encoder means for encoding each character with a code having a bit length which is an inverse function of the frequency of appearance of the character in a sample of a predetermined number of immediately preceding characters in said data stream, said encoder means including code generating means for receiving said input data stream and for developing a code for each character received, and bit length means for receiving the same input data stream as said code generating means and for determining from said predetermined number of characters the number of bits of a code to be developed by the code generating means for a specific character k, said code having a bit length $\beta(k)$, where $\beta(k)$ is the smallest positive integer such that the non-zero probability p(k) of a character appearing in said

predetermined number of characters is > or = to 1/(2 to the β(k) power);

(b) data link means connected to said transmitter means for receiving the codes created by said encoder means; and

(c) receiver means connected to said data link means for receiving said codes generated by said transmitter means and for decoding the data back to a character based data stream.

4,516,247

SIGNAL RECEIVER WHICH INDICATES THE STATUS OF THE DEVICE CONNECTED THERETO

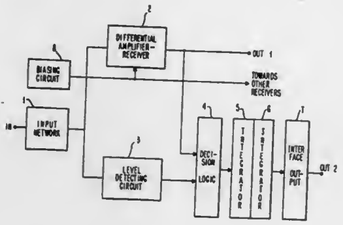
Henri Carsalade, Antibes; Francois-Xavier Delaporte, Cagnes-sur-Mer, and Jean-Pierre Pantani, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1983, Ser. No. 496,328

Claims priority, application European Pat. Off., Jul. 28, 1982, 82430019.8

Int. Cl.³ H03K *5/153;* **H04L** *25/06*

U.S. Cl. 375—56 **9 Claims**



1. A monolithic integrated receiver for receiving first signals of an input line and for providing at its output binary signals usable in data processing devices, characterized in that it includes:

an input network receiving said first signals and outputting a signal the amplitude of which is divided by factor k,

threshold voltage generating means for generating first and second threshold voltages at different times,

a differential amplifier with two inputs, the first one receiving the output signal of the input network and the second one receiving the threshold voltages.

4,516,248

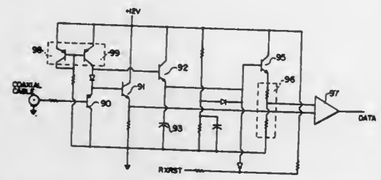
VARIABLE THRESHOLD RECEIVER

Thomas E. Barclay, Fort Washington, Md., and John A. Zett, Springfield, Va., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jan. 21, 1983, Ser. No. 459,896

Int. Cl.³ H03K *5/20*

U.S. Cl. 375—76 **5 Claims**



1. Apparatus for decoding a composite signal having a varying d.c. offset voltage comprising:

(a) an input transistor adapted to receive an input composite signal comprising discrete unipolar signals in varying sequence and amplitude and providing an output signal representative of said input signal at its emitter electrode;

(b) a threshold transistor having it base electrode electrically connected to the emitter electrode's said input transistor;

(c) a bias capacitor electrically connected between the emitter electrode of said threshold transistor and ground reference, the charging/discharging characteristics of said capacitor being related to the bandwidth of the composite signals so that the signal appearing at the emitter electrode of said threshold transistor is representative of the average peak amplitude levels in the composite signal;

(d) a threshold bias transistor having its base electrically connected to the emitter of said threshold transistor;

(e) a voltage divider network comprising a plurality of series-connected resistors, serially connected between the emitter electrode of said threshold bias transistor and ground; and

(f) an integrator/cosmparator having two input terminals, one of said input terminals being electrically connected to the output signals of said input transistor and the other of said input terminals being electrically connected to a point between two of said plurality of resistors in said voltage divider network;

whereby a decoded output signal is derived from said integrator/comparator by comparing the output signal obtained from said voltage divider with the signal obtained from the output of said input transistor.

4,516,249

RAILWAY SIGNALLING RECEIVER

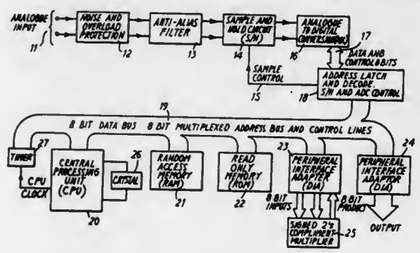
Andrew J. Cook, Chippenham, and Paul D. Negus, Bath, both of England, assignors to Westinghouse Brake & Signal Co. Ltd., Chippenham, England

Filed Dec. 16, 1982, Ser. No. 450,459

Claims priority, application United Kingdom, Dec. 22, 1981, 8138634; Aug. 18, 1982, 8223767

Int. Cl.³ H03D *3/18*

U.S. Cl. 375—82 **6 Claims**



1. A railway signalling receiver responsive to signals carried by track rails, said receiver comprising:

sensing means cooperating with the track rails for sensing the signals carred by the track rails, means for sampling a sensed signal at a predetermined sampling rate to provide a multiplicity of samples and means for converting the value of each of said samples into a digital word so as to provide over a period of time a multiplicity of digital data words representing a series of time domain samples of the sensed signal;

means for performing a heterodyne operation on the sensed signal including a multiplier means, having a first input connected to means for supplying a multiplication factor corresponding to the value of a cosine function, for multiplying said first and second inputs to provide an output comprising a heterodyned data word,

data memory means for receiving and storing a multiplicity of said heterodyned data words,

means for performing a discrete Fourier transform using as input data said multiplicity of heterodyned data words and including processing means for performing a predetermined mathematical operation, and a program memory means containing a sequence of processor instructions for evaluating an algorithm for said discrete Fourier transform, said program memory means being connected to control the operation of the processing means,

memory addressing means for interconnecting the data memory means and the processing means so as to input data to the processing means for storing intermediate and final results from the processing means produced by evaluation of the transform algorithm, and

means, connected to the memory addressing means and responsive to said final frequency domain results, for identifying the frequency components of the signal sensed by signal sensing means.

4,516,250

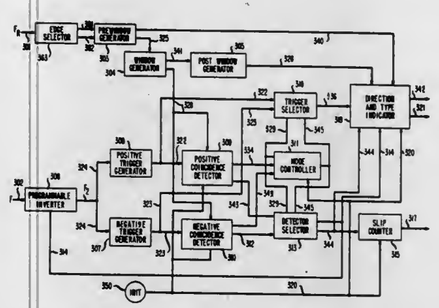
FREQUENCY AND PHASE COMPARATOR WITH SLIP DETECTION CAPABILITY

Gary J. Grimes, Thornton, Colo., assignor to AT&T Information Systems, Holmdel, N.J.

Filed Aug. 26, 1983, Ser. No. 526,642

Int. Cl.³ H03D *3/18*

U.S. Cl. 375—82 **24 Claims**



1. A frequency and phase comparator for detecting phase shifts indicative of frequency differences between a first signal F_R and a second signal F having identifiable preselected transitions, comprising:

means for applying said first and second signals to first and second inputs, respectively, of said comparator,

means responsive to the reception of each preselected transition in said first signal F_R for generating a window pulse,

means responsive to the reception of each preselected transition in said second signal F for generating a trigger pulse,

a detector for generating a coincidence signal in response to each coincidence between said window pulse and said trigger pulse,

means interposed between said second input and said trigger pulse generating means and responsive to the generation of alternate ones of said coincidence signals by said detector for inverting said second signal until the generation of the next coincidence signal, and

means responsive to the generation of alternate ones of said coincidence signals for generating a slip signal indicative of either two contiguous 180 degree phase shifts or a single 360 degree phase shift between said first and said second signals.

4,516,251

PROGRAMMABLE PRESCALER

Michael G. Gallup, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 6, 1983, Ser. No. 501,315

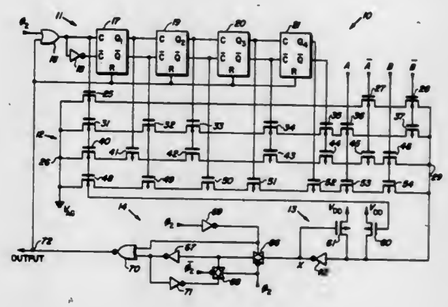
Int. Cl.³ H03K *21/36*

U.S. Cl. 377—110 **12 Claims**

1. A programmable prescaler for providing an output signal which is synchronous with and proportional in frequency to a clock signal, comprising:

a plurality of series-connected flip flop circuits, a first of the flip flop circuits having an input coupled to the clock signal, the flip flop circuits counting a predetermined number of cycles of the clock signal, each of the flip flops providing a counter signal after a predetermined number of clock signal cycles and each having a reset terminal connected to an output of the prescaler;

decoder means coupled to the plurality of flip flop circuits and connected to an input control signal for scaling the frequency of the output signal to a predetermined fraction of the frequency of the clock signal, the decoder means



coupling a reference voltage node to a decoder output in response to at least one of the counter signals;

latch means having an input coupled to the decoder output, and having an output for temporarily providing a latched output; and

delay means having an input coupled to the output of the latch means, and having an output connected to the reset terminal of each flip flop circuit of the plurality of flip flop circuits at the prescaler output, for providing the output signal after a predetermined amount of time delay.

4,516,252

DEVICE FOR IMAGING LAYERS OF A BODY

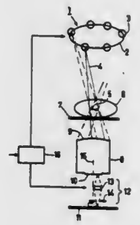
Rolf Linde, Haseldorf, and Erhard Klotz, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,837

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134076

Int. Cl.³ A61B *6/00;* **G01T** *1/29;* **G03B** *41/16*

U.S. Cl. 378—23 **15 Claims**



1. A device for producing an image of a layer of a body, said device comprising:

a single radiation detector situated on one side of the body;

radiation source means on a side of the body opposite to the detector, said radiation source means arranged to sequentially irradiate the body from a plurality of radiation source positions in a single plane to form a sequence of perspective images of the body on the detector, at least two of the perspective images being at least partially spatially superposed on the detector;

image recording means arranged to record the perspective images formed on the detector;

image separating means arranged between the image recording means and the detector, said image separating means separating the perspective images so that no two perspective images are superposed on the image recording means; and

means for superposing the recorded perspective images so as to construct an image of a layer of the body.

4,516,253

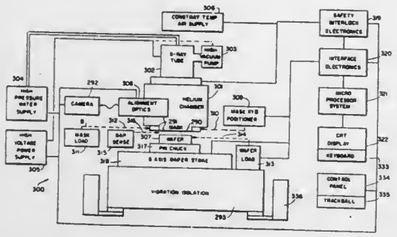
LITHOGRAPHY SYSTEM

W. Thomas Novak, San Jose, Calif., assignor to Micronix Partners, Los Gatos, Calif.

Continuation-in-part of Ser. No. 475,430, Mar. 15, 1983,. This application Apr. 25, 1983, Ser. No. 487,943

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—034 **25 Claims**



1. A lithography system for a substrate printing sequence comprising,

(a) a work station, said station including

(i) a beam chamber,

(ii) means for mounting a beam source at one end of said chamber,

(iii) means for mounting a mask at a position adjacent an opposite end of said chamber,

(iv) means for mounting image sensing means interiorly of said chamber;

(b) means for mounting in position a semiconductor substrate in contact or spaced from said mask on a side of said mask opposite said source;

(c) means for adjusting said substrate mounting means in more than three degrees of freedom in said position;

(d) means for loading a mask into said mask mounting means;

(e) means for loading a substrate onto said substrate mounting means; and

(f) means including said image sensing means for aligning the substrate and said mask.

4,516,254

X-RAY LITHOGRAPHIC APPARATUS

Yoshihiro Komeyama, Yokohama, and Motoya Taniguchi, Kamakura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

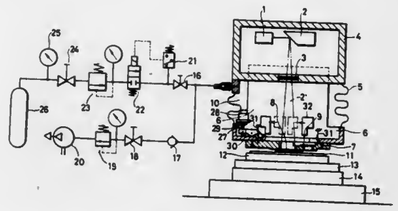
Filed Dec. 2, 1983, Ser. No. 557,460

Claims priority, application Japan, Dec. 3, 1982, 57-211407

Int. Cl.³ H01J *00/00*

U.S. Cl. 378—34 **6 Claims**

1. In an X-ray lithographic apparatus having an X-ray generator which generates X-rays, and a gastight chamber which is gastightly coupled to the X-ray generator and which holds a mask to be exposed to the X-rays, on its surface remote from the X-ray generator; an X-ray lithographic apparatus characterized in that said gastight chamber is provided with a window on which a soft member softer than the mask is mounted.



4,516,255

ROTATING ANODE FOR X-RAY TUBES

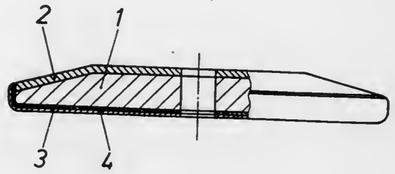
Helmut Petter, Lechaschau; Hubert Bildstein, and Fritz Simader, both of Reutte, all of Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Filed Feb. 11, 1983, Ser. No. 465,804

Claims priority, application Austria, Feb. 18, 1982, 618/82

Int. Cl.³ H01J *35/08*

U.S. Cl. 378—143 **5 Claims**



1. A rotating anode for x-ray tubes comprising:

a basic member comprised of a carbonaceous molybdenum alloy;

a focal path member comprised of tungsten or a tungsten alloy;

a coating layer disposed on at least part of said basic member comprised of at least one oxide, or of a mixture of at least one oxide and at least one metal; and

an intermediate layer comprised of molybdenum, tungsten, or a mixture thereof, disposed between said basic member and said coating layer and being from 10 to 200 μm thick.

4,516,256

MOVABLE PROJECTOR UNIT FOR GAMMA RADIATION FOR WELDING CONTROL PURPOSES WITH PIPE-LINES AND THE LIKE

Pieter Wapperom, Rotterdam, Netherlands, assignor to Röntgen Technische Dienst B.V., Rotterdam, Netherlands

Filed Jun. 26, 1981, Ser. No. 277,805

Claims priority, application Netherlands, Jun. 27, 1980, 8003756

Int. Cl.³ G03B *41/16*

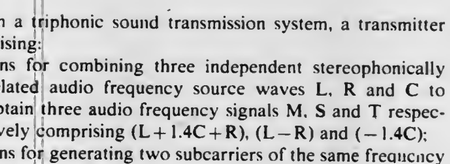
U.S. Cl. 378—60 **7 Claims**

1. A movable projector device for inspecting by gamma rays a weld in a pipe-line and the like, comprising:

a motor driven carriage,

a gamma radiation projector mounted on said carriage and including a radiation source holder and a radiation source, said projector being provided with a protective housing having an axially extending channel therein for the movement of said radiation source holder,

a micro-pneumatic device coupled to said radiation source holder protective housing so as to form an integrated unit therewith, said micro-pneumatic device including a gas supply tank containing highly pressurized gas, a piston-cylinder device, the cylinder of said piston-cylinder device extending through an axial inlet bush tube in said gas supply tank and the piston rod of said piston-cylinder device being connected to said radiation source holder, said highly pressurized gas being supplied to the cylinder of said piston-cylinder to extend said piston rod and thereby move said radiation source holder into said exposure position, said gas being exhausted on the return stroke



of said piston rod, thereby performing a self-cleaning action in said piston-cylinder device, and

a remotely controllable electronic unit including means for receiving and processing control commands, and adapted to control selectively said carriage motor and to control selectively said micro-pneumatic device in response to said control commands, said control commands comprising pulse signals of different numbers corresponding to respective forward, stop and reverse drive commands and for radiation exposure.

4,516,257

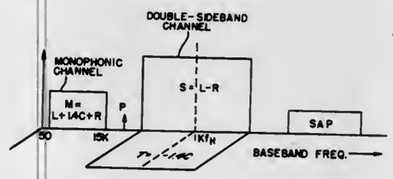
TRIPHONIC SOUND SYSTEM

Emil L. Torick, Darien, Conn., assignor to CBS Inc., New York, N.Y.

Continuation of Ser. No. 441,571, Nov. 15, 1982, abandoned. This application Apr. 5, 1984, Ser. No. 597,000

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—4 **17 Claims**



1. In a triphonic sound transmission system, a transmitter comprising:

means for combining three independent stereophonically related audio frequency source waves L, R and C to obtain three audio frequency signals M, S and T respectively comprising $(L+1.4C+R)$, $(L-R)$ and $(-1.4C)$;

means for generating two subcarriers of the same frequency and spaced 90° apart in phase;

means for amplitude-modulating each subcarrier with a respective one of said audio frequency signals S and T to develop two double-sideband suppressed-carrier signals, the frequency of said subcarriers being sufficiently high as to assure a frequency gap between the lower sidebands of the modulated subcarrier signals and the said M signal;

means for generating a phase reference pilot signal having a frequency which is one-half the frequency of the subcarriers and lies within said frequency gap; and

means for frequency modulating the aforementioned signals onto a high frequency carrier for the purpose of transmitting the same to one or more remote receivers.

4,516,258

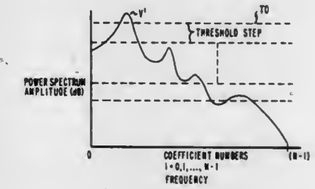
BIT ALLOCATION GENERATOR FOR ADAPTIVE TRANSFORM CODER

Yau-Chau Ching, Morganville, and James D. Tomcik, Aberdeen, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1982, Ser. No. 393,690

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—31 **5 Claims**



1. Apparatus for allocating a predetermined total number of bits to a plurality of signal amplitude coefficients in an adaptive transform coding frame, each amplitude coefficient including an integer magnitude portion representation and a fractional magnitude portion representation, the apparatus comprising,

means for controllably generating an integer threshold representative of a predetermined magnitude, said integer threshold magnitude being initially adjusted during each coding frame to a predetermined maximum integer value,

means for comparing the integer magnitude representation of each of said plurality of signal amplitude coefficients to the integer threshold magnitude value,

means for allocating one bit to each of the signal amplitude coefficients having an integer magnitude which is equal to or greater than the integer threshold magnitude value,

means for controllably counting the number of bits allocated to said plurality of signal amplitude coefficients,

means responsive to the allocated bit count for controllably decreasing the integer threshold magnitude by a prescribed integer magnitude value if the allocated bit count is less than the predetermined total number of bits to be allocated after comparing all of said plurality of signal amplitude coefficient magnitudes to the integer threshold magnitude value, wherein each of said plurality of amplitude coefficient integer magnitudes is compared to said integer threshold magnitude value after each decrease in the integer threshold magnitude and one bit is added to the bits allocated to each of said plurality of amplitude coefficients having an integer magnitude which is equal to or greater than said integer threshold magnitude during each comparison cycle,

means for controllably generating a fractional threshold representative of a predetermined fractional magnitude, said fractional threshold magnitude being initially adjusted during each coding frame to a predetermined minimum fractional value,

means for comparing the fractional magnitude representations of said plurality of signal amplitude coefficients in a prescribed sequence to the fractional threshold magnitude value,

means responsive to the allocated bit count for decreasing by one bit the number of bits allocated a signal amplitude coefficient in the sequence having a fractional magnitude equal to the fractional threshold magnitude value when the allocated bit count is greater than the predetermined total number of bits to be allocated during the coding frame, and

means responsive to the allocated bit count for controllably increasing the fractional threshold magnitude by a prescribed fractional magnitude value if the allocated bit count is greater than the predetermined total number of bits to be allocated during the coding frame upon comple-

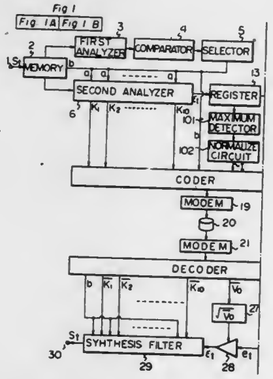
tion of the fractional threshold comparison sequence, wherein one bit is decremented from the bits allocated to each of said plurality of signal amplitude coefficients in said sequence having a fractional magnitude equal to said fractional threshold.

4,516,259

SPEECH ANALYSIS-SYNTHESIS SYSTEM

Fumihiro Yato; Seishi Kitayama, both of Tokyo, and Akira Kurematsu, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,356
Claims priority, application Japan, May 11, 1981, 56-69388; Sep. 30, 1981, 56-153578
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—36 **4 Claims**



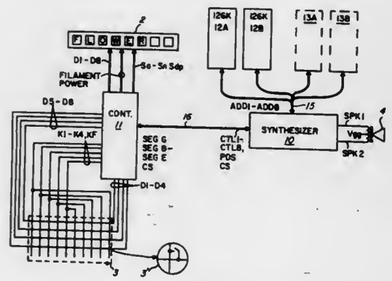
1. A speech analysis-synthesis system comprising:
a transmit side comprising:
(a) an input terminal for receiving an input speech signal,
(b) spectrum analysis means for analyzing said input speech signal to provide spectrum information (K_i),
(c) means for providing an average (V_0) of linear prediction error signal,
(d) means for deriving a basis period (L) of a pitch of an input speech signal,
(e) means for deriving a voiced/unvoiced decision signal V/UV according to whether an input speech signal is a voiced sound or an unvoiced sound,
(f) means for detecting a maximum level of said linear prediction error signal,
(g) means for normalizing said linear prediction error signal by dividing said signal by said maximum level to provide a pseudo exciting signal (I),
(h) a coder for coding said spectrum information, said average (V_0), said basic period (L), said voiced/unvoiced decision signal (V/UV), and said pseudo exciting signal (I) to transmit a coded speech signal,
a receive side comprising:
(i) a decoder for decoding the coded speech signal,
(j) a switch for switching a product of the pitch period (L) and said pseudo exciting signal (I), and a white noise,
(k) a synthesis filter which receives a driving signal which is obtained according to the output of said switch and said average of linear prediction error signal, and attaches correlation information to said driving signal according to said spectrum information, and
(l) an output terminal coupled with an output of said synthesis filter to provide a synthesis speech,
said pseudo exciting signal being used as an exciting signal in said receive side.

4,516,260

ELECTRONIC LEARNING AID OR GAME HAVING SYNTHESIZED SPEECH

Paul S. Breedlove, Plano, and James H. Moore, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 901,391, Apr. 28, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 182,382
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—51 **77 Claims**



1. A talking electronic apparatus comprising:
memory means for storing digital speech data and digital control data from which a plurality of requests in synthesized human speech for respective operator responses and appropriate operator responses corresponding to said plurality of requests may be respectively derived,
speech synthesizer means operably associated with said memory means for converting said digital speech data into audible human speech,
means for randomly accessing a portion of said digital speech data stored in said memory means from which a request for an operator response may be derived,
means for transferring said randomly accessed portion of said digital speech data from said memory means to said speech synthesizer means to produce a randomly selected audible request in human speech,
operator input means for receiving an operator response to said randomly selected audible request, and
means responsive to said digital control data and said operator response to said randomly selected audible request for responding in a manner producing an output indicative of the appropriateness of said operator response with respect to the appropriate operator response corresponding to said randomly selected audible request.

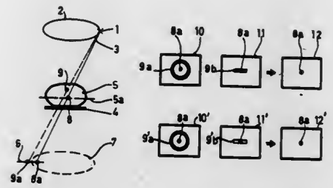
4,516,261

DEVICE FOR REDUCING FAULTS IN LAYER IMAGES OF A THREE-DIMENSIONAL OBJECT FORMED BY MEANS OF PENETRATING RADIATION

Geoffrey Harding, Rellingen, and Erhard Klotz, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,163
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945057
Int. Cl.³ G06K *9/00*
U.S. Cl. 382—6 **12 Claims**

1. A method of reducing distortions in layer images comprising the steps of:
forming at least first and second groups of perspective images of the object, each perspective image being formed by irradiating the object from a given direction, the irradiation directions which correspond to perspective images in the first group being different from the irradiation directions which correspond to perspective images in the second group;
forming at least first and second layer images of a single object layer, said first layer image being formed by superimposing the first group of perspective images, said second layer image being formed by superimposing the second group of perspective images;
analyzing information at corresponding points in the two layer images to determine whether or not those points contain corresponding information; and



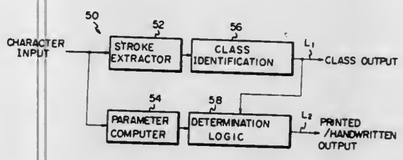
forming an ultimate corrected image of the object layer by the carrying over of information from points in the layer images which contain corresponding information and by at least partially supressing information from such points which do not contain corresponding information.

4,516,262

CHARACTER DATA PROCESSING APPARATUS

Akira Sakurai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 410,119
Claims priority, application Japan, Aug. 31, 1981, 56-136480
Int. Cl.³ G06K *9/46*
U.S. Cl. 382—18 **8 Claims**



1. A character data processing apparatus comprising:
a scanning means for scanning an original document carrying handwritten character data to produce electric image data;
character extraction means for extracting each character from the image data;
character identification means for identifying the characteristics of the extracted character; and
character processing means for processing the identified character into printed character data;
the character identification means comprising a character shape detector for detecting the shape of the extracted character which is one of a plurality of shapes;
the character shape detector comprising a character stroke extractor for extracting the number of strokes of the extracted character, and a character shape estimater for estimating the shape of the extracted character depending on the extracted number of strokes.

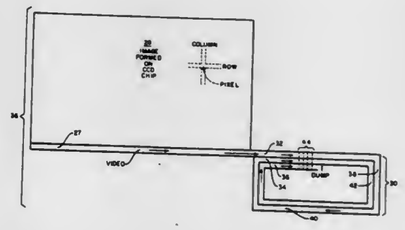
4,516,263

SPATIALLY INTEGRAL, VIDEO SIGNAL PROCESSOR

Brock S. Dew, Newton, and Paul Greiff, Wayland, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 30, 1982, Ser. No. 373,620
Int. Cl.³ G06K *9/00*; H03H *15/02*; G11C *19/14*; H01L *27/00*
U.S. Cl. 382—41 **25 Claims**

1. A spatially integral video signal processor unit comprising:
a unitary substrate;
a plurality of signal transfer channels for transferring video signals originating from detection of an optical image along said substrate;
means for applying said video signaLs to one of said signal transfer channels;
said plurality of channels being adjacent each other on said substrate and divided into individual signal storage elements;
said signal storage elements adapted to transfer the signal stored thereby from element to element along each channel;



said substrate further including means for applying the output of one channel after suitable delay to the input of an adjacent channel to define a single elongated signal path through said plurality of signal transfer channels during application of said video signals to said one of said signal transfer channels whereby the signaLs stored in said plural adjacent channels represent the detected optical image in original two-dimensional relationship;
means on said substrate for developing a signal representative of a predetermined function of at least a portion of the signals stored in adjacent elements of adjacent channels in real time during application of said video signals.

4,516,264

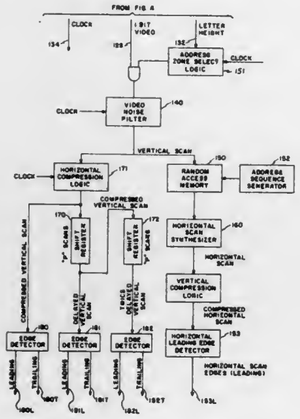
APPARATUS AND PROCESS FOR SCANNING AND ANALYZING MAIL INFORMATION

John Corvari; Joseph Ulvr, and Raigo Alas, all of Guelph, Canada, assignors to United States of America Postal Service, Washington, D.C.

Continuation of Ser. No. 343,727, Jan. 29, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,153
Int. Cl.³ G06K *9/36*
U.S. Cl. 382—46 **19 Claims**

1. An apparatus for evaluating information on a surface of an object being transported past a fixed point comprising: means for sensing the presence of said object in said apparatus to enable scanning of said surface, means enabled by said sensing means for scanning said surface due to movement of said object past said sensing means, means for receiving signals from said scanning means and for generating first serial streams of data representing successive lines of information on said object in one direction of scan, means for disposing bit of said first serial streams in a different order to provide a second serial data stream representing scan results from successive lines of information for only a direction orthogonally related to said one direction, and means coupled to said means for receiving and

generating and said means for disposing responsive to said first data streams directly and said second data stream to determine

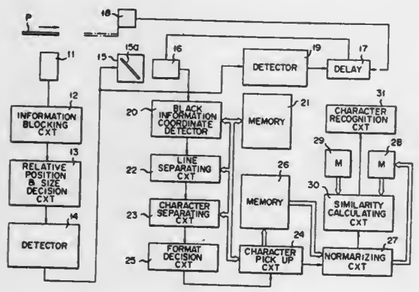


characteristics of said information on said surface of said object.

4,516,265
OPTICAL CHARACTER READER

Shuji Kizu, Yokohama; Tsutomu Ikeda, and Masanori Iwamoto, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 242,565, Mar. 11, 1981, abandoned. This application Apr. 5, 1982, Ser. No. 365,385
Claims priority, application Japan, Mar. 14, 1980, 55-32300; European Pat. Off., Mar. 6, 1981, 81101659.1
Int. Cl.³ G06K *9/20, 9/00*
U.S. Cl. 382—48 **5 Claims**



1. An optical character reader for reading information from an object comprising:

a pre-scanner for coarsely scanning a surface of the object on which the information to be read appears and generating first video signals indicative thereof;

blocking means for processing the first video signal to identify a plurality of separate and distinct blocks of information;

coordinate data means, connected to said blocking means, for determining a coordinate of a particular block from among the blocks identified by said blocking means to produce coordinate data;

a main scanner, connected to said coordinate data means, for finely scanning the particular block identified by the coordinate data and generating second video signals indicative thereof;

first memory means for storing video data corresponding to the second video signals;

line separating means, connected to said first memory means, for processing the video signals data to separate the particular block into a plurality of character lines and deriving a video data component corresponding to a particular character line including one or more characters from the second video signals data;

character separating means, connected to said line separating means, for identifying separate and distinct characters of the particular character line;

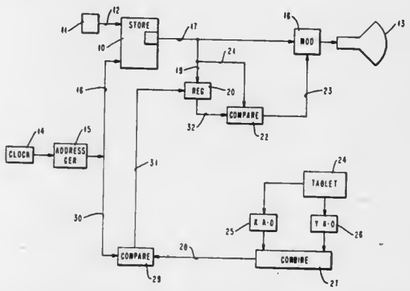
second memory means, connected to said character separating means, for storing video data corresponding to each of the separately identified characters; and

character recognition means for recognizing the characters represented by the video data stored in said second memory means.

4,516,266
ENTITY CONTROL FOR RASTER DISPLAYS

Robert J. Christopher, Underhill, and Robert F. Walker, Hinesburg, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,577
Int. Cl.³ G06F *3/14;* **G06K** *9/00*
U.S. Cl. 382—48 **8 Claims**



1. Apparatus for carrying out displayed feature detection and verification in a raster system including,

a store for items of data,

display means for serially receiving incoming items of data from said store, and forming an image therefrom,

each item of data being used to form a part of a feature of the image and being provided with an identifying signal associated with the feature formed in part by said item,

input means for generating signals, each representing the coordinates of a selected point in the feature formed in part by said item,

first comparison means for comparing the signal representing the coordinates of the selected point with the incoming items of data from the store to indicate if a correlation exists, and providing a loading signal if such correlation exists,

register means for receiving the loading signal of said first comparison means, and in response to the loading signal storing the identifying signal of the item of data so compared,

second comparison means for comparing the stored identifying signal with the identifying signal of the serially received items of data from said store, and

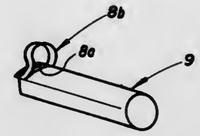
means coupled to the second comparison means, for emphasizing the feaure of the image correlated with the selected point,

said second comparison means providing a signal to said emphasizing means for emphasizing the feature when a correlation occurs between the stored identifying signal and the identifying signal of the received items of data from the store.

4,516,267
HANG BAG

Garnet J. Kent, Mississauga, and John C. Wood, Milton, both of Canada, assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation of Ser. No. 358,503, Mar. 15, 1982,. This application Aug. 1, 1983, Ser. No. 518,894
Int. Cl.³ B65D *30/00*
U.S. Cl. 383—22 **1 Claim**



1. A hang bag comprising:

(a) a bag portion including:

(i) front and back panels of heat shrinkable, thermoplastic sheet material;

(ii) said panels comprising a single sheet folded so that the fold comprises the bottom of the bag and,

(iii) each side of said front and back panels being sealed to the corresponding side of the panels along their side edges in parallel side seals leaving the top side unsealed thereby defining the mouth of the bag for loading a product into the bag; and,

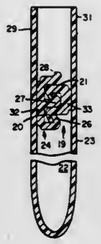
(b) a single strap of non-heat shrinkable, sealable material, one end of said strap being sealed to one side seal and the other end to the other side seal;

(c) a heat shrinkable strap each end of which is sealed in an opposite side seal of said bag, said strap being shrunken with said bag, said non-heat shrinkable strap of thermoplastic material being superimposed over said shrinkable strap, one end of said strap being sealed to one side seal and the other end of said strap to the other side seal thus providing a hang loop for said bag, the respective ends of said non-shrinkable strap and said shrinkable strap being sealed together at a side seal, whereby when said bag is heated and shrunk the heat shrinkable strap shrinks with the bag and remains in contact therewith, said shrinkable bag and strap shrinking away from the non-shrinkable strap which remains unshrunken and provides a hang loop.

4,516,268
PENTABAR CLOSURE DEVICE

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 400,114, Jul. 20, 1982, abandoned, which is a continuation of Ser. No. 972,428, Dec. 22, 1978, abandoned. This application Jul. 29, 1983, Ser. No. 518,537
Int. Cl.³ A44B *17/00, 19/00*
U.S. Cl. 383—63 **8 Claims**



1. A container comprising a flexible closure device and a pouch portion including two side walls and two side edges;

said closure device comprising first and second flexible closure strips arranged in confronting relationship to each other and permanently connected to each other at the two side edges;

said first closure strip having two opposite sides, one side of said first closure strip is generally flat and connected to one side wall of said pouch portion and the other side of said first closure strip consists of a pair of first hooks;

each of said first hooks extending in the direction of the interior of said pouch portion;

said second closure strip having two opposite sides, one side of said second closure strip is generally flat and connected to the other side wall of said pouch portion and the other side of said second closure strip consists of a ridge and a pair of second hooks;

each of said second hooks extending in a direction away from the interior of said pouch portion;

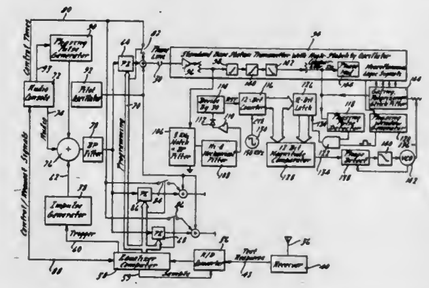
said pairs of first and second hooks being operable for resiliently engaging and disengaging with each other and said ridge being positioned on the side of said pair of second hooks away from the interior of said pouch portion and being operable to guide said first and second closure strips for occlusion and to maintain the occlusion;

wherein the hooks near the interior of said pouch portion have a negative angle of engagement when said closure device is occluded, and wherein the hooks distal to said pouch portion have a positive angle of engagement when said closure device is occluded.

4,516,269
AUTOMATIC EQUALIZATION FOR A SIMULCAST COMMUNICATION SYSTEM

Jerome V. Krinock, Detroit, Mich., assignor to Michigan Consolidated Gas Company, Detroit, Mich.

Filed Dec. 10, 1982, Ser. No. 448,830
Int. Cl.³ H04B *3/50, 1/62, 3/04, 17/02*
U.S. Cl. 455—51 **21 Claims**



20. A method of generating a synchronized squelch signal to be simultaneously broadcasted from a plurality of base stations in a communication system where an audio signal is transmitted from a dispatch station to each of said base stations along telephone lines, comprising the steps of:

generating a pilot signal and transmitting said pilot signal to each of said base stations with said audio signal;

generating a phasing signal and transmitting said phasing signal to each of said base stations at the beginning of said audio signal; and

generating a substantially synchronized squelch signal at each of said base stations in response to said pilot and phasing signals.

4,516,270
MICROWAVE RECEIVER FRONT END DESIGN

James P. Phillips, Lake in the Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

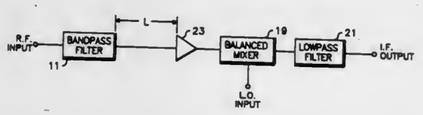
Filed Mar. 2, 1983, Ser. No. 471,418
Int. Cl.³ H04B *1/10, 1/26*
U.S. Cl. 455—302 **3 Claims**

3. A method for receiving and processing communications

signals comprising a desired frequency signal and an undesired image frequency signal, the method comprising the steps of;

(a) filtering said desired frequency from said communications signal with a filtering means,

(b) transmitting said desired frequency over a transmission medium which has a length L equal to $\eta\pi/\beta$ where η



equals an integer and β is proportional to the wavelength of the image frequency,

(c) low noise amplifying said desired frequency while impedance matching with said transmission medium,

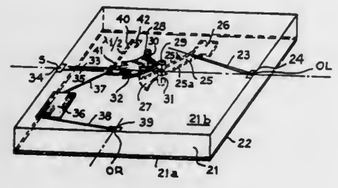
(d) mixing said desired frequency with a local oscillator frequency to produce an information signal.

4,516,271

MICROWAVE MIXER WITH RECOVERY OF THE SUM FREQUENCY

Pierre Fraise, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 11, 1983, Ser. No. 522,212
Claims priority, application France, Aug. 20, 1982, 82 14435
Int. Cl.³ H04B 1/26
U.S. Cl. 455—327
10 Claims



1. A microwave mixer comprising:

a microelectronic circuit having at least one electronic element with a nonlinear characteristic,

a substrate for supporting said circuit

a plurality of striplines coupled to said at least one element supported by said substrate,

a closed casing surrounding said circuit and forming an internal cavity thereby, said casing having thereon first, second and third terminals,

said first terminal accepting an incident wave of frequency Fs, said second terminal accepting a mixing wave of frequency F_L and said third terminal providing a mixed output wave having a frequency Fo,

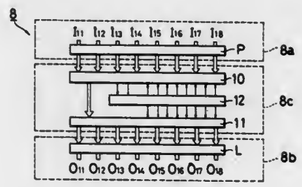
tuning means coupled to said casing to tune said internal cavity to a sum frequency $Fs+F_L$ representing the sum of the frequency of the mixing wave F_L and of the frequency of the incident wave Fs.

4,516,272

COMMUNICATION NETWORK

Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 15, 1983, Ser. No. 466,504
Claims priority, application Japan, Feb. 15, 1982, 57-21312
Int. Cl.³ H04B 9/00
U.S. Cl. 455—607
19 Claims



15. A node for use in a communication network as connected to one or more other nodes and/or terminals of various peripheral devices, comprising:

a plurality of input channels;

a like plurality of output channels, each of which corresponds to one of said plurality of input channels thereby forming a like plurality of input-output channel pairs; and

connection control means for scanning said input channels for receipt of an input signal and for controlling a connection ondition between said plurality of input and output channels, wherein said connection control means stores information to flag which one of said plurality of input channels has received an input signal, without inspecting the contents thereof, for a predetermined time period from reception of said input signal or until reception of another input signal by another of said input channels within said predetermined time period, and thereupon causes said other input signal to be supplied as an output signal to an output channel corresponding to said flagged one input channel.

DESIGNS

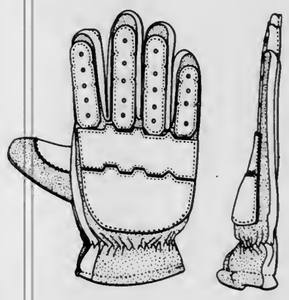
MAY 7, 1985

278,660

GLOVE

Geoffrey T. Fox, San Jose, Calif., assignor to Moto-X Fox, Inc., Campbell, Calif.

Filed Dec. 7, 1982, Ser. No. 447,751
Term of patent 14 years
U.S. Cl. D2—373



278,662

TOOTHBRUSH

Andreas Fay, Vienna, Austria, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,729
Claims priority, application Austria, May 27, 1983, 529643
Term of patent 14 years
U.S. Cl. D4—104

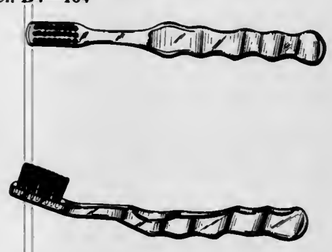


278,661

CHILDREN'S TOOTH BRUSH

Ralf Gelsen, Rotenburg-Unterstedt, Fed. Rep. of Germany, assignor to MAPA GmbH Gummi- und Plastikwerke, Zeven, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,303
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, MR 18
Term of patent 14 years
U.S. Cl. D4—104

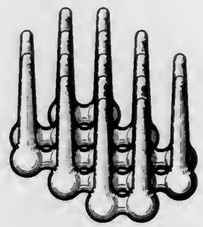


278,663

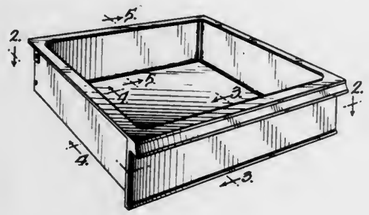
MAGAZINE RACK

Walter Zeischegg, deceased, late of Ulm, Fed. Rep. of Germany; by Rosalinde Zeischegg, heiress, Blumenscheinweg 10, Ulm, and Bernd Brüssing, Bilharzstr. 3, Ulm-Lehr, both of Fed. Rep. of Germany D-7900

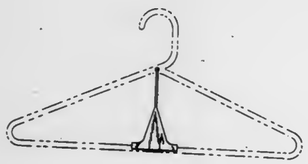
Filed Aug. 24, 1982, Ser. No. 411,231
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, MR 954; France, Mar. 16, 1982, DM-001299
Term of patent 14 years
U.S. Cl. D6—476



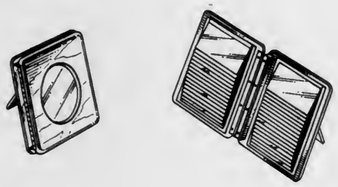
278,664
DRAWER
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Michael Peterson, Evanston, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Oct. 18, 1982, Ser. No. 435,101
Term of patent 14 years
U.S. Cl. D6—510



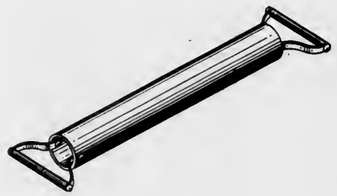
278,665
RETAINER ACCESSORY FOR GARMENT HANGERS
Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205
Filed Sep. 30, 1982, Ser. No. 430,266
Term of patent 14 years
U.S. Cl. D6—328



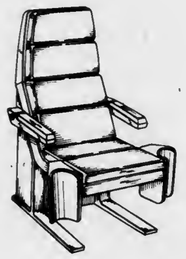
278,666
COMBINED PICTURE FRAME AND PHOTOGRAPH ALBUM
Gerald S. McCartin, Van Nuys, Calif., assignor to Sunset Time, Inc., Mission Hills, Calif.
Filed Jul. 15, 1983, Ser. No. 514,009
Term of patent 14 years
U.S. Cl. D6—300



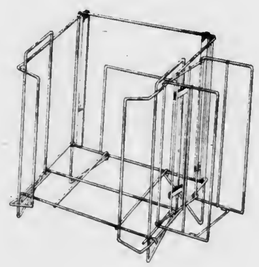
278,667
A PORTABLE SEAT FOR USE IN TRANSPORTING AN INDIVIDUAL
Alvin M. Jacobson, Rte. 1, Box 67, Ostrander, Minn. 55961
Filed Mar. 10, 1983, Ser. No. 474,122
Term of patent 14 years
U.S. Cl. D6—334



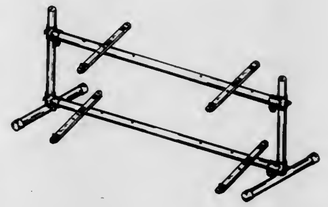
278,668
MULTI-POSITION EXAMINATION CHAIR
Terry J. Simpkins, Snowmass Village, Colo., assignor to Midmark Corporation, Versailles, Ohio
Filed Feb. 15, 1983, Ser. No. 466,705
Term of patent 14 years
U.S. Cl. D6—335



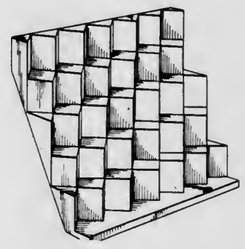
278,669
PILLOW RACK
Arline Walpin, 9400 Brighton Way, Beverly Hills, Calif. 90210
Filed Aug. 17, 1982, Ser. No. 408,803
Term of patent 14 years
U.S. Cl. D6—462



278,670
KEYBOARD STACKER
Darrell A. Schoenig, 432 Clover La., Ft. Collins, Colo. 80521
Filed Dec. 9, 1982, Ser. No. 448,268
Term of patent 14 years
U.S. Cl. D6—463



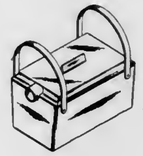
278,671
MERCHANDISE DISPLAY RACK
Hal D. Sandy, 4937 Glendale Rd., Shawnee Mission, Kans. 66205
Filed Nov. 8, 1982, Ser. No. 440,017
Term of patent 14 years
U.S. Cl. D6—474



278,672
CHAMPAGNE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 403,144
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



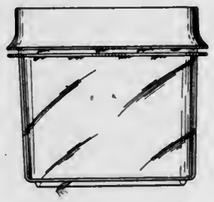
278,673
BOTTLE COOLER
David E. Decker, Tujunga, Calif., assignor to Charles E. Da Mart, Studio City, Calif.
Filed Feb. 16, 1982, Ser. No. 349,065
Term of patent 14 years
U.S. Cl. D7—77





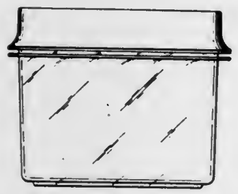
278,674
FOOD SAVER
Pierre Tardif, and Yvan Laporte, both of, Vieux Montreal, Canada, assignors to Les Produits Menagers Coronet (1980) Inc., St. Hyacinthe, Canada
Filed Jun. 21, 1982, Ser. No. 390,557
Claims priority, application Canada, Feb. 25, 1982, 25-02-82-12
Term of patent 14 years
U.S. Cl. D7—79



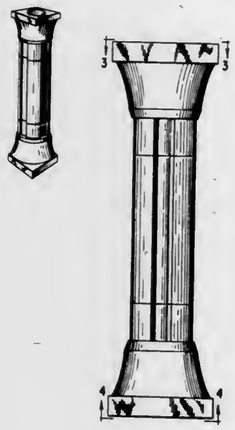


278,675
FOOD SAVER
Pierre Tardif, and Yvan Laporte, both of Vieux, Montreal, Canada, assignors to Les Produits Menagers Coronet (1980) Inc., St. Hyacinthe, Canada
Filed Jun. 21, 1982, Ser. No. 390,669
Claims priority, application Canada, Feb. 25, 1982, 25-02-82-11
Term of patent 14 years
U.S. Cl. D7—79

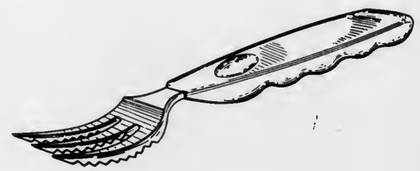




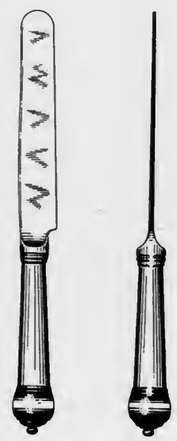
278,676
CAKE SUPPORT PILLAR
David W. DeAre, Glen Ellyn, Ill., assignor to Wilton Enterprises, Inc., Woodridge, Ill.
Filed Aug. 23, 1982, Ser. No. 409,581
Term of patent 14 years
U.S. Cl. D7—83



278,677
FOOD MASHING TOOL
Mildred Zimetbaum, 19 McClellan Ter., West Orange, N.J. 07052
Filed Sep. 27, 1982, Ser. No. 424,027
Term of patent 14 years
U.S. Cl. D7—101



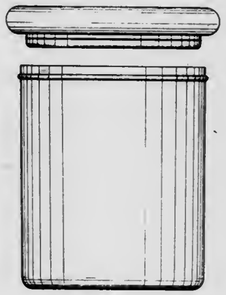
278,678
KNIFE
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,469
Term of patent 14 years
U.S. Cl. D7—137



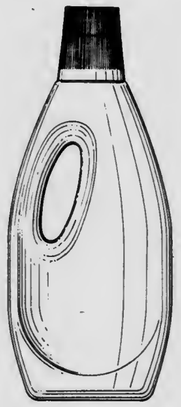
278,679
MOUNTING CLIP
Jesus R. Villanueva, Justice, Ill., assignor to The Cooperative Marketing Co., Elk Grove Village, Ill.
Filed Jul. 20, 1982, Ser. No. 400,098
Term of patent 14 years
U.S. Cl. D8—373



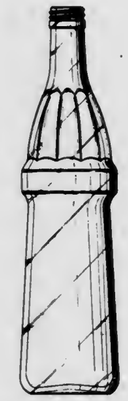
278,680
COMBINED PACKAGING CONTAINER AND COVER WITH A CROWNED BEAD
Silvio Guzzini, Recanati, Italy, assignor to F. Lli Guzzini S.p.A., Recanati, Italy
Filed Feb. 8, 1982, Ser. No. 347,024
Term of patent 14 years
U.S. Cl. D9—352



278,681
BOTTLE
Harald Prahs, Hamburg-Wentorf, Fed. Rep. of Germany, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 14, 1982, Ser. No. 417,893
Term of patent 14 years
U.S. Cl. D9—378



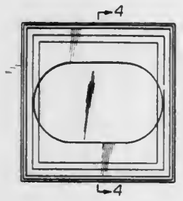
278,682
BOTTLE
Gérard Khalifa, Marseille, France, assignor to Societe Internationale De Boissons, Aubagne, France
Filed Jul. 12, 1982, Ser. No. 397,019
Claims priority, application France, Jan. 12, 1982, 820,074
Term of patent 14 years
U.S. Cl. D9—398



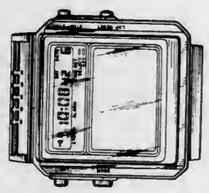
278,683
BOTTLE
Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Inc., Boyertown, Pa.
Filed May 13, 1982, Ser. No. 377,638
Term of patent 14 years
U.S. Cl. D9—410



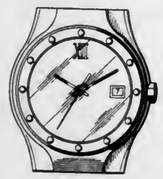
278,684
TELESCOPING DISPENSER FOR COTTON BALLS OR THE LIKE
Howard Sussman, c/o F. F. Adams, Inc., 700 NW. 8th Ave., Fort Lauderdale, Fla. 33311
Filed Nov. 2, 1981, Ser. No. 317,272
Term of patent 14 years
U.S. Cl. D9—339



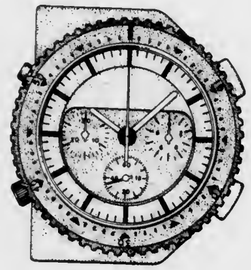
278,685
WATCH
Susumu Suzuki; Noritaka Uchihori, and Naoto Fukasawa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 14, 1982, Ser. No. 449,815
Claims priority, application Japan, Jun. 15, 1982, 57-26705
Term of patent 14 years
U.S. Cl. D10—38



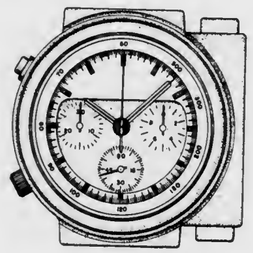
278,686
WATCH
Fredy Mathez, Tramelan, Switzerland, assignor to Paul Virgile Mathez, S.A., Tramelan, Switzerland
Filed Dec. 6, 1982, Ser. No. 447,680
Claims priority, application Hague, Jun. 7, 1982, 72,433
Term of patent 14 years
U.S. Cl. D10—39



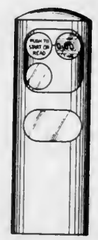
278,687
WRISTWATCH
Giorgetto Giugiaro, Trofarello, Italy, assignor to Kabushiki Kaisha Hattori Seiko, Tokyo, Japan
Filed Jun. 29, 1983, Ser. No. 509,169
Claims priority, application Japan, Jan. 20, 1983, 58-1955
Term of patent 14 years
U.S. Cl. D10—39



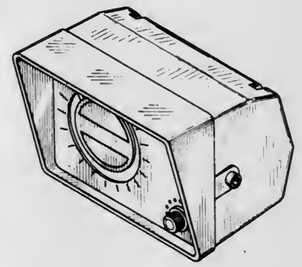
278,688
WRISTWATCH
Giorgetto Giugiaro, Trofarello, Italy, assignor to Kabushiki Kisha Hattori Seiko, Tokyo, Japan
Filed Jun. 21, 1983, Ser. No. 506,338
Claims priority, application Japan, Dec. 21, 1982, 57-261
Term of patent 14 years
U.S. Cl. D10—39



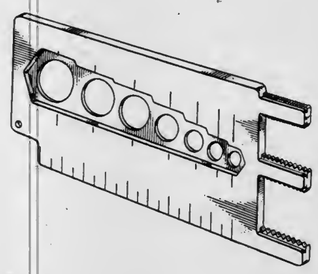
278,689
PARKING METER
Carlen R. Jupe, 1270 First St., Monterey, Calif. 93940
Filed May 27, 1982, Ser. No. 382,635
Term of patent 14 years
U.S. Cl. D10—42



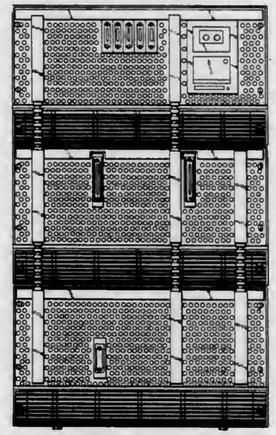
278,690
HOUSING FOR SONAR UNIT
David B. Steensland, and William E. McBride, both of Tulsa, Okla., assignors to Lowrance Electronics, Inc., Tulsa, Okla.
Filed Aug. 9, 1982, Ser. No. 406,702
Term of patent 14 years
U.S. Cl. D10—46



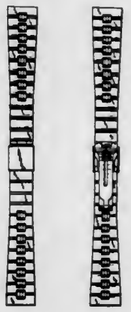
278,691
BOLT, NUT, SCREW AND THREAD GAGE
John E. Sorrell, Toluca Lake, Calif., assignor to Sonia Sorrell, Toluca Lake, Calif.
Filed May 25, 1982, Ser. No. 382,227
Term of patent 14 years
U.S. Cl. D10—64



278,692
CIRCUIT BOARD TESTING EQUIPMENT
Kurt Groetzner, Stuttgart, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 19, 1982, Ser. No. 340,791
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 5331
Term of patent 14 years
U.S. Cl. D10—75



278,693
WATCH BRACELET
Alain-Dominique Perrin, Rueil-Malmaison, France, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Oct. 6, 1982, Ser. No. 433,095
Claims priority, application France, Apr. 6, 1982, 821203; Apr. 16, 1982, 821342
Term of patent 14 years
U.S. Cl. D11—19



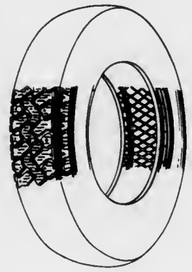
278,694
WINDOW JEWEL
Julia Andrus, Salt Lake City, Utah, assignor to Authentica, Inc., Salt Lake City, Utah
Filed Nov. 10, 1982, Ser. No. 440,460
Term of patent 14 years
U.S. Cl. D11—117



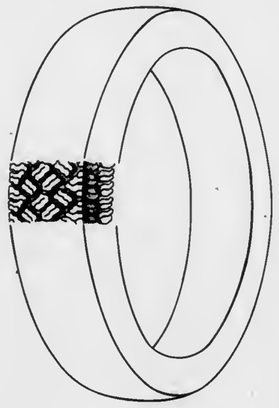
278,695
WINDOW JEWEL
Julia Andrus, Salt Lake City, Utah, assignor to Authentica, Inc., Salt Lake City, Utah
Filed Nov. 10, 1982, Ser. No. 440,581
Term of patent 14 years
U.S. Cl. D11—117



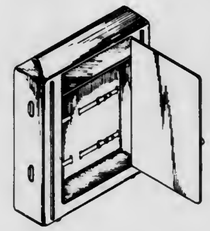
278,696
VEHICLE TIRE
Hubert Grohmann, and Halvard Nilsson, both of Gislaved, Sweden, assignors to Gislaved Aktiebolag, Gislaved, Sweden
Filed Oct. 18, 1983, Ser. No. 543,098
Claims priority, application Sweden, Apr. 18, 1983, 83-1088
Term of patent 14 years
U.S. Cl. D12—147



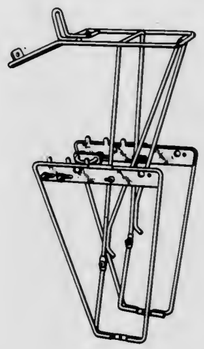
278,697
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Orchard Lake, Mich., assignor to Uniroyal, Inc., Middlebury, Conn.
Filed Jul. 5, 1983, Ser. No. 510,795
Term of patent 14 years
U.S. Cl. D12—151



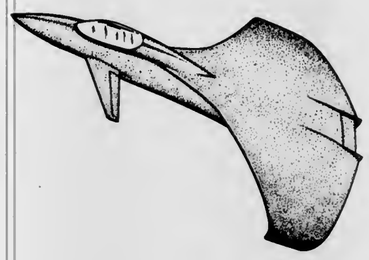
278,698
CAR TOP CARRIER FOR CLOTHING ARTICLES, CARGO AND THE LIKE
William K. Borden, 211 Savannah Dr., Nicholasville, Ky. 40356
Filed Sep. 30, 1982, Ser. No. 432,127
Term of patent 14 years
U.S. Cl. D12—157



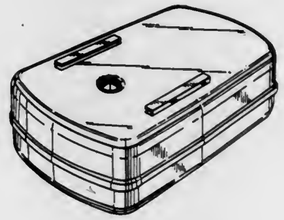
278,699
PANNIER CARRIER FOR THE FRONT WHEEL OF A BICYCLE
James R. Blackburn, 303 Casitas Bulevar, Los Gatos, Calif. 95030
Filed May 15, 1981, Ser. No. 263,777
Term of patent 14 years
U.S. Cl. D12—158



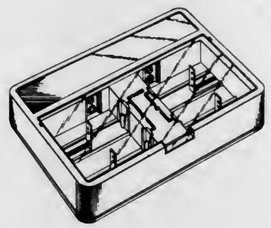
278,700
AIRCRAFT
Sidney A. Powers, Fort Salonga; Gordon Rosenthal, Jericho, and William V. Stirling, Huntington, all of N.Y., assignors to Fairchild Industries, Inc., Chantilly, Va.
Filed Nov. 3, 1983, Ser. No. 548,460
Term of patent 14 years
U.S. Cl. D12—342



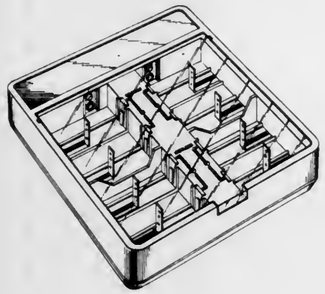
278,701
ROTATOR PRIMARILY FOR A BARBECUE SPIT
Clement S. Wan, Hong Kong, Hong Kong, assignor to Landmann Limited, Kowloon, Hong Kong
Filed Feb. 26, 1982, Ser. No. 352,610
Claims priority, application United Kingdom, Sep. 9, 1981, 1002392
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—2



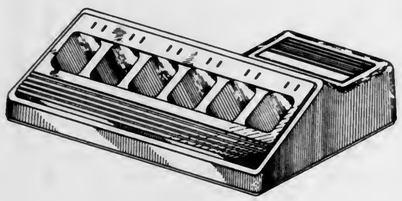
278,702
MULTIPLE BATTERY CHARGER
Daniel J. Chiodo, Miami; Barry Pardon, Tamarac, and Joseph Verga, Miami Lakes, all of Fla., assignors to General Electric Company, Gainesville, Fla.
Filed Jan. 28, 1983, Ser. No. 461,769
Term of patent 14 years
U.S. Cl. D13—5



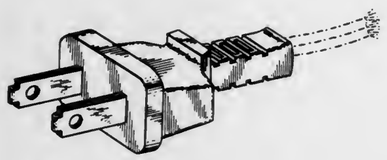
278,703
MULTIPLE BATTERY CHARGER
Daniel J. Chiodo, Miami; Barry Pardon, Tamarac, and Joseph Verga, Miami Lakes, all of Fla., assignors to General Electric Company, Gainesville, Fla.
Filed Jan. 28, 1983, Ser. No. 461,771
Term of patent 14 years
U.S. Cl. D13—5



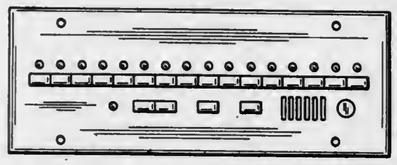
278,704
MULTIPLE BATTERY CHARGING UNIT OR SIMILAR ARTICLE
Bruce A. Claxton, Coral Springs, Fla., and Sylvia Ramos, Royal Oak, Mich., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 22, 1983, Ser. No. 525,085
Term of patent 14 years
U.S. Cl. D13—5



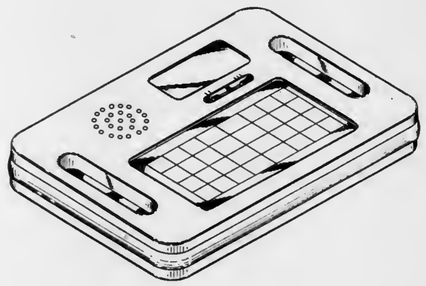
278,705
TWO-PRONG ELECTRIC PLUG
Petrus J. J. Nagelkerke, and Klaas T. Oord, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 5, 1982, Ser. No. 432,627
Term of patent 14 years
U.S. Cl. D13—28



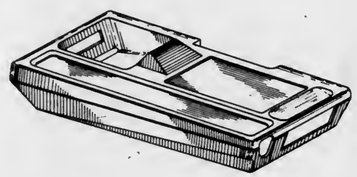
278,706
POWER CONTROL PANEL
Hiroshi Yamagata, and Kendo Makihara, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Aug. 10, 1983, Ser. No. 522,192
Term of patent 14 years
U.S. Cl. D13—35



278,707
CASING FOR VOICE SYNTHESIZER
Robert S. Swinney, Glendale, Calif., assignor to Robert Swinney Ltd., Glendale, Calif.
Filed Feb. 28, 1983, Ser. No. 470,279
Term of patent 14 years
U.S. Cl. D14—1



278,708
TELEPHONE CRADLE OR SIMILAR ARTICLE
Terrance N. Taylor, Cary, and Leonid Soren, Lincolnwood, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 19, 1983, Ser. No. 459,278
Term of patent 14 years
U.S. Cl. D14—60



278,709
KEYBOARD FOR A COMPUTER SYSTEM
Eric G. Xanthopoulus, San Jose, Calif., assignor to Cromemco Inc., Calif.
Filed Nov. 2, 1982, Ser. No. 438,480
Term of patent 14 years
U.S. Cl. D14—100

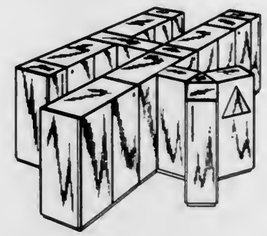


278,710
PROGRAMMABLE CONTROLLER
Norio Shimizu; Yuichi Watanabe, and Kiichi Naoi, all of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1982, Ser. No. 454,755
Term of patent 14 years
U.S. Cl. D14—100

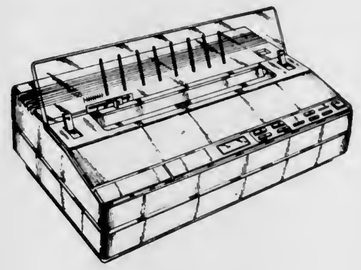
278,711
COMPUTER HOUSING
Randall S. Duell, Batavia; Steven H. Kulpa, Aurora, both of Ill.; Justin M. Maguire, Jr., Barrington, R.I.; Alan C. Schoneck, Wheaton, Ill., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 23, 1982, Ser. No. 422,206
Term of patent 14 years
U.S. Cl. D14—102



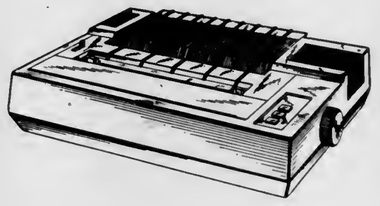
278,712
CENTRAL PROCESSOR UNIT
Koushirou Adachi, Tokorozawa; Katsuhiko Nishiwaki, Higashimurayama; Motoake Sakamoto, Tanashi; Tamotsu Tsukaguchi, Hiratsukashi, and Mitsuo Miyamoto, Hatano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 26, 1982, Ser. No. 444,707
Claims priority, application Japan, Jun. 21, 1982, 57-27339
Term of patent 14 years
U.S. Cl. D14—102



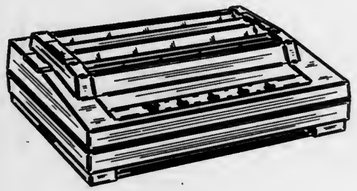
278,713
PRINTER
Vincent A. Juliana, Exton, Pa., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Sep. 30, 1982, Ser. No. 429,149
Term of patent 14 years
U.S. Cl. D14—111



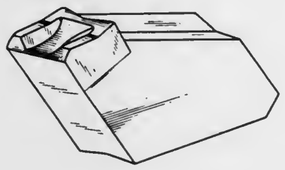
278,714
ELECTRONIC PRINTER
Naoyuki Maruyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha and Epson Corp., both of Tokyo, Japan
Filed Dec. 2, 1982, Ser. No. 446,118
Claims priority, application Japan, Jun. 4, 1982, 57-24662
Term of patent 14 years
U.S. Cl. D14—111



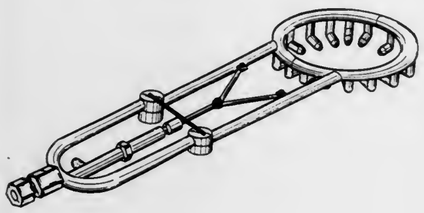
278,715
INK JET PRINTER
Katsuhiro Ishida, and Harumi Sakamoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1982, Ser. No. 452,838
Claims priority, application Japan, Jul. 5, 1982, 57-30409
Term of patent 14 years
U.S. Cl. D14—111



278,716
CUTTING INSERT FOR METAL WORKING MACHINES
Joseph Pano, Nahariya, Israel, assignor to Iscar Ltd., Nahariya, Israel
Filed Jul. 9, 1981, Ser. No. 281,550
Claims priority, application Israel, Jan. 21, 1981, 8420
Term of patent 14 years
U.S. Cl. D15—139



278,717
PRESSURE WELDING BURNER
Kokichi Ichikawa, 1-27 Heian-cho, Tsurumi-ku, Yokohama 230, Japan
Filed Sep. 22, 1982, Ser. No. 421,524
Term of patent 14 years
U.S. Cl. D15—144



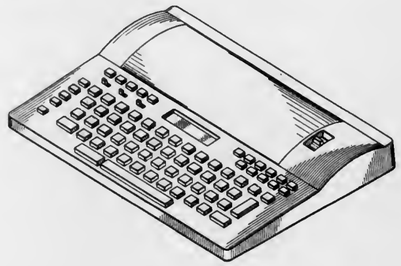
278,718
PIANO WIRE DAMPER
Jerry McKibben, Seneca, S.C., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Mar. 1, 1983, Ser. No. 471,195
Term of patent 14 years
U.S. Cl. D17—9



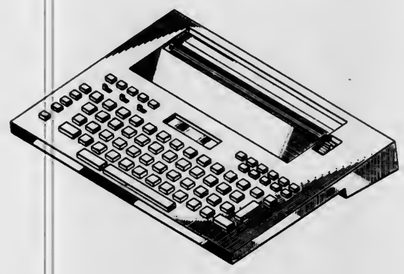
278,719
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,311
Claims priority, application Japan, Jan. 11, 1983, 58-507
Term of patent 14 years
U.S. Cl. D18—1



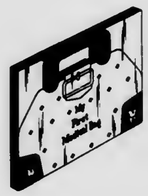
278,720
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,313
Claims priority, application Japan, Jan. 11, 1983, 58-513
Term of patent 14 years
U.S. Cl. D18—1



278,721
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,324
Claims priority, application Japan, Jan. 11, 1983, 58-510
Term of patent 14 years
U.S. Cl. D18—1



278,722
CHILDREN'S BOOK
James F. Becker, 3008 3rd St. - Apt. A, and Andrew S. Mayer, 706-½ Ashland Ave, both of Santa Monica, Calif. 90405
Filed Jul. 12, 1982, Ser. No. 397,290
Term of patent 14 years
U.S. Cl. D19—28



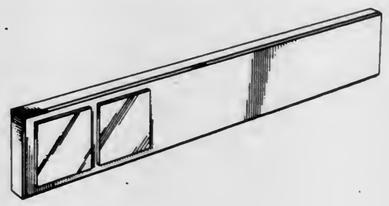
278,723
APPOINTMENT MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Jan. 20, 1983, Ser. No. 459,698
Term of patent 14 years
U.S. Cl. D19—91



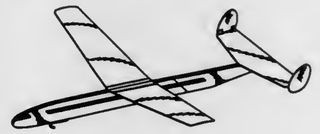
278,724
VENDING MACHINE
G. Merle Bachmann, Stone Mountain; Charles L. Davis, Atlanta; Annis R. Morgan, Jr., Atlanta; Walter L. Shelton, Atlanta, and Robert D. Hughes, IV, Smyrna, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 236,182, Feb. 20, 1981, Pat. No. Des. 266,337. This application Jun. 14, 1982, Ser. No. 388,442
Term of patent 14 years
U.S. Cl. D20—4



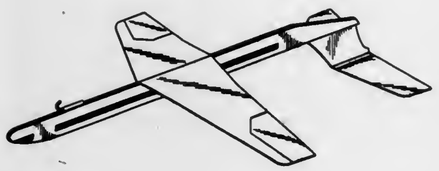
278,725
SIGN BOARD
Lee R. Caroselli, Box 842, Vail, Colo. 81657
Continuation of Ser. No. 930,733, Aug. 3, 1978,. This application Dec. 5, 1980, Ser. No. 213,253
Term of patent 14 years
U.S. Cl. D20—42



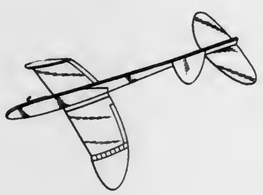
278,726
TOY AIRPLANE
Yasuaki Ninomiya, Suite 5-101 Tamaplaza, 20 Utsukushigaoka, 1-chome, Midoriku, Yokohama, Kanagawa, Japan
Filed Nov. 15, 1982, Ser. No. 441,508
Claims priority, application Japan, May 28, 1982, 57-23519
Term of patent 14 years
U.S. Cl. D21—89



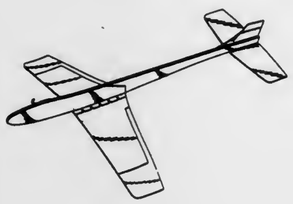
278,727
TOY AIRPLANE
Yasuaki Ninomiya, Suite 5-101 Tamaplaza, 20 Utsukushigaoka, 1-chome, Midoriku, Yokohama, Kanagawa, Japan
Filed Nov. 15, 1982, Ser. No. 441,510
Claims priority, application Japan, May 28, 1982, 57-23518
Term of patent 14 years
U.S. Cl. D21—89



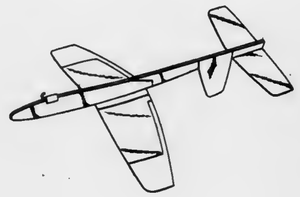
278,728
TOY AIRPLANE
Yasuaki Ninomiya, Suite 5-101 Tamaplaza, 20 Utsukushigaoka, 1-chome, Midoriku, Yokohama, Kanagawa, Japan
Filed Nov. 15, 1982, Ser. No. 441,649
Claims priority, application Japan, May 31, 1982, 57-23960
Term of patent 14 years
U.S. Cl. D21—89



278,729
TOY AIRPLANE
Yasuaki Ninomiya, Suite 5-101 Tamaplaza, 20 Utsukushigaoka, 1-chome, Midoriku, Yokohama, Kanagawa, Japan
Filed Nov. 15, 1982, Ser. No. 441,650
Claims priority, application Japan, May 28, 1982, 57-23521
Term of patent 14 years
U.S. Cl. D21—89



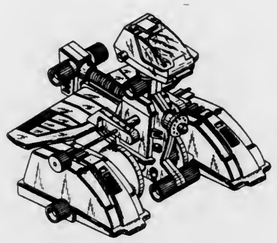
278,730
TOY AIRPLANE
Yasuaki Ninomiya, Suite 5-101 Tamaplaza, 20 Utsukushigaoka, 1-chome, Midoriku, Yokohama, Kanagawa, Japan
Filed Nov. 15, 1982, Ser. No. 441,651
Claims priority, application Japan, May 31, 1982, 57-23959
Term of patent 14 years
U.S. Cl. D21—89



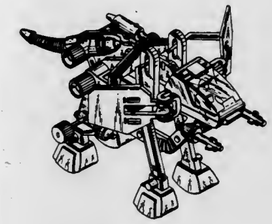
278,731
INFLATABLE PLUSH TOY FIGURES
Timothy J. Cohorst, P.O. Box 2868, Arnold, Calif. 95223, and Ruth R. Haupt, 2620 Echo Ave., Bakersfield, Calif. 93304
Filed Dec. 8, 1982, Ser. No. 432,656
Term of patent 14 years
U.S. Cl. D21—148



278,732
ANIMAL-LIKE FIGURE TOY
Tethuo Ohkado, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan
Filed Aug. 13, 1982, Ser. No. 407,740
Claims priority, application Japan, Aug. 25, 1981, 56-37330
Term of patent 14 years
U.S. Cl. D21—150



278,733
ANIMAL-LIKE FIGURE TOY
Tethuo Ohkado, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan
Filed Aug. 13, 1982, Ser. No. 407,741
Claims priority, application Japan, Aug. 25, 1981, 56-37330
Term of patent 14 years
U.S. Cl. D21—150



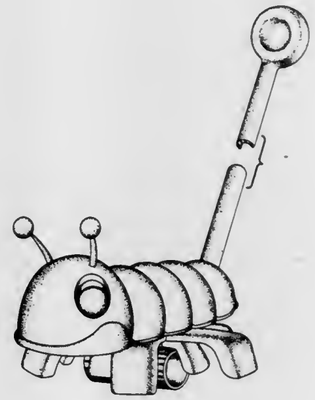
278,734
DUCK-LIKE DOLL
Barbara A. D. Thorndike, Reservoir Rd., Meredith, N.H. 03253
Filed Jun. 14, 1982, Ser. No. 388,099
Term of patent 14 years
U.S. Cl. D21—160



278,735
TOY FIGURE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Dec. 10, 1982, Ser. No. 448,757
Term of patent 14 years
U.S. Cl. D21—166



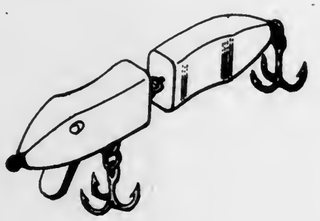
278,736
WHEELED CATERPILLAR TOY
Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Dec. 27, 1982, Ser. No. 452,889
Term of patent 14 years
U.S. Cl. D21—185



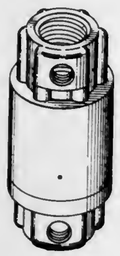
278,737
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Division of Ser. No. 370,209, Apr. 21, 1982, which is a continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Jun. 29, 1984, Ser. No. 626,646
Term of patent 14 years
U.S. Cl. D21—190



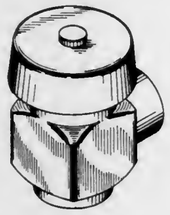
278,738
FISHING LURE
Wilson C. Hargreaves, 120 Pinecliff Lake Dr., West Milford, N.J. 07480
Filed Apr. 7, 1983, Ser. No. 482,859
Term of patent 14 years
U.S. Cl. D22—28



278,739
NON-DRAIN VALVE
Cecil Galloway, Glendora, Calif., assignor to Brownline Pipe, Inc., Laguna Hills, Calif.
Filed Aug. 16, 1982, Ser. No. 408,271
Term of patent 14 years
U.S. Cl. D23—19



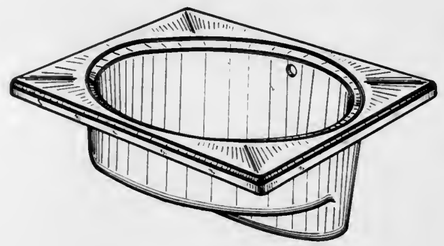
278,740
VACUUM BREAKER VALVE
Edwin F. Bolgert, Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Nov. 29, 1982, Ser. No. 444,998
Term of patent 14 years
U.S. Cl. D23—19



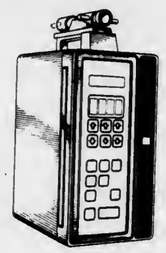
278,741
BATHTUB
Jack N. Kaiser, Rte. 2, Harrodsburg Rd., Danville, Ky. 40422
Filed Mar. 18, 1983, Ser. No. 476,696
Term of patent 14 years
U.S. Cl. D23—55



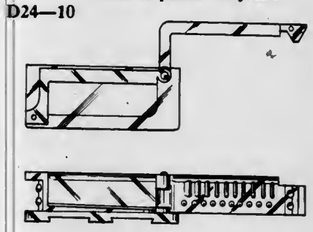
278,742
BATHTUB
Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,088
Term of patent 14 years
U.S. Cl. D23—55



278,743
PARENTERAL INFUSION PUMP
Joseph J. Manno, San Diego, and Stephen H. O'Leary, Encinitas, both of Calif., assignors to IVAC Corporation, San Diego, Calif.
Filed Jun. 28, 1982, Ser. No. 392,736
Term of patent 14 years
U.S. Cl. D24—8

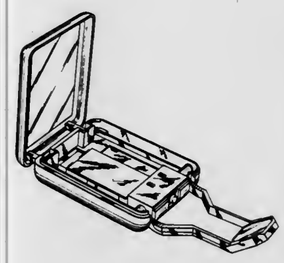


278,744
DENTAL DIE LOCK
Clyde J. Miener, St. Louis, Mo., assignor to Kirkwood Dental Crafts, Inc., St. Louis, Mo.
Filed Sep. 16, 1982, Ser. No. 418,797
Term of patent 14 years
U.S. Cl. D24—10



278,745
TOOTH MIRROR
Mitsuo Takahashi, Miyagi, Japan, assignor to Central Koyo Co., Ltd., Miyagi, Japan
Filed Aug. 19, 1982, Ser. No. 409,605
Claims priority, application Japan, Apr. 23, 1981, 56-17110
Term of patent 14 years
U.S. Cl. D24—13

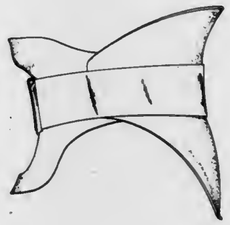




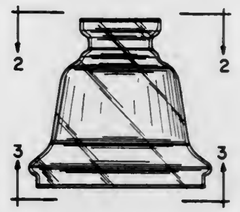
278,746
PULSE TRANSMITTER
Seppo J. Saynajakangas, Kempele, Finland, assignor to Polar Electro Ky, Oulu, Finland
Filed Nov. 26, 1982, Ser. No. 444,533
Claims priority, application Finland, Sep. 10, 1982, 805/82
Term of patent 14 years
U.S. Cl. D24—17



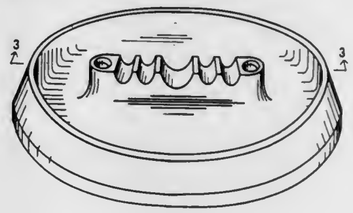
278,747
CERVICAL COLLAR
Clyde E. Peach, Jr, 7045 North 550 East, Brownsburg, Ind. 46112
Filed Sep. 24, 1982, Ser. No. 423,479
Term of patent 14 years
U.S. Cl. D24—64



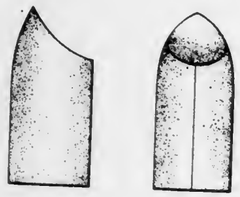
278,748
SHADE OR THE LIKE
Kenneth A. Burket, Horseheads, and Gerhard F. Koenig, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 24, 1982, Ser. No. 381,015
Term of patent 14 years
U.S. Cl. D26—132



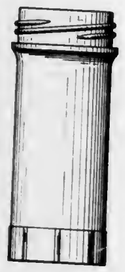
278,749
ASHTRAY
Antal M. Martinovics, 32 Jordan Rd., Chelmsford, Mass. 01863, and Andrew G. Kohalmi, 11 Baron Park La., Apt. 2, Burlington, Mass. 01803
Filed Jun. 7, 1982, Ser. No. 385,897
Term of patent 14 years
U.S. Cl. D27—27



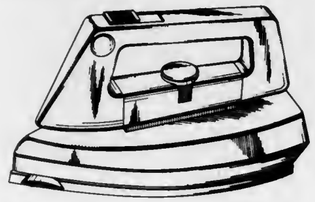
278,750
LIPSTICK
Arthur Pisani, and Robert Pisani, both of Kennelon, N.J., assignors to Cavalla, Inc., Hackensack, N.J.
Filed Sep. 26, 1983, Ser. No. 535,602
Term of patent 14 years
U.S. Cl. D28—4



278,751
DISPENSER TUBE CASING FOR TOILETRY STICK OR THE LIKE
Richard H. Seager, Mystic, Conn., assignor to Calumet Manufacturing Co., East Orange, N.J.
Filed Nov. 9, 1981, Ser. No. 319,808
Term of patent 14 years
U.S. Cl. D28—76



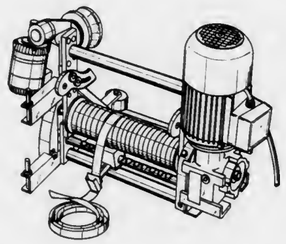
278,752
IRON OR SIMILAR ARTICLE
John C. Shalvoy, Fairfield, Conn., and Gary E. Van Deursen, Upper Saddle River, N.J., assignors to Black & Decker, Inc., Newark, Del.
Filed Jul. 11, 1983, Ser. No. 465,200
Term of patent 14 years
U.S. Cl. D32—70



278,753
MARINE RAILWAY STAND
John H. Honour, VII, 3560 Ivy Pl., Wayzata, Minn. 55391
Filed Sep. 16, 1982, Ser. No. 419,044
Term of patent 14 years
U.S. Cl. D34—31



278,754
WINCH
Bengt-Göran Andersson, Valter Sjölins vä 3, and Gert Liljenborg, Valter Sjölins väg 19, both of S-260 50 Billesholm, Sweden
Filed Sep. 1, 1982, Ser. No. 414,177
Claims priority, application Sweden, Mar. 5, 1982, 82-0520
Term of patent 14 years
U.S. Cl. D34—33



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF MAY, 1985

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Moelven Brug: *See*—
Falch, Sverre, 4,515,282, Cl. 212-254.000.
Aarflot, Kjell, to Nike, Inc. Sole for cross-country ski shoe. 4,514,916, Cl. 36-117.000.
Abbott Laboratories: *See*—
Manderino, George L.; and Suarez, Adoracion F., 4,515,890, Cl. 435-7.000.
Mendenhall, Douglas W.; and Li, Ping, 4,515,586, Cl. 604-87.000.
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. Artificial pancreas. 4,515,584, Cl. 604-66.000.
Abe , Ryozo: *See*—
Sigiyama, Hiroyuki; Sakurai, Masaki; Abe , Ryozo; and Yoshihara, Kenji, 4,516,161, Cl. 358-342.000.
Abe, Susumu; Munakata, Akio; and Kitahara, Takeshi, to Fujitsu Limited. Image data conversion method and character code/character pattern conversion apparatus. 4,516,173, Cl. 358-261.000.
Abex Corporation: *See*—
Bownass, Norris; and Clarkson, Donald J., 4,515,184, Cl. 137-625.660.
Abic Ltd.: *See*—
Daniel, Nisim, 4,515,590, Cl. 604-144.000.
Abkowitz, Martin A.: *See*—
Mammino, Joseph; Sypula, Donald S.; Abramsohn, Dennis A.; Abkowitz, Martin A.; and Scharfe, Merlin E., 4,515,882, Cl. 430-58.000.
Abramsohn, Dennis A.: *See*—
Mammino, Joseph; Sypula, Donald S.; Abramsohn, Dennis A.; Abkowitz, Martin A.; and Scharfe, Merlin E., 4,515,882, Cl. 430-58.000.
A'Costa, Anthony. Gun recoil protector. 4,514,862, Cl. 2-268.000.
A'Costa, Anthony. Handgun accuracy control harness. 4,515,301, Cl. 224-204.000.
Acutherm, Ltd.: *See*—
Kline, James R.; and Brand, Peter, 4,515,069, Cl. 98-40.00D.
Adachi, Kiyoshi; Uehara, Masaru; Kitagawa, Hiroshi; Kojima, Hirotaka; and Sato, Masaaki, to Mitsubishi Rayon Company, Limited. Apparatus for continuously packing medical appliances for sterilization. 4,514,965, Cl. 53-553.000.
Adams, Frank H.: *See*—
Danta, William E.; and Adams, Frank H., 4,515,105, Cl. 118-629.000.
Adams, Michael J.: *See*—
Payne, David N.; Sasaki, Issei; and Adams, Michael J., 4,515,475, Cl. 356-73.100.
Adger, Brian M.; and O'Rourke, David J., to Smith Kline & French Laboratories Limited. Synthesis of 2-pyridylalkylamines substituted on the pyridyl ring by bromine. 4,515,952, Cl. 546-329.000.
Adnyana, Dewa N.: *See*—
Rogen, Neil E.; and Adnyana, Dewa N., 4,515,213, Cl. 166-123.000.
Adriaensen, Ludo: *See*—
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,515,905, Cl. 502-309.000.
Advanced Micro Devices, Inc.: *See*—
Frederick, Bruce A., 4,516,225, Cl. 365-203.000.
Advanced Technology Laboratories, Inc.: *See*—
McConaghy, Robert F., 4,515,017, Cl. 73-618.000.
Ag-Chem Equipment Co., Inc.: *See*—
Takata, Harry H., 4,515,311, Cl. 239-172.000.
Agadi, Isaac. Internal combustion engines. 4,515,138, Cl. 123-590.000.
Agfa-Gevaert Aktiengesellschaft: *See*—
Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,515,356, Cl. 270-53.000.
AGFA-Gevaert N.V.: *See*—
Vackier, Leo N., 4,515,461, Cl. 355-3.0TR.
Agro-Systems, Inc.: *See*—
Anthony, Wilson B., 4,515,816, Cl. 426-69.000.
Air Products and Chemicals, Inc.: *See*—
Greskovich, Eugene J., 4,515,095, Cl. 110-347.000.
Airwick Industries, Inc.: *See*—
Hennart, Claude; and Blanc, Rene , 4,515,768, Cl. 424-40.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Frank, Andrew A.; and Omitsu, Takashi, 4,515,041, Cl. 74-866.000.
Inden, Masahiro; and Kuwana, Kazutaka, 4,515,345, Cl. 251-141.000.
Ajima, Takashi; Ohshima, Jiro; and Koshino, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of forming deep aluminum doped silicon by implanting Al and Si ions through alumina layer and device formed thereby. 4,515,642, Cl. 148-1.500.
Akashi, Goro: *See*—
Kitamoto, Tatsuji; and Akashi, Goro, 4,515,857, Cl. 428-328.000.
Akerblom, Bengt. Flow-modifying element, especially a rudder. 4,515,101, Cl. 114-162.000.
Akey, Ronald R.: *See*—
Van Gompel, James; and Akey, Ronald R., 4,515,506, Cl. 410-46.000.
Akiba, Shigeyuki: *See*—
Utaka, Katsuyuki; Sakai, Kazuo; and Akiba, Shigeyuki, 4,516,243, Cl. 372-96.000.
Akimoto, Koichi: *See*—
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.
Akred, Brian J.; Messenger, Edward T.; and Nicholson, William J., to Albright & Wilson Limited. Pourable non-sedimenting aqueous based detergent composition having an organic lamellar structural component. 4,515,704, Cl. 252-135.000.
Aktiebolaget Volvo Penta: *See*—
Ryberg, Bertil; and Mellgren, Kenth, 4,516,000, Cl. 200-44.000.
Aktieselskabet Aalborg Portland-Cement-Fabrik: *See*—
Arup, Hans, 4,515,861, Cl. 428-450.000.
Akzona Incorporated: *See*—
Juenger, Rudolf, 4,515,641, Cl. 134-5.000.
Alario, Joseph P.; Brown, Richard F.; and Kosson, Robert L., to United States of America, National Aeronautics and Space Administration. Monogroove heat pipe design: insulated liquid channel with bridging wick. 4,515,207, Cl. 165-1.000.
Alas, Raigo: *See*—
Corvari, John; Ulvr, Joseph; and Alas, Raigo, 4,516,264, Cl. 382-46.000.
Albright, Jay D.: *See*—
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,515,791, Cl. 514-248.000.
Albright & Wilson Limited: *See*—
Akred, Brian J.; Messenger, Edward T.; and Nicholson, William J., 4,515,704, Cl. 252-135.000.
Alfa Farmaceutici S.p.A.: *See*—
Borzatta, Valerio; Cristofori, Manlio; Morotti, Mauro; and Mascellani, Giuseppe, 4,515,809, Cl. 514-533.000.
Alfa-Laval AB: *See*—
Kirschenmann, Bernd R. G., 4,515,823, Cl. 426-491.000.
Alisyncro S.p.A.: *See*—
Bruno, Carlo L., 4,514,963, Cl. 53-493.000.
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., to American Cyanamid Company. Substituted phenyl-1,2,4-triazolo[2,3-b]pyridazin-3(2H)ones as anti-asthma agents. 4,515,791, Cl. 514-248.000.
Allied Corporation: *See*—
Aron, Mitchell, 4,515,442, Cl. 350-397.000.
Bach, Lloyd G.; and Gaiser, Robert F., 4,514,982, Cl. 60-562.000.
Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, 4,515,868, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,515,869, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,515,870, Cl. 428-656.000.
Brown, Arthur K.; Fulmer, Keith H.; and Ewald, Jerome T., 4,514,981, Cl. 60-547.100.
Gaiser, Robert F., 4,514,983, Cl. 60-562.000.
Johnson, Duane R., 4,515,258, Cl. 192-91.00A.
Margolin, Mark; Grois, Igor; Herdeg, Peter K.; and Nijman, John P., 4,515,434, Cl. 350-96.210.
Spaargaren, Robert, 4,515,250, Cl. 188-79.5GT.
Vaughn, Edward A., 4,514,880, Cl. 19-0.350.
Allied Flux Reclaiming Ltd.: *See*—
Beck, Alfred; and Van Papeveld, Piet, 4,514,931, Cl. 49-21.000.
Allis-Chalmers Corporation: *See*—
Fisher, Richard K., Jr., 4,515,524, Cl. 415-219.00R.
Alpha-Debon Industries, Inc.: *See*—
Dorsch, Robert; and Matusz, Arnold J., 4,515,073, Cl. 98-115.200.
Alvarado, Alfredo. Surgical glove carton and trash receptacle. 4,515,270, Cl. 206-438.000.
Alvarez, Donald E. Heat recuperator for a strip mill. 4,514,999, Cl. 72-202.000.
ALZA Corporation: *See*—
Urquhart, John; and Theeuwes, Felix, 4,515,585, Cl. 604-85.000.
Amann, Markus: *See*—
Thomann, Roland; and Amann, Markus, 4,515,498, Cl. 404-4.000.
Amano Corporation: *See*—
Iwasawa, Hiroshi; Numata, Masanori; and Mama, Shinichi, 4,516,138, Cl. 346-80.000.
Amano, Yoshifumi, to Sony Corporation. Flat panel display apparatus. 4,516,053, Cl. 313-584.000.

Amemori, Koichi; Kawabe, Toshihiko; and Takahashi, Yosuke, to Yanmar Diesel Engine Co., Ltd. Governor for internal combustion engine. 4,515,120, Cl. 123-368.000.

Amendolia, Pasquale J., to Health Care Concepts, Inc. I.V. flow regulator. 4,515,588, Cl. 604-118.000.

American Cyanamid Company: *See—*
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,515,791, Cl. 514-248.000.
Chang, Eugene Y. C., 4,515,933, Cl. 528-57.000.
Chow, San-Laung; and Sims, Bernard, 4,515,810, Cl. 514-530.000.
De Maria, Francesco; and Streetman, William E., 4,515,859, Cl. 428-398.000.
Lang, Stanley A., Jr.; and Murdock, Keith C., 4,515,954, Cl. 548-109.000.
Ling, Chi-Fei, 4,515,855, Cl. 428-290.000.
Schaub, Robert E.; Miner, Thomas G.; and Bernstein, Seymour, 4,515,782, Cl. 514-24.000.
Sears, Karl, 4,514,960, Cl. 53-440.000.

American Hoechst Corporation: *See—*
Caines, R. Scott, 4,515,863, Cl. 428-480.000.

American Home Products Corporation: *See—*
Demerson, Christopher A.; and Humber, Leslie G., 4,515,961, Cl. 548-432.000.
Santroch, George; and Jirkovsky, Ivo, 4,515,949, Cl. 544-343.000.

American Hospital Supply Corporation: *See—*
DeVroom, William A., 4,515,278, Cl. 211-107.000.

American Sterilizer Company: *See—*
Dyke, Denis G., 4,515,841, Cl. 428-35.000.

Ammermann, Eberhard: *See—*
Husslein, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,515,623, Cl. 71-12.000.

AMP Incorporated: *See—*
Marpoe, Gary R., Jr., 4,516,072, Cl. 324-158.00F.
Pritulsky, James, 4,515,422, Cl. 339-17.00C.

Ampex Corporation: *See—*
Lee, Patrick S., 4,516,178, Cl. 360-78.000.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Method of monitoring the production of extruded profiles and an apparatus incorporating means for effecting such monitoring. 4,515,738, Cl. 264-40.700.

Anderson, F. Allan; Chen, Henry C. J.; DiMucci, Vito A.; and Wang, Roger C., to Peco Controls Corporation. Filler line monitoring system. 4,514,954, Cl. 53-53.000.

Anderson, Gene S., to Cooper Industries, Inc. Thermally stabilized fiber optic cable. 4,515,435, Cl. 350-96.230.

Anderson, Richard N., to Hunter Douglas Inc. Suspension means for suspending venetian blind hanger pivot members. 4,515,201, Cl. 160-174.000.

Anderson, Robert L.; and McDonald, William R., to Ford Motor Company. Ionization probe interface circuit with high bias voltage source. 4,515,132, Cl. 123-494.000.

Androsenko, Alexandr P.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.

Annis, Gerald A., to Schlegel Corporation. Pile damper mechanism. 4,515,845, Cl. 428-86.000.

Anno, Tesfaye: *See—*
Wilfong, Evan C.; and Anno, Tesfaye, 4,515,262, Cl. 194-1.00G.

Anslinger, Friedrich: *See—*
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, 4,514,937, Cl. 51-281.0SF.

Anthes Equipment Limited: *See—*
Manderla, Henry J., 4,514,940, Cl. 52-126.100.

Anthony, Wilson B., to Agro-Systems, Inc. Processing of lignocellulose materials. 4,515,816, Cl. 426-69.000.

Aoki, Akira; and Ito, Kunihiko, to Tachikawa Spring Co., Ltd. Top member for a vehicle seat. 4,514,869, Cl. 5-472.000.

Aoki, Ryoichi: *See—*
Kataoka, Takeshi; Aoki, Ryoichi; Matsui, Hisashi; and Matsumoto, Hiroshi, 4,515,024, Cl. 74-10.330.

Aoki, Takashi: *See—*
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,515,465, Cl. 355-14.00C.

Aoyama, Keizo, to Fujitsu Limited. Semiconductor memory. 4,516,224, Cl. 365-203.000.

Apontoweil, Peter; and Krasselt, Manfred M., to Gist-Brocades N.V. Vaccines. 4,515,777, Cl. 424-89.000.

Applied Polymer Technology, Inc.: *See—*
Hinrichs, Richard J.; and Thuen, Judy, 4,515,545, Cl. 425-143.000.

Arai, Akio: *See—*
Horikoshi, Hiroshi; Arai, Akio; Tsukagoshi, Sadayuki; and Sakamoto, Junichi, 4,515,365, Cl. 273-25.000.

Arashi, Norio: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.

Arens, Hans, to Grunbeck Wasserauebereitung GmbH. Dosing pump. 4,515,537, Cl. 417-489.000.

Arikawa, Junichi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.

Arkansas Medical Research & Development Corporation: *See—*
Elliott, John Q., 4,515,779, Cl. 424-145.000.

Armstead, Brian H.; and Quinn, James P., to Internationale Octrooi Maatschappij "Octropa". Calcined silicas and their use in beer clarification. 4,515,821, Cl. 426-330.400.

Armstrong, Thomas R., to Paradyne Corporation. In-service monitoring system for data communications network. 4,516,216, Cl. 364-514.000.

Arndt, Friedrich: *See—*
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, 4,515,619, Cl. 71-90.000.

Arneberg, Walter, to Ideal Security Hardware Corporation. Reversible adjustable torsion door closer. 4,514,878, Cl. 16-300.000.

Arnold, Ernst, to Meteor AG. Plug-in arrangement and process for tin plating contacts of a plug-in arrangement. 4,516,103, Cl. 336-65.000.

Arnold & Richter Cine Technik GmbH. & Co. Betriebs KG: *See—*
Blaschek, Otto, 4,515,469, Cl. 355-35.000.

Aron, Mitchell, to Allied Corporation. Optical filter device. 4,515,442, Cl. 350-397.000.

Arrazola, Ignacio M., to McDonnell Douglas Corporation. Transparency for use with a flying spot scanner to generate images. 4,515,450, Cl. 353-5.000.

Arrow International, Inc.: *See—*
Frankhouser, Paul L., 4,515,592, Cl. 604-163.000.

Artemenko, Anatoly I.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.

Arup, Hans, to Aktieselskabet Aalborg Portland-Cement-Fabrik. Articles protected against corrosion and methods for protecting articles against corrosion. 4,515,861, Cl. 428-450.000.

Arvey Corporation: *See—*
Gillie, Raymond A., 4,514,961, Cl. 53-449.000.

Asahi Glass Company Ltd.: *See—*
Kambara, Toru; Uemura, Michihiko; and Iwanaga, Takeya, 4,516,090, Cl. 333-141.000.

Asai, Koichi; Tsuda, Mamoru; Oe, Kunio; and Muto, Yasuo, to Fuji Machine Mfg. Co., Ltd. Method and apparatus for holding and centering electronic component. 4,515,507, Cl. 414-226.000.

Asaida, Takashi: *See—*
Miyata, Katsuro; Asaida, Takashi; and Nagumo, Fumio, 4,516,172, Cl. 358-228.000.

Asami, Kazuto: *See—*
Nakamura, Minoru; and Asami, Kazuto, 4,515,172, Cl. 133-8.00A.

Asami, Toshio: *See—*
Honma, Kenji; Asami, Toshio; Baba, Masayuki; and Nakayama, Sumio, 4,515,384, Cl. 280-276.000.

Asan-Dzhalalov, Alexei G.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.

Asano, Toshiaki: *See—*
Takahashi, Sadatoshi; Tsuji, Sadahiko; Tajima, Akira; Asano, Toshiaki; and Minami, Setsuo, 4,515,446, Cl. 350-427.000.

ASEA Aktiebolag: *See—*
Lindgren, Carl E., 4,516,022, Cl. 250-227.000.
Liss, Gote, 4,516,198, Cl. 363-35.000.

Ashida, Shinichiro: *See—*
Boigegrain, Robert; Maffrand, Jean-Pierre; Suzuki, Norio; Matsubayachi, Kynichi; and Ashida, Shinichiro, 4,515,951, Cl. 546-114.000.

Ashland Oil, Inc.: *See—*
Beck, H. Wayne; Lochow, Charles F., Jr.; and Nibert, Charles W., 4,515,683, Cl. 208-113.000.
Goel, Anil B.; and Pettiford, Michael E., 4,515,983, Cl. 560-130.000.
Hettinger, William P., Jr.; Turrill, Frank H.; Rozman, George J.; and Beck, H. Wayne, 4,515,680, Cl. 208-87.000.
Hettinger, William P., Jr.; and Beck, Hubert W., 4,515,900, Cl. 502-63.000.
Hupp, Stephen S., 4,515,965, Cl. 548-548.000.

Ashley, Fred C., to Milliken Research Corporation. Yarn bobbin. 4,515,327, Cl. 242-118.300.

ASQ Boats, Inc.: *See—*
Lee, Steven N., 4,515,104, Cl. 118-500.000.

Associated Engineering Italy S.p.A.: *See—*
Bruni, Ludovico, 4,515,003, Cl. 72-370.000.

Associated Truss Company: *See—*
Kirby, Edward R., 4,514,901, Cl. 29-822.000.

AT&T Bell Laboratories: *See—*
Brown, James M.; and Kemper, Kyran B., 4,516,070, Cl. 324-117.00R.
Burrus, Charles A., Jr.; and Stone, Julian, 4,515,612, Cl. 65-3.120.
Ching, Yau-Chau; and Tomcik, James D., 4,516,258, Cl. 381-31.000.
Dixon, Richard W.; Joyce, William B.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,514,896, Cl. 29-576.00B.
Dragone, Corrado, 4,516,130, Cl. 343-781.00P.
Farah, Robert L.; and Walters, Stephen M., 4,516,241, Cl. 370-110.100.
Howard, Richard E.; Pleibel, William; Simpson, Jay R.; and Stolen, Rogers H., 4,515,436, Cl. 350-96.330.

Huang, Alan; and Knauer, Scott C., 4,516,238, Cl. 370-60.000.
Kinsbron, Eliezer; Lynch, William T.; and Smith, Thomas E., 4,514,893, Cl. 29-571.000.
Maxemchuk, Nicholas F., 4,516,239, Cl. 370-85.000.
Ray, Richard C., 4,516,214, Cl. 364-483.000.
Shackle, Peter W., 4,516,037, Cl. 307-252.00A.
Shoji, Masakazu, 4,516,123, Cl. 340-825.860.
Smith, Peter W.; and Tomlinson, Walter J., III, 4,515,429, Cl. 350-96.130.

AT&T Information Systems: *See—*
Grimes, Gary J., 4,516,250, Cl. 375-82.000.

AT&T Technologies, Inc.: *See—*
Chandler, Donald E.; Chisholm, William M.; and Lechner, Ralph T., 4,515,354, Cl. 269-15.000.
Gilley, James H., 4,515,484, Cl. 374-137.000.
Schoenthaler, David; and Wojcik, Thaddeus, 4,515,297, Cl. 222-160.000.

AT&T Teletype Corporation: *See—*
Durkee, David B.; Koller, James P.; and Wentzel, Robert M., 4,516,140, Cl. 346-140.00R.
Willcox, Charles R., 4,516,136, Cl. 346-76.0PH.

Atalla Corporation: *See—*
Atalla, Martin M., 4,515,288, Cl. 221-1.000.

Atalla, Martin M., to Atalla Corporation. Currency-dispensing method and apparatus. 4,515,288, Cl. 221-1.000.

Attard, Michel: *See—*
Chevrel, Roger; Attard, Michel; and Leviandier, Michel, 4,515,491, Cl. 400-693.000.

Auciello, Anthony R.: *See—*
Auciello, Michael J.; and Auciello, Anthony R., 4,515,271, Cl. 206-519.000.

Auciello Iron Works, Inc.: *See—*
Auciello, Michael J.; and Auciello, Anthony R., 4,515,271, Cl. 206-519.000.

Auciello, Michael J.; and Auciello, Anthony R., to Auciello Iron Works, Inc. Insert means for forming voids in concrete and method of applying same. 4,515,271, Cl. 206-519.000.

Audi NSU Auto Union A.G.: *See—*
Bier, Axel, 4,516,034, Cl. 307-10.00R.
Blatt, Georg; van den Boom, Johannes; Kuipers, Geert; and Hollerweger, Heinz, 4,515,239, Cl. 181-290.000.

Ausnit, Steven, to Minigrip, Inc. Method and apparatus for filling reclosable bags. 4,514,962, Cl. 53-457.000.

Austin, Jon W.; and Vaughn, Cecil C. Peristaltic pumping method and apparatus. 4,515,589, Cl. 604-122.000.

Austria Tabkwerke Aktiengesellschaft vorm. Osterreischische Tabakregie: *See—*
Peschetz, Johann, 4,515,542, Cl. 425-84.000.

Automated Industrial Systems: *See—*
Lawrence, Merlin, 4,515,289, Cl. 221-13.000.

Ayata, Kenzo: *See—*
Narita, Kiichi; Mori, Takasuke; and Ayata, Kenzo, 4,515,203, Cl. 164-468.000.

Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, to Hitachi, Ltd. Fuel jet method and apparatus for pulverized coal burner. 4,515,094, Cl. 110-347.000.

B. F. Goodrich Co., The: *See—*
Chesar, Dwight W.; and Matheny, Perry D., 4,515,733, Cl. 260-988.000.
Shaw, Chong-Kuang, 4,515,957, Cl. 548-177.000.

B. & G. Consultants, Inc.: *See—*
Groves, George D., 4,515,349, Cl. 256-1.000.

Baba, Masayuki: *See—*
Honma, Kenji; Asami, Toshio; Baba, Masayuki; and Nakayama, Sumio, 4,515,384, Cl. 280-276.000.

Baba, Tetsuro: *See—*
Nemoto, Michio; Yoshida, Kiyokazu; and Baba, Tetsuro, 4,516,101, Cl. 335-208.000.

Babbitt, Richard W.: *See—*
Bayha, William T.; Borowick, John; Stern, Richard A.; and Babbitt, Richard W., 4,516,131, Cl. 343-785.000.

Babcock, Walter C.: *See—*
Friesen, Dwayne; Babcock, Walter C.; and Tuttle, Mark, 4,515,906, Cl. 521-28.000.

Bach, Lloyd G.; and Gaiser, Robert F., to Allied Corporation. Master cylinder. 4,514,982, Cl. 60-562.000.

Bachman, Brett: *See—*
Farber, David A.; Bachman, Brett; Pilat, John F.; and Wallach, Walter A., Jr., 4,516,203, Cl. 364-200.000.

Bachman, Gerald L.; and Vineyard, Billy D., to Monsanto Company. Asymmetric catalysis. 4,515,731, Cl. 260-465.00D.

Bachmann, Heinrich; and Kollmar, Ulrich. Raking apparatus. 4,515,519, Cl. 414-680.000.

Bager, Reinhard. Heavy duty clamping electrical connector. 4,515,426, Cl. 339-42.000.

Baier, Heinz; Kurten, Hans W.; and Waschulewski, Hans-Georg, to Losenhausen Machinenbau AG. Unbalance vibrator. 4,515,027, Cl. 74-87.000.

Bailey, Denis M., to Sterling Drug Inc. Substituted aminobenzoates, their preparation and use. 4,515,980, Cl. 560-45.000.

Baker, Harold L., to Morrison Products, Inc. Center plate-blade interconnection on a centrifugal blower wheel. 4,515,527, Cl. 416-184.000.

Baker Oil Tools, Inc.: *See—*
Beimgraben, Herbert W., 4,515,011, Cl. 73-151.000.
Stout, Gregg W., 4,515,217, Cl. 166-297.000.

Baker, Warren N. Portable acoustical shield and sound enhancing closure. 4,515,238, Cl. 181-30.000.

Ball Corporation: *See—*
Munson, Robert E.; and Haddad, Hussain A., 4,516,097, Cl. 333-261.000.

Ballard, Paul T.; and Little, Gordon R., to Systems Research Laboratories, Inc. Coherent light detecting system including passive averaging network. 4,515,478, Cl. 356-345.000.

Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, to Siemens Aktiengesellschaft. Vacuum switching tube with a helical current path. 4,516,004, Cl. 200-144.00B.

Barbieri, John J.; and Oar, Ross C., to Barbieri, John J. Object-simulating belt buckle. 4,514,883, Cl. 24-163.00K.

Barclay, Thomas E.; and Zett, John A., to E-Systems, Inc. Variable threshold receiver. 4,516,248, Cl. 375-76.000.

Barkhau, Marvin L.; Perry, Philip D.; Poundstone, Donald H.; and Sherman, James E., to Owens-Illinois, Inc. Electrically heated forehearth and method of controlling molten glass temperature therein. 4,515,614, Cl. 65-29.000.

Barmag Barmer Maschinenfabrik AG: *See—*
Hertell, Siegfried; and Hager, Artur, 4,515,512, Cl. 418-1.000.

Baron, Arthur L.; and Krishnan, Sivaram, to Mobay Chemical Corporation. Flame resistant sulfur-bearing copolycarbonate. 4,515,937, Cl. 528-204.000.

Barone, Bruno J.: *See—*
Click, Gaylon T.; and Barone, Bruno J., 4,515,899, Cl. 502-35.000.

Barr, Colin, to Burroughs Corporation. Electro-optical imaging system. 4,516,032, Cl. 250-578.000.

Barth, Phillip W., to Leland Stanford, Jr. University, The Board of Trustees of the. Semiconductor device having improved lead attachment. 4,516,148, Cl. 357-68.000.

Barton, Felix R. Battery powered fishing reel. 4,515,324, Cl. 242-84.10A.

Bartoszek-Loza, Rosemary, to Standard Oil Company, The. Novel catalysts and processes for the photochemical decarboxylation of alpha-hydroxy carboxylic acids. 4,515,667, Cl. 204-162.00R.

Barzynski, Helmut; and Holoch, Klaus, to BASF Aktiengesellschaft. Image-recording materials and image-recording carried out using these to produce an optical mask. 4,515,877, Cl. 430-5.000.

Basevi, Licinio. Instructional chess game. 4,515,371, Cl. 273-260.000.

BASF Aktiengesellschaft: *See—*
Barzynski, Helmut; and Holoch, Klaus, 4,515,877, Cl. 430-5.000.
Bleckmann, Gerhard; Lynch, John; and Mohr, Heinz, 4,515,375, Cl. 277-1.000.
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, 4,514,937, Cl. 51-281.0SF.
Husslein, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,515,623, Cl. 71-12.000.
Husslein, Gerd; Hamprecht, Gerhard; Koenig, Karl-Heinz; Boehm, Walter; and Gaeng, Manfred, 4,515,985, Cl. 562-472.000.
Lechtken, Peter; Mueller, Gerhard; and Schmieder, Klaus, 4,515,982, Cl. 560-125.000.
Rentzea, Costin; Spiegler, Wolfgang; and Jung, Johann, 4,515,616, Cl. 71-76.000.
Stumpfl, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.
Vogel, Friedrich; and Paust, Joachim, 4,515,975, Cl. 549-411.000.

Baskett, Theodore N. Self-balanced surface-processing apparatus. 4,514,933, Cl. 51-32.000.

Bassuk, Lawrence J.: *See—*
Kuehnle, Manfred R.; Cahill, Lysle D.; Butler, John C.; and Bassuk, Lawrence J., 4,515,879, Cl. 430-31.000.

Bastenhof, Dirk, to Ecopool Design Limited. Combustion powered wave generator. 4,515,500, Cl. 405-79.000.

Baudoux, Richard; and Webb, Anthony J., to T.D. Williamson, Inc. Pressure activated closure lock. 4,515,287, Cl. 220-316.000.

Baumann, William J., to Motorola, Inc. Pulse deinterleaving signal processor and method. 4,516,220, Cl. 364-715.000.

Baxter Travenol Laboratories, Inc.: *See—*
D'Silva, Edmund D., 4,515,535, Cl. 417-360.000.

Bayan, Ghawamedin, to Du Pont de Nemours, E. I., and Company. Polyester hairbrush bristle. 4,515,858, Cl. 428-364.000.

Bayer Aktiengesellschaft: *See—*
Fauss, Rudolf; Meiners, Hans J.; Rasshofer, Werner; and Meyborg, Holger, 4,515,923, Cl. 525-127.000.
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,515,617, Cl. 71-76.000.
Kleiner, Frank; Kubens, Rolf; Reese, Eckart; and Wank, Joachim, 4,515,925, Cl. 525-439.000.
Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,515,812, Cl. 514-592.000.
Metzger, Karl G.; Schrock, Wilfried; Habich, Dieter; Naab, Paul; and Zeiler, Hans-Joachim, 4,515,789, Cl. 514-196.000.
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.
Stegelmeier, Hartmut; and Brandes, Wilhelm, 4,515,801, Cl. 514-403.000.
Zecher, Wilfried; and Merten, Rudolf, 4,515,974, Cl. 549-372.000.

Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., to Rohm and Haas Company. Herbicidal 4-trifluoromethyl-4'-nitrodiphenyl ethers. 4,515,988, Cl. 568-586.000.

Bayerische Motoren Werke AG: *See—*
Huber, Siegfried, 4,514,864, Cl. 2-424.000.

Bayha, William T.; Borowick, John; Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Variable slot conductance dielectric antenna and method. 4,516,131, Cl. 343-785.000.

Baylor College of Medicine: *See—*
Emery, Jared M.; and Chan, Raymond Y., 4,515,794, Cl. 514-249.000.

Beardmore, David H.; and Needham, Riley B. Method and apparatus for the recovery of hydrocarbons. 4,515,093, Cl. 110-347.000.

Beattie, Thomas R.: *See—*
Yang, Shu S.; Beattie, Thomas R.; Durette, Philippe L.; Gallagher, Timothy F.; and Shen, Tsung-Ying, 4,515,722, Cl. 260-403.000.

Beck, Alfred; and Van Papeveld, Piet, to Allied Flux Reclaiming Ltd. Securing device for manhole cover. 4,514,931, Cl. 49-21.000.

Beck, H. Wayne; Lochow, Charles F., Jr.; and Nibert, Charles W., to Ashland Oil, Inc. Passivation of vanadium accumulated on catalytic solid fluidizable particles. 4,515,683, Cl. 208-113.000.

Beck, H. Wayne: *See—*
Hettinger, William P., Jr.; Turrill, Frank H.; Rozman, George J.; and Beck, H. Wayne, 4,515,680, Cl. 208-87.000.

Beck, Harold K., to Halliburton Company. Low pressure responsive downhole tool with floating shoe retarding means. 4,515,219, Cl. 166-74.000.

Beck, Hubert W.: *See—*
Hettinger, William P., Jr.; and Beck, Hubert W., 4,515,900, Cl. 502-63.000.

Beckett, Joel M., to Marq Packaging Systems, Inc. Programmable case set-up and bottom sealing machine. 4,515,579, Cl. 493-1.000.

Becton, Dickinson and Company: *See—*
Johnson, Michael D., 4,515,851, Cl. 428-246.000.

Begrich, Rainer, to Ciba Geigy AG. Process for producing 1,8-naphtholactam compounds. 4,515,963, Cl. 548-437.000.

Behr, Raymond D., to Dow Chemical Company, The. Method and apparatus for forming an integral closure for a thermoplastic container. 4,515,647, Cl. 156-91.000.

Beimgraben, Herbert W., to Baker Oil Tools, Inc. Torque transmitting and indicating device for well drilling apparatus. 4,515,011, Cl. 73-151.000.

Bell, Frank H., to Thiokol Corporation. Inertia type friction initiator for rotating projectiles. 4,515,080, Cl. 102-205.000.

Bell & Howell Company: *See—*
Benham, Harold H., Jr.; and Wells, Thomas R., 4,515,451, Cl. 353-120.000.

Beltran, Edward R. Accessory kit for flying disc toy. 4,515,570, Cl. 446-47.000.

Belwith International, Ltd.: *See—*
Sjogren, C. Norman, 4,514,996, Cl. 70-100.000.

Bemis Company, Inc.: *See—*
Jacobson, Roger K.; and Munson, Ronald W., 4,515,273, Cl. 206-604.000.

Benard, Jacques A. V., to Con Rad Industries, Inc. Apparatus to manufacture heat exchanger finned tube. 4,514,900, Cl. 29-727.000.

Bend Research, Inc.: *See—*
Friesen, Dwayne; Babcock, Walter C.; and Tuttle, Mark, 4,515,906, Cl. 521-28.000.

Benditalia S.p.A.: *See—*
Cadeddu, Leonardo, 4,514,985, Cl. 60-589.000.

Benham, Harold H., Jr.; and Wells, Thomas R., to Bell & Howell Company. Indexing microfilm. 4,515,451, Cl. 353-120.000.

Benson, Steven R. Double-chambered exhaust manifold. 4,514,986, Cl. 60-605.000.

Benzoni, Josette: *See—*
Teutsch, Jean G.; Deraedt, Roger; and Benzoni, Josette, 4,515,787, Cl. 514-180.000.

Berendt, Hans-Ulrich; and Pacher, Marielise, to Ciba-Geigy Corporation. Process for aftertreating dyed fibrous material made of or containing cellulose. 4,515,596, Cl. 8-107.000.

Beretta, Paolo; and Kitchin, Jonathan P., to Minnesota Mining and Manufacturing Company. Cyanine dyes for sensitizing silver halide emulsions to infrared radiation and photographic elements including them. 4,515,888, Cl. 430-584.000.

Berger, Jean P., to Northern Telecom Limited. Mounting of electronic components on printed circuit boards. 4,515,304, Cl. 228-136.000.

Berger, Wolfgang: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.

Bergsten, Lars E.: *See—*
Sa af, Lars L.; and Bergsten, Lars E., 4,515,141, Cl. 123-647.000.

Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, to Ruhrchemie Aktiengesellschaft. Process for preparing 3-dimethylamino-2,2-dimethylpropanal. 4,515,986, Cl. 564-471.000.

Bernstein, Seymour: *See—*
Schaub, Robert E.; Miner, Thomas G.; and Bernstein, Seymour, 4,515,782, Cl. 514-24.000.

Berthold, Rudiger, to Hoechst Aktiengesellschaft. Process for the preparation of aryldiazosulfonates. 4,515,940, Cl. 534-565.000.

Bertin et Cie: *See—*
Boy-Marcotte, Jean L. M. R.; Chastang, Georges J.; Salvaire, Laurent O.; and Burnouf, Christian D., 4,515,148, Cl. 126-438.000.

Besic, Frank C., to University Patents, Inc. Food materials for prevention of carious degradation of teeth. 4,515,770, Cl. 424-49.000.

Bettge, Hans: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.

Bettinger, Gunter: *See—*
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.

Bhatia, Kishan: *See—*
Burnes, Edward E.; and Bhatia, Kishan, 4,515,759, Cl. 423-220.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method of making and using glass fiber forming feeders. 4,515,610, Cl. 65-2.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method of making glass fibers. 4,515,611, Cl. 65-2.000.

Bialkowski, Gunter: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.

BICC Public Limited Company: *See—*
Hutchison, John B., 4,515,991, Cl. 174-65.0SS.

Bier, Axel, to Audi NSU Auto Union A.G. Circuit for operating a displaceable component in a motor vehicle, in particular a motor vehicle window. 4,516,034, Cl. 307-10.00R.

Bildstein, Hubert: *See—*
Petter, Helmut; Bildstein, Hubert; and Simader, Fritz, 4,516,255, Cl. 378-143.000.

Billenstein, Siegfried; Hartung, Herbert; May, Adolf; and Bucking, Hans-Walter, to Hoechst Aktiengesellschaft. Quaternary N-alkyl-N,N',N'-polyoxyalkyl-α,ω-diamino-alkylene fatty acid esters, and their use. 4,515,723, Cl. 260-404.500.

Binet, Jean: *See—*
Wick, Alexander E.; and Binet, Jean, 4,515,814, Cl. 514-652.000.

Binsack, Rudolf: *See—*
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.

Birkett, John N.: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.

Bissonnette, Harold S., to Dow Chemical Company, The. Casing structures having core members under radial compressive force. 4,515,218, Cl. 166-328.000.

Black & Decker, Inc.: *See—*
Duverger, Jean, 4,516,047, Cl. 310-230.000.
Jeffress, Ronald E.; Wanat, David J.; and Krasznai, Charles Z., 4,516,011, Cl. 219-222.000.

Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., to General Mills, Inc. Preparation of cakes and no-stir dry mix for their preparation. 4,515,824, Cl. 426-554.000.

Blake, Joseph W. Skin staple extractor. 4,515,348, Cl. 254-28.000.

Blake, Walter R., to General Electric Company. Luminaire hinge and latch. 4,516,196, Cl. 362-311.000.

Blanc, Rene : *See—*
Hennart, Claude; and Blanc, Rene , 4,515,768, Cl. 424-40.000.

Blaschek, Otto, to Arnold & Richter Cine Technik GmbH. & Co. Betriebs KG. Motion picture camera having an interchangeable lens. 4,515,469, Cl. 355-35.000.

Blatt, Georg; van den Boom, Johannes; Kuipers, Geert; and Hollerweger, Heinz, to Audi NSU Auto Union A.G. Noise reduction lining. 4,515,239, Cl. 181-290.000.

Bleacher, John N.; and Cushman, Barry M., to RCA Corporation. Method for ablating a coded marking into a glass workpiece and product thereof. 4,515,867, Cl. 428-204.000.

Bleckmann, Gerhard; Lynch, John; and Mohr, Heinz, to BASF Aktiengesellschaft. Process and arrangement for sealing the gap between the ends of a gravure printing plate mounted on a printing cylinder. 4,515,375, Cl. 277-1.000.

Bleger, Claude: *See—*
Nolting, Peter; and Bleger, Claude, 4,516,106, Cl. 338-28.000.

Block, Dale A., to Kohler Co. Handle assembly. 4,515,037, Cl. 74-553.000.

Blumer, David J., to Occidental Research Corporation. Process for extracting tungsten or molybdenum from solution. 4,515,756, Cl. 423-54.000.

Bly, Vincent T., to United States of America, Army. Passive optical system for background suppression in starring imagers. 4,515,443, Cl. 350-396.000.

Bobjer, Olle; Dahlin, Torsten; and Grieves, John. Ventilation method and apparatus. 4,515,070, Cl. 98-42.070.

Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., to International Flavors & Fragrances Inc. Process for preparing a methoxybenzaldehyde from the corresponding phenolic benzaldehyde. 4,515,987, Cl. 568-433.000.

Bodenheimer, Joseph S.; and Eisenberg, Naphtali, to Luz International Ltd. Solar sensing arrangement for use in a uniaxis solar collector tracking system. 4,516,018, Cl. 250-203.00R.

Boehm, Russell W.; Rippstein, Robert P.; and Stone, David R., to International Business Machines Corporation. Mold protection device. 4,515,544, Cl. 425-129.00R.

Boehm, Walter: *See—*
Husslein, Gerd; Hamprecht, Gerhard; Koenig, Karl-Heinz; Boehm, Walter; and Gaeng, Manfred, 4,515,985, Cl. 562-472.000.

Boehringer Mannheim GmbH: *See—*
Klose, Sigmar; Stahler, Fritz; Lange, Hans; and Kleemann, Wolfgang, 4,515,889, Cl. 435-4.000.

Boeing Company, The: *See—*
McDermott, Arthur W., 4,516,104, Cl. 336-206.000.
Phillips, Michael J., 4,515,051, Cl. 83-146.000.
Wagner, David L., 4,515,260, Cl. 193-44.000.

Boese, Harold L., to HKC, Inc. Occupant propelled wheeled device. 4,515,382, Cl. 280-221.000.

Bogardus, Rodger E.; Packer, Jon D.; and SaNogueira, Peter, to Richardson-Vicks Inc. Reducing sebum spreading. 4,515,784, Cl. 514-63.000.

Boger, Manfred; and Drabek, Jozef, to Ciba Geigy Corporation. Benzoylparabanic acids. 4,515,798, Cl. 514-341.000.

Bohm, Gottfried, to Messer Griesheim GmbH. Procedure for bright annealing of metallic work pieces using nitrogen as protective gas. 4,515,645, Cl. 148-16.000.

Bohner, Beat, to Ciba Geigy Corporation. Triaza compounds. 4,515,620, Cl. 71-91.000.

Boigegrain, Robert; Maffrand, Jean-Pierre; Suzuki, Norio; Matsubayachi, Kynichi; and Ashida, Shinichiro, to Sanofi. Preparation of 5,6,7,7a-tetrahydro-4H-thieno[3,2-c]pyridin-2-one compounds. 4,515,951, Cl. 546-114.000.

Boiston, David A.: *See—*
Smith, John; and Boiston, David A., 4,515,210, Cl. 165-133.000.

Bolick, Fred C., Jr.; and Plunkett, Luther C., Jr., to Lanier Business Products, Inc. Telephone answering machine with apparatus for selecting particular outgoing message in response to incoming call on a particular line. 4,515,995, Cl. 179-6.130.

Boliden Aktiebolag: *See—*
Lindquist, Bjorn K. V.; and Petersson, Stig A., 4,515,631, Cl. 75-73.000.

Bolle, Gunter; Bragas, Peter; and Eschke, Bernd, to Robert Bosch GmbH. Combination electronic road guidance and communication system for vehicles. 4,515,994, Cl. 179-2.00R.

Bolwig, Rolf W., to Rotabo Industries Inc. Lamp carriage arm for safety hats. 4,516,192, Cl. 362-107.000.

Bond, Kevin; and Watson, Brian W., to Cossar Electronics Limited. Antenna with a reflector of open construction. 4,516,132, Cl. 343-815.000.

Bond, Michael J., to Gillette Company, The. Razor handle. 4,514,904, Cl. 30-87.000.

Bone, Kendall F., to Cincinnati Milacron Inc. Heat exchange apparatus for electric motor and electric motor equipped therewith. 4,516,044, Cl. 310-64.000.

Bonetti, William F.: *See—*
Deckert, Cheryl A.; Couble, Edward C.; and Bonetti, William F., 4,515,829, Cl. 427-97.000.

Borchard, Heinz; Knothe, Herbert; and Rybka, Bruno, to Teldec Telefunken-Decca Schallplatten GmbH. Disc-shaped information carrier having a high storage density. 4,515,843, Cl. 428-64.000.

Borden, Inc.: *See—*
Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., 4,515,769, Cl. 424-49.000.

Borel, Georg, to Hermann Wangner GmbH & Co. KG. Composite fabric for use as clothing for the sheet forming section of a papermaking machine. 4,515,853, Cl. 428-257.000.

Borg-Warner Corporation: *See—*
Haley, William J.; and Neumann, Guenter J., 4,515,255, Cl. 192-3.570.
Jenkins, Patrick A.; and Ferguson, Donald A., 4,515,012, Cl. 73-168.000.

Borgschulte, Fritz: *See—*
Trumper, Thomas; Schoop, Gunther-Dietmar; Borgschulte, Fritz; and Krummnack, Friedrich, 4,515,410, Cl. 299-43.000.

Borner, Roland; and Holstein, Herbert. Scanning device for a machine for the automatic sharpening of broaching or reaming tools. 4,514,935, Cl. 51-165.00R.

Borowick, John: *See—*
Bayha, William T.; Borowick, John; Stern, Richard A.; and Babbitt, Richard W., 4,516,131, Cl. 343-785.000.

Borroughs Tool & Equipment Corporation: *See—*
Okamuro, James A., 4,515,376, Cl. 277-9.500.

Borst, Erich; Schadlich, Fritz; and Stabler, Manfred, to Robert Bosch GmbH. Electric power machine with protection against overspeed. 4,516,045, Cl. 310-68.00E.

Borzatta, Valerio; Cristofori, Manlio; Morotti, Mauro; and Mascellani, Giuseppe, to Alfa Farmaceutici S.p.A. Derivatives of benzoylphenoxyalkanoic acids having normolipemizing activity. 4,515,809, Cl. 514-533.000.

Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, to Allied Corporation. Homogeneous, ductile cobalt based hardfacing foils. 4,515,868, Cl. 428-656.000.

Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, to Allied Corporation. Homogeneous, ductile nickel based hardfacing foils. 4,515,869, Cl. 428-656.000.

Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, to Allied Corporation. Homogeneous, ductile iron based hardfacing foils. 4,515,870, Cl. 428-656.000.

Boskovic, Borislav. Slide retainer. 4,515,342, Cl. 249-122.000.

Botzman, Thomas J.: *See—*
Kaniecki, Michael; Landers, Samuel P.; and Botzman, Thomas J., 4,515,199, Cl. 152-353.00R.

Bouchard, Andre C.: *See—*
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,515,558, Cl. 431-359.000.

Boudart, Michel; Oyama, Shigeo T.; and Volpe, Leo, to Leland Stanford Jr. Univeristy, Board of Trustees of. High specific surface area carbides and nitrides. 4,515,763, Cl. 423-409.000.

Boudault, Robert, to 501 Telecommunications Radioelectriques et Telephoniques. Frequency modulator for the transmission of analog data. 4,516,086, Cl. 332-16.00R.

Bourgo, Edward A.: *See—*
Curtis, James J.; and Bourgo, Edward A., 4,514,995, Cl. 66-170.000.

Boute, Willem: *See—*
Wittkampf, Frederik H. M.; and Boute, Willem, 4,515,161, Cl. 128-419.0PG.

Bowden, William L.; and Dey, Arabinda N., to Duracell Inc. Inorganic rechargeable non-aqueous cell. 4,515,875, Cl. 429-196.000.

Bowen, Collin W. Water lift system. 4,514,977, Cl. 60-398.000.

Bowen, David R.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,515,712, Cl. 252-522.00R.

Bownass, Norris; and Clarkson, Donald J., to Abex Corporation. Modular directional valve. 4,515,184, Cl. 137-625.660.

Boy-Marcotte, Jean L. M. R.; Chastang, Georges J.; Salvaire, Laurent O.; and Burnouf, Christian D., to Rossignol S.A.; and Bertin et Cie. Cylindro-parabolical solar energy collector. 4,515,148, Cl. 126-438.000.

Boyer, Nicodemus E., to PPG Industries, Inc. Polyhalophthalimidoalkyl-functional carbonates. 4,515,964, Cl. 548-463.000.

Bozung, Richard E. Musical instrument having a rigid base with circle of tone bars and pattern guides. 4,515,062, Cl. 84-403.000.

Bradley, Robert E.; and Keithler, William R., to Lockheed Corporation. Protective coating composition and process for aluminum and aluminum alloys. 4,515,919, Cl. 524-591.000.

Bragas, Peter: *See—*
Bolle, Gunter; Bragas, Peter; and Eschke, Bernd, 4,515,994, Cl. 179-2.00R.

Brand, Glen. Flow monitoring method and device. 4,515,022, Cl. 73-861.790.

Brand, Peter: *See—*
Kline, James R.; and Brand, Peter, 4,515,069, Cl. 98-40.00D.

Brandes, Wilhelm: *See—*
Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,515,812, Cl. 514-592.000.
Stegelmeier, Hartmut; and Brandes, Wilhelm, 4,515,801, Cl. 514-403.000.

Brashears, David F.; and Mollick, Joseph T., to Mechtron International Corp. Solid fuel burner. 4,515,090, Cl. 110-264.000.

Braslaw, Jacob: *See—*
Wingfield, Robert C., Jr.; Braslaw, Jacob; and Gealer, Roy L., 4,515,659, Cl. 201-2.500.

Brazdil, James F., Jr.; Marritt, William A.; and Ward, Michael D., to Standard Oil Company, The. Conversion of acetonitrile to glycolonitrile and/or glycolamide. 4,515,732. Cl. 260-465.600.

BRECO Kunststoffverarbeitungs- GmbH & Co. KG: *See—*
Breher, Rudolf, 4,515,743, Cl. 264-135.000.

Breedlove, Paul S.; and Moore, James H., to Texas Instruments Incorporated. Electronic learning aid or game having synthesized speech. 4,516,260, Cl. 381-51.000.

Breher, Rudolf, to BRECO Kunststoffverarbeitungs- GmbH & Co. KG. Method of producing a reinforced toothed belt having a fabric cover. 4,515,743, Cl. 264-135.000.

Brendley, William H., Jr.: *See—*
Kuhn, Robert R.; Whiteman, John D.; and Brendley, William H., Jr., 4,515,835, Cl. 427-388.300.

Bresson, Clarence R.; and Louthan, Rector P. Ore flotation and flotation agents for use therein. 4,515,687, Cl. 209-167.000.

Brich, Zdenek; and Muhle, Herbert, to Sandoz Ltd. Process for the isomerization of ergovine derivatives. 4,515,950, Cl. 546-67.000.

Bridges, Ernest: *See—*
Ittipiboon, Apisak; Shafai, Lotfollah; and Bridges, Ernest, 4,516,129, Cl. 343-772.000.

Bridgestone Tire Company Limited: *See—*
Kajigaya, Shinichi; and Nakaya, Mitsuo, 4,515,502, Cl. 405-215.000.
Motomura, Kenichi; Ogawa, Hiroshi; Yamamoto, Akira; and Hagita, Noriyuki, 4,515,197, Cl. 152-209.00R.
Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,515,922, Cl. 525-99.000.

Brigham, Robert N., to Superior Electric Company, The. Stator with nonuniformly spaced teeth for rotating electromagnetic device. 4,516,048, Cl. 310-254.000.

Bristol Fiberlite Industries: *See—*
Doell, Aubrey C., 4,514,944, Cl. 52-200.000.

British Aerospace Public Limited Company: *See—*
Grainge, Richard W.; and Humphries, Rowland F., 4,516,158, Cl. 358-109.000.
Kaye, Arthur; Carr, Brian; and Latham, Philip A., 4,516,063, Cl. 318-685.000.

British Gas Corporation: *See—*
Williams, John P., 4,515,562, Cl. 432-225.000.

Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., to Monsanto Company. Permeable asphaltic concrete base for artificial turf. 4,515,839, Cl. 428-17.000.

Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., to Hoffmann-La Roche Inc. Cyclic compounds. 4,515,969, Cl. 549-39.000.

Brooks, Burton, to Chemithon Corporation, The. Intermediate product for use in producing a detergent bar and method for producing same. 4,515,707, Cl. 252-368.000.

Brooks, Gary T.; and Cole, Bill W., to Standard Oil Company (Indiana). Injection moldable amide-imide polymers and copolymers containing semi-crystalline and amorphous polyamides. 4,515,924, Cl. 525-432.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Yasui, Tsuneo, 4,516,137, Cl. 346-76.0PH.

Brown, Arthur K.; Fulmer, Keith H.; and Ewald, Jerome T., to Allied Corporation. Brake booster. 4,514,981, Cl. 60-547.100.

Brown, Boveri & Cie Ag: *See—*
Steinleitner, Gunther, 4,515,874, Cl. 429-104.000.

Brown, Edward G., to CBM-Oil Reclamation Systems, Inc. Oil reclamation process and apparatus therefor. 4,515,684, Cl. 208-180.000.

Brown, James M.; and Kemper, Kyran B., to AT&T Bell Laboratories. Magnetic current sensor with offset and load correction. 4,516,070, Cl. 324-117.00R.

Brown, Richard F.: *See—*
Alario, Joseph P.; Brown, Richard F.; and Kosson, Robert L., 4,515,207, Cl. 165-1.000.

Brown, Thomas R.: *See—*
Parquet, Donald J.; Brown, Thomas R.; and Edwards, Eldon R., 4,515,520, Cl. 414-718.000.

Brown & Williamson Tobacco Corporation: *See—*
Cantrell, Daniel V.; and Sanford, Robert A., 4,515,170, Cl. 131-336.000.
Gilbert, Jerry R.; Millikan, Robert C.; Wysowski, Charles H.; and Pyburn, John R., Jr., 4,515,518, Cl. 414-459.000.

Brownell, David J.; and Roberts, Jon A., to Honeywell Inc. Method of forming a dielectric layer comprising a gettering material. 4,515,668, Cl. 204-192.00D.

Brubaker, Robert C.: *See—*
Pardini, John A.; Brubaker, Robert C.; and Rusnak, John J., 4,515,750, Cl. 376-446.000.

Bruene, Warren B., to Rockwell International Corporation. Method for reducing side-lobe energy in an MSK detectable signal. 4,516,087, Cl. 332-17.000.

Brumfield, Donald E.: *See—*
Meigs, William; Guffey, David M.; and Brumfield, Donald E., 4,514,948, Cl. 52-397.000.

Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., to General Electric Company. Microcomposite of metal carbide and ceramic particles. 4,515,746, Cl. 264-332.000.

Bruni, Ludovico, to Associated Engineering Italy S.p.A. Piston shaping. 4,515,003, Cl. 72-370.000.

Bruno, Carlo L., to Alisyncro S.p.A. System for regulating the feed of articles to a wrapping machine. 4,514,963, Cl. 53-493.000.

Brunswick Corporation: *See—*
de Winter, Dirk M., 4,515,606, Cl. 55-159.000.

Bruske, Heinz-Dieter: *See—*
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Bruske, Heinz-Dieter, 4,515,660, Cl. 202-241.000.

Brutsman, James W. Drain apparatus. 4,515,188, Cl. 141-1.000.

BTR South Africa Limited: *See—*
Gehrke, Erich F., 4,515,309, Cl. 238-349.000.

Bucher, Robert R.: *See—*
Durville, Gerard A.; and Bucher, Robert R., 4,515,186, Cl. 139-455.000.

Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, to Robert Bosch GmbH. Safety arrangement for an internal combustion engine. 4,515,125, Cl. 123-359.000.

Bucking, Hans-Walter: *See—*
Billenstein, Siegfried; Hartung, Herbert; May, Adolf; and Bucking, Hans-Walter, 4,515,723, Cl. 260-404.500.

Budapesti Muszaki Egyetem: *See—*
Varga, Laszlo; Krekacs, Sandor; Latorcai, Janos; Palfi, Zoltan; and Fledrich, Istvan, 4,514,911, Cl. 34-22.000.

Budd Co., The: *See—*
Hamner, James R., 4,515,543, Cl. 425-112.000.

Budinger, A. Bowman: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,516,057, Cl. 315-260.000.

Buehler, Martin G., to United States of America, National Aeronautics and Space Administration. Split-cross-bridge resistor for testing for proper fabrication of integrated circuits. 4,516,071, Cl. 324-158.00R.

Buguet, M. Maurice; and Deruelle, M. Patrick, to Le Metal Deploye. Electrical resistor of stretched sheet metal. 4,516,108, Cl. 338-319.000.

Burger, Raymond. Apparatus with optical projector for assembling a wooden structure. 4,514,899, Cl. 29-721.000.

Burger, Raymond. Roller chain and its use for the movement of one surface in bearing relation with another. 4,515,578, Cl. 474-231.000.

Burgin, Kenneth N., to U.S. Philips Corporation. Telephone circuit. 4,515,996, Cl. 179-81.00B.

Burkhalter, John F.: *See—*
Rao, S. Prabhakara; and Burkhalter, John F., 4,515,635, Cl. 106-90.000.

Burkleca, Frank M. Firearm recoil buffer. 4,514,921, Cl. 42-1.00V.

Burlington Industries, Inc.: *See—*
Payne, William M., Jr., 4,515,328, Cl. 242-131.000.

Burnes, Edward E.; and Bhatia, Kishan, to NL Industries, Inc. Process of removing hydrogen sulfide from gas mixtures. 4,515,759, Cl. 423-220.000.

Burnouf, Christian D.: *See—*
Boy-Marcotte, Jean L. M. R.; Chastang, Georges J.; Salvaire, Laurent O.; and Burnouf, Christian D., 4,515,148, Cl. 126-438.000.

Burow, Kenneth W., Jr., to Eli Lilly and Company. Benzamides, compositions and agricultural method. 4,515,625, Cl. 71-92.000.

Burroughs Corporation: *See—*
Barr, Colin, 4,516,032, Cl. 250-578.000.
Koos, William M., Jr., 4,515,292, Cl. 222-52.000.
Warren, Robert G.; and Robertson, Michael A., 4,516,201, Cl. 364-200.000.

Burrus, Charles A., Jr.; and Stone, Julian, to AT&T Bell Laboratories. Method for optical fiber fabrication including deuterium/hydrogen exchange. 4,515,612, Cl. 65-3.120.

Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Fluid pressure power transmission. 4,514,978, Cl. 60-426.000.

Bush Boake Allen Limited: *See—*
Ferber, John G.; Goddard, Peter J.; and Holden, Robert S., 4,515,990, Cl. 568-808.000.

Bushman, James B.: *See—*
Dimond, James R.; and Bushman, James B., 4,515,669, Cl. 204-196.000.

Butler, John C.: *See—*
Kuehnle, Manfred R.; Cahill, Lysle D.; Butler, John C.; and Bassuk, Lawrence J., 4,515,879, Cl. 430-31.000.

Byler, Richard E.: *See—*
McCarthy, James P.; and Byler, Richard E., 4,515,176, Cl. 137-115.000.

Byszewski, Wojciech W.: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,516,057, Cl. 315-260.000.

C. Otto & Comp. G.m.b.H.: *See—*
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Bruske, Heinz-Dieter, 4,515,660, Cl. 202-241.000.

C. R. Bard, Inc.: *See—*
Norton, William J., 4,515,593, Cl. 604-265.000.

Cadeddu, Leonardo, to Benditalia S.p.A. Master cylinder. 4,514,985, Cl. 60-589.000.

Cahill, Lysle D.: *See—*
Kuehnle, Manfred R.; Cahill, Lysle D.; Butler, John C.; and Bassuk, Lawrence J., 4,515,879, Cl. 430-31.000.

Caines, R. Scott, to American Hoechst Corporation. Polyester film primed with phosphorus-containing polyester. 4,515,863, Cl. 428-480.000.

Calabrese, Anthony, to Charles Greiner & Company, Inc. Stabilizer for cervical collar. 4,515,153, Cl. 128-75.000.

Caldero Ges, Jose M.; and Faba, Eusebio M., to Inke, S.A. Furan derivatives and addition salts thereof pharmaceutical compositions and the therapeutical applications thereof. 4,515,806, Cl. 514-471.000.

Calvert, Colin: *See—*
Cox-Smith, Peter; Calvert, Colin; and Wesley, John, 4,515,582, Cl. 494-7.000.

Cameron Iron Works, Inc.: *See—*
Smith, Jerry D.; and Szymczak, Edward J., 4,515,400, Cl. 285-141.000.

Campau, Daniel N. Liquid level control device. 4,515,178, Cl. 137-393.000.

Campbell, Malcolm G. Portable electronic camera. 4,516,157, Cl. 358-108.000.

Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., to Pfizer Inc. Dihydropyridine anti-ischaemic and antihypertensive agents. 4,515,799, Cl. 514-341.000.

Canadian Patents & Dev. Ltd.: *See—*
Ittipiboon, Apisak; Shafai, Lotfollah; and Bridges, Ernest, 4,516,129, Cl. 343-772.000.

Cannon, Warren R.: *See—*
Wu, Jenn-Ming; Cannon, Warren R.; and Panzera, Carlino, 4,515,634, Cl. 106-35.000.

Canon Kabushiki Kaisha: *See—*
Knechtel, Wilhelm, 4,515,460, Cl. 355-3.0TR.
Masuda, Shunichi; Yagasaki, Toshiaki; and Kasuya, Yukio, 4,515,458, Cl. 355-3.0SH.
Takahashi, Sadatoshi; Tsuji, Sadahiko; Tajima, Akira; Asano, Toshiaki; and Minami, Setsuo, 4,515,446, Cl. 350-427.000.
Yamada, Yasuyoshi; and Hiraga, Ryozo, 4,515,481, Cl. 356-400.000.

Canon Kabushuki Kaisha: *See—*
Tsuzuki, Hiroyoshi, 4,515,452, Cl. 354-106.000.

Cantagrel, Michel: *See—*
Hardy, Patrick; Cantagrel, Michel; and Guichard, Serge, 4,516,186, Cl. 361-306.000.

Cantella, Michael J.: *See—*
Dion, Donald F.; and Cantella, Michael J., 4,516,167, Cl. 358-160.000.

Cantrell, Daniel V.; and Sanford, Robert A., to Brown & Williamson Tobacco Corporation. Ventilated mouthpiece for a smoking article. 4,515,170, Cl. 131-336.000.

Caputo, William R., to Westinghouse Electric Corp. Elevator system. 4,515,247, Cl. 187-29.00R.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Eichinger, Johann, 4,515,573, Cl. 464-69.000.

Carl, William P.: *See—*
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,515,989, Cl. 568-674.000.

Carl-Zeiss-Stiftung: *See—*
Weimer, Eugen; and Muller, Gerhard, 4,515,447, Cl. 350-527.000.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Esswein, Karlheinz, 4,515,439, Cl. 350-257.000.
Muller, Gerhard; and Schwarz, Jurgen, 4,515,445, Cl. 350-524.000.

Carl-Zeiss-Stuftung, Heidenheim/Brenz: *See—*
Szenger, Franz, 4,515,415, Cl. 308-6.00R.

Carlo, Louis D., to Mr. Gasket Company. Dual mode shifter for automatic transmissions. 4,515,033, Cl. 74-476.000.

Carney, Thomas E.; Champion, Allan R.; and Logullo, Francis M., Sr., to Du Pont de Nemours, E. I., and Company. Reinforced cement. 4,515,636, Cl. 106-90.000.

Carr, Brian: *See—*
Kaye, Arthur; Carr, Brian; and Latham, Philip A., 4,516,063, Cl. 318-685.000.

Carr, Edward F., to University of Maine, Board of Trustees of the. Active regulation of heat transfer. 4,515,206, Cl. 165-1.000.

Carrier Corporation: *See—*
Mount, Gordon L., 4,514,989, Cl. 62-201.000.
Zinsmeyer, Thomas M., 4,514,991, Cl. 62-209.000.

Carroll, Robert, to Energy Conversion Devices, Inc. Apparatus and method for detecting tumors. 4,515,165, Cl. 128-664.000.

Cars & Concepts, Inc.: *See—*
Draper, David L., 4,514,891, Cl. 29-401.100.

Carsalade, Henri; Delaporte, Francois-Xavier; and Pantani, Jean-Pierre, to International Business Machines Corporation. Signal receiver which indicates the status of the device connected thereto. 4,516,247, Cl. 375-56.000.

Carsonite International Corporation: *See—*
Schmanski, Donald W., 4,516,069, Cl. 324-71.100.

Caruso, Anthony M. Anti-personnel fragmentation liner. 4,515,083, Cl. 102-493.000.

Casey, Morton P., Jr.: *See—*
Komanduri, Ranga; Ettinger, Robert H.; Casey, Morton P., Jr.; and Reed, William R., Jr., 4,515,047, Cl. 82-1.00C.

Casio Computer Co. Ltd.: *See—*
Kashio, Toshio, 4,515,056, Cl. 84-1.010.

Cassidy, John E.; and Jones, L. Raymond, Jr., to Electro-Nite Co. Molten metal sample cup. 4,515,485, Cl. 374-157.000.

Castronovo, Frank P.; Strauss, Harry W.; and Potsaid, Majic S., to Massachusetts General Hospital, The. Labeled phosphonic acid compositions for investigations of in vivo deposits of calcium. 4,515,766, Cl. 424-1.100.

Caterpillar Tractor Co.: *See—*
Dezelan, Joseph E., 4,515,181, Cl. 137-596.000.
Ray, Robert W.; and Pierce, Rex G., 4,514,934, Cl. 51-165.00R.

Cathey, Thaddeus F.; Gaynor, John C.; and Nelson, Rodney J., to Uniroyal, Inc. Low backlash-high-torque power transmission system and toothed belt used therein. 4,515,577, Cl. 474-204.000.

Cavanagh, Kenneth M., to Marshall and Williams Company. Air knife apparatus. 4,515,313, Cl. 239-455.000.

Cavero, Icilio; Langer, Salomon Z.; and York, Billie M., Jr. Method of lowering intraocular pressure using phenylimino-imidazoles. 4,515,800, Cl. 514-392.000.

CBM-Oil Reclamation Systems, Inc.: *See—*
Brown, Edward G., 4,515,684, Cl. 208-180.000.

CBS Inc.: *See—*
Torick, Emil L., 4,516,257, Cl. 381-4.000.

Celanese Corporation: *See—*
McLaughlin, William D., Jr., 4,515,054, Cl. 83-663.000.

CEM Compagnie Electro-Mecanique: *See—*
Mercier, Rene, 4,516,046, Cl. 310-154.000.

Central Glass Co., Ltd.: *See—*
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,515,709, Cl. 252-509.000.

Centre National de la Recherche Scientifique CNRS: *See—*
Jouffrey, Bernard; Trinquier, Jacques; and Franceschi, Jean-Luc, 4,516,026, Cl. 250-310.000.

Cerberus AG: *See—*
Frigon, Raymond A.; and Kahl, William G., Jr., 4,516,115, Cl. 340-556.000.

Cerkovnik, Jerry, to Christensen, Inc. Nozzle placement in a diamond rotating bit including a pilot bit. 4,515,227, Cl. 175-65.000.

Chalk, Alan J.; and Purzycki, Kenneth L., to Givaudan Corporation. Alkenoxy octadienes as odorants. 4,515,711, Cl. 252-522.00R.

Champion, Allan R.: *See—*
Carney, Thomas E.; Champion, Allan R.; and Logullo, Francis M., Sr., 4,515,636, Cl. 106-90.000.

Champion, Perrine & Associates: *See—*
Perrine, Paul M.; and Perrine, Carol-Anne, 4,515,516, Cl. 417-38.000.

Chan, Raymond Y.: *See—*
Emery, Jared M.; and Chan, Raymond Y., 4,515,794, Cl. 514-249.000.

Chandler, Donald E.; Chisholm, William M.; and Lechner, Ralph T., to AT&T Technologies, Inc. Fixture for assembling pins into a shuttle. 4,515,354, Cl. 269-15.000.

Chandler, James W.; and Chandler, William D., to Water Soft, Inc. Water filter. 4,515,692, Cl. 210-278.000.

Chandler, William D.: *See—*
Chandler, James W.; and Chandler, William D., 4,515,692, Cl. 210-278.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Catalysis over activated high silica zeolites. 4,515,682, Cl. 208-111.000.

Chang, Eugene Y. C., to American Cyanamid Company. One-component polyurethane adhesive compositions. 4,515,933, Cl. 528-57.000.

Chang, Jenq S.; and Chang, Tung S., to Storage Technology Partners. Reduction of contact resistance in CMOS integrated circuit chips and the product thereof. 4,516,145, Cl. 357-42.000.

Chang, Tung S.: *See—*
Chang, Jenq S.; and Chang, Tung S., 4,516,145, Cl. 357-42.000.

Chao, Chung-Yao: *See—*
Polan, Ned W.; and Chao, Chung-Yao, 4,515,671, Cl. 204-228.000.

Charles Greiner & Company, Inc.: *See—*
Calabrese, Anthony, 4,515,153, Cl. 128-75.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Dew, Brock S.; and Greiff, Paul, 4,516,263, Cl. 382-41.000.

Charters, John E. Carbonaceous briquette. 4,515,601, Cl. 44-19.000.

Chasar, Dwight W.; and Matheny, Perry D., to B. F. Goodrich Co., The. Method for making 1,3,5,2,4,6-trioxatriphosphorinanes. 4,515,733, Cl. 260-988.000.

Chastang, Georges J.: *See—*
Boy-Marcotte, Jean L. M. R.; Chastang, Georges J.; Salvaire, Laurent O.; and Burnouf, Christian D., 4,515,148, Cl. 126-438.000.

Chaudhari, Praveen; and Muller, Rene , to International Business Machines Corporation. Method for producing large grained semiconductor ribbons. 4,515,650, Cl. 156-622.000.

Cheek, Alton E. Overshot. 4,515,403, Cl. 294-86.310.

Cheffer, Harold H.: *See—*
Rhoads, Paul M.; and Cheffer, Harold H., 4,516,035, Cl. 307-66.000.

Chemithon Corporation, The: *See—*
Brooks, Burton, 4,515,707, Cl. 252-368.000.

Chen, Chee G., to Eaton Corporation. Transparent touch switching system. 4,516,112, Cl. 340-365.00R.

Chen, Henry C. J.: *See—*
Anderson, F. Allan; Chen, Henry C. J.; DiMucci, Vito A.; and Wang, Roger C., 4,514,954, Cl. 53-53.000.

Chen, Nai Y.; and Miale, Joseph N., to Mobil Oil Corporation. Fermentation process. 4,515,892, Cl. 435-161.000.

Cheng, Peter S. C. Ribbon for forming a decorative bow. 4,515,837, Cl. 428-4.000.

Chester, Martin H.; and Norman, Cary A. Clamp-on nerve stimulator and locator. 4,515,168, Cl. 128-741.000.

Chevrel, Roger; Attard, Michel; and Leviandier, Michel, to Compagnie d'Informatique Militaire Spatiale & Aeronautique-CIMSA-25. Device for opening and closing an exit slit for a data carrier and a printer utilizing such device. 4,515,491, Cl. 400-693.000.

Chevron Research Company: *See—*
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,515,757, Cl. 423-54.000.
Loh, William, 4,515,618, Cl. 71-88.000.

Childs, Jerry; Sabins, Fred; and Taylor, Mary J., to Halliburton Company. Method of using thixotropic cements for combating lost circulation problems. 4,515,216, Cl. 166-293.000.

Ching, Yau-Chau; and Tomcik, James D., to AT&T Bell Laboratories. Bit allocation generator for adaptive transform coder. 4,516,258, Cl. 381-31.000.

Chisholm, William M.: *See—*
Chandler, Donald E.; Chisholm, William M.; and Lechner, Ralph T., 4,515,354, Cl. 269-15.000.

Chiu, Te-Long; and Lien, Jih-Chang, to Texas Instruments Incorporated. Electrically programmable floating gate semiconductor memory device. 4,514,897, Cl. 29-578.000.

Chodorow, Marvin: *See—*
Shaw, Herbert J.; Chodorow, Marvin; and Digonnet, Michel J. F., 4,515,431, Cl. 350-96.150.

Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., to Garrett Corporation, The. Supercharged diesel engine air inflow control system. 4,515,136, Cl. 123-564.000.

Chonan, Kenichi: *See—*
Ito, Tosikazu; Komathuzaki, Kiyomi; Chonan, Kenichi; and Horibe, Kiyoshi, 4,515,066, Cl. 91-454.000.

Chow, San-Laung; and Sims, Bernard, to American Cyanamid Company. Composition of matter. 4,515,810, Cl. 514-530.000.

Christensen, Inc.: *See—*
Cerkovnik, Jerry, 4,515,227, Cl. 175-65.000.

Christian, Dixon W. Wheelchair and attachment therefor. 4,515,385, Cl. 280-289.0WC.

Christiano, Vito F.: *See—*
Smith, John L.; and Christiano, Vito F., 4,515,753, Cl. 422-102.000.

Christidis, Yani; and Vallejos, Jean-Claude, to Societe Francaise Hoechst. Process for preparation of alkanoic acids. 4,515,970, Cl. 549-79.000.

Christoff, William J., to Rockwell International Corporation. Integrated auxiliary power and environmental control unit. 4,514,976, Cl. 60-39.070.

Christoleit, Arno, to WABCO Westinghouse Fahrzeugbremsen GmbH. Disabling arrangement for a reciprocating piston compressor. 4,515,530, Cl. 417-214.000.

Christopher, Robert J.; and Walker, Robert F., to International Business Machines Corporation. Entity control for raster displays. 4,516,266, Cl. 382-48.000.

Chung, Rack H., to General Electric Company. End-capping catalysts for forming alkoxy-functional one component RTV compositions. 4,515,932, Cl. 528-16.000.

Churma, Theodore; Latimer, Elwood D., Jr.; and Vicik, Stephen J., to Union Carbide Corporation. Modification of ethylene vinyl acetate copolymer. 4,515,745, Cl. 264-211.000.

Ciba Geigy AG: *See—*
Begrich, Rainer, 4,515,963, Cl. 548-437.000.

Ciba-Geigy Corporation: *See—*
Berendt, Hans-Ulrich; and Pacher, Marielise, 4,515,596, Cl. 8-107.000.
Boger, Manfred; and Drabek, Jozef, 4,515,798, Cl. 514-341.000.
Bohner, Beat, 4,515,620, Cl. 71-91.000.

Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,515,717, Cl. 260-239.00A.
Guth, Christian; and Schafer, Paul, 4,515,597, Cl. 8-107.000.
Kaschig, Jurgen; Kleiner, Eduard K.; Nueller, Karl F.; and Cooke, Thomas W., 4,515,640, Cl. 106-287.250.
Kaser, Adolf, 4,515,599, Cl. 8-685.000.
Renner, Alfred, 4,515,962, Cl. 548-435.000.
Szczepanski, Henry, 4,515,626, Cl. 71-93.000.
Watthey, Jeffrey W. H., 4,515,792, Cl. 514-214.000.

Cincinnati Milacron Inc.: *See—*
Bone, Kendall F., 4,516,044, Cl. 310-64.000.

Cioca, Gheorghe, to Seton Company. Collagen-thrombin compositions. 4,515,637, Cl. 424-94.000.

Cipriani, Aldo: *See—*
Mazzola, Massimo; and Cipriani, Aldo, 4,515,908, Cl. 521-182.000.

Citizen Watch Company Limited: *See—*
Sakuyama, Masao, 4,516,120, Cl. 340-785.000.

Clark, Graeme M.: *See—*
Patrick, James F.; Seligman, Peter; Tong, Yit C.; and Clark, Graeme M., 4,515,158, Cl. 128-419.00R.

Clarkson, Donald J.: *See—*
Bownass, Norris; and Clarkson, Donald J., 4,515,184, Cl. 137-625.660.

Clasicon (Proprietary) Limited: *See—*
Vivier, Jacobus L., 4,515,689, Cl. 209-453.000.

Clausen, Peter J. M.: *See—*
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,515,555, Cl. 431-208.000.

Clegg, Joe D., to Shell Oil Company. Multi-chamber gas anchor. 4,515,608, Cl. 55-193.000.

Click, Gaylon T.; and Barone, Bruno J., to Denka Chemical Corporation. Steam regeneration of phosphorus treated vanadium-phosphorus-oxygen catalysts. 4,515,899, Cl. 502-35.000.

Cline, Harvey E., to General Electric Company. Method for making semiconductor devices utilizing eutectic masks. 4,515,654, Cl. 156-656.000.

Cobbledick, David S., to GenCorp Inc. In-mold coating composition. 4,515,710, Cl. 252-511.000.

Cobbs, Walter H., Jr.; and Rehman, William R., to Nordson Corporation. Process for coating substrates with aqueous polymer dispersions. 4,515,836, Cl. 427-425.000.

Cockhill, Thomas D.: *See—*
Prewett, Phillip D.; Jefferies, Derek K.; Pashley, Neil A.; and Cockhill, Thomas D., 4,516,052, Cl. 313-546.000.

Codella, Michael: *See—*
Melillo, Anthony; and Gabriele, Louis, 4,515,361, Cl. 272-93.000.

Cody, Ian A., to Exxon Research & Engineering Co. Catalytic dewaxing using collapsed large pore zeolites. 4,515,681, Cl. 208-111.000.

Coffey, Fred S.: *See—*
Stotler, David V.; and Coffey, Fred S., 4,515,613, Cl. 65-4.400.

Cohen, Carole. Multiple-use sports bag and method of converting it to a backpack. 4,515,300, Cl. 224-151.000.

Coinamatic Leasing Corporation: *See—*
Prisant, Simon, 4,515,261, Cl. 194-1.00A.

Colbry, Norman: *See—*
Werbel, Leslie M.; Colbry, Norman; Turner, William; and Worth, Donald F., 4,515,793, Cl. 514-252.000.

Cole, Bill W.: *See—*
Brooks, Gary T.; and Cole, Bill W., 4,515,924, Cl. 525-432.000.

Cole, Roderick: *See—*
Vosmeyer, Wilhelm; Cole, Roderick; and Slezak, Pavel J., 4,515,111, Cl. 123-41.610.

Coleman Company, Inc., The: *See—*
Steffes, William J., 4,515,421, Cl. 312-351.000.
Zwick, David J., 4,515,394, Cl. 280-764.100.

Coles, Robert F., to Minnesota Mining and Manufacturing Company. Isoindoline cationic dyes. 4,515,955, Cl. 548-150.000.

Combustion Engineering, Inc.: *See—*
Creek, Ronald B.; Harden, Charles T.; and Harris, Harold H., 4,515,747, Cl. 376-249.000.
Wheeler, Louis B., 4,514,888, Cl. 29-227.000.

Comer, Philip L., to McGraw-Edison Company. High capacity filter for floor cleaning machines and the like. 4,514,875, Cl. 15-349.000.

Commonwealth of Australia Secretary of Industry and Commerce, The: *See—*
Patrick, James F.; Seligman, Peter; Tong, Yit C.; and Clark, Graeme M., 4,515,158, Cl. 128-419.00R.

CommScope Company: *See—*
Gupta, Chakra V., 4,515,992, Cl. 174-102.00R.

Compagnie d'Informatique Militaire Spatiale & Aeronautique-CIMSA-25: *See—*
Chevrel, Roger; Attard, Michel; and Leviandier, Michel, 4,515,491, Cl. 400-693.000.

Compagnie Generale des Etablissements Michelin: *See—*
Mioche, Robert, 4,515,548, Cl. 425-308.000.

Computer Basic Technology Research Assoc.: *See—*
Narishige, Shinji; Yoshinari, Tsuneo; Sato, Mituo; Takagi, Masayuki; and Yoshida, Toshihiro, 4,516,180, Cl. 360-126.000.

Con Rad Industries, Inc.: *See—*
Benard, Jacques A. V., 4,514,900, Cl. 29-727.000.

Conner, Donald E.; and Klein, Kenneth, to Van Dyk & Company Inc. Liquid, cinnamal dialkyl malonates as sole organic sunscreens. 4,515,774, Cl. 424-59.000.

Control Data Corporation: *See—*
Tucker, Theodore W., 4,516,029, Cl. 250-442.100.

Cook, Andrew J.; and Negus, Paul D., to Westinghouse Brake & Signal Co. Ltd. Railway signalling receiver. 4,516,249, Cl. 375-82.000.

Cook, Daniel D.: *See—*
Davern, John W.; and Cook, Daniel D., 4,515,302, Cl. 227-58.000.

Cook, Robert C., to Securitron-Magnalock Corp. Magnetic locking status detection system. 4,516,114, Cl. 340-542.000.

Cooke, Thomas W.: *See—*
Kaschig, Jurgen; Kleiner, Eduard K.; Nueller, Karl F.; and Cooke, Thomas W., 4,515,640, Cl. 106-287.250.

Coomber, Barry A.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,515,786, Cl. 514-182.000.

Cooper Industries, Inc.: *See—*
Anderson, Gene S., 4,515,435, Cl. 350-96.230.

Cooperheat: *See—*
Parker, Gary F., 4,515,559, Cl. 432-10.000.

CooperVision, Inc.: *See—*
Sorich, Richard A., 4,515,583, Cl. 604-22.000.

Cordis Corporation: *See—*
DeHaan, Abel, 4,515,873, Cl. 429-91.000.

Coret & Co. Ltd.: *See—*
Ito, Takeshi, 4,515,325, Cl. 242-84.51R.

Cormio, Ignazio, to Videocolor S.A. Process of fixing a deflection yoke onto the neck of a CRT. 4,515,568, Cl. 445-3.000.

Cornell Research Foundation, Inc.: *See—*
Kosikowski, Frank V., 4,515,815, Cl. 426-40.000.

Corsette, Douglas F. Nozzle insert for a fluid dispenser. 4,515,315, Cl. 239-491.000.

Corvari, John; Ulvr, Joseph; and Alas, Raigo, to United States of America, America Postal Service. Apparatus and process for scanning and analyzing mail information. 4,516,264, Cl. 382-46.000.

Cossar Electronics Limited: *See—*
Bond, Kevin; and Watson, Brian W., 4,516,132, Cl. 343-815.000.

Cote , Paul T., to General Electric Company. Capacitively ballasted low voltage incandescent lamp. 4,516,056, Cl. 315-240.000.

Couble, Edward C.: *See—*
Deckert, Cheryl A.; Couble, Edward C.; and Bonetti, William F., 4,515,829, Cl. 427-97.000.

Coughlin, Thomas E., to Nylco Corporation. Delsolite. 4,515,844, Cl. 428-82.000.

Coulter Corporation: *See—*
Hollinger, John D.; and Pedroso, Raul I., 4,515,274, Cl. 209-3.100.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; Cahill, Lysle D.; Butler, John C.; and Basuk, Lawrence J., 4,515,879, Cl. 430-31.000.

Council, Malcolm N.: *See—*
Sizer, Phillip S.; Cox, Don C.; and Council, Malcolm N., 4,515,220, Cl. 166-384.000.

Courtaulds PLC: *See—*
Smith, John; and Boiston, David A., 4,515,210, Cl. 165-133.000.

Courtney, Thomas F., Jr.: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,966, Cl. 549-30.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,967, Cl. 549-39.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,968, Cl. 549-39.000.

Couture, Paul A.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,514,943, Cl. 52-200.000.

Couture, Raymond; Couture, Raynald; and Poulin, Paul. Range controller for continuously monitoring the position of the boom of heavy machinery. 4,516,117, Cl. 340-685.000.

Couture, Raynald: *See—*
Couture, Raymond; Couture, Raynald; and Poulin, Paul, 4,516,117, Cl. 340-685.000.

Cox, A. Benns, II: *See—*
Smith, Robert C.; and Cox, A. Benns, II, 4,516,012, Cl. 219-400.000.

Cox, Don C.: *See—*
Sizer, Phillip S.; Cox, Don C.; and Council, Malcolm N., 4,515,220, Cl. 166-384.000.

Cox-Smith, Peter; Calvert, Colin; and Wesley, John, to Hoccum Developments Limited. Method of initiating an operation. 4,515,582, Cl. 494-7.000.

Crain, Edward: *See—*
Molitor, Edwin A.; Crain, Edward; and Lampe, Guy W., 4,515,581, Cl. 493-183.000.

Crane Cams Incorporated: *See—*
Gaterman, William C., III, 4,515,346, Cl. 251-337.000.

Creed, Gerald J., to Singer Company, The. Thread severing arrangement for thread winding bobbin. 4,515,099, Cl. 112-279.000.

Creek, Ronald B.; Harden, Charles T.; and Harris, Harold H., to Combustion Engineering, Inc. Remotely operated maintenance and inspection equipment transporter. 4,515,747, Cl. 376-249.000.

Crehan, Patrick J.: *See—*
Kennedy, Richard B., 4,515,638, Cl. 106-162.000.

Crespo, Jorge L. N. Interlocking system for building walls. 4,514,949, Cl. 52-585.000.

Crisp, Eric H., to Spraybake Limited. Spraybooth. 4,515,072, Cl. 98-115.200.

Cristofori, Manlio: *See—*
Borzatta, Valerio; Cristofori, Manlio; Morotti, Mauro; and Mascellani, Giuseppe, 4,515,809, Cl. 514-533.000.

Cross, Leslie E.: *See—*
Lawless, William N.; Cross, Leslie E.; and Steyert, William A., 4,515,534, Cl. 417-322.000.

Cross, Peter E.: *See—*
Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,515,799, Cl. 514-341.000.

Crowcroft Engineering Limited: *See—*
Heward, Peter D.; Jones, Valerie A.; and Jones, John C., 4,515,510, Cl. 414-422.000.

Crowley, Albert T., to RCA Corporation. Frequency synthesizer using an arithmetic frequency synthesizer and plural phase locked loops. 4,516,084, Cl. 331-2.000.

Crum, Michael A., to Leggett & Platt, Incorporated. Latch for a chair's footrest assembly. 4,515,407, Cl. 297-429.000.

Cruz, Mamerto M., Jr., to Morca, Inc. Polymeric materials combined with modified hydrated magnesium aluminosilicates. 4,515,633, Cl. 106-18.260.

CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Tellone, Mauro, 4,516,166, Cl. 360-72.100.

CSP Foods Ltd.: *See—*
MacDonald, Bruce E.; Galloway, Geoffrey; and Kakuda, Yukio, 4,515,818, Cl. 426-268.000.

Culligan, John C.; Stich, Frederick A.; and Williams, Conrad F., to Siemens-Allis, Inc. Time ratio control circuit for contactor or the like. 4,516,185, Cl. 361-154.000.

Cumpston, Edward H. Hand-fired, solid fuel stove. 4,515,144, Cl. 126-58.000.

Cunningham, Earl A.; and Palmer, Dean C., to International Business Machines Corporation. Error recovery procedure using selective erasure. 4,516,165, Cl. 360-53.000.

Cupp, Carl J.: *See—*
Farrar, Frank W.; and Cupp, Carl J., 4,514,922, Cl. 42-50.000.

Currall, William J. P., to Plessey Overseas Limited. Liquid spray apparatus. 4,515,314, Cl. 239-466.000.

Currie, Corliss H. Seed drill with improved seed disc means. 4,515,224, Cl. 172-572.000.

Curtis, James J.; and Bourgo, Edward A. Knit cover for beverage container. 4,514,995, Cl. 66-170.000.

Curtis, John. Personal safety device. 4,515,240, Cl. 182-6.000.

Cushman, Barry M.: *See—*
Bleacher, John N.; and Cushman, Barry M., 4,515,867, Cl. 428-204.000.

Cuvelier, Leon, to Donaldson Company, Inc. Fluid cleaner device. 4,515,609, Cl. 55-270.000.

Cvengros, Norbert F.: *See—*
Gallatin, Paul M.; Dyken, Henry J.; and Cvengros, Norbert F., 4,516,005, Cl. 200-147.00R.

Czech, Joachim. Dispenser for paste-like products with manually actuable piston including insert device. 4,515,298, Cl. 222-380.000.

Dacomed Corporation: *See—*
Timm, Gerald W., 4,515,166, Cl. 128-694.000.

Dahlgren, Harold P. Planetary synchronizing device. 4,515,079, Cl. 101-183.000.

Dahlgren, Lennart G. O., to Victor Hasselblad Aktiebolag. Focusing hood for cameras. 4,515,454, Cl. 354-287.000.

Dahlin, Torsten: *See—*
Bobjer, Olle; Dahlin, Torsten; and Grieves, John, 4,515,070, Cl. 98-42.070.

Dahlke, Douglas F., to Marq Packaging Systems, Inc. Programmable tray forming machine. 4,516,210, Cl. 364-471.000.

Dailey, Patrick E., to Smith International, Inc. Mud energized electrical generating method and means. 4,515,225, Cl. 175-40.000.

Dainippin Ink and Chemicals Inc.: *See—*
Karino, Saburo; and Ishida, Yoshiaki, 4,515,737, Cl. 264-22.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Yokogawa, Kanae; Kotani, Shozo; Kawata, Shigeo; and Takase, Yoshiyuki, 4,515,891, Cl. 435-69.000.

Daitoku, Koichi: *See—*
Wakabayashi, Hiroshi; Okabe, Nobuo; and Daitoku, Koichi, 4,515,453, Cl. 354-149.100.

Danfoss A/S: *See—*
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,515,555, Cl. 431-208.000.

Dang, Nguyen. Two part piston assembly. 4,515,114, Cl. 123-48.00B.

Daniel, Nisim, to Abic Ltd. Automatic injection apparatus. 4,515,590, Cl. 604-144.000.

Danilevsky, Mikhail G.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.

Dankel, Douglas D., to Roper Corporation. Log splitter having serviceable wedge assembly. 4,515,194, Cl. 144-193.00A.

Danta, William E.; and Adams, Frank H. Dielectric powder sprayer. 4,515,105, Cl. 118-629.000.

Dart Industries Inc.: *See—*
Holzl, Robert A., 4,515,860, Cl. 428-408.000.

Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Intermediates and method for producing intermediates useful in the preparation of 7-oxabicycloheptane prostaglandin derivatives. 4,515,972, Cl. 549-229.000.

Data General Corporation: *See—*
Farber, David A.; Bachman, Brett; Pilat, John F.; and Wallach, Walter A., Jr., 4,516,203, Cl. 364-200.000.

Datta, Amitava: *See—*
Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, 4,515,868, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, 4,515,869, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, 4,515,870, Cl. 428-656.000.

Davern, John W.; and Cook, Daniel D., to Gemcor Engineering Corp. Riveting machine. 4,515,302, Cl. 227-58.000.

Davidenko, Nikolai I.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.

Davidson, Katharine H. Head harness for glasses. 4,515,449, Cl. 351-156.000.

Davidson, Lewis; Lees, Brian; and Lytra, Eric K., to Gestetner Manufacturing Limited. Duplicating stencil. 4,515,077, Cl. 101-127.000.

Davis, Alan R.: *See—*
Reynolds, Joseph D.; and Davis, Alan R., 4,515,029, Cl. 74-339.000.

Davis, Earl K.; Drye, James E.; and Reed, David J., to Motorola, Inc. Glass bonding means and method. 4,515,898, Cl. 501-15.000.

Davis, Gary C., to General Electric Company. Photopatternable dielectric compositions, method for making and use. 4,515,887, Cl. 430-283.000.

Deamer, David W., to University of California, The Regents of the. Method for encapsulating materials into liposomes. 4,515,736, Cl. 264-4.300.

Deans, E. Grant: *See—*
Gidden, Robert A., 4,516,213, Cl. 364-483.000.

Debourge, Jean-Claude; and Lacroix, Guy, to Rhone-Poulenc Agrochimie. Thioglycine derivatives and use as fungicides. 4,515,807, Cl. 514-513.000.

DeChristofaro, Nicholas J.: *See—*
Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, 4,515,868, Cl. 428-656.000.

Deckers, Albert T.; and Leppink, Arie, to Oce-Nederland B.V. Apparatus for exposing and then separating superposed original and light-sensitive sheets. 4,515,470, Cl. 355-105.000.

Deckert, Cheryl A.; Couble, Edward C.; and Bonetti, William F., to Shipley Company Inc. Through-hole plating. 4,515,829, Cl. 427-97.000.

DeCristofaro, Nicholas J.: *See—*
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,515,869, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,515,870, Cl. 428-656.000.

Deering, Roland F.. to Union Oil Company of California. Process for retorting oil shale with fluidized retorting of shale fines. 4,515,679, Cl. 208-11.00R.

DeGeorge Ceilings, Inc.: *See—*
Shih, Hung Y., 4,515,538, Cl. 417-572.000.

Degtev, Evgeny I.: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., 4,515,157, Cl. 128-303.00R.

Degussa Aktiengesellschaft: *See—*
Domesle, Rainer; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,515,758, Cl. 423-213.200.

DeHaan, Abel, to Cordis Corporation. Lithium cell having continuous depletion gauge. 4,515,873, Cl. 429-91.000.

Delahousse, Philippe: *See—*
Delahousse, Regis; and Delahousse, Philippe, 4,514,885, Cl. 24-557.000.

Delahousse, Regis; and Delahousse, Philippe. Clip with two stable positions of the clothes pin type. 4,514,885, Cl. 24-557.000.

Delancey, Warren H.: *See—*
Tallman, William R.; McDevitt, Steven C.; and Delancey, Warren H., 4,515,145, Cl. 126-99.00A.

Delaporte, Francois-Xavier: *See—*
Carsalade, Henri; Delaporte, Francois-Xavier; and Pantani, Jean-Pierre, 4,516,247, Cl. 375-56.000.

DeLorean, John Z. Swash plate engine. 4,515,113, Cl. 123-48.00C.

De Maria, Francesco; and Streetman, William E., to American Cyanamid Company. Hydrophilic, water-absorbing acrylonitrile polymer fiber. 4,515,859, Cl. 428-398.000.

Demerson, Christopher A.; and Humber, Leslie G., to American Home Products Corporation. Resolution of (±)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4,-b] indole-1-acetic acid using enrichment crystallization. 4,515,961, Cl. 548-432.000.

Denka Chemical Corporation: *See—*
Click, Gaylon T.; and Barone, Bruno J., 4,515,899, Cl. 502-35.000.

Dentsply Research & Development Corp.: *See—*
Gonser, Donald I., 4,516,195, Cl. 362-281.000.
Welsh, Richard E., 4,515,267, Cl. 206-219.000.

Deppisch, Gerd: *See—*
Kieser, Jorg; Kukla, Reiner; and Deppisch, Gerd, 4,515,675, Cl. 204-298.000.

Deraedt, Roger: *See—*
Teutsch, Jean G.; Deraedt, Roger; and Benzoni, Josette, 4,515,787, Cl. 514-180.000.

de Ronde, Francois: *See—*
Goscianski, Michel; and de Ronde, Francois, 4,516,089, Cl. 333-135.000.

DeRosett, William P. Canoe lantern holder. 4,515,335, Cl. 248-231.500.

Deruelle, M. Patrick: *See—*
Buguet, M. Maurice; and Deruelle, M. Patrick, 4,516,108, Cl. 338-319.000.

Despatch Industries, Inc.: *See—*
Melgaard, Hans L., 4,515,561, Cl. 432-136.000.

Deushi, Takeo: *See—*
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,515,942, Cl. 536-16.800.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Adaptive tone generator assignment in a keyboard electronic musical instrument. 4,515,058, Cl. 84-1.240.

Develop Dr. Eisbein GmbH & Co.: *See—*
Moser, Kurt; and Hofmann, Rolf, 4,515,459, Cl. 355-3.0FU.

DeVroom, William A., to American Hospital Supply Corporation. Manifold for monitoring hemodynamic pressure. 4,515,278, Cl. 211-107.000.

Dew, Brock S.; and Greiff, Paul, to Charles Stark Draper Laboratory, Inc., The. Spatially integral, video signal processor. 4,516,263, Cl. 382-41.000.

de Winter, Dirk M., to Brunswick Corporation. Gas separating and venting filter. 4,515,606, Cl. 55-159.000.

Dey, Arabinda N.: *See—*
Bowden, William L.; and Dey, Arabinda N., 4,515,875, Cl. 429-196.000.

Dezelan, Joseph E., to Caterpillar Tractor Co. Flow control valve assembly wth quick response. 4,515,181, Cl. 137-596.000.

Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Amidinoureas. 4,515,718, Cl. 260-239.00B.

Diaz, Zaida, to Shell Oil Company. Removal of H_2S from gaseous streams. 4,515,764, Cl. 423-573.00R.

Diepeveen, Neal, to Magnavox Government and Industrial Electronics, Co. Elevation step scanner. 4,516,159, Cl. 358-293.000.

Dietl, Josef; and Kotilge, Jorg, to Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe m.b.H. Process for the removal of the slag portion from molten mixtures of slag and silicon using a semipermeable separating wall. 4,515,600, Cl. 23-293.00R.

Dietz, Peter; Muller, Norbert W.; and Kroh, Horst F. M., to Pittler Machinenfabrik AG. Quick-change tool holder for lathes. 4,515,049, Cl. 82-36.00R.

Difflipp, Kurt; and Wanke, Johannes, to M.A.N.-Roland Druckmaschinen AG. Doctor blade drive. 4,515,078, Cl. 101-157.000.

Diffracto Ltd.: *See—*
Pryor, Timothy R., 4,515,479, Cl. 356-375.000.

Digonnet, Michel J. F.: *See—*
Shaw, Herbert J.; Chodorow, Marvin; and Digonnet, Michel J. F., 4,515,431, Cl. 350-96.150.

Dillon, Charles M.: *See—*
Sherwood, Edward F.; Orndorff, Karl B.; and Dillon, Charles M., 4,514,946, Cl. 52-211.000.

DiMarco, Louis A., to RCA Corporation. Solvent-cast capacitive high density information disc. 4,515,830, Cl. 427-122.000.

Dimond, James R.; and Bushman, James B., to Harco Corporation. Anode and connection. 4,515,669, Cl. 204-196.000.

DiMucci, Vito A.: *See—*
Anderson, F. Allan; Chen, Henry C. J.; DiMucci, Vito A.; and Wang, Roger C., 4,514,954, Cl. 53-53.000.

Dion, Donald F.; and Cantella, Michael J., to RCA Corporation. Compression of the dynamic range of video signals. 4,516,167, Cl. 358-160.000.

Disco Aluminum Products Co., Inc.: *See—*
Meigs, William; Guffey, David M.; and Brumfield, Donald E., 4,514,948, Cl. 52-397.000.

Dixon Industries Corporation: *See—*
Marshall, Charles R., 4,515,378, Cl. 277-152.000.

Dixon, Richard W.; Joyce, William B.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, to AT&T Bell Laboratories. Method of forming current confinement channels in semiconductor devices. 4,514,896, Cl. 29-576.00B.

Dizek, Frederick A.; Vogel, Eric S.; Tiedeman, C. John, Jr.; and Herold, Robert A., to United Technologies Corporation. Degassing metal powder. 4,515,629, Cl. 75-0.50B.

Docter, Richard: *See—*
Effinger, David D.; and Docter, Richard, 4,516,085, Cl. 331-40.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
Kessler, Jochen, 4,515,126, Cl. 123-401.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Hennig, Eberhard; Klie, Juergen; and Wellendorf, Klaus, 4,516,155, Cl. 358-80.000.
Jung, Eggert; and Wadle, Heinrich, 4,516,175, Cl. 358-283.000.

Dodds, Robert E.; and Harrigan, David J., to GTE Products Corporation. Method of vapor coating phosphor particles. 4,515,827, Cl. 427-68.000.

Doehler, Joachim: *See—*
Fournier, Eugene; and Doehler, Joachim, 4,515,107, Cl. 118-718.000.

Doell, Aubrey C., to Bristol Fiberlite Industries. Skylight and mounting therefor. 4,514,944, Cl. 52-200.000.

Dofke, Harald: *See—*
Muller, Rudolf; Radeklau, Hans-Jurgen; Dofke, Harald; and Krieger, Detlef, 4,515,483, Cl. 366-303.000.

Dohi, Takashi: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,516,061, Cl. 318-561.000.

Dolezal, George E.; and Kelly, Joseph L., Jr., to Hughes Tool Company - USA. Air groove scraper. 4,515,228, Cl. 175-313.000.

Dolgirev, Jury E.: *See—*
Maidanik, Jury F.; Vershinin, Sergei V.; Kholodov, Valery F.; and Dolgirev, Jury E., 4,515,209, Cl. 165-104.220.

Doman, Glidden S., to United Technologies Corporation. Minimization of the effects of yaw oscillations in wind turbines. 4,515,525, Cl. 416-11.000.

Domesle, Rainer; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, to Degussa Aktiengesellschaft. Process and catalyst for the reduction of the ignition temperature of diesel soot filtered out of the exhaust gas of diesel engines. 4,515,758, Cl. 423-213.200.

Donaldson Company, Inc.: *See—*
Cuvelier, Leon, 4,515,609, Cl. 55-270.000.
Wolde-Michael, Girma, 4,515,607, Cl. 55-166.000.

Donn Incorporated: *See—*
Menchetti, Robert J.; and Sauer, Gale E., 4,514,945, Cl. 52-202.000.

Dopfer, Peter; Ostermeier, Johann; and Schwerin, Siegfried, to Hoechst Aktiengesellschaft. Azo pigment formulations. 4,515,639, Cl. 106-288.00Q.

Doriath, Gerard; and Gaudry, Roger, to Thomson-CSF. Magnetometer probe using a thin-film magnetic material as a magneto-optic sensor. 4,516,073, Cl. 324-244.000.

Dorsch, Robert; and Matusz, Arnold J., to Alpha-Debon Industries, Inc. Air scrubbing system. 4,515,073, Cl. 98-115.200.

Dotson, Jarvis L., to Gulf & Western Manufacturing Company. Vehicle parking brake self-adjusting control mechanism. 4,515,036, Cl. 74-535.000.

Dougherty, Delford O., to St. Luke's Hospital. Eye dropper with light source. 4,515,295, Cl. 222-113.000.

Douglas, George H.: *See—*
Diamond, Julius; and Douglas, George H., 4,515,718, Cl. 260-239.00B.

Dow Chemical Company, The: *See—*
Behr, Raymond D., 4,515,647, Cl. 156-91.000.
Bissonnette, Harold S., 4,515,218, Cl. 166-328.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,515,989, Cl. 568-674.000.
Hefner, Robert E., Jr., 4,515,934, Cl. 528-92.000.
Kleschick, William A., 4,515,956, Cl. 548-230.000.
McCullough, Thomas W.; and Stevens, Bradley D., 4,515,907, Cl. 521-139.000.
McKinney, Linda M.; and McKinney, Osborne K., 4,515,846, Cl. 428-95.000.
Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., 4,515,767, Cl. 424-1.100.
Swearingen, Loren L.; and LaTulip, Randy J., 4,515,938, Cl. 528-252.000.
Tsurumi, Michio; and Lee, Do I., 4,515,914, Cl. 523-201.000.

Doyen, Daniel, to U.S. Philips Corporation. Magnetic circuit for an yttrium-iron garnet crystal resonator for an oscillator. 4,516,096, Cl. 333-219.000.

Drabek, Jozef: *See—*
Boger, Manfred; and Drabek, Jozef, 4,515,798, Cl. 514-341.000.

Dragone, Corrado, to AT&T Bell Laboratories. Antenna arrangements using focal plane filtering for reducing sidelobes. 4,516,130, Cl. 343-781.00P.

Draper, David L., to Cars & Concepts, Inc. Method of conversion of vehicle bodies. 4,514,891, Cl. 29-401.100.

Dremann, George H.: *See—*
Johnson, Ray M.; and Dremann, George H., 4,516,088, Cl. 333-22.00F.

Dresser Europe S.A.: *See—*
Parrott, George A., 4,515,409, Cl. 299-43.000.

Dresser Industries, Inc.: *See—*
Loy, Robert E.; Phillips, Dale R.; and Willis, Paul E., 4,515,234, Cl. 180-89.120.

Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W. Drill bit assembly with fluid separator. 4,515,229, Cl. 175-337.000.

Drye, James E.: *See—*
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,515,898, Cl. 501-15.000.

D'Silva, Edmund D., to Baxter Travenol Laboratories, Inc. Peristaltic pump quick disconnect rotor assembly. 4,515,535, Cl. 417-360.000.

Dublier Scientific Limited: *See—*
Prewett, Phillip D.; Jefferies, Derek K.; Pashley, Neil A.; and Cockhill, Thomas D., 4,516,052, Cl. 313-546.000.

DuBois, R. Clark. Continuous web feeder with web cutting means. 4,515,053, Cl. 83-488.000.

Duffy, Joseph J.: *See—*
Varallo, Thomas P.; Ervine, Albert W. G.; Duffy, Joseph J.; and Olson, Edwin G., 4,514,956, Cl. 53-148.000.

Dungill, Kenneth F. Amalgam carrier. 4,515,563, Cl. 433-90.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bayan, Ghawamedin, 4,515,858, Cl. 428-364.000.
Carney, Thomas E.; Champion, Allan R.; and Logullo, Francis M., Sr., 4,515,636, Cl. 106-90.000.
Hoorn, Willem A., 4,514,958, Cl. 53-266.00R.
Memeger, Wesley, Jr., 4,515,656, Cl. 162-101.000.
Plotzker, Irene G., 4,515,761, Cl. 423-240.000.
Reap, James J., 4,515,624, Cl. 71-92.000.
Varallo, Thomas P.; Ervine, Albert W. G.; Duffy, Joseph J.; and Olson, Edwin G., 4,514,956, Cl. 53-148.000.

Duracell Inc.: *See—*
Bowden, William L.; and Dey, Arabinda N., 4,515,875, Cl. 429-196.000.

Durette, Philippe L.: *See—*
Yang, Shu S.; Beattie, Thomas R.; Durette, Philippe L.; Gallagher, Timothy F.; and Shen, Tsung-Ying, 4,515,722, Cl. 260-403.000.

Durkee, David B.; Koller, James P.; and Wentzel, Robert M., to AT&T Teletype Corporation. Print head actuator for an ink jet printer. 4,516,140, Cl. 346-140.00R.

Durville, Gerard A.; and Bucher, Robert R., to Textilma Ag. Loom heald control means. 4,515,186, Cl. 139-455.000.

DuVal, Daniel A.; Kahn, Roger N.; and Myers, David E. Method and apparatus for displaying records. 4,515,396, Cl. 281-15.00R.

Duverger, Jean, to Black & Decker, Inc. Electric motor with two directions of rotation and shiftable brushes. 4,516,047, Cl. 310-230.000.

Dyke, Denis G., to American Sterilizer Company. Pore forming sterilization bag. 4,515,841, Cl. 428-35.000.

Dyken, Henry J.: *See—*
Gallatin, Paul M.; Dyken, Henry J.; and Cvengros, Norbert F., 4,516,005, Cl. 200-147.00R.

Dynamit Nobel Aktiengesellschaft: *See—*
El-Chahawi, Moustafa, 4,515,984, Cl. 560-183.000.

Dyonics, Inc.: *See—*
Prescott, Rochelle; and Leiner, Dennis C., 4,515,444, Cl. 350-413.000.

E.I. Du Pont de Nemours and Company: *See—*
Knupp, John L., Jr., 4,515,695, Cl. 210-634.000.

E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,515,972, Cl. 549-229.000.

E-Systems, Inc.: *See—*
Barclay, Thomas E.; and Zett, John A., 4,516,248, Cl. 375-76.000.

Eastin, John A. Manufacturing and using nitrogen fertilizer solutions on a farm. 4,515,615, Cl. 71-54.000.

Eastman Kodak Company: *See—*
Harvey, Donald M., 4,515,457, Cl. 354-443.000.
Sandefur, Louise O.; Slusarek, Wojciech; Wilson, Burton D.; and Maggiulli, Cataldo A., 4,515,947, Cl. 544-295.000.

Eaton Corporation: *See—*
Chen, Chee G., 4,516,112, Cl. 340-365.00R.
Jaskolski, Stanley V.; Schutten, Herman P.; Spellman, Gordon B.; Sedivy, Jan K.; and Jensen, Maurice W., 4,516,144, Cl. 357-27.000.
Reynolds, Joseph D.; and Davis, Alan R., 4,515,029, Cl. 74-339.000.

Eckert, Alton B., to Pitney Bowes Inc. Date checking device for electronic postage meter. 4,516,014, Cl. 235-101.000.

Economy, James; and Flandera, Mary A., to International Business Machines Corporation. Planarization method. 4,515,828, Cl. 427-82.000.

Ecopool Design Limited: *See—*
Bastenhof, Dirk, 4,515,500, Cl. 405-79.000.

Eden, Dayton D., to LTV Aerospace and Defense Company. Scanning laser radar. 4,515,471, Cl. 356-5.000.

Eder, Helmut, to Multisafe AG. Guard grid for a passageway. 4,514,951, Cl. 52-660.000.

Edixhoven, Gerardus H., to Hunter Douglas International N.V. Unit for positioning a venetian blind ladder and for guiding the slats of the blind thereonto. 4,514,886, Cl. 29-24.500.

Edmunds, Robert H.; and Vanek, Jay D., to Vapor Corporation. Pressure relief valve with adjustment for set pressure. 4,515,179, Cl. 137-543.130.

Edna McConnell Clark Foundation: *See—*
Werbel, Leslie M.; Colbry, Norman; Turner, William; and Worth, Donald F., 4,515,793, Cl. 514-252.000.

Edwards, Eldon R.: *See—*
Parquet, Donald J.; Brown, Thomas R.; and Edwards, Eldon R., 4,515,520, Cl. 414-718.000.

Edwards, Robert C., to Standard Oil Company (Indiana). Catalysts for the production of maleic anhydride by the oxidation of butane. 4,515,904, Cl. 502-209.000.

Eertink, Bastiaan B. B.; and van Esch, Hendrikus J., to Oce-Nederland B.V. Light detector circuit. 4,516,019, Cl. 250-214.0RC.

EFCO, Inc.: *See—*
Korytko, Myron I., 4,515,551, Cl. 425-406.000.

Effinger, David D.; and Docter, Richard, to Hughes Aircraft Company. Microwave frequency synthesizer using plural switchable low noise oscillators. 4,516,085, Cl. 331-40.000.

Ehrlichmann, Merlin W., to Sunburst Laboratories, Inc. Incinerator having kinetic venturi isothermic grid burner system. 4,515,089, Cl. 110-235.000.

Eichinger, Johann, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Differential coupling. 4,515,573, Cl. 464-69.000.

Eing A., Hubert I.; and Klein, Rolf D. Access control of data transmission network. 4,516,205, Cl. 364-200.000.

Eisenberg, Naphtali: *See—*
Bodenheimer, Joseph S.; and Eisenberg, Naphtali, 4,516,018, Cl. 250-203.00R.

Eisenlohr, Karl-Heinz; Gaensslen, Hans; Kriebel, Manfred; and Tanz, Heiner, to Metallgesellschaft Aktiengesellschaft. Process of producing a synthesis gas which has a low inert gas content. 4,515,604, Cl. 48-197.00R.

Elattar, Azza A., to Texaco Inc. Method of preparing pillared, interlayered clay catalyst using soluble carbohydrates. 4,515,901, Cl. 502-63.000.

El-Chahawi, Moustafa, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of alkali-metal formyl acid esters. 4,515,984, Cl. 560-183.000.

Electric Power Research Institute, Inc.: *See—*
Park, Dong-Sil; and Zabala, Robert J., 4,515,865, Cl. 428-610.000.

ELECTRICITE DE FRANCE Service National: *See—*
Fabregue, Jean-Pierre, 4,515,748, Cl. 376-250.000.

Electro-Nite Co.: *See—*
Cassidy, John E.; and Jones, L. Raymond, Jr., 4,515,485, Cl. 374-157.000.

Electrolytic Zinc Company of Australasia Limited: *See—*
Matthew, Ian G.; Pammenter, Robert V.; and Kershaw, Mervyn G., 4,515,696, Cl. 210-713.000.

Electronic Concepts, Inc.: *See—*
Lavene, Bernard, 4,516,187, Cl. 361-309.000.

Eli Lilly and Company: *See—*
Burow, Kenneth W., Jr., 4,515,625, Cl. 71-92.000.
McShane, Lawrence J., 4,515,719, Cl. 260-239.00A.
Robertson, David W., 4,515,796, Cl. 514-303.000.

Elkem a/s: *See—*
Sandvik, Johannes, 4,515,329, Cl. 242-157.100.

Ellenberger & Poensgen GmbH: *See—*
Krasser, Fritz; and Kinner, Josef, 4,516,098, Cl. 335-35.000.

Elliott, John Q., to Arkansas Medical Research & Development Corporation. Skin tumor removal and healing compositions and processes. 4,515,779, Cl. 424-145.000.

Elliott, Michael; Janes, Norman F.; and Khambay, Bhupinder P. S., to National Research Development Corporation. Pesticides. 4,515,808, Cl. 514-521.000.

Elmaleh, Samuel; and Grasmick, Alain D., to Gozal, David. Method for flocculating microscopic particles in suspension in a liquid and application to the collection of phytoplankton microalgae and zooplankton and for the purification of used water. 4,515,697, Cl. 210-768.000.

Elmore, Carl L.; and Funk, Erwin D., to Kamyr, Inc. Dehydration of lignite or the like. 4,514,910, Cl. 34-15.000.

Eltech systems Corporation: *See—*
Platek, Gary F.; and Krug, Geoffrey P., 4,515,672, Cl. 204-269.000.

Embelton-Grail, Inc.: *See—*
Grail, Donald J., 4,514,947, Cl. 52-536.000.

Emert, Anton; Knabel, Walter; and Richert, Manfred, to Marker International. Ski brake. 4,515,388, Cl. 280-605.000.

Emery, Jared M.; and Chan, Raymond Y., to Baylor College of Medicine. Mitotic inhibitors preventing posterior lens capsule opacification. 4,515,794, Cl. 514-249.000.

Emmerich, Kenneth C.: *See—*
Means, Thomas C.; and Emmerich, Kenneth C., 4,515,230, Cl. 175-410.000.

Emms, Norman R., to Hestair Kiddicraft Limited. Floatable toys. 4,515,572, Cl. 446-153.000.

Emori, Hiroshi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.

Endo, Tomohiro: *See—*
Taniguchi, Nobuhiro; and Endo, Tomohiro, 4,515,776, Cl. 424-85.000.

Energy Conversion Devices, Inc.: *See—*
Carroll, Robert, 4,515,165, Cl. 128-664.000.

Engel, Friedrich: *See—*
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.

Engels, Bernd: *See—*
Kluting, Bernd; and Engels, Bernd, 4,515,339, Cl. 248-543.000.

Enomoto, Kiyoshige; and Iwata, Masao, to Oppama Kogyo Kabushiki Kaisha. Contactless ignition device for internal combustion engines. 4,515,140, Cl. 123-603.000.

Enomoto, Yuji: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Envirotech Corporation: *See—*
Haymore, Ralph B.; and Winter, Heinz W., 4,515,694, Cl. 210-531.000.

Equipment Systems & Devices, Inc.: *See—*
Wilfong, Evan C.; and Anno, Tesfaye, 4,515,262, Cl. 194-1.00G.

Erickson, Bruce W., to Rockefeller University, The. Synthesis of peptides and proteins. 4,515,920, Cl. 525-54.110.

Erickson, Donald A., to Texas Instruments Incorporated. High density bipolar ROM having a lateral PN diode as a matrix element and method of fabrication. 4,516,223, Cl. 365-175.000.

Erickson, Wade A. Hand operated weeding device with operating depth stabilizer plate and weed displacer strip. 4,515,223, Cl. 172-372.000.

Eriksson, Jan. Device for processing trees or the like. 4,515,192, Cl. 144-2.00Z.

Ernest, Ivan: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,515,717, Cl. 260-239.00A.

Ernst Wagner KG-Fordertechnik: *See—*
Schumacher, Karl, 4,515,380, Cl. 280-93.000.

Ervine, Albert W. G.: *See—*
Varallo, Thomas P.; Ervine, Albert W. G.; Duffy, Joseph J.; and Olson, Edwin G., 4,514,956, Cl. 53-148.000.

Escarabajal, Gislain; and Maligne, Jean-Charles, to Societe Anonyme D.B.A. Spring for pads of a disc brake with a sliding calliper, and disc brake equipped with such a spring. 4,515,249, Cl. 188-73.380.

Eschke, Bernd: *See—*
Bolle, Gunter; Bragas, Peter; and Eschke, Bernd, 4,515,994, Cl. 179-2.00R.

Esswein, Karlheinz, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Attachment of microscope objectives. 4,515,439, Cl. 350-257.000.
Establissement E. Ferron: *See*—
Ferron, Ernest, 4,515,061, Cl. 84-394.000.
Ethyl Corporation: *See*—
Laurent, Sebastian M.; and Pond, Wilson G., 4,515,780, Cl. 424-154.000.
Ranken, Paul F.; and Walter, Thomas J., 4,515,945, Cl. 544-94.000.
Ettinger, Robert H.: *See*—
Komanduri, Ranga; Ettinger, Robert H.; Casey, Morton P., Jr.; and Reed, William R., Jr., 4,515,047, Cl. 82-1.00C.
Euscher-Klingenhagen, Werner; Griemla, Horst; and Rodekamp, Hartmut, to Ewald Euscher. Valve plates for container valves and method of manufacturing same. 4,515,285, Cl. 220-288.000.
Everett, George S., to QO Chemicals, Inc. Catalysts for foundry core binders. 4,515,935, Cl. 528-141.000.
Ewald Euscher: *See*—
Euscher-Klingenhagen, Werner; Griemla, Horst; and Rodekamp, Hartmut, 4,515,285, Cl. 220-288.000.
Ewald, Jerome T.: *See*—
Brown, Arthur K.; Fulmer, Keith H.; and Ewald, Jerome T., 4,514,981, Cl. 60-547.100.
Ewan, George B.: *See*—
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,515,786, Cl. 514-182.000.
Ex-Cell-O Corporation: *See*—
Nord, Keith W., 4,515,039, Cl. 74-665.00C.
Exxon Research & Engineering Co.: *See*—
Cody, Ian A., 4,515,681, Cl. 208-111.000.
Haslegrave, John A.; and Sullivan, Daniel S., 4,515,708, Cl. 252-390.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., to Dow Chemical Company, The. Preparation decarboxylation and polymerization of novel acid flourides and resulting monomers. 4,515,989, Cl. 568-674.000.
Faba, Eusebio M.: *See*—
Caldero Ges, Jose M.; and Faba, Eusebio M., 4,515,806, Cl. 514-471.000.
Fabregue, Jean-Pierre, to ELECTRICITE DE FRANCE Service National. Apparatus for detection of losses in a vapor generator. 4,515,748, Cl. 376-250.000.
Fabris, Alfonso V.; Strickland, Robert M., Jr.; and Toth, John T., to Satellite Business Systems. Teleconferencing method and system. 4,516,156, Cl. 358-85.000.
Facto, Archibald R. Coin operated mechanism for opening the door of a cabinet. 4,515,263, Cl. 194-1.00D.
Fair, David L.; Justice, David D.; and Kelly, Pilar P., to Olin Corporation. Method of stabilizing metal-silica complexes in alkali metal halide brines. 4,515,665, Cl. 204-98.000.
Fairchild Camera & Instrument Corporation: *See*—
Phy, William S., 4,515,662, Cl. 204-15.000.
Fairclough Civil Engineering Limited: *See*—
Thomas, Norman S., 4,515,501, Cl. 405-153.000.
Falch, Sverre, to A/S Moelven Brug. Rotatable crane apparatus for a rescue vehicle. 4,515,282, Cl. 212-254.000.
Falk, Volker: *See*—
Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, 4,515,986, Cl. 564-471.000.
Fancher, Llewellyn W.; and Scher, Herbert B., to Stauffer Chemical Company. Lepidoptericidal isothiourea compounds. 4,515,813, Cl. 514-563.000.
Fansteel Inc.: *See*—
Means, Thomas C.; and Emmerich, Kenneth C., 4,515,230, Cl. 175-410.000.
Farah, Robert L.; and Walters, Stephen M., to AT&T Bell Laboratories. Bit compression coding with embedded signaling. 4,516,241, Cl. 370-110.100.
Farber, David A.; Bachman, Brett; Pilat, John F.; and Wallach, Walter A., Jr., to Data General Corporation. Improved apparatus for encaching data whose value does not change during execution of an instruction sequence. 4,516,203, Cl. 364-200.000.
Farcy, Andre : *See*—
Peynaud, Francois; Gosselin, Jean; Farcy, Andre ; and Grandvaux, Bernard, 4,516,226, Cl. 367-6.000.
Farrar, Frank W.; and Cupp, Carl J., to Pachmayr Gun Works, Inc. Gun magazine structure. 4,514,922, Cl. 42-50.000.
Fauss, Rudolf; Meiners, Hans J.; Rasshofer, Werner; and Meyborg, Holger, to Bayer Aktiengesellschaft. Polyamines and a process for their production. 4,515,923, Cl. 525-127.000.
Fayter, Richard G., Jr.: *See*—
Harris, Eugene G.; and Fayter, Richard G., Jr., 4,515,978, Cl. 549-484.000.
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza. Corneal incision marker. 4,515,157, Cl. 128-303.00R.
Feller, Ron; and Mizrach, Amos, to State of Israel, Ministry of Agriculture, The. Separation devices employing forced air through conveyor belt means. 4,515,276, Cl. 209-693.000.
Felten & Guilleaume Carlswerk Aktiengesellschaft: *See*—
Schmidt, Bernhard, 4,515,433, Cl. 350-96.210.
Fenneman, David B.; Rinehart, Larry F.; and Hardesty, Leonard W., Jr., to United States of America, Navy. Apparatus for and a method of measuring the intrinsic time constant of liquids. 4,516,077, Cl. 324-425.000.
Ferber, John G.; Goddard, Peter J.; and Holden, Robert S., to Bush Boake Allen Limited. Preparation of indanes, tetralins and phenyl alcohol in Friedel Craft reaction. 4,515,990, Cl. 568-808.000.
Ferguson, Donald A.: *See*—
Jenkins, Patrick A.; and Ferguson, Donald A., 4,515,012, Cl. 73-168.000.
Ferlan, Stephen J.; and Gesinski, Leonard T., to Westinghouse Electric Corp. Spring clip inserter tool. 4,514,889, Cl. 29-229.000.
Ferrante, Mario, to Photomeca S.A. Tank for the treatment of offset plates by ultrasounds. 4,515,456, Cl. 354-320.000.
Ferron, Ernest. Wind instrument with adjustable tone. 4,515,060, Cl. 84-380.00R.
Ferron, Ernest, to Establissement E. Ferron. Trumpet with improved tone. 4,515,061, Cl. 84-394.000.
Fetty, James R. Radial universal tool. 4,515,191, Cl. 144-1.00C.
Fev Forschungsgesellschaft fur Energietechnik und ver Brennungsmotoren mbH: *See*—
Pischinger, Franz; and Kreuter, Peter, 4,515,343, Cl. 251-48.000.
Fides Treuhand GmbH: *See*—
Mohr, Ernst, 4,514,979, Cl. 60-512.000.
Field, John R.; Kocher, Haribhajan S.; and Martellock, Arthur C., to Xerox Corporation. Fusing system with unblended silicone oil. 4,515,884, Cl. 430-99.000.
Filatov, Vladimir N.: *See*—
Markov, Vladimir A.; Filatov, Vladimir N.; Kernasovsky, Ilya S.; and Gorina, Ljudmila V., 4,515,254, Cl. 188-371.000.
Filimonovna, Ljudmila Y.: *See*—
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
Findakly, Talal K., to TRW Inc. Integrated optical star coupler. 4,515,428, Cl. 350-96.120.
Fine, Daniel H. Composition and method for the preventative treatment of dental disease and apparatus for dispensing said composition. 4,515,771, Cl. 424-52.000.
Fischer, William H., to Opcon, Inc. Ball and socket mount for optical sensing system source and/or detector devices. 4,515,336, Cl. 248-288.300.
Fisher, Jared D.: *See*—
Fisher, Susan S.; and Fisher, Jared D., 4,514,871, Cl. 5-508.000.
Fisher, Richard K., Jr., to Allis-Chalmers Corporation. Draft tube for hydraulic turbine. 4,515,524, Cl. 415-219.00R.
Fisher, Susan S.; and Fisher, Jared D. Waterbed convertible cap. 4,514,871, Cl. 5-508.000.
Fishler, Jay. Article dispensing apparatus. 4,515,290, Cl. 221-124.000.
Fisons plc: *See*—
Newman, Peter M.; and Jenkins, Anthony W., 4,515,805, Cl. 514-460.000.
Fitch, John L.; and Strubhar, Malcolm K., to Mobil Oil Corporation. Method for controlling the vertical growth of hydraulic fractures. 4,515,214, Cl. 166-250.000.
Fitterer, Horst: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.
Flandera, Mary A.: *See*—
Economy, James; and Flandera, Mary A., 4,515,828, Cl. 427-82.000.
Flaum, Stephen S., to S&S Corrugated Paper Machinery Co., Inc. Automatic slitter. 4,515,052, Cl. 83-479.000.
Flax, Stephen W.; and Pelc, Norbert J., to General Electric Company. Method and a means for determining ultrasonic wave attenuation in tissue using zero crossing detector functioning within a specified frequency band. 4,515,163, Cl. 128-660.000.
Fledrich, Istvan: *See*—
Varga, Laszlo ; Krekacs, Sandor; Latorcai, Janos; Palfi, Zoltan; and Fledrich, Istvan, 4,514,911, Cl. 34-22.000.
Flegel, Martin; Krojidlo, Milan; Kolinsky , Jiri ; Masek, Karel; and Seifert, Jaroslav, to SPOFA, spojene podniky pro zdratvonickou vyrobu. L-Alanyl-D-isoglutamine adamantylamide. 4,515,715, Cl. 260-112.50R.
FMC Corporation: *See*—
Gunnarsson, Arne N., 4,515,381, Cl. 280-96.000.
LeDevehat, Eugene R., 4,515,182, Cl. 137-614.060.
Rathe, Robert A.; and Volkmann, Thomas J., 4,514,939, Cl. 52-118.000.
Fong, Dodd W., to Nalco Chemical Company. Retention aids. 4,515,658, Cl. 162-168.400.
Ford Aerospace & Communications Corporation: *See*—
Pizzurro, Vito F., 4,515,082, Cl. 102-293.000.
Ford Motor Company: *See*—
Anderson, Robert L.; and McDonald, William R., 4,515,132, Cl. 123-494.000.
Holubka, Joseph W., 4,515,926, Cl. 525-449.000.
Janson, David A., 4,515,031, Cl. 74-359.000.
McCarthy, James P.; and Byler, Richard E., 4,515,176, Cl. 137-115.000.
Swider, Robert A.; and Horsch, Martha E., 4,515,911, Cl. 523-414.000.
Wingfield, Robert C., Jr.; Braslaw, Jacob; and Gealer, Roy L., 4,515,659, Cl. 201-2.500.
Forenade Fabriksverken: *See*—
Sundvall, Kenneth, 4,515,081, Cl. 102-266.000.
Forsell, Glenn W. Method and apparatus for trimming lead wires projecting from printed circuit boards. 4,515,048, Cl. 83-13.000.

Forshey, Terry L.: *See*—
Isenberg, Gerry E.; Forshey, Terry L.; and Keller, Robert D., Jr., 4,515,353, Cl. 266-236.000.
Forsyth, John L.: *See*—
Sanders, Royden C., Jr.; and Forsyth, John L., 4,515,488, Cl. 400-124.000.
Fortuna, Vincent E.: *See*—
MacLaughlin, Donald N.; and Fortuna, Vincent E., 4,515,651, Cl. 156-423.000.
Fournier, Eugene; and Doehler, Joachim, to Sovonics Solar Systems. Apparatus for the manufacture of photovoltaic devices. 4,515,107, Cl. 118-718.000.
Fox, Richard J., to United States of America, Energy. Method and apparatus for determining peak temperature along an optical fiber. 4,515,474, Cl. 356-44.000.
Fraise, Pierre, to Thomson-CSF. Microwave mixer with recovery of the sum frequency. 4,516,271, Cl. 455-327.000.
Franceschi, Jean-Luc: *See*—
Jouffrey, Bernard; Trinquier, Jacques; and Franceschi, Jean-Luc, 4,516,026, Cl. 250-310.000.
Francis, John H.: *See*—
VanDerLinden, Roy E.; and Francis, John H., 4,515,028, Cl. 74-191.000.
Frank, Andrew A.; and Omitsu, Takashi, to Aisin Seiki Kabushiki Kaisha. Control system and method for a power delivery system having a continuously variable ratio transmission. 4,515,041, Cl. 74-866.000.
Frankhouser, Paul L., to Arrow International, Inc. Catheter shield. 4,515,592, Cl. 604-163.000.
Franklin, LeRoy H., to GA Technologies Inc. Current limiting apparatus. 4,516,182, Cl. 361-13.000.
Franz, James H., Jr.: *See*—
Roberts, Richard D.; Franz, James H., Jr.; Hoffman, Lester J.; and Miller, Lalan G., 4,516,059, Cl. 318-301.000.
Frederick, Bruce A., to Advanced Micro Devices, Inc. MOS Depletion load circuit. 4,516,225, Cl. 365-203.000.
Frederick Manufacturing Company: *See*—
VanDerLinden, Roy E.; and Francis, John H., 4,515,028, Cl. 74-191.000.
Frei, Theo: *See*—
Haenni, Eduard; Frei, Theo; and Hug, Peter, 4,515,050, Cl. 83-71.000.
Freye, Theodor: *See*—
Moosbrucker, Karl; Hollmann, Bernd; and Freye, Theodor, 4,514,969, Cl. 56-341.000.
Frick Company: *See*—
Pillis, Joseph W., 4,515,540, Cl. 418-97.000.
Fricke, Richard J.: *See*—
Kennedy, Richard B., 4,515,638, Cl. 106-162.000.
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., to Nanodata Computer Corporation. Data processing system. 4,516,199, Cl. 364-200.000.
Friesen, Dwayne; Babcock, Walter C.; and Tuttle, Mark, to Bend Research, Inc. Anisotropic microporous supports impregnated with polymeric ion-exchange materials. 4,515,906, Cl. 521-28.000.
Frigon, Raymond A.; and Kahl, William G., Jr., to Cerberus AG. Intrusion detection system. 4,516,115, Cl. 340-556.000.
Frihart, Charles R.; and Veazey, Richard L., to Union Camp Corporation. Poly(ester-amide) hot-melt adhesives. 4,515,939, Cl. 528-339.300.
Frisbie, Richard C.; Houser, David E.; Morenus, Richard J.; and Thomas, Edwin L., to International Business Machines Corporation. Pressure foot assembly for an end mill delete cutter. 4,515,505, Cl. 409-163.000.
Frisz, James O. Method and apparatus for opening a loaded plastic bag and removing the contents thereof. 4,515,509, Cl. 414-412.000.
Frohberger, Paul-Ernst: *See*—
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,515,617, Cl. 71-76.000.
Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,515,812, Cl. 514-592.000.
Frungel, Frank. Visibility meter and components used therein. 4,515,477, Cl. 356-338.000.
Fruth, Franz: *See*—
Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,515,356, Cl. 270-53.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Takano, Toshio; and Sakakiyama, Ryuzo, 4,515,257, Cl. 192-0.075.
Fuji Machine Mfg. Co., Ltd.: *See*—
Asai, Koichi; Tsuda, Mamoru; Oe, Kunio; and Muto, Yasuo, 4,515,507, Cl. 414-226.000.
Fuji Photo Film Co., Ltd.: *See*—
Kitamoto, Tatsuji; and Akashi, Goro, 4,515,857, Cl. 428-328.000.
Yamamoto, Takaaki; and Kawai, Yasuhiro, 4,516,142, Cl. 346-160.000.
Fuji Xerox Co., Ltd.: *See*—
Kume, Hiroshi; and Tan, Yoichi, 4,516,240, Cl. 370-85.000.
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihasa, 4,516,134, Cl. 346-75.000.
Todoh, Hidemasa, 4,516,135, Cl. 346-76.0PH.
Fujibayashi, Kentaro: *See*—
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Fujibayashi, Kentaro, 4,516,211, Cl. 364-474.000.
Fujii, Kazuko Uchida and Chigusa, heiresses: *See*—
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Fujii, Kunihisa; Tomono, Noboru; Watanabe, Hajime; and Miyakoshi, Yasushi, to Takamisawa Electric Co., Ltd. Electromagnetic relay. 4,516,099, Cl. 335-135.000.
Fujii, Masahiro: *See*—
Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, 4,515,691, Cl. 210-274.000.
Fujimoto, Hiroyuki: *See*—
Nojima, Kazuhiro; Fujimoto, Hiroyuki; and Takahashi, Mikio, 4,515,833, Cl. 427-362.000.
Fujirebio Kabushiki Kaisha: *See*—
Taniguchi, Nobuhiro; and Endo, Tomohiro, 4,515,776, Cl. 424-85.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,515,788, Cl. 514-202.000.
Fujita, Kagari: *See*—
Iwataki, Isao; Fujita, Kagari; Ishikawa, Hisao; Hosaka, Hideo; and Kohara, Kenichi, 4,515,729, Cl. 260-464.000.
Fujita, Takashi: *See*—
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.
Fujitsu Fanuc Limited: *See*—
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Fujibayashi, Kentaro, 4,516,211, Cl. 364-474.000.
Fujitsu Limited: *See*—
Abe, Susumu; Munakata, Akio; and Kitahara, Takeshi, 4,516,173, Cl. 358-261.000.
Aoyama, Keizo, 4,516,224, Cl. 365-203.000.
Tsuchikawa, Haruo; and Kai, Junichi, 4,516,030, Cl. 250-492.200.
Fujiwara, Tatsuro; Watanabe, Hideyuki; Hirano, Takao; and Sakakibara, Hideo, to Toyo Jozo Kabushiki Kaisha. 23-Demycinosyl-desmycosin derivatives. 4,515,941, Cl. 536-7.100.
Fujiyama, Kunio; Okamoto, Kei; and Yoshikawa, Noriyuki, to Takara Company, New York, Inc. Headrest for medical treatment chair. 4,515,406, Cl. 297-409.000.
Fukayama, Miyoji; and Ichijo, Chikara, to Toray Silicone Company, Ltd. RTV Polyorganosiloxane compositions yielding paintable elastomers. 4,515,834, Cl. 427-387.000.
Fukemoto, Hiromu. Fishing line with a reinforced leader. 4,514,927, Cl. 43-44.980.
Fukuda, Mitsutoshi: *See*—
Yamaoka, Tsuguo; and Fukuda, Mitsutoshi, 4,515,886, Cl. 430-270.000.
Fukui, Kazuyuki, to Minolta Camera Kabushiki Kaisha. Sheet feeding apparatus. 4,515,358, Cl. 271-122.000.
Fukushima, Naoto: *See*—
Hidaka, Kunihiko; Fukushima, Naoto; and Iwata, Kazuro, 4,515,252, Cl. 188-282.000.
Fukushima, Tsutomu; Kawasaki, Kiyoshi; and Sasaki, Sadayuki, to Nippon Kokan Kabushiki Kaisha. Rotary furnace used for the production of ferrochromium. 4,515,352, Cl. 266-218.000.
Fukuta, Minoru, to Sony/Tektronix Corporation. Logic signal display apparatus. 4,516,119, Cl. 340-722.000.
Fukuyo, Hiroshi: *See*—
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,515,351, Cl. 266-177.000.
Fulmer, Keith H.: *See*—
Brown, Arthur K.; Fulmer, Keith H.; and Ewald, Jerome T., 4,514,981, Cl. 60-547.100.
Funakoshi, Yasunobu: *See*—
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.
Funk, Erwin D.: *See*—
Elmore, Carl L.; and Funk, Erwin D., 4,514,910, Cl. 34-15.000.
Furiate, David L. Traffic lane delineator. 4,515,499, Cl. 404-6.000.
Furubayashi, Hisatoshi; Tanaka, Junichi; Watanabe, Masanori; and Hijikigawa, Masaya, to Sharp Kabushiki Kaisha. Method for production of a moisture sensor. 4,515,653, Cl. 156-643.000.
Furukawa, Osamu: *See*—
Imai, Motomasa; Takahashi, Takashi; Furukawa, Osamu; and Kanai, Hideyuki, 4,516,105, Cl. 338-21.000.
Furukawa, Tokinobu: *See*—
Matsushita, Nobuo; Furukawa, Tokinobu; Shintani, Tetsuo; Sumitani, Tomoaki; and Oda, Chikao, 4,515,008, Cl. 73-53.000.
G.A. Pfleiderer GmbH & Co. KG: *See*—
Rother, Bruno; and Trommen, Hartmut, 4,515,547, Cl. 425-215.000.
G. S. Blodgett Co., Inc.: *See*—
Smith, Robert C.; and Cox, A. Benns, II, 4,516,012, Cl. 219-400.000.
GA Technologies Inc.: *See*—
Franklin, LeRoy H., 4,516,182, Cl. 361-13.000.
Gabriele, Louis: *See*—
Melillo, Anthony; and Gabriele, Louis, 4,515,361, Cl. 272-93.000.
Gaede, Hans: *See*—
Sewell, James H.; Gaede, Hans; and Ritch, Curtis R., 4,515,299, Cl. 223-76.000.

Gaeng, Manfred: *See—*
Husslein, Gerd; Hamprecht, Gerhard; Koenig, Karl-Heinz; Boehm, Walter; and Gaeng, Manfred, 4,515,985, Cl. 562-472.000.
Gaensslen, Hans: *See—*
Eisenlohr, Karl-Heinz; Gaensslen, Hans; Kriebel, Manfred; and Tanz, Heiner, 4,515,604, Cl. 48-197.00R.
Gaiser, Robert F., to Allied Corporation. Master cylinder attachment for plastic reservoir. 4,514,983, Cl. 60-562.000.
Gaiser, Robert F.: *See—*
Bach, Lloyd G.; and Gaiser, Robert F., 4,514,982, Cl. 60-562.000.
Galetta, Nicholas J. Combination boot and lockable storage means. 4,514,915, Cl. 36-1.000.
Gallagher, Timothy F.: *See—*
Yang, Shu S.; Beattie, Thomas R.; Durette, Philippe L.; Gallagher, Timothy F.; and Shen, Tsung-Ying, 4,515,722, Cl. 260-403.000.
Gallatin, Paul M.; Dyken, Henry J.; and Cvengros, Norbert F., to Siemens-Allis, Inc. Sequenced intermittent blowout coil controller. 4,516,005, Cl. 200-147.00R.
Galloway, Geoffrey: *See—*
MacDonald, Bruce E.; Galloway, Geoffrey; and Kakuda, Yukio, 4,515,818, Cl. 426-268.000.
Gallup, Michael G., to Motorola, Inc. Programmable prescaler. 4,516,251, Cl. 377-110.000.
Gantz, Jack L.: *See—*
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,515,136, Cl. 123-564.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Kaule, Wittich; Renz, Walter; and Stenzel, Gerhard, 4,516,031, Cl. 250-562.000.
Garcia, Manuel E. Board game. 4,515,370, Cl. 273-258.000.
Garde, Peter, to Unisearch Limited. High-efficiency low distortion parallel amplifier. 4,516,080, Cl. 330-3.000.
Garner, John N.; and Shannon, Michael A., to Northern Telecom Limited. Method of production of dielectric insulation layers upon electrical conductors. 4,515,826, Cl. 427-8.000.
Garrett Corporation, The: *See—*
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,515,136, Cl. 123-564.000.
Gaterman, William C., III, to Crane Cams Incorporated. Valve spring retainer assembly. 4,515,346, Cl. 251-337.000.
Gates Formed Fibre Products Inc.: *See—*
Leunig, Carl V.; and Kovar, Robert F., 4,515,848, Cl. 428-172.000.
Gattiker, Anton: *See—*
Taylor, Charles E.; Gattiker, Anton; and Krantz, Gary B., 4,515,468, Cl. 355-27.000.
Gatward, Douglas K. Sheet material. 4,515,840, Cl. 428-35.000.
Gatzke, Kenneth G.; and Winslow, John M., to Minnesota Mining and Manufacturing Company. Diazo vesicular imaging films with nitrate salt. 4,515,885, Cl. 430-175.000.
Gaudioso, Stephen L., to Xerox Corporation. Reflex imaging process with magnetic images. 4,515,880, Cl. 430-39.000.
Gaudry, Roger: *See—*
Doriath, Gerard; and Gaudry, Roger, 4,516,073, Cl. 324-244.000.
Gaylord, Norman G. Process to copolymerize vinyl chloride and chlorotrifluoroethylene. 4,515,927, Cl. 526-87.000.
Gaynor, John C.: *See—*
Cathey, Thaddeus F.; Gaynor, John C.; and Nelson, Rodney J., 4,515,577, Cl. 474-204.000.
Gealer, Roy L.: *See—*
Wingfield, Robert C., Jr.; Braslaw, Jacob; and Gealer, Roy L., 4,515,659, Cl. 201-2.500.
Gebelius, Sven R. V. Flag-pole. 4,515,241, Cl. 182-96.000.
Geerts, Jan: *See—*
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,515,905, Cl. 502-309.000.
Gehrke, Erich F., to BTR South Africa Limited. Rail fastener assembly and components thereof. 4,515,309, Cl. 238-349.000.
Gehrke, Hans-Georg: *See—*
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, to BASF Aktiengesellschaft. Method for the surface treatment of magnetic recording media. 4,514,937, Cl. 51-281.0SF.
Geiger, Rolf: *See—*
Henning, Rainer; Urbach, Hansjorg; Geiger, Rolf; Teetz, Volker; and Scholkens, Bernward, 4,515,803, Cl. 514-338.000.
Gemcor Engineering Corp.: *See—*
Davern, John W.; and Cook, Daniel D., 4,515,302, Cl. 227-58.000.
Gemignani, Francois. Blocking valve. 4,515,344, Cl. 251-635.000.
GenCorp Inc.: *See—*
Cobbledick, David S., 4,515,710, Cl. 252-511.000.
General American Transportation Corporation: *See—*
Mowatt-Larssen, Erling, 4,515,189, Cl. 141-11.000.
General Electric Company: *See—*
Blake, Walter R., 4,516,196, Cl. 362-311.000.
Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., 4,515,746, Cl. 264-332.000.
Chung, Rack H., 4,515,932, Cl. 528-16.000.
Cline, Harvey E., 4,515,654, Cl. 156-656.000.
Cote , Paul T., 4,516,056, Cl. 315-240.000.
Davis, Gary C., 4,515,887, Cl. 430-283.000.
Flax, Stephen W.; and Pelc, Norbert J., 4,515,163, Cl. 128-660.000.
Komanduri, Ranga; Ettinger, Robert H.; Casey, Morton P., Jr.; and Reed, William R., Jr., 4,515,047, Cl. 82-1.00C.
Kuwata, Masayoshi, 4,515,205, Cl. 165-1.000.
Love, Robert P., 4,516,143, Cl. 357-23.400.
Olson, Daniel R.; and O'Donnell, Timothy W., 4,515,931, Cl. 526-323.200.
Schoenig, Frederick C., Jr.; and Landry, James D., 4,515,749, Cl. 376-254.000.
Sikdar, Subhas K.; and Yeboah, Yaw D., 4,515,936, Cl. 528-200.000.
Young, James R., 4,515,528, Cl. 417-51.000.
General Energy Systems, Inc.: *See—*
Glass, James W., 4,515,135, Cl. 123-557.000.
General Mills, Inc.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,515,824, Cl. 426-554.000.
Kraig, Leon; and Langenfeld, Mathew, 4,515,822, Cl. 426-445.000.
General Motors Corporation: *See—*
Hogan, Martin J., 4,515,418, Cl. 384-502.000.
Nowakowski, Robert J., 4,516,066, Cl. 320-15.000.
Stettner, Ernest R., 4,515,129, Cl. 123-472.000.
General Signal Corporation: *See—*
Schwab, Carl E.; Rost, David P.; Hackenberg, William; and Holcombe, Paul, 4,516,125, Cl. 343-7.700.
General Tire & Rubber Company, The: *See—*
Stamper, Richard W.; and Hultz, Robert C., 4,515,744, Cl. 264-171.000.
Genisis Technology, Inc.: *See—*
Schorr, Steven M.; and Stoner, Richard J., Jr., 4,514,930, Cl. 47-60.000.
Geo-Centers, Inc.: *See—*
Mermelstein, Marc D., 4,515,473, Cl. 356-33.000.
George Fischer Limited: *See—*
Thalmann, Alfred; and Reich, Fritz, 4,515,177, Cl. 137-318.000.
Gesinski, Leonard T.: *See—*
Ferlan, Stephen J.; and Gesinski, Leonard T., 4,514,889, Cl. 29-229.000.
GESIPA Blindniettechnik Gesellschaft mit beschrankter Haftung: *See—*
Klein, Gunter, 4,515,005, Cl. 72-391.000.
Gestetner Manufacturing Limited: *See—*
Davidson, Lewis; Lees, Brian; and Lytra, Eric K., 4,515,077, Cl. 101-127.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Golla, Franz, 4,514,873, Cl. 15-306.00B.
Trumper, Thomas; Schoop, Gunther-Dietmar; Borgschulte, Fritz; and Krummnack, Friedrich, 4,515,410, Cl. 299-43.000.
Gidden, Robert A., to Deans, E. Grant. Multiple rate metering system. 4,516,213, Cl. 364-483.000.
Gilbert, Curtis R. Miter gauge. 4,514,909, Cl. 33-471.000.
Gilbert, Jerry R.; Millikan, Robert C.; Wysowski, Charles H.; and Pyburn, John R., Jr., to Brown & Williamson Tobacco Corporation. Towable, hydraulically powered lifting and transport trailer. 4,515,518, Cl. 414-459.000.
Gillemot, Laszlo ; Prodan, Janos; Pataki, Endre; and Zuckermann, Erno , to Magyar Aluminiumipari Troszt. Clamping element for the releasable fastening of spatially arranged, or parallel bars, tubes and similar objects. 4,515,497, Cl. 403-391.000.
Gillette Company, The: *See—*
Bond, Michael J., 4,514,904, Cl. 30-87.000.
Gilley, James H., to AT&T Technologies, Inc. Temperature testing apparatus for an electronic circuit substrate. 4,515,484, Cl. 374-137.000.
Gillie, Raymond A., to Arvey Corporation. Method for handling envelopes. 4,514,961, Cl. 53-449.000.
Gimpelson, George E.; and Russo, Cheryl L., to Harris Corporation. Plasma sculpturing with a non-planar sacrificial layer. 4,515,652, Cl. 156-643.000.
Giorgioni, Angelo: *See—*
Missio, Bruno; and Giorgioni, Angelo, 4,515,025, Cl. 74-27.000.
Girogioni di A. Giorgioni & C. s.a.s.: *See—*
Missio, Bruno; and Giorgioni, Angelo, 4,515,025, Cl. 74-27.000.
Gist-Brocades N.V.: *See—*
Apontoweil, Peter; and Krasselt, Manfred M., 4,515,777, Cl. 424-89.000.
Giulekas, Gus: *See—*
Zapisek, John M.; and Giulekas, Gus, 4,516,040, Cl. 307-468.000.
Givaudan Corporation: *See—*
Chalk, Alan J.; and Purzycki, Kenneth L., 4,515,711, Cl. 252-522.00R.
Gladstein, Harvey. Method and apparatus for supporting logs and the like. 4,515,195, Cl. 144-366.000.
Glass, James W., to General Energy Systems, Inc. Hot fuel gas generator. 4,515,135, Cl. 123-557.000.
Glasstech, Inc.: *See—*
McMaster, Harold A.; McMaster, Robert G.; and McMaster, Ronald A., 4,515,622, Cl. 65-351.000.
Glaxo Group Limited: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,515,786, Cl. 514-182.000.
Glennon, Timothy F., to Sundstrand Corporation. Triangle wave generator. 4,516,038, Cl. 307-264.000.
Glory Kogyo Kabushiki Kaisha: *See—*
Nakamura, Minoru; and Asami, Kazuto, 4,515,172, Cl. 133-8.00A.
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., to Spetsialnoe Konstruktorskoe

Bjuro Seismicheskoi Tekhniki. Automatic wrench for screwing a pipe string together and apart. 4,515,045, Cl. 81-429.000.
GNB Batteries Inc.: *See—*
Schaumburg, Edward G.; and Stanefski, Eugene F., 4,515,187, Cl. 141-1.000.
Goddard, Peter J.: *See—*
Ferber, John G.; Goddard, Peter J.; and Holden, Robert S., 4,515,990, Cl. 568-808.000.
Goel, Anil B.; and Pettiford, Michael E., to Ashland Oil, Inc. Manufacture of phenyl esters and phenol. 4,515,983, Cl. 560-130.000.
Goi, Kowichi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Goldstein, Gideon: *See—*
Kung, Patrick C.; and Goldstein, Gideon, 4,515,893, Cl. 435-240.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,515,894, Cl. 435-240.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,515,895, Cl. 435-240.000.
Golla, Franz, to Gewerkschaft Eisenhutte Westfalia. Equipment for cleaning remnants of carbon blocks. 4,514,873, Cl. 15-306.00B.
Golubev, Vladimir N.: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., 4,515,157, Cl. 128-303.00R.
Gomez, Abelicio. Clutch lever retaining mechanism. 4,515,533, Cl. 417-319.000.
Gonser, Donald I., to Dentsply Research & Development Corp. Multifunction dental operating light source. 4,516,195, Cl. 362-281.000.
Gonzales, Jose M. G. Game device. 4,515,372, Cl. 273-274.000.
Gonzalez, Benito: *See—*
Gonzalez, Jose; and Gonzalez, Benito, 4,515,237, Cl. 180-287.000.
Gonzalez Flores, Manuel. Aseismic sliders. 4,514,941, Cl. 52-167.000.
Gonzalez, Jose; and Gonzalez, Benito. Automobile security system. 4,515,237, Cl. 180-287.000.
Goodloe, Kent J.; and Landrum, Ralph A., Jr., to Western Geophysical Company of America. Protective drive-level limiter for an electrohydraulic vibrator. 4,516,230, Cl. 367-190.000.
Goodson, Albert A., Jr. Building framing system and method. 4,514,950, Cl. 52-648.000.
Goodyear Tire & Rubber Company, The: *See—*
Kaniecki, Michael; Landers, Samuel P.; and Botzman, Thomas J., 4,515,199, Cl. 152-353.00R.
Stanley, John H., 4,515,006, Cl. 72-402.000.
Wideman, Lawson G.; and Kuczkowski, Joseph A., 4,515,713, Cl. 260-106.000.
Gorina, Ljudmila V.: *See—*
Markov, Vladimir A.; Filatov, Vladimir N.; Kernasovsky, Ilya S.; and Gorina, Ljudmila V., 4,515,254, Cl. 188-371.000.
Goscianski, Michel; and de Ronde, Francois, to U.S. Philips Corporation. System for receiving microwave signals having orthogonal polarizations. 4,516,089, Cl. 333-135.000.
Gosselin, Jean: *See—*
Peynaud, Francois; Gosselin, Jean; Farcy, Andre ; and Grandvaux, Bernard, 4,516,226, Cl. 367-6.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba Geigy Corporation. Thia-aza compounds with a β-lactam ring. 4,515,717, Cl. 260-239.00A.
Goto, Satoshi: *See—*
Sawada, Kiyoshi; Goto, Satoshi; Kinoshita, Akira; and Sasaki, Osamu, 4,515,881, Cl. 430-58.000.
Goto, Takahiro: *See—*
Manabe, Nobuyuki; and Goto, Takahiro, 4,515,312, Cl. 239-227.000.
Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft: *See—*
Stehning, Werner, 4,515,754, Cl. 422-168.000.
Gozal, David: *See—*
Elmaleh, Samuel; and Grasmick, Alain D., 4,515,697, Cl. 210-768.000.
Gragson, James T.: *See—*
Schuettenberg, Alexander D.; and Gragson, James T., 4,515,740, Cl. 264-50.000.
Grail, Donald J., to Embelton-Grail, Inc. Roof tile and tile composition of matter. 4,514,947, Cl. 52-536.000.
Grainge, Richard W.; and Humphries, Rowland F., to British Aerospace Public Limited Company. Ground reconnaissance. 4,516,158, Cl. 358-109.000.
Grandvaux, Bernard: *See—*
Peynaud, Francois; Gosselin, Jean; Farcy, Andre ; and Grandvaux, Bernard, 4,516,226, Cl. 367-6.000.
Grant, Willie T. Four-terminal zone thermostat. 4,515,306, Cl. 236-9.00A.
Grasmick, Alain D.: *See—*
Elmaleh, Samuel; and Grasmick, Alain D., 4,515,697, Cl. 210-768.000.
Gray, Billy C., to United States of America, Army. Carburetor adjustment tool. 4,515,043, Cl. 81-57.220.
Green, Gary J.: *See—*
Walsh, Dennis E.; and Green, Gary J., 4,515,092, Cl. 110-347.000.
Green, Laddie L., to Stauffer Chemical Company. Dichloro ethyl benzyl acetamide herbicide antidote. 4,515,627, Cl. 71-95.000.
Green, Paul M.: *See—*
Morrill, David R.; Mason, Mark T.; and Green, Paul M., 4,516,023, Cl. 250-235.000.
Greenberg, William H. Chassis and suspension system for vehicles. 4,515,390, Cl. 280-675.000.
Greiff, Paul: *See—*
Dew, Brock S.; and Greiff, Paul, 4,516,263, Cl. 382-41.000.
Greig, Robert E. Apparatus for coating a tire tread. 4,515,103, Cl. 118-218.000.
Greskovich, Eugene J., to Air Products and Chemicals, Inc. Combustion of coal/water slurries. 4,515,095, Cl. 110-347.000.
Griemla, Horst: *See—*
Euscher-Klingenhagen, Werner; Griemla, Horst; and Rodekamp, Hartmut, 4,515,285, Cl. 220-288.000.
Grierson, Robert A. Attachment for sail vehicles to automatically compensate for varying wind pressure. 4,515,100, Cl. 114-97.000.
Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Muhlhofer, Ernst; and Schwab, Michael, to Wacker-Chemitronic Gesellschaft Fur Elektronik-Grundstoffe mbH. Process for processing waste gases resulting during the production of silicon. 4,515,762, Cl. 423-337.000.
Grieves, John: *See—*
Bobjer, Olle; Dahlin, Torsten; and Grieves, John, 4,515,070, Cl. 98-42.070.
Grimes, Gary J., to AT&T Information Systems. Frequency and phase comparator with slip detection capability. 4,516,250, Cl. 375-82.000.
Grissom, David: *See—*
Weido, Vincent C.; and Grissom, David, 4,515,010, Cl. 73-151.000.
Groethe, Roland E. Method of manufacturing shear blades for shearing hot glass. 4,515,002, Cl. 72-339.000.
Grois, Igor: *See—*
Margolin, Mark; Grois, Igor; Herdeg, Peter K.; and Nijman, John P., 4,515,434, Cl. 350-96.210.
Grosch, Peter T. Storage container with movable identification tabs. 4,515,420, Cl. 312-12.000.
Groves, George D., to B. & G. Consultants, Inc. Integral vegetation barrier. 4,515,349, Cl. 256-1.000.
Grunbeck Wasserauebereitung GmbH: *See—*
Arens, Hans, 4,515,537, Cl. 417-489.000.
GTE Automatic Electric Inc.: *See—*
Perry, Thomas J.; and Khera, Muhammad I., 4,516,237, Cl. 370-58.000.
Perry, Thomas J., 4,516,245, Cl. 375-17.000.
GTE Laboratories Incorporated: *See—*
Lee, Ching W., 4,516,094, Cl. 333-194.000.
Lee, Ching W., 4,516,095, Cl. 333-194.000.
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,516,057, Cl. 315-260.000.
GTE Products Corporation: *See—*
Dodds, Robert E.; and Harrigan, David J., 4,515,827, Cl. 427-68.000.
Hall, Harold H., Jr.; and Bouchard, Andre C., 4,515,558, Cl. 431-359.000.
Guffey, David M.: *See—*
Meigs, William; Guffey, David M.; and Brumfield, Donald E., 4,514,948, Cl. 52-397.000.
Guichard, Serge: *See—*
Hardy, Patrick; Cantagrel, Michel; and Guichard, Serge, 4,516,186, Cl. 361-306.000.
Gulf & Western Manufacturing Company: *See—*
Dotson, Jarvis L., 4,515,036, Cl. 74-535.000.
Gumma, Alexandre: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.
Gunnarsson, Arne N., to FMC Corporation. Steering control mechanism. 4,515,381, Cl. 280-96.000.
Gunthner, Frantz, to JENAer Glaswerk, Schott & Gen. Sheet rolling machine. 4,515,621, Cl. 65-171.000.
Gupta, Chakra V., to CommScope Company. Cable with corrosion inhibiting adhesive. 4,515,992, Cl. 174-102.00R.
Gurley, Thomas M., to RCA Corporation. Worldwide compatible synchronizing signal for accurate time base correction in an analog component interface standard. 4,516,150, Cl. 358-13.000.
Gurries, Raymond A., to Resonant Technology Company. Counterweight support for resonantly driven tool. 4,515,408, Cl. 299-37.000.
Guth, Christian; and Schafer, Paul, to Ciba Geigy Corporation. Magnesium complexes of oligomeric phosphonic acid esters, a process for their preparation and their use as stabilizers in alkaline, peroxide-containing bleach liquors. 4,515,597, Cl. 8-107.000.
Guzik, Nahum; and Mangeym, Gennady. Digital motor speed control. 4,516,060, Cl. 318-341.000.
H. J. Langen & Sons Limited: *See—*
Langen, Marinus J. M., 4,514,957, Cl. 53-252.000.
Langen, Marinus J. M., 4,514,964, Cl. 53-540.000.
H. King & Associates, Ltd.: *See—*
King, Homer F., 4,515,279, Cl. 211-153.000.
Ha, Jung Y., to KIA Industrial Co., Inc. Clutch-operated hill holder brake system. 4,515,259, Cl. 192-3.00H.
Haas, Daniel R.: *See—*
Mouser, Curtis A.; Roberts, Mark G.; Haas, Daniel R.; and Lancaster, Patrick R., III, 4,514,955, Cl. 53-64.000.
Habich, Dieter: *See—*
Metzger, Karl G.; Schrock, Wilfried; Habich, Dieter; Naab, Paul; and Zeiler, Hans-Joachim, 4,515,789, Cl. 514-196.000.

Hachino, Hiroaki: *See—*
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, 4,516,149, Cl. 357-71.000.

Hack, Joachim: *See—*
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, 4,514,937, Cl. 51-281.0SF.

Hackenberg, William: *See—*
Schwab, Carl E.; Rost, David P.; Hackenberg, William; and Holcombe, Paul, 4,516,125, Cl. 343-7.700.

Haddad, Hussain A.: *See—*
Munson, Robert E.; and Haddad, Hussain A., 4,516,097, Cl. 333-261.000.

Hadziomerovic, Faruk, to Northern Telecom Limited. Full-duplex transmission of bit streams serially and in bit-synchronism on a bus between two terminals. 4,516,236, Cl. 370-24.000.

Haenni, Eduard; Frei, Theo; and Hug, Peter, to Hammerle AG Maschinenfabrik. Apparatus for feeding sheet metal plates to a sheet shear arrangement. 4,515,050, Cl. 83-71.000.

Haferl, Peter E., to RCA Corporation. Linearity corrected horizontal deflection circuit. 4,516,058, Cl. 315-370.000.

Hagemeister, Klaus, to MTU Motoren-und Turbinen-Union Munchen GmbH. Connection of the tubular ends of a heat exchanger matrix to the associated bottom of the heat exchanger. 4,515,305, Cl. 228-173.200.

Hager, Artur: *See—*
Hertell, Siegfried; and Hager, Artur, 4,515,512, Cl. 418-1.000.

Hagita, Noriyuki: *See—*
Motomura, Kenichi; Ogawa, Hiroshi; Yamamoto, Akira; and Hagita, Noriyuki, 4,515,197, Cl. 152-209.00R.

Hakaridani, Mitsuhiro; Iwahashi, Hiroyuki; and Nishioka, Yoshiki, to Sharp Kabushiki Kaisha. Recognition of speech or speech-like sounds. 4,516,215, Cl. 364-513.500.

Haley, William J.; and Neumann, Guenter J., to Borg-Warner Corporation. Hydraulic control system for a clutch and transmission. 4,515,255, Cl. 192-3.570.

Hall, Douglas J.; Langley, Robert F.; and Thomas, Edwin L., to International Business Machines Corporation. Printed circuit board modification process. 4,515,878, Cl. 430-5.000.

Hall, Harold H., Jr.; and Bouchard, Andre C., to GTE Products Corporation. Encapsulated photoflash device having a radiant energy-activated disconnect switch as part of the circuitry thereof. 4,515,558, Cl. 431-359.000.

Halliburton Company: *See—*
Beck, Harold K., 4,515,219, Cl. 166-374.000.
Childs, Jerry; Sabins, Fred; and Taylor, Mary J., 4,515,216, Cl. 166-293.000.
Rao, S. Prabhakara; and Burkhalter, John F., 4,515,635, Cl. 106-90.000.

Hallmark Cards, Inc.: *See—*
Schneider, Marshall, 4,515,338, Cl. 248-460.000.

Hamano, Junichi. Slot machine with pattern confirmation and correction means. 4,515,366, Cl. 273-143.00R.

Hamilton Sorter Company, Inc.: *See—*
Kwiecinski, Alfred; and Yauger, Jon A., 4,515,086, Cl. 108-96.000.

Hamilton, Stephen P., to Texas Instruments Incorporated. Memory system with single command selective sequential accessing of predetermined pluralities of data locations. 4,516,218, Cl. 364-900.000.

Hamlin, Thomas J., to Xerox Corporation. Paddle retard feeder. 4,515,357, Cl. 271-120.000.

Hammerle AG Maschinenfabrik: *See—*
Haenni, Eduard; Frei, Theo; and Hug, Peter, 4,515,050, Cl. 83-71.000.

Hamner, James R., to Budd Co., The. In-mold coating part ejection system. 4,515,543, Cl. 425-112.000.

Hampel, Herbert J.; and Willers, Arthur G., to Northern Telecom Limited. Electronic instrument with stand doubling as console cover. 4,515,419, Cl. 312-7.100.

Hamprecht, Gerhard: *See—*
Husslein, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,515,623, Cl. 71-12.000.
Husslein, Gerd; Hamprecht, Gerhard; Koenig, Karl-Heinz; Boehm, Walter; and Gaeng, Manfred, 4,515,985, Cl. 562-472.000.

Hamrick, Glen F.: *See—*
Walker, Paul; Hamrick, Glen F.; and Sosebee, B. Lamar, 4,515,646, Cl. 156-78.000.

Hanifin, John W., Jr.: *See—*
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,515,791, Cl. 514-248.000.

Hanna, Marie R.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,515,712, Cl. 252-522.00R.

Hannmann, Ralph A., Jr.; and Higginbotham, James F., to United States of America, Navy. Automatic centering servo actuator. 4,515,065, Cl. 91-363.00A.

Hansen, Glen D.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,514,978, Cl. 60-426.000.

Hanson, Clarence A., to Hanson, Richard A. Leader holder with elastic element. 4,514,928, Cl. 43-57.200.

Hanson, Richard A.: *See—*
Hanson, Clarence A., 4,514,928, Cl. 43-57.200.

Haq, Zia, to Lever Brothers Company. Article carrying active material. 4,515,703, Cl. 252-92.000.

Hara, Masahiro; Okamoto, Atsutoshi; and Sakai, Toshiyasu, to Nippondenso Co., Ltd. High-sensitive optical reading apparatus and method of reading optical information. 4,516,017, Cl. 235-472.000.

Harase, Jirou: *See—*
Sawatani, Tadashi; Ishii, Mitsuo; Yoshimura, Hirofumi; and Harase, Jirou, 4,515,644, Cl. 148-12.0EA.

Harco Corporation: *See—*
Dimond, James R.; and Bushman, James B., 4,515,669, Cl. 204-196.000.

Harden, Charles T.: *See—*
Creek, Ronald B.; Harden, Charles T.; and Harris, Harold H., 4,515,747, Cl. 376-249.000.

Hardesty, Leonard W., Jr.: *See—*
Fenneman, David B.; Rinehart, Larry F.; and Hardesty, Leonard W., Jr., 4,516,077, Cl. 324-425.000.

Harding, Geoffrey; and Klotz, Erhard, to U.S. Philips Corporation. Device for reducing faults in layer images of a three-dimensional object formed by means of penetrating radiation. 4,516,261, Cl. 382-6.000.

Hardy, Patrick; Cantagrel, Michel; and Guichard, Serge, to LCC.CICE-Compagnie Europeenne de Composants Electroniques. Multi-layer power capacitor. 4,516,186, Cl. 361-306.000.

Harper, William P., to Rogers Corporation. Full travel keyboard. 4,515,999, Cl. 200-5.00A.

Harrigan, David J.: *See—*
Dodds, Robert E.; and Harrigan, David J., 4,515,827, Cl. 427-68.000.

Harris Corporation: *See—*
Gimpelson, George E.; and Russo, Cheryl L., 4,515,652, Cl. 156-643.000.

Harris, Eugene G.; and Fayter, Richard G., Jr., to National Distillers and Chemical Corporation. Dihydrofurans. 4,515,978, Cl. 549-484.000.

Harris, Harold H.: *See—*
Creek, Ronald B.; Harden, Charles T.; and Harris, Harold H., 4,515,747, Cl. 376-249.000.

Harris, William H. Stemmed femoral component for the human hip. 4,514,865, Cl. 3-1.913.

Harstad, Larry V. Quick change ratchet wrench. 4,515,044, Cl. 81-61.000.

Hartemann, Pierre; Meunier, Paul-Louis; and Jacobelli, Alain, to Thomson-CSF. Elastic surface wave accelerometers. 4,515,016, Cl. 73-517.00R.

Hartlaub, Jerome T.: *See—*
McDonald, Ray S.; Thompson, David L.; Rossing, Martin A.; and Hartlaub, Jerome T., 4,515,159, Cl. 128-419.0PG.

Hartung, Herbert: *See—*
Billenstein, Siegfried; Hartung, Herbert; May, Adolf; and Bucking, Hans-Walter, 4,515,723, Cl. 260-404.500.

Haruta, Toshio: *See—*
Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, 4,515,691, Cl. 210-274.000.

Harvey, Donald M., to Eastman Kodak Company. Exposure control mechanism. 4,515,457, Cl. 354-443.000.

Hasegawa, Shumpei; and Otobe, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Method for detecting opening of a throttle valve in a fully closed position in an internal combustion engine. 4,515,009, Cl. 73-118.000.

Hasegawa, Shumpei, to Honda Motor Co., Ltd. Method for controlling fuel supply to an internal combustion engine at deceleration. 4,515,130, Cl. 123-493.000.

Hasegawa, Yoshio: *See—*
Yajima, Seishi, deceased; Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, 4,515,742, Cl. 264-63.000.

Hashimoto, Tadashi, to Mitsubishi Plastics Industries Limited. Magazine for electronic devices. 4,515,269, Cl. 206-334.000.

Hashimoto, Yasuo: *See—*
Ishino, Ken; Hashimoto, Yasuo; Ichihara, Kenichi; and Narumiya, Yoshikazu, 4,515,850, Cl. 428-225.000.

Haslanger, Martin F.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,515,972, Cl. 549-229.000.

Haslegrave, John A.; and Sullivan, Daniel S., to Exxon Research & Engineering Co. Corrosion inhibitors. 4,515,708, Cl. 252-390.000.

Hassall, Cedric H.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,515,969, Cl. 549-39.000.

Hatakeyama, Sakichi: *See—*
Ogano, Takeo; Sueshige, Hiroshi; and Hatakeyama, Sakichi, 4,514,917, Cl. 37-249.000.

Hattori, Yoshiyuki: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.

Haubner, Georg; and Schmid, Hans-Dieter. Magneto ignition system, particularly for one-cylinder internal combustion engines. 4,515,118, Cl. 123-149.00C.

Hauser, Frank M.; and Mal, Dipakranjan, to Oregon Graduate Center for Study & Research. Method of synthesizing a late-stage intermediate to 11-deoxydaunorubicin and 11-deoxyadriamycin, and two precursors to the object intermediate. 4,515,720, Cl. 260-351.100.

Hawkinson, Raymond P., Jr.; and Newman, Dennis W., to Paul E. Hawkinson Company. Tire defect tester. 4,516,068, Cl. 324-54.000.

Hayakawa, Hideyuki: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.

Hayase, Isao; Mizukami, Masao; and Kishi, Atsuo, to Hitachi, Ltd. Rotary compressor with inner and outer cylinders and axial insert type discharge valves. 4,515,513, Cl. 418-101.000.

Hayase, Isao; Suginuma, Atsushi; Kishi, Atsuo; and Kawashima, Kenichi, to Hitachi, Ltd. Vane-type rotary machine. 4,515,514, Cl. 418-150.000.

Hayashi, Kiyoshi: *See—*
Kawahara, Yoshihiro; and Hayashi, Kiyoshi, 4,516,141, Cl. 346-153.100.

Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Valve operating system of internal combustion engine. 4,515,116, Cl. 123-90.430.

Hayashi, Yoshimasa; and Ogawa, Naoki, to Nissan Motor Company, Limited. Bearing beam structure of automotive engine. 4,515,119, Cl. 123-198.00E.

Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Engine control system. 4,515,124, Cl. 123-324.000.

Hayashi, Yoshimi: *See—*
Keino, Goro; Kitagawa, Yosuke; and Hayashi, Yoshimi, 4,515,849, Cl. 428-201.000.

Hayfield, Peter C. S., to Marston Palmer Limited. Electrode with anode active layer. 4,515,673, Cl. 204-290.00F.

Haymore, Ralph B.; and Winter, Heinz W., to Envirotech Corporation. Cable lifting mechanism for sedimentation device. 4,515,694, Cl. 210-531.000.

Hazeltine Corporation: *See—*
Masak, Raymond J.; and Kowalski, Anthony M., 4,516,126, Cl. 343-383.000.

Hazenbroek, Jacobus E. Suspended feather picker with rotatable sections. 4,514,879, Cl. 17-11.10R.

Health Care Concepts, Inc.: *See—*
Amendolia, Pasquale J., 4,515,588, Cl. 604-118.000.

Heathcoat, Michael J.; Jackson, Douglas H.; Jowitt, Frederick W.; Madley, Jack R.; and Stuart, Ian C. E., to Metal Box Limited. Apparatus for electrocoating. 4,515,677, Cl. 204-300.0EC.

Heerlein, Manfred, to Siemens Aktiengesellschaft. Axial fan with blades that automatically adjust to the direction of rotation. 4,515,511, Cl. 416-131.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Vinyl ester resins containing triazine or both triazine and oxazoline groups. 4,515,934, Cl. 528-92.000.

Heiber, Oskar: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.

Height Inc.: *See—*
Shinriki, Tatsuo, 4,515,819, Cl. 426-297.000.

Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, to Kali-Chemie Pharma GmbH. 1,5-Diphenyl-2-haloalkylpyrazolin-3-one intermediates. 4,515,944, Cl. 544-91.000.

Heisler, Carl B., to Xerox Corporation. Sheet delivery station for copying apparatus. 4,515,466, Cl. 355-15.000.

Heliotronic Forschungs-und Entwicklungsgesellschaft fur Solarzellen-Grundstoffe m.b.H.: *See—*
Dietl, Josef; and Kotilge, Jorg, 4,515,600, Cl. 23-293.00R.

Hellmann, Walter: *See—*
Kolbe, Klaus; Hellmann, Walter; Krajec, Otmar; Schikowsky, Hartmut; and Vetter, Heinz, 4,515,648, Cl. 156-196.000.

Hemmerich, Karl J.; Millerd, Donald L.; and Semedo, Anthony B., to IVAC Corporation. Disposable syringe cartridge for fluid delivery apparatus. 4,515,591, Cl. 604-152.000.

Hengesbach, Robert W. Spraying apparatus and method. 4,515,310, Cl. 239-8.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Knaster, Mark, 4,515,643, Cl. 148-6.15Z.
Ritter, Wolfgang, 4,515,724, Cl. 260-410.000.

Hennart, Claude; and Blanc, Rene , to Airwick Industries, Inc. Insecticidal vapors-emitting composition on a pyrethrinoid base. 4,515,768, Cl. 424-40.000.

Hennig, Eberhard; Klie, Juergen; and Wellendorf, Klaus, to Dr. Ing. Rudolf Hell GmbH. Method for partially smoothing retouch in electronic color reproduction. 4,516,155, Cl. 358-80.000.

Henning, Rainer; Urbach, Hansjorg; Geiger, Rolf; Teetz, Volker; and Scholkens, Bernward, to Hoechst Aktiengesellschafat. Substituted derivatives of octahydroindole-2-carboxylic acids. 4,515,803, Cl. 514-338.000.

Henschel, Claude: *See—*
Bose, Debasis; Datta, Amitava; DeChristofaro, Nicholas J.; and Henschel, Claude, 4,515,868, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,515,869, Cl. 428-656.000.
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,515,870, Cl. 428-656.000.

Hercules Incorporated: *See—*
Maslanka, William W., 4,515,657, Cl. 162-164.300.

Herdeg, Peter K.: *See—*
Margolin, Mark; Grois, Igor; Herdeg, Peter K.; and Nijman, John P., 4,515,434, Cl. 350-96.210.

Hergeth, Helmut: *See—*
Hergeth, Hubert; and Hergeth, Helmut, 4,514,881, Cl. 19-80.00R.

Hergeth Hollingsworth, GmbH: *See—*
Hergeth, Hubert; and Hergeth, Helmut, 4,514,881, Cl. 19-80.00R.

Hergeth, Hubert; and Hergeth, Helmut, to Hergeth Hollingsworth, GmbH. Method and apparatus for reducing fiber bales. 4,514,881, Cl. 19-80.00R.

Herlihy, Walter C., to Repligen Corporation. Skin tanning composition and method. 4,515,773, Cl. 424-59.000.

Herman Miller, Inc.: *See—*
Kurrasch, Andrew J., 4,515,087, Cl. 108-147.000.

Herman, Raymond L., to United States of America, Energy. Method of and apparatus for testing the integrity of filters. 4,515,007, Cl. 73-38.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Anders, Dietmar, 4,515,738, Cl. 264-40.700.

Hermann Wagner GmbH & Co. KG: *See—*
Borel, Georg, 4,515,853, Cl. 428-257.000.

Hermes, Chester E.; and Huang, Wann-Sheng, to Texaco Inc. Steam injection method with constant rate of heat. 4,515,215, Cl. 166-272.000.

Hernqvist, Karl G., to RCA Corporation. Method of electrically processing a CRT mount assembly to reduce arcing and afterglow. 4,515,569, Cl. 445-5.000.

Herold, Robert A.: *See—*
Dizek, Frederick A.; Vogel, Eric S.; Tiedeman, C. John, Jr.; and Herold, Robert A., 4,515,629, Cl. 75-0.50B.

Herr, R. Wilbur: *See—*
Strom, Alice M.; Herr, R. Wilbur; and Martin, Sylvia, 4,515,663, Cl. 204-44.200.

Herren, Thomas W., Jr. Moveable target assembly. 4,515,374, Cl. 273-359.000.

Hertell, Siegfried; and Hager, Artur, to Barmag Barmer Maschinenfabrik AG. Seal for high pressure pump or the like. 4,515,512, Cl. 418-1.000.

Hestair Kiddicraft Limited: *See—*
Emms, Norman R., 4,515,572, Cl. 446-153.000.

Hester, Robert W. Decoying calculator. 4,516,013, Cl. 235-78.00R.

Hettinger, William P., Jr.; Turrill, Frank H.; Rozman, George J.; and Beck, H. Wayne, to Ashland Oil, Inc. Naphthenic lube oils. 4,515,680, Cl. 208-87.000.

Hettinger, William P., Jr.; and Beck, Hubert W., to Ashland Oil, Inc. Sorbent useful in a visbreaking treatment of carbo-metallic oils. 4,515,900, Cl. 502-63.000.

Heward, Peter D.; Jones, Valerie A.; and Jones, John C., to Crowcroft Engineering Limited. Skip trailer. 4,515,510, Cl. 414-422.000.

Hewitt, Alan R.: *See—*
Robilliard, Leonard T.; and Hewitt, Alan R., 4,515,494, Cl. 403-187.000.

Heyl, Walter, to Linde Aktiengesellschaft. Adjustable axial piston machines. 4,515,067, Cl. 91-506.000.

Hicks, James E., to RCA Corporation. Shutdown circuit for a switching regulator in a remote controlled television receiver. 4,516,168, Cl. 358-190.000.

Hidaka, Kunihiko; Fukushima, Naoto; and Iwata, Kazuro, to Nissan Motor Company, Limited. Piston stroke responsive vortex-flow shock absorber. 4,515,252, Cl. 188-282.000.

Higginbotham, James F.: *See—*
Hannmann, Ralph A., Jr.; and Higginbotham, James F., 4,515,065, Cl. 91-363.00A.

Higuchi, Mamoru: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.

Hihara, Toshio: *See—*
Niwa, Toshio; and Hihara, Toshio, 4,515,716, Cl. 534-635.000.

Hijikigawa, Masaya: *See—*
Furubayashi, Hisatoshi; Tanaka, Junichi; Watanabe, Masanori; and Hijikigawa, Masaya, 4,515,653, Cl. 156-643.000.

Hill, Christine R.: *See—*
Hill, Henry R.; and Hill, Christine R., 4,515,293, Cl. 222-95.000.

Hill, Daryl G. Belt conveyer system and conveyer belt usable therewith. 4,515,265, Cl. 198-821.000.

Hill, Henry R.; and Hill, Christine R. Dispenser for collapsible containers with hydraulic actuation. 4,515,293, Cl. 222-95.000.

Hilton-Davis Chemical Co.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,515,971, Cl. 549-225.000.

Hinrichs, Richard J.; and Thuen, Judy, to Applied Polymer Technology, Inc. Control system for processing composite material. 4,515,545, Cl. 425-143.000.

Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, to Hoechst Aktiengesellschaft. Pharmaceutical compositions. 4,515,795, Cl. 514-263.000.

Hiraga, Ryozo: *See—*
Yamada, Yasuyoshi; and Hiraga, Ryozo, 4,515,481, Cl. 356-400.000.

Hirano, Kazuo: *See—*
Moriyama, Masakazu; Shinohara, Toshio; Hirano, Kazuo; and Makino, Fumio, 4,516,121, Cl. 340-825.050.

Hirano, Takao: *See—*
Fujiwara, Tatsuro; Watanabe, Hideyuki; Hirano, Takao; and Sakakibara, Hideo, 4,515,941, Cl. 536-7.100.

Hirata, Yasushi: *See—*
Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,515,922, Cl. 525-99.000.

Hirshfeld, Uri, to Orda Industries Ltd. Hand-held ball game. 4,515,373, Cl. 273-317.000.

Hisajima, Masahiko: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.

Hisatsune, Fumiyuki: *See—*
Murata, Shirou; Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,002, Cl. 200-144.00C.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,003, Cl. 200-144.00C.

Hishinuma, Yukio: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.

Hitachi Keiyo Eng. Co., Ltd.: *See—*
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, 4,516,065, Cl. 318-811.000.

Hitachi, Ltd.: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.
Hayase, Isao; Mizukami, Masao; and Kishi, Atsuo, 4,515,513, Cl. 418-101.000.
Hayase, Isao; Suginuma, Atsushi; Kishi, Atsuo; and Kawashima, Kenichi, 4,515,514, Cl. 418-150.000.
Ito, Tosikazu; Komathuzaki, Kiyomi; Chonan, Kenichi; and Horibe, Kiyoshi, 4,515,066, Cl. 91-454.000.
Kadowaki, Yoshihiko, 4,516,202, Cl. 364-200.000.
Kajiyama, Sigeru, 4,515,018, Cl. 73-637.000.
Kawagoe, Hiroto, 4,514,894, Cl. 29-571.000.
Komeyama, Yoshihiro; and Taniguchi, Motoya, 4,516,254, Cl. 378-34.000.
Matsushita, Nobuo; Furukawa, Tokinobu; Shintani, Tetsuo; Sumitani, Tomoaki; and Oda, Chikao, 4,515,008, Cl. 73-53.000.
Matsuzaki, Isokazu; Yamagiwa, Akira; Watanabe, Yutaka; Matsumoto, Takashi; and Yabe, Katsumi, 4,516,039, Cl. 307-455.000.
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, 4,516,221, Cl. 364-900.000.
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, 4,516,065, Cl. 318-811.000.
Nishizawa, Shigeki; Nagahara, Shusaku; and Ozawa, Naoki, 4,516,154, Cl. 358-44.000.
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, 4,516,149, Cl. 357-71.000.

Hitzman, Donald O., to Phillips Petroleum Company. Gelled acid composition. 4,515,700, Cl. 252-8.55R.

HKC, Inc.: *See—*
Boese, Harold L., 4,515,382, Cl. 280-221.000.

Hoccum Developments Limited: *See—*
Cox-Smith, Peter; Calvert, Colin; and Wesley, John, 4,515,582, Cl. 494-7.000.

Hochman, Joel S. Device for the development, training and rehabilitation of the pubococcygeal and related perineal musculature of the female. 4,515,167, Cl. 128-736.000.

Hoeberechts, Arthur M. E.: *See—*
Shannon, John M.; Hoeberechts, Arthur M. E.; and Van Gorkom, Gerardus G. P., 4,516,146, Cl. 357-52.000.

Hoechst Aktiengesellschafat: *See—*
Henning, Rainer; Urbach, Hansjorg; Geiger, Rolf; Teetz, Volker; and Scholkens, Bernward, 4,515,803, Cl. 514-338.000.

Hoechst Aktiengesellschaft: *See—*
Berthold, Rudiger, 4,515,940, Cl. 534-565.000.
Billenstein, Siegfried; Hartung, Herbert; May, Adolf; and Bucking, Hans-Walter, 4,515,723, Cl. 260-404.500.
Dopfer, Peter; Ostermeier, Johann; and Schwerin, Siegfried, 4,515,639, Cl. 106-288.00Q.
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, 4,515,795, Cl. 514-263.000.
Maurer, Alexander; and Staendeke, Horst, 4,515,632, Cl. 106-18.160.
Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursula, heir; and Rudolph nee Otten, Anna G., heir, 4,515,598, Cl. 8-549.000.
Teetz, Volker, 4,515,960, Cl. 548-408.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Martin, Lawrence L.; and Setescak, Linda L., 4,515,946, Cl. 548-237.000.

Hoffman, Daniel E.: *See—*
Reed, Michael R.; and Hoffman, Daniel E., 4,515,211, Cl. 166-77.000.

Hoffman, Lester J.: *See—*
Roberts, Richard D.; Franz, James H., Jr.; Hoffman, Lester J.; and Miller, Lalan G., 4,516,059, Cl. 318-301.000.

Hoffman, Philip A., to Solid State Chargers Research and Development Limited Partnership. Regulated power supply with current regulating circuit. 4,516,067, Cl. 323-265.000.

Hoffmann-La Roche Inc.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,515,969, Cl. 549-39.000.
Hofheinz, Werner, 4,515,790, Cl. 514-234.000.
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,515,948, Cl. 544-325.000.

Hofheinz, Werner, to Hoffmann-La Roche Inc. Antiprotozoal 2-nitroimidazole compounds. 4,515,790, Cl. 514-234.000.

Hofmann, Rolf: *See—*
Moser, Kurt; and Hofmann, Rolf, 4,515,459, Cl. 355-3.0FU.

Hogan, Martin J., to General Motors Corporation. Bearing assembly with stamped races. 4,515,418, Cl. 384-502.000.

Hohrein, Henry E. Weapon rim-fire conversion unit II. 4,515,064, Cl. 89-128.000.

Hojo, Yoshikata: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Holcombe, Paul: *See—*
Schwab, Carl E.; Rost, David P.; Hackenberg, William; and Holcombe, Paul, 4,516,125, Cl. 343-7.700.

Holden, Paul C.: *See—*
North, William E.; Holden, Paul C.; and Hultgren, Kent G., 4,515,523, Cl. 415-115.000.

Holden, Robert S.: *See—*
Ferber, John G.; Goddard, Peter J.; and Holden, Robert S., 4,515,990, Cl. 568-808.000.

Hollerweger, Heinz: *See—*
Blatt, Georg; van den Boom, Johannes; Kuipers, Geert; and Hollerweger, Heinz, 4,515,239, Cl. 181-290.000.

Hollinger, John D.; and Pedroso, Raul I., to Coulter Corporation. Particle analyzing and sorting apparatus. 4,515,274, Cl. 209-3.100.

Hollister, F. Harold; and Meyer, Danny S., to Joy Manufacturing Company. Gate valve with internal pressure relief means. 4,515,174, Cl. 137-72.000.

Hollmann, Bernd: *See—*
Moosbrucker, Karl; Hollmann, Bernd; and Freye, Theodor, 4,514,969, Cl. 56-341.000.

Holmes, Dale A., to Rockwell International Corporation. Commonpass decentered annular ring resonator with improved polarization control. 4,516,244, Cl. 372-99.000.

Holmes, Robert G., to Ohio Agricultural Research and Development Center, The. Seed planter, planter assembly and method of picking up and discharging single seeds. 4,515,291, Cl. 221-211.000.

Holmsten, Richard B. Refrigeration system for ice rinks utilizing pressure control/metering valve. 4,514,992, Cl. 62-235.000.

Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Benzyl-pyrimidinylalkyl-ethers as plant growth regulators and fungicides, and corresponding pyrimidinylcarbinols. 4,515,617, Cl. 71-76.000.

Holoch, Klaus: *See—*
Barzynski, Helmut; and Holoch, Klaus, 4,515,877, Cl. 430-5.000.

Holstein, Herbert: *See—*
Borner, Roland; and Holstein, Herbert, 4,514,935, Cl. 51-165.00R.

Holton, Percy G., to Syntex Corporation. Process for the resolution of d,l 2-(6-methoxy-2-naphthyl)propionic acid. 4,515,811, Cl. 514-554.000.

Holubka, Joseph W., to Ford Motor Company. Coating composition comprising bis-diene oligomers and bis-dieneophile oligomers. 4,515,926, Cl. 525-449.000.

Holzl, Robert A., to Dart Industries Inc. Self protecting carbon bodies and method for making same. 4,515,860, Cl. 428-408.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Shumpei; and Otobe, Yutaka, 4,515,009, Cl. 73-118.000.
Honma, Kenji; Asami, Toshio; Baba, Masayuki; and Nakayama, Sumio, 4,515,384, Cl. 280-276.000.
Matsuura, Masaaki; and Nakano, Yoshikatsu, 4,515,121, Cl. 123-198.00F.
Ogano, Takeo; Sueshige, Hiroshi; and Hatakeyama, Sakichi, 4,514,917, Cl. 37-249.000.
Ogishima, Tetsuo, 4,515,405, Cl. 296-78.100.
Sato, Makoto, 4,515,412, Cl. 303-6.00R.
Takeo, Tadashi; Yamamoto, Toru; and Yamashito, Sachihiro, 4,515,521, Cl. 414-735.000.
Tsuboi, Masaharu, 4,515,038, Cl. 74-606.00R.

Honda Motor Co., Ltd.: *See—*
Hasegawa, Shumpei, 4,515,130, Cl. 123-493.000.

Honeywell Inc.: *See—*
Brownell, David J.; and Roberts, Jon A., 4,515,668, Cl. 204-192.00D.

Hongou, Hiroshi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.

Honma, Kenji; Asami, Toshio; Baba, Masayuki; and Nakayama, Sumio, to Honda Giken Kogyo Kabushiki Kaisha; and Showa Manufacturing Co., Ltd. Front wheel suspension system for a motorcycle. 4,515,384, Cl. 280-276.000.

Hooft van Huijsduijnen, Jozef A. M., to U.S. Philips Corporation. Cathode-ray tube and cathode unit for such a cathode-ray tube. 4,516,051, Cl. 313-446.000.

Hoorn, Willem A., to Du Pont de Nemours, E. I., and Company. Automatic X-ray film cassette unloader and reloader. 4,514,958, Cl. 53-266.00R.

Hopkins, Hammond W. Escalator tread cleaning brush. 4,514,872, Cl. 15-256.500.

Horibe, Kiyoshi: *See—*
Ito, Tosikazu; Komathuzaki, Kiyomi; Chonan, Kenichi; and Horibe, Kiyoshi, 4,515,066, Cl. 91-454.000.

Horikoshi, Hiroshi; Arai, Akio; Tsukagoshi, Sadayuki; and Sakamoto, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Device for measuring swing data of baseball bat. 4,515,365, Cl. 273-25.000.

Horne, Edward A. Container rack. 4,515,334, Cl. 248-146.000.

Horsch, Martha E.: *See—*
Swider, Robert A.; and Horsch, Martha E., 4,515,911, Cl. 523-414.000.

Hosaka, Hideo: *See—*
Iwataki, Isao; Fujita, Kagari; Ishikawa, Hisao; Hosaka, Hideo; and Kohara, Kenichi, 4,515,729, Cl. 260-464.000.

Hoskin, Dennis H., to Mobil Oil Corporation. Low cost, brine tolerant sulfonate and sulfate surfactants having 1,3-dihydrocarboxy-2-propyl hydrophobic tails. 4,515,701, Cl. 252-8.55D.

Hosono, Akira: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Hottinger Baldwin Measurements, Inc.: *See—*
Rubinstein, Randall B., 4,515,232, Cl. 177-154.000.

Houlberg, Jorn P. Injection moulded bag closure. 4,514,876, Cl. 16-110.00R.

Houser, David E.: *See—*
Frisbie, Richard C.; Houser, David E.; Morenus, Richard J.; and Thomas, Edwin L., 4,515,505, Cl. 409-163.000.

Howard, Richard E.; Pleibel, William; Simpson, Jay R.; and Stolen, Rogers H., to AT&T Bell Laboratories. Single-mode single-polarization optical fiber. 4,515,436, Cl. 350-96.330.

Howard, Robert. Card shuffler having a random ejector. 4,515,367, Cl. 273-149.00R.

Hsu, Wen-Liang: *See—*
Shore, Sheldon G.; and Hsu, Wen-Liang, 4,515,728, Cl. 260-429.0CY.

Huang, Alan; and Knauer, Scott C., to AT&T Bell Laboratories. Self-routing switching network. 4,516,238, Cl. 370-60.000.

Huang, Wann-Sheng: *See—*
Hermes, Chester E.; and Huang, Wann-Sheng, 4,515,215, Cl. 166-272.000.

Huber, Gustave: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.

Huber, Hans P.; and Weber, Jochen, to Licentia Patent-Verwaltungs-GmbH. Method of manufacturing a radiation receiver. 4,516,010, Cl. 219-121.0LJ.

Huber, Siegfried, to Bayerische Motoren Werke AG. Safety helmet, especially for users of automotive vehicles. 4,514,864, Cl. 2-424.000.

Hubner, Klaus M.: *See—*
Sgroi, Carl M.; and Hubner, Klaus M., 4,515,149, Cl. 126-442.000.

Hubred, Gale L.; and Van Leirsburg, Dean A., to Chevron Research Company. Stripping a solution containing molybdenum, tungsten and/or vanadium values. 4,515,757, Cl. 423-54.000.

Hudson Engineering Company: *See—*
Napolitano, Pellegrino E., 4,515,180, Cl. 137-565.000.

Hudson, Kenneth C., to RCA Corporation. Automatically adjustable aperture stop for optical scanning system. 4,516,024, Cl. 250-236.000.

Hue, Jean-Pierre, to 501 Etablissement Public dit "Centre National d'Exploitation des Oceans" (CNEXO). Apparatus for measuring the vertical acceleration due to the swell. 4,515,013, Cl. 73-170.00A.

Hug, Peter: *See—*
Haenni, Eduard; Frei, Theo; and Hug, Peter, 4,515,050, Cl. 83-71.000.

Hughes Aircraft Company: *See—*
Effinger, David D.; and Docter, Richard, 4,516,085, Cl. 331-40.000.

Hughes, David T.: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,516,199, Cl. 364-200.000.

Hughes Tool Company - USA: *See—*
Dolezal, George E.; and Kelly, Joseph L., Jr., 4,515,228, Cl. 175-313.000.

Hultgren, Kent G.: *See—*
North, William E.; Holden, Paul C.; and Hultgren, Kent G., 4,515,523, Cl. 415-115.000.

Hultz, Robert C.: *See—*
Stamper, Richard W.; and Hultz, Robert C., 4,515,744, Cl. 264-171.000.

Humber, David C.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,515,786, Cl. 514-182.000.

Humber, Leslie G.: *See—*
Denierson, Christopher A.; and Humber, Leslie G., 4,515,961, Cl. 548-432.000.

Humphries, Rowland F.: *See—*
Grainge, Richard W.; and Humphries, Rowland F., 4,516,158, Cl. 358-109.000.

Hung, William M.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,515,971, Cl. 549-225.000.

Hunter Douglas Inc.: *See—*
Anderson, Richard N., 4,515,201, Cl. 160-174.000.

Hunter Douglas International N.V.: *See—*
Edixhoven, Gerardus H., 4,514,886, Cl. 29-24.500.

Hunter, James R., to Warner & Swasey Company, The. Sheet metal workholder utilizing linear wedge action. 4,515,355, Cl. 269-234.000.

Hupp, Stephen S., to Ashland Oil, Inc. Process for preparing maleimide. 4,515,965, Cl. 548-548.000.

Hurtado, Ruben G. Lathe dust enclosure. 4,514,936, Cl. 51-270.000.

Husslein, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Control of unwanted plant growth with 2-aryloxy-2-azolylalkanecarboxamides. 4,515,623, Cl. 71-12.000.

Husslein, Gerd; Hamprecht, Gerhard; Koenig, Karl-Heinz; Boehm, Walter; and Gaeng, Manfred, to BASF Aktiengesellschaft. Preparation of chlorinated phenoxyalkanoic acids. 4,515,985, Cl. 562-472.000.

Hutchison, John B., to BICC Public Limited Company. Electric cable glands. 4,515,991, Cl. 174-65.0SS.

Ibori, Satoshi: *See—*
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, 4,516,065, Cl. 318-811.000.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Refrigerated display case having ambient air defrost. 4,514,988, Cl. 62-82.000.

Ichihara, Kenichi: *See—*
Ishino, Ken; Hashimoto, Yasuo; Ichihara, Kenichi; and Narumiya, Yoshikazu, 4,515,850, Cl. 428-225.000.

Ichijo, Chikara: *See—*
Fukayama, Miyoji; and Ichijo, Chikara, 4,515,834, Cl. 427-387.000.

Ichoh, Tasuku: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.

Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, to Unitika, Ltd. Filtration apparatus. 4,515,691, Cl. 210-274.000.

Ide, Russell D. Elastomeric supported hydrodynamic bearing. 4,515,486, Cl. 384-117.000.

Ideal Security Hardware Corporation: *See—*
Arneberg, Walter, 4,514,878, Cl. 16-300.000.

Idtkow, Inc.: *See—*
Johnson, Randolph K., 4,514,993, Cl. 62-372.000.

Igarashi, Sadayuki: *See—*
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, 4,516,065, Cl. 318-811.000.

Iimura, Takashi: *See—*
Yanagihara, Masaki; and Iimura, Takashi, 4,516,078, Cl. 328-167.000.

Ikeda, Hisatoshi: *See—*
Kobayashi, Akio; Mizoguchi, Hitoshi; Ikeda, Hisatoshi; and Mayama, Hidekiyo, 4,516,006, Cl. 200-148.00A.

Ikeda, Tsutomu: *See—*
Kizu, Shuji; Ikeda, Tsutomu; and Iwamoto, Masanori, 4,516,265, Cl. 382-48.000.

Imai, Jiro: *See—*
Torrence, Paul F.; Johnston, Margaret I.; and Imai, Jiro, 4,515,781, Cl. 514-46.000.

Imai, Motomasa; Takahashi, Takashi; Furukawa, Osamu; and Kanai, Hideyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Metal oxide varistor with non-diffusable electrodes. 4,516,105, Cl. 338-21.000.

Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, to Sony Corporation. Magnetic transducer head utilizing magnetoresistance effect. 4,516,179, Cl. 360-113.000.

Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co.): *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 4,515,557, Cl. 431-302.000.

Imanishi, Yasuhiro: *See—*
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.

Impact Systems, Inc.: *See—*
Stephansen, Erik W., 4,514,913, Cl. 34-48.000.

Imperial Chemical Industries PLC: *See—*
Kay, Ian T.; and Noon, Robert A., 4,515,959, Cl. 548-378.000.

Imura, Shinichi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.

Inada, Tooru: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.

Inden, Masahiro; and Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Solenoid valve. 4,515,345, Cl. 251-141.000.

Indian Industries, Inc.: *See—*
Nurney, David J., 4,515,142, Cl. 124-23.00R.

Ingersoll-Rand Company: *See—*
Luthi, Oscar, 4,515,693, Cl. 210-402.000.

Ingmar, Bjelkhagen H. Device for the ocular determination of any discrepancy in the luminescence capacity of the surface of a tooth for the purpose of identifying any caried area on the surface to the tooth. 4,515,476, Cl. 356-318.000.

Ingram, Gary L., to Spencer Wright Industries, Inc. Tufting machines. 4,515,096, Cl. 112-79.00R.

Inke, S.A.: *See—*
Caldero Ges, Jose M.; and Faba, Eusebio M., 4,515,806, Cl. 514-471.000.

Ino, Takashi: *See—*
Shioiri, Tomonori; and Ino, Takashi, 4,515,902, Cl. 502-64.000.

Inoue, Hiroshi: *See—*
Komatsu, Shigeru; and Inoue, Hiroshi, 4,516,147, Cl. 357-59.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,516,009, Cl. 219-69.00P.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Capacitor-type HF power supply for electrical machining. 4,516,009, Cl. 219-69.00P.

Inoue, Takehisa; and Miwa, Kishio, to Toray Industries, Incorporated. Separation process for a gas mixture. 4,515,605, Cl. 55-26.000.

Intech Corporation: *See—*
Sewell, James H.; Gaede, Hans; and Ritch, Curtis R., 4,515,299, Cl. 223-76.000.

Intech Systems Corp.: *See—*
Slavin, Martin J., 4,515,164, Cl. 128-663.000.

International Business Machines Corporation: *See—*
Boehm, Russell W.; Rippstein, Robert P.; and Stone, David R., 4,515,544, Cl. 425-129.00R.
Carsalade, Henri; Delaporte, Francois-Xavier; and Pantani, Jean-Pierre, 4,516,247, Cl. 375-56.000.
Chaudhari, Praveen; and Muller, Rene , 4,515,650, Cl. 156-622.000.
Christopher, Robert J.; and Walker, Robert F., 4,516,266, Cl. 382-48.000.
Cunningham, Earl A.; and Palmer, Dean C., 4,516,165, Cl. 360-53.000.
Economy, James; and Flandera, Mary A., 4,515,828, Cl. 427-82.000.
Frisbie, Richard C.; Houser, David E.; Morenus, Richard J.; and Thomas, Edwin L., 4,515,505, Cl. 409-163.000.
Hall, Douglas J.; Langley, Robert F.; and Thomas, Edwin L., 4,515,878, Cl. 430-5.000.

International Ferrox Co., Establishment: *See—*
Vallak, Enn; and Vallak, Hannes, 4,515,341, Cl. 249-106.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,966, Cl. 549-30.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,967, Cl. 549-39.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,968, Cl. 549-39.000.
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,515,712, Cl. 252-522.00R.

International Paper Company: *See—*
Lovelace, Harold, 4,515,580, Cl. 493-183.000.

Internationale Octrooi Maatschappij "Octropa": *See—*
Armstead, Brian H.; and Quinn, James P., 4,515,821, Cl. 426-330.400.

Irie, Yoichiro: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.

Isenberg, Gerry E.; Forshey, Terry L.; and Keller, Robert D., Jr., to Sperry Corporation. Tundish cover for ductile iron treatment. 4,515,353, Cl. 266-236.000.

Ishida, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Address designating method of memory and apparatus therefor. 4,516,219, Cl. 364-900.000.

Ishida, Takehisa, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus with serial weighing operations. 4,515,231, Cl. 177-25.000.

Ishida, Yoshiaki: *See—*
Karino, Saburo; and Ishida, Yoshiaki, 4,515,737, Cl. 264-22.000.

Ishii, Mitsuo: *See—*
Sawatani, Tadashi; Ishii, Mitsuo; Yoshimura, Hirofumi; and Harase, Jirou, 4,515,644, Cl. 148-12.0EA.

Ishii, Tsutomu: *See—*
Takahara, Takeshi; Ishii, Tsutomu; and Shirakawa, Yasuhiro, 4,515,706, Cl. 252-301.40H.

Ishikawa, Hisao: *See—*
Iwataki, Isao; Fujita, Kagari; Ishikawa, Hisao; Hosaka, Hideo; and Kohara, Kenichi, 4,515,729, Cl. 260-464.000.

Ishino, Ken; Hashimoto, Yasuo; Ichihara, Kenichi; and Narumiya, Yoshikazu, to TDK Corporation. Composite ferrite textile. 4,515,850, Cl. 428-225.000.

Ishiwata, Ichiro, to Nippon Air Brake Co., Ltd. Hydraulic reservoir for tandem master cylinder. 4,514,980, Cl. 60-534.000.

Ito, Kunihiko: *See—*
Aoki, Akira; and Ito, Kunihiko, 4,514,869, Cl. 5-472.000.

Ito, Takeshi, to Coret & Co. Ltd.; and Machine Engineering Co., Ltd. Fly reel. 4,515,325, Cl. 242-84.51R.

Ito, Tosikazu; Komathuzaki, Kiyomi; Chonan, Kenichi; and Horibe, Kiyoshi, to Hitachi, Ltd. Vacuum actuator. 4,515,066, Cl. 91-454.000.

Itoh, Hidekuni, to Kabushiki Kaisha Showa Seisakusho. Damping force generating device for an oil damper. 4,515,253, Cl. 188-314.000.

Itoki Kosakusho Co. Ltd.: *See—*
Takamatsu, Shunicti, 4,515,508, Cl. 414-280.000.

Ittipiboon, Apisak; Shafai, Lotfollah; and Bridges, Ernest, to Canadian Patents & Dev. Ltd. Waveguide with dielectric coated flange antenna feed. 4,516,129, Cl. 343-772.000.

IVAC Corporation: *See—*
Hemmerich, Karl J.; Millerd, Donald L.; and Semedo, Anthony B., 4,515,591, Cl. 604-152.000.

Iverson, Kjeld K. Barbecue cooking unit. 4,515,074, Cl. 99-393.000.

Iwahashi, Hiroyuki: *See—*
Hakaridani, Mitsuhiro; Iwahashi, Hiroyuki; and Nishioka, Yoshiki, 4,516,215, Cl. 364-513.500.

Iwamoto, Masanori: *See—*
Kizu, Shuji; Ikeda, Tsutomu; and Iwamoto, Masanori, 4,516,265, Cl. 382-48.000.

Iwanaga, Takeya: *See—*
Kambara, Toru; Uemura, Michihiko; and Iwanaga, Takeya, 4,516,090, Cl. 333-141.000.

Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, to Kowa Company, Ltd. Antibiotics KA-6606 XII, XIII, XV, XVI and XVII. 4,515,942, Cl. 536-16.800.

Iwasaki, Yoshiki: *See—*
Masuda, Isao; Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Ueno, Shoji, 4,516,163, Cl. 360-32.000.

Iwasawa, Hiroshi; Numata, Masanori; and Mama, Shinichi, to Amano Corporation. Time-clock recording and computation apparatus with optional rest processing function. 4,516,138, Cl. 346-80.000.

Iwata, Kazuro: *See—*
Hidaka, Kunihiko; Fukushima, Naoto; and Iwata, Kazuro, 4,515,252, Cl. 188-282.000.

Iwata, Masao: *See—*
Enomoto, Kiyoshige; and Iwata, Masao, 4,515,140, Cl. 123-603.000.

Iwataki, Isao; Fujita, Kagari; Ishikawa, Hisao; Hosaka, Hideo; and Kohara, Kenichi, to Nippon Soda Company Limited. Cyclohexane derivatives. 4,515,729, Cl. 260-464.000.

Iwatani, Kenji: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.

Iyoda, Tetsuo: *See—*
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihasa, 4,516,134, Cl. 346-75.000.

Izumi, Masaro: *See—*
Shibata, Yoichi; Kimura, Ryosuke; Sumigama, Takashi; and Izumi, Masaro, 4,515,350, Cl. 266-92.000.

J. I. Case Company: *See—*
Parquet, Donald J.; Brown, Thomas R.; and Edwards, Eldon R., 4,515,520, Cl. 414-718.000.

Jabas, Florian H. Moving air oven for baking and the like. 4,515,143, Cl. 126-21.00A.

Jaber, Khalil N.: *See—*
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,515,839, Cl. 428-17.000.

Jackson, Douglas H.: *See—*
Heathcoat, Michael J.; Jackson, Douglas H.; Jowitt, Frederick W.; Madley, Jack R.; and Stuart, Ian C. E., 4,515,677, Cl. 204-300.0EC.

Jacobelli, Alain: *See—*
Hartemann, Pierre; Meunier, Paul-Louis; and Jacobelli, Alain, 4,515,016, Cl. 73-517.00R.

Jacobs, Pierre: *See—*
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,515,905, Cl. 502-309.000.

Jacobson, Roger K.; and Munson, Ronald W., to Bemis Company, Inc. Bag with tab and method of forming. 4,515,273, Cl. 206-604.000.

Jacoby, Charles E., to SI Handling Systems, Inc. Track for driverless vehicles. 4,515,084, Cl. 104-166.000.

Jacquemin, Claude; Provost, Florent; and Seinera, Andre , to Ugine Aciers. Grill element of cast metal for solid-fluid heat exchange at very high temperature comprising a latching device which is integrated in the grill structure. 4,515,560, Cl. 432-80.000.

Jaenson, Howard W., to Jenglo Engineering, Inc. Welded wire fabric bending apparatus and method. 4,515,004, Cl. 72-388.000.

Jaggle, Gunther; Maisch, Wolfgang; Peters, Klaus-Jurgen; and Schutz, Rudolf, to Robert Bosch GmbH. Fuel injection system. 4,515,128, Cl. 123-454.000.

Janes, Norman F.: *See—*
Elliott, Michael; Janes, Norman F.; and Khambay, Bhupinder P. S., 4,515,808, Cl. 514-521.000.

Janich, Hans-Jurgen, to PKS-Engineering GmbH & Co. KG. Method for the operation of an air separator, and an air separator for the practice of the method. 4,515,686, Cl. 209-139.00A.

Janis, James. Security system window guard apparatus and anchor assembly therefor. 4,514,932, Cl. 49-50.000.

Janson, David A., to Ford Motor Company. Chain driven reverse gear for a manual transmission. 4,515,031, Cl. 74-359.000.

Janusch, Alois; and Mayer, Franz, to Voest-Alpine Aktiengesellschaft. Process for drying or organic solid materials, particularly brown coals. 4,514,912, Cl. 34-37.000.

Japan Radio Company, Limited: *See—*
Matsumoto, Shigeru; Okabe, Yoshikatsu; and Kazama, Yasuhiro, 4,516,133, Cl. 343-819.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,515,922, Cl. 525-99.000.

Jaras, Sven G.: *See—*
Otterstedt, Jan-Erik A.; Jaras, Sven G.; Pudas, Roland; and Upson, Lawrence L., 4,515,903, Cl. 502-68.000.

Jardinier, Pierre; and Simonnot, Jack, to Societe d'Etudes et de Recherches de Ventilation et d'Aerauliques. Flow stabilizer for a ventilation duct. 4,515,308, Cl. 236-49.000.

Jaskolski, Stanley V.; Schutten, Herman P.; Spellman, Gordon B.; Sedivy, Jan K.; and Jensen, Maurice W., to Eaton Corporation. Columnated and trimmed magnetically sensitive semiconductor. 4,516,144, Cl. 357-27.000.

Jasserand, Daniel: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,515,944, Cl. 544-91.000.

Jefferies, Derek K.: *See—*
Prewett, Phillip D.; Jefferies, Derek K.; Pashley, Neil A.; and Cockhill, Thomas D., 4,516,052, Cl. 313-546.000.

Jeffress, Ronald E.; Wanat, David J.; and Krasznai, Charles Z., to Black & Decker, Inc. Portable electric appliance for steaming hair rollers prior to use. 4,516,011, Cl. 219-222.000.

JENAer Glaswerk, Schott & Gen.: *See—*
Gunthner, Frantz, 4,515,621, Cl. 65-171.000.

Jenglo Engineering, Inc.: *See—*
Jaenson, Howard W., 4,515,004, Cl. 72-388.000.

Jenkins, Anthony W.: *See—*
Newman, Peter M.; and Jenkins, Anthony W., 4,515,805, Cl. 514-460.000.

Jenkins, Patrick A.; and Ferguson, Donald A., to Borg-Warner Corporation. Valve testing system utilizing an artificial atmosphere. 4,515,012, Cl. 73-168.000.

Jensen, Maurice W.: *See—*
Jaskolski, Stanley V.; Schutten, Herman P.; Spellman, Gordon B.; Sedivy, Jan K.; and Jensen, Maurice W., 4,516,144, Cl. 357-27.000.

Jensen, Neil B. Wheel chair with displaceable seat panel. 4,514,867, Cl. 4-480.000.

Jentoft, Arthur P.; and Couture, Paul A., to Wasco Products, Inc. Thermal break skylight. 4,514,943, Cl. 52-200.000.

Jeumont-Schneider Corporation: *See—*
Trouillet, Jean, 4,515,495, Cl. 403-336.000.

Jirkovsky, Ivo: *See—*
Santroch, George; and Jirkovsky, Ivo, 4,515,949, Cl. 544-343.000.

Johansson, Bengt, to Maskingruppen 82 AB. Roof panel mounting clip. 4,514,952, Cl. 52-713.000.

Johns, David L., to Suncoast Medical Manufacturing Co. Pen light. 4,516,194, Cl. 362-202.000.

Johnsey, Walter F.: *See—*
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,515,229, Cl. 175-337.000.

Johnson, Duane R., to Allied Corporation. Clutch drive with link spring. 4,515,258, Cl. 192-91.00A.

Johnson, Ernest L. Dice and blackjack game board. 4,515,369, Cl. 273-243.000.

Johnson, Gilbert. Retractable torque applying tool. 4,515,046, Cl. 81-436.000.

Johnson & Johnson Dental Products Company: *See—*
Wu, Jenn-Ming; Cannon, Warren R.; and Panzera, Carlino, 4,515,634, Cl. 106-35.000.

Johnson, Leonard M., to Massachusetts Institute of Technology. Integrated optical transducers. 4,515,430, Cl. 350-96.130.

Johnson, Leslie V. Rotary seal assembly having a liquid filled bellows. 4,515,377, Cl. 277-27.000.

Johnson, Michael D., to Becton, Dickinson and Company. Slip resistant surfaces. 4,515,851, Cl. 428-246.000.

Johnson, Randolph K., to Idtkow, Inc. Insulated barrel cooler. 4,514,993, Cl. 62-372.000.

Johnson, Ray M.; and Dremann, George H. Power absorbing termination for a waveguide transmission line. 4,516,088, Cl. 333-22.00F.

Johnson Service Company: *See—*
Seaks, Charles E., Jr., 4,516,189, Cl. 361-426.000.

Johnston, Margaret I.: *See—*
Torrence, Paul F.; Johnston, Margaret I.; and Imai, Jiro, 4,515,781, Cl. 514-46.000.

Jones, Gary A., to Pertron Controls Corporation. System for calculating the root mean square (RMS) current in a resistance welding system. 4,516,008, Cl. 219-109.000.

Jones, John C.: *See—*
Heward, Peter D.; Jones, Valerie A.; and Jones, John C., 4,515,510, Cl. 414-422.000.

Jones, L. Raymond, Jr.: *See—*
Cassidy, John E.; and Jones, L. Raymond, Jr., 4,515,485, Cl. 374-157.000.

Jones, Valerie A.: *See—*
Heward, Peter D.; Jones, Valerie A.; and Jones, John C., 4,515,510, Cl. 414-422.000.

Jonsson, Karl-Erik A. Cutting tool and holder. 4,515,193, Cl. 144-172.000.

Jordan Chemical Company: *See—*
Login, Robert B.; Walele, Ismail L.; and Otterson, Richard J., 4,515,721, Cl. 260-400.000.

Jouffrey, Bernard; Trinquier, Jacques; and Franceschi, Jean-Luc, to Centre National de la Recherche Scientifique CNRS. Scanning electron microscope assembly operating in situ. 4,516,026, Cl. 250-310.000.

Jowitt, Frederick W.: *See—*
Heathcoat, Michael J.; Jackson, Douglas H.; Jowitt, Frederick W.; Madley, Jack R.; and Stuart, Ian C. E., 4,515,677, Cl. 204-300.0EC.

Joy Manufacturing Company: *See—*
Hollister, F. Harold; and Meyer, Danny S., 4,515,174, Cl. 137-72.000.
Sitton, Willard J.; and Whaley, William L., 4,515,347, Cl. 251-328.000.

Joyce, William B.: *See—*
Dixon, Richard W.; Joyce, William B.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,514,896, Cl. 29-576.00B.

JSJ Corporation: *See—*
Olmsted, Bruce E., 4,515,032, Cl. 74-473.00R.

Juenger, Rudolf, to Akzona Incorporated. Cleaning control through measurement of electrical conductivity. 4,515,641, Cl. 134-5.000.

Jufuku, Yasunobu: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.

Jullien, Georges, to Novatome. Apparatus for the production of steam by heat exchange between a heat-transfer liquid metal and feed water, comprising several liquid metal/inert gas interfaces. 4,515,109, Cl. 122-32.000.

Jung, Eggert; and Wadle, Heinrich, to Dr. Ing. Rudolf Hell GmbH. Scanning method and scanning diaphragm for suppressing Moire in the scanning of rastered masters. 4,516,175, Cl. 358-283.000.

Jung, Johann: *See—*
Rentzea, Costin; Spiegler, Wolfgang; and Jung, Johann, 4,515,616, Cl. 71-76.000.

Juridicial Foundation, The Chemo-Semo-Sero-Therapeutic Research Institute: *See—*
Kawahara, Tetsuo; Mizokami, Hiroshi; Mizuno, Kyosuke; and Susumi, Sadao, 4,515,714, Cl. 260-112.00R.

Jury, Harold R. Metal forming machine. 4,514,998, Cl. 72-184.000.

Justice, David D.: *See—*
Fair, David L.; Justice, David D.; and Kelly, Pilar P., 4,515,665, Cl. 204-98.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Kitano, Seiichi; and Ono, Yukio, 4,515,256, Cl. 192-18.00R.

Kabushiki Kaisha Daini Seikosha: *See—*
Momoshima, Yukichi; and Nagasaka, Nobuyuki, 4,515,057, Cl. 84-1.030.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Ishida, Takehisa, 4,515,231, Cl. 177-25.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Narita, Kiichi; Mori, Takasuke; and Ayata, Kenzo, 4,515,203, Cl. 164-468.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Okubo, Junpei, 4,515,115, Cl. 123-52.00M.

Kabushiki Kaisha Nagaoka: *See—*
Yamaguchi, Izumi, 4,514,908, Cl. 33-365.000.

Kabushiki Kaisha Showa Seisakusho: *See—*
Itoh, Hidekuni, 4,515,253, Cl. 188-314.000.

Kabushiki Kaisha Toshiba: *See—*
Takahara, Takeshi; Ishii, Tsutomu; and Shirakawa, Yasuhiro, 4,515,706, Cl. 252-301.40H.

Kadowaki, Yoshihiko, to Hitachi, Ltd. Interface control system for high speed processing based on comparison of sampled data values to expected values. 4,516,202, Cl. 364-200.000.

Kahl, William G., Jr.: *See—*
Frigon, Raymond A.; and Kahl, William G., Jr., 4,516,115, Cl. 340-556.000.

Kahlman, Sture. Method to cut off a preferably band shaped running web of tearable material and means to carry out the method. 4,515,321, Cl. 242-56.00R.

Kahn, Roger N.: *See—*
DuVal, Daniel A.; Kahn, Roger N.; and Myers, David E., 4,515,396, Cl. 281-15.00R.

Kai, Junichi: *See—*
Tsuchikawa, Haruo; and Kai, Junichi, 4,516,030, Cl. 250-492.200.

Kajigaya, Shinichi; and Nakaya, Mitsuo, to Bridgestone Tire Company Limited. Marine fenders. 4,515,502, Cl. 405-215.000.

Kajino, Yukio. Method of and apparatus for igniting internal combustion engine. 4,515,117, Cl. 123-146.50A.

Kajiyama, Ryuichi; and Yonemoto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling the arrival of an elevator cage at an elevator floor. 4,515,246, Cl. 187-29.00R.

Kajiyama, Sigeru, to Hitachi, Ltd. Guide rail apparatus for an object running around piping. 4,515,018, Cl. 73-637.000.

Kaken Pharmaceutical Co., Ltd.: *See—*
Nakano, Jun; Nakanishi, Teruo; and Kimura, Kazuhiko, 4,515,977, Cl. 549-468.000.

Kakuda, Yukio: *See—*
MacDonald, Bruce E.; Galloway, Geoffrey; and Kakuda, Yukio, 4,515,818, Cl. 426-268.000.

Kalama Chemical, Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,515,953, Cl. 546-345.000.

Kali-Chemie Pharma GmbH: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,515,944, Cl. 544-91.000.

Kaltenbach & Voigt GmbH & Co.: *See—*
Lohn, Gerd, 4,515,564, Cl. 433-126.000.

Kamada, Toshihiko, to Kamatari Co., Ltd. Golf gloves. 4,514,861, Cl. 2-161.00A.

Kamatari Co., Ltd.: *See—*
Kamada, Toshihiko, 4,514,861, Cl. 2-161.00A.

Kambara, Toru; Uemura, Michihiko; and Iwanaga, Takeya, to Asahi Glass Company Ltd. Ultrasonic delay line. 4,516,090, Cl. 333-141.000.

Kammoto, Yoshiaki, to Ricoh Company, Ltd. Video signal regulating apparatus. 4,516,174, Cl. 358-282.000.

Kamp, Ewald A., to Union Carbide Corporation. Pentabar closure device. 4,516,268, Cl. 383-63.000.

Kamyr, Inc.: *See—*
Elmore, Carl L.; and Funk, Erwin D., 4,514,910, Cl. 34-15.000.

Kanai, Hideyuki: *See—*
Imai, Motomasa; Takahashi, Takashi; Furukawa, Osamu; and Kanai, Hideyuki, 4,516,105, Cl. 338-21.000.

Kanamaru, Hitoshi, to Universal Pioneer Corporation. Information recording and reproducing system. 4,516,160, Cl. 358-326.000.

Kanamori, Takashi, to Yamaha Hatsudoki Kabushiki Kaisha. Rear suspension for motorcycles. 4,515,236, Cl. 180-227.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, 4,515,915, Cl. 524-87.000.

Kaneko, Katsukichi. Double-slider fastening lock. 4,514,884, Cl. 24-386.000.

Kaneko, Yasunori: *See—*
Maki, Masao; Kaneko, Yasunori; and Kobayashi, Ikuo, 4,515,862, Cl. 428-450.000.

Kangol Magnet Limited: *See—*
Patterson, Michael, 4,515,395, Cl. 280-808.000.

Kania, Don R.: *See—*
Zimmermann, Eugene L.; and Kania, Don R., 4,515,173, Cl. 137-68.00R.

Kaniecki, Michael; Landers, Samuel P.; and Botzman, Thomas J., to Goodyear Tire & Rubber Company, The. Coating material for use on sulfur vulcanized rubber. 4,515,199, Cl. 152-353.00R.

Kanzaki Paper Mfg. Co., Ltd.: *See—*
Nojima, Kazuhiro; Fujimoto, Hiroyuki; and Takahashi, Mikio, 4,515,833, Cl. 427-362.000.

Kao Corporation: *See—*
Tsuneno, Tatsuro; and Takaku, Masaaki, 4,515,725, Cl. 260-410.700.

Kao Soap Co., Ltd.: *See—*
Katabe, Kenichi; and Nishimura, Takeo, 4,515,852, Cl. 428-246.000.

Karavaev, Alexandr A.: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., 4,515,157, Cl. 128-303.00R.

Karino, Saburo; and Ishida, Yoshiaki, to Dainippin Ink and Chemicals Inc. Process for producing composite plastic pipe. 4,515,737, Cl. 264-22.000.

Karlsson, Hans I. R. Arrangement for locking the winding device of a vehicle safety-belt. 4,515,326, Cl. 242-107.40A.

Karwat, Heinz: *See—*
Lang, Roland; and Karwat, Heinz, 4,515,760, Cl. 423-220.000.

Kaschig, Jurgen; Kleiner, Eduard K.; Nueller, Karl F.; and Cooke, Thomas W., to Ciba Geigy Corporation. Fluoroaliphatic-thio,-sulfinyl, or sulfonyl substituted bicycloaliphatic amic acid amine salts, and compositions and use thereof. 4,515,640, Cl. 106-287.250.

Kaser, Adolf, to Ciba Geigy Corporation. Process for dyeing paper. 4,515,599, Cl. 8-685.000.

Kashio, Toshio, to Casio Computer Co. Ltd. Electronic musical instrument. 4,515,056, Cl. 84-1.010.

Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,515,389, Cl. 280-642.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Baby carriage and armrest for such baby carriage. 4,515,389, Cl. 280-642.000.

Kastell, Wolfgang. Preparation for conditioning and grooming the hair. 4,515,778, Cl. 424-95.000.

Kasuya, Yukio: *See—*
Masuda, Shunichi; Yagasaki, Toshiaki; and Kasuya, Yukio, 4,515,458, Cl. 355-3.0SH.

Katabe, Kenichi; and Nishimura, Takeo, to Kuraray Co., Ltd.; and Kao Soap Co., Ltd. Leather-like sheet material having low slip characteristics. 4,515,852, Cl. 428-246.000.

Kataishi, Takao; and Seo, Iwazou, to Misawa Home Co., Ltd. Release and carry-out apparatus. 4,515,552, Cl. 425-436.0RM.

Katakura, Masayuki, to Sony Corporation. Voltage controlled variable gain circuit. 4,516,081, Cl. 330-254.000.

Katalistiks B.V.: *See—*
Otterstedt, Jan-Erik A.; Jaras, Sven G.; Pudas, Roland; and Upson, Lawrence L., 4,515,903, Cl. 502-68.000.

Kataoka, Takeshi; Aoki, Ryoichi; Matsui, Hisashi; and Matsumoto, Hiroshi, to Ono Seiko Co., Ltd. Clutch mechanism of a push-button tuner. 4,515,024, Cl. 74-10.330.

Kather, Kenneth C.: *See—*
Nowobilski, Jeffert J.; and Kather, Kenneth C., 4,515,397, Cl. 285-47.000.

Katsuoka, Tatsuzo, to Yamaha Hatsudoki Kabushiki Kaisha. Four-cycle engine. 4,515,127, Cl. 123-430.000.

Kaule, Wittich; Renz, Walter; and Stenzel, Gerhard, to GAO Gesellschaft fur Automation und Organisation mbH. Method of determining the degree of wear of bank-notes and a device for carrying out this method. 4,516,031, Cl. 250-562.000.

Kawabe, Toshihiko: *See—*
Amemori, Koichi; Kawabe, Toshihiko; and Takahashi, Yosuke, 4,515,120, Cl. 123-368.000.

Kawagoe, Hiroto, to Hitachi, Ltd. Semiconductor integrated circuit device manufacturing method. 4,514,894, Cl. 29-571.000.

Kawaguchi, Masayuki: *See—*
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,515,709, Cl. 252-509.000.

Kawaguchi, Mitsuru, to Kotobuki Engineering & Mfg Company, Ltd. Method of withdrawing particulate material from dead-bed of centrifugal crusher and centrifugal crusher suitable for carrying the method into practice. 4,515,316, Cl. 241-5.000.

Kawahara, Tetsuo; Mizokami, Hiroshi; Mizuno, Kyosuke; and Susumi, Sadao, to Juridicial Foundation, The Chemo-Semo-Sero-Therapeutic Research Institute. Method for purification of hepatitis B virus surface antigen. 4,515,714, Cl. 260-112.00R.

Kawahara, Yoshihiro; and Hayashi, Kiyoshi, to Mita Industrial Company Limited. Electrostatic recording apparatus. 4,516,141, Cl. 346-153.100.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,515,058, Cl. 84-1.240.

Kawai, Yasuhiro: *See—*
Yamamoto, Takaaki; and Kawai, Yasuhiro, 4,516,142, Cl. 346-160.000.

Kawai, Yoshio; and Kitagawa, Kiyoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cell unit for observing electrophoresis. 4,515,676, Cl. 204-299.00R.

Kawamori, Ryuzo: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.

Kawamura, Hideaki: *See—*
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Fujibayashi, Kentaro, 4,516,211, Cl. 364-474.000.

Kawasaki, Kiyoshi: *See—*
Fukushima, Tsutomu; Kawasaki, Kiyoshi; and Sasaki, Sadayuki, 4,515,352, Cl. 266-218.000.

Kawashima, Kenichi: *See—*
Hayase, Isao; Suginuma, Atsushi; Kishi, Atsuo; and Kawashima, Kenichi, 4,515,514, Cl. 418-150.000.

Kawata, Shigeo: *See—*
Yokogawa, Kanae; Kotani, Shozo; Kawata, Shigeo; and Takase, Yoshiyuki, 4,515,891, Cl. 435-69.000.

Kay, Ian T.; and Noon, Robert A., to Imperial Chemical Industries PLC. Biologically active amides. 4,515,959, Cl. 548-378.000.

Kaye, Arthur; Carr, Brian; and Latham, Philip A., to British Aerospace Public Limited Company. Control apparatus. 4,516,063, Cl. 318-685.000.

Kazama, Yasuhiro: *See—*
Matsumoto, Shigeru; Okabe, Yoshikatsu; and Kazama, Yasuhiro, 4,516,133, Cl. 343-819.000.

Kearns, William F. Oscillator proximity switch. 4,516,229, Cl. 367-95.000.

Keimel, John G., to Medtronic, Inc. Cardiac pacemaker synchronized programming. 4,515,160, Cl. 128-419.0PG.

Keino, Goro; Kitagawa, Yosuke; and Hayashi, Yoshimi, to Matsui Shikiso Chemical Co. Ltd. Transfer printing sheet, printing method and printed article. 4,515,849, Cl. 428-201.000.

Keiper Automobiltechnik GmbH & Co. KG.: *See—*
Kluting, Bernd; and Engels, Bernd, 4,515,339, Cl. 248-543.000.

Keithler, William R.: *See—*
Bradley, Robert E.; and Keithler, William R., 4,515,919, Cl. 524-591.000.

Keller, David J.: *See—*
Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., 4,515,769, Cl. 424-49.000.

Keller, Douglas V., Jr.; and Simmons, Frederick J., to Otisca Limited, Ltd. Coal compositions. 4,515,602, Cl. 44-51.000.

Keller, Robert D., Jr.: *See—*
Isenberg, Gerry E.; Forshey, Terry L.; and Keller, Robert D., Jr., 4,515,353, Cl. 266-236.000.

Kelly, Joseph L., Jr.: *See—*
Dolezal, George E.; and Kelly, Joseph L., Jr., 4,515,228, Cl. 175-313.000.

Kelly, Pilar P.: *See—*
Fair, David L.; Justice, David D.; and Kelly, Pilar P., 4,515,665, Cl. 204-98.000.

Kemper, Kyran B.: *See—*
Brown, James M.; and Kemper, Kyran B., 4,516,070, Cl. 324-117.00R.

Kendall Company, The: *See—*
Pendergrass, John E.; and Melton, David T., 4,515,594, Cl. 604-384.000.

Kenemuth, James A., to Prentice Corporation. Data compression system. 4,516,246, Cl. 375-37.000.

Kennedy, Richard B., to Fricke, Richard J.; and Crehan, Patrick J. Stabilization of the B-side. 4,515,638, Cl. 106-162.000.

Kent, Garnet J.; and Wood, John C., to W. R. Grace & Co., Cryovac Div. Hang bag. 4,516,267, Cl. 383-22.000.

Kernasovsky, Ilya S.: *See—*
Markov, Vladimir A.; Filatov, Vladimir N.; Kernasovsky, Ilya S.; and Gorina, Ljudmila V., 4,515,254, Cl. 188-371.000.

Kershaw, Mervyn G.: *See—*
Matthew, Ian G.; Pammenter, Robert V.; and Kershaw, Mervyn G., 4,515,696, Cl. 210-713.000.

Kershner, Daniel E. Recreational pool implement. 4,515,023, Cl. 73-864.510.

Kessler, Claus, to Siemens Aktiengesellschaft. Logic card. 4,516,188, Cl. 361-408.000.

Kessler, Jochen, to Dr. Ing. h.c.F. Porsche AG. Device for damping periodically alternating longitudinal accelerations of a motor vehicle. 4,515,126, Cl. 123-401.000.

Khambay, Bhupinder P. S.: *See—*
Elliott, Michael; Janes, Norman F.; and Khambay, Bhupinder P. S., 4,515,808, Cl. 514-521.000.

Khera, Muhammad I.: *See—*
Perry, Thomas J.; and Khera, Muhammad I., 4,516,237, Cl. 370-58.000.

Kholodov, Valery F.: *See—*
Maidanik, Jury F.; Vershinin, Sergei V.; Kholodov, Valery F.; and Dolgirev, Jury E., 4,515,209, Cl. 165-104.220.

Khromov, Sergei V.: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., 4,515,157, Cl. 128-303.00R.

Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., to Vsesojuzny Nauchno-Issledovatelsky Institut Gornospasatelngo Dela. Regenerative canister of a self-contained oxygen-breathing apparatus on chemically fixed oxygen. 4,515,156, Cl. 128-202.260.

KIA Industrial Co., Inc.: *See—*
Ha, Jung Y., 4,515,259, Cl. 192-3.00H.

Kida, Shinji: *See—*
Otsuki, Masaaki; and Kida, Shinji, 4,515,979, Cl. 556-445.000.

Kiefer, Werner: *See—*
Sack, Werner; and Kiefer, Werner, 4,515,897, Cl. 501-15.000.

Kieser, Jorg; Kukla, Reiner; and Deppisch, Gerd, to Leybold-Heraeus GmbH. Magnetron cathode for cathodic evaportion apparatus. 4,515,675, Cl. 204-298.000.

Kievit, David J.; and Osterhage, Thomas F., to Procter & Gamble Company, The. Disposable diapers with elastically contractible waistbands. 4,515,595, Cl. 604-385.00A.

Kihara, Tomohiko: *See—*
Yamakawa, Tsutomu; Nishikawa, Mineki; and Kihara, Tomohiko, 4,516,025, Cl. 250-252.100.

Kimura, Hiroshi: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.

Kimura, Kazuhiko: *See—*
Nakano, Jun; Nakanishi, Teruo; and Kimura, Kazuhiko, 4,515,977, Cl. 549-468.000.

Kimura, Ryosuke: *See—*
Shibata, Yoichi; Kimura, Ryosuke; Sumigama, Takashi; and Izumi, Masaro, 4,515,350, Cl. 266-92.000.

Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Torque transmission system. 4,515,575, Cl. 474-13.000.

King, Homer F., to H. King & Associates, Ltd. Display shelf construction. 4,515,279, Cl. 211-153.000.

Kinner, Josef: *See—*
Krasser, Fritz; and Kinner, Josef, 4,516,098, Cl. 335-35.000.

Kinoshita, Akira: *See—*
Sawada, Kiyoshi; Goto, Satoshi; Kinoshita, Akira; and Sasaki, Osamu, 4,515,881, Cl. 430-58.000.

Kinsbron, Eliezer; Lynch, William T.; and Smith, Thomas E., to AT&T Bell Laboratories. Fabrication of FETs. 4,514,893, Cl. 29-571.000.

Kirby, Edward R., to Associated Truss Company. Method and apparatus for attaching mounting plates. 4,514,901, Cl. 29-822.000.

Kirschenmann, Bernd R. G., to Alfa-Laval AB. Process for separation of raw milk into cream and skim milk which is pasteurized. 4,515,823, Cl. 426-491.000.

Kirschner, Thomas F., to RCA Corporation. Disc record player having player control apparatus. 4,516,233, Cl. 369-79.000.

Kishi, Atsuo: *See—*
Hayase, Isao; Mizukami, Masao; and Kishi, Atsuo, 4,515,513, Cl. 418-101.000.
Hayase, Isao; Suginuma, Atsushi; Kishi, Atsuo; and Kawashima, Kenichi, 4,515,514, Cl. 418-150.000.

Kitada, Fumihiko: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 4,515,557, Cl. 431-302.000.

Kitagawa, Hiroshi: *See—*
Adachi, Kiyoshi; Uehara, Masaru; Kitagawa, Hiroshi; Kojima, Hirotaka; and Sato, Masaaki, 4,514,965, Cl. 53-553.000.

Kitagawa, Kiyoshi: *See—*
Kawai, Yoshio; and Kitagawa, Kiyoshi, 4,515,676, Cl. 204-299.00R.

Kitagawa, Yosuke: *See—*
Keino, Goro; Kitagawa, Yosuke; and Hayashi, Yoshimi, 4,515,849, Cl. 428-201.000.

Kitahara, Takeshi: *See—*
Abe, Susumu; Munakata, Akio; and Kitahara, Takeshi, 4,516,173, Cl. 358-261.000.

Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,515,857, Cl. 428-328.000.

Kitano, Seiichi; and Ono, Yukio, to Kabushiki Kaisha Daikin Seisakusho. Clutch and brake unit. 4,515,256, Cl. 192-18.00R.

Kitayama, Seishi: *See—*
Yato, Fumihiro; Kitayama, Seishi; and Kurematsu, Akira, 4,516,259, Cl. 381-36.000.

Kitchin, Jonathan P.: *See—*
Beretta, Paolo; and Kitchin, Jonathan P., 4,515,888, Cl. 430-584.000.

Kitzmiller, George R. Solar clothes dryer. 4,514,914, Cl. 34-93.000.

Kizu, Shuji; Ikeda, Tsutomu; and Iwamoto, Masanori, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical character reader. 4,516,265, Cl. 382-48.000.

Klay, William F. Door lock. 4,515,401, Cl. 292-170.000.

Kleemann, Wolfgang: *See—*
Klose, Sigmar; Stahler, Fritz; Lange, Hans; and Kleemann, Wolfgang, 4,515,889, Cl. 435-4.000.

Klein, Gunter, to GESIPA Blindniettechnik Gesellschaft mit beschrankter Haftung. Hydropneumatic blind riveter with automatic mandrel catcher. 4,515,005, Cl. 72-391.000.

Klein, Kenneth: *See—*
Conner, Donald E.; and Klein, Kenneth, 4,515,774, Cl. 424-59.000.

Klein, Rolf D.: *See—*
Eing A., Hubert I.; and Klein, Rolf D., 4,516,205, Cl. 364-200.000.

Kleiner, Eduard K.: *See—*
Kaschig, Jurgen; Kleiner, Eduard K.; Nueller, Karl F.; and Cooke, Thomas W., 4,515,640, Cl. 106-287.250.

Kleiner, Frank; Kubens, Rolf; Reese, Eckart; and Wank, Joachim, to Bayer Aktiengesellschaft. Polycarbonate/polybutylene terephthalate film. 4,515,925, Cl. 525-439.000.

Kleinewefers GmbH: *See—*
Rauf, Richard; Pav, Josef; and Scholl, Klaus, 4,514,887, Cl. 29-116.0AD.

Kleschick, William A., to Dow Chemical Company, The. Selective preparation of isomers and enantiomers of cyclopropane carboxylic acids. 4,515,956, Cl. 548-230.000.

Klie, Juergen: *See—*
Hennig, Eberhard; Klie, Juergen; and Wellendorf, Klaus, 4,516,155, Cl. 358-80.000.

Klimsch/Optronics: *See—*
Morrill, David R.; Mason, Mark T.; and Green, Paul M., 4,516,023, Cl. 250-235.000.

Kline, James R.; and Brand, Peter, to Acutherm, Ltd. Change-over diffuser. 4,515,069, Cl. 98-40.00D.

Kline, Mark H.: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,516,199, Cl. 364-200.000.

Klingenstein, Klaus: *See—*
Schadlich, Fritz; Rieker, Werner; Thaler, Rainer; and Klingenstein, Klaus, 4,515,303, Cl. 227-131.000.

Kloots, Jacobus, to Luxtec Corporation. Surgical headlamp. 4,516,190, Cl. 362-32.000.

Klose, Sigmar; Stahler, Fritz; Lange, Hans; and Kleemann, Wolfgang, to Boehringer Mannheim GmbH. Method for carrying out analytical determinations. 4,515,889, Cl. 435-4.000.

Klotz, Erhard: *See—*
Harding, Geoffrey; and Klotz, Erhard, 4,516,261, Cl. 382-6.000.
Linde, Rolf; and Klotz, Erhard, 4,516,252, Cl. 378-23.000.

Kluting, Bernd; and Engels, Bernd, to Keiper Automobiltechnik GmbH & Co. KG. Height adjustment arrangement for seats, particularly motor vehicle seats. 4,515,339, Cl. 248-543.000.

Knabel, Walter: *See—*
Emert, Anton; Knabel, Walter; and Richert, Manfred, 4,515,388, Cl. 280-605.000.

Knaster, Mark, to Henkel Kommanditgesellschaft auf Aktien. Method for determining and adjusting the potency and effectiveness of a metal phosphate conversion coating process. 4,515,643, Cl. 148-6.15Z.

Knauer, Scott C.: *See—*
Huang, Alan; and Knauer, Scott C., 4,516,238, Cl. 370-60.000.

Knechtel, Wilhelm, to Canon Kabushiki Kaisha. Device for transferring color toner images. 4,515,460, Cl. 355-3.0TR.

Knepper, J. Irvine; and Sallee, Dennis C., to Petrolite Corporation. Anti-static compositions. 4,515,603, Cl. 44-62.000.

Kniep, Claus: *See—*
Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, 4,515,986, Cl. 564-471.000.

Knothe, Herbert: *See—*
Borchard, Heinz; Knothe, Herbert; and Rybka, Bruno, 4,515,843, Cl. 428-64.000.

Knupp, John L., Jr., to E.I. Du Pont de Nemours and Company. Extraction of substances from aqueous solution. 4,515,695, Cl. 210-634.000.

Knutson, Richard K.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,515,824, Cl. 426-554.000.

Kobayashi, Akio; Mizoguchi, Hitoshi; Ikeda, Hisatoshi; and Mayama, Hidekiyo, to Tokyo Shibaura Denki Kabushiki Kaisha. Puffer type gas-blast circuit breaker. 4,516,006, Cl. 200-148.00A.

Kobayashi, Ikuo: *See—*
Maki, Masao; Kaneko, Yasunori; and Kobayashi, Ikuo, 4,515,862, Cl. 428-450.000.

Kobayashi, Yukiharu: *See—*
Miya, Toyofumi; Kobayashi, Yukiharu; and Yano, Masao, 4,515,943, Cl. 536-27.000.

Kobe Steel, Ltd.: *See—*
Morimoto, Kotaro; and Suzuki, Tomio, 4,515,553, Cl. 431-8.000.

Koberstein, Edgar: *See—*
Domesle, Rainer; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,515,758, Cl. 423-213.200.

Kocher, Haribhajan S.: *See—*
Field, John R.; Kocher, Haribhajan S.; and Martellock, Arthur C., 4,515,884, Cl. 430-99.000.

Kocherga, Vladimir K.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.

Kodron, Rudolf S. Apparatus for recording and processing guest orders in restaurants or the like. 4,516,016, Cl. 235-472.000.

Koenig, Karl-Heinz: *See—*
Husslein, Gerd; Hamprecht, Gerhard; Koenig, Karl-Heinz; Boehm, Walter; and Gaeng, Manfred, 4,515,985, Cl. 562-472.000.

Kogame, Kunio; Tanba, Yoshihiro; and Makimura, Masaru, to Kuraray Co., Ltd. Entangled fibrous mat having good elasticity and methods for the production thereof. 4,515,854, Cl. 428-288.000.
Kohara, Kenichi: *See*—
Iwataki, Isao; Fujita, Kagari; Ishikawa, Hisao; Hosaka, Hideo; and Kohara, Kenichi, 4,515,729, Cl. 260-464.000.
Kohjin Co., Ltd.: *See*—
Miya, Toyofumi; Kobayashi, Yukiharu; and Yano, Masao, 4,515,943, Cl. 536-27.000.
Kohle, Ulrich; and Paffhausen, Hans, to Pelikan Aktiengesellschaft. Overstrike ribbon for print wheels. 4,515,489, Cl. 400-241.200.
Kohler Co.: *See*—
Block, Dale A., 4,515,037, Cl. 74-553.000.
Kohyama, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing apparatus. 4,515,106, Cl. 118-651.000.
Koide, Masaru, to Nissan Motor Company, Limited. Vehicle suspension with lateral member. 4,515,391, Cl. 280-690.000.
Koizumi, Yukihasa: *See*—
Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihasa, 4,516,134, Cl. 346-75.000.
Kojima, Hirotaka: *See*—
Adachi, Kiyoshi; Uehara, Masaru; Kitagawa, Hiroshi; Kojima, Hirotaka; and Sato, Masaaki, 4,514,965, Cl. 53-553.000.
Kokubo, Eiichi: *See*—
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Yato, Fumihiro; Kitayama, Seishi; and Kurematsu, Akira, 4,516,259, Cl. 381-36.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Utaka, Katsuyuki; Sakai, Kazuo; and Akiba, Shigeyuki, 4,516,243, Cl. 372-96.000.
Watanabe, Fumio; Mizuguchi, Yoshihiko; and Yamada, Matsuichi, 4,516,128, Cl. 343-761.000.
Kolbe, Klaus; Hellmann, Walter; Krajec, Otmar; Schikowsky, Hartmut; and Vetter, Heinz, to Rohm GmbH. Method of making a gastight multiple-walled plastic panel. 4,515,648, Cl. 156-196.000.
Kolinsky , Jiri : *See*—
Flegel, Martin; Krojidlo, Milan; Kolinsky , Jiri ; Masek, Karel; and Seifert, Jaroslav, 4,515,715, Cl. 260-112.50R.
Koller, James P.: *See*—
Durkee, David B.; Koller, James P.; and Wentzel, Robert M., 4,516,140, Cl. 346-140.00R.
Kollmar, Ulrich: *See*—
Bachmann, Heinrich; and Kollmar, Ulrich, 4,515,519, Cl. 414-680.000.
Komanduri, Ranga; Ettinger, Robert H.; Casey, Morton P., Jr.; and Reed, William R., Jr., to General Electric Company. Dynamically stiffened rotary tool system. 4,515,047, Cl. 82-1.00C.
Komathuzaki, Kiyomi: *See*—
Ito, Tosikazu; Komathuzaki, Kiyomi; Chonan, Kenichi; and Horibe, Kiyoshi, 4,515,066, Cl. 91-454.000.
Komatsu, Shigeru; and Inoue, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device having a substrate covered with a high impurity concentration first polycrystalline layer and then a lower impurity concentration second polycrystalline layer. 4,516,147, Cl. 357-59.000.
Komeyama, Yoshihiro; and Taniguchi, Motoya, to Hitachi, Ltd. X-Ray lithographic apparatus. 4,516,254, Cl. 378-34.000.
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, to Hoffmann-La Roche Inc. 2,4-Diamino-5-(4-amino and 4-dimethylamino-3,5-dimethoxy benzyl)pyrimidines. 4,515,948, Cl. 544-325.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Ohnuki, Mitsuo, 4,515,438, Cl. 350-255.000.
Sawada, Kiyoshi; Goto, Satoshi; Kinoshita, Akira; and Sasaki, Osamu, 4,515,881, Cl. 430-58.000.
Konstantin, Anatole E. Shrink banding machine for use with thin film. 4,514,966, Cl. 53-585.000.
Koos, William M., Jr., to Burroughs Corporation. Digital implementation of toner concentration sensing apparatus. 4,515,292, Cl. 222-52.000.
Koppl, Franz: *See*—
Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Muhlhofer, Ernst; and Schwab, Michael, 4,515,762, Cl. 423-337.000.
Korach, Malcolm, to PPG Industries, Inc. Electro organic method. 4,515,664, Cl. 204-62.000.
Korba, James M.: *See*—
Wallace, David R.; Korba, James M.; Matson, James E.; and Lynnworth, Lawrence C., 4,515,021, Cl. 73-861.270.
Korpijaakko, Pekka, to Willette Corporation. Method for making ambidirectional pressed ceramic slip-on support for a towel bar. 4,515,741, Cl. 264-62.000.
Korytko, Myron I., to EFCO, Inc. Closed loop hydraulic/mechanical leveling system. 4,515,551, Cl. 425-406.000.
Koshino, Yutaka: *See*—
Ajima, Takashi; Ohshima, Jiro; and Koshino, Yutaka, 4,515,642, Cl. 148-1.500.
Kosikowski, Frank V., to Cornell Research Foundation, Inc. Low sodium chloride ripened rennet cheeses by ultrafiltration. 4,515,815, Cl. 426-40.000.
Kosson, Robert L.: *See*—
Alario, Joseph P.; Brown, Richard F.; and Kosson, Robert L., 4,515,207, Cl. 165-1.000.
Kosugi, Takumi: *See*—
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, 4,515,915, Cl. 524-87.000.
Koszi, Louis A.: *See*—
Dixon, Richard W.; Joyce, William B.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,514,896, Cl. 29-576.00B.
Kotani, Shozo: *See*—
Yokogawa, Kanae; Kotani, Shozo; Kawata, Shigeo; and Takase, Yoshiyuki, 4,515,891, Cl. 435-69.000.
Kotilge, Jorg: *See*—
Dietl, Josef; and Kotilge, Jorg, 4,515,600, Cl. 23-293.00R.
Kotobuki Engineering & Mfg Company, Ltd.: *See*—
Kawaguchi, Mitsuru, 4,515,316, Cl. 241-5.000.
Kouichi, Ryujiro: *See*—
Sawano, Kiyohito; Kouichi, Ryujiro; Oota, Hideaki; Takano, Masashi; and Moroe, Michio, 4,515,909, Cl. 523-102.000.
Kovacs, Steve A., to Supreme Casting & Tooling. Blow molded article. 4,515,842, Cl. 428-36.000.
Kovar, Robert F.: *See*—
Leunig, Carl V.; and Kovar, Robert F., 4,515,848, Cl. 428-172.000.
Kowa Company, Ltd.: *See*—
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,515,942, Cl. 536-16.800.
Kowalski, Anthony M.: *See*—
Masak, Raymond J.; and Kowalski, Anthony M., 4,516,126, Cl. 343-383.000.
Kozuka, Michihiro; and Tonokura, Masayuki, to Tomy Kogyo Co., Inc. Moving toy capable of being non-permanently assembled. 4,515,571, Cl. 446-90.000.
Kraig, Leon; and Langenfeld, Mathew, to General Mills, Inc. Hollow, puffed fruit products and methods of preparation. 4,515,822, Cl. 426-445.000.
Krajec, Otmar: *See*—
Kolbe, Klaus; Hellmann, Walter; Krajec, Otmar; Schikowsky, Hartmut; and Vetter, Heinz, 4,515,648, Cl. 156-196.000.
Kramer, Edward T. Direction altering device. 4,515,244, Cl. 182-230.000.
Krantz, Gary B.: *See*—
Taylor, Charles E.; Gattiker, Anton; and Krantz, Gary B., 4,515,468, Cl. 355-27.000.
Krasselt, Manfred M.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., 4,515,777, Cl. 424-89.000.
Krasser, Fritz; and Kinner, Josef, to Ellenberger & Poensgen GmbH. Overcurrent protection switch. 4,516,098, Cl. 335-35.000.
Krasznai, Charles Z.: *See*—
Jeffress, Ronald E.; Wanat, David J.; and Krasznai, Charles Z., 4,516,011, Cl. 219-222.000.
Kreimes, Norbert: *See*—
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.
Kreissler, Helmut: *See*—
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, 4,514,937, Cl. 51-281.0SF.
Krekacs, Sandor: *See*—
Varga, Laszlo ; Krekacs, Sandor; Latorcai, Janos; Palfi, Zoltan; and Fledrich, Istvan, 4,514,911, Cl. 34-22.000.
Kreuter, Peter: *See*—
Pischinger, Franz; and Kreuter, Peter, 4,515,343, Cl. 251-48.000.
Kriebel, Manfred: *See*—
Eisenlohr, Karl-Heinz; Gaensslen, Hans; Kriebel, Manfred; and Tanz, Heiner, 4,515,604, Cl. 48-197.00R.
Krieg, Herman C., Jr., to United States of America, National Aeronautics and Space Administration. Moisture content and gas sampling device. 4,515,751, Cl. 422-86.000.
Krieger, Detlef: *See*—
Muller, Rudolf; Radeklau, Hans-Jurgen; Dofke, Harald; and Krieger, Detlef, 4,515,483, Cl. 366-303.000.
Krinock, Jerome V., to Michigan Consolidated Gas Company. Automatic equalization for a simulcast communication system. 4,516,269, Cl. 455-51.000.
Krishnai, Sivara: *See*—
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.
Krishnan, Sivaram: *See*—
Baron, Arthur L.; and Krishnan, Sivaram, 4,515,937, Cl. 528-204.000.
Kroh, Horst F. M.: *See*—
Dietz, Peter; Muller, Norbert W.; and Kroh, Horst F. M., 4,515,049, Cl. 82-36.00R.
Krojidlo, Milan: *See*—
Flegel, Martin; Krojidlo, Milan; Kolinsky , Jiri ; Masek, Karel; and Seifert, Jaroslav, 4,515,715, Cl. 260-112.50R.
KRONES AG Hermann Kronseder Maschinenfabrik: *See*—
Patzwahl, Hans-Jurgen, 4,514,953, Cl. 53-52.000.
Krug, Geoffrey P.: *See*—
Platek, Gary F.; and Krug, Geoffrey P., 4,515,672, Cl. 204-269.000.
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, to Schering Aktiengesellschaft. 1,2,3-Thiadiazole-5-yl-urea derivatives, agents containing these compounds with plant growth regulating and defoliating activity. 4,515,619, Cl. 71-90.000.
Krugh, Michael E., to Marathon Oil Company. Internal casing wiper for an oil field well bore hole. 4,515,212, Cl. 166-99.000.

Krull, Donald K.; and Naimpally, Saiprasad V., to RCA Corporation. Composite video signal processing apparatus providing amplitude equalization. 4,516,153, Cl. 358-31.000.
Krummnack, Friedrich: *See*—
Trumper, Thomas; Schoop, Gunther-Dietmar; Borgschulte, Fritz; and Krummnack, Friedrich, 4,515,410, Cl. 299-43.000.
Kubens, Rolf: *See*—
Kleiner, Frank; Kubens, Rolf; Reese, Eckart; and Wank, Joachim, 4,515,925, Cl. 525-439.000.
Kubota, Hitoshi, to Nissan Motor Company, Limited. Reservoir tank structure for master cylinder. 4,514,984, Cl. 60-585.000.
Kuczkowski, Joseph A.: *See*—
Wideman, Lawson G.; and Kuczkowski, Joseph A., 4,515,713, Cl. 260-106.000.
Kudo, Yoshiaki: *See*—
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, 4,515,702, Cl. 252-49.600.
Kuehnle, Manfred R.; Cahill, Lysle D.; Butler, John C.; and Bassuk, Lawrence J., to Coulter Systems Corporation. Optical mass memory system using electrophotography. 4,515,879, Cl. 430-31.000.
Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with N-sulphenylated ureas. 4,515,812, Cl. 514-592.000.
Kuhlman, George A., to Magnetrol International, Incorporated. Capacitance level sensor for use with viscous, electrically conductive materials. 4,515,015, Cl. 73-304.00C.
Kuhn, Robert R.; Whiteman, John D.; and Brendley, William H., Jr., to Rohm and Haas Company. High solids thermosetting coating compositions, cured coatings, coated articles, and processes. 4,515,835, Cl. 427-388.300.
Kuipers, Geert: *See*—
Blatt, Georg; van den Boom, Johannes; Kuipers, Geert; and Hollerweger, Heinz, 4,515,239, Cl. 181-290.000.
Kukla, Reiner: *See*—
Kieser, Jorg; Kukla, Reiner; and Deppisch, Gerd, 4,515,675, Cl. 204-298.000.
Kull, Hermann: *See*—
Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, 4,515,125, Cl. 123-359.000.
Kume, Hiroshi; and Tan, Yoichi, to Fuji Xerox Co., Ltd. Time division digital signal transmission system with block packing. 4,516,240, Cl. 370-85.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Hybrid cell line for producing complement-fixing monoclonal antibody to human T cells. 4,515,893, Cl. 435-240.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Hybrid cell line for producing monoclonal antibody to human T cells. 4,515,894, Cl. 435-240.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Hybrid cell line for producing monoclonal antibody to human helper T cells. 4,515,895, Cl. 435-240.000.
Kuraray Co., Ltd.: *See*—
Katabe, Kenichi; and Nishimura, Takeo, 4,515,852, Cl, 428-246.000.
Kogame, Kunio; Tanba, Yoshihiro; and Makimura, Masaru, 4,515,854, Cl. 428-288.000.
Omura, Ikuo; and Yamauchi, Junichi, 4,515,930, Cl. 526-276.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kawai, Yoshio; and Kitagawa, Kiyoshi, 4,515,676, Cl. 204-299.00R.
Sakurai, Yoshifumi; and Numata, Takuhisa, 4,516,222, Cl. 365-32.000.
Kurematsu, Akira: *See*—
Yato, Fumihiro; Kitayama, Seishi; and Kurematsu, Akira, 4,516,259, Cl. 381-36.000.
Kuroiwa, Akihiko: *See*—
Nakagawa, Shiro; and Kuroiwa, Akihiko, 4,516,234, Cl. 369-109.000.
Kurrasch, Andrew J., to Herman Miller, Inc. Height adjustable table. 4,515,087, Cl. 108-147.000.
Kurten, Hans W.: *See*—
Baier, Heinz; Kurten, Hans W.; and Waschulewski, Hans-Georg, 4,515,027, Cl. 74-87.000.
Kury, John A., to Port-A-Boat, Inc. Combination boat and trailer assembly with integrated retractable trailer wheel structure. 4,515,102, Cl. 114-344.000.
Kurz, Gerhard. Device for automatically controlling the suction power of a vacuum cleaner. 4,514,874, Cl. 15-319.000.
Kuster & Co. GmbH: *See*—
Kuster, Klaus, 4,515,035, Cl. 74-501.00R.
Kuster, Klaus, to Kuster & Co. GmbH. Curved cable support member for bowden lifters. 4,515,035, Cl. 74-501.00R.
Kut-Kwick Corporation: *See*—
Torras, Robert M., 4,515,337, Cl. 248-371.000.
Torras, Robert M., 4,515,392, Cl. 280-755.000.
Kuwana, Kazutaka: *See*—
Inden, Masahiro; and Kuwana, Kazutaka, 4,515,345, Cl. 251-141.000.
Kuwata, Masayoshi, to General Electric Company. Method for fluidized particle tray heat exchange. 4,515,205, Cl. 165-1.000.
Kuwata, Satoshi: *See*—
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, 4,515,702, Cl. 252-49.600.
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Bruske, Heinz-Dieter, to C. Otto & Comp. G.m.b.H. Apparatus for removing charging hole covers and for cleaning sealing surfaces in a coke oven. 4,515,660, Cl. 202-241.000.
Kwiecinski, Alfred; and Yauger, Jon A., to Hamilton Sorter Company, Inc. Adjustable word processor work station. 4,515,086, Cl. 108-96.000.
Kymi-Stromberg Oy: *See*—
Savonjousi, Aslak, 4,515,318, Cl. 241-28.000.
Labonville, Emilien. Means for detachably connecting a chain link to a skidder ring. 4,515,198, Cl. 152-223.000.
LaChance, Paul. Movable hand railing and tray for ladders. 4,515,242, Cl. 182-106.000.
Laclede Professional Products, Inc.: *See*—
Pellico, Michael A., 4,515,913, Cl. 523-109.000.
Lacroix, Guy: *See*—
Debourge, Jean-Claude; and Lacroix, Guy, 4,515,807, Cl. 514-513.000.
La Fiandra, Carlo; and Mumola, Peter B., to Perkin-Elmer Corporation, The. Actuator. 4,516,062, Cl. 318-676.000.
LaFrance Corporation: *See*—
Peroni, Peter A., 4,514,877, Cl. 16-111.00R.
Lamb-Weston, Inc.: *See*—
Shroyer, David, 4,514,959, Cl. 53-428.000.
Lampe, Guy W.: *See*—
Molitor, Edwin A.; Crain, Edward; and Lampe, Guy W., 4,515,581, Cl. 493-183.000.
Lancaster, Patrick R., III: *See*—
Mouser, Curtis A.; Roberts, Mark G.; Haas, Daniel R.; and Lancaster, Patrick R., III, 4,514,955, Cl. 53-64.000.
Landers, Samuel P.: *See*—
Kaniecki, Michael; Landers, Samuel P.; and Botzman, Thomas J., 4,515,199, Cl. 152-353.00R.
Landrum, Ralph A., Jr.: *See*—
Goodloe, Kent J.; and Landrum, Ralph A., Jr., 4,516,230, Cl. 367-190.000.
Landry, James D.: *See*—
Schoenig, Frederick C., Jr.; and Landry, James D., 4,515,749, Cl. 376-254.000.
Lang, Roland; and Karwat, Heinz, to Linde Aktiengesellschaft. Non-precipitating regulation of ammonia content in sour gas solvent scrubbing systems. 4,515,760, Cl. 423-220.000.
Lang, Stanley A., Jr.; and Murdock, Keith C., to American Cyanamid Company. Metal chelates of anthracene-9,10-bis-carbonylhydrazones. 4,515,954, Cl. 548-109.000.
Lang, Winfried: *See*—
Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Muhlhofer, Ernst; and Schwab, Michael, 4,515,762, Cl. 423-337.000.
Lange, Hans: *See*—
Klose, Sigmar; Stahler, Fritz; Lange, Hans; and Kleemann, Wolfgang, 4,515,889, Cl. 435-4.000.
Langen, Marinus J. M., to H. J. Langen & Sons Limited. Bag loading machine. 4,514,957, Cl. 53-252.000.
Langen, Marinus J. M., to H. J. Langen & Sons Limited. Packaging machines. 4,514,964, Cl. 53-540.000.
Langenfeld, Mathew: *See*—
Kraig, Leon; and Langenfeld, Mathew, 4,515,822, Cl. 426-445.000.
Langer, Salomon Z.: *See*—
Cavero, Icilio; Langer, Salomon Z.; and York, Billie M., Jr., 4,515,800, Cl. 514-392.000.
Langley, Robert F.: *See*—
Hall, Douglas J.; Langley, Robert F.; and Thomas, Edwin L., 4,515,878, Cl. 430-5.000.
Lanier Business Products, Inc.: *See*—
Bolick, Fred C., Jr.; and Plunkett, Luther C., Jr., 4,515,995, Cl. 179-6.130.
Lantech, Inc.: *See*—
Mouser, Curtis A.; Roberts, Mark G.; Haas, Daniel R.; and Lancaster, Patrick R., III, 4,514,955, Cl. 53-64.000.
Latham, Philip A.: *See*—
Kaye, Arthur; Carr, Brian; and Latham, Philip A., 4,516,063, Cl. 318-685.000.
Latimer, Elwood D., Jr.: *See*—
Churma, Theodore; Latimer, Elwood D., Jr.; and Vicik, Stephen J., 4,515,745, Cl. 264-211.000.
Latorcai, Janos: *See*—
Varga, Laszlo ; Krekacs, Sandor; Latorcai, Janos; Palfi, Zoltan; and Fledrich, Istvan, 4,514,911, Cl. 34-22.000.
LaTulip, Randy J.: *See*—
Swearingen, Loren L.; and LaTulip, Randy J., 4,515,938, Cl. 528-252.000.
Laurel Bank Machine Co., Ltd.: *See*—
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Laurent, Sebastian M.; and Pond, Wilson G., to Ethyl Corporation; and United States of America, Agriculture. Animal nutrition. 4,515,780, Cl. 424-154.000.
Lavene, Bernard, to Electronic Concepts, Inc. Outer wrapping and planar terminations for a metallized wound capacitor and method therefor. 4,516,187, Cl. 361-309.000.
Lavielle, Christian. Device for retaining in side-by-side relationship flexible tying means such as shoelaces. 4,514,882, Cl. 24-16.0PB.
Lawless, William N.; Cross, Leslie E.; and Steyert, William A. Miniature solid-state gas compressor. 4,515,534, Cl. 417-322.000.
Lawrence, Merlin, to Automated Industrial Systems. Hopper feed mechanism for radial lead devices. 4,515,289, Cl. 221-13.000.

LCC.CICE-Compagnie Europeenne de Composants Electroniques: *See—*
Hardy, Patrick; Cantagrel, Michel; and Guichard, Serge, 4,516,186, Cl. 361-306.000.
Le Metal Deploye: *See—*
Buguet, M. Maurice; and Deruelle, M. Patrick, 4,516,108, Cl. 338-319.000.
Lechner, Ralph T.: *See—*
Chandler, Donald E.; Chisholm, William M.; and Lechner, Ralph T., 4,515,354, Cl. 269-15.000.
Lechtken, Peter; Mueller, Gerhard; and Schmieder, Klaus, to BASF Aktiengesellschaft. Aminoreductones. 4,515,982, Cl. 560-125.000.
LeDevehat, Eugene R., to FMC Corporation. Pipe coupling with valve closure safety system. 4,515,182, Cl. 137-614.060.
Lee, Chee M.: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.
Lee, Ching W., to GTE Laboratories Incorporated. Acoustic surface wave device. 4,516,094, Cl. 333-194.000.
Lee, Ching W., to GTE Laboratories Incorporated. Surface acoustic wave device. 4,516,095, Cl. 333-194.000.
Lee, Do I.: *See—*
Tsurumi, Michio; and Lee, Do I., 4,515,914, Cl. 523-201.000.
Lee, Harry W., Jr.; and Wallace, Joseph W., to Reynolds Metals Company. Can body bottom configuration. 4,515,284, Cl. 220-70.000.
Lee, Minyoung: *See—*
Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., 4,515,746, Cl. 264-332.000.
Lee, Patrick S., to Ampex Corporation. Cylinder crossing detection circuit for disc drive or the like. 4,516,178, Cl. 360-78.000.
Lee, Richard J. Turret press for reloading rifle and pistol cartridges. 4,515,063, Cl. 86-27.000.
Lee, Steven N., to ASQ Boats, Inc. Contiguous wafer boat. 4,515,104, Cl. 118-500.000.
Lees, Brian: *See—*
Davidson, Lewis; Lees, Brian; and Lytra, Eric K., 4,515,077, Cl. 101-127.000.
Leggett & Platt, Incorporated: *See—*
Crum, Michael A., 4,515,407, Cl. 297-429.000.
Leiner, Dennis C.: *See—*
Prescott, Rochelle; and Leiner, Dennis C., 4,515,444, Cl. 350-413.000.
Leland Stanford Jr. Univeristy, Board of Trustees of: *See—*
Boudart, Michel; Oyama, Shigeo T.; and Volpe, Leo, 4,515,763, Cl. 423-409.000.
Leland Stanford, Jr. University, The Board of Trustees of the: *See—*
Barth, Phillip W., 4,516,148, Cl. 357-68.000.
Leland Stanford Junior University, The Board of Trustees of the: *See—*
Shaw, Herbert J.; Chodorow, Marvin; and Digonnet, Michel J. F., 4,515,431, Cl. 350-96.150.
Leonard, Myer S. Method and apparatus for indexing the condyle position during sagittal ramus split surgery. 4,515,154, Cl. 128-92.0EB.
Leppink, Arie: *See—*
Deckers, Albert T.; and Leppink, Arie, 4,515,470, Cl. 355-105.000.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., to Sterling Drug Inc. 3-Amino-5-(hydroxy- and/or aminophenyl)-6-(lower-alkyl)-2(1H)-pyridinones and cardiotonic use thereof. 4,515,797, Cl. 514-349.000.
Lestraden, Jacobus W., to Schulte & Lestraden B.V. Cell. 4,514,929, Cl. 47-17.000.
Leth-Sorensen, Thomas. Holder with a plurality of spring clips for suspension of sheet material. 4,515,277, Cl. 211-45.000.
Leunig, Carl V.; and Kovar, Robert F., to Gates Formed Fibre Products Inc. Materials and methods for making resin-rigidified articles. 4,515,848, Cl. 428-172.000.
Levengood, James L., to United Technologies Corporation. Coolable airfoil for a rotary machine. 4,515,526, Cl. 416-96.00R.
Lever Brothers Company: *See—*
Haq, Zia, 4,515,703, Cl. 252-92.000.
Moran, David P. J.; and Sharp, David G., 4,515,825, Cl. 426-603.000.
Leviandier, Michel: *See—*
Chevrel, Roger; Attard, Michel; and Leviandier, Michel, 4,515,491, Cl. 400-693.000.
Leybold-Heraeus GmbH: *See—*
Kieser, Jorg; Kukla, Reiner; and Deppisch, Gerd, 4,515,675, Cl. 204-298.000.
Li, Ping: *See—*
Mendenhall, Douglas W.; and Li, Ping, 4,515,586, Cl. 604-87.000.
Licciardello, Michael: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.
Licentia Patent-Verwaltungs-GmbH: *See—*
Huber, Hans P.; and Weber, Jochen, 4,516,010, Cl. 219-121.0LJ.
Liebel, John T., Jr.: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,516,199, Cl. 364-200.000.
Lien, Jih-Chang: *See—*
Chiu, Te-Long; and Lien, Jih-Chang, 4,514,897, Cl. 29-578.000.
Lin, Chin-Lung. Exercise tricycle. 4,515,362, Cl. 272-114.000.
Linde Aktiengesellschaft: *See—*
Heyl, Walter, 4,515,067, Cl. 91-506.000.
Lang, Roland; and Karwat, Heinz, 4,515,760, Cl. 423-220.000.
Wernicke, Hans J.; and Zimmerman, Heinz, 4,515,678, Cl. 208-10.000.
Linde, Rolf; and Klotz, Erhard, to U.S. Philips Corporation. Device for imaging layers of a body. 4,516,252, Cl. 378-23.000.
Lindgren, Carl E., to ASEA Aktiebolag. Detection of light-producing events. 4,516,022, Cl. 250-227.000.
Lindquist, Bjorn K. V.; and Petersson, Stig A., to Boliden Aktiebolag. Method for producing blister copper. 4,515,631, Cl. 75-73.000.
Ling, Chi-Fei, to American Cyanamid Company. Process for sizing textile materials. 4,515,855, Cl. 428-290.000.
Linn, Bruce O.; and Lusi, Aino, to Merck & Co., Inc. 4-Amino-4-dehydroxy derivatives of efrotomycin and related compounds. 4,515,783, Cl. 514-27.000.
Liss, Gote, to ASEA Aktiebolag. Control system for DC power transmission. 4,516,198, Cl. 363-35.000.
Little, Gordon R.: *See—*
Ballard, Paul T.; and Little, Gordon R., 4,515,478, Cl. 356-345.000.
Litton Systems, Inc.: *See—*
Ringdahl, Mark G.; Raymond, Lambert L.; and Scherer, Richard J., 4,516,007, Cl. 219-10.55D.
Lochow, Charles F., Jr.: *See—*
Beck, H. Wayne; Lochow, Charles F., Jr.; and Nibert, Charles W., 4,515,683, Cl. 208-113.000.
Lockheed Corporation: *See—*
Bradley, Robert E.; and Keithler, William R., 4,515,919, Cl. 524-591.000.
Sullivan, Paul E.; and Peppel, George W., 4,515,399, Cl. 285-95.000.
Login, Robert B.; Walele, Ismail L.; and Otterson, Richard J., to Jordan Chemical Company. Process for the production of fatty acid esters of hydroxyalkyl sulfonate salts. 4,515,721, Cl. 260-400.000.
Logullo, Francis M., Sr.: *See—*
Carney, Thomas E.; Champion, Allan R.; and Logullo, Francis M., Sr., 4,515,636, Cl. 106-90.000.
Loh, William, to Chevron Research Company. 5-Deoxy-3-O-thienylmethyl or furylmethyl-1,2-O-alkylidene-alpha-D-xylofuranose herbicide derivatives. 4,515,618, Cl. 71-88.000.
Lohn, Gerd, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,515,564, Cl. 433-126.000.
Losenhausen Machinenbau AG: *See—*
Baier, Heinz; Kurten, Hans W.; and Waschulewski, Hans-Georg, 4,515,027, Cl. 74-87.000.
Louthan, Rector P.: *See—*
Bresson, Clarence R.; and Louthan, Rector P., 4,515,687, Cl. 209-167.000.
Love, Robert P., to General Electric Company. Self-aligned power MOSFET with integral source-base short and methods of making. 4,516,143, Cl. 357-23.400.
Lovelace, Harold, to International Paper Company. Bottom sealing tab prebreaking apparatus. 4,515,580, Cl. 493-183.000.
Loy, Robert E.; Phillips, Dale R.; and Willis, Paul E., to Dresser Industries, Inc. Stabilizing and isolation system for a vehicle cab. 4,515,234, Cl. 180-89.120.
LTV Aerospace and Defense Company: *See—*
Eden, Dayton D., 4,515,471, Cl. 356-5.000.
Welch, Albert B., 4,515,472, Cl. 356-5.000.
Luccarelli, Domenick, Jr.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,515,712, Cl. 252-522.00R.
Luchko, Viktor N.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
Lurssen, Klaus: *See—*
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,515,617, Cl. 71-76.000.
Lusi, Aino: *See—*
Linn, Bruce O.; and Lusi, Aino, 4,515,783, Cl. 514-27.000.
Luthi, Oscar, to Ingersoll-Rand Company. Fiberglass-reinforced solid plastic drum. 4,515,693, Cl. 210-402.000.
Lutts, William P.: *See—*
Shannon, Harry D.; and Lutts, William P., 4,516,124, Cl. 340-960.000.
Lutzens, William W., to Union Oil Company of California. Convergence extensometer for measuring mine roof subsidence. 4,514,905, Cl. 33-125.00B.
Luxtec Corporation: *See—*
Kloots, Jacobus, 4,516,190, Cl. 362-32.000.
Luz International Ltd.: *See—*
Bodenheimer, Joseph S.; and Eisenberg, Naphtali, 4,516,018, Cl. 250-203.00R.
Lynch, John: *See—*
Bleckmann, Gerhard; Lynch, John; and Mohr, Heinz, 4,515,375, Cl. 277-1.000.
Lynch, William T.: *See—*
Kinsbron, Eliezer; Lynch, William T.; and Smith, Thomas E., 4,514,893, Cl. 29-571.000.
Lynnworth, Lawrence C.: *See—*
Wallace, David R.; Korba, James M.; Matson, James E.; and Lynnworth, Lawrence C., 4,515,021, Cl. 73-861.270.

Lytra, Eric K.: *See—*
Davidson, Lewis; Lees, Brian; and Lytra, Eric K., 4,515,077, Cl. 101-127.000.
M.A.N.-Roland Druckmaschinen AG: *See—*
Difflipp, Kurt; and Wanke, Johannes, 4,515,078, Cl. 101-157.000.
Mabb, Kenneth G., to Sodastream Limited. Apparatus for aerating liquids. 4,514,994, Cl. 62-389.000.
Macawber Engineering Limited: *See—*
Snowdon, Brian, 4,515,503, Cl. 406-11.000.
MacDonald, Bruce E.; Galloway, Geoffrey; and Kakuda, Yukio, to CSP Foods Ltd. Process for preparing sunflower butter spread from pretreated sunflower seeds. 4,515,818, Cl. 426-268.000.
Machine Engineering Co., Ltd.: *See—*
Ito, Takeshi, 4,515,325, Cl. 242-84.51R.
Machon, William P., Sr. Device for elevating closet bowl. 4,515,398, Cl. 285-59.000.
MacKenzie, Burton T., to TRW Inc. Low profile submersible electrical cable. 4,515,993, Cl. 174-102.00R.
MacLaughlin, Donald N.; and Fortuna, Vincent E., to Vercon Inc. Apparatus for oscillatory bonding of dissimilar thermoplastic materials. 4,515,651, Cl. 156-423.000.
Madley, Jack R.: *See—*
Heathcoat, Michael J.; Jackson, Douglas H.; Jowitt, Frederick W.; Madley, Jack R.; and Stuart, Ian C. E., 4,515,677, Cl. 204-300.0EC.
Maffrand, Jean-Pierre: *See—*
Boigegrain, Robert; Maffrand, Jean-Pierre; Suzuki, Norio; Matsubayachi, Kynichi; and Ashida, Shinichiro, 4,515,951, Cl. 546-114.000.
Maggiulli, Cataldo A.: *See—*
Sandefur, Louise O.; Slusarek, Wojciech; Wilson, Burton D.; and Maggiulli, Cataldo A., 4,515,947, Cl. 544-295.000.
Magnavox Government and Industrial Electronics, Co.: *See—*
Diepeveen, Neal, 4,516,159, Cl. 358-293.000.
Magnetic Peripherals Inc.: *See—*
West, David E., 4,516,162, Cl. 360-25.000.
Magnetrol International, Incorporated: *See—*
Kuhlman, George A., 4,515,015, Cl. 73-304.00C.
Maguire, Edward D. Portable building structure. 4,514,938, Cl. 52-79.400.
Magyar Aluminiumipari Troszt: *See—*
Gillemot, Laszlo ; Prodan, Janos; Pataki, Endre; and Zuckermann, Erno , 4,515,497, Cl. 403-391.000.
Maidanik, Jury F.; Vershinin, Sergei V.; Kholodov, Valery F.; and Dolgirev, Jury E., to Otdel Fiziko-Tekhnicheskikh Problem Energetiki Uralskogo Nauchnogo Tsentra Akademi Nauk SSR. Heat transfer apparatus. 4,515,209, Cl. 165-104.220.
Maine, Richard L., to Rogers Corporation. Matrix coating system and method of manufacture thereof. 4,515,739, Cl. 264-45.300.
Maisch, Wolfgang: *See—*
Jaggle, Gunther; Maisch, Wolfgang; Peters, Klaus-Jurgen; and Schutz, Rudolf, 4,515,128, Cl. 123-454.000.
Makarov, Nikolai P.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.
Maki, Masao; Kaneko, Yasunori; and Kobayashi, Ikuo, to Matsushita Electric Industrial Co., Ltd. Coated surfaces capable of decomposing oils. 4,515,862, Cl. 428-450.000.
Maki, William. Radio-controlled skyline carriage. 4,515,281, Cl. 212-76.000.
Makimura, Masaru: *See—*
Kogame, Kunio; Tanba, Yoshihiro; and Makimura, Masaru, 4,515,854, Cl. 428-288.000.
Makino, Fumio: *See—*
Moriyama, Masakazu; Shinohara, Toshio; Hirano, Kazuo; and Makino, Fumio, 4,516,121, Cl. 340-825.050.
Mal, Dipakranjan: *See—*
Hauser, Frank M.; and Mal, Dipakranjan, 4,515,720, Cl. 260-351.100.
Maligne, Jean-Charles: *See—*
Escarabajal, Gislain; and Maligne, Jean-Charles, 4,515,249, Cl. 188-73.380.
Mama, Shinichi: *See—*
Iwasawa, Hiroshi; Numata, Masanori; and Mama, Shinichi, 4,516,138, Cl. 346-80.000.
Mammino, Joseph; Sypula, Donald S.; Abramsohn, Dennis A.; Abkowitz, Martin A.; and Scharfe, Merlin E., to Xerox Corporation. Overcoated electrophotographic imaging system. 4,515,882, Cl. 430-58.000.
Manabe, Nobuyuki; and Goto, Takahiro, to Taiho Industries Co. Ltd.; and O.P.E. Co. Ltd. Apparatus for disposal of sludge in a floating roof type oil tank. 4,515,312, Cl. 239-227.000.
Manderino, George L.; and Suarez, Adoracion F., to Abbott Laboratories. Immunoassay of terminal deoxynucleotidyl transferase. 4,515,890, Cl. 435-7.000.
Manderla, Henry J., to Anthes Equipment Limited. Shoring system. 4,514,940, Cl. 52-126.100.
Mangeym, Gennady: *See—*
Guzik, Nahum; and Mangeym, Gennady, 4,516,060, Cl. 318-341.000.
Manolis, John. Crankcase emissions device. 4,515,137, Cl. 123-572.000.
Marathon Oil Company: *See—*
Krugh, Michael E., 4,515,212, Cl. 166-99.000.
Wener, Kenneth R.; and Tinkle, Anthony R., 4,516,227, Cl. 367-15.000.
Margolin, Mark; Grois, Igor; Herdeg, Peter K.; and Nijman, John P., to Allied Corporation. Fiber optic connector. 4,515,434, Cl. 350-96.210.
Margolis, Anatoly E.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Production of polychlorinated pyridine mixtures by liquid phase chlorination of pyridine or pyridine hydrochloride. 4,515,953, Cl. 546-345.000.
Mariol, James F. Toy kitchen play center. 4,515,359, Cl. 272-1.00R.
Mariol, James F. Sandbox with play deck cover. 4,515,360, Cl. 272-1.00A.
Marker, Franklin, III. Computer printer stand with multiple paper web guide slots. 4,515,490, Cl. 400-613.200.
Marker International: *See—*
Emert, Anton; Knabel, Walter; and Richert, Manfred, 4,515,388, Cl. 280-605.000.
Markov, Vladimir A.; Filatov, Vladimir N.; Kernasovsky, Ilya S.; and Gorina, Ljudmila V., to Vsesojuzny Nauchno-Issledovatelsky Institut Textilno-Galantereinoi Promyshlennosti. Device for damping impact load. 4,515,254, Cl. 188-371.000.
Marpoe, Gary R., Jr., to AMP Incorporated. Device for use in testing printed circuit board components. 4,516,072, Cl. 324-158.00F.
Marq Packaging Systems, Inc.: *See—*
Beckett, Joel M., 4,515,579, Cl. 493-1.000.
Dahlke, Douglas F., 4,516,210, Cl. 364-471.000.
Marritt, William A.: *See—*
Brazdil, James F., Jr.; Marritt, William A.; and Ward, Michael D., 4,515,732, Cl. 260-465.600.
Marshall, Charles R., to Dixon Industries Corporation. Double cup sealing member for double action piston pump. 4,515,378, Cl. 277-152.000.
Marshall and Williams Company: *See—*
Cavanagh, Kenneth M., 4,515,313, Cl. 239-455.000.
Marston Palmer Limited: *See—*
Hayfield, Peter C. S., 4,515,673, Cl. 204-290.00F.
Martellock, Arthur C.: *See—*
Field, John R.; Kocher, Haribhajan S.; and Martellock, Arthur C., 4,515,884, Cl. 430-99.000.
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, to Zyma SA. Crystal modifications of (+)-catechin and pharmaceutical preparations containing them. 4,515,804, Cl. 514-456.000.
Martin, Lawrence L.; and Setescak, Linda L., to Hoechst-Roussel Pharmaceuticals Inc. 6,11-Dihydro-11-oxo-dibenz-[b,e]oxepin derivatives. 4,515,946, Cl. 548-237.000.
Martin, Sylvia: *See—*
Strom, Alice M.; Herr, R. Wilbur; and Martin, Sylvia, 4,515,663, Cl. 204-44.200.
Martin, Tony E., to Moog Automotive, Inc. Service tool means for rack and pinion steering systems. 4,515,042, Cl. 81-55.000.
Masai, Tadahisa: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.
Masak, Raymond J.; and Kowalski, Anthony M., to Hazeltine Corporation. Adaptive array having an auxiliary channel notched pattern in the steered beam direction. 4,516,126, Cl. 343-383.000.
Mascellani, Giuseppe: *See—*
Borzatta, Valerio; Cristofori, Manlio; Morotti, Mauro; and Mascellani, Giuseppe, 4,515,809, Cl. 514-533.000.
Maschinenfabrik Schweiter AG: *See—*
Slavik, Walter; and Rebsamen, Arthur, 4,515,320, Cl. 242-18.0DD.
Masek, Karel: *See—*
Flegel, Martin; Krojidlo, Milan; Kolinsky , Jiri ; Masek, Karel; and Seifert, Jaroslav, 4,515,715, Cl. 260-112.50R.
Maskingruppen 82 AB: *See—*
Johansson, Bengt, 4,514,952, Cl. 52-713.000.
Maslanka, William W., to Hercules Incorporated. Wet Strength resins. 4,515,657, Cl. 162-164.300.
Mason, Mark T.: *See—*
Morrill, David R.; Mason, Mark T.; and Green, Paul M., 4,516,023, Cl. 250-235.000.
Massachusetts General Hospital, The: *See—*
Castronovo, Frank P.; Strauss, Harry W.; and Potsaid, Majic S., 4,515,766, Cl. 424-1.100.
Massachusetts Institute of Technology: *See—*
Johnson, Leonard M., 4,515,430, Cl. 350-96.130.
Masuda, Isao; Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Ueno, Shoji, to Victor Company of Japan. Digital information signal recording system. 4,516,163, Cl. 360-32.000.
Masuda, Shunichi; Yagasaki, Toshiaki; and Kasuya, Yukio, to Canon Kabushiki Kaisha. Image forming apparatus. 4,515,458, Cl. 355-3.0SH.
Matheny, Perry D.: *See—*
Chasar, Dwight W.; and Matheny, Perry D., 4,515,733, Cl. 260-988.000.
Matson, James E.: *See—*
Wallace, David R.; Korba, James M.; Matson, James E.; and Lynnworth, Lawrence C., 4,515,021, Cl. 73-861.270.

Matsubayachi, Kynichi: *See—*
Boigegrain, Robert; Maffrand, Jean-Pierre; Suzuki, Norio; Matsubayachi, Kynichi; and Ashida, Shinichiro, 4,515,951, Cl. 546-114.000.

Matsui, Hisashi: *See—*
Kataoka, Takeshi; Aoki, Ryoichi; Matsui, Hisashi; and Matsumoto, Hiroshi, 4,515,024, Cl. 74-10.330.

Matsui, Kazuma: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.

Matsui, Seiji: *See—*
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,515,351, Cl. 266-177.000.

Matsui Shikiso Chemical Co. Ltd.: *See—*
Keino, Goro; Kitagawa, Yosuke; and Hayashi, Yoshimi, 4,515,849, Cl. 428-201.000.

Matsumoto, Hiroshi: *See—*
Kataoka, Takeshi; Aoki, Ryoichi; Matsui, Hisashi; and Matsumoto, Hiroshi, 4,515,024, Cl. 74-10.330.

Matsumoto, Ikuo, to Victor Company of Japan, Ltd. Magnetic recording media comprising titanium monoxide and carbon black powders in a magnetic recording layer. 4,515,856, Cl. 428-323.000.

Matsumoto, Katsuo: *See—*
Yamamoto, Katsuhiro; Matsumoto, Katsuo; and Okada, Yoshiyuki, 4,515,162, Cl. 128-640.000.

Matsumoto, Shigeru; Okabe, Yoshikatsu; and Kazama, Yasuhiro, to Japan Radio Company, Limited. Antenna element having non-feed conductive loop surrounding radiating element. 4,516,133, Cl. 343-819.000.

Matsumoto, Takashi: *See—*
Matsuzaki, Isokazu; Yamagiwa, Akira; Watanabe, Yutaka; Matsumoto, Takashi; and Yabe, Katsumi, 4,516,039, Cl. 307-455.000.

Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, to Toshiba Ceramics Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for producing a silicon single crystal from a silicon melt. 4,515,755, Cl. 422-246.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Maki, Masao; Kaneko, Yasunori; and Kobayashi, Ikuo, 4,515,862, Cl. 428-450.000.
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,516,061, Cl. 318-561.000.

Matsushita, Nobuo; Furukawa, Tokinobu; Shintani, Tetsuo; Sumitani, Tomoaki; and Oda, Chikao, to Hitachi, Ltd. Polymerization rate detection method. 4,515,008, Cl. 73-53.000.

Matsuura, Masaaki; and Nakano, Yoshikatsu, to Honda Giken Kogyo Kabushiki Kaisha. Valve driving control apparatus in an internal combusiton engine. 4,515,121, Cl. 123-198.00F.

Matsuzaki, Isokazu; Yamagiwa, Akira; Watanabe, Yutaka; Matsumoto, Takashi; and Yabe, Katsumi, to Hitachi, Ltd. Logic circuit utilizing a current switch circuit having a non-threshold transfer characteristic. 4,516,039, Cl. 307-455.000.

Matsuzaki, Tadashi; and Sumi, Koji, to Mitsubishi Denki Kabushiki Kaishi. Overcurrent relay. 4,516,183, Cl. 361-71.000.

Matthew, Ian G.; Pammenter, Robert V.; and Kershaw, Mervyn G., to Electrolytic Zinc Company of Australasia Limited. Treatment of solutions to facilitate the removal of ferric iron therefrom. 4,515,696, Cl. 210-713.000.

Matusz, Arnold J.: *See—*
Dorsch, Robert; and Matusz, Arnold J., 4,515,073, Cl. 98-115.200.

Maurer, Alexander; and Staendeke, Horst, to Hoechst Aktiengesellschaft. Activated ammonium polyphosphate, a process for making it, and its use. 4,515,632, Cl. 106-18.160.

Maxemchuk, Nicholas F., to AT&T Bell Laboratories. System, apparatus and method for controlling a multiple access data communications system including variable length data packets and fixed length collision-free voice packets. 4,516,239, Cl. 370-85.000.

May, Adolf: *See—*
Billenstein, Siegfried; Hartung, Herbert; May, Adolf; and Bucking, Hans-Walter, 4,515,723, Cl. 260-404.500.

Mayama, Hidekiyo: *See—*
Kobayashi, Akio; Mizoguchi, Hitoshi; Ikeda, Hisatoshi; and Mayama, Hidekiyo, 4,516,006, Cl. 200-148.00A.

Mayer, Franz: *See—*
Janusch, Alois; and Mayer, Franz, 4,514,912, Cl. 34-37.000.

Mazda Motor Corporation: *See—*
Moriyama, Naomune; and Ohtani, Fumiyuki, 4,516,191, Cl. 362-65.000.

Mazziotti, Philip J., to Zeller Corporation, The. Universal joint seal with multiple lips. 4,515,574, Cl. 464-131.000.

Mazzola, Massimo; and Cipriani, Aldo, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Liquid foams of reinforced unsaturated polyester resins and process for making the same. 4,515,908, Cl. 521-182.000.

McCarthy, James P.; and Byler, Richard E., to Ford Motor Company. Solenoid operated pressure regulation. 4,515,176, Cl. 137-115.000.

McConaghy, Robert F., to Advanced Technology Laboratories, Inc. Oscillating ultrasound-scanhead. 4,515,017, Cl. 73-618.000.

McCullough, Thomas W.; and Stevens, Bradley D., to Dow Chemical Company, The. Styrene polymer foam made with alpha-polyolefin additives. 4,515,907, Cl. 521-139.000.

McDermott, Arthur W., to Boeing Company, The. Coil assembly for hot melt induction heater apparatus. 4,516,104, Cl. 336-206.000.

McDevitt, Steven C.: *See—*
Tallman, William R.; McDevitt, Steven C.; and Delancey, Warren H., 4,515,145, Cl. 126-99.00A.

McDonald, Ray S.; Thompson, David L.; Rossing, Martin A.; and Hartlaub, Jerome T., to Medtronic, Inc. Digital cardiac pacemaker with rate limit means. 4,515,159, Cl. 128-419.0PG.

McDonald, William R.: *See—*
Anderson, Robert L.; and McDonald, William R., 4,515,132, Cl. 123-494.000.

McDonnell Douglas Corporation: *See—*
Arrazola, Ignacio M., 4,515,450, Cl. 353-5.000.

McEvilly, Thomas V. Post-processing of seismic parameter data based on valid seismic event determination. 4,516,206, Cl. 364-421.000.

McGean-Rohco, Inc.: *See—*
Zellner, Robert J., 4,515,765, Cl. 423-617.000.

McGlew, John J.; and McGlew, John J. B., Jr. Building structure and building panel and method of controlling appearance and lighting of a building. 4,515,150, Cl. 126-445.000.

McGlew, John J. B., Jr.: *See—*
McGlew, John J.; and McGlew, John J. B., Jr., 4,515,150, Cl. 126-445.000.

McGraw-Edison Company: *See—*
Comer, Philip L., 4,514,875, Cl. 15-349.000.

McInerney, Charles E.: *See—*
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,515,136, Cl. 123-564.000.

McKay, Stewart K. Securing assembly. 4,515,496, Cl. 403-388.000.

McKinney, Linda M.; and McKinney, Osborne K., to Dow Chemical Company, The. Polyurethane backed carpet formed with two catalysts. 4,515,846, Cl. 428-95.000.

McKinney, Osborne K.: *See—*
McKinney, Linda M.; and McKinney, Osborne K., 4,515,846, Cl. 428-95.000.

McLaughlin, William D., Jr., to Celanese Corporation. Cutter wheel for cutting continuous tow. 4,515,054, Cl. 83-663.000.

McMaster, Harold A.; McMaster, Robert G.; and McMaster, Ronald A., to Glasstech, Inc. Glass sheet quench including oppositely angled jets. 4,515,622, Cl. 65-351.000.

McMaster, Robert G.: *See—*
McMaster, Harold A.; McMaster, Robert G.; and McMaster, Ronald A., 4,515,622, Cl. 65-351.000.

McMaster, Ronald A.: *See—*
McMaster, Harold A.; McMaster, Robert G.; and McMaster, Ronald A., 4,515,622, Cl. 65-351.000.

McNeilly, David R.: *See—*
Simpson, Marc L.; and McNeilly, David R., 4,516,020, Cl. 250-214.00L.

McShane, Lawrence J., to Eli Lilly and Company. Azetidinone sulfinic acids from cephalosporin sulfones. 4,515,719, Cl. 260-239.00A.

Means, Thomas C.; and Emmerich, Kenneth C., to Fansteel Inc. Roof drill bit. 4,515,230, Cl. 175-410.000.

Mechtron International Corp.: *See—*
Brashears, David F.; and Mollick, Joseph T., 4,515,090, Cl. 110-264.000.

Meco Equipment Engineers, B.V.: *See—*
Piepers, Harry C.; and van Poele, Gerard J., 4,515,670, Cl. 204-199.000.

Medtronic, Inc.: *See—*
Keimel, John G., 4,515,160, Cl. 128-419.0PG.
McDonald, Ray S.; Thompson, David L.; Rossing, Martin A.; and Hartlaub, Jerome T., 4,515,159, Cl. 128-419.0PG.

Medwed, Emmerich, to Multivac Sepp Haggenmuller, KG. Molding apparatus provided with separable mold parts. 4,515,546, Cl. 425-195.000.

Meier, David P.: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,516,199, Cl. 364-200.000.

Meigs, William; Guffey, David M.; and Brumfield, Donald E., to Disco Aluminum Products Co., Inc. Thermal break frame with load transfer member. 4,514,948, Cl. 52-397.000.

Meiners, Hans J.: *See—*
Fauss, Rudolf; Meiners, Hans J.; Rasshofer, Werner; and Meyborg, Holger, 4,515,923, Cl. 525-127.000.

Meininger, Fritz; Otten, Joachim W., deceased; by Otten, Ursula, heir; and by Rudolph nee Otten, Anna G., heir, to Hoechst Aktiengesellschaft. Process for dyeing and printing fiber materials containing hydroxy and/or carbonamide groups with reactive dye containing both vinyl sulphonyl and fluoro-triazinyl groups. 4,515,598, Cl. 8-549.000.

Melgaard, Hans L., to Despatch Industries, Inc. Fiber treatment oven. 4,515,561, Cl. 432-136.000.

Melillo, Anthony; and Gabriele, Louis, to Codella, Michael, a part interest. Exercising appliance. 4,515,361, Cl. 272-93.000.

Mellgren, Kenth: *See—*
Ryberg, Bertil; and Mellgren, Kenth, 4,516,000, Cl. 200-44.000.

Melton, David T.: *See—*
Pendergrass, John E.; and Melton, David T., 4,515,594, Cl. 604-384.000.

Melton, Lynn A., to United Technologies Corporation. Fluorescent additives for the determination of condensed and vapor phases in multiphase systems. 4,515,896, Cl. 436-2.000.

Memeger, Wesley, Jr., to Du Pont de Nemours, E. I., and Company. Low density nonwoven sheets. 4,515,656, Cl. 162-101.000.

Memory Metals, Inc.: *See—*
Rogen, Neil E.; and Adnyana, Dewa N., 4,515,213, Cl. 166-123.000.

Menchetti, Robert J.; and Sauer, Gale E., to Donn Incorporated. Window insulating system. 4,514,945, Cl. 52-202.000.

Mendenhall, Douglas W.; and Li, Ping, to Abbott Laboratories. Powder syringe mixing system. 4,515,586, Cl. 604-87.000.

Mengel, Hans-Eckhard; and Munzel, Hermann, to Norton Christensen, Inc. Tooth design to avoid shearing stresses. 4,515,226, Cl. 175-57.000.

Mercier, Rene, to CEM Compagnie Electro-Mecanique. Continuous current electric machine with cylindrical air gap and permanent magnet pole piece. 4,516,046, Cl. 310-154.000.

Merck & Co., Inc.: *See—*
Linn, Bruce O.; and Lusi, Aino, 4,515,783, Cl. 514-27.000.
Yang, Shu S.; Beattie, Thomas R.; Durette, Philippe L.; Gallagher, Timothy F.; and Shen, Tsung-Ying, 4,515,722, Cl. 260-403.000.

Mermelstein, Marc D., to Geo-Centers, Inc. Photoelastic stress sensor signal processor. 4,515,473, Cl. 356-33.000.

Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., to Borden, Inc. Encapsulated flavorant material, method for its preparation, and food and other compositions incorporating same. 4,515,769, Cl. 424-49.000.

Merten, Rudolf: *See—*
Zecher, Wilfried; and Merten, Rudolf, 4,515,974, Cl. 549-372.000.

Messenger, Edward T.: *See—*
Akred, Brian J.; Messenger, Edward T.; and Nicholson, William J., 4,515,704, Cl. 252-135.000.

Messer Griesheim GmbH: *See—*
Bohm, Gottfried, 4,515,645, Cl. 148-16.000.

Metal Box Limited: *See—*
Heathcoat, Michael J.; Jackson, Douglas H.; Jowitt, Frederick W.; Madley, Jack R.; and Stuart, Ian C. E., 4,515,677, Cl. 204-300.0EC.

Metallgesellschaft Aktiengesellschaft: *See—*
Eisenlohr, Karl-Heinz; Gaensslen, Hans; Kriebel, Manfred; and Tanz, Heiner, 4,515,604, Cl. 48-197.00R.

Meteor AG: *See—*
Arnold, Ernst, 4,516,103, Cl. 336-65.000.

Metzger, Karl G.; Schrock, Wilfried; Habich, Dieter; Naab, Paul; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft. β-Lactam anlibiotics. 4,515,789, Cl. 514-196.000.

Meunier, Paul-Louis: *See—*
Hartemann, Pierre; Meunier, Paul-Louis; and Jacobelli, Alain, 4,515,016, Cl. 73-517.00R.

Meyborg, Holger: *See—*
Fauss, Rudolf; Meiners, Hans J.; Rasshofer, Werner; and Meyborg, Holger, 4,515,923, Cl. 525-127.000.

Meyer, Danny S.: *See—*
Hollister, F. Harold; and Meyer, Danny S., 4,515,174, Cl. 137-72.000.

Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,515,682, Cl. 208-111.000.
Chen, Nai Y.; and Miale, Joseph N., 4,515,892, Cl. 435-161.000.

Michaelis, Theodore D., to RCA Corporation. Optical disc system having momentum compensation. 4,516,231, Cl. 369-44.000.

Michigan Consolidated Gas Company: *See—*
Krinock, Jerome V., 4,516,269, Cl. 455-51.000.

Micro Automation, Inc.: *See—*
Miller, William I.; and Reimiller, Robert D., 4,515,480, Cl. 356-400.000.

Micronix Partners: *See—*
Novak, W. Thomas, 4,516,253, Cl. 378-034.000.

Miki, Joh: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Sugai, Kazuyoshi, to Mikoshiba, Nobuo; and Tsubouchi, Kazuo. Multi-layer acoustic surface wave device having minimal delay time temperature coefficient. 4,516,049, Cl. 310-313.00A.

Mikuni Kohyo Co., Inc.: *See—*
Tominari, Noboru, 4,516,184, Cl. 361-152.000.

Milkowski, Wolfgang: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,515,944, Cl. 544-91.000.

Miller, Lalan G.: *See—*
Roberts, Richard D.; Franz, James H., Jr.; Hoffman, Lester J.; and Miller, Lalan G., 4,516,059, Cl. 318-301.000.

Miller, Lowell A., to Scientific Laboratories, Inc. Tube crimping device. 4,515,550, Cl. 425-392.000.

Miller, Richard C.: *See—*
Dixon, Richard W.; Joyce, William B.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,514,896, Cl. 29-576.00B.

Miller, Richard D., to RCA Corporation. Linear ramp voltage generator circuit. 4,516,036, Cl. 307-228.000.

Miller, William I.; and Reimiller, Robert D., to Micro Automation, Inc. Pattern alignment system and method. 4,515,480, Cl. 356-400.000.

Millerd, Donald L.: *See—*
Hemmerich, Karl J.; Millerd, Donald L.; and Semedo, Anthony B., 4,515,591, Cl. 604-152.000.

Millikan, Robert C.: *See—*
Gilbert, Jerry R.; Millikan, Robert C.; Wysowski, Charles H.; and Pyburn, John R., Jr., 4,515,518, Cl. 414-459.000.

Milliken Research Corporation: *See—*
Ashley, Fred C., 4,515,327, Cl. 242-118.300.
Rekers, John W., 4,515,666, Cl. 204-159.200.

Mills, George A.; and Richert, Gerald R., to Pennwalt Corporation. Apparatus and method for processing fruit and the like. 4,515,275, Cl. 209-558.000.

Minami, Hitoshi, to Pentel Kabushiki Kaisha. Multicolor printer. 4,515,487, Cl. 400-121.000.

Minami, Setsuo: *See—*
Takahashi, Sadatoshi; Tsuji, Sadahiko; Tajima, Akira; Asano, Toshiaki; and Minami, Setsuo, 4,515,446, Cl. 350-427.000.

Miner, Thomas G.: *See—*
Schaub, Robert E.; Miner, Thomas G.; and Bernstein, Seymour, 4,515,782, Cl. 514-24.000.

Minigrip, Inc.: *See—*
Ausnit, Steven, 4,514,962, Cl. 53-457.000.

Minnebraker, Jeffrey P., to Quadra Wheelchairs, Inc. Wheelchair construction. 4,515,383, Cl. 280-242.0WC.

Minnesota Mining and Manufacturing Company: *See—*
Beretta, Paolo; and Kitchin, Jonathan P., 4,515,888, Cl. 430-584.000.
Coles, Robert F., 4,515,955, Cl. 548-150.000.
Gatzke, Kenneth G.; and Winslow, John M., 4,515,885, Cl. 430-175.000.
Rood, Robert M.; and Wulfing, James J., 4,515,323, Cl. 242-74.100.
Wulfing, James J.; and Rood, Robert M., 4,515,330, Cl. 242-197.000.

Minolta Camera Kabushiki Kaisha: *See—*
Fukui, Kazuyuki, 4,515,358, Cl. 271-122.000.

Mioche, Robert, to Compagnie Generale des Etablissements Michelin. Apparatus for forming and cutting latex blocks into strips. 4,515,548, Cl. 425-308.000.

Miramanda, Fernando X. Stopper for containers for use in analyses. 4,515,752, Cl. 422-99.000.

Misawa Home Co., Ltd.: *See—*
Kataishi, Takao; and Seo, Iwazou, 4,515,552, Cl. 425-436.0RM.

Missio, Bruno; and Giorgioni, Angelo, to Girogioni di A. Giorgioni & C. s.a.s. Apparatus for driving take-up elements for palletizable load units. 4,515,025, Cl. 74-27.000.

Mr. Gasket Company: *See—*
Carlo, Louis D., 4,515,033, Cl. 74-476.000.

Mita Industrial Company Limited: *See—*
Kawahara, Yoshihiro; and Hayashi, Kiyoshi, 4,516,141, Cl. 346-153.100.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,515,465, Cl. 355-14.00C.
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.

Mitsubishi Chemical Industries Limited: *See—*
Niwa, Toshio; and Hihara, Toshio, 4,515,716, Cl. 534-635.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Horikoshi, Hiroshi; Arai, Akio; Tsukagoshi, Sadayuki; and Sakamoto, Junichi, 4,515,365, Cl. 273-25.000.
Ishida, Masayuki, 4,516,219, Cl. 364-900.000.
Kajiyama, Ryuichi; and Yonemoto, Masashi, 4,515,246, Cl. 187-29.00R.
Morishita, Etsuo, 4,515,539, Cl. 418-55.000.
Murata, Shirou; Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,002, Cl. 200-144.00C.
Nishimura, Tadashi, 4,514,895, Cl. 29-571.000.
Ohta, Kazutoshi, 4,515,248, Cl. 187-67.000.
Shiraishi, Akiyoshi, 4,515,417, Cl. 384-445.000.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,003, Cl. 200-144.00C.

Mitsubishi Denki Kabushiki Kaishi: *See—*
Matsuzaki, Tadashi; and Sumi, Koji, 4,516,183, Cl. 361-71.000.

Mitsubishi Plastics Industries Limited: *See—*
Hashimoto, Tadashi, 4,515,269, Cl. 206-334.000.

Mitsubishi Rayon Company, Limited: *See—*
Adachi, Kiyoshi; Uehara, Masaru; Kitagawa, Hiroshi; Kojima, Hirotaka; and Sato, Masaaki, 4,514,965, Cl. 53-553.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Miwa, Kishio: *See—*
Inoue, Takehisa; and Miwa, Kishio, 4,515,605, Cl. 55-26.000.

Miya, Toyofumi; Kobayashi, Yukiharu; and Yano, Masao, to Kohjin Co., Ltd. Crystal of beta-nicotinamide-adenine-dinucleotide and process for preparing the same. 4,515,943, Cl. 536-27.000.

Miyajima, Yukio. Fancy article for use as a greeting gift such as a greeting card. 4,515,838, Cl. 428-14.000.

Miyakoshi, Yasushi: *See—*
Fujii, Kunihisa; Tomono, Noboru; Watanabe, Hajime; and Miyakoshi, Yasushi, 4,516,099, Cl. 335-135.000.

Miyamoto, Kiyoshi: *See—*
Nishimura, Shinichi; Mizuno, Saburo; and Miyamoto, Kiyoshi, 4,515,404, Cl. 296-65.00R.

Miyata, Katsuro; Asaida, Takashi; and Nagumo, Fumio, to Sony Corporation. Solid state television camera with iris control. 4,516,172, Cl. 358-228.000.

Miyata, Tatsuhiko: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.

Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, to Mita Industrial Company Limited. Electrostatic copying apparatus. 4,515,465, Cl. 355-14.00C.
Mizoguchi, Hitoshi: *See—*
Kobayashi, Akio; Mizoguchi, Hitoshi; Ikeda, Hisatoshi; and Mayama, Hidekiyo, 4,516,006, Cl. 200-148.00A.
Mizokami, Hiroshi: *See—*
Kawahara, Tetsuo; Mizokami, Hiroshi; Mizuno, Kyosuke; and Susumi, Sadao, 4,515,714, Cl. 260-112.00R.
Mizrach, Amos: *See—*
Feller, Ron; and Mizrach, Amos, 4,515,276, Cl. 209-693.000.
Mizuguchi, Yoshihiko: *See—*
Watanabe, Fumio; Mizuguchi, Yoshihiko; and Yamada, Matsuichi, 4,516,128, Cl. 343-761.000.
Mizukami, Masao: *See—*
Hayase, Isao; Mizukami, Masao; and Kishi, Atsuo, 4,515,513, Cl. 418-101.000.
Mizuno, Kyosuke: *See—*
Kawahara, Tetsuo; Mizokami, Hiroshi; Mizuno, Kyosuke; and Susumi, Sadao, 4,515,714, Cl. 260-112.00R.
Mizuno, Saburo: *See—*
Nishimura, Shinichi; Mizuno, Saburo; and Miyamoto, Kiyoshi, 4,515,404, Cl. 296-65.00R.
Mizuo, Yasuhiko. Apparatus for manufacturing screened cable. 4,514,971, Cl. 57-9.000.
Mobay Chemical Corporation: *See—*
Baron, Arthur L.; and Krishnan, Sivaram, 4,515,937, Cl. 528-204.000.
Witman, Mark W., 4,515,921, Cl. 525-67.000.
Mobil Oil Corporation: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,515,682, Cl. 208-111.000.
Chen, Nai Y.; and Miale, Joseph N., 4,515,892, Cl. 435-161.000.
Fitch, John L.; and Strubhar, Malcolm K., 4,515,214, Cl. 166-250.000.
Hoskin, Dennis H., 4,515,701, Cl. 252-8.55D.
Walsh, Dennis E.; and Green, Gary J., 4,515,092, Cl. 110-347.000.
Zemanek, Joseph, Jr., 4,516,228, Cl. 367-75.000.
Mochalova, Zoya N.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.
Mod, William A.: *See—*
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,515,989, Cl. 568-674.000.
Moeddel, Robert W., to Procter & Gamble Company, The. Compositions containing odor purified proteolytic enzymes and perfumes. 4,515,705, Cl. 252-174.120.
Mohr, Ernst, to Fides Treuhand GmbH. Hot-gas piston type engine. 4,514,979, Cl. 60-512.000.
Mohr, Heinz: *See—*
Bleckmann, Gerhard; Lynch, John; and Mohr, Heinz, 4,515,375, Cl. 277-1.000.
Molitor, Edwin A.; Crain, Edward; and Lampe, Guy W., to Multifold-International, Inc. Machine for erecting, holding and discharging a folding case. 4,515,581, Cl. 493-183.000.
Mollick, Joseph T.: *See—*
Brashears, David F.; and Mollick, Joseph T., 4,515,090, Cl. 110-264.000.
Molt, Kenneth R., to Morton Thiokol Inc. Stabilizers for halogen containing polymers comprising zinc mercaptoesters, basic inorganic alkali or alkaline earth metal compounds and, substituted dihydropyridines. 4,515,916, Cl. 524-99.000.
Momoshima, Yukichi; and Nagasaka, Nobuyuki, to Kabushiki Kaisha Daini Seikosha. Musical sound wave generating circuit for electronic musical instrument. 4,515,057, Cl. 84-1.030.
Monsanto Company: *See—*
Bachman, Gerald L.; and Vineyard, Billy D., 4,515,731, Cl. 260-465.00D.
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,515,839, Cl. 428-17.000.
Wrobleski, James T., 4,515,973, Cl. 549-259.000.
Moog Automotive, Inc.: *See—*
Martin, Tony E., 4,515,042, Cl. 81-55.000.
Moon, Ronald R.: *See—*
Moon, William G.; Moon, Ronald R.; Peterson, Bruce R.; and Westwood, Donald C., 4,516,177, Cl. 360-77.000.
Moon, William G.; Moon, Ronald R.; Peterson, Bruce R.; and Westwood, Donald C., to Quantum Corporation. Rotating rigid disk data storage device. 4,516,177, Cl. 360-77.000.
Moore, James H.: *See—*
Breedlove, Paul S.; and Moore, James H., 4,516,260, Cl. 381-51.000.
Moore, Jerry R.; and Van Dusseldorp, C. Peter. Extension device for electrically powered tools. 4,515,423, Cl. 339-28.000.
Moore, Ted E., Sr. Debris collector. 4,515,504, Cl. 408-67.000.
Moosbrucker, Karl; Hollmann, Bernd; and Freye, Theodor. Apparatus for producing a wrapped cylindrical bale of harvested agricultural material. 4,514,969, Cl. 56-341.000.
Moran, Daniel B.: *See—*
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,515,791, Cl. 514-248.000.
Moran, David P. J.; and Sharp, David G., to Lever Brothers Company. Low fat spread and process for producing same. 4,515,825, Cl. 426-603.000.
Moran, Paul R., to Wisconsin Alumni Research Foundation. NMR scanner with motion zeugmatography. 4,516,075, Cl. 324-309.000.
Morca, Inc.: *See—*
Cruz, Mamerto M., Jr., 4,515,633, Cl. 106-18.260.
Morenus, Richard J.: *See—*
Frisbie, Richard C.; Houser, David E.; Morenus, Richard J.; and Thomas, Edwin L., 4,515,505, Cl. 409-163.000.
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, to Shin-Etsu Chemical Co., Ltd. Heat-resistant silicone fluid compositions. 4,515,702, Cl. 252-49.600.
Mori, Takasuke: *See—*
Narita, Kiichi; Mori, Takasuke; and Ayata, Kenzo, 4,515,203, Cl. 164-468.000.
Mori, Toshihito: *See—*
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,515,942, Cl. 536-16.800.
Morimoto, Kiyoshi: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.
Morimoto, Kotaro; and Suzuki, Tomio, to Kobe Steel, Ltd. Combustion method for reducing the emission of nitrogen oxides. 4,515,553, Cl. 431-8.000.
Morimoto, Yoshiro: *See—*
Takeuchi, Yasuhisa; Morimoto, Yoshiro; and Suzuki, Tadashi, 4,515,040, Cl. 74-866.000.
Morishita, Etsuo, to Mitsubishi Denki Kabushiki Kaisha. Scroll-type hydraulic machine with two axially spaced scroll mechanisms. 4,515,539, Cl. 418-55.000.
Morito, Motoyoshi: *See—*
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, 4,516,221, Cl. 364-900.000.
Moriyama, Masakazu; Shinohara, Toshio; Hirano, Kazuo; and Makino, Fumio, to Toyota Motor Co., Ltd.; and Sumitomo Electric Industries, Ltd. Transmission control system. 4,516,121, Cl. 340-825.050.
Moriyama, Masakazu; and Saito, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling air conditioner by voice. 4,516,207, Cl. 364-424.000.
Moriyama, Naomune; and Ohtani, Fumiyuki, to Mazda Motor Corporation. Retractable head-light device for automobiles. 4,516,191, Cl. 362-65.000.
Moroder, Luis: *See—*
Valet, Gunter; Ruhenstroth-Bauer, Gerhard; Wunsch, Erich; and Moroder, Luis, 4,515,730, Cl. 260-465.00D.
Moroe, Michio: *See—*
Sawano, Kiyohito; Kouichi, Ryujiro; Oota, Hideaki; Takano, Masashi; and Moroe, Michio, 4,515,909, Cl. 523-102.000.
Morotti, Mauro: *See—*
Borzatta, Valerio; Cristofori, Manlio; Morotti, Mauro; and Mascellani, Giuseppe, 4,515,809, Cl. 514-533.000.
Morrill, David R.; Mason, Mark T.; and Green, Paul M., to Klimsch/Optronics. Scanner/plotter optical system. 4,516,023, Cl. 250-235.000.
Morrison Products, Inc.: *See—*
Baker, Harold L., 4,515,527, Cl. 416-184.000.
Morton Thiokol Inc.: *See—*
Molt, Kenneth R., 4,515,916, Cl. 524-99.000.
Moser, Kurt; and Hofmann, Rolf, to Develop Dr. Eisbein GmbH & Co. Press fixing apparatus with three pressing rollers. 4,515,459, Cl. 355-3.0FU.
Mosier, Donald E., to Rockwell International Corporation. Mounting structure for multiple liquid crystal displays. 4,515,440, Cl. 350-334.000.
Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., 4,515,157, Cl. 128-303.00R.
Motomura, Kenichi; Ogawa, Hiroshi; Yamamoto, Akira; and Hagita, Noriyuki, to Bridgestone Tire Company Limited. Heavy duty pneumatic radial tire. 4,515,197, Cl. 152-209.00R.
Motorola, Inc.: *See—*
Baumann, William J., 4,516,220, Cl. 364-715.000.
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,515,898, Cl. 501-15.000.
Gallup, Michael G., 4,516,251, Cl. 377-110.000.
Phillips, James P., 4,516,270, Cl. 455-302.000.
Sasser, Bill H., 4,516,091, Cl. 333-161.000.
Siwiak, Kazimierz, 4,516,127, Cl. 343-702.000.
Smith, Michael D.; and Whatley, Roger A., 4,516,082, Cl. 330-296.000.
Turney, William J., 4,516,083, Cl. 331-1.00A.
Mount, Gordon L., to Carrier Corporation. Method and control system for protecting an electric motor driven compressor in a refrigeration system. 4,514,989, Cl. 62-201.000.
Mouser, Curtis A.; Roberts, Mark G.; Haas, Daniel R.; and Lancaster, Patrick R., III, to Lantech, Inc. Feedback controlled stretch wrapping apparatus and process. 4,514,955, Cl. 53-64.000.
Mowatt-Larssen, Erling, to General American Transportation Corporation. Molten sulfur tank car assembly. 4,515,189, Cl. 141-11.000.
Moxon, Edwin C., to Stypher Corporation. Apparatus for decoding video address code signals. 4,516,164, Cl. 360-53.000.
MTU Motoren-und Turbinen-Union Munchen GmbH: *See—*
Hagemeister, Klaus, 4,515,305, Cl. 228-173.200.

Mueller, Gerhard: *See—*
Lechtken, Peter; Mueller, Gerhard; and Schmieder, Klaus, 4,515,982, Cl. 560-125.000.
Muhle, Herbert: *See—*
Brich, Zdenek; and Muhle, Herbert, 4,515,950, Cl. 546-67.000.
Muhlhofer, Ernst: *See—*
Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Muhlhofer, Ernst; and Schwab, Michael, 4,515,762, Cl. 423-337.000.
Muller, Gerhard; and Schwarz, Jurgen, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Optical system for transmitted-light microscopy with incident illumination. 4,515,445, Cl. 350-524.000.
Muller, Gerhard: *See—*
Weimer, Eugen; and Muller, Gerhard, 4,515,447, Cl. 350-527.000.
Muller, Johann: *See—*
Preiner, Gerhard; and Muller, Johann, 4,515,976, Cl. 556-453.000.
Muller, Norbert W.: *See—*
Dietz, Peter; Muller, Norbert W.; and Kroh, Horst F. M., 4,515,049, Cl. 82-36.00R.
Muller, Rene : *See—*
Chaudhari, Praveen; and Muller, Rene , 4,515,650, Cl. 156-622.000.
Muller, Rudolf; Radeklau, Hans-Jurgen; Dofke, Harald; and Krieger, Detlef, to Schering Aktiengesellschaft. Apparatus for removing substances from the inner walls of vessels. 4,515,483, Cl. 366-303.000.
Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, to Agfa-Gevaert Aktiengesellschaft. Spring biased crank arm drive for tray mounted stapler. 4,515,356, Cl. 270-53.000.
Multifold-International, Inc.: *See—*
Molitor, Edwin A.; Crain, Edward; and Lampe, Guy W., 4,515,581, Cl. 493-183.000.
Multisafe AG: *See—*
Eder, Helmut, 4,514,951, Cl. 52-660.000.
Multivac Sepp Haggenmuller, KG: *See—*
Medwed, Emmerich, 4,515,546, Cl. 425-195.000.
Mumola, Peter B.: *See—*
La Fiandra, Carlo; and Mumola, Peter B., 4,516,062, Cl. 318-676.000.
Munakata, Akio: *See—*
Abe, Susumu; Munakata, Akio; and Kitahara, Takeshi, 4,516,173, Cl. 358-261.000.
Munson, Robert E.; and Haddad, Hussain A., to Ball Corporation. Apparatus and method for coupling r.f. energy through a mechanically rotatable joint. 4,516,097, Cl. 333-261.000.
Munson, Ronald W.: *See—*
Jacobson, Roger K.; and Munson, Ronald W., 4,515,273, Cl. 206-604.000.
Munzel, Hermann: *See—*
Mengel, Hans-Eckhard; and Munzel, Hermann, 4,515,226, Cl. 175-57.000.
Muralidhara, Ranya: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,966, Cl. 549-30.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,967, Cl. 549-39.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,515,968, Cl. 549-39.000.
Muramatsu, Motoyasu: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,515,131, Cl. 123-491.000.
Muraoka, Hisashi: *See—*
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.
Murata Manufacturing Co., Ltd.: *See—*
Shikama, Takashi; Yamamoto, Tomoyuki; and Yokota, Atsuo, 4,516,054, Cl. 315-71.000.
Murata, Shirou; Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker with arc light absorber. 4,516,002, Cl. 200-144.00C.
Murata, Shirou: *See—*
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,003, Cl. 200-144.00C.
Murdock, Keith C.: *See—*
Lang, Stanley A., Jr.; and Murdock, Keith C., 4,515,954, Cl. 548-109.000.
Murphy, James P. Lighting system for artificial Christmas tree. 4,516,193, Cl. 362-123.000.
Muto, Yasuo: *See—*
Asai, Koichi; Tsuda, Mamoru; Oe, Kunio; and Muto, Yasuo, 4,515,507, Cl. 414-226.000.
Myers, David E.: *See—*
DuVal, Daniel A.; Kahn, Roger N.; and Myers, David E., 4,515,396, Cl. 281-15.00R.
Myers, Richard A., to St. Regis Corporation. Modified atmosphere package and process. 4,515,266, Cl. 206-205.000.
N P Marketing Corporation: *See—*
Van Gompel, James; and Akey, Ronald R., 4,515,506, Cl. 410-46.000.
N. V. Bekaert S.A.: *See—*
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, 4,515,905, Cl. 502-309.000.
N. V. Raychem S. A.: *See—*
Wille, Marc, 4,515,831, Cl. 427-223.000.
Naab, Paul: *See—*
Metzger, Karl G.; Schrock, Wilfried; Habich, Dieter; Naab, Paul; and Zeiler, Hans-Joachim, 4,515,789, Cl. 514-196.000.
Nagahara, Shusaku: *See—*
Nishizawa, Shigeki; Nagahara, Shusaku; and Ozawa, Naoki, 4,516,154, Cl. 358-44.000.
Nagamine, Tsuyoshi: *See—*
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Fujibayashi, Kentaro, 4,516,211, Cl. 364-474.000.
Nagasaka, Nobuyuki: *See—*
Momoshima, Yukichi; and Nagasaka, Nobuyuki, 4,515,057, Cl. 84-1.030.
Nagase, Hiroshi: *See—*
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, 4,516,065, Cl. 318-811.000.
Nagashima, Hideo: *See—*
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.
Nagashima, Kazuo, to Toshiba Kikai Kabushiki Kaisha. Control system for roll grinding machine. 4,516,212, Cl. 364-475.000.
Nagashima, Takashi: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.
Nagumo, Fumio: *See—*
Miyata, Katsuro; Asaida, Takashi; and Nagumo, Fumio, 4,516,172, Cl. 358-228.000.
Naimpally, Saiprasad V.: *See—*
Krull, Donald K.; and Naimpally, Saiprasad V., 4,516,153, Cl. 358-31.000.
Nakagawa, Hiroshi: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.
Nakagawa, Shiro; and Kuroiwa, Akihiko, to TDK Electronics Co., Ltd. Optical recording system. 4,516,234, Cl. 369-109.000.
Nakajima, Tsuyoshi: *See—*
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,515,709, Cl. 252-509.000.
Nakajima, Yasushi: *See—*
Sakura, Yasuhiro; Nakajima, Yasushi; Tajima, Noriyasu; and Nimura, Hitoshi, 4,516,208, Cl. 364-466.000.
Nakamura, Michael D., to Tektronix, Inc. Clamp circuits. 4,516,042, Cl. 307-546.000.
Nakamura, Minoru; and Asami, Kazuto, to Glory Kogyo Kabushiki Kaisha. Coin stacking apparatus for a coin packaging machine or the like. 4,515,172, Cl. 133-8.00A.
Nakanishi, Teruo: *See—*
Nakano, Jun; Nakanishi, Teruo; and Kimura, Kazuhiko, 4,515,977, Cl. 549-468.000.
Nakano, Hidetaka, to Yamaichi Electric Mfg. Co., Ltd. IC socket with IC package pressing means. 4,515,425, Cl. 339-75.0MP.
Nakano, Jun; Nakanishi, Teruo; and Kimura, Kazuhiko, to Kaken Pharmaceutical Co., Ltd. Process for preparing optically active [S]-2-acetyl-7-(hydroxy-3-isopropylaminopropoxy)-benzofuran and salts thereof. 4,515,977, Cl. 549-468.000.
Nakano, Yoshikatsu: *See—*
Matsuura, Masaaki; and Nakano, Yoshikatsu, 4,515,121, Cl. 123-198.00F.
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, to Hitachi, Ltd.; and Yagi Antenna Co., Ltd. Data communication system. 4,516,221, Cl. 364-900.000.
Nakaya, Mitsuo: *See—*
Kajigaya, Shinichi; and Nakaya, Mitsuo, 4,515,502, Cl. 405-215.000.
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for manufacturing non-fired iron-bearing pellet. 4,515,351, Cl. 266-177.000.
Nakayama, Sumio: *See—*
Honma, Kenji; Asami, Toshio; Baba, Masayuki; and Nakayama, Sumio, 4,515,384, Cl. 280-276.000.
Nalco Chemical Company: *See—*
Fong, Dodd W., 4,515,658, Cl. 162-168.400.
Nancarrow, James N.: *See—*
Cholvin, Robert L.; McInerney, Charles E.; Nancarrow, James N.; and Gantz, Jack L., 4,515,136, Cl. 123-564.000.
Nanodata Computer Corporation: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,516,199, Cl. 364-200.000.
Napolitano, Pellegrino E., to Hudson Engineering Company. Valve for self-priming pump system. 4,515,180, Cl. 137-565.000.
Narato, Kiyoshi: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.
Narishige, Shinji; Yoshinari, Tsuneo; Sato, Mituo; Takagi, Masayuki; and Yoshida, Toshihiro, to Computer Basic Technology Research Assoc. Thin film magnetic head. 4,516,180, Cl. 360-126.000.
Narita, Kiichi; Mori, Takasuke; and Ayata, Kenzo, to Kabushiki Kaisha Kobe Seiko Sho. Continuous steel casting process. 4,515,203, Cl. 164-468.000.
Narumiya, Yoshikazu: *See—*
Ishino, Ken; Hashimoto, Yasuo; Ichihara, Kenichi; and Narumiya, Yoshikazu, 4,515,850, Cl. 428-225.000.
National Distillers and Chemical Corporation: *See—*
Harris, Eugene G.; and Fayter, Richard G., Jr., 4,515,978, Cl. 549-484.000.

National Research Development Corporation: *See—*
Elliott, Michael; Janes, Norman F.; and Khambay, Bhupinder P. S., 4,515,808, Cl. 514-521.000.
Payne, David N.; Sasaki, Issei; and Adams, Michael J., 4,515,475, Cl. 356-73.100.
Skorecki, Jan, 4,515,122, Cl. 123-198.00E.
National Semiconductor Corporation: *See—*
Sherwin, James S., 4,515,432, Cl. 350-96.200.
NCR Corporation: *See—*
Rhoads, Paul M.; and Cheffer, Harold H., 4,516,035, Cl. 307-66.000.
Needham, Riley B.: *See—*
Beardmore, David H.; and Needham, Riley B., 4,515,093, Cl. 110-347.000.
Negus, Paul D.: *See—*
Cook, Andrew J.; and Negus, Paul D., 4,516,249, Cl. 375-82.000.
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, to Matsushita Electric Industrial Co., Ltd. Sewing machine having a memory for generating a speed signal in response to operating conditions. 4,516,061, Cl. 318-561.000.
Nelson, David A., to Rockwell International Corporation. Electronic display dimming circuit. 4,516,055, Cl. 315-151.000.
Nelson, Rodney J.: *See—*
Cathey, Thaddeus F.; Gaynor, John C.; and Nelson, Rodney J., 4,515,577, Cl. 474-204.000.
Nemoto, Michio; Yoshida, Kiyokazu; and Baba, Tetsuro, to Tohoku Metal Industries, Ltd. Air-flow-rate sensors. 4,516,101, Cl. 335-208.000.
Neuhaus, J. D.: *See—*
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, 4,515,183, Cl. 137-625.210.
Neumann, Guenter J.: *See—*
Haley, William J.; and Neumann, Guenter J., 4,515,255, Cl. 192-3.570.
Neuray, Dieter: *See—*
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.
Newgard, Peter J.: *See—*
Slemmons, Arthur J.; and Newgard, Peter J., 4,515,151, Cl. 126-450.000.
Newhouse, Denis P. Rosin bar holder. 4,515,272, Cl. 206-592.000.
Newman, Dennis W.: *See—*
Hawkinson, Raymond P., Jr.; and Newman, Dennis W., 4,516,068, Cl. 324-54.000.
Newman, Peter M.; and Jenkins, Anthony W., to Fisons plc. Soluble sodium cromoglycate compositions. 4,515,805, Cl. 514-460.000.
Nibert, Charles W.: *See—*
Beck, H. Wayne; Lochow, Charles F., Jr.; and Nibert, Charles W., 4,515,683, Cl. 208-113.000.
Nicholson, William J.: *See—*
Akred, Brian J.; Messenger, Edward T.; and Nicholson, William J., 4,515,704, Cl. 252-135.000.
Nijman, John P.: *See—*
Margolin, Mark; Grois, Igor; Herdeg, Peter K.; and Nijman, John P., 4,515,434, Cl. 350-96.210.
Nike, Inc.: *See—*
Aarflot, Kjell, 4,514,916, Cl. 36-117.000.
Nimura, Hitoshi: *See—*
Sakura, Yasuhiro; Nakajima, Yasushi; Tajima, Noriyasu; and Nimura, Hitoshi, 4,516,208, Cl. 364-466.000.
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, to Hitachi, Ltd.; and Hitachi Keiyo Eng. Co., Ltd. Control apparatus for AC motors. 4,516,065, Cl. 318-811.000.
Nippon Air Brake Co., Ltd.: *See—*
Ishiwata, Ichiro, 4,514,980, Cl. 60-534.000.
Nippon Kogaku K.K.: *See—*
Wakabayashi, Hiroshi; Okabe, Nobuo; and Daitoku, Koichi, 4,515,453, Cl. 354-149.100.
Nippon Kokan Kabushiki Kaisha: *See—*
Fukushima, Tsutomu; Kawasaki, Kiyoshi; and Sasaki, Sadayuki, 4,515,352, Cl. 266-218.000.
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,515,351, Cl. 266-177.000.
Shibata, Yoichi; Kimura, Ryosuke; Sumigama, Takashi; and Izumi, Masaro, 4,515,350, Cl. 266-92.000.
Nippon Light Metal Company Limited: *See—*
Ohno, Atsumi, 4,515,204, Cl. 164-483.000.
Nippon Soda Company Limited: *See—*
Iwataki, Isao; Fujita, Kagari; Ishikawa, Hisao; Hosaka, Hideo; and Kohara, Kenichi, 4,515,729, Cl. 260-464.000.
Nippon Steel Corporation: *See—*
Sawatani, Tadashi; Ishii, Mitsuo; Yoshimura, Hirofumi; and Harase, Jirou, 4,515,644, Cl. 148-12.0EA.
Nippon Telegraph & Telephone Public Corp.: *See—*
Yoshihara, Hideo; Ozawa, Akira; Sekimoto, Misao; and Ono, Toshiro, 4,515,876, Cl. 430-5.000.
Nippon Zeon Co. Ltd.: *See—*
Ogura, Shunichiro; and Soumai, Masamichi, 4,515,661, Cl. 203-60.000.
Nippondenso Co., Ltd.: *See—*
Hara, Masahiro; Okamoto, Atsutoshi; and Sakai, Toshiyasu, 4,516,017, Cl. 235-472.000.
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, to Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co.). Kerosene combustion apparatus. 4,515,557, Cl. 431-302.000.
Nishikawa, Kazunori: *See—*
Masuda, Isao; Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Ueno, Shoji, 4,516,163, Cl. 360-32.000.
Nishikawa, Mineki: *See—*
Yamakawa, Tsutomu; Nishikawa, Mineki; and Kihara, Tomohiko, 4,516,025, Cl. 250-252.100.
Nishimura, Shinichi; Mizuno, Saburo; and Miyamoto, Kiyoshi, to Nissan Motor Company, Limited; and Ohio Seisakusho Co., Ltd. Seat sliding device. 4,515,404, Cl. 296-65.00R.
Nishimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Method of forming field-effect transistors using selectively beam-crystallized polysilicon channel regions. 4,514,895, Cl. 29-571.000.
Nishimura, Takeo: *See—*
Katabe, Kenichi; and Nishimura, Takeo, 4,515,852, Cl. 428-246.000.
Nishio, Ken-ichi: *See—*
Okamoto, Hideho; Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,515,866, Cl. 428-614.000.
Nishioka, Yoshiki: *See—*
Hakaridani, Mitsuhiro; Iwahashi, Hiroyuki; and Nishioka, Yoshiki, 4,516,215, Cl. 364-513.500.
Nishizawa, Shigeki; Nagahara, Shusaku; and Ozawa, Naoki, to Hitachi, Ltd. Solid state color imaging system. 4,516,154, Cl. 358-44.000.
Nissan Motor Company, Limited: *See—*
Hayashi, Yoshimasa, 4,515,116, Cl. 123-90.430.
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,515,119, Cl. 123-198.00E.
Hayashi, Yoshimasa, 4,515,124, Cl. 123-324.000.
Hidaka, Kunihiko; Fukushima, Naoto; and Iwata, Kazuro, 4,515,252, Cl. 188-282.000.
Koide, Masaru, 4,515,391, Cl. 280-690.000.
Kubota, Hitoshi, 4,514,984, Cl. 60-585.000.
Nishimura, Shinichi; Mizuno, Saburo; and Miyamoto, Kiyoshi, 4,515,404, Cl. 296-65.00R.
Sakurai, Yukio; and Yamamoto, Akihiko, 4,515,208, Cl. 165-43.000.
Takeuchi, Yasuhisa; Morimoto, Yoshiro; and Suzuki, Tadashi, 4,515,040, Cl. 74-866.000.
Yasuhara, Seishi, 4,515,690, Cl. 210-90.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Yamamoto, Katsuhiro; Matsumoto, Katsuo; and Okada, Yoshiyuki, 4,515,162, Cl. 128-640.000.
Niwa, Toshio; and Hihara, Toshio, to Mitsubishi Chemical Industries Limited. 2,6-Diaminopyridine-based azo dyes for cellulose-containing fibers. 4,515,716, Cl. 534-635.000.
NL Industries, Inc.: *See—*
Burnes, Edward E.; and Bhatia, Kishan, 4,515,759, Cl. 423-220.000.
Weido, Vincent C.; and Grissom, David, 4,515,010, Cl. 73-151.000.
Noda, Akiko, heir: *See—*
Yajima, Seishi, deceased; Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, 4,515,742, Cl. 264-63.000.
Nojima, Kazuhiro; Fujimoto, Hiroyuki; and Takahashi, Mikio, to Kanzaki Paper Mfg. Co., Ltd. Method of producing cast coated paper and product thereof. 4,515,833, Cl. 427-362.000.
Nolting, Peter; and Bleger, Claude, to Robert Bosch GmbH. Temperature sensing module. 4,516,106, Cl. 338-28.000.
Nolting, Rolf; and Siniza, Bernhard, to VEB Ingenieurbuero fuer Meliorationen. Control impulse intensifier. 4,515,175, Cl. 137-107.000.
Nomura, Takeo: *See—*
Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, 4,515,785, Cl. 424-195.100.
Noon, Robert A.: *See—*
Kay, Ian T.; and Noon, Robert A., 4,515,959, Cl. 548-378.000.
Noord-Nederlandsche Machinefabriek B.V.: *See—*
van Os, Cornelis J., 4,515,536, Cl. 417-394.000.
Nord, Keith W., to Ex-Cell-O Corporation. Robot joint. 4,515,039, Cl. 74-665.00C.
Nordson Corporation: *See—*
Cobbs, Walter H., Jr.; and Rehman, William R., 4,515,836, Cl. 427-425.000.
Norman, Cary A.: *See—*
Chester, Martin H.; and Norman, Cary A., 4,515,168, Cl. 128-741.000.
North, William E.; Holden, Paul C.; and Hultgren, Kent G., to Westinghouse Electric Corp. Cooling arrangement for airfoil stator vane trailing edge. 4,515,523, Cl. 415-115.000.
Northern Telecom Limited: *See—*
Berger, Jean P., 4,515,304, Cl. 228-136.000.
Garner, John N.; and Shannon, Michael A., 4,515,826, Cl. 427-8.000.
Hadziomerovic, Faruk, 4,516,236, Cl. 370-24.000.
Hampel, Herbert J.; and Willers, Arthur G., 4,515,419, Cl. 312-7.100.
Northmore, James E. Camera movement synchronizing apparatus. 4,515,455, Cl. 354-293.000.
Norton Christensen, Inc.: *See—*
Mengel, Hans-Eckhard; and Munzel, Hermann, 4,515,226, Cl. 175-57.000.
Norton, William J., to C. R. Bard, Inc. Medical tubing having exterior hydrophilic coating for microbiocide absorption therein and method for using same. 4,515,593, Cl. 604-265.000.
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions based on polycarbonate, polyalkylene terephthalate and, optionally, one or more polymers. 4,515,918, Cl. 524-504.000.
Novak, W. Thomas, to Micronix Partners. Lithography system. 4,516,253, Cl. 378-034.000.
Novatome: *See—*
Jullien, Georges, 4,515,109, Cl. 122-32.000.
Nowakowski, Robert J., to General Motors Corporation. Dual-voltage battery charging system. 4,516,066, Cl. 320-15.000.
Nowobilski, Jeffert J.; and Kather, Kenneth C., to Union Carbide Corporation. Vacuum insulated conduit. 4,515,397, Cl. 285-47.000.
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Fujibayashi, Kentaro, to Fujitsu Fanuc Limited. Numerical control system. 4,516,211, Cl. 364-474.000.
Nueller, Karl F.: *See—*
Kaschig, Jurgen; Kleiner, Eduard K.; Nueller, Karl F.; and Cooke, Thomas W., 4,515,640, Cl. 106-287.250.
Numata, Masanori: *See—*
Iwasawa, Hiroshi; Numata, Masanori; and Mama, Shinichi, 4,516,138, Cl. 346-80.000.
Numata, Takuhisa: *See—*
Sakurai, Yoshifumi; and Numata, Takuhisa, 4,516,222, Cl. 365-32.000.
Nurney, David J., to Indian Industries, Inc. Compound bow and eccentric wheel assemblies therefor. 4,515,142, Cl. 124-23.00R.
Nussbaum, Joel H., to Standard Products Company, The. Thermoplastic elastomer molding. 4,515,649, Cl. 156-244.110.
Nyffeler, Felix, to Siemens-Albis AG. Surface acoustic wave filter. 4,516,093, Cl. 333-193.000.
Nylco Corporation: *See—*
Coughlin, Thomas E., 4,515,844, Cl. 428-82.000.
O.C.C. Company Limited: *See—*
Ohno, Atsumi, 4,515,204, Cl. 164-483.000.
O.P.E. Co. Ltd.: *See—*
Manabe, Nobuyuki; and Goto, Takahiro, 4,515,312, Cl. 239-227.000.
Oakley, Inc.: *See—*
Tackles, George, 4,515,448, Cl. 351-41.000.
Oar, Ross C.: *See—*
Barbieri, John J.; and Oar, Ross C., 4,514,883, Cl. 24-163.00K.
Occidental Research Corporation: *See—*
Blumer, David J., 4,515,756, Cl. 423-54.000.
Oce-Nederland B.V.: *See—*
Deckers, Albert T.; and Leppink, Arie, 4,515,470, Cl. 355-105.000.
Eertink, Bastiaan B. B.; and van Esch, Hendrikus J., 4,516,019, Cl. 250-214.0RC.
Oda, Chikao: *See—*
Matsushita, Nobuo; Furukawa, Tokinobu; Shintani, Tetsuo; Sumitani, Tomoaki; and Oda, Chikao, 4,515,008, Cl. 73-53.000.
Oda, Kengo: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.
O'Donnell, Timothy W.: *See—*
Olson, Daniel R.; and O'Donnell, Timothy W., 4,515,931, Cl. 526-323.200.
Oe, Kunio: *See—*
Asai, Koichi; Tsuda, Mamoru; Oe, Kunio; and Muto, Yasuo, 4,515,507, Cl. 414-226.000.
Ogano, Takeo; Sueshige, Hiroshi; and Hatakeyama, Sakichi, to Honda Giken Kogyo Kabushiki Kaisha. Self-propelled working vehicle. 4,514,917, Cl. 37-249.000.
Ogawa, Hiroshi: *See—*
Motomura, Kenichi; Ogawa, Hiroshi; Yamamoto, Akira; and Hagita, Noriyuki, 4,515,197, Cl. 152-209.00R.
Ogawa, Masaki: *See—*
Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,515,922, Cl. 525-99.000.
Ogawa, Naoki: *See—*
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,515,119, Cl. 123-198.00E.
Ogishima, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Fairing device for motorcycles. 4,515,405, Cl. 296-78.100.
Ogura, Shunichiro; and Soumai, Masamichi, to Nippon Zeon Co. Ltd. Process for separating highly pure butene-1 and butene-2. 4,515,661, Cl. 203-60.000.
Ohio Agricultural Research and Development Center, The: *See—*
Holmes, Robert G., 4,515,291, Cl. 221-211.000.
Ohio Seisakusho Co., Ltd.: *See—*
Nishimura, Shinichi; Mizuno, Saburo; and Miyamoto, Kiyoshi, 4,515,404, Cl. 296-65.00R.
Ohio State University Research Foundation, The: *See—*
Shore, Sheldon G.; and Hsu, Wen-Liang, 4,515,728, Cl. 260-429.0CY.
Ohno, Atsumi, to Nippon Light Metal Company Limited; and O.C.C. Company Limited. Continuous metal casting. 4,515,204, Cl. 164-483.000.
Ohnuki, Mitsuo, to Konishiroku Photo Industry Co., Ltd. Lens barrel. 4,515,438, Cl. 350-255.000.
Ohshima, Jiro: *See—*
Ajima, Takashi; Ohshima, Jiro; and Koshino, Yutaka, 4,515,642, Cl. 148-1.500.
Ohta, Kazutoshi, to Mitsubishi Denki Kabushiki Kaisha. Buffer device for elevator. 4,515,248, Cl. 187-67.000.
Ohtani, Fumiyuki: *See—*
Moriyama, Naomune; and Ohtani, Fumiyuki, 4,516,191, Cl. 362-65.000.
Ohtsuka, Keizou: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.
Ojserkis, Maurice J. Opening device for a trawl net. 4,514,924, Cl. 43-9.000.
Okabe, Nobuo: *See—*
Wakabayashi, Hiroshi; Okabe, Nobuo; and Daitoku, Koichi, 4,515,453, Cl. 354-149.100.
Okabe, Yoshikatsu: *See—*
Matsumoto, Shigeru; Okabe, Yoshikatsu; and Kazama, Yasuhiro, 4,516,133, Cl. 343-819.000.
Okada, Yoshiyuki: *See—*
Yamamoto, Katsuhiro; Matsumoto, Katsuo; and Okada, Yoshiyuki, 4,515,162, Cl. 128-640.000.
Okamoto, Atsutoshi: *See—*
Hara, Masahiro; Okamoto, Atsutoshi; and Sakai, Toshiyasu, 4,516,017, Cl. 235-472.000.
Okamoto, Hideho; Yamatsuta, Kohji; and Nishio, Ken-ichi, to Sumitomo Chemical Company, Limited. Fiber-reinforced metallic composite material. 4,515,866, Cl. 428-614.000.
Okamoto, Kei: *See—*
Fujiyama, Kunio; Okamoto, Kei; and Yoshikawa, Noriyuki, 4,515,406, Cl. 297-409.000.
Okamoto, Kenzo: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 4,515,557, Cl. 431-302.000.
Okamoto, Norihiko: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.
Okamura, Kiyohito: *See—*
Yajima, Seishi, deceased; Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, 4,515,742, Cl. 264-63.000.
Okamuro, James A., to Borroughs Tool & Equipment Corporation. Seal installation device with coaxial handle parts. 4,515,376, Cl. 277-9.500.
Okano, Shizuo, to Sanyo Electric Co., Ltd. Battery pack. 4,515,872, Cl. 429-65.000.
Okubo, Junpei, to Kabushiki Kaisha Komatsu Seisakusho. Inertia supercharger for internal combustion engines. 4,515,115, Cl. 123-52.00M.
Okudaira, Toshiyuki: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.
Olin Corporation: *See—*
Fair, David L.; Justice, David D.; and Kelly, Pilar P., 4,515,665, Cl. 204-98.000.
Polan, Ned W.; and Chao, Chung-Yao, 4,515,671, Cl. 204-228.000.
Shen, Ming, 4,515,958, Cl. 548-251.000.
Tyler, Derek E.; and Yarwood, John C., 4,515,630, Cl. 75-53.000.
Oliver, John E., Jr.; and Singer, Arnold M. Chemically cleaning drilling/completion/packer brines. 4,515,699, Cl. 252-8.55R.
Olmsted, Bruce E., to JSJ Corporation. Drop-in type shifter with displaced shift stick. 4,515,032, Cl. 74-473.00R.
Olson, Daniel R.; and O'Donnell, Timothy W., to General Electric Company. Polyfunctional acrylate monomers and polymers thereof useful as capacitor dielectrics. 4,515,931, Cl. 526-323.200.
Olson, Edwin G.: *See—*
Varallo, Thomas P.; Ervine, Albert W. G.; Duffy, Joseph J.; and Olson, Edwin G., 4,514,956, Cl. 53-148.000.
Olson, Marvin. Apparatus for converting flow of water into electrical power. 4,516,033, Cl. 290-54.000.
Olympus Optical Co., Ltd.: *See—*
Shirako, Hideo, 4,516,181, Cl. 300-132.000.
Ushikubo, Masao, 4,515,286, Cl. 220-314.000.
Omark Industries, Inc.: *See—*
Scott, Lewis A., 4,515,055, Cl. 83-835.000.
OMI International Corporation: *See—*
Strom, Alice M.; Herr, R. Wilbur; and Martin, Sylvia, 4,515,663, Cl. 204-44.200.
Omitsu, Takashi: *See—*
Frank, Andrew A.; and Omitsu, Takashi, 4,515,041, Cl. 74-866.000.
Omura, Ikuo; and Yamauchi, Junichi, to Kuraray Co., Ltd. Highly water-resistant adhesive. 4,515,930, Cl. 526-276.000.
Ono Seiko Co., Ltd.: *See—*
Kataoka, Takeshi; Aoki, Ryoichi; Matsui, Hisashi; and Matsumoto, Hiroshi, 4,515,024, Cl. 74-10.330.
Ono, Toshiro: *See—*
Yoshihara, Hideo; Ozawa, Akira; Sekimoto, Misao; and Ono, Toshiro, 4,515,876, Cl. 430-5.000.
Ono, Yukio: *See—*
Kitano, Seiichi; and Ono, Yukio, 4,515,256, Cl. 192-18.00R.
Oota, Hideaki: *See—*
Sawano, Kiyohito; Kouichi, Ryujiro; Oota, Hideaki; Takano, Masashi; and Moroe, Michio, 4,515,909, Cl. 523-102.000.
Ooue, Michio: *See—*
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, 4,516,149, Cl. 357-71.000.

Opalka, Chester J., Jr.: *See—*
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,515,797, Cl. 514-349.000.
Opcon, Inc.: *See—*
Fischer, William H., 4,515,336, Cl. 248-288.300.
Oppama Kogyo Kabushiki Kaisha: *See—*
Enomoto, Kiyoshige; and Iwata, Masao, 4,515,140, Cl. 123-603.000.
Optimum Manufacturing Inc.: *See—*
Vanelli, Johnny, 4,515,556, Cl. 431-253.000.
Orda Industries Ltd.: *See—*
Hirshfeld, Uri, 4,515,373, Cl. 273-317.000.
Oregon Graduate Center for Study & Research: *See—*
Hauser, Frank M.; and Mal, Dipakranjan, 4,515,720, Cl. 260-351.100.
Orjala, Markku, to Valtion Teknillinen Tutkimuskeskus. Burner for pellets. 4,515,088, Cl. 110-110.000.
Orndorff, Karl B.: *See—*
Sherwood, Edward F.; Orndorff, Karl B.; and Dillon, Charles M., 4,514,946, Cl. 52-211.000.
Orofino, Thomas A.: *See—*
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,515,839, Cl. 428-17.000.
O'Rourke, David J.: *See—*
Adger, Brian M.; and O'Rourke, David J., 4,515,952, Cl. 546-329.000.
Ortho Pharmaceutical Corporation: *See—*
Kung, Patrick C.; and Goldstein, Gideon, 4,515,893, Cl. 435-240.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,515,894, Cl. 435-240.000.
Kung, Patrick C.; and Goldstein, Gideon, 4,515,895, Cl. 435-240.000.
Osako, Kyoichi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Osterhage, Thomas F.: *See—*
Kievit, David J.; and Osterhage, Thomas F., 4,515,595, Cl. 604-385.00A.
Ostermeier, Johann: *See—*
Dopfer, Peter; Ostermeier, Johann; and Schwerin, Siegfried, 4,515,639, Cl. 106-288.00Q.
Ostop, John A.: *See—*
Przybysz, John X.; and Ostop, John A., 4,514,898, Cl. 29-582.000.
Otani, Kozo; and Yamada, Yoshio, to Toyo Tire & Rubber Company, Limited. Polyetherpolyol derivative and process for preparing the same. 4,515,981, Cl. 560-50.000.
Otdel Fiziko-Tekhnicheskikh Problem Energetiki Uralskogo Nauchnogo Tsentra Akademi Nauk SSR: *See—*
Maidanik, Jury F.; Vershinin, Sergei V.; Kholodov, Valery F.; and Dolgirev, Jury E., 4,515,209, Cl. 165-104.220.
Otis Engineering Corporation: *See—*
Sizer, Phillip S.; Cox, Don C.; and Council, Malcolm N., 4,515,220, Cl. 166-384.000.
Otisca Limited, Ltd.: *See—*
Keller, Douglas V., Jr.; and Simmons, Frederick J., 4,515,602, Cl. 44-51.000.
Otobe, Yutaka: *See—*
Hasegawa, Shumpei; and Otobe, Yutaka, 4,515,009, Cl. 73-118.000.
Otsuki, Masaaki; and Kida, Shinji, to Toshiba Silicone Co., Ltd. Prevention of odors in polyorganosiloxanes. 4,515,979, Cl. 556-445.000.
Otten, Joachim W., deceased: *See—*
Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursula, heir; and Rudolph nee Otten, Anna G., heir, 4,515,598, Cl. 8-549.000.
Otten, Ursula, heir: *See—*
Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursula, heir; and Rudolph nee Otten, Anna G., heir, 4,515,598, Cl. 8-549.000.
Otterson, Richard J.: *See—*
Login, Robert B.; Walele, Ismail L.; and Otterson, Richard J., 4,515,721, Cl. 260-400.000.
Otterstedt, Jan-Erik A.; Jaras, Sven G.; Pudas, Roland; and Upson, Lawrence L., to Katalistiks B.V. Cracking catalyst. 4,515,903, Cl. 502-68.000.
Oudet, Claude; and Regnier, Danielle, to Portescap. Stepper motor control device. 4,516,064, Cl. 318-696.000.
Outboard Marine Corporation: *See—*
St. Ledger, Joseph B., 4,515,139, Cl. 123-599.000.
Ovcharov, Vladimir K.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
Overmyer, Mark. Ski stress signaling device. 4,516,110, Cl. 340-323.00R.
Owens-Corning Fiberglas Corporation: *See—*
Bhatti, Mohinder S., 4,515,610, Cl. 65-2.000.
Bhatti, Mohinder S., 4,515,611, Cl. 65-2.000.
Stotler, David V.; and Coffey, Fred S., 4,515,613, Cl. 65-4.400.
Owens-Illinois, Inc.: *See—*
Barkhau, Marvin L.; Perry, Philip D.; Poundstone, Donald H.; and Sherman, James E., 4,515,614, Cl. 65-29.000.
Oyama, Shigeo T.: *See—*
Boudart, Michel; Oyama, Shigeo T.; and Volpe, Leo, 4,515,763, Cl. 423-409.000.
Ozawa, Akira: *See—*
Yoshihara, Hideo; Ozawa, Akira; Sekimoto, Misao; and Ono, Toshiro, 4,515,876, Cl. 430-5.000.
Ozawa, Hitoshi: *See—*
Tsuchiya, Yasuhiro; and Ozawa, Hitoshi, 4,515,112, Cl. 123-41.840.
Ozawa, Naoki: *See—*
Nishizawa, Shigeki; Nagahara, Shusaku; and Ozawa, Naoki, 4,516,154, Cl. 358-44.000.
P. L. Porter Co.: *See—*
Porter, Clyde R., 4,515,034, Cl. 74-501.00R.
Pacher, Marielise: *See—*
Berendt, Hans-Ulrich; and Pacher, Marielise, 4,515,596, Cl. 8-107.000.
Pachmayr Gun Works, Inc.: *See—*
Farrar, Frank W.; and Cupp, Carl J., 4,514,922, Cl. 42-50.000.
Packer, Jon D.: *See—*
Bogardus, Rodger E.; Packer, Jon D.; and SaNogueira, Peter, 4,515,784, Cl. 514-63.000.
Packless Metal Hose, Inc.: *See—*
Zifferer, Lothar R., 4,514,997, Cl. 72-68.000.
Paffhausen, Hans: *See—*
Kohle, Ulrich; and Paffhausen, Hans, 4,515,489, Cl. 400-241.200.
Page, Donald F.: *See—*
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,515,797, Cl. 514-349.000.
Palfi, Zoltan: *See—*
Varga, Laszlo ; Krekacs, Sandor; Latorcai, Janos; Palfi, Zoltan; and Fledrich, Istvan, 4,514,911, Cl. 34-22.000.
Palkin, Leonid N.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.
Palmer, Dean C.: *See—*
Cunningham, Earl A.; and Palmer, Dean C., 4,516,165, Cl. 360-53.000.
Pammenter, Robert V.: *See—*
Matthew, Ian G.; Pammenter, Robert V.; and Kershaw, Mervyn G., 4,515,696, Cl. 210-713.000.
Panametrics, Inc.: *See—*
Wallace, David R.; Korba, James M.; Matson, James E.; and Lynnworth, Lawrence C., 4,515,021, Cl. 73-861.270.
Pantani, Jean-Pierre: *See—*
Carsalade, Henri; Delaporte, Francois-Xavier; and Pantani, Jean-Pierre, 4,516,247, Cl. 375-56.000.
Panteleev, Valery A.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.
Panzera, Carlino: *See—*
Wu, Jenn-Ming; Cannon, Warren R.; and Panzera, Carlino, 4,515,634, Cl. 106-35.000.
Paradyne Corporation: *See—*
Armstrong, Thomas R., 4,516,216, Cl. 364-514.000.
Pardini, John A.; Brubaker, Robert C.; and Rusnak, John J., to United States of America, Energy. Sealing coupling. 4,515,750, Cl. 376-446.000.
Park, Dong-Sil; and Zabala, Robert J., to Electric Power Research Institute, Inc. Corrosion-resistant coated ferrous body. 4,515,865, Cl. 428-610.000.
Parker, Gary F., to Cooperheat. Heat treatment method and apparatus. 4,515,559, Cl. 432-10.000.
Parquet, Donald J.; Brown, Thomas R.; and Edwards, Eldon R., to J. I. Case Company. Stabilizer assembly. 4,515,520, Cl. 414-718.000.
Parr, Leslie R.: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.
Parran, John J., Jr.; and Sakkab, Nabil Y., to Procter & Gamble Company, The. Oral compositions. 4,515,772, Cl. 424-57.000.
Parrott, George A., to Dresser Europe S.A. Mining machine. 4,515,409, Cl. 299-43.000.
Pashley, Neil A.: *See—*
Prewett, Phillip D.; Jefferies, Derek K.; Pashley, Neil A.; and Cockhill, Thomas D., 4,516,052, Cl. 313-546.000.
Pasques, Christian. Wheel truck and roller assembly. 4,515,379, Cl. 280-11.270.
Pataki, Endre: *See—*
Gillemot, Laszlo ; Prodan, Janos; Pataki, Endre; and Zuckermann, Erno , 4,515,497, Cl. 403-391.000.
Patrick, James F.; Seligman, Peter; Tong, Yit C.; and Clark, Graeme M., to Commonwealth of Australia Secretary of Industry and Commerce, The. Speech processing method and apparatus. 4,515,158, Cl. 128-419.00R.
Patterson, John W., Jr.; and Pfister, Jurg R., to SYNTEX (U.S.A.) Inc. Allene containing arachidonic acid derivatives. 4,515,727, Cl. 260-413.000.
Patterson, Michael, to Kangol Magnet Limited. Adjustable vehicle seat belt anchorage. 4,515,395, Cl. 280-808.000.
Patzwahl, Hans-Jurgen, to KRONES AG Hermann Kronseder Maschinenfabrik. Device for removing air from filled bottles or other containers. 4,514,953, Cl. 53-52.000.

Paul E. Hawkinson Company: *See—*
Hawkinson, Raymond P., Jr.; and Newman, Dennis W., 4,516,068, Cl. 324-54.000.
Paust, Joachim: *See—*
Vogel, Friedrich; and Paust, Joachim, 4,515,975, Cl. 549-411.000.
Pav, Josef: *See—*
Rauf, Richard; Pav, Josef; and Scholl, Klaus, 4,514,887, Cl. 29-116.0AD.
Pavan, Mario. Method for producing undulated dough products. 4,515,817, Cl. 426-106.000.
Payne, David N.; Sasaki, Issei; and Adams, Michael J., to National Research Development Corporation. Measurement of refractive index profile. 4,515,475, Cl. 356-73.100.
Payne, William M., Jr., to Burlington Industries, Inc. Incremental modular creel system. 4,515,328, Cl. 242-131.000.
Peco Controls Corporation: *See—*
Anderson, F. Allan; Chen, Henry C. J.; DiMucci, Vito A.; and Wang, Roger C., 4,514,954, Cl. 53-53.000.
Pedroso, Raul I.: *See—*
Hollinger, John D.; and Pedroso, Raul I., 4,515,274, Cl. 209-3.100.
Pehart, Paul. Pupillary distance measuring instrument. 4,514,906, Cl. 33-200.000.
Pelc, Norbert J.: *See—*
Flax, Stephen W.; and Pelc, Norbert J., 4,515,163, Cl. 128-660.000.
Pelikan Aktiengesellschaft: *See—*
Kohle, Ulrich; and Paffhausen, Hans, 4,515,489, Cl. 400-241.200.
Pellico, Michael A., to Laclede Professional Products, Inc. Dental impression composition. 4,515,913, Cl. 523-109.000.
Pendergrass, John E.; and Melton, David T., to Kendall Company, The. Surgical sponge. 4,515,594, Cl. 604-384.000.
Pennwalt Corporation: *See—*
Mills, George A.; and Richert, Gerald R., 4,515,275, Cl. 209-558.000.
Pentel Kabushiki Kaisha: *See—*
Minami, Hitoshi, 4,515,487, Cl. 400-121.000.
Peppel, George W.: *See—*
Sullivan, Paul E.; and Peppel, George W., 4,515,399, Cl. 285-95.000.
Perkin-Elmer Corporation, The: *See—*
La Fiandra, Carlo; and Mumola, Peter B., 4,516,062, Cl. 318-676.000.
Perkins, Frank M. Transmission. 4,515,026, Cl. 74-63.000.
Peroni, Peter A., to LaFrance Corporation. Stove damper handle. 4,514,877, Cl. 16-111.00R.
Perrine, Carol-Anne: *See—*
Perrine, Paul M.; and Perrine, Carol-Anne, 4,515,516, Cl. 417-38.000.
Perrine, Paul M.; and Perrine, Carol-Anne, to Champion, Perrine & Associates. Method and apparatus for compressing gases. 4,515,516, Cl. 417-38.000.
Perry, John C. Rod bearing lubrication for two-cycle engines. 4,515,110, Cl. 123-41.370.
Perry, Philip D.: *See—*
Barkhau, Marvin L.; Perry, Philip D.; Poundstone, Donald H.; and Sherman, James E., 4,515,614, Cl. 65-29.000.
Perry, Thomas J.; and Khera, Muhammad I., to GTE Automatic Electric Inc. Remote data link controller having multiple data link handling capabilities. 4,516,237, Cl. 370-58.000.
Perry, Thomas J., to GTE Automatic Electric Inc. Digital span transmission circuit. 4,516,245, Cl. 375-17.000.
Pertron Controls Corporation: *See—*
Jones, Gary A., 4,516,008, Cl. 219-109.000.
Peschetz, Johann, to Austria Tabkwerke Aktiengesellschaft vorm. Osterreischische Tabakregie. Apparatus for the production of a reconstituted tobacco foil. 4,515,542, Cl. 425-84.000.
Peters, Dieter: *See—*
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, 4,515,183, Cl. 137-625.210.
Peters, Klaus-Jurgen: *See—*
Jaggle, Gunther; Maisch, Wolfgang; Peters, Klaus-Jurgen; and Schutz, Rudolf, 4,515,128, Cl. 123-454.000.
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., to Danfoss A/S. Vapor burner for liquid fuel. 4,515,555, Cl. 431-208.000.
Peterson, Bruce R.: *See—*
Moon, William G.; Moon, Ronald R.; Peterson, Bruce R.; and Westwood, Donald C., 4,516,177, Cl. 360-77.000.
Petersson, Stig A.: *See—*
Lindquist, Bjorn K. V.; and Petersson, Stig A., 4,515,631, Cl. 75-73.000.
Petitjean, Donald L. Golf club swing training device. 4,515,368, Cl. 273-186.00A.
Petro Tool, Inc.: *See—*
Reed, Michael R.; and Hoffman, Daniel E., 4,515,211, Cl. 166-77.000.
Petroleum Meter & Pump Co., Inc.: *See—*
Stephenson, Tom, 4,515,030, Cl. 74-348.000.
Petrolite Corporation: *See—*
Knepper, J. Irvine; and Sallee, Dennis C., 4,515,603, Cl. 44-62.000.
Petter, Helmut; Bildstein, Hubert; and Simader, Fritz, to Schwarzkopf Development Corporation. Rotating anode for X-ray tubes. 4,516,255, Cl. 378-143.000.
Pettiford, Michael E.: *See—*
Goel, Anil B.; and Pettiford, Michael E., 4,515,983, Cl. 560-130.000.
Pevnev, Anatoly A.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.
Peynaud, Francois; Gosselin, Jean; Farcy, Andre ; and Grandvaux, Bernard, to Thomson-CSF. Acoustic positioning system. 4,516,226, Cl. 367-6.000.
Pfaff Industriemaschinen GmbH: *See—*
Walther, Karl-Heinz, 4,515,098, Cl. 112-274.000.
Pfefferkorn, Dietmar: *See—*
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.
Pfister, Jurg R.: *See—*
Patterson, John W., Jr.; and Pfister, Jurg R., 4,515,727, Cl. 260-413.000.
Pfizer Inc.: *See—*
Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,515,799, Cl. 514-341.000.
Phase One Products, Corp.: *See—*
Taylor, Charles E.; Gattiker, Anton; and Krantz, Gary B., 4,515,468, Cl. 355-27.000.
Phelps, Peter M. Slotted splash bars for gas liquid contact apparatus. 4,515,735, Cl. 261-111.000.
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., to Glaxo Group Limited. 11α-Amino-androstanes. 4,515,786, Cl. 514-182.000.
Phillips, Dale R.: *See—*
Loy, Robert E.; Phillips, Dale R.; and Willis, Paul E., 4,515,234, Cl. 180-89.120.
Phillips, James P., to Motorola, Inc. Microwave receiver front end design. 4,516,270, Cl. 455-302.000.
Phillips, Michael J., to Boeing Company, The. Knife block guide. 4,515,051, Cl. 83-146.000.
Phillips Petroleum Company: *See—*
Hitzman, Donald O., 4,515,700, Cl. 252-8.55R.
Schuettenberg, Alexander D.; and Gragson, James T., 4,515,740, Cl. 264-50.000.
Photomeca S.A.: *See—*
Ferrante, Mario, 4,515,456, Cl. 354-320.000.
Photon Chroma, Inc.: *See—*
Plumadore, John D., 4,515,463, Cl. 355-10.000.
Phy, William S., to Fairchild Camera & Instrument Corporation. Process for fabricating precision optical spacers for image sensor filters. 4,515,662, Cl. 204-15.000.
Piduch, Hans-Gunter: *See—*
Kwasnik, Hans-Jurgen; Piduch, Hans-Gunter; and Bruske, Heinz-Dieter, 4,515,660, Cl. 202-241.000.
Piepers, Harry C.; and van Poele, Gerard J., to Meco Equipment Engineers, B.V. Device for galvanically applying a metal coating. 4,515,670, Cl. 204-199.000.
Pierce, Rex G.: *See—*
Ray, Robert W.; and Pierce, Rex G., 4,514,934, Cl. 51-165.00R.
Pilat, John F.: *See—*
Farber, David A.; Bachman, Brett; Pilat, John F.; and Wallach, Walter A., Jr., 4,516,203, Cl. 364-200.000.
Pillari, Joseph C.; and Willging, Arthur W., to Singer Company, The. Fault detection arrangement for relay switching system. 4,516,076, Cl. 324-418.000.
Pillis, Joseph W., to Frick Company. Variable liquid refrigerant injection port locator for screw compressor equipped with automatic variable volume ratio. 4,515,540, Cl. 418-97.000.
Pinede, Edourd; and Seidel, William J., to PKS/Communications, Inc. Convertible desk to wall mounted telephone set. 4,515,998, Cl. 179-146.00R.
Pioneer Photo Albums, Inc.: *See—*
Plutsky, Sheldon, 4,514,919, Cl. 40-159.000.
Pischinger, Franz; and Kreuter, Peter, to Fev Forschungsgesellschaft fur Energietechnik und ver Brennungsmotoren mbH. Arrangement for electromagnetically operated actuators. 4,515,343, Cl. 251-48.000.
Pitney Bowes Inc.: *See—*
Eckert, Alton B., 4,516,014, Cl. 235-101.000.
Scribner, Albert W., 4,516,209, Cl. 364-466.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. 4,5-Dimethyl-2-(2-methylthio)ethyl)-1,3-oxathiolane. 4,515,966, Cl. 549-30.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Methyl(methylthioalkyl)-1,3-dithiolanes. 4,515,967, Cl. 549-39.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Furyl and phenyl mercaptals and use thereof in augmenting or enhancing the aroma or taste of foodstuffs. 4,515,968, Cl. 549-39.000.
Pittler Machinenfabrik AG: *See—*
Dietz, Peter; Muller, Norbert W.; and Kroh, Horst F. M., 4,515,049, Cl. 82-36.00R.
Piwonka, Fridolin: *See—*
Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, 4,515,125, Cl. 123-359.000.
Pizzurro, Vito F., to Ford Aerospace & Communications Corporation. Guided projectile lens cover. 4,515,082, Cl. 102-293.000.
PKS/Communications, Inc.: *See—*
Pinede, Edourd; and Seidel, William J., 4,515,998, Cl. 179-146.00R.
PKS-Engineering GmbH & Co. KG: *See—*
Janich, Hans-Jurgen, 4,515,686, Cl. 209-139.00A.
Plaquin, Bernard; to Vallourec. Method and apparatus for ensuring correct thread make-up of a pipejoint. 4,515,020, Cl. 73-761.000.

Platek, Gary F.; and Krug, Geoffrey P., to Eltech systems Corporation. Reticulate electrode and cell for recovery of metal ions. 4,515,672, Cl. 204-269.000.

Pleibel, William: *See—*
Howard, Richard E.; Pleibel, William; Simpson, Jay R.; and Stolen, Rogers H., 4,515,436, Cl. 350-96.330.

Plessey Overseas Limited: *See—*
Currall, William J. P., 4,515,314, Cl. 239-466.000.

Pletka, Hans-Dieter: *See—*
Domesle, Rainer; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,515,758, Cl. 423-213.200.

Plotzker, Irene G., to Du Pont de Nemours, E. I., and Company. Protective garment or cover, composite semipermeable barrier fabric, and use in detoxification. 4,515,761, Cl. 423-240.000.

Plumadore, John D., to Photon Chroma, Inc. Inclined toner flow control system for developing an electrostatic latent image upon an electrophotographic film. 4,515,463, Cl. 355-10.000.

Plunkett, Luther C., Jr.: *See—*
Bolick, Fred C., Jr.; and Plunkett, Luther C., Jr., 4,515,995, Cl. 179-6.130.

Plutsky, Sheldon, to Pioneer Photo Albums, Inc. Apparatus for storing, displaying and identifying photographs. 4,514,919, Cl. 40-159.000.

Pocanschi, Adrian. Damping installation for earthquake-endangered buildings. 4,514,942, Cl. 52-167.000.

Polan, Ned W.; and Chao, Chung-Yao, to Olin Corporation. Electrochemical treatment of copper for improving its bond strength. 4,515,671, Cl. 204-228.000.

Polydrain, Inc.: *See—*
Thomann, Roland; and Amann, Markus, 4,515,498, Cl. 404-4.000.

Pond, Wilson G.: *See—*
Laurent, Sebastian M.; and Pond, Wilson G., 4,515,780, Cl. 424-154.000.

Pong, Richard G. S. Buoyant metering dispenser. 4,514,866, Cl. 4-228.000.

Pope, H. Maie' . Personal grooming device. 4,514,903, Cl. 30-49.000.

Popendiker, Kurt: *See—*
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, 4,515,795, Cl. 514-263.000.

Port-A-Boat, Inc.: *See—*
Kury, John A., 4,515,102, Cl. 114-344.000.

Porter, Clyde R., to P. L. Porter Co. Control mechanism for hydraulic locking device. 4,515,034, Cl. 74-501.00R.

Portescap: *See—*
Oudet, Claude; and Regnier, Danielle, 4,516,064, Cl. 318-696.000.

Potsaid, Majic S.: *See—*
Castronovo, Frank P.; Strauss, Harry W.; and Potsaid, Majic S., 4,515,766, Cl. 424-1.100.

Poulin, Paul: *See—*
Couture, Raymond; Couture, Raynald; and Poulin, Paul, 4,516,117, Cl. 340-685.000.

Poundstone, Donald H.: *See—*
Barkhau, Marvin L.; Perry, Philip D.; Poundstone, Donald H.; and Sherman, James E., 4,515,614, Cl. 65-29.000.

PPG Industries, Inc.: *See—*
Boyer, Nicodemus E., 4,515,964, Cl. 548-463.000.
Korach, Malcolm, 4,515,664, Cl. 204-62.000.
Schwarz, Richard A., 4,515,928, Cl. 526-200.000.
Tang, Robert H., 4,515,929, Cl. 526-228.000.

Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co.: *See—*
Schimmelpfennig, Wolfgang; and Siede, Heinz-Jurgen, 4,516,027, Cl. 250-338.000.

Preiner, Gerhard; and Muller, Johann, to Wacker-Chemie GmbH. Method for preparing asymmetrical disiloxanes. 4,515,976, Cl. 556-453.000.

Prentice Corporation: *See—*
Kenemuth, James A., 4,516,246, Cl. 375-37.000.

Prescott, Rochelle; and Leiner, Dennis C., to Dyonics, Inc. Optical system. 4,515,444, Cl. 350-413.000.

Prewett, Phillip D.; Jefferies, Derek K.; Pashley, Neil A.; and Cockhill, Thomas D., to Dublier Scientific Limited. Dispenser for ion source. 4,516,052, Cl. 313-546.000.

Prior, Herbert E. Sawhorse bracket. 4,515,243, Cl. 182-155.000.

Prisant, Simon, to Coinamatic Leasing Corporation. Mounting means for drop coin mechanism. 4,515,261, Cl. 194-1.00A.

Pritulsky, James, to AMP Incorporated. Pin receptacle intended for mounting in a circuit board. 4,515,422, Cl. 339-17.00C.

Procter & Gamble Company, The: *See—*
Kievit, David J.; and Osterhage, Thomas F., 4,515,595, Cl. 604-385.00A.
Moeddel, Robert W., 4,515,705, Cl. 252-174.120.
Parran, John J., Jr.; and Sakkab, Nabil Y., 4,515,772, Cl. 424-57.000.

Prodan, Janos: *See—*
Gillemot, Laszlo ; Prodan, Janos; Pataki, Endre; and Zuckermann, Erno , 4,515,497, Cl. 403-391.000.

Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, to GTE Laboratories Incorporated. Multi-electrode array for a beam mode fluorescent lamp. 4,516,057, Cl. 315-260.000.

Provost, Florent: *See—*
Jacquemin, Claude; Provost, Florent; and Seinera, Andre , 4,515,560, Cl. 432-80.000.

Pryor, Timothy R., to Diffracto Ltd. Electro-optical sensors with fiber optic bundles. 4,515,479, Cl. 356-375.000.

Przybysz, John X.; and Ostop, John A., to Westinghouse Electric Corp. Method of making a self protected thyristor. 4,514,898, Cl. 29-582.000.

Pudas, Roland: *See—*
Otterstedt, Jan-Erik A.; Jaras, Sven G.; Pudas, Roland; and Upson, Lawrence L., 4,515,903, Cl. 502-68.000.

Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., to University of Technology. Adjustable support for an optical or other instrument. 4,515,333, Cl. 248-122.000.

Pundak, Nachman; and Shtrikman, Shmuel, to Ricor Ltd. Passive automatic phase delay control of the displacer motion in pneumatically driven split cycle type cryocoolers. 4,514,987, Cl. 62-6.000.

Purzycki, Kenneth L.: *See—*
Chalk, Alan J.; and Purzycki, Kenneth L., 4,515,711, Cl. 252-522.00R.

Pyburn, John R., Jr.: *See—*
Gilbert, Jerry R.; Millikan, Robert C.; Wysowski, Charles H.; and Pyburn, John R., Jr., 4,515,518, Cl. 414-459.000.

QO Chemicals, Inc.: *See—*
Everett, George S., 4,515,935, Cl. 528-141.000.

Quadra Wheelchairs, Inc.: *See—*
Minnebraker, Jeffrey P., 4,515,383, Cl. 280-242.0WC.

Quan, Ronald, to Sony Corporation. Voltage controlled variable capacitor. 4,516,041, Cl. 307-494.000.

Quantum Corporation: *See—*
Moon, William G.; Moon, Ronald R.; Peterson, Bruce R.; and Westwood, Donald C., 4,516,177, Cl. 360-77.000.

Querens, Allan E.: *See—*
Rawls, Henry R.; Querens, Allan E.; and Zimmerman, Barbara F., 4,515,910, Cl. 523-115.000.

Quinn, James P.: *See—*
Armstead, Brian H.; and Quinn, James P., 4,515,821, Cl. 426-330.400.

Radeklau, Hans-Jurgen: *See—*
Muller, Rudolf; Radeklau, Hans-Jurgen; Dofke, Harald; and Krieger, Detlef, 4,515,483, Cl. 366-303.000.

Radovich, Albert F. Portable desk and briefcase. 4,515,493, Cl. 402-4.000.

Ranken, Paul F.; and Walter, Thomas J., to Ethyl Corporation. N-Alkyl-4-(4-pyridinyl)isatoic anhydrides. 4,515,945, Cl. 544-94.000.

Rankin, Henry, Jr. Bird nesting habitat. 4,515,108, Cl. 119-45.00R.

Rao, S. Prabhakara; and Burkhalter, John F., to Halliburton Company. Hydrolytically stable polymers for use in oil field cementing methods and compositions. 4,515,635, Cl. 106-90.000.

Rask, Mark C. Electrically-powered expansion/contraction apparatus. 4,516,102, Cl. 335-267.000.

Rasmussen, Hilmar O.: *See—*
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,515,555, Cl. 431-208.000.

Rasshofer, Werner: *See—*
Fauss, Rudolf; Meiners, Hans J.; Rasshofer, Werner; and Meyborg, Holger, 4,515,923, Cl. 525-127.000.

Rathe, Robert A.; and Volkmann, Thomas J., to FMC Corporation. Extensible boom with manual section stored in base. 4,514,939, Cl. 52-118.000.

Rauf, Richard; Pav, Josef; and Scholl, Klaus, to Kleinewefers GmbH. Roll for use in calendars or the like. 4,514,887, Cl. 29-116.0AD.

Rawls, Henry R.; Querens, Allan E.; and Zimmerman, Barbara F. Interpolymeric resin for treatment of teeth. 4,515,910, Cl. 523-115.000.

Ray, Richard C., to AT&T Bell Laboratories. Power failure alarm circuit permitting orderly shutdown of microprocessor load. 4,516,214, Cl. 364-483.000.

Ray, Robert W.; and Pierce, Rex G., to Caterpillar Tractor Co. Method and apparatus for abrasively machining a workpiece. 4,514,934, Cl. 51-165.00R.

Raymond, Lambert L.: *See—*
Ringdahl, Mark G.; Raymond, Lambert L.; and Scherer, Richard J., 4,516,007, Cl. 219-10.55D.

RCA Corporation: *See—*
Bleacher, John N.; and Cushman, Barry M., 4,515,867, Cl. 428-204.000.
Crowley, Albert T., 4,516,084, Cl. 331-2.000.
DiMarco, Louis A., 4,515,830, Cl. 427-122.000.
Dion, Donald F.; and Cantella, Michael J., 4,516,167, Cl. 358-160.000.
Gurley, Thomas M., 4,516,150, Cl. 358-13.000.
Haferl, Peter E., 4,516,058, Cl. 315-370.000.
Hernqvist, Karl G., 4,515,569, Cl. 445-5.000.
Hicks, James E., 4,516,168, Cl. 358-190.000.
Hudson, Kenneth C., 4,516,024, Cl. 250-236.000.
Kirschner, Thomas F., 4,516,233, Cl. 369-79.000.
Krull, Donald K.; and Naimpally, Saiprasad V., 4,516,153, Cl. 358-31.000.
Michaelis, Theodore D., 4,516,231, Cl. 369-44.000.
Miller, Richard D., 4,516,036, Cl. 307-228.000.
Starner, Eugene R., 4,516,217, Cl. 364-717.000.
Tarzaiski, Richard J., 4,516,235, Cl. 369-116.000.
Truskalo, Walter, 4,516,169, Cl. 358-190.000.
van Raalte, John A.; and Riddle, George H. N., 4,516,232, Cl. 369-126.000.
Willis, Donald H., 4,516,152, Cl. 358-29.000.

Reap, James J., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,515,624, Cl. 71-92.000.

Rebsamen, Arthur: *See—*
Slavik, Walter; and Rebsamen, Arthur, 4,515,320, Cl. 242-18.0DD.

Reed, David J.: *See—*
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,515,898, Cl. 501-15.000.

Reed, Michael R.; and Hoffman, Daniel E., to Petro Tool, Inc. Tool cable feeding system. 4,515,211, Cl. 166-77.000.

Reed, William R., Jr.: *See—*
Komanduri, Ranga; Ettinger, Robert H.; Casey, Morton P., Jr.; and Reed, William R., Jr., 4,515,047, Cl. 82-1.00C.

Reese, Eckart: *See—*
Kleiner, Frank; Kubens, Rolf; Reese, Eckart; and Wank, Joachim, 4,515,925, Cl. 525-439.000.

Regnier, Danielle: *See—*
Oudet, Claude; and Regnier, Danielle, 4,516,064, Cl. 318-696.000.

Rehman, William R.: *See—*
Cobbs, Walter H., Jr.; and Rehman, William R., 4,515,836, Cl. 427-425.000.

Reich, Fritz: *See—*
Thalmann, Alfred; and Reich, Fritz, 4,515,177, Cl. 137-318.000.

Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, to Neuhaus, J. D. Pneumatic control valve. 4,515,183, Cl. 137-625.210.

Reimiller, Robert D.: *See—*
Miller, William I.; and Reimiller, Robert D., 4,515,480, Cl. 356-400.000.

Rekers, John W., to Milliken Research Corporation. Radiation-stable polyolefin compositions containing aromatic ketone compoun[illegible] 4,515,666, Cl. 204-159.200.

Rempel, Dieter: *See—*
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.

Renner, Alfred, to Ciba Geigy Corporation. Allyl or methallyl-bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid imides and bisimides. 4,515,962, Cl. 548-435.000.

Rentzea, Costin; Spiegler, Wolfgang; and Jung, Johann, to BASF Aktiengesellschaft. Triazolyl ketone-oximes and triazolyl dioximes, their preparation and their use as plant growth regulators. 4,515,616, Cl. 71-76.000.

Renz, Walter: *See—*
Kaule, Wittich; Renz, Walter; and Stenzel, Gerhard, 4,516,031, Cl. 250-562.000.

Repligen Corporation: *See—*
Herlihy, Walter C., 4,515,773, Cl. 424-59.000.

Research Association For Residual Oil Processing: *See—*
Shioiri, Tomonori; and Ino, Takashi, 4,515,902, Cl. 502-64.000.

Resonant Technology Company: *See—*
Gurries, Raymond A., 4,515,408, Cl. 299-37.000.

Rexnord, Inc.: *See—*
Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, 4,515,832, Cl. 427-233.000.

Rey-Bellet, Gerald: *See—*
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,515,948, Cl. 544-325.000.

Reynolds, Joseph D.; and Davis, Alan R., to Eaton Corporation. Compound variable mechanical advantage shifting mechanism. 4,515,029, Cl. 74-339.000.

Reynolds Metals Company: *See—*
Lee, Harry W., Jr.; and Wallace, Joseph W., 4,515,284, Cl. 220-70.000.

Reznik, David. Apparatus for cracking and separating nuts. 4,515,076, Cl. 99-571.000.

Rhoads, Paul M.; and Cheffer, Harold H., to NCR Corporation. Phase synchronization and control circuit. 4,516,035, Cl. 307-66.000.

Rhone-Poulenc Agrochimie: *See—*
Debourge, Jean-Claude; and Lacroix, Guy, 4,515,807, Cl. 514-513.000.

Ribaudo, Andrew, Jr. Hot water control system. 4,515,307, Cl. 236-25.00R.

Richardson-Vicks Inc.: *See—*
Bogardus, Rodger E.; Packer, Jon D.; and SaNogueira, Peter, 4,515,784, Cl. 514-63.000.

Richert, Gerald R.: *See—*
Mills, George A.; and Richert, Gerald R., 4,515,275, Cl. 209-558.000.

Richert, Manfred: *See—*
Emert, Anton; Knabel, Walter; and Richert, Manfred, 4,515,388, Cl. 280-605.000.

Ricoh Company, Ltd.: *See—*
Kammoto, Yoshiaki, 4,516,174, Cl. 358-282.000.
Sakurai, Akira, 4,516,262, Cl. 382-18.000.
Sasaki, Masaomi, 4,515,883, Cl. 430-58.000.
Suzuki, Kohji, 4,515,467, Cl. 355-15.000.
Yano, Takashi, 4,516,272, Cl. 455-607.000.

Ricor Ltd.: *See—*
Pundak, Nachman; and Shtrikman, Shmuel, 4,514,987, Cl. 62-6.000.

Riddle, George H. N.: *See—*
van Raalte, John A.; and Riddle, George H. N., 4,516,232, Cl. 369-126.000.

Rieker, Werner: *See—*
Schadlich, Fritz; Rieker, Werner; Thaler, Rainer; and Klingenstein, Klaus, 4,515,303, Cl. 227-131.000.

Riggan, William C., to United States of America, Energy. Pulse flux measuring device. 4,516,028, Cl. 250-370.000.

Rinehart, John R. Taxidermy mannikin mold with recesses for supporting artificial eyes. 4,515,340, Cl. 249-96.000.

Rinehart, Larry F.: *See—*
Fenneman, David B.; Rinehart, Larry F.; and Hardesty, Leonard W., Jr., 4,516,077, Cl. 324-425.000.

Ringdahl, Mark G.; Raymond, Lambert L.; and Scherer, Richard J., to Litton Systems, Inc. Interlock switch module for a microwave oven. 4,516,007, Cl. 219-10.55D.

Rippstein, Robert P.: *See—*
Boehm, Russell W.; Rippstein, Robert P.; and Stone, David R., 4,515,544, Cl. 425-129.00R.

Riseberg, Leslie A.: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; Byszewski, Wojciech W.; and Budinger, A. Bowman, 4,516,057, Cl. 315-260.000.

Ritch, Curtis R.: *See—*
Sewell, James H.; Gaede, Hans; and Ritch, Curtis R., 4,515,299, Cl. 223-76.000.

Ritter, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Boron alkyl compounds and processes for their manufacture and use. 4,515,724, Cl. 260-410.000.

Robert Bosch GmbH: *See—*
Bolle, Gunter; Bragas, Peter; and Eschke, Bernd, 4,515,994, Cl. 179-2.00R.
Borst, Erich; Schadlich, Fritz; and Stabler, Manfred, 4,516,045, Cl. 310-68.00E.
Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, 4,515,125, Cl. 123-359.000.
Jaggle, Gunther; Maisch, Wolfgang; Peters, Klaus-Jurgen; and Schutz, Rudolf, 4,515,128, Cl. 123-454.000.
Nolting, Peter; and Bleger, Claude, 4,516,106, Cl. 338-28.000.
Schadlich, Fritz; Rieker, Werner; Thaler, Rainer; and Klingenstein, Klaus, 4,515,303, Cl. 227-131.000.
Sumal, Jaihind S., 4,515,014, Cl. 73-202.000.

Roberts, Jon A.: *See—*
Brownell, David J.; and Roberts, Jon A., 4,515,668, Cl. 204-192.00D.

Roberts, Mark G.: *See—*
Mouser, Curtis A.; Roberts, Mark G.; Haas, Daniel R.; and Lancaster, Patrick R., III, 4,514,955, Cl. 53-64.000.

Roberts, Richard D.; Franz, James H., Jr.; Hoffman, Lester J.; and Miller, Lalan G., to Westinghouse Electric Corp. Motor control chopper apparatus phase angle limiting. 4,516,059, Cl. 318-301.000.

Robertson, David W., to Eli Lilly and Company. Certain naphthalenyl imidazo compounds and their pharmaceutical use. 4,515,796, Cl. 514-303.000.

Robertson, Michael A.: *See—*
Warren, Robert G.; and Robertson, Michael A., 4,516,201, Cl. 364-200.000.

Robilliard, Leonard T.; and Hewitt, Alan R. Framework connection means. 4,515,494, Cl. 403-187.000.

Robot Research, Inc.: *See—*
Stahler, John P., 4,516,151, Cl. 358-14.000.

Robvon Backing Ring Company: *See—*
von Ahrens, Roger W., 4,515,000, Cl. 72-278.000.

Rock, Howard P.; and Rock, Kelly P. Fuel efficient, low pollution carburetor and methods. 4,515,734, Cl. 261-50.00R.

Rock, Kelly P.: *See—*
Rock, Howard P.; and Rock, Kelly P., 4,515,734, Cl. 261-50.00R.

Rockefeller University, The: *See—*
Erickson, Bruce W., 4,515,920, Cl. 525-54.110.

Rockford Enterprises, Inc.: *See—*
Salmon, Dennis E., 4,515,245, Cl. 184-105.00R.

Rockwell International Corporation: *See—*
Bruene, Warren B., 4,516,087, Cl. 332-17.000.
Christoff, William J., 4,514,976, Cl. 60-39.070.
Holmes, Dale A., 4,516,244, Cl. 372-99.000.
Mosier, Donald E., 4,515,440, Cl. 350-334.000.
Nelson, David A., 4,516,055, Cl. 315-151.000.

Rockwood, Albert M. Folding net mechanism. 4,514,925, Cl. 43-12.000.

Rodekamp, Hartmut: *See—*
Euscher-Klingenhagen, Werner; Griemla, Horst; and Rodekamp, Hartmut, 4,515,285, Cl. 220-288.000.

Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, to Rexnord, Inc. Method for coating the inside of pipe. 4,515,832, Cl. 427-233.000.

Rogen, Neil E.; and Adnyana, Dewa N., to Memory Metals, Inc. Packing tool apparatus for sealing well bores. 4,515,213, Cl. 166-123.000.

Rogers Corporation: *See—*
Harper, William P., 4,515,999, Cl. 200-5.00A.
Maine, Richard L., 4,515,739, Cl. 264-45.300.

Rohm GmbH: *See—*
Kolbe, Klaus; Hellmann, Walter; Krajec, Otmar; Schikowsky, Hartmut; and Vetter, Heinz, 4,515,648, Cl. 156-196.000.

Rohm and Haas Company: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,515,988, Cl. 568-586.000.
Kuhn, Robert R.; Whiteman, John D.; and Brendley, William H., Jr., 4,515,835, Cl. 427-388.300.

Rohrbach, Peter H., to SI Handling Systems, Inc. Speed control apparatus. 4,515,085, Cl. 104-250.000.

Roman, Frank. Fuel economizing device. 4,515,133, Cl. 123-538.000.

Romer, Dietmar, to Sandoz Ltd. Analgesic preparations. 4,515,802, Cl. 514-288.000.

Rontgen Technische Dienst B.V.: *See—*
Wapperom, Pieter, 4,516,256, Cl. 378-60.000.

Rood, Robert M.; and Wulfing, James J., to Minnesota Mining and Manufacturing Company. Tape spool. 4,515,323, Cl. 242-74.100.

Rood, Robert M.: *See—*
Wulfing, James J.; and Rood, Robert M., 4,515,330, Cl. 242-197.000.

Roper Corporation: *See—*
Dankel, Douglas D., 4,515,194, Cl. 144-193.00A.
Scanland, Joseph E.; and Skillman, David B., 4,514,967, Cl. 56-14.700.

Rosenberg, Michael A., to SFE Technologies. Leadless filter component. 4,516,092, Cl. 333-184.000.

Roser, Erich. Swash ring driven diaphragm pump. 4,515,531, Cl. 417-269.000.

Rossignol S.A.: *See—*
Boy-Marcotte, Jean L. M. R.; Chastang, Georges J.; Salvaire, Laurent O.; and Burnouf, Christian D., 4,515,148, Cl. 126-438.000.

Rossing, Martin A.: *See—*
McDonald, Ray S.; Thompson, David L.; Rossing, Martin A.; and Hartlaub, Jerome T., 4,515,159, Cl. 128-419.0PG.

Rost, David P.: *See—*
Schwab, Carl E.; Rost, David P.; Hackenberg, William; and Holcombe, Paul, 4,516,125, Cl. 343-7.700.

Rotabo Industries Inc.: *See—*
Bolwig, Rolf W., 4,516,192, Cl. 362-107.000.

Rotella, Thomas B. Compact exercise device. 4,515,364, Cl. 272-143.000.

Rother, Bruno; and Trommen, Hartmut, to G.A. Pfleiderer GmbH & Co. KG. Apparatus for the manufacture of conical hollow poles of fiber reinforced synthetic resin. 4,515,547, Cl. 425-215.000.

Roussel Uclaf: *See—*
Teutsch, Jean G.; Deraedt, Roger; and Benzoni, Josette, 4,515,787, Cl. 514-180.000.

Rovin, Herman. Drapery pleat hemming method. 4,515,097, Cl. 112-262.300.

Rozek, Rafl: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.

Rozman, George J.: *See—*
Hettinger, William P., Jr.; Turrill, Frank H.; Rozman, George J.; and Beck, H. Wayne, 4,515,680, Cl. 208-87.000.

Rubinstein, Randall B., to Hottinger Baldwin Measurements, Inc. Platform transducer beams. 4,515,232, Cl. 177-154.000.

Rudolf, Peter: *See—*
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, 4,514,937, Cl. 51-281.0SF.

Rudolph nee Otten, Anna G., heir: *See—*
Meininger, Fritz; Otten, Joachim W., deceased; Otten, Ursula, heir; and Rudolph nee Otten, Anna G., heir, 4,515,598, Cl. 8-549.000.

Ruhenstroth-Bauer, Gerhard: *See—*
Valet, Gunter; Ruhenstroth-Bauer, Gerhard; Wunsch, Erich; and Moroder, Luis, 4,515,730, Cl. 260-465.00D.

Ruhrchemie Aktiengesellschaft: *See—*
Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, 4,515,986, Cl. 564-471.000.

Rusch, Reinhard: *See—*
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, 4,515,619, Cl. 71-90.000.

Ruskin Manufacturing Company: *See—*
Van Becelaere, Robert M., 4,515,068, Cl. 98-1.000.

Rusnak, John J.: *See—*
Pardini, John A.; Brubaker, Robert C.; and Rusnak, John J., 4,515,750, Cl. 376-446.000.

Russo, Carl J., to Varian Associates, Inc. Ion chamber for electron-bombardment ion sources. 4,516,050, Cl. 313-359.100.

Russo, Cheryl L.: *See—*
Gimpelson, George E.; and Russo, Cheryl L., 4,515,652, Cl. 156-643.000.

Ryberg, Bertil; and Mellgren, Kenth, to Aktiebolaget Volvo Penta. Starter switch arrangement. 4,516,000, Cl. 200-44.000.

Rybka, Bruno: *See—*
Borchard, Heinz; Knothe, Herbert; and Rybka, Bruno, 4,515,843, Cl. 428-64.000.

S.A.R.L Centre d'Etude et de Realisation d'Equipment et de Materiel C.E.R.E.M.: *See—*
Sirand, Joseph, 4,515,554, Cl. 431-78.000.

S&S Corrugated Paper Machinery Co., Inc.: *See—*
Flaum, Stephen S., 4,515,052, Cl. 83-479.000.

Sa af, Lars L.; and Bergsten, Lars E., to Saab-Scania Aktiebolag. Arrangement for ignition means in a multi-cylinder internal combustion engine. 4,515,141, Cl. 123-647.000.

Saab-Scania Aktiebolag: *See—*
Sa af, Lars L.; and Bergsten, Lars E., 4,515,141, Cl. 123-647.000.

Sabins, Fred: *See—*
Childs, Jerry; Sabins, Fred; and Taylor, Mary J., 4,515,216, Cl. 166-293.000.

Sack, Werner; and Kiefer, Werner, to Schott Glaswerke. Crystallizing glass solders and stripping films with such glass solder imprinted thereon. 4,515,897, Cl. 501-15.000.

Safety Devices (Engineering) Limited: *See—*
White, Iain S., 4,516,116, Cl. 340-685.000.

St. Ledger, Joseph B., to Outboard Marine Corporation. Low moisture sensitive ignition. 4,515,139, Cl. 123-599.000.

St. Luke's Hospital: *See—*
Dougherty, Delford O., 4,515,295, Cl. 222-113.000.

St. Regis Corporation: *See—*
Myers, Richard A., 4,515,266, Cl. 206-205.000.

Saito, Takao: *See—*
Moriyama, Masakazu; and Saito, Takao, 4,516,207, Cl. 364-424.000.

Sakai, Kazuo: *See—*
Utaka, Katsuyuki; Sakai, Kazuo; and Akiba, Shigeyuki, 4,516,243, Cl. 372-96.000.

Sakai, Koichi: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 4,515,557, Cl. 431-302.000.

Sakai, Toshiyasu: *See—*
Hara, Masahiro; Okamoto, Atsutoshi; and Sakai, Toshiyasu, 4,516,017, Cl. 235-472.000.

Sakakibara, Hideo: *See—*
Fujiwara, Tatsuro; Watanabe, Hideyuki; Hirano, Takao; and Sakakibara, Hideo, 4,515,941, Cl. 536-7.100.

Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, to Bridgestone Tire Company Limited; and Japan Synthetic Rubber Co., Ltd. Rubber compositions. 4,515,922, Cl. 525-99.000.

Sakakiyama, Ryuzo: *See—*
Takano, Toshio; and Sakakiyama, Ryuzo, 4,515,257, Cl. 192-0.075.

Sakamoto, Junichi: *See—*
Horikoshi, Hiroshi; Arai, Akio; Tsukagoshi, Sadayuki; and Sakamoto, Junichi, 4,515,365, Cl. 273-25.000.

Sakata, Yoshiya: *See—*
Shiba, Haruo; Sakata, Yoshiya; and Tanaka, Kimio, 4,515,322, Cl. 242-71.800.

Sakkab, Nabil Y.: *See—*
Parran, John J., Jr.; and Sakkab, Nabil Y., 4,515,772, Cl. 424-57.000.

Sakura, Yasuhiro; Nakajima, Yasushi; Tajima, Noriyasu; and Nimura, Hitoshi, to Tokyo Electric Co. Ltd. Label issuing apparatus with programmable label feed. 4,516,208, Cl. 364-466.000.

Sakurai, Akira, to Ricoh Company, Ltd. Character data processing apparatus. 4,516,262, Cl. 382-18.000.

Sakurai, Masaki: *See—*
Sigiyama, Hiroyuki; Sakurai, Masaki; Abe , Ryozo; and Yoshihara, Kenji, 4,516,161, Cl. 358-342.000.

Sakurai, Toshihiro, to Yamaichi Electric Mfg. Co., Ltd. Support structure for IC package and having removable closure. 4,515,424, Cl. 339-75.0MP.

Sakurai, Yoshifumi; and Numata, Takuhisa, to Kureha Kagaku Kogyo Kabushiki Kaisha. Laminated magnetic bubble device. 4,516,222, Cl. 365-32.000.

Sakurai, Yukio; and Yamamoto, Akihiko, to Nissan Motor Company, Limited. Air conditioning system. 4,515,208, Cl. 165-43.000.

Sakuyama, Masao, to Citizen Watch Company Limited. Display device. 4,516,120, Cl. 340-785.000.

Sallee, Dennis C.: *See—*
Knepper, J. Irvine; and Sallee, Dennis C., 4,515,603, Cl. 44-62.000.

Salmon, Dennis E., to Rockford Enterprises, Inc. Oil filler extension. 4,515,245, Cl. 184-105.00R.

Saltzman, Leonard F. Bow and arrow sighting device. 4,514,907, Cl. 33-265.000.

Salvadori, Bruno, to Societa Pneumatici Pirelli. Devices for vulcanizing tires. 4,515,541, Cl. 425-47.000.

Salvaire, Laurent O.: *See—*
Boy-Marcotte, Jean L. M. R.; Chastang, Georges J.; Salvaire, Laurent O.; and Burnouf, Christian D., 4,515,148, Cl. 126-438.000.

Sanchez, Fernando J.: *See—*
Winter-Moore, Peter H.; and Sanchez, Fernando J., 4,515,565, Cl. 433-221.000.

Sandefur, Louise O.; Slusarek, Wojciech; Wilson, Burton D.; and Maggiulli, Cataldo A., to Eastman Kodak Company. Cyanoalkylpiperazines and methods for their preparation and use. 4,515,947, Cl. 544-295.000.

Sanders, Royden C., Jr.; and Forsyth, John L., to Sanders, Royden C., Jr. Assembling dot matrix print heads. 4,515,488, Cl. 400-124.000.

Sandoz Ltd.: *See—*
Brich, Zdenek; and Muhle, Herbert, 4,515,950, Cl. 546-67.000.
Romer, Dietmar, 4,515,802, Cl. 514-288.000.

Sandvik, Johannes, to Elkem a/s. Feed device for guiding a rope onto a winding drum. 4,515,329, Cl. 242-157.100.

Sanford, Robert A.: *See—*
Cantrell, Daniel V.; and Sanford, Robert A., 4,515,170, Cl. 131-336.000.

Sanofi: *See—*
Boigegrain, Robert; Maffrand, Jean-Pierre; Suzuki, Norio; Matsubayachi, Kynichi; and Ashida, Shinichiro, 4,515,951, Cl. 546-114.000.

SaNogueira, Peter: *See—*
Bogardus, Rodger E.; Packer, Jon D.; and SaNogueira, Peter, 4,515,784, Cl. 514-63.000.

Santroch, George; and Jirkovsky, Ivo, to American Home Products Corporation. [2-(1H-indol-1-yl)ethyl]-2-piperazine and pyrido[1,2-a]indol-9-one as intermediates for pyrazino(2,3-3,4)pyrido(1,2-a) indoles which are useful for treating hypertension in mammals. 4,515,949, Cl. 544-343.000.

Sanyo Electric Co., Ltd.: *See—*
Okano, Shizuo, 4,515,872, Cl. 429-65.000.

Sasaki, Issei: *See—*
Payne, David N.; Sasaki, Issei; and Adams, Michael J., 4,515,475, Cl. 356-73.100.

Sasaki, Masaomi, to Ricoh Company, Ltd. Stilbene derivatives, distyryl derivatives and electrophotographic photoconductor comprising at least one of the derivatives. 4,515,883, Cl. 430-58.000.

Sasaki, Osamu: *See—*
Sawada, Kiyoshi; Goto, Satoshi; Kinoshita, Akira; and Sasaki, Osamu, 4,515,881, Cl. 430-58.000.

Sasaki, Sadayuki: *See—*
Fukushima, Tsutomu; Kawasaki, Kiyoshi; and Sasaki, Sadayuki, 4,515,352, Cl. 266-218.000.

Sasser, Bill H., to Motorola, Inc. Low RCS RF switch and phase shifter using such a switch. 4,516,091, Cl. 333-161.000.

Satake Engineering Co. Ltd.: *See—*
Satake, Toshihiko, 4,515,075, Cl. 99-519.000.

Satake, Toshihiko, to Satake Engineering Co. Ltd. Rice polishing machine. 4,515,075, Cl. 99-519.000.

Satellite Business Systems: *See—*
Fabris, Alfonso V.; Strickland, Robert M., Jr.; and Toth, John T., 4,516,156, Cl. 358-85.000.

Sato, Kunihiko: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,515,131, Cl. 123-491.000.

Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Dual type antilock braking device for four-wheeled vehicles. 4,515,412, Cl. 303-6.00R.

Sato, Masaaki: *See—*
Adachi, Kiyoshi; Uehara, Masaru; Kitagawa, Hiroshi; Kojima, Hirotaka; and Sato, Masaaki, 4,514,965, Cl. 53-553.000.

Sato, Mituo: *See—*
Narishige, Shinji; Yoshinari, Tsuneo; Sato, Mituo; Takagi, Masayuki; and Yoshida, Toshihiro, 4,516,180, Cl. 360-126.000.

Sato, Naoki: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Sauer, Anton; and Thinschmidt, Hans, to Siemens Aktiengesellschaft. Optical passive bus control system. 4,516,204, Cl. 364-200.000.

Sauer, Gale E.: *See—*
Menchetti, Robert J.; and Sauer, Gale E., 4,514,945, Cl. 52-202.000.

Sauter, Gary E. Neon lighted roll bar. 4,515,393, Cl. 280-756.000.

Savonjousi, Aslak, to Kymi-Stromberg Oy. Method for controlling a piston fed wood grinder. 4,515,318, Cl. 241-28.000.

Sawada, Kiyoshi; Goto, Satoshi; Kinoshita, Akira; and Sasaki, Osamu, to Konishiroku Photo Industry Co., Ltd. Electrophotographic bisazo photosensitive member. 4,515,881, Cl. 430-58.000.

Sawahata, Mamoru: *See—*
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, 4,516,149, Cl. 357-71.000.

Sawano, Kiyohito; Kouichi, Ryujiro; Oota, Hideaki; Takano, Masashi; and Moroe, Michio. Resinous composition for the prolonged release of fragrant substances. 4,515,909, Cl. 523-102.000.

Sawatani, Tadashi; Ishii, Mitsuo; Yoshimura, Hirofumi; and Harase, Jirou, to Nippon Steel Corporation. Method for producing ferritic stainless steel sheets or strips containing aluminum. 4,515,644, Cl. 148-12.0EA.

Sayles, David C., to United States of America, Army. Cure shrink-resistant missile motor cases. 4,515,912, Cl. 523-456.000.

Scanland, Joseph E.; and Skillman, David B., to Roper Corporation. Bridge support for securing sulky to walk-behind mower. 4,514,967, Cl. 56-14.700.

Schadewald, Frederic H., to Upjohn Company, The. Sterile suspension and solution holding and mixing tank. 4,515,482, Cl. 366-136.000.

Schadlich, Fritz; Rieker, Werner; Thaler, Rainer; and Klingenstein, Klaus, to Robert Bosch GmbH. Electric hammering apparatus with air-cushioned armature. 4,515,303, Cl. 227-131.000.

Schadlich, Fritz: *See—*
Borst, Erich; Schadlich, Fritz; and Stabler, Manfred, 4,516,045, Cl. 310-68.00E.

Schaefer, Ernst H., to Westvaco Corporation. Method of bleaching paper pulp by blending chlorine with a flow volume of paper pulp slurry. 4,515,655, Cl. 162-57.000.

Schafer, Paul: *See—*
Guth, Christian; and Schafer, Paul, 4,515,597, Cl. 8-107.000.

Schaffer, Norbert: *See—*
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.

Scharfe, Merlin E.: *See—*
Mammino, Joseph; Sypula, Donald S.; Abramsohn, Dennis A.; Abkowitz, Martin A.; and Scharfe, Merlin E., 4,515,882, Cl. 430-58.000.

Scharfy, Madelon L. Culinary utensil support. 4,515,332, Cl. 248-37.300.

Schaub, Robert E.; Miner, Thomas G.; and Bernstein, Seymour, to American Cyanamid Company. Substituted phenyl-1-thio(poly-O-sulfo)-α(or β)-D-glucopyranosides. 4,515,782, Cl. 514-24.000.

Schaumburg, Edward G.; and Stanefski, Eugene F., to GNB Batteries Inc. Compound dispensing method and apparatus. 4,515,187, Cl. 141-1.000.

Scheckel, Bruno; and Wittenzellner, Ernst, to Siemens Aktiengesellschaft. Digital tone generator for tone sequences. 4,516,113, Cl. 340-384.00E.

Scher, Herbert B.: *See—*
Fancher, Llewellyn W.; and Scher, Herbert B., 4,515,813, Cl. 514-563.000.

Scherer, Richard J.: *See—*
Ringdahl, Mark G.; Raymond, Lambert L.; and Scherer, Richard J., 4,516,007, Cl. 219-10.55D.

Schering Aktiengesellschaft: *See—*
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhard, 4,515,619, Cl. 71-90.000.
Muller, Rudolf; Radeklau, Hans-Jurgen; Dofke, Harald; and Krieger, Detlef, 4,515,483, Cl. 366-303.000.

Schiff, Peter, to SMEC, Inc. IAB having apparatus for assuring proper balloon inflation and deflation. 4,515,587, Cl. 604-96.000.

Schikowsky, Hartmut: *See—*
Kolbe, Klaus; Hellmann, Walter; Krajec, Otmar; Schikowsky, Hartmut; and Vetter, Heinz, 4,515,648, Cl. 156-196.000.

Schimmelpfennig, Wolfgang; and Siede, Heinz-Jurgen, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Infrared detector. 4,516,027, Cl. 250-338.000.

Schleffendorf, John J. Weight lifting exerciser. 4,515,363, Cl. 272-118.000.

Schlegel Corporation: *See—*
Annis, Gerald A., 4,515,845, Cl. 428-86.000.

Schlueter, Klaus. Method of removing plastic residues in mixing apparatuses and molding tools. 4,515,091, Cl. 110-346.000.

Schmanski, Donald W., to Carsonite International Corporation. Electrolysis test station terminal and support. 4,516,069, Cl. 324-71.100.

Schmid, Hans-Dieter: *See—*
Haubner, Georg; and Schmid, Hans-Dieter, 4,515,118, Cl. 123-149.00C.

Schmidt, Bernhard, to Felten & Guilleaume Carlswerk Aktiengesellschaft. Coupling arrangement for optical waveguides and method of manufacturing the same. 4,515,433, Cl. 350-96.210.

Schmidt, Paul J.; and Hung, William M., to Hilton-Davis Chemical Co. 5'/6'-Carboxyfluorans and derivatives. thereof. 4,515,971, Cl. 549-225.000.

Schmidts, Kurt: *See—*
Stumpfi, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, 4,515,331, Cl. 242-199.000.

Schmieder, Klaus: *See—*
Lechtken, Peter; Mueller, Gerhard; and Schmieder, Klaus, 4,515,982, Cl. 560-125.000.

Schnall, Gunther: *See—*
Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,515,356, Cl. 270-53.000.

Schneider, Marshall, to Hallmark Cards, Inc. Combination easel hinge and hanging device. 4,515,338, Cl. 248-460.000.

Schoenig, Frederick C., Jr.; and Landry, James D., to General Electric Company. Subcriticality measurement apparatus and method. 4,515,749, Cl. 376-254.000.

Schoenthaler, David; and Wojcik, Thaddeus, to AT&T Technologies, Inc. Methods for multipoint dispensing of viscous material. 4,515,297, Cl. 222-160.000.

Schoettle, Klaus: *See—*
Gehrung, Manfred; Schoettle, Klaus; Kreissler, Helmut; Rudolf, Peter; Hack, Joachim; and Anslinger, Friedrich, 4,514,937, Cl. 51-281.0SF.

Scholkens, Bernward: *See—*
Henning, Rainer; Urbach, Hansjorg; Geiger, Rolf; Teetz, Volker; and Scholkens, Bernward, 4,515,803, Cl. 514-338.000.

Scholl, Klaus: *See—*
Rauf, Richard; Pav, Josef; and Scholl, Klaus, 4;514,887, Cl. 29-116.0AD.

Schoop, Gunther-Dietmar: *See—*
Trumper, Thomas; Schoop, Gunther-Dietmar; Borgschulte, Fritz; and Krummnack, Friedrich, 4,515,410, Cl. 299-43.000.

Schorr, Steven M.; and Stoner, Richard J., Jr., to Genisis Technology, Inc. Method and apparatus for aeroponic propagation of plants. 4,514,930, Cl. 47-60.000.

Schott Glaswerke: *See—*
Sack, Werner; and Kiefer, Werner, 4,515,897, Cl. 501-15.000.

Schrock, Wilfried: *See—*
Metzger, Karl G.; Schrock, Wilfried; Habich, Dieter; Naab, Paul; and Zeiler, Hans-Joachim, 4,515,789, Cl. 514-196.000.

Schuck, Howard L. Hitch with swiveling tongue. 4,515,387, Cl. 280-478.00A.

Schuettenberg, Alexander D.; and Gragson, James T., to Phillips Petroleum Company. Method of forming solid form fuel additives. 4,515,740, Cl. 264-50.000.

Schulte & Lestraden B.V.: *See—*
Lestraden, Jacobus W., 4,514,929, Cl. 47-17.000.

Schumacher, Karl, to Ernst Wagner KG-Fordertechnik. Vehicle with two steerable wheels. 4,515,380, Cl. 280-93.000.

Schutten, Herman P.: *See—*
Jaskolski, Stanley V.; Schutten, Herman P.; Spellman, Gordon B.; Sedivy, Jan K.; and Jensen, Maurice W., 4,516,144, Cl. 357-27.000.

Schutz, Rudolf: *See—*
Jaggle, Gunther; Maisch, Wolfgang; Peters, Klaus-Jurgen; and Schutz, Rudolf, 4,515,128, Cl. 123-454.000.

Schwab, Carl E.; Rost, David P.; Hackenberg, William; and Holcombe, Paul, to General Signal Corporation. Method and apparatus for monitoring vehicle ground movement in the vicinity of an airport. 4,516,125, Cl. 343-7.700.

Schwab, Michael: *See—*
Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Muhlhofer, Ernst; and Schwab, Michael, 4,515,762, Cl. 423-337.000.

Schwartz, Bertram: *See—*
Dixon, Richard W.; Joyce, William B.; Koszi, Louis A.; Miller, Richard C.; and Schwartz, Bertram, 4,514,896, Cl. 29-576.00B.
Schwarz, Jurgen: *See—*
Muller, Gerhard; and Schwarz, Jurgen, 4,515,445, Cl. 350-524.000.
Schwarz, Richard A., to PPG Industries, Inc. Organic peroxide composition containing trihydric alcohol, alkali or alkaline earth metal chloride, or monosaccharide. 4,515,928, Cl. 526-200.000.
Schwarzkopf Development Corporation: *See—*
Petter, Helmut; Bildstein, Hubert; and Simader, Fritz, 4,516,255, Cl. 378-143.000.
Schwerin, Siegfried: *See—*
Dopfer, Peter; Ostermeier, Johann; and Schwerin, Siegfried, 4,515,639, Cl. 106-288.00Q.
Scientific Laboratories, Inc.: *See—*
Miller, Lowell A., 4,515,550, Cl. 425-392.000.
Scott, Lewis A., to Omark Industries, Inc. Circular saw blade. 4,515,055, Cl. 83-835.000.
Scribner, Albert W., to Pitney Bowes Inc. Postage metering system having weight checking capability. 4,516,209, Cl. 364-466.000.
Seaks, Charles E., Jr., to Johnson Service Company. Control apparatus having modular construction. 4,516,189, Cl. 361-426.000.
Sears, Karl, to American Cyanamid Company. In-package insecticidal bait preparation utilizing microwave energy. 4,514,960, Cl. 53-440.000.
Sebag, Henri: *See—*
Vanlerberghe, Guy; and Sebag, Henri, 4,515,775, Cl. 424-70.000.
Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom, The: *See—*
Singer, Alfred R. E., 4,515,864, Cl. 428-546.000.
Securitron-Magnalock Corp.: *See—*
Cook, Robert C., 4,516,114, Cl. 340-542.000.
Sedan, Jack D. Golf ball retriever. 4,515,402, Cl. 294-19.200.
Sedivy, Jan K.: *See—*
Jaskolski, Stanley V.; Schutten, Herman P.; Spellman, Gordon B.; Sedivy, Jan K.; and Jensen, Maurice W., 4,516,144, Cl. 357-27.000.
Segonne, Jean-marc, to 501 Maco Meudon Chemin de Genas. Compressor servomechanical regulator. 4,515,515, Cl. 417-26.000.
Seidel, William J.: *See—*
Pinede, Edourd; and Seidel, William J., 4,515,998, Cl. 179-146.00R.
Seifert, Jaroslav: *See—*
Flegel, Martin; Krojidlo, Milan; Kolinsky , Jiri ; Masek, Karel; and Seifert, Jaroslav, 4,515,715, Cl. 260-112.50R.
Seinera, Andre : *See—*
Jacquemin, Claude; Provost, Florent; and Seinera, Andre , 4,515,560, Cl. 432-80.000.
Sekimoto, Misao: *See—*
Yoshihara, Hideo; Ozawa, Akira; Sekimoto, Misao; and Ono, Toshiro, 4,515,876, Cl. 430-5.000.
Sekiya, Tetsuo: *See—*
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.
Seligman, Peter: *See—*
Patrick, James F.; Seligman, Peter; Tong, Yit C.; and Clark, Graeme M., 4,515,158, Cl. 128-419.00R.
Semedo, Anthony B.: *See—*
Hemmerich, Karl J.; Millerd, Donald L.; and Semedo, Anthony B., 4,515,591, Cl. 604-152.000.
Seo, Iwazou: *See—*
Kataishi, Takao; and Seo, Iwazou, 4,515,552, Cl. 425-436.0RM.
Serini, Volker: *See—*
Nouvertne, Werner; Serini, Volker; Neuray, Dieter; Binsack, Rudolf; Gehrke, Hans-Georg; Rempel, Dieter; and Krishnai, Sivara, 4,515,918, Cl. 524-504.000.
Setescak, Linda L.: *See—*
Martin, Lawrence L.; and Setescak, Linda L., 4,515,946, Cl. 548-237.000.
Seton Company: *See—*
Cioca, Gheorghe, 4,515,637, Cl. 424-94.000.
Sewell, James H.; Gaede, Hans; and Ritch, Curtis R., to Intech Corporation. Method for handling hosiery. 4,515,299, Cl. 223-76.000.
SFE Technologies: *See—*
Rosenberg, Michael A., 4,516,092, Cl. 333-184.000.
Sgroi, Carl M.; and Hubner, Klaus M. Apparatus for the collection of solar heat energy and a solar collector. 4,515,149, Cl. 126-442.000.
Shackle, Peter W., to AT&T Bell Laboratories. Control circuitry for high voltage solid-state switches. 4,516,037, Cl. 307-252.00A.
Shafai, Lotfollah: *See—*
Ittipiboon, Apisak; Shafai, Lotfollah; and Bridges, Ernest, 4,516,129, Cl. 343-772.000.
Shafrir, Doron; and Tamir, Giora. Display module. 4,514,920, Cl. 40-448.000.
Shaginian, Albert S.: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.
Shan, Chen J. Writing implement and kit. 4,515,492, Cl. 401-52.000.
Shannon, Harry D.; and Lutts, William P., to Shannon, Harry D. Convertible amphibious aircraft wheel position warning system. 4,516,124, Cl. 340-960.000.
Shannon, John M.; Hoeberechts, Arthur M. E.; and Van Gorkom, Gerardus G. P., to U.S. Philips Corporation. Electron sources and equipment having electron sources. 4,516,146, Cl. 357-52.000.
Shannon, Michael A.: *See—*
Garner, John N.; and Shannon, Michael A., 4,515,826, Cl. 427-8.000.
Sharp, David G.: *See—*
Moran, David P. J.; and Sharp, David G., 4,515,825, Cl. 426-603.000.
Sharp Kabushiki Kaisha: *See—*
Furubayashi, Hisatoshi; Tanaka, Junichi; Watanabe, Masanori; and Hijikigawa, Masaya, 4,515,653, Cl. 156-643.000.
Hakaridani, Mitsuhiro; Iwahashi, Hiroyuki; and Nishioka, Yoshiki, 4,516,215, Cl. 364-513.500.
Takiguchi, Masahiro, 4,516,139, Cl. 346-140.00R.
Shaw, Chong-Kuang, to B. F. Goodrich Company, The. Purification of mercaptobenzothiazole. 4,515,957, Cl. 548-177.000.
Shaw, Herbert J.; Chodorow, Marvin; and Digonnet, Michel J. F., to Leland Stanford Junior University, The Board of Trustees of the. Fiber optic amplifier. 4,515,431, Cl. 350-96.150.
Shell Oil Company: *See—*
Clegg, Joe D., 4,515,608, Cl. 55-193.000.
Diaz, Zaida, 4,515,764, Cl. 423-573.00R.
Sullivan, Don A., 4,515,726, Cl. 260-412.400.
Shen, Ming, to Olin Corporation. Process for preparing 1-alkyl-5-mercaptotetrazoles. 4,515,958, Cl. 548-251.000.
Shen, Tsung-Ying: *See—*
Yang, Shu S.; Beattie, Thomas R.; Durette, Philippe L.; Gallagher, Timothy F.; and Shen, Tsung-Ying, 4,515,722, Cl. 260-403.000.
Sherman, James E.: *See—*
Barkhau, Marvin L.; Perry, Philip D.; Poundstone, Donald H.; and Sherman, James E., 4,515,614, Cl. 65-29.000.
Sherwin, James S., to National Semiconductor Corporation. Fiber optics heat formed assembly. 4,515,432, Cl. 350-96.200.
Sherwood, Edward F.; Orndorff, Karl B.; and Dillon, Charles M., to Westinghouse Electric Corp. Architrave. 4,514,946, Cl. 52-211.000.
Sheu, Roung-Hwang. Coupling device. 4,515,280, Cl. 211-189.000.
Shevchenko, Jury A.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
Shiba, Haruo; Sakata, Yoshiya; and Tanaka, Kimio, to TDK Corporation. Reel for a magnetic tape. 4,515,322, Cl. 242-71.800.
Shibata, Yoichi; Kimura, Ryosuke; Sumigama, Takashi; and Izumi, Masaro, to Nippon Kokan Kabushiki Kaisha. Simultaneous multipoint sounding apparatus. 4,515,350, Cl. 266-92.000.
Shichiri, Motoaki: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.
Shields, Dean W. Log handling and sawing system. 4,515,196, Cl. 144-378.000.
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, to Mita Industrial Company Limited. Copying apparatus having a copy sheet sorter. 4,515,464, Cl. 355-14.00R.
Shih, Hung Y., to DeGeorge Ceilings, Inc. Ceiling fan. 4,515,538, Cl. 417-572.000.
Shikama, Takashi; Yamamoto, Tomoyuki; and Yokota, Atsuo, to Murata Manufacturing Co., Ltd. Lamp protection arrangement. 4,516,054, Cl. 315-71.000.
Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, to Terumo Corporation. Neem bark extracts. 4,515,785, Cl. 424-195.100.
Shin-Etsu Chemical Co., Ltd.: *See—*
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, 4,515,702, Cl. 252-49.600.
Shinko Electric Co., Ltd.: *See—*
Yamamoto, Kiwamu; and Tanaka, Tsuyoshi, 4,515,235, Cl. 180-168.000.
Shinohara, Toshio: *See—*
Moriyama, Masakazu; Shinohara, Toshio; Hirano, Kazuo; and Makino, Fumio, 4,516,121, Cl. 340-825.050.
Shinozaki, Nozomu: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,516,061, Cl. 318-561.000.
Shinozaki, Takashi: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Shinriki, Tatsuo, to Height Inc. Process of making encrusted bakery products. 4,515,819, Cl. 426-297.000.
Shintani, Tetsuo: *See—*
Matsushita, Nobuo; Furukawa, Tokinobu; Shintani, Tetsuo; Sumitani, Tomoaki; and Oda, Chikao, 4,515,008, Cl. 73-53.000.
Shioiri, Tomonori; and Ino, Takashi, to Research Association For Residual Oil Processing. Hydrocarbon conversion catalyst and process for preparing same. 4,515,902, Cl. 502-64.000.
Shiotsu, Osamu: *See—*
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, 4,516,221, Cl. 364-900.000.

Shipley Company Inc.: *See—*
Deckert, Cheryl A.; Couble, Edward C.; and Bonetti, William F., 4,515,829, Cl. 427-97.000.
Shiraishi, Akiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Grounding device for preventing electrolytic corrosion in the bearings of rotary electric machines. 4,515,417, Cl. 384-445.000.
Shirakawa, Yasuhiro: *See—*
Takahara, Takeshi; Ishii, Tsutomu; and Shirakawa, Yasuhiro, 4,515,706, Cl. 252-301.40H.
Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette liner sheet arrangement. 4,516,181, Cl. 300-132.000.
Shirogami, Tamotsu; and Ueno, Mitsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochemical power generator. 4,515,871, Cl. 429-34.000.
Shoji, Masakazu, to AT&T Bell Laboratories. Integrated circuit including logic array with distributed ground connections. 4,516,123, Cl. 340-825.860.
Shore, Sheldon G.; and Hsu, Wen-Liang, to Ohio State University Research Foundation, The. Synthesis of heteronuclear osmium carbonyl hydrides under gaseous hydrogen. 4,515,728, Cl. 260-429.0CY.
Showa Manufacturing Co., Ltd.: *See—*
Honma, Kenji; Asami, Toshio; Baba, Masayuki; and Nakayama, Sumio, 4,515,384, Cl. 280-276.000.
Shroyer, David, to Lamb-Weston, Inc. Apparatus and method for aligning and packaging elongated articles. 4,514,959, Cl. 53-428.000.
Shtrikman, Shmuel: *See—*
Pundak, Nachman; and Shtrikman, Shmuel, 4,514,987, Cl. 62-6.000.
Shulman, Grigory A.: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
SI Handling Systems, Inc.: *See—*
Jacoby, Charles E., 4,515,084, Cl. 104-166.000.
Rohrbach, Peter H., 4,515,085, Cl. 104-250.000.
Sieber, Albrecht: *See—*
Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, 4,515,125, Cl. 123-359.000.
Siede, Heinz-Jurgen: *See—*
Schimmelpfennig, Wolfgang; and Siede, Heinz-Jurgen, 4,516,027, Cl. 250-338.000.
Siefert, William J.: *See—*
Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, 4,515,832, Cl. 427-233.000.
Siemens Aktiengesellschaft: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.
Heerlein, Manfred, 4,515,511, Cl. 416-131.000.
Kessler, Claus, 4,516,188, Cl. 361-408.000.
Sauer, Anton; and Thinschmidt, Hans, 4,516,204, Cl. 364-200.000.
Scheckel, Bruno; and Wittenzellner, Ernst, 4,516,113, Cl. 340-384.00E.
Siemens-Albis AG: *See—*
Nyffeler, Felix, 4,516,093, Cl. 333-193.000.
Siemens-Allis, Inc.: *See—*
Culligan, John C.; Stich, Frederick A.; and Williams, Conrad F., 4,516,185, Cl. 361-154.000.
Gallatin, Paul M.; Dyken, Henry J.; and Cvengros, Norbert F., 4,516,005, Cl. 200-147.00R.
Sigiyama, Hiroyuki; Sakurai, Masaki; Abe , Ryozo; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. System for pausing reproduction in rotary recording medium reproducing apparatus. 4,516,161, Cl. 358-342.000.
Sikdar, Subhas K.; and Yeboah, Yaw D., to General Electric Company. Catalyzed interfacial polycondensation polycarbonate process. 4,515,936, Cl. 528-200.000.
Silverstein, Joseph D. Universal automotive battery holddown system. 4,515,233, Cl. 180-68.500.
Simader, Fritz: *See—*
Petter, Helmut; Bildstein, Hubert; and Simader, Fritz, 4,516,255, Cl. 378-143.000.
Siminoff, Roger H. Geared tuning machine. 4,515,059, Cl. 84-306.000.
Simmons, Frederick J.: *See—*
Keller, Douglas V., Jr.; and Simmons, Frederick J., 4,515,602, Cl. 44-51.000.
Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., to Dow Chemical Company, The. Radioactive metals complexed with phosphonate derivatives of dicyclopentadienebis(methylamine). 4,515,767, Cl. 424-1.100.
Simonnot, Jack: *See—*
Jardinier, Pierre; and Simonnot, Jack, 4,515,308, Cl. 236-49.000.
Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,515,953, Cl. 546-345.000.
Simpson, Jay R.: *See—*
Howard, Richard E.; Pleibel, William; Simpson, Jay R.; and Stolen, Rogers H., 4,515,436, Cl. 350-96.330.
Simpson, Marc L.; and McNeilly, David R., to United States of America, Energy. Light-operated proximity detector with linear output. 4,516,020, Cl. 250-214.00L.
Sims, Bernard: *See—*
Chow, San-Laung; and Sims, Bernard, 4,515,810, Cl. 514-530.000.
Singer, Alfred R. E., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom, The. Solid metal articles from built up splat particles. 4,515,864, Cl. 428-546.000.
Singer, Arnold M.: *See—*
Oliver, John E., Jr.; and Singer, Arnold M., 4,515,699, Cl. 252-8.55R.
Singer Company, The: *See—*
Creed, Gerald J., 4,515,099, Cl. 112-279.000.
Pillari, Joseph C.; and Willging, Arthur W., 4,516,076, Cl. 324-418.000.
Siniza, Bernhard: *See—*
Nolting, Rolf; and Siniza, Bernhard, 4,515,175, Cl. 137-107.000.
Sirand, Joseph, to S.A.R.L Centre d'Etude et de Realisation d'Equipment et de Materiel C.E.R.E.M. Ignition and fuel supply system for a gas-fueled heat-radiator. 4,515,554, Cl. 431-78.000.
Sitton, Willard J.; and Whaley, William L., to Joy Manufacturing Company. Valve seat structure. 4,515,347, Cl. 251-328.000.
Siwiak, Kazimierz, to Motorola, Inc. Three element low profile antenna. 4,516,127, Cl. 343-702.000.
Sizer, Phillip S.; Cox, Don C.; and Council, Malcolm N., to Otis Engineering Corporation. Apparatus and method for rotating coil tubing in a well. 4,515,220, Cl. 166-384.000.
Sjogren, C. Norman, to Belwith International, Ltd. Sliding door lock. 4,514,996, Cl. 70-100.000.
Skerlos, Peter C., to Zenith Electronics Corporation. Dual mode UHF tuning system. 4,516,170, Cl. 358-191.100.
Skillman, David B.: *See—*
Scanland, Joseph E.; and Skillman, David B., 4,514,967, Cl. 56-14.700.
Skorecki, Jan, to National Research Development Corporation. Mounting for a vibrating system. 4,515,122, Cl. 123-198.00E.
Slavik, Walter; and Rebsamen, Arthur, to Maschinenfabrik Schweiter AG. Traverse winding frame for producing the winding of a package. 4,515,320, Cl. 242-18.0DD.
Slavin, Martin J., to Intech Systems Corp. Differential doppler for blood flow measurement. 4,515,164, Cl. 128-663.000.
Slemmons, Arthur J.; and Newgard, Peter J., to SRI International. Fiber-reinforced concrete solar collector. 4,515,151, Cl. 126-450.000.
Slezak, Pavel J.: *See—*
Vosmeyer, Wilhelm; Cole, Roderick; and Slezak, Pavel J., 4,515,111, Cl. 123-41.610.
Sloan, Albert H. Well point system and apparatus. 4,515,517, Cl. 417-46.000.
Slump, William R., to United States of America, Navy. Pulsewidth modulated, charge transfer, digital to analog converter. 4,516,111, Cl. 340-347.0DA.
Slusarek, Wojciech: *See—*
Sandefur, Louise O.; Slusarek, Wojciech; Wilson, Burton D.; and Maggiulli, Cataldo A., 4,515,947, Cl. 544-295.000.
SMEC, Inc.: *See—*
Schiff, Peter, 4,515,587, Cl. 604-96.000.
Smit, Hermanus, to U.S. Philips Corporation. Coaxial cable with a connector. 4,515,427, Cl. 339-177.00E.
Smith, Douglas G.: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.
Smith International, Inc.: *See—*
Dailey, Patrick E., 4,515,225, Cl. 175-40.000.
Smith, Jerry D.; and Szymczak, Edward J., to Cameron Iron Works, Inc. Wellhead assembly. 4,515,400, Cl. 285-141.000.
Smith, John; and Boiston, David A., to Courtaulds PLC. Heat exchanger having a plastics membrane. 4,515,210, Cl. 165-133.000.
Smith, John L.; and Christiano, Vito F., to Technicon Instruments Corporation. Integral reagent dispenser. 4,515,753, Cl. 422-102.000.
Smith Kline & French Laboratories Limited: *See—*
Adger, Brian M.; and O'Rourke, David J., 4,515,952, Cl. 546-329.000.
Smith, Michael D.; and Whatley, Roger A., to Motorola, Inc. Amplifier circuit for minimizing output voltage power-up transients. 4,516,082, Cl. 330-296.000.
Smith, Peter W.; and Tomlinson, Walter J., III, to AT&T Bell Laboratories. Nonlinear and bistable optical waveguide devices. 4,515,429, Cl. 350-96.130.
Smith, Richard D.: *See—*
Van Grouw, Samual J.; and Smith, Richard D., 4,515,147, Cl. 126-163.00R.
Smith, Robert C.; and Cox, A. Benns, II, to G. S. Blodgett Co., Inc. Dual flow heating apparatus. 4,516,012, Cl. 219-400.000.
Smith, Thomas E.: *See—*
Kinsbron, Eliezer; Lynch, William T.; and Smith, Thomas E., 4,514,893, Cl. 29-571.000.
Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Mazzola, Massimo; and Cipriani, Aldo, 4,515,908, Cl. 521-182.000.
Snowdon, Brian, to Macawber Engineering Limited. Method and apparatus for unblocking conveying pipes for particulate material. 4,515,503, Cl. 406-11.000.
Societa Pneumatici Pirelli: *See—*
Salvadori, Bruno, 4,515,541, Cl. 425-47.000.
Societe Anonyme D.B.A.: *See—*
Escarabajal, Gislain; and Maligne, Jean-Charles, 4,515,249, Cl. 188-73.380.
Societe Anonyme dite: L'Oreal: *See—*
Vanlerberghe, Guy; and Sebag, Henri, 4,515,775, Cl. 424-70.000.

Societe d'Etudes et de Recherches de Ventilation et d'Aerauliques: *See—*
Jardinier, Pierre; and Simonnot, Jack, 4,515,308, Cl. 236-49.000.

Societe Francaise Hoechst: *See—*
Christidis, Yani; and Vallejos, Jean-Claude, 4,515,970, Cl. 549-79.000.

Soda, Yutaka: *See—*
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.

Sodastream Limited: *See—*
Mabb, Kenneth G., 4,514,994, Cl. 62-389.000.

Soder, Alfons: *See—*
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, 4,515,795, Cl. 514-263.000.

Soga, Tasao: *See—*
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, 4,516,149, Cl. 357-71.000.

Solid State Chargers Research and Development Limited Partnership: *See—*
Hoffman, Philip A., 4,516,067, Cl. 323-265.000.

Sonerud, John T. Pipelaying appliance. 4,515,522, Cl. 414-747.000.

Sony Corporation: *See—*
Amano, Yoshifumi, 4,516,053, Cl. 313-584.000.
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.
Katakura, Masayuki, 4,516,081, Cl. 330-254.000.
Miyata, Katsuro; Asaida, Takashi; and Nagumo, Fumio, 4,516,172, Cl. 358-228.000.
Quan, Ronald, 4,516,041, Cl. 307-494.000.

Sony/Tektronix Corporation: *See—*
Fukuta, Minoru, 4,516,119, Cl. 340-722.000.

Sorich, Richard A., to CooperVision, Inc. Operative elliptical probe for ultrasonic surgical instrument and method of its use. 4,515,583, Cl. 604-22.000.

Sosebee, B. Lamar: *See—*
Walker, Paul; Hamrick, Glen F.; and Sosebee, B. Lamar, 4,515,646, Cl. 156-78.000.

Souma, Kenichi: *See—*
Azuhata, Shigeru; Arashi, Norio; Narato, Kiyoshi; Inada, Tooru; Souma, Kenichi; Ohtsuka, Keizou; Hishinuma, Yukio; and Masai, Tadahisa, 4,515,094, Cl. 110-347.000.

Soumai, Masamichi: *See—*
Ogura, Shunichiro; and Soumai, Masamichi, 4,515,661, Cl. 203-60.000.

South American Placers, Inc.: *See—*
Vargas, Alfredo P., 4,515,688, Cl. 209-167.000.

Southern Chemical Products Company: *See—*
Udall, Raymond E., 4,515,294, Cl. 222-105.000.

Sovonics Solar Systems: *See—*
Fournier, Eugene; and Doehler, Joachim, 4,515,107, Cl. 118-718.000.

Spaargaren, Robert, to Allied Corporation. Spring clutch for duo-servo drum brake. 4,515,250, Cl. 188-79.5GT.

Sparkman, David M., to Thiokol Corporation. Method of and apparatus for grinding solid organic waste material encountered in sewage waste and waste water reclamation. 4,515,317, Cl. 241-5.000.

Spellman, Gordon B.: *See—*
Jaskolski, Stanley V.; Schutten, Herman P.; Spellman, Gordon B.; Sedivy, Jan K.; and Jensen, Maurice W., 4,516,144, Cl. 357-27.000.

Spencer Wright Industries, Inc.: *See—*
Ingram, Gary L., 4,515,096, Cl. 112-79.00R.

Sperry Corporation: *See—*
Isenberg, Gerry E.; Forshey, Terry L.; and Keller, Robert D., Jr., 4,515,353, Cl. 266-236.000.
Underhill, Kenneth R., 4,514,968, Cl. 56-341.000.
Wahlquist, Clayton C., 4,516,118, Cl. 340-703.000.

Spetsialnoe Konstruktorskoe Bjuro Seismicheskoi Tekhniki: *See—*
Gnatchenko, Viktor V.; Makarov, Nikolai P.; Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Panteleev, Valery A.; Androsenko, Alexandr P.; Davidenko, Nikolai I.; Mochalova, Zoya N.; and Palkin, Leonid N., 4,515,045, Cl. 81-429.000.

Spiegler, Wolfgang: *See—*
Rentzea, Costin; Spiegler, Wolfgang; and Jung, Johann, 4,515,616, Cl. 71-76.000.

Spielman, Rick B.: *See—*
Vigil, Samuel A.; and Spielman, Rick B., 4,516,043, Cl. 310-11.000.

SPOFA, spojene podniky pro zdratvonickou vyrobu: *See—*
Flegel, Martin; Krojidlo, Milan; Kolinsky , Jiri ; Masek, Karel; and Seifert, Jaroslav, 4,515,715, Cl. 260-112.50R.

Sprague, Robert S. Flip card apparatus for forming units of speech. 4,515,566, Cl. 434-172.000.

Spraybake Limited: *See—*
Crisp, Eric H., 4,515,072, Cl. 98-115.200.

Springer, Helmut: *See—*
Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, 4,515,986, Cl. 564-471.000.

SRI International: *See—*
Slemmons, Arthur J.; and Newgard, Peter J., 4,515,151, Cl. 126-450.000.

Stabler, Manfred: *See—*
Borst, Erich; Schadlich, Fritz; and Stabler, Manfred, 4,516,045, Cl. 310-68.00E.

Staendeke, Horst: *See—*
Maurer, Alexander; and Staendeke, Horst, 4,515,632, Cl. 106-18.160.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Pneumatic cleaning apparatus for open end friction spinning machines. 4,514,972, Cl. 57-301.000.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Mobile cleaning device for open end friction spinning machines. 4,514,973, Cl. 57-301.000.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Open end friction spinning machine. 4,514,974, Cl. 57-401.000.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Friction roller arrangement for open end friction spinning machine. 4,514,975, Cl. 57-401.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz, 4,514,972, Cl. 57-301.000.
Stahlecker, Fritz, 4,514,973, Cl. 57-301.000.
Stahlecker, Fritz, 4,514,974, Cl. 57-401.000.
Stahlecker, Fritz, 4,514,975, Cl. 57-401.000.

Stahler, Fritz: *See—*
Klose, Sigmar; Stahler, Fritz; Lange, Hans; and Kleemann, Wolfgang, 4,515,889, Cl. 435-4.000.

Stahler, John P., to Robot Research, Inc. Color slow scan video signal translation. 4,516,151, Cl. 358-14.000.

Stamper, Richard W.; and Hultz, Robert C., to General Tire & Rubber Company, The. Vinyl chloride polymer laminate. 4,515,744, Cl. 264-171.000.

Standard Microsystems Corporation: *See—*
Zapisek, John M.; and Giulekas, Gus, 4,516,040, Cl. 307-468.000.

Standard Oil Company, The: *See—*
Bartoszek-Loza, Rosemary, 4,515,667, Cl. 204-162.00R.
Brazdil, James F., Jr.; Marritt, William A.; and Ward, Michael D., 4,515,732, Cl. 260-465.600.

Standard Oil Company (Indiana): *See—*
Brooks, Gary T.; and Cole, Bill W., 4,515,924, Cl. 525-432.000.
Edwards, Robert C., 4,515,904, Cl. 502-209.000.

Standard Products Company, The: *See—*
Nussbaum, Joel H., 4,515,649, Cl. 156-244.110.

Stanefski, Eugene F.: *See—*
Schaumburg, Edward G.; and Stanefski, Eugene F., 4,515,187, Cl. 141-1.000.

Stanley, John H., to Goodyear Tire & Rubber Company, The. Hose coupling crimper and method of crimping. 4,515,006, Cl. 72-402.000.

Starner, Eugene R., to RCA Corporation. Event selector for wide range probability of occurrence. 4,516,217, Cl. 364-717.000.

State of Israel, Ministry of Agriculture, The: *See—*
Feller, Ron; and Mizrach, Amos, 4,515,276, Cl. 209-693.000.

Stauffer Chemical Company: *See—*
Fancher, Llewellyn W.; and Scher, Herbert B., 4,515,813, Cl. 514-563.000.
Green, Laddie L., 4,515,627, Cl. 71-95.000.

Steffes, William J., to Coleman Company, Inc., The. Multiple use shelf for cooler. 4,515,421, Cl. 312-351.000.

Stegelmeier, Hartmut; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Fungicidally active pyrano-pyrazole derivatives. 4,515,801, Cl. 514-403.000.

Stehning, Werner, to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft. Washing tower for the desulfurization of flue gases. 4,515,754, Cl. 422-168.000.

Steinemer, Norbert: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.

Steinleitner, Gunther, to Brown, Boveri & Cie Ag. Electrochemical storage cell. 4,515,874, Cl. 429-104.000.

Stenzel, Gerhard: *See—*
Kaule, Wittich; Renz, Walter; and Stenzel, Gerhard, 4,516,031, Cl. 250-562.000.

Stephansen, Erik W., to Impact Systems, Inc. Apparatus for drying a moving web having movable dryer modules. 4,514,913, Cl. 34-48.000.

Stephenson, Tom, to Petroleum Meter & Pump Co., Inc. Extended range variator for fuel pump computer. 4,515,030, Cl. 74-348.000.

Sterling Drug Inc.: *See—*
Bailey, Denis M., 4,515,980, Cl. 560-45.000.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,515,797, Cl. 514-349.000.

Stern, Richard A.: *See—*
Bayha, William T.; Borowick, John; Stern, Richard A.; and Babbitt, Richard W., 4,516,131, Cl. 343-785.000.

Stettner, Ernest R., to General Motors Corporation. Edge discharge pulse fuel injector. 4,515,129, Cl. 123-472.000.

Stevens, Bradley D.: *See—*
McCullough, Thomas W.; and Stevens, Bradley D., 4,515,907, Cl. 521-139.000.

Stewart, Alvin E. Tool assembly for removal and installation of freeze plugs. 4,514,890, Cl. 29-256.000.

Stewart, James F. Food pouch opening device. 4,514,902, Cl. 30-2.000.

Stewart, William E. Liquid clarifying apparatus and methods. 4,515,698, Cl. 210-802.000.

Steyert, William A.: *See—*
Lawless, William N.; Cross, Leslie E.; and Steyert, William A., 4,515,534, Cl. 417-322.000.

Stibbs, Richard G.: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.

Stich, Frederick A.: *See—*
Culligan, John C.; Stich, Frederick A.; and Williams, Conrad F., 4,516,185, Cl. 361-154.000.

Sticht, Walter, to Stiwa-Fertigungstechnik Sticht Gesellschaft M.B.H. Assembly line. 4,515,264, Cl. 198-344.000.

Stinger, Walter E., Jr. Direct digital loudspeaker. 4,515,997, Cl. 179-111.00R.

Stiwa-Fertigungstechnik Sticht Gesellschaft M.B.H.: *See—*
Sticht, Walter, 4,515,264, Cl. 198-344.000.

Stolen, Rogers H.: *See—*
Howard, Richard E.; Pleibel, William; Simpson, Jay R.; and Stolen, Rogers H., 4,515,436, Cl. 350-96.330.

Stone, David R.: *See—*
Boehm, Russell W.; Rippstein, Robert P.; and Stone, David R., 4,515,544, Cl. 425-129.00R.

Stone, Julian: *See—*
Burrus, Charles A., Jr.; and Stone, Julian, 4,515,612, Cl. 65-3.120.

Stoner, Richard J., Jr.: *See—*
Schorr, Steven M.; and Stoner, Richard J., Jr., 4,514,930, Cl. 47-60.000.

Storage Technology Partners: *See—*
Chang, Jenq S.; and Chang, Tung S., 4,516,145, Cl. 357-42.000.

Story, Allan. Apparatus for facilitating visual meter readings. 4,515,437, Cl. 350-114.000.

Stotler, David V.; and Coffey, Fred S., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing a continuous glass filament mat. 4,515,613, Cl. 65-4.400.

Stout, Gregg W., to Baker Oil Tools, Inc. Perforating gun pressure activated sliding sleeve. 4,515,217, Cl. 166-297.000.

Strauss, Harry W.: *See—*
Castronovo, Frank P.; Strauss, Harry W.; and Potsaid, Majic S., 4,515,766, Cl. 424-1.100.

Street, Jeffrey B., to Verbatim Corporation. Magnetic head cleaning diskette. 4,516,176, Cl. 360-75.000.

Streetman, William E.: *See—*
De Maria, Francesco; and Streetman, William E., 4,515,859, Cl. 428-398.000.

Strickland, Robert M., Jr.: *See—*
Fabris, Alfonso V.; Strickland, Robert M., Jr.; and Toth, John T., 4,516,156, Cl. 358-85.000.

Strom, Alice M.; Herr, R. Wilbur; and Martin, Sylvia, to OMI International Corporation. Acid zinc and zinc alloy electroplating solution and process. 4,515,663, Cl. 204-44.200.

Strubhar, Malcolm K.: *See—*
Fitch, John L.; and Strubhar, Malcolm K., 4,515,214, Cl. 166-250.000.

Stuart, Ian C. E.: *See—*
Heathcoat, Michael J.; Jackson, Douglas H.; Jowitt, Frederick W.; Madley, Jack R.; and Stuart, Ian C. E., 4,515,677, Cl. 204-300.0EC.

Stubbs, John K.: *See—*
Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,515,799, Cl. 514-341.000.

Stumpfl, Werner; Bettinger, Gunter; Engel, Friedrich; Fitterer, Horst; Kreimes, Norbert; Pfefferkorn, Dietmar; Schaffer, Norbert; and Schmidts, Kurt, to BASF Aktiengesellschaft. Hub for magnetic tape cassettes, especially compact cassettes, and magnetic tape cassette possessing one or more such hubs. 4,515,331, Cl. 242-199.000.

Stumpp, Gerhard: *See—*
Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, 4,515,125, Cl. 123-359.000.

Stypher Corporation: *See—*
Moxon, Edwin C., 4,516,164, Cl. 360-53.000.

Suarez, Adoracion F.: *See—*
Manderino, George L.; and Suarez, Adoracion F., 4,515,890, Cl. 435-7.000.

Suda, Kaoru: *See—*
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, 4,516,221, Cl. 364-900.000.

Sudo, Tadashi: *See—*
Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, 4,515,785, Cl. 424-195.100.

Sueshige, Hiroshi: *See—*
Ogano, Takeo; Sueshige, Hiroshi; and Hatakeyama, Sakichi, 4,514,917, Cl. 37-249.000.

Sugai, Hiroshi: *See—*
Ninomiya, Hisakazu; Ibori, Satoshi; Nagase, Hiroshi; Igarashi, Sadayuki; and Sugai, Hiroshi, 4,516,065, Cl. 318-811.000.

Sugai, Kazuyoshi: *See—*
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Sugai, Kazuyoshi, 4,516,049, Cl. 310-313.00A.

Sugimoto, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Nuclear magnetic resonance diagnostic apparatus. 4,516,074, Cl. 324-309.000.

Suginuma, Atsushi: *See—*
Hayase, Isao; Suginuma, Atsushi; Kishi, Atsuo; and Kawashima, Kenichi, 4,515,514, Cl. 418-150.000.

Sugita, Junkichi: *See—*
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.

Sulkowski, Alfred. Heat exchange system with space heating, space cooling and hot water generating cycles. 4,514,990, Cl. 62-238.700.

Sullivan, Daniel S.: *See—*
Haslegrave, John A.; and Sullivan, Daniel S., 4,515,708, Cl. 252-390.000.

Sullivan, Don A., to Shell Oil Company. Oilseed extraction process. 4,515,726, Cl. 260-412.400.

Sullivan, Paul E.; and Peppel, George W., to Lockheed Corporation. Symmetrically loaded flexible connector having multiple passageways. 4,515,399, Cl. 285-95.000.

Sumal, Jaihind S., to Robert Bosch GmbH. Apparatus for measuring the mass of a flowing medium. 4,515,014, Cl. 73-202.000.

Sumi, Koji: *See—*
Matsuzaki, Tadashi; and Sumi, Koji, 4,516,183, Cl. 361-71.000.

Sumigama, Takashi: *See—*
Shibata, Yoichi; Kimura, Ryosuke; Sumigama, Takashi; and Izumi, Masaro, 4,515,350, Cl. 266-92.000.

Sumitani, Tomoaki: *See—*
Matsushita, Nobuo; Furukawa, Tokinobu; Shintani, Tetsuo; Sumitani, Tomoaki; and Oda, Chikao, 4,515,008, Cl. 73-53.000.

Sumitomo Chemical Company, Limited: *See—*
Okamoto, Hideho; Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,515,866, Cl. 428-614.000.
Yamamoto, Kazuhito; and Takenaka, Toshio, 4,515,917, Cl. 524-178.000.

Sumitomo Electric Industries, Ltd.: *See—*
Moriyama, Masakazu; Shinohara, Toshio; Hirano, Kazuo; and Makino, Fumio, 4,516,121, Cl. 340-825.050.

Sunburst Laboratories, Inc.: *See—*
Ehrlichmann, Merlin W., 4,515,089, Cl. 110-235.000.

Suncoast Medical Manufacturing Co.: *See—*
Johns, David L., 4,516,194, Cl. 362-202.000.

Sundstrand Corporation: *See—*
Glennon, Timothy F., 4,516,038, Cl. 307-264.000.

Sundvall, Kenneth, to Forenade Fabriksverken. Arrangement in a fuse for projectiles with explosive charge for changing over between direct and delayed ignition of the explosive charge. 4,515,081, Cl. 102-266.000.

Superior Electric Company, The: *See—*
Brigham, Robert N., 4,516,048, Cl. 310-254.000.

Supreme Casting & Tooling: *See—*
Kovacs, Steve A., 4,515,842, Cl. 428-36.000.

Surdilla, Silverio B. Variable ratio liquid metering dispenser. 4,515,296, Cl. 222-134.000.

Susumi, Sadao: *See—*
Kawahara, Tetsuo; Mizokami, Hiroshi; Mizuno, Kyosuke; and Susumi, Sadao, 4,515,714, Cl. 260-112.00R.

Suyama, Hideo: *See—*
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.

Suzuki, Hiro. Bung for jars. 4,515,283, Cl. 215-270.000.

Suzuki, Kohji, to Ricoh Company, Ltd. Magnet brush cleaning apparatus for electrophotographic copying machine. 4,515,467, Cl. 355-15.000.

Suzuki, Norio: *See—*
Boigegrain, Robert; Maffrand, Jean-Pierre; Suzuki, Norio; Matsubayachi, Kynichi; and Ashida, Shinichiro, 4,515,951, Cl. 546-114.000.

Suzuki, Tadashi: *See—*
Takeuchi, Yasuhisa; Morimoto, Yoshiro; and Suzuki, Tadashi, 4,515,040, Cl. 74-866.000.

Suzuki, Tomio: *See—*
Morimoto, Kotaro; and Suzuki, Tomio, 4,515,553, Cl. 431-8.000.

Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, to Toyota Jidosha Kabushiki Kaisha. Fuel-injection control in an internal-combustion engine. 4,515,131, Cl. 123-491.000.

Swearingen, Loren L.; and LaTulip, Randy J., to Dow Chemical Company, The. Hydroxystyrylazapolymers. 4,515,938, Cl. 528-252.000.

Swider, Robert A.; and Horsch, Martha E., to Ford Motor Company. Self-crosslinkable electrocoat resins prepared by room temperature reactions by epoxy resins and polyamines containing primary and tertiary amine groups. 4,515,911, Cl. 523-414.000.

Swithenbank, Colin: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,515,988, Cl. 568-586.000.

Syntex Corporation: *See—*
Holton, Percy G., 4,515,811, Cl. 514-554.000.

SYNTEX (U.S.A.) Inc.: *See—*
Patterson, John W., Jr.; and Pfister, Jurg R., 4,515,727, Cl. 260-413.000.

Synthelabo: *See—*
Wick, Alexander E.; and Binet, Jean, 4,515,814, Cl. 514-652.000.

Sypula, Donald S.: *See—*
Mammino, Joseph; Sypula, Donald S.; Abramsohn, Dennis A.; Abkowitz, Martin A.; and Scharfe, Merlin E., 4,515,882, Cl. 430-58.000.

Systems Research Laboratories, Inc.: *See—*
Ballard, Paul T.; and Little, Gordon R., 4,515,478, Cl. 356-345.000.

Szala, Lawrence E.: *See—*
Brun, Milivoj K.; Lee, Minyoung; and Szala, Lawrence E., 4,515,746, Cl. 264-332.000.

Szczepanski, Henry, to Ciba Geigy Corporation. N-(Cyclopropyltriazinyl-n'-(arylsulfonyl) ureas having herbicidal activity. 4,515,626, Cl. 71-93.000.

Szenger, Franz, to Carl-Zeiss-Stuftung, Heidenheim/Brenz. Plain bearing. 4,515,415, Cl. 308-6.00R.

Szymczak, Edward J.: *See—*
Smith, Jerry D.; and Szymczak, Edward J., 4,515,400, Cl. 285-141.000.

T.D. Williamson, Inc.: *See—*
Baudoux, Richard; and Webb, Anthony J., 4,515,287, Cl. 220-316.000.

Tachibana, Hajime: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Tachikawa Spring Co., Ltd.: *See—*
Aoki, Akira; and Ito, Kunihiko, 4,514,869, Cl. 5-472.000.

Tackles, George, to Oakley, Inc. Sunglasses. 4,515,448, Cl. 351-41.000.

Tai, Tet C.: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.

Taiho Industries Co. Ltd.: *See—*
Manabe, Nobuyuki; and Goto, Takahiro, 4,515,312, Cl. 239-227.000.

Tajima, Akira: *See—*
Takahashi, Sadatoshi; Tsuji, Sadahiko; Tajima, Akira; Asano, Toshiaki; and Minami, Setsuo, 4,515,446, Cl. 350-427.000.

Tajima, Noriyasu: *See—*
Sakura, Yasuhiro; Nakajima, Yasushi; Tajima, Noriyasu; and Nimura, Hitoshi, 4,516,208, Cl. 364-466.000.

Tajima, Osamu: *See—*
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,515,351, Cl. 266-177.000.

Takagi, Kiyotaka: *See—*
Abe, Hiroshi; Shichiri, Motoaki; Kawamori, Ryuzo; Ichoh, Tasuku; Iwatani, Kenji; Higuchi, Mamoru; Takagi, Kiyotaka; Okamoto, Norihiko; and Okudaira, Toshiyuki, 4,515,584, Cl. 604-66.000.

Takagi, Masayuki: *See—*
Narishige, Shinji; Yoshinari, Tsuneo; Sâto, Mituo; Takagi, Masayuki; and Yoshida, Toshihiro, 4,516,180, Cl. 360-126.000.

Takahara, Takeshi; Ishii, Tsutomu; and Shirakawa, Yasuhiro, to Kabushiki Kaisha Toshiba. Rare earth oxyfluoride barium fluoride halide phosphor. 4,515,706, Cl. 252-301.40H.

Takahashi, Mikio: *See—*
Nojima, Kazuhiro; Fujimoto, Hiroyuki; and Takahashi, Mikio, 4,515,833, Cl. 427-362.000.

Takahashi, Nobuaki: *See—*
Masuda, Isao; Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Ueno, Shoji, 4,516,163, Cl. 360-32.000.

Takahashi, Sadatoshi; Tsuji, Sadahiko; Tajima, Akira; Asano, Toshiaki; and Minami, Setsuo, to Canon Kabushiki Kaisha. Zoom objective. 4,515,446, Cl. 350-427.000.

Takahashi, Takashi: *See—*
Imai, Motomasa; Takahashi, Takashi; Furukawa, Osamu; and Kanai, Hideyuki, 4,516,105, Cl. 338-21.000.

Takahashi, Yoshinobu, to Toyota Jidosha Kabushiki Kaisha. Electrode for cationic electrodeposition coating. 4,515,674, Cl. 204-292.000.

Takahashi, Yosuke: *See—*
Amemori, Koichi; Kawabe, Toshihiko; and Takahashi, Yosuke, 4,515,120, Cl. 123-368.000.

Takaku, Masaaki: *See—*
Tsuneno, Tatsuro; and Takaku, Masaaki, 4,515,725, Cl. 260-410.700.

Takamatsu, Shunicti, to Itoki Kosakusho Co. Ltd. Article automatic storage and retrieval system. 4,515,508, Cl. 414-280.000.

Takamisawa Electric Co., Ltd.: *See—*
Fujii, Kunihisa; Tomono, Noboru; Watanabe, Hajime; and Miyakoshi, Yasushi, 4,516,099, Cl. 335-135.000.

Takano, Masashi: *See—*
Sawano, Kiyohito; Kouichi, Ryujiro; Oota, Hideaki; Takano, Masashi; and Moroe, Michio, 4,515,909, Cl. 523-102.000.

Takano, Toshio; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Control system for an electromagnetic clutch for automobiles. 4,515,257, Cl. 192-0.075.

Takara Company, New York, Inc.: *See—*
Fujiyama, Kunio; Okamoto, Kei; and Yoshikawa, Noriyuki, 4,515,406, Cl. 297-409.000.

Takase, Yoshiyuki: *See—*
Yokogawa, Kanae; Kotani, Shozo; Kawata, Shigeo; and Takase, Yoshiyuki, 4,515,891, Cl. 435-69.000.

Takasugi, Hisashi: *See—*
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,515,788, Cl. 514-202.000.

Takata, Harry H., to Ag-Chem Equipment Co., Inc. Liquid waste application system with sludge gun. 4,515,311, Cl. 239-172.000.

Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,515,788, Cl. 514-202.000.

Takenaka, Toshio: *See—*
Yamamoto, Kazuhito; and Takenaka, Toshio, 4,515,917, Cl. 524-178.000.

Takeo, Tadashi; Yamamoto, Toru; and Yamashito, Sachihiro, to Honda Giken Kogyo Kabushiki Kaisha. Welding torch apparatus. 4,515,521, Cl. 414-735.000.

Takeuchi, Yasuhisa; Morimoto, Yoshiro; and Suzuki, Tadashi, to Nissan Motor Company, Limited. Control apparatus and method for engine-continuously variable transmission. 4,515,040, Cl. 74-866.000.

Takiguchi, Masahiro, to Sharp Kabushiki Kaisha. Print control system in a color image printer. 4,516,139, Cl. 346-140.00R.

Takino, Hiroshi: *See—*
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.

Takizawa, Masaaki: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.

Tallman, William R.; McDevitt, Steven C.; and Delancey, Warren H., to Yukon Energy Corporation. Gas-fired condensing mode furnace. 4,515,145, Cl. 126-99.00A.

Tamai, Masayoshi; Iyoda, Tetsuo; and Koizumi, Yukihasa, to Fuji Xerox Co., Ltd. Ink jet printer shut-down control. 4,516,134, Cl. 346-75.000.

Tamir, Giora: *See—*
Shafrir, Doron; and Tamir, Giora, 4,514,920, Cl. 40-448.000.

Tamura, Masaru: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.

Tan, Yoichi: *See—*
Kume, Hiroshi; and Tan, Yoichi, 4,516,240, Cl. 370-85.000.

Tanaka, Junichi: *See—*
Furubayashi, Hisatoshi; Tanaka, Junichi; Watanabe, Masanori; and Hijikigawa, Masaya, 4,515,653, Cl. 156-643.000.

Tanaka, Kimio: *See—*
Shiba, Haruo; Sakata, Yoshiya; and Tanaka, Kimio, 4,515,322, Cl. 242-71.800.

Tanaka, Tsuyoshi: *See—*
Yamamoto, Kiwamu; and Tanaka, Tsuyoshi, 4,515,235, Cl. 180-168.000.

Tanba, Yoshihiro: *See—*
Kogame, Kunio; Tanba, Yoshihiro; and Makimura, Masaru, 4,515,854, Cl. 428-288.000.

Tang, Charlene. Method for coating and infusing nut products with honey-sucrose solution for roasting. 4,515,820, Cl. 426-309.000.

Tang, Robert H., to PPG Industries, Inc. Peroxide composition. 4,515,929, Cl. 526-228.000.

Taniguchi, Motoya: *See—*
Komeyama, Yoshihiro; and Taniguchi, Motoya, 4,516,254, Cl. 378-34.000.

Taniguchi, Nobuhiro; and Endo, Tomohiro, to Fujirebio Kabushiki Kaisha. Method of preparing gamma globulin suitable for intravenous administration. 4,515,776, Cl. 424-85.000.

Tanz, Heiner: *See—*
Eisenlohr, Karl-Heinz; Gaensslen, Hans; Kriebel, Manfred; and Tanz, Heiner, 4,515,604, Cl. 48-197.00R.

Tarzaiski, Richard J., to RCA Corporation. Dynamic record level control for optical disc recorder. 4,516,235, Cl. 369-116.000.

Taverna, Arthur R.; and Thompson, Warren S., to United States of America, Air Force. Erosion-resistant nosetip construction. 4,515,847, Cl. 428-107.000.

Taylor, Charles E.; Gattiker, Anton; and Krantz, Gary B., to Phase One Products, Corp. Combined photographic enlarger and print developing tray. 4,515,468, Cl. 355-27.000.

Taylor, Henry F. Fiber optic magnetic field sensor. 4,516,021, Cl. 250-227.000.

Taylor, John L. Rotary internal combustion engine. 4,515,123, Cl. 123-222.000.

Taylor, Mary J.: *See—*
Childs, Jerry; Sabins, Fred; and Taylor, Mary J., 4,515,216, Cl. 166-293.000.

Taylor, Maurice. Wheel having adjustment for axial position of rim relative to disc. 4,515,411, Cl. 301-9.0TV.

TDK Corporation: *See—*
Ishino, Ken; Hashimoto, Yasuo; Ichihara, Kenichi; and Narumiya, Yoshikazu, 4,515,850, Cl. 428-225.000.
Shiba, Haruo; Sakata, Yoshiya; and Tanaka, Kimio, 4,515,322, Cl. 242-71.800.

TDK Electronics Co., Ltd.: *See—*
Nakagawa, Shiro; and Kuroiwa, Akihiko, 4,516,234, Cl. 369-109.000.

Technicon Instruments Corporation: *See—*
Smith, John L.; and Christiano, Vito F., 4,515,753, Cl. 422-102.000.

Teel, Patrick. Trigger actuator. 4,514,923, Cl. 42-69.00R.

Teeter, Roger C. Load centering boot for inverse suspension. 4,515,152, Cl. 128-75.000.

Teetz, Volker, to Hoechst Aktiengesellschaft. Spiro-2-aza-alkane-3-carbonitriles, their preparation and their use. 4,515,960, Cl. 548-408.000.

Teetz, Volker: *See—*
Henning, Rainer; Urbach, Hansjorg; Geiger, Rolf; Teetz, Volker; and Scholkens, Bernward, 4,515,803, Cl. 514-338.000.

Tektronix, Inc.: *See—*
Nakamura, Michael D., 4,516,042, Cl. 307-546.000.

Teldec Telefunken-Decca Schallplatten GmbH: *See—*
Borchard, Heinz; Knothe, Herbert; and Rybka, Bruno, 4,515,843, Cl. 428-64.000.

Teledyne Industries, Inc.: *See—*
Ward, John W., 4,515,169, Cl. 128-746.000.

Tellone, Mauro, to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A. Device for the automatic computer-control of the operation of a plurality of videorecorders. 4,516,166, Cl. 360-72.100.

Telly, Reginald O. Ball case for storing and organizing gage balls. 4,515,268, Cl. 206-305.000.

Terachi, Junichi: *See—*
Murata, Shirou; Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,002, Cl. 200-144.00C.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,003, Cl. 200-144.00C.

Terada, Matsuaki: *See—*
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, 4,516,221, Cl. 364-900.000.

Teramachi, Hiroshi. Linear slide bearing. 4,515,413, Cl. 308-6.00C.

Teramachi, Hiroshi. Linear slide bearing. 4,515,416, Cl. 308-6.00C.

Terumo Corporation: *See—*
Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, 4,515,785, Cl. 424-195.100.

Teutsch, Jean G.; Deraedt, Roger; and Benzoni, Josette, to Roussel Uclaf. Steroids. 4,515,787, Cl. 514-180.000.

Texaco Inc.: *See—*
Elattar, Azza A., 4,515,901, Cl. 502-63.000.
Hermes, Chester E.; and Huang, Wann-Sheng, 4,515,215, Cl. 166-272.000.

Texas Instruments Incorporated: *See—*
Breedlove, Paul S.; and Moore, James H., 4,516,260, Cl. 381-51.000.
Chiu, Te-Long; and Lien, Jih-Chang, 4,514,897, Cl. 29-578.000.
Erickson, Donald A., 4,516,223, Cl. 365-175.000.
Hamilton, Stephen P., 4,516,218, Cl. 364-900.000.
Thompson, E. Earle, 4,516,200, Cl. 364-200.000.

Textilma Ag: *See—*
Durville, Gerard A.; and Bucher, Robert R., 4,515,186, Cl. 139-455.000.

Thaler, Rainer: *See—*
Schadlich, Fritz; Rieker, Werner; Thaler, Rainer; and Klingenstein, Klaus, 4,515,303, Cl. 227-131.000.

Thalmann, Alfred; and Reich, Fritz, to George Fischer Limited. Molded connection piece. 4,515,177, Cl. 137-318.000.

Theeuwes, Felix: *See—*
Urquhart, John; and Theeuwes, Felix, 4,515,585, Cl. 604-85.000.

Theijsmeijer, Frederik: *See—*
Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, 4,515,832, Cl. 427-233.000.

Thibodeaux, Patricia T. Hair curler with retractable retaining band. 4,515,171, Cl. 132-42.00R.

Thinschmidt, Hans: *See—*
Sauer, Anton; and Thinschmidt, Hans, 4,516,204, Cl. 364-200.000.

Thiokol Corporation: *See—*
Bell, Frank H., 4,515,080, Cl. 102-205.000.
Sparkman, David M., 4,515,317, Cl. 241-5.000.

Thomann, Roland; and Amann, Markus, to Polydrain, Inc. Slotted drainage grate with support. 4,515,498, Cl. 404-4.000.

Thomas, Edwin L.: *See—*
Frisbie, Richard C.; Houser, David E.; Morenus, Richard J.; and Thomas, Edwin L., 4,515,505, Cl. 409-163.000.
Hall, Douglas J.; Langley, Robert F.; and Thomas, Edwin L., 4,515,878, Cl. 430-5.000.

Thomas, Gareth J.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,515,969, Cl. 549-39.000.

Thomas, Glenn R.: *See—*
Wallace, James B.; and Thomas, Glenn R., 4,516,100, Cl. 335-160.000.

Thomas, Norman S., to Fairclough Civil Engineering Limited. Tunnel linings. 4,515,501, Cl. 405-153.000.

Thompson, David L.: *See—*
McDonald, Ray S.; Thompson, David L.; Rossing, Martin A.; and Hartlaub, Jerome T., 4,515,159, Cl. 128-419.0PG.

Thompson, E. Earle, to Texas Instruments Incorporated. Data communications system with host character terminal mode. 4,516,200, Cl. 364-200.000.

Thompson, Warren S.: *See—*
Taverna, Arthur R.; and Thompson, Warren S., 4,515,847, Cl. 428-107.000.

Thomson-CSF: *See—*
Doriath, Gerard; and Gaudry, Roger, 4,516,073, Cl. 324-244.000.
Fraise, Pierre, 4,516,271, Cl. 455-327.000.
Hartemann, Pierre; Meunier, Paul-Louis; and Jacobelli, Alain, 4,515,016, Cl. 73-517.00R.
Peynaud, Francois; Gosselin, Jean; Farcy, Andre ; and Grandvaux, Bernard, 4,516,226, Cl. 367-6.000.

Thuen, Judy: *See—*
Hinrichs, Richard J.; and Thuen, Judy, 4,515,545, Cl. 425-143.000.

Thurston, Kurt W. Road barricade flasher light combination. 4,516,109, Cl. 340-114.00B.

Tie Down Engineering, Inc.: *See—*
Wilson, Richard C., 4,514,970, Cl. 56-400.120.

Tiedeman, C. John, Jr.: *See—*
Dizek, Frederick A.; Vogel, Eric S.; Tiedeman, C. John, Jr.; and Herold, Robert A., 4,515,629, Cl. 75-0.50B.

Timm, Gerald W., to Dacomed Corporation. Nocturnal penile tumescence and rigidity monitor. 4,515,166, Cl. 128-694.000.

Tindall, Frank A. Ice cream can filling machine with content varigator. 4,515,190, Cl. 141-131.000.

Tinkle, Anthony R.: *See—*
Wener, Kenneth R.; and Tinkle, Anthony R., 4,516,227, Cl. 367-15.000.

Todoh, Hidemasa, to Fuji Xerox Co., Ltd. Thermal printer capable of reproducing halftone image. 4,516,135, Cl. 346-76.0PH.

Tohoku Metal Industries, Ltd.: *See—*
Nemoto, Michio; Yoshida, Kiyokazu; and Baba, Tetsuro, 4,516,101, Cl. 335-208.000.

Tokyo Electric Co. Ltd.: *See—*
Sakura, Yasuhiro; Nakajima, Yasushi; Tajima, Noriyasu; and Nimura, Hitoshi, 4,516,208, Cl. 364-466.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ajima, Takashi; Ohshima, Jiro; and Koshino, Yutaka, 4,515,642, Cl. 148-1.500.
Imai, Motomasa; Takahashi, Takashi; Furukawa, Osamu; and Kanai, Hideyuki, 4,516,105, Cl. 338-21.000.
Kizu, Shuji; Ikeda, Tsutomu; and Iwamoto, Masanori, 4,516,265, Cl. 382-48.000.
Kobayashi, Akio; Mizoguchi, Hitoshi; Ikeda, Hisatoshi; and Mayama, Hidekiyo, 4,516,006, Cl. 200-148.00A.
Kohyama, Mitsuaki, 4,515,106, Cl. 118-651.000.
Komatsu, Shigeru; and Inoue, Hiroshi, 4,516,147, Cl. 357-59.000.
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.
Shirogami, Tamotsu; and Ueno, Mitsushi, 4,515,871, Cl. 429-34.000.
Sugimoto, Hiroshi, 4,516,074, Cl. 324-309.000.
Tomikawa, Masataka, 4,516,122, Cl. 340-825.500.
Yamakawa, Tsutomu; Nishikawa, Mineki; and Kihara, Tomohiko, 4,516,025, Cl. 250-252.100.
Yokota, Tsuneshi, 4,516,242, Cl. 372-29.000.
Yoneda, Hitoshi, 4,515,462, Cl. 355-4.000.

Tomcik, James D.: *See—*
Ching, Yau-Chau; and Tomcik, James D., 4,516,258, Cl. 381-31.000.

Tomihira, Shigeru: *See—*
Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,515,922, Cl. 525-99.000.

Tomikawa, Masataka, to Tokyo Shibaura Denki Kabushiki Kaisha. Communication system with collision detection and forced collision. 4,516,122, Cl. 340-825.500.

Tominari, Noboru, to Tominari, Noboru; and Mikuni Kohyo Co., Inc. Circuit device for driving electromagnetically movable unit at high speed with single power source. 4,516,184, Cl. 361-152.000.

Tomlinson, Walter J., III: *See—*
Smith, Peter W.; and Tomlinson, Walter J., III, 4,515,429, Cl. 350-96.130.

Tomono, Noboru: *See—*
Fujii, Kunihisa; Tomono, Noboru; Watanabe, Hajime; and Miyakoshi, Yasushi, 4,516,099, Cl. 335-135.000.

Tomy Kogyo Co., Inc.: *See—*
Kozuka, Michihiro; and Tonokura, Masayuki, 4,515,571, Cl. 446-90.000.

Tong, Yit C.: *See—*
Patrick, James F.; Seligman, Peter; Tong, Yit C.; and Clark, Graeme M., 4,515,158, Cl. 128-419.00R.

Tonokura, Masayuki: *See—*
Kozuka, Michihiro; and Tonokura, Masayuki, 4,515,571, Cl. 446-90.000.

Toray Industries, Incorporated: *See—*
Inoue, Takehisa; and Miwa, Kishio, 4,515,605, Cl. 55-26.000.

Toray Silicone Company, Ltd.: *See—*
Fukayama, Miyoji; and Ichijo, Chikara, 4,515,834, Cl. 427-387.000.

Torick, Emil L., to CBS Inc. Triphonic sound system. 4,516,257, Cl. 381-4.000.

Torras, Robert M., to Kut-Kwick Corporation. Self-leveling vehicle seat mount. 4,515,337, Cl. 248-371.000.

Torras, Robert M., to Kut-Kwick Corporation. Slope mower. 4,515,392, Cl. 280-755.000.

Torrence, Paul F.; Johnston, Margaret I.; and Imai, Jiro, to United States of America, Health and Human Services. 2',5'-Riboadenylate-morpholinoadenylate nucleotides. 4,515,781, Cl. 514-46.000.

Toshiba Ceramics Co., Ltd.: *See—*
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Nagashima, Kazuo, 4,516,212, Cl. 364-475.000.

Toshiba Silicone Co., Ltd.: *See—*
Otsuki, Masaaki; and Kida, Shinji, 4,515,979, Cl. 556-445.000.

Toth, John T.: *See—*
Fabris, Alfonso V.; Strickland, Robert M., Jr.; and Toth, John T., 4,516,156, Cl. 358-85.000.

Toyama, Teruhiko: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Fujiwara, Tatsuro; Watanabe, Hideyuki; Hirano, Takao; and Sakakibara, Hideo, 4,515,941, Cl. 536-7.100.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Yamaoka, Tsuguo; and Fukuda, Mitsutoshi, 4,515,886, Cl. 430-270.000.

Toyo Tire & Rubber Company, Limited: *See—*
Otani, Kozo; and Yamada, Yoshio, 4,515,981, Cl. 560-50.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Tsujimura, Isao; and Yoshimi, Takani, 4,514,892, Cl. 29-568.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,515,131, Cl. 123-491.000.
Takahashi, Yoshinobu, 4,515,674, Cl. 204-292.000.

Tsuchiya, Yasuhiro; and Ozawa, Hitoshi, 4,515,112, Cl. 123-41.840.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kinbara, Hiroji; Matsui, Kazuma; Hattori, Yoshiyuki; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,515,575, Cl. 474-13.000.
Moriyama, Masakazu; and Saito, Takao, 4,516,207, Cl. 364-424.000.
Toyota Motor Co., Ltd.: *See—*
Moriyama, Masakazu; Shinohara, Toshio; Hirano, Kazuo; and Makino, Fumio, 4,516,121, Cl. 340-825.050.
Trinquier, Jacques: *See—*
Jouffrey, Bernard; Trinquier, Jacques; and Franceschi, Jean-Luc, 4,516,026, Cl. 250-310.000.
Trio Kabushiki Kaisha: *See—*
Yanagihara, Masaki; and Iimura, Takashi, 4,516,078, Cl. 328-167.000.
Tritter, Stephen D. Function generators. 4,516,107, Cl. 338-89.000.
Trommen, Hartmut: *See—*
Rother, Bruno; and Trommen, Hartmut, 4,515,547, Cl. 425-215.000.
Trouillet, Jean, to Jeumont-Schneider Corporation. Linking arrangement for a shaft and a fly-wheel. 4,515,495, Cl. 403-336.000.
Trumper, Thomas; Schoop, Gunther-Dietmar; Borgschulte, Fritz; and Krummnack, Friedrich, to Gewerkschaft Eisenhutte Westfalia. Rack assembly. 4,515,410, Cl. 299-43.000.
Truskalo, Walter, to RCA Corporation. Synchronized switching regulator for a multiple scanning frequency video monitor. 4,516,169, Cl. 358-190.000.
TRW Inc.: *See—*
Findakly, Talal K., 4,515,428, Cl. 350-96.120.
MacKenzie, Burton T., 4,515,993, Cl. 174-102.00R.
Tsuboi, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission mechanism for motorcycles. 4,515,038, Cl. 74-606.00R.
Tsubouchi, Kazuo: *See—*
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Sugai, Kazuyoshi, 4,516,049, Cl. 310-313.00A.
Tsuchikawa, Haruo; and Kai, Junichi, to Fujitsu Limited. Scanning electron beam exposure system. 4,516,030, Cl. 250-492.200.
Tsuchiya, Yasuhiro; and Ozawa, Hitoshi, to Toyota Jidosha Kabushiki Kaisha. Aluminum alloy cylinder block. 4,515,112, Cl. 123-41.840.
Tsuda, Mamoru: *See—*
Asai, Koichi; Tsuda, Mamoru; Oe, Kunio; and Muto, Yasuo, 4,515,507, Cl. 414-226.000.
Tsuji, Sadahiko: *See—*
Takahashi, Sadatoshi; Tsuji, Sadahiko; Tajima, Akira; Asano, Toshiaki; and Minami, Setsuo, 4,515,446, Cl. 350-427.000.
Tsujimura, Isao; and Yoshimi, Takani, to Toyoda Koki Kabushiki Kaisha. Machine tool. 4,514,892, Cl. 29-568.000.
Tsujimura, Kanji. Guard for chain wheel. 4,515,386, Cl. 280-289.00G.
Tsukagoshi, Sadayuki: *See—*
Horikoshi, Hiroshi; Arai, Akio; Tsukagoshi, Sadayuki; and Sakamoto, Junichi, 4,515,365, Cl. 273-25.000.
Tsuneno, Tatsuro; and Takaku, Masaaki, to Kao Corporation. Process for preparing boric esters of glycerol fatty acid esters. 4,515,725, Cl. 260-410.700.
Tsurumi, Michio; and Lee, Do I., to Dow Chemical Company, The. Crosslinked latexes encapsulated with linear polymers. 4,515,914, Cl. 523-201.000.
Tsuzuki, Hiroyoshi, to Canon Kabushuki Kaisha. Data inserting device for camera. 4,515,452, Cl. 354-106.000.
Tucker, Theodore W., to Control Data Corporation. E beam stage with below-stage X-Y drive. 4,516,029, Cl. 250-442.100.
Turner, William: *See—*
Werbel, Leslie M.; Colbry, Norman; Turner, William; and Worth, Donald F., 4,515,793, Cl. 514-252.000.
Turney, William J., to Motorola, Inc. Fast lock PLL having out of lock detector control of loop filter and divider. 4,516,083, Cl. 331-1.00A.
Turrill, Frank H.: *See—*
Hettinger, William P., Jr.; Turrill, Frank H.; Rozman, George J.; and Beck, H. Wayne, 4,515,680, Cl. 208-87.000.
Tuttle, Mark: *See—*
Friesen, Dwayne; Babcock, Walter C.; and Tuttle, Mark, 4,515,906, Cl. 521-28.000.
Tuyet-Van, Hoang T. Sock. 4,514,863, Cl. 2-240.000.
Tyler, Charles E., Jr. Fire resistant lap protection blanket. 4,514,870, Cl. 5-485.000.
Tyler, Derek E.; and Yarwood, John C., to Olin Corporation. Process of continuously treating an alloy melt. 4,515,630, Cl. 75-53.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,514,988, Cl. 62-82.000.
Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.
UBE Industires, Ltd.: *See—*
Yajima, Seishi, deceased; Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, 4,515,742, Cl. 264-63.000.
Uchida, Hiroyuki: *See—*
Imakoshi, Shigeyoshi; Soda, Yutaka; Uchida, Hiroyuki; Sugita, Junkichi; Takino, Hiroshi; Sekiya, Tetsuo; and Suyama, Hideo, 4,516,179, Cl. 360-113.000.
Uchida, Isamu, deceased (by Fujii, Kazuko Uchida and Chigusa, heiresses); Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, to Laurel Bank Machine Co., Ltd. Automatic money receiving and disbursing machine. 4,516,015, Cl. 235-379.000.
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyamide acid composition for preparing polyimide. 4,515,915, Cl. 524-87.000.
Udall, Raymond E., to Southern Chemical Products Company. Liquid dispenser, valve therefor and process of producing the valve. 4,515,294, Cl. 222-105.000.
Uehara, Masaru: *See—*
Adachi, Kiyoshi; Uehara, Masaru; Kitagawa, Hiroshi; Kojima, Hirotaka; and Sato, Masaaki, 4,514,965, Cl. 53-553.000.
Uemura, Michihiko: *See—*
Kambara, Toru; Uemura, Michihiko; and Iwanaga, Takeya, 4,516,090, Cl. 333-141.000.
Ueno, Mitsushi: *See—*
Shirogami, Tamotsu; and Ueno, Mitsushi, 4,515,871, Cl. 429-34.000.
Ueno, Shoji: *See—*
Masuda, Isao; Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Ueno, Shoji, 4,516,163, Cl. 360-32.000.
Ugine Aciers: *See—*
Jacquemin, Claude; Provost, Florent; and Seinera, Andre , 4,515,560, Cl. 432-80.000.
Ulvr, Joseph: *See—*
Corvari, John; Ulvr, Joseph; and Alas, Raigo, 4,516,264, Cl. 382-46.000.
Umeda, Tadashi: *See—*
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,515,465, Cl. 355-14.00C.
Underhill, Kenneth R., to Sperry Corporation. In-line rectangular baler. 4,514,968, Cl. 56-341.000.
Union Camp Corporation: *See—*
Frihart, Charles R.; and Veazey, Richard L., 4,515,939, Cl. 528-339.300.
Union Carbide Corporation: *See—*
Churma, Theodore; Latimer, Elwood D., Jr.; and Vicik, Stephen J., 4,515,745, Cl. 264-211.000.
Kamp, Ewald A., 4,516,268, Cl. 383-63.000.
Nowobilski, Jeffert J.; and Kather, Kenneth C., 4,515,397, Cl. 285-47.000.
Union Oil Company of California: *See—*
Deering, Roland F., 4,515,679, Cl. 208-11.00R.
Lutzens, William W., 4,514,905, Cl. 33-125.00B.
Uniroyal, Inc.: *See—*
Cathey, Thaddeus F.; Gaynor, John C.; and Nelson, Rodney J., 4,515,577, Cl. 474-204.000.
Unisearch Limited: *See—*
Garde, Peter, 4,516,080, Cl. 330-3.000.
United States of America
Agriculture: *See—*
Laurent, Sebastian M.; and Pond, Wilson G., 4,515,780, Cl. 424-154.000.
Air Force: *See—*
Taverna, Arthur R.; and Thompson, Warren S., 4,515,847, Cl. 428-107.000.
Zahn, Robert L., 4,515,001, Cl. 72-323.000.
America Postal Service: *See—*
Corvari, John; Ulvr, Joseph; and Alas, Raigo, 4,516,264, Cl. 382-46.000.
Army: *See—*
Bayha, William T.; Borowick, John; Stern, Richard A.; and Babbitt, Richard W., 4,516,131, Cl. 343-785.000.
Bly, Vincent T., 4,515,443, Cl. 350-396.000.
Gray, Billy C., 4,515,043, Cl. 81-57.220.
Sayles, David C., 4,515,912, Cl. 523-456.000.
Energy: *See—*
Fox, Richard J., 4,515,474, Cl. 356-44.000.
Herman, Raymond L., 4,515,007, Cl. 73-38.000.
Pardini, John A.; Brubaker, Robert C.; and Rusnak, John J., 4,515,750, Cl. 376-446.000.
Riggan, William C., 4,516,028, Cl. 250-370.000.
Simpson, Marc L.; and McNeilly, David R., 4,516,020, Cl. 250-214.00L.
Zimmermann, Eugene L.; and Kania, Don R., 4,515,173, Cl. 137-68.00R.
Health and Human Services: *See—*
Torrence, Paul F.; Johnston, Margaret I.; and Imai, Jiro, 4,515,781, Cl. 514-46.000.
National Aeronautics and Space Administration: *See—*
Alario, Joseph P.; Brown, Richard F.; and Kosson, Robert L., 4,515,207, Cl. 165-1.000.
Buehler, Martin G., 4,516,071, Cl. 324-158.00R.
Krieg, Herman C., Jr., 4,515,751, Cl. 422-86.000.
Navy: *See—*
Fenneman, David B.; Rinehart, Larry F.; and Hardesty, Leonard W., Jr., 4,516,077, Cl. 324-425.000.
Hannmann, Ralph A., Jr.; and Higginbotham, James F., 4,515,065, Cl. 91-363.00A.
Slump, William R., 4,516,111, Cl. 340-347.0DA.
U.S. Philips Corporation: *See—*
Burgin, Kenneth N., 4,515,996, Cl. 179-81.00B.
Doyen, Daniel, 4,516,096, Cl. 333-219.000.
Goscianski, Michel; and de Ronde, Francois, 4,516,089, Cl. 333-135.000.
Harding, Geoffrey; and Klotz, Erhard, 4,516,261, Cl. 382-6.000.
Hooft van Huijsduijnen, Jozef A. M., 4,516,051, Cl. 313-446.000.
Linde, Rolf; and Klotz, Erhard, 4,516,252, Cl. 378-23.000.
Shannon, John M.; Hoeberechts, Arthur M. E.; and Van Gorkom, Gerardus G. P., 4,516,146, Cl. 357-52.000.

Smit, Hermanus, 4,515,427, Cl. 339-177.00E.
United Technologies Corporation: *See—*
Dizek, Frederick A.; Vogel, Eric S.; Tiedeman, C. John, Jr.; and Herold, Robert A., 4,515,629, Cl. 75-0.50B.
Doman, Glidden S., 4,515,525, Cl. 416-11.000.
Levengood, James L., 4,515,526, Cl. 416-96.00R.
Melton, Lynn A., 4,515,896, Cl. 436-2.000.
Unitika, Ltd.: *See—*
Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, 4,515,691, Cl. 210-274.000.
Universal Pioneer Corporation: *See—*
Kanamaru, Hitoshi, 4,516,160, Cl. 358-326.000.
University of California, The Regents of the: *See—*
Deamer, David W., 4,515,736, Cl. 264-4.300.
Vigil, Samuel A.; and Spielman, Rick B., 4,516,043, Cl. 310-11.000.
University of Maine, Board of Trustees of the: *See—*
Carr, Edward F., 4,515,206, Cl. 165-1.000.
University of Technology: *See—*
Pugh, Stuart; Smith, Douglas G.; Lee, Chee M.; Parr, Leslie R.; Birkett, John N.; Stibbs, Richard G.; and Tai, Tet C., 4,515,333, Cl. 248-122.000.
University Patents, Inc.: *See—*
Besic, Frank C., 4,515,770, Cl. 424-49.000.
Upjohn Company, The: *See—*
Schadewald, Frederic H., 4,515,482, Cl. 366-136.000.
Upson, Lawrence L.: *See—*
Otterstedt, Jan-Erik A.; Jaras, Sven G.; Pudas, Roland; and Upson, Lawrence L., 4,515,903, Cl. 502-68.000.
Ura, Masaaki: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,515,628, Cl. 71-111.000.
Urbach, Hansjorg: *See—*
Henning, Rainer; Urbach, Hansjorg; Geiger, Rolf; Teetz, Volker; and Scholkens, Bernward, 4,515,803, Cl. 514-338.000.
Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. System for parenteral administration of agent. 4,515,585, Cl. 604-85.000.
Usami, Toshiro: *See—*
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.
Ushikubo, Masao, to Olympus Optical Co., Ltd. Cap and a cap opening and closing device. 4,515,286, Cl. 220-314.000.
Utaka, Katsuyuki; Sakai, Kazuo; and Akiba, Shigeyuki, to Kokusai Denshin Denwa Kabushiki Kaisha. Distributed feedback semiconductor laser. 4,516,243, Cl. 372-96.000.
Utsumi, Isamu: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.
Uytterhoeven, Jan; Jacobs, Pierre; Adriaensen, Ludo; and Geerts, Jan, to N. V. Bekaert S.A. Process for forming a catalyst and the catalytic product produced by the process. 4,515,905, Cl. 502-309.000.
Vackier, Leo N., to AGFA-Gevaert N.V. Apparatus for transferring electrophotographic images. 4,515,461, Cl. 355-3.0TR.
Valet, Gunter; Ruhenstroth-Bauer, Gerhard; Wunsch, Erich; and Moroder, Luis. Compounds for determining the pH value in the interior of a cell. 4,515,730, Cl. 260-465.00D.
Vallak, Enn; and Vallak, Hannes, to International Ferrox Co., Establishment. Ingot mould having a hot-top inside the upper part of the mould. 4,515,341, Cl. 249-106.000.
Vallak, Hannes: *See—*
Vallak, Enn; and Vallak, Hannes, 4,515,341, Cl. 249-106.000.
Vallejos, Jean-Claude: *See—*
Christidis, Yani; and Vallejos, Jean-Claude, 4,515,970, Cl. 549-79.000.
Vallourec: *See—*
Plaquin, Bernard, 4,515,020, Cl. 73-761.000.
Valtion Teknillinen Tutkimuskeskus: *See—*
Orjala, Markku, 4,515,088, Cl. 110-110.000.
Van Dyk & Company Inc.: *See—*
Conner, Donald E.; and Klein, Kenneth, 4,515,774, Cl. 424-59.000.
Van Becelaere, Robert M., to Ruskin Manufacturing Company. Damper with integral mounting means. 4,515,068, Cl. 98-1.000.
van den Boom, Johannes: *See—*
Blatt, Georg; van den Boom, Johannes; Kuipers, Geert; and Hollerweger, Heinz, 4,515,239, Cl. 181-290.000.
van der Lely, Cornelis. Tractor having guidance system. 4,515,221, Cl. 172-3.000.
van der Lely, Cornelis. Soil cultivating implements. 4,515,222, Cl. 172-68.000.
VanDerLinden, Roy E.; and Francis, John H., to Frederick Manufacturing Company. Multi-speed drive. 4,515,028, Cl. 74-191.000.
Van Dusseldorp, C. Peter: *See—*
Moore, Jerry R.; and Van Dusseldorp, C. Peter, 4,515,423, Cl. 339-28.000.
Vanek, Jay D.: *See—*
Edmunds, Robert H.; and Vanek, Jay D., 4,515,179, Cl. 137-543.130.
Vanelli, Johnny, to Optimum Manufacturing Inc. Combined lighter and mouth spray. 4,515,556, Cl. 431-253.000.
van Esch, Hendrikus J.: *See—*
Eertink, Bastiaan B. B.; and van Esch, Hendrikus J., 4,516,019, Cl. 250-214.0RC.
Van Gompel, James; and Akey, Ronald R., to N P Marketing Corporation. Pallet cargo restraining device. 4,515,506, Cl. 410-46.000.
Van Gorkom, Gerardus G. P.: *See—*
Shannon, John M.; Hoeberechts, Arthur M. E.; and Van Gorkom, Gerardus G. P., 4,516,146, Cl. 357-52.000.
Van Grouw, Samual J.; and Smith, Richard D. Clean burning grate for fireplaces and wood stoves. 4,515,147, Cl. 126-163.00R.
VanHulle, Glenn J.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,515,824, Cl. 426-554.000.
Van Leirsburg, Dean A.: *See—*
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,515,757, Cl. 423-54.000.
Vanlerberghe, Guy; and Sebag, Henri, to Societe Anonyme dite: L'Oreal. Polyhydroxyl non-ionic surfactant, process for preparing the same and cosmetic composition containing the same. 4,515,775, Cl. 424-70.000.
Van Loveren, Augustinus G.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,515,712, Cl. 252-522.00R.
van Os, Cornelis J., to Noord-Nederlandsche Machinefabriek B.V. Perstaltic pump. 4,515,536, Cl. 417-394.000.
Van Papeveld, Piet: *See—*
Beck, Alfred; and Van Papeveld, Piet, 4,514,931, Cl. 49-21.000.
van Poele, Gerard J.: *See—*
Piepers, Harry C.; and van Poele, Gerard J., 4,515,670, Cl. 204-199.000.
van Raalte, John A.; and Riddle, George H. N., to RCA Corporation. Video disc player with compensation for stylus holder mechanical resonance. 4,516,232, Cl. 369-126.000.
Vapor Corporation: *See—*
Edmunds, Robert H.; and Vanek, Jay D., 4,515,179, Cl. 137-543.130.
Varallo, Thomas P.; Ervine, Albert W. G.; Duffy, Joseph J.; and Olson, Edwin G., to Du Pont de Nemours, E. I., and Company. Vacuum transfer apparatus for packing layers of articles in a container. 4,514,956, Cl. 53-148.000.
Varga, Laszlo ; Krekacs, Sandor; Latorcai, Janos; Palfi, Zoltan; and Fledrich, Istvan, to Budapesti Muszaki Egyetem. Method for removing moisture adhered to surfaces of bodies and for simultaneously adjusting the surface temperature of the bodies. 4,514,911, Cl. 34-22.000.
Vargas, Alfredo P., to South American Placers, Inc. Process for the selective separation of base metal sulfides and oxides contained in an ore. 4,515,688, Cl. 209-167.000.
Varian Associates, Inc.: *See—*
Russo, Carl J., 4,516,050, Cl. 313-359.100.
Vaughn, Cecil C.: *See—*
Austin, Jon W.; and Vaughn, Cecil C., 4,515,589, Cl. 604-122.000.
Vaughn, Edward A., to Allied Corporation. Formation of nonwoven webs or batts from continuous filament tow or yarn strands. 4,514,880, Cl. 19-0.350.
Veazey, Richard L.: *See—*
Frihart, Charles R.; and Veazey, Richard L., 4,515,939, Cl. 528-339.300.
VEB Ingenieurbuero fuer Meliorationen: *See—*
Nolting, Rolf; and Siniza, Bernhard, 4,515,175, Cl. 137-107.000.
Veda, Inc.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,514,978, Cl. 60-426.000.
Verbatim Corporation: *See—*
Street, Jeffrey B., 4,516,176, Cl. 360-75.000.
Vercon Inc.: *See—*
MacLaughlin, Donald N.; and Fortuna, Vincent E., 4,515,651, Cl. 156-423.000.
Vershinin, Sergei V.: *See—*
Maidanik, Jury F.; Vershinin, Sergei V.; Kholodov, Valery F.; and Dolgirev, Jury E., 4,515,209, Cl. 165-104.220.
Vetter, Heinz: *See—*
Kolbe, Klaus; Hellmann, Walter; Krajec, Otmar; Schikowsky, Hartmut; and Vetter, Heinz, 4,515,648, Cl. 156-196.000.
Vicik, Stephen J.: *See—*
Churma, Theodore; Latimer, Elwood D., Jr.; and Vicik, Stephen J., 4,515,745, Cl. 264-211.000.
Victor Company of Japan: *See—*
Masuda, Isao; Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; and Ueno, Shoji, 4,516,163, Cl. 360-32.000.
Victor Company of Japan, Ltd.: *See—*
Matsumoto, Ikuo, 4,515,856, Cl. 428-323.000.
Sigiyama, Hiroyuki; Sakurai, Masaki; Abe , Ryozo; and Yoshihara, Kenji, 4,516,161, Cl. 358-342.000.
Victor Hasselblad Aktiebolag: *See—*
Dahlgren, Lennart G. O., 4,515,454, Cl. 354-287.000.
Videocolor S.A.: *See—*
Cormio, Ignazio, 4,515,568, Cl. 445-3.000.
Vigil, Samuel A.; and Spielman, Rick B., to University of California, The Regents of the. Method and apparatus for generating electrical energy from a heated gas containing carbon particles. 4,516,043, Cl. 310-11.000.
Vinals, Joaquin F.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.

Vineyard, Billy D.: *See—*
Bachman, Gerald L.; and Vineyard, Billy D., 4,515,731, Cl. 260-465.00D.
Visinand, Jean-Claude. Bathtub. 4,514,868, Cl. 4-541.000.
Vitafin N.V.: *See—*
Wittkampf, Frederik H. M.; and Boute, Willem, 4,515,161, Cl. 128-419.0PG.
Vivier, Jacobus L., to Clasicon (Proprietary) Limited. Classifying means. 4,515,689, Cl. 209-453.000.
Vock, Manfred H.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,515,712, Cl. 252-522.00R.
Voelker, Herbert: *See—*
Domesle, Rainer; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,515,758, Cl. 423-213.200.
Voest-Alpine Aktiengesellschaft: *See—*
Janusch, Alois; and Mayer, Franz, 4,514,912, Cl. 34-37.000.
Vogel, Eric S.: *See—*
Dizek, Frederick A.; Vogel, Eric S.; Tiedeman, C. John, Jr.; and Herold, Robert A., 4,515,629, Cl. 75-0.50B.
Vogel, Friedrich; and Paust, Joachim, to BASF Aktiengesellschaft. Chroman derivatives and their preparation. 4,515,975, Cl. 549-411.000.
Volkert, Wynn A.: *See—*
Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., 4,515,767, Cl. 424-1.100.
Volkmann, Claus-Jurgen: *See—*
Bany, Peter-Michael; Berger, Wolfgang; Bettge, Hans; Bialkowski, Gunter; Rozek, Rafl; Steinemer, Norbert; and Volkmann, Claus-Jurgen, 4,516,004, Cl. 200-144.00B.
Volkmann, Thomas J.: *See—*
Rathe, Robert A.; and Volkmann, Thomas J., 4,514,939, Cl. 52-118.000.
Volpe, Leo: *See—*
Boudart, Michel; Oyama, Shigeo T.; and Volpe, Leo, 4,515,763, Cl. 423-409.000.
von Ahrens, Roger W., to Robvon Backing Ring Company. Method for manufacturing consumable welding spacer. 4,515,000, Cl. 72-278.000.
Vosmeyer, Wilhelm; Cole, Roderick; and Slezak, Pavel J. Air-cooled, reciprocating piston, internal combustion engine with cylinder heads forming arcuate or S-shaped cooling ducts therebetween. 4,515,111, Cl. 123-41.610.
Vsesojuzny Nauchno-Issledovatelsky Institut Gornospasatelngo Dela: *See—*
Khudosovtsev, Nikolai M.; Shevchenko, Jury A.; Artemenko, Anatoly I.; Danilevsky, Mikhail G.; Kocherga, Vladimir K.; Luchko, Viktor N.; Margolis, Anatoly E.; Ovcharov, Vladimir K.; Filimonovna, Ljudmila Y.; and Shulman, Grigory A., 4,515,156, Cl. 128-202.260.
Vsesojuzny Nauchno-Issledovatelsky Institut Textilno-Galantereinoi Promyshlennosti: *See—*
Markov, Vladimir A.; Filatov, Vladimir N.; Kernasovsky, Ilya S.; and Gorina, Ljudmila V., 4,515,254, Cl. 188-371.000.
W. R. Grace & Co., Cryovac Div.: *See—*
Kent, Garnet J.; and Wood, John C., 4,516,267, Cl. 383-22.000.
WABCO Westinghouse Fahrzeugbremsen GmbH: *See—*
Christoleit, Arno, 4,515,530, Cl. 417-214.000.
Wacker-Chemie GmbH: *See—*
Preiner, Gerhard; and Muller, Johann, 4,515,976, Cl. 556-453.000.
Wacker-Chemitronic Gesellschaft Fur Elektronik-Grundstoffe mbH: *See—*
Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Muhlhofer, Ernst; and Schwab, Michael, 4,515,762, Cl. 423-337.000.
Wadle, Heinrich: *See—*
Jung, Eggert; and Wadle, Heinrich, 4,516,175, Cl. 358-283.000.
Wagemann, Dolores. Infant restraint. 4,515,155, Cl. 128-134.000.
Wagner, David L., to Boeing Company, The. Escapement orienting mechanism. 4,515,260, Cl. 193-44.000.
Wahlquist, Clayton C., to Sperry Corporation. Pulse width modulation conversion circuit for controlling a color display monitor. 4,516,118, Cl. 340-703.000.
Wakabayashi, Hiroshi; Okabe, Nobuo; and Daitoku, Koichi, to Nippon Kogaku K.K. Camera having a flash unit built therein. 4,515,453, Cl. 354-149.100.
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, to Hitachi, Ltd. Semiconductor device having ribbon electrode structure and method for fabricating the same. 4,516,149, Cl. 357-71.000.
Walele, Ismail L.: *See—*
Login, Robert B.; Walele, Ismail L.; and Otterson, Richard J., 4,515,721, Cl. 260-400.000.
Walker, Paul; Hamrick, Glen F.; and Sosebee, B. Lamar, to Walker, Paul; and Hamrick, Glen F. Method for applying polyurethane backing. 4,515,646, Cl. 156-78.000.
Walker, Robert F.: *See—*
Christopher, Robert J.; and Walker, Robert F., 4,516,266, Cl. 382-48.000.
Wallace, David R.; Korba, James M.; Matson, James E.; and Lynnworth, Lawrence C., to Panametrics, Inc. Intervalometer time measurement apparatus and method. 4,515,021, Cl. 73-861.270.
Wallace, James B.; and Thomas, Glenn R., to Westinghouse Electric Corp. Mechanical interlock for vertically mounted circuit breakers. 4,516,100, Cl. 335-160.000.
Wallace, Joseph W.: *See—*
Lee, Harry W., Jr.; and Wallace, Joseph W., 4,515,284, Cl. 220-70.000.
Wallach, Walter A., Jr.: *See—*
Farber, David A.; Bachman, Brett; Pilat, John F.; and Wallach, Walter A., Jr., 4,516,203, Cl. 364-200.000.
Walling, John B. Single action pneumatic powered spring retractable pump. 4,515,532, Cl. 417-318.000.
Walsh, Dennis E.; and Green, Gary J., to Mobil Oil Corporation. Enhancement of solid fuel combustion by catalyst deposited on a substrate. 4,515,092, Cl. 110-347.000.
Walter, Thomas J.: *See—*
Ranken, Paul F.; and Walter, Thomas J., 4,515,945, Cl. 544-94.000.
Walters, Stephen M.: *See—*
Farah, Robert L.; and Walters, Stephen M., 4,516,241, Cl. 370-110.100.
Walther, Karl-Heinz, to Pfaff Industriemaschinen GmbH. Device for driving a sewing machine. 4,515,098, Cl. 112-274.000.
Wanat, David J.: *See—*
Jeffress, Ronald E.; Wanat, David J.; and Krasznai, Charles Z., 4,516,011, Cl. 219-222.000.
Wang, Roger C.: *See—*
Anderson, F. Allan; Chen, Henry C. J.; DiMucci, Vito A.; and Wang, Roger C., 4,514,954, Cl. 53-53.000.
Wank, Joachim: *See—*
Kleiner, Frank; Kubens, Rolf; Reese, Eckart; and Wank, Joachim, 4,515,925, Cl. 525-439.000.
Wanke, Johannes: *See—*
Difflipp, Kurt; and Wanke, Johannes, 4,515,078, Cl. 101-157.000.
Wapperom, Pieter, to Rontgen Technische Dienst B.V. Movable projector unit for gamma radiation for welding control purposes with pipe-lines and the like. 4,516,256, Cl. 378-60.000.
Ward, John W., to Teledyne Industries, Inc. Differential latency audiometer. 4,515,169, Cl. 128-746.000.
Ward, Michael D.: *See—*
Brazdil, James F., Jr.; Marritt, William A.; and Ward, Michael D., 4,515,732, Cl. 260-465.600.
Warner, David. Pants presser with spring gripping device. 4,514,918, Cl. 38-36.000.
Warner Electric Brake & Clutch Company: *See—*
Wruk, Thomas J., 4,515,251, Cl. 188-171.000.
Warner & Swasey Company, The: *See—*
Hunter, James R., 4,515,355, Cl. 269-234.000.
Warren, Conrad K., II. Molecular diffuser assembly. 4,515,134, Cl. 123-557.000.
Warren, Robert G.; and Robertson, Michael A., to Burroughs Corporation. Multiplexed data communications using a queue in a controller. 4,516,201, Cl. 364-200.000.
Waschulewski, Hans-Georg: *See—*
Baier, Heinz; Kurten, Hans W.; and Waschulewski, Hans-Georg, 4,515,027, Cl. 74-87.000.
Wasco Products, Inc.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,514,943, Cl. 52-200.000.
Watanabe, Fumio; Mizuguchi, Yoshihiko; and Yamada, Matsuichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Beam waveguide feeder. 4,516,128, Cl. 343-761.000.
Watanabe, Hajime: *See—*
Fujii, Kunihisa; Tomono, Noboru; Watanabe, Hajime; and Miyakoshi, Yasushi, 4,516,099, Cl. 335-135.000.
Watanabe, Hideyuki: *See—*
Fujiwara, Tatsuro; Watanabe, Hideyuki; Hirano, Takao; and Sakakibara, Hideo, 4,515,941, Cl. 536-7.100.
Watanabe, Isamu: *See—*
Iwasaki, Akio; Deushi, Takeo; Watanabe, Isamu; and Mori, Toshihito, 4,515,942, Cl. 536-16.800.
Watanabe, Masaharu: *See—*
Matsuo, Shuitsu; Imanishi, Yasuhiro; Nagashima, Hideo; Watanabe, Masaharu; Usami, Toshiro; and Muraoka, Hisashi, 4,515,755, Cl. 422-246.000.
Watanabe, Masanori: *See—*
Furubayashi, Hisatoshi; Tanaka, Junichi; Watanabe, Masanori; and Hijikigawa, Masaya, 4,515,653, Cl. 156-643.000.
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, to Central Glass Co., Ltd. Ternary intercalation compound of a graphite with an alkali metal fluoride and fluorine, a process for producing the same, and an electrically conductive material comprising the ternary intercalation compound. 4,515,709, Cl. 252-509.000.
Watanabe, Yutaka: *See—*
Matsuzaki, Isokazu; Yamagiwa, Akira; Watanabe, Yutaka; Matsumoto, Takashi; and Yabe, Katsumi, 4,516,039, Cl. 307-455.000.
Water Soft, Inc.: *See—*
Chandler, James W.; and Chandler, William D., 4,515,692, Cl. 210-278.000.
Watson, Brian W.: *See—*
Bond, Kevin; and Watson, Brian W., 4,516,132, Cl. 343-815.000.
Watthey, Jeffrey W. H., to Ciba-Geigy Corporation. Tetracyclic heterocycles and antidepressant compositions thereof. 4,515,792, Cl. 514-214.000.
Webb, Anthony J.: *See—*
Baudoux, Richard; and Webb, Anthony J., 4,515,287, Cl. 220-316.000.
Weber, Jochen: *See—*
Huber, Hans P.; and Weber, Jochen, 4,516,010, Cl. 219-121.0LJ.

Weber, Jurgen: *See—*
Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, 4,515,986, Cl. 564-471.000.
Weber, Richard E., Sr. Snagged fish hook release device. 4,514,926, Cl. 43-17.200.
Wei, Yun-Song. Dual-inclined lifters for autogenous mills. 4,515,319, Cl. 241-284.000.
Weido, Vincent C.; and Grissom, David, to NL Industries, Inc. Stuck point indicating device with linear sensing means. 4,515,010, Cl. 73-151.000.
Weimer, Eugen; and Muller, Gerhard, to Carl-Zeiss-Stiftung. Optical adjustment device. 4,515,447, Cl. 350-527.000.
Welch, Albert B., to LTV Aerospace and Defense Co. Agile receiver for a scanning laser radar. 4,515,472, Cl. 356-5.000.
Wellendorf, Klaus: *See—*
Hennig, Eberhard; Klie, Juergen; and Wellendorf, Klaus, 4,516,155, Cl. 358-80.000.
Wells, Thomas R.: *See—*
Benham, Harold H., Jr.; and Wells, Thomas R., 4,515,451, Cl. 353-120.000.
Welsh, Richard E., to Dentsply Research & Development Corp. Dental mixing and extrusion capsule. 4,515,267, Cl. 206-219.000.
Wener, Kenneth R.; and Tinkle, Anthony R., to Marathon Oil Company. Subocean bottom explosive seismic system. 4,516,227, Cl. 367-15.000.
Wentz, John L., to Westinghouse Electric Corp. Dielectric polarizer for high average and high peak power operation. 4,515,441, Cl. 350-395.000.
Wentzel, Robert M.: *See—*
Durkee, David B.; Koller, James P.; and Wentzel, Robert M., 4,516,140, Cl. 346-140.00R.
Werbel, Leslie M.; Colbry, Norman; Turner, William; and Worth, Donald F., to Edna McConnell Clark Foundation. Phenylpiperazines which are useful in the treatment of schistosomiasis. 4,515,793, Cl. 514-252.000.
Wernicke, Hans J.; and Zimmerman, Heinz, to Linde Aktiengesellschaft. Process and catalyst for the hydrogenation of coal. 4,515,678, Cl. 208-10.000.
Werth, Carl H., Jr., to Werth Engineering, Inc. Automatic adjusting gib assembly. 4,515,414, Cl. 308-3.00R.
Werth Engineering, Inc.: *See—*
Werth, Carl H., Jr., 4,515,414, Cl. 308-3.00R.
Wesley, John: *See—*
Cox-Smith, Peter; Calvert, Colin; and Wesley, John, 4,515,582, Cl. 494-7.000.
Wessel, Wolf: *See—*
Buck, Rainer; Kull, Hermann; Piwonka, Fridolin; Sieber, Albrecht; Stumpp, Gerhard; and Wessel, Wolf, 4,515,125, Cl. 123-359.000.
West, David E., to Magnetic Peripherals Inc. Method for verifying servo data. 4,516,162, Cl. 360-25.000.
West, Frank M. Automobile horn circuit and replacement part therefor. 4,516,001, Cl. 200-61.540.
Western Geophysical Company of America: *See—*
Goodloe, Kent J.; and Landrum, Ralph A., Jr., 4,516,230, Cl. 367-190.000.
Westinghouse Brake & Signal Co. Ltd.: *See—*
Cook, Andrew J.; and Negus, Paul D., 4,516,249, Cl. 375-82.000.
Westinghouse Electric Corp.: *See—*
Caputo, William R., 4,515,247, Cl. 187-29.00R.
Ferlan, Stephen J.; and Gesinski, Leonard T., 4,514,889, Cl. 29-229.000.
North, William E.; Holden, Paul C.; and Hultgren, Kent G., 4,515,523, Cl. 415-115.000.
Przybysz, John X.; and Ostop, John A., 4,514,898, Cl. 29-582.000.
Roberts, Richard D.; Franz, James H., Jr.; Hoffman, Lester J.; and Miller, Lalan G., 4,516,059, Cl. 318-301.000.
Sherwood, Edward F.; Orndorff, Karl B.; and Dillon, Charles M., 4,514,946, Cl. 52-211.000.
Wallace, James B.; and Thomas, Glenn R., 4,516,100, Cl. 335-160.000.
Wentz, John L., 4,515,441, Cl. 350-395.000.
York, Theodore H., 4,516,079, Cl. 329-104.000.
Westvaco Corporation: *See—*
Schaefer, Ernst H., 4,515,655, Cl. 162-57.000.
Westwood, Donald C.: *See—*
Moon, William G.; Moon, Ronald R.; Peterson, Bruce R.; and Westwood, Donald C., 4,516,177, Cl. 360-77.000.
Whalen, Patrick: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,515,987, Cl. 568-433.000.
Whaley, William L.: *See—*
Sitton, Willard J.; and Whaley, William L., 4,515,347, Cl. 251-328.000.
Whatley, Roger A.: *See—*
Smith, Michael D.; and Whatley, Roger A., 4,516,082, Cl. 330-296.000.
Wheeler, Louis B., to Combustion Engineering, Inc. Apparatus for installing a tension coil spring. 4,514,888, Cl. 29-227.000.
White, Iain S., to Safety Devices (Engineering) Limited. Apparatus for visually displaying the load-moment, axle-load, or payload of a vehicle. 4,516,116, Cl. 340-685.000.
Whiteman, John D.: *See—*
Kuhn, Robert R.; Whiteman, John D.; and Brendley, William H., Jr., 4,515,835, Cl. 427-388.300.
Wick, Alexander E.; and Binet, Jean, to Synthelabo. 3-Phenoxypropan-2-ol derivatives for treating glaucoma. 4,515,814, Cl. 514-652.000.
Wideman, Lawson G.; and Kuczkowski, Joseph A., to Goodyear Tire & Rubber Company, The. Decarboxylation of rosin acids. 4,515,713, Cl. 260-106.000.
Wiebus, Ernst: *See—*
Bernhagen, Wolfgang; Falk, Volker; Springer, Helmut; Weber, Jurgen; Wiebus, Ernst; and Kniep, Claus, 4,515,986, Cl. 564-471.000.
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Macrocyclic carbonates and organoleptic uses thereof. 4,515,712, Cl. 252-522.00R.
Wiendahl, Joachim: *See—*
Reiffert, Werner; Peters, Dieter; and Wiendahl, Joachim, 4,515,183, Cl. 137-625.210.
Wiens, William S. Variable speed transmission. 4,515,576, Cl. 474-29.000.
Wilfong, Evan C.; and Anno, Tesfaye, to Equipment Systems & Devices, Inc. Coin slide. 4,515,262, Cl. 194-1.00G.
Wilkening, Donald W. Fireplace door. 4,515,146, Cl. 126-140.000.
Willcox, Charles R., to AT&T Teletype Corporation. Thermal print head. 4,516,136, Cl. 346-76.0PH.
Wille, Marc, to N. V. Raychem S. A. Coating recoverable sheets. 4,515,831, Cl. 427-223.000.
Willers, Arthur G.: *See—*
Hampel, Herbert J.; and Willers, Arthur G., 4,515,419, Cl. 312-7.100.
Willette Corporation: *See—*
Korpijaakko, Pekka, 4,515,741, Cl. 264-62.000.
Willging, Arthur W.: *See—*
Pillari, Joseph C.; and Willging, Arthur W., 4,516,076, Cl. 324-418.000.
William H. Rorer, Inc.: *See—*
Diamond, Julius; and Douglas, George H., 4,515,718, Cl. 260-239.00B.
Williams, Conrad F.: *See—*
Culligan, John C.; Stich, Frederick A.; and Williams, Conrad F., 4,516,185, Cl. 361-154.000.
Williams, John P., to British Gas Corporation. Apparatus for applying heat to a portion of a pipeline. 4,515,562, Cl. 432-225.000.
Williams, Roy L. Apparatus for whitewalling vehicle tires. 4,515,200, Cl. 157-13.000.
Willis, Donald H., to RCA Corporation. Video signal processor with automatic kinescope white balance and beam current limiter control systems. 4,516,152, Cl. 358-29.000.
Willis, Paul E.: *See—*
Loy, Robert E.; Phillips, Dale R.; and Willis, Paul E., 4,515,234, Cl. 180-89.120.
Wilson, Bradford W. Environmental curtain. 4,515,202, Cl. 160-332.000.
Wilson, Burton D.: *See—*
Sandefur, Louise O.; Slusarek, Wojciech; Wilson, Burton D.; and Maggiulli, Cataldo A., 4,515,947, Cl. 544-295.000.
Wilson, David A.: *See—*
Simon, Jaime; Wilson, David A.; and Volkert, Wynn A., 4,515,767, Cl. 424-1.100.
Wilson, Jay R. Trolling motor foot control. 4,515,567, Cl. 440-7.000.
Wilson, Richard C., to Tie Down Engineering, Inc. Rake attachment. 4,514,970, Cl. 56-400.120.
Windischbauer, Florian. Apparatus for the constrained actuation of the clamping system of filling-yarn insertion devices in shuttleless weaving machines. 4,515,185, Cl. 139-446.000.
Wingerd, Winston H.: *See—*
Merritt, Carleton G.; Wingerd, Winston H.; and Keller, David J., 4,515,769, Cl. 424-49.000.
Wingfield, Robert C., Jr.; Braslaw, Jacob; and Gealer, Roy L., to Ford Motor Company. Pyrolytic conversion of plastic and rubber waste to hydrocarbons with basic salt catalysts. 4,515,659, Cl. 201-2.500.
Winslow, John M.: *See—*
Gatzke, Kenneth G.; and Winslow, John M., 4,515,885, Cl. 430-175.000.
Winter, Heinz W.: *See—*
Haymore, Ralph B.; and Winter, Heinz W., 4,515,694, Cl. 210-531.000.
Winter-Moore, Peter H.; and Sanchez, Fernando J. Dentistry. 4,515,565, Cl. 433-221.000.
Wisconsin Alumni Research Foundation: *See—*
Moran, Paul R., 4,516,075, Cl. 324-309.000.
Witman, Mark W., to Mobay Chemical Corporation. Polycarbonate compositions having a high impact strength and melt flow rate. 4,515,921, Cl. 525-67.000.
Wittenzellner, Ernst: *See—*
Scheckel, Bruno; and Wittenzellner, Ernst, 4,516,113, Cl. 340-384.00E.
Wittkampf, Frederik H. M.; and Boute, Willem, to Vitafin N.V. Dual chamber pacemaker system with V-A time measurement apparatus and method. 4,515,161, Cl. 128-419.0PG.
Wojcik, Thaddeus: *See—*
Schoenthaler, David; and Wojcik, Thaddeus, 4,515,297, Cl. 222-160.000.
Wolde-Michael, Girma, to Donaldson Company, Inc. Gas, fluid and mineral solids separation and reclamation system. 4,515,607, Cl. 55-166.000.

Wolff, Edward A.: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,516,199, Cl. 364-200.000.
Wood, John C.: *See—*
Kent, Garnet J.; and Wood, John C., 4,516,267, Cl. 383-22.000.
Wood, Roy W.: *See—*
Drummond, Donald D.; Johnsey, Walter F.; and Wood, Roy W., 4,515,229, Cl. 175-337.000.
Woodfill, Ronald C. Pressure measuring device for bottles. 4,515,019, Cl. 73-756.000.
Woodhull, William M. Energy transducer for hydraulic wind power conversion system and instrumentation therefor. 4,515,529, Cl. 417-63.000.
Woodward, Robert B.: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,515,717, Cl. 260-239.00A.
Worth, Donald F.: *See—*
Werbel, Leslie M.; Colbry, Norman; Turner, William; and Worth, Donald F., 4,515,793, Cl. 514-252.000.
Wrobleski, James T., to Monsanto Company. Process for producing maleic anhydride. 4,515,973, Cl. 549-259.000.
Wruk, Thomas J., to Warner Electric Brake & Clutch Company. Electromagnetic brake with improved armature mounting. 4,515,251, Cl. 188-171.000.
Wu, Jenn-Ming; Cannon, Warren R.; and Panzera, Carlino, to Johnson & Johnson Dental Products Company. Castable glass-ceramic composition useful as dental restorative. 4,515,634, Cl. 106-35.000.
Wuerzer, Bruno: *See—*
Husslein, Gerd; Ammermann, Eberhard; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,515,623, Cl. 71-12.000.
Wulfing, James J.; and Rood, Robert M., to Minnesota Mining and Manufacturing Company. Tape roller for a tape cassette. 4,515,330, Cl. 242-197.000.
Wulfing, James J.: *See—*
Rood, Robert M.; and Wulfing, James J., 4,515,323, Cl. 242-74.100.
Wunsch, Erich: *See—*
Valet, Gunter; Ruhenstroth-Bauer, Gerhard; Wunsch, Erich; and Moroder, Luis, 4,515,730, Cl. 260-465.00D.
Wysowski, Charles H.: *See—*
Gilbert, Jerry R.; Millikan, Robert C.; Wysowski, Charles H.; and Pyburn, John R., Jr., 4,515,518, Cl. 414-459.000.
Xerox Corporation: *See—*
Field, John R.; Kocher, Haribhajan S.; and Martellock, Arthur C., 4,515,884, Cl. 430-99.000.
Gaudioso, Stephen L., 4,515,880, Cl. 430-39.000.
Hamlin, Thomas J., 4,515,357, Cl. 271-120.000.
Heisler, Carl B., 4,515,466, Cl. 355-15.000.
Mammino, Joseph; Sypula, Donald S.; Abramsohn, Dennis A.; Abkowitz, Martin A.; and Scharfe, Merlin E., 4,515,882, Cl. 430-58.000.
Yabe, Katsumi: *See—*
Matsuzaki, Isokazu; Yamagiwa, Akira; Watanabe, Yutaka; Matsumoto, Takashi; and Yabe, Katsumi, 4,516,039, Cl. 307-455.000.
Yada, Isao: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.
Yagasaki, Toshiaki: *See—*
Masuda, Shunichi; Yagasaki, Toshiaki; and Kasuya, Yukio, 4,515,458, Cl. 355-3.0SH.
Yagi Antenna Co., Ltd.: *See—*
Nakata, Yukio; Terada, Matsuaki; Suda, Kaoru; Morito, Motoyoshi; and Shiotsu, Osamu, 4,516,221, Cl. 364-900.000.
Yajima, Mantaro, heir: *See—*
Yajima, Seishi, deceased; Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, 4,515,742, Cl. 264-63.000.
Yajima, Seishi, deceased (by Yajima, Mantaro, heir); Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, to UBE Industires, Ltd. Continuous inorganic fibers and process for production thereof. 4,515,742, Cl. 264-63.000.
Yamada, Matsuichi: *See—*
Watanabe, Fumio; Mizuguchi, Yoshihiko; and Yamada, Matsuichi, 4,516,128, Cl. 343-761.000.
Yamada, Yasuyoshi; and Hiraga, Ryozo, to Canon Kabushiki Kaisha. Apparatus for processing a signal for aligning. 4,515,481, Cl. 356-400.000.
Yamada, Yoshio: *See—*
Otani, Kozo; and Yamada, Yoshio, 4,515,981, Cl. 560-50.000.
Yamagata, Shinji: *See—*
Murata, Shirou; Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,002, Cl. 200-144.00C.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,003, Cl. 200-144.00C.
Yamagiwa, Akira: *See—*
Matsuzaki, Isokazu; Yamagiwa, Akira; Watanabe, Yutaka; Matsumoto, Takashi; and Yabe, Katsumi, 4,516,039, Cl. 307-455.000.
Yamaguchi, Izumi, to Kabushiki Kaisha Nagaoka. Level with two guide frames and ball in each. 4,514,908, Cl. 33-365.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kanamori, Takashi, 4,515,236, Cl. 180-227.000.
Katsuoka, Tatsuzo, 4,515,127, Cl. 123-430.000.
Yamaichi Electric Mfg. Co., Ltd.: *See—*
Nakano, Hidetaka, 4,515,425, Cl. 339-75.0MP.
Sakurai, Toshihiro, 4,515,424, Cl. 339-75.0MP.
Yamakawa, Tsutomu; Nishikawa, Mineki; and Kihara, Tomohiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling scintillation camera. 4,516,025, Cl. 250-252.100.
Yamamoto, Akihiko: *See—*
Sakurai, Yukio; and Yamamoto, Akihiko, 4,515,208, Cl. 165-43.000.
Yamamoto, Akira: *See—*
Motomura, Kenichi; Ogawa, Hiroshi; Yamamoto, Akira; and Hagita, Noriyuki, 4,515,197, Cl. 152-209.00R.
Yamamoto, Katsuhiro; Matsumoto, Katsuo; and Okada, Yoshiyuki, to Nitto Electric Industrial Co., Ltd. Electrode pad. 4,515,162, Cl. 128-640.000.
Yamamoto, Kazuhito; and Takenaka, Toshio, to Sumitomo Chemical Company, Limited. Adhesive composition. 4,515,917, Cl. 524-178.000.
Yamamoto, Kiwamu; and Tanaka, Tsuyoshi, to Shinko Electric Co., Ltd. Driverless guided vehicle. 4,515,235, Cl. 180-168.000.
Yamamoto, Takaaki; and Kawai, Yasuhiro, to Fuji Photo Film Co., Ltd. Image scanning apparatus. 4,516,142, Cl. 346-160.000.
Yamamoto, Tomoyuki: *See—*
Shikama, Takashi; Yamamoto, Tomoyuki; and Yokota, Atsuo, 4,516,054, Cl. 315-71.000.
Yamamoto, Toru: *See—*
Takeo, Tadashi; Yamamoto, Toru; and Yamashito, Sachihiro, 4,515,521, Cl. 414-735.000.
Yamamoto, Tsuneo: *See—*
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, 4,515,915, Cl. 524-87.000.
Yamanaka, Hideaki: *See—*
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,515,788, Cl. 514-202.000.
Yamaoka, Tsuguo; and Fukuda, Mitsutoshi, to Toyo Soda Manufacturing Co., Ltd. Photosensitive compositions. 4,515,886, Cl. 430-270.000.
Yamashito, Sachihiro: *See—*
Takeo, Tadashi; Yamamoto, Toru; and Yamashito, Sachihiro, 4,515,521, Cl. 414-735.000.
Yamatsuta, Kohji: *See—*
Okamoto, Hideho; Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,515,866, Cl. 428-614.000.
Yamauchi, Junichi: *See—*
Omura, Ikuo; and Yamauchi, Junichi, 4,515,930, Cl. 526-276.000.
Yamaura, Takemi: *See—*
Yajima, Seishi, deceased; Noda, Akiko, heir; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamaura, Takemi, 4,515,742, Cl. 264-63.000.
Yamazaki, Makoto: *See—*
Uchida, Isamu, deceased; Kokubo, Eiichi; Osako, Kyoichi; Yamazaki, Makoto; Imura, Shinichi; Arikawa, Junichi; Goi, Kowichi; Hongou, Hiroshi; Shinozaki, Takashi; and Emori, Hiroshi, 4,516,015, Cl. 235-379.000.
Yamazaki, Shogo, to Yoshida Industry Co., Ltd. Video transfer device. 4,516,171, Cl. 358-214.000.
Yanagihara, Masaki; and Iimura, Takashi, to Trio Kabushiki Kaisha. Variable frequency passband circuit. 4,516,078, Cl. 328-167.000.
Yang, Der C. High speed automatic brick making machine. 4,515,549, Cl. 425-350.000.
Yang, Shu S.; Beattie, Thomas R.; Durette, Philippe L.; Gallagher, Timothy F.; and Shen, Tsung-Ying, to Merck & Co., Inc. Phosphatidyl inositol analogs useful as anti-inflammatory/analgesic agents. 4,515,722, Cl. 260-403.000.
Yanmar Diesel Engine Co., Ltd.: *See—*
Amemori, Koichi; Kawabe, Toshihiko; and Takahashi, Yosuke, 4,515,120, Cl. 123-368.000.
Yano, Masao: *See—*
Miya, Toyofumi; Kobayashi, Yukiharu; and Yano, Masao, 4,515,943, Cl. 536-27.000.
Yano, Takashi, to Ricoh Company, Ltd. Communication network. 4,516,272, Cl. 455-607.000.
Yarwood, John C.: *See—*
Tyler, Derek E.; and Yarwood, John C., 4,515,630, Cl. 75-53.000.
Yasuda, Tomio: *See—*
Wakui, Yoko; Hachino, Hiroaki; Sawahata, Mamoru; Soga, Tasao; Yasuda, Tomio; and Ooue, Michio, 4,516,149, Cl. 357-71.000.
Yasuhara, Seishi, to Nissan Motor Company, Limited. Fuel supply system for diesel engines. 4,515,690, Cl. 210-90.000.
Yasui, Tsuneo, to Brother Kogyo Kabushiki Kaisha. Thermal print head for heat or non-heat-sensitive paper. 4,516,137, Cl. 346-76.0PH.
Yato, Fumihiro; Kitayama, Seishi; and Kurematsu, Akira, to Kokusai Denshin Denwa Co., Ltd. Speech analysis-synthesis system. 4,516,259, Cl. 381-36.000.
Yatsenko, Igor A.: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; and Karavaev, Alexandr A., 4,515,157, Cl. 128-303.00R.
Yauger, Jon A.: *See—*
Kwiecinski, Alfred; and Yauger, Jon A., 4,515,086, Cl. 108-96.000.
Yavordios, Dimitri: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,515,944, Cl. 544-91.000.
Yeboah, Yaw D.: *See—*
Sikdar, Subhas K.; and Yeboah, Yaw D., 4,515,936, Cl. 528-200.000.
Yeh, George C. Treatment and separation of petroleums and related materials. 4,515,685, Cl. 208-309.000.
Yih, Roy Y.: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,515,988, Cl. 568-586.000.

Yokogawa, Kanae; Kotani, Shozo; Kawata, Shigeo; and Takase, Yoshiyuki, to Dainippon Pharmaceutical Co., Ltd. Process for the production of disaccharide-tripeptide and disaccharide-tetrapeptide. 4,515,891, Cl. 435-69.000.
Yokota, Atsuo: *See—*
Shikama, Takashi; Yamamoto, Tomoyuki; and Yokota, Atsuo, 4,516,054, Cl. 315-71.000.
Yokota, Tsuneshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Output stabilizing device. 4,516,242, Cl. 372-29.000.
Yoneda, Hitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for forming multicolor image. 4,515,462, Cl. 355-4.000.
Yonemoto, Masashi: *See—*
Kajiyama, Ryuichi; and Yonemoto, Masashi, 4,515,246, Cl. 187-29.00R.
Yonkers, Edward H. Antiglare panel. 4,516,197, Cl. 362-342.000.
York, Billie M., Jr.: *See—*
Cavero, Icilio; Langer, Salomon Z.; and York, Billie M., Jr., 4,515,800, Cl. 514-392.000.
York, Theodore H., to Westinghouse Electric Corp. Coherent phase shift keyed demodulator for power line communication systems. 4,516,079, Cl. 329-104.000.
Yoshida Industry Co., Ltd.: *See—*
Yamazaki, Shogo, 4,516,171, Cl. 358-214.000.
Yoshida, Kiyokazu: *See—*
Nemoto, Michio; Yoshida, Kiyokazu; and Baba, Tetsuro, 4,516,101, Cl. 335-208.000.
Yoshida, Toshihiro: *See—*
Narishige, Shinji; Yoshinari, Tsuneo; Sato, Mituo; Takagi, Masayuki; and Yoshida, Toshihiro, 4,516,180, Cl. 360-126.000.
Yoshihara, Hideo; Ozawa, Akira; Sekimoto, Misao; and Ono, Toshiro, to Nippon Telegraph & Telephone Public Corp. X-Ray lithography mask and method for fabricating the same. 4,515,876, Cl. 430-5.000.
Yoshihara, Kenji: *See—*
Sigiyama, Hiroyuki; Sakurai, Masaki; Abe , Ryozo; and Yoshihara, Kenji, 4,516,161, Cl. 358-342.000.
Yoshikawa, Noriyuki: *See—*
Fujiyama, Kunio; Okamoto, Kei; and Yoshikawa, Noriyuki, 4,515,406, Cl. 297-409.000.
Yoshikawa, Yasuhiko: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; Yoshikawa, Yasuhiko; and Nagashima, Takashi, 4,515,464, Cl. 355-14.00R.
Yoshikoshi, Hideyuki: *See—*
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,515,351, Cl. 266-177.000.
Yoshimi, Takani: *See—*
Tsujimura, Isao; and Yoshimi, Takani, 4,514,892, Cl. 29-568.000.
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Oda, Kengo; Ura, Masaaki; Sato, Naoki; Toyama, Teruhiko; Tachibana, Hajime; Enomoto, Yuji; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, to Mitsui Toatsu Chemicals, Inc. Diphenyl ether derivatives and herbicides containing same. 4,515,628, Cl. 71-111.000.
Yoshimura, Hirofumi: *See—*
Sawatani, Tadashi; Ishii, Mitsuo; Yoshimura, Hirofumi; and Harase, Jirou, 4,515,644, Cl. 148-12.0EA.
Yoshinari, Tsuneo: *See—*
Narishige, Shinji; Yoshinari, Tsuneo; Sato, Mituo; Takagi, Masayuki; and Yoshida, Toshihiro, 4,516,180, Cl. 360-126.000.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker with arc light absorber. 4,516,003, Cl. 200-144.00C.
Yoshiyasu, Hajimu: *See—*
Murata, Shirou; Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,516,002, Cl. 200-144.00C.
Yoshizawa, Masao: *See—*
Sakakibara, Mitsuhiko; Yoshizawa, Masao; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,515,922, Cl. 525-99.000.
Young, James R., to General Electric Company. Hydrocarbon getter pump. 4,515,528, Cl. 417-51.000.
Yukon Energy Corporation: *See—*
Tallman, William R.; McDevitt, Steven C.; and Delancey, Warren H., 4,515,145, Cl. 126-99.00A.
Zabala, Robert J.: *See—*
Park, Dong-Sil; and Zabala, Robert J., 4,515,865, Cl. 428-610.000.
Zach, Elmer S. Ventilation air control unit. 4,515,071, Cl. 98-55.000.
Zahn, Robert L., to United States of America, Air Force. Variable radius lead former. 4,515,001, Cl. 72-323.000.
Zanetti, Guido: *See—*
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,515,948, Cl. 544-325.000.
Zapisek, John M.; and Giulekas, Gus, to Standard Microsystems Corporation. High-speed merged plane logic function array. 4,516,040, Cl. 307-468.000.
Zecher, Wilfried; and Merten, Rudolf, to Bayer Aktiengesellschaft. Process for the preparation of fumaric acid monoesters. 4,515,974, Cl. 549-372.000.
Zeiler, Hans-Joachim: *See—*
Metzger, Karl G.; Schrock, Wilfried; Habich, Dieter; Naab, Paul; and Zeiler, Hans-Joachim, 4,515,789, Cl. 514-196.000.
Zeller Corporation, The: *See—*
Mazziotti, Philip J., 4,515,574, Cl. 464-131.000.
Zellner, Robert J., to McGean-Rohco, Inc. Method for the production of antimony oxide. 4,515,765, Cl. 423-617.000.
Zemanek, Joseph, Jr., to Mobil Oil Corporation. Acoustic well logging device for detecting compressional and shear waves. 4,516,228, Cl. 367-75.000.
Zenith Electronics Corporation: *See—*
Skerlos, Peter C., 4,516,170, Cl. 358-191.100.
Zett, John A.: *See—*
Barclay, Thomas E.; and Zett, John A., 4,516,248, Cl. 375-76.000.
Zeugner, Horst: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,515,944, Cl. 544-91.000.
Zifferer, Lothar R., to Packless Metal Hose, Inc. Tube corrugating die. 4,514,997, Cl. 72-68.000.
Zimmerman, Barbara F.: *See—*
Rawls, Henry R.; Querens, Allan E.; and Zimmerman, Barbara F., 4,515,910, Cl. 523-115.000.
Zimmerman, Heinz: *See—*
Wernicke, Hans J.; and Zimmerman, Heinz, 4,515,678, Cl. 208-10.000.
Zimmermann, Eugene L.; and Kania, Don R., to United States of America, Energy. Fast shutter apparatus. 4,515,173, Cl. 137-68.00R.
Zinsmeyer, Thomas M., to Carrier Corporation. Variable speed drive motor system with inverter control. 4,514,991, Cl. 62-209.000.
Zuckermann, Erno : *See—*
Gillemot, Laszlo ; Prodan, Janos; Pataki, Endre; and Zuckermann, Erno , 4,515,497, Cl. 403-391.000.
Zwick, David J., to Coleman Company, Inc., The. Wheel lock and stand assembly for trailer. 4,515,394, Cl. 280-764.100.
Zyma SA: *See—*
Marti, Erwin; Heiber, Oskar; Gumma, Alexandre; Huber, Gustave; Utsumi, Isamu; Nakagawa, Hiroshi; Miyata, Tatsuhiko; and Akimoto, Koichi, 4,515,804, Cl. 514-456.000.
501 Etablissement Public dit "Centre National d'Exploitation des Oceans" (CNEXO): *See—*
Hue, Jean-Pierre, 4,515,013, Cl. 73-170.00A.
501 Maco Meudon Chemin de Genas: *See—*
Segonne, Jean-marc, 4,515,515, Cl. 417-26.000.
501 Telecommunications Radioelectriques et Telephoniques: *See—*
Boudault, Robert, 4,516,086, Cl. 332-16.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allied Corporation: *See—*
Ritsema, Irving R., Re. 31,878, Cl. 188-71.800.

Lubbers, Dietrich W.; and Opitz, Norbert, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Method and arrangement for measuring the concentration of gases. Re. 31,879, Cl. 436-133.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Lubbers, Dietrich W.; and Opitz, Norbert, Re. 31,879, Cl. 436-133.000.

Nomura, Kazuhiki, to Yamaha Hatsudoki Kabushiki Kaisha. Air intake conduitry for a motorcycle. Re. 31,877, Cl. 180-219.000.

Opitz, Norbert: *See—*
Lubbers, Dietrich W.; and Opitz, Norbert, Re. 31,879, Cl. 436-133.000.

Ritsema, Irving R., to Allied Corporation. Disc brake having a piston retraction assembly. Re. 31,878, Cl. 188-71.800.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Nomura, Kazuhiki, Re. 31,877, Cl. 180-219.000.

LIST OF DESIGN PATENTEES

Adachi, Koushirou; Nishiwaki, Katsuhiko; Sakamoto, Motoake; Tsukaguchi, Tamotsu; and Miyamoto, Mitsuo, to Hitachi, Ltd. Central processor unit. 278,712, 5-7-85, Cl. D14-102.000.

American Commercial, Incorporated: *See—*
Laslo, Larry R., 278,678, Cl. D7-137.000.
Seibel, Ben, 278,672, Cl. D7-13.000.

American Standard Inc.: *See—*
Stairs, Henry M., Jr., 278,742, Cl. D23-55.000.

Andersson, Bengt-Goran; and Liljenborg, Gert. Winch. 278,754, 5-7-85, Cl. D34-33.000.

Andrus, Julia, to Authentica, Inc. Window jewel. 278,694, 5-7-85, Cl. D11-117.000.

Andrus, Julia, to Authentica, Inc. Window jewel. 278,695, 5-7-85, Cl. D11-117.000.

AT&T Bell Laboratories: *See—*
Duell, Randall S.; Kulpa, Steven H.; Maguire, Justin M., Jr.; Schoneck, Alan C.; and Sylvester, Gordon E., 278,711, Cl. D14-102.000.

Authentica, Inc.: *See—*
Andrus, Julia, 278,694, Cl. D11-117.000.
Andrus, Julia, 278,695, Cl. D11-117.000.

Bachmann, G. Merle; Davis, Charles L.; Morgan, Annis R., Jr.; Shelton, Walter L.; and Hughes, Robert D., IV, to Coca-Cola Company, The. Vending machine. 278,724, 5-7-85, Cl. D20-4.000.

Becker, James F.; and Mayer, Andrew S. Children's book. 278,722, 5-7-85, Cl. D19-28.000.

Biesecker, Frederick N., to Drug Plastics & Glass Company, Inc. Bottle. 278,683, 5-7-85, Cl. D9-410.000.

Black & Decker, Inc.: *See—*
Shalvoy, John C.; and Van Deursen, Gary F., 278,752, Cl. D32-70.000.

Blackburn, James R. Pannier carrier for the front wheel of a bicycle. 278,699, 5-7-85, Cl. D12-158.000.

Bolgert, Edwin F., to Kohler Co. Vacuum breaker valve. 278,740, 5-7-85, Cl. D23-19.000.

Borden, William K. Car top carrier for clothing articles, cargo and the like. 278,698, 5-7-85, Cl. D12-157.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,719, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,720, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,721, Cl. D18-1.000.

Brown, Dwight C. Retainer accessory for garment hangers. 278,665, 5-7-85, Cl. D6-328.000.

Brownline Pipe, Inc.: *See—*
Galloway, Cecil, 278,739, Cl. D23-19.000.

Brussing, Bernd: *See—*
Zeischegg, Walter, deceased; Zeischegg, Rosalinde, heiress; and Brussing, Bernd, 278,663, Cl. D6-476.000.

Burket, Kenneth A.; and Koenig, Gerhard F., to Corning Glass Works. Shade or the like. 278,748, 5-7-85, Cl. D26-132.000.

Calumet Manufacturing Co.: *See—*
Seager, Richard H., 278,751, Cl. D28-76.000.

Caroselli, Lee R. Sign board. 278,725, 5-7-85, Cl. D20-42.000.

Cavalla, Inc.: *See—*
Pisani, Arthur; and Pisani, Robert, 278,750, Cl. D28-4.000.

Central Koyo Co., Ltd.: *See—*
Takahashi, Mitsuo, 278,745, Cl. D24-13.000.

Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, to General Electric Company. Multiple battery charger. 278,702, 5-7-85, Cl. D13-5.000.

Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, to General Electric Company. Multiple battery charger. 278,703, 5-7-85, Cl. D13-5.000.

Claxton, Bruce A.; and Ramos, Sylvia, to Motorola, Inc. Multiple battery charging unit or similar article. 278,704, 5-7-85, Cl. D13-5.000.

Coats & Clark, Inc.: *See—*
Dunn, James R., 278,723, Cl. D19-91.000.
McKibben, Jerry, 278,718, Cl. D17-9.000.

Coca-Cola Company, The: *See—*
Bachmann, G. Merle; Davis, Charles L.; Morgan, Annis R., Jr.; Shelton, Walter L.; and Hughes, Robert D., IV, 278,724, Cl. D20-4.000.

Cohorst, Timothy J.; and Haupt, Ruth R. Inflatable plush toy figures. 278,731, 5-7-85, Cl. D21-148.000.

Colgate-Palmolive Company: *See—*
Prahs, Harald, 278,681, Cl. D9-378.000.

Cooperative Marketing Co., The: *See—*
Villanueva, Jesus R., 278,679, Cl. D8-373.000.

Corning Glass Works: *See—*
Burket, Kenneth A.; and Koenig, Gerhard F., 278,748, Cl. D26-132.000.

Cromemco Inc.: *See—*
Xanthopoulus, Eric G., 278,709, Cl. D14-100.000.

Da Mart, Charles E.: *See—*
Decker, David E., 278,673, Cl. D7-77.000.

Davis, Charles L.: *See—*
Bachmann, G. Merle; Davis, Charles L.; Morgan, Annis R., Jr.; Shelton, Walter L.; and Hughes, Robert D., IV, 278,724, Cl. D20-4.000.

DeAre, David W., to Wilton Enterprises, Inc. Cake support pillar. 278,676, 5-7-85, Cl. D7-83.000.

Decker, David E., to Da Mart, Charles E. Bottle cooler. 278,673, 5-7-85, Cl. D7-77.000.

Drug Plastics & Glass Company, Inc.: *See—*
Biesecker, Frederick N., 278,683, Cl. D9-410.000.

Duell, Randall S.; Kulpa, Steven H.; Maguire, Justin M., Jr.; Schoneck, Alan C.; and Sylvester, Gordon E., to AT&T Bell Laboratories. Computer housing. 278,711, 5-7-85, Cl. D14-102.000.

Dunn, James R., to Coats & Clark, Inc. Appointment memo holder. 278,723, 5-7-85, Cl. D19-91.000.

Epson Corp.: *See—*
Maruyama, Naoyuki, 278,714, Cl. D14-111.000.

Exxon Research and Engineering Co.: *See—*
Juliana, Vincent A., 278,713, Cl. D14-111.000.

F. Lli Guzzini S.p.A.: *See—*
Guzzini, Silvio, 278,680, Cl. D9-352.000.

Fairchild Industries, Inc.: *See—*
Powers, Sidney A.; Rosenthal, Gordon; and Stirling, William V., 278,700, Cl. D12-342.000.

Fay, Andreas, to Lever Brothers Company. Toothbrush. 278,662, 5-7-85, Cl. D4-104.000.

Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, to Hirsh Company. Drawer. 278,664, 5-7-85, Cl. D6-510.000.

Fox, Geoffrey T., to Moto-X Fox, Inc. Glove. 278,660, 5-7-85, Cl. D2-373.000.

Fukasawa, Naoto: *See—*
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, 278,685, Cl. D10-38.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,719, 5-7-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,720, 5-7-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,721, 5-7-85, Cl. D18-1.000.

Galloway, Cecil, to Brownline Pipe, Inc. Non-drain valve. 278,739, 5-7-85, Cl. D23-19.000.

Gelsen, Ralf, to MAPA GmbH Gummi- und Plastikwerke. Children's tooth brush. 278,661, 5-7-85, Cl. D4-104.000.

General Electric Company: *See—*
Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, 278,702, Cl. D13-5.000.
Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, 278,703, Cl. D13-5.000.

Gislaved Aktiebolag: *See—*
Grohmann, Hubert; and Nilsson, Halvard, 278,696, Cl. D12-147.000.

Giugiaro, Giorgetto, to Kabushiki Kaisha Hattori Seiko. Wristwatch. 278,687, 5-7-85, Cl. D10-39.000.

Giugiaro, Giorgetto, to Kabushiki Kisha Hattori Seiko. Wristwatch. 278,688, 5-7-85, Cl. D10-39.000.

Groetzner, Kurt; and Wurst, Bert, to Robert Bosch GmbH. Circuit board testing equipment. 278,692, 5-7-85, Cl. D10-75.000.

Grohmann, Hubert; and Nilsson, Halvard, to Gislaved Aktiebolag. Vehicle tire. 278,696, 5-7-85, Cl. D12-147.000.

Guzzini, Silvio, to F. Lli Guzzini S.p.A. Combined packaging container and cover with a crowned bead. 278,680, 5-7-85, Cl. D9-352.000.

Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 278,736, Cl. D21-185.000.

Hargreaves, Wilson C. Fishing lure. 278,738, 5-7-85, Cl. D22-28.000.

Haupt, Ruth R.: *See—*
Cohorst, Timothy J.; and Haupt, Ruth R., 278,731, Cl. D21-148.000.

Hirsh Company: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 278,664, Cl. D6-510.000.

Hitachi, Ltd.: *See—*
Adachi, Koushirou; Nishiwaki, Katsuhiko; Sakamoto, Motoake; Tsukaguchi, Tamotsu; and Miyamoto, Mitsuo, 278,712, Cl. D14-102.000.

Honour, John H., VII. Marine railway stand. 278,753, 5-7-85, Cl. D34-31.000.

Hughes, Robert D., IV: *See—*
Bachmann, G. Merle; Davis, Charles L.; Morgan, Annis R., Jr.; Shelton, Walter L.; and Hughes, Robert D., IV, 278,724, Cl. D20-4.000.

Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 278,697, 5-7-85, Cl. D12-151.000.

Ichikawa, Kokichi. Pressure welding burner. 278,717, 5-7-85, Cl. D15-144.000.

Interdica S.A.: *See—*
Perrin, Alain-Dominique, 278,693, Cl. D11-19.000.

Interlego A.G.: *See—*
Nielsen, Jacob, 278,735, Cl. D21-166.000.

Iscar Ltd.: *See—*
Pano, Joseph, 278,716, Cl. D15-139.000.

Ishida, Katsuhiro; and Sakamoto, Harumi, to Sharp Corporation. Ink jet printer. 278,715, 5-7-85, Cl. D14-111.000.

Itoh, Masafumi: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,719, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,720, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,721, Cl. D18-1.000.

IVAC Corporation: *See—*
Manno, Joseph J.; and O'Leary, Stephen H., 278,743, Cl. D24-8.000.

Jacobson, Alvin M. A portable seat for use in transporting an individual. 278,667, 5-7-85, Cl. D6-334.000.

Juliana, Vincent A., to Exxon Research and Engineering Co. Printer. 278,713, 5-7-85, Cl. D14-111.000.

Jupe, Carlen R. Parking meter. 278,689, 5-7-85, Cl. D10-42.000.

Kabushiki Kaisha Hattori Seiko: *See—*
Giugiaro, Giorgetto, 278,687, Cl. D10-39.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Maruyama, Naoyuki, 278,714, Cl. D14-111.000.
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, 278,685, Cl. D10-38.000.

Kabushiki Kisha Hattori Seiko: *See—*
Giugiaro, Giorgetto, 278,688, Cl. D10-39.000.

Kaiser, Jack N. Bathtub. 278,741, 5-7-85, Cl. D23-55.000.

Khalifa, Gerard, to Societe Internationale De Boissons. Bottle. 278,682, 5-7-85, Cl. D9-398.000.

Kirkwood Dental Crafts, Inc.: *See—*
Miener, Clyde J., 278,744, Cl. D24-10.000.

Klawitter, Ronald R., to Handi-Pac, Inc. Wheeled caterpillar toy. 278,736, 5-7-85, Cl. D21-185.000.

Koenig, Gerhard F.: *See—*
Burket, Kenneth A.; and Koenig, Gerhard F., 278,748, Cl. D26-132.000.

Kohalmi, Andrew G.: *See—*
Martinovics, Antal M.; and Kohalmi, Andrew G., 278,749, Cl. D27-27.000.

Kohler Co.: *See—*
Bolgert, Edwin F., 278,740, Cl. D23-19.000.

Koper, Barry R. Facial appliance for makeup. 278,737, 5-7-85, Cl. D21-190.000.

Koyo Electronics Industries Co., Ltd.: *See—*
Shimizu, Norio; Watanabe, Yuichi; and Naoi, Kiichi, 278,710, Cl. D14-100.000.

Kulpa, Steven H.: *See—*
Duell, Randall S.; Kulpa, Steven H.; Maguire, Justin M., Jr.; Schoneck, Alan C.; and Sylvester, Gordon E., 278,711, Cl. D14-102.000.

Landmann Limited: *See—*
Wan, Clement S., 278,701, Cl. D13-2.000.

Laporte, Yvan: *See—*
Tardif, Pierre; and Laporte, Yvan, 278,674, Cl. D7-79.000.
Tardif, Pierre; and Laporte, Yvan, 278,675, Cl. D7-79.000.

Laslo, Larry R., to American Commercial, Incorporated. Knife. 278,678, 5-7-85, Cl. D7-137.000.

Les Produits Menagers Coronet (1980) Inc.: *See—*
Tardif, Pierre; and Laporte, Yvan, 278,674, Cl. D7-79.000.
Tardif, Pierre; and Laporte, Yvan, 278,675, Cl. D7-79.000.

Lever Brothers Company: *See—*
Fay, Andreas, 278,662, Cl. D4-104.000.

Liljenborg, Gert: *See—*
Andersson, Bengt-Goran; and Liljenborg, Gert, 278,754, Cl. D34-33.000.

Lowrance Electronics, Inc.: *See—*
Steensland, David B.; and McBride, William E., 278,690, Cl. D10-46.000.

Maguire, Justin M., Jr.: *See—*
Duell, Randall S.; Kulpa, Steven H.; Maguire, Justin M., Jr.; Schoneck, Alan C.; and Sylvester, Gordon E., 278,711, Cl. D14-102.000.

Makihara, Kendo: *See—*
Yamagata, Hiroshi; and Makihara, Kendo, 278,706, Cl. D13-35.000.

Manno, Joseph J.; and O'Leary, Stephen H., to IVAC Corporation. Parenteral infusion pump. 278,743, 5-7-85, Cl. D24-8.000.

MAPA GmbH Gummi- und Plastikwerke: *See—*
Gelsen, Ralf, 278,661, Cl. D4-104.000.

Martinovics, Antal M.; and Kohalmi, Andrew G. Ashtray. 278,749, 5-7-85, Cl. D27-27.000.

Maruyama, Naoyuki, to Kabushiki Kaisha Suwa Seikosha; and Epson Corp. Electronic printer. 278,714, 5-7-85, Cl. D14-111.000.

Mathez, Fredy, to Paul Virgile Mathez, S.A. Watch. 278,686, 5-7-85, Cl. D10-39.000.

Mayer, Andrew S.: *See—*
Becker, James F.; and Mayer, Andrew S., 278,722, Cl. D19-28.000.

McBride, William E.: *See—*
Steensland, David B.; and McBride, William E., 278,690, Cl. D10-46.000.

McCartin, Gerald S., to Sunset Time, Inc. Combined picture frame and photograph album. 278,666, 5-7-85, Cl. D6-300.000.

McKibben, Jerry, to Coats & Clark, Inc. Piano wire damper. 278,718, 5-7-85, Cl. D17-9.000.

Midmark Corporation: *See—*
Simpkins, Terry J., 278,668, Cl. D6-335.000.

Miener, Clyde J., to Kirkwood Dental Crafts, Inc. Dental die lock. 278,744, 5-7-85, Cl. D24-10.000.

Miyamoto, Mitsuo: *See—*
Adachi, Koushirou; Nishiwaki, Katsuhiko; Sakamoto, Motoake; Tsukaguchi, Tamotsu; and Miyamoto, Mitsuo, 278,712, Cl. D14-102.000.

Morgan, Annis R., Jr.: *See—*
Bachmann, G. Merle; Davis, Charles L.; Morgan, Annis R., Jr.; Shelton, Walter L.; and Hughes, Robert D., IV, 278,724, Cl. D20-4.000.

Morishita, Masayuki: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,719, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,720, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,721, Cl. D18-1.000.

Moto-X Fox, Inc.: *See—*
Fox, Geoffrey T., 278,660, Cl. D2-373.000.

Motorola, Inc.: *See—*
Claxton, Bruce A.; and Ramos, Sylvia, 278,704, Cl. D13-5.000.
Taylor, Terrance N.; and Soren, Leonid, 278,708, Cl. D14-60.000.

Nagelkerke, Petrus J. J.; and Oord, Klaas T., to U.S. Philips Corporation. Two-prong electric plug. 278,705, 5-7-85, Cl. D13-28.000.

Naoi, Kiichi: *See—*
Shimizu, Norio; Watanabe, Yuichi; and Naoi, Kiichi, 278,710, Cl. D14-100.000.

Nielsen, Jacob, to Interlego A.G. Toy figure. 278,735, 5-7-85, Cl. D21-166.000.

Nilsson, Halvard: *See—*
Grohmann, Hubert; and Nilsson, Halvard, 278,696, Cl. D12-147.000.

Ninomiya, Yasuaki. Toy airplane. 278,726, 5-7-85, Cl. D21-89.000.

Ninomiya, Yasuaki. Toy airplane. 278,727, 5-7-85, Cl. D21-89.000.

Ninomiya, Yasuaki. Toy airplane. 278,728, 5-7-85, Cl. D21-89.000.

Ninomiya, Yasuaki. Toy airplane. 278,729, 5-7-85, Cl. D21-89.000.

Ninomiya, Yasuaki. Toy airplane. 278,730, 5-7-85, Cl. D21-89.000.

Nishiwaki, Katsuhiko: *See—*
Adachi, Koushirou; Nishiwaki, Katsuhiko; Sakamoto, Motoake; Tsukaguchi, Tamotsu; and Miyamoto, Mitsuo, 278,712, Cl. D14-102.000.

Ohkado, Tethuo, to Tomy Kogyo Company, Incorporated. Animal-like figure toy. 278,732, 5-7-85, Cl. D21-150.000.

Ohkado, Tethuo, to Tomy Kogyo Company, Incorporated. Animal-like figure toy. 278,733, 5-7-85, Cl. D21-150.000.

O'Leary, Stephen H.: *See—*
Manno, Joseph J.; and O'Leary, Stephen H., 278,743, Cl. D24-8.000.
Oord, Klaas T.: *See—*
Nagelkerke, Petrus J. J.; and Oord, Klaas T., 278,705, Cl. D13-28.000.
Pano, Joseph, to Iscar Ltd. Cutting insert for metal working machines. 278,716, 5-7-85, Cl. D15-139.000.
Pardon, Barry: *See—*
Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, 278,702, Cl. D13-5.000.
Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, 278,703, Cl. D13-5.000.
Paul Virgile Mathez, S.A.: *See—*
Mathez, Fredy, 278,686, Cl. D10-39.000.
Peach, Clyde E., Jr. Cervical collar. 278,747, 5-7-85, Cl. D24-64.000.
Perrin, Alain-Dominique, to Interdica S.A. Watch bracelet. 278,693, 5-7-85, Cl. D11-19.000.
Peterson, Michael: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 278,664, Cl. D6-510.000.
Pisani, Arthur; and Pisani, Robert, to Cavalla, Inc. Lipstick. 278,750, 5-7-85, Cl. D28-4.000.
Pisani, Robert: *See—*
Pisani, Arthur; and Pisani, Robert, 278,750, Cl. D28-4.000.
Polar Electro Ky: *See—*
Saynajakangas, Seppo J., 278,746, Cl. D24-17.000.
Powers, Sidney A.; Rosenthal, Gordon; and Stirling, William V., to Fairchild Industries, Inc. Aircraft. 278,700, 5-7-85, Cl. D12-342.000.
Prahs, Harald, to Colgate-Palmolive Company. Bottle. 278,681, 5-7-85, Cl. D9-378.000.
Ramos, Sylvia: *See—*
Claxton, Bruce A.; and Ramos, Sylvia, 278,704, Cl. D13-5.000.
Robert Bosch GmbH: *See—*
Groetzner, Kurt; and Wurst, Bert, 278,692, Cl. D10-75.000.
Robert Swinney Ltd.: *See—*
Swinney, Robert S., 278,707, Cl. D14-1.000.
Rosenthal, Gordon: *See—*
Powers, Sidney A.; Rosenthal, Gordon; and Stirling, William V., 278,700, Cl. D12-342.000.
Sakamoto, Harumi: *See—*
Ishida, Katsuhiro; and Sakamoto, Harumi, 278,715, Cl. D14-111.000.
Sakamoto, Motoake: *See—*
Adachi, Koushirou; Nishiwaki, Katsuhiko; Sakamoto, Motoake; Tsukaguchi, Tamotsu; and Miyamoto, Mitsuo, 278,712, Cl. D14-102.000.
Sandy, Hal D. Merchandise display rack. 278,671, 5-7-85, Cl. D6-474.000.
Saynajakangas, Seppo J., to Polar Electro Ky. Pulse Transmitter. 278,746, 5-7-85, Cl. D24-17.000.
Schoenig, Darrell A. Keyboard stacker. 278,670, 5-7-85, Cl. D6-463.000.
Schoneck, Alan C.: *See—*
Duell, Randall S.; Kulpa, Steven H.; Maguire, Justin M., Jr.; Schoneck, Alan C.; and Sylvester, Gordon E., 278,711, Cl. D14-102.000.
Seager, Richard H., to Calumet Manufacturing Co. Dispenser tube casing for toiletry stick or the like. 278,751, 5-7-85, Cl. D28-76.000.
Seibel, Ben, to American Commercial, Incorporated. Champagne glass. 278,672, 5-7-85, Cl. D7-13.000.
Shalvoy, John C.; and Van Deursen, Gary E., to Black & Decker, Inc. Iron or similar article. 278,752, 5-7-85, Cl. D32-70.000.
Sharp Corporation: *See—*
Ishida, Katsuhiro; and Sakamoto, Harumi, 278,715, Cl. D14-111.000.
Yamagata, Hiroshi; and Makihara, Kendo, 278,706, Cl. D13-35.000.
Shelton, Walter L.: *See—*
Bachmann, G. Merle; Davis, Charles L.; Morgan, Annis R., Jr.; Shelton, Walter L.; and Hughes, Robert D., IV, 278,724, Cl. D20-4.000.
Shimizu, Norio; Watanabe, Yuichi; and Naoi, Kiichi, to Koyo Electronics Industries Co., Ltd. Programmable controller. 278,710, 5-7-85, Cl. D14-100.000.
Simpkins, Terry J., to Midmark Corporation. Multi-position examination chair. 278,668, 5-7-85, Cl. D6-335.000.
Societe Internationale De Boissons: *See—*
Khalifa, Gerard, 278,682, Cl. D9-398.000.
Soren, Leonid: *See—*
Taylor, Terrance N.; and Soren, Leonid, 278,708, Cl. D14-60.000.
Sorrell, John E., to Sorrell, Sonia. Bolt, nut, screw and thread gage. 278,691, 5-7-85, Cl. D10-64.000.
Sorrell, Sonia: *See—*
Sorrell, John E., 278,691, Cl. D10-64.000.
Stairs, Henry M., Jr., to American Standard Inc. Bathtub. 278,742, 5-7-85, Cl. D23-55.000.
Steensland, David B.; and McBride, William E., to Lowrance Electronics, Inc. Housing for sonar unit. 278,690, 5-7-85, Cl. D10-46.000.
Stirling, William V.: *See—*
Powers, Sidney A.; Rosenthal, Gordon; and Stirling, William V., 278,700, Cl. D12-342.000.
Sunset Time, Inc.: *See—*
McCartin, Gerald S., 278,666, Cl. D6-300.000.
Sussman, Howard. Telescoping dispenser for cotton balls or the like. 278,684, 5-7-85, Cl. D9-339.000.
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, to Kabushiki Kaisha Suwa Seikosha. Watch. 278,685, 5-7-85, Cl. D10-38.000.
Swinney, Robert S., to Robert Swinney Ltd. Casing for voice synthesizer. 278,707, 5-7-85, Cl. D14-1.000.
Sylvan, Richard: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, 278,664, Cl. D6-510.000.
Sylvester, Gordon E.: *See—*
Duell, Randall S.; Kulpa, Steven H.; Maguire, Justin M., Jr.; Schoneck, Alan C.; and Sylvester, Gordon E., 278,711, Cl. D14-102.000.
Takahashi, Mitsuo, to Central Koyo Co., Ltd. Tooth mirror. 278,745, 5-7-85, Cl. D24-13.000.
Tardif, Pierre; and Laporte, Yvan, to Les Produits Menagers Coronet (1980) Inc. Food saver. 278,674, 5-7-85, Cl. D7-79.000.
Tardif, Pierre; and Laporte, Yvan, to Les Produits Menagers Coronet (1980) Inc. Food saver. 278,675, 5-7-85, Cl. D7-79.000.
Taylor, Terrance N.; and Soren, Leonid, to Motorola, Inc. Telephone cradle or similar article. 278,708, 5-7-85, Cl. D14-60.000.
Thorndike, Barbara A. D. Duck-like doll. 278,734, 5-7-85, Cl. D21-160.000.
Tomy Kogyo Company, Incorporated: *See—*
Ohkado, Tethuo, 278,732, Cl. D21-150.000.
Ohkado, Tethuo, 278,733, Cl. D21-150.000.
Tsukaguchi, Tamotsu: *See—*
Adachi, Koushirou; Nishiwaki, Katsuhiko; Sakamoto, Motoake; Tsukaguchi, Tamotsu; and Miyamoto, Mitsuo, 278,712, Cl. D14-102.000.
Uchihori, Noritaka: *See—*
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, 278,685, Cl. D10-38.000.
Uniroyal, Inc.: *See—*
Hutz, John A., 278,697, Cl. D12-151.000.
U.S. Philips Corporation: *See—*
Nagelkerke, Petrus J. J.; and Oord, Klaas T., 278,705, Cl. D13-28.000.
Van Deursen, Gary E.: *See—*
Shalvoy, John C.; and Van Deursen, Gary E., 278,752, Cl. D32-70.000.
Verga, Joseph: *See—*
Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, 278,702, Cl. D13-5.000.
Chiodo, Daniel J.; Pardon, Barry; and Verga, Joseph, 278,703, Cl. D13-5.000.
Villanueva, Jesus R., to Cooperative Marketing Co., The. Mounting clip. 278,679, 5-7-85, Cl. D8-373.000.
Walpin, Arline. Pillow rack. 278,669, 5-7-85, Cl. D6-462.000.
Wan, Clement S., to Landmann Limited. Rotator primarily for a barbecue spit. 278,701, 5-7-85, Cl. D13-2.000.
Watanabe, Yuichi: *See—*
Shimizu, Norio; Watanabe, Yuichi; and Naoi, Kiichi, 278,710, Cl. D14-100.000.
Wilton Enterprises, Inc.: *See—*
DeAre, David W., 278,676, Cl. D7-83.000.
Wurst, Bert: *See—*
Groetzner, Kurt; and Wurst, Bert, 278,692, Cl. D10-75.000.
Xanthopoulus, Eric G., to Cromemco Inc. Keyboard for a computer system. 278,709, 5-7-85, Cl. D14-100.000.
Yamagata, Hiroshi; and Makihara, Kendo, to Sharp Corporation. Power control panel. 278,706, 5-7-85, Cl. D13-35.000.
Zeischegg, Rosalinde, heiress: *See—*
Zeischegg, Walter, deceased; Zeischegg, Rosalinde, heiress; and Brussing, Bernd, 278,663, Cl. D6-476.000.
Zeischegg, Walter, deceased; by Zeischegg, Rosalinde, heiress; and Brussing, Bernd. Magazine rack. 278,663, 5-7-85, Cl. D6-476.000.
Zimetbaum, Mildred. Food mashing tool. 278,677, 5-7-85, Cl. D7-101.000.

LIST OF PLANT PATENTEES

Amfac Garden Perry's Inc.: *See—*
Whiting, Hubert F., 5,465, Cl. 88.000.
Asdoorian, Alan R.; and Asdoorian, Soren. Nectarine tree, Island Delight. 5,462, 5-7-85, Cl. 41.000.
Asdoorian, Soren: *See—*
Asdoorian, Alan R.; and Asdoorian, Soren, 5,462, Cl. 41.000.
Bennett, Cecilia L. D. Miniature rose plant. 5,458, 5-7-85, Cl. 7.000.
Milek en Zonen B.V.: *See—*
Sarneel, J. F., 5,464, Cl. 70.000.
Moore, Ralph S., to Sequoia Nursery. Miniature rose plant. 5,459, 5-7-85, Cl. 8.000.
Moore, Ralph S., to Sequoia Nursery. Miniature rose plant. 5,460, 5-7-85, Cl. 10.000.
Sarneel, J. F., to Milek en Zonen B.V. Carnation named Medea. 5,464, 5-7-85, Cl. 70.000.
Sequoia Nursery: *See—*
Moore, Ralph S., 5,459, Cl. 8.000.
Moore, Ralph S., 5,460, Cl. 10.000.
Stark Brothers Nurseries and Orchards Company.: *See—*
Zaiger, Chris F., 5,461, Cl. 41.000.
Zaiger, Chris F., 5,463, Cl. 43.000.
Whiting, Hubert F., to Amfac Garden Perry's Inc. *Digitaria didactyla* grass plant. 5,465, 5-7-85, Cl. 88.000.
Zaiger, Chris F., to Stark Brothers Nurseries and Orchards Company. Nectarine tree—Zaipride cultivar. 5,461, 5-7-85, Cl. 41.000.
Zaiger, Chris F., to Stark Brothers Nurseries and Orchards Company. Peach tree — Zaiqueen cultivar. 5,463, 5-7-85, Cl. 43.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 7TH DAY OF MAY, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Basi, Jagtar S.; and Mendel, Eric. Method for polishing amorphous aluminum oxide. T105,402, 5-7-85, Cl. 156-636.000.
Hsieh, Shuang-shii; and Lehr, James R. Beneficiation of phosphate ores containing surface activated silica. T105,404, 5-7-85, Cl. 209-166.000.
Hultmark, Eric B. Method of manufacturing a sealing cap for an integrated circuit carrying substrate. T105,403, 5-7-85, Cl. 264-23.000.
Lehr, James R.: *See—*
Hsieh, Shuang-shii; and Lehr, James R., T105,404, Cl. 209-166.000.
Mendel, Eric: *See—*
Basi, Jagtar S.; and Mendel, Eric, T105,402, Cl. 156-636.000.
Nadkarni, Vikas M.; and Shin, Hyunkook. Beneficiation of phosphate ores containing surface activated silica. T105,404, 5-7-85, Cl. 209-166.000.
Shin, Hyunkook: *See—*
Nadkarni, Vikas M.; and Shin, Hyunkook, T105,401, Cl. 264-151.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 7, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

161 A	4,514,861
240	4,514,863
268	4,514,862
424	4,514,864

CLASS 3

1.913	4,514,865

CLASS 4

228	4,514,866
480	4,514,867
541	4,514,868

CLASS 5

472	4,514,869
485	4,514,870
508	4,514,871

CLASS 8

107	4,515,596
	4,515,597
549	4,515,598
685	4,515,599

CLASS 15

256.5	4,514,872
306 B	4,514,873
319	4,514,874
349	4,514,875

CLASS 16

110 R	4,514,876
111 R	4,514,877
300	4,514,878

CLASS 17

11.1 R	4,514,879

CLASS 19

0.35	4,514,880
80 R	4,514,881

CLASS 23

293 R	4,515,600

CLASS 24

16 PB	4,514,882
163 K	4,514,883
386	4,514,884
557	4,514,885

CLASS 29

24.5	4,514,886
116 AD	4,514,887
227	4,514,888
229	4,514,889
256	4,514,890
401.1	4,514,891
568	4,514,892
571	4,514,893
	4,514,894
	4,514,895
576 B	4,514,896
578	4,514,897
582	4,514,898
721	4,514,899
727	4,514,900
822	4,514,901

CLASS 30

2	4,514,902
49	4,514,903
87	4,514,904

CLASS 33

125 B	4,514,905
200	4,514,906
265	4,514,907
365	4,514,908
471	4,514,909

CLASS 34

15	4,514,910
22	4,514,911
37	4,514,912
48	4,514,913
93	4,514,914

CLASS 36

1	4,514,915
117	4,514,916

CLASS 37

249	4,514,917

CLASS 38

36	4,514,918

CLASS 40

159	4,514,919
448	4,514,920

CLASS 42

1 V	4,514,921
50	4,514,922
69 R	4,514,923

CLASS 43

9	4,514,924
12	4,514,925
17.2	4,514,926
44.98	4,514,927
57.2	4,514,928

CLASS 44

19	4,515,601
51	4,515,602
62	4,515,603

CLASS 47

17	4,514,929
60	4,514,930

CLASS 48

197 R	4,515,604

CLASS 49

21	4,514,931
50	4,514,932

CLASS 51

32	4,514,933
165 R	4,514,934
	4,514,935
270	4,514,936
281 SF	4,514,937

CLASS 52

79.4	4,514,938
118	4,514,939
126.1	4,514,940
167	4,514,941
	4,514,942
200	4,514,943
	4,514,944
202	4,514,945
211	4,514,946
397	4,514,948
536	4,514,947
585	4,514,949
648	4,514,950
660	4,514,951
713	4,514,952

CLASS 53

52	4,514,953
53	4,514,954
64	4,514,955
148	4,514,956
252	4,514,957
266 R	4,514,958
428	4,514,959
440	4,514,960
449	4,514,961
457	4,514,962
493	4,514,963
540	4,514,964
553	4,514,965
585	4,514,966

CLASS 55

26	4,515,605
159	4,515,606
166	4,515,607
193	4,515,608
270	4,515,609

CLASS 56

14.7	4,514,967
341	4,514,968
	4,514,969
400.12	4,514,970

CLASS 57

9	4,514,971
301	4,514,972
	4,514,973
401	4,514,974
	4,514,975

CLASS 60

39.07	4,514,976
398	4,514,977
426	4,514,978
512	4,514,979
534	4,514,980
547.1	4,514,981
562	4,514,982
	4,514,983
585	4,514,984
589	4,514,985
605	4,514,986

CLASS 62

6	4,514,987
82	4,514,988
201	4,514,989
209	4,514,991
235	4,514,992
238.7	4,514,990
372	4,514,993
389	4,514,994

CLASS 65

2	4,515,610
	4,515,611
3.12	4,515,612
4.4	4,515,613
29	4,515,614
171	4,515,621
351	4,515,622

CLASS 66

170	4,514,995

CLASS 70

100	4,514,996

CLASS 71

12	4,515,623
54	4,515,615
76	4,515,616
	4,515,617
88	4,515,618
90	4,515,619
91	4,515,620
92	4,515,624
	4,515,625
93	4,515,626
95	4,515,627
111	4,515,628

CLASS 72

68	4,514,997
184	4,514,998
202	4,514,999
278	4,515,000
323	4,515,001
339	4,515,002
370	4,515,003
388	4,515,004
391	4,515,005
402	4,515,006

CLASS 73

38	4,515,007
53	4,515,008
118	4,515,009
151	4,515,010
	4,515,011
168	4,515,012
170 A	4,515,013
202	4,515,014
304 C	4,515,015
517 R	4,515,016
618	4,515,017
637	4,515,018
756	4,515,019
761	4,515,020
861.27	4,515,021
861.79	4,515,022
864.51	4,515,023

CLASS 74

10.33	4,515,024
27	4,515,025
63	4,515,026
87	4,515,027
191	4,515,028
339	4,515,029
348	4,515,030
359	4,515,031
473 R	4,515,032
476	4,515,033
501 R	4,515,034
	4,515,035
535	4,515,036
553	4,515,037
606 R	4,515,038
665 C	4,515,039
866	4,515,040
	4,515,041

CLASS 75

0.5 B	4,515,629
53	4,515,630
73	4,515,631

CLASS 81

55	4,515,042
57.22	4,515,043
61	4,515,044
429	4,515,045
436	4,515,046

CLASS 82

1 C	4,515,047
36 R	4,515,049

CLASS 83

13	4,515,048
71	4,515,050
146	4,515,051
479	4,515,052
488	4,515,053
663	4,515,054
835	4,515,055

CLASS 84

1.01	4,515,056
1.03	4,515,057
1.24	4,515,058
306	4,515,059
380 R	4,515,060
394	4,515,061
403	4,515,062

CLASS 86

27	4,515,063

CLASS 89

128	4,515,064

CLASS 91

363 A	4,515,065
454	4,515,066
506	4,515,067

CLASS 98

1	4,515,068
40 D	4,515,069
42.07	4,515,070
55	4,515,071
115.2	4,515,072
	4,515,073

CLASS 99

393	4,515,074
519	4,515,075
571	4,515,076

CLASS 101

127	4,515,077
157	4,515,078
183	4,515,079

CLASS 102

205	4,515,080
266	4,515,081
293	4,515,082
493	4,515,083

CLASS 104

166	4,515,084
250	4,515,085

CLASS 106

18.16	4,515,632
18.26	4,515,633
35	4,515,634
90	4,515,635
	4,515,636
162	4,515,638
287.25	4,515,640
288 Q	4,515,639

CLASS 108

96	4,515,086
147	4,515,087

CLASS 110

110	4,515,088
235	4,515,089
264	4,515,090
346	4,515,091
347	4,515,092
	4,515,093
	4,515,094
	4,515,095

CLASS 112

79 R	4,515,096
262.3	4,515,097
274	4,515,098
279	4,515,099

CLASS 114

97	4,515,100
162	4,515,101
344	4,515,102

CLASS 118

218	4,515,103
500	4,515,104
629	4,515,105
651	4,515,106
718	4,515,107

CLASS 119

45 R	4,515,108

CLASS 122

32	4,515,109

CLASS 123

41.37	4,515,110
41.61	4,515,111
41.84	4,515,112
48 B	4,515,114
48 C	4,515,113
52 M	4,515,115
90.43	4,515,116
146.5 A	4,515,117
149 C	4,515,118
198 E	4,515,119
	4,515,122
198 F	4,515,121
222	4,515,123
324	4,515,124
359	4,515,125
368	4,515,120
401	4,515,126
430	4,515,127
454	4,515,128
472	4,515,129
491	4,515,131
493	4,515,130
494	4,515,132
538	4,515,133
557	4,515,134
	4,515,135
564	4,515,136
572	4,515,137
590	4,515,138
599	4,515,139
603	4,515,140
647	4,515,141

CLASS 124

23 R	4,515,142

CLASS 126

21 A	4,515,143
58	4,515,144
99 A	4,515,145
140	4,515,146
163 R	4,515,147
438	4,515,148
442	4,515,149
445	4,515,150
450	4,515,151

CLASS 128

75	4,515,152
	4,515,153
92 EB	4,515,154
134	4,515,155
202.26	4,515,156
303 R	4,515,157
419 PG	4,515,159
	4,515,160
	4,515,161
419 R	4,515,158
640	4,515,162
660	4,515,163
663	4,515,164
664	4,515,165
694	4,515,166
736	4,515,167
741	4,515,168
746	4,515,169

CLASS 131

336	4,515,170

CLASS 132

42 R	4,515,171

CLASS 133

8 A	4,515,172

CLASS 134

5	4,515,641

CLASS 137

68 R	4,515,173
72	4,515,174
107	4,515,175
115	4,515,176
318	4,515,177
393	4,515,178
543.13	4,515,179
565	4,515,180
596	4,515,181
614.06	4,515,182
625.21	4,515,183
625.66	4,515,184

CLASS 139

446	4,515,185
455	4,515,186

CLASS 141

1	4,515,187
	4,515,188
11	4,515,189
131	4,515,190

CLASS 144

1 C	4,515,191
2 Z	4,515,192
172	4,515,193
193 A	4,515,194
366	4,515,195
378	4,515,196

CLASS 148

1.5	4,515,642
6.15 Z	4,515,643
12 EA	4,515,644
16	4,515,645

CLASS 152

209 R	4,515,197
223	4,515,198
353 R	4,515,199

CLASS 156

78	4,515,646
91	4,515,647
196	4,515,648
244.11	4,515,649
423	4,515,651
622	4,515,650
643	4,515,652
	4,515,653
656	4,515,654

CLASS 157

13	4,515,200

CLASS 160

174	4,515,201
332	4,515,202

CLASS 162

57	4,515,655
101	4,515,656
164.3	4,515,657
168.4	4,515,658

CLASS 164

468	4,515,203
483	4,515,204

CLASS 165

1 4,515,205
4,515,206
4,515,207
43 4,515,208
104.22 4,515,209
133 4,515,210

CLASS 166

77 4,515,211
99 4,515,212
123 4,515,213
250 4,515,214
272 4,515,215
293 4,515,216
297 4,515,217
328 4,515,218
374 4,515,219
384 4,515,220

CLASS 172

3 4,515,221
68 4,515,222
372 4,515,223
572 4,515,224

CLASS 174

65 SS 4,515,991
102 R 4,515,992
4,515,993

CLASS 175

40 4,515,225
57 4,515,226
65 4,515,227
313 4,515,228
337 4,515,229
410 4,515,230

CLASS 177

25 4,515,231
154 4,515,232

CLASS 179

2 R 4,515,994
6.13 4,515,995
81 B 4,515,996
111 R 4,515,997
146 R 4,515,998

CLASS 180

68.5 4,515,233
89.12 4,515,234
168 4,515,235
219 Re.31,877
227 4,515,236
287 4,515,237

CLASS 181

30 4,515,238
290 4,515,239

CLASS 182

6 4,515,240
96 4,515,241
106 4,515,242
155 4,515,243
230 4,515,244

CLASS 184

105 R 4,515,245

CLASS 187

29 R 4,515,246
4,515,247
67 4,515,248

CLASS 188

71.8 Re.31,878
73.38 4,515,249
79.5 GT 4,515,250
171 4,515,251
282 4,515,252
314 4,515,253
371 4,515,254

CLASS 192

0.075 4,515,257
3 H 4,515,259
3.57 4,515,255
18 R 4,515,256
91 A 4,515,258

CLASS 193

44 4,515,260

CLASS 194

1 A 4,515,261
1 D 4,515,263
1 G 4,515,262

CLASS 198

344 4,515,264
821 4,515,265

CLASS 200

5 A 4,515,999
44 4,516,000
61.54 4,516,001
144 B 4,516,004
144 C 4,516,002
4,516,003
147 R 4,516,005
148 A 4,516,006

CLASS 201

2.5 4,515,659

CLASS 202

241 4,515,660

CLASS 203

60 4,515,661

CLASS 204

15 4,515,662
44.2 4,515,663
62 4,515,664
98 4,515,665
159.2 4,515,666
162 R 4,515,667
192 D 4,515,668
196 4,515,669
199 4,515,670
228 4,515,671
269 4,515,672
290 F 4,515,673
292 4,515,674
298 4,515,675
299 R 4,515,676
300 EC 4,515,677

CLASS 206

205 4,515,266
219 4,515,267
305 4,515,268
334 4,515,269
438 4,515,270
519 4,515,271
592 4,515,272
604 4,515,273

CLASS 208

10 4,515,678
11 R 4,515,679
87 4,515,680
111 4,515,681
4,515,682
113 4,515,683
180 4,515,684
309 4,515,685

CLASS 209

3.1 4,515,274
139 A 4,515,686
167 4,515,687
4,515,688
453 4,515,689
558 4,515,275
693 4,515,276

CLASS 210

90 4,515,690
274 4,515,691
278 4,515,692
402 4,515,693
531 4,515,694
634 4,515,695
713 4,515,696
768 4,515,697
802 4,515,698

CLASS 211

45 4,515,277
107 4,515,278
153 4,515,279
189 4,515,280

CLASS 212

76 4,515,281
254 4,515,282

CLASS 215

270 4,515,283

CLASS 219

10.55 D 4,516,007
69 P 4,516,009
109 4,516,008
121 LJ 4,516,010
222 4,516,011
400 4,516,012

CLASS 220

70 4,515,284
288 4,515,285
314 4,515,286
316 4,515,287

CLASS 221

1 4,515,288
13 4,515,289
124 4,515,290
211 4,515,291

CLASS 222

52 4,515,292
95 4,515,293
105 4,515,294
113 4,515,295
134 4,515,296
160 4,515,297
380 4,515,298

CLASS 223

76 4,515,299

CLASS 224

151 4,515,300
204 4,515,301

CLASS 227

58 4,515,302
131 4,515,303

CLASS 228

136 4,515,304
173.2 4,515,305

CLASS 235

78 R 4,516,013
101 4,516,014
379 4,516,015
472 4,516,016
4,516,017

CLASS 236

9 A 4,515,306
25 R 4,515,307
49 4,515,308

CLASS 238

349 4,515,309

CLASS 239

8 4,515,310
172 4,515,311
227 4,515,312
455 4,515,313
466 4,515,314
491 4,515,315

CLASS 241

5 4,515,316
4,515,317
28 4,515,318
284 4,515,319

CLASS 242

18 DD 4,515,320
56 R 4,515,321
71.8 4,515,322
74.1 4,515,323
84.1 A 4,515,324
84.51 R 4,515,325
107.4 A 4,515,326
118.3 4,515,327
131 4,515,328
157.1 4,515,329
197 4,515,330
199 4,515,331

CLASS 248

37.3 4,515,332
122 4,515,333
146 4,515,334
231.5 4,515,335
288.3 4,515,336
371 4,515,337
460 4,515,338
543 4,515,339

CLASS 249

96 4,515,340
106 4,515,341
122 4,515,342

CLASS 250

203 R 4,516,018
214 L 4,516,020
214 RC 4,516,019
227 4,516,021
4,516,022
235 4,516,023
236 4,516,024
252.1 4,516,025
310 4,516,026
338 4,516,027
370 4,516,028
442.1 4,516,029
492.2 4,516,030
562 4,516,031
578 4,516,032

CLASS 251

48 4,515,343
141 4,515,345
328 4,515,347
337 4,515,346
635 4,515,344

CLASS 252

8.55 D 4,515,701
8.55 R 4,515,699
4,515,700
49.6 4,515,702
92 4,515,703
135 4,515,704
174.12 4,515,705
301.4 H 4,515,706
368 4,515,707
390 4,515,708
509 4,515,709
511 4,515,710
522 R 4,515,711
4,515,712

CLASS 254

28 4,515,348

CLASS 256

1 4,515,349

CLASS 260

106 4,515,713
112 R 4,515,714
112.5 R 4,515,715
239 A 4,515,717
4,515,719
239 B 4,515,718
351.1 4,515,720
400 4,515,721
403 4,515,722
404.5 4,515,723
410 4,515,724
410.7 4,515,725
412.4 4,515,726
413 4,515,727
429 CY 4,515,728
464 4,515,729
465 D 4,515,730
4,515,731
465.6 4,515,732
988 4,515,733

CLASS 261

50 R 4,515,734
111 4,515,735

CLASS 264

4.3 4,515,736
22 4,515,737
40.7 4,515,738
45.3 4,515,739
50 4,515,740
62 4,515,741
63 4,515,742
135 4,515,743
171 4,515,744
211 4,515,745
332 4,515,746

CLASS 266

92 4,515,350
177 4,515,351
218 4,515,352
236 4,515,353

CLASS 269

15 4,515,354
234 4,515,355

CLASS 270

53 4,515,356

CLASS 271

120 4,515,357
122 4,515,358

CLASS 272

1 A 4,515,360
1 R 4,515,359
93 4,515,361
114 4,515,362
118 4,515,363
143 4,515,364

CLASS 273

25 4,515,365
143 R 4,515,366
149 R 4,515,367
186 A 4,515,368
243 4,515,369
258 4,515,370
260 4,515,371
274 4,515,372
317 4,515,373
359 4,515,374

CLASS 277

1 4,515,375
9.5 4,515,376
27 4,515,377
152 4,515,378

CLASS 280

11.27 4,515,379
93 4,515,380
96 4,515,381
221 4,515,382
242 WC 4,515,383
276 4,515,384
289 G 4,515,386
289 WC 4,515,385
478 A 4,515,387
605 4,515,388
642 4,515,389
675 4,515,390
690 4,515,391
755 4,515,392
756 4,515,393
764.1 4,515,394
808 4,515,395

CLASS 281

15 R 4,515,396

CLASS 285

47 4,515,397
59 4,515,398
95 4,515,399
141 4,515,400

CLASS 290

54 4,516,033

CLASS 292

170 4,515,401

CLASS 294

19.2 4,515,402
86.31 4,515,403

CLASS 296

65 R 4,515,404
78.1 4,515,405

CLASS 297

409 4,515,406
429 4,515,407

CLASS 299

37 4,515,408
43 4,515,409
4,515,410

CLASS 300

132 4,516,181

CLASS 301

9 TV 4,515,411

CLASS 303

6 R 4,515,412

CLASS 307

10 R 4,516,034
66 4,516,035
228 4,516,036
252 A 4,516,037
264 4,516,038
455 4,516,039
468 4,516,040
494 4,516,041
546 4,516,042

CLASS 308

3 R 4,515,414
6 C 4,515,413
4,515,416
6 R 4,515,415

CLASS 310

11 4,516,043
64 4,516,044
68 E 4,516,045
154 4,516,046
230 4,516,047
254 4,516,048
313 A 4,516,049

CLASS 312

7.1 4,515,419
12 4,515,420
351 4,515,421

CLASS 313

359.1 4,516,050
446 4,516,051
546 4,516,052
584 4,516,053

CLASS 315

71 4,516,054
151 4,516,055
240 4,516,056
260 4,516,057
370 4,516,058

CLASS 318

301 4,516,059
341 4,516,060
561 4,516,061
676 4,516,062
685 4,516,063
696 4,516,064
811 4,516,065

CLASS 320

15 4,516,066

CLASS 323

265 4,516,067

CLASS 324

54 4,516,068
71.1 4,516,069
117 R 4,516,070
158 F 4,516,072
158 R 4,516,071
244 4,516,073
309 4,516,074
4,516,075
418 4,516,076
425 4,516,077

CLASS 328

167 4,516,078

CLASS 329

104 4,516,079

CLASS 330

3 4,516,080
254 4,516,081
296 4,516,082

CLASS 331

1 A 4,516,083
2 4,516,084
40 4,516,085

CLASS 332

16 R 4,516,086
17 4,516,087

CLASS 333

22 F 4,516,088
135 4,516,089
141 4,516,090
161 4,516,091
184 4,516,092
193 4,516,093
194 4,516,094
4,516,095
219 4,516,096
261 4,516,097

CLASS 335

35 4,516,098
135 4,516,099
160 4,516,100
208 4,516,101
267 4,516,102

CLASS 336

65 4,516,103
206 4,516,104

CLASS 338

21 4,516,105
28 4,516,106
89 4,516,107
319 4,516,108

CLASS 339

17 C 4,515,422
28 4,515,423
42 4,515,426
75 MP 4,515,424
4,515,425
177 E 4,515,427

CLASS 340

114 B 4,516,109
323 R 4,516,110
347 DA 4,516,111
365 R 4,516,112
384 E 4,516,113
542 4,516,114
556 4,516,115
685 4,516,116
4,516,117
703 4,516,118
722 4,516,119
785 4,516,120
825.05 4,516,121
825.5 4,516,122
825.86 4,516,123
960 4,516,124

CLASS 343

7.7 4,516,125
383 4,516,126
702 4,516,127
761 4,516,128
772 4,516,129
781 P 4,516,130
785 4,516,131
815 4,516,132
819 4,516,133

CLASS 346

75 4,516,134
76 PH 4,516,135
4,516,136
4,516,137
80 4,516,138

140 R 4,516,139
4,516,140
153.1 4,516,141
160 4,516,142

CLASS 350

96.12 4,515,428
96.13 4,515,429
4,515,430
96.15 4,515,431
96.20 4,515,432
96.21 4,515,433
4,515,434
96.23 4,515,435
96.33 4,515,436
114 4,515,437
255 4,515,438
257 4,515,439
334 4,515,440
395 4,515,441
396 4,515,443
397 4,515,442
413 4,515,444
427 4,515,446
524 4,515,445
527 4,515,447

CLASS 351

41 4,515,448
156 4,515,449

CLASS 353

5 4,515,450
120 4,515,451

CLASS 354

106 4,515,452
149.1 4,515,453
287 4,515,454
293 4,515,455
320 4,515,456
443 4,515,457

CLASS 355

3 FU 4,515,459
3 SH 4,515,458
3 TR 4,515,460
4,515,461
4 4,515,462
10 4,515,463
14 C 4,515,465
14 R 4,515,464
15 4,515,466
4,515,467
27 4,515,468
35 4,515,469
105 4,515,470

CLASS 356

5 4,515,471
4,515,472
33 4,515,473
44 4,515,474
73.1 4,515,475
318 4,515,476
338 4,515,477
345 4,515,478
375 4,515,479
400 4,515,480
4,515,481

CLASS 357

23.4 4,516,143
27 4,516,144
42 4,516,145
52 4,516,146
59 4,516,147
68 4,516,148
71 4,516,149

CLASS 358

13 4,516,150
14 4,516,151
29 4,516,152
31 4,516,153
44 4,516,154
80 4,516,155
85 4,516,156
108 4,516,157
109 4,516,158
160 4,516,167
190 4,516,168
4,516,169
191.1 4,516,170
214 4,516,171
228 4,516,172
261 4,516,173
282 4,516,174
283 4,516,175
293 4,516,159
326 4,516,160
342 4,516,161

CLASS 360

25 4,516,162
32 4,516,163
53 4,516,164
4,516,165
72.1 4,516,166
75 4,516,176
77 4,516,177
78 4,516,178
113 4,516,179
126 4,516,180

CLASS 361

13 4,516,182
71 4,516,183
152 4,516,184
154 4,516,185
306 4,516,186
309 4,516,187
408 4,516,188
426 4,516,189

CLASS 362

32 4,516,190
65 4,516,191
107 4,516,192
123 4,516,193
202 4,516,194
281 4,516,195
311 4,516,196
342 4,516,197

CLASS 363

35 4,516,198

CLASS 364

200 4,516,199
4,516,200
4,516,201
4,516,202
4,516,203
4,516,204
4,516,205
421 4,516,206
424 4,516,207
466 4,516,208
4,516,209
471 4,516,210
474 4,516,211
475 4,516,212
483 4,516,213
4,516,214
513.5 4,516,215
514 4,516,216
715 4,516,220
717 4,516,217
900 4,516,218
4,516,219
4,516,221

CLASS 365

32 4,516,222
175 4,516,223
203 4,516,224
4,516,225

CLASS 366

136 4,515,482
303 4,515,483

CLASS 367

6 4,516,226
15 4,516,227
75 4,516,228
95 4,516,229
190 4,516,230

CLASS 369

44 4,516,231
79 4,516,233
109 4,516,234
116 4,516,235
126 4,516,232

CLASS 370

24 4,516,236
58 4,516,237
60 4,516,238
85 4,516,239
4,516,240
110.1 4,516,241

CLASS 372

29 4,516,242
96 4,516,243
99 4,516,244

CLASS 374

137 4,515,484
157 4,515,485

CLASS 375

17 4,516,245
37 4,516,246
56 4,516,247
76 4,516,248
82 4,516,249
4,516,250

CLASS 376

249 4,515,747
250 4,515,748
254 4,515,749
446 4,515,750

CLASS 377

110 4,516,251

CLASS 378

23 4,516,252
34 4,516,254
60 4,516,256
034 4,516,253
143 4,516,255

CLASS 381

4 4,516,257
31 4,516,258
36 4,516,259
51 4,516,260

CLASS 382

6 4,516,261
18 4,516,262
41 4,516,263
46 4,516,264
48 4,516,265
4,516,266

CLASS 383

22 4,516,267
63 4,516,268

CLASS 384

117 4,515,486
445 4,515,417
502 4,515,418

CLASS 400

121 4,515,487
124 4,515,488
241.2 4,515,489
613.2 4,515,490
693 4,515,491

CLASS 401

52 4,515,492

CLASS 402

4 4,515,493

CLASS 403

187 4,515,494
336 4,515,495
388 4,515,496
391 4,515,497

CLASS 404

4 4,515,498
6 4,515,499

CLASS 405

79 4,515,500
153 4,515,501
215 4,515,502

CLASS 406

11 4,515,503

CLASS 408

67 4,515,504

CLASS 409

163 4,515,505

CLASS 410

46 4,515,506

CLASS 414

226 4,515,507
280 4,515,508
412 4,515,509
422 4,515,510
459 4,515,518
680 4,515,519
718 4,515,520
735 4,515,521
747 4,515,522

CLASS 415

115 4,515,523
219 R 4,515,524

CLASS 416

11 4,515,525
96 R 4,515,526
131 4,515,511
184 4,515,527

CLASS 417

26 4,515,515
38 4,515,516
46 4,515,517
51 4,515,528
63 4,515,529
214 4,515,530
269 4,515,531
318 4,515,532
319 4,515,533
322 4,515,534
360 4,515,535
394 4,515,536
489 4,515,537
572 4,515,538

CLASS 418

1 4,515,512
55 4,515,539
97 4,515,540
101 4,515,513
150 4,515,514

CLASS 422

86 4,515,751
99 4,515,752
102 4,515,753
168 4,515,754
246 4,515,755

CLASS 423

54 4,515,756
4,515,757
213.2 4,515,758
220 4,515,759
4,515,760
240 4,515,761
337 4,515,762
409 4,515,763
573 R 4,515,764
617 4,515,765

CLASS 424

1.1 4,515,766
4,515,767
40 4,515,768
49 4,515,769
4,515,770
52 4,515,771
57 4,515,772
59 4,515,773
4,515,774
70 4,515,775
85 4,515,776
89 4,515,777
94 4,515,637
95 4,515,778
145 4,515,779
154 4,515,780
195.1 4,515,785

CLASS 425

47 4,515,541
84 4,515,542
112 4,515,543
129 R 4,515,544
143 4,515,545
195 4,515,546
215 4,515,547
308 4,515,548
350 4,515,549
392 4,515,550
406 4,515,551
436 RM 4,515,552

CLASS 426

40 4,515,815
69 4,515,816
106 4,515,817
268 4,515,818
297 4,515,819
309 4,515,820
330.4 4,515,821
445 4,515,822
491 4,515,823
554 4,515,824
603 4,515,825

CLASS 427

8 4,515,826
68 4,515,827
82 4,515,828
97 4,515,829
122 4,515,830
223 4,515,831
233 4,515,832
362 4,515,833
387 4,515,834
388.3 4,515,835
425 4,515,836

CLASS 428

4 4,515,837
14 4,515,838
17 4,515,839
35 4,515,840
4,515,841
36 4,515,842
64 4,515,843
82 4,515,844
86 4,515,845
95 4,515,846
107 4,515,847
172 4,515,848
201 4,515,849
204 4,515,867
225 4,515,850
246 4,515,851
4,515,852
257 4,515,853
288 4,515,854
290 4,515,855
323 4,515,856
328 4,515,857
364 4,515,858
398 4,515,859
408 4,515,860
450 4,515,861
4,515,862
480 4,515,863
546 4,515,864
610 4,515,865
614 4,515,866
656 4,515,868
4,515,869
4,515,870

CLASS 429

34 4,515,871
65 4,515,872
91 4,515,873
104 4,515,874
196 4,515,875

CLASS 430

5 4,515,876
4,515,877
4,515,878
31 4,515,879
39 4,515,880
58 4,515,881
4,515,882
4,515,883
4,515,884
99 4,515,884
175 4,515,885
270 4,515,886
283 4,515,887
584 4,515,888

CLASS 431

8 4,515,553
78 4,515,554
208 4,515,555
253 4,515,556
302 4,515,557
359 4,515,558

CLASS 432

10 4,515,559
80 4,515,560
136 4,515,561
225 4,515,562

CLASS 433

90 4,515,563
126 4,515,564
221 4,515,565

CLASS 434

172 4,515,566

CLASS 435

4 4,515,889
7 4,515,890
69 4,515,891
161 4,515,892
240 4,515,893
4,515,894
4,515,895

CLASS 436

2 4,515,896
133 Re.31,879

CLASS 440

7 4,515,567

CLASS 445

3 4,515,568
5 4,515,569

CLASS 446

47 4,515,570
90 4,515,571
153 4,515,572

CLASS 455

51 4,516,269
302 4,516,270
327 4,516,271
607 4,516,272

CLASS 464

69 4,515,573
131 4,515,574

CLASS 474

13 4,515,575
29 4,515,576
204 4,515,577
231 4,515,578

CLASS 493

1 4,515,579
183 4,515,580
4,515,581

CLASS 494

7 4,515,582

CLASS 501

15 4,515,897
4,515,898

CLASS 502

35 4,515,899
63 4,515,900
4,515,901
64 4,515,902
68 4,515,903
209 4,515,904
309 4,515,905

CLASS 514

24 4,515,782
27 4,515,783
46 4,515,781
63 4,515,784
180 4,515,787
182 4,515,786
196 4,515,789
202 4,515,788
214 4,515,792
234 4,515,790
248 4,515,791
249 4,515,794
252 4,515,793
263 4,515,795
288 4,515,802
303 4,515,796
338 4,515,803
341 4,515,798
4,515,799
349 4,515,797
392 4,515,800
403 4,515,801
456 4,515,804
460 4,515,805
471 4,515,806
513 4,515,807
521 4,515,808
530 4,515,810
533 4,515,809
554 4,515,811
563 4,515,813
592 4,515,812
652 4,515,814

CLASS 521

28 4,515,906
139 4,515,907
182 4,515,908

CLASS 523

102 4,515,909
109 4,515,913
115 4,515,910
201 4,515,914
414 4,515,911
456 4,515,912

CLASS 524

87 4,515,915
99 4,515,916
178 4,515,917
504 4,515,918
591 4,515,919

CLASS 525

54.11 4,515,920
67 4,515,921
99 4,515,922
127 4,515,923
432 4,515,924
439 4,515,925
449 4,515,926

CLASS 526

87 4,515,927
200 4,515,928
228 4,515,929
276 4,515,930
323.2 4,515,931

CLASS 528

16 4,515,932
57 4,515,933
92 4,515,934
141 4,515,935
200 4,515,936
204 4,515,937
252 4,515,938
339.3 4,515,939

CLASS 534

565 4,515,940
635 4,515,716

CLASS 536

7.1 4,515,941
16.8 4,515,942
27 4,515,943

CLASS 544

91 4,515,944
94 4,515,945
295 4,515,947

CLASSIFICATION OF PATENTS

325	4,515,948	230	4,515,956	39	4,515,967						
343	4,515,949	237	4,515,946		4,515,968	**CLASS 556**		**CLASS 562**		**CLASS 604**	
CLASS 546		251	4,515,958		4,515,969	445	4,515,979	472	4,515,985	22	4,515,583
67	4,515,950	378	4,515,959	79	4,515,970	453	4,515,976	**CLASS 564**		66	4,515,584
114	4,515,951	408	4,515,960	225	4,515,971	**CLASS 560**		471	4,515,986	85	4,515,585
329	4,515,952	432	4,515,961	229	4,515,972	45	4,515,980	**CLASS 568**		87	4,515,586
345	4,515,953	435	4,515,962	259	4,515,973	50	4,515,981	433	4,515,987	96	4,515,587
CLASS 548		437	4,515,963	372	4,515,974	125	4,515,982	586	4,515,988	118	4,515,588
109	4,515,954	463	4,515,964	411	4,515,975	130	4,515,983	674	4,515,989	122	4,515,589
150	4,515,955	548	4,515,965	468	4,515,977	183	4,515,984	808	4,515,990	144	4,515,590
177	4,515,957	**CLASS 549**		484	4,515,978					152	4,515,591
		30	4,515,966							163	4,515,592
										265	4,515,593
										384	4,515,594
										385 A	4,515,595

CLASSIFICATION OF DESIGNS

D2—	373	278,660		83	278,676		75	278,692		60	278,708	D20—	4	278,724			278,740
D4—	104	278,661		101	278,677	D11—	19	278,693		100	278,709		42	278,725		55	278,741
		278,662		137	278,678		117	278,694			278,710	D21—	89	278,726			278,742
D6—	300	278,666	D8—	373	278,679			278,695		102	278,711			278,727	D24—	8	278,743
	328	278,665	D9—	339	278,684	D12—	147	278,696			278,712			278,728		10	278,744
	334	278,667		352	278,680		151	278,697		111	278,713			278,729		13	278,745
	335	278,668		378	278,681		157	278,698			278,714			278,730		17	278,746
	462	278,669		398	278,682		158	278,699			278,715		148	278,731		64	278,747
	463	278,670		410	278,683		342	278,700	D15—	139	278,716		150	278,732	D26—	132	278,748
	474	278,671	D10—	38	278,685	D13—	2	278,701		144	278,717			278,733	D27—	27	278,749
	476	278,663		39	278,686		5	278,702	D17—	9	278,718		160	278,734	D28—	4	278,750
	510	278,664			278,687			278,703	D18—	1	278,719		166	278,735		76	278,751
D7—	13	278,672			278,688			278,704			278,720		185	278,736	D32—	70	278,752
	77	278,673		42	278,689		28	278,705			278,721		190	278,737	D34—	31	278,753
	79	278,674		46	278,690		35	278,706	D19—	28	278,722	D22—	28	278,738		33	278,754
		278,675		64	278,691	D14—	1	278,707		91	278,723	D23—	19	278,739			

CLASSIFICATION OF PLANTS

P.—	7	5,458		10	5,460			43	5,463		88	5,465
	8	5,459		41	5,461		5,462			70	5,464	

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

156—	636	T105,402	209—	166	T105,404	264—	23	T105,403		151	T105,401		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,514,888		4,515,332		4,516,085		4,516,257		4,515,368		4,515,171
	4,514,948		4,515,379		4,516,088	10 :	4,515,267		4,515,434		4,515,191
	4,515,229		4,515,381		4,516,092		4,515,624		4,515,435		4,515,200
	4,515,580		4,515,383		4,516,114		4,515,636		4,515,535		4,515,238
	4,515,912		4,515,393		4,516,145		4,515,656		4,515,586		4,515,681
04 :	4,514,932		4,515,401		4,516,148		4,515,695		4,515,658		4,515,780
	4,515,589		4,515,402		4,516,151		4,515,761		4,515,745		4,515,910
	4,515,898		4,515,403		4,516,176		4,515,858		4,515,750		4,515,945
	4,516,091		4,515,423		4,516,177	12 :	4,514,914		4,515,890		4,516,124
	4,516,220		4,515,428		4,516,178		4,515,090		4,515,904		4,516,185
	4,516,237		4,515,431		4,516,182		4,515,103		4,515,924	23 :	4,514,943
	4,516,245		4,515,432		4,516,206		4,515,165		4,515,935		4,515,206
05 :	4,515,779		4,515,448		4,516,225		4,515,274		4,515,964	24 :	4,515,001
06 :	4,514,863		4,515,468		4,516,244		4,515,292		4,516,038		4,515,023
	4,514,913		4,515,480		4,516,246		4,515,346		4,516,083		4,515,028
	4,514,918		4,515,493		4,516,253		4,515,367		4,516,110		4,515,441
	4,514,919		4,515,509	08 :	4,514,862		4,515,371		4,516,136		4,515,451
	4,514,922		4,515,545		4,514,905		4,515,504		4,516,140		4,515,473
	4,514,938		4,515,556		4,514,930		4,515,517		4,516,170		4,515,540
	4,514,944		4,515,566		4,515,083		4,515,652		4,516,197		4,515,781
	4,514,947		4,515,570		4,515,134		4,515,859		4,516,268		4,516,067
	4,514,954		4,515,583		4,515,301		4,515,873		4,516,270		4,516,248
	4,514,961		4,515,585		4,515,306		4,516,035	18 :	Re.31,878	25 :	4,514,865
	4,514,976		4,515,591		4,515,369		4,516,100		4,514,981		4,514,904
	4,514,996		4,515,601		4,515,544		4,516,127		4,514,982		4,514,907
	4,515,004		4,515,606		4,515,550		4,516,194		4,515,145		4,515,021
	4,515,026		4,515,618		4,516,097		4,516,216		4,515,250		4,515,100
	4,515,034		4,515,627		4,516,227	13 :	4,514,967		4,515,506		4,515,232
	4,515,046		4,515,662		4,516,250		4,515,294		4,515,625		4,515,242
	4,515,058		4,515,679	09 :	4,514,966		4,515,337		4,515,719		4,515,271
	4,515,059		4,515,684		4,514,990		4,515,392		4,515,796		4,515,338
	4,515,069		4,515,727		4,515,030		4,515,518		4,516,066		4,515,430
	4,515,076		4,515,735		4,515,053		4,515,646		4,516,152		4,515,444
	4,515,082		4,515,736		4,515,348		4,515,839		4,516,153		4,515,463
	4,515,104		4,515,751		4,515,525		4,515,919		4,516,168		4,515,558
	4,515,110		4,515,756		4,515,526		4,515,995		4,516,233		4,515,629
	4,515,123		4,515,757		4,515,577	16 :	4,514,902	19 :	4,514,939		4,515,766
	4,515,136		4,515,759		4,515,630		4,515,064		4,515,440		4,515,773
	4,515,147		4,515,763		4,515,638		4,515,281		4,515,520		4,515,829
	4,515,151		4,515,811		4,515,655	17 :	4,514,903		4,516,055		4,515,844
	4,515,155		4,515,813		4,515,671		4,514,934	20 :	4,514,890		4,515,847
	4,515,168		4,515,827		4,515,698		4,515,012		4,515,068		4,516,023
	4,515,202		4,515,828		4,515,739		4,515,015		4,515,421		4,516,029
	4,515,211		4,515,860		4,515,784		4,515,042		4,515,993		4,516,050
	4,515,225		4,515,913		4,515,958		4,515,105	21 :	4,514,955		4,516,057
	4,515,237		4,515,949		4,515,998		4,515,139		4,515,170		4,516,094
	4,515,243		4,515,956		4,515,999		4,515,179		4,515,201		4,516,095
	4,515,261		4,516,008		4,516,011		4,515,181		4,515,230		4,516,164
	4,515,275		4,516,033		4,516,014		4,515,194		4,515,407		4,516,167
	4,515,278		4,516,041		4,516,048		4,515,251		4,515,680		4,516,190
	4,515,288		4,516,043		4,516,062		4,515,279		4,515,683		4,516,203
	4,515,296		4,516,060		4,516,115		4,515,342		4,515,900		4,516,263
	4,515,315		4,516,071		4,516,209		4,515,363	22 :	4,514,871	26 :	4,514,891

4,514,925
4,514,983
4,514,988
4,515,029
4,515,031
4,515,032
4,515,036
4,515,073
4,515,087
4,515,107
4,515,132
4,515,176
4,515,178
4,515,190
4,515,245
4,515,255
4,515,268
4,515,272
4,515,376
4,515,396
4,515,411
4,515,414
4,515,455
4,515,482
4,515,543
4,515,563
4,515,647
4,515,649
4,515,651
4,515,659
4,515,663
4,515,744
4,515,793
4,515,911
4,515,926
4,516,269
27 : 4,514,878
4,514,923
4,514,928
4,514,970
4,514,978
4,514,992
4,515,039
4,515,089
4,515,114
4,515,146
4,515,154
4,515,159
4,515,160
4,515,166
4,515,187
4,515,273
4,515,311
4,515,323
4,515,330
4,515,561
4,515,607
4,515,668
4,515,822
4,515,824
4,515,885
4,515,955
4,516,007
4,516,068
4,516,102
4,516,165
28 : 4,515,196
4,516,005
29 : 4,515,349
4,515,603
4,515,731
4,515,973
31 : 4,515,022
4,515,071
4,515,615
32 : 4,515,408
4,516,069
4,516,109
33 : 4,515,198
4,515,488
4,515,693
4,515,875

4,515,879
4,516,107
34 : 4,514,866
4,514,893
4,514,896
4,514,924
4,514,960
4,515,000
4,515,065
4,515,099
4,515,180
4,515,240
4,515,247
4,515,361
4,515,364
4,515,429
4,515,436
4,515,442
4,515,569
4,515,593
4,515,612
4,515,633
4,515,682
4,515,701
4,515,711
4,515,712
4,515,718
4,515,722
4,515,741
4,515,771
4,515,774
4,515,782
4,515,783
4,515,791
4,515,830
4,515,855
4,515,868
4,515,869
4,515,870
4,515,892
4,515,893
4,515,894
4,515,895
4,515,920
4,515,927
4,515,933
4,515,939
4,515,946
4,515,966
4,515,967
4,515,968
4,515,972
4,515,987
4,516,001
4,516,037
4,516,070
4,516,076
4,516,084
4,516,111
4,516,123
4,516,130
4,516,131
4,516,150
4,516,159
4,516,169
4,516,187
4,516,214
4,516,217
4,516,231
4,516,232
4,516,235
4,516,238
4,516,239
4,516,258
35 : 4,515,043
4,515,167
4,515,173
4,515,372
4,515,533
4,516,028
36 : 4,514,883
4,514,910

4,514,915
4,514,920
4,514,945
4,514,962
4,514,989
4,514,991
4,515,047
4,515,052
4,515,113
4,515,129
4,515,137
4,515,149
4,515,150
4,515,164
4,515,195
4,515,205
4,515,207
4,515,233
4,515,290
4,515,300
4,515,302
4,515,307
4,515,357
4,515,397
4,515,457
4,515,466
4,515,505
4,515,528
4,515,529
4,515,588
4,515,602
4,515,650
4,515,654
4,515,746
4,515,753
4,515,769
4,515,792
4,515,797
4,515,810
4,515,815
4,515,845
4,515,848
4,515,865
4,515,878
4,515,880
4,515,882
4,515,884
4,515,887
4,515,901
4,515,931
4,515,932
4,515,936
4,515,947
4,515,954
4,515,980
4,516,040
4,516,125
4,516,126
4,516,143
4,516,199
4,516,241
37 : 4,515,054
4,515,108
4,515,299
4,515,327
4,515,328
4,515,484
4,515,749
4,515,992
4,516,013
4,516,079
4,516,196
39 : 4,514,875
4,514,926
4,514,999
4,515,006
4,515,019
4,515,033
4,515,048
4,515,086
4,515,189
4,515,199

4,515,234
4,515,258
4,515,291
4,515,295
4,515,310
4,515,319
4,515,359
4,515,360
4,515,387
4,515,418
4,515,478
4,515,499
4,515,527
4,515,534
4,515,574
4,515,581
4,515,595
4,515,610
4,515,611
4,515,613
4,515,614
4,515,622
4,515,664
4,515,667
4,515,669
4,515,672
4,515,692
4,515,705
4,515,710
4,515,713
4,515,728
4,515,732
4,515,733
4,515,765
4,515,772
4,515,836
4,515,851
4,515,907
4,515,916
4,515,928
4,515,929
4,515,957
4,515,965
4,515,971
4,515,978
4,515,983
4,516,044
4,516,056
4,516,229
40 : 4,514,977
4,514,993
4,515,093
4,515,216
4,515,218
4,515,219
4,515,224
4,515,324
4,515,567
4,515,635
4,515,687
4,515,700
4,515,740
4,516,162
41 : 4,514,959
4,514,995
4,515,055
4,515,720
4,515,906
4,516,042
42 : 4,514,877
4,514,889
4,514,898
4,514,921
4,514,946
4,514,968
4,515,002
4,515,051
4,515,084
4,515,085
4,515,092
4,515,095
4,515,133

4,515,135
4,515,153
4,515,244
4,515,262
4,515,270
4,515,289
4,515,297
4,515,353
4,515,355
4,515,394
4,515,419
4,515,420
4,515,422
4,515,485
4,515,523
4,515,524
4,515,551
4,515,592
4,515,637
4,515,643
4,515,657
4,515,685
4,515,721
4,515,835
4,515,841
4,515,867
4,515,988
4,515,997
4,516,024
4,516,036
4,516,059
4,516,072
4,516,195
43 : 4,514,949
44 : 4,515,313
4,515,378
4,515,390
4,515,398
4,515,486
45 : 4,514,880
4,515,062
4,515,097
4,515,594
4,515,666
4,515,863
46 : 4,515,223
47 : 4,515,096
4,515,335
4,515,474
4,515,587
4,515,665
4,515,747
4,516,020
48 : 4,514,872
4,514,897
4,514,901
4,514,936
4,514,950
4,514,956
4,514,997
4,515,010
4,515,011
4,515,079
4,515,102
4,515,174
4,515,213
4,515,214
4,515,215
4,515,217
4,515,220
4,515,228
4,515,266
4,515,347
4,515,370
4,515,382
4,515,399
4,515,400
4,515,437
4,515,471
4,515,472
4,515,490
4,515,532

4,515,576
4,515,608
4,515,699
4,515,708
4,515,726
4,515,764
4,515,767
4,515,794
4,515,816
4,515,820
4,515,846
4,515,896
4,515,899
4,515,934
4,515,938
4,515,989
4,516,082
4,516,087
4,516,193
4,516,200
4,516,218
4,516,223
4,516,228
4,516,230
4,516,251
4,516,260
49 : 4,514,986
4,515,080
4,515,227
4,515,317
4,515,449
4,515,516
4,515,694
4,515,734
4,516,118
50 : 4,515,144
4,516,012
4,516,266
51 : 4,514,870
4,515,169
4,515,284
4,515,334
4,515,354
4,515,374
4,515,385
4,515,443
4,516,021
4,516,077
4,516,156
53 : 4,514,933
4,515,007
4,515,017
4,515,044
4,515,142
4,515,152
4,515,260
4,515,265
4,515,336
4,515,579
4,515,707
4,515,953
4,516,104
4,516,210
54 : 4,515,921
4,515,937
55 : 4,514,867
4,514,909
4,515,037
4,515,041
4,515,063
4,515,143
4,515,163
4,515,340
4,515,770
4,515,832
4,516,075
4,516,112
4,516,144
4,516,189
56 : 4,515,188
4,515,212

DESIGN PATENTS

06 : 278,660
278,666
278,669
278,673
278,689
278,691
278,699
278,707
278,709
278,722

278,731
278,737
278,739
278,743
08 : 278,668
278,670
278,725
09 : 278,723
278,751
278,752

12 : 278,684
278,702
278,703
278,704
13 : 278,724
17 : 278,664
278,676
278,679
278,708
278,711

18 : 278,747
20 : 278,671
21 : 278,698
278,741
278,749
25 : 278,749
26 : 278,697
27 : 278,667
278,753
29 : 278,736

278,744
33 : 278,734
34 : 278,677
278,738
278,742
278,750
36 : 278,672
278,678
278,700

278,748
40 : 278,690
42 : 278,683
278,713
45 : 278,718
49 : 278,694
278,695
51 : 278,665
55 : 278,740

PLANT PATENTS

06 : 5,458
5,459
5,460
5,461
5,462
5,463
5,465

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01 : T105,404
36 : T105,402
T105,403

U.S. GOVERNMENT PRINTING OFFICE : O—1985

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

(or) COUNTRY

PLEASE PRINT OR TYPE

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

(or) COUNTRY

PLEASE PRINT OR TYPE

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. . . . . .

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Vol. 1054 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 14, 1985

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, Acting Commissioner

Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
May 14, 1985 Volume 1054 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1054 OG 10
Notice of Maintenance Fees Payable	1054 OG 10
Reissue Applications Filed	1054 OG 10
Requests for Reexaminations Filed	1054 OG 11
Notice of Availability for Licensing	1054 OG 11
Patents Available for Licensing or Sale	1054 OG 11
Patent Certificates of Correction	1054 OG 13
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1054 OG 14
Condition of Patent Applications	1054 OG 15
Reexaminations	491
Reissue Patents Granted (31,881)	493
Plant Patents Granted (5,466)	497
Patents Granted	
General and Mechanical (4,516,273)	499
Chemical (4,516,978)	745
Electrical (4,517,403)	867
Design Patents Granted (278,755)	969
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 52
Classification of	
Patents (Including Reissues and Reexaminations)	PI 57
Designs and Plants	PI 60
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 61
Designs and Plants	PI 62
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 25/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

Note that the amount of the international search fee for the European Patent Office will change effective May 7, 1985 and the amounts of the International PCT fees will change effective May 28, 1985. For information on these fee changes see the notice appearing in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	No charge

Mar. 20, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 11, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,328,592 through 4,329,740

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,979,296, Re. S.N. 654,312, Filed Sept. 25, 1984, Cl. 210/324, FILTER, Wendel Bastgen, Owner of Record: *Firma Albert Klein K.G., Nieder-Fishbach, Germany,* Attorney or Agent: Alan K. Roberts, et al., Ex. Gp.: 136

4,056,953, Re. S.N. 636,071, Filed July 30, 1984, Cl. 464/34, TORQUE LIMITING COUPLING, James Furlette, et al., Owner of Record: *Excel Corp., Fenton, Mich.,* Attorney or Agent: Ernest I. Gifford, Ex. Gp.: 342

4,152,831, Re. S.N. 608,549, Filed May 10, 1984, Cl. 030/296, A TOOL HOLDER, Peter O. Davies, Owner of Record: *Tullen Industries Ltd., Auckland, New Zealand,* Attorney or Agent: Marvin R. Stern, Ex. Gp.: 324

4,241,756, Re. S.N. 661,233, Filed Oct. 15, 1984, Cl. 137/496, EXHALATION VALVE ASSEMBLY, Clifford D. Bennett, Owner of Record: *Inspiron Corp., Rancho Cucamonga, Calif.,* Attorney or Agent: Robert Spensley, et al., Ex. Gp.: 347

4,359,960, Re. S.N. 673,442, Filed Nov. 20, 1984, Cl. 114/294, MARINE TETHER ANCHORING DEVICE, Clive J. Burchett, et al., Owner of Record: *Vickers Ltd., Vickers House, London SW1P 4RA, England,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 315

4,364,751, Re. S.N. 683,406, Filed Dec. 19, 1984, Cl. 055/96, SELF-CLEANING PULSED AIR CLEANER, George A. Copley, Owner of Record: *Donaldson Co., Inc., Minneapolis, Minn.,* Attorney or Agent: Paul A. Welter, et al., Ex. Gp.: 135

4,368,731, Re. S.N. 692,347, Filed Jan. 17, 1985, Cl. 604/272, PISTOL-TYPE SYRINGE, Heinrich W. Schramm, Owner of Record: *Henke-Sass, Wolf GmbH, Tuttlingen, Germany,* Attorney or Agent: Arthur Schwartz, et al., Ex. Gp.: 336

4,462,769, Re. S.N. 694,125, Filed Jan. 22, 1985, Cl. 418/001, METHOD AT AN OIL-INJECTED SCREW-COMPRESSOR, (Lars) Lauritz B. Schibbye, et al., Owner of Record: *Sullair Technology Ab, Stockholm, Sweden,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 343

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-696,222. IMPROVED METHOD AND APPARATUS FOR THE MASS REARING OF FRUIT FLIES.
SN 6-696,274. ELECTRONIC TEMPERATURE EQUALIZER.
SN 6-704,442. NOVEL DIOLEFIN PHEROMONE MIMICS AS DISRUPTANTS OF SEXUAL COMMUNICATION IN INSECTS.

DEPARTMENT OF COMMERCE

SN 6-680,114. METHOD AND APPARATUS FOR FOUR-BEAM RADAR.
SN 6-716,913. POLYUNSATURATED FATTY ACIDS FROM FISH OILS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-696,538. MONOCLONAL ANTIBODIES AGAINST CHLAMYDIAL GENUS SPECIFIC LIPOPOLYSACCHARIDE.
SN 6-709,678. PURIFIED ANTIGEN FROM NON-A, NON-B HEPATITIS CAUSING FACTOR.

DEPARTMENT OF THE ARMY

SN 6-700,573. CYLINDRICAL CRYSTAL RESONATOR.

Patents Available for Licensing or Sale

Des. 229,895. COMBINED CAN OPENER AND SEALABLE POUR SPOUT. *Santo Musumeci,* P.O. Box 1443, Hawthorne, Calif. 90250.
3,862,876. PROTECTIVE EDGE WEIGHTED COVER CLOTH. *L. Graves,* 5927 S. Grant, Littleton, Colo. 80121.
4,504,054. ELBOW BRACE FOR BOWLERS AND GOLFERS. *Emanuel Jackson, et al.* — Correspondence should be addressed to: Edward M. Woodberry, 7401 N. Hampshire Ave., #903, Hyattsville, Md. 20783.
4,506,837. PROGRAMMING ON DEMAND CABLE SYSTEM AND METHOD. *Howard F. Walter,* P.O. Box 11617, Fort Wayne, Ind. 46859.
4,090,540. TREE OR STUMP SAW, 4,394,031. HITCH PIN RETAINER, 4,388,939. PORTABLE KNOCK-DOWN HUNTING BLIND, 4,299,522. TRACTOR MOUNTABLE FRONT AND REAR BALE-IMPALING HAY CARRIERS. *Cyril Barton,* Waltonville, Ill. 62894.
4,323,118. APPARATUS FOR CONTROLLING AND PREVENTING OIL BLOWOUTS. *Conrad Bergmann,* 1365 Lincoln Ave., San Jose, Calif. 95125.
4,239,030. FIELD BURNER APPARATUS. *Everett H. Benson.* Correspondence to: Mrs. Ruth Benson, 20568 S.E. Norse Rd., Eagle Creek, Oreg. 97022.
4,464,141. SHAFT COUPLING. and 4,477,912. CORRELATION DATA COMMUNICATIONS SYSTEM, *James A. Oliff, Esq.,* Parkhurst & Oliff, 277 S. Washington St., Suite 212, Alexandria, Va. 22314.
4,511,411. METHOD OF FORMING A HARD SURFACE LAYER ON A METAL COMPONENT. *Vereinigte Drahtwerke AG, Owner.* Correspondence should be addressed to: J. C. Holman, Holman & Stern, Chartered, 2401 Fifteenth St., N.W., Washington, D.C. 20009.

3,657,476. CRYPTOGRAPHY. 3,815,144. THERMAL RECORDER HAVING AN ANALOGUE TO DIGITAL CONVERTER., 3,964,061. SUCCESSIVE APPROXIMATION ANALOG TO DIGITAL CONVERTER. *Howard A. Aiken.* Correspondence should be addressed to: G. Franklin Rothwell; Bernard, Rothwell & Brown, P.C., 1700 K St., N.W., Washington, D.C. 20006.

The following patents are offered by Perry E. Burton and John V. Noonan (correspondence to James R. Paulk, Jr. or Charles T. Lester, Jr., Sutherland, Asbill & Brennan, 3100 First Atlanta Tower, Atlanta, Ga. 30383):

3,640,235. METHOD & APPARATUS FOR CUTTING & HEMMING CLOTH LENGTHS.
3,772,948. METHOD AND APPARATUS FOR FORMING CLOTH LENGTHS WITH FOLDED HEMS.
3,773,002. METHOD AND APPARATUS FOR FOLDING AND SEWING HEMS.
3,906,878. HEMMING METHOD AND APPARATUS.
4,157,692. LABEL DISPENSING SYSTEM FOR USE WITH SEWING APPARATUS.
4,132,184. SHEET MATERIAL GUIDANCE SYSTEM.
4,186,672. SEWING MACHINE MONITOR.
4,154,180. CUTTING & HEMMING SYSTEM.
4,271,774. CUTTING & HEMMING SYSTEM (DIVISIONAL).
4,224,886. CUTTING & HEMMING SYSTEM (DIVISIONAL).
4,269,130. SHEET PRODUCTION SYSTEM.
4,271,767. SHEET PRODUCTION SYSTEM (DIVISIONAL).
4,204,012. SHEET INSPECTION AND MARKING SYSTEM.
4,369,723. NEEDLE LUBRICATOR SYSTEM (2ND CONTINUATION).
4,227,684. SHEET FOLDER.
4,353,316. SHEET PRODUCTION SYSTEM WITH HEM EXPANDER.
4,462,322. SHEET PRODUCTION SYSTEM WITH HEM EXPANDER (DIVISIONAL).

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: General Electric Co., Component Products Group, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

3,812,570. APPARATUS FOR HANDLING MAGNETIC CORES AND PERFORMING WINDING TREATMENT PROCEDURES.
3,903,593. METHOD FOR HANDLING MAGNETIC CORES AND PERFORMING WINDING TREATMENT PROCEDURES.
4,217,938. APPARATUS AND METHOD FOR MAKING DYNAMOELECTRIC MACHINE WINDINGS.
4,476,408. HIGH EFFICIENCY, LOW COST PERMANENT MAGNET AC MACHINE.
4,486,679. PERMANENT MAGNET ROTOR AND METHOD OF MAKING SAME.
4,499,660. METHOD OF MAKING A LAMINATED ROTOR FOR A DYNAMOELECTRIC MACHINE.

Applications for licenses may be addressed to the General Electric Co., Construction Equipment Business Operation, P.O. Box 704, Farmington, Conn. 06034-0704, Attention: Richard A. Menelly, Patent Counsel.

4,507,527. CURRENT LIMITING CIRCUIT-BREAKER HAVING AN IMPROVED CONTACT ARRANGEMENT.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Rm. 218, Schenectady, N.Y. 12345.

4,462,205. INTEGRATED COAL-FIRED GAS TURBINE POWER PLANT.
4,503,681. STATE-OF-THE-ART GAS TURBINE AND STEAM TURBINE POWER PLANT.

Applications for licenses may be addressed to: Patent Counsel, Capacitor Products Business Dept., General Electric Co., 1 John St., Bldg. 12, Hudson Falls, N.Y. 12839.

4,388,669. POLYGLYCOL DIELECTRIC CAPACITOR FLUID.
4,422,962. POLYGLYCOL DIELECTRIC CAPACITOR FLUID.
4,423,463. COMBINED CAPACITOR & RESISTOR.
4,439,812. IMPREGNATED CAPACITOR FOIL.
4,480,285. CAPACITOR.
4,482,478. BLENDS OF BRANCHED CHAIN PHTHALATE ESTERS AND HALOGENATED BENZENE COMPOUNDS.
4,482,931. METALLIZED CAPACITOR WITH IMPROVED BILAYER ELECTRODES.

PATENT NOTICES

Certificates of Correction for the Week of May 14, 1985

Re. 31,736	4,459,784	4,479,531	4,488,932
Re. 31,760	4,463,077	4,479,980	4,488,958
Re. 31,787	4,463,201	4,480,176	4,489,261
3,877,839	4,463,236	4,480,517	4,489,339
4,039,680	4,464,043	4,480,382	4,490,109
4,185,037	4,464,123	4,480,805	4,490,262
4,275,214	4,464,199	4,481,084	4,490,269
4,350,732	4,465,405	4,481,155	4,490,326
4,366,060	4,466,147	4,481,173	4,490,513
4,368,531	4,468,475	4,481,186	4,490,591
4,371,895	4,468,816	4,481,568	4,490,652
4,404,277	4,469,083	4,481,853	4,490,683
4,415,694	4,469,311	4,482,282	4,490,926
4,426,467	4,469,314	4,482,298	4,490,940
4,426,858	4,470,066	4,482,353	4,490,999
4,428,980	4,470,167	4,482,537	4,491,031
4,430,379	4,470,323	4,482,555	4,491,485
4,430,970	4,471,058	4,482,574	4,491,499
4,431,273	4,471,114	4,482,900	4,491,975
4,434,334	4,471,969	4,482,919	4,492,062
4,437,316	4,473,107	4,482,984	4,492,144
4,438,987	4,473,446	4,483,152	4,492,313
4,439,789	4,473,658	4,483,760	4,493,557
4,440,562	4,474,093	4,484,114	4,493,592
4,442,444	4,474,104	4,484,149	4,493,598
4,443,379	4,474,618	4,484,287	4,493,817
4,443,933	4,474,690	4,484,737	4,494,008
4,444,356	4,474,695	4,485,177	4,494,124
4,444,694	4,474,714	4,485,628	4,494,128
4,450,515	4,474,803	4,486,276	4,494,371
4,450,527	4,474,819	4,486,363	4,494,387
4,450,877	4,475,027	4,486,397	4,494,724
4,451,130	4,475,193	4,486,506	4,495,425
4,452,594	4,475,292	4,487,002	4,495,639
4,452,903	4,475,858	4,487,247	4,496,014
4,454,978	4,476,076	4,487,571	4,496,324
4,455,393	4,476,314	4,487,894	4,496,703
4,456,550	4,476,471	4,487,982	
4,457,998	4,477,365	4,488,188	
4,458,844	4,478,760	4,488,822	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 13, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-12-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-28-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-03-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-20-81
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-1-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-20-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-05-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-21-83

Expiration of patents: The patents within the range of numbers indicated below expire during April 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,375,529 to 3,381,302, inclusive

Plant Patents ..... Numbers 2,802 to 2,810 inclusive

REEXAMINATIONS

MAY 14, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Plant 3,971 (345th)

NEOREGELIA PLANT

Paul de Coster, Ruitersdreef 1, Melle, B-9230, and Adrien Simoens, Zonneveld 21, Merelbeke, B-9920, both of Belgium

Reexamination Request No. 90/000,557, May 16, 1984.
Reexamination Certificate for Patent No. Plant 3,971, issued Nov. 2, 1976, Ser. No. 596,441, Jul. 16, 1975.
Claims priority, application Belgium, Jan. 13, 1975, PVO/152,338
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—88

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 1 is confirmed.

1. A new cultivar, of Neoregelia characterized by its broader leaves; a more compact plant rosette comprised of some thirty leaves with a width of about 5 cm. which have in the middle along the lengthwise axis, a cream white stripe 2.5 to 3 cm. wide, sometimes with very fine green lines therethrough; inflorescence in the form of red coloring of about six bracts, while certain of said cream-white stripes of the lowermost leaves display a pink-red coloring.

B1 4,034,772 (346th)

VAULTED MEMBRANE SHELTER

Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co., Pleasant Ridge, Mich.

Reexamination Request No. 90/000,125, Dec. 14, 1981.
Reexamination Certificate for Patent No. 4,034,772, issued Jul. 12, 1977, Ser. No. 597,970, Jul. 21, 1975.
Continuation-in-part of Ser. No. 339,333, Mar. 8, 1973, which is a continuation-in-part of Ser. No. 93,293, Nov. 27, 1970, abandoned. The portion of the term of this patent subsequent to Jun. 9, 1993, has been disclaimed.
The portion of the term of this patent subsequent to Jun. 9, 1993, has been disclaimed.
Int. Cl.³ A45F *1/12, 1/16*
U.S. Cl. 135—119



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–31 is confirmed.

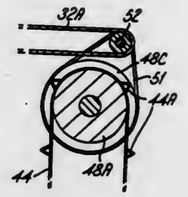
1. A vaulted membrane shelter comprising at least two substantially vertical arches with curved bights mounted on a base, face to face, but spaced apart with their respective ends aligned to form a framework; a flexible roof membrane extending between, and being operatively attached to, said arches and said base that is tensioned longitudinally and transversely with an inward concave curvature between at least the bights of said arches, said inward curvature having been formed by said membrane having a longer circumferential length at where it is operatively attached to said arches then its circumferential length in a vertical plane midway between said arches; and means acting between at least one of said vertical arches and said base for fixing said arches apart to maintain tension in said membrane.

B1 4,120,391 (347th)

CONVEYOR SYSTEMS FOR CIGARETTES AND OTHER ROD-LIKE ARTICLES

Desmond W. Molins; Dennis Hinchcliffe, and Peter A. Clarke, all of London, England, assignors to Molins Limited, England

Reexamination Request No. 90/000,302, Dec. 6, 1982.
Reexamination Certificate for Patent No. 4,120,391, issued Oct. 17, 1978, Ser. No. 408,256, Oct. 23, 1973.
Claims priority, application United Kingdom, Oct. 27, 1972, 49787/72
Int. Cl.³ B65G *43/08*
U.S. Cl. 198—347



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–55 is confirmed.

New claims 56–65 are added and determined to be patentable.

1. A conveyor system for conveying a stack of cigarettes or the like, comprising means defining a channel for the passage of a continuous stack of cigarettes, said channel having a wall formed partly by a conveyor having protrusions at regular intervals on its operative face which contacts the stack of cigarettes during use, and a pulley having a middle part around which the conveyor passes and two coaxial outer parts on opposite sides of the middle part and of a larger diameter than the middle part for guiding the cigarettes in the region of the pulley.

B1 4,232,619 (348th)

LIFTING LOOP

Bengt E. Lindahl, Gothenburg, Sweden, assignor to Svensk Lasthantering, Bengt Lindahl AB, Torslanda, Sweden

Reexamination Request No. 90/000,016, Jul. 2, 1981.
Reexamination Certificate for Patent No. 4,232,619, issued Nov. 11, 1980, Ser. No. 899,734, Apr. 25, 1978.
Filed Jul. 2, 1981, Ser. No. 899,734
Int. Cl.³ D05B *93/00*
U.S. Cl. 112—417

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–6 are cancelled.

[1. An improved flexible lifting loop of sufficient length to

encircle and support a large lifting load comprising a core of parallel threads, a protecting covering enclosing said core and retained about said core by a seam extending in the longitudinal direction of the loop, the improvement comprising said seam being a side seam, said threads and said covering having



sufficient flexibility to conform to the shape of a lifting hook or the like and the engaged portion of the lifted load, said seam when stitching together said protecting covering making said covering enclose said core snugly and retain said threads in their parallel relationship when said loop is engaged with a load.]

B1 4,276,329 (349th)
WOOD TREATMENT PROCESS AND PRODUCT THEREOF
Ramesh C. Vasishth, Danville, Calif., and Dodwell P. deSilva, Vancouver, Canada, assignors to Envirosol Systems International, Ltd., Orinda, Calif.
Reexamination Request No. 90/000,338, Mar. 7, 1983.
Reexamination Certificate for Patent No. 4,276,329, issued Jun. 30, 1981, Ser. No. 91,030, Nov. 5, 1979.
Continuation-in-part of Ser. No. 23,051, Mar. 22, 1979, abandoned.
Claims priority, application Canada, May 16, 1979, 327689
Int. Cl.[3] B05D *1/18, 3/02*
U.S. Cl. 427—393

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–23** are now disclaimed.

1. A method for treating wood to enhance its properties comprising: contacting the wood to be treated with sufficient water dilutable resin in a water miscible solvent to deposit an effective amount of said resin in the cell walls of said wood, said resin containing molecules having a molecular weight of less than about 1000 and of a size which can enter the free space in said cell walls in the presence of said solvent in an amount sufficient to stabilize the wood, and converting the resin in said cell walls to a water insoluble form at ambient conditions.

B1 4,367,157 (350th)
SOFT CONTACT LENS AMBIENT TEMPERATURE DISINFECTANT SOLUTION CONTAINING ASCORBIC ACID OR SALT THEREOF
Guy J. Sherman, Mandeville, La., assignor to Sherman Laboratories, Inc., Abita Springs, La.
Reexamination Request No. 90/000,550, May 2, 1984.
Reexamination Certificate for Patent No. 4,367,157, issued Jan. 4, 1983, Ser. No. 228,562, Jan. 26, 1981.
Continuation-in-part of Ser. No. 37,645, May 10, 1979.
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.[3] C11D *3/48, 1/04*
U.S. Cl. 252—106

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **6–8** is confirmed.

Claims **1–5, 9** and **10** are cancelled.

[1. An aqueous composition which disinfects soft and semi-hard contact lenses at ambient temperature consisting essentially of:

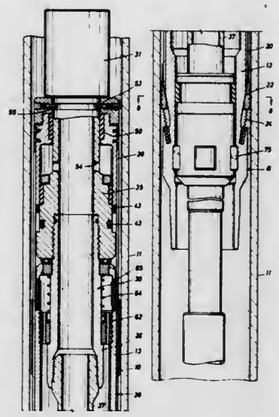
water, a first compound selected from the group consisting of ascorbic acid, sodium ascorbate, calcium ascorbate and mixtures thereof, said first component present in an amount of between about 0.1% and 20% by weight of said total aqueous composition calculated as ascorbic acid, and a second compound selected from the group consisting of trimethoprim and thimerosal, said second compound present in an amount of between about 0.0001% and 5.0% by weight of said total aqueous composition, said aqueous composition being compatible with soft contact lenses to allow storage of soft contact lenses therein.]

REISSUES

MAY 14, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,881
SETTING TOOLS AND LINER HANGER ASSEMBLY
Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool and Supply Company, Midland, Tex.
Original No. 4,287,949, dated Sep. 8, 1981, Ser. No. 109,979, Jan. 7, 1980. Application for reissue Sep. 6, 1983, Ser. No. 529,757
Int. Cl.[3] E21B *23/04*
U.S. Cl. 166—212 **15 Claims**



1. A liner hanger and setting tool for use in a well bore comprising:

a liner hanger body member having slip means disposed about its outer circumference, said slip means being movable between a retracted condition and an extended condition in which the slip means engage a well bore, said body member having its lower end adapted for connection to a tubular string of pipe;

a setting tool including tubular means extending through said body member

said tubular means at its upper end having a hydraulically operated pressure means, said pressure means in one operative position being releasably coupled to said slip means to normally retain said slip means in a retracted condition and in another operative position being released from said slip means, permitting said slip means to be in an extended condition,

spring means normally biasing said slip means toward said extended condition and for independently moving said slip means between said retracted condition and said extended condition;

said tubular means intermediate of its length having a releasable rotative connection with said body member which is operative to release said tubular means from said body member upon relative rotation therebetween,

said tubular means at its lower end having pack-off means, *means for* releasably [interconnected] *interconnecting said pack-off means* with said body member and operative to be released from interconnection with said body member upon relative longitudinal movement between said tubular means and said body member.

7. A setting tool for use with a liner hanger in a well bore comprising

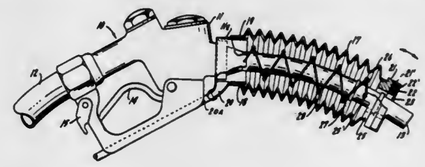
a tubular mandrel adopted for coupling between a string of tubular members,

a pressure operated sleeve slidably disposed on the upper end of said tubular mandrel, shear means for releasably retaining said sleeve in one position on said tubular mandrel, port means in said tubular mandrel for providing fluid pressure access to said sleeve, spring biased locking means in said sleeve adapted for cooperation with an annular locking groove in said tubular mandrel in another position of said sleeve on said tubular mandrel,

a nut member slidably mounted on said tubular mandrel, said nut member having an external threaded portion for interconnection with a threaded portion of a liner hanger, a nut housing rotatably mounted on said tubular mandrel above said nut member and having a hollow interior adopted to receive said nut member and having a lower end adopted to engage a liner hanger, spring means disposed in said nut housing for applying a compression force on said nut member, and

a tubular seal member slidably mounted on the lower end of said tubular mandrel, said seal member having pack-off means and spring biased latch members, said latch members normally extending outwardly of the seal member, said tubular mandrel havng a recessed portion permitting said latch members to retract relative to said seal member when said recessed portion is disposed adjacent to said latch members.

Re. 31,882
LIQUID DISPENSING NOZZLE ASSEMBLY AND METHOD OF USING SAME
Peter P. Moskovich, Gary, Ind., assignor to Atlantic Richfield Company, Harvey, Ill.
Original No. 4,008,738, dated Feb. 22, 1977, Ser. No. 536,533, Dec. 26, 1974. Application for reissue Apr. 7, 1980, Ser. No. 134,142
Int. Cl.[3] B65B *31/06*
U.S. Cl. 141—5 **42 Claims**



1. A liquid-dispensing nozzle assembly for delivery of liquid from a liquid source to a liquid receiver having a receiver inlet, said assembly being provided with means to reduce escape of vapor during delivery of liquid to said receiver inlet from said source, said nozzle assembly comprising:

a liquid dispensing nozzle having a nozzle inlet, a nozzle housing and an elongated discharge spout adapted for insertion into said receiver inlet;

a flexible vapor collector surrounding, in spaced relation thereto and forming a chamber therearound, the upper portion of said spout nearest said nozzle housing, said chamber being in fluid communication with said receiver inlet during said liquid delivery, one end of said vapor collector being attached to said nozzle housing;

a face means located adjacent to and carried by the second end of said vapor collector away from said end attached to said housing for forming a surface seal against the outer surface of said receiver inlet, provided that said spout extends beyond said second end of said vapor collector during said liquid dispensing; and

at least two spring members located in spaced relation thereabout said spout and acting to extend said vapor collec-

tor means, each of said spring members having one end attached to a different point of said face means so that said face means has substantially free rotational movement transverse to the axis of said spout.

Re. 31,883

RESINOID GRINDING WHEELS CONTAINING NICKEL-COATED CUBIC BORON NITRIDE PARTICLES

Harold P. Bovenkerk, Worthington, and William A. Berecki, Columbus, both of Ohio, assignors to General Electric Company, Worthington, Ohio

Original No. 3,645,706, dated Feb. 29, 1972, Ser. No. 885,630, Dec. 16, 1969. Application for reissue Dec. 9, 1977, Ser. No. 859,243

Int. Cl.³ B24D *17/00*

U.S. Cl. 51—295 **9 Claims**

1. In a grinding wheel for hardened steel and steel alloys, an abrasive surface consisting of nickel-coated cubic boron nitride particles, the nickel constituting from 30 to 80 weight percent of the coated particles, said coated particles being embedded in a matrix of resinous material selected from the group consisting of phenol-formaldehyde, urea-formaldehyde, melamine-formaldehyde, epoxy, polyester, polyamide and polyimide resins, and mixtures thereof, *said wheel being formed in a mold by pressing to a stop.*

Re. 31,884

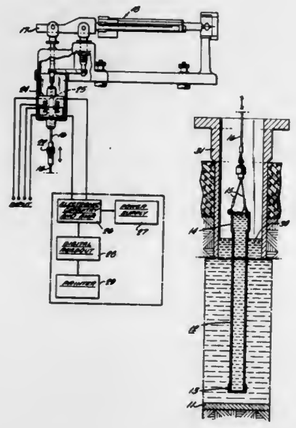
METHOD FOR LEAKAGE MEASUREMENT

William B. Hansel, Media, Pa., and Earl W. Smith, Wilmington, Del., assignors to Hunter Environmental Services, Inc., Malvern, Pa.

Original No. 4,300,388, dated Nov. 17, 1981, Ser. No. 84,241, Oct. 12, 1979. Application for reissue Aug. 5, 1982, Ser. No. 405,492

Int. Cl.³ G01M *3/32;* **G01F** *23/20*

U.S. Cl. 73—49.2 **14 Claims**



1. A method of high sensitivity for measuring leakage of liquid into or out of a storage tank *normally at atmospheric pressure* which comprises introducing a freely suspended sensor into the liquid in the tank *through the fill-pipe or other access hole of said tank*, said sensor being coupled to means for sensing mass displacement, [and] observing the change of displacement of said sensor over a period of time to determine a change of liquid mass in said tank, *and subsequently removing said sensor from said tank.*

Re. 31,885

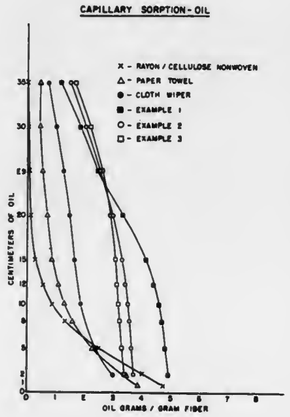
MICROFIBER OIL AND WATER WIPE

Gary H. Meitner, Winneconne, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Original No. 4,307,143, dated Dec. 22, 1981, Ser. No. 170,904, Jul. 21, 1980. Continuation-in-part of Ser. No. 1,744, Jan. 8, 1979, abandoned, and a continuation-in-part of Ser. No. 843,001, Oct. 17, 1977, abandoned. Application for reissue Dec. 20, 1983, Ser. No. 563,713

Int. Cl.³ A47L *13/17;* **B32B** *3/00;* **D04H** *1/04*

U.S. Cl. 252—91 **4 Claims**



1. A wiper that is both oil and water absorbent and having a reduced tendency to leave streaks and spots consisting essentially of a melt blown polypropylene web having a basis weight in the range of from about 1.5 to 3.5 oz. per square yard and containing about 0.1 to 0.6% by weight of a wetting agent selected from the group consisting of dioctylester of sodium sulfosuccinic acid and isooctyl phenylpolyethoxy ethanol and formed from fibers having an average diameter in the range of up to 10 microns, said wiper having been embossed under conditions of at least 20 psi pressure at a temperature in the range of 180° F. to 245° F.

Re. 31,886

MOISTURE-VAPOR-PERMEABLE PRESSURE-SENSITIVE ADHESIVE MATERIALS

Martin E. Hodgson, Harlow, England, assignor to T. J. Smith & Nephew Limited, Kingston-upon-Hull, England

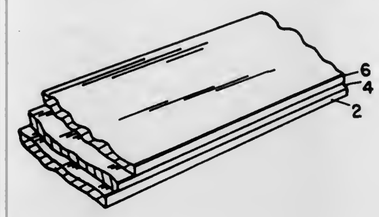
Original No. 3,645,835, dated Feb. 29, 1972, Ser. No. 839,436, Jul. 7, 1969. Division of Ser. No. 157,288, Jun. 5, 1980,. Application for reissue May 12, 1983, Ser. No. 494,013

Claims priority, application United Kingdom, Jul. 9, 1968, 32588/68; Oct. 22, 1968, 50045/68; Dec. 20, 1968, 60756/68

Int. Cl.³ B32B *7/10, 27/40;* **A61F** *13/02;* **A61L** *15/06*

U.S. Cl. 428—40 **14 Claims**

27. A moisture-vapor-permeable adhesive dressing for use on human skin which adhesive dressing when in use on human skin consists of a polyurethane backing material with a pressure-sensitive adhesive on the whole of the skin-adhering face thereof, said backing material being continuous and consisting of a film of thermoplastic polyurethane which is permeable to oxygen and moisture vapor but is unaffected by and impermeable to liquid water, said adhesive comprising an acrylic ester co-polymer containing hydrophillic groups which is permeable to oxygen and moisture vapor but is unaffected by and impermeable to liquid water where in the hydrophillic group is a hydroxyl, carboxyl, amine, amide, ether or alkoxy group,



said adhesive dressing having a moisture-vapor-permeability of at least 300 g./sq. meter/24 hours/40° C./80% RH.

Re. 31,887

MOISTURE-VAPOR-PERMEABLE PRESSURE-SENSITIVE ADHESIVE MATERIALS

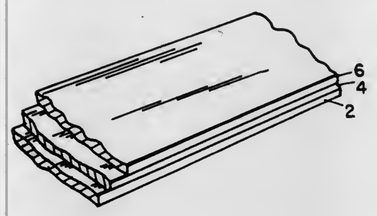
Martin E. Hodgson, Harlow, England, assignor to T. J. Smith & Nephew Limited, Kingston-upon-Hull, England

Original No. 3,645,835, dated Feb. 29, 1972, Ser. No. 839,436, Jul. 7, 1969. Application for reissue Jun. 6, 1980, Ser. No. 157,288

Claims priority, application United Kingdom, Jul. 9, 1968, 32588/68; Oct. 22, 1968, 50045/68; Dec. 20, 1968, 60756/68

Int. Cl.³ B32B *7/10, 27/40;* **A61F** *13/02;* **A61L** *15/06*

U.S. Cl. 428—355 **16 Claims**



1. A moisture-vapour-permeable pressure-sensitive adhesive material for use on [animal] *human* skin [and nails,] comprising a *continuous* backing material, *which is an unreinforced thermoplastic polyurethane film* and a *continuous* pressure-sensitive adhesive on at least substantially the whole of the body-adhering portion of at least one surface of said *continuous* backing material, both said *continuous* backing material and said *continuous* adhesive being [moisture-vapour-permeable and] *oxygen-permeable,* [and at least on of said backing material and said adhesive comprising a] synthetic polymer [and being continuous] *which are moisture vapour permeable,* unaffected by water and nonpermeable to liquid water, said adhesive material having a moisture vapor permeability of at least [300] *500* g./sq. meter/24 hours/40° C./80 percent RH.

Re. 31,888

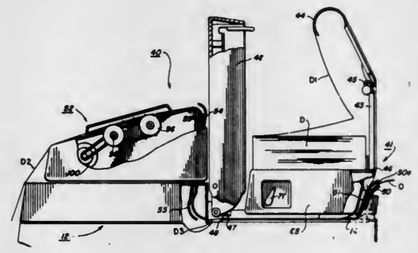
SENSOR CONTROLLING IN COMPUTER FANFOLD REPRODUCTION

Joseph W. Ward, Pittsford, and Russell G. Schroeder, II, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Original No. 4,320,960, dated Mar. 23, 1982, Ser. No. 75,868, Sep. 17, 1979. Application for reissue Jul. 11, 1983, Ser. No. 512,808

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **18 Claims**



1. In a reproduction machine adapted to handle document material in the form of a computer fanfold web consisting of a plurality of frame sections and being formed with equally spaced openings along one or both edges for cooperation with a tractor drive for imparting movement of the web, the machine having a processor for reproducing copies of the frames positioned on an exposure platen, the combination of:

control system associated with the tractor drive for advancing the web to position the frames upon the platen manually or automatically,

sensing means arranged in the path of movement of the web and adapted to sense the openings along an edge of the web material,

circuit means connected to said sensing means and arranged to produce a frequency of pulses in accordance with the sensed rate of openings movement, and control means associated with said circuit means for effecting the shutdown of the machine in the event said frequency of pulses deviates from a reference frequency.

PLANT PATENTS

GRANTED MAY 14, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,466

HYBRID TEA ROSE PLANT CV. AROSUMO

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Sep. 13, 1983, Ser. No. 651,695
Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, being particularly characterized in that its abundant production of well formed yellow flowers essentially as described and illustrated; its very vigorous growth; its well-above-average disease resistance; its well-above-average level of hardiness; its abundant foliage which clothes the entire plant and its low-thorned stems that are of suitable length for cutting.

5,467

ROSE CV. AROFEIGEL

John R. Feigel, Evansville, Ind., and Jack E. Christensen, Ontario, Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Sep. 12, 1983, Ser. No. 531,255
Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose as a sport of the rose "Century Two" (U.S. Plant Pat. No. 3,340) characterized in that it produces flowers of significantly lighter pink coloration, essentially as described and illustrated and otherwise having the characteristics of the parent rose cv. "Century Two."

5,468

PEAR TREE

Lyle A. Brooks, Forest Grove, Oreg., assignor to Carlton Nursery Company, Inc., Dayton, Oreg.

Filed Sep. 20, 1983, Ser. No. 534,180
Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree referred to by the cultivar designation Old Home × Farmingdale #217 and substantially as herein shown and described characterized particularly by its ability to serve as a rootstock for grafting of pear tree cultivars to produce "semi-standard" pear trees; further characterized by its resistance to the Fireblight disease and its tolerance of the Pear Decline disease; further characterized by its non-rootsuckering habit, its hardiness, its excellent root-anchorage, its good compatibility with all major commercial pear varieties, its early bearing habit, and its ability to root easily and reproduce readily by hard and softwood cuttings.

5,469

PRIVET PLANT

Byron E. Wates, 9403 Mirror Pond Ct., Fairfax, Va. 22031 (executrix; E. Inez Wates)

Filed Sep. 25, 1981, Ser. No. 305,494
Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinctive variety of Ligustrum substantially as herein shown and described, particularly characterized by its small leaves, dense foliage and twiggy growth habit.

PATENTS

GRANTED MAY 14, 1985

ERRATA

For CLASS	See PATENT NO.
604–022	4,516,398
073–164	4,516,414
081–020	4,516,615
173–053	4,516,662
426–655	4,517,120
514–249	4,517,179
514–016	4,517,180
514–012	4,517,181
514–413	4,517,182
514–183	4,517,183
514–212	4,517,184
514–232	4,517,185
514–255	4,517,186
514–250	4,517,187
514–394	4,517,188
514–259	4,517,189
514–300	4,517,190
514–300	4,517,191
514–345	4,517,192
514–471	4,517,193
514–184	4,517,194
514–413	4,517,195
514–371	4,517,196
514–376	4,517,197
514–400	4,517,198
514–392	4,517,199
514–455	4,517,200
514–521	4,517,201
514–530	4,517,202
428–632	4,517,217
425–457	4,517,248
423–501	4,517,322
235–095	4,517,450
235–379	4,517,451

PATENTS

GRANTED MAY 14, 1985

GENERAL AND MECHANICAL

4,516,273

UPPER BODY PROTECTOR APPARATUS AND METHOD

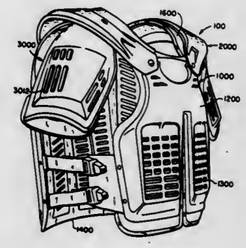
John R. Gregory, 303 W. 35th St., Suite C, National City, Calif. 92050; Gerald Parks, Denver, Colo., and John D. Dondero, Sun Valley, Id., assignors to John R. Gregory, Chula Vista, Calif.

Continuation of Ser. No. 493,736, May 11, 1983, Pat. No. 4,467,475. This application Jul. 9, 1984, Ser. No. 629,183

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.³ A41D *13/00*

U.S. Cl. 2—2 **17 Claims**



1. An upper body protector comprising:

an upper body shield having a chest plate portion, a back plate portion, and left and right shoulder portions adapted to conformably embrace the chest, back and shoulders of a wearer;

a pair of stiff flexible shoulder flaps each being hingedly connected at fixed pivot points to front and back portions of the left and right shoulder portions, respectively, of said upper body shield so that each of said shoulder flaps is superposed over respective left and right shoulder portions, and so that each of said shoulder flaps is movable in an arcuate path about said pivot points between an uppermost and lowermost position; and

a pair of epaulets, each being hingedly connected to respective shoulder flaps.

4,516,274

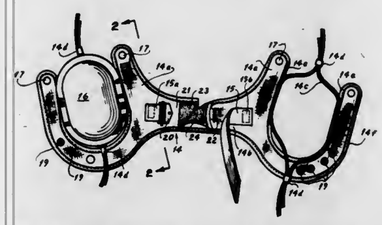
ADJUSTABLE EARCUP RETENTION HARNESS

Bruce E. Buckland, Franklin, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 26, 1984, Ser. No. 573,902

Int. Cl.³ A42B *1/06*

U.S. Cl. 2—209 **5 Claims**



1. A flexible harness adapted to be secured to a rigid protective helmet adapted to receive the head of a wearer, said harness having two U-shaped end portions located so as to partially encircle the ears of the wearer, said U-shaped end positions connected by means of a nape strap, means attached to said U-shaped end portions to hold earcups in position so as to cover the ears of the wearer, said means permitting rotational and vertical adjustment of the position of the earcups to cover the ears of the wearer.

4,516,275

GARMENT SUSPENSION WAISTBAND

Warren C. Schroeder, 2400 Virginia Ave., NW., C-603, Washington, D.C. 20037

Filed Nov. 12, 1981, Ser. No. 320,603

Int. Cl.³ A41F *19/00*

U.S. Cl. 2—308 **2 Claims**



1. An improved garment waistband secured to the upper portion of a wearing apparel body garment of the type having a waistband, said waistband having inner and outer surfaces, a plurality of belt loops secured to the inner surface of said waistband at their lower ends only and at a distance from the upper margin of the waistband by a least the length of the loops including separable fastening means between said loop and said waistband.

4,516,276

BONE SUBSTITUTE AND A METHOD OF PRODUCTION THEREOF

Heinz Mittelmeier, Homburg-Schwarzenbach, Fed. Rep. of Germany; Heinz Moser, Selzach, and Beat Leu, Ipsach, both of Switzerland, assignors to Oscobal AG, Selzach, Switzerland

Continuation of Ser. No. 217,455, Dec. 17, 1980, abandoned. This application Mar. 26, 1984, Ser. No. 593,174

Claims priority, application European Pat. Off., Dec. 18, 1979, 79810183.8

Int. Cl.³ A61F *1/00, 1/24*

U.S. Cl. 3—1.91 **8 Claims**

1. A bone substitute consisting essentially of a mixture of collagen fleece with apatite in the form of powder or granules, wherein the collagen is present in the form of an enzymatically treated, cleansed, lyophilized and sterilized collagen fleece.

4,516,277

ARTICLE COMPRISING AND METHOD FOR FABRICATING A HIP PROSTHESIS HAVING A FLEXIBLE MULTI-ELEMENT FEMORAL ROD

Jean Butel, 19 Avenue de Plain Fleurie, Meylan, Isere, France

Filed Dec. 3, 1982, Ser. No. 446,650

Claims priority, application France, Dec. 8, 1981, 81 23325

Int. Cl.³ A61F *1/04;* **B21D** *39/00*

U.S. Cl. 3—1.913 **19 Claims**

1. In a process for making a hip prosthesis including a bulbous head, a neck extending from said head, a plate connected to the neck opposite the head, and a femoral rod attached to, and extending from, the plate in a direction away from the neck, the improvment comprising:

forging said head, neck, plate and rod as a single unitary piece;

cutting said rod once along one longitudinally extending portion thereof to form a pair of opposing longitudinal elements; and

linking said pair of elements with separate holding means, said separate holding means both permitting relative movements of said elements longitudinally of one another

during flexing of said elements, and holding said pair of elements in opposing relationship while preventing the



ends of said longitudinal elements from moving apart from one another.

4,516,278

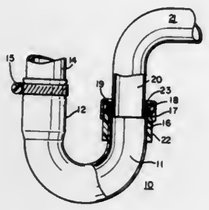
FLEXIBLE PLUMBING TRAP

Lee T. Lamond, 613 Shearer St., North Wales, Pa. 19454

Continuation-in-part of Ser. No. 126,546, Mar. 3, 1980, abandoned. This application Oct. 27, 1980, Ser. No. 200,954

Int. Cl.³ E03C *1/00*; F16K *9/00*

U.S. Cl. 4—191 **15 Claims**



1. A flexible plumbing trap for use with drain pipes from plumbing fixtures which drain pipes include one smooth straight drain pipe and one drain pipe with rim means on its end which trap comprises

an arcuate tubular hollow central body portion,

one end portion extending from said body portion and of different diameter than said body portion for engagement with said smooth straight drain pipe,

adjustable clamp means for detachably connecting said one end portion of said trap to said smooth straight drain pipe,

an other end portion of said trap extending from said body portion,

a collar member engaged with the said other end portion of said trap and said drain pipe rim means end,

a collar nut engaged with said rim means end of said drain pipe and said collar member, and

said collar nut is deformable for movement over said rim means and has a pair of opposed locking ears which engage said rim means.

4,516,279

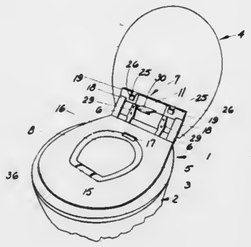
UNIVERSAL CHILD'S TOILET TRAINER

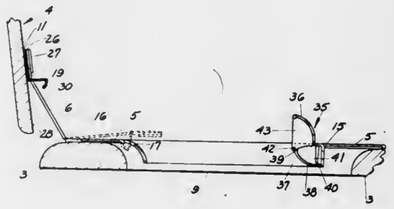
Richard M. Block, 1340 Custer Ave., Cincinnati, Ohio 45202

Continuation-in-part of Ser. No. 373,239, Apr. 29, 1982, abandoned. This application Nov. 15, 1983, Ser. No. 552,009

Int. Cl.³ A47K *13/00*

U.S. Cl. 4—235 **13 Claims**





1. A universal child's toilet trainer usable with a conventional toilet seat and lid said lid having an inner planar surface without relieved areas comprising:

(a) an auxiliary toilet seat having a central aperture, the central aperture being of a smaller diameter than that of a conventional toilet seat, the auxiliary toilet seat in an operational position resting upon the conventional toilet seat, and in a storage position, lying flat against said inner planar surface of said lid;

(b) means for attaching the auxiliary toilet seat to the lid to allow movement of the auxiliary toilet seat between the storage and operational positions; and

(c) means on the attaching means for picking up the auxiliary toilet seat from the operational position in which the auxiliary toilet seat rests upon the conventional toilet seat and fixing the auxiliary toilet seat in the storage position adjacent said inner planar surface of said lid whereby the use of the child's toilet trainer does not interfere with the adult use and operation of the conventional toilet seat.

10. A universal child's toilet trainer usable with a conventional toilet seat and lid comprising:

(a) an auxiliary toilet seat having a central aperture, the central aperture being of a smaller diameter than that of a conventional toilet seat, the auxiliary toilet seat in an operational position resting upon a conventional toilet seat, and in a storage position, lying flat against the lid;

(b) a strip secured to the underside of the lid, the strip having a pair of projections extending perpendicularly from the underside of the lid;

(c) a pair of extension arms connecting the rear portion of the auxiliary toilet seat to the strip on the underside of the lid;

(d) a mounting pad on the outer end of each extension arm, each mounting pad having a cut-out, the cut-out fitting onto the pair of projections on the strip;

(e) a hook positioned on the strip so that the hook engages the open arm on the rear portion of the auxiliary toilet seat when the lid lies horizontally upon the auxiliary toilet seat, the hook being capable of grasping the opening of the auxiliary toilet seat as the lid is raised, whereby the use of the child's toilet trainer by the child does not interfere with the adult use and operation of the conventional toilet seat.

4,516,280

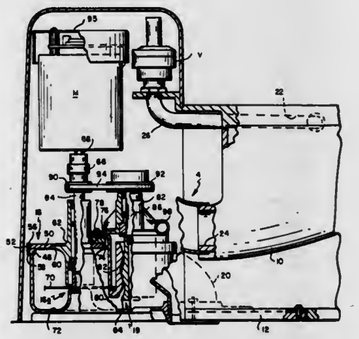
WATER SAVING TOILET SYSTEM

Wesley M. Tufts, Holliston, Mass., assignor to Control Fluidics, Inc., Greenwich, Conn.

Filed Apr. 27, 1984, Ser. No. 604,855

Int. Cl.³ E03D *9/10*

U.S. Cl. 4—319 **8 Claims**



1. A toilet system comprising a toilet bowl having at the bottom a discharge opening, a treating chamber having an intake opening, a conductor connecting the discharge opening of the bowl to the intake opening of the treating chamber, a macerator in the treating chamber, means in the treating chamber for discharging treated effluent therefrom into a waste pipe, a motor, means drivably connecting the macerator and discharge pump to the motor for effecting simultaneous operation of the macerator and discharge pump, a valve connecting the bowl to a source of water operable to admit water to the bowl and means for sequencing operation of the valve and the motor to initiate operation of the discharge pump followed by operation of the valve to supply flush water to the bowl, terminate operation of the discharge pump and then close the valve.

4,516,281

SEWAGE TREATMENT DEVICE

David B. MacPherson, Brunswick; Jay E. Paris, West Bass; Robert W. Foley, Cumberland Foreside; Martin W. Greinier, Westbrook, and David N. Pulsifer, Brunswick, all of Me., assignors to The Eastern Company, Naugatuck, Conn.

PCT No. PCT/US81/01363, § 371 Date May 11, 1983, § 102(e) Date May 11, 1983, PCT Pub. No. WO83/01267, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 9, 1981, Ser. No. 495,150

Int. Cl.³ E03D *9/10*

U.S. Cl. 4—319 **14 Claims**

1. A sewage treatment device for use with a toilet having a water flush input and a sewage output to treat with a disinfectant, comprising in combination:

a treatment tank;

connecting means for connecting the sewage output from the toilet to said treatment tank enabling water entering the water flush input of the toilet to transfer the sewage from the sewage output of the toilet to said treatment tank;

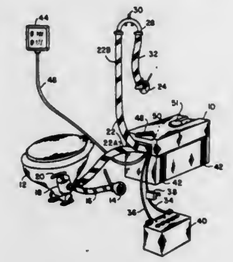
a disinfectant holding tank for holding the disinfectant;

a macerator blade disposed in said treatment tank;

a rotatable disinfectant pump for pumping disinfectant from said disinfectant holding tank to said treatment tank;

a motor for rotating said macerator blade within said treatment tank and for simultaneously rotating said disinfectant pump for macerating the sewage in said treatment tank and for simultaneously treating the sewage within said treatment tank with the disinfectant;

said macerator blade reducing the particle size of the sewage in said treatment tank concomitantly with said disinfectant pump metering a preselected amount of disinfectant in the treatment tank upon each rotation of said disinfectant pump;



timing means connected to electric power to said motor for macerating the sewage for a preselected period of time and for introducing a specified volume of disinfectant into said treatment tank; and

a discharge pump for discharging the treated sewage from said treatment tank.

4,516,282

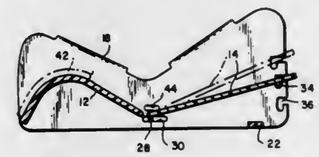
SUPPORT FOR A PREMATURE INFANT

Joan A. Topalian, 125 Newbritian Dr., Warwick, R.I. 02889, and Ronald L. Izen, Stillwater Rd., Smithfield, R.I. 02917

Filed Oct. 13, 1981, Ser. No. 310,456

Int. Cl.³ A61G *7/06*

U.S. Cl. 5—72 **8 Claims**



1. A support for a premature infant comprising means defining a stationary convex surface of such dimensions as to accommodate the leg structure of an infant, means defining a relatively flat mobile surface dimensioned to accommodate the back structure of an infant, vertically spaced supports comprising spaced, parallel side wall panels to which said means defining the stationary surface is fixed, and a hinge for positioning the mobile surface at several predetermined angular positions relative to the stationary surface, said hinge comprising horizontal slots in the side wall panels and pin means at the proximal ends of the flat mobile surface engaged with the slots, said slots being dimensioned to permit rotation of the pin means and movement of the pin means along the slots and wherein the crest of the convex stationary surface occurs at approximately the location of the knee joints.

4,516,283

METHOD FOR CONTINUOUS BLEACHING OF CLOTH

Yoshikazu Sando, and Eiichi Nakano, both of Wakayama, Japan, assignors to Sando Iron Works Co. Ltd., Japan

Filed Mar. 12, 1984, Ser. No. 588,294

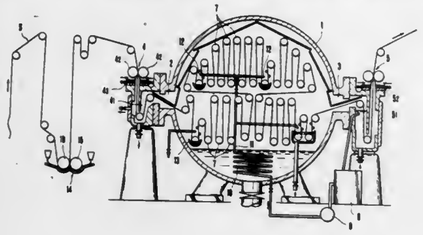
Claims priority, application Japan, Mar. 15, 1983, 58-42905

Int. Cl.³ D06B *3/12*

U.S. Cl. 8—149.1 **1 Claim**

1. A method for continuous bleaching of a cloth in a high

pressure steamer with use of hydrogen peroxide, comprising soaking a cotton cloth to be bleached with a neutral or slightly alkaline hydrogen peroxide solution outside a high pressure steamer body, squeezing the cloth, introducing the resultant



cloth continuously in the steamer body maintained with wet-heat at a temperature above 100° C., and wet-heat treating the cloth therein while maintaining the total water content of the cloth to not less than 170% by applying hot water repeatedly to the cloth.

4,516,284

BRIDGING ARRANGEMENT FOR EXPANSION JOINTS IN THE CARRIAGEWAYS OF BRIDGES OR THE LIKE

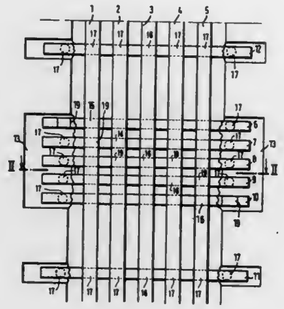
Reinhold Huber, Bulach, Switzerland, and Waldemar Koster, Forsbach, Fed. Rep. of Germany, assignors to Kober AG, Glarus, Switzerland

Filed Apr. 4, 1983, Ser. No. 481,643

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212717

Int. Cl.³ E01D *19/06;* **E01C** *11/12*

U.S. Cl. 14—16.5 **5 Claims**



1. Bridging arrangement for an expansion joint in a carriageway of a bridging structure and the like, wherein the expansion joint is located between edges of adjacent construction members formed with facing recesses, said construction members being spaced apart in the direction of said carriageway and said recesses therein extending in a direction transverse to said carriageway, a plurality of longitudinally extending bars, spaced from one another in said direction transverse to said carriageway, bridging said construction members and extending into said recesses thereof, a first plurality of slide support means in one of said recesses for all but one of said plurality of bars for slidably supporting the ends of said all but one bar in said one of said recesses, a second plurality of slide support means in the other of said recesses for all but one of said plurality of bars for slidably supporting the ends of all but one bar in said other of said recesses, a plurality of spaced apart plates adjacent the surface of the carriageway and extending longitudinally in a direction transverse to the direction of said carriageway solely above and spaced from said bars, each of said plates, to ensure uniform spacing between the plates and adequate support thereof for sustaining heavy vertical loads, having at least one rigid connection between the plates and said bars, and for at least a majority of said plates, at least one additional connection to said bars by a shear-deformable elastomeric member provided between the lower surface of the plate and the upper surface of the bar, said one of said plurality of bars in said one and in said other of said recesses being different bars connected at at least one end thereof to a shear-deformable elastomeric member.

4,516,285

PICK-UP SWEEPER OF THE TYPE WITH ELEVATING CONVEYOR WITH DIRT DISTRIBUTING DEVICE IN THE DIRT COLLECTING RECEPTACLE

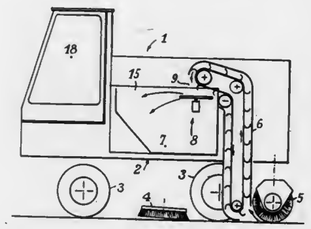
Jean Pineau, Suresnes, France, assignor to Le Materiel de Voirie, Sarl, Argenteuil, France

Filed Aug. 11, 1983, Ser. No. 522,008

Claims priority, application France, Aug. 20, 1982, 82 14762

Int. Cl.³ E01H *1/04*

U.S. Cl. 15—84 **12 Claims**



1. In a pick-up sweeper comprising at least one rotary brush for sweeping and collecting dirt on the ground, a dirt receptacle, an elevating conveyor having a lower input end associated with said rotary brush for receiving dirt collected thereby and an upper output end associated with said receptacle for discharging said dirt by gravity into said receptacle, and distributing means adjacent the upper output end of said elevating conveyor for evenly distributing said dirt into said receptacle, the improvement comprising said distributing means comprising a rotary disk located below the upper output end of said conveyor and having a substantially vertical axis of rotation, and driving means connected to said rotary disk for rotating same, said driving means including means for reversing the direction of rotation of the disk.

4,516,286

SEWER PIPELINE CLEANING APPARATUS

Patrick Crane, 24600 Dry Canyon Cold Creek Rd., Calabasas, Calif. 91302

Filed Jun. 6, 1983, Ser. No. 501,523

Int. Cl.³ B08B *9/02*

U.S. Cl. 15—104.12 **2 Claims**

1. In a sewer pipeline cleaning apparatus having a hydraulic motor with a drive shaft, an inlet for connecting a high pressure hydraulic fluid to drive a sewer cleaning tool attached to said drive shaft the improvement comprising;

a rigid frame formed of first and second cylindrical rings connected by a plurality of stiffening struts;

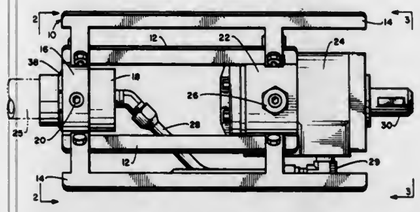
clamp means removably clamping said hydraulic motor in said first cylindrical ring;

a fluid connecting adaptor having a fluid inlet and outlet and rearwardly facing orifices connected to a passageway through said fluid connecting adaptor;

connecting means connecting a high pressure fluid supply to the inlet of said fluid connecting adaptor, said high pressure fluid providing a thrust through said rearwardly facing orifices;

conduit means connecting said outlet from said fluid connecting adaptor to said hydraulic motor inlet;

second clamp means removably clamping said fluid connecting adaptor in said second cylindrical ring separately from said hydraulic motor;



a plurality of skids bolted to said struts for holding said frame with said hydraulic motor and fluid connecting adaptor spaced from the interior wall of a sewer pipeline being cleansed;

whereby the hydraulic motor, fluid connecting adaptor and skids may be separately removed for repair or replacement.

4,516,287

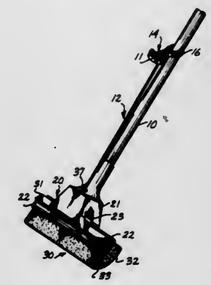
ANGLED ROLLER MOP

Robert S. Johnson; Paul E. Fletcher; William S. Benjamin, all of Seattle, and John I. Zsitvay, Mercer Island, all of Wash., assignors to The Lighthouse for the Blind, Incorporated, Seattle, Wash.

Filed Apr. 2, 1984, Ser. No. 595,710

Int. Cl.³ A47L *13/144*

U.S. Cl. 15—119 A **8 Claims**



1. A mop, comprising:

an elongate handle having a longitudinal axis;

a wringer assembly connected to said handle, said assembly including:

a pair of spaced-apart ends, each of said ends having openings that cooperatively define a retraction channel that is oriented about a retraction axis, said channel being open at its lower end and closed at its upper end, said retraction axis being oriented transverse to the longitiudinal axis of said handle;

a pair of rollers mounted between said ends in substantially parallel relation to one another on opposite sides of the open lower end of said channel; and

a bearing surface disposed adjacent the closed end of said retraction channel;

a cleaning assembly having a compressible cleaning element connected to a retainer, said cleaning assembly being mounted in the retraction channel so that said cleaning element extends downwardly between said rollers, said cleaning assembly being adapted to move along the retraction axis in a transverse direction relative to the longitudinal axis of said handle between an open position, in which the retainer of said cleaning assembly engages said rollers, and a closed position, in which said retainer engages the closed end of said channel; and

a retraction rod connected to the retainer of said cleaning assembly, said rod being operable to move the cleaning assembly in said retraction channel in a transverse direction relative to the longitudinal axis of said handle, said rod having an angled portion that is adapted to slidingly engage said bearing surface during a portion of the movement of the cleaning assembly between the open and closed positions.

4,516,288

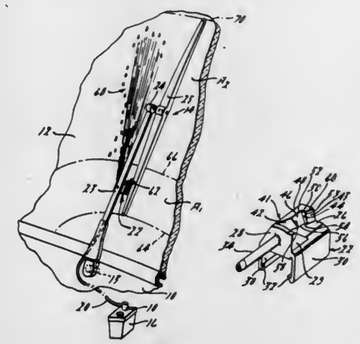
WINDSHIELD WASHER DUAL SPRAY NOZZLE

Wojciech L. Fizyta, Livonia, and Algen K. Kaumeheiwa, Southfield, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 7, 1984, Ser. No. 607,897

Int. Cl.³ B60S *1/46*

U.S. Cl. 15—250.04 **3 Claims**



1. A vehicle windshield cleaning assembly including a wiper blade oscillatable through an arcuate path across the outer surface of the windshield to wipe upper, intermediate, and lower areas of the same, a washer nozzle mounted on said windshield cleaning assembly and movable therewith, said washer nozzle comprising a base having an uninterrupted surface, a first solid wall upstanding from said base having a transverse frontal wall surface extending vertically from said base surface, an orifice extending through said frontal wall surface such that the principal axis of said orifice is normal to said frontal wall surface, means for supplying fluid under pressure to said orifice for discharge therefrom, a second longitudinally extending wall upstanding from said base surface disposed substantially perpendicular to said first wall, said second wall having its upper surface parallel with said base surface, said second wall forming first deflecting surface means disposed in a plane oriented at an obtuse angle relative to said base and an acute angle relative to said first solid wall intersecting the path of a stream of solvent discharged from said orifice, and means for supplying a solvent under pressure to said orifice, the improvement wherein said first deflecting surface means having a notched-out portion therein defining a second transverse deflecting surface and a third skewed deflecting surface, said first deflecting surface means in the form of a pair of fore and aft coplanar deflecting surfaces on either side of said notched-out portion such that said fore and aft surfaces are located proximate and distal respectively, from said orifice, said third skewed deflecting surface intersecting said fore and said transverse deflecting surfaces, whereby said fore and aft deflecting surfaces intersecting and diverting a primary spray of said stream of fluid generally axially upwardly toward said upper and intermediate areas of the windshield and said second

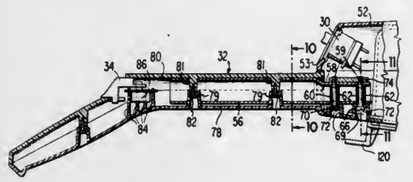
and third surfaces intersecting and dispersing a secondary spray said stream of fluid generally normally toward said lower area of the windshield.

4,516,289

HANDLE CONSTRUCTION FOR FLOOR CARE APPLIANCE

William R. Sumerau, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1984, Ser. No. 605,330
Int. Cl.³ A47L *9/32*
U.S. Cl. 15—410 **4 Claims**



1. A handle for a floor care appliance comprising a housing including a rigid main housing, said main housing having an internally oriented surface thereof formed with a cavity having at least one aperture therethrough extending from the external surface of the main housing through to the internal surface of the cavity;

a handle tube having on one end thereof a surface complimentary to said cavity and an oppositely disposed flatted surface, at least one hole normal to said flatted surface and through said flatted surface and said surface complimentary to said cavity substantially coaxial with said aperture through said cavity of said main housing;

at least one reinforcement tube received internally of said handle tube in said one end, said at least one reinforcement tube having the axis of its internal diameter substantially coaxial with the axis of said hole and said aperture; and

a handle mounting plate retained on said flatted surface of said handle tube externally thereof and including at least one tapped hole therethrough; and,

at least one screw extending through said at least one aperture in said main housing, through said at least one hole in said handle tube and said internal diameter of said at least one reinforcement tube into said at least one tapped hole of said handle mounting plate for retaining said handle tube affixed to said main housing.

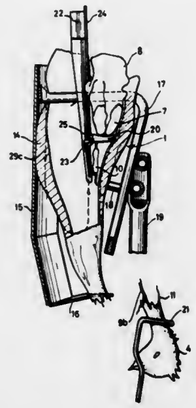
4,516,290

APPARATUS FOR THE REMOVAL OF ENTRAILS OF SLAUGHTERED BIRDS

Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Netherlands

Filed May 11, 1983, Ser. No. 493,404
Claims priority, application Netherlands, May 17, 1982, 8202031
Int. Cl.³ A22C *21/06*
U.S. Cl. 17—11 **6 Claims**

1. Apparatus for removing the heads and entrails of slaughtered birds comprising means for positioning the birds and supporting them at a fixed location with their legs arranged uppermost and their necks and heads lowermost, an oblong carrier adapted to be moved into and out of an internal cavity of each bird at the fixed location and carrying near its leading end a spoon-shaped extractor member which is rockable about a transverse pivot axis and is provided with a central cut-out, the spoon-shaped extractor member after being moved with said carrier into said cavity being adapted to pivot to a position in which it is at an angle to the carrier so that when the carrier is retracted from said cavity the spoon-shaped extractor member will extract a packet of entrails from each bird, and a head pulling bow which is swingable toward and from the neck of each bird and adapted to straddle the neck and exert a pulling force on the neck to separate the head and part of the neck from each bird together with the gullet and windpipe, and means controlling the movement of said carrier and head pulling bow in such a manner that the spoon-shaped extractor member while positioned at said angle to the carrier removes the packet of entrails from said cavity of each bird while the head pulling bow is removing the head and part of the neck from each bird with the gullet and windpipe attached, and said



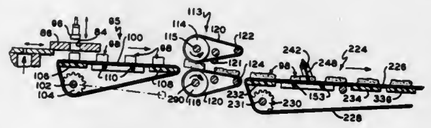
means for positioning the birds and supporting them at said fixed location comprising a concave support plate which receives the breast of each bird and which is biased in one direction by a spring, and the concave support plate at its bottom having two projecting support lips adapted to cooperate with two U-shaped bows disposed above the lips and being movable toward and away from the support plate, the uppermost of the two bows having a closed end toward the support plate and the lower bow having an open end toward the support plate.

4,516,291

APPARATUS AND PROCESS FOR FORMING MEAT PATTIES

Robert D. Goldberger, Wayzata, and James F. Stower, South St. Paul, both of Minn., assignors to Goldberger Foods Inc., Minneapolis, Minn.

Filed May 31, 1983, Ser. No. 499,227
Int. Cl.³ A22C *7/00*
U.S. Cl. 17—32 **25 Claims**



1. An apparatus for forming meat patties from ground meat, the formed patties having extended substantially parallel top and bottom surfaces and a peripheral side wall,

said apparatus comprising a mold plate with a mold chamber therein, each such chamber having a side wall including spaced apart peripherally distributed recesses,

a mold closure means to seal off the mold cavity in the mold plate,

said apparatus having an injection duct extending therethrough into the mold chamber,

a storage chamber for the ground meat communicating through the injection duct with the mold chamber,

a pump housing including a meat pumping means for propelling the ground meat from the storage chamber through

the duct into the mold chamber at a pressure of about 70 to 80 p.s.i. within the mold chamber to thereby compress the meat within the mold chamber to a predetermined density,

a means establishing relative motion between the mold plate and the mold closure means to open the mold chamber in the mold plate after the chamber has been filled,

means to strip the patty from the mold chamber when the mold chamber is open,

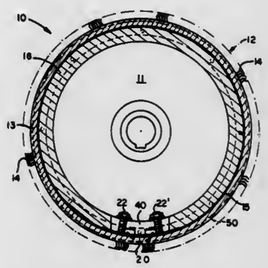
pressure members engageable with the top and bottom surfaces of the stripped out patty to force the top and bottom surfaces toward one another causing the patty to spread out peripherally in all directions and causing said patty to have an irregular outline and to fracture at the edge thereby providing radially extending peripherally distributed compression fractures around the periphery of the patty extending partially toward the center thereof.

4,516,292

WIRE-COVERED DOFFER FOR SLIVER HIGH PILE FABRIC KNITTING MACHINES

Earl R. Quay, Orangeburg, S.C., assignor to Mayer, Rothkopf Industries, Inc., Orangeburg, S.C.

Filed Oct. 3, 1983, Ser. No. 538,142
Int. Cl.³ D01G *15/14*
U.S. Cl. 19—112 **15 Claims**



1. A doffer for feeding fibers to the needles of a sliver high pile fabric knitting machine, said doffer including a smooth-peripheried doffer roll mounting wire-covered card clothing, characterized by

(a) a segment of card clothing enveloping the periphery of the doffer roll and having spaced ends disposed in abutting relation on said roll and

(b) fastening means for tightly securing the segment of card clothing to the doffer roll, said fastening means comprising

(i) a pair of clamps mounted on the doffer roll, each clamp having a plate disposed on the periphery of the doffer roll,

(ii) each clamp having a row of impaling points mounted on the plate and extending transversely relative to the periphery of the doffer roll for engaging one of the two abutting ends of the segment of card clothing, and

(iii) clamp securing means affixing each clamp to the doffer roll.

4,516,293

CLAMPING STRUCTURE

Anthony V. Beran, 1472 La Loma Dr., Santa Ana, Calif.

Continuation-in-part of Ser. No. 256,698, Apr. 23, 1981. This application Apr. 25, 1983, Ser. No. 488,057
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—16 PB **7 Claims**

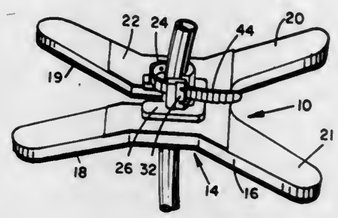
1. In a locking structure for a clamp:

bolt means for locking cooperation with a surface conformation on a keeper;

a keeper formed by two members spaced to provide an opening between them;

a latch carried by the keeper and resiliently mounted on one of said members for movement in said opening;

said latch being biased to a position in said opening such that entry of the bolt means into the space between said members requires mating of said conformation and said latch or retraction of the latch;



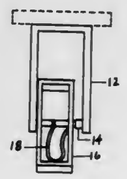
said members being capable of being spread apart and in which a projection extends into said space from one of said members sufficiently to require spreading of said members to permit entry of the bolt means into said space by arranging said conformation and latch in mating position.

4,516,294

SELF LOCKING HOLDER FOR AN ITEM OF JEWELRY

Dilworth Sanderson, 79 Waller Ave., White Plains, N.Y. 10605

Filed Mar. 10, 1982, Ser. No. 356,859
Int. Cl.³ A41B *7/00*
U.S. Cl. 24—41 **10 Claims**



1. A self-locking holder for a cuff link comprising, in combination:

(a) a U-shaped stem adapted to hold thereon the cuff link said stem having two side members defining an opening therebetween;

(b) a pin member defining an axis extending between said side members across said opening, said pin member having a cylindrical non-circular cross-section along a first portion of its length near one side member and a cylindrical cross-section along a second portion of its length near the other side member;

(c) a locking member, slidably and rotatably arranged on said pin member within said opening, said locking member having a hole therein for receiving said pin member, the cross-section of said hole on the side thereof adjacent said one side member matching said non-circular cross-section, said locking member being smaller in width than the distance between said two side members; and

(d) spring means arranged for biasing said locking member toward said one side member; whereby said locking member may be rotated on said pin member by first sliding it along the axis of said pin member toward said other side member away from said first portion of said pin member, and whereby said locking member is prevented from rotating on said pin member when it is positioned adjacent said one side member with the matching cross-section of

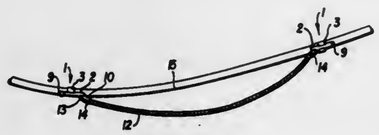
said hole disposed over said first portion of said pin member.

4,516,295

SECUREMENT MEANS

Donald G. McCoy, 69 Penfold Rd., Rosslyn Park, Australia (5072)

PCT No. PCT/AU82/00084, § 371 Date Jan. 27, 1983, § 102(e) Date Jan. 27, 1983, PCT Pub. No. WO82/04235, PCT Pub. Date Dec. 9, 1982
PCT Filed May 27, 1982, Ser. No. 464,515
Claims priority, application Australia, May 27, 1981, PE9064
Int. Cl.³ B63B *15/02*; F16G *11/00*
U.S. Cl. 24—136 R **9 Claims**



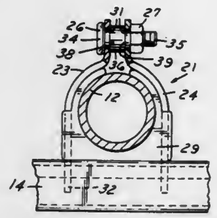
1. Apparatus for releasable attachment at spaced apart distances of each end of a rope to a sail board wishbone boom for use with a "Hawaiian Harness", the apparatus comprising a frame adapted to be locatable alongside the boom, and a pliable member adapted to engage around the boom and inter-engage with the frame member, and rope holding means on the frame arranged to facilitate pulling of the frame by a rope attached thereto along the direction of elongation of the boom, the frame and pliable member being so arranged that such pulling can result in a tightening of the pliable member about the boom and tight gripping thereby of the boom whereas the apparatus can be released for relocation at another location along the boom by urging the frame in a direction contra to the pulling direction of the rope.

4,516,296

TUBING CLAMP AND METHOD OF MAKING THE SAME

Clarence A. Sherman, Birmingham, Mich., assignor to ZSI, Inc., Redford, Mich.

Filed Oct. 5, 1983, Ser. No. 539,219
Int. Cl.³ B65D *63/06*; F16L *3/08*
U.S. Cl. 24—279 **4 Claims**



1. A clamp for securing a cylindrical member comprising a first clamp half and a second clamp half having inner and outer sides for encircling the cylindrical member, the first clamp half and second clamp half having means at their ends for interlocking with a channel member and having apertures of a substantially equal diameter formed at their opposite end for receiving a stud, said stud comprising an elongated member having a longitudinal axis, a head portion at one end abuttingly engaging the outer side of the first clamp half and externally threaded portion at the opposite end for receiving an internally threaded nut abuttingly engaging the outer side of the second clamp half to tighten the first clamp half and second clamp half about the cylindrical member, and an elongated spacer coaxial with the longitudinal axis of said elongated member and integral with said elongated member interposed between said head portion and said externally threaded portion, said spacer having a diameter greater than the diameter of said apertures forming first and second spaced apart parallel shoulders perpendicular to the longitudinal axis of said elongated member, the inner side of the first clamp half being squarely abutted against the first shoulder and inner side if the second clamp half being squarely abutted against the second shoulder when said internally threaded nut is tightened against the outer side of the second clamp half, said first and second shoulders preventing the first clamp and second clamp half from being tightened to the extent that they damage the conduit or bend the side,

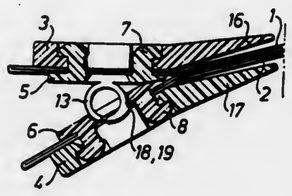
said head portion being pressed against the outer side of said first clamp half tightly restricting the first clamp half between said head portion and said first shoulder, said stud being restrained from turning within the aperture in said first clamp half, wherein said head portion further comprises a serrated section adjacent said first shoulder receivable by said aperture in said first clamp half, said serrated section preventing said stud from turning within said aperture.

4,516,297

CLOTH FASTENER

Klas A. Pettersson, Läggestavägen 16, S-124 31 Bandhagen, Sweden

PCT No. PCT/SE82/00405, § 371 Date Jul. 1, 1983, § 102(e) Date Jul. 1, 1983, PCT Pub. No. WO83/01889, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 26, 1982, Ser. No. 516,605
Claims priority, application Sweden, Nov. 30, 1981, 8107133
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—498 **6 Claims**



1. A fastener assembly for releasably securing a cloth article (1) and another article (2) together, comprising:

(a) a first fastener member including inner and outer elements (5,3; 20,3) adapted to be snapped together through an aperture (9) in the cloth article with the cloth article clamped between them,

(b) a resiliently deformable projection (13; 22) extending outwardly from the inner element and defining a hook portion (18; 24) along one outer side thereof,

(c) a second fastener member (4,6; 4,21) adapted to be mounted to another article,

(d) an aperture (12; 23) defined in the second fastener member, said aperture being configured to retainably accommodate the projection on the inner element of the first fastener member and having an engagement portion (19; 25) along one inner side thereof adapted to lockingly coact with the hook portion of the projection, the projection being deformably insertable through the aperture by bringing the first and second fastener members together along a common abutment line proximate the hook and engagement portions and then pivoting them relative to each other in a first sense to effect a snap fit, and

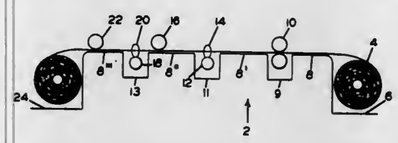
(e) a lever portion (16) extending laterally outwardly from the outer element as a substantially planar projection thereof and integral therewith, the snap fit being releasable by pressing the lever portion towards the second fastener member to pivot the first and second fastener members relative to each other in a second sense opposite the first sense.

4,516,298

CANE SINGEING APPARATUS

John C. Ashley, and Bernard Calhoun, both of Lansing, N.C., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 21, 1983, Ser. No. 564,035
Int. Cl.³ D06C *9/02*
U.S. Cl. 26—3 **1 Claim**



1. In an apparatus for singeing cane material, the structure comprising:

(a) a table structure with an upper work surface, several recessed areas in the upper work surface, and a dispensing compartment at one end of the table with a receiving compartment at the other end of the table,

(b) in one recess of the table adjacent the dispensing compartment, a dual roll drive means is positioned with the lower surface of the upper roll and the upper surface of the lower roll defining a nip and the nip being positioned in the plane of the upper work surface of the table,

(c) adjacent the drive means in another recessed area of the table, a gas manifold is positioned below the surface of the upper work surface of the table,

(d) a second gas manifold in position in another recessed area with a section of the upper work surface positioned between the two recessed areas having the gas manifolds, and

(e) two hold down roll means resting on the upper work surface adjacent the recess with the second manifold means whereby a chair cane seat may be moved from the dispensing compartment by the drive means and slipped along the upper work surface of the table through flames generated by the first and second manifolds to singe protruding cane fiber and remove the protruding cane fiber from the body of the chair cane seat prior to the time the chair cane seat is rolled up in the receiving compartment.

4,516,299

METHOD AND APPARATUS FOR MAKING SINGLE CRANKS FOR BUILT-UP CRANKSHAFTS USED IN LARGE ENGINES

Wayne A. Martin, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 9, 1983, Ser. No. 493,119
Int. Cl.³ B21K *1/08*
U.S. Cl. 29—6 **8 Claims**

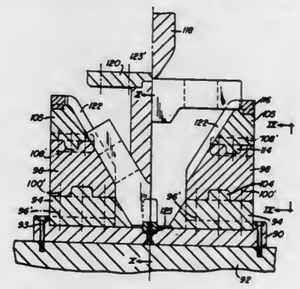
1. A method of making a crank having a pair of spaced generally parallel crank arms and an integral throw pin joining said arms,

said method comprising:

(a) providing an elongated generally flat metal workpiece having longitudinal end portions of about the desired final thickness and shape of said crank arms and a central portion with a saddle-shaped area protruding from a lower broad face, thereof,

(b) heating said workpiece to a temperature suitable for a first-forming operation,

(c) placing the heated workpiece in a first-forming die so that lower edges of longitudinal ends of the workpiece rest substantially at the point of tangency in a horizontal direction of downwardly curved configurations at the upper ends of opposed sidewalls forming a V-shaped cavity in said die, and forming the heated workpiece by lowering a first top punch into an upper broad face of the central portion of the workpiece, bending the workpiece into the shape of the cavity in said die, said opposed sidewalls being tilted upwardly from horizontal at an angle within the range of about 35° to about 65°, the lower end of said top punch having opposed lower surfaces substantially parallel to said opposed sidewalls of the die, the base of said cavity in the die having a shape substantially the same as the saddle-shaped area of the workpiece,



(d) reheating the V-shaped workpiece to a temperature suitable for a second-forming operation, and

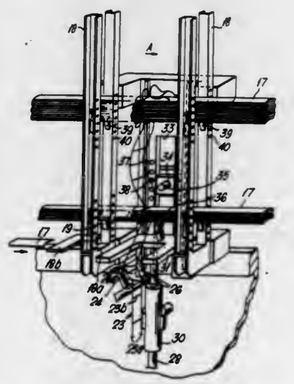
(e) forming the reheated workpiece to a generally parallel arm configuration by lowering a second-top punch into the upper broad face of the central workpiece portion forcing the workpiece into a second-forming die having a cavity extending downwardly therein, the upper portion of said cavity having opposed surfaces sloped downwardly and inwardly at substantially the same angle as the arms of the V-shaped workpiece, the lower portion of said cavity having generally parallel sidewalls joining the spaced inner ends of the sloped upper die surfaces.

4,516,300

APPARATUS AND A METHOD FOR ASSEMBLING SLATS OF A VENETIAN BLIND

Adrianus J. C. Gaillard, Zwijndrecht, Netherlands, and Richard N. Anderson, Owensboro, Ky., assignors to Hunter Douglas International N.V., Curacao, Netherlands Antilles

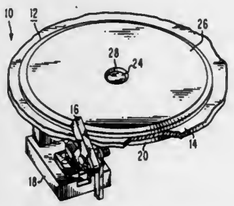
Filed Aug. 1, 1983, Ser. No. 518,911
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—24.5 **11 Claims**



1. An assembly apparatus for assembling slats of a venetian blind in the ladder means of the blind, said apparatus comprising, in combination:

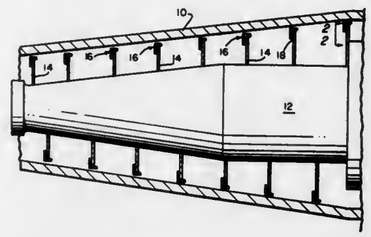
(a) a first guide for guiding slat material in a slat feed direction;
(b) slat feeding means for moving slats through said apparatus;
(c) at least two assembly stations, each assembly station including:
(i) a second guide for guiding a slat or a slat material assembled in said ladder means in a direction transverse to said feed direction;
(ii) a lifting element for moving each slat, after assembly into said ladder means in said transverse direction along said second guide, to a first position and by a distance effective to align the next rung of the ladder means with the first guide;
(iii) first retaining means to retain slats so lifted in said first position;
(iv) drive means to move said lifting element;
(v) control means to control the drive means effective to cause them to move said lifting element only by said distance, to move a slat to said first position;
(vi) intermittently operable means to over-ride said control means, effective to enable said drive means to lift a stack of slats held by said first retaining means to a second position located beyond said first position and by a distance whereby several rungs of the ladder means move past the level of said first guide and effective to disable said slat feeding means during the time said drive means moves said lifting element between said first and second positions; and
(vii) second retaining means at said second position to retain a stack of slats so lifted to said second position.

4,516,301
METHOD AND APPARATUS FOR REMOVING FLASH FROM A MOLDED RECORDED DISC
Harry H. Westerman, Jr., Danville, and John J. Prusak, Indianapolis, both of Ind., assignors to RCA Corporation, Princeton, N.J.
Filed Nov. 8, 1982, Ser. No. 439,928
Int. Cl.³ B23B *5/00*
U.S. Cl. 29—27 C **15 Claims**



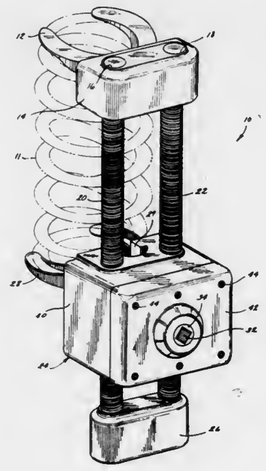
5. An apparatus for removing flash from a molded disc comprising:
means for supporting the disc for rotation about the center of the disc,
a knife mounted adjacent the means for supporting the disc,
means for moving said knife across a portion of the flash of a disc so as to cut through said portion of the disc, and
means for moving the knife inwardly along a line having a component radially inwardly of the disc.

4,516,302
FIELD REPLACEABLE SCREW CONVEYOR INSERTS
Edmund C. Chulada, Londonderry, and David A. Nelson, Wilton, both of N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Division of Ser. No. 289,042, Jul. 31, 1981, Pat. No. 4,419,090.
This application Aug. 15, 1983, Ser. No. 523,164
Int. Cl.³ B21K *3/04;* **B23P** *15/02, 15/04*
U.S. Cl. 29—156.8 R **1 Claim**



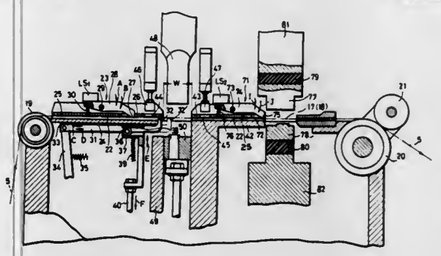
1. A method of forming replaceable inserts for placement on the outer edges of conveyor helical flights comprising: making a metal ring-shaped annular member of the same material as the conveyor flights, depositing wear-resistant, hard-facing material on one radial surface of said annular member in a manner to simultaneously form and fuse the wear-resistant, hard-facing material to the annular member; machining the metal part of the annular member to the proper dimensions; radially cutting the machined annular member into a plurality of segmental inserts; and mounting the segmental inserts on the periphery of the feed-side conveyor helical flights with the radially cut sides of the segmental inserts adjacent each other.

4,516,303
SPRING COMPRESSOR
Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537
Filed Mar. 16, 1983, Ser. No. 475,906
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—227 **5 Claims**



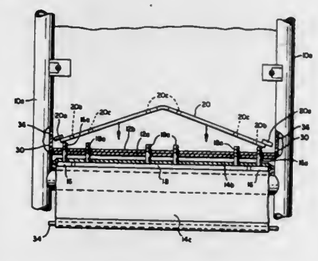
1. An apparatus for compressing a helical coil spring comprising:
a pair of spaced apart spring engaging shoes for receiving spaced apart helical portions of the spring;
a pair of spaced apart elongate externally threaded guide shafts each having a longitudinal axis;
means for mounting said guide shafts in spaced apart, generally parallel relationship and for preventing rotative movement of said guide shafts;
means for securely mounting one of said spring engaging shoes relative to said guide shafts; and
means for supporting the other one of said spring engaging shoes in facing relationship with said one shoe, said support means including a housing mounted for axial movement along said guide shafts and a separate internally threaded sleeve threadedly mounted about each of said guide shafts, means for resisting axial movement of each of said sleeves along said guide shafts relative to said housing, and rotatable input means for simultaneously rotating said sleeves relative to said housing about the longitudinal axes of said guide shafts whereby rotation of said input means in one direction causes said support means to move along said guide shafts in one direction and rotation of said input means in an opposite direction causes said support means to move along said guide shafts in an opposite direction.

4,516,304
METHOD AND APPARATUS FOR APPLYING REINFORCING PIECES TO SLIDE FASTENER CHAIN
Hiroshi Yoshida; Shunji Akashi, both of Kurobe, and Kazuki Kuse, Toyama, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Apr. 27, 1983, Ser. No. 489,124
Claims priority, application Japan, Apr. 28, 1982, 57-71761
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—408 **5 Claims**



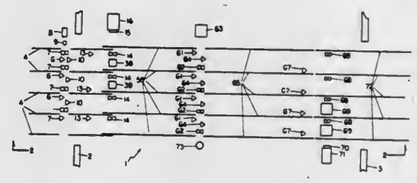
1. A method of applying reinforcing film pieces of thermoplastic synthetic resin to a slide fastener chain having a pair of continuous thermoplastic stringers with interengaged coupling elements mounted on thermoplastic core threads thereof for production of slide fasteners having a separable bottom end stop, the fastener chain having successive spaced between the successive spaced pairs of coupling element groups, said method comprising the steps of:
(a) moving the fastener chain longitudinally along a first path;
(b) automatically temporarily stopping the movement of the fastener chain every time each of the successive spaced pairs of blank tape portions arrives at a first working station;
(c) feeding a continuous strip of the thermoplastic synthetic resin longitudinally, in uniform steps equal to the length of one reinforcing film piece, to the first working station along a second path extending perpendicularly to the first path;
(d) automatically severing a reinforcing film piece from the continuous strip each time when the latter has been fed said length;
(e) automatically placing the severed a reinforcing film piece on the fastener chain across one of the successive spaced pairs of blank tape portions at the first working station;
(f) applying pressure and ultrasonically-generated heat only to the inner marginal edges of said one pair of blank tape portions and to the abutting portion of the reinforcing film piece thereon to partially fuse the reinforcing film piece to said one pair of blank tape portions and to shape the fused marginal portions along the core cords as a pair of pin-like members subsequently receptive of a pin and a box of the separable bottom end stop;
(g) restarting the movement of the chain and piece of film in the first path and again automatically temporarily stopping the movement at a second working station; and
(h) applying reduced pressure and heat to said one pair of blank tape portions and said reinforcing film piece thereon at their superposed non-fused areas to fuse the same.

4,516,305
WEBBING TENSIONING METHOD
Goetz W. Unger, East Greenville, Pa., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 330,948, Dec. 15, 1981, Pat. No. 4,431,229.
This application Sep. 6, 1983, Ser. No. 529,341
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—448 **2 Claims**



1. A method of stretching and securing upholstery fabric in place in a rigid framework of a chair or the like comprising positioning a pair o bars in pockets along opposite edges of the fabric, articulatedly securing the bars at corresponding ends thereof to spaced portions of said rigid framework, forcing apart the other ends of the bars by straightening a bent rigid elongated support between said other ends to stretch the fabric, and securing said other ends of said bars and said straightened rigid elongated support in said forced-apart condition to said spaced portions of said fixed framework to maintain said fabric in stretched condition.

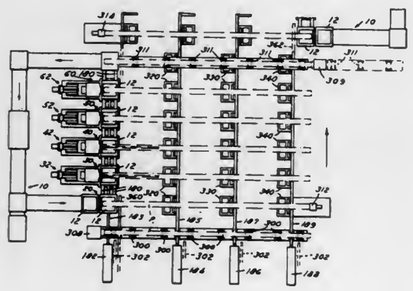
4,516,306
SEMI-AUTOMATIC PIPE THREADING PLANT AND APPARATUS THEREFOR
Robert J. Albert, Harvey, La., assignor to Tubular Threading Incorporated, Marrero, La.
Filed Oct. 13, 1982, Ser. No. 433,967
Int. Cl.³ B23P *41/04*
U.S. Cl. 29—564.7 **6 Claims**



1. A semi-automated plant for threading pipe, said plant comprising a building, first conveyor means for receiving outside of said building pipe to be threaded, aligning said pipe and conveying said pipe to inside said building, with said pipe entering said building at a side thereof, with the axial length of the pipe generally parallel to that building side and at least one end of said pipe aligned with respect to a point on that building

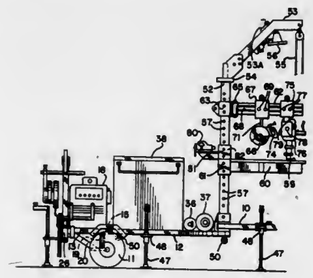
side, a first threading means for threading the exterior of a first end of said pipe at a location higher than the height of the first conveyor means at said building side, first pneumatic lift means for lifting said pipe from said first conveyor to the general level of said first threading means, first hydraulic lift means cooperating with said first pneumatic lift means for fine adjustment of the height to which said pipe is lifted so that said pipe is at the proper height for said first threading means, first three roll clamp means for clamping said pipe in position to be threaded by the use of three rollers, while permitting said pipe to rotate in said first threading means, bucking means for applying a coupling to the threaded first end of said pipe, second conveyor means for conveying said pipe from said first threading means to the vicinity of said bucking means, second lift means for lifting said pipe from said second conveyor means to the proper height for said coupling to be applied, second threading means for threading the exterior of the second end of said pipe, third conveyor means for conveying said pipe from said bucking means to the vicinity of said second threading means, said second threading means at a location higher than the height of said third conveyor means, second pneumatic lift means for lifting said pipe from said third conveyor means to the general level of said second threading means, second hydraulic lift means cooperating with said second pneumatic lift means for fine adjustment of the height to which said pipe is lifted so that said pipe is at the proper height for said second threading means, second three roll clamp means for clamping said pipe in position to be threaded by the use of three rollers, while permitting said pipe to rotate in said second threading means, and fourth conveyor means for conveying said pipe with each end threaded and at least one coupling thereon away from said second threading means and out of said building, with the pipe being maintained while in said plant generally parallel to said side of said building.

4,516,307
PIPE AND BAR STOCK TRANSFER AND MACHINING SYSTEM AND APPARATUS
Frederick H. Beard, Farmington Hills; Maynard M. Moyer, Rochester, and Clarence Smith, Jr., Oak Park, all of Mich., assignors to Snyder Corporation, Detroit, Mich.
Filed Mar. 15, 1982, Ser. No. 358,465
Int. Cl.³ B23B *41/00*
U.S. Cl. 29—564 **11 Claims**



1. A machining and handling apparatus for the finishing of work elements in the form of long cylindrical or rectangular bars or tubes which comprises:
(a) a plurality of pallet registry stations positioned along a primary lineal path adjacent a plurality of machining consoles,
(b) pallet means movable along said path in step-by-step progression to said registry stations,
(c) means on each said pallets to locate and clamp the one end of a work element disposed normal to said path,
(d) a plurality of parallel transfer bars spaced laterally from said path,
(e) retractable first means adjacent said bars in substantial alignment with said registry stations in a direction normal to said path selectively operable to support the remaining portion of said work element in an idle position in a predetermined plane for a machining operation, and
(f) second means in a transfer position to support said work element in said plane independent of said first means for transfer movement in the direction of said path from one station to another in said predetermined plane.

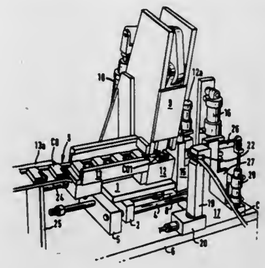
4,516,308
PORTABLE WORKSHOP
John A. Urban, 423 S. Woodlawn, Wheaton, Ill. 60187
Filed Apr. 18, 1983, Ser. No. 486,215
Int. Cl.³ B23Q *39/06*
U.S. Cl. 29—564 **8 Claims**



1. A portable workshop for facilitating precision machine work at various job sites including a mobile trailer frame supported for easy transport to a job site including a first section, a second section, and means to removably connect said first and second sections; first wheel means connected to said first section for portable support thereof; second wheel means connected to said second section for portable support thereof; a vertically-extending support column connected to and supported by said first section of said trailer frame; a first platform associated with said first section of said trailer frame adapted to support a tool container thereon; a second platform associated with said second section of said trailer frame adapted to support welding equipment or the like, said section being easily detachable from said first section for removal therefrom at a job site; a mounting arm; means to connect said mounting arm to said vertical support at any of a number of predetermined heights; means to adjust said mounting arm from one height to another, said arm adapted to function as a mounting support for any of a number of power tools adapted to be adjustably positioned along and supported by said arm; and hitching means attached to said trailer frame to provide for connecting of said trailer frame to a towing vehicle.

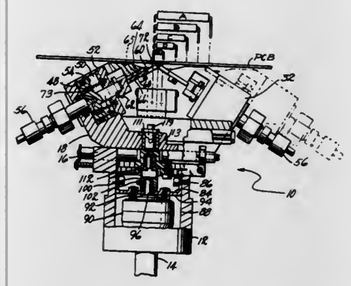
4,516,309
APPARATUS FOR ASSEMBLING AN ELECTRICAL CONNECTOR TO A CABLE
Donald G. Clark, Bideford, England, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 13, 1984, Ser. No. 599,854
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—564.4 **5 Claims**

1. Apparatus for assembling an electrical connector to an end portion of a multiconductor electrical cable having a cable jacket, the apparatus comprising a table, a cable gripper mechanism beside the table, a cable jacket stripper mechanism on the table, a press on the table beside said stripper mechanism, for assembling a connector to the end portion of the cable, a connector feed mechanism on the press, for intermittently feeding a strip of electrical connectors thereto to position a leading connector of the strip in the press, means for releasably holding the leading connector in the press, means for translating the table in two opposite directions along first and second mutually perpendicular paths with respect to the cable gripper mechanism, drive means for said gripper, said stripper and said feed, mechanisms and said holding and said translating means,



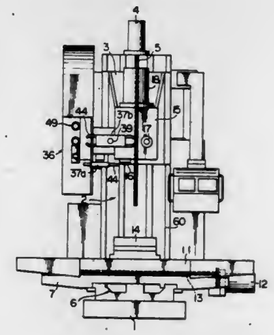
and control means for so cycling said drive means that the end portion of a cable held by the cable gripper mechanism is presented to the stripper mechanism whereby such mechanism strips the jacket from said end portion; said leading connector is held in the press by the connector holding means; said leading connector is moved onto said stripped end portion; and the press is actuated to assemble said leading connector to said stripped end portion.

4,516,310
CUT-CLINCH MECHANISM FOR VARIABLY SPACED COMPONENT LEADS
Vitaly Bandura, Danvers, Mass., assignor to USM Corporation, Farmington, Conn.
Filed Feb. 25, 1983, Ser. No. 469,788
Int. Cl.³ B21F *1/00*
U.S. Cl. 29—566.3 **5 Claims**



1. A mechanism for cutting and clinching variable spaced leads of electrical components that have been inserted into a printed circuit board comprising of:
(a) a support housing;
(b) a fixed cut and clinch head mounted on said support housing having means to cut and clinch component leads;
(c) a movable cut and clinch head having means to cut and clinch component leads;
(d) rail means supporting said movable head on said fixed head for lateral movement of said movable head toward and away from said fixed head to accommodate cutting and clinching variable spaced component leads;
(e) a programmable drive mechanism for moving said movable head with respect to said fixed head to incrementally position said movable head a multiplicity of spacings from said fixed head;
(f) said drive mechanism including a rack carried on said movable head and a pinion engaging with said rack, said pinion being driven by a drive shaft passing through said housing in a direction normal to the lateral movement of said movable head.

4,516,311
MACHINING CENTERS
Shilo Takakuwa; Isao Kobayashi, both of Ueda; Tastuo Takahashi, Komoro, and Shige Imamizu, Ueda, all of Japan, assignors to Kabushiki Kaisha Miyano Tekkosho, Nagano, Japan
Filed Dec. 30, 1982, Ser. No. 454,666
Claims priority, application Japan, Apr. 21, 1982, 57-66889
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **2 Claims**



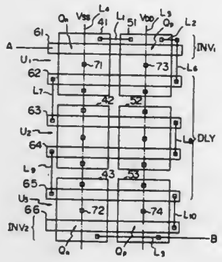
1. In a machine center of the type comprising a horizontal bed, a column disposed perpendicularly to said bed, first, second and third slide rests located to be relatively movable with respect to said bed and column, a spindle head mounted on said first slide rest to be movable vertically relative to said column, vertical and horizontal spindles provided in said spindle head for holding cutting tools, respectively, a tool exchanging mechanism and a drive mechanism attached to said spindle head for operating said spindles, a tool magazine secured to said column, and a table on which a workpiece is mounted, the improvement in which said tool magazine comprises an endless roller chain extended in a vertical plane so as to form a horizontal path and a vertical path, a number of tool pots being provided along the roller chain, said tool exchanging mechanism comprises a pair of tool exchanging arm assemblies provided respectively for said vertical and horizontal spindles so as to exchange tools held by said spindles with those stored in said tool magazine, each of said tool exchanging arm assemblies comprising a first hydraulic driving means for rotating a shaft, a second hydraulic driving means for reciprocating said shaft in its longitudinal direction, a frame member secured to an end of said shaft, a pair of arms slidably supported in an opposing parallel relationship by said frame, each of said arms having tool holding claw members pivotally mounted on an outer end thereof and a rack portion provided along an inward surface opposing the other arm, a pinion engaging with said rack portions of said arms, and a third driving means which rotates said pinion for reciprocating said two arms in opposite directions in said frame so that the tool holding claw members at the ends thereof are reciprocated between a first positional state in which cutting tools held in the spindle and stored in the magazine can be seized by the tool holding claw members, and a second positional state in which the claw members retract from the cutting tools.

4,516,312

METHOD FOR CONSTRUCTING DELAY CIRCUITS IN A MASTER SLICE IC

Masayoshi Tomita, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 10, 1982, Ser. No. 347,464
Claims priority, application Japan, Feb. 12, 1981, 56-19310
Int. Cl.³ H01L *29/78*
U.S. Cl. 29—571 **5 Claims**



1. A method for constructing delay circuits in a master slice IC having a semiconductor substrate and having an insulating film formed on the semiconductor substrate, said method comprising the steps of:

(a) forming a plurality of basic cells arranged in parallel in an array, the basic cells including MIS transistors, each of the MIS transistors having a gate electrode formed through the insulating film on the semiconductor substrate, having a source, and having a drain, the gate electrodes of the MIS transistors formed parallel to each other;

(b) selecting a wiring pattern for connecting the basic cells to form various logic circuits, including forming an input logic circuit having an output and an output logic circuit having an input; and

(c) connecting one or more of the parallel gate electrodes of the MIS transistors in at least one of the basic cells and connecting the sources and drains of the MIS transistors to form a delay circuit between two of the logic circuits, the delay circuit comprising a resistance derived from the gate electrodes and a capacitance formed between the gate electrodes and the semiconductor substrate, comprising the substeps of:

(i) sequentially connecting the output of the input logic circuit to a first end of a first one of the gate electrodes adjacent to the input logic circuit;

(ii) connecting a second end of the first one of the gate electrodes to a first end of a second one of the gate electrodes adjacent to the first one of the gate electrodes; and

(iii) connecting a second end of a last one of the gate electrodes adjacent to the output logic circuit, to the input of the output logic circuit.

4,516,313

UNIFIED CMOS/SNOS SEMICONDUCTOR FABRICATION PROCESS

Raymond A. Turi, Miamisburg, and Robert F. Pfeifer, Centerville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 27, 1983, Ser. No. 499,044
Int. Cl.³ H01L *21/76, 21/90*
U.S. Cl. 29—571 **14 Claims**

1. A unified process for fabricating CMOS and SNOS type devices on a semiconductor substrate, comprising the steps of:

forming wells of first and second impurity type in a common semiconductor substrate;

forming field oxides between the wells;

forming gate oxide layers over the wells;

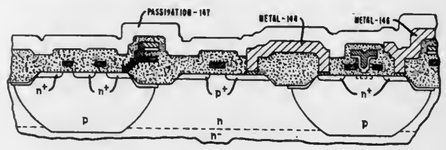
forming a first patterned conductive layer over the field oxides and gate oxide layers as gate and interconnect electrodes;

selectively doping regions in the first and second impurtiy type wells to form interconnect and S/D regions selectively self-aligned with the first patterned conductive layer and of an impurity type opposite that of the respective well;

lightly doping the substrate at the SNOS device with a impurity type opposite that of the SNOS device well;

forming a first isolation oxide layer over the first patterned conductive layer and the selectively doped regions;

selectively removing oxide from over the SNOS device to expose the semiconductor substrate;



forming a memory dielectric over the exposed semiconductor substrate;

selectively removing memory dielectric and oxide from the selectively doped regions in the first and second impurity type wells;

forming a second patterned conductive layer over the semiconductor substrate;

forming a second isolation dielectric layer over the second patterned conductive layer; and

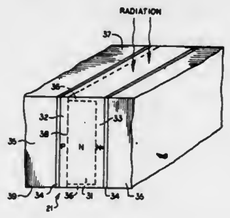
forming conductive contacts to selectively interconnect the doped interconnect regions, the S/D regions, the first patterned conductive layer and the second patterned conductive layer.

4,516,314

METHOD OF MAKING A HIGH INTENSITY SOLAR CELL

Bernard L. Sater, 9007 Westlawn Blvd., Olmsted Falls, Ohio 44138

Continuation of Ser. No. 539,546, Oct. 6, 1983, abandoned, which is a division of Ser. No. 327,567, Dec. 4, 1981, Pat. No. 4,409,422, which is a continuation of Ser. No. 53,923, Jul. 2, 1979, abandoned, and Ser. No. 522,244, Nov. 8, 1974, abandoned. This application Mar. 16, 1984, Ser. No. 590,331
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **11 Claims**



1. A method of manufacturing an array of integrally bonded, series connected matrix of high intensity solar cells, comprising the steps of:

(a) Forming identical PNN+ (or NPP+) junctions to a depth of approximately 0.001 inch into flat wafers of high resistivity N type (or P type) silicon of more than 100 ohm-cm with a thickness of approximately 0.008 inch with the PNN+ junctions lying in the plane of the wafers;

(b) Stacking these PNN+ wafers with approximately 0.001 inch aluminum foil interposed between each wafer and with each wafer's PNN+ junction and crystal orientation orientated in the same direction;

(c) Alloying the silicon wafers and aluminum interfaces under pressure at eutectic temperatures so that the stacked assemblage will be integrally bonded together;

(d) Preparing the end surfaces of later connection of electrical leads by metallization;

(e) Cutting the said assemblage into a plurality of slabs having a thickness of approximately 0.020 inch by cutting it along parallel planes extending perpendicular to the plane of the said wafers, then cutting to trim each slab to the desired length;

(f) Etching the cut surfaces of said slabs to remove damage and metal smeared across the junctions;

(g) Treating the exposed silicon to passivate and prepare an accumulation layer to the surfaces;

(h) Attaching electrical leads to each end of the slab; and

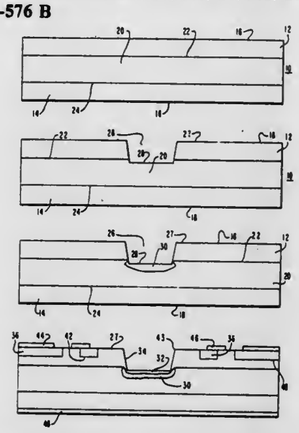
(i) Applying antireflection coatings.

4,516,315

METHOD OF MAKING A SELF-PROTECTED THYRISTOR

John X. Przybysz, Pittsburgh, Pa., and Earl S. Schlegel, deceased, late of Columbia, Md. (by Barbara W. Schlegel, Administratrix), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 9, 1983, Ser. No. 492,772
Int. Cl.³ H01L *21/223, 21/265, 21/302, 29/74*
U.S. Cl. 29—576 B **4 Claims**



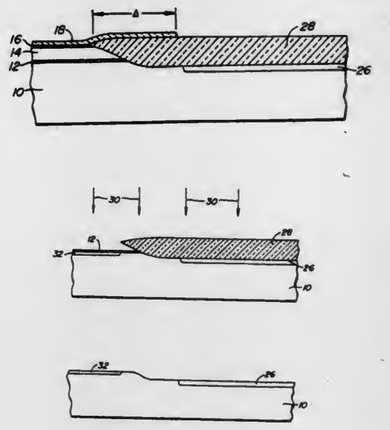
1. A process for making a thyristor, said thyristor being self-protected from overvoltage by the avalanche mechanism, comprising, forming two regions of a second type of conductivity in a body of semiconductor material of a first type of conductivity by diffusing a suitable doping material through a top and a bottom surface of said body, said two regions of second type conductivity being separated by a region of said first type conductivity, forming a well in a central portion of said top surface of said body, said well extending at least entirely through said region of second type conductivity formed by diffusion through said top surface of said body of first type conductivity, said well having a bottom surface, implanting ions, capable of forming a region of first type conductivity, through said bottom surface of said well, whereby a region of said first type of conductivity is formed adjacent to the bottom surface of said well, forming a region of said second type of conductivity between said bottom surface of said well and said region of first type conductivity formed by ion implantation, activating said implanted region, forming at least one region of said first type of conductivity in said region of second type conductivity formed by diffusion through said top surface, said at least one region being spaced apart from said well, said at least one region extending into said region of second type of conductivity to a width less than the width of the region of second type conductivity, affixing metal electrical contacts to said top surface of said body in ohmic electrical contact with said at least one region and said region of second type of conductivity, affixing a second metal electrical contact to the bottom surface of said body in ohmic electrical contact with said region of second type conductivity formed by diffusion through said bottom surface of said body.

4,516,316

METHOD OF MAKING IMPROVED TWIN WELLS FOR CMOS DEVICES BY CONTROLLING SPATIAL SEPARATION

Jacob D. Haskell, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 27, 1984, Ser. No. 593,763
Int. Cl.³ H01L *21/265, 21/22, 17/00*
U.S. Cl. 29—576 W **19 Claims**



1. A method for forming complementary wells of first and second conductivity types in a substrate comprising the steps of:

applying a polysilicon layer to the substrate;

doping the polysilicon layer;

applying an oxidation barrier layer over the doped polysilicon layer;

removing a portion of the doped polysilicon and the oxidation barrier layers to expose a well region of the first conductivity type in the substrate;

implanting a well of the first conductivity type in the exposed well region;

steam oxidizing the surface of the well of the first conductivity type and the polysilicon layer proximate the well of the first conductivity type beneath the oxidation barrier layer until the desired lateral oxide penetration into the polysilicon layer beneath the oxidation barrier layer has been reached to form an oxide masking layer covering and extending beyond the borders of the well of the first conductivity type;

removing the remaining oxide barrier layer to expose a well region of the second conductivity type spaced from the well region of the first conductivity type by the extended oxide masking layer;

implanting a well of the second conductivity type in the exposed well region;

removing the oxide masking layer; and

driving the wells to the desired depth, the wells remaining spaced from one another beneath the surface of the substrate to minimize compensation and migration of the well borders.

4,516,317

NONAQUEOUS CELL EMPLOYING AN ANODE HAVING A BORON-CONTAINING SURFACE FILM

John C. Bailey, Columbia Station, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 449,575, Dec. 14, 1982, Pat. No. 4,440,836.
This application Apr. 3, 1984, Ser. No. 596,446
Int. Cl.³ H01M *6/14*
U.S. Cl. 29—623.5 **4 Claims**

1. A method for treating an active metal anode and assembling the anode, along with a cathode and a nonaqueous electrolyte to produce a cell, which comprises

(a) preparing a boron-containing material in a liquid medium;

(b) placing an active metal anode in the boron-containing medium of step (a) for a time period sufficient to form a boron-containing film on at least a portion of the surface of the anode; and

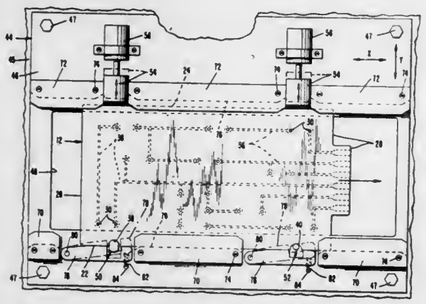
(c) removing the anode from the liquid medium and assembling the anode along with a cathode and a nonaqueous electrolyte in a container thereby producing a cell in which the excessive passivation of the active metal anode is substantially prevented during storage and usage of the cell.

4,516,318

METHODS OF PROCESSING SUBSTRATES

Duane L. Kirschenman, Winston-Salem, N.C., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Apr. 26, 1983, Ser. No. 488,856
Int. Cl.³ H05K *3/10*
U.S. Cl. 29—846 **5 Claims**



1. A method of precisely aligning a substrate in a preselected position in an X-Y coordinate system, wherein the substrate has first and second spaced arcuate locating recesses having the same radius formed in an edge of the substrate which is to extend in an X-direction, which comprises the steps of:

providing a first locating member which has peripherally spaced arcuate portions having a radius which is essentially the same as the radius of the arcuate locating recesses in the edge of the substrate;

providing a second locating member which has a peripheral arcuate portion having a radius which is less than the radius of the arcuate locating recesses in the edge of the substrate;

causing the first locating member to seat in the first arcuate locating recess such that the peripherally spaced arcuate portions of the first locating member engage respective portions of the substrate in the first arcuate locating recess at spaced points on respective opposite sides of a center of the arcuate recess, to locate the substrate in the X-direction, to locate an adjacent first portion of the substrate in a Y-direction which is perpendicular to the X-direction, and such that the substrate can pivot about the first locating member, and

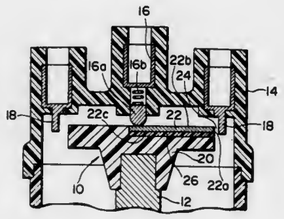
causing the second locating member to seat in the second arcuate locating recess such that the peripheral arcuate portion of the second locating member engages the substrate in the second arcuate locating recess adjacent the center of the second arcuate locating recess with adjacent portions of the second locating member in spaced relationship to opposite sides of the second arcuate locating recess, to locate an adjacent second portion of the substrate in the Y-direction such that the edge of the substrate having the arcuate locating recesses formed therein extends in the X-direction.

4,516,319

METHOD OF MAKING RADIO FREQUENCY INTERFERENCE SUPPRESSING IGNITION DISTRIBUTOR ROTOR

Masazumi Sone, Yokohama; Iwao Imai, Yokosuka, and Hiromitsu Nagae, Katsuta, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Hitachi, Ltd., Tokyo, both of, Japan

Division of Ser. No. 286,647, Jul. 24, 1981, Pat. No. 4,425,485.
This application Oct. 17, 1983, Ser. No. 542,406
Claims priority, application Japan, Jul. 25, 1980, 55-101263; Jul. 25, 1980, 55-101264; Jul. 25, 1980, 55-101265; May 20, 1981, 56-74868; May 20, 1981, 56-74867
Int. Cl.³ H01R *43/02*
U.S. Cl. 29—877 **1 Claim**



1. A method of manufacturing a rotor terminal of an ignition distributor rotor of the type adapted to be rotated about its axis within a distributor cap having a plurality of output terminals circumferentially disposed about the rotor axis of rotation, comprising the steps of:

preparing a plate of stainless steel;

immersing a woven cloth of a glass fiber in a silicone varnish to form a silicone varnish-containing glass cloth constituting a silicone plate;

subjecting said silicone plate and said stainless steel plate to a hot pressing process to attach them together to form a composite plate;

setting said composite plate in a stamping machine with said silicone plate placed on a female die of the stamping machine; and

stamping the composite plate in said stamping machine by causing a male die of the stamping machine to press through an opening of the female die.

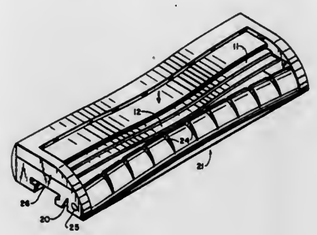
4,516,320

DYNAMIC RAZOR

Anthony J. Peleckis, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 28, 1983, Ser. No. 489,634
Int. Cl.³ B26B *21/06*
U.S. Cl. 30—49 **3 Claims**

1. A razor comprising a flexible blade package having one or more blade edges supported at each end as a fixed beam, a cooperating relatively rigid guard bar, said blade package and guard bar being positioned relative to one another to provide a given blade edge exposure, said blade package being operable in response to shaving forces to deflect relative to the guard to alter blade edge exposure, said guard bar being formed with a rod element effective to increase its resistance to bending.

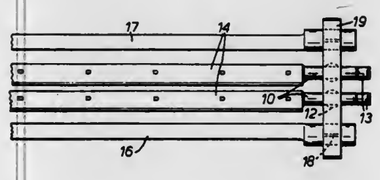


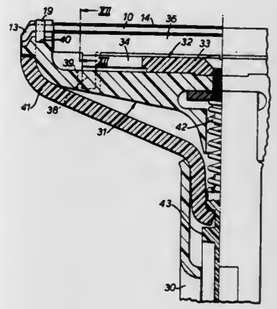
4,516,321

SAFETY RAZORS

John F. Francis, Horsell, England, assignor to The Gillette Company, Boston, Mass.

Filed Nov. 28, 1983, Ser. No. 555,801
Claims priority, application United Kingdom, Dec. 7, 1982, 8234784; Oct. 11, 1983, 8327094
Int. Cl.³ B26B *21/22*
U.S. Cl. 30—50 **10 Claims**





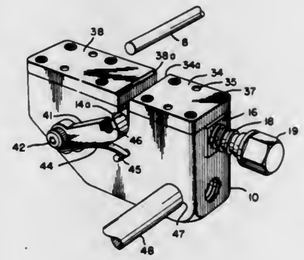
1. A tandem blade unit for use in a safety razor, said tandem blade unit comprising: a pair of wire-supported blades, each said wire supported blade comprising a narrow elongate blade strip sharpened along one longitudinal cutting edge thereof and an elongate wire-like support formed over a length at least equal to the length of said blade strip with a substantially flat surface is directly attached, with the said cutting edge of said strip projecting forwardly of said support and with opposite end portions of said support projecting beyond the respective ends of said blade strips; and a pair of links disposed at opposite ends of said pair of wire-supported blades, each said link being moulded directly onto adjacent said end portions of said supports to form a permanent integrated assembly in which said blade strips are held in spaced parallel relation.

4,516,322

SHEARING APPARATUS

Allen P. Schlein, 107 Curtis Ter., Fairfield, Conn. 06430

Filed Sep. 27, 1982, Ser. No. 423,729
Int. Cl.³ B23D *21/06*
U.S. Cl. 30—92 **11 Claims**



1. A shear for cutting elongated elements such as bone pins and the like, said shear comprising:

an elongated rigid body member having an elongated interior cutting plug channel having first and second ends, sidewalls and a central longitudinal axis, said body member being closed except for an open slot disposed transverse to said longitudinal axis which extends from the exterior of said body member into said cutting plug channel for allowing access to said channel of an element to be sheared and except for a longitudinal slot in a first sidewall which intersects said transverse slot and which extends therefrom toward a first end of said channel in a direction parallel to said longitudinal axis;

pin carrier means slideably mounted in said cutting plug channel for longitudinal movement therealong between first and second positions, said pin carrier means having an open passageway therein which extends thereacross transverse to said longitudinal axis and is aligned with said open slot so as to be adapted to receive therein an element to be sheared when said pin carrier means is in said first position and to carry an element received therein along when said pin carrier means is moved from said first position to said second position;

cutter plug means slideably mounted in said cutting plug channel between its second end and said pin carrier means constructed and arranged to be moved into contact with with said pin carrier means and to coact with the pin carrier passageway so as to substantially encircle that portion of the length of an element supported in said pin carrier passageway which is nearest the sidewall of said cutting plug channel opposite that having said longitudinal slot and to be moved with said pin carrier means along said channel; and

means supported on said body member at the second end of said channel for applying force to said cutter plug means for moving the cutter plug means, the pin carrier means and an element carried thereby toward said first end of said channel from said first position to said second position thereby to shear the element along a shear plane defined by the mating surfaces of said cutter plug means and the sidewall of said cutting channel opposite the sidewall having said longitudinal slot, said cutter plug means and said pin carrier means coacting to restrict bending in said element as it is sheared by movement of said cutter plug means from said first position to said second position.

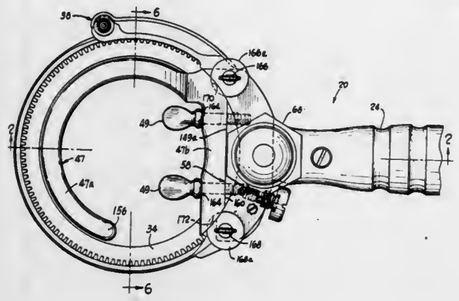
4,516,323
ROTARY HAND KNIFE AND PARTS THEREFOR

Louis A. Bettcher, Amherst, and Richard B. Decker, Vermilion, both of Ohio, assignors to Bettcher Industries, Inc., Birmingham, Ohio

Continuation-in-part of Ser. No. 485,738, Apr. 18, 1983, Pat. No. 4,492,027, which is a continuation-in-part of Ser. No. 318,386, Nov. 5, 1981, Pat. No. 4,439,924. This application Sep. 22, 1983, Ser. No. 534,760

Int. Cl.³ A22C *17/04*

U.S. Cl. 30—276 **14 Claims**



1. In a hand knife of the type having a rotary ring blade for cutting and trimming meat, fat, and the like, comprising a handpiece having a handle portion, an arcuate portion at one end of the handle portion having a concave arcuate face and a recess in the handpiece opening through the arcuate face; a ring-like housing secured to the handpiece adjacent the arcuate portion; a ring blade supported and guided by the housing for rotation about a central axis and having ring gear teeth by which the blade is rotated; a drive pinion in the recess for driving the ring blade; and a pinion cap covering at least a major portion of the pinion and in part seated against said concave arcuate face; the improvement wherein the pinion cap has a first portion directly adjacent the blade and a second portion of greater thickness than the first and located axially farther from the blade, said second portion having an outwardly facing surface with straight-line elements extending in the axial direction of the blade and said first portion being inset therefrom.

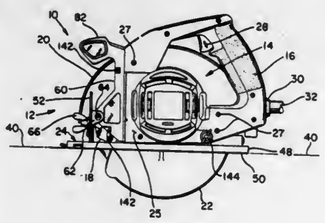
4,516,324
MODULAR HOUSING SYSTEM FOR A CIRCULAR SAW

Ammon N. Heininger, Jr., Redlion, Pa., and Edward A. Barnik, Reisterstown, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Nov. 1, 1982, Ser. No. 438,522

Int. Cl.³ B23D *47/02*; B27B *9/02*

U.S. Cl. 30—377 **6 Claims**



1. A portable circular saw, comprising:
(a) a housing;
(b) a motor mounted in said housing;
(c) a circular saw blade rotatably connected to said motor;
(d) said saw blade extending a predetermined distance from a reference plane to deliver a predetermined depth of cut;
(e) mounting means on said housing for interchangeably mounting either vertical adjust means for adjusting said depth of cut by transverse movement of said housing relative to said reference plane, or pivot adjust means for adjusting said depth of cut by pivotal movement of said housing relative to said reference plane;
(f) said reference plane being defined by a saw shoe;
(g) said mounting means including an interface portion formed on said housing;
(h) said interface portion defining a locating surface, a recess formed in said housing adjacent said locating surface, and a main handle support portion;
(i) a main handle detachably connected to said housing and engaging said main handle support portion;
(j) a cupola formed adjacent said main handle support portion and defining a main handle fastener aperture;
(k) said main handle having a hollow front portion defining a main handle orifice;
(l) said hollow front portion engaging said cupola with said main handle orifice being in registration with said main handle fastener aperture; and
(m) a fastener connecting said handle to said housing via said aperture and said orifice.

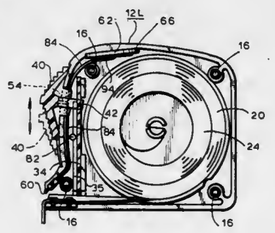
4,516,325
ILLUMINATED DEVICE EMPLOYING PRINTED CIRCUIT BOARD SWITCH

Howard Cohen, Plainview, and Edward Pakus, East Northport, both of N.Y., assignors to Irwin Measuring Tool Inc., Patchogue, N.Y.

Continuation-in-part of Ser. No. 457,489, Jan. 12, 1983, Pat. No. 4,462,160. This application Aug. 12, 1983, Ser. No. 522,824

Int. Cl.³ G01B *3/10*

U.S. Cl. 33—138 **6 Claims**



1. In a retractable tape measure including a casing having an opening, a coiled tape rule within said casing having a face with legible indicia thereon and a free end extending through said opening in said casing, means for retracting the tape rule into the casing, locking means for selectively locking the tape rule in an extended position and releasing the tape rule for retraction into the casing, including an actuator member disposed outside said casing and movable between a unlock position in which said tape rule is released for automatic retraction and a lock position in which said tape rule is locked against retraction, an electric light device disposed in the casing for illuminating the indicia on said tape rule, a power source within said casing providing electric current to said electric light device, and a switch mechanism actuated by said actuator member and connected electrically between said power source and said electric light device, to open and close in response to movement of said actuator member to its unlock and lock positions, respectively, to cause said light to illuminate the indicia on said tape rule when said tape rule is locked in its extended position; the improvement wherein said switch mechanism includes a flexible resilient circuit board having a flexible resilient non-conducting stratum, a conductor on said stratum including a conductive pad biassed against one terminal of said power source, and another conductor on said stratum having a conductive contact pad for making selective electrical contact with another terminal of said power source; means electrically coupling said electric light device to said conductors; and means yieldably biasing said flexible resilient circuit board so that said contact pad of said other conductor is normally maintained out of electrical contact with said other terminal of said power source, but said board is deflected and said contact pad is urged into electrical contact with said other terminal when said actuator member is moved to its lock position.

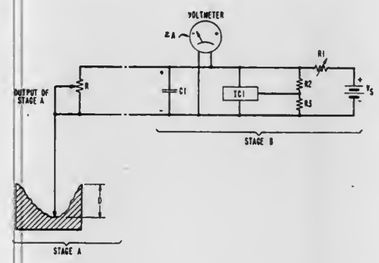
4,516,326
ELECTRONIC DEPTH GAGE

Vincent J. Calcagno, Jr., Havre de Grace, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 12, 1984, Ser. No. 570,276

Int. Cl.³ G01B *7/26, 7/28*

U.S. Cl. 33—169 B **3 Claims**



1. An electromechanical depth gage device comprising a mechanical depth micrometer mechanism with a probe; and an electrical linear resistant circuit which converts depth measurements of said probe to voltage, said circuit comprising a passive stage which responds to movements of said probe including a variable resistor, and an active stage including a Zener circuit; comprising: fixed resistors, a capacitor, a Zener regulator and a voltage source, said linear resistant circuit being operatively connected to a digital readout voltmeter for reading variation in electrical resistance of said variable resistor, as a measure of probed depth position.

4,516,327
TOUCH SIGNAL PROBE

Yoshiro Kanda, Tochigi; Hironori Noguchi, and Tadashi Ikeda, both of Kanagawa, all of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

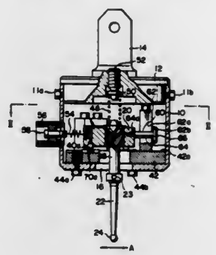
Filed May 4, 1983, Ser. No. 491,573

Claims priority, application Japan, May 11, 1982, 57-79678

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—169 R **3 Claims**

1. A touch signal probe comprising:
a probe case for tiltably and vertically movably holding said probe to be brought into contact with a workpiece to be measured;
a top plate affixed to the top end portion of the probe case and having a shank engageable with or disengageable from a movable bed;
a stationary plate housed in the probe case, for fixing and holding the top end portion of said probe;
a bottom receiving seat affixed to the bottom of the probe case, for holding the stationary plate;
an abutting ball and an engaging ball, which are affixed to the stationary plate and each having a side peripheral edge projecting from the stationary plate in the lateral direction and fixedly secured to the stationary plate;
a side receiving seat affixed to the probe case, for being abutted against the abutting ball to control the movement of the stationary plate in the lateral direction;
an engageable seat affixed to the probe case, having an engageable groove to be abutted thereagainst with said engaging ball at two points for controlling the position of the stationary plate in the lateral direction;
three contact point balls affixed to the stationary plate at substantially equiangular intervals, each having an under



peripheral edge projecting downwardly from the stationary plate and fixedly secured to the stationary plate;
three stationary contact points affixed to the bottom receiving seat in opposed relations to the contact point balls;
a first biasing means for urgingly biasing the stationary plate toward the bottom receiving seat; and
a second biasing means for urgingly biasing the stationary plate toward the side receiving seat and the engageable seat.

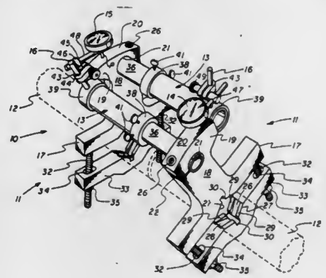
4,516,328
SHAFT ALIGNMENT DEVICE

Charles R. Massey, 3523 Southbrook, LaPorte, Tex. 77571

Filed Jun. 27, 1983, Ser. No. 508,268

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—181 R **10 Claims**



1. A shaft alignment device for aligning a fixed shaft and a movable shaft for coupling comprising;
a pair of substantially similar clamping members adapted to be secured one on each of said shafts,
each of said clamping members comprising a solid body having an arcuate top surface adapted to be engaged by the gauge of the other clamping member when supported on said shafts with said gauges positioned closely adjacent to each other on the same side of said shafts,
a pair of elongated gauge-supporting members supported one in each of said clamping members and extending normal thereto,
one of said gauge-supporting members extending outward from one side of one of said clamping members, and the other gauge-supporting member extending outward from the other side of the other clamping member whereby said gauge-supporting members may be positioned extending toward each other in overlapping relation when said

clamping members are positioned on said shafts for alignment thereof,

a gauge holding rod extending laterally from and carried by the end of each of said gauge-supporting members, and

a pair of dial indicator gauges mounted one on each of said rods, each having a feeler adapted to be positioned to contact the arcuate surface of the opposing clamping member adjacent to said gauge-supporting members whereby readings are taken from the surface thereof in different angular orientations of said apparatus on said shafts to determine the amount of misalignment and make adjustments in said alignment, and

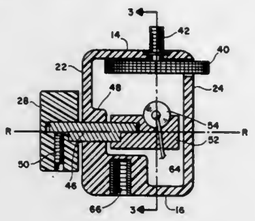
said arcuate surfaces being machined on a radius whereby rotation of said members, when supported on said shafts, defines an indicating circle from the surface of which readings are taken by the dial gauge mounted on the opposing gauge holding rod.

4,516,329

ELECTRONIC LEVEL DEVICE

Warren L. Dilcox, 6130 Via Casitas Ave., Carmichael, Calif. 95608

Filed Sep. 2, 1983, Ser. No. 528,805
Int. Cl.³ G01C *9/06*
U.S. Cl. 33—366 **3 Claims**



1. An electronic level device comprising:

a substantially rectangular, box shaped enclosure having a top wall, a bottom wall, a front wall, a back wall, and two side walls; said top wall being provided with a camera mount and said bottom wall being provided with a tripod mount; said camera mount including a threaded stud extending through an elongated slot provided in said top wall, a thumb wheel attached to said threaded stud, and means for retaining said stud within said slot such that it may slide the length of said slot, said back wall being provided with another slot through which a portion of said thumb wheel protrudes;

a rotary shaft extending through a front wall of said enclosure, said rotary shaft having an axis of rotation substantially parallel to a top and a bottom wall of said enclosure;

a knob attached to an end of said rotary shaft, and wherein said enclosure is provided with indicia on said front wall proximate said knob to indicate degrees of tilt, said knob being capable of rotation of at least 180°;

an elongated mercury switch disposed within said enclosure and attached to said shaft, said mercury switch including a sealed, insulative body enclosing a quantity of mercury and two, separated conductive electrodes which can be shorted by said quantity of mercury to close said switch, said switch being closed when it is substantially parallel to said top and bottom walls of said enclosure; and

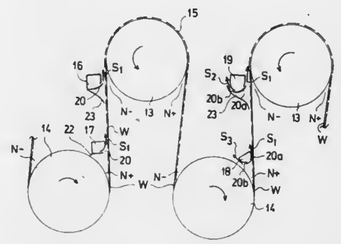
audible alarm means activated by the closure of said switch, said audible alarm means including an audible transducer having a pair of inputs, one of which is coupled to a power supply through on/off switch means, and the other of which is coupled to a grounding transistor which is forward biased when said switch is closed and reverse biased when said switch is open.

4,516,330

METHOD AND APPARATUS FOR THE DRYING SECTION OF A PAPER MACHINE

Pekka Eskelinen, and Matti Nurmio, both of Turku, Finland, assignors to Valmet Oy, Finland

Filed Dec. 8, 1981, Ser. No. 328,793
Claims priority, application Finland, Dec. 12, 1980, 803891
Int. Cl.³ F26B *3/04, 13/08*
U.S. Cl. 34—23 **20 Claims**



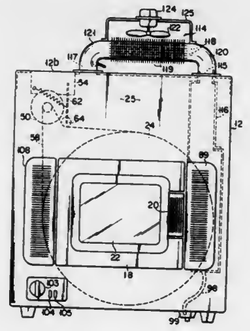
1. A method for preventing separation of a running web from a supporting fabric due to formation of positive pressure in a drying section of a paper machine, at a nip defined by a joint run of the web and fabric and a surface of a cylinder within the drying section, said method comprising the step of blowing air in a direction substantially opposite to the direction of travel of the joint run, and on said fabric to reduce a pressure difference by ejecting air from the positive pressure nip in which the pressure tends to detach the web from the fabric.

4,516,331

DRYING APPARATUS HAVING RECYCLE AIR PATH

Toshiaki Yamauchi, Aichi; Tsuneo Hibi, Gifu; Kiyomi Sasano, Ichinomiya, and Yoshiki Hayashi, Nagoya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 19, 1982, Ser. No. 399,872
Claims priority, application Japan, Sep. 16, 1981, 56-146625
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—77 **18 Claims**



1. A drying apparatus comprising:

an outer box sealed substantially air-tightly;

a drum in which materials to be dried are housed, said drum rotatably arranged in the outer box and spaced from the inner surface of the outer box by a certain distance;

driving means for rotating the drum;

air supply means for supplying heated air into the drum to remove moisture from the materials to be dried;

moisture-removing means for cooling moist air discharged from the drum with air supplied from the outside of the outer box, to remove moisture from the discharged air;

a first path through which the moist air discharged from the drum is introduced to the moisture-removing means, said first path being defined by (a) a ventilator having one end in communication with the drum, and (b) a ventilating duct having one end in communication with the moisture-removing means, said ventilator and ventilating duct communicating with each other at the other ends thereof;

a first lint filter attached to said one end of the ventilator and positioned so as to be capable of contact with the materials in the drum whereby accumulated lint adhered to said first lint filter is effectively removed therefrom by virtue of the materials in the drum coming into contact therewith; and

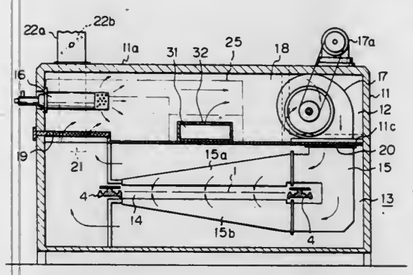
a second path through which air, whose moisture has been removed by the moisture-removing means, is introduced to the air supply, said second path being defined by the inner surface of the outer box and the outer surface of the drum, wherein air discharged from the drum is again supplied into the drum through the first path, moisture-removing means, second path and air supply means.

4,516,332

APPARATUS FOR CLARIFYING AND CIRCULATING HOT AIR FOR HEAT-TREATING TEXTILE FABRICS

Shozo Takaoka, and Akio Hirasako, both of Wakayama, Japan, assignors to Wakayama Iron Works, Ltd., Wakayama, Japan

Filed Sep. 26, 1983, Ser. No. 535,654
Claims priority, application Japan, Jun. 2, 1983, 58-97009
Int. Cl.³ F26B *21/06*
U.S. Cl. 34—79 **4 Claims**



1. An apparatus for clarifying and circulating hot air for heat-treating textile fabrics, which comprises:

(A) a heating chamber which is divided into a plurality of compartments connected to each other which has space for allowing fabrics to pass therethrough, extending through these compartments, and which is provided with nozzle means for blowing hot air to the fabrics, and which is defined by heat-insulating walls;

(B) a hot air-circulation flue which has a hot air circulating inlet port communicated with the fabric-passing space of said heating chamber (A), a hot air circulating outlet port communicated with said hot air nozzle means, and a hot air heater and a circulation fan both arranged within said hot air-circulation flue;

(C) a hot air-exhaust duct which has exhaust air suction inlet ports communicated with said fabric-passing space, and an exhaust fan located within the hot air-exhaust duct; and

(D) at least one hot air-clarifying box which has a hot air inlet port communicated with said hot air exhaust duct (C), a hot air outlet port communicated with said hot air circulation flue (B), and hot air heater and an oxidizing catalyst layer located within the clarifying box in which apparatus:

(a) said heating chamber (A) is partitioned into a fabric treating lower chamber which contains said fabric-passing space and said hot air nozzle means, and a hot air-conditioning upper chamber located above said fabric treating lower chamber;

(b) said hot air-circulation air flue (B) extends through the compartments of said hot air-conditioning upper chamber;

(c) said exhaust air suction ports of said hot air-exhaust duct (C) are opened to the compartments of said fabric treating lower chamber;

(d) at least one hot air clarifying box is disposed in the front half portion of said hot air-conditioning upper chamber; and

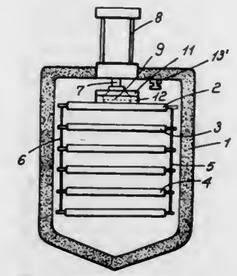
(e) a hot air outlet port of said hot air-clarifying box is communicated with the hot air-circulation flue (B) via a hot air distributing duct formed in said hot air-conditioning upper chamber and hot air distributing ports provided in the hot air distributing duct.

4,516,333

DEVICE FOR CONTROLLING THE POSITION OF PRODUCT CONTAINERS CARRYING PLATES OF A LYOPHILIZATION AND THE LIKE APPARATUS

Gianrico Rossi, Pavia, Italy, assignor to Edwards Alto Vuoto S.p.A., Milan, Italy

Filed May 20, 1983, Ser. No. 496,406
Claims priority, application Italy, May 25, 1982, 21983/82[U]
Int. Cl.³ F26B *25/08*
U.S. Cl. 34—92 **3 Claims**



1. A device for controlling and tilting the Position of product containers carrying plates assembled in a plate rack structure and contained in a chamber of a lyophilization and the like apparatus, including a vertical axis pressure fluid operated cylinder-piston assembly arranged centrally at the top of said chamber, supporting links for said plate rack structure which permit adjustment of the spacing between the plates in said plate rack structure, said supporting links being vertically movable by said pressure fluid operated cylinder-piston assembly to impart vertical movement to said plates and said plate rack structure, said device comprising a swivel joint connecting the top plate of said plate rack structure to the rod of said cylinder-piston assembly so as to allow the plates of said rack structure to be tilted with respect to the horizontal plane, at least one engagement member provided laterally to said swivel joint at the top of the chamber and acting on at least the top plate of said rack structure to interlock all said plates on one side thereof to forcibly tilt them by a relative movement between said cylinder-piston rod and said engagement member.

4,516,334

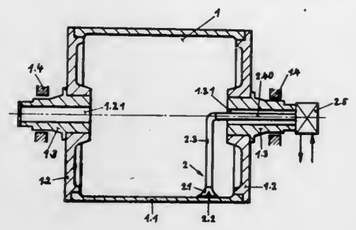
ROTARY DRYER WITH ROTARY LOW-PRESSURE SYPHON

Wilhelm Wanke, Donauschwabenstrasse 47, D-7920 Heidenheim, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,979
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237994
Int. Cl.³ D06F *58/00;* F26B *11/02*
U.S. Cl. 34—124 **6 Claims**

1. In a steam heated dryer drum adapted to rotate in two opposed bearing journals at its axis and provided with means

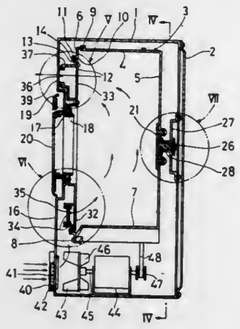
for introducing steam into the interior thereof through one of said bearing journals and further provided with syphon means rotatable with said drum for removing condensate from the interior thereof through either of said bearing journals, said syphon means comprising an outlet pipe extending through said journal bearing communicating with a standpipe provided with a syphon shoe at its end adjacent the interior surface of said drum the chamber of which receives condensate therefrom and directs said condensate from its edge toward its center along a flow path essentially parallel to said drum surface; a baffle within said syphon shoe chamber adapted to change the essentially parallel flow of said condensate so as to direct said flow into said standpipe; and at least one steam jet nozzle in the wall of said syphon shoe for introducing steam into said chamber in a direction toward said baffle at an angle to the surface of said drum of less than 90°.



4,516,335
CLOTHES DRYER

Yoshiaki Aoki; Hazime Suzuki, both of Otsu, and Tatsuya Hirota, Kyoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 30, 1983, Ser. No. 480,486
Claims priority, application Japan, Apr. 9, 1982, 57-60156; Sep. 17, 1982, 57-162712; Sep. 20, 1982, 57-164753
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—133 **13 Claims**

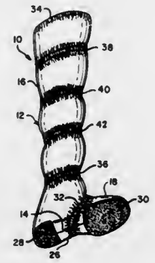


1. A clothes dryer comprising:
a cabinet;
a horizontal type rotary drum having a peripheral wall and front and rear walls which are generally perpendicular to the peripheral wall, one of the front or rear walls having a main opening formed therein;
a stationary drum supporting disc slidably fitted in the main opening and arranged in and supported by said cabinet generally coextensively with said front or rear wall, said drum supporting disc being formed with an air inlet and an air outlet;
heater means for heating air; and
blower means for supplying air heated by the heater means into said drum through said air inlet and for discharging the air in said drum to the outside of said drum through said air outlet, said cabinet being formed with an ambient air intake opening and a discharge opening, said cabinet including a duct interposed between the discharge opening and the air outlet of the drum supporting disc, whereby after the ambient air has been sucked from said intake opening by the action of said blower means to raise the pressure in said cabinet to a higher level than the atmospheric pressure, the air in said cabinet is heated by said heater means so that the heated air is supplied to said horizontal type rotary drum.

4,516,336
PROTECTIVE OVERSHOE

Judith Nissenbaum, 20 Fifth Ave., New York, N.Y. 10001

Filed Sep. 13, 1983, Ser. No. 531,664
Int. Cl.³ A43B *3/16, 3/24*
U.S. Cl. 36—7.1 R **15 Claims**

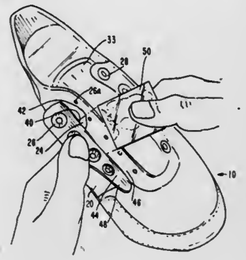


1. A protective overshoe comprising:
a body member formed of a collapsible sheet material, said body member having a leg encasing portion and a foot encasing portion;
said foot encasing portion having an instep portion, a heel portion, a sole portion and an arch portion, said heel and sole portions being separated by said arch portion;
first reinforcement means on said heel portion and second reinforcement means on said sole portion to provide durable walking surfaces, said first and second reinforcement means being relatively non-collapsible compared to said body member and being spaced from one another by said arch portion, said first and second reinforcement means being foldable relative to each other by appropriately collapsing said arch and instep portions; and
a band member engaging and extending around said arch portion and said instep portion, said band member engaging said arch portion at a location spaced forwardly from the front edge of said first reinforcement means on said heel portion and being spaced rearwardly from the rear edge of said second reinforcement means on said sole portion, said band member providing adjustability across said arch and instep portions for various shoe sizes and shapes and for various heel heights;
whereby said overshoe will accommodate a wide variety of shoe sizes and shapes and heel heights, and whereby said overshoe may be collapsed and folded to length and width dimensions only slightly greater than the length and width dimensions of said sole portion.

4,516,337
MEANS FOR DISPLAYING A PICTURE OR THE LIKE IN A SHOE

Jaroslav Adamik, Santa Ana, Calif., assignor to San Shoe Trading Corp., New York, N.Y.

Filed Nov. 4, 1983, Ser. No. 548,877
Int. Cl.³ G09F *03/18;* A43B *23/24*
U.S. Cl. 36—136 **15 Claims**

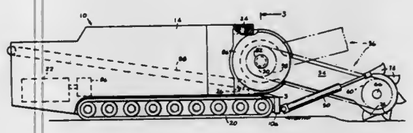


1. Shoe having means for providing a visual display comprising
a saddle portion having a front and a rear,
a window in said saddle portion,
a plastic element adjacent to said window,
a pocket formed along the rear of said plastic element and said window, said pocket including an entranceway accessible from the rear of said saddle portion, and
cooperating reception means carried by said saddle portion at the front and rear thereof and adjacent the entranceway of said pocket for correspondingly receiving securing means for securing the shoe on the wearer and for simultaneously closing said passageway, thereby preventing exposure of said pocket to the elements or dirt and debris.

4,516,338
GIMBAL MOUNTED ON FRAME WITH HEAVY METAL PLATE SIDES

Jonas L. Roe, Santa Cruz, Calif., assignor to Terradyne Limited, Georgetown, Cayman Islands

Division of Ser. No. 313,155, Oct. 20, 1981, Pat. No. 4,438,575, which is a continuation of Ser. No. 93,020, Nov. 9, 1979, abandoned. This application Jan. 16, 1984, Ser. No. 570,846
Int. Cl.³ E02F *5/06*
U.S. Cl. 37—4 **9 Claims**

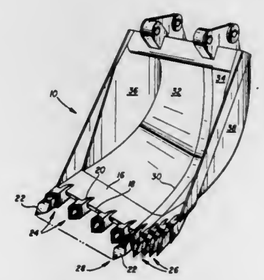


1. Continuous excavating apparatus comprising: a longitudinally elongated, low, narrow frame including a first side-counterweight and a second side-counterweight transversely spaced therefrom, each side-counterweight being formed of a heavy metal elongated plate means of substantially greater length that its width or height; a mobile ground engaging means for said frame; a gimbal mounted on the forward end of said frame for pivotal motion about a vertical axis; a boom mounted on said gimbal for movement about a horizontal axis; said boom including an endless excavating bucket line for digging material at the movable free end of said boom to cause, while digging, a force tending to pivot the frame about a leading end of said ground engaging means; means connecting said boom to said frame at a level substantially the same as the ground engaging means for adjusting the boom and for resisting said force; said frame having an effective center of gravity and sufficient dead weight to provide a greater counter force around said leading end of said ground engaging means than the pivoting force to maintain said bucket line in an excavating position and said heavy metal plate means having a center of gravity and sufficient dead weight to provide a counter force to forces tending to rotate said frame about its longitudinal axis when performing an off center digging operation.

4,516,339
COMBINATION EXCAVATING BUCKET, SHANK AND DIGGING TEETH

Charles W. Hemphill, Duncanville, Tex., assignor to GH Hensley Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 86,018, Oct. 17, 1979, abandoned. This application Jan. 19, 1984, Ser. No. 572,592
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—141 R **3 Claims**



1. In an earth excavating apparatus, a bucket having a generally V-shaped lip formed along a forward end of said bucket for supporting a plurality of digging teeth for digging a ditch in the earth, at least a portion of each of said teeth projecting forwardly of said lip in the direction of digging into the earth, said each of said teeth being identical to the other teeth and being characterized by:
a tooth body formed as a quadrilateral in lateral cross-section having four sidewalls and spaced apart planar parallel faces, both of said faces terminating in opposite directions at opposed tips forming opposite terminal ends of said tooth, and both of said faces forming opposed cutting edges which diverge away from said tips, respectively, in a direction opposite to the direction of cutting so that said tooth can be reversely disposed on said bucket for cutting the earth with one or the other ends of said tooth;
support means on said lip for each of said teeth, said support means including a shank member including a shank body defining a pocket, said pocket being formed by a roof, a floor, and sidewalls for receiving said tooth in close tolerance relationship with respect to the corresponding sidewalls of said tooth body defining said quadrilateral, and said pocket being delimited by a rear wall converging to an apex so that said pocket is formed to receive on one end of a tooth with one of said faces being received in abutting relationship with said rear wall in accordance with which of said ends of said teeth are disposed in said pockets, respectively and with a tip of said tooth being received within said apex of said pocket;
means for retaining each tooth on its associated shank including a groove formed in a sidewall of said tooth and a hole formed in said shank body for receiving a retaining pin for retaining said tooth on said shank in one or the other of reversely disposed positions with an end of said tooth secured in said pocket and one or the other of said faces in abutting relationship with said rear wall so that said teeth can be located in a predetermined position in said pockets by said one or the other of said faces and interchanged between shanks even though the cutting

edges or tip formed by said faces, respectively, become worn or broken; and

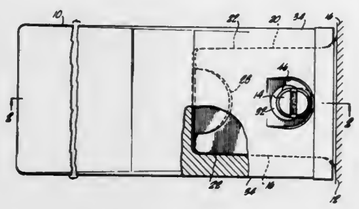
said shanks are disposed on said lip to provide an array of teeth with a central tooth having its cutting face facing upwardly and slanting upwardly toward said bucket when said bucket is oriented to dig a ditch in the earth having a generally horizontal open side, and opposed sets of teeth on opposite sides of said central tooth arranged so as to have their cutting faces aligned to slope upwardly toward said bucket and inwardly toward said central tooth.

4,516,340

ATTACHMENT ASSEMBLY FOR EXCAVATION TEETH

Richard L. Launder, 8107 San Lucas Dr., Whittier, Calif. 90605

Filed Jun. 6, 1983, Ser. No. 501,520
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **1 Claim**



1. An assembly for securing an excavation tooth in a row of teeth on an earth excavation implement comprising: a nose piece adapted to be secured to the excavation implement and defining a base portion, a forwardly extending tapered portion, said tapered portion having parallel lateral side walls and converging upper and lower surfaces, said side walls and said surfaces terminating in a forward end, a channel extending vertically through said tapered portion, a pair of substantially semi-circular recessed areas disposed in said upper and lower surfaces adjacent said forward end, said areas defining a pair of substantially parallel stablizing surfaces and curvilinear wall surfaces, said wall surfaces being perpendicarly disposed with respect to said stablizing surfaces and extending between said stablizing surfaces and said converging upper and lower surfaces and terminating at said forward end, the diameter of said recessed areas being less than the spacing between said lateral side walls; and excavation tooth having a hollow portion adapted to be snugly slidable onto said tapered portion of said nose piece and including a pair of protuberances extending into said hollow portion, said protuberances defining abutment surfaces adapted to abut in a mating relationship with said stablizing surfaces on said nose piece and perimeter wall portions extending about portions of said abutment surfaces and adapted to abut in a mating relationship said wall surfaces on said nose piece and a channel extending vertically through said tooth and communicating with said hollow portion thereof; and pin means adapted to extend through said channels in said nose piece and said excavation tooth for holding said tooth on said nose piece.

4,516,341

PICTURE FRAME ASSEMBLY

Robert D. Jenkins, Indianapolis, Ind., assignor to David G. Reilich and Jeffrey J. Quinn, both of Indianapolis, Ind., part interest to each

Continuation-in-part of Ser. No. 340,257, Jan. 18, 1982, Pat. No. 4,403,434. This application Apr. 28, 1983, Ser. No. 489,239
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 **18 Claims**

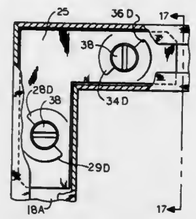
1. A frame assembly comprising:

a plurality of framing members arranged in series, with the ends of each member meeting ends of the next adjacent members in the series at junctions, to form a frame, each of said members having a generally C-shaped cross section comprising spaced facing wall means;

a plurality of connector assemblies, one of said connector assemblies being located at each of said junctions of frame members to connect the adjacent frame members together at the junction,

each connector assembly including first and second bearing pieces, said first bearing piece having at least two apertures therein spaced from each other and located on opposite sides of the junction between the two frame members being connected by the connector assembly at the junction,

said first bearing piece of each connector assembly engaging one of said facing wall means of each of the two frame



members on opposite sides of the junction and adjacent said apertures, and

said second bearing piece engaging another of said facing wall means of each of the said two frame members, and

each connector assembly including at least two bearing pad means, each bearing pad means including a bearing pad portion engaging said second bearing piece of the connector assembly,

each bearing pad means including a locating stem received in one of said apertures of the first bearing piece, the stem having a tool receiver therein;

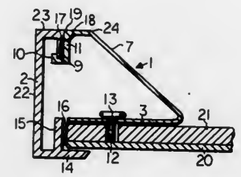
said bearing pieces and bearing pad means having cooperating cam and follower means thereon operable by a tool when received in the tool receiver in the stem of the bearing pad means to tighten and loosen the connector assemblies between the facing wall means at the junctions.

4,516,342

ARRANGEMENT FOR EXCHANGEABLY FRAMING PICTURES

Paul Reim, Rathausgasse 5, D-7100 Heilbronn, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,126
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223416
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—156 **21 Claims**



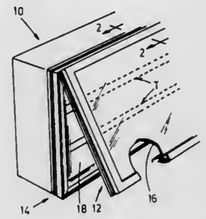
1. An arrangement for exchangeably framing pictures, comprising: a frame having a profiled cross section and a hook-shaped end portion and arranged to hold a cover plate and a rearward plate confining a picture therebetween; and a resilient locking member including one portion arranged to rest against the rearward plate and another portion provided with a hook-shaped end which defines a groove and has a support face, the hook-shaped end portion of the frame being engageable in the groove of the locking member in such a manner that the support face of the hook-shaped end of the locking member abuts against the hook-shaped end portion of the frame, the frame having a profile upper part and an external profile surface the one end of which is integrally connected with the hook-shaped end portion and the other end of which is entegrally connected with the profile upper part extending perpendicularly to the external surface so that the frame is of essentially C-shaped cross section, the hook-shaped end portion having one part extending perpendicularly to the external surface and parallel to the profile upper part and another part extending perpendicularly in inward direction from the one part so as to be parallel to the external surface, said another part being wedge shaped to form a wedge bar which is engageable with the groove.

4,516,343

SIGN STRUCTURE

Johann Stilling, Apt. #A1001, 1141 Royal York Rd., Islington, Ontario, Canada

Filed Jan. 18, 1983, Ser. No. 458,771
Int. Cl.³ G09F *13/04*
U.S. Ci. 40—574 **6 Claims**



1. An intermediate frame construction for use in association with a sign box of the type having a box hinge recess around its perimeter and a front frame for supporting a face panel, said front frame having a front hinge, said intermediate frame comprising;

a generally rectangular frame having two end members, and top and bottom members, joining one another at corners, each of said members having an outer wall;

face panel supporting means connected with said outer wall and extending inwardly, for supporting a face panel therein;

an intermediate hinge connected to said outer wall, and extending in a rearward direction for hinging interengagement with said box hinge recess in said sign box, and,

wall means defining an intermediate hinge recess connected to said outer wall, and extending in a forward direction, and adapted to receive said front hinge carried on said front frame whereby such front frame is hingedly connected to such intermediate frame, and such intermediate frame is in turn hingedly connected to such sign box.

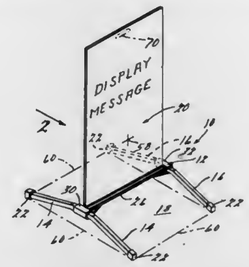
4,516,344

PORTABLE WIND-RESISTANT SIGN STAND WITH FLEXIBLE SIGN

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Dec. 30, 1983, Ser. No. 567,379
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—602 **27 Claims**

1. A lightweight and readily portable sign and stand apparatus, comprising an elongated base assembly, a plurality of ground-engaging legs extending transversely from and secured to said elongated base assembly, a one-piece monolithic sign panel having a lower peripheral portion and protruding in a generally vertical direction from said elongated base assembly and having at least one generally planar display surface thereon, said base assembly including clamping means for clampingly securing and anchoring substantially the entire length of the lower peripheral portion of said sign panel to said elongated base assembly in a generally fixed relationship therewith, said sign panel being sufficiently rigid to be self-supporting in said generally vertically protruding relationship with said base assembly but sufficiently flexible and resilient to bendably deflect without yielding in response to predetermined loads exerted thereon in directions transverse to the plane of said display surface, said sign and stand apparatus having a combined center of gravity located a predetermined vertical distance above the ground, said legs being configured to engage the ground at a predetermined horizontal distance



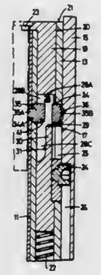
from said base assembly, said combined center of gravity remaining horizontally within the confines of the area defined by the locations at which said legs engage the ground during said bendable deflection of said sign panel in order to substantially prevent said sign and stand apparatus from tipping over in response to said predetermined transverse loads, said sign panel, when deflected, having a continuously curved portion defining an airfoil, said sign panel having the lower peripheral portion disposed a preselected height above the ground to define an open area generally beneath said sign panel, the size of said open area in relation to the size of said sign panel and the shape of said airfoil cooperating to substantially negate aerodynamic lift.

4,516,345

CARTRIDGE EJECTOR DEVICE FOR FIREARMS

Rune Flodman, Nora, Sweden, assignor to Flodman Guns KB, Nora, Sweden

PCT No. PCT/SE81/00285, § 371 Date Jun. 1, 1983, § 102(e) Date Jun. 1, 1983, PCT Pub. No. WO83/01297, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 2, 1981, Ser. No. 503,137
Int. Cl.³ F41C *15/00*
U.S. Cl. 42—46 **6 Claims**



1. In a firearm having a barrel secured to a breech and a receiver interconnected by a hinge for enabling relative pivotal movement to open the action thereof, and means for ejecting a

cartridge in response to such opening pivotal movement, said means comprising:

(a) a cartridge ejector slideably mounted in said breech for movement paralllel to said barrel between a fully advanced position and a retracted position, and biased by a spring toward said retracted position, said ejector having a shoulder extending transversely to the direction of ejector movement; and

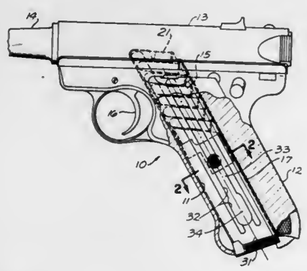
(b) A combined latch and sensing member slideably mounted in a bore in said breach for movement transverse to that of said ejector between a non-latching inner position and a latching outer position, said member having a portion for latching said ejector adjacent to its said fully advanced position, said member being responsive to said opening pivotal movement to unlatch said ejector, said member having a sensing plunger extending through an opening in the wall of said barrel an actuatable in response to mechanical force exerted by the expanding shell of a fired cartridge for movement of said member to said ejector-latching outer position, and said member having an ejector-arresting abutment which, in said outer position, is in the path of said shoulder during initial movement of said ejector from said fully advanced position.

4,516,346

MAGAZINE FOR GUNS

Frank W. Farrar, Los Alamitos, and Carl J. Cupp, Hawaiian Gardens, both of Calif., assignors to Pachmayer Gun Works, Inc., Los Angeles, Calif.

Filed Feb. 1, 1983, Ser. No. 462,920
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 **16 Claims**



1. A magazine comprising:

a magazine body to be inserted into a gun and adapted to contain a series of rounds of ammunition;

a follower movable upwardly and downwardly within said magazine body beneath said rounds to urge them upwardly;

a spring yieldingly urging said follower upwardly; and

a holding structure mounted to said follower for movement upwardly and downwardly therewith and for rotary movement relative to the follower about an axis between an active position in which said structure retains the follower against movement upwardly from a lower setting thereof and a released position permitting such upward movement;

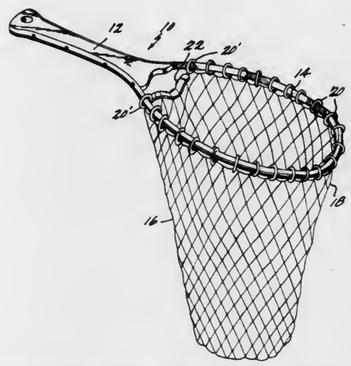
said holding structure being also mounted for movement axially along said axis relative to said follower and operable by said axial movement to releasably latch the follower against upward movement.

4,516,347

FISHING NET

Harold G. Dickie, Stewiacke, Canada, assignor to Dickie Investments Incorporated, Colchester, Canada

Filed Dec. 9, 1983, Ser. No. 559,694
Claims priority, application Canada, Sep. 15, 1983, 436801
Int. Cl.³ A01K *77/00*
U.S. Cl. 43—11 **10 Claims**



1. A net structure comprising a handle, a rigid hoop secured to said handle, a flexible bag having an openable top portion defining the mouth of the bag, a plurality of connector means secured at spaced intervals to said top portion of the bag, said connector means also being freely slidably attached to said rigid hoop to pendantly secure said bag to said hoop, said connector means being movable from a first relative positional arrangement wherein said connector means are spaced apart about said hoop to define the open mouth position of the bag to a second relative positional arrangement wherein said connector means are grouped together on said hoop to define the closed mouth position of the bag, and an elastic member connected between selected ones of said connector means such that as said connector means are made to slide along said hoop between said first and second relative positional arrangements, the distance between said selected ones of said connector means varies such that said elastic member is first made to increase in length and then allowed to decrease in length and at least partially relax whereby to assist in resiliently retaining said bag in both the open mouth and closed mouth positions thereof.

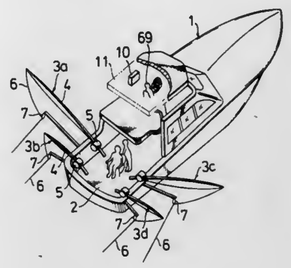
4,516,348

TRAWLING LINE INFORMATION COMMUNICATION SYSTEM

Haruomi Hirose, Tokyo, and Akio Yamazaki, Saitama, both of Japan, assignors to Daiwa Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1983, Ser. No. 522,855
Claims priority, application Japan, Aug. 18, 1982, 57-143098
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **1 Claim**

1. A trawling line information communication system comprising a fishing device mounted on the deck of a trawling vessel, a sensor for detecting the delivery winding speed of the line of said fishing device, a sensor for detecting tension applied to said line, a transmitter for transmitting line information detected by each of said sensors, a receiver mounted on the operator side of the trawling vessel for receiving and demodulating a transmitted signal from said transmitter, an indication part controlled by a demodulated signal from said receiver for indicating the length of the delivery and winding of said fishing line, a means for informing a vessel operator of the delivery and winding speed of the fishing line, a line tension indicating part controlled by the demodulated signal from said receiver for bar-indicating the tension of the fishing line, and a timer means starting to operate when a fish is caught by said fishing device.

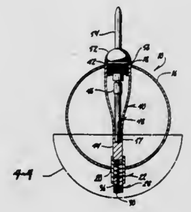


4,516,349

FISHING BOBBER

Howard W. Klocksiem, Box 18, Paton, Iowa

Filed May 16, 1983, Ser. No. 494,800
Int. Cl.³ A01K *93/00*
U.S. Cl. 43—17.5 **8 Claims**



1. A fishing bobber, comprising:

a spherically shaped hollow float member having a center axis and upper and lower apertures at the respective ends of said axis,

a first tube element rigidly secured to said float member in said lower aperture and having an upper end within said float member and a lower end extending outside said float member,

said first tube element having a longitudinal axis co-extensive with the center axis of said float member,

a second tube element having an upper end rigidly secured to the float member at its upper aperture, and a lower end supported by said first tube element so that said second tube element is positioned primarily within said float member,

said second tube element having a longitudinal axis co-extensive with the center axis of said float member,

a cap element detachably secured to the upper end of said second tube element and dwelling outside and above said float member,

a light element in said cap element,

a battery means in said second tube element and adapted to be in operative contact with said light element to cause said light element to be illuminated at times,

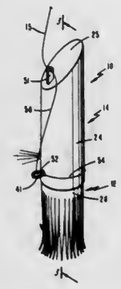
and a fish line connection means on the lower end of said first tube element, said fish line connection means comprising a hook having a generally J-shaped end protruding downwardly from said lower tube, a line retainer within said lower tube and vertically movable relative to said hook and spring means operative to urge said retainer downwardly toward said J-shaped end portion to grip a fish line extending therethrough.

4,516,350

FISHING LURE

Manley L. Malphrus, 2130 Brooks Dr., #809, Forestville, Md. 20747

Filed Jul. 18, 1983, Ser. No. 514,794
Int. Cl.³ A01K *85/01*
U.S. Cl. 43—17.6 **12 Claims**



1. A fishing lure, comprising:

(a) a pair of first and second tubes, each having a generally cylindrical side wall enclosed at one end by an end wall and open at an opposite end, said cylindrical side walls having diameters enabling the second tube to be coaxially inserted into the first tube said end wall first with overlapping portions of the side walls in sealing, slip fitting contact with each other to define a watertight compartment in a forward interior portion of the first tube between said end walls, said tubes when connected together forming a lure body; and

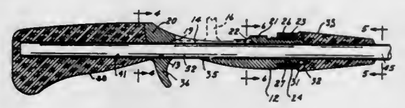
(b) means for enabling a hook to be affixed to at least one of said first and second tubes.

4,516,351

CASTING ROD AND HANDLE ASSEMBLY

Dennis N. Highby, Sidney, Nebr., assignor to Cabela's Inc., Sidney, Nebr.

Filed Dec. 6, 1982, Ser. No. 446,966
Int. Cl.³ A01K *87/00, 87/06*
U.S. Cl. 43—23 **2 Claims**



1. A pistol grip type casting rod handle assembly in combination with a casting-type rod blank having reduced weight, improved sensitivity and improved balance comprising:

a handle body having a throughbore defined by interior surfaces extending through substantially a full circle and a unitary rod blank of the casting type extending through said throughbore in direct contact with and connected to said interior surfaces to reinforce and strengthen said handle body and improve sensitivity, said rod blank being continuous and unbroken in its extension through the handle body extending beyond the rear end of said handle body,

said handle body having a recessed surface along a line disposed inwardly of the periphery of said rod blank defining a reel seat on which a reel base is supported to bring the reel base in close proximity to the axis of the rod blank for providing improved reel balance on the rod,

said reel seat having a top opening provided by having said throughbore extend into said reel seat and a first exposed rod blank portion in said top opening that projects above said reel seat for contacting the base of the reel whereby

to receive rod blank vibrations that are transmitted through said rod blank to a reel carried by said reel seat and into the hand of the user,

said handle body having a bottom opening and a second exposed rod blank portion in said bottom opening projecting out of said bottom opening whereby to receive rod blank vibrations that are transmitted through said rod blank directly to the finger of the user,

said body having a forward end portion with a forward bore section arranged concentric with the center of said forward end portion,

said body having a rear end portion upwardly offset from said front end portion with a rear bore section offset below the center of said rear end portion,

said rear bore section defined by interior surfaces in contact with and connected to said rod blank with said rear end portion fully surrounding said rod blank at said rear end,

said body having a trigger portion,

said recessed surface, forward end portion, rear end portion, and trigger portion being formed as a one-piece member, said member being secured to said rod blank for transmitting rod blank vibrations to said reel seat; and

an offset hand grip extending rearwardly of said handle body and extending downwardly at an angle to said rod blank, said grip having a grip bore alined with said throughbore and extending from a front end of said grip to the rear of said grip, said grip fully covering said rod blank, said rod blank being secured to said grip to provide an offset pistol grip type assembly for proper grip angle and casting comfort.

4,516,352

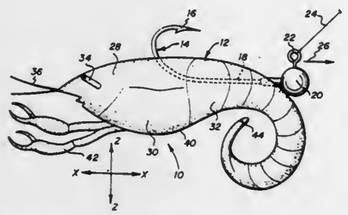
ARTIFICIAL CRAWFISH LURE WITH DORSAL AND VENTRAL SEAM

Herman P. Firmin, Baton Rouge, La., assignor to Knight Manufacturing Company, Inc., Tyler, Tex.

Continuation-in-part of Ser. No. 400,296, Jul. 21, 1982,. This application May 2, 1983, Ser. No. 490,499

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.26 **1 Claim**



1. An artificial lure comprising:

an elongated body of elastomeric material having integral head, midbody and cantilevered tail portions said midbody portion extending rearwardly of said head portion and said cantilevered tail portion extending in a spiral manner downwardly, then inwardly and then rearwardly of said midbody portion and continuously tapered therefrom to form an increasingly tapered arch of approximately 360° from a longitudinal plane of said midbody portion;

a ventral fabrication seam formed on the ventral side of said head, midbody and tail portions;

a dorsal seam formed on the dorsal side of said head, midbody and tail portions;

said tail portion having a substantially circular cross-section terminating in a relatively flat fin disposed substantially perpendicular to said midbody portion with the extreme tip of said fin extending in the rearward direction such that said fin oscillates in response to water flowing around said tail portion as said lure is drawn backwards through the water;

a pair of paws extending downwardly of said midbody portion and outwardly toward said head portion an aligned in the same plane as said dorsal and ventral fabricating seams;

a hook means having a shank and barb formed at one end of said shank, said shank extending through said midbody and tail portions such that said barb extends above said midbody portion and said shank extends substantially parallel with said midbody portion; and

a weight member secured to said shank at the other end thereof.

4,516,353

METHOD OF PRODUCING VOLE-RESISTANT APPLE TREES AND TREES PRODUCED THEREBY

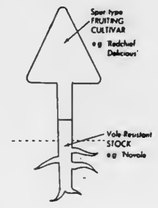
James N. Cummins; Herb S. Aldwinckle, both of Geneva, N.Y., and Ross E. Byers, Winchester, Va., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,770

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.³ A01H *1/00*

U.S. Cl. 47—58 **7 Claims**



1. A composite apple tree comprising a fruiting cultivar grafted to an interstem cultivar which is in turn grafted to a 'Novole' rootstock.

4,516,354

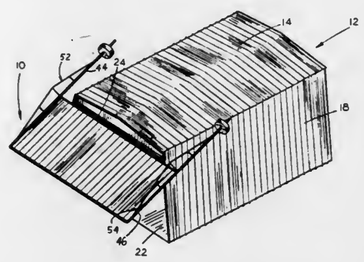
COUNTERWEIGHT DOOR STRUCTURE

J. Joseph Dugan, Box 127, Greeley, Nebr.

Filed Nov. 16, 1983, Ser. No. 552,250

Int. Cl.³ E05F *1/00*

U.S. Cl. 49—387 **9 Claims**



1. A counterweight door structure, comprising,

a door having a top edge, bottom edge and opposite side edges,

at least one arm connected to said door and extended upwardly therefrom,

a counterweight carried on said arm at a position in spaced relation from said door,

door mounting means on said door for supporting said door for pivotal movement about a horizontal axis positioned closely adjacent the top edge of the door, and

a forwardly extended truss on said arm and said door, said truss spanning a substantial portion of the height of the door and arm,

said truss comprising an elongated tension member having upper and lower ends, means for securing said upper end of the tension member to said arm, means for securing said lower end of the tension member to said door and a plurality of spacer links arranged in spaced-apart relation along said arm and door and connected to said tension member.

4,516,355

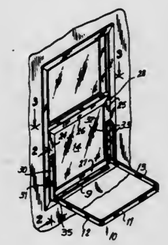
LIFT RAIL WINDOW STRUCTURE

Dan Basil, 1428 Park Ave., Merrick, Long Island, N.Y. 11566

Filed Jan. 4, 1984, Ser. No. 567,966

Int. Cl.³ E05B *1/00*

U.S. Cl. 49—460 **5 Claims**



1. In a window assembly having an outer frame defining an inner opening having parallel vertical edge surfaces, at least one window sash having vertical side jamb rails; a top rail extending between said jamb rails and a bottom rail extending between said jamb rails, said sash being mounted in said outer frame for sliding movement between a lower window-closed position and an upper window-open position; an improved window opening structure including:

(a) a pair of elongated, lift guide means having an L-shaped cross section, each lift guide means having a mounting leg and a guide leg connected thereto;

(b) a lift arm means projecting outwardly from each of said lift guide means;

(c) lift rail means extending horizontally between said lift arm means;

(d) fastening means securing each of said mounting legs respectively to said vertical jamb rails; and

(e) joining means permanently connecting said lift arms to said guide legs;

(f) said guide legs having outer guide surfaces disposed parallel with and adjacent to the inner vertical opening surfaces of said window frame opening.

4,516,356

INSULATED PLASTIC FRAME FOR DOORS, WINDOWS AND THE LIKE

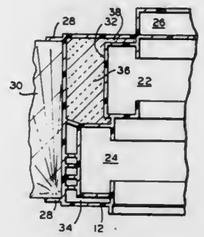
Ralph Delman, 2914 Hardale, Toledo, Ohio 43606

Filed Dec. 14, 1983, Ser. No. 561,304

Int. Cl.³ E06B *1/04*

U.S. Cl. 49—504 **11 Claims**

1. An insulated frame for doors, windows and the like comprising, in combination, a plurality of elongate frame sections each having notched corners and joined to an adjacent said frame section at a right angle, each of said elongate frame sections defining a plastic extrusion having at least one internal passageway extending along its length, said passageway having a plurality of surfaces, at least a pair of said sections defining at least one channel for receiving an associated movable panel, insulating means disposed in said passageway for reducing heat transfer therethrough and means for positioning said insulation away from at least one of said surfaces and defining



an air filled region between said one of said surfaces and said insulation.

4,516,357

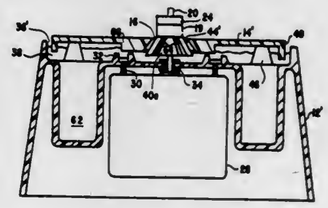
COOLANT SUPPLY APPARATUS FOR A GRINDING TOOL

Paul Gach, 1224 Woodbridge, St. Clair Shores, Mich. 48080

Filed Feb. 15, 1983, Ser. No. 466,437

Int. Cl.³ B24B *9/10*

U.S. Cl. 51—98 R **21 Claims**



1. A grinding apparatus comprising:

a housing having a coolant reservoir for retaining a liquid coolant;

drive means supported in the housing having a drive shaft that protrudes into the coolant reservoir;

a grinding tool attached to the drive shaft;

a work table supported on the housing above the coolant reservoir, the work table having an opening through which the grinding tool protrudes;

an impeller attached to the drive shaft, at least a portion of the impeller being situated in the coolant reservoir for impelling coolant upwards from the reservoir when the drive shaft is rotating; and

collar means extending downwardly from the work table into the coolant in the coolant reservoir and surrounding at least a portion of the impeller and the portion of the grinding tool that extends below the work table, thereby serving to direct the coolant from the impeller towards the grinding tool.

4,516,358

CLUTCH ASSEMBLY FOR SANDING HEAD

Miksa Marton, 3620 Randin Blvd., and George Marton, 1835 Todd Ln., both of Windsor, Ontario, Canada

Filed Feb. 2, 1984, Ser. No. 576,306

Claims priority, application Canada, Apr. 29, 1983, 427102

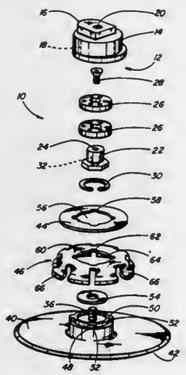
Int. Cl.³ B24B *23/02*

U.S. Cl. 51—119 **5 Claims**

1. A clutch assembly for a sanding head to provide said head with dual functions of random orbital sanding and rotary grinding, said assembly comprising;

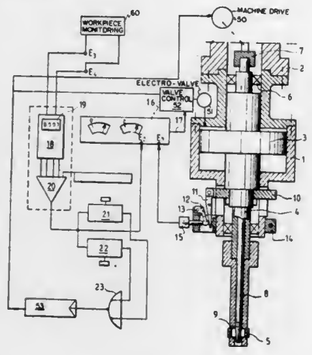
(a) a drive head including an eccentrically located drive spindle mounted for rotation in and with respect to said head, the latter having a planar bottom surface;

(b) a backup pad having a centrally located stud secured in said drive spindle; and
(c) a clutch plate and clutch actuating means mounted concentrically on said backup pad;
(d) guide means on said backup pad, clutch plate and clutch actuating means whereby said clutch plate and actuating means rotate with said backup pad, and said clutch plate being free to move axially on said guide means between the actuating means and the adjacent planar surface of said drive head;



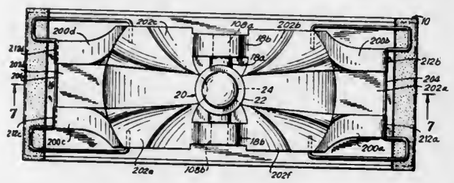
(e) said actuating means including a plurality of segments adapted to move said clutch plate axially into engagement with said drive head surface in response to high speed rotation of said drive head during which the segments use upwardly responsive to centrifugal force, whereby at low speeds with the clutch plate disengaged random orbital motion is obtained and at high speeds with the clutch plate engaged rotary grinding motion is obtained.

4,516,359
GRINDING MACHINE
Pierre A. Largeteau, Bezons, France, assignor to S.A. Automobiles Citroen and Societe Automobiles Peugeot, both of Paris, France
Filed Apr. 9, 1982, Ser. No. 367,065
Claims priority, application France, Apr. 16, 1981, 81 08064
Int. Cl.³ B24B *5/36*
U.S. Cl. 51—349 **7 Claims**



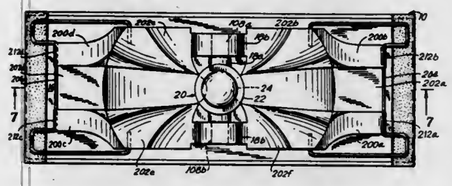
1. A grinding machine comprising:
an expandable grinding tool connected to a machine drive;
an expansion rod received in said tool and axially displaceable therein to expand said tool;
a fluid operated jack having a piston connected to said rod for axially displacing same;
means for continuously monitoring position of said piston for continuously generating an electrical signal as a function of this position and of expansion of said tool;
an analog voltmeter receiving said signal and having a variable threshold for outputting a control signal upon attainment of said threshold;
an electrovalve emergized by said control signal and connected to said jack for operating same to modify the expansion of said tool automatically to compensate for wear thereof; and
means for automatically modifying said threshold upon wear of said tool and a change in dimensions of a product ground by the tool.

4,516,360
MOLDED POLE-TYPE SANDPAPERING TOOL HAVING RESILIENT PAPER RETENTION MEANS
Donald Gringer, Bedford, N.Y., and Howard Soled, Teaneck, N.J., assignors to Allway Tools, Inc., Bronx, N.Y.
Filed Feb. 3, 1983, Ser. No. 463,513
Int. Cl.³ B24D *15/00*
U.S. Cl. 51—384 **6 Claims**



1. A molded pole-type sandpapering tool comprising a molded body member, said molded body member comprising a planar flat backing surface capable of being covered with sandpaper for providing an abrasive surface, and a handle mounting surface disposed on the opposite side of said sandpaper backing surface; and a molded universal joint mounted substantially at the center of said handle mounting surface and being connectable to an elongated handle member for permitting said body member abrasive surface to be disposed in a plurality of angular positions with respect to said handle for enabling optimum positive pressure to be applied to said abrasive surface through said handle member, said universal joint comprising a molded resilient male clevis resiliently engagable in a molded female clevis extending from said handle mounting surface for providing a two piece resilient universal joint having a positive friction fit, said tool further comprising a resilient wire-like unitary spring clip disposed on said handle mounting surface adjacent the ends thereof for removably securing said sandpaper on said backing surface, said spring clip having a locking portion and a pressure engaging portion, said sandpaper extending across said backing surface and around said ends onto said handle mounting surface for enabling positive pressure engagement thereof by said spring clip pressure engaging portion, said handle mounting surface comprising two pairs of spaced apart contoured guide ramps, with said pairs being disposed on opposite sides of said universal joint in the same plane, said spring clip being pivotally mounted to said guide ramp, said guide ramp further comprising a retention notch therein for removably locking said resilient wire spring clip locking portion in a sandpaper securing position against said handle mounting surface for maintaining positive pressure of said spring clip pressure engaging portion against said handle mounting surface.

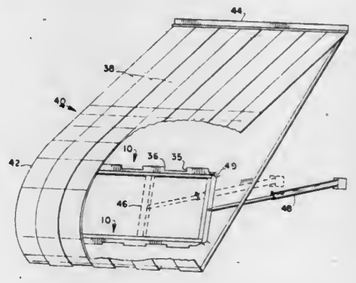
4,516,361
MOLDED POLE-TYPE SANDPAPERING TOOL
Donald Gringer, Bedford, N.Y., assignor to Allway Tools, Inc., Bronx, N.Y.
Filed Feb. 3, 1983, Ser. No. 463,518
Int. Cl.³ B24D *15/00*
U.S. Cl. 51—392 **14 Claims**



1. A molded pole-type sandpapering tool comprising a molded body member said molded body member comprising a planar flat backing surface capable of being covered with sandpaper for providing an abrasive surface, and a handle mounting surface disposed on the opposite side of said sandpaper backing surface; and a molded universal joint mounted substantially at the center of said handle mounting surface and being connectable to an elongated handle member for permitting said body member abrasive surface to be disposed in a plurality of universal angular positions with respect to said handle for enabling positive pressure to be applied to said abrasive surface through said handle member, said handle mounting surface comprising a pair of spaced apart peripherally disposed molded sloped contoured guide ramps adjacent said universal joint for enabling said universally mounted handle member to be guided into substantially orthogonally disposed planar positions substantially parallel to said abrasive surface for enabling said optimum positive pressure to be applied thereto while permitting said handle member to be further guided into a plurality of other angular positions from said orthogonal positions during a universal movement of said handle member, the spacing between said pair of spaced apart sloped contoured guide ramps defining a pair of substantially orthonogal positions for said planar positioning of said handle member and comprising sloped contoured surfaces positively guiding said handle member on a universal contoured path between said orthogonal positions and said plurality of other angular positions during said universal movement of said handle member, said sloped contoured surfaces substantially defining a 360 degree path of guided movement for said handle member, whereby said handle member may be freely guided into said plurality of universal angular positions without being lockably retained therein.

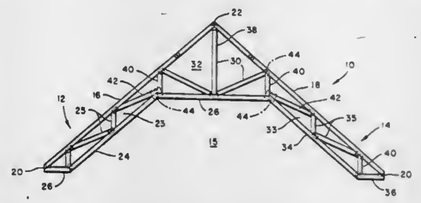
4,516,362
AWNING STRINGER
Lloyd E. Carden, St. Petersburg, Fla., assignor to Aluminum Metals, Inc., St. Petersburg, Fla.
Filed May 23, 1983, Ser. No. 496,976
Int. Cl.³ E04F *10/08*
U.S. Cl. 52—75 **4 Claims**

1. An awning stringer, comprising, in combination,
a first rigid, elongate beam member,
a second rigid, elongate beam member,
an awning member having a top side and a bottom side,
said awning member formed collectively by a plurality of longitudinally disposed, laterally interlocking slat members,
said awning member having a proximal end fixedly secured to a support surface and having a distal free end longitudinally spaced therefrom configured to have an arcuate bend or non-arcuate, angled bend formed therein,
said first and second beam members disposed transversely to said slat members in parallel, longitudinally spaced relation to one another, and positioned within said arcuate or non-arcuate bend on the bottom side of said awning member,
said first and second beam members configured to engage individual ones of said slat members,
a longitudinally disposed interconnecting member disposed in interconnecting relation to said first and second beam members,
said interconnecting member having an inwardly sloped bevel surface formed in each of its opposite ends,



said first and second beam members configured to abut associated ones of said beveled surfaces so that the respective upper portions of said beam members diverge relative to one another and their respective lower portions converge relative to one another,
and means for rigidly interconnecting said lower portions of said beam members to maintain said beam members in their abutting relation to said interconnecting member.

4,516,363
SUPERINSULATION ROOF RAFTER TRUSSES AND BUILDING SYSTEM
Roger D. Beaulieu, Standish; William W. Alcorn, Cape Elizabeth, and David S. Matychowiak, Saco, all of Me., assignors to Super-Truss Building Systems, Inc., Gorham, Me.
Filed Apr. 22, 1983, Ser. No. 487,693
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—90 **21 Claims**



1. A roof rafter truss structure comprising:
first and second outer rafter chords defining a roof gable from eave to eave with respective first and second sloping sides leading from the gable eaves to a gable ridge;
at least a first inner rafter hord parallel to and spaced from a portion of the first outer rafter chord extending from an eave part way to the gable ridge;
first deep webbing means comprising webs rigidly joining said first outer rafter chord and first inner rafter chord in parallel and spaced apart a sufficient distance to accommodate a depth of insulation for superinsulation with R factor of 60 or greater and with ventilation space over the insulation, said first outer rafter chord and first inner rafter chord defining a first superinsulation channel and ventilation space extending from a gable eave toward the gable ridge;
a horizontal ceiling joist chord positioned above and joined

to the upper end of the first inner rafter chord for defining and spanning a living space without obstruction;

second deep webbing means comprising webs rigidly joining and spacing the horizontal ceiling joist chord directly with the first and second outer rafter chords, said webs of the second deep webbing means being coupled to the horizontal ceiling joist chord on one hand, and on the other hand to the first and second outer rafter chords so that the ceiling joist chord is an integral part of the perimeter of the truss structure, said outer rafter chords and ceiling joist chord defining an attic space sufficient to accommodate a depth of insulation for superinsulation at an R factor of 60 or greater with ridge space ventilation above, said attic space communicating with the superinsulation channel;

said ceiling joist chord and deep webbing means tying the sloping first and second outer rafter chords of the roof gable together in a unitary structure, said ceiling joist chord and inner rafter chord partially defining a raised ceiling living space recessed within the roof gable below the roof rafter truss structure;

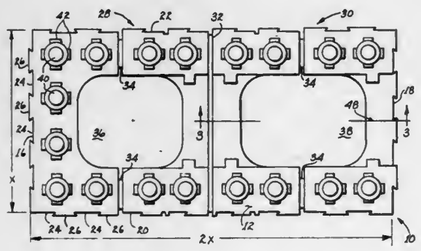
said outer rafter chords, inner rafter chord, and horizontal ceiling joist chord being tied together directly by said first and second deep webbing means to form a prefabricated integral eave-to-eave roof truss for subsequent incorporation in the roof of a building.

4,516,364

INSULATING BLOCK AND A WALL THEREOF

Richard M. Heider, 8002 E. del Tesoro Dr., Scottsdale, Ariz. 85258

Filed Sep. 30, 1982, Ser. No. 430,967
Int. Cl.³ E04C *1/00, 1/10*
U.S. Cl. 52—98 **10 Claims**



1. A generally rectangular insulating block presenting parallel and opposite upper and lower surfaces and end and side portions thereof, comprising:

a first series of matching dovetail mortises and tenons on said end portions;

a second series of said matching dovetail mortises and tenons on said side portions, said mortises and tenons for interlocking to an adjacent insulating block in a wall course;

a plurality of regularly spaced sockets formed in said bottom surface, each of said sockets having a central cavity surrounded by radially extending grooves;

a like plurality of regularly spaced posts on said top surface, each of said posts having a central projection surrounded by radially extending ribs for frictionally engaging said central cavity and surrounding radially extending grooves of one of said plurality of sockets in another insulating block of a superimposed wall course;

a pair of spaced apart bores communicating between said upper and lower surfaces;

first means extending around the outside of said block for facilitating the lateral bisecting of said block into generally equal size halves; and

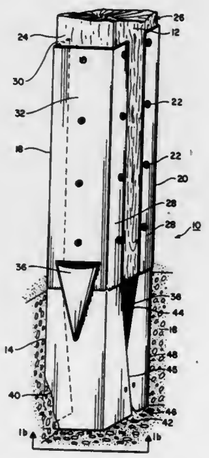
second means for facilitating the lateral bisecting of said generally equal size halves into generally equal size quarters.

4,516,365

SUPPORT ASSEMBLY AND METHOD

Nicholas J. Chapman, 40587 Robin St., Fremont, Calif. 94538

Filed Nov. 12, 1982, Ser. No. 441,050
Int. Cl.³ E02D *27/42*
U.S. Cl. 52—170 **17 Claims**



1. An assembly for fixedly supporting a structural member with respect to an aperture, said assembly having a first and a second opposed surface, each of said surfaces having one end shaped to fixedly engage an end of the structural member, each of said assembly surfaces having a second end extending longitudinally beyond the end of the structural member, said second assembly surface ends being configured to enter the aperture and having opposed camming shapes which wedge said second surface ends into tight engagement with the aperture as said second assembly surface ends move further into the aperture, said opposed camming shapes being angular and extending toward one another at sides of said assembly, one of said camming shapes extending toward the opposing camming shape to a point short of a distal end of said one camming shape and then extending substantially parallel to the opposing camming shape toward the distal end.

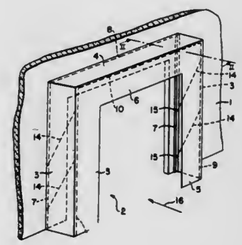
12. A method for repairing a post originally set in concrete and which has rotted below ground level, which comprises providing an attaching assembly comprising first and second brackets, each with a first end having camming surfaces configured to be driven into an aperture in the concrete originally formed around the post and expand the assembly into tight engagement with the aperture, and a second end configured for attachment to the post above ground level, positioning the first and second brackets in opposed relationship around the post, driving the first ends of the opposed brackets into the aperture, and fixedly attaching the second ends to the post.

4,516,366

SEAL FOR THE GAP BETWEEN THE EDGE OF A BUILDING OPENING AND THE BACK END OF A VEHICLE DRIVEN UP TO IT

Kurt Alten, Ringstr. 14, D-3015 Wennigsen, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,579
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1981, 3130654
The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.
Int. Cl.³ E06B *7/16*
U.S. Cl. 52—173 DS **12 Claims**



1. A deformable seal for a gap between the edges of an opening of a building and a back end of a vehicle driven up to said opening, said seal comprising in combination:

a rigid, inverted U-shaped frame which is spaced from said building and comprises first metallic profiled members;

inclined upwardly directed guides having a first and connected to said frame, and a second end which is operatively connected to said building so that said rigid, inverted U-shaped frame is held by said inclined upwardly directed guides unchangeable in height thereof;

an apron having a first outer edge fastened to said first metallic profiled members, and a second edge directed inwardly upon itself for effecting sealing with said vehicle so that said apron forms the actual seal and deforms when struck or contacted by a vehicle whereupon pressure is exerted upon said apron that leads to pivoting of said inclined upwardly directed guides;

second profiled members connected to said building; and

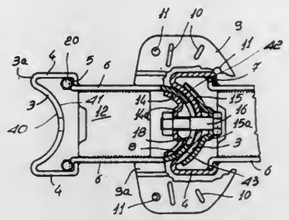
a flexible covering located between said apron and said building, said covering having a first edge fastened to said first metallic profiled members in the vicinity of said first outer edge of said apron, and a second edge fastened to said second profiled members; said profiled members being provided with undercut longitudinal grooves for insertion of at least one of said first outer edge of said apron, and said first and second edges of said flexible covering, said flexible covering and said apron being quickly replaceable and additionally distortions and deformations thereof are accepted without causing any special damage in operation therewith as a consequence thereof that inclined load forces are kept from leading to any tearing or ripping but rather lead to a resilient, elastically yieldable shifting of the associated edges so that relative height changes can be equalized through nominal shifting movements of said edges of said flexible covering in the longitudinal grooves and, consequently, rather than a rigid fastening there is provided a shiftable mounting and fastening.

4,516,367

MODULAR SUPPORT FOR STAIRWAY STEPS

Roberto Molinazzi, Ozzano Emilia, Italy, assignor to Albini & Fontanot S.p.A., Rimini, Italy

Filed Dec. 20, 1982, Ser. No. 451,511
Claims priority, application Italy, Dec. 31, 1981, 3626 A/81
Int. Cl.³ E04F *17/00*
U.S. Cl. 52—182 **8 Claims**



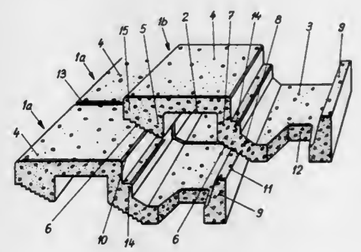
1. A modular support for stairway steps, adapted to be clamped with adjacent supports, characterized in that it comprises, as a unitary construction, a horizontal resting deck for a respective step, a first wall including a vertical cylindrical portion which defines an outer surface and an inner surface and extends above the resting deck, an additional wall including a vertical cylindrical portion which defines an outer surface and an inner surface and extends below said resting deck with its inner surface facing the inner surface of the first wall, said additional wall being attached on the outer surface thereof with said resting deck, said outer surface matching the outer surface of said first wall, and comprises at least one pair of clamping elements including each a portion respectively shaped to match the inner surface of said first wall and the inner surface of said additional wall for fastening the first wall of said support to the additional wall of an adjacent support.

4,516,368

ADJUSTABLE STAIRWAY ELEMENT

Rudolf Pichler, Schubertweg 10, CH-3073, Gümligen, Switzerland

PCT No. PCT/CH80/00134, § 371 Date Aug. 3, 1981, § 102(e) Date Aug. 3, 1981, PCT Pub. No. WO81/01584, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 10, 1980, Ser. No. 287,737
Int. Cl.³ E04F *11/14, 11/00*
U.S. Cl. 52—190 **1 Claim**



1. A constructional unit for stairs, comprising

a stirrup-like bridge portion having an upper surface;

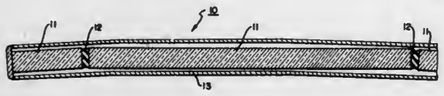
said upper surface of said bridge portion being of rectangular shape and having a corner portion located on the rear end of said bridge portion

a trough portion, connected to said bridge portion by an oblique portion, having a rectangular outer edge standing upright;

a cutout located at the side of said trough portion;

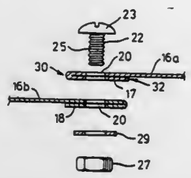
a front bridge pier on one side of said stirrup-like bridge portion terminating in a nose portion;
said nose portion having an underside formed with tooth-like shoulders;
a second bridge pier, having on the underside thereof tooth-like shoulders on the back side of said stirrup-like bridge portion.

4,516,369
TRANSPARENT PANEL FOR CURVED WALLS IN REVOLVING DOORS
Jorgen E. Olesen, Brams Sidevej 2A, 2920 Charlottenlund, Denmark
Continuation of Ser. No. 316,520, Oct. 29, 1981, abandoned. This application May 9, 1984, Ser. No. 608,535
Int. Cl.³ F06B *3/90*
U.S. Cl. 52—204 **5 Claims**



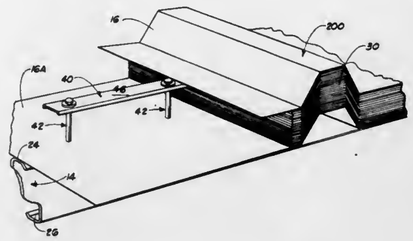
1. An approximately arcuate wall partially enclosing a revolving door comprising:
a plurality of high, narrow, generally rectangular strips of flat glass panes forming a transparent panel, each strip having a height corresponding to the height of said wall and a width of at least 3 inches, each strip subtending an angle not greater than 10 degrees as measured from the axis of rotation of said door, the difference in radial distance from said axis to the center and either edge of said strip not exceeding 5 mm;
joints of a flexible sealer connecting longitudinal edges of adjacent ones of said strips; and
an arcuate frame enclosing said panel of said plurality of high, narrow, generally rectangular strips of flat glass panes jointed by said joints for bending said panel to a desired arcuate configuration.

4,516,370
SHEET METAL JOINT, STRUCTURE UTILIZING THE SAME, AND METHOD OF CONSTRUCTION
George T. Halmos, Willowdale, Canada, assignor to Delta Engineering Ltd., Willowdale, Canada
Filed Feb. 7, 1983, Ser. No. 464,554
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—245 **10 Claims**



1. An edge joint between two pieces of metal sheet material, a marginal portion of each piece being folded back to lie adjacently along the main portion of that piece, the pieces being arranged so that the marginal portion of one piece is sandwiched between the main portions of the two pieces, and the main portion of the other piece is sandwiched between the marginal portions of the two pieces, a least one aperture in each piece passing through both of its portions, the apertures of the two pieces being aligned, and a fastener through said aligned apertures for joining the two pieces.

4,516,371
INSULATION AND PANELING APPARATUS AND METHOD
Harold G. Simpson, Oklahoma City, Okla., assignor to Encon Products, Inc., Oklahoma City, Okla.
Continuation-in-part of Ser. No. 93,173, Nov. 13, 1979, Pat. No. 4,329,823. This application Nov. 17, 1981, Ser. No. 322,165
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—269 **29 Claims**

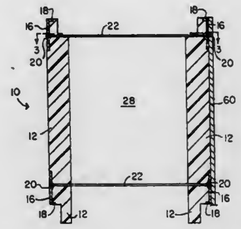


1. An improved insulation and paneling apparatus for enclosing a building having a building frame comprising:
a first panel member supported by the building frame;
at least one insulation batting disposed to extend substantially adjacent to the first panel member;
a spacer member having a first support surface and an opposite second support surface;
fastener means for attaching the spacer member to a selected one of the first panel member and the building frame, the fastener means comprising:
a plurality of discreet column members connected to the spacer member before installation of the spacer member, the column members being shaped to penetrate a compressible material so that the characteristics of the insulation are substantially retained during the penetration of the insulation by the column members, each column member maintainable substantially in nonpenetrating engagement with the first panel member in the installed position of the spacer member; and
a plurality of fastener members attachable to the selected one of the first panel member and the building frame so that the column members are disposed between the spacer member and the first panel member, the first support surface being thereby disposed a predetermined distance from the first panel member, each fastener member attachable to the selected one of the first panel member and the building frame by the application of energy to one end of the fastener member to cause attachment of the other end of the fastener member;
a second panel member supported on the first support surface; and
attaching means for attaching the second panel member to the spacer member.

4,516,372
CONCRETE FORMWORK
George A. Grutsch, 6455 S. Meadowwood La., Missoula, Mont. 59803
Continuation of Ser. No. 293,033, Aug. 14, 1981,. This application Jul. 20, 1983, Ser. No. 515,222
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—309.12 **16 Claims**

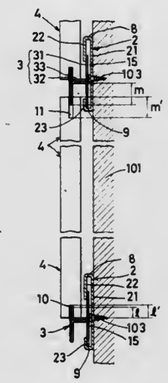
1. Permanent formwork for forming a concrete wall, wherein said formwork becomes part of the finished wall, said formwork comprising:
a panel assembly including at least first and second panels, said panels being spaced apart horizontally in a parallel relationship,

each of said panels having an interior and an exterior surface,
said panel assembly including means for stacking said panel assembly on another similar panel assembly,
first and second backing plates,
said first backing plate abutting the exterior surface of said first panel,
said second backing plate abutting the exterior surface of said second panel, and
said first and second backing plates lying entirely on the exteriors of said panels,
structural tieing means for tieing said first and second backing plates together, said tieing means being separate and distinct from said backing plates, said tieing means extending through the panels between and being connected to



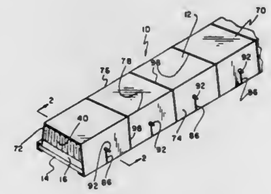
said first and second backing plates to restrain outward movement of said panels,
wherein a number of said panel assemblies are stacked end-to-end and vertically to form said formwork,
said tieing means of adjacent said panel assemblies being spaced apart when said panel assemblies are stacked,
wherein said panels are comprised of a moldable plastic foam material which is relatively soft and weak, as compared to the material of which said plates are composed, said panel assemblies being sufficiently strong so that a stack of said panel assemblies is self-supporting during the pouring of the concrete therein,
said panels, plates and tieing means comprising means for becoming a part of the finished wall.

4,516,373
APPARATUS FOR TILE-SETTING
Yoshinori Osawa, 178, Oazasagami, Koga-cho, Koga-gun, shiga, Japan
Filed Oct. 19, 1982, Ser. No. 435,395
Claims priority, application Japan, Oct. 26, 1981, 56-171620; Dec. 9, 1981, 56-183842
Int. Cl.³ E04F *13/08*
U.S. Cl. 52—387 **3 Claims**



1. An apparatus for setting a plurality of tiles having rectangular longitudinal grooves in a pair of opposite sides, comprising:
a plurality of horizontal bars, each having an H-shaped section with a first web means for connecting two flanges,
a plurality of horizontal bar holders having a second web means for connecting upper and lower tongues between which one of said two flanges is gripped, said upper tongue having a vertical length longer than the vertical length of said lower tongue, and
means, provided in the second web means, for allowing securement of each of the horizontal bar holders to a surface of plaster.

4,516,374
MEANS FOR AND METHOD OF FURNACE INSULATION
John F. Finney, 915 E. 15th, Winfield, Kans. 67156
Filed Sep. 27, 1982, Ser. No. 424,310
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 **25 Claims**



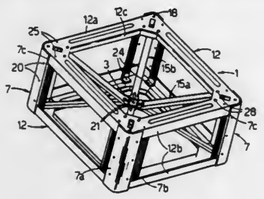
1. In structure for mounting ceramic fiber modules a pair of elongated retainer bar supports each having inner and outer ends with the inner end of each being adapted to be secured to a furnace wall, whereby the supports may be spaced from each other and secured perpendicularly to a wall to project their outer ends in spaced relation from the wall and from each other, an insulation module having an elongated retainer bar extending laterally therethrough, each of the supports being provided with holding means at its outer end for releasably holding an end portion of the retainer bar, said holding means comprising said support being bifurcated lengthwise from its outer end to a position spaced from its inner end to define a pair of fingers for receiving an end portion of the retainer bar therebetween, with such fingers being of a sufficiently malleable material to enable their being selectively bent to grip and pried apart to release an end portion of the retainer bar therebetween, said module being positioned intermediate the supports with the pairs of fingers respectively receiving therebetween and gripping the end portions of the retainer bar.

4,516,375
FRAMEWORK BLOCK OR BRICK CONSISTING OF MODULAR ELEMENTS OF FORMED SHEET STEEL OR ALUMINUM AND COMPRISING JOINTING MEANS
Michele Pagano, Parco Comola, 147-Napoli, and Nicola Palumbo, Vico Belledonne a Chiaia, 9 Napoli, both of Italy
Filed Jan. 18, 1983, Ser. No. 458,848
Claims priority, application Italy, Jan. 29, 1982, 47691 A/82; Jul. 13, 1982, 35926/82[U]
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—581 **5 Claims**

1. A framework block or brick of sheet steel or aluminum which is press formed, which has the shape of a rectangular parallelepiped, which is of a modular framework structure, and which is formed by elements placed along the corners and the diagonals of the parallelepiped, comprising:
(a) two identical component elements having the shape of rectangular pyramids disposed with opposite vertices and the bases of which are the external facing surfaces of the block or brick; and

(b) four angle bars having a C-cross section and forming the corners perpendicular to the external facing surfaces,

wherein each of said component elements includes a base frame and two V-shaped elements or ribs which form the corners of the pyramid and extend and intersect such that



each V-shaped element forms a pair of opposite semidiagonals having a first flattened end for connection to the base frame at the corners thereof and a second flattened end corresponding to the vertex of the pyramid for connection to each other, the connections being made by fastening means.

4,516,376

ASSEMBLY SYSTEM

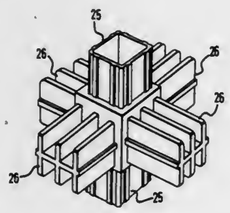
Lionel W. King, 57, Lakedale Rd., Plumstead, London, England

Filed Jul. 16, 1982, Ser. No. 398,900

Claims priority, application United Kingdom, Feb. 24, 1982, 8205400

Int. Cl.³ E04H *12/00*

U.S. Cl. 52—648 **4 Claims**



1. A system for assembling a structural framework, said system comprising a plurality of elongated structural members having hollow ends, and a plurality of coupling members adapted to be fit into said hollow ends for interconnecting said structural members, said coupling members being formed of resilient plastic material, each of said coupling members having a body portion and at least two coupling spigots which project outwardly from said body portion and which are engageable within said hollow ends, at least one of said spigots only comprising flat blades which extend outwardly from said body portion, said blades comprising a plurality of parallel blades extending from said body portion and and a single flat blade projecting outwardly from said body transverse to said parallel blades, said transversely extending blade having first and second ends and interconnecting said plurality of parallel blades, all of said parallel blades being located between said first and said second ends of said transversely extending blade, said blades having edges, said edges together defining an external profile which is discontinuous over the circumference of said spigot, said profile substantially extending over the length of said spigot, said profile generally corresponding in size and shape to a cross-section of one of said ends.

4,516,377

ROLLABLE GRATING SYSTEM

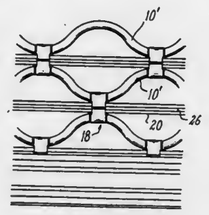
Samuel Feller, Roide, Pont de Roide, France 25150

Filed Jan. 17, 1983, Ser. No. 459,041

Claims priority, application France, Jan. 18, 1982, 82 00669

Int. Cl.³ E04C *2/42*

U.S. Cl. 52—660 **4 Claims**



1. In a rollable grating system of the type including a plurality of wavy tubes, and means for joining adjacent said tubes at adjacent waves thereof, the improvement wherein:

said tubes are formed of an anodized aluminum alloy;

said joining means comprise a connecting bar extending longitudinally between adjacent said tubes, and fasteners connecting respective pairs of adjacent said waves to the respective said bar;

said bar having therethrough longitudinal cavities, and longitudinal slots opening through opposite sides of said bar into respective said cavities; and

each said fastener comprises two portions, each said portion fitting around a respective said wave of a said pair of adjacent waves, and said portions of each said fastener having lugs extending through said slots and into said cavities of the respective said bar.

4,516,378

ANCHORING DEVICE

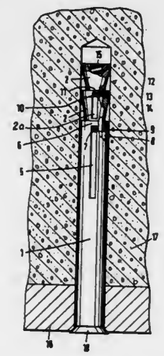
Artur Fischer, Weinhalde 34, D-7244 Tumlingen Waldachtal 3, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,262

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214440

Int. Cl.³ E04C *5/12*

U.S. Cl. 52—704 **11 Claims**



1. An anchoring device for mounting an object to a supporting structure of porous construction materials, particularly aerated cement or hollow structural blocks, comprising an expansible sleeve-shaped member adapted to be received and anchored in a hole formed in the structure, said sleeve-shaped member having a front end remote from said object and being formed with elongated slots; an expandable member having a conical outer face portion; an actuating screw insertable into said sleeve-shaped member and said expandable member to cause the movement of said expandable member in an axial direction of the sleeve upon rotation of said actuating screw; and at least one intermediate expandable element with an internal thread to receive said actuating screw therethrough and positioned between the front end of the sleeve-shaped member and said expandable member and having a conical outer face portion, said intermediate element having a front end remote from said sleeve-shaped member and being formed with elongated slots extended from its front end over a portion of its length, said intermediate element being further formed with locking pins radially outwardly extended therefrom and engageable in the respective elongated slots of said sleeve-shaped member.

4,516,379

DEVICE FOR THE PACKAGING OF POWDER, GRANULATES AND LUMP, PASTY AND LIQUID MATERIALS TO BE PACKAGED BY MEANS OF A TUBULAR FILM

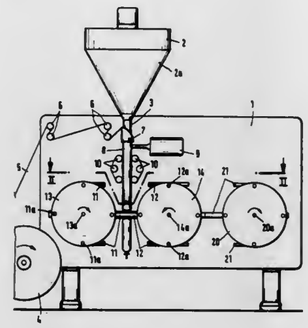
Stewart Iain, Wuppertal, Fed. Rep. of Germany, assignor to Maschinenfabrik Fr. Niepmann GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 395,947

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128043

Int. Cl.³ B65B *61/00*

U.S. Cl. 53—138 A **6 Claims**



1. In a device for the packaging of powder, granulates, slurries and viscous materials in a tubular film which is formed from an endless web of film by a forming shoulder into a tube which is filled by means of a filling pipe with the material to be packaged and subdivided at intervals by transverse closures which are each formed by a clip which is brought against the tubular film transverse to the direction of film movement by two cooperating gathering members which are brought against the tubular film from opposite sides to gather the tubular film and thereby form the transverse closure, the improvement wherein

two turret discs are arranged downstream of the filling pipe in the direction of movement of the tubular film and are driven in uniform rotation in opposite directions relative to each other, each of said turret discs carrying at least one of said gathering members which cooperate in pairs with each other, and

means for rotatably mounting the gathering members on said turret discs so as to be always oriented transversely to the direction of movement of the tubular film,

an additional disc arranged alongside one of the turret discs and means for driving said additional disc in opposite direction to, but with the same speed as, said one turret disc, said additional disc being provided with means for feeding clips which form the transverse closures, to the gathering members on said one turret disc,

said clip feeding means include support means on said additional disc extending parallel to the gathering members on said one turret disc, the number of said support means on said additional disc corresponding to the specific number of gathering members on said one turret disc,

said clip is U-shaped and each said support means is provided with a carriage which is displaceable in a longitudinal direction parallel to the transverse direction of movement of the gathering members, said support means having two pairs of grooves, each said pair of grooves to receive one of said U-shaped clips, ejector bars fastened to the support means for entry into respective pairs of said grooves upon relative movement of the carriage with respect to the support means, to transfer the clips to one of said gathering members while said discs are in motion.

4,516,380

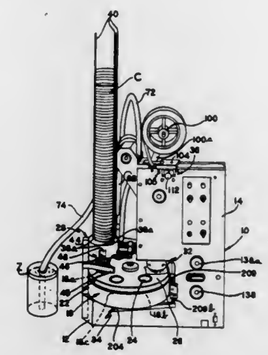
PORTABLE APPARATUS FOR FILLING AND CLOSING CONTAINERS

Leonard Buckner, Mount Eaton; William A. Foll, Sr., Wooster, and Stephen W. Pesho, Dalton, all of Ohio, assignors to Euclid Spiral Paper Tube Corp., Apple Creek, Ohio

Filed Sep. 17, 1982, Ser. No. 419,599

Int. Cl.³ B65B *3/00, 7/28*

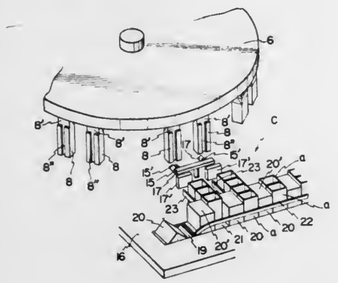
U.S. Cl. 53—282 **21 Claims**



1. A compact portable apparatus for filling an open-ended container with a substance, such as a liquid medication, and then heat sealing a thin flexible closure material to the periphery of the open end of the container to seal the latter, comprising a frame, a rotatable support mounted on said frame adapted to receive a plurality of the containers, a plurality of work stations on said frame adapted for coaction with said support, said work stations including means for inserting some of the substances into a container at one of said stations and comprising a container filling station, means for applying the closure material to the periphery of the substance filled container at another of said stations and comprising a container sealing station, means coacting with said support for facilitating removal of sealed containers from the support at a discharge station, and means for automatically indexing said support through a predetermined cycle, including rotary movement from said filling station to said sealing station, and thence to said discharge station, and including means for automatically feeding containers onto said support upon said indexing of said support about its axis and comprising a feeding station, and wherein said automatic container feeding means comprises a chute member, reciprocal container support-release means coacting with said chute member and adapted for generally transverse movement relative to the lengthwise axis of said chute member, and wherein in one position of said support-release means, being operable for retaining a stack of containers in positional relationship with respect to said chute member, and in another position of said support-release means adapted to cause gravity release of a lowermost container in the stack, and spring finger means normally coacting with said chute member in interfering relation to gravity movement of

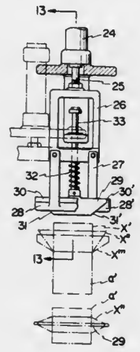
containers past said chute member, for momentarily holding the released lowermost container from dropping onto said support, until said support-release means moves from said other position back towards said one position, to thereby cause deactivation of said finger means by forcing the latter outwardly out of said normal interfering relation with the momentarily held container to thereby permit dropping of the latter onto said support.

4,516,381
AUTOMATIC CARTON PACKING MACHINE
Mutsuhiko Nakajima, Soka, Japan, assignor to Ace Pak Company Incorporated, Japan
Division of Ser. No. 250,282, Apr. 2, 1981, Pat. No. 4,448,013.
This application Aug. 16, 1983, Ser. No. 523,741
Int. Cl.³ B65B *57/00*
U.S. Cl. 53—375 **2 Claims**



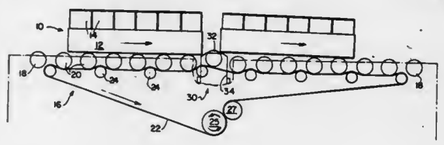
1. A carton shifting device for use in an automatic carton packing machine, said carton shifting device comprising:
an intermittently rotatable, generally horizontally oriented disc having a plurality of downwardly extending mandrels, each for receiving a carton blank, said mandrels connected to said disc in pairs, each pair of mandrels having an outwardly facing surface lying in a common plane with a groove in said outwardly facing surface;
a withdrawing bar having a length to span a distance between each mandrel in a pair of mandrels and extending horizontally;
a pair of claws connected to said withdrawing bar, each claw positioned to engage one mandrel of a pair of mandrels;
drive means connected to said withdrawing bar for driving said withdrawing bar downwardly to move said claws in respective grooves of respective mandrels to remove a carton blank from each mandrel in a downward direction;
a horizontal table for receiving carton blanks from said mandrels;
a push-out bar positioned to push carton blanks on said table by a distance corresponding substantially to the width of one carton blank;
a guiding frame space from said withdrawing bar for receiving carton blanks pushed by said push-out bar and aligning said carton blanks in a pair of rows; and
a conveyor device arranged at an end of said guide frame, and for horizontal movement at a right angle to a direction in which said push-out bar pushes carton blanks, said conveyor device including a chain conveyor and a plurality of rectangular blocks to secure to said chain conveyor at spaced locations on said chain conveyor with a space between adjacent blocks corresponding to a length of a carton blank to be pushed by said push-out bar, each block having a width at least twice the width of a carton blank for accommodating two carton blanks in each space between adjacent blocks in side to side relationships.

4,516,382
AUTOMATIC CARTON PACKING MACHINE
Mutsuhiko Nakajima, Soka, Japan, assignor to Ace Pak Company Incorporated, Japan
Division of Ser. No. 250,282, Apr. 2, 1981, Pat. No. 4,448,013.
This application Aug. 16, 1983, Ser. No. 523,742
Int. Cl.³ B65B *57/00, 19/24*
U.S. Cl. 53—375 **5 Claims**



1. A folding device for imparting a folding habit to the open top of a carton wherein the top includes a pair of top sections which are folded and sealed together comprising:
a frame secured to a shaft which is movable upwardly and downwardly;
a pair of squeezing plates secured to said frame and having lower portions defining opposing tapered surfaces and upper portions defining facing vertical surfaces which are spaced from each other;
a deforming plate interposed between said squeezing plates and having an upper part extending between said upper portions of said squeezing plates, a gap being formed on opposite sides of said upper part of said deforming plate and said upper portion of each of said squeezing plates, each gap being sized to allow one of the top sections of a carton being folded to project into a respective gap, said deforming plate having a lower part with edges which extend obliquely with respect to each other; and
vertically yielding mounting means connected between said deforming plate and said frame for supporting said deforming plate for resilient upward movement with respect to said squeezing plates, said deforming plate having a lower position defined by said mounting means with said gaps being present in said lower position of said deforming plate.

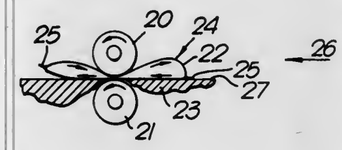
4,516,383
METHOD AND APPARATUS FOR PACKAGING CONTAINERS
Horst F. W. Arfert, Midlothian, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Sep. 23, 1983, Ser. No. 535,060
Int. Cl.³ B65B *3/02*
U.S. Cl. 53—410 **11 Claims**



1. In a method of packaging containers comprising placing said containers in a tray, said tray having apertures in the bottom corners thereof, and wrapping said tray with a plastic film to form a unitary package the improvement comprising passing said package along a conveyor, contacting the front bottom corners of said package with heated surfaces to burn apertures in said film in registry with said apertures in the front bottom corners of said tray, passing said package over said heated surfaces and contacting the rear bottom corners of said package with said heated surfaces to burn apertures in said film in registry with said apertures in the rear bottom corners of said tray.

5. In an apparatus for conveying plastic film wrapped packages comprising a conveying surface the improvement comprising a heater means for forming aperatures in said plastics film comprising a pair of surfaces for contacting the bottom corners of said packages, means for lifting said packages over said surfaces and means for heating said surfaces.

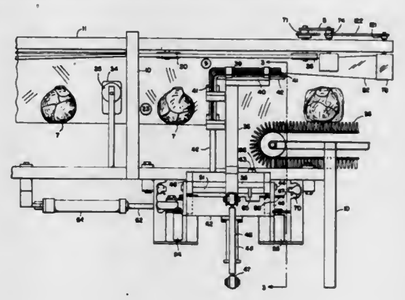
4,516,384
METHOD AND APPARATUS FOR OPENING AND LOADING FLEXIBLE CONTAINERS
Nino Imperiale, Milan, Italy, assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
Filed Dec. 31, 1981, Ser. No. 336,231
Claims priority, application United Kingdom, Mar. 16, 1981, 8108129
Int. Cl.³ B65B *43/30, 43/28, 43/34*
U.S. Cl. 53—459 **20 Claims**



1. A process for opening and loading flexible containers each having a mouth defined between first and second superposed flexible panels, such process comprising the steps of:
(a) establishing non-slip contact of first and second movable members with respective portions of said first and second panels of a said flexible container at a container-opening station;
(b) mechanically displacing the contacted portions of the first and second panels in opposite directions by sliding the first panel over the second, said sliding displacement causing the edges of said flexible container to roll and separate the panels near said edges;
(c) inserting container-spreading means into the thus opened gap between said first and second panels;
(d) spreading said flexible container to grasp it on said spreading means; and
(e) displacing the spreading means from said opening station to a loading station to transport the thus grasped flexible container thereon.

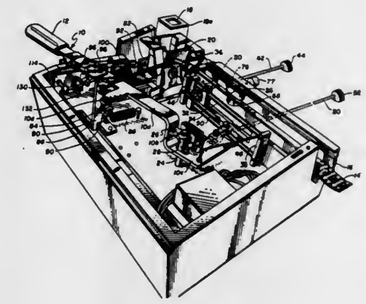
4,516,385
WRAPPING MACHINE
Don H. Lenker, and Dennis F. Nascimento, both of Salinas, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed May 20, 1982, Ser. No. 380,374
Int. Cl.³ B65B *9/02*
U.S. Cl. 53—504 **10 Claims**

1. An apparatus for the continuous wrapping of objects in heat-sealable film which is particularly adapted for the wrapping of three-dimensional objects which have a poorly-defined shape or which are non-uniform in size or shape, comprising:
(a) a frame;
(b) a conveyor assembly for advancing the film and the object and for bringing the film into a wrapping relationship with the object, wherein said conveyor assembly comprises V-positioned endless belts which converge adjacent to the area where the film is sealed, said belts having brads affixed thereto to advance the film so that the edges of the film converge and the center portion of the film sags downward to form a V-shaped trough adapted to contain three-dimensional objects which have poorly-defined shape or which are non-uniform in size or shape, and so that the edges of the film further converge to wrap the film peripherally about the object;



(c) a sealing assembly for bringing the sides of the film containing the object into a heat-sealable relationship and for sealing the film to sealably enclosed the object;
(d) an indexing carriage for advancing said sealing assembly at the same rate as said conveyor assembly; and
(e) means for detecting the object and actuating said sealing assembly to seal the film while the film is advancing.

4,516,386
SEMI-AUTOMATIC SLIDE MOUNTER WITH ANTI-REVERSE OPERATING LEVER
Armer J. Willenbring, Bloomington, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed May 9, 1980, Ser. No. 144,284
Int. Cl.³ B65B *63/00*
U.S. Cl. 53—520 **9 Claims**



1. An apparatus for mounting a photographic film transparency into a slide frame comprising:
slide holder means for holding a plurality of slide frames;
a slide track;
slide advance means for advancing a slide frame from the slide holder means along the slide track;
film advance means for feeding the transparency, while still an integral portion of a film web, into an insertion opening of the slide frame;
knife means for severing the transparency from the web;
operating lever means operatively connected to the slide advance means, the film advance means and the knife

means, the operating lever means being movable in a first direction through a closed path having a plurality of path segments to provide operation of the slide advance means, the film advance means, and the knife means during an operating cycle; and

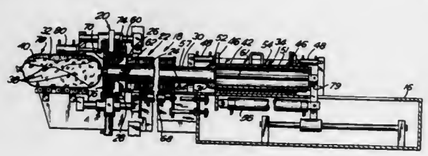
anti-reverse means operably connected to the operating lever means for preventing the operating lever means from moving in a second, reverse direction in the closed path.

4,516,387

APPARATUS FOR STUFFING LARGE MEAT ARTICLES

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1982, Ser. No. 364,075
Int. Cl.³ B65B *63/02, 3/12, 3/18*
U.S. Cl. 53—530 **11 Claims**



1. In an apparatus for stuffing large meat articles into discrete lengths of flexible tubular casing comprising, in combination: a frame; a stuffing horn mounted on said frame, having a discharge end and an inlet end; an article-loading chamber in communication with the inlet end of the stuffing horn; a compression member extending longitudinally in said article-loading chamber, movable between a retracted position and an extended position; piston means disposed in longitudinally axial alignment with the article-loading chamber and stuffing horn, having an article contacting face; actuating means operably connected to said piston means arranged and disposed to move said piston means in multistage operations sequentially in a first stage through said article-loading chamber, and in a second stage through said stuffing horn to the discharge end thereof; and a shirred casing supply disposed coaxially on the stuffing horn arranged and disposed to provide a continuous deshirred casing to be stuffed with said meat articles; the improvement whereby said meat articles can be packaged without substantial loss of liquidous materials contained in said articles; said improvement comprising, in combination:

(a) a first stage piston comprising a first elongated tubular member and an annular piston head mounted to the forward end of said tubular member and carrying an article contacting face, said first tubular member and said annular piston head being of a size which will enable both to fit snugly inside the article-loading chamber after said compression member has been moved to its extended position, and having a combined length such that they are substantially coextensive in the longitudinal direction with said article-loading chamber; and

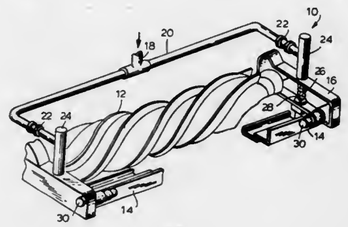
(b) a second stage piston comprising a pneumatic cylinder having an outer tubular wall forming a second enlongated tubular member having a separate article contacting face, coaxially mounted inside the first elongated tubular member of said first stage piston, the outer tubular wall of said pneumatic cylinder being of a size which will enable it to fit snugly inside said stuffing horn and having a length such that said outer tubular wall is substantially coextensive in the longitudinal direction with said stuffing horn, said pneumatic cylinder including an actuating rod extending outwardly from an end thereof in a direction opposite to the stuffing horn, said actuating rod being permanently anchored in a stationary position.

4,516,388

HYDRAULIC BEDKNIFE ADJUSTER FOR REEL-TYPE MOWING EQUIPMENT

Noel W. Chandler, 114 Venus St., Jupiter, Fla. 33458

Filed Sep. 12, 1979, Ser. No. 74,656
Int. Cl.³ A01D *55/20*
U.S. Cl. 56—249 **8 Claims**



1. In a reel-type mower having a reel blade and a bedknife movably attached thereto, a system for precisely positioning and retaining the bedknife at a predetermined distance relative to the blade, comprising:

means for hydraulically adjusting and locking a bedknife relative to a reel blade at a desired relative position;

means for actuating said hydraulic adjusting means;

a means for moving the bedknife in a first direction to a predetermined position relative to said reel blade under hydraulic pressure;

resilient force means for moving said bedknife in a counter direction to said first direction; and

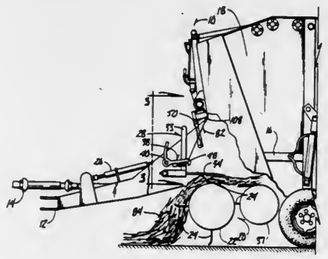
means for displacing a predetermined amount of hydraulic fluid to allow displacement of said bedknife from a first maximum position in said first direction to a second position in said counter direction relative to the amount of fluid displaced.

4,516,389

ROUND HAY BALING MACHINE

Grant M. Core, Rte. #3, Knoxville, Iowa 50138

Filed Sep. 4, 1984, Ser. No. 646,460
Int. Cl.³ A01D *59/00, 89/00*
U.S. Cl. 56—341 **5 Claims**



1. An improved round hay baling machine having a frame with forward and rearward ends, a baling chamber supported on said frame, a pickup assembly mounted on said frame forwardly of said baling chamber, a windguard assembly pivotally connected to said frame above said pickup assembly, a latch assembly pivotally secured to said frame and having a stop element for normally limiting the pivotal movement of said windguard, and a twine tie assembly operatively connected to said frame and including a hydraulic cylinder means having a first end pivotally connected to said frame and a spaced apart second end, a twine wrapper activator having a first end pivotally connected to said second end of said hydraulic cylinder means and a spaced apart second end, and an elongated twine wrapper arm having a first end pivotally connected to said frame and a second end pivotally connected to said activator such that actuation of said hydraulic cylinder means pivots said second ends of said activator and said wrapper arm downwardly, said improvement comprising:

cable means having first and second opposite ends attached to said twine tie assembly and to said latch assembly, respectively, such that actuation of said hydraulic cylinder means pulls on said cable means thereby raising said latch assembly to allow said windguard assembly to pivot beyond said stop element whereby an accumulation of hay passes beneath said windguard assembly into said baling chamber,

first connection means for securing said first end of said cable means to said twine tie assembly, and

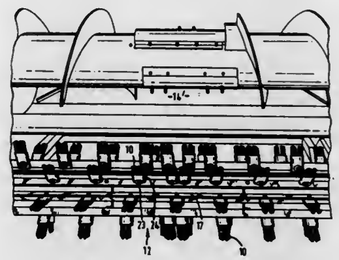
second connection means for securing said second end of said cable means to said latch assembly.

4,516,390

APPARATUS AND METHOD OF PICKING UP AND CONVEYING CUT CROP

Wilfred E. Klinner, Milton Keynes, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 173,136, filed as PCT GB 79/00053, Mar. 30, 1979, published as WO 79/00863 Nov. 1, 1979, § 102(e) date Nov. 30, 1979 abandoned. This application Aug. 17, 1982, Ser. No. 408,883
Claims priority, application United Kingdom, Mar. 31, 1978, 12703/78
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 **21 Claims**



1. Apparatus for picking up and conveying cut grass and other cut fibrous fodder crop, comprising

a mobile frame for movement over the ground,

a crop conveying rotor for picking up and conveying cut grass and other cut fibrous fodder crop, said rotor being mounted on said mobile frame in a position close to the ground for picking up crop from the ground, but with the lowest part of said rotor spaced from the normal ground surface,

said conveying rotor comprising a brush-like structure having a multiplicity of stiff, resilient, outwardly directed, elongate elements for picking up and conveying the crop by an action including relative movement between the conveying elements and the crop engaged thereby, the elements being yieldable in response to engagement with the crop but being sufficiently stiff to penetrate at least part of a stream of crop conveyed by the rotor, the elements being yieldable at least predominantly by bending of the elements along at least part of the crop engaging portions of the lengths thereof, and the elements being sufficiently stiff to return to their undeflected dispositions when free from engagement with crop at least predominantly by virtue of the stiffness of the elements,

said brush-like structure comprising spaced-apart, discrete tufts of crop engaging elements, each tuft being formed of a plurality of lengths of resilient, synthetic material doubled over and secured to a supporting base by a securing member passing through the fold of the doubled-over elements lengths, the doubled-over material being secured in a sleeve of resilient material which supports and protects the tuft of elements at the base thereof, the discrete tufts of elements being arranged so that tufts which are adjacent to each other along a direction parallel to the axis of rotation of the rotor are spaced-apart from each other at the distal ends of the tufts so as to leave gaps between adjacent tufts, the axial positions of the brush tufts being staggered around the rotor so that upon rotation of the rotor the gaps between the spaced-apart tufts presented to the crop are filled at least partly by succeeding tufts presented to the crop during the rotation,

a housing extending over the front of the crop conveying rotor and forming a crop flow passage between the rotor and the housing,

outlet means forming an outlet from said passage leading rearwardly from said rotor for discharging crop released by the rotor, and

drive means for rotating the crop conveying rotor about an axis substantially parallel to the ground in such a manner as to pick-up cut crop and convey the crop upwardly and rearwardly over the rotor along the passage,

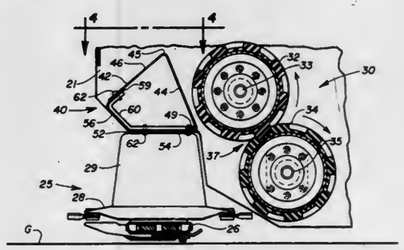
said drive means including means for coupling said rotor to a power source for driving said rotor in rotation independently of forward movement of the mobile frame and at a rotational speed sufficient to pick-up the crop by a stiff brushing action and to detach crop from the rotor by centrifugal effect and discharge the crop rearwardly through said rearward outlet formed by the outlet means.

4,516,391

LIGHT HAY BAFFLE FOR DISC MOWER-CONDITIONER

Kenneth W. McLean, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

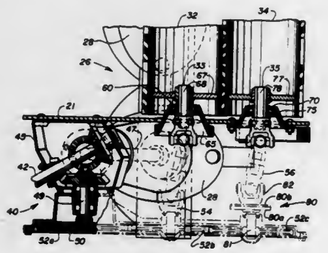
Filed Mar. 2, 1984, Ser. No. 585,675
Int. Cl.³ A01D *43/10*
U.S. Cl. 56—16.4 **12 Claims**



1. A hay harvesting machine having a mobile frame including transversely spaced side sheets; crop conditioning means rotatably supported by said frame to condition crop received thereby; rotary cutting means supported by said frame forwardly of said conditioning means to sever standing crop material and convey the severed crop material rearwardly toward said conditioning means, said rotary cutting means having a plurality of transversely spaced disc cutters rotatably mounted on a transverse cutterbar, each said disc cutter having at least one knife mounted thereon to sever standing crop by impact action upon rotation of said disc cutters; and drive means for rotatably driving said conditioning means and said rotary cutting means, the improvement comprising:

a transverse baffle positioned above said rotary cutting means and forwardly of said conditioning means to assist in directing the flow of severed crop material from said rotary cutting means into said conditioning means.

4,516,392
CONDITIONING ROLL DRIVE MECHANISM
Kenneth W. McLean, and John K. Hale, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.
Filed Mar. 2, 1984, Ser. No. 585,676
Int. Cl.[3] A01D 82/00
U.S. Cl. 56—16.4 4 Claims

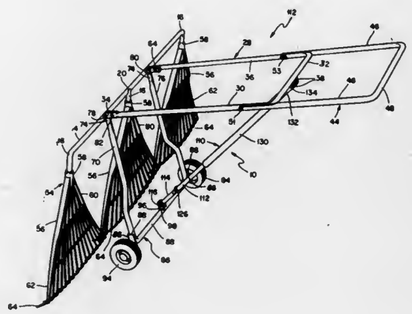


1. A hay harvesting machine having a mobile frame defining opposing lateral sides; upper and lower transverse conditioning rolls supported by said frame to condition crop passing therebetween, each said conditioning roll having opposing ends being rotatably mounted by first and second bearings adjacent, respectively, the opposing lateral sides; crop cutting and conveying means supported by said frame to sever standing crop material and convey the severed crop material to said conditioning rolls to be fed therebetween; and drive means for operatively powering said crop cutting and conveying means and the rotation of said conditioning rolls, the improvement comprising:

said conditioning rolls having a generally tubular construction with a support plate recessed inside each respective said conditioning roll and positioned generally perpendicular to the respective axis of rotation, each said support plate having a stub shaft extending therefrom toward the corresponding end of the conditioning roll, the first bearing for each said conditioning roll being mounted in a housing cup, each said stub shaft being rotatably supported by the corresponding said first bearing, each said first bearing being positioned internally of the corresponding said conditioning roll between the corresponding support plate and the respective end of the corresponding conditioning roll, the housing cup for said upper conditioning roll being connected to a biasing means for biasing said upper conditioning roll toward a position relative to said lower conditioning roll.

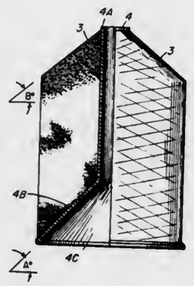
4,516,393
WHEELED PUSH RAKE
Phillip E. Lambert, Rte. 2, Zimmerman, Minn. 55398
Filed Sep. 6, 1983, Ser. No. 529,344
Int. Cl.[3] A01D 7/00
U.S. Cl. 56—400.2 16 Claims

1. A push rake comprising a first frame unit including a handle member, a second frame unit, wheel means on said second frame unit for traversing the ground to be raked, means connecting said first frame unit to said second frame unit for pivotal movement of said first frame unit about an axis spaced from said wheel means, rake means rigidly mounted on said first frame unit forwardly of said wheel means, and a spring mechanism connected to said first frame unit at a first location spaced rearwardly from said connecting means and to said second frame unit at a second location spaced downwardly



from said connecting means and rearwardly of said rake means for yieldingly biasing said frame units relative to each other.

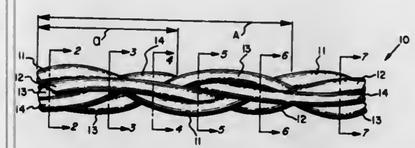
4,516,394
YARN PACKAGE FOR SPIRALERS
Gilbert C. Bell, and Harry W. Stanhope, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.
Filed Sep. 7, 1982, Ser. No. 415,100
Int. Cl.[3] D02G 3/40, 3/02, 3/44; B65H 55/00
U.S. Cl. 57—234 8 Claims



1. An improved feed stock package of yarn for a high speed spiraling machine suitable for the manufacture of reinforced hose, which package comprises a rotatable support and filamentary yarn wound about the support, the filamentary yarn having a twist of less than 3 turns per inch wherein the improvement comprises: said rotatable support is a king spool and said yarn is up to about 7 pounds of an adhesive-treated yarn having from 1% to 8% by weight of adhesive material said adhesive material having the ability to increase the bond strength of said yarn in said hose.

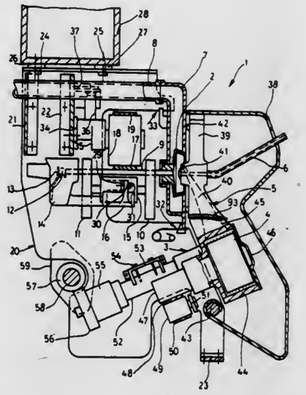
4,516,395
METALLIC CABLE FOR REINFORCING ELASTOMERIC ARTICLES
Kenneth J. Palmer, Wadsworth; Dennis R. Brandyberry, Canton, and Grover W. Rye, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 23, 1983, Ser. No. 525,540
Int. Cl.[3] D02G 3/48
U.S. Cl. 57—237 6 Claims

1. A metallic cable for reinforcing elastomeric articles comprising two strands twisted together and having a cable lay length, each of said strands comprising two filaments twisted together and said strands each having a strand lay length, the



strand lay length of said strands being equal to one another but being less than said cable lay length by between 25% and 75%.

4,516,396
OPEN END YARN SPINNING APPARATUS
Fritz Stahlecker, Josef-Neidart-Str. 18, Bad Überkingen, Fed. Rep. of Germany, and Hans Raasch, Monchen-Gladbach, Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany
Filed Nov. 17, 1983, Ser. No. 552,741
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247411
Int. Cl.[3] D01H 7/882
U.S. Cl. 57—407 22 Claims



1. In an open end yarn spinning apparatus comprising a plurality of side by side spinning positions arranged longitudinally along the apparatus, and characterized in that the internal components of each spinning position are readily accessible without affecting adjacent positions, and with each spinning position including a circular spinning rotor having a rotor shaft coaxially fixed thereto; bearing means rotatably mounting said rotor shaft while permitting the axial withdrawal of said rotor and shaft; a rotor housing generally surrounding the periphery of said spinning rotor and having a rear wall with an opening receiving said rotor shaft therethrough; fiber delivery means including a feed roll and an opening roll for delivering fibers to said spinning rotor; and a cover pivotally mounted so as to selectively overlie such position, the improvement wherein said rotor housing of each spinning position is separate from the rotor housings of adjacent positions and wherein said yarn spinning apparatus further comprises

a central frame extending longitudinally along the length of the apparatus,

a frame subassembly fixedly mounted to said central frame at each of said spinning positions,

means mounting said bearing means of each spinning position to the associated frame subassembly,

means mounting said feed roll and said opening roll of said fiber delivery means of each spinning position to the associated frame subassembly, and

means releaseably mounting said rotor housing of each spinning position to the associated frame subassembly and so that the rotor housing of each spinning position may be separately removed without affecting the adjacent positions,

whereby the internal components of each spinning position are readily accessible by opening its cover and removing the rotor and rotor shaft, and the rotor housing.

4. In an open end yarn spinning apparatus comprising a plurality of side by side spinning positions arranged longitudinally along the apparatus, and characterized in that the internal components of each spinning position are readily accessible without affecting adjacent positions, and with each spinning position including a spinning rotor having a forward side adapted to receive fibers, and a rearward side having a rotor shaft coaxially fixed thereto; bearing means rotatably mounting said rotor shaft while permitting the axial withdrawal of said rotor and rotor shaft in the forward direction; a rotor housing generally surrounding the periphery of said rotor and having a rear wall with an opening receiving said rotor shaft therethrough; fiber delivery means including a feed roll, an opening roll, and a fiber delivery duct for delivering fibers to the forward side of said rotor; a cover pivotally mounted so as to selectively overlie such position, with said cover mounting a closure insert which is adapted to overlie the forward side of said rotor when the cover is closed and with said closure insert including at least a portion of said fiber delivery duct and a yarn removal duct, the improvement wherein said yarn spinning apparatus further comprises

a central frame extending longitudinally along the length of the apparatus,

a frame subassembly fixedly mounted to said central frame at each of said spinning positions, with each frame subassembly comprising a pair of longitudinally spaced apart side members fixed to said central frame and extending generally parallel to each other in the transverse direction, and support means extending longitudinally between and fixed to each of the associated side members,

means mounting said bearing means of each spinning position to the associated frame subassembly,

means mounting said feed roll and said opening roll of said fiber delivery means of each spinning position to the associated frame subassembly, and

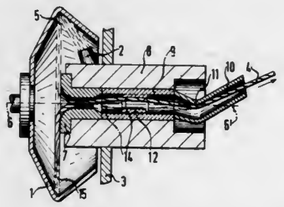
means releaseably mounting said rotor housing of each spinning position to the associated frame subassembly and so that the rotor housing of each spinning position may be separately removed without affecting the adjacent positions,

whereby the internal components of each spinning position are readily accessible by opening its cover and removing the rotor and rotor shaft, and the rotor housing.

4,516,397
METHOD AND DEVICE FOR INCREASING THE HAIRINESS AND THE BULKINESS OF A THREAD
Hans Raasch, and Heinz-Georg Wassenhoven, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany
Filed May 31, 1983, Ser. No. 499,193
Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220402
Int. Cl.[3] D01H 7/882
U.S. Cl. 57—417 14 Claims

1. Method of increasing the hairiness and bulkiness of a thread, in an open-end rotor spinning machine having a deflection ring disposed concentric to the axis of rotation of the rotor, which comprises continuously withdrawing the thread through the deflection ring substantially along the direction of the axis of rotation of the rotor, forming a thread balloon with the thread having a maximum diameter larger than the inner diameter of the deflection ring, bringing the thread in contact with a multiplicity of separately disposed balloon disturbance elements, and thereby changing the diameter of the thread balloon several times during each revolution of the thread balloon:

4. In a device for increasing the hairiness and bulkiness of a thread in an open-end rotor spinning machine, having a rotor with an axis of rotation and a deflection ring disposed concentric to the axis of rotation of the rotor, the thread being continuously drawn through the deflection ring substantially along the direction of the axis of rotation of the rotor, the improvement comprising a thread balloon guide following said deflection ring for forming a thread balloon having a larger maximum diameter than the inner diameter of said deflection ring, said thread balloon guide having balloon disturbance elements for contacting the thread and changing the diameter of the thread balloon, said balloon disturbance elements being annularly and separately disposed in said thread guide.



4,516,398

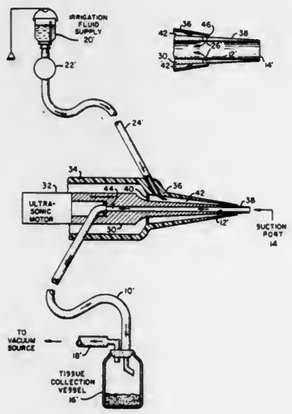
METHOD OF USE OF AN ULTRASONIC SURGICAL PRE-ASPIRATOR HAVING A ORIFICE BY-PASS

David G. Wuchinich, New York, N.Y., assignor to Cooper LaserSonics, Inc., Santa Clara, Calif.

Continuation of Ser. No. 195,205, Oct. 8, 1980, abandoned, which is a continuation of Ser. No. 34,717, Apr. 30, 1979, abandoned, which is a division of Ser. No. 895,217, Apr. 10, 1978, abandoned. This application Jun. 5, 1984, Ser. No. 617,146

Int. Cl.³ A61B *17/20*

U.S. Cl. 604—22 **1 Claim**



1. A method for preventing clogging of a surgical aspirator with fragmented tissue and blood removed from a surgical site by aspiration through a suction passage of said surgical aspirator, said aspirator comprising an ultrasonic tool having a longitudinal axis and a free end portion adapted to ultrasonically vibrate along said axis of said tool, a suction passage extending through said tool generally parallel to said axis, said suction passage defining a suction port at said free end portion, a sleeve coaxially surrounding said tool and spaced therefrom and extending substantially to said free end of said tool to define an annular fluid supply passage having an annular orifice surrounding said tool, and at least one orifice extending through said tool from said fluid supply passage to said suction passage, said orifice disposed adjacent said free end of said tool and wherein said method comprises: ultrasonically framgenting tissue causing bleeding and body fluid excretes;

supplying an anticoagulating and irrigating fluid to said fluid supply passage;

introducing substantially all of said anticoagulating fluid together with irrigation fluid into said suction passage through said orifice extending from said fluid supply passage to said suction passage;

diluting said tissue and blood with said anticoagulating fluid;

preventing substantially all of said anticoagulating and irrigating fluid from contacting said free end of said tool and from reaching the surgical site through the tool so as to prevent excessive bleeding at the surgical site and to further prevent atomization of said anticoagulating and irrigating fluids with said free end of said ultrasonic tool; and

aspirating fragmented tissue, body fluids, anticoagulant and irrigation fluids.

4,516,399

HYDRAULIC COUPLING

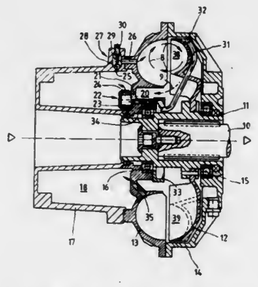
Heinz Höller, and Wolfgang Weber, both of Crailsheim, Fed. Rep. of Germany, assignors to Voith Turbo GmbH & Co. KG, Crailsheim, Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 543,530

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240334

Int. Cl.³ F16D *33/12*

U.S. Cl. 60—351 **15 Claims**



1. A hydraulic coupling of the type having a constant volume of operating fluid comprising

a bladed primary wheel and a bladed secondary wheel having an operating space therebetween,

said bladed primary wheel having a plurality of circumferentially spaced radially extending blades and being provided with a blade-free ram space adjacent to the inner radius of the blades of the primary wheel,

said bladed primary wheel including means defining a delay chamber fixedly mounted to the primary wheel for rotation therewith, first channeling means for passing an operating fluid from said ram space to said delay chamber, first valve means for closing said first channeling means when a primary rotation speed is greater than a first switching speed,

second channeling means for passing the operating fluid from the delay chamber to the operating space, second valve means closing said second channeling means, said second valve means being operable to open said second channeling means when the primary rotation speed is greater than a second switching speed,

a scoop tube fixedly mounted to said bladed secondary wheel for rotation therewith, said scoop tube having an inlet opening proximate the radially outer periphery of the bladed secondary wheel open to said operating space and an outlet opening proximate a radially inner zone of the coupling adjacent to the ram space, and

speed responsive means for selectively passing operating fluid from said scoop tube to the delay chamber only when the primary rotational speed is less than a third switching speed, said operating fluid from said scoop tube otherwise being returned to said operating space.

4,516,400

MASTER CYLINDER ASSEMBLY FOR A VEHICLE BRAKING SYSTEM

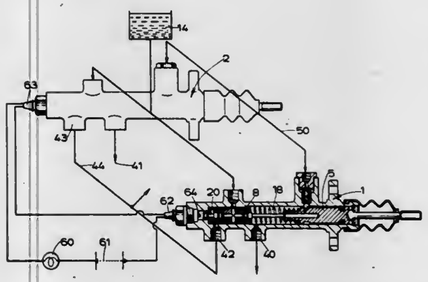
Michael K. Tarplee, Birmingham, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed May 4, 1982, Ser. No. 374,693

Claims priority, application United Kingdom, May 15, 1981, 8115016

Int. Cl.³ F15B *7/00*

U.S. Cl. 60—535 **6 Claims**



1. A master cylinder assembly for a vehicle hydraulic braking system comprising a pair of master cylinders, each said master cylinder comprising a housing having a bore, a closure for one end of said bore, a pedal-operated primary piston working in said bore, a secondary floating piston working in a portion of said bore between said primary piston and said closure, a primary pressure space defined in said bore between said primary and secondary pistons, and a secondary pressure space defined in said bore between said secondary piston and said closure, wherein said primary pressure spaces are adapted to be connected to brakes on wheels on opposite sides of the vehicle, said secondary pressure spaces are both connected to a common auxiliary braking system, a transfer passage provides communication between said primary pressure spaces when said master cylinders are operated simultaneously, transfer valve means are operative to cut off communication between said primary pressure spaces when one of said master cylinders is operated on its own, and said secondary pressure spaces are adapted to operate said auxiliary braking system only when said two master cylinders are operated simultaneously, each said secondary piston being provided with passage means in communication at all times with a reservoir for fluid, and normally open primary and secondary recuperation valves provide communication between said passage means and said primary and secondary pressure spaces when said pistons are in retracted positions, simultaneous operation of both said master cylinders causing both pairs of said primary and secondary recuperation valves to close followed by pressurisation of the fluid in both said pairs of primary and secondary pressure spaces whereby to apply simultaneously the brakes on opposite sides of the vehicle and to operate said auxiliary braking system, and operation of one of said master cylinders on its own causing said primary and secondary recuperation valves of the said one master cylinder to close followed by pressurisation of the fluid in said primary pressure space but with fluid in said secondary pressure space being displaced to said reservoir through the open secondary recuperation valve of the other, inoperative, master cylinder whereby to prevent operation of said auxiliary braking system.

4,516,401

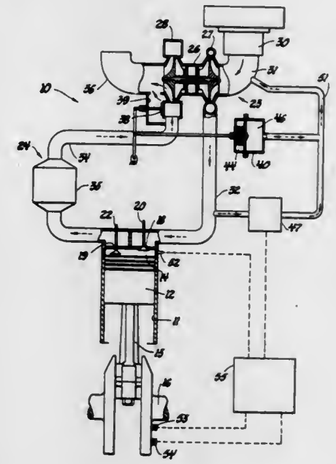
SUPERCHARGED ENGINE CHARGE CONTROL

John S. Jackson, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1983, Ser. No. 548,709

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **2 Claims**



1. An internal combustion engine comprising

at least one variable volume combustion chamber in which compressed charges are cyclically burned and expanded to produce power, whereby a cyclical peak pressure is reached at a measurable interval after each charge is compressed to its minimum volume,

a charge supply system connected to deliver charges to the combustion chamber for compression and burning, the charging pressure in said supply system being functionally related to said peak pressure interval,

a supercharger for increasing the charge pressure in said charge supply system, thereby altering said peak pressure interval,

means for detecting said peak pressure interval and measuring the deviation of said interval from a reference value, and

valve means coupled with said means for detecting said peak pressure interval for altering said charge pressure in a direction to minimize the deviation of said interval from said reference value and thereby desirably affect engine operation.

4,516,402

LIMITLESS AND LIMITED HEAT SOURCES POWER PLANTS

Yan P. Chang, 181 Sherbrooke Ave., Williamsville, N.Y. 14221

Continuation-in-part of Ser. No. 406,321, Aug. 9, 1982, abandoned. This application May 31, 1983, Ser. No. 499,286

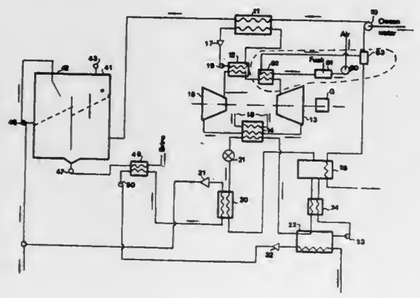
Int. Cl.³ F01K *13/02*

U.S. Cl. 60—656 **8 Claims**

1. A method of utilizing the thermal energy of a substantially limitless heat source, which is usually considered as an inert heat source such as the atmosphere and the like, and of a limited heat source, such as the combustion of fossil fuel, to power a plant including (i) first heat exchange means operatively associated with the sources, (ii) a prime mover which includes a gas turbine and a compressor, operates in a closed cycle and is operatively associated with the first heat exchange means, (iii) second heat exchange means operatively associated with the prime mover and (iv) an auxiliary system for starting the operation of the prime mover; the said method comprising:

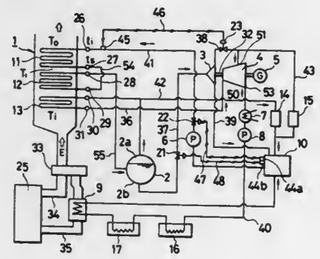
(a) selecting the proper first and second heat exchange

means to provide appropriate heating and cooling processes of the power cycle so that the power plant is capable of producing net work with the continuous increase of entropy in the surroundings.
(b) passing the source fluid from such heat sources through the said first heat exchange means wherein the source fluid gives heat to the working fluid of the turbine and is cooled as it flows out of the first heat exchange means to produce cooled source fluid;
(c) expanding the heated working fluid in the turbine:
(d) cooling the expanded working fluid by the said auxiliary system for a short period to start the prime mover and to initiate the continuous release of thermal energy from the limitless heat source;



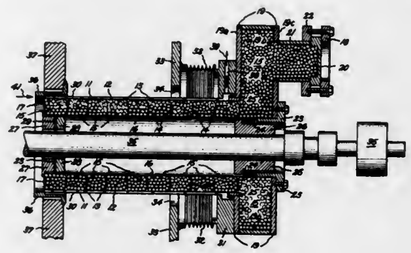
(e) cutting off the auxiliary system;
(f) conducting a portion of the cooled source fluid effluent from the first heat exchange means to the said second heat exchange means wherein the heat of the expanded working fluid is removed and discharged to the cooled source fluid;
(g) compressing the cooled expanded working fluid back to the said first heat exchange means wherein the compressed working fluid is heated by the source fluid to repeat steps (b), (c), (f) and (g); and
(h) utilizing the remaining cooled source effluent from such power plant for another cooling process.

4,516,403
WASTE HEAT RECOVERY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Yoshiharu Tanaka, Machida, Japan, assignor to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan
Filed Apr. 20, 1984, Ser. No. 602,563
Claims priority, application Japan, Oct. 21, 1983, 58-196200
Int. Cl.³ F22D *5/00*
U.S. Cl. 60—667 **3 Claims**



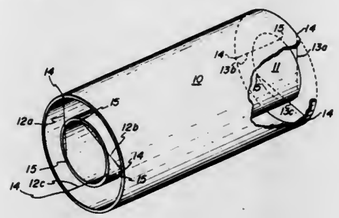
1. In a waste heat recovery system comprising
(a) an exhaust gas economizer having a preheating portion, an evaporating portion and superheating portion, (b) a multi-pressure steam turbine driving generator, (c) a steam separating drum and a first steam line supplying steam within the steam separating drum to a high pressure portion through the superheating portion of the exhaust gas economizer, said waste heat recovery system comprises:
(c) a steam separating drum and a first steam line supplying steam within the steam separating drum to a high pressure inlet of said multi-pressure steam turbine through the superheating portion of the exhaust gas economizer;
(d) a hot water flash turbine connected to said multi-pressure steam turbine;
(e) a hot water supply line supplying hot water in the steam separating drum to said hot water flash turbine;
(f) a second steam line supplying steam separated in said hot water flash turbine to a low pressure inlet of the multi-pressure steam turbine;
(g) a first return line returning the hot water separated in said hot water flash turbine to a drain tank;
(h) a second return line returning water condensed from the exhaust steam discharged from said multi-pressure steam turbine to said drain tank through a variety of coolers;
(i) a water supply line supplying the liquid in said drain tank to the preheating portion of the exhaust gas economizer;
(j) a first control valve provided at said second steam line and controlling a supply of the steam within the second steam line by sensing the temperature of circulating water at the inlet side of the preheating portion of the exhaust gas economizer;
(k) a feed water supply pump provided at said water supply line;
(l) a second control valve provided at said water supply line and controlling a supply of the water by sensing a water level in the drain tank; and
(m) a third control valve provided at said hot water supply line and controlling a supply of the hot water by sensing the water level in the drain tank.

4,516,404
FOAM FILLED INSERT FOR HORIZONTAL CRYOSTAT PENETRATIONS
Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 30, 1984, Ser. No. 595,201
Int. Cl.³ F17C *1/00*
U.S. Cl. 62—45 **24 Claims**



1. An insert for horizontal cryostat penetration comprising:
an outer, low thermal conductivity tube;
an inner, low thermal conductivity tube disposed substantially coaxially with respect to said outer tube;
a plurality of foam pieces disposed between said inner and outer tubes;
an annular chamber sealably affixed to said inner and outer tubes so that the interior volume of said chamber is in flow communication with the volume between said inner and outer tubes containing said foam particles; and
blowout means in flow communication with the interior of said annular chamber.

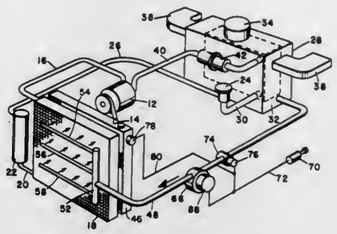
4,516,405
SUPPORTING TIE CONFIGURATION FOR CRYOSTAT FOR COLD SHIPMENT OF NMR MAGNET
Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 15, 1984, Ser. No. 621,321
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—55 **5 Claims**



1. A cryostat comprising:
an outer, evacuable vessel having an annular shape;
an interior vessel having an annular shape and being wholly contained within said outer vessel so that the central axes of said interior vessel and said outer vessel lie substantially along the same line;
a first set of at least three supporting ties extending transversely from attachment positions on a first end of said interior vessel to corresponding attachment points on the proximal end of said outer vessel, said attachment points on said first end of said interior vessel being substantially uniformly disposed about the periphery thereof and said corresponding attachment points on said outer vessel being substantially uniformly disposed about said outer vessel; and
a second set of at least three supporting ties extending transversely from attachment points on a second end of said interior vessel to corresponding attachment points on the proximal end of said outer vessel, said attachment points on said second end of said interior vessel being substantially uniformly disposed about the periphery thereof and said corresponding attachment points on said outer vessel being substantially uniformly disposed about said outer vessel;
said first and second set of said supporting ties each being disposed so that the angle θ between said tie and a line drawn from its attachment point on said interior vessel to said axis is given by $\theta=\cos^{-1}(\Delta t/\Delta R)$, where Δt is the thermal contraction length of said tie and ΔR is the thermal radial contraction length of said interior vessel.

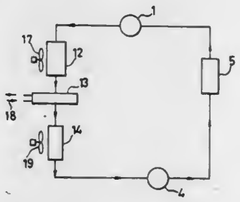
4,516,406
COOLING SYSTEM FOR MOTOR VEHICLES
Samuel H. Gentry, Chula Vista, Calif., and Frank Gentry, Rogersville, Tenn., assignors to Gentry and Green Enterprises, San Diego, Calif.
Filed Feb. 22, 1983, Ser. No. 468,077
Int. Cl.³ F25B *39/04*
U.S. Cl. 62—183 **18 Claims**

1. A cooling system for a motor vehicle having an engine and also having an air conditioner that includes an evaporator in a plenum chamber and a condenser, comprising:
conduit means connected at one end with said plenum chamber;
cooled air dispersing means connected to the other end of said conduit means adjacent said condenser for automatically, selectively passing a portion of the cooled air from said plenum chamber over said condenser; and
means responsive to the engine temperature for controlling the amount of cooled air passing from said plenum chamber to said cooled air dispersing means, the amount of cooled air flowing through said conduit means selectively ranging from zero to the capacity of said conduit means, based on demand;



whereby the refrigerant in the condenser is cooled, thereby reducing the tendency of the vehicle engine to overheat.

4,516,407
REFRIGERATING APPARATUS
Shin Watabe, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed May 27, 1983, Ser. No. 498,962
Claims priority, application Japan, Jun. 3, 1982, 57-95248
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **7 Claims**



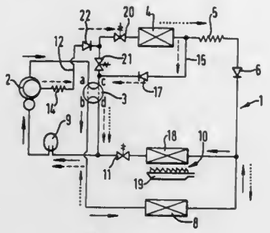
1. A refrigerating apparatus comprising, a compressor, a condenser having an inlet and an outlet, an expansion valve, and an evaporator all connected in series, an upstream air cooled condenser adjacent said condenser having an inlet and an outlet, said upstream air cooled condenser inlet being connected to said compressor, a downstream air cooled condenser adjacent said expansion valve having an inlet and an outlet with said outlet of said downstream air cooled condenser being connected to said inlet of said expansion valve, a water cooled condenser having an inlet and an outlet and being connected between both of said upstream and downstream air cooled condensers, said inlet of said water cooled condenser being connected to said outlet of said upstream air cooled condenser and said outlet of said water cooled condenser being connected to said inlet of said downstream air cooled condenser.

4,516,408
REFRIGERATION SYSTEM FOR REFRIGERANT HEATING TYPE AIR CONDITIONING APPARATUS
Mitsuyoshi Chiba, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 30, 1984, Ser. No. 605,078
Claims priority, application Japan, May 25, 1983, 58-90626
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.7 **14 Claims**

1. A refrigeration system for a refrigerant heating type air conditioning apparatus having a main circuit including a compressor for circulating refrigerant, a four-way valve connected to the high pressure side of the compressor for changing the direction of flow of the refrigerant, an outdoor heat exchanger (4) connected for receiving the refrigerant through the four-way valve and condensing the refrigerant, a main capillary

tube connected to receive the condensed refrigerant, a check valve connected to receive refrigerant from the capillary tube, and an indoor heat exchanger (8) provided between the check valve and the four-way valve for exchanging heat with air, said system comprising:

a refrigerant heating device (10) connected to the indoor heat exchanger during a heating cycle, for heating and vaporing the refrigerant;



a releasing circuit connected to the outlet side of the compressor, for bypassing a portion of refrigerant toward the four-way valve;

valve means for changing the refrigerant flow direction from the releasing circuit toward the outdoor heat exchanger or the four-way valve; and

means for removing the refrigerant from the outdoor heat exchanger according to the flow direction of said refrigerant.

4,516,409

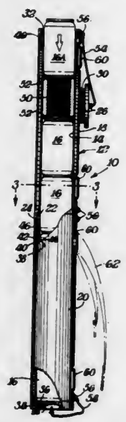
PORTABLE BEVERAGE COOLER

Andrew G. P. Hobbs, Jr., P.O. Box 240; Brett D. Lickle, "The Yellow House", and Patricia W. Hobbs, P.O. Box 240, all of Montchanin, Del. 19710

Filed May 1, 1984, Ser. No. 605,919

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **14 Claims**



1. A portable beverage cooler comprising a tubular container having an internal storage passageway therein open at its opposite ends and arranged to receive a plurality of beverage cans in end-to-end relationship, removable caps at the ends of the container closing the ends of the storage passageway, spring means in the storage passageway biased against beverage cans to assist in removing them from the cooler when one or the other of the end caps is removed and bearing means on opposite ends of the spring means constructed and arranged to engage beverage cans as such cans are introduced into the cooler and removed therefrom.

4,516,410

KNITWORK DRAWING DEVICE IN A DOUBLE CYLINDER CIRCULAR KNITTING MACHINE

Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy

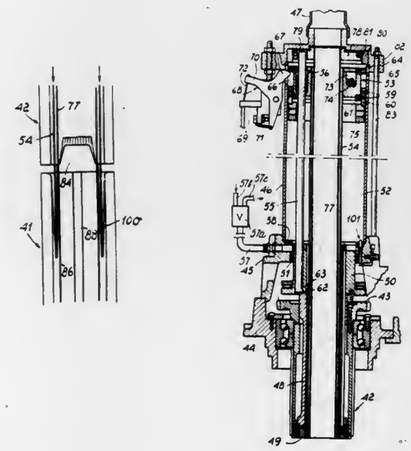
Continuation of Ser. No. 923,416, Jul. 10, 1978, Pat. No. 4,407,145. This application Feb. 4, 1983, Ser. No. 463,792

Claims priority, application Italy, Jul. 14, 1977, 25773 A/77; Mar. 24, 1978, 21614 A/78

The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.³ D04B *9/10, 15/88, 15/92*

U.S. Cl. 66—14 **5 Claims**



1. In a circular knitting machine having an upper and a lower needle cylinder defining a stitch-formation area therebetween, and needles in said upper and lower needle cylinder, a knitwork drawing device comprising a cylindrical chamber coaxial with said upper and lower needle cylinder, a fluid-operated piston slidable within said cylindrical chamber, a hollow rod secured to said piston and extending at least partially within one of said needle cylinders, said rod having open ends, knitwork retaining means arranged at said stitch-formation area, said knitwork retaining means having a cross dimension smaller than said hollow piston rod and being rotatable with the knitwork, means for delivering pressure fluid into said cylindrical chamber to operate said piston and for discharging pressure fluid therefrom, wherein said knitwork retaining means comprise an elongated tubular member arranged inside said hollow rod and spaced therefrom and having two open ends, and a locking member coaxial with said hollow rod and said elongated open-ended tubular member and facing said elongated open-ended tubular member at said stitch-formation area, one of said members being axially movable with respect to the other to lock the knitwork therebetween and within said elongated open-ended tubular member and to subsequently release the knitwork thereby knitwork portions lying along a whole length of the knitwork between an initially knitted portion and a finally knitted portion being selectively lockable between said elongated open-ended tubular member and said locking member and the knitwork entering one of said two ends of said elongated open-ended tubular member being dischargeable through another of said two ends of said elongated open-ended tubular member, and wherein said hollow rod is movable past said stitch-formation area to engage and tension the knitwork which is being knitted by said needles and locked by said locking member and said elongated open-ended tubular member.

4,516,411

LOOP HOLD-DOWN DEVICE FOR USE IN CONJUNCTION WITH A KNITTING MACHINE

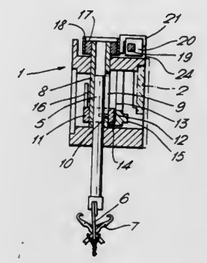
Jack T. Hampson, Belper, England, assignor to J & P Coats, Limited, Glasgow, Scotland

Filed Dec. 9, 1983, Ser. No. 559,759

Claims priority, application United Kingdom, Dec. 9, 1982, 8235148

Int. Cl.³ D04B *7/04*

U.S. Cl. 66—64 **8 Claims**



1. A loop hold-down device incorporating a carrier member attachable to the needle actuating carriage customarily forming part of a flat knitting machine and movable to and fro along the needle bed of the machine, two spaced parallel rods rotatable about their axes and also reciprocable in the carrier member in a direction which is vertical when the carrier member is attached to said movable carriage and a loop hold-down element attached to and projecting from the lowermost end of each rod, i.e. the end which is lowermost when the device is attached to the carriage in which two sleeves are mounted in the carriage to be rotatable but restrained against reciprocation in the carrier, each rod is slidable in a respective sleeve and is entrained by the sleeve to rotate therewith, a driving band interconnects the two sleeves whereby to cause both sleeves to rotate together, two sliding blocks are slidable vertically in the carrier member, each block engaging a respective rod and each formed with a cam follower engageable with a cam surface located at each end of the bed of the knitting machine and thereupon to be operable to cause the associated rod to reciprocate in the sleeve and an actuating bar slidable in the carrier member in a direction parallel with the direction in which the carriage is movable, said actuating bar being connected to the driving band and being engageable with an abutment located at each end of the knitting machine as the carriage moves to and fro so that the bar is also movable to and fro in the carrier member, moving with it the driving band.

4,516,412

CAMBOX FOR A FLAT KNITTING MACHINE

Karl Essig, Gaienhofen, Fed. Rep. of Germany, assignor to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany

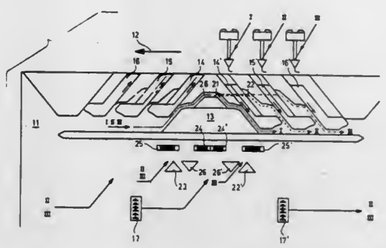
Filed Sep. 30, 1982, Ser. No. 429,197

Claims priority, application Fed. Rep. of Germany, Nov. 1, 1981, 3144246

Int. Cl.³ D04B *7/00*

U.S. Cl. 66—78 **2 Claims**

1. A cambox for a flat knitting machine adapted to produce single needle bed, multicolor knitting patterns during a single pass of the machine carriage characterized by the provision of a plurality of stitch cams operable independently of one another and associated together at the two sides of the cambox and control means for providing independent movement of said stitch cams and of selected needles carrying yarns of at least three different colors such that needles carrying a first color yarn are caused to travel through a needle guide track of the cambox and to be drawn down by a first stitch cam to provide a knitted stitch of the first color, such that needles carrying a second color yarn are caused to travel through the needle guide track along a second path in which the needles are held out of the guide track of the cambox at a first point corresponding to the point of which the needles carrying the first color yarn are drawn down by the first stitch cam and thereafter are subsequently released into the guide track of the cambox so as to enable drawing down of a knitted stitch of the second color by a second, laterally spaced stitch cam, and such that needles carrying a third color yarn are caused to travel



along a third path wherein the needles are held out of the needle guide track at said first point and at a further point corresponding to the point at which the needles carrying the second color yarn are released, and thereafter are subsequently released into the guide track of the cambox so as to enable drawing down of a knitted stitch of the third color by a third stitch cam spaced laterally from said second stitch cam.

4,516,413

MACHINES FOR THE LIQUID OR GASEOUS TREATMENT OF TEXTILE MATERIAL OR OTHER FIBROUS OR POROUS MATERIALS

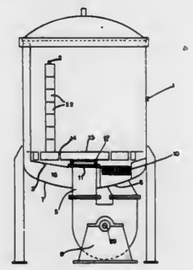
Robert Barriquand; Bernard Barriquand; Bernard Durantet, and Bernard Machabert, all of Roanne, France, assignors to Barriquand, Roanne, France

Continuation of Ser. No. 349,997, Feb. 18, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,352

Claims priority, application France, Mar. 5, 1981, 81 04401

Int. Cl.³ D06B *5/18*

U.S. Cl. 68—5 C **20 Claims**



1. A machine for treating textile materials or other fibrous or porous materials with a liquid or gaseous treatment bath, and more particularly for washing, dyeing and bleaching such material, said machine comprising:

a container;

a false bottom disposed in, and extending across a lower part of, said container;

a first pipe mounted in said container and being vertically disposed, one end of said pipe extending through the bottom of said container and said false bottom;

a second pipe mounted in said container and extending through the bottom of said container and said false bottom;

said false bottom being imperforate except for first and

second openings for receiving said first and second pipes, respectively;

said false bottom defining in combination with the bottom of said container a compartment which is fluid-tight with respect to said treatment bath in the container above said false bottom, said false bottom further defining means for reducing the volume of bath circulating within said container;

said first and second pipes being sealed in said false bottom to maintain the integrity of isolation of said compartment from the treatment bath above said false bottom;

a reversible pump means interconnecting, and communicating with, said first and second pipes, said pump means being disposed externally of said container and being capable of causing the treatment bath to flow in either direction through said first and second pipes; and

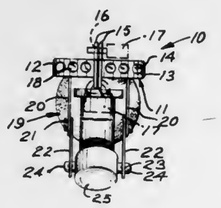
a material carrier mounted on the end of said first pipe extending above said false bottom.

4,516,414

SECURITY LOCKING DEVICE FOR OUTDOOR WATER FAUCETS

Samuel C. Woolvin, 350 Jackson Pl., Corpus Christi, Tex. 78411

Filed Apr. 5, 1983, Ser. No. 482,183
Int. Cl.³ B65D *55/14*
U.S. Cl. 70—164 **1 Claim**



1. A security locking device for outdoor water faucets, comprising, in combination, a circular main body comprised of two semi-circular body halves, projecting hasps on each end of each said half, an opening in each said hasp, said openings at each end being aligned with each other when said halves encompass and enclose a faucet handle, for receiving a padlock and locking said halves together, a pair of links, each said link being affixed at one end to one said half and its opposite end being pivotally connected to one end of a link arm which at its opposite end to one of a pair of oppositely extending lugs on a cap, and said cap having a screw thread for screwing on a faucet spout.

4,516,415

STEERING LOCK FOR AUTOMOBILES

Satoru Kobayashi; Mikio Masaki, both of Kawaguchi; Hideaki Sakuno, Tokyo; Keiichi Shimizu, Tokyo, and Takeshi Fukasawa, Tokyo, all of Japan, assignors to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,318
Claims priority, application Japan, Dec. 26, 1981, 56-209528
Int. Cl.³ B60R *25/02;* **F16C** *3/00;* **G05G** *5/00*
U.S. Cl. 70—252 **3 Claims**

1. A steering lock for an automobile, actuated by a key to engage a steering shaft, said steering lock comprising:

a frame;

a housing disposed in said frame, said housing defining a cam groove and a locking cam groove;

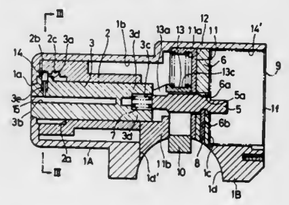
a partition defined by the housing separating the cam groove and the locking step cam groove;

a key cylinder rotatably mounted in said housing for rotation about its axis and for axial movement within said housing, said key cylinder defining a key insertion slot and a radial bore, said key insertion slot extending axially in said key cylinder and said radial bore communicating with said key insertion slot;

locking rod means movably supported in said frame, said locking rod means being movable between a retracted position wherein the locking rod means is disengaged from the steering shaft and a locking position wherein the locking rod means is located in locking engagement with the steering shaft, said key cylinder including a cam portion engaging said locking rod means;

a first spring biasing said key cylinder away from said locking rod means;

a control member slidably mounted in said radial bore and sliding axially along the housing between three positions including a first position where one end of the control member contacts the side surface of said key inserted in the key insertion slot and the other end of the control member engages said locking step cam groove, a second position wherein one end of the control member extends into the key insertion slot and the other end of the control



member engages the partition upon the withdrawal of the key from the key insertion slot, and a third position wherein one end of the control member engages said cam groove and the other end of the control member extends to the key insertion slot;

a second spring biasing said control member radially away from said key insertion slot, the bias of said first spring being greater than the bias of said second spring;

said key cylinder being axially movable in a first direction by rotation of the key in said key insertion slot to move said control member from said cam groove to said locking step cam groove until said cam portion of the key cylinder moves said locking rod means to said retracted position; and

said key cylinder being axially movable in a second direction opposite to said first direction by said first spring upon removal of the key from said key insertion slot to move said control member from said first position to said second position and said third position.

4,516,416

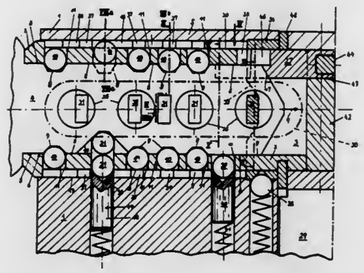
LOCKING DEVICE AND KEY

Kurt Prunbauer, Herzogenburg, and Erich Csapo, Vienna, both of Austria, assignors to Evva-Werk Spezialerzeugung von Zylinder- und Sicherheitsschlössern Gesellschaft m.b.H. & Co. Kommanditgesellschaft, Vienna, Austria

Continuation of Ser. No. 232,244, Feb., 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,952
Claims priority, application Austria, Feb. 8, 1980, 701/80; Feb. 14, 1980, 811/80; Mar. 3, 1980, 1167/80
Int. Cl.³ E05B *27/06, 47/00*
U.S. Cl. 70—276 **19 Claims**

1. Closure device with a cylinder core turnable in a housing and a key insertable into a key channel, wherein the key has opposite longitudinal edges formed with recesses extending transversely to the direction of insertion and delimiting edge portions therebetween, which edge portions and recesses control blocking elements shiftable transversely to the direction of insertion of the key and which blocking elements extend in the locking position into a recess of the housing and in the unlocking position are arranged within the plane of separation between the cylinder core and the housing, the blocking elements

being balls guided in bores of the cylinder core, the arrangement of at least one blocking element in the cylinder core corresponding to the arrangement of a recess on the key, the arrangement of at least one ball in the cylinder core corresponding to the arrangement of an edge portion on the key, said one ball being in a circumferential groove on the inner surface of the housing permitting a turning of the cylinder core, a key-holding multipartite pin arranged in the same plane as said one ball at the opposite longitudinal edge of the key, the division of said pin being located in the plane of separation between the cylinder core and the housing, said pin having a



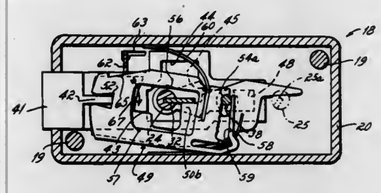
housing pin portion which slides under the pressure of a spring after a turning of the key through 180° over the ball held in the groove by the edge portion, or which enters into the bore of said one ball and blocks the cylinder core if a wrong key is inserted, and further including another ball guided in another bore of the cylinder core and cooperating with another edge portion and being pressed by a housing pin and spring thereof against the other edge portion, said another ball being guided in another circumferential groove of the housing and the cylinder core surface being essentially continuous at a side opposite said another bore.

4,516,417

CHANGEABLE KEYLOCK HAVING TUMBLERS WITH SHIFTABLE PIVOT SEATS

Joseph J. Parrock, Milford, Ohio, assignor to American Standard Inc., New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,378
Int. Cl.³ E05B *25/00*
U.S. Cl. 70—384 **17 Claims**



1. In a key changeable lock wherein at least one lever tumbler is turned about a pivot in a lock case by an operating key into a rotational position of alignment to permit a bolt to be withdrawn, the improvement wherein,

said pivot is fixedly secured against movement in the lock case,

said tumbler presents a series of seats in the form of notches, the notches being alternatively engageable with said pivot,

spring means exerting a biasing force from a fixed surface in the lock to said tumbler and tending to move the tumbler toward said pivot to maintain a particular one of said seats in rotational engagement with said pivot, and

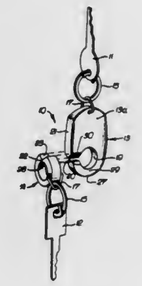
said tumbler is movable by a change key which bears directly on the tumbler to move it so that said seats are shifted in a direction tangential to said pivot, against the bias of said spring means, thereby to disengage one of said seats from said pivot and engage another seat therewith, the rotational axis of the tumbler thereby being changed so that the rotational position of alignment of the tumbler is also changed.

4,516,418

SEPARABLE HOLDER FOR KEYS AND THE LIKE

Luis Cuttler, Mexico City, Mexico, assignor to FAOSA - Fabrica de Armazones Opticos, S.A., Mexico City, Mexico

Filed Sep. 29, 1982, Ser. No. 427,554
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 R **7 Claims**



1. A separable holder for keys and the like, comprising:

a first body having a first hole therein, one end portion on one side of said hole for connection to keys and the like, a second end portion on the opposite side of said hole in the form of a rib defining one side of said hole, and a passage having a finger defining one side of said passage and having a V-shaped end, said passage substantially narrower than the width of said hole extending from said hole to another side of said body;

a second body having a second hole therein surrounded by an at least substantially continuous wall that is thicker than said passage and thin enough to fit loosely in said first hole, said second hole being larger than the thickness of said rib to receive the latter in said second body, and said wall having a single notch creating a portion of reduced thickness that is sized and shaped to slide through said passage with a close fit, thereby to couple said bodies detachably together the angle of said notch being smaller than the angle of said V-shaped end and the passage being sized to permit the ring to slide through the passage with an interference fit along two lines, to reduce the possibility of inadvertent uncoupling and for avoiding jamming flat surface contact;

and first and second means for holding keys and the like, said first means being connected to said one end portion of said first body, and said second means being pivotally connected to said second body at a point other than directly opposite said portion of reduced thickness, thereby to tend to position that portion away from said passage.

4,516,419

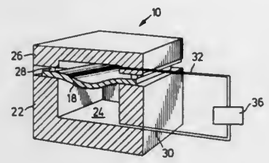
METHODS OF ENHANCING SUPERPLASTIC FORMABILITY OF ALUMINUM ALLOYS BY ALLEVIATING CAVITATION

Suphal P. Agrawal, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 28, 1981, Ser. No. 335,264
Int. Cl.³ B21D *26/04*
U.S. Cl. 72—60 **4 Claims**

1. Improvements in a method of superplastically forming a component by deformation comprising the steps of:

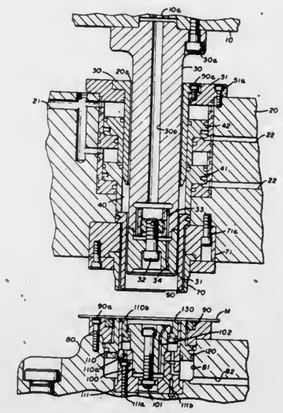
providing a blank of material having superplastic characteristics to be deformed into the component;
providing a die having a cavity surface which is complementary to the shape of the component, and having fluid ports;
providing a die opposing cover having fluid ports;
providing a fluid supply for introducing fluid under pressure controllably through said fluid ports of said die and said cover;
positioning said blank between said die and said cover;
bringing said blank to a temperature at which said blank exhibits superplastic characteristics;
applying to the blank a first fluid pressure on the cavity side thereof; and
simultaneously applying to said blank a second fluid pressure to the cover side thereof;
the improvement comprising



controlling said first and second fluid pressures as applied to said blank during a forming cycle to generate opposing forces to apply initially a very low or substantially nil pressure differential causing compressive force to opposing sides of said blank and then to reduce the cavity side pressure to permit said blank to be forced toward engagement with said die, and thereafter varying said cavity side pressure as a function of time while maintaining constant the cover side pressure in order to create a net differential pressure in accordance with the predetermined pressure-time requirements as necessary to form the blank into the said component shape, and reducing said pressures at substantially the same rate or reducing said cavity side pressure at a rate slightly lower than the rate of decrease of the cover side pressure whereby the differential pressure reduces gradually until said pressures are eliminated and said blank is caused to fully engage said die.

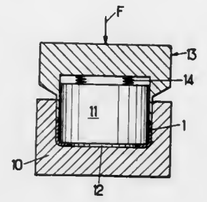
4,516,420
SHELL TOOLING
Joseph D. Bulso, Jr., Canton; Stephen D. Doyle, and James A. McClung, both of North Canton, all of Ohio, assignors to Redicon Corporation, Akron, Ohio
Filed Jun. 10, 1983, Ser. No. 503,343
Int. Cl.[3] B21D *28/02, 28/14*
U.S. Cl. 72—329 **7 Claims**

1. Apparatus for forming an end panel from a blank of metal in a double acting press having inner and outer slides and a lower platen, comprising:
(A) fluid actuated pressure means, carried by the outer slide of the press and being movable into holding engagement with the metal;
(B) blanking means carried by the outer slide of the press and the fixed lower platen thereof;
(C) forming means carried by the inner slide of the press for forming the panel;
(D) die means carried by the lower platen for initially forming a chuck wall of the panel in cooperation with said blanking means and said forming means;
(E) cushioning means carried by the lower platen and resiliently supporting the panel in the chuck wall area against the force of the forming means during final formation of the chuck wall;
(F) said die means including a die core fixed to said lower platen and a die core ring carried by said lower platen in encircling relationship with said die core, said blanking means on said lower platen encircling said die core ring and being spaced therefrom so that said outer slide blanking means telescopically moves over said die core ring



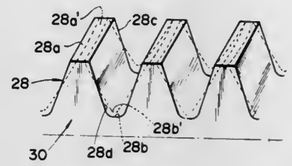
between said lower platen blanking means and die core ring to initially form said chuck wall; and
(G) said cushioning means including a piston between said die core and said die core ring.

4,516,421
DEVICES FOR MANUFACTURING ANNULAR FRAMES FOR SEALS AND TO THE CORRESPONDING FRAMES AND SEALS
Gérard Tavin, Segre, France, assignor to Hutchinson, Paris, France
Filed Sep. 13, 1982, Ser. No. 417,337
Int. Cl.[3] B21D *22/00*
U.S. Cl. 72—354 **2 Claims**



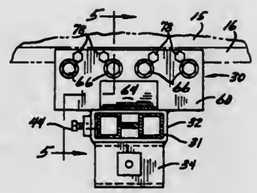
1. A device for deforming a cylindrical ring into an annular metal frame for a seal having an annular portion at one end and a radially directed lip portion at the other end, comprising:
an external pot including a bottom and an inner annular surface defining a cylindrical cavity,
a central mandrel located inside of said cavity, said mandrel being cylindrically shaped to mate with the bottom of the pot to define a radially directed cavity and arranged so that the outer surface of the mandrel defines with the inner annular surface of the pot an annular cavity of small thickness adapted to jointingly receive and axially guide the ring during deformation thereof, and
a bell-shaped punch having a thin cylindrical skirt dimensioned and mounted to slide axially and jointingly into the entrance of said annular cavity, the radial cross section of said skirt having the shape of a ring identical to the radial cross section of the edge of the ring to be driven, said skirt comprising means for engaging the edge of the ring to drive the opposite end of the ring down into the radially directed cavity upon downward movement of the punch and skirt to form the radially directed portion of the metal frame.

4,516,422
METHOD OF MANUFACTURING RACKS FOR VARIABLE RATIO STEERING GEARS
Kunihiko Morikawa, Yokosuka; Megumu Higuchi, Tokyo, and Tokiyoshi Yanai, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 15, 1983, Ser. No. 504,402
Claims priority, application Japan, Jul. 7, 1982, 57-116997
Int. Cl.[3] B21D *31/00*
U.S. Cl. 72—377 **3 Claims**



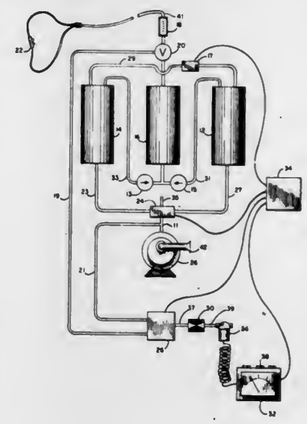
1. A method of manufacturing a rack for a variable ratio rack and pinion steering gear, comprising:
a preforming process for preparing a rack blank having a plurality of teeth which are formed to a shape corresponding approximately to the shape desired in the finished rack said preforming process including forming top lands of said preformed rack teeth to be level with those in the finished shape, forming bottom lands of said preformed rack teeth to be deeper than those in the finished shape, forming the widths of the preformed teeth such that the preformed teeth are all wider at the top areas than in the finished shape, and forming the ratio of the widths at the root areas of the rack teeth in the preformed shape to those in the finished shape in proportion to the variation of the steering ratio such that a rack tooth for a higher steering ratio has a higher width ratio; and
a finishing process comprising converting the teeth to a finished shape by cold forming the rack blank in a die having a shape corresponding to a counterpart of the finished shape.

4,516,423
VEHICLE FRAME CLAMPING AND SUPPORT APPARATUS
George Reich, Elgin, Ill., assignor to Unibody Time Saver Corporation, Elgin, Ill.
Filed Feb. 11, 1983, Ser. No. 465,450
Int. Cl.[3] B21D *1/14*
U.S. Cl. 72—422 **23 Claims**



1. A motor vehicle frame support apparatus for use in straightening of vehicle bodies and frames comprising base means, a plurality of frame engaging clamping heads, means for selectively mounting said clamping heads on said base means in determined location with respect to a vehicle frame to be straightened, said clamping heads each including a pair of relatively movable jaw supports each carrying a clamping jaw, means biasing said jaw supports in an outwardly open position for receiving a respective section of said vehicle frame between said clamping jaws, means associated with each clamping head for selectively causing relative transverse movement of the jaw supports against the force of said biasing means for engaging said vehicle frame between the jaws, said jaw supports of each clamping head having opposed faces and means interposed between said faces for maintaining a spacial separation between said jaw supports during clamping, said jaw support separation means comprising a cylindrical rod fixed to the face of one of the jaw supports of each clamping head and the face of the other of said jaw support being recessed to receive said rod during clamping, and floating mounting means for supporting said jaws on said supports for limited pivotal movement relative to said supports during clamping for enhancing reliable engagement of the jaws with the vehicle frame.

4,516,424
OXYGEN CONCENTRATOR MONITOR AND REGULATION ASSEMBLY
Robert O. Rowland, Hemet, Calif., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.
Filed Jul. 9, 1982, Ser. No. 396,705
Int. Cl.[3] G01N *31/06*
U.S. Cl. 73—23 **29 Claims**



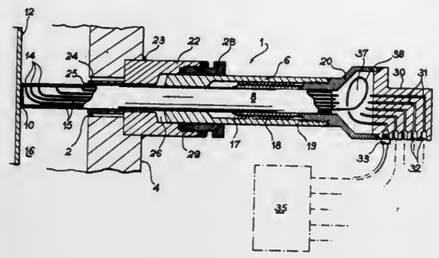
1. In an apparatus for increasing the oxygen concentration of a breathable gaseous mixture to be delivered to a patient, the improvement comprising an oxygen sensing assembly for sensing the concentration of oxygen in said breathable gaseous mixture comprising:
a three-way valve having a first and a second gas inlet and a gas outlet, and means for selectively opening said first and second gas inlets,
a first conduit connected to said first gas inlet for directing said breathable gaseous mixture having increased oxygen concentration thereto,
a second conduit connected to said second gas inlet for directing atmospheric air thereto,
an oxygen sensor,
a third conduit connected between said gas outlet and said oxygen sensor, and
a control means electrically connected to said means for alternately opening one of said first and second gas inlets and closing the other, for a selected time, and operating said oxygen sensor.

4,516,425

DEVICE FOR MEASURING THE SPEED OF THE FLUID IN THE ANNULAR SPACE OF A STEAM GENERATOR

Christian Chollet, Bois d'Arcy, and Jean David, Champs sur Marne, both of France, assignors to Electricite de France Service National, Paris, France

Filed Jun. 14, 1983, Ser. No. 504,067
Claims priority, application France, Jun. 16, 1982, 82 10497
Int. Cl.³ G01F *15/08*
U.S. Cl. 73—198 **6 Claims**



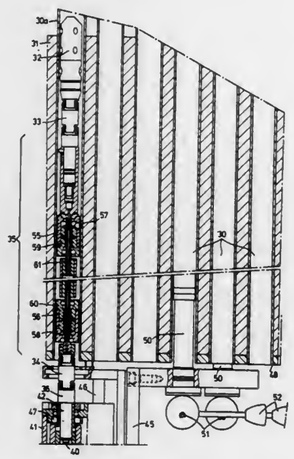
1. A device for measuring the flow rate of a fluid in an annular space of a steam generator, said space being limited by an inner ferrule and an outer ferrule, said device comprising: a probe housing, means for keeping said housing fixed with respect to the outer ferrule, a probe placed within said housing, an elastic bellows surrounding the probe and having a first end fixed to the probe and another end fixed to said probe housing, said bellows being fitted so as to constantly apply an end of the probe to the inner ferrule.

4,516,426

INSPECTION DEVICE FOR THE TUBE PLATE OF A HEAT EXCHANGER

Pascal G. Dumont, Chatenoy-le-Royal, and Daniel M. Chiron, Chalon-sur-Saone, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Mar. 10, 1983, Ser. No. 474,095
Claims priority, application France, Mar. 26, 1982, 82 05170
Int. Cl.³ G01N *21/29*
U.S. Cl. 73—432 R **4 Claims**



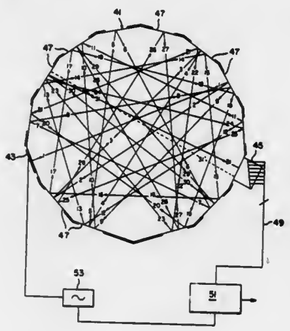
1. Inspection device for the tube plate of a heat exchanger upon which a bank of tubes is mounted passing through said plate from its inlet face (**48**) with with said tubes (**30**) are flush to its outlet face through which said tubes (**30**) of said bank emerge, comprising a motive part (**5, 40**) mounted on a support (**41**) equipped with fixing means (**50, 51, 52**) to said inlet face (**48**) and driven in rotation and in translation along the axis of said tubes by driving means fixed to said support (**41**), and an active part (**1, 32**) comprising an inspection probe (**10**) and guide means (**17**) for said probe within said tubes (**30**), the inspection of said tube plate being performed from the inside of each of said tubes (**30**) of said bank successively, wherein said active part (**1, 32**) consists of a central shaft (**8**) rigidly carrying said probe (**10**), and at least one guide sleeve (**14**) for said device mounted rotatably on said central shaft (**8**), about the axis of said shaft (**8**) coincident with the axis of said tube (**30**) into which said active part is introduced, said sleeve (**14**) comprising in its side wall at least two sets, spaced in axial direction, of three orifices (**15**) arranged at 120° and each containing a ball (**17**) projecting outwards and mounted rotatably for rolling on the inner surface of said tube (**30**), said active part (**1**) being connected to said motive part (**5**) by an articulation (**3**) permitting disalignment between the axis of said active part (**1, 32**) and the axis of rotation of said motive part (**5, 40**).

4,516,427

QUARTZ RATE SENSOR

Desmond F. Carey, Oradell, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 26, 1983, Ser. No. 498,349
Int. Cl.³ G01D *3/44;* **G01C** *21/00*
U.S. Cl. 73—505 **20 Claims**



1. Sensor for information concerning movement in inertial space characterized by:

(a) a crystalline substance having a plurality of facets;

(b) means, rotationally fixed to said crystalline substance, for transmitting acoustic energy through the crystalline substance such that a substantial amount of the energy occurs along a main beam and the energy in the beam is reflected from the facets until the energy occurs at an output position; and

(c) means, rotationally fixed to said crystalline substance, for detecting a shift in the output position resulting from a deflection of the beam.

4,516,428

ACCELERATION VIBRATION DETECTOR

Masao Konomi, Tokyo, Japan, assignor to Pan Communications, Inc., Japan

Filed Mar. 31, 1983, Ser. No. 480,723
Int. Cl.³ H04R *19/00, 25/02*
U.S. Cl. 73—585 **19 Claims**

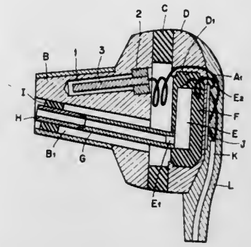
1. An electrostatic type acceleration vibration detector mounted within a bone conduction ear microphone adapted to be inserted in the external auditory canal of an ear comprising: a metal casing having a closed end and an open end, said metal casing vibrating in response to physical vibrations conducted from the surface of the external auditory canal via said ear microphone;

a grounded vibrating electrode in physical contact with said metal casing and near said closed end for vibrating in response to the vibrations of said metal casing;

a transistor positioned between said fixed electrode and said open end;

means for supporting said fixed electrode and said transistor in said metal casing; and

a printed circuit board transverse said metal casing between



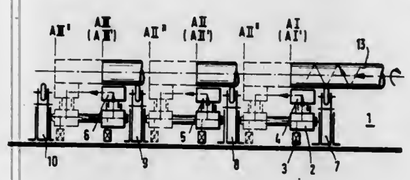
said transistor and said open end, said circuit board having conductive patterns on its outer surface, the source and drain terminals of said transistor being connected to individual ones of said conductive patterns, the edge portions of said open end of said metal casing being bent inwardly to contact said outer surface of said circuit board and thereby to apply pressure against said supporting means for mechanically clamping the gate electrode of said transistor in electrical connection with said fixed electrode, the conductive pattern connected with said source electrode being under pressure electrical contact with said edge portions.

4,516,429

METHOD FOR TESTING THE TOTAL LENGTH OF EXTENDED ROUND MATERIAL SUCH AS PIPES AND BARS, AND DEVICE TO CARRY OUT THE METHOD

Harri Haacke, Dusseldorf, and Karl Loch, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,664
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114850
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—638 **1 Claim**



1. A device for testing the total length of extended round material such as pipes and bars moving helically in longitudinal direction, especially with the aid of ultrasonic testing in segment immersion technique, for longitudinal and transverse faults and for wall thickness, comprising:

a plurality of testing heads, independent of each other, positioned along the longitudinal direction of the material; and

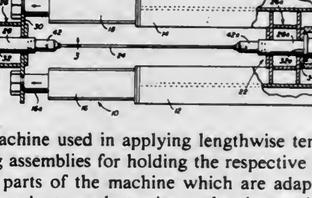
driving units connected to each said testing head and moving the associated testing head as a function of the speed of movement of the material, and holding the associated testing head in contact with the forward and rearward end of the material in synchronism with the axial speed of the material at least during one revolution of the material.

4,516,430

ECONOMICAL TRANSDUCER APPARATUS FOR USE IN THE MEDICAL FIELD

Anthony D. Kurtz, Teaneck; Timothy A. Nunn, Ridgewood, and Joseph R. Mallon, Franklin Lakes, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Dec. 5, 1983, Ser. No. 558,033
Int. Cl.³ G01L *1/22*
U.S. Cl. 73—727 **20 Claims**



1. A pressure transducer apparatus particularly adapted for use in implementing pressure measurements in the medical field comprising:

a planar member fabricated from a highly insulative material and having on a surface a given area adapted to deflect upon application of a force thereto;

a dome member having an opened bottom and a domed surface with a hollow between said opened bottom and said domed surface with said opened bottom coupled about said given area of said planar member, with said dome member having at least one pressure port extending from said domed surface and communicating with said hollow,

a piezoresistive sensor member secured to said planar member and within said given area,

a terminal planar member fabricated from an insulative material and coupled to said planar member, said terminal planar member having an aperture aligned with said active area, and having on a top surface thereof a series of terminal areas, and means coupled said piezoresistive sensor member to said terminal areas on said terminal planar member.

4,516,431

PIPE TESTING APPARATUS

William C. Heldenbrand, P.O. Box 2066, New Iberia, La. 70560

Filed Jun. 28, 1983, Ser. No. 508,656
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—826 **11 Claims**

1. For a machine used in applying lengthwise tension to a pipe, gripping assemblies for holding the respective pipe ends in respective parts of the machine which are adapted to be urged apart in order to apply tension to the pipe, each gripping assembly including a header means for attachment to the respective part of the machine, a mandrel associated with the header means for attachment to one end of the pipe, abutment means associated with the header means for applying lengthwise force to the mandrel when said parts of the machine are urged apart thereby longitudinally tensioning the pipe, and

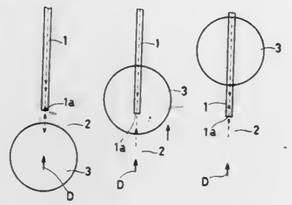
restraining means associated with the header means for engaging the mandrel and resisting expulsion of the mandrel from the header means in the event of a pipe failure during the application of lengthwise tension thereto, wherein each mandrel has a peripheral projecting means located between respective shoulders of the associated header means, one of said shoulders constituting said abutment means and being adapted to engage one surface of the projecting means for applying lengthwise force to the mandrel, the other of said shoulders constituting said restraining means and being adapted to engage the opposite surface of the projecting means in the event of a pipe failure under tension, thereby precluding expulsion of the mandrel from the header means.

4,516,432

APPARATUS FOR MEASURING TWO-PHASE FLOW

Katsuji Hironaga, Kawaniasi, and Tadaki Nishiura, Takatsuki, both of Japan, assignors to Nihon Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 13, 1983, Ser. No. 541,793
Int. Cl.³ G01F *1/74*
U.S. Cl. 73—861.04 **8 Claims**



1. An apparatus for measuring liquid-gas two-phase flow comprising:
- a light source for generating light which has a signal oscillation frequency and a specified plane of polarization,
- a polarization beam splitter for passing the applied light from said light source,
- an optical fiber with two end faces, the light passing through said polarization beam splitter being applied to one of said end faces, and the other end face being placed in said liquid-gas two-phase flow,
- a photo detector for receiving reflected light by said polarization beam splitter out of the light reflected by said other end face of said optical fiber for measuring a bubble transit time and the light reflected by a boundary face of said liquid-gas two-phase flow for measuring doppler frequency shift,
- a velocity detecting means for detecting bubble velocity from a high frequency component of an output signal of said photo detector, and
- a transit time detecting means for detecting bubble transit time from a low frequency component of the output signal of said photo detector.

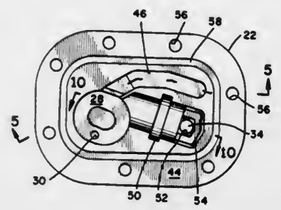
4,516,433

FLOW SENSOR

John A. MacIntosh, Cupertino, and Willard L. Zeigner, San Ramon, both of Calif., assignors to Zemco, Inc., San Ramon, Calif.

Filed Jul. 18, 1983, Ser. No. 514,520
Int. Cl.³ G01F *1/70*
U.S. Cl. 73—861.05 **5 Claims**

1. A fluid flow sensor comprising:
- body means having an inlet and an outlet for fluid to be measured;
- means forming a continuous raceway within said body means having an inlet passage for receiving a fluid stream to be measured and an outlet passage for discharging the fluid;
- a race ball received in the raceway and caused to circulate at a rate in proportion to the flow rate of said fluid stream;
- an electromagnetic sensing means adjacent to said raceway for providing an electrical signal with each passage of said race ball; and
- nozzle means situated within said inlet passage and having an exit end adjacent said raceway, said nozzle means including means providing a first relatively small passage for said fluid when it flows at a relatively low rate and a second relatively large passage for said fluid when it flows at a relatively high rate, whereby, even at relatively low fluid flow rates, a sufficient force is produced at said exit end to keep the race ball and fluid therein moving smoothly in said raceway; said nozzle means comprising a nozzle having an exterior shape similar to the interior shape of a similar recess in said body means, a nozzle



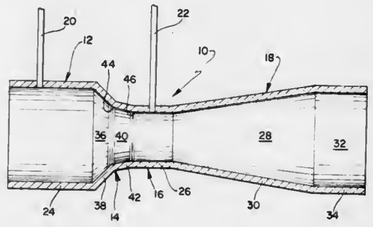
member seated in said housing having a central bore with an open port at its exit end and cover means attached to its inlet end with a central inlet opening, a plunger in said central bore, and spring means normally urging said plunger against said central inlet opening of said cover means, a relatively small passage extending longitudinally through said plunger and extension means extending from its outer surface, forming a plurality of longitudinal passage having a substantially greater cross-sectional area than said relatively small passage, whereby at low fluid rates said spring holds said plunger against said cover means to that fluid flows through said small passage, and at relatively high flow rates, said plunger moves axially against said spring within said nozzle member so that a greater volume of fluid can flow around said plunger through said longitudinal passages and through the exit end of said nozzle member.

4,516,434

FLOW METERING DEVICE WITH LOW ENERGY LOSS

Dezsoe Halmi, Cranston, R.I., assignor to D. Halmi And Associates Inc., Pawtucket, R.I.

Filed Oct. 20, 1983, Ser. No. 543,954
Int. Cl.³ G01F *1/44*
U.S. Cl. 73—861.64 **7 Claims**



1. A flow metering device of the type operative for producing a pressure differential comprising a shaped tubular member comprising substantially longitudinally extending inlet and throat sections having inlet and throat pressure sensing taps therein, respectively, and a converging section which interconnects said inlet and throat sections, said converging section

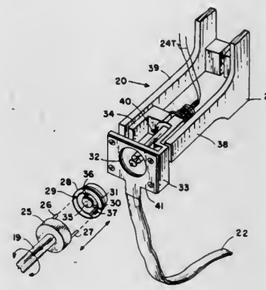
comprising an inlet cone portion which extends angularly inwardly in a downstream direction relative to said inlet section and a throat cone portion which extends angularly inwardly in a downstream direction from said inlet cone portion to said throat section, said throat cone portion being at a reduced angle with respect to said inlet section in comparison to said inlet cone portion, the intersections between said inlet cone portion and said throat cone portion and between said throat cone portion and said throat section being of rounded configurations to prevent the formation of vena contractas in fluids passing through said device.

4,516,435

PRECISION MANIPULATOR HEATING AND COOLING APPARATUS FOR USE IN UHV SYSTEMS WITH SAMPLE TRANSFER CAPABILITY

Ronald A. Outlaw, Newport News, and Bill T. Baugh, Poquoson, both of Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 31, 1983, Ser. No. 547,176
Int. Cl.³ G01N *1/00, 37/00*
U.S. Cl. 73—863.11 **6 Claims**



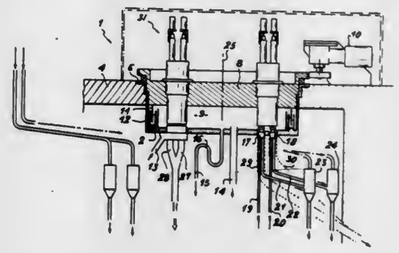
1. A precision manipulator for use in a UHV system with sample transfer capability comprising:
- an electrically conductive sample holder;
- means for mounting a sample on said sample holder such that heating current will flow from the sample to said sample holder;
- first and second manipulator electrodes;
- a receiving block electrically connected to said first manipulator electrode and with an opening through it such that said sample holder will fit into the receiving block;
- means for attaching said sample holder to said receiving block whenever the sample holder is moved into the receiving block;
- a rear electrode assembly including a heater electrode fixed relative to said rear electrode assembly and a thermocouple; and
- means for spring loading said thermocouple such that when a pressure is exerted against said thermocouple the thermocouple will move relative to said rear electrode assembly;
- said rear electrode assembly mounted with said heater electrode electrically connected to said second manipulator electrode, said heater electrode and said thermocouple mounted in said rear electrode assembly behind said opening in said receiving block such that when said sample holder is moved into said receiving block said sample comes in contact with said thermocouple first and then as said sample holder is further moved into said receiving block the thermocouple is pushed back against said spring loading means until said sample makes contact with said heater electrode at which time the thermocouple and the heater electrode are both in contact with said sample.

4,516,436

LIQUID SAMPLING BENCH

Francois Conche, Les Mureaux, and Pierre Naujalis, Orly, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 20, 1982, Ser. No. 435,353
Claims priority, application France, Oct. 26, 1981, 81 20039
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.85 **8 Claims**



1. A bench for sampling liquids by means of a container or jug sealed by an elastic plug, which is perforated on a hollow needle connected to a tank containing the liquid to be sampled, the latter being positioned beneath a biological protection slab, wherein said bench comprises a sealed vessel located beneath the protection slab and integral therewith, in which are located the end fittings of the hollow needles, and at least one mechanical device for introducing and manipulating the containers, whereof at least the lower part traverses the slab and terminates in the vessel level with the needle end fittings, the needle end fittings being disposed on two concentric circular arcs, the slab having a rotary plug, whose rotation axis passes through the center of the circular arcs defined by the needle end fittings, the lower part of said at least one mechanical device for introducing and manipulating the containers traversing the rotary plug, said at least one mechanical device comprising at least one tool holder located at a distance from the rotation axis of the plug equal to the radius of one of the circular arcs defined by the hollow needle end fittings, said at least one mechanical device further comprising rotation means for bringing the containers above a needle located on either of the two circular arcs.

4,516,437

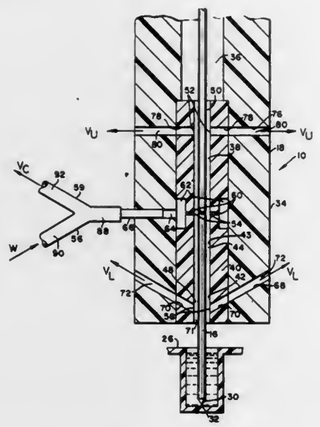
MICROSAMPLE HANDLING APPARATUS

Raul I. Pedroso, Miami, and Robert S. Coulter, Hialeah, both of Fla., assignors to Coulter Corporation, Hialeah, Fla.

Filed Mar. 23, 1983, Ser. No. 478,134
Int. Cl.³ G01N *35/06*
U.S. Cl. 73—864.22 **20 Claims**

1. A method of cleaning a fluid probe means, having a probe tip, within a cleaning chamber of a cleaning station, said cleaning chamber having a first, open end and a second end, and a plurality of cleaning ports, comprising:
- moving said probe means to be cleaned into said cleaning chamber, and
- externally:
  - directing a flow of washing fluid against said probe means while said probe tip extends beyond the open end of said cleaning chamber,

drawing said flow of washing fluid past said probe means, and



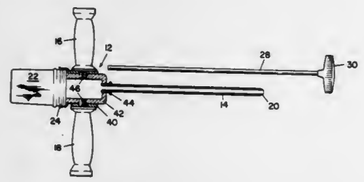
drawing a flow of gas from the atmosphere past said probe tip when said probe tip is within said cleaning chamber.

4,516,438

STANDARDIZED SAMPLING HAY PROBE

Allan M. Hodge, 5852 Lomond Dr., San Diego, Calif. 92120

Filed Sep. 20, 1983, Ser. No. 534,079
Int. Cl.³ G01N *1/08*
U.S. Cl. 73—864.44 **19 Claims**



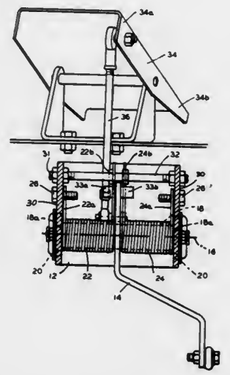
1. A hay probe apparatus for obtaining standardized samples of hay for analysis of the actual contents of bales of hay or similar material, comprising:
an elongated hollow metal probe tube, having an inner diameter in the order of one-quarter to five-eighths inch, and a length in the order of eight to sixteen inches, said tube being sharpened at one end;
central mounting assembly secured to the other end of said probe tube;
a pair of handles mounted to said central mounting assembly transverse to said probe;
impermeable container means removably secured to said mounting assembly for receiving hay samples from said probe tube and for maintaining them in substantially the same condition as when the samples were taken from bales of hay; and
tamper rod means for transferring hay samples from said probe tube to said impermeable container;
whereby the samples of a standard volume may be analyzed without significant changes in moisture content or the like between sampling and testing.

4,516,439

PUMP CENTERING CONTROL

Thomas M. Sagaser, Bismarck, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 6, 1981, Ser. No. 251,439
Int. Cl.³ G05G *1/00, 1/14*
U.S. Cl. 74—470 **7 Claims**



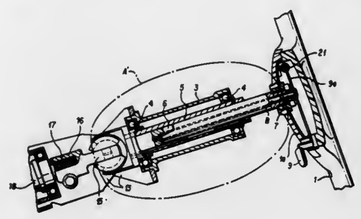
1. A pump centering control for defining a neutral position in a hydrostatic transmission comprising:
a bell crank mechanism including a bell crank lever pivotally mounted on a fixed support bracket having opposite side walls;
first and second torsion springs mounted on the pivotal mounting of said bell crank lever on opposite sides thereof, the one ends of the springs engaging elements mounted on said opposite walls of the support bracket, the other ends of said springs engaging a pair of elements rigidly mounted on opposite sides of the bell crank lever; and
means for moving the bell crank lever in one direction against the bias of one only of the torsion springs and in the opposite direction against the bias of the other only of the torsion springs whereby release of said moving means causes the spring end engaging the element on the bell crank lever to return the bell crank to a neutral position of the pump centering control.

4,516,440

LOCKING MECHANISM FOR A TELESCOPIC STEERING WHEEL

Masumi Nishikawa, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 15, 1982, Ser. No. 441,632
Claims priority, application Japan, Nov. 12, 1981, 56-167667[U]
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—493 **5 Claims**



1. A locking mechanism for a telescopic steering wheel comprising:
a housing;

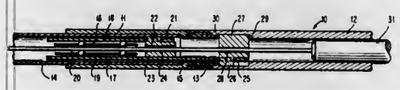
an outer cylinder rotatably supported within said housing;
a locking member slidably mounted within said outer cylinder;
a steering shaft movably mounted within said outer cylinder, engaged with said locking member and operatively connected to said steering wheel;
a locking rod rotatably mounted in said steering shaft and engaged with said locking member for attaining a locked or unlocked position of said locking member;
a telescopic lever connected to said locking rod and movable between said locked and unlocked position;
spring means for continuously urging said telescopic lever into said locked position; and
recessed means formed on a main body portion of said steering wheel for engaging said telescopic lever thereon in said unlocked position.

4,516,441

FLEXIBLE REMOTE CONTROL WITH IMPROVED ANCHORING OF OUTER BALL RACES

Alan H. Paynter, Brookfield, Conn., assignor to Incom International Inc., Pittsburgh, Pa.

Filed Jan. 3, 1983, Ser. No. 455,239
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **12 Claims**



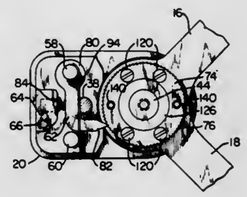
1. In a flexible remote control which has a push-pull blade movably supported in flexible cylindrical tubing by ball cage strips disposed between the opposite faces of said blade and two outer ball races, each end of said tubing being fastened to an end fitting formed by two rigid cylindrical tubes screwed together, the improvement within each said end fitting comprising a slidable anchor attached to an end of one of said races and having a side in slidable contact with the other of said races, said slidable anchor being slotted for the passage of said blade therethrough, and a fixed anchor attached to an end of the other of said races and slotted for the passage of said blade therethrough, at least part of said fixed anchor being cylindrical to permit rotation of said fixed anchor in a cylindrical recess formed between said two cylindrical tubes, and said fixed anchor being held in said recess substantially without longitudinal play.

4,516,442

RATCHET DEVICE

Duane L. Davis, 1225 Boston Ave., Longmont, Colo. 80501

Filed Jan. 6, 1982, Ser. No. 337,415
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—529 **17 Claims**



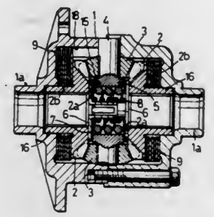
5. A ratchet device comprising:
a housing assembly having a generally open interior;
an axle member mounted to said housing assembly in the interior thereof and defining an axis of rotation;
first and second mounting members positioned in said interior in spaced-apart relation to one another, said mounting members oriented symmetrically about a plane defined by the axis of said axle member and a mid-point between said first and second mounting members whereby said first mounting member is positioned on a first side of said plane and said second mounting member is positioned on a second side of said plane, said mounting member being first and second posts oriented along axes parallel to said axis of rotation, said pawl member being L-shaped in configuration and having an annular end opposite said free end and a mid-portion, said annular end being received on a selected one of said posts, said pawl arm passing through said plane;
a circular ratchet wheel mounted on said axle for rotation in said housing assembly, said ratchet wheel including a plurality of circumferential ratchet teeth, each said ratchet tooth being canted in an angular direction with respect to said axis, said ratchet wheel being selectively mountable on said axle in one of a first orientation wherein said ratchet teeth are canted in a first angular direction and a second orientation wherein said ratchet teeth are canted in an opposite angular direction;
a pawl member selectively mounted to one of said first and second mounting members and having a free end adapted for engaging said ratchet teeth, the selective mounting of said pawl member to one of said first and second mounting members corresponding to the first and second orientation of said ratchet wheel;
bias means associated with said pawl member for biasing said free end into engagement with said ratchet teeth; and
a rotatable detent shaft extending into the interior of said housing assembly between the mid-portion of said pawl member and said ratchet wheel, said detent shaft having a notch adapted to receive the mid-portion of said pawl arm whereby said free end is engaged with said ratchet teeth when said mid-portion is received by said notch and whereby said free end is disengaged from said ratchet teeth when said notch is rotated away from said mid-portion.

4,516,443

RESTRICTION DEVICE FOR DIFFERENTIAL GEAR

Hideo Hamano, and Yasunori Koga, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1982, Ser. No. 345,392
Claims priority, application Japan, Feb. 9, 1981, 56-16945[U]
Int. Cl.³ F16H *1/44*; F16D *13/60*
U.S. Cl. 74—711 **8 Claims**



1. A differential gear for an automobile, comprising:
a differential casing;
a pair of side gears;
first and second pinions, said side gears and said pinions being meshed with each other;
a plurality of multi-plate clutches provided between cylindrical portions of said side gears and inner surfaces of said differential casing for restricting differential movement of said side gears in said differential casing, wherein said

multiplate clutches further comprise a plurality of first friction plates fixed to said side gears and a plurality of second friction plates fixed to said differential casing, each of said first and second friction plates being alternately disposed so as to contact with each other and form at least first and second opposing frictional faces; and

means for restricting differential movement of said side gears wherein said first opposing friction face includes a cold rolled face and the second opposing face includes a self-lubricating agent coated face having a plurality of lattice-shaped oil grooves formed thereon and wherein said agent contains molybdenum particles.

4,516,444

HIGH-LOW BRAKED GEAR DRIVE

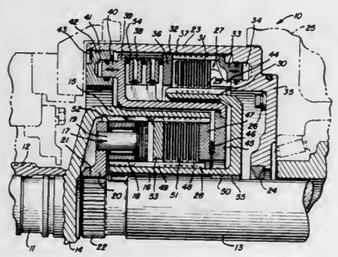
Charles H. Herr, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00167, § 371 Date Feb. 19, 1980, § 102(e) Date Feb. 19, 1980, PCT Pub. No. WO81/02453, PCT Pub. Date Sep. 3, 1981

PCT Filed Feb. 19, 1980, Ser. No. 177,681

Int. Cl.³ F16H *3/44, 57/10;* **B60K** *41/24;* **F16D** *67/02*

U.S. Cl. 74—781 R **7 Claims**



1. In a power transmission system (**10**) having brake (**27**) and clutch means (**28**), improved means for selectively operating the clutch means comprising:

a first fluid pressure-operated force-applying means (**33,34**);

a second fluid pressure-operated force-applying means (**40,41**);

spring means (**38**) biasing said brake and clutch means to an engaged condition; and

force transfer means associated with said force-applying means (**39**) for causing alternatively (a) said brake means to be in the engaged condition and said clutch means to be in a released condition as a result of force being applied only by said first force-applying means, (b) said brake means to be in the released condition and said clutch means to be in the engaged condition as a result of forces applied by both said first and second force-applying means, or (c) said brake and clutch means concurrently to be in the engaged condition as a result of elimination of application of forces by the force-applying means.

4,516,445

POWER-DRIVEN SCREWING TOOL FOR PRESSURE VESSEL HEADS

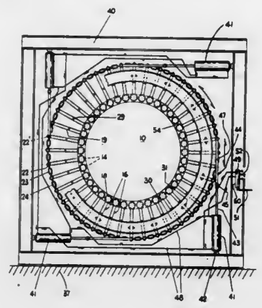
Antoine Wlodarski, 6500 Léon Derome St., Montreal, Canada H1M 1S4

Filed Jul. 6, 1983, Ser. No. 511,228

Int. Cl.³ B25B *13/00*

U.S. Cl. 81—57.36 **11 Claims**

1. An assembly for manipulating a plurality of screw-type fasteners disposed in a bolting circle, comprising: a plurality of wrenches of a number equal to that of said fasteners, each having a fastener fitting inner end portion and an elongated handle generally outwardly extending from said inner end portion and having an outer end portion, tying means pivotally attaching to one another the outer end portions of said wrench handles to form a tying circle and including an elongated rigid tie member for each pair of wrenches, each tie member including means to adjust its length, a pair of pivot members carried by the two ends of said tie member and pivotally connected to the outer end portions of said pair of wrenches, and



means permitting translation movement of said pivot members along the length of the handles of said pair of wrenches, and power-operated means to rotate said tying circle, said power-operated means including a hydraulic cylinder and piston arrangement connected to the tying circle at one end and to a stationary member at its other end.

4,516,446

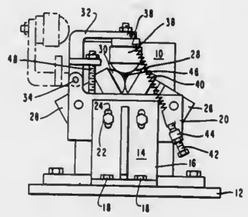
PRECISION ROTATING ROD GUIDE

Paul H. Flohn, East Orange, N.J., assignor to North American Philips Lighting Corporation, New York, N.Y.

Filed Feb. 14, 1983, Ser. No. 465,959

Int. Cl.³ B65H *23/32;* **B23B** *25/00*

U.S. Cl. 82—38 A **5 Claims**



1. A rod guide and sensor assembly, comprising:

a sensor for sensing a longitudinally traveling rod traveling relative to said sensor and proximate said sensor; and

a pair of rod guides positioned on opposite sides of said sensor for defining a path of travel for a longitudinally traveling rod and for guiding a longitudinally traveling rod along the path of travel relative to and proximate said sensor, each of said rod guides comprising;

three spherical bearings symmetrically disposed around the rod travel path defined by said pair of rod guides for guiding a rod traveling longitudinally along the rod travel path;

bearing mounting means for mounting said three spherical bearings for rotation about their respective centers at their respective symmetrically disposed positions to permit a longitudinally traveling rod guided by said spherical bearings of said rod guides to rotate freely; and

biasing means for biasing one of said spherical bearings toward the other of said spherical bearings for maintaining a portion of longitudinally traveling rod between and guided by said pair of rod guides sufficiently vibration-free to permit said sensor to accurately sense the portion of rod proximate said sensor while permitting the longitudinally traveling rod to rotate freely.

4,516,447

NUMERICALLY CONTROLLED GROOVE-STAMPING MACHINE

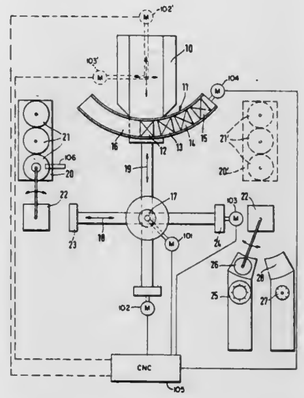
Franz Schneider, Göppingen, and Rolf Ruhl, Rechberghausen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,292

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919687

Int. Cl.³ B21D *28/22*

U.S. Cl. 83—71 **1 Claim**



1. A numerically controlled groove-stamping machine for processing workpieces including

a numerically controlled automatic multiple tool set comprising a plurality of individual tools,

an indexing unit means for presenting workpieces for engagement by at least one of said individual tools,

positioning drive means for rotating the indexing unit about a rotational axis in a stepwise fashion,

means for displacing the indexing unit along a first path, and

means for displacing the indexing unit along a second path which extends substantially at a right angle to the first path and to the rotational axis, and in that

means are provided for bringing the respective tools of the tool set into engagement in an individually controllable manner in accordance with work steps to be executed by the groove-stamping machine.

4,516,448

PUNCH AND RAM ASSEMBLY FOR PUNCH PRESS

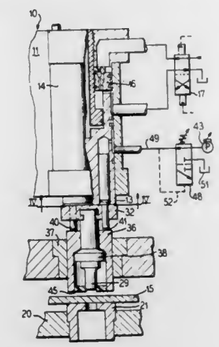
Ronald C. Hill, Corfu; Richard M. Stein, Lancaster; Raymond J. Bzibziak, Akron, and Robert Goodwill, North Tonawanda, all of N.Y., assignors to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Filed Sep. 7, 1982, Ser. No. 415,600

Int. Cl.³ B26D *7/04*

U.S. Cl. 83—137 **7 Claims**

1. In a punch and ram assembly having a movable ram carrying a removable punch with a punch guide and stripper surrounding portion of the punch, the punch having limited axial movement relative to the guide and stripper, the improvement of hydraulic pistons carried by the ram and extendable into contact with a top surface of the guide and stripper to urge the guide and stripper against a workpiece contacted by the punch, means allowing limited independent movement of the ram and pistons and the punch and guide and stripper whereby the punch guide and stripper may be maintained against the workpiece top surface while the punch passes through and back through the workpiece in response to ram movement, the punch guide and stripper carried by the punch for movement away from the workpiece in dependent response to movement of the punch, at least portions of the punch intermediate a punch head end and a punch tip end having the punch peripheral engaging and guided by a guide means cooperating between the punch and the guide and stripper for limiting the



movement of the punch relative to the guide and stripper and for retaining the guide and stripper on the punch.

4,516,449

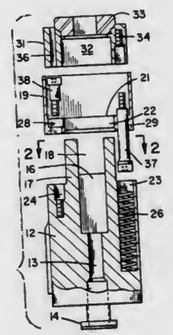
TOOL HOLDER WITH WORK RELEASE MECHANISM

Bobby R. Boyette, 11519 Belton Dr., Dublin, Calif. 94566

Continuation-in-part of Ser. No. 364,462, Apr. 1, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 558,390

Int. Cl.³ B26F *1/14;* **B21D** *45/00*

U.S. Cl. 83—140 **3 Claims**



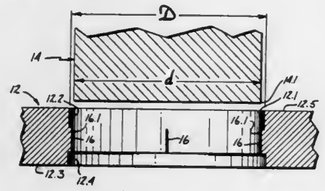
1. An improved tool holder for supporting a tool and stripping work pieces from the tool, including; a cylindrical mandrel having a boss extending axially from one end thereof, a first plurality holes extending into said one end and disposed parallel to the axis of said mandrel, said first plurality of holes being tapped a second plurality of holes extend into said upper one end of said mandrel parallel to said axis, for receiving springs therein a tubular collar secured to said one end of said mandrel and received about said boss, a bumper piston disposed within said collar and about said boss in freely translating fashion, a plurality of compression springs each disposed in one of said second plurality of holes, first screw means extending from said collar and secured in said first plurality of tapped holes, and second screw means extending through said collar and secured in said bumper piston, said second screw means including distal portions impinging on said compression springs in said second plurality of holes.

4,516,450

SLUG-RETAINING DIE

Edwin T. Shuttleworth, Point Pleasant, N.J., assignor to Wilson Tool Company, White Bear Lake, Minn.

Filed Mar. 7, 1983, Ser. No. 472,282
Int. Cl.³ B26F *1/14*
U.S. Cl. 83—146 **6 Claims**



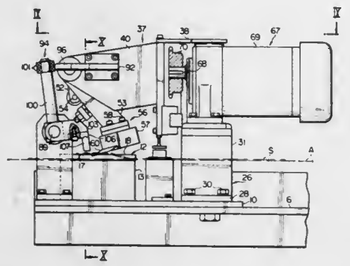
1. A punch press comprising a punch and a die having an opening receiving the punch during punching and retraction steps in a material-punching operation, the die having a face normally facing the punch, and including at least two inwardly-extending, elongated protrusions positioned and dimensioned to encounter and grip solely the peripheral edge of a punched slug of workpiece material that exceeds the corresponding punch dimension during the punching step and to restrain the slug from following the punch during the retraction step, the at least two protrusions being elongated in the direction of punch travel and being spaced in the direction of punch travel from said die face.

4,516,451

APPARATUS FOR CUTTING AN ELONGATE RUBBERY STRIP

Masaru Takeshita, Kodaira; Toshio Tokunaga, and Yuichiro Ogawa, both of Fuchu, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,278
Claims priority, application Japan, May 24, 1982, 57-87712
Int. Cl.³ B26D *7/10, 7/26*
U.S. Cl. 83—171 **1 Claim**



1. An apparatus for cutting an elongate non-vulcanized rubbery strip movable on a predetermined plane and having longitudinal transverse directions, comprising:

transmitting means operative to transmit said elongate non-vulcanized rubbery strip in the longitudinal direction thereof and to be brought to a stop when the elongate non-vulcanized rubbery strip reaches a predetermined longitudinal position on said predetermined plane;

an anvil located underneath the predetermined plane and formed with an elongated groove extending obliquely to the transverse direction of said elongate non-vulcanized rubbery strip, the anvil having an upper surface substantially in parallel with said predetermined plane, an inner surface directed away from the upper surface at an acute angle and a guide surface spaced apart from the inner surface, the inner surface and the guide surface forming in combination said elongated groove;

a cutting mechanism arranged in opposing relation with said anvil across said predetermined plane and provided with a cutting device having a cutting edge portion, a heating device operative to heat the cutting edge portion of the cutting device to a predetermined temperature, a driving device operative to move the cutting device into or out of a cutting position in which the cutting edge portion of the cutting device is received in the elongated groove of said anvil through the elongate rubbery strip in said predetermined longitudinal position and a transfer device operative to move the cutting device along the elongated groove of said anvil when the cutting device is assumed in the cutting position, said cutting device being operative to cut said elongate non-vulcanized rubbery strip on bias throughout the width thereof in cooperation with said anvil when the cutting device is moved along the elongated groove of said anvil;

said cutting edge portion of said cutting device being directed away from the upper surface of said elongate non-vulcanized rubbery strip at an angle ranging between about 5 degrees and 20 degrees when the cutting device is moved along said elongated groove of said anvil and being constituted by upper and lower surfaces, the upper surface of said cutting edge portion being directed from said lower surface of said cutting edge portion at an angle ranging between about 5 degrees and about 20 degrees;

said cutting device further having a lower surface directed away from the upper surface of said elongate non-vulcanized rubbery strip at an angle ranging between about 10 degrees and about 40 degrees when the cutting device is assumed in said cutting position;

said guide surface of said anvil extending substantially in parallel with said lower surface of said cutting device and being spaced apart from said lower surface of said cutting device by a distance falling within a range between about 0.0 mm and about 0.2 mm, when the cutting device is assumed in said cutting position;

biasing means shiftable into or out of a pressing position in which the biasing means presses said elongate non-vulcanized rubbery strip against said anvil for maintaining the elongated rubbery strip in said predetermined longitudinal position, the biasing means being in contact with said upper surface of said anvil across said elongate rubbery strip throughout the width of the elongate rubbery strip; and

adjusting means operative to adjust positions of said anvil and said cutting mechanism with respect to said elongate non-vulcanized rubbery strip in said predetermined longitudinal position.

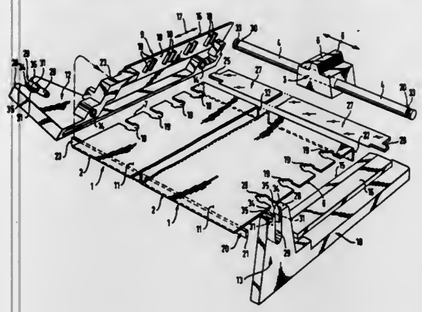
4,516,452

PAPER CUTTER

Gerald Dahle, Coburg, Fed. Rep. of Germany, assignor to Wilhelm Dahle Büro- und Zeichengerätefabrik, Coburg, Fed. Rep. of Germany

Continuation of Ser. No. 300,801, Sep. 10, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,420
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035787
Int. Cl.³ B26D *7/02, 5/08*
U.S. Cl. 83—455 **15 Claims**

1. A manually operable cutter which can be set on a table, said cutter comprising a base composed of a thin-walled steel sheet presenting an upper surface constituting a rectangular supporting surface, a bottom surface opposite said upper surface, and a lateral cutting edge along one side of said upper surface, means defining two holding jaws located in the region of said cutting edge, and above the surface of said base, a guide rail extending parallel to said lateral cutting edge and held between said jaws, and a cutting assembly including a rotary wheel cutter mounted on said rail for displacement therealong, wherein: said means defining two holding jaws comprise two one-piece side members each including a respective holding jaw and extending along essentially the entire length of a respective one of the sides of said base which is perpendicular to said cutting edge, each said side member being an injection molded plastic member covering the respective side of said base, and each said side member including a portion disposed above said supporting surface of said base and presenting an inner edge extending at a right angle to said lateral cutting edge of said base and forming an abutment edge for the material to be cut; said lateral cutting edge is sharpened and itself acts as a counterblade for said wheel cutter; said cutter further comprises a support member for said supporting surface, said support member being disposed in the region of, and parallel to, said lateral cutting edge and resting against said bottom surface of said base, said support member having end portions and said side members being provided with recesses in which said end portions rest to support said support member; and said side members comprise supporting feet for supporting said cutter.

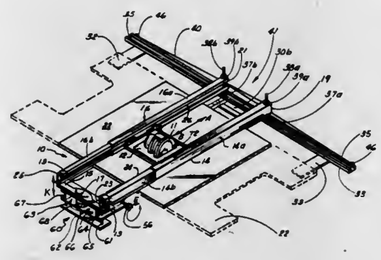


4,516,453

CONTROL AND GUIDANCE APPARATUS FOR USE WITH POWERED TOOLS

Walter J. Parham, Jr., Rte. #16, Box 20, Milton, Fla. 32570

Filed Sep. 24, 1984, Ser. No. 653,318
Int. Cl.³ B27B *5/20, 9/04*
U.S. Cl. 83—471.3 **4 Claims**



1. A control and guidance apparatus for use with a powered saw for making controlled cuts at an infinite number of angles in a workpiece comprising:

a. a pair of parallel elongated rail members telescopically adjustable in length for defining a cutting path for a saw;

b. a carriage moveably mounted on said rail members for independent movement therealong and with a saw mount opening in its surface; and

c. adjustable means for controlling the angle of cut of said saw in said workpiece including:

i. a third elongated rail member substantially perpendicular to said pair of elongated rail members;

ii. means mounted to the distal end of each of said elongated rail members for slidably engaging said third elongated rail member; and

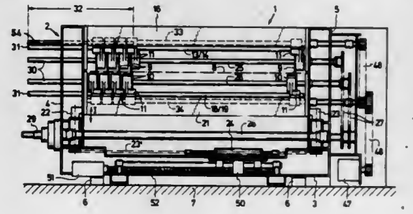
iii. a cord means connected to the distal end of each of said pair of elongated rail members and provided through a series of pulleys and wound about a spool for imparting arcuate movement to said pair of elongated rail members whereby said pair of rail members telescopically lengthen as a function of the rotation of said spool.

4,516,454

STRAIGHT LINE CUTTING AND/OR GROOVE MACHINE FOR MOVING MATERIAL WEBS, ESPECIALLY FOR CORRUGATED PAPER WEBS

Hans Mosburger, Weiherhammer, Fed. Rep. of Germany, assignor to BHS-Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 459,960
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202914
Int. Cl.³ B26D *7/26, 5/02, 1/24*
U.S. Cl. 83—499 **12 Claims**



1. A straight line cutting and groove machine through which material webs are moved comprising, a plurality of cooperable pairs of rotatable tools arranged with one of each pair on one upper side of the web and the other of each pair on the opposite lower side of the web, guide members arranged transverse to the lengthwise direction of the web with the tools movably mounted along said guide members, drive means for effecting movement of the tools, adjustment means for shifting the tools along the guide members, a driven adjustment spindle associated with all of said tools on one side of the web and another driven adjustment spindle associated with all of said tools on the other side of said web, each spindle having a slide part and a shifting tube rigidly connected thereto, a controlled braking mechanism connected with each tool and operable together with the shifting tube, and a controlled retaining mechanism for moving each tool to a rest position.

4,516,455

THREE-KNIFE TRIMMER

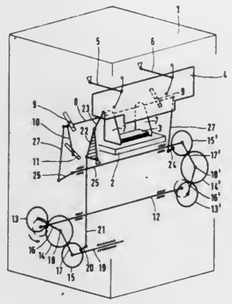
Gerd Peters, Langenhagen, Fed. Rep. of Germany, assignor to H. Wohlenberg KG GmbH & Co., Hanover, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,608
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1982, 3201836
Int. Cl.³ B26D *5/08*
U.S. Cl. 83—519 **7 Claims**

1. In a trimmer for books, magazines or the like including a knife assembly having a front knife and at least one side knife, guide means formed and coupled for guided displacement of said front knife and said side knife, and drive means including a rotatable shaft coupled to produce sequential displacement of said front knife and said side knife during a single revolution of said shaft, wherein the improvement in said trimmer comprises:

said drive means further including at least two separate gear trains each coupled for driving by said shaft and with one

of said gear trains being coupled to said front knife and a remainder of said gear trains being coupled to said side knife to produce displacement thereof, at least one of said gear trains being provided by a first set of gear wheels including a first gear wheel eccentrically mounted to said shaft, a third gear wheel coupled to drive the knives, and an intermediate gear wheel movably coupled to follow



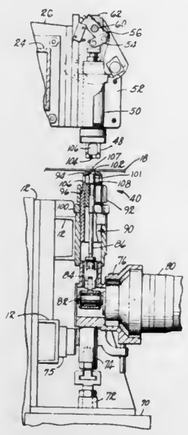
said first gear wheel during eccentric movement while engaging and driving said third gear wheel to provide a gear train with a gear ratio which changes over one revolution of said shaft to enable dwell of the displacement of knives during each cycle of said shaft for positioning and removal of objects to be trimmed in registration relative to the knives.

4,516,456

PALLET NIBBLER

Adolph S. Dorosz, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Jun. 29, 1983, Ser. No. 508,862
Int. Cl.³ B26D *5/08*
U.S. Cl. 83—578 **11 Claims**



1. A machine for punching and nibbling a sheet of material, comprising:

a base movably supporting a sheet of material to be worked;

a common reciprocable shaft having punching means for punching a hole with a first stroke through said sheet of material, and having nibbling means also on said shaft adjacent said punching means for nibbling said material on the return stroke of said shaft for fast and simple utilization thereof; and

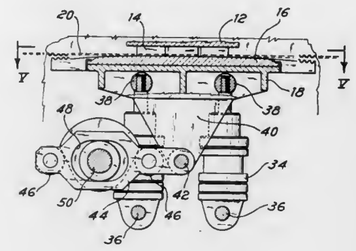
a die arrangement for guiding said reciprocable shaft.

4,516,457

PLANE DIE-CUTTING MACHINE

Angelo Bartesaghi, Caduti a Fossoli 22, Lecco (Como), Italy

Continuation of Ser. No. 348,510, Feb. 12, 1982, abandoned.
This application Apr. 18, 1984, Ser. No. 601,116
Claims priority, application Italy, Feb. 25, 1981, 19961 A/81
Int. Cl.³ B26D *5/16*
U.S. Cl. 83—646 **7 Claims**



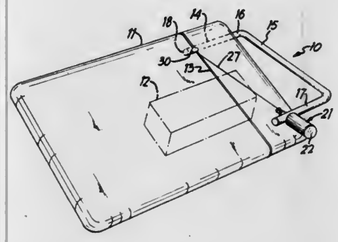
1. A machine for die-cutting laminar material, said machine comprising a frame, a plane punch having a planar working surface, a counter-punch having an arch shaped working surface movably arranged opposed said working surface of said plane punch, an appendix secured to said counter-punch and extending therefrom, control means for controlling the direction of movement of said counter-punch relative to said plane punch wherein said working surface of said counter-punch contacts said working surface of said plane punch within a die-cutting area along a line of contact extending transversely of said direction of movement of said counter-punch, said line of contact progressively advancing across the working surfaces of said plane punch and said counter-punch by operation of said control means, said control means comprising (1) a cam and cam follower pivotally secured to a portion of said appendix for operating said counter-punch in an alternate oscillatory movement, and (2) a plurality of cylinders each having one end pivotally secured to a portion of said frame, said cylinders each having an extensible end arranged in engagement with said counter-punch whereby said extensible ends of said cylinders cooperate with the oscillatory movement of said counter-punch to maintain said working surface of said plane punch in engagement with said working surface of said counter-punch along said line of contact therebetween as said line of contact progressively advances thereacross, a pair of plane extensions each having a downwardly extending leg terminating at a planar surface and arranged adjacent the sides of said plane punch extending through said die-cutting area along the direction of movement of said counter-punch and extending therebeyond, a pair of counter-extensions each having an upwardly extending leg terminating at an arch shaped surface opposed a respective one of said planar surfaces of said plane extensions and arranged adjacent the sides of said counter-punch extending through said die-cutting area along the direction of movement of said counter-punch and extending therebeyond, and meshing racks having a plurality of gear teeth provided on said planar surfaces of said plane extensions and said arch shaped surfaces of said counter-extensions within said die-cutting area and extending therebeyond, said meshing racks maintaining continuous meshed engagement between said plane extensions and said counter-extensions along progressive opposed portions thereof by the meshing of said plurality of gear teeth of said meshing racks within said die-cutting area and therebeyond during said alternate oscillatory movement of said counter-punch by said cam and cam follower whereby relative movement between said planar shaped working surface of said plane punch and said arch shaped surface of said counter-punch is prevented within said die-cutting area and therebeyond.

4,516,458

SLICING DEVICE FOR FOODSTUFFS

Julie Pomerantz, and Paul Feeney, both of 230 Fifth Ave., New York, N.Y. 10001

Filed Aug. 2, 1982, Ser. No. 404,537
Int. Cl.³ B26D *1/26, 1/547*
U.S. Cl. 83—651.1 **9 Claims**



1. Slicing apparatus for relatively firm foodstuffs comprising:

a baseboard having a groove extending transversely thereof;

a bore extending into one end of said baseboard through and beyond said groove toward the other end of said baseboard and such that such bore communicates with said groove at a juncture formed therebetween;

a U-shaped bar having a first leg, a second leg and a central portion;

the end portion of the first leg of said U-shaped bar extending into said bore beyond said groove and being provided with a slot disposed in said bore immediately below said groove and in a lateral position in alignment with said groove;

said end portion of said first leg being frictionally engaged in said bore to prevent lateral movement of said first leg in said bore and in turn to prevent lateral movement of said slot in said first leg from its lateral position in alignment with said groove, and said end portion of said first leg also being rotatable in said bore;

a passage exiting through the baseboard substantially adjacent the junction between the slot and the bore to accommodate the cutting element when replaced; and

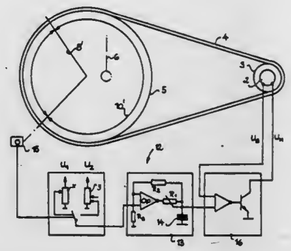
a handle carried by the second leg of the U-shaped bar.

4,516,459

DRIVE-CONTROL SYSTEM FOR A MICROTOME, IN PARTICULAR AN ULTRAMICROTOME

Gerhard Kappl; Helmut Kranner, and Reinhard Lihl, all of Vienna, Austria, assignors to C. Reichert Optische Werke, Vienna, Austria

Filed Jul. 8, 1983, Ser. No. 512,098
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—713 **7 Claims**



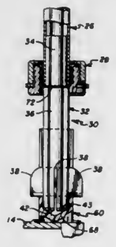
1. A rotary driven microtome having a control to dissipate vibrations prior to cutting a specimen, which comprise a specimen arm for holding a specimen, a knife positioned adjacent to said arm, drive means comprising an electric drive motor and a crank mechanism for moving said arm in an oscillating stroke movement, said stroke movement comprising a cutting movement in which a specimen on said arm is passed from a starting position over said knife to produce a thin section of said specimen and a return movement in which said specimen is returned near to said starting position along a path spaced from said knife, and a motor-control system for varying the speed of said electric motor, a cutting signal generated by said control system, a return signal generated by said control system and a transition signal generated by said control system, said transition signal controlling deceleration of said specimen arm to dissipate vibrations prior to the cutting movement.

4,516,460

METHOD AND APPARATUS FOR SLITTING SHOTGUN SHELL WADS

Donald F. Vizecky, Minneapolis, Minn., assignor to Steel Handlers' Manual and Steel Handloaders' Components, Inc., Minneapolis, Minn.

Filed Sep. 7, 1982, Ser. No. 415,154
Int. Cl.³ B26D *3/12, 5/10;* **F42B** *33/00*
U.S. Cl. 83—861 **7 Claims**



1. In combination with a shotgun shell reloading device which has a fixed plate and a ram member movable with respect to the fixed plate, and where a portion of the ram member is a hollow tube having an open end adjacent the fixed plate, an apparatus for causing a series of uniformly spaced longitudinal cuts of the same length through a cylindrical peripheral cup wall of a plastic shotgun shell wad, said apparatus comprising:

a cylindrical member having an upper end portion and a lower portion, the diameter of the upper end portion being less than that of the lower end portion with a shoulder therebetween;

said upper portion of reduced diameter being designed to be secured within the open end of the hollow tube of the ram member with said shoulder engaging the lower end of the hollow tube; and

said lower portion having a plurality of cutting blades uniformly spaced about the lower portion and projecting radially outwardly therefrom, each of said cutting blades having a downwardly facing cutting edge spaced from a bottom edge of said cylindrical member the same predetermined distance, so that when the cylindrical member is secured to the hollow tube of the ram member, the lower portion thereof is inserted into a top open end of a cylindrical cup wall of a plastic shotgun shell wad positioned on the fixed shotgun shell wad positioned on the fixed plate of the shotgun shell reloading device, and the ram member is moved toward the fixed plate, the cup wall of the wad has a plurality of longitudinal slits of equal length made therethrough by cutting blades, the lower end of said cylindrical member being chamfered to facilitate entry of the lower portion of said cylindrical member into the cup wall of the wad; and

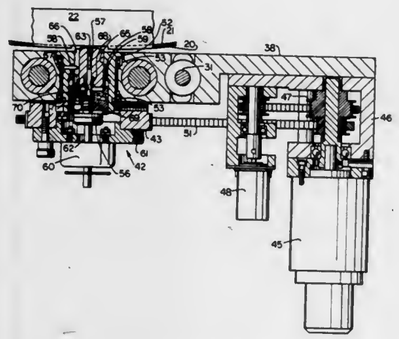
means for limiting downward movement of the cylindrical member so that the longitudinal slits extend from the top end of the wad to an area spaced from a lower base portion of the wad by a predetermined distance.

4,516,461

KNIFE ASSEMBLY FOR TAPE LAYING MACHINE

Andrew P. Schaeffer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 5, 1984, Ser. No. 586,420
Int. Cl.³ B26D *3/08*
U.S. Cl. 83—881 **3 Claims**



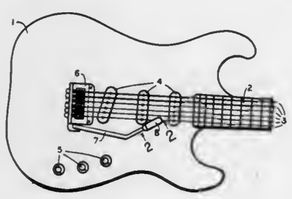
1. A knife assembly for a tape laying machine utilizing composite tape carried on a backing tape, comprising: a base; a tape platen affixed to said base, having a surface for supporting tape movement in a first direction; a knife slide, movable on said base in a second direction, coordinate to said first direction; means for moving said knife slide in said second direction; a spindle, rotatably supported in said knife slide, having its rotary axis normal to said first and second direction; a knife support, axially movable in said spindle in a direction parallel to said normal rotary axis; an elongate knife member, carried in said knife support; means for rearwardly biasing said knife support away from said platen; means for forwardly biasing said knife support to position said knife member a predetermined distance from said tape platen; a knife edge on said knife member, substantially parallel to a plane formed by said first and second directions; a tape presser member carried by said slide; and yieldable means for biasing said tape presser member toward said platen wherein said knife edge is orientable to the resultant direction of said tape movement and knife slide movement, and wherein said tape presser member will snugly press against the composite tape, holding it to the platen while accommodating variations in tape thickness, and wherein said knife member may completely sever the composite tape without severing the backing tape.

4,516,462

TREMOLO AND ELECTRONIC CONTROL DEVICE FOR STRINGED INSTRUMENTS

Arne Schulze, 2716 3rd St. #2, Santa Monica, Calif. 90405

Filed Mar. 28, 1983, Ser. No. 479,271
Int. Cl.³ G10D *3/00;* **G10H** *1/045, 3/18*
U.S. Cl. 84—1.16 **12 Claims**



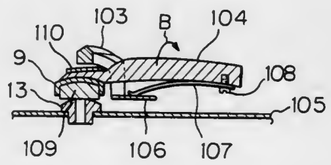
1. A guitar system including a single arm for controlling both tremolo effects and output volume comprising:
an electric guitar;
means for controlling tremolo effects by stretching and relaxing the strings of the guitar, said means including a movable tailpiece for holding the strings, and a tremolo arm mechanically coupled to said tailpiece, said arm extending to the area of playing the guitar; and
manually operable electronic control means mounted on said tremolo arm for controlling and varying the output volume from said guitar;
whereby the guitar player may control both the output electronic sound effects of the guitar and the tremolo effects, with the same hand normally employed for plucking the guitar.

4,516,463

KEY MECHANISM FOR WIND INSTRUMENTS

Fusao Satoh, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Oct. 6, 1983, Ser. No. 539,525
Claims priority, application Japan, Oct. 7, 1982, 57-176583
Int. Cl.³ G10D *7/08*
U.S. Cl. 84—385 R **2 Claims**



1. An improved key mechanism for wind instruments in which first and second tone holes formed in the body of a wind instrument are simultaneously closed and opened by a lever action,
a first hinge rod axially rotatably arranged on said body,
a second hinge rod arranged on said body and driven for axial rotation by said lever action,
a first key fixed to said first hinge rod and holding a first pad cup for said first tone hole,
a second key fixed to said second hinge rod and holding a second pad cup for said second tone hole, and
a spring means attached to said second key and biasing said first key so that said first pad cup should close said first tone hole,
the operation of said lever action permitting said second key to raise said first pad cup apart from said first tone hole.

4,516,464

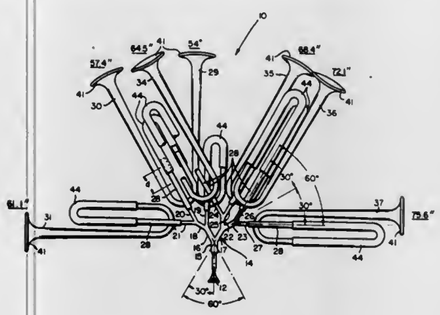
VALVELESS TRUMPET INSTRUMENT

John H. Hastings, 591 Elmgrove Rd., Rochester, N.Y. 14606

Filed Nov. 12, 1982, Ser. No. 440,798
Int. Cl.³ G10D *7/10*
U.S. Cl. 84—387 R **15 Claims**

1. A musical wind instrument, comprising
a single mouthpiece,
a plurality of tubular trumpets, each of which has an axial bore having a predetermined, effective axial length different than that of the others, and
means connecting each of said trumpets to said mouthpiece for operation thereby solely by lip vibrations applied to said mouthpiece.

13. A musical instrument comprising
a tubular mouthpiece,
a manifold having a single, tubular inlet connected to said mouthpiece, and a plurality of spaced, tubular outlets communicating at their inner ends with said inlet, and
a plurality of tubular horns connected by said outlets to said mouthpiece for operation thereby,
each of said horns comprising a first tubular section connected to one of said outlets, a second tubular section spaced from said first section, and a third tubular section adjustably interconnecting said first and second sections thereby to permit adjustment of the overall length of each horn.

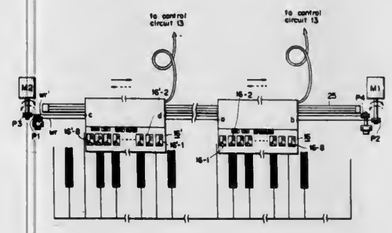


4,516,465

DEVICE FOR GUIDING A PLAYER IN PERFORMANCE OF A KEYBOARD INSTRUMENT

Hirofumi Kani, 264-29, Takata-cho, Kohoku-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Mar. 18, 1983, Ser. No. 476,732
Int. Cl.³ G09B *15/08*
U.S. Cl. 84—470 R **20 Claims**



1. A device for guiding the player in performance of a keyboard instrument comprising:
movable indicating means having a predetermined number of indicating elements corresponding to keys of the keyboard instrument;
shifting means associated with said indicating means;
means for activating said indicating elements on said indicating means for sequentially specifying the keys to be acted upon while the player plays a tune; and
means for exciting said shifting means for shifting said movable indicating means to a position capable of indicating a key corresponding to the next note on the musical score by said indicating elements when the key corresponding to said next note is outside the zone of indication of the movable indicating means.

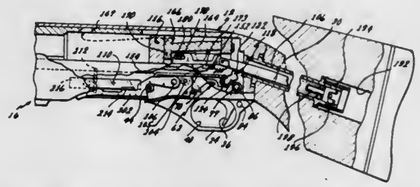
4,516,466

MECHANISM PROVIDING POSITIVE SAFETY WITH BOLT LOCKED

Fred Jennie, Santa Ana, Calif., assignor to Weatherby, Inc., South Gate, Calif.

Continuation-in-part of Ser. No. 261,527, May 7, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,559
Int. Cl.³ F41C *5/00;* **F41D** *3/00*
U.S. Cl. 89—145 **8 Claims**

1. A gun mechanism for a gun having a hammer engageable with a firing pin, a sear engageable with the hammer adapted for releasing the hammer for firing, a trigger member, a disconnector member having connections with the trigger member and having a part engageable with the sear for disengaging it from the hammer for firing, the gun mechanism having a bolt and a bolt carrier including an extending member extending from the bolt carrier having proximity to the trigger and having a position wherein the bolt is in fully closed position, and means including a link member providing engagement between said extending member and the disconnector member, the bolt carrier and extending member being constructed whereby in any position other than the closed and locked position of the bolt and before movement of the bolt, the said link member engages said extending member and positively acts on the said disconnector member whereby to positively hold it in a position to prevent it from bringing about disengagement between the sear and the hammer.

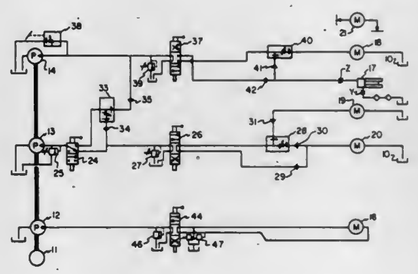


4,516,467

METHOD AND APPARATUS FOR CONTROLLING A ROTARY PERCUSSIVE HYDRAULIC DRILL

Keith Keeney, Clintwood, Va., and Dennis J. Wehner, Baden, Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed May 27, 1983, Ser. No. 498,977
Int. Cl.³ F15B *13/09*
U.S. Cl. 91—31 **17 Claims**



1. A quick changeover hydraulic circuit for use in a first mode or a second mode, controllable in each mode by the same flow regulator comprising:
a pressure compensated flow regulator;
a pressure compensated priority flow divider having a regulated output and a bypass output;
a first branch circuit comprising:
a hydraulic powered means;
a diversion valve for directing flow to the hydraulic powered means or said priority flow divider;
a first constant volume pump for delivering flow to said diversion valve;
a second branch circuit comprising:
inlet and outlet connectors;
a hydraulic percussion motor for a drill steel hammer and a rotary hydraulic motor for an auger, only one of which is in the circuit at one time and being between said inlet and outlet connections when in the circuit;
a second constant volume pump for delivering flow to the said inlet connector;
said pressure compensated flow regulator arranged for diverting flow around said second pump;

an interbranch circuit comprising;

said priority flow divider arranged for distributing flow with the regulated output connected to the hydraulic powered means and the bypass output connected to said inlet connector;

such that:

in a first mode with the hydraulic percussion motor connected into the second branch the diversion valve is positioned for the flow from the first pump to be delivered to the hydraulic powered means in said first branch and for the flow from the second pump to be delivered to the inlet connector and thence to the percussion motor; and

in a second mode with the rotary hydraulic motor connected into the second branch the diversion valve is positioned for directing flow from the first pump to the priority flow divider where it distributes flow between the hydraulic powered means in said first branch and the second branch and for delivering flow from the second pump, combined with flow from the flow divider to the inlet connector and thence to the rotary hydraulic motor.

4,516,468

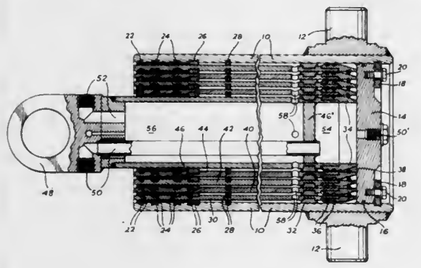
DOUBLE ACTING TELESCOPIC CYLINDER CONSTRUCTION

Merle M. Sheriff, Carlsbad, Calif., assignor to Hydraulic Technology Corporation, Naples, Fla.

Filed Jan. 10, 1983, Ser. No. 456,122

Int. Cl.³ F01B *7/20*

U.S. Cl. 91—169 **11 Claims**



1. A double acting telescopic fluid pressure cylinder, comprising:

(a) a hollow cylindrical base member of substantially uniform wall thickness arranged to be mounted for support,

(b) the base member having an end closure at one end defining an adjacent cylinder cavity,

(c) the base member having near its open end a set of longitudinally spaced machined grooves on its interior surface removably mounting outer end performance rings,

(d) at least one telescoping cylinder stage of substantially uniform wall thickness slidably received through said rings in the base member,

(e) each said uniform wall thickness telescoping cylinder stage having a set of internal grooves machined in its wall surface near its outer end removably mounting outer end performance rings, each cylinder stage also having near its inner end an internal groove machined in its wall surface removably receiving a lifting ring arranged for abutment with the adjacent inner cylinder stage,

(f) a hollow piston stage of substantially uniform wall thickness slidably received through the rings in the innermost cylinder stage and arranged for abutment with the lifting ring of the adjacent cylinder stage,

(g) closure members adjacent the inner and outer ends of the hollow piston stage defining a piston cavity between them,

(h) each stage having in its wall surface near its inner end at least one external annular piston ring receiving groove disposed outwardly of said lifting ring groove,

(i) fluid sealing piston ring means mounted removably in said external piston ring receiving groove on the inner end of the piston stage and any desired cylinder stage sequentially outward from the piston stage, the piston ring means being arranged to provide a fluid seal between each piston ring stage and the next adjacent outer cylinder stage for rendering each said piston ring stage double acting,

(j) first fluid pressure passageway means communicating the cylinder cavity in the base member with a source of fluid under pressure and exhaust for applying fluid pressure against the inner side of each piston ring means for extending the associated stage,

(k) second fluid pressure passageway means communicating said piston cavity with a source of fluid under pressure and exhaust, and

(l) third fluid pressure passageway means in each piston ring stage communicating said piston cavity with the outer side of each piston ring means for applying fluid under pressure thereto for retracting the associated stage.

4,516,469

ELECTRIC HYDRAULIC CONTROLL DEVICE FOR A CONSTRUCTION VEHICLE

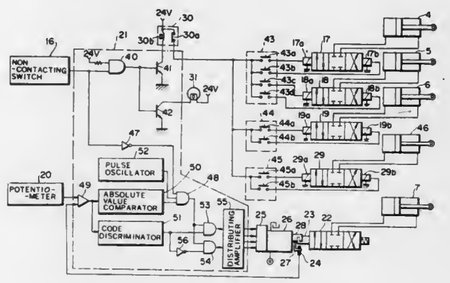
Yoshito Sato, Hirakata; Tokuhiro Yato, Yawata; Hidemi Maeo, and Yoshio Tsutsumi, both of Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,701

Claims priority, application Japan, May 26, 1981, 81/79799

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—362 **7 Claims**



5. An electric hydraulic control device for a construction vehicle comprising:

first signal generating means for generating a first electric signal corresponding to the placement of a first operation lever in one of two predetermined positions;

a first electric hydraulic control system for controlling a first control valve by means of said first electric signal, and for supplying hydraulic fluid to a first hydraulic cylinder for controlling the movement of a first work tool along a first degree of freedom;

second signal generating means for generating a second electric signal corresponding to the stroke of said first operation lever during operation; and

a second electric hydraulic control system for controlling the position of a spool of a second control valve by means of a difference between said second electric signal and a third electric signal formed in an electric servo mechanism and corresponding to the position of said spool, said electric servo mechanism having a stepping motor driven in response to said difference, a stepping cylinder, and a differential transformer, and controlling the movement of said first work tool along a second degree of freedom.

4,516,470

UNBALANCED HYDRAULIC AMPLIFIER VALVE ASSEMBLY

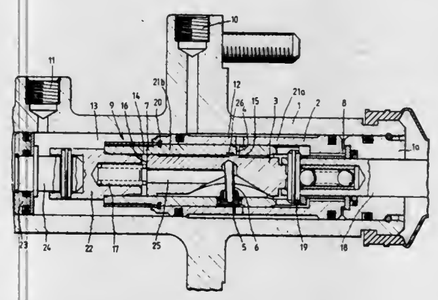
Rolf Warnecke, Gifhorn; Heinz Rühmer, Wolfenbüttel, and Günter Leineweber, Gifhorn, all of Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,446

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023027

Int. Cl.³ F15B *7/00*

U.S. Cl. 91—374 **12 Claims**



1. In an unbalanced hydraulic valve assembly including a first plunger element; a second plunger element having an axial bore receiving, with a loose fit, said first plunger element for axial and radial displacement relative to said second plunger element; a work chamber within said valve assembly; a pressure supply conduit provided in said valve assembly for introducing pressurized hydraulic fluid into said valve assembly; control port means in one of said plunger elements, said control port means being arranged asymmetrically relative to the circumference of said plunger elements; said control port means being arranged for permitting or blocking flow from said pressure supply conduit to said work chamber dependent upon the relative axial position of said plunger elements with respect to one another; the improvement comprising a force transmitting member supported in said second plunger element for displacement transversely to the direction of relative axial motion of said plunger elements and relative to said second plunger element, said force transmitting member engaging said first plunger element and having a surface, means for providing a continuous hydraulic communication between the pressure supply conduit and said surface for exposing said surface to the pressurized hydraulic fluid for pressing said first plunger element against an inner wall face of said axial bore provided in said second plunger element; and further wherein said first plunger element and said second plunger element being free from annular seals between said plunger elements.

4,516,471

POWER STEERING VALVE WITH CHAMFERED LANDS

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 335,123

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—375 A **6 Claims**

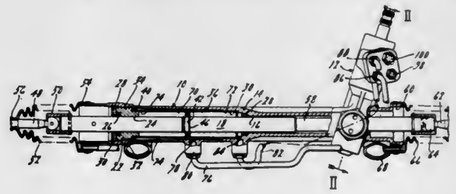
1. In a power steering gear comprising a fluid motor adapted to be connected to a driven member, said fluid motor having opposed fluid pressure chambers, a steering shaft, a positive displacement fluid pump, and a fluid circuit for controlling pressure distribution from said pump to said fluid motor;

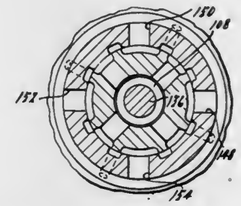
a valve assembly in said fluid circuit comprising a rotary valve sleeve having internal valve lands, a rotary shaft valve connected to and rotatable with said steering shaft, and external valve lands on said shaft valve;

a yieldable mechanical connection between said steering shaft and said driven member, a positive driving connection between said valve sleeve and said driven member;

a fluid connection between said pump and said pressure chambers comprising a first passage extending from said valve assembly to one pressure chamber and a second passage extending from said valve assembly to the other pressure chamber, a fluid supply passage extending from said pump to said valve assembly and a fluid return passage between said valve assembly and a flow inlet region of said pump;

the external valve lands of said shaft valve registering with the internal valve lands of said valve sleeve whereby said registering lands define in part said first passage and said second passage, the internal valve lands on said sleeve adjacent said supply passage being chamfered throughout their length whereby a pressure buildup occurs in said





pressure chambers at a controlled rate dependent on the torque applied to said steering shaft;

the external lands on said shaft valve being spaced angularly about the axis of said shaft valve and being formed by axially extending crescent-shaped grooves adapted to be formed by rotary milling cutter, the internal valve lands in said sleeve being straight-through lands defined by axially extending groove adapted to be formed by a linear broaching tool, the chamfer on said internal valve lands being of uniform dimension throughout their axial extent whereby said internal lands and said chamfers are adapted to be broached simultaneously with said linear broaching tool, and end rings in said valve sleeve on either axial end of said internal lands, said end rings having an internal diameter equal to the internal diameter of said internal lands.

4,516,472

HYDRAULICALLY-OPERATED BREAKING DEVICE

Yoshikata Kobayashi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 10, 1981, Ser. No. 329,435

Claims priority, application Japan, Dec. 26, 1980, 55-188890; Dec. 26, 1980, 55-188896

Int. Cl.³ F15B *15/17, 13/044, 13/043*

U.S. Cl. 91—392 **7 Claims**

1. A hydraulically-operated breaking device comprising:

a cylinder (**22**) into which a working liquid is fed;

a block (**34, 35**) for supporting said cylinder (**22**);

a differential piston (**21**) inserted in said cylinder (**22**) so as to be able to move axially in the forward and backward directions and defining at the front end thereof a front

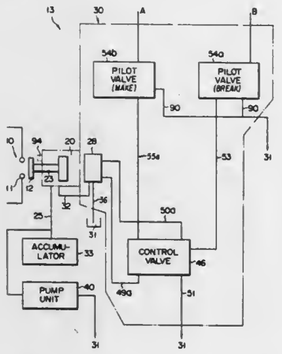
chamber (**29**) supplied with a high-pressure working liquid discharged from a high-pressure working liquid source (**40**) and at the rear end thereof a rear chamber (**24**), said differential piston (**21**) having a front pressure receiving surface (**29***a*) facing said front chamber (**29**) at the front end and a rear pressure receiving surface (**29***a*) facing said rear chamber (**24**) at the rear end, the rear pressure receiving surface (**29***a*) having a larger area than that of the front pressure receiving surface (**29***a*);

a switching unit (**10**) driven by said differential piston (**21**) to make and break an electric circuit;

an intermediate valve (**28**) having a making main valve (**44**) and a breaking main valve (**41**),

said making main valve (**44**) being opened by a breaker closing signal and transmitting to said rear chamber (**24**) the working liquid supplied from said high-pressure liquid source (**40**) to thereby close said switching unit (**10**), and said making main valve (**44**) being closed by a breaker opening signal to thereby prevent the working liquid from being transmitted to said rear chamber (**24**), and

said breaking main valve (**41**) being opened by the breaker opening signal and discharging the high-presusre working liquid within said rear chamber (**24**) into a drainage tank (**31**) to thereby opening said switching unit (**10**) and said breaking main valve (**41**) being closed by the breaker closing signal and preventing the working liquid from being discharged;



a control valve (**46**) having a control valve plug (**46***a*) fitted in a control chamber (**52**) defined in said block (**35**),

said control valve (**46**) transmitting the breaker closing signal to said intermediate valve (**28**) to thereby close said switching unit (**10**) and transmitting the breaker opening signal to said intermediate valve (**28**) to thereby open said switching unit (**10**),

said control valve plug (**46***a*) being inserted so as to be able to slide in one and the other directions in said control chamber (**52**) communicating with said rear chamber (**24**), said high-pressure working liquid source (**40**), and a low-pressure drainage tank (**31**) by means of first (**50***a*), second (**49***a*) and third passages (**51**), respectively, said control valve plug (**46***a*) including first and second poppet valve plugs (**46***b*, **46***c*) coupled in a straight line and disposed on the sides of said one and the other directions, respectively, chambers (**52***a*, **52***b*) for make and break being defined in said control chamber (**52**), one on said one direction side of said first poppet valve plug (**46***b*) and the other on said other direction side of said second poppet valve plug (**46***c*), so that said first poppet valve plug (**46***b*) connects said first and second passages (**50***a*, **49***a*) and supplies the breaker closing signal to said intermediate valve (**28**) and said second poppet valve plug (**46***c*) disaconnect said third passage (**51**) from said first passage (**50***a*) and second passage (**49***a*) when said control valve plug (**46***a*) is moved in said one direction, and that said second poppet valve plug (**46***c*) connects said first and third passages (**50***a*, **51**) and said first poppet valve plug (**46***b*) disconnects said second passage (**49***a*) from said first and third passages (**50**, **51**) and said intermediate valve (**28**) receives a low-pressure signal, i.e., the breaker opening signal, which is supplied through the first passage (**50***a*) when said control valve plug (**46***a*) is moved in said other direction, and said control valve plug (**46***a*) having passages (**46***g*, **46***e*) to leak the high-pressure working liquid supplied through said second passage (**49***a*) into said making and breaking chambers (**52***a*, **52***b*);

a first pilot vaLve (**54***b*) for making disposed in a passage connecting said making chamber (**52***a*) and said drainage tank (**31**) and discharging the high-pressure working liquid in said making chamber (**52***a*) to move said control valve plug (**46***a*) in said one direction when receiving a command for make; and

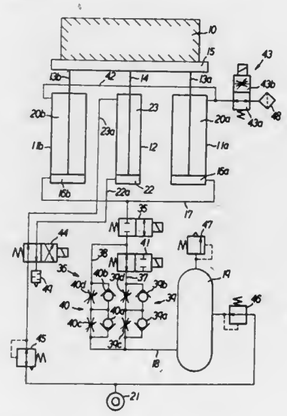
a second pilot valve (**54***a*) for breaking disposed in a passage connecting said breaking chamber (**52***b*) and said drainage tank (**31**) and discharging the high-pressure working liquid in said breaking chamber (**52***b*) to move said control valve plug (**46***a*) in said other direction when receiving a command for break.

4,516,473

CYLINDER DRIVING SYSTEM

Naotake Oneyama, Kashiwa, and Akihisa Yoshikawa, Mastudo, both of Japan, assignors to Shokestu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,561
Int. Cl.³ F15B *21/00*; F04B *47/14*
U.S. Cl. 91—462 **4 Claims**



1. A cylinder driving system comprising:

a common support frame for carrying a load thereon;

a plurality of balance air cylinders for supporting said load in a substantially balanced state;

at least one drive air cylinder having a smaller diameter than said balance air cylinders for driving the load up and down, said balance and drive air cylinders being fluidically disposed in parallel and having piston rods connected with said common support frame;

an air accumulator;

head chambers of said balance air cylinders being normally communicated through a balance pipeway with said accumulator so as to bring air pressure thereinto to produce a counteracting force against the weight of the load for supporting the load in a substantially balance state, said balance pipeway including a speed control device for switching the operation speed of said balance cylinders to a high or low speed to control an air flow rate, and means for opening rod chambers thereof to the atmosphere;

an air supply source;

means for connecting a head chamber and a rod chamber of said drive air cylinder to said air supply source; and

a change-over device in said means for connecting for selectively interconnecting said chambers of said drive cylinder with said air supply source,

wherein said speed control device comprises:

first and second parallel bypass circuits in said balance pipeway, said first and second circuits being constructed so as to permit positive fluid flow through both of said bypass circuits in two directions, said first and second circuits respectively including air flow resistance means with mutually relatively low and high flow resistance values; and

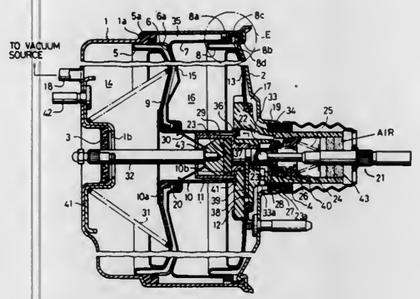
means for selectively switching on and off air flow in said first bypass circuit having said low flow resistance value, whereby the operation speed of said balance cylinders may be switched between a high and a low speed.

4,516,474

TANDEM DIAPHRAGM BRAKE BOOSTER

Chiaki Ochiai, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 30, 1983, Ser. No. 509,430
Claims priority, application Japan, Jul. 6, 1982, 57-102389[U]
Int. Cl.³ F01B *19/00*; F15B *9/10*
U.S. Cl. 91—519 **5 Claims**



1. A tandem diaphragm brake booster which comprises:

a housing;

first and second diaphragms disposed in said housing in spaced relation to each other;

a partition wall disposed between said first and second diaphragms within said housing for defining first, second, third and fourth chambers within said housing;

a securing member interconnecting said partition wall with said housing;

piston means secured to said first and second diaphragms and axially slidable therewith;

first fluid passage means provided in said piston means for fluid communication between said first and third chambers, said first chamber being in communication with a vacuum source;

second fluid passage means provided between said housing, and said partition wall for fluid communication between said second and fourth chamber;

third fluid passage means provided in said piston means for fluid communication between said third and fourth chambers;

valve means disposed in said third fluid passage means for preventing fluid communication between said third and fourth chambers and introducing atmospheric pressure into said fourth chamber, thereby creating pressure differentials between said first and second chambers and said third and fourth chambers, respectively; and

operator-operated means for actuating said valve means in response to manual operation;

wherein said housing further comprises a first shell section having a cylindrical outer wall with a shoulder portion and a second dish-shaped shell section;

said first diaphragm has a bead at its periphery and said bead of the first diaphragm is compressed between said shoulder portion of the first shell section and said securing member; and

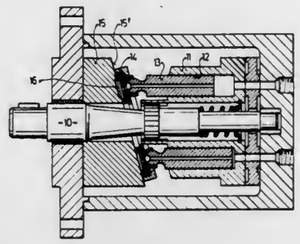
said second diaphragm has an inner bead and an outer bead at its periphery and fourth fluid passage means provided between said inner bead and said outer bead and wherein said inner bead is secured air-tightly to said partition wall and said outer bead is compressed between said first shell section and said second shell section.

4,516,475

HYDROSTATIC PISTON MACHINE

Hans-Jürgen Fricke, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 906,647, May 16, 1978, abandoned.
This application Apr. 3, 1980, Ser. No. 136,971
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2730034
Int. Cl.³ F01B *13/04*
U.S. Cl. 92—57 **8 Claims**



1. A hydrostatic piston machine, comprising a housing with a pressure fluid and forming a low pressure zone and a high pressure zone; a rotor in said housing; a plurality of pistons in said housing and rotatable with said rotor, said pistons including sliding shoes at the ends thereof; a displacing element operative for effecting reciprocation of said pistons, and having a surface including a contact portion which is in sliding contact with said shoes and separated therefrom by a film of a pressure fluid; and means for reducing viscous friction between said surface of said displacing element and said shoes during said sliding contact, said means including a closed arcuate recess formed in said contact portion of said surface of said displacing element and extending along an arcuate distance in the range 130°–180°, said recess being shallow of a relatively small depth and being located in the region of said low pressure zone and communicating with the latter.

4,516,476

ACTUATOR ASSEMBLY FOR AN INDUSTRIAL MANIPULATOR OR THE LIKE

Brian M. Beaton, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Apr. 14, 1983, Ser. No. 484,783
Int. Cl.³ F01B *29/04*
U.S. Cl. 92—59 **5 Claims**

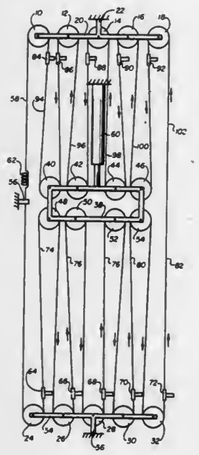
1. An actuator assembly for an industrial manipulator or the like, comprising:

a plurality of elongate actuator units each adapted to produce linear output motion in the direction of its central axis, means for interconnecting at least a first one of said units and a second one of said units to define a generally T-shaped array wherein said second unit extends transversely of and is moveable laterally by said first unit;

each of said units utilizing electrical and fluid energy during operation thereof and including an elongate rigid frame having inlet openings for receiving electricity and pressurized fluid conducted thereto, a pair of elongate support members mounted by and projecting forwardly from said

frame in laterally spaced and substantially parallel relationship to each other for longitudinal movement in unison with each other relative to said frame, drive means carried by said frame and driveably connected to said support members for imparting said movement thereto, said support members having passageways extending longitudinally thereof for conducting electricity and pressurized fluid forwardly from said frame through said support members and to the forwardmost end portions thereof;

said second unit being connected to said forwardmost end portions of said movement support members of said first unit for lateral movement of said second unit in response



to longitudinal movement of said support members of said first unit;

said inlet openings of said second unit including a first pair of inlet openings aligned with said support members of said first unit when said second unit is connected in one transverse orientation to said first unit and including a second pair of inlet openings aligned with said support members of said first unit when said second unit is connected in another transverse orientation relative to said first unit, whereby electricity and pressurized fluid is conducted to said second unit from said frame and through said support members of said first unit in either of said orientations of said second unit.

4,516,477

CLOSURE FOR OPENINGS IN PUMPS

Edwin C. Lewis, P.O. Box 79631, Houston, Tex. 77279; Helmut Henschenmacher, Schwarzer Weg 26, Brachelen, Fed. Rep. of Germany (D-5142); Karl-Heinz Ecker, Wilhelmstrasse 38, Erkelenz, Fed. Rep. of Germany (D-5140); Hartmut Giernalczyk, Adalbert-Stifter-Str.12, and Siegfried Rutte, Gerhard-Schümmer-Str.21, both of Geilenkirchen, Fed. Rep. of Germany (D-5130)

Filed Sep. 26, 1983, Ser. No. 535,748

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235316

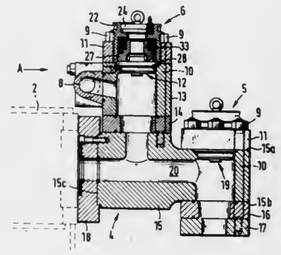
Int. Cl.[3] **F01B** *29/00;* **F04B** *21/00, 39/14*

U.S. Cl. 92—128 **9 Claims**

1. In a removable closure for an opening in a pump housing or cover part including a supporting cover threadedly engageable with the housing or cover part over the opening, an inner cover member insertable between the supporting cover and opening to close the opening, a loadable and releasable pressure-applying member between the supporting cover and inner cover for applying closing pressure to the inner cover, and a device for loading the pressure-applying member, the improvement comprising:

a compression spring operatively interposed between the supporting cover and pressure-applying member to urge the pressure-applying member toward the inner cover; and

means to releasably urge said pressure-applying member away from said inner cover member against the force of and to compress said compression spring:



so that the supporting cover is initially adjustable inwardly toward the opening to an initial closing position with respect to the inner cover member, said means to releasably urge the pressure-applying member away from the inner cover member is thereafter operable thereby moving the pressure-applying member away from the cover member, and the supporting cover is again adjustable inwardly to a final closing position, whereafter said means is operable to release the pressure-applying member to allow said compression spring to urge the inner cover member with a final closing force.

4,516,478

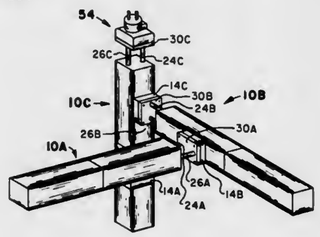
CYLINDER DRIVEN RECIPROCATOR

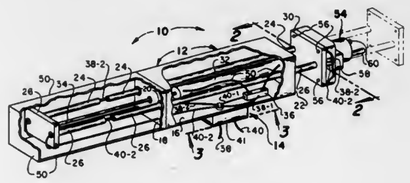
Dale L. Connelly, Rte. 3, McAAP, Box 615B, McAlester, Okla. 74501

Filed May 5, 1983, Ser. No. 491,833

Int. Cl.[3] **B66D** *1/08;* **F01B** *9/00*

U.S. Cl. 92—137 **3 Claims**





1. A reciprocator comprising:

a vertical support,

a base upon which said support is mounted,

a lower pulley mounting plate and an upper pulley mounting plate on said support,

pulley mounts extending above and below both pulley mounting plates,

said pulley mounts extending above said upper pulley mounting plate and below one of said pulley mounts extending said lower pulley mounting plate supporting single pulleys thereon,

said vertical support including a trackway having a pair of U-shaped beams,

an output mounting block slidably mounted between said beams and between said single pulleys,

an extensible member mounted on said vertical support,

a moveable frame attached to said extensible member and moveable therewith,

said moveable frame having an upper row of pulleys and a lower row of pulleys thereon,

one of said pulley mounts extending below said upper pulley mounting plate and one of said pulley mounts extending above said lower pulley mounting plate having a plurality of pulleys mounted thereon,

a cable with ends attached to said upper and lower pulley mounting plates,

said cable being looped continuously around said pulleys on said moveable frame and on said upper and lower pulley mounts on said upper and lower pulley mounting plates,

said output mounting block being attached to said cable and moveable therewith upon actuation by movement of said extensible member.

4,516,479

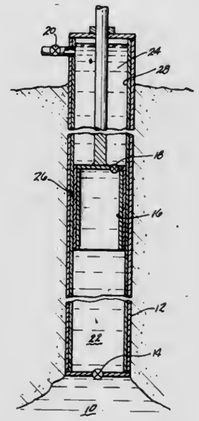
PUMP

Amnon F. Vadasz, Caracas, Venezuela, assignor to Intevep, S.A., Caracas, Venezuela

Filed Jun. 6, 1983, Ser. No. 501,650

Int. Cl.[3] **F16J** *10/04, 1/00*

U.S. Cl. 92—170 **4 Claims**



1. In a reciprocating piston pump for pumping fluids which contain a high degree of suspended particles including a cylinder having a fluid inlet and a fluid outlet and a piston movable within said cylinder for pumping fluid from said fluid inlet to said fluid outlet, the improvement which comprises a hollow elongated metal piston having an exterior peripheral surface and a valve, a cylinder having an interior surface, a first cylindrical sleeve mounted over the exterior peripheral surface of said piston and a second cylindrical sleeve lining the interior surface of the cylinder wherein said first cylindrical sleeve and said second cylindrical sleeve are made of a hard ceramic material having a hardness of greater than nine on the Mho scale such that any suspended particles which lodge between said first cylindrical sleeve and said second cylindrical sleeve are pulverized as said piston moves within said cylinder.

4,516,480

PISTON RING FOR ENDOTHERMIC MOTORS HAVING AN IMPROVED FLAME DAMPER RING

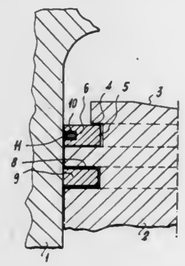
Leopoldo Cattaneo, Via de Allesandri, 1, 20144 Milano, Italy

Continuation-in-part of Ser. No. 152,496, May 22, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,041

Claims priority, application Italy, Jun. 1, 1979, 23193 A/79; Jun. 1, 1979, 23194 A/79

Int. Cl.[3] **F02F** *5/00;* **F16J** *9/08, 9/20*

U.S. Cl. 92—182 **1 Claim**



1. A piston for an endothermic motor, comprising

at least one first piston ring groove for receiving a first compression ring,

a flame damper ring groove disposed between said first groove and a head of said piston,

a floating flame damper ring disposed with clearance in said flame damper ring groove,

at least one second groove provided on an outer surface of said flame damper ring in a radial direction thereof, and

a second compression ring of the split type having tips and disposed within said second groove to define a ring gap between said second compression ring and said flame damper ring in the radial direction thereof,

said second compression ring so disposed as not to close on the tips thereof when subjected to external pressure, and so disposed as to act on a surface of said second groove in a radial direction thereof when subjected to external pressure.

4,516,481

PISTON AND PISTON RINGS SET

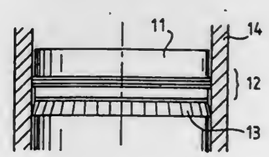
Robert Geffroy, and Christophe Geffroy, both of 1 Blvd. Richard Wallace, Neuilly s/s Maillot 38-57, Paris, France

Filed Feb. 1, 1982, Ser. No. 344,732

Claims priority, application France, Feb. 6, 1981, 81 02353; Dec. 23, 1981, 81 24100; Jan. 15, 1982, 82 00625

Int. Cl.[3] **F16J** *1/04, 9/20, 15/32*

U.S. Cl. 92—212 **33 Claims**



1. An assembly comprising a cylinder, for internal combustion engine or compressor, extending between a compression head and a crankcase, a piston, and piston rings set reciprocable within said cylinder characterized by an improved combination of compression ring and oil control ring means for

reducing friction, blow-by, and oil climbing, said means comprising: compression ring means in a piston groove coaxial with the cylinder adjacent the compression head end of said piston for minimizing blow-by from said compression head to said crankcase, and oil control ring means in a piston groove adjacent said compression ring means on the crankcase side constructed with acute conical elastic circular outer edge skirt means projecting uniformly from its piston groove for differentially scraping oil from the cylinder wall during the strokes of the piston toward said crankcase, and for bypassing oil on the cylinder wall by Kingsbury effect during strokes of the piston away from said crankcase, said skirt means comprising a plurality of separated metal blades projecting from an integral connecting portion of said oil control ring means, the composite free state circumference of said blades being greater than their operating circumference thereby providing said outward spring bias upon assembly.

4,516,482

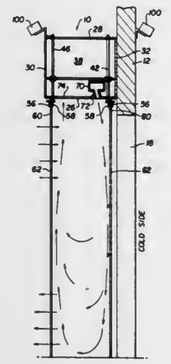
CONDITIONED AIR VESTIBULE FOR REFRIGERATED WAREHOUSE DOORWAY

George R. Smith, 21811 Georgia Ave., Brookeville, Md. 20792

Filed Apr. 24, 1984, Ser. No. 603,417

Int. Cl.³ F24F *9/00*

U.S. Cl. 98—36 **15 Claims**



1. A conditioned air vestibule for controlling the flow of air through a door opening in a wall of a cold storage room and for reducing precipitation resulting from such air flow, said apparatus comprising,

a frame including a pair of laterally spaced vertically extending side panels and a top panel, said frame being adapted to be mounted in contact with the refrigerated room wall in surrounding relation to the door opening with said side panels extending outwardly from the wall one adjacent each side of the door opening, said side and top panels cooperating to define an open portal projecting from the wall,

first and second door panel means,

mounting means supporting said first and said second door panel means for movement between a closed position extending across and closing said portal and an open position, said first and said second door panel means in the closed position being disposed in parallel planes spaced from one another in the direction of travel through the door opening a distance no greater than about one half the distance between said side panels and cooperating with said frame to define a closed vestibule,

power means for substantially simultaneously moving said first and second door panel means between the open and closed positions,

air outlet means extend through said top panel, said air outlet means being adapted to direct air into said closed vestibule adjacent the top of one of said door panel means along at least a major portion of the length of said top panel,

air inlet opening means in said top panel for permitting escape of air from said closed vestibule,

blower means operatively connected with said air outlet means and said air inlet means for circulating air through said closed vestibule, and

heater means associated with said blower means for conditioning air in the closed vestibule to eliminate precipitation resulting from infiltration air and exfiltration air through the closed vestibule.

4,516,483

AIR BLOWING DEVICE

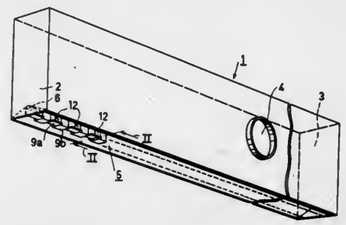
Jakob Bosman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,107

Claims priority, application Netherlands, Apr. 2, 1982, 8201410

Int. Cl.³ F24F *13/072*

U.S. Cl. 98—40.14 **3 Claims**



1. An air-discharge device for incorporation in a ceiling, which comprises an elongate housing of substantially rectangular cross section, said housing having two longitudinal vertical sides, two vertical ends, a longitudinal upper horizontal side, and an open longitudinal lower horizontal side substantially flush with the ceiling, each longitudinal vertical side being formed with an elongate lower edge; an air inlet in said housing; two longitudinal walls extending obliquely into said housing from the respective lower edges of the longitudinal vertical sides, the inner edges of said two oblique walls defining a longitudinal air passage slot therebetween; a plurality of air-deflecting L-shaped guide blades extending lengthwise along said housing between said two oblique walls, said guide blades being alternately secured at one end of the vertical portion of the L to the respective two oblique walls, each guide blade having the horizontal portion of its L lying in a plane including the elongate lower edges, said guide blades thereby forming with the respective two oblique walls alternately directed air discharge outlets; and partitions arranged substantially transversely to the longitudinal extent of the housing between the respective adjacent guide blades, whereby the air discharged through said outlets flows substantially along the ceiling.

4,516,484

HOUSEHOLD APPLIANCE FOR PREPARING HOT BEVERAGES

Luigi De Ponti, Milan, Italy, assignor to Alfonso Bialetti & C., Fonderia in Conchiglia S.p.A., Omegna-Crusinallo, Italy

Filed Mar. 23, 1984, Ser. No. 593,039

Claims priority, application Italy, Mar. 23, 1983, 21234/83[U]; Apr. 15, 1983, 21565/83[U]

Int. Cl.³ A47J *31/00*

U.S. Cl. 99—279 **6 Claims**

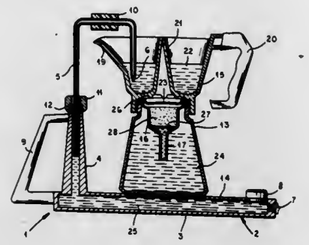
1. An appliance for the preparation of hot beverages, comprising:

a boiling chamber fillable with water for generating steam upon being exposed to a source of heat;

a receptacle remote from said boiling chamber adapted to contain a liquid to be separately heated;

conduit means extending from said boiling chamber and terminating in an outlet within said receptacle for emitting the generated steam into the liquid contained therein;

a vessel separated by thermally conductive wall means from said boiling chamber for indirectly heating liquid present in said vessel, said receptacle being supported on a cover closing the top of said vessel, said boiling chamber being formed by a jacket spacedly surrounding at least a lower part of said vessel, said vessel being spaced above the bottom of said boiling chamber, said conduit means comprising a tube rising centrally within said vessel and penetrating said cover, said receptacle having a central nipple surrounding at least part of an upper end of said tube.



4,516,485

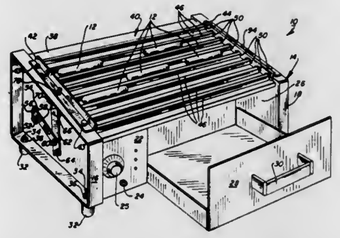
DEVICE FOR COOKING FOOD

Dye O. Miller, South Barrington, Ill., assignor to A. J. Antunes & Co., Addison, Ill.

Filed Jun. 29, 1981, Ser. No. 278,313

Int. Cl.³ A47J *37/04*

U.S. Cl. 99—339 **8 Claims**



1. An apparatus for heating food items, comprising:

a housing,

an inclined platen mounted on said housing,

means for heating said platen,

a grid slideably positioned on said platen, said grid including a plurality of food item supports extending across said inclined platen, and

means for reciprocally sliding said grid up and down on said inclined platen.

4,516,486

COOKING APPARATUS AND METHOD

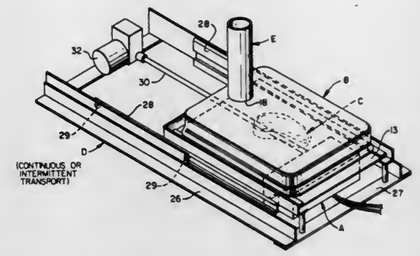
William H. Burkhart, 225 Avalon Dr., Los Altos, Calif. 94022

Filed Jun. 20, 1983, Ser. No. 506,130

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—388 **12 Claims**

1. Apparatus for cooking meat or the like, comprising a cooking chamber having means for supporting the meat or the like therein, a source of radiant energy including a lamp and means for focusing energy from said lamp on a region of a surface of said meat or the like that is small relative to the area of said surface and for producing at that region an intense heat flux, said lamp having a filament capable of producing of the order of hundreds of watts per inch of filament length from a 120 volt AC supply, said lamp being located outside of said cooking chamber and said cooking chamber having a wall that is transmissive to said radiant energy and through which said radiant energy is transmitted to said region, means for moving said source relative to said cooking chamber along said surface so as to move said region and so as to char at least portions of said surface so quickly that the interior of said meat or the like does not cook beyond a desired state, and means for the disposal of smoke generated in said cooking chamber.



4,516,487

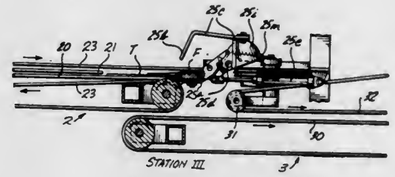
APPARATUS FOR FOLDING A DOUGH SHEET TO ENCLOSE A FOODSTUFF FILLER

David P. Madison, 409 Glenbrook Rd., Apt. E, Stamford, Conn. 06906, and Michael B. Cruver, 1408 Adams, Port Townsend, Wash. 98368

Filed May 5, 1982, Ser. No. 375,051

Int. Cl.³ A21C *9/00, 11/00*

U.S. Cl. 99—450.6 **16 Claims**



1. In mechanism for folding a sheet wrapper around filling including generally horizontal conveyor means for transporting a sheet wrapper edgewise and having a discharge end roller rotatable about an axis extending transversely of the direction of movement of the conveyor means and means for rotating such discharge end roller continuously in one direction, the improvement comprising an auxiliary roller adjacent to and beyond the discharge end of the conveyor means, having its upper surface disposed at substantially the same elevation as the elevation of the discharge end of the conveyor means and rotatable about an axis substantially parallel to the axis of rotation of the conveyor discharge end roller, reversible drive means for driving said auxiliary roller alternatively in opposite directions, and control means for controlling said reversible drive means to drive said auxiliary roller in the same rotative direction as the conveyor discharge end roller rotation until a substantial portion of a wrapper delivered by the conveyor means has been transferred from the conveyor means onto said auxiliary roller, and for then reversing the direction of rotation of said reversible drive means for driving said auxiliary roller in the rotative direction opposite the direction of rotation of the conveyor discharge end roller for folding the wrapper between the conveyor discharge end roller and said auxiliary roller along a crease extending transversely of the direction of movement of the conveyor means and drawing the

wrapper and filling downward between such rollers in that folded condition, and said control means thereafter being operable to reverse the direction of rotation of said auxiliary roller to rotate again in the same direction as the direction of rotation of the conveyor discharge end roller to receive thereon the leading portion of the next sheet wrapper delivered by the conveyor means.

4,516,488

SUPPORT AND TENSIONING APPARATUS FOR TENSIONING A STRAPPING BAND ABOUT A PACKAGE

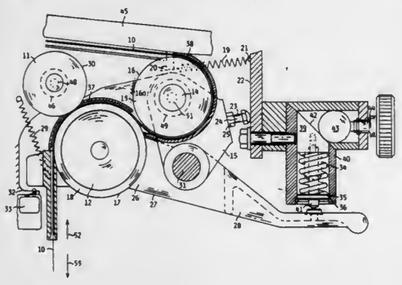
Günter Bartzick, Ennepetal; Gerd Bühne, Schwelm, and Reinhard Naydowski, Remscheid, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,259

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220446

Int. Cl.³ B65B *13/22*

U.S. Cl. 100—4 **19 Claims**



1. Support and tensioning apparatus for a strapping band to be tensioned around a package, comprising: a pair of wheels of which one wheel is an idler wheel and the other wheel is a tensioning wheel for tensioning said strapping band; tensioning motor means for driving said tensioning wheel in tensioning direction and having a shaft; a pivoting lever, said shaft of said tensioning motor means being mounted in said pivoting lever, said tensioning wheel pressing against the strapping band while the band is being tensioned and rests on the idler wheel and is looped partially around said tensioning wheel, said tensioning wheel pressing against said band with a force that increases with the tension in the band; a band guide surrounding said package without contacting said package, said band being first placed between said idler wheel and an advance and retraction wheel and advanced in said band guide and being subsequently retracted with its front end secured in place into a position against the package by reversing rotation of said pair of wheels, said band being thereafter tensioned with said tensioning wheel rotating substantially slowly and at high power, said tensioning wheel pressing against said band with a pressing force that increases with tension in said band when said band is being tensioned and contacts said idler wheel, frictional forces arising on the partially looped part of said tensioning wheel due to said pressing force being additive to said pressing force and being applied with said pressing force to said idler wheel.

4,516,489

APPARATUS FOR CRUSHING ARTICLES

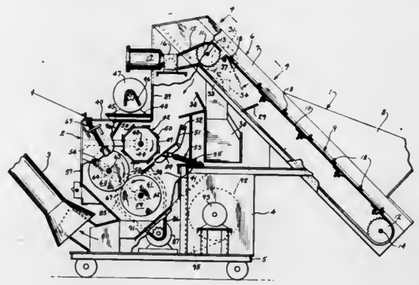
James A. Ballo, Elm Grove, Wis., assignor to Balcon Industries, Menomonee Falls, Wis.

Filed Jun. 24, 1982, Ser. No. 391,581

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—98 R **12 Claims**

1. An apparatus for crushing articles, comprising a housing, first stage crushing means disposed within the housing and disposed to receive and crush a plurality of said articles, second stage crushing means located within the housing to receive partially crushed articles from said first stage and to provide a secondary stage of crushing, delivery means for delivering the partially crushed articles from said first stage crushing means to the second stage crushing means, recirculating conduit means for conducting partially crushed articles from a location



between said first and second crushing means to a second location upstream of said first crushing means, and means associated with said first crushing means for moving said articles through said recirculation conduit means during periods when said second crushing means cannot accommodate the flow of partially crushed articles.

4,516,490

PRESS DRAINAGE

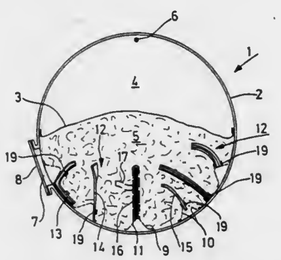
Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG, Niederweningen, Switzerland

Filed Nov. 8, 1983, Ser. No. 549,925

Claims priority, application Switzerland, Dec. 21, 1982, 7442/82

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—107 **19 Claims**



1. A press for extracting fluid from fluid-containing matter so as to separate the fluid from the remaining matter, particularly for dejuicing of agricultural products, primarily fruit,

comprising in combination a rotatably supported container,

at least one flexible membrane actuatable by pressure means, disposed in said container, and subdividing said container so as to define a pressure chamber and a press space therein,

at least one wall surrounding said press space,

said pressure chamber having an inlet conduit and an outlet conduit for a pressure medium, and

a plurality of flexible drainage means, at least some of said drainage means having free ends, at least the remaining drainage means having ends connected to said wall, said flexible drainage means extending into said press space.

4,516,491

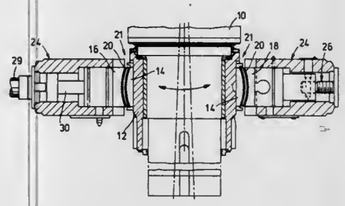
ROLL CROSS-AXIS MECHANISM

William J. Winter, Trumbull, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 30, 1983, Ser. No. 537,596

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—158 R **2 Claims**



1. In a calender roll machine having a pair of opposed rolls one of which is mounted at opposite ends in journals which are adjustable in cross axis directions to compensate for roll bending, and also adjustable in directions toward and away from a cooperating roll, the improvement comprising semi-cylindrical anti-friction bearings at opposite sides of the journal between means for adjusting the journal in cross axis directions, and means between a slide and the journal for adjusting the journal and the one roll toward and away from the cooperating roll the slide being mounted in a frame by anti-friction linear bearings for permitting free floating movement of said one roll on the first named and second named bearings toward and away from the cooperating roll without affecting the cross-axis adjustment.

4,516,492

BALE DISCHARGE PRESSURE PLATE

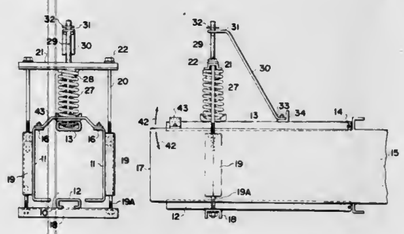
Abram J. Olfert, Box 7, Hague Saskatchewan, Canada (S0K 1X0)

Filed Oct. 7, 1983, Ser. No. 539,948

Claims priority, application Canada, Oct. 7, 1982, 413033

Int. Cl.³ B30B *9/30*

U.S. Cl. 100—192 **6 Claims**



1. In a bale discharge chute which includes a pair of spaced and parallel vertical side walls, a lower member and an upper pressure beam pivoted by one end thereof adjacent the inlet end of the chute and extending towards the discharge end thereof between the upper edges of the vertical side walls and a pair of links extended between the chute and the beam for loading the beam said lines having upper ends; the improvement comprising an adjustable compression spring for preloading said beam and means mounting said compression spring from said chute whereby said compression spring reacts between said beam and said chute and normally urges said beam downwardly in a vertical arc around the pivotal connection thereof to said chute, said means mounting said compression spring upon said chute includes means operatively connecting the upper ends of the links together across the upper side of said chute and spaced upwardly from said beam, said compression spring reacting between said beam and said means connecting the upper ends of said links in order to pre-load said beam, and a compression spring locating member secured to said overspanning member and engaging within the upper end of said compression spring, a compression spring guiding bolt extending axially through said compression spring and freely through said locating member, an anchor plate at the base of said compression spring, the lower end of said bolt being secured to said anchor plate and securing plate means clamping said anchor plate to said pressure beam, a brace extending rearwardly between the upper end of said guide bolt and said pressure beam, means spanning said bale chamber forwardly of said overspanning member to limit the upward movement of said pressure beam and further means extending transversely of said pressure beam rearwardly of said overspanning member and engageable with the other side of said discharge chute to limit the downward movement of said beam.

4,516,493

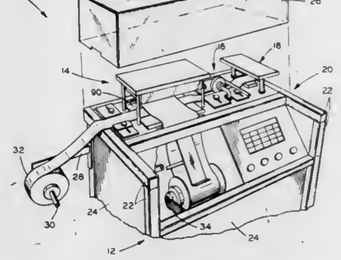
APPARATUS FOR IMPRINTING AND CUTTING A TAPE OR RIBBON

Harold Schemenauer, 1943 Heatherwood Dr., Toledo, Ohio 43614

Continuation-in-part of Ser. No. 465,536, Feb. 10, 1983, abandoned. This application Mar. 8, 1984, Ser. No. 587,555

Int. Cl.³ B41F *17/00*

U.S. Cl. 101—27 **19 Claims**



1. A tape imprinting apparatus comprising, in combination:

means for imprinting indicia on a tape including a printing assembly, means for providing heat to said printing assembly, a platen spaced from and parallel to said printing assembly, first means for reciprocably translating said printing assembly along an axis normal to said platen and into imprinting contact with a tape disposed on said platen;

first means for advancing the tape along a first axis including a first drive roller, a first idler roller and first means for rotating said first drive roller;

at least one pair of guide means having adjustable separation along an axis transverse to said first axis for guiding said tape along said first axis;

second means for advancing a printing foil generally along a second axis normal to said first axis including a second drive roller, a second idler roller and second means for unidirectionally rotating said second drive roller, means responsive to said imprinting means for cycling said second advancing means; and

means for cutting said tape including a first tape cutting mechanism having a first cutting pattern, a second cutting mechanism having a second cutting pattern, and means for selectively activating said first cutting mechanism or said first and said second cutting mechanisms to cut such tape according to said cutting patterns.

4,516,494

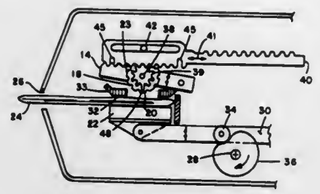
ANTI THEFT DEVICE FOR A PRINTING MACHINE PRINT WHEEL ASSEMBLY

Christian A. Beck, Ridgefield, and Alton B. Eckert, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 459,427, Jan. 20, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 591,891

Int. Cl.³ B41J *1/54*

U.S. Cl. 101—93.26 **6 Claims**



6. In a printing machine having the capability of printing value indicia on material by means of a printing device having a plurality of selectively settable printing wheels mounted for rotation on a common axis and having a plurality of numerical printing members arranged around the periphery thereof, said printing device including means for setting said printing wheels, said setting means comprising a gear carried by each of said printing wheels on one side thereof and having a predetermined number of gear teeth, and a movable drive member operatively associated with each printing wheel, each drive member having a plurality of teeth thereon defining at least a corresponding plurality of tooth spaces adapted to engage and mesh with said gear teeth in a predetermined synchronous relationship, the improvement comprising:

means to render said machine inoperative responsive to alterations of said predetermined synchronous relationship including means for preventing said gear teeth from meshing with said tooth spaces upon an alteration in said predetermined synchronous relationship between the teeth of any of said gears and the tooth spaces of the corresponding drive members associated with said gears and means responsive to said prevention of meshing for indicating a malfunction in said printing machine.

4,516,495

METHOD AND ARRANGEMENT FOR POSITIONING A SECOND PATTERN ORIGINATING FROM A PATTERN FORMED ON A STENCIL IN RELATION TO A MATERIAL INTENDED FOR THE PATTERN

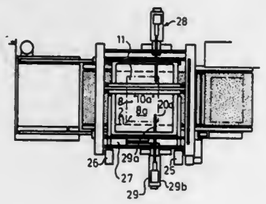
Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed May 18, 1984, Ser. No. 611,629

Claims priority, application Sweden, May 18, 1983, 8302802; Mar. 20, 1984, 8401527

Int. Cl.³ B41F *1/34, 15/36;* **B41L** *13/02*

U.S. Cl. 101—129 **25 Claims**



1. Method for positioning a second pattern (**10***a*) originating from a first pattern (**1***a*) formed on a stencil in relation to a material (**8**) intended for the pattern, with said second pattern (**10***a*) being formed by causing a coating intended for the material to pass through the first pattern, for example by means of a scraper blade in a silk screen printing machine, characterized in that the position of the second pattern (**10***a*) relative to a reference point, usually the frame components of the printing machine, is stored in an organ, and in that when a material to which the second pattern (**10***a*) is to be transferred has been moved into a printing position, the position of the material or of a pattern already applied to it is evaluated as well as any discrepancy which would arise if the second pattern (**10***a*) were to be applied to said material in said position, whereupon a frame holding the stencil and/or a printing table and/or the material is displaced or is caused to move in some way into a position dependent on the size and direction of the discrepancy such that, when the second pattern (**10***a*) is applied to the material, said pattern will adopt a position on the material in which any previously identified discrepancy will be compensated for fully or to a satisfactory extent.

4,516,496

COPPERPLATE ENGRAVING MACHINE FOR PRINTING PAPER CURRENCY

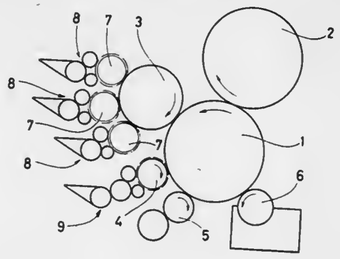
Gualtiero Giori, Lonay, Switzerland, assignor to De La Rue Giori S.A., Switzerland

Filed Mar. 18, 1983, Ser. No. 476,539

Claims priority, application Switzerland, Apr. 7, 1982, 2150/82

Int. Cl.³ B41F *9/02*

U.S. Cl. 101—152 **1 Claim**



1. An intaglio plate printing machine for printing paper currency, notably banknotes, compriing a plate cylinder with at least one engraved plate provided with deep intaglio cuts corresponding to elements of a main design, and less deep, finer intaglio cuts corresponding to the elements of a safety background, an impression cylinder cooperating with and contiguous to a surface of the plate cylinder, at least one selector inking roller of an inking unit having a resilient surface with relief cuts therein and cooperating directly with said plate for inking the cuts corresponding to the main design, a plate wiping system contiguous to a surface of the engraved plate together with an inking system for inking the cuts corresponding to the safety background with at least two different colors, wherein said inking system for inking the cuts corresponding to the safety background elements consists of a collector cylinder having a smooth resilient surface cooperating with the engraved plate, said collector cylinder being located, in the direction of rotation of the plate cylinder, ahead of said selector inking roller and being in contact at its periphery with at least two hard color selector cylinders for different colors of the safety background which are formed with relief areas corresponding to the respective colored areas of the safety background, and an inking supply device being associated with each color selector cylinder.

4,516,497

PRINTER WITH AUTOMATIC STACKER

Frederick M. Pou, Dayton, and Richard L. Straub, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 393,674, Jun. 30, 1982, Pat. No. 4,442,774. This application Mar. 26, 1984, Ser. No. 575,942

Int. Cl.³ B41F *13/64*

U.S. Cl. 101—240 **7 Claims**



1. A stacker for stacking batches of tags issuing from a printer comprising:

means including a conveyor for receiving said tags;

means for counting the number of tags placed on said conveyor;

means for determining the number and width of the tags present in each batch; and

means responsive to said counting means and to said number and width determining means for advancing said conveyor an increment that is a predetermined amount greater than the width of the tags in the batch after a predetermined number of tags have been printed or after the end of a batch has been reached, said increment being determined by the width of the tags in the batch being printed.

4,516,498

HAND-HELD LABELER AND LABELING METHOD

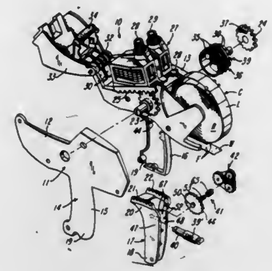
John D. Mistyurik, Tipp City, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 416,196, Sep. 9, 1982, which is a continuation of Ser. No. 243,100, Mar. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,085

Int. Cl.³ B41K *5/08*

U.S. Cl. 101—288 **16 Claims**

1. A hand-held labeler for printing and applying labels releasably secured to a carrier web, comprising: a housing having a handle, a manually operable actuator disposed at the handle and movable from an initial position, to an actuated position, and again to its initial position, a platen, a print head cooperable with the platen, an inking member for inking the print head, means for delaminating printed labels, means for applying printed labels, a drive member engageable with the carrier web for advancing the carrier web, means coupled to the actuator for moving the print head and for moving the drive member through a cycle of operation to print and dispense labels one at a time into label applying relationship with respect to the label applying means, and means for blocking return of the actuator to prevent operation of the moving means.



4,516,499

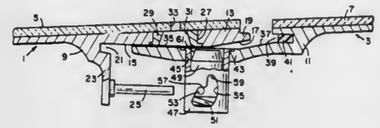
QUICK ACCESS SPLICE FOR MISSILE SECTIONS

Ralph A. Eyman, Clermont, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 30, 1983, Ser. No. 509,577

Int. Cl.³ F42B *13/00*

U.S. Cl. 102—293 **5 Claims**



1. Forward and aft mating missile sections having a quick access splice, comprising cylindrical telescoping ring structures on the forward and aft sections, said forward section having a conically tapered cutout surface in said cylindrical ring structure and a trigger member mounted thereon, said aft structure having a pin with a conically tapered front surface and being held in a retracted position by latch means and a spring means biasing said pin radially outwardly for engagement of said front tapered surface on said pin with the conically tapered surface on said forward member, said trigger member being positioned relative to said latch means for said pin such that said trigger member releases said latch means as said forward and aft members are telescoped together to allow said spring means to bias said pin into engagement with said conically tapered surface of said forward member and provide a shear surface connecting means between said forward and aft structures for securing these members together.

4,516,500

Patent Not Issued For This Number

4,516,501

AMMUNITION CONSTRUCTION WITH SELECTION MEANS FOR CONTROLLING FRAGMENTATION SIZE

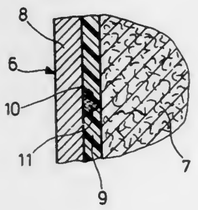
Manfred Held, Aresing, and Peter Grössler, Hockstadt, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,552

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016861

Int. Cl.³ F42B *13/18*

U.S. Cl. 102—496 **15 Claims**



1. Ammunition, such as a warhead, comprising:

a casing defining a space;

an explosive charge within said space;

elongated casing dividing means extending in a pattern between said casing and said explosive charge for fragmenting said casing along said casing dividing means with said casing dividing means in an operable condition; and

selection means associated with said elongated casing dividing means for placing only selected portions of but not all of, said elongated casing dividing means in an inoperable condition to change the size for fragments of the casing to be formed upon explosion of the explosive charge and operation of a remaining operable portion of said elongated casing dividing means.

4,516,502

IMPACT PROJECTILE ASSEMBLY

Klaus-Walter Klein, Neuss; Jürgen Böcker, Oberhausen; Gerhard Glotz, Düsseldorf, and Klaus Gersbach, Willich, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,902

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207220

Int. Cl.³ F42B *13/16*

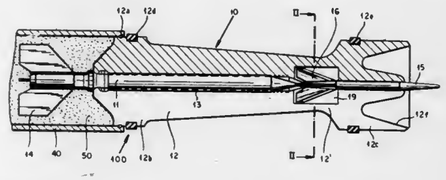
U.S. Cl. 102—523 **6 Claims**

1. A subcaliber projectile assembly for firing from a barrel-type weapon to attack a multilayer armored target, comprising:

an elongated sabot comprising a plurality of axially extending segments separable along axial planes, said segments defining a recess close to a leading air-catching end of the sabot;

a relatively small inertial enabling projectile received in said end of said sabot and having a fin stabilizer received in said recess;

a relatively large main inertial subsequently attacking projectile received in said sabot behind said enabling projectile and having a fin stabilizer disposed rearwardly of said sabot, said segments and the periphery of said main projectile being formed with mating formations enabling



entrainment of said main projectile with said sabot until said segments of said sabot separate, said projectiles having aerodynamic configurations such that said enabling projectile reaches said target ahead of said main projectile; and

at least one band surrounding said segments for releasably retaining same against said projectiles and holding said formations in mutual engagement.

4,516,503

MACHINE FOR REPLACING RAILWAY SWITCHES AND TRACKS

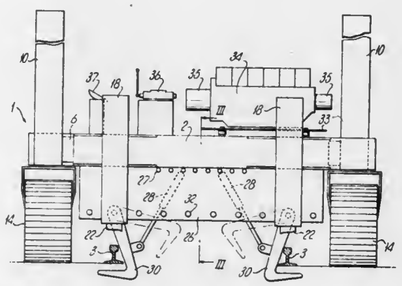
Pietro Boccaletti, Reggio Emilia, Italy, assignor to AMECA S.r.l., Cavriago, Italy

Filed May 18, 1982, Ser. No. 379,357

Claims priority, application Italy, May 22, 1981, 46846 A/81

Int. Cl.³ E01B *29/02*

U.S. Cl. 104—3 **5 Claims**



1. Railway maintenance apparatus for replacing railway switches and track portions comprising,

a rigid platform,

four flanged wheels for engagement with tracks of a railway to transport the apparatus on the railway,

means mounting two of said wheels at each side of said platform, in spaced apart relation to each other, for downward extension and upward retraction relative to said platform,

motor means connected to said platform for extending and retracting said flanged wheels,

first and second crawler tracks at opposite sides respectively of said platform,

first means mounting said first crawler track on said platform for straight line generally horizontal movement between a retracted position adjacent one side of said platform and an extended position spaced from said one side of the platform,

first cylinder means on said platform for moving said first crawler track between said extended and retracted positions,

second means mounting said second crawler track on said platform for straight line generally horizontal movement between a retracted position adjacent the other side of said platform and an extended position spaced from said other side of the platform,

second cylinder means on said platform for moving said second crawler track between said extended and retracted positions,

said straight line movement of the first crawler track being parallel to the straight line movement of the second crawler track,

means mounting said first crawler track on said first mounting means for generally vertical movement between an upper retracted position adjacent said first mounting means, and a lowered extended position spaced below said first mounting means for travel on a ballast at one side of a railway,

means mounting said second crawler track on said second mounting means for generally vertical movement between an upper retracted position and a lowered extended position spaced below said second mounting means for travel on a ballast at the other side of the railway,

plural hooks pivotally mounted on said platform for hooking onto a railway track portion and for lifting the track portion upon movement of said crawler tracks to said lowered extended positions, and

said first and second cylinder means comprising means for shifting said platform laterally of said crawler tracks when said crawler tracks are vertically and horizontally extended for travel on the ballast, to enable accurate lateral positioning of a railway track portion supported between said crawler tracks by said hooks.

4,516,504

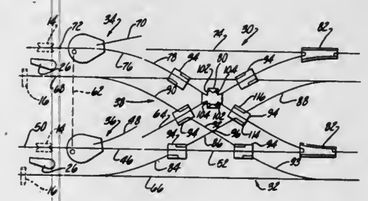
CROSS-OVER TRACK STRUCTURE FOR WHEELED PALLETS

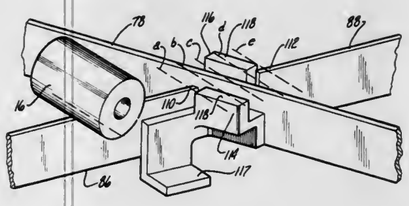
John H. Brems, Boca Raton, Fla., and John L. Vaphiadis, Troy, Mich., assignors to Lamb Technicon Corp., Warren, Mich.

Filed Apr. 1, 1983, Ser. No. 481,344

Int. Cl.³ E01B *7/10, 7/28*

U.S. Cl. 104—130 **7 Claims**





1. A gravity conveyor system for pallets of the type having a pair of downwardly inclined tracks which cross one another at an intersection, each crossing track comprising a pair of generally parallel laterally-spaced upright rails, the upper edges of the rails being generally coplanar adjacent said intersection, characterized in that each pallet is provided at one side thereof with a pair of peripherally grooved wheels adapted to ride on the upper edge on one of said rails of each track to guide the pallet along the track and with a straight cylindrical roller on its opposite side adapted to ride on the upper edge of the other rail in each track, the intersecting wheel engaging rails of the two tracks being interconnected by a frog, each wheel engaging rail being interrupted at said frog, said frog having a pair of intersecting guideways interconnecting the adjacent ends of the interrupted rail, each guideway having a bottom wall and a pair of side walls, the bottom walls of the guideways being coplanar, the side walls of each guideway being spaced apart transversely to accommodate the passage of the wheels therebetween, said bottom walls lying in a plane generally parallel to the plane of the upper edges of the portions of the rails adjacent the frog and being spaced below said upper edges a distance corresponding to the depth of the groove in said wheels, the intersections between the wheel engaging and the roller engaging rails of the two tracks being interconnected by a cross-over member, said wheel engaging rail having a section extending through said cross-over member, a pair of coplanar pads spaced laterally from said rail section on opposite sides thereof to permit a grooved wheel on said wheel engaging rail to roll therebetween, the roller engaging rail at the cross-over member being interrupted between said pads to form a gap defined by two spaced apart rail ends, said pads extending transversely of the spaced ends of the interrupted roller engaging rail, said pads being generally coplanar with the upper edges of said rail section and the spaced ends of the interrupted roller engaging rail, said pads having a length relative to the length of the roller and the included angle between the crossing rails such that when a roller on one of the pallets rolls off one of the spaced apart ends of the interrupted roller engaging rail and onto the other end thereof, the pads and said section of the wheel engaging rail provide a continuous support surface for the roller which prevents the roller from dropping into said gap.

4,516,505

VEHICLE WHICH CAN BE HELD ON A ROADWAY WITH THE AID OF AN ATTRACTING MAGNETIC DEVICE

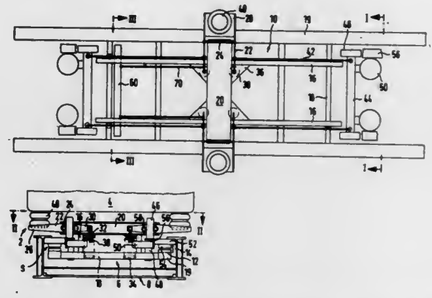
Götz Heidelberg, Am Hügel 16, D-8136 Percha, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,097

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107341

Int. Cl.³ B61B *13/08*

U.S. Cl. 104—284 **12 Claims**



1. A system operating at least partly by magnetic attraction for maintaining a vehicle in spaced relation to a track, said system comprising:

a track,

a vehicle, said vehicle including a support part, a payload carrier, and spring means joining said support part and said payload carrier, said payload carrier being movable relative to said support part by deformation of said spring

means and said spring means including at least one spring arrangement having a first spring element and a second spring element sequentially connected with said first spring element;

attracting magnetic means for providing a magnetic force and for supporting said vehicle relative to said track, said attracting magnetic means including a first part mounted on said track and a second part mounted on the support part of said vehicle so as to be opposite said first part and to leave a free gap therebetween;

position-defining means mounted on said support part and guided at a substantially constant spacing from said track; and

coupling means mounted on said support part for providing a connection between said position-defining means and said second spring element for continuously detecting a variation of the load of said vehicle exerted on said second spring element and for converting such variation into a shift of said support part relative to said position-defining means thereby altering the width of said gap between said first and second parts for varying the magnetic force of said magnetic means and adapting such force to the load of said vehicle.

4,516,506

ARTICULATED INTERMODAL FLATCAR

H. Neil Paton, 1218 Third Ave., Suite 1022, Seattle, Wash. 98101

Filed Jul. 13, 1981, Ser. No. 283,007
Int. Cl.³ B23P 6/00; B61D 3/12, 17/04
U.S. Cl. 105—3 **30 Claims**



1. At least one short railway car unit manufactured by converting a long railway car having a center beam structure and a deck according to a process comprising the steps of:

(a) transversely severing said long railway car to form at least one car section having a center beam structure and a deck;

(b) removing portions of the center beam structure of said at least one section adjacent the end that severance was effected;

(c) removing portions of the deck of said at least one section between its ends to form a reduced section of decreased weight but having at least the combined load strength of said long railway car; and

(d) mounting a truck to said at least one reduced section adjacent the removed center beam portions of said at least one section to form at least one short railway car unit.

16. A method of converting a long railway car having a center beam structure and a deck into at least one short railway car unit, comprising the steps of:

(a) transversely severing said long railway car to form at least one short car section having a center beam structure and a deck;

(b) removing portions of the center beam structure of said at least one section adjacent the end at which severance was effected to provide truck clearance;

(c) removing portions of the deck of said at least one section between its ends to decrease the weight of said at least one section while retaining at least the combined load strength of said long railway car; and

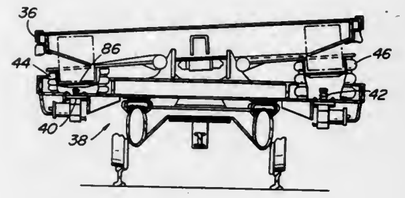
(d) mounting at least one truck to said at least one section adjacent to the removed center beam structure portions to form at least one short railway car unit.

4,516,507

MECHANICAL STOP MECHANISM FOR A TILT SYSTEM IN A RAILWAY CAR

Walter C. Dean, II, Collegeville, Pa., assignor to The Budd Company, Troy, Mich.

Filed Aug. 23, 1982, Ser. No. 410,235
Int. Cl.³ B61F 3/08
U.S. Cl. 105—199 A **1 Claim**



1. In combination with a tilting system for a railway car body disposed on a truck, a pair of stop mechanisms connected to said truck to limit tilting of said car, each of said stop mechanisms being disposed towards opposite sides of said car body and comprising:

(a) a main housing for each of said pair of stop mechanisms:

(b) a shaft member disposed in said housing for engaging the bottom portion of said car to limit the downward movement of said car body;

(c) a movable block element extending below and in contact with said shaft member;

(d) a piston connected to said movable block element;

(e) biasing spring means normally biasing said block element in an extended position below said shaft member to prevent downward movement of said shaft member; and

(f) means for selectively applying pressure to move said piston to overcome the bias of said biasing means to cause said block element to be retracted from a position below said shaft member to permit free downward movement of said shaft member thereby permitting tilting of said car, and

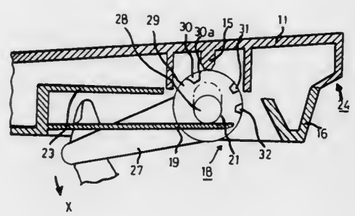
(g) a second spring connected to bias said shaft member normally upwardly to continuously engage the bottom portion of said car body.

4,516,508

DESK APPARATUS

Mitumasa Kako, and Michifumi Ishigami, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 4, 1983, Ser. No. 491,559
Claims priority, application Japan, May 11, 1982, 57-68571[U]
Int. Cl.³ A47F 5/12
U.S. Cl. 108—7 **6 Claims**



1. An angle adjusting mechanism for use in selectively adjusting the angle of inclination of a work surface and disposed between said work surface and a base, said mechanism comprising

a casing comprising a lower casing and an upper casing, with a pair of elliptical holes formed on opposite side walls of said casing and in the area of the boundary between said upper casing and lower casing, said upper casing being attachable to said work surface and said lower casing being contactable with said base in a level position of said work surface;

a foot device positioned within said casing and comprising a cylindrical portion having a plurality of channels in the periphery thereof, a pair of shafts extending from both ends of said cylindrical portion, and a foot member extending from said periphery of said cylindrical portion and having an end thereof contactable with said base in inclined positions of said work surface;

an engaging member positioned within and attachable to said upper casing and above said cylindrical portion within contactable distance to said plurality of channels in said cylinder portion to determine the distance between the base and the work surface dependent on the particular one of said plurality of channels to which said engaging member is engaged, said distance determining said angle of inclination of said work surface; and

resilient means for urging said cylindrical member against said engaging means,

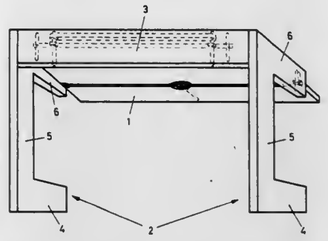
wherein said shafts are positioned within said elliptical holes to be rotatable and vertically movable therein so that in a level locked position of said work surface, said foot member is within the casing and said lower casing contacts said base, and the engaging member is engaged with one of said plurality of channels on the periphery of the cylindrical member, and so that in said inclined positions of said work surface the foot member is manually rotated outside of the casing and against the resilient force of said resilient means to disengage the engaging member from said one or other of said plurality of channels, until the cylindrical member presents another selected channel for engagement and said selected other channel is engaged by the engaging member with said foot member having said end portion thereof thereupon resting on said base at a selected distance from said work surface.

4,516,509

OFFICE FURNITURE WITH AN ADJUSTABLE TABLETOP IN MODULAR DESIGN FOR SETUP AT THE WORK PLACE

Urs Langenegger, Uznach; Werner Roffler, Hinwil, and Wendolin Rütsche, Ruti, all of Switzerland, assignors to Embru-Werke, Mantel & Cie., Ruti, Switzerland

Filed Jun. 23, 1982, Ser. No. 391,148
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124658; Jun. 24, 1981, 3124660
Int. Cl.³ A47B 9/00
U.S. Cl. 108—147 **8 Claims**



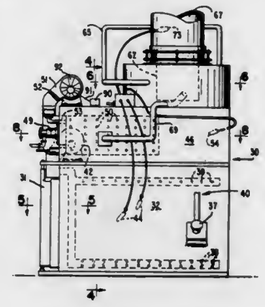
1. Furniture in modular design for setup at the work place, such that the modular unit has a framework which consists of two side parts each having a hollow side arm and a hollow connecting beam with a tabletop held adjustably in the framework, characterized by the fact that there is at least one bolt (**27**) at the rear edge of the tabletop (**1**) such that the projecting end of the bolt (**27**) fits into a vertical slit (**29**) of the hollow beam (**3**) which connects the two hollow side arms (**6**) of the modular furniture unit, and at least one vertical adjusting spindle (**32**), which has a follower nut (**31**), housed inside the beam (**3**) for vertical movement of the bolt (**27**) which connects with the nut (**31**) and thus permits vertical adjustment of the tabletop (**1**), and further characterized by the fact that two operating rods (**10**) which can be shifted equally in longitudinal direction are located in the front area of the tabletop (**1**) and each of their outer ends fits in one side arm (**6**) of the furniture, a wedge element (**21**) which tapers toward the top is located in each side arm (**6**) and has a bolt head (**23**) of the corresponding operating rod (**10**) resting on its wedge surface (**22**), the horizontal distance (**25'**) between the wedge surfaces increases steadily toward the bottom, there is an adjusting mechanism (**13,14,17,18**) to achieve the movement of the operating rods (**10**) for the purpose of changing the distance (**25'**) between the two bolt heads (**23**) so that each bolt head spacing (**25'**) corresponds to a different height position of the front part of the tabletop (**1**).

4,516,510

INCINERATOR WITH TWO REBURN STAGES AND, OPTIONALLY, HEAT RECOVERY

John N. Basic, Sr., 41 W. 202 Whitney Rd., St. Charles, Ill. 60174

Division of Ser. No. 248,054, Mar. 27, 1981, Pat. No. 4,438,705.
This application Mar. 26, 1984, Ser. No. 573,429
Int. Cl.³ F23G 7/06
U.S. Cl. 110—346 **38 Claims**



1. A method of incinerating refuse which comprises:

(A) placing bulk refuse through a first inlet opening into a main incinerator chamber;

(B) burning said bulk refuse to produce gaseous combustion products;

(C) passing the gaseous combustion products out of said main combustion chamber through a first outlet opening and directly into a second inlet opening of a first reburn chamber;

(D) measuring a first temperature within or in near proximity to the interior of said first reburn chamber;

(E) burning, in said first chamber and in proximity to said second inlet opening, an amount of fuel, said amount of fuel being a first amount when said first temperature is above a first predetermined set point and a second amount when said first temperature is below a second prodetermined set point which is not higher than said first set point, said first amount being less than said second amount;

(F) measuring a second temperature within or in near proximity to the interior of said first reburn chamber;

(G) introducing an amount of an oxygen-containing gas into said first reburn chamber through a plurality of jets extending at least about half the distance from said second inlet opening to a second outlet opening through which the gaseous combustion products can egress from said first

reburn chamber, said amount of said oxygen-containing gas introduced into said first chamber being a third amount when said second temperature is above a third predetermined set point and a fourth amount when said second temperature is below said third set point, said third amount being greater than said fourth amount;

(H) passing the gaseous combustion products out of said first reburn chamber through said second outlet opening and directly through a third inlet opening into a second reburn chamber;

(I) measuring a third temperature within or in near proximity of the interior of said second reburn chamber;

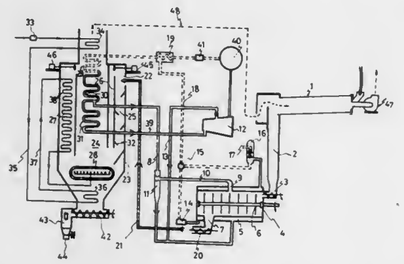
(J) introducing an amount of an oxygen-containing gas into said second reburn chamber through a plurality of jets extending at least about half the distance from said third inlet opening to a third outlet opening through which the gaseous products of combustion can egress from said second reburn chamber, said amount of said oxygen-containing gas introduced into said second chamber being a fifth amount when said third temperature is above a fourth predetermined set point and a sixth amount when said third temperature is below said fourth set point, said fifth amount being greater than said sixth amount.

4,516,511

REFUSE INCINERATION SYSTEM

Tsung H. Kuo, 465 Yuong An St., Cha-Yi, Taiwan

Filed Apr. 6, 1984, Ser. No. 597,256
Int. Cl.³ F23G *5/04*
U.S. Cl. 110—346 **10 Claims**



1. A method of refuse incineration comprising the step of drying wet refuse before passing the latter to a boiler adapted to generate high-pressure superheated steam for producing mechanical work in an expander, wherein, in said drying step, the wet refuse is heated in a dryer by a heating medium in order to vaporize most of the moisture contained in said wet refuse to produce vapor, and recovering said vapoer and confining it into said heating medium.

4,516,512

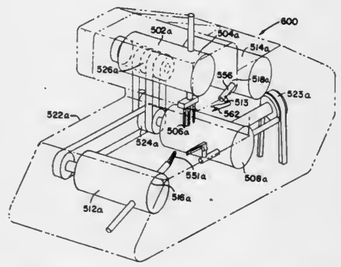
MODULARIZED CARDAN SEWING MACHINE

Benjamin T. Bernstein, Highland Park; Thomas J. Bock, Schaumburg; George M. Toman, Chicago, and Chandrakant Bhatia, Buffalo Grove, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed May 9, 1978, Ser. No. 904,205
Int. Cl.³ D05B *1/10, 57/32, 61/00*
U.S. Cl. 112—165 **15 Claims**

1. A sewing machine adapted to create stitches comprising:

a Cardan gear driven needle module means driving at least one needle means; and



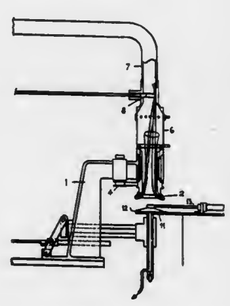
at least one Cardan gear driven looper module means driving looper means for cooperating with said needle module means.

4,516,513

METHOD AND APPARATUS FOR APPLYING A PATCH TO MANUFACTURED GOODS

Vinicio Gazzarrini, Florence, Italy, assignor to Solis S.r.l., Florence, Italy

Division of Ser. No. 107,426, Dec. 26, 1979;. This application Mar. 29, 1982, Ser. No. 362,974
Claims priority, application Italy, Jan. 9, 1979, 9311 A/79
Int. Cl.³ D05B *1/00, 97/00*
U.S. Cl. 112—262.2 **20 Claims**



1. A method for applying a gusset to tubular articles such as women's pantyhose, comprising the steps of:

arranging the pantyhose across a hollow support with the edge of the seamless fabric stretched along the horizontal contour of a closed loop;

reversing the body of the pantyhose through the hollow support;

arranging a gusset over the pantyhose, which gusset is shaped to conform to the closed loop shape of the support;

holding the gusset in place;

trimming the excess fabric from the gusset;

sewing the superposed edges of the gusset and the stretched zone of the pantyhose;

removing the pantyhose from the device; and,

reversing the pantyhose to be in its right side out position.

6. A method of applying a gusset to tubular articles such as women's pantyhose, comprising the steps of:

arranging a pantyhose with an unsewn crotch zone across a hollow support with an edge of the unsewn crotch zone stretched along a horizontal contour of a closed loop;

reversing the body of the pantyhose through the hollow support to move substantially the entire portion of the pantyhose into the hollow support just leaving the edge of the unsewn crotch zone exposed;

arranging a gusset having an outer edge over the unsewn crotch zone;

holding the gusset in place;

trimming excess fabric from the gusset; and

sewing the superimposed edges of the gusset and the crotch zone of the pantyhose.

14. A method of applying a gusset to tubular outer articles such as pantyhose which have a seamless crotch zone between legs with each leg terminating in a toe section; comprising:

stretching and fastening the edge of said seamless crotch zone on the horizontal edge of an upper tubular support duct provided with suction means so that said pantyhose is in a hanging position relative to said support;

pneumatically turning the body of said pantyhose over and introducing therein the legs thereof with said toe sections in said upper tubular support;

holding said toe sections in said upper support;

mechanically placing a circular gusset on a lower horizontal circular support duct having suction means;

mechanically laying said support with said gusset thereon against said upper support so that the edge of the gusset is pressed and held fixed in juxtaposition to the stretched edge of said seamless zone of said pantyhose;

trimming excess fabric beyond the seam line of said pantyhose and said gusset;

sewing said gusset to said pantyhose; and

while said pantyhose is still being held by said toe section and said upper support, allowing said pantyhose to fall down right side out into said lower tubular support and removing said pantyhose from said lower support.

4,516,514

CIRCUIT ARRANGEMENT FOR CONTROLLING SEWING MACHINE SPEED AND FOR POSITIONING SEWING NEEDLE

Shigeo Neki; Nozomu Shinozaki, and Takeshi Morofuji, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 23, 1983, Ser. No. 535,287
Claims priority, application Japan, Sep. 25, 1982, 57-166923; Sep. 25, 1982, 57-166926; Sep. 25, 1982, 57-166927
Int. Cl.³ D05B *69/26*
U.S. Cl. 112—275 **12 Claims**

1. A circuit arrangement for controlling the operational speed of a sewing machine and for positioning a sewing needle at one or more predetermined resting position, comprising:

(a) first means for producing a first signal indicative of the rotational speed of an arm shaft operatively connected to said sewing needle for driving the same;

(b) second means for producing a second signal when said sewing needle is at said predetermined resting position or positions;

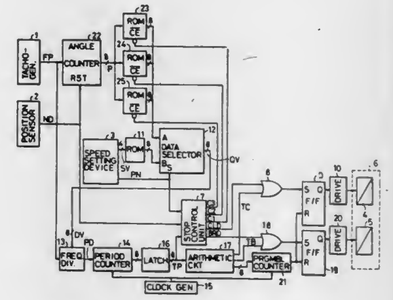
(c) third means responsive to said first and second signals for producing a third signal indicative of the rotational angle of said arm shaft from a reference position;

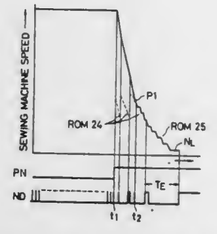
(d) fourth means having a manually operable member for producing a fourth signal indicative of first speed setting data in accordance with the user's choice, and a fifth signal when said manually operable member is positioned at a predetermined position;

(e) fifth means responsive to said third signal for producing a sixth signal indicative of second speed setting data in such a manner that the greater the rotational angle, the smaller the second speed setting data;

(f) sixth means for selecting said fourth signal in the absence of said fifth signal, and said sixth signal in the presence of said fifth signal;

(g) seventh means responsive to said first signal, second signal, fifth signal, and an output signal from said sixth means for producing a speed control signal; and





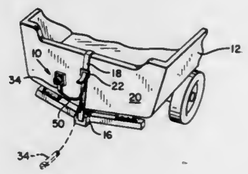
(h) eighth means responsive to said speed control signal for controlling the rotational speed and damping operation of said arm shaft.

4,516,515

BOAT PLUG REMINDER AND METHOD FOR USE THEREOF

David A. Johnson, Salem, Oreg., assignor to J.F.S., Inc., Salem, Oreg.

Filed May 19, 1983, Ser. No. 496,172
Int. Cl.³ B63B *13/00*
U.S. Cl. 114—197 **11 Claims**



9. A method for reminding a boat user to replace a boat plug in a drain hole of a boat before launching the boat, comprising:

(a) mounting a storage receptacle for a boat plug on in a boat;

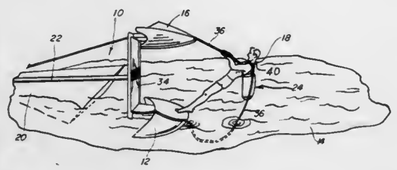
(b) connecting a reminder flag movably to a portion of an apparatus used to support the boat while it is out of the water;

(d) attaching said reminder flag to said storage receptacle by installing the boat plug of the boat in the storage receptacle in a manner which requires the boat plug to be at least loosened therefrom in order to detach the reminder flag from the storage receptacle.

4,516,516
BALLAST APPARATUS FOR RIGHTING A CAPSIZED BOAT

Robert W. Methven, 2991 S. Ivory Ct., Aurora, Colo. 80013

Filed Oct. 31, 1983, Ser. No. 547,332
Int. Cl.³ B63H 9/04
U.S. Cl. 114—39 8 Claims



1. Ballast apparatus for aiding in righting a capsized boat, comprising:

container means for holding a quantity of water as ballast, said container means being formed of flexible sheet material and changeable between an open condition for receiving and holding a quantity of water as ballast and a relatively flat, compact condition for stowage while not in use, said container means further including a collapsible sidewall adapted to open at an upper end and closed at a lower end by a bottom wall;

a stiffening element around a periphery of said bottom wall tending to open said sidewall around said bottom wall when said container means is deployed into the water, said stiffening element comprising a continuous pocket formed around a peripheral edge of said bottom wall containing flowable particulate material denser than water for submerging a lower end of said container means when deployed into the water,

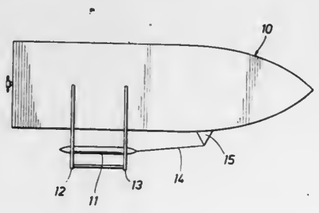
said container means further including stiffening ring means around said upper end of said sidewall ready to receive water for ballast when said container means is deployed in the water, said stiffening ring means comprising a plurality of relatively stiff, but flexible, hollow elongated elements aligned end to end forming a generally circular, floatable, hollow stiffener ring extending around said open end of said container, said hollow elongated elements comprising hollow tubes of flexible material pivotally interconnected together at adjacent ends thereof by elongated flexible elements projecting into the hollow interior thereof; and

support means for securing said container of water to a person outwardly of said boat for exerting a righting moment thereon comprising shoulder strap means secured to said container means adjacent an upper level thereon for supporting the same from a persons shoulders.

4,516,517
FLOAT RECOVERY SYSTEM

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 21, 1983, Ser. No. 516,158
Int. Cl.³ B63C 7/16
U.S. Cl. 114—51 14 Claims



1. A method for positioning a towed body for retrieval from the water to onboard a towing ship which is underway, comprising,

positioning the towed body adjacent the ship;

aligning a saddle means laterally with the towed body;

deploying a rudder means attached to the saddle means into the water in the vicinity of the towed body;

moving the saddle means in coordination with the rudder to a position directly above the towed body; and

lowering the saddle means into engagement with one end of the towed body.

2. An apparatus for positioning a towed body for retrieval from the water to onboard a towing ship which is underway, comprising,

saddle means;

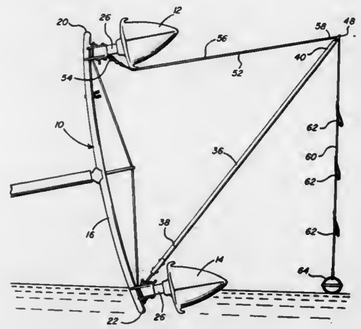
rudder means attached via a feeler arm to the saddle and functionable to laterally align the saddle directly above the towed body; and

means to engage one end of the saddle means with the towed body and restrict further lateral movement of the saddle means.

4,516,518
CATAMARAN RIGHTING ACCESSORY

John M. Cate, 434 Utah St., S.E., Albuquerque, N. Mex. 87108

Filed Jul. 8, 1983, Ser. No. 511,988
Int. Cl.³ B63B 3/14
U.S. Cl. 114—61 9 Claims

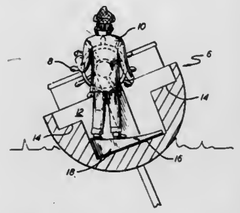


1. In combination with a boat having a pair of laterally spaced apart elongated longitudinally extending hulls connected together by a elongated fore and aft transverse bracing structures extending between and anchored relative to fore and aft portions, respectively, of said hulls and wherein said hulls include normally upper and lower surfaces and said boat includes a mast stepped from said fore transverse bracing structure and projecting upwardly therefrom, a righting accessory including mounting means mounted from the underside of one end of said transverse bracing structures adjacent one of said hulls, an elongated structural member, anchor means mounting one end portion of said structural member from said mounting means with said structural member disposed generally in a first plane normal to the longitudinal centerlines of said hulls and with the other end portion of said structural member disposed at least closely adjacent a second plane generally paralleling said most and extending along the longitudinal centerline of the other hull with said other end portion disposed outwardly of the underside of said boat, and elongated flexible tension member means having one end portion anchored relative to the other end of said one bracing structure, a mid-portion thereof engaged with the other end of said structural member and a second free end portion.

4,516,519
WEDGE DEVICE FOR A PLEASURE BOAT COCKPIT

William D. Gulick, Stamford, Conn., assignor to S&A Corporation, Rowayton, Conn.

Filed Mar. 21, 1983, Ser. No. 476,912
Int. Cl.³ B63B 35/00
U.S. Cl. 114—270 4 Claims

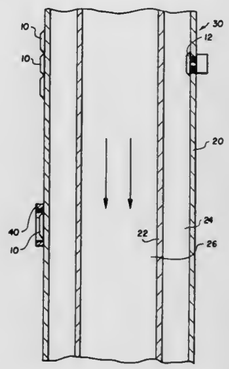


1. For use in a sailboat having a cockpit and a helm located in or extending into the cockpit, means provided so a helmsman can stand aproximately vertical regardless of the amount of boat heeling including: a removable and reversible wedge device having a lower surface adapted to be positioned on the upper surface of the sole of the cockpit, non-slip means on said wedge lower surface, the wedge device providing a generally horizontal upper surface when the boat is heeling for the helmsman of the boat to stand upon whereby the fatigue that a helmsman normally experiences due to the heeling is minimized, non-slip means on said upper surface, and the upper surface of said wedge being curved in the athwartships direction.

4,516,520
METHOD AND APPARATUS OF THERMAL DETECTION USING BONDED COUPON

Hubert L. Whaley, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 31, 1982, Ser. No. 413,289
Int. Cl.³ G01K 11/06
U.S. Cl. 116—217 18 Claims



1. A method of detecting the exposure of an inner surface of a component wall to a selected temperature above an ambient, during an operation, comprising:

bonding a coupon to the component wall inner surface using a bonding agent which changes state from a solid to a liquid at a temperature which is equal to at least the selected temperature, whereby the bonding agent no longer bonds the coupon to the component when the component is exposed to the selected temperature;

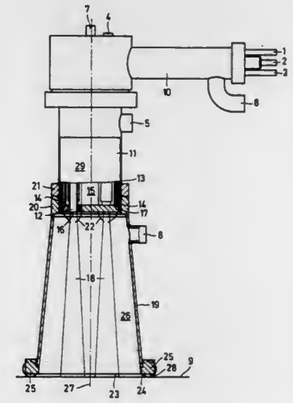
initiating the operation; and

sonically measuring, from a position on the opposite side of the component wall from said inner surface, thickness through the component wall and any coupon bonded thereto at the location where the coupon was bonded to the component wall to determine whether the coupon is bonded to the component wall.

4,516,521
APPARATUS FOR THE COATING OF WORKPIECES BY FLAME SPRAYING

Peter Szelagowski, Elmshorn, and Siegfried Motzkau, Geesthacht, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe G.m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,251
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313533
Int. Cl.³ B05B 7/20
U.S. Cl. 118—50 12 Claims



1. An apparatus for underwater flame spraying of coatings onto the surface of a workpiece, said apparatus comprising a flame spray gun for the thermal deposition of the coatings, said spray gun having at least one burner jet discharge opening at its front end for discharging a combustible gas and spray mixture and an ignition device associated therewith for igniting the gas mixture discharged therefrom so as to generate a flame, a riser mounted on the front end of said spray gun, said riser surrounding said discharge opening and having a variable length so as to extend from said spray gun to an adjustable extent, said riser further having a release passage at its end remote from the spray gun with which it is adapted to be disposed adjacent said workpiece for the release of gases and vapors from the interior of said riser, and a gas admission nozzle mounted on said riser for admitting gas under pressure to the interior to said riser for the displacement of water therefrom and for drying the surface to be coated in cooperation with the heat generated by the flame of said burner jet.

4,516,522
SLIDE PREPARATION APPARATUS

F. Robert Drury, Lexington, and Marshall D. Graham, Framingham, both of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 14, 1982, Ser. No. 434,378
Int. Cl.³ B05C 17/10, 11/04, 13/02
U.S. Cl. 118—120 7 Claims

1. Apparatus for preparing a monolayer film of a biological fluid sample, such as blood or the like, on a slide for microscopic analysis, comprising:

A. a base having opposite extremities and a flat upper surface between said extremities for supporting a slide thereon and a pair of upstanding guide rails extending along opposite side edges of the surface;

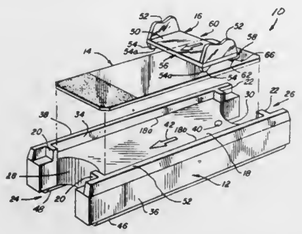
B. a spreader for linear movement between said extremities relative to and engaged with the slide for spreading the sample into a monolayer on the slide comprising:

i. a generally planar platform having first and second ends,

i.i. a pair of spaced apart leg members depending from the platform adjacent said first end,

i.i.i. a sample spreading blade member depending from the platform adjacent said second end; and

i.v. means for moving said spreader linearly,



C. said spreader being constructed and arranged to be positioned for such movement between the guide rails with both said leg members and blade riding on the slide so that when a sample has been deposited on the slide resting on the said surface, said spreader is movable linearly to enable the blade member to form said monolayer during such linear movement of the spreader between said extremities without engaging said surface.

4,516,523

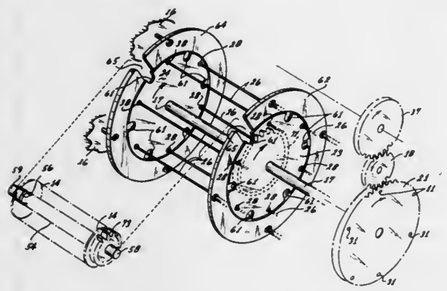
APPARATUS FOR WETTING APERTURED DISCS

David J. Knox, 13016 Ladana Ct., Santa Fe Springs, Calif. 90670

Filed Dec. 16, 1983, Ser. No. 562,227

Int. Cl.³ B05C *13/02*

U.S. Cl. 118—500 **3 Claims**



1. An apparatus for wetting a plurality of apertured discs, which are penetrably supported on at least one dowel, said apparatus comprising:

a pair of spaced side panels secured to one another;

an axle fixedly mounted and disposed normal to said both side panels;

a pair of wheels mounted for unison rotation onto said axle and spaced from each other;

each of said wheels having a plurality of radially extending recesses formed at the periphery thereof, the number and spacing of said recesses being such that one of said recesses on one of said wheels is aligned axially parallel to a respective one of said recesses on said other wheel;

a drive gear also mounted for rotation about said axle in unison with said wheels;

a sun gear fixedly mounted on said axle and disposed between said wheels;

each of said dowels being capable of being nested in one of said recesses on one of said wheels and in one of said recesses on said other wheel so that said dowel is parallel to said axle;

each of said dowels having a planet gear fixed thereto and said planet gear being disposed to mesh with said sun gear whenever said respective dowel is nested within said recesses;

means for rotating said wheels and said drive gear;

a C-shaped keeper fixedly disposed and substantially surrounding each of said wheels so that a radially extending slot approximately the same width as the recesses in said wheels, but not narrower than said recesses, is formed therein; and

both of said slots being disposed to extend upwardly.

4,516,524

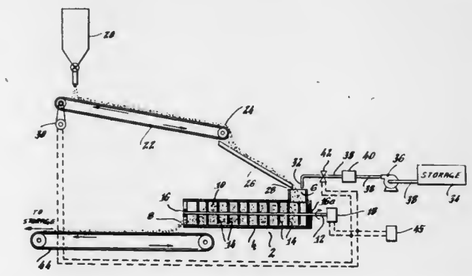
APPARATUS FOR COATING PARTICULATE MATERIAL

Thomas R. McClellan, Seabrook, and Pat L. Murray, Baytown, both of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 16, 1983, Ser. No. 466,940

Int. Cl.³ B05B *17/00*

U.S. Cl. 118—683 **8 Claims**



1. Apparatus for continuously coating particulate wood furnish material with a fluid binder adhesive which apparatus comprises:

blender means comprising a substantially cylindrical housing having an inlet port and an exit port;

agitator means mounted within said housing and adapted to provide uniform distribution of said binder adhesive in said particulate wood furnish material and continuous propulsion of said particulate material through said blender by said agitator means in combination with paddle means;

means for continuously feeding particulate wood furnish material at a predetermined rate to the inlet port of said blender;

means for continuously feeding fluid binder adhesive at a predetermined rate and in predetermined ratio with respect to the rate of feeding of said particulate wood furnish material to the inlet port of said blender;

means for transporting said particulate wood furnish material coated with binder adhesive from said exit port of said blender to storage means; and

master control means for synchronously actuating and deactuating each of said agitator means, said means for feeding said particulate wood furnish material and said means for feeding said binder adhesive to said blender.

4,516,525

ELECTRON GUN EQUIPMENT FOR VACUUM DEPOSITION

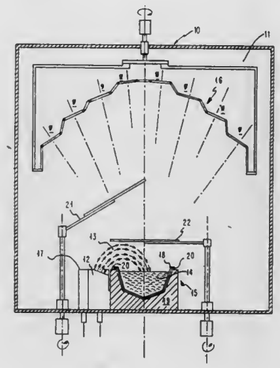
Serge Bourgeois, Draveil; Jean-Franqois Carle, Saint Cheron; Henri Lochon, Corbeil Essonnes, and Jean-Pierre Trotin, Milly-La-Foret, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,027

Claims priority, application European Pat. Off., Oct. 28, 1982, 82430032.1

Int. Cl.³ C23C *13/12*

U.S. Cl. 118—688 **8 Claims**



1. An Electron beam system for vacuum metal deposition from a melt thereof comprised of a vacuum chamber having disposed therein a substrate carrier for supporting a plurality of substrates, and an inert open crucible disposed below said carrier and containing a source of the material to be evaporated, and means for melting and evaporation of said source comprised of an electron-beam gun in said chamber generating a beam of electrons focused to directly impinge on said source, a copper hearth in said chamber having a recess for seating said crucible therein; said crucible having a bent-cone configuration comprising a first tapered section extending inwardly from the lip of said crucible and forming a first angle with the vertical, said first section merging with a second conical section tapering inwardly to a point at the bottom of said cup and forming a second angle with the vertical greater than said first angle; and wherein said recess has a configuration corresponding to the configuration of said crucible for nesting thereof in spaced relationship to each other, with said crucible supported in said recess at said lip by a radially extending flange therefrom and supported on the top surface of said hearth.

4,516,526

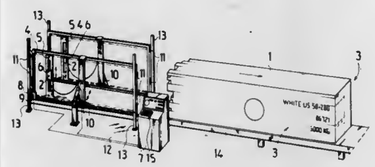
MEANS FOR MARKING TIMBER PACKAGES

Kalevi Drockila, Kyminlinna, Finland, assignor to Rauma-Repola Oy, Finland

Filed May 9, 1984, Ser. No. 608,442

Int. Cl.³ B05B *13/04, 12/00*

U.S. Cl. 118—697 **5 Claims**



1. A marking apparatus for imprinting the sides of timber packages with data relating to the packages and the goods contained therein, said packages being movable to a marking station at which said apparatus is located, said apparatus comprising a support structure, a vertically disposed frame pivotally attached to said support structure for establishing a coordinate-controlled plane beside one side of a package at said station, a horizontally movable carriage carried by said frame, a vertically movable slide mounted on said carriage, a paint spray gun fixed on said slide, power means for operating said carriage and slide as well as power means for moving said frame from a first position away from the side of the package to a second position close to the side of the package, and remote control means for actuating said power means and spray gun to spray prescribed markings on the side of said package.

4,516,527

PHOTOCHEMICAL VAPOR DEPOSITION APPARATUS

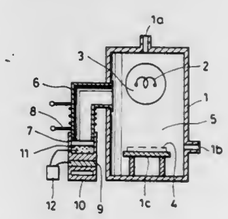
Shinji Sugioka, Kawasaki, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1983, Ser. No. 566,791

Claims priority, application Japan, Feb. 1, 1983, 58-13761

Int. Cl.³ C23C *13/12*

U.S. Cl. 118—723 **3 Claims**



1. A photochemical vapor deposition apparatus comprising:

means, including a vessel, for defining a reaction space in which the photochemical vapor deposition occurs and a discharge space in which electric plasma discharge is generated, said reaction space forming a passage for a photoreactive gas, and said electric plasma being generated for radiating ultraviolet rays which cause a photochemical reaction of said photoreactive gas;

a mercury reservoir outside said vessel and in communication with the discharge space by way of a communication pipe;

means heating said communication pipe to a temperature higher than the temperature of the mercury reservoir; and

means, including a Peltier effect element, for controlling the temperature of the mercury reservoir.

4,516,528

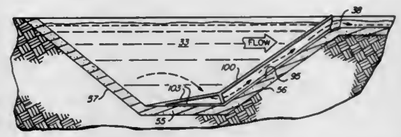
FISH GROWING SYSTEM

J. Phillip Jones, Star Rte., Box 328, Gila Bend, Ariz. 85337

Filed Jan. 4, 1983, Ser. No. 441,603

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 **14 Claims**



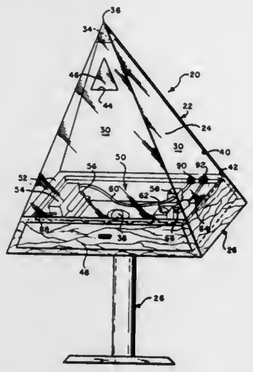
1. A self-cleaning aquaculture growing system including in combination:

a raceway in the form of an elongated ditch having a water inlet end and a water outlet end;

means for supplying water at a predetermined flow rate to the inlet end of said ditch; and

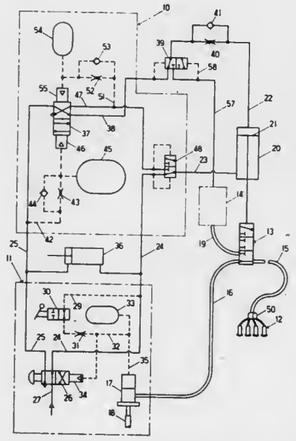
a bottom feeding spillway means adjacent the outlet end of said ditch, said spillway means including a spillway lip located below the water level at the outlet end of said ditch, and a coffer dam means above the water level surrounding the spillway lip, said coffer dam means extending downwardly to a predetermined distance above the bottom of said ditch adjacent the spillway lip, whereby said spillway lip and said cofferdam means operate to continuously remove solid wastes and water from the bottom of the outlet end of said ditch.

4,516,529
AQUARIUM
Vincent Lotito, 9 John St., East Rockaway, New York, N.Y. 11518, and Stephen R. Fletcher, 137 S. Village Ave., Rockville Center, N.Y. 11570
Filed Aug. 19, 1982, Ser. No. 409,528
Int. Cl.³ A01K *64/00*
U.S. Cl. 119—5 **1 Claim**



1. An aquarium comprising:
a set of triangular transparent walls;
a polygonal floor, said walls standing on the peripheral edges of said floor and being sealed therewith to form a chamber in the form of a pyramid;
water entry and exit ports disposed in said floor on opposite sides of said pyramid and having their orifices located in opposite corners of said polygonal floor and directed through said water perpendicularly to said floor upwardly along the walls of said chamber to induce a circular movement to water in said chamber;
a base mounted to and positioned beneath said chamber for supporting said chamber, a drawer slidably and removably mounted in said base; water treatment equipment located in said drawer and including flexible tubing for connection with said ports; said equipment including a filter for filtering waste material in said water, a heater for heating said water, and a pump for pumping said water via said entry and exit ports and through said filter and past said heater;
a lamp within said chamber for illuminating water within said chamber;
a light beneath said floor for illuminating the water in said chamber, said floor being transparent for propagating illuminating rays of said light into said chamber; and
an air pump in said drawer, and an aeration nozzle in said chamber; said air pump and said nozzle being connected by flexible tubing for driving air into said chamber; and a check valve connected between said air pump and said nozzle for preventing back-up of water in said air pump.

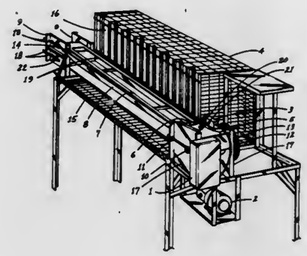
4,516,530
MILK SWEEP METHOD AND APPARATUS FOR AUTOMATED MILKING SYSTEMS
Rolf W. Reisgies, and Robert Camren, both of Waunakee, Wis., assignors to Germania Dairy Automation, Inc., Waunakee, Wis.
Filed Oct. 14, 1983, Ser. No. 542,005
Int. Cl.³ A01J *5/04*
U.S. Cl. 119—14.08 **19 Claims**



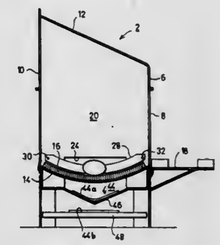
1. Apparatus for controlling the milking vacuum applied to a teat cup cluster and the milk hose extending therefrom comprising:
(a) a milk flow valve connected to the milk hose and having a first position in which milking vacuum is applied to the milk hose and teat cup cluster and a second position in which the milking vacuum is cut off;
(b) drive means responsive to control signals for switching the milk flow valve between its first and second positions; and
(c) timing and control means for providing control signals to operate the drive means to switch the milk flow valve in response thereto, the timing and control means responsive to a signal indicating the end of milking and the removal of the teat cup cluster from a cow to control the drive means to switch the milk flow valve from its first to its second position to cut off the milking vacuum to the teat cup cluster, the timing and control means also responsive thereafter to a milk sweep initiate signal to control the drive means to switch the milk flow valve from its second to its first position for a selected period of time and thereafter switching the milk flow valve back to its second position, whereby rest milk in the milk hose and teat cup cluster will tend to be drawn therefrom during the period of time the milk flow valve is switched to its second position as vacuum is applied to the open teat cups.

4,516,531
FEED INTAKE CONTROL APPARATUS FOR ANIMALS
David C. Snetsinger, Webster Groves; Henry M. Engster, St. Louis, and Dwaine D. Stiebler, Washington, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 21, 1984, Ser. No. 591,721
Int. Cl.³ A01K *31/00, 39/00*
U.S. Cl. 119—18 **18 Claims**

10. A feed intake control apparatus comprising:
(a) a movable belt adapted to cover a feeding means, wherein a portion of said belt contains an opening to provide both an opened and closed position for said belt over a feeding means;
(b) control means to provide for preselected movement of said belt to an opened position to permit the animal access to a feeding means and preselected movement to a closed position thereby denying the animal access to said feeding means.



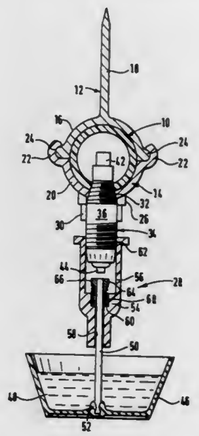
4,516,532
EGG-COLLECTION SYSTEM
Gilad Rafaeli, Kibbutz Givat Haim Ichud, Israel
Filed Jan. 23, 1984, Ser. No. 572,908
Claims priority, application Israel, Feb. 4, 1983, 67832
Int. Cl.³ A01K *31/16*
U.S. Cl. 119—48 **16 Claims**



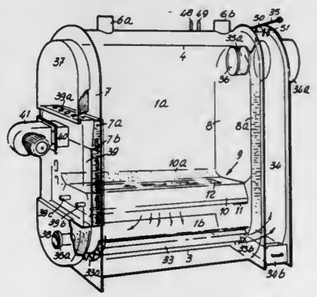
1. An egg-collection system for collecting the eggs of laying hens or the like, comprising: an enclosure defining a plurality of hen laying-stations in side-by-side relationship along the length of the enclosure; each of said hen laying-stations including a floor for supporting a hen, which floor is formed with a discharge opening therethrough at one end of the respective station; and a drawer bar means drawable over said floors so as to engage any eggs thereon and to move them to said discharge openings to cause them to drop therethrough by gravity.

4,516,533
CONDUIT
Ronald I. Mallinson, Halifax, England, assignor to Mono-Flo Lister Limited, Halifax, England
Filed Aug. 22, 1983, Ser. No. 525,777
Claims priority, application United Kingdom, Feb. 11, 1983, 8303881
Int. Cl.³ A01K *39/02*
U.S. Cl. 119—72 **6 Claims**

1. A drinking supply arrangement comprising an elongated conduit, adapted to be suspended at a plurality of spaced locations therealong, and a plurality of drinking apparatus extending downwardly at spaced locations from said elongated conduit; said elongated conduit including a pipe portion and a flnage portion, said flange portion extending along substantially the complete length of said pipe portion and including a flange and a connecting portion; means for securing said connecting portion to said pipe portion at a plurality of spaced locations along the length of said pipe portion, whereby said pipe portion is suspended from said flange portion and said flange projects radially upwardly from said pipe portion, and for suspending each of said drinking apparatus from said conduit and connecting each of said drinking apparatus for communication with the interior of said pipe portion.



4,516,534
STEEL CONSTRUCTION SOLID-FUEL FIRING BOILER FOR CIVIL HEATING APPLICATIONS
Giovanni Jahier, Mantova, Italy, assignor to UNICAL S.p.A., Castel D'Ario, Italy
Filed Jun. 11, 1984, Ser. No. 619,569
Claims priority, application Italy, Mar. 16, 1984, 18107 A/84
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—15 **11 Claims**



1. A steel construction solid-fuel firing boiler for civil heating applications, comprising a space portion defined by longitudinal side walls, by a bottom and a cover having an interspace containing water to be heated and comprising delivery and return connections, and by a front wall and a rear wall defining therein, at least in part, a similar interspace, a burner comprising a block of firestone arranged in said space portion and separating said space portion into a fuel containing upper zone and a lower zone where flame extends and flue gases are conveyed from said burner, said burner defining at a top face thereof a housing having, at a bottom portion thereof, a hole communicating said upper and lower zones of the boiler space portion; at least one body of a refractory material accommodated in said housing and resting on said bottom portion thereof, said at least one body presenting at a position directly overlying the hole, a means of holding overlying embers, said housing bottom portion and a surface of said body resting on said bottom portion defining a channel opening at the hole and

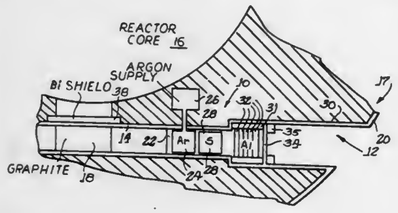
communicating with an air distribution chamber located on the front wall of the boiler to convey secondary combustion air; a combustion air feeding electric fan linked to an automatic control circuit and provided with a secondary combustion air outlet in communication with said distribution chamber and a primary combustion air outlet in communication with a high portion of the upper zone of the boiler space portion; a smoke box extending adjacent to the rear wall and in communication with the lower zone of said space portions, said smoke box having, at a top portion thereof, a connection for discharging smokes a loading door on the front wall at the upper zone of said space portion and an inspection door on the front wall at the lower zone of said space portion; a communication port between the upper zone of said space portion and the smoke box at top portions thereof; and a manually operated gate at said communication port.

4,516,535

METHODS FOR NEUTRON-CAPTURE TUMOR THERAPY

John L. Russell, Jr., Alpharetta, and Denise J. Noonan, Atlanta, both of Ga., assignors to Nuclear Medicine, Inc., Atlanta, Ga.

Filed Jun. 22, 1982, Ser. No. 390,941
Int. Cl.³ A61N 5/12
U.S. Cl. 128—1.1 **11 Claims**



3. A method of treating a patient with a malignant tumor comprising

administering to the patient a compound that selectively accumulates in tumor cells relative to normal cells, said compound including an element having an isotope that emits alpha particles when bombarded with neutrons, said compound being administered in an effective dose whereat the selective accumulation of said isotope in said tumor cells is sufficient to selectively kill tumor cells by alpha particle emission upon bombardment by neutrons,

providing a source that emits a beam of neutrons,

filtering said neutrons through some combination of an aluminum filter, a sulfur filter and an argon filter, which combination selectively transmits neutrons in the epithermal energy range and attenuates gamma radiation, and

positioning the patient so that the tumor is in the path of said filtered beam for a time sufficient to effect tumor destruction.

4,516,536

THREE CYCLE INTERNAL COMBUSTION ENGINE

Gerald J. Williams, R.R. #2, Nolalu, Ontario, Canada P0T 2K0

Filed May 6, 1981, Ser. No. 261,248
Int. Cl.³ F02B 75/00, 75/26
U.S. Cl. 123—39 **6 Claims**

1. An axial cam driven, axially opposed piston type internal combustion engine comprising in combination

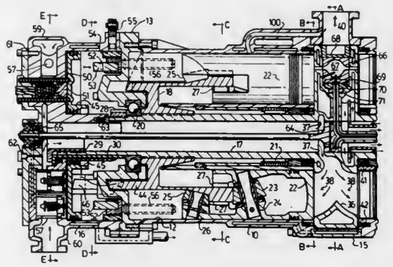
two symmetrical but opposite and opposing cylinder blocks defining a first cylinder block and a second cylinder block, each cylinder block defining axially disposed cylinders arranged in parallel, annularly and symmetrically spaced about a common long axis, all cylinders of each block terminating at a flat plane which is square with said long axis and the cylinders of the cylinder blocks being axially aligned with a cylinder of the opposed cylinder block and separated therefrom by a short distance,

an axially disposed main shaft, concentric with said long axis, said main shaft axially and radially supported by main bearings axially and concentrically arranged in said cylinder blocks on said long axis, said main shaft having a hollow portion which functions as a high pressure charge distribution means, said hollow portion being disposed in said first cylinder block,

a piston in each of said cylinders disposed to form opposing piston pairs,

an axially profiled first axial cam and an axially profiled second axial cam, said first axial cam mounted securely and concentrically on an outward portion of said hollow portion of said main shaft and operatively connected to said pistons in said first cylinder block, said second axial cam mounted securely on an outward portion of said main shaft in said second cylinder block and operatively connect to said pistons in said second cylinder block, said axial cams cooperating with said pistons to convert any reciprocating motion of said pistons to rotational motion of said main shaft, said first axial cam and said second axial cam being symmetrically opposed to impart opposed reciprocating motion to said piston pairs,

a rotary disc valve housing defining a cylindrical housing spanning between said cylinder blocks and forming a rigid structural connection between said cylinder blocks, said rotary disc valve housing including at least one exhaust duct communicating between said housing and surrounding atmosphere,



each of said pistons being movable within one of said cylinders from a top center portion adjacent said rotary disc valve housing to a bottom center position,

a valving means, defining a rotary disc valve comprising a thick flat, circular disc, concentrically and securely mounted on said main shaft between said piston pairs, said disc valve having a thickness closely matching said short distance between said opposing cylinder blocks, said disc valve having a diameter large enough to completely cover said cylinders thereby forming individual combustion chambers therein, said rotary disc valve further including an exhaust port defining a radial opening spanning through the thickness of said disc valve and communicating continuously radially outwardly with said rotry disc valve housing and said atmosphere, said exhaust port being of such annular extent as to be brought into axial alignment with said cylinders during movement from said bottom center position to said top center position of said pistons, said rotary disc valve further including a high pressure charging port defined by a radial opening spanning through the thickness of said disc valve and communicating continuously radially inwardly with said hollow portion of said main shaft, said high pressure charging port being of such annular extent so as to be brought into axial alignment with said cylinders only while said pistons are in the top center position in said cylinders, said high pressure charging port forming a terminating portion of said high pressure charge distribution means,

a gas charge high pressure pre-combustion means, defining a reciprocating piston compressor means for compressing a gas charge to a precombustion pressure, disposed at an end of said first cylinder block, said piston compressor means operatively connected to and driven by said main shaft, said piston compressor means communicating with said hollow portion of said main shaft via a compressor outlet valving means and communicating with a gas charge intake means via a compressor inlet valving means,

said gas charge intake means, defining a means to pre-condition the gas charge including fuel and air mixing means,

an ignition means, defining a means of sequentially igniting the high pressure gas charge in successive ones of said combustion chamber after said high pressure charging port has sequentially been brought out of alignment with successive ones of said combustion chambers;

each combustion chamber is sealed by a first sealing element in the form of a rotary disc valve inner seal, a second sealing element in the form of a rotary disc valve outer seal, and a third sealing elements in the form of cylinder separation seals, said first sealing element defining a first annular ring of cylindrical shape and disposed in a first annular groove concentrically arranged in said cylinder block, said annular ring being biased axially towards and bearing against a flat surface of said rotary disc valve; said second sealing element defining a second annular ring, cylindrically shaped, and disposed in a second annular groove, concentrically arranged in said cylinder block, said second annular ring being biased axially towards and bearing against a flat surface of said rotary disc valve; said third sealing elements defining straight bars, rectangular in sectional outline, and disposed in straight grooves, radially arranged in each cylinder block between said cylinders and spanning from said first annular groove to said second annular groove, said third sealing elements being biased axially towards, and bearing against, a flat surface of said rotary disc valve;

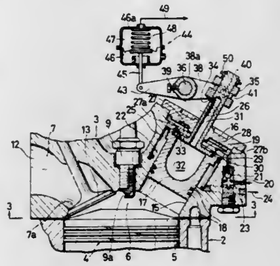
said first cylinder block and said second cylinder block are provided with straight, smooth bored holes to contain said main shaft, and wherein said first sealing element has an outside diameter equal to the inside diameter of said smooth bored holes, said first sealing element being disposed in a separate annular ring, L-shaped in cross section, with an outside diameter equal to an inside diameter of said smooth bored holes.

4,516,537

VARIABLE COMPRESSION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Mitsuharu Nakahara; Tomio Ishida; Norifumi Honjo, and Yoshitaka Yoshida, all of Ikeda, Japan, assignors to Daihatsu Motor Company, Osaka, Japan

Filed Mar. 18, 1983, Ser. No. 476,548
Int. Cl.³ F02B 75/04
U.S. Cl. 123—48 AA **15 Claims**



1. A variable compression system for internal combustion engines comprising:

at least one main cylinder communicating with a cooperating combustion chamber having a clearance volume which is adjustable by hydraulic regulation of back and forth movement of a sub-piston slidably mounted within a housing containing a sub-cylinder which communicates with said combustion chamber,

spring means for normally urging said sub-piston away from said combustion chamber,

a pressure oil chamber formed on a back face of said sub-piston and pressurized from a pressure source,

a control valve for controlling supply of pressure oil, serving as actuating oil, to said pressure oil chamber, said control valve being closed when pressure rise occurs in said pressure oil chamber,

a reciprocative member connected at one end to said sub-piston and having a portion projecting out of said housing containing said sub-cylinder, said reciprocative member having an internal oil passage which communicates with said pressure oil chamber,

a spill port formed in said reciprocative member where said portion projects out of said housing containing said sub-cylinder, communicated with said internal oil passage for releasing therethrough said actuating oil introduced from said pressure oil chamber into said internal oil passage,

a spill regulation member slidably mounted on said reciprocative member where said portion projects out of said housing containing said sub-cylinder, so as to close said spill port when said sub-piston moves away from said combustion chamber and open said spill port when said sub-piston moves toward said combustion chamber, and

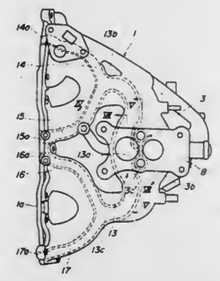
means for operating said spill regulation member being located outside of said housing.

4,516,538

INTAKE MANIFOLD FOR INTERNAL COMBUSTION ENGINES

Tetsuo Arakawa, Asaka, and Kenichi Nagahiro, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 533,149
Claims priority, application Japan, Sep. 21, 1982, 57-142898[U]
Int. Cl.³ F02M 25/00
U.S. Cl. 123—52 M **5 Claims**



1. In an intake manifold for an internal combustion engine, said engine having a plurality of main combustion chambers, a plurality of auxiliary combustion chambers communicating with respective ones of said main combustion chambers, and a carburetor unit, said intake manifold having:

an interior thereof formed with a plurality of main intake passages connected to respective ones of said main combustion chambers,

a plurality of auxiliary intake passages connected to respective ones of said auxiliary combustion chambers,

a main distributing chamber from which diverge said main intake passages, and

an auxiliary distributing chamber from which diverge said

auxiliary intake passage in two substantially horizontally opposite directions,

said auxiliary distributing chamber being disposed to overlap with said main distributing chamber at a location downward thereof in a vertical direction,

said main distributing chamber and said auxiliary distributing chamber being adapted for connection to said carburetor unit at a location downstream thereof,

said intake manifold having a partition wall extending through said main distributing chamber along the entire length thereof in a direction of flow of a mixture therein and dividing said main distributing chamber into a primary distributing chamber and a secondary distributing chamber,

the improvement wherein said partition wall has a boss, and an intake guide passage formed through said boss,

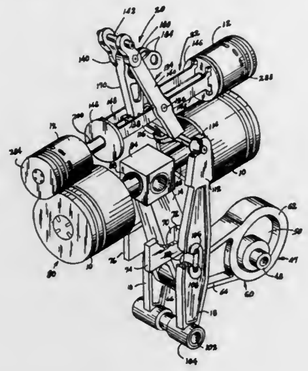
said intake guide passage opening at one end thereof in an outer surface of said intake manifold, said outer surface forming a carburetor-mounting surface, and opening at another end thereof in said auxiliary distributing chamber, said other end of said intake guide passage being directed toward a horizontally substantially central location of said auxiliary distributing chamber.

4,516,539

INTERNAL COMBUSTION ENGINE

John F. Andreen, R.R. #3, Cadillac, Mich. 49601

Filed Sep. 26, 1983, Ser. No. 535,950
Int. Cl.³ F02B *75/32*
U.S. Cl. 123—53 R **22 Claims**



1. An internal combustion engine comprising:

an engine housing having a first piston cylinder;

a first piston mounted for reciprocation in said first cylinder;

counterbalance arm means pivotally coupled to said housing for pivotal movement and for counterbalancing said first piston, said counterbalancing arm means including a counterbalance head;

a first pump means for reciprocating within said housing in opposition to said first piston for forcing an uncombusted charge into said first cylinder after said first piston has withdrawn from the ignition of a previous charge; and

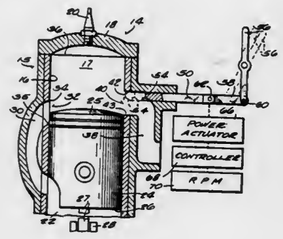
linkage means for coupling said first piston to said counterbalance arm for reciprocation by said pivotal movement of said counterbalance arm and for coupling said first pump means to said counterbalance arm means for reciprocation by said pivotal movement of said counterbalance arm, such that said pump means and said counterbalance head reciprocate in opposition to the reciprocation of said first piston.

4,516,540

TWO-CYCLE INTERNAL COMBUSTION ENGINE INCLUDING MEANS FOR VARYING CYLINDER PORT TIMING

James S. Nerstrom, Gurnee, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 141,906, Apr. 21, 1980, Pat. No. 4,341,188.
This application May 10, 1982, Ser. No. 376,705
Int. Cl.³ F02D *39/04*
U.S. Cl. 123—65 PE **3 Claims**



1. A two-cycle internal combustion engine comprising an engine block including a cylindrical wall defining a cylinder having a head end, a piston mounted for reciprocative movement in said cylinder relative to said cylinder head end, a passage in said engine block terminating at said cylindrical wall in a port having upper and lower edges at given distances from said cylinder head end and valve means mounted for movement inside said passage relative to said port to selectively vary the effective distance of one of said port edges from said cylinder head end, said valve means comprising a valve member including an inner end portion having an arcuate edge portion which has a concave contour corresponding to that of said cylinder wall and which is chamfered, said valve member being mounted for radially reciprocative movement relative to said cylindrical wall and to said port between a first position wherein said valve member edge portion is spaced radially outwardly from said wall and does not substantially affect the effective distance of said one port edge from said cylinder head end and a second position wherein said valve member edge portion is located adjacent said wall and said port and acts as said one port edge to effectively change the distance thereof from said cylinder head end, and means for moving said valve member between the first and second positions.

4,516,541

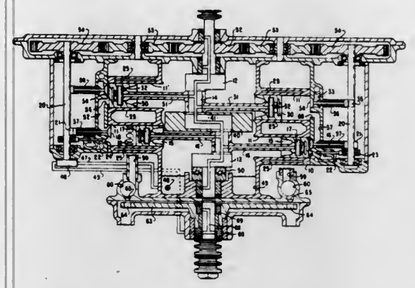
INTERNAL COMBUSTION ENGINE WITH SUPERCHARGER

James A. Yungclas, E. Friendship Haven, Room 120, Fort Dodge, Iowa 50501

Filed Jul. 7, 1983, Ser. No. 511,581
Int. Cl.³ F02B *33/22*
U.S. Cl. 123—70 R **2 Claims**

1. An internal combustion engine including a crankcase, at least two opposed power cylinder and piston assemblies and two opposed supercharger cylinder and piston assemblies mounted in said crankcase, a single crankshaft journalled on a vertical axis in said crankcase, piston means in each of said cylinders each piston having a connecting rod, said crankshaft having a single power throw on which both power piston connecting rods are journalled and a single second throw on which both supercharger piston connecting rods are journalled, a flywheel fixed on said crankshaft between said power throw and said second throw, means for admitting air into said supercharger cylinders and means for conducting compressed air from each supercharger cylinder to its adjacent power cylinder, means for injecting fuel into said power cylinder, ignition means for igniting said fuel and timing means for properly sequenced timing of the entrance and exhaust of fuel and gases into and from said cylinders and for ignition within

said power cylinders, a sump for lubricating material formed in said crankcase at its lower part, pump means communicating with said sump to pump said lubricating material from said sump throughout means in said engine to distribute said material, a turbine wheel journalled in said crankcase coaxially with said crankshaft, means for conducting exhaust gases from said power cylinder to said turbine wheel and guide means adjacent said wheel to direct said exhaust gases to impinge on said wheel.

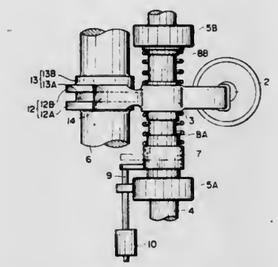


4,516,542

VALVE OPERATION CHANGING SYSTEM OF INTERNAL COMBUSTION ENGINE

Shunichi Aoyoma, Yokosuka, and Manabu Kato, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 31, 1983, Ser. No. 499,465
Claims priority, application Japan, Jun. 2, 1982, 57-94378; Jul. 27, 1982, 57-113690[U]; Jan. 12, 1983, 58-2326[U]
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **19 Claims**



1. A valve operation changing system of an internal combustion engine, comprising:

first and second cams formed on a camshaft, said first and second cams being different in cam profile from each other, at least said first cam having a plurality of cam faces, said plurality of cam faces of said first cam being so axially separate from each other that a cam face of said second cam is locatable therebetween;

a rocker arm mounted on a rocker shaft and swingable relative to the rocker shaft so as to operate an engine valve, said rocker arm being formed with a follower section which has a plurality of contact faces contactable with said cam faces, said rocker arm being movable in the axial direction of said rocker shaft between a first position in which at least one of said plurality of contact faces of said follower section is brought into contact with one of said plurality of cam faces of said first cam and a second position in which at least one of said plurality of contact faces of said follower section is brought into contact with the cam face of said second cam; and

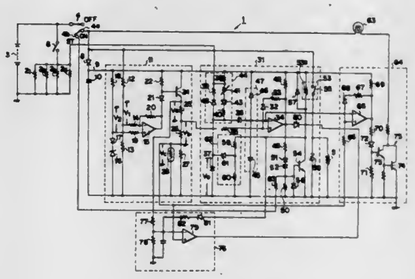
means for selectively placing said rocker arm in one of said first and second positions in accordance with an engine operating condition.

4,516,543

CIRCUIT FOR CONTROLLING GLOW PLUG ENERGIZATION

Yoshiaki Abe, Higashimatsuyama; Yutaka Nishimura, Kawagoe, and Hitoshi Sugimoto, Higashimatsuyama, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 386,911
Claims priority, application Japan, Jun. 10, 1981, 56-088294
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 H **10 Claims**



1. A circuit for controlling glow plug energization for use with a diesel engine having at least one glow plug energized by actuation of an ignition switch having an OFF position, an ON position for connecting said circuit to a power sources and an ST position for starting the diesel engine, said circuit comprising:

a first circuit means for producing a simulation voltage signal with a level which changes substantially in accordance with the change of glow plug temperature upon glow plug energization and deenergization;

a second circuit means for generating a first reference voltage signal with a level which is determined in relation to a desired glow plug temperature and which is changed in magnitude in response to the change in the voltage of said power source and the temperature of the engine coolant, the magnitude of said reference voltage signal being changed inversely with changes in the voltage of said power source;

means for comparing the level of said simulation voltage signal with that of said first reference voltage signal; and

a switching means responsive to the resulting output of said comparing means for controlling the flow of current from said power source to the glow plug to energize the glow plug, whereby the glow plug is energized so as to be heated to said desired glow plug temperature.

4,516,544

HELICALLY-SHAPED INTAKE PORT OF AN INTERNAL-COMBUSTION ENGINE

Takeshi Okumura; Kiyoshi Nakanishi, both of Susono, and Mikio Nakajima, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 13, 1983, Ser. No. 494,387
Claims priority, application Japan, May 25, 1982, 57-087210; May 25, 1982, 57-087206
Int. Cl.³ F02F *1/42*
U.S. Cl. 123—188 M **25 Claims**

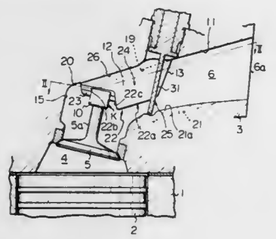
1. An intake device of an internal-combustion engine comprising:

an intake valve having a valve stem;

an axially extending intake port passage having an inlet opening at one end thereof and an outlet opening at the other end thereof, said intake port passage having a substantially cylindrically extending circumferential wall

which circumferentially extends about said valve stem, a first side wall which extends between said inlet opening and said circumferential wall along an axis of said intake port passage, a second side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage and is arranged so that it faces said first side wall, an upper wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage, and a bottom wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage;

a separating wall projecting downwardly from said upper wall and spaced from said bottom wall, said separating wall extending along the axis of said intake port passage and being spaced from said circumferential wall so as to define a helical poriton having a helix-terminating poriton between said separating wall and said circumferential wall, said separating wall having a first side wall spaced from the first side wall of said intake port passage so as to



define therebetween an inlet passage portion tangentially connected to said helical portion, said separating wall having a second side wall spaced from the second side wall of said intake port passage so as to define therebetween a bypass passage which interconnects said inlet passage portion and said helix-terminating poriton, the second side wall of said separating wall having an expansion portion which expands towards said circumferential wall and which is located in said helical portion in the vicinity of an outlet portion of said bypass passage, said circumferential wall having an expanding portion which expands towards the expanding portion of the second side wall of said separating wall so as to define a first narrow passage portion between said expanding protions;

normally closed valve means arrnaged in said bypass passage for controlling the flow area of said bypass passage; and

actuating means for actuating said vlave means in response to the change in the operating condition of the engine to open said valve means when the engine is operating at a high speed under a heavy load.

4,516,545

APPARATUS FOR CONTROLLING THE ROLLING OF AN ENGINE

Naotake Kumagai, Aichi; Minoru Tatemoto, Okazaki; Itoh: Yoji, Nagoya, and Tokushige Inuzuka, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,041

Claims priority, application Japan, Apr. 15, 1983, 58-56182[U]; Apr. 15, 1983, 58-56184[U]; Apr. 15, 1983, 58-56185[U]; Apr. 15, 1983, 58-56187[U]; Apr. 15, 1983, 58-56188[U]

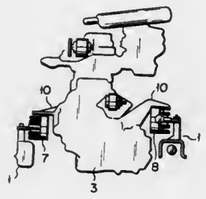
Int. Cl.³ F16F *9/04;* **F16M** *5/00*

U.S. Cl. 123—192 R **10 Claims**

1. An apparatus for controlling the rolling of the engine of an automobile, comprising:

detecting means for detecting that changes have been achieved by an automatic transmission in lever position and gear position;

engine-roll control means for controlling the rolling of the engine;



a drive mechanism for driving the engine-roll control means; and

a drive circuit for actuating the drive mechanism for a predetermined period of time in response to an output signal from the detecting means.

4,516,546

V-TYPE OVERHEAD-CAMSHAFT ENGINE

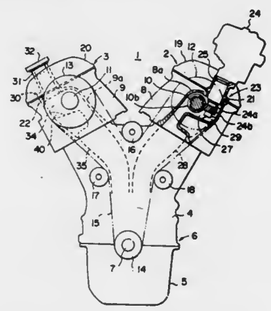
Masahiro Choushi, Hiroshima, and Tetsuji Yahiro, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Japan

Filed Apr. 18, 1984, Ser. No. 601,729

Claims priority, application Japan, Apr. 18, 1983, 58-68788; Mar. 29, 1984, 59-61723

Int. Cl.³ F02B *77/14*

U.S. Cl. 123—195 A **14 Claims**



1. A V-type overhead-camshaft engine comprising first and second cylinder banks arranged in V-shape and respectively having a first cylinder head assembly and a second cylinder head assembly for supporting first and second camshafts, the first and second camshafts being operatively connected at their one end with one end of a crankshaft for synchronized rotation with the crankshaft, a row of a plurality of cylinders being formed in each cylinder bank to extend in the axial direction of the camshaft between front and rear ends of the engine the row of the cylinders in the first cylinder bank starting from a location spaced apart from the front end of the engine and terminating at a location near the rear end of the same, the row of the cylinders in the second cylinder bank starting from a location near the front end of the engine and terminating at a location spaced apart from the rear end of the same, wherein said first cylinder head assembly is provided with an opening at a location corresponding to the part of the first cylinder bank between the front end of the engine and the foremost cylinder in the first cylinder bank and said second cylinder head assembly is provided with an opening at a location corresponding to the part of the second cylinder bank between the rear end of the engine and the rearmost cylinder in the second cylinder bank, the openings in the cylinder head assemblies being identical to each other and located symmetrically with respect to the center of the engine as viewed from above, one of the openings forming an oil filler section, and the other opening forming an engine auxiliary mechanism mounting section for mounting an engine auxiliary mechanism which is to be driven by the corresponding camshaft.

4,516,547

FUEL SUPPLY SYSTEM

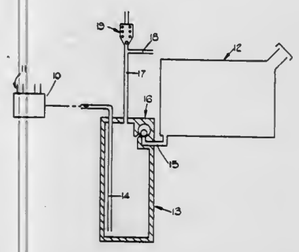
Derek Williams, Hertford, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jul. 19, 1983, Ser. No. 515,179

Claims priority, application United Kingdom, Aug. 3, 1982, 8222350

Int. Cl.³ F02D *19/00*

U.S. Cl. 123—198 A **5 Claims**



1. A fuel supply system for an internal combustion engine comprising a fuel delivery unit through which fuel can be supplied to an associated engine, a fuel supply pump for supplying fuel to the delivery unit, a supply tank from which fuel in use is drawn by the supply pump, a subsidiary fuel tank, a conduit through which said subsidiary fuel tank can be supplied with fuel from the supply tank, a one way valve in said conduit, said one way valve acting to prevent the flow of fuel from the subsidiary fuel tank to the supply tank and a further conduit through which said subsidiary fuel tank can be pressurized with air to force fuel from the subsidiary fuel tank towards said fuel delivery unit.

4,516,548

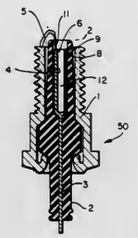
IGNITION DEVICE FOR IMPROVING THE EFFICIENCY OF AND TO REDUCE EMISSIONS OF INTERNAL COMBUSTION ENGINES

Michael G. May, CH-1180 Rolle, Bel Air, Switzerland

Filed Oct. 28, 1983, Ser. No. 546,250

Int. Cl.³ F02P *15/00*

U.S. Cl. 123—260 **14 Claims**



1. An ignition device for improving the thermodynamic efficiency of externally ignited spark ignited combustion engines including a main combustion chamber and which has an ignition chamber communicating by means of at least one transfer channel with said main combustion chamber comprising a housing secured at one end to an insulator, a socket in said insulator, a ground electrode on said housing and directed toward a central electrode disposed in said insulator in said housing thereby to form a spark gap therebetween, said central electrode constructed and arranged to have a terminus and to conduct a sparking voltage towards said spark gap, said central electrode further being formed with only part of its length as a hollow body including an orifice and confined by said socket, and said hollow body being insulated from said ground potential and said socket in said insulator such that the spark between the ground electrode and the hollow body is generated within the confinement of the orifice of said hollow body thereby igniting the charge contained therein.

4,516,549

INTERNAL COMBUSTION ENGINE

Frederick Brear, Peterborough, England, assignor to Massey-Ferguson-Perkins Limited, London, England

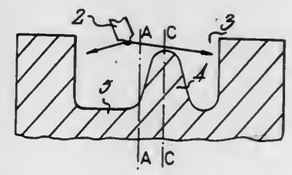
PCT No. PCT/GB82/00241, § 371 Date Apr. 4, 1983, § 102(e) Date Apr. 4, 1983, PCT Pub. No. WO83/00531, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 4, 1982, Ser. No. 491,956

Claims priority, application United Kingdom, Aug. 13, 1981, 8124723

Int. Cl.³ F02N *17/08;* **F02B** *3/06, 3/00*

U.S. Cl. 123—276 **15 Claims**



1. An internal combustion engine comprising a piston having a recessed combustion bowl with a raised projection in the floor of the bowl so as to define an annulus with the sides of the bowl, swirl means to cause the inlet air to rotate about said raised projection, and a fuel injector having orifices that spray a plurality of jets into the annulus at spaced points around the projection, characterised in that the cross-sectional area of the annulus varies around the projection (**4**) and has a single minimum value in a median plane (D—D) through the axis (C) of the projection (**4**), the centre (A) of the bowl (**3**) and the centre of the injector nozzle (**2**); and the injector nozzle (**2**) is located on the opposite side of the axis (C) from the minimum value cross-sectional area of the annulus and has orifices orientated so as to direct jets of fuel both sides of said median plane (D—D).

4,516,550

ELECTRONIC CONTROL DEVICE FOR A FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE WITH SELF-IGNITION

Rainer Buck, Tamm; Thomas Küttner, Stuttgart; Fridolin Piwonka, Tamm, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 415,615, Sep. 3, 1982, abandoned. This application May 7, 1984, Ser. No. 606,555

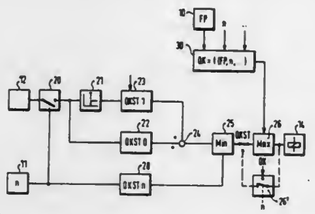
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209433

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **12 Claims**

1. A method for determining a fuel quantity control signal in a fuel metering system of an internal combustion engine with self-ignition, having sensors for operating parameters and function transducers for a set-point value of the fuel quantity in accordance with operating parameters, comprising the steps of, pre-specifying at least one of a time-dependent starting fuel

quantity and an rpm-dependent starting fuel quantity as the fuel quantity control signal during starting below a predetermined rpm value, selecting the set-point value of the fuel quantity as the fuel quantity control signal during starting above a predetermined rpm value that is below idle speed, and reducing the set-point value of the fuel quantity at least in accordance with rpm.

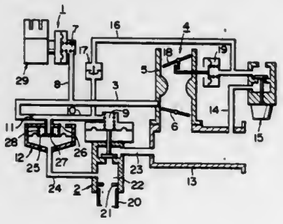


4,516,551

CONTROL SYSTEM FOR IGNITION TIMING AND EXHAUST GAS RECIRCULATION OF COMBUSTION ENGINE

Masahiro Urushidani, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 16, 1982, Ser. No. 450,374
Int. Cl.[2] F02P *5/04*
U.S. Cl. 123—407 **6 Claims**



1. A control system for ignition timing and exhaust gas recirculation of a combustion engine having a throttle valve in a carburetor, comprising:

a vacuum controller operated by negative pressure of an air passageway of said carburetor to advance the ignition timing;

an EGR valve operated by said negative pressure to recirculate the exhaust gas;

a temperature sensing valve for sensing an engine temperature which introduces atmosphere to said vacuum controller as well as to said EGR valve when the engine temperature is low;

a pressure control valve which introduces the atmosphere by a flow ratio substantially in inverse proportion to a pressure of the exhaust gas;

a negative pressure line which introduces said negative pressure at a portion in a carburetor upstream of said throttle valve to said vacuum controller and said EGR valve; and

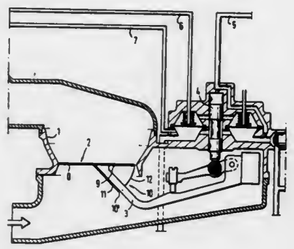
a check valve provided in a line from said temperature sensing valve to said negative pressure line, said check valve closing when said temperature sensing valve introduces said negative pressure to said line from said temperature sensing valve to said negative pressure line.

4,516,552

AIR QUALITY MEASURING DEVICE FOR A FUEL INJECTION INSTALLATION

August Hofbauer, Pforzheim, and Erich Exinger, Stuttgart, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,557
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240271
Int. Cl.[3] F02M *39/00*
U.S. Cl. 123—452 **15 Claims**



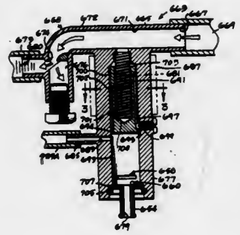
1. An air quantity measuring device of a continuously operating fuel injection installation for an internal combustion engine, comprising a baffle plate means pivotally arranged in a housing on a lever, the pivoting movements of the baffle plate means being dependent on the through-flowing air quantity, for actuating a control piston of a quantity distributor for the distribution of fuel to cylinders of the internal combustion engine, the baffle plate means being provided on its inflow side with a raised means for reducing its flow resistance, the raised means having a peak disposed eccentrically to the baffle plate means and including a first portion rising approximately from the center of the baffle plate means to said peak and a second portion dropping off from the peak to the edge of the baffle plate means and terminating flush therewith.

4,516,553

COMBUSTION AND POLLUTION CONTROL SYSTEM

John E. Lindberg, Lafayette, Calif., assignor to Owen, Wickersham & Erickson, San Francisco, Calif.

Division of Ser. No. 190,932, Sep. 25, 1980, Pat. No. 4,331,525, which is a division of Ser. No. 657,747, Feb. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 613,867, Sep. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 356,589, May 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 227,440, Feb. 18, 1972, abandoned. This application Jul. 14, 1983, Ser. No. 513,901
Int. Cl.[3] F02B *47/08*
U.S. Cl. 123—568 **8 Claims**



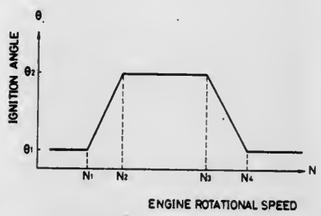
1. An inverter apparatus for producing an increasing vacuum effect in response to a decreasing vacuum field, said inverter apparatus comprising, cylinder means having an internal cylindrical bore, piston means axially movable within the cylindrical bore, said piston means having a first surface exposed to the vacuum in said vacuum field and having a second surface exposed to atmospheric pressure, spring means for biasing said piston means in a direction opposed to the direction of movement which would be produced by atmospheric pressure on said second surface, a fluid inlet passageway extending through said cylinder means and opening into the cylindrical bore, said piston means having an axially extending side wall facing the cylindrical bore, orifice means formed in said side wall and an outlet passageway located at one end of the orifice means for connecting said end with that portion of the bore having the vacuum acting on said first surface of said piston means, and wherein said axially extending orifice is so located in the side wall of said piston means as to provide a decreasing restriction to flow of fluid from said inlet passageway through the orifice to the outlet with decreasing vacuum.

4,516,554

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Nobuo Miura, Wako, and Nolihisa Ishii, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 480,063
Claims priority, application Japan, Mar. 31, 1982, 57-053163; Oct. 20, 1982, 57-184096
Int. Cl.[3] F02P *5/04*
U.S. Cl. 123—418 **11 Claims**



1. An ignition control system for supplying a trigger signal to an ignition plug driving circuit which exerts a high-tension pulse to an ignition plug of an internal combustion engine, which comprises:

timing pulse generating means for producing first and second timing pulses at the positions of greatest ignition advancement and retardation of each engine cycle, respectively, per engine cycle; and

trigger signal generating means connected to said timing pulse generating means, for producing said trigger signal at a desired ignition timing in response to said timing pulses, said trigger signal generating means keeping the ignition timing at a retarded constant level when the instantaneous engine speed is within either a lower engine speed range or a higher engine speed range and keeping the ignition timing at an advanced constant level when the instantaneous engine speed is within a middle engine speed range, and changing the ignition timing generally proportionate to the instantaneous engine speed within a first transitional range between the lower and the middle engine speed ranges and changing the ignition timing generally inversely proportionate to the instantaneous engine speed within a second transitional range between the middle and the higher engine speed ranges, said trigger signal generating means including,

first saw-tooth wave generating means for generating a first saw-tooth wave signal having each apex thereof coincident to each of said second timing pulses and having each sloped portion thereof lasting between the successive two of said second timing pulses,

second saw-tooth wave generating means for generating a second saw-tooth wave signal abruptly rising up to a certain level at the occurrence of each of said first timing pulses and gradually increasing in level at a steepness greater than that of the sloped portion of said first saw-tooth wave signal and dropping down in level coincident to the occurrence of each of said second timing pulses,

comparing means for comparing in level said first and second saw-tooth wave signals and for producing an ON signal when the difference in level between said first and second saw-tooth wave signals reaches a predetermined value,

trigger signal generating means for generating said trigger signal in response to said ON signal, and

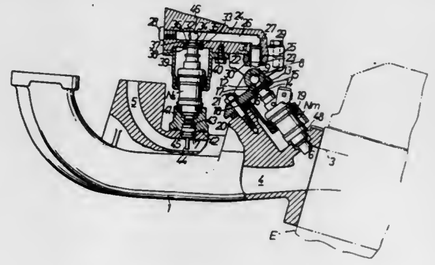
inhibiting circuit means for inhibiting said ON signal from being supplied to said trigger signal generating circuit during a predetermined time period beginning after the occurrence of said second timing pulse.

4,516,555

FUEL FEEDING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toshio Shioya, and Katsuhiko Kimura, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,558
Claims priority, application Japan, Apr. 25, 1983, 58-72439
Int. Cl.[3] F02M *55/00*
U.S. Cl. 123—470 **8 Claims**

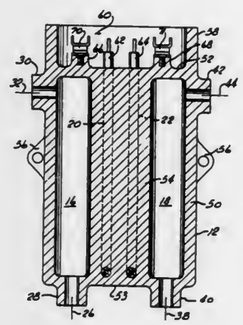


1. A fuel injection feeding system for an internal combustion engine having a plurality of main combustion chambers and sub combustion chambers, a plurality of main feed injection nozzles with rear ends, a sub fuel injection nozzle with a rear end and an intake manifold, comprising, a fuel distributor having a main fuel passage therethrough, said fuel distributor being mounted to the intake manifold, a fuel branching member having a branch fuel passage therethrough, an upper mounting surface formed on the upper side of said fuel distributor, a fuel communication passage through said upper surface communicating with said main fuel passage, a lower mounting surface formed on the lower side of said fuel branching member, a first end of said branch fuel passage being open to said lower mounting surface, a second end of said branch fuel passage being open to the atmosphere, means to connect said lower mounting surface to said upper mounting surface, a guide sleeve fitted within said first end of said branch fuel passage and said fuel communication passage in said upper mounting surface, an annular seal member fitted about said guide sleeve, means to seal said second end of said branch fuel passage, passageway means to insert the rear ends of the main fuel injection nozzles into said fuel distributor and passageway means to insert the rear end of the sub fuel injection nozzle into said fuel branch member.

4,516,556
FUEL PREHEATER

Howard E. Meyer, Slippery Rock, Pa., assignor to Heat Exchange and Transfer, Inc., Pittsburgh, Pa.

Filed Feb. 3, 1984, Ser. No. 576,568
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **10 Claims**



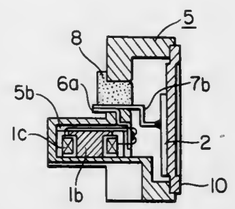
1. In a preheater system for use in conjunction with an internal combustion engine, the combination comprising:
- a preheater body member;
- a fuel flow conducting channel defined within said body member and adapted to have a flow of fuel passed continuously therethrough;
- a pair of selectively operable heat sources associated with said body member in heat exchange relationship with said fuel flow conducting channel for supplying energy to heat such a flow of fuel;
- at least one of said pair of heat sources including an engine block coolant flow conducting channel formed within said body member and adapted to sustain a continuous flow of engine coolant therethrough for recirculation of such engine coolant through said coolant flow conducting channel and the engine block;
- selectively operable control means for selecting operation of one of said pair of heat sources to supply energy for preheating said flow of fuel said pair of heat sources, including the engine coolant flow conducting channel, being located in a manner that the body member provides for heat transfer from said pair of heat sources to the flow of fuel passing through said fuel flow conducting channel,
- a selectively operable additional heater means carried by said body member for heating the flow of engine coolant within said engine coolant flow conducting channel, and a thermostatic control for limiting the heat input from said selectively operable additional heater means according to a preselected maximum temperature for said engine coolant.

4,516,557
IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Katsuyoshi Masuno, and Tsutomu Kamata, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00313, § 371 Date Mar. 2, 1983, § 102(e) Date Mar. 2, 1983, PCT Pub. No. WO83/00537, PCT Pub. Date Feb. 17, 1983
PCT Filed Aug. 10, 1982, Ser. No. 486,277
Claims priority, application Japan, Aug. 10, 1981, 56-119294[U]
Int. Cl.³ F02P *1/00*; H03F *1/00*; H02K *11/00*
U.S. Cl. 123—619 **5 Claims**

1. An ignition apparatus for an internal combustion engine, comprising:
- a rotary shaft for being rotated in synchronism with the internal combustion engine;
- a signal rotor mounted to said rotary shaft for being rotated therewith;
- a core opposing said signal rotor;
- a core coil wound about said core;
- a metal heat sink;
- a frame connected to said heat sink so as to form a casing having an interior, said frame having a recess opening into said interior, said frame having a grooved portion extending into said recess from said interior;
- an integrated circuit disposed on said heat sink, said integrated circuit including a capacitor electrically connected

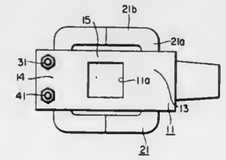


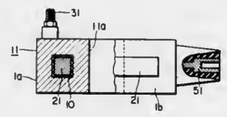
to said core coil to form a resonance circuit, oscillation energy supply means for supplying oscillation energy to said resonance circuit, oscillation detecting means, responsive to oscillation energy in said resonance circuit for producing a output signal, amplifier means for applifying said output signal to produced an amplified signal, and switch means for interrupting the amplified signal;
- ignition coil means, responsive to interruption of the amplified signal by said switch means, for generating a high voltage; and
- connecting means, including electrical lead wires connected at one end to said core coil and extending from said recess in said grooved portion, for electrically connecting said core coil to said capacitor.

4,516,558
IGNITION COIL DEVICE FOR INTERNAL COMBUSTION ENGINE

Yutaka Oohashi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 21, 1983, Ser. No. 506,365
Claims priority, application Japan, Jun. 30, 1982, 57-115065
Int. Cl.³ F02P *3/02*
U.S. Cl. 123—634 **4 Claims**



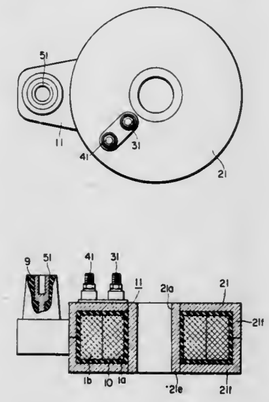


1. An ignition coil device for an internal combustion engine comprising:
- a core including two U-shaped core parts, each of which has a pair of connecting portions protruding from the ends of a leg portion in the same direction, and said two core parts being connected by butting the ends of corresponding connecting portions;
- said core defining a core aperture surrounded by said leg portions and said connecting portions;
- a coil assembly including coils wound on said leg portions of said core;
- said coil assembly having a molding material with an insulating property which is formed so as to cover said coils therein;
- said coil assembly further having molding material which is formed so as to provide a coupling portion connecting said coils and extending within said coil aperture, said coupling portion of molding material and said molding material which covers said coils being integral to maintain said coils in assembled relationship and said core parts in abutting relationship and having a coil aperture extending through said coupling portion coaxially with said core aperture; and
- said coils being used for generating a high voltage for activating spark plugs.

4,516,559
IGNITION COIL DEVICE FOR INTERNAL COMBUSTION ENGINE

Yutaka Oohashi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 24, 1983, Ser. No. 507,569
Claims priority, application Japan, Jun. 30, 1982, 57-115066
Int. Cl.³ F02P *3/02*
U.S. Cl. 123—634 **1 Claim**

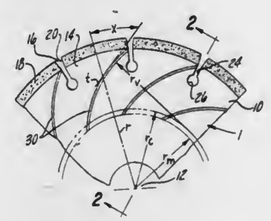


1. An ignition coil device for an internal combustion engine comprising:
- a core which includes a first annular core member having a central axis and a second core member;
- said second core member being connected to said first core member so as to define a toroidal coil space outside said first core member and being split along a plane transverse to said axis to divide said second core member into separate parts, each having an axially extending cylindrical section and a radically extending annular section;
- a toroidal coil assembly which is arranged in said toroidal coil space; and
- said toroidal coil assembly having a primary coil and a secondary coil for generating a high voltage for the ignition of the engine and being arranged so as to surround said first core member and so as to be surrounded by said separate parts of said second core member when assembled with the cylindrical sections thereof in contact with each other and the annular sections in contact along the inner periphery with said annular core member.

4,516,560
ABRASIVE CUTTING WHEEL AND METHOD OF CUTTING ABRADABLE MATERIAL

E. J. Cruickshank, Overland Park, Kans., and Joseph D. Ekland, Birmingham, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Jul. 29, 1982, Ser. No. 403,201
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—15 **7 Claims**



1. A rotatable cutting wheel for wet cutting of natural or artifical rock or rock-like material, comprising:
- a generally circular disc-shaped drive core having a pair of opposite core faces and a plurality of circumferentially-extending and circumferentially-spaced support surfaces generally at the outer periphery thereof, a substantial number of said support surfaces having affixed thereto an abrasive cutting member capable of cutting abradable rock or rock-like material;
- said core having a plurality of gullets, at least a substantial number of said gullets extending between a closed gullet end located a substantial radial distance inward of said support surfaces and an open gullet end defined by the space between adjacent pairs of said support surfaces;
- said core having a plurality of vane means thereon for distributing a fluid coolant therethrough over at least one of said core faces, for directing said fluid coolant from at least one core face generally radially outwardly to at least some of said cutting members and for maintaining a quantity of said fluid coolant on at least said one core face as said core is rotating through the cut being made;
- said vane means including a plurality of generally arcuate vanes circumferentially-spaced on at least one core face, said arcuate vanes curving outwardly from radial inward locations on at least said one core face that are approximately radially midway between said supporting surfaces and the axis of rotation of said core, each of said vanes being recessed relative to at least one core face and being in fluid communication with one of said gullets, said arcuate vanes extending in a generally radially outward and circumferential arcuate direction from said radial inward locations to said gullets, each of said arcuate vanes being configured so that a radius line from the core's axis to an intersection point on said vane approximately 40 percent inwardly along said vane from the periphery of said core forms an included angle of approximately 65° to approximately 85° with a tangent line that is tangent to said vane at said intersection point.

4,516,561
PORTABLE BATTERY POWERED BLOWER APPARATUS FOR FANNING CHARCOAL OR OTHER FUEL

Karl-Heinz Stawski, Parkdale, and Philip W. Jensen, Hood River, both of Oreg., assignors to P D Manufacturing, Inc., Hood River, Oreg.

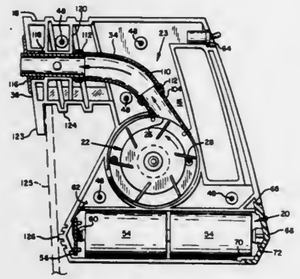
Filed Sep. 30, 1982, Ser. No. 428,991
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 B **8 Claims**

1. A portable battery powered blower apparatus for fanning charcoal or other fuel which is positioned within a rimmed fuel container comprising:

a housing having an upright body and a barrel having one end connected to an upper portion of the body, the barrel projecting outwardly from the upper portion of the body, the projecting portion of the barrel having a free end which is spaced from said one end of the barrel;

said body including a lower battery receiving compartment, an intermediate blower receiving chamber with an air inlet and an air outlet, and an upper air flow transition region;

a curved tubular conduit connected at a first end to the air



outlet and having its other or second end supported by the free end of the barrel so as to provide a curved air flow passageway from the intermediate chamber, through the air flow transition region and to the free end of the barrel;

a battery powered fan means positioned within the intermediate chamber for moving air from the air inlet, through the intermediate chamber and the tubular conduit, and from the free end of the barrel to the fuel;

said barrel having a plurality of lips projecting from the free end thereof, whereby the blower may be positioned on the rim of the fuel container during use.

4,516,562

ARRANGEMENT IN COMBUSTION CHAMBERS FOR BURNING SOLID FUEL

Karl S. H. Hultgren, Rosengården, Kyrkv. 18, S-565 00 Mullsjö , Sweden

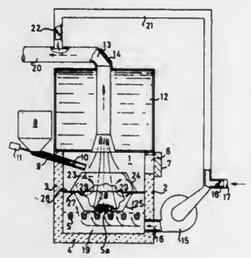
PCT No. PCT/SE82/00248, § 371 Date Mar. 1, 1983, § 102(e) Date Mar. 1, 1983, PCT Pub. No. WO83/00373, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 21, 1982, Ser. No. 485,115

Claims priority, application Sweden, Jul. 23, 1981, 81045163

Int. Cl.[3] F24C *1/14*

U.S. Cl. 126—77 **8 Claims**



1. An improvement in a solid fuel combustion chamber in which the combustion gases are recirculated; comprising peripheral walls surrounding the combustion chamber, fire bars located in the lower part of the combustion chamber for supporting said fuel in the central area thereof; a convection section arranged above said chamber; a flue-gas outlet communicating with said chamber by means of said convection section; fan means for supplying combustion gases to the combustion chamber; and a supply conduit extending from the pressure side of the fan means and having an outlet located in the combustion chamber beneath the fire bars; wherein the improvement comprises

an upwardly open first screening wall located above the fire bars in the combustion chamber, and in inwardly spaced relationship with the peripheral walls thereof, said first screening wall surrounding the central area upwardly adjacent the fire bars whereby gases delivered by the supply conduit discharging beneath the fire bars, and entering the combustion chamber through the fire bars, flow into both the space radially inward of said first screening wall and the space outward thereof; and

a downwardly open second screening wall which is located substantially above the first screening wall, the inner peripheral surface of the lower opening of the second wall being disposed radially outward of, and adjacent to, the outer peripheral surface of the upper opening of the first screening wall, so as to define between said adjacent peripheral surfaces of said first and second screening walls a gap which encircles said central area upwardly adjacent the fire bars in the combustion chamber, and which provides a gas supply opening for gases entering the combustion chamber through the fire bars and flowing outwardly of the first screening wall, said gap communicating with the space located radially inwardly of both said screening walls, so as to direct the flow of gases entering said gap along the inner surface of the second screening wall to cool the latter and to further direct said gases into circulation with the gases inside the first screening wall emanating from the fire, thereby generating blue-frame combustion within said screening walls; and

a baffle wall within said combustion chamber, extending radially from the periphery of the lower opening of the second screening wall to the surrounding wall of the combustion chamber to guide gases flowing externally of said first screening wall into said gap.

4,516,563

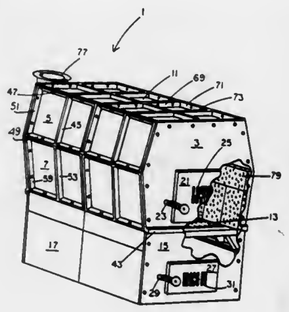
HEATING DEVICE

James B. De Larm, Summit Dr., Hague, N.Y. 12836

Continuation-in-part of Ser. No. 475,255, Mar. 14, 1983, abandoned. This application Feb. 24, 1984, Ser. No. 583,189

Int. Cl.[3] F24D *9/00*

U.S. Cl. 126—101 **12 Claims**



1. A heating device of assembled cast panel construction comprising: an upper front cast plate, upper and lower side cast panels, an upper back cast plate, top cast panels, grates, a lower front cast plate, lower side panels, a lower back cast plate, a flue and fire brick; said upper front cast plate, upper and lower side cast panels, upper back cast plate, top cast panels and grates defining a combustion chamber, said lower front cast plate, lower side panels and lower back cast plate defining an ashpit, said flue communicating with said combustion chamber to exhaust therefrom smoke, flue gases and products of combustion, said upper side cast panels having upper flanges, lower flanges and lateral flanges, said lower side cast panels having upper flanges, lower flanges and lateral flanges, said lateral flanges of said upper side cast panels being square, said upper side cast panels being joined together at their said lateral flanges and presenting and defining flat surfaces inwardly facing said combustion chamber, said lateral flanges of said upper side cast panels being joined together with and in normal relationship with said upper front cast plate, said lateral flanges of said upper side cast panels being joined together with and in normal relationship with said upper back cast plate, said lateral flanges of said lower side cast panels being square, said lower side cast panels being joined together at their said lateral flanges and presenting and defining flat surfaces inwardly facing said combustion chamber, said lateral flanges of said lower side cast panels being joined together with and in normal relationship with said upper front cast plate, said lateral flanges of said lower side cast panels being joined together with and in normal relationship with said upper back cast plate, said upper and lower flanges of said upper side cast panels being tapered, said upper and lower flanges of said lower side cast panels being tapered, said lower flanges of said upper side cast panels being joined together with said upper flanges of said lower side cast panels, said lower side cast panels, as joined together, diverging upwardly and outwardly, said upper side cast panels, as joined together, converging upwardly and inwardly, said flat surfaces of said lower side cast panels and upper side cast panels, as joined together, defining obtuse interior angles, said top cast panels having front and rear flanges, and lateral flanges, said front and rear flanges of said top cast panels being square, said lateral flanges of said top cast panels being tapered, said top cast panels being joined together at their said front and rear flanges and presenting and defining a horizontal flat surface inwardly facing said combustion chamber, said front and rear flanges of said top cast panels being joined together with and in normal relationship with said upper front cast plate and upper back cast plate, respectively, said tapered upper flanges of said upper side cast panels being joined together with said tapered lateral flanges of said top cast panels, said upper side cast panels and top cast panels, as joined together, defining obtuse interior angles, said fire brick lying in place in corresponding diverging relationship against said inward flat surfaces of each of said diverging lower side cast panels to reflect heat upward, said converging inward flat surfaces of said upper side cast panels defining the upper half of said combustion chamber, said upper back cast plate having an upper half corresponding with said upper half of said combustion chamber, said upper half of said combustion chamber and said upper half of said upper back cast plate having corresponding middle regions, said middle region of said upper back cast plate mounting said flue for communication with said middle region of said upper half of said combustion chamber, said converging inward flat surfaces of said upper side cast panels forcing such heat to concentrate and maintain itself in said upper half of said combustion chamber above the creosote deposition temperature of the flue gases to prevent the formation of creosote, said horizontal flat surface of said top cast panels inwardly presented and facing said combustion chamber stopping such heat and further concentrating and maintaining such heat in said upper half of said combustion chamber for maximum heat exchange, a coil of layers of connected water tubes, and said coil of water tubes is disposed in said upper half of said combustion chamber, and said flue and its location at said middle region of said upper back cast plate cooperating in such stopping of such heat and further concentrating and maintaining such heat in said upper half of said combustion chamber by delaying the exhaustion of such heat from said upper half of said combustion chamber.

4,516,564

HEAT GENERATING BODY

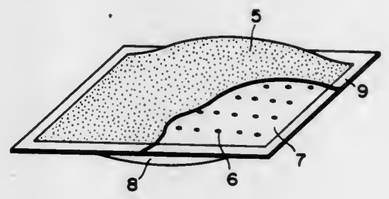
Yasuhiko Koiso, Hiratsuka; Kenji Ohtsuka, Zama, and Shigeo Yahara, Hiratsuka, all of Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 417,861

Claims priority, application Japan, Nov. 28, 1981, 56-191404

Int. Cl.[3] F24J *1/00*

U.S. Cl. 126—263 **1 Claim**



1. A heat generating body comprising:

a heat generating composition for generating heat upon contact with oxygen;

a bag storing said heat generating composition, said bag comprising:

an air-permeable film with at least one window or holes, each of said holes having a diameter ranging between 0.05 and 50 mm; and

a microporous film covering and closing the window or holes, said microporous film having fine pores, each said pore having a diameter equivalent ranging between 0.005 and 5 microns; and

an outer cover with air-impermeability covering said bag, said outer cover being adapted to be removed from said bag when used.

4,516,565

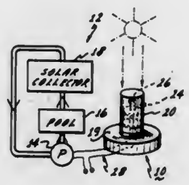
SUN SENSING CONTROL DEVICE

Milton Stone, 7121 Catalina St., Spring Hill, Fla. 33526

Filed Jan. 23, 1984, Ser. No. 573,055

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—419 **17 Claims**



1. A sun sensing control device for controlling a solar heating system, comprising:

base means;

a hollow elongated housing being mounted on said base means in an upright disposition and having a sealed compartment therein confining fluid;

an electrical transducer mounted at least partially within said compartment and responsive to changes in the characteristics of the fluid confined within said compartment for generating an electric signal indicative of the presence of adequate solar radiation to cause the activation of the solar heating system; and

said housing being substantially longer in length than its transverse dimension to provide a small effective external exposed upper opaque area for the higher intensity solar radiation, and to provide a larger effective external exposed lower opaque area for the lower intensity solar

radiation, the external surfaces of said upper and lower areas having solar radiation absorbing color,

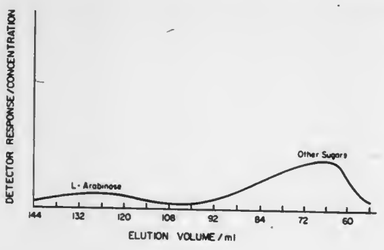
whereby the temperature of said fluid does not tend to become excessively elevated and said transducer is energized or de-energized only after a given time delay interval determined by the heat absorbing and releasing characteristics of the fluid respectively.

4,516,566

SEPARATION OF ARABINOSE BY SELECTIVE ADSORPTION ON ZEOLITIC MOLECULAR SIEVES

Chien C. Chao, Millwood, and John D. Sherman, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 30, 1982, Ser. No. 454,655
Int. Cl.³ C13K *13/00*
U.S. Cl. 127—46.3 **10 Claims**



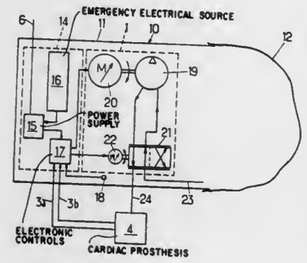
1. A selective adsorption process for the separation of arabinose from a liquid mixture containing arabinose and at least one other aldose, which process comprises: (a) contacting said liquid mixture, at a pressure sufficient to maintain the mixture in a liquid phase, with an adsorbent composition comprising a BaX crystalline aluminosilicate zeolite, whereby arabinose is selectively adsorbed thereon; (b) removing the non-adsorbed portion of said liquid mixture from contact with the adsorbent composition; and (c) desorbing arabinose from said adsorbent composition by contacting said adsorbent composition with a desorbing agent and recovering desorbed arabinose.

4,516,567

SEQUENTIAL PNEUMATIC CONTROL DEVICE, SUPPLIED WITH ELECTRIC ENERGY

René Veragen, Chatou, France, assignor to Sagem, Paris, France

Filed Jul. 25, 1983, Ser. No. 516,889
Claims priority, application France, Jul. 26, 1982, 82 13007
Int. Cl.³ A61M *1/03*
U.S. Cl. 128—1 D **8 Claims**



1. A sequential pneumatic control device implantable in the human body and supplied with electrical energy, for use at least with a pneumatically operated cardiac prosthesis of the type formed by a biventricular monobloc assembly said control device comprising:

at least one housing forming an enclosure for a drive gas reserve, said housing comprised of an open rigid case having at least one opening therein and a wall, said wall being at least partially flexible and sealingly connected to said case such that said wall is subjected to flexing by the internal pressures of the human body and forms a flexible pocket, and such that the gas reserve is formed partly by said open rigid case and partly by said flexible pocket;

a motor mounted in said housing;

a pneumatic pump mounted in said housing and driven by said motor;

at least one main valve mounted in said housing for distributing the pressurized gas delivered by the pump to a device output port;

at least one electric motor mounted in said housing for actuating said valve;

a reference pressure detector;

a detector means for receiving a signal responsive to a cardiac condition; and

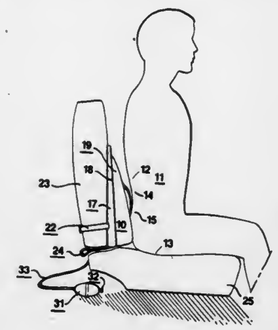
control means mounted in said housing and having inputs connected to said reference pressure detector and said detector means and having outputs connected to the motors of the pneumatic pump and of the valve.

4,516,568

PRESSURE EXERTING DEVICE

Kern C. A. Baxter, 820 Sheffield Rd., Sheffield Lake, Ohio 44054, and Heinz-Gert Grm, 939 S. Main St., Amherst, Ohio 44001

Filed Jul. 22, 1983, Ser. No. 516,111
Int. Cl.³ A61F *5/00*; A47C *27/08, 27/18*
U.S. Cl. 128—70 **2 Claims**



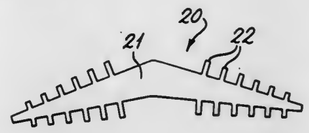
1. A pressure exerting device conformable to the contour of a body to exert pressure to the surface of the body in a preselected pounds per square inch pressure in a uniform manner throughout a preselected area of the surface of the body, said device comprising, a wedge shaped member of resilient material having a continuous surface, a modified U-shaped air bladder on said continuous surface with the base of the U-shaped bladder at the thick end of the wedge shaped member and with the legs of the U-shaped bladder extending along the opposite edges of said surface from said thick end substantially to the thin end thereof, means securing said bladder to said continuous surface, and hand operative means connected to said bladder to fill said bladder with air to a selected pressure while the divice is in pressure exerting contact with a body, said bladder expanding outwardly from said continuous surface a distance greater than either of said legs of said U-shaped bladder, and means for generating heat over a major portion of said continuous surface.

4,516,569

INTRAMEDULLARY ORTHOPAEDIC DEVICES

David M. Evans, Farnham Common, and Barry O. Weightman, Thames Ditton, both of England, assignors to National Research Development Corporation, London, England

Filed May 5, 1983, Ser. No. 492,034
Claims priority, application United Kingdom, May 6, 1982, 8213032
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 BC **6 Claims**



1. An internal orthopaedic fracture fixation device for a smali bone comprising:

an elongate member of plastics material, said member having a rectangular overall cross-sectional shape defined by an opposed pair on major side faces in alternating disposition with an opposed pair of minor side faces;

said minor side faces being smooth;

said major side faces being formed over at least a major portion of the length thereof with at least two longitudinally adjacent sequences of fins;

each said sequence:

having the longitudinal direction of the fins therein extending transversely of said member,

being spaced longitudinally on said member from the next adjacent one of said sequences by a distance greater than the thickness of a respective one of said fins in the same direction, and

having the height of each said fin, directed outwardly from said member, being greater than said thickness;

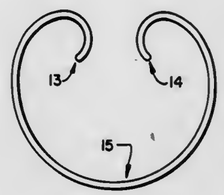
said member being constructed and arranged to be secured by an interference fit, by longitudinal translation alone, into a preprepared, substantially complementary recess in said small bone; with such fit resulting from flexure of said fins of at least one corresponding said sequence thereof on each said major side face without necessarily causing substantial stripping of bone material from the wall of said recess, while said smooth faces act against rotation of said member in said recess.

4,516,570

PESSARY

Charles H. Taban, 50bis Ch des Falquet, 1223 Cologny, Switzerland

Filed Aug. 27, 1982, Ser. No. 412,162
Int. Cl.³ A61F *5/46*
U.S. Cl. 128—130 **1 Claim**



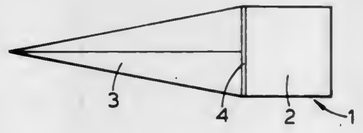
1. A pessary comprising a unitary malleable metal core member, and a flexible sheath hermetically covering said core member, said sheath being formed from a bio-compatible polymeric material, said pessary having a first free end, a second free end and an intermediate portion between said free ends, and said pessary being formed into a non-closed curve wherein said intermediate portion has a generally semicircular shape, said semicircle having a center and a radius, and said free ends being curved inward generally toward said center, said free ends having radii of curvature smaller than the radius of said semicircle.

4,516,571

MEDICAL DEVICE, ITS PREPARATION AND USE

Ian A. Buchan, Stansted Mountfitchet, England, assignor to Smith and Nephew Associated Companies p.l.c., England

Filed Mar. 8, 1984, Ser. No. 587,470
Claims priority, application United Kingdom, Mar. 10, 1983, 8306663; Nov. 9, 1983, 8329877
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 R **14 Claims**



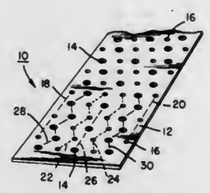
1. A device useful for the prophylaxis of pressure sores and which is removably attachable to the human body which device comprises a mobile moisture absorbing hydrophilic gel retained within a flexible elastomeric envelope which envelope has a body contacting surface which is a film having a moisture vapour transmission rate of greater than 300 g/m^2 24 hr^{-1} at 37° C. at 100% to 10% relative humidity difference said device being 5 to 25 mm thick.

4,516,572

PERFORATED CLOSED CELL PADDING MATERIAL

Allen P. Schlein, 107 Curtis Ter., Fairfield, Conn. 06430

Filed Mar. 11, 1983, Ser. No. 474,287
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 **6 Claims**



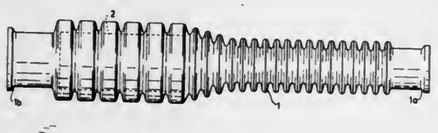
1. A padding material for an immobilizing orthopedic cast, said padding material consisting essentially of closed cell polyvinyl chloride foam in strip sheet form having a density as high as possible consistent with rendering said padding material conformable, resiliently compressible and elastic in the longitudinal direction, said foam being water repellent at least to the extent that water penetrates the foam with difficuly and the sheet surface which engages the human skin being macroscopically smooth and having the property of transporting moisture therealong, said foam material having perforations capable of passing moisture such as water and perspiration from the human skin therethrough by vapor transmission.

4,516,573

DEVICE FOR CONNECTING A RESPIRATOR OR ANESTHESIA MACHINE TO A PATIENT

Andras Gedeon, Täby, Sweden, assignor to Gambro Engström AB, Bromma, Sweden

Filed Feb. 14, 1983, Ser. No. 466,097
Claims priority, application Sweden, Feb. 23, 1982, 8201131
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—201.13 **7 Claims**



1. A device for connecting a Y-piece connected to the inspiration and expiration tubes of a respirator or an anesthesia machine to an endotracheal tube or the like adapted to be attached to a patient, comprising a hose which is continuous and flexible along substantially its whole length and which at one end thereof includes means formed in a manner to enable it to be connected, in gas-tight fashion, to said endotracheal tube or the like, and which at the other end thereof includes means formed in a manner to enable it to be connected, in gas-tight fashion, to said Y-piece coupled to the inspiration and expiration tubes of the respirator or anesthesia machine, and inside said flexible hose there is permanently incorporated, in the region thereof adjacent said other end, a heat and moisture exchanger consisting of a flexible, substantially uniformly gas permeable body of a felted fibrous material impregnated with a hygroscopic substance, said body filling substantially the whole of the cross-sectional flow area of the hose.

4,516,574

TOOL FOR CASTRATING ANIMALS BY SEVERING THE SPERMATIC CORD BY SEARING OR CAUTERIZATION

Francis W. Hewes, Jr., Toponas, Colo. 80472

Filed Apr. 18, 1983, Ser. No. 485,667
Int. Cl.³ A61B *17/32, 17/38*
U.S. Cl. 128—303.1 **7 Claims**



1. A tool for castrating animals operating to sever the spermatic cord at least partly by searing or cauterization, comprising:

(a) a pair of arms pivotally connected together to operate in scissor-like manner;

(b) means on one of said arms for stripping the covering of the spermatic cord of an animal after the cord has been pulled out of the animal's body during castration,

(c) a heating area on one of said arms cooperating with said other arm upon closing of the arms to contact the spermatic cord of an animal between said arms to sever the cord at least partly by searing or cauterization, and (d) means for connecting said heating area to a source of energy.

4,516,575

SURGICAL SCALPEL

Gregory J. Gerhard, Seattle, and William M. Graham, Burton, both of Wash., assignors to CooperVision, Inc., Palo Alto, Calif.

Filed Jun. 3, 1982, Ser. No. 384,596
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—305 **6 Claims**



1. A surgical scalpel comprising:

a barrel having a longitudinal channel therethrough, the channel having first and second ends corresponding to first and second ends of the barrel;

a blade holder having a blade affixed to one end thereof, the blade holder being mounted for reciprocation in the channel between an extended position wherein the blade extends beyond the first end of the barrel and a retracted position;

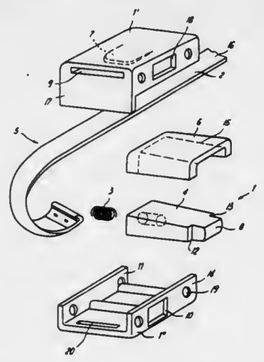
adjustment means reciprocably mounted in the channel and coacting with the blade holder to adjustably reciprocate the blade holder between the extended and retracted positions, the adjustment means comprising a rod having intersecting axial and transverse bores extending therethrough, an expandable plug positioned in the transverse bore and having a bore therethrough that is oriented substantially coaxially with the axial bore in the rod, and means for moving the plug outwardly to engage the walls of the channel, the means for moving the plug comprising a tapered pin reciprocably mounted in the axial bore in the rod and the bore in the plug.

4,516,576

TOURNIQUET STRAP OR BAND FOR RESTRICTING BLOOD FLOW, ESPECIALLY FOR TAKING BLOOD SAMPLES

Georg Kirchner, Markröningen, Fed. Rep. of Germany, assignor to Sanimed Vertrieb AG, St. Gallen, Switzerland

Filed Mar. 28, 1983, Ser. No. 479,445
Claims priority, application Switzerland, Apr. 1, 1983, 2011/82
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—327 **6 Claims**



4. A clamping lock for use with a tourniquet containing a strap having a longitudinal axis and which can be pulled through the clamping lock in the direction of said longitudinal axis of the strap and can be suspended in the clamping lock at one of its ends to form a stanching loop, said clamping lock having a longitudinal axis and comprising:

a wall;

a clamping wedge positioned transverse to said longitudinal axis of the clamping lock and transverse to said longitudinal axis of the strap which can be pulled through the clamping lock;

a spring acting upon said clamping wedge;

said clamping wedge being displaceable against the force of said spring and transversely with respect to the longitudinal axis of the strap and in its operative position being biased towards said wall of the clamping lock due to the action of said spring; and

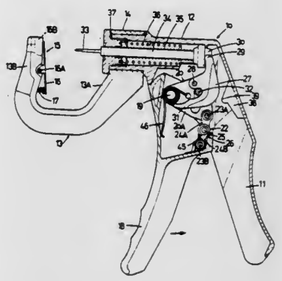
an actuating element constituting a grip extension of said clamping wedge for releasing the biasing of said clamping wedge towards said wall of said clamping lock.

4,516,577

APPLICATOR TOOL

Michael J. Scott, Fielding; Paul Slater, and Lawrence H. Brooshooft, both of Palmerston North, all of New Zealand, assignors to Allflex International Limited, Palmerston North, New Zealand

Continuation of Ser. No. 332,345, Dec. 18, 1981, abandoned. This application Apr. 2, 1984, Ser. No. 595,990
Claims priority, application New Zealand, Dec. 22, 1980, 195919
Int. Cl.³ A01K *11/00*
U.S. Cl. 128—330 **15 Claims**



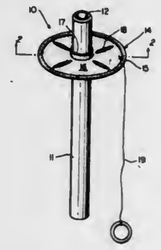
1. An animal ear tag tool for applying an ear tag characterized by comprising a body including a first retention means for a first part of said tag, a second retention means for a second part of said tag, said first retention means including a first portion facing said second retention means and a second portion adjacent to said first portion, a pivoted lever pivotally mounted on said body, around a first pivot mount, means for transferring movement of said lever into movement of said second portion of said first retention means, said means for transferring being pivotal about a second pivot mount, said second pivot mount being movable in response to pivotal movement of said lever, said means for transferring being engaged with said second portion of said first retention means, guiding means comprising a cam surface and a cam follower, one of which is mounted with said means for transferring, and the other of which is fixed on said body, said cam surface having a profile which imparts variable speed motion to said second portion of said first retention means, said variable speed motion decreasing as said first portion approaches said second retention means.

4,516,578

RECTAL DEVICE AND METHOD OF INSERTING SAME

Luther Shuffield, 4005 Twilight Dr., Fort Worth, Tex. 76116

Continuation-in-part of Ser. No. 429,815, Sep. 30, 1982, Pat. No. 4,471,782. This application Aug. 25, 1983, Ser. No. 526,410
Int. Cl.³ A61M *26/00*
U.S. Cl. 128—341 **26 Claims**



1. A rectal device comprising:

an elongated tube having a distal end and an outlet in the vicinity of the distal end, for introducing liquid into the anal opening through said outlet,

a diaphragm attached to the side of the tube, near the distal end thereof, said diaphragm normally extending outwardly, transversely to the tube axis, such that in use, with the tube inserted in the person's rectum, the diaphragm rests against the inside of the anal opening, interiorly of the anal spincter muscles, to prevent the escape of fluid being introduced,

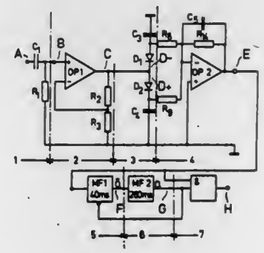
said diaphragm having a relatively stiff outer ring and a more pliable imperforate central portion between the ring and the tube, the ring and central portion, taken together, being sufficiently stiff to maturally assume said transverse position, and sufficiently resilent to fold closely against the tube for insertion.

4,516,579

INTERFERENCE RECOGNITION CIRCUIT IN A HEART PACEMAKER

Werner Irnich, 3 Birkenweg 60, D-6301 Wettenberg, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 527,177
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232478
Int. Cl.³ A61N *1/00*
U.S. Cl. 128—419 PG **20 Claims**



1. A synchronizable heart pacemaker

comprising in combination

a timing circuit for generating a stimulating impulse after an expected time interval,

differentiating means for receiving signals,

interference recognition means connected to the output of said differentiating means, and including

a testing stage for each signal, an output signal normally

appearing on an output of said testing stage, said testing stage including a peak detector circuit storing a positive maximum value and a negative maximum value of each signal differentiated by an adder which further acts as an amplifier and which forms the difference of both positive and negative maximum values, and a comparator postcoupled with one input thereof to said adder and with another input thereof to a reference voltage,

a discriminator postcoupled to the testing stage, said discriminator stage generating a time interval corresponding approximately to a time duration of the QRS complex of a heart-action signal, and including

checking means for checking for the presence or absence of said output signal after said time interval, and

decision means for recognizing said output signal in the presence thereof within said time interva' either as an interfering signal, and thereafter rendering said interfering signal ineffective, or recognizing said output signal as said heart-action signal and passing said heart-action signal to said timing circuit.

4,516,580

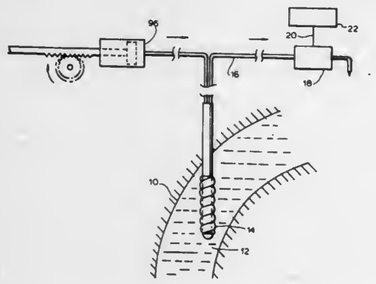
CONTINUOUS BLOOD GAS MONITORING

Michael L. Polanyi, Vaughn Hill Rd., Bolton, Mass. 01740

Filed Dec. 29, 1981, Ser. No. 335,391

Int. Cl.[3] A61B *5/00*

U.S. Cl. 123—632 **12 Claims**



1. A method for measuring the concentration of components of a fluid mixture comprising

contacting one side of a membrane permeable to the component to be determined with a sample of the fluid mixture to be analyzed;

contacting the second side of the membrane with a test fluid for the component to be determined with the test fluid contacting the membrane according to a first setting of a relevant parameter;

contacting successively the second side of the membrane with the test fluid for the component to be determined with the test fluid contacting the membrane according to a second setting of a relevant parameter;

analyzing the resultant properties of the test fluid having contacted the membrane according to the first setting of a relevant parameter;

analyzing the resultant properties of the test fluid having contacted the membrane according to the second setting of a relevant parameter, for establishing the concentration of the component to be determined from the resulting analytical values of the test fluid obtained from both analyzing the resultant properties of the test fluid having contacted the membrane according to both settings of a relevant parameter.

4,516,581

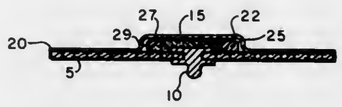
EKG ELECTRODE

Robert W. Sessions, Burr Ridge, Ill., assignor to Ferris Manufacturing Corp., Burr Ridge, Ill.

Filed Jun. 20, 1983, Ser. No. 506,043

Int. Cl.[3] A61B *5/04*

U.S. Cl. 128—639 **7 Claims**



1. In an EKG electrode with a body portion to which is attached a conducting contact member in electrical contact with a jell impregnated foam member, an improvement comprising:

means for surrounding said foam member positioned so as to be in physical contact with a part of said body portion as well as in electrical contact with said foam member, and wherein;

said means surrounding comprises a conductive annular ring formed of a selected medical grade plastic.

4,516,582

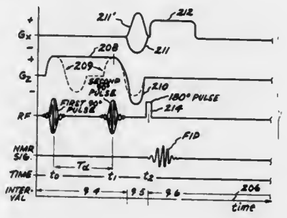
NMR BLOOD FLOW IMAGING

Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1983, Ser. No. 490,605

Int. Cl.[3] A61B *5/02*

U.S. Cl. 128—653 **19 Claims**



1. A method for producing a detectable signal for imaging related to the flow rate of fluid moving within one or more confined pathways in an object using NMR pulse sequences, said method comprising the steps of:

exciting atomic nuclei within a selected planar slab portion of said object by applying a 90° selective RF pulse to said object, said slab being of predetermined thickness and oriented at an angle to each of said pathways respectively;

exciting atomic nuclei within substantially the same selected planar slab portion a second time after a predetermined time delay by applying a second 90° selective RF pulse to said object said time delay being directly proportional to said slab thickness and inversely proportional to said fluid flow rate so as to generate an NMR signal whose amplitude is related to the quantity of liquid which flowed into the slab via said pathways during said time delay said selective pulses being applied simultaneously with at least one gradient pulse in a direction perpendicular to said planar slab; and

detecting said NMR signal from said planar slab.

4,516,583

ULTRASONIC ECHOGRAM PROBE AND SECTOR ECHOGRAPHIC SCANNING DEVICE

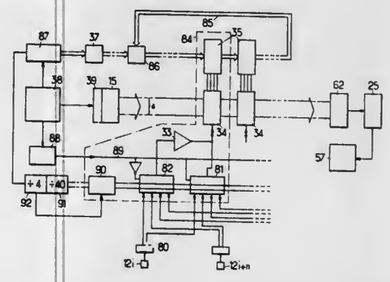
Bruno Richard, Brunoy, France, assignor to Centre National de la Recherche Scientifique, Paris, France

Filed Jul. 7, 1982, Ser. No. 396,078

Claims priority, application France, Jul. 8, 1981, 81 13445

Int. Cl.[3] A61B *10/00*

U.S. Cl. 128—660 **6 Claims**



1. An electronic scanning ultrasonic echography device for exploration of an organ or other internal anatomical structure, said device comprising:

a probe having an external surface adapted for contact with a surface of a body to be examined and carrying a linear array of N identical transducer elements, where N is an integer, distributed at equal intervals along a part circular line having the convex side thereof facing toward said external surface of said probe,

means for storing at least one distribution of time delays associated with n successive transducer elements, where n is a number less than N, corresponding to focusing at a predetermined distance from the center of said part circular line which is substantially larger than the radius of said part circular line,

signal transmitting means and signal receiving means and switch means, cooperating with said storing means, for providing connection of a first group of n successive transducer elements to said signal transmitting means and signal receiving means with said distribution of time delays and thereafter providing connection of successive groups of n transducer elements at an increasing angular distance from said first group in accordance with a predetermined sequence, so as to provide sector scanning,

said signal transmitting means comprising a pulse generator, and means for delivering on a plurality of channels, from each said pulse of said pulse generator, a plurality of time pulses delayed by a predetermined time τ and by multiples of τ,

said switch means being arranged to control a plurality of amplifiers each associated with one of said transducers in response to a said pulse appearing on the channel associated with that amplifier, as selected by the storing means, and to direct the reflected signal from said one of said transducers to the associated channel,

and said signal receiving means comprising a plurality of time delay elements, each connected to a particular one of said channels, for passing a signal received on that channel with the time delay associated with that channel.

4,516,584

SUTURE COLLAR

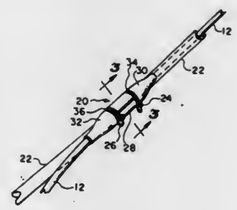
Leonard M. Garcia, Severna Park, Md., assignor to Cordis Corporation, Miami, Fla.

Filed Jan. 7, 1983, Ser. No. 456,532

Int. Cl.[3] A61N *1/04*

U.S. Cl. 128—785 **10 Claims**

1. A suture collar for use with a pacing lead body, said collar comprising a generally cylindrical body having opposite ends and having a throughbore therethrough for receiving a pacing lead body, said cylindrical body including a middle barrel portion and tapering end portions, each of which taper from the barrel portion to one of said ends, said barrel portion being separated from said tapering end portions by first and second suture receiving annular grooves, and said barrel portion having at least two generally longitudinally extending slits therein, each extending generally radially inwardly from the outer surface of said barrel portion to said throughbore to facilitate squeezing of the cylindrical body around a lead body when a suture is tied in one of said grooves.



4,516,585

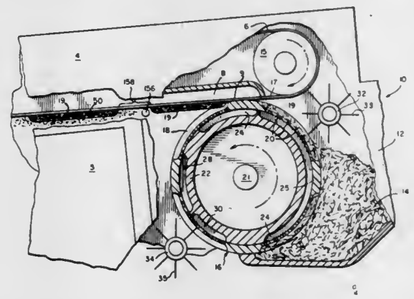
METHOD AND APPARATUS FOR PRODUCING A MULTIPLE-BLEND CIGARETTE

Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 2, 1982, Ser. No. 415,193

Int. Cl.[3] A24C *5/18*

U.S. Cl. 131—84.3 **1 Claim**



1. A cigarette-making machine for producing a multi-blend segmented cigarette comprising:

(a) means for conveying tobacco defining a tobacco receiving surface;

(b) means for retaining said tobacco on said tobacco conveying means;

(c) first blend supply means for supplying a first blend adjacent said tobacco conveying means;

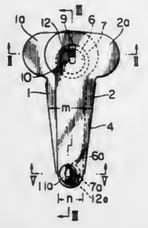
(d) forming means adjacent to said tobacco conveying means for receiving and forming portions of said first blend at spaced intervals and transporting said formed portions into contact with said tobacco conveying means;

(e) means for retaining said formed portions on said and forming means between said first blend supply means and said tobacco conveying means and transferring said formed portions to said tobacco conveying means;

(f) second blend supply means located adjacent said tobacco conveying means and subsequent to said forming means for supplying a second blend to said tobacco conveying means, said second blend being deposited on said tobacco conveying means in the spaced intervals between said formed portions and covering said formed portions carried on said tobacco conveying means to form a longitudi-

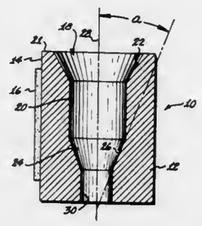
nal layer of said second blend having discrete portions of said first blend at spaced intervals therein;
(g) means for trimming said longitudinal layer to form a trimmed layer of uniform thickness by removing only portions of the second blend;
(h) rod-forming means for receiving said trimmed layer and forming a tobacco rod with a wrapper;
(i) cutter means for cutting said wrapped tobacco rod into segments; and
(j) control means for synchronizing said cutter means with said rod conveying means to cut the tobacco rod in the intervals between each portion including a sensing device located adjacent to said tobacco conveying means subsequent to the transfer of said portions to said tobacco conveying means and prior to said second blend supply means for detecting the location of each formed portion on said tobacco conveying means.

4,516,586
REAMER FOR PIPE
Toshio Koito; Tetsuo Koito, and Miyoko Koito, all of Tokyo, Japan, assignors to Yugen-gaisha Koito-Seisakusho; Yugen-gaisha Koito-Seimitsu and Yugen-gaisha Koito-Denki, all of Tokyo, Japan
Filed May 20, 1983, Ser. No. 496,714
Claims priority, application Japan, Jun. 25, 1982, 57-94524[U]
Int. Cl.³ A24F *9/10*
U.S. Cl. 131—246 **9 Claims**



1. A pipe reamer comprising a pair of reamer plates, each of said plates having a pair of end sections, pivotal means at one end section of each of said blades for pivotably mounting said pair of plates for pivotal movement in an increasing angular direction and in a decreasing angular direction, the other end section of one of said plates having a circular mounting opening, an adjusting member having a circular part rotatably disposed in said mounting opening, said adjusting member having a first part eccentrically disposed relative to said circular part, the other end section of said other plate having an adjusting hole, a clamp member justaposed to said other plate and having a second part passing into said adjusting hole, thread means on said first and second parts threadably engaging said first and second parts, said adjusting member being rotatable in said mounting opening to eccentrically displace said first part so that the threadedly engaged second part is concurrently displaced, whereby the displaced second part engages said adjusting hole to pivot said other plate relative to said first plate, said thread means being constructed such that application of an external force tending to pivot said two plates in said decreasing angular direction tightens said thread means such that said adjusting member and said clamp member increasingly wedge said two plates therebetween to thereby resist pivoting of said two plates in said decreasing angular direction.

4,516,587
CIGARETTE EXTINGUISHER
Victor R. Eastridge, and John C. Milani, both of P.O. Box 3291, Scottsdale, Ariz. 85257
Filed May 23, 1983, Ser. No. 496,859
Int. Cl.³ A24F *13/18*
U.S. Cl. 131—256 **10 Claims**



1. A cigarette extinguishing device comprising:
(a) a housing having an upper surface and an opposed lower surface with a bore extending therebetween;
(b) said housing configured to provide said bore with a cylindrical bore portion the upper end of which opens onto the upper surface of said housing, said cylindrical bore portion adapted to removably receive the substantially cylindrical body portion of a cigarette to be extinguished;
(c) said housing configured to form a frusto-conical bore portion at the lower end of said cylindrical bore portion for nestingly receiving and circumscribingly engaging at least a portion of the conical surface of the burning tip of the cigarette removably receivable in said cylindrical bore portion; and
(d) said housing configured to form a reduced diameter cylindrical bore portion which extends from said frusto-conical bore portion and opens onto the lower surface of said housing.

4,516,588
PROCESS FOR IMPROVING THE FILLING CAPACITY OF TOBACCO, IN PARTICULAR CUT TOBACCO LEAF
Gert Rudolph, Hamburg, and Günther Rodemeyer, Seevetal, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten Fabriken G.M.B.H., Hamburg, Fed. Rep. of Germany
Filed Dec. 29, 1982, Ser. No. 454,373
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1982, 3200305
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **9 Claims**

1. In a process for improving the filling capacity of tobacco for use in cigarettes or cigars in which raw tobacco is moistened, stripped and cut and, after impregnation with a vaporizable expanding agent, is subjected to an expansion process, the improvement which comprises adding an anti-oxidant, in the amount of 0.0001% to less than 0.1% by weight relative to the raw tobacco weight, to the tobacco before said expansion.

4,516,589
NON-COMBUSTIBLE CARBONIZED CIGARETTE FILTERS
Norman B. Rainer, Richmond, and Charles S. McClung, Prince George, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed May 18, 1982, Ser. No. 379,556
Int. Cl.³ A24D *3/06, 1/18*
U.S. Cl. 131—331 **8 Claims**

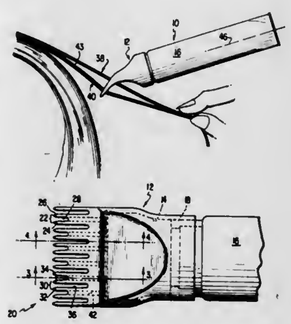
1. A non-combustible filter for a smoking article, comprising up to about a 40 mm length of a carbonized material prepared by:

(a) contacting a sheet of porous cellulosic web material with a film-forming aqueous solution of an inorganic salt selected from the group consisting of alkali metal and ammonium silicates, carbonates, hydrophosphites, diphosphites, phosphites, hypophosphites, orthophosphates, diphosphates, triposphates, polymetaphosphates, peroxymonophosphates, peroxydiphosphates, orthoborates, metaborates, tetraborates and mixtures thereof so that the web material contains at least about 1% of the salt on a dry weight basis; then
(b) laterally gathering and compressing the cellulosic material into a substantially cylindrical coherent bundle; and then
(c) pyrolyzing the cellulosic material in an inert atmosphere at a temperature of at least about 700° C. such that at least about 15% of the initial weight of the cellulosic material remains after pyrolysis.

4,516,590
AIR-CURED BRIGHT TOBACCO FILLER, BLENDS AND SMOKING ARTICLES
Daniel M. Teng, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Nov. 26, 1982, Ser. No. 444,928
Int. Cl.³ A24B *3/14*
U.S. Cl. 131—352 **18 Claims**

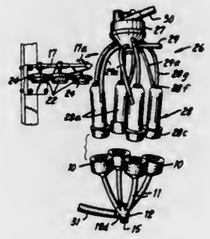
1. A tobacco filler for smoking articles, comprising air-cured bright tobacco filler having, on a dry weight basis, a total reducing sugar content within the range of from 0 to about 6%, a chlorogenic acid content within the range of from 0 to about 0.4%, a rutin content within the range of from 0 to about 0.2%, a hot water solubles content within the range of from about 45 to about 55%, a total ash content within the range of from about 12 to about 26%, a combined proline and threonine content within the range of from 0 to about 1 mg/g, a combined aspartic acid and asparagine content with the range of from about 0.5 to about 1.7 mg/g, and a combined glutamic acid and glutamine content within the range of from about 0.5 to about 1.6 mg/g.

4,516,591
HIGHLIGHTING APPLICATOR
Melvin C. Hierholzer, 4213 Beard, Corpus Christi, Tex. 78413
Filed Mar. 14, 1983, Ser. No. 475,028
Int. Cl.³ A45D *24/22*; B43K *1/06*
U.S. Cl. 132—88.7 **18 Claims**



1. An applicator for distributing a hair treating material onto less than all of the hair of an individual, comprising
a body having a chamber therein and including means for attaching the body to a material supply container in communication with the chamber; and
a comb structure carried by the body for distributing the material, including
a plurality of first teeth pairs having therebetween roots of a first depth and a plurality of second teeth pairs having therebetween roots of a second depth, different from the first depth, and
conduit means commuicating with the chamber and opening through the roots between at least some of the first teeth pairs, there being no communication between the chamber and the space between the second teeth pairs.

4,516,592
MILKER UNIT WASHER
Per-Erik Schultz, Aelvsjoe, Sweden; Mofazzal H. Chowdhury, Kansas City, Mo., and Clayton B. Neff, Shawnee, Kans., assignors to Alfa-Laval, Inc., Tumba, Sweden
Filed Feb. 29, 1984, Ser. No. 584,893
Int. Cl.³ A01J *5/00*; B08B *3/04, 9/00*
U.S. Cl. 134—169 C **12 Claims**

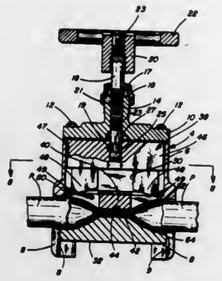


10. In a washing device for a milker unit, the combination of four teat cup receivers each having a receiving space and a flexible annular flange defining an opening dimensioned for entrance of a teat cup into said space, a distributor forming a chamber and having a valve seat and a washing liquid inlet leading to the chamber through said seat, tubes through which the respective receivers communicate with said chamber and from which said distributor is suspended, a valve element in said chamber operable by a vacuum in said inlet to close said inlet by engaging said seat, said valve element being movable in response to a vacuum in said receiver spaces to disengage said seat and open said inlet, a plurality of holders for the respective receivers and a bracket on which said holders are mounted, each holder including a generally annular member and a rod on which said annular member depends from the bracket, each annular member having a part of greater diameter than said receiver opening and engageable with said receiver flange from within said space to support the receiver, said annular member being dimensioned for insertion through said receiver opening by flexing of said receiver flange.

4,516,593
PLUMBING REPAIR DEVICE AND METHOD
Anthony Muto, 2817 Aberdeen Ave., Ashtabula, Ohio 44004
Filed May 14, 1984, Ser. No. 609,827
Int. Cl.³ F16K *43/00*; F16L *55/14*
U.S. Cl. 137—15 **9 Claims**

9. A method for selectively controlling the fluid flow through a deformable pipe section made from a readily deformable materials such as copper or the like, said method comprising supplying a portable fluid flow control device to a predetermined selected area of said pipe section to be isolated, said device including a unitary piercing member having an integral pair of laterally spaced, oppositely disposed blade-like elements disposed within a hollow cavity of said control device for vertical movement toward and away from said pipe section so as to form by a simultaneous piercing action lengthwise extending openings therein, said piercing member occupying generally the full transverse area of said cavity during said vertical movement of said piercing member, and rib means being disposed relative to said blade-like elements for substan-

tially simultaneously crimping said pipe section into a closed condition, intermediate said openings thereof to automatically



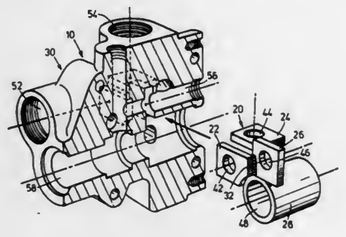
close-off and then re-establish fluid flow around the crimped area upon formation of said openings by said piercing member.

4,516,594

MULTI-PART VALVE WITH A VALVE SEAT SKELETON AND CAST VALVE BODY

John C. Martin, and Paul H. Martin, both of Toronto, Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Filed Apr. 3, 1984, Ser. No. 596,311
Int. Cl.³ F16K *27/00*; B22D *19/00*
U.S. Cl. 137—15 **8 Claims**



1. A multi-port valve comprising:

(a) a valve seat skeleton comprising a plurality of wear-resistant members each having a wear-resistant operative surface formed thereon, said wear-resistant members being secured to one another to retain said wear-resistant operative surfaces thereof in a predetermined fixed arrangement,

(b) a valve body of readily castible material cast about said skeleton, said valve body having a plurality of valve passages formed therein, at least one of said valve passages opening to expose each wear-resistant operative surface for engagement by a movable valve component mounted in each valve passage to bear against and move relative to each wear-resistant operative surface in use.

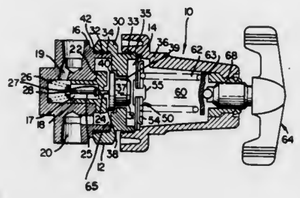
4,516,595

GAS PRESSURE REDUCING REGULATOR AND ADAPTER

Byron H. Acomb, Florence, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 5, 1983, Ser. No. 510,732
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—73 **7 Claims**

1. A gas pressure reducing regulator in combination with an adapter for minimizing the potential danger from the occurrence of a regulator burnout comprising: a regulator body having an inlet opening adapted to be connected to a source of relatively high pressure gas containing oxygen; an outlet opening for discharging said gas at a relatively controlled reduced pressure; a valve chamber in said regulator body; a valve assembly mounted in said valve chamber and having a valve nozzle, a valve seat and a slidable valve member; a push pin extending from said slidable valve member through said valve seat; a bonnet having a bonnet chamber; a diaphragm assembly having a flexible diaphragm for forming a diaphragm chamber between said bonnet chamber and said valve chamber and with said adapter comprising: connecting means for removably coupling said regulator body to said bonnet and for forming an isolation chamber for isolating said valve assembly from said



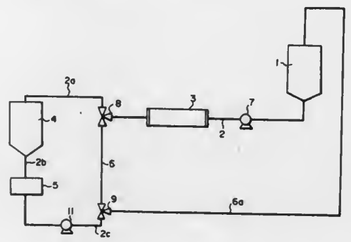
diaphragm assembly in response to a regulator ignition, said isolation chamber being in open communication with said diaphragm chamber during normal operation of said regulator; and a free floating plunger slidably mounted in said connecting means and extending between said push pin and said diaphragm assembly for moving said diaphragm assembly in response to the movement of said push pin during normal operation of said regulator and for sealing off said isolation chamber from said diaphragm chamber in response to an ignition in the regulator body.

4,516,596

SYSTEM FOR CLEANING A THREE-WAY VALVE

Ko Sugisawa; Kazuya Sekiguchi; Masao Taguchi; Masayuki Nakatani, and Hitoshi Iwata, all of Higashiosaka, Japan, assignors to House Food Industrial Company, Ltd., Osaka, Japan

Filed Jun. 22, 1984, Ser. No. 623,374
Claims priority, application Japan, Jun. 22, 1983, 58-95955[U]
Int. Cl.³ B08B *9/06*
U.S. Cl. 137—240 **6 Claims**



1. In a system having first, second and third pipes connected respectively to first, second and third ports of a three-way valve;

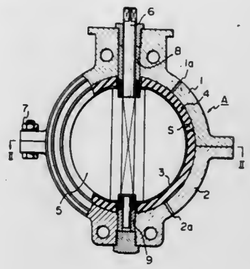
a system for cleaning said three-way valve comprising a by-pass pipe adapted to be connected at its one end to one of the second and third ports after disconnecting the associated one of the second and third pipes therefrom and at its other end to the other of the second and third pipes, whereby a cleaning fluid can be made to flow in either direction between and only between said first pipe and said other of the second and third pipes depending on the position of the valve.

4,516,597

ANTICORROSIVE BUTTERFLY VALVE

Tomoyuki Ueda, Nobeoka, Japan, assignor to Asahi Yukizai Kogyo Co., Ltd., Japan

Filed Apr. 1, 1983, Ser. No. 481,388
Int. Cl.³ F16L *27/00*
U.S. Cl. 137—314 **6 Claims**



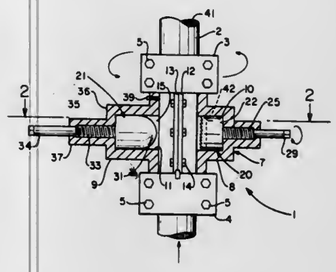
1. An anticorrosive butterfly valve comprising a valve body, a fluid passageway within said valve body, and a valve disk mounted for rotation within said passageway about an axis located at right angles to the axis of the passageway, the valve body being adapted to carry an annular valve seat ring which projects within the interior of said passageway, said valve disk being composed of polytetrafluoro ethylene and said valve seat ring being formed of an elastic layer lined by a polyvinylidene difluoride layer, said elastic layer of the valve seat ring being made from a material having a higher moisture permeability than that of polyvinylidene difluoride; on the outer surface of the valve seat ring, circular grooves are provided annularly around openings for receiving the upper and lower ends of a valve stem of the valve disk; on the outer surface of the elastic layer facing the valve body, a plurality of parallel annular grooves are provided, said circular and parallel grooves being communicated with each other such that a continuous fluid path is formed in the outer surface of the valve seat ring; and a plurality of vents for moisture are passed through the wall of the valve body substantially in radial directions toward the axis of the valve body and are communicated with said circular and parallel grooves.

4,516,598

WELL SAFETY VALVE

Adam E. Stupak, R.D.-1, Box 395-G, Toledo, Oreg. 97391

Filed Oct. 24, 1983, Ser. No. 544,982
Int. Cl.³ F16K *43/00*; F16L *55/10*
U.S. Cl. 137—318 **16 Claims**



1. A safety valve of the type adapted to be mounted on a submerged section of a well pipe including:

(a) a pair of vertically spaced positioning blocks adapted to be mounted on a submerged section of well pipe;

(b) a collar adapted to be rotatably mounted on the well pipe between the pair of positioning blocks, said collar being formed with a pair of diametrically opposed fluid tight chambers adapted to communicate with the well pipe when mounted on said pipe;

(c) cutter means movably mounted in one of the collar chambers for cutting an opening in the well pipe, with said cutter means being constructed and arranged to be operated externally of said collar; and

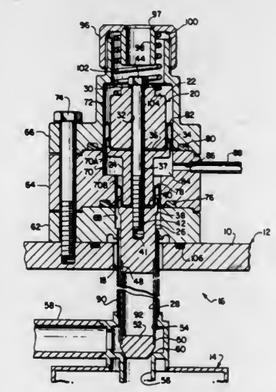
(d) plug means movably mounted in the other of the collar chambers for extending into the bore of the well pipe through the opening formed therein by the cutter means after rotation of the collar on the well pipe for sealing said pipe bore to prevent flow of a fluid therethrough.

4,516,599

VALVE MECHANISM FOR LOW TEMPERATURE APPLICATIONS

Shyunichi Nakaya, Kawasaki, and Hiroyuki Nakamura, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 23, 1982, Ser. No. 351,509
Claims priority, application Japan, Feb. 27, 1981, 56-28213
Int. Cl.³ F16L *7/00*
U.S. Cl. 137—375 **15 Claims**



1. A valve mechanism for low temperature applications comprising:

an outlet for a low temperature fluid;

valve means for opening and closing said outlet;

an axially movable rod having one end secured to said valve means and the other end extending into a normal temperature zone;

means for holding said rod;

resilient means located in said normal temperature zone for urging said rod toward a position wherein said outlet is closed by said valve means and for compressing in response to pressure of said low temperature fluid against said valve means in excess of a desired pressure value to permit said rod and said valve means to be displaced to open said outlet and allow excess pressure to be released; and

means for selectively applying a pressurized fluid to said rod to exert a force counter to said resilient means, whereby said rod and valve means may be displaced and said outlet opened;

said means for selectively applying a pressurized fluid to said rod comprising a pressure chamber defined by the outer surface of said rod, the inner surface of said rod holding means and first and second flexible partitions sealingly extending between said rod and said rod holding means, said pressure chamber having a larger diameter end away from said valve means sealed by said second flexible partition and a smaller diameter end toward said valve means sealed by said first flexible partition, and gas passage

means for introducing a pressurized fluid into said pressure chamber;

said rod comprising first, second and third rod portions axially connected to each other, said second flexible partition being sandwiched between said first and second rod portions and said first flexible partition being sandwiched between said second and third rod portions, the end of said second rod portion oriented in the direction of the force exerted by said resilient means having a smaller diameter than the end of said second rod portion oriented in the direction counter to the direction of the force exerted by said resilient means;

said rod holding means comprising first, second and third rod holding members axially connected to each other, said first flexible partition being sandwiched between said first and second rod holding members and said second flexible partition being sandwiched between said second and third rod holding members, said second rod holding member comprising an axial through bore having a smaller diameter at its end oriented in the direction of the force exerted by said resilient means and a larger diameter at its end oriented counter to the force exerted by said resilient means.

4,516,600

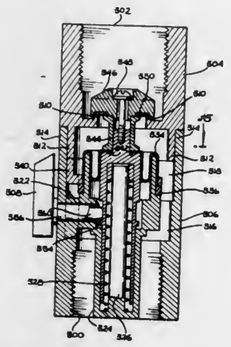
PRESSURE REGULATING VALVES

Oded E. Sturman, 18241 Andrea Cir. N.; Benjamin Grill, 9819 Etiwanda Ave., both of Northridge, Calif. 91329, and Lynn Harrison, 23554 Cherry St., Newhall, Calif. 91321

Continuation-in-part of Ser. No. 378,139, May 14, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 585,379

Int. Cl.³ F16K *31/14*

U.S. Cl. 137—495 **9 Claims**



1. A pressure regulating valve for receiving fluid from a fluid source and controllably delivering fluid at a regulated pressure comprising first and second housing members, each having first and second ends, said first housing member having an inlet port at said first end thereof, said second housing member having an outlet port at said first end thereof and a valve seat having a valve seat opening therethrough adjacent said second end and facing said first end thereof, said first and second housing members being joined adjacent said second ends thereof so that said inlet port, said outlet port and said valve seat are all coaxial, said first housing member having a spring housing integral therewith and supported internally to said first housing member on at least one support so as to allow fluid flow therebetween, said spring housing being closed adjacent the inlet port end thereof, a compression spring within said spring housing, a valve closure assembly fitting at least in part within said spring housing and extending through said valve seat opening, said valve closure assembly having a valve closure member facing said valve seat, said valve closure assembly being moveable along the axis of said valve seatbetween a closed position with said valve closure member engaging said valve seat and an open position with said valve closure member displaced from said valve seat and toward said second port, said compression spring urging said valve closure assembly to said open position, a diaphragm sealingly fastened adjacent its outer periphery to said spring housing and sealingly fastened adjacent its inner periphery to said valve closure assembly, thereby sealing said spring housing and isolating said spring from fluid in said inlet and outlet ports, and cam means extending radially through said first housing means, said at least one spring housing support and said spring housing, said cam means being a manually operable means for engaging said valve closure assembly and forcing said assembly to said closed position.

4,516,601

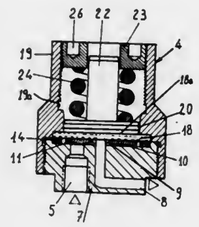
MINING CYLINDER HYDRAULIC SLIDE VALVE

Roger Chanal, Saint Etienne, and Daniel Cotte, Chambon Feugerolles, both of France, assignors to Bennes Marrel, France

Filed Jun. 30, 1982, Ser. No. 393,977

Int. Cl.³ F16K *17/04, 31/122*

U.S. Cl. 137—510 **10 Claims**



1. A hydraulic slide valve for a cylinder of a mine prop comprising:

valve body means having a valve housing receiving surface, a recess with a recess surface, first passage means communicating with said recess through said recess surface, hub means upstanding a hub height above said recess surface along a central axis, said hub means having an annular seating surface at said hub height and second passage means therethrough, said first passage means adapted to communicate with a source of fluid pressure and said second passage means adapted to communicate with a fluid drain means;

valve housing means having a bottom end and a valve body end, said valve body end comprising a valve body receiving surface secured to said valve housing receiving surface of said valve body means, said valve housing means further comprising a stepped diaphragm bore and a piston bore, said stepped diaphragm bore having an internal seating shoulder and defining a diaphragm chamber facing said recess, and said piston bore being axially disposed between said internal seating shoulder and said bottom end and defining a piston chamber radially inboard of said stepped diaphragm bore;

resilient circular diaphragm means having a piston side, a sealing side, and an outer rim portion secured in said diaphragm chamber against said internal seating shoulder;

piston means slidably received in said piston bore for axially engaging said piston side of said resilient circulr diaphragm means;

spring means disposed between said bottom end and said piston means urging said piston means against said piston side of said resilient circular diaphragm means to bias said sealing side of said resilient circular diaphragm means to normally seat against said annular seating surface of said valve body means of said hub means and thereby close said second passage means from said recess, whereby said second passage means are sealed until said fluid pressure communicated to said first passage means exceeds a predetermined fluid pressure and to allow said fluid pressure when in excess of said predetermined fluid pressure to urge said sealing side of said resilient circular diaphragm means away from said annular seating surface to thereby open said second passage means and communicate said recess and said first passage means with said fluid drain means until said fluid pressure is reduced below said predetermined fluid pressure;

outer washer means disposed in said recess comprising an outer member secured to a resilient inner sealing member, said outer member securing said outer rim portion of said resilient circular diaphragm means against said internal seating shoulder and said resilient inner sealing member haaving a first and a second sealing lip with an axial separation therebetween, said first sealing lip continually sealingly engaging said recess surface of said recess and said second sealing lip continually sealingly engaging said sealing side of said resilient circular diaphragm means, whereby said first and said second sealing lips cooperate with said recess surface and said resilient circular diaphragm means to seal said first passage means from said valve housing receiving surface and said valve body receiving surface; and

inner washer means having an upper and a lower surface disposed in said recess radially inboard of said outer washer means, said lower surface facing said recess surface and having embossment means protruding from said lower surface against said recess surface to space said recess surface axially from said lower surface and to thereby allow said first passage means to communicate with said recess, said inner and outer washer means cooperating with said annular seating surface to normally support substantially the entire said sealing side of said resilient circular diaphragm means at a washer height above said recess substantially the same as said hub height.

4,516,602

DISC VALVE

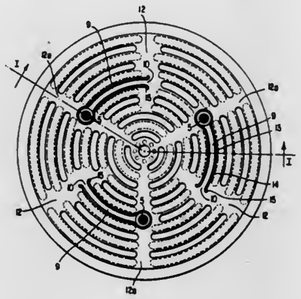
Karl Lüdenbach, Engelskirchen, and Erhard Huhn, Overath, both of Fed. Rep. of Germany, assignors to Dienes Werke für Maschinenteile GmbH & Co. KG, Overath, Fed. Rep. of Germany

Filed Nov. 1, 1983, Ser. No. 547,567

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241050; Mar. 1, 1983, 3307118

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—512.15 **5 Claims**



1. A disc-valve of the type having a circular valve-plate disposed between a seat-plate and a catch-plate in which the valve-plate comprises a plurality of radial webs which are connected by ring segments to form circular segment-shaped flow openings which correspond to ring segments and openings in the seat-plate, in the catch-plate, and in any spring-or damping-plates, the disc-valve distinguished by the fact that:

the valve plate is guided by a plurality of bow-shaped guides, each guide extending in a circumferential path from a first of said webs to a second of said webs, each guide shaped by a clearance from the valve-plate and having a fixed end and a free end, each fixed end flanked by a rounded extra clearance in the middle of its respective first web whereby each guide has clearance at least above one ring segment of the seat-plate; the free end of each guide forming a clamping ring which surrounds a mounting bolt and is held in position by a plurality of excursion spacers, said mounting bolt passing through the respective second web associated with the guide,

the guide so configured that the edges of the surrounding clearance are positioned above and between the edges of the adjacent ring segment of the seat-plate.

4,516,603

CONTROL ARMATURE INSERTED IN THE FLOW ROUTE OF A SYSTEM FOR TRANSFERRING PRESSURE MEDIA IN A GASEOUS AND/OR LIQUID GASEOUS STATE

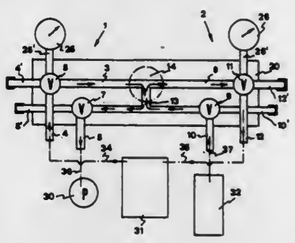
Bruno A. Mock, Wylstr. 15, 6052 Hergiswil, Switzerland

Filed Jun. 29, 1983, Ser. No. 509,257

Claims priority, application Switzerland, Aug. 16, 1982, 4888/82

Int. Cl.³ F16K *37/00, 1/00*

U.S. Cl. 137—559 **5 Claims**



1. A control valve assembly comprising:

a casing of generally prismatic shape having a front face;

a low-pressure fitting extending into said casing at a low-pressure side thereof and connectable to a suction pump;

a high-pressure fitting extending into said casing at a high-pressure side thereof and connectable to a source of pressure medium;

respective fittings connectable to a unit to be charged with said medium on said high-pressure and low-pressure sides of said casing;

first respective valves in said casing connected to each of said charging fittings;

a first conduit between the first valves connected to said fittings;

a second conduit between respective second valves connected to charging said high-pressure and low-pressure fittings;

a common connection between the first and second conduits forming respective T-junctions therewith; and

a sight glass in said face of said casing exposing to view at least the T-junction of said common connection with said first conduit, said common connection forming with said first-conduit a junction which curves at the latter T-junction.

4,516,604

PILOT OPERATED SUPPLY AND WASTE CONTROL VALVE

John F. Taplin, 15 Sewall St., West Newton, Mass. 02165

Filed Apr. 20, 1984, Ser. No. 602,438

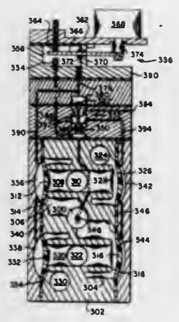
Int. Cl.³ F15B *13/043*

U.S. Cl. 137—596.15 **15 Claims**

14. A pilot operated fluid supply and waste valve of the type comprising two main diaphragm valves communicating with a

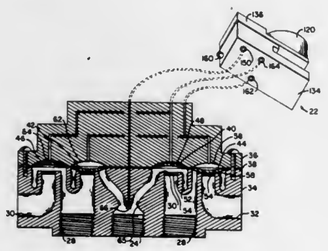
load port for alternately supplying and exhausting supply fluid to and from said load port, the supply fluid having a supply pressure, and control means for controlling fluid pressure on the control faces of main valving diaphragms incorporated in said main diaphragm valves to open and close a supply diaphragm valve communicating with said load port while conversely closing and opening a waste diaphragm valve communicating with said load port, the control means comprising:

a pilot valve providing an output pilot control pressure having a value derived from and about equal to the supply



pressure of said supply fluid when the pilot valve is in a first position and a lower pressure value when the pilot valve is in a second position, wherein said pilot control pressure is applied on the control face of one of the main valving diaphragms and said pilot control pressure is also applied to one side of a pressure driven element having lower pressure constantly applied to a second side of said pressure driven element opposite the first side, wherein said pressure driven element actuates a supply and waste type pressure reversing valve to apply reversed pressure to the control face of the other main valving diaphragm.

4,516,605
FOUR-WAY CONTROL VALVE
John F. Taplin, 15 Sewall St., West Newton, Mass. 02165
Filed Apr. 20, 1984, Ser. No. 602,654
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—596.15 **8 Claims**



1. A pilot operated supply and waste control valve of the type comprising two main valves associated with at least one load port for alternately supplying and exhausting a supply fluid to and from each load port and control means for applying fluid control pressure to open and close a main supply valve associated with each load port while conversely closing and opening a main waste valve associated with each load port, wherein:

each main valve comprises a diaphragm which presses against a valve seat with a high pressure applied to a control surface of the diaphragm opposite to the valve seat; and

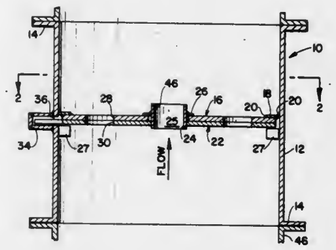
the control means is a four way pilot valve comprising:

first and second output pressure chambers, each having a high pressure inlet port in communication with a source of said supply fluid, a low pressure inlet port and an output control conduit for applying opposite high and low pressures to the control surfaces of the diaphragms of said main supply and waste valves associated with each load port;

a valve member associated with each output pressure chamber, each valve member comprising an arm having a first end thereof positioned between the high and low pressure inlet ports, a second end, and a fluid sealed pivot between the first and second ends, the arm being pivoted about the pivot to move said first end alternately against the high and low pressure inlet ports to alternately close the ports; and

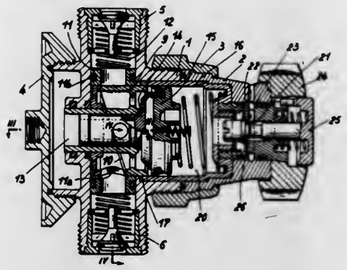
one actuator for simultaneously driving the second ends of the pivotal arms of the respective valve members such that the high pressure port to one output pressure chamber is closed by one valve member arm as the opposite, low pressure port to the other output pressure chamber is closed by the other valve member arm such that one of the main supply and waste valves of each load port is opened due to the resultant pressure in one of the chambers and the other of the main supply and waste valves of each load port is closed due to the resultant pressure in the other chamber.

4,516,606
VARIABLE ORIFICE VALVE ASSEMBLY
Arthur C. Worley, Mt. Tabor, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Feb. 16, 1983, Ser. No. 467,089
Int. Cl.³ F16K *3/08*
U.S. Cl. 137—625.3 **10 Claims**



1. A disc valve for controlling the flow of a fluid solids mixture such as present in petroleum process equipment comprising a cylindrical tubular conduit, outwardly extending flange means at opposite ends of said tubular conduit for mounting said tubular conduit in a process conduit, a flat planar first orifice plate extending transversely across said tubular conduit and welded thereto, said first orifice plate including a circular central aperture and a plurality of spaced orifices disposed circumferentially about said central aperture, a flat planar second orifice plate having a plurality of orifices conforming in size and spacing to said orifices in said first orifice plate, said second orifice plate including a cylindrical tubular support means fixedly attached thereto and extending through said central aperture for suspending and pivotally mounting said second orifice plate from said first orifice plate, and means engaging a peripheral edge of said second orifice plate for rotationally adjusting the relative positions of the orifices in said first and second orifice plates.

4,516,607
FAUCET MIXER
Lucien Patient, Montrouge, France, assignor to Les Robinets Presto, Montrouge, France
Continuation of Ser. No. 960,551, Nov. 14, 1978, abandoned. This application Oct. 22, 1980, Ser. No. 199,668
Claims priority, application France, Nov. 23, 1977, 77 35147
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—637.4 **1 Claim**



1. A faucet comprising a body comprising:

(a) a first body part adapted to be releasably attached to a second body part, wherein said first body part comprises:

(i) means for mounting said first body part on a mounting base on a wall at one end thereof;

(ii) two feed openings comprising means for receiving hot and cold water pipes, respectively, on opposite sides of said first body part;

(iii) an outlet for water from said hot and cold water pipes;

(iv) a cylindrical bore positioned between said feed openings at an anterior end of said first body part, comprising means for receiving water from said hot and cold water pipes;

(v) a cylindrical cock shell having an oblique opening therein and adapted to rotate in said bore, wherein said cock shell comprises means for producing any desired mix of hot and cold water in said cylindrical bore;

(vi) a first cylinder, attached to said cock shell, one end of which communicates with said two feed openings, the other end of which communicates with said outlet;

(vii) a valve, adapted to reciprocate in said cock shell cylinder, into an open and a closed position, wherein in said open position said valve permits fluid to flow from said two feed openings into said first cylinder and to said outlet, and in said closed position said valve blocks fluid flow from said two feed openings to said first cylinder;

(viii) a second cylinder, an anterior end of which is positioned in and adapted to rotate in said first body part of said body, and a posterior end of which is positioned in and adapted to rotate in said second body part of said body, wherein said second cylinder, at said anterior end thereof comprises means for attachment to one end of said cock shell so that rotation of said second cylinder rotates said cock shell, wherein said second cylinder, at the posterior and the anterior end thereof comprises an opening, and wherein said second cylinder further comprises a piston and having an opening in the center thereof, communicating with said second cylinder and said cock shell, and a spring adapted to bias a posterior end of said piston toward said cock shell, wherein said piston is attached at its anterior end to said valve; and wherein said body further comprises:

(b) a second body part, comprising:

(i) an auxiliary valve stem, attached to the posterior end of said second body part and adapted to rotate therein, wherein said valve stem is attached to the posterior end of said second cylinder such that rotation of said valve stem rotates said second cylinder;

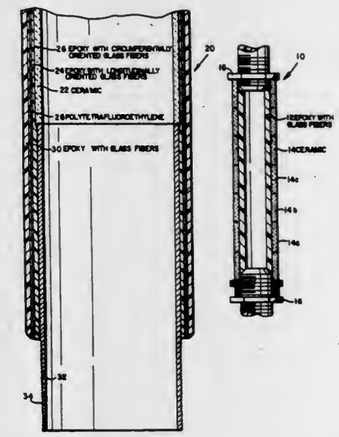
(ii) a knob, attached to said valve stem and attached to said posterior end of said second body part, wherein said knob is adapted to rotate on said second body part, thereby rotating said valve stem;

(iii) a push button, adapted to reciprocate in said knob;

(iv) an auxiliary valve having a shaft at a posterior end thereof, attached to said push button, wherein said auxiliary valve is seated in said auxiliary valve stem and is adapted to reciprocate into a closed position in which said opening in the posterior end of said second cylinder is blocked, and is adapted to reciprocate into an open position in which said opening in the posterior end of said second cylinder is unblocked to permit fluid to flow therethrough; and

(v) elastic means attached to said shaft for biasing said auxiliary valve closed.

4,516,608
TUBULAR MEMBER
Charles H. Titus, Newtown Square, and John K. Wittle, Chester Springs, both of Pa., assignors to Electro-Petroleum, Inc., Wayne, Pa.
Filed Sep. 29, 1982, Ser. No. 427,712
Int. Cl.³ F16L *9/14, 9/10, 11/18*
U.S. Cl. 138—140 **19 Claims**



1. An elongated tubular member resistant to both tensile and compressive deformation and resistant to electrical stress comprised of a first annular layer of electrically non-conducting fiber reinforced organic resin material resistant to tensile deformation and a second annular layer of electrically non-conducting refractory material resistant to thermal degradation and compressive deformation.

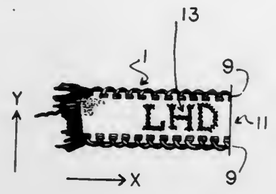
2. An elongated tubular member resistant to both tensile and compressive deformation comprised of a first annular layer of fiber reinforced organic resin material resistant to tensile deformation and a second annular layer of refractory material resistant to thermal degradation and compressive deformation, said first and second layers being bonded together.

3. An elongated tubular member resistant to both tensile and compressive deformation comprised of a first annular layer of fiber reinforced organic resin material resistant to tensile deformation, a second annular layer of refractory material resistant to thermal degradation and compressive deformation; and collar means disposed at opposite ends of the first and second layers and in engagement with the first and second layers, said collar means simultaneously maintaining the first annular layer of fiber reinforced organic resin material in tension and the second annular layer of refractory material in compression.

4,516,609
CROSS STITCH RIBBON

Linda H. Dennis, 519 E. Main St., Spartanburg, S.C. 29302

Continuation of Ser. No. 343,444, Jan. 28, 1982, abandoned. This application Mar. 14, 1984, Ser. No. 589,043
Int. Cl.³ D03D *3/00, 25/00;* D05C *17/00*
U.S. Cl. 139—383 R **10 Claims**

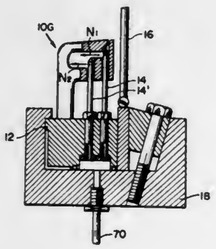


1. A fabric for threaded embellishments, comprising:
a plain consistent weave fabric having no more than sixty (60) warp threads with a continuous filling thread, each of said warp threads forming with said continuous filling thread interstices of sufficient size to permit a needle to pass therethrough;
said fabric having a warp direction defined by said warp threads and a weft direction defined by said filling thread and wherein the distance between said interstices in the warp direction is substantially the same as the distance between interstices in the weft direction;
said fabric being of an open weave to permit needle and thread embellishments through the interstices of said fabric and further comprising a threaded embellishment woven by needle and thread through some of said interstices, said plain consistent weave fabric being substantially no wider than two inches.

4,516,610
WEFT PICKING DEVICE OF AIR JET WEAVING LOOM

Kimimasa Onishi; Takao Takahashi, both of Hachioji, and Masayuki Koriyama, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 1, 1983, Ser. No. 519,396
Claims priority, application Japan, Aug. 4, 1982, 57-135095; Mar. 29, 1983, 58-51463; Mar. 29, 1983, 58-51464; May 24, 1983, 58-91173
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **22 Claims**

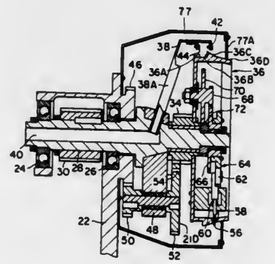


1. A weft picking device of an air jet type weaving loom, comprising:
a plurality of air guide members which are aligned in the weft picking direction, each guide member having therein an air guide opening and a slit through which the weft thread passes out of the opening upon beating operation of the loom, said air guide opening having an inwardly projected land portion with first and second peripheral sides and including an air induction section directly connected to said slit and a weft guiding section connected through said air induction section to said slit, said first peripheral side of said land portion bounding partially said air induction section, while, said second peripheral side of said land portion bounding partially said weft guiding section; and
an auxiliary nozzle associated with one of the air guide members, said nozzle having an air jet opening facing said air induction section so that jet air from said opening advances toward said weft guiding section after passing through said air induction section, the opening being inclined toward the weft picking direction by a given angle with respect to said direction,
wherein an imaginary plane containing said second peripheral side of said inwardly projected land portion intersects the upper perimeter of said weft guiding section at a position spaced from said slit.

4,516,611
WEFT YARN STORAGE UNIT FOR JET LOOMS

Nobuharu Mimura, Aichi; Kazunori Yoshida, Nagoya; Susumu Kawabata, and Junzo Hasegawa, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Nov. 23, 1982, Ser. No. 444,062
Claims priority, application Japan, Nov. 25, 1981, 56-188667
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—452 **21 Claims**



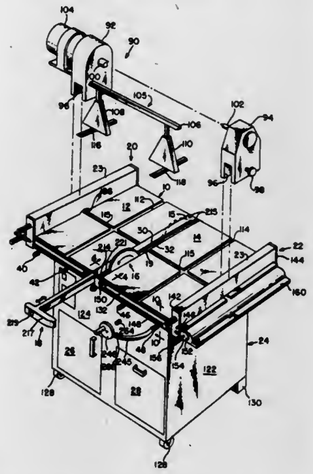
1. A weft yarn storage unit disposed between a yarn supply package and a weft insertion device for storing a weft yarn to be inserted in the warp shed, comprising
a differential yarn feeding device for feeding the weft yarn from said yarn supply package, and
a yarn storage means for winding the fed weft yarn thereabout by co-operating with said differential yarn feeding device, storing the wound weft yarn therearound and unwinding the stored weft yarn therefrom by co-operating with said weft insertion device,
said yarn storage means being continuously rotating in a direction opposite to the direction in which the weft yarn is unwound at a predetermined circumferential speed in response to an insertion speed of the weft yarn
whereby the circumferential speed of the unwound point of the stored weft yarn unwound from said yarn storage means is reduced, so that the centrifugal force applied to the weft yarn and the ballooning are reduced, and the back tension of the weft yarn is reduced to a sufficient degree.

4,516,612
MULTIPURPOSE TABLE SAW

Edward R. Wiley, 9050 - 51st Pl., Mercer Island, Wash. 98040

Filed Sep. 3, 1982, Ser. No. 414,907
Int. Cl.³ B23D *19/00;* B27B *31/00;* B25H *1/00;* B27C *9/00*
U.S. Cl. 144—1 R **30 Claims**

1. A woodworking system for performing multiple woodworking functions, comprising: a base; a saw assembly including a rotary saw blade supported by said base to provide a woodcutting function; a table top supported by said base, said table top including at least one section that is movable to and from an operative position in which one edge thereof fronts upon one side of said rotary saw blade; and a conversion assembly positionable in a space formed between said rotary saw blade and said one edge when said one section is moved from its operative position, and comprising;

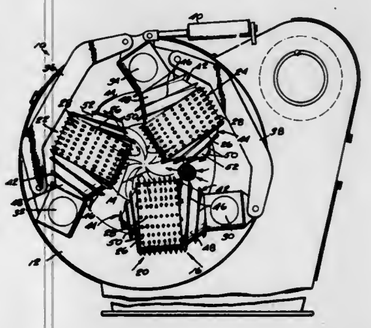


(a) a panel supportable by said base in said space, and securable to said base,
(b) drive means supported by said panel, and
(c) means operatively connected with said drive means providing another woodworking function, whereby a work piece may be subjected to another woodworking function.

4,516,613
DEBARKING MACHINE WITH INFEED ROLLS HAVING HELICAL OFFSET LOG FEEDER BLADES

Walden M. Gaitten, deceased, late of Sylacauga, Ala. (by Dorothy A. Gaitten, executrix), assignor to Kockums Cancar, Corp., Talladega, Ala.

Filed Dec. 9, 1983, Ser. No. 559,816
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—208 E **7 Claims**

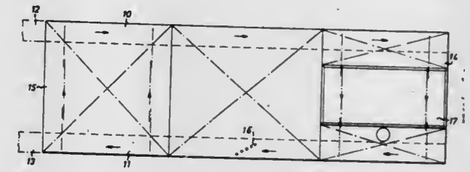


1. In a debarking machine of the type including an annular frame, a plurality of debarking tools, means mounting said tools in annularly spaced relation within said annular frame for rotation together about the axis of said annular frame and for movement toward and away from each other, infeed and outfeed mechanisms for feeding logs through said annular frame so that said tools will engage the exterior periphery of the successive logs and strip the bark therefrom during their movement through the annular frame, said infeed mechanism including three driven infeed spiked rolls arranged so that their spiked peripheries normally engage the exterior periphery of the log in centered relation and move the same axially through said annular frame for debarking by said tools, the improvement which comprises:
said infeed mechanism including helical blade means at the ends of each roll for rotation therewith configured with respect to the direction of rotational movement of the associated roll to move a log engaged thereby in a lateral direction toward the spiked periphery of the roll.

4,516,614
METHOD OF SLICING VENEER

Carl G. Grimhall, Djursholm, and Olav Hoel, Knislinge, both of Sweden, assignors to Tarkett AB, Tonneby, Sweden

Filed Jun. 3, 1983, Ser. No. 500,887
Claims priority, application Sweden, Nov. 3, 1982, 8206810
Int. Cl.³ B27L *5/06*
U.S. Cl. 144—364 **7 Claims**

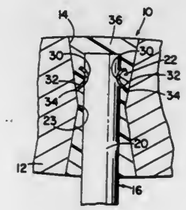


1. A method of slicing veneer by moving logs and at least one veneer knife relatively to one another in the longitudinal or transverse direction of the logs, wherein the log surface portion to be sliced is heated with dry heat for no more than about 27 seconds and to a temperature of about 80° C., immediately before slicing, said heating being controlled to a depth insignificantly greater than the thickness of the veneer to be sliced.

4,516,615
TOOL HANDLE ATTACHMENT

Arnold H. Finn, Farmington, Conn., assignor to Taco Products, Incorporated, Plainville, Conn.

Filed Mar. 1, 1982, Ser. No. 353,357
Int. Cl.³ B25C *1/00*
U.S. Cl. 81—20 **12 Claims**



1. In a tool having a head including an eye, an elongated handle having a grip portion and a connecting portion longitudinally spaced from the grip portion and disposed within the eye, and retaining means for securing the connecting portion to the head, the improvement wherein said retaining means comprises a generally U-shaped metal retaining clip disposed within said eye between said connecting portion and said head and having transversely extending legs straddling said connecting portion, at least one of said legs having a transversely extending first portion engaged with said connecting portion and a transversely extending second portion integrally joined

to said first portion and inclined in a longitudinal direction laterally outwardly and away from the surface of connecting portion and toward said grip portion, said second portion cooperating with an associated portion of said surface to define a generally wedge shaped space therebetween, said second portion terminating at an outer end laterally spaced from the surface of said connecting portion and engaging said head within said eye, said retaining clip coacting in wedging relation with said connecting portion and said head to increase resistance to separation between said handle and said head in response to pull-off force tending to effect said separation.

4,516,616

PORTABLE TOWEL ACCESSORY

Ethel L. Fesler, 15129 SE. 141st Pl., Renton, Wash. 98056

Continuation of Ser. No. 365,534, Apr. 5, 1982, abandoned. This application Jan. 25, 1984, Ser. No. 573,595

Int. Cl.³ A47K *10/12;* **A63B** *57/00, 47/04*

U.S. Cl. 150—52 R **12 Claims**



1. In combination:

a fabric hand towel having a central portion;

a towel cover constructed from a sheet of a material which is at least water-resistant, said towel cover being a separate member from said towel and having a central portion;

connector means detachably connecting together the central portions of the towel and towel cover; and

carrying means connected so that, in use, the towel and towel cover are suspended from the carrying means and said towel and cover each hang freely from said means and each assume the shape of a pleated cone, with the central portions of the towel and cover forming apexes of the cones, whereby the combination may be carried with the towel cover over the towel, and access to the towel may be simply had by a user bringing his or her hands upwardly to the towel, and

wherein the connector means permits movement of the towel and towel cover between a first position in which the towel cover is draped over the towel and a second position in which the towel is draped over the towel cover, and wherein in each position the carrying means presents an upwardly directed handle portion and in each position the towel cover and towel hang freely from said carrying means.

4,516,617

METHOD OF MOUNTING A TIRE

Hans Seitz; Udo Frerichs, both of Langenhagen; Heinz-Dieter Rach, Garbsen, and Siegmund Spendel, Betheln, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,864

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233441

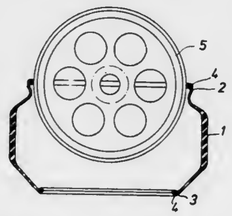
Int. Cl.³ B60C *25/00*

U.S. Cl. 157—1 **6 Claims**

1. A method of mounting a tire on a rim, for both the situation where in the vulcanizing state the axial distance between the bead regions of the tire is considerably greater than the width of the tread, and the bead regions could even be capable of being shifted relative to the bead cores, and the situation where in the vulcanizing state the axial distance between the bead regions is at most approximately the same as the width of the tread; the rim has two seats along its inner periphery, each of said seats being adjacent to a radially inwardly extending rim flange and to a circumferential recessed portion, the diameters of the bases of which are greater than the diameters of said rim seats; said tire also has two seats, one on each bead region in the vicinity of the bead core thereof; said tire and said rim each have an axis of rotation; said method includes the steps of:

providing a relative movement of said rim and said tire toward one another while keeping their axes of rotation at an angle to one another;

introducing said rim into the interior of said tire in the direction of the axis of rotation of said tire, with at least one of



said tire bead regions at this point having assumed an oval shape;

rotating said rim in such a way that the axes of rotation of said rim and said tire are at least parallel to one another, and the rim is in the interior of said tire;

with the seat of a given tire bead region, when viewed in cross section, approximately parallel to an adjacent seat of said rim, introducing a portion of said given bead region into the adjacent recessed portion of said rim;

introducing the remainder of said given bead region, over its entire periphery, into said adjacent recessed portion of said rim;

repeating said last two introducing steps for the other tire bead region; and

inflating said tire with air to bring said seats of said bead regions onto said seats of said rim.

4,516,618

EDGE SEAL AND RERAILER FOR INSULATING SHADE

Bruce C. Gardner, Brattleboro; Daniel L. Ingold, Wardsboro, both of Vt., and David A. May, Brookline, Mass., assignors to Appropriate Technology Corporation, Brattleboro, Vt.

Filed Aug. 6, 1982, Ser. No. 406,064

Int. Cl.³ E06B *1/34, 3/28*

U.S. Cl. 160—120 **13 Claims**

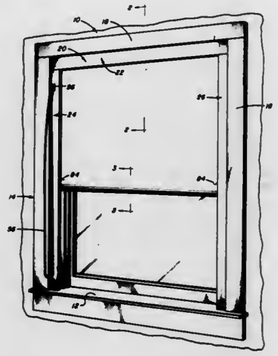
11. An insulating window shade assembly adapted to be mounted on the inside of a window comprising

a shade frame having a pair of opposed vertical side channels open in a direction facing one another and adapted to be mounted on the inside of the window, each channel having inner and outer flanges,

a flexible insulating shade having its ends secured at the top of the shade frame and having spaced apart and parallel insulating shade panels extending downwardly between the side channels, the bottom of the panels being connected together,

means disposed at the bottoms of the panels weighing down the bottom of the shade to cause the panels to lie in vertical planes,

and two pair of generally parallel inner and outer, spring-like vertically extending, elongated sheets, one pair of said sheets lying within each of the channels, each pair of sheets having a generally U-shape to conform to the shape of said channel, and having outer edges facing said panels to form U-shaped edge seals, the edges of the two sheets of each pair being disposed within the channels adjacent the channel flanges, the adjacent sides of the edges of each pair of the sheets being biased against one another and



defining slits within the channels just inside the flanges, the vertical side edges of the panel extending into the slits to be captured between the two edges of the two sheets to form surface to surface edge seals with the sheets.

4,516,619

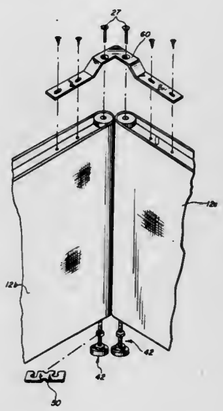
PARTITION SYSTEM AND CONNECTORS THEREFOR

Gene B. Hasbrouck, deceased, Late of Corry, Pa. (by Anna B. Hasbrouck, legal representative), assignor to Hon Industries, Inc., Muscatine, Iowa

Filed Aug. 16, 1982, Ser. No. 408,447

Int. Cl.³ A47G *5/00*

U.S. Cl. 160—135 **9 Claims**



1. A partition system comprising first and second partition panel components arranged in edge-to-edge abutting relation with one another, a glide stem disposed at the bottom of each panel component adjacent the respecttive abutment edge, a connector for spanning the joint between said first and second panel components and detachably retaining said first and second panels in abutting relationship with one another, said connector having spaced open-sided latch portions for engaging said glide stem on each of said panel components whereby said panel components are urged by said connector into such abutting relation.

4,516,620

PRIVACY SCREEN MODULE

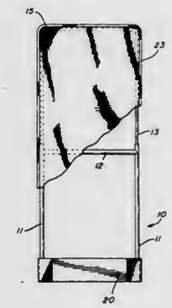
Louise J. Mulhern, 800 Lakeshore Rd., Apt. 59, Dorval, Quebec, Canada

Filed Mar. 9, 1983, Ser. No. 473,669

Claims priority, application Canada, Oct. 21, 1982, 413938

Int. Cl.³ A47G *5/00*

U.S. Cl. 160—351 **16 Claims**



1. A privacy screen module comprising a self supporting open topped stand having hexagonal shape with parallel sides and a pair of end faces at each end, said stand adapted for being filled through said open top with particulate material for thereby providing stability for said stand, the pair of end faces having an included angle not greater than about 90°, said frame having a nontransparent screen surface, the frame having upright members extending from the included angles of the stand, t upright members positioned such that a second screen module can be placed at an angle of up to about 90° on either side from an in-line position adjacent the first screen module, and the upright members of the first and second screen modules retain the same minimum distance apart.

4,516,621

MOULD ASSEMBLY FOR CASTING METAL ARTICLES

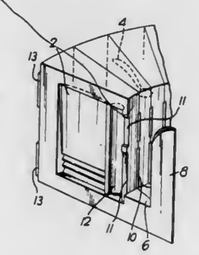
David Mills; Alan D. Kington, and Rodney J. Close, all of Bristol, England, assignors to Rolls-Royce Limited

Filed Apr. 2, 1982, Ser. No. 365,047

Claims priority, application United Kingdom, Apr. 13, 1981, 8111519

Int. Cl.³ B22C *9/08, 9/20*

U.S. Cl. 164—339 **5 Claims**



1. A mould assembly for producing multiple castings comprising a plurality of moulds each defining a mould cavity, means for holding the moulds together in an assembly, a runner passage communicating with all of the mould cavities through at least one slit formed in each mould, and in which the width of each slit lies in the range from 1.25 mm to 0.25 mm.

4,516,622

PLATE MOULD OF A CONTINUOUS CASTING PLANT

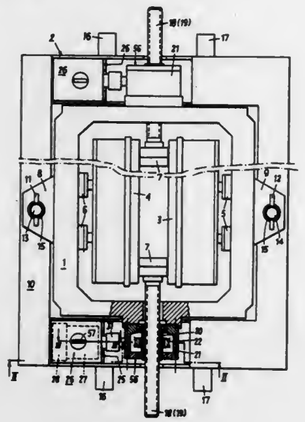
Heinrich Thöne, Stiedelsbach; Reinhard Hargassner, Linz; Gottfried Deibl, Luftenberg, and Günter Holleis, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 2, 1982, Ser. No. 404,502

Claims priority, application Austria, Aug. 21, 1981, 3658/81; May 25, 1982, 2052/82

Int. Cl.³ B22D *11/04, 11/00*

U.S. Cl. 164—416 **16 Claims**



2. In a plate mould of a continuous casting plant, in particular for continuously casting steel slabs, of the type including a reciprocating mould lifting table, a carrying frame mounted on said lifting table, a stationary supporting structure neighboring said lifting table, mould walls supported on said carrying frame and defining a mould cavity, and an adjustment means for displacing at least one of said mould walls transversely to the mould axis for changing the strand cross sectional format, the improvement wherein said adjustment means includes an adjustment drive mounted on said lifting table, and a coupling means for releasably connecting said adjustment drive with said at least one displaceable mould wall.

4,516,623

CONTINUOUS CASTING PLANT

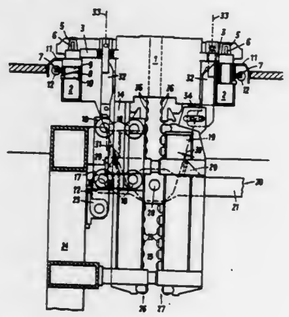
Alois Scheinecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 17, 1982, Ser. No. 419,282

Claims priority, application Austria, Sep. 17, 1981, 4018/81

Int. Cl.³ B22D *11/04*

U.S. Cl. 164—416 **4 Claims**



1. In a continuous casting plant including a mould,

a reciprocating lifting table accommodating said mould, and

a strand guide section following upon said mould, in particular designed as a bending means, the improvement comprising

at least one vertically oriented guiding sword arranged on one of said mould and said strand guide section and roller means, including pairs of rollers, for cooperating with said guiding sword arranged on the other of said mould and said strand guide, said guiding sword being inserted between the rollers of said roller means to adjust the position of said mould relative to said strand guide section, and

means for aligning said lifting table relative to said mould and means for fastening said mould on said lifting table.

4,516,624

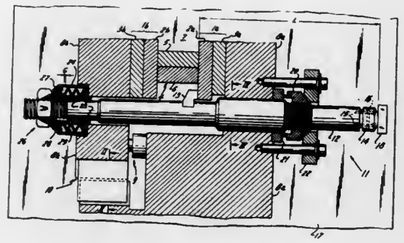
MOLD ASSEMBLY FOR CONTINUOUS CASTING

Michael Poran, Westwood, N.J.; Carl Langner, Monsey, and Chester C. Tobiasz, Elmhurst, both of N.Y., assignors to Concast Incorporated, Montvale, N.J.

Filed Dec. 24, 1981, Ser. No. 334,342

Int. Cl.³ B22D *11/00, 11/04*

U.S. Cl. 164—418 **13 Claims**



1. A mold assembly for a continuous casting apparatus having a guide for a continuously cast strand which issues from said mold assembly, a mold support table for supporting said mold assembly, and the mold support table being provided with a fixed element said mold assembly comprising:

(a) a plurality of plates which cooperate to define a mold cavity; and

(b) a device for both clamping said plates in position relative to one another and aligning said mold cavity with reference to the strand guide, and said device comprising a rod arranged to exert clamping pressure on said plates, and clamping means for applying said clamping pressure, said rod having a tongue which contacts one of said plates, and said rod having a reference end which abuts the fixed element to the mold support table when said assembly is in position for casting and defines a predetermined distance with said tongue to thereby align said mold cavity with reference to the strand guide.

4,516,625

ELECTROMAGNETIC CONTROL SYSTEM FOR CASTING THIN STRIP

John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 10, 1983, Ser. No. 456,687

Int. Cl.³ B22D *11/16*

U.S. Cl. 164—454 **25 Claims**

1. In an apparatus for forming material such as feed ribbon or rod material into a desired thin strip shape, said material including during said forming an upstream and a downstream liquid-solid interface, defining molten material head and solid material portions of said material;

means for electromagnetically containing and forming said material in molten form into said desired thin strip shape,

said electromagnetic containing and forming means comprising: inductor means having at least upstream and downstream sections respectively arranged to be adjacent said upstream and downstream liquid-solid interfaces for applying a magnetic field to said molten material;

means for applying an alternating current to said inductor means to generate said magnetic field, said magnetic field defining a containment zone for said molten material and a gap between said molten material and said inductor means;

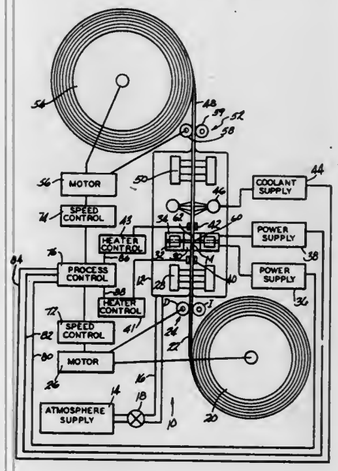
means for delivering said feed material to said containment zone at a delivery rate;

means for withdrawing said desired thin strip from said containment zone at a withdrawal rate;

means for monitoring the location of said upstream and downstream liquid-solid interfaces; and

control means responsive to the monitoring means for controlling the location of said upstream and downstream liquid-solid interfaces so as to reduce variations in the grain structure of the desired thin strip.

16. A process for forming material such as feed ribbon or rod material into a desired thin strip shape, said material including



during said forming an upstream and a downstream liquid-solid interface defining molten material head and solid material portions of said material, said process comprising the steps of:

electromagnetically containing and forming said material in molten form into said desired thin strip shape;

providing at least one inductor having upstream and downstream sections respectively arranged to be adjacent said upstream and downstream liquid-solid interfaces for applying a magnetic field to said molten material head;

applying an alternating current to said upstream and said downstream sections of said at least one inductor to generate said magnetic field, wherein said magnetic field defines a containment zone for said molten material and a gap between said molten material and said inductor;

delivering said feed material to said containment zone at a delivery rate;

withdrawing said desired thin strip from said containment zone at a withdrawal rate;

monitoring the location of said upstream and downstream liquid-solid interfaces; and

controlling the location of said upstream and downstream liquid-solid interfaces so as to reduce variations in the grain structure of the desired thin strip.

4,516,626

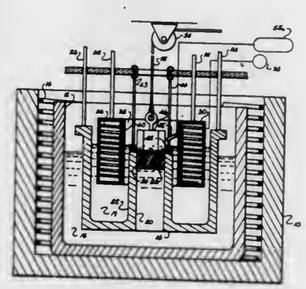
APPARATUS AND METHOD FOR PRODUCING ARTICLE SHAPES FROM A COMPOSITE MATERIAL

Moysey Liberman, 32 Cross Pointe, Greenville, S.C. 29607

Filed Sep. 17, 1982, Ser. No. 419,145

Int. Cl.³ B22D *19/14*

U.S. Cl. 164—461 **16 Claims**



1. Apparatus for producing shaped composite articles from a matrix material and a reinforcing material to reduce the interaction of the materials in producing said articles, said apparatus comprising:

a matrix crucible for containing said matrix material;

furnace means for heating said matrix material to a desired temperature;

capillary means carried by said matrix crucible having an interior side exposed to fluid communication with said matrix material and an exterior side out of contact with said matrix materials; said capillary means including a number of capillary openings for the passage of said reinforcing material;

shape forming means carried adjacent said capillary means:

means for providing a liquid contact zone in which said reinforcing material first contacts said matrix material to form a composite material, said liquid contact zone being defined by a predetermined level of said matrix material between said capillary means and said shape forming means;

liquid level control means for controlling and maintaining said predetermined level of said matrix material in said matrix crucible above the level of said capillary means so that little or no chemical interaction between said reinforcing material and matrix material takes place during the time and space of said contact zone;

means for passing said reinforcing material serially through said capillary openings of said capillary means and said contact zone to form said composite material;

said capillary means preventing physical contact of said matrix material and reinforcing material except above said capillary means in said liquid contact zone;

means for passing said composite material through said shape forming means;

said shape forming means forming said composite material into a desired shape corresponding to said shape forming means; and

means solidifying said composite material passing through said shape forming means producing a solid composite article of a predetermined shape and having predetermined physical and mechanical properties.

4,516,627

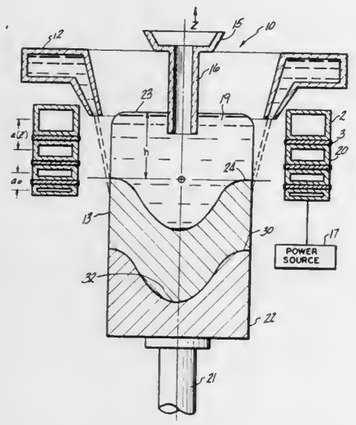
MULTI-TURN COILS OF CONTROLLED PITCH FOR ELECTROMAGNETIC CASTING

Gerhart K. Gaule, Elberon, N.J.; John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 185,114, Sep. 8, 1980, abandoned, which is a division of Ser. No. 9,429, Feb. 5, 1979, abandoned. This application Jun. 25, 1982, Ser. No. 392,049

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—467 **5 Claims**



1. A process for electromagnetic forming of molten material into a casting of desired shape comprising:

establishing a casting zone defining an upstream portion and a downstream portion;

placing a variable-pitch multi-turn inductor in surrounding relation to said zone, said inductor comprising at least three individual turns arranged in a stacked relationship with each turn being oriented parallel to each other such that the center line through the midpoint of each turn is substantially perpendicular to the longitudinal axis through the inductor in the direction of casting, said individual turns being electrically connected in series;

setting the pitch between turns of said inductor substantially in accordance with the formula

$$a_{(z)} = a_o / \sqrt{\frac{h - z}{h}}$$

wherein

$a_{(z)}$=the pitch or spacing between inductor turns at a height z above the solidification interface

a_o=the pitch or spacing between inductor turns at the solidification interface

h=the total molten material head

z=the height above the solidification interface;

passing a current through said inductor to generate an electromagnetic field in said casting zone, said field being characterized by a substantially uniform flux density in a transverse direction and a gradually diminishing flux density in a longitudinal direction toward the upstream portion of said casting zone; and

pouring said molten material into said casting zone;

whereby said molten material is formed into a casting of desired shape having substantially vertical sidewalls.

4,516,628

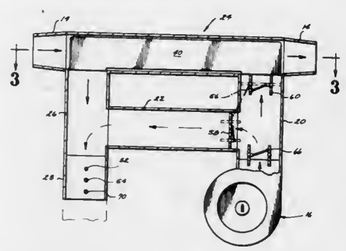
HEAT RECOVERY SYSTEM AND METHOD

William F. Ward, 5947 Winding Way, Sylvania, Ohio 43560

Filed Sep. 30, 1982, Ser. No. 429,967

Int. Cl.³ G05D *23/00*

U.S. Cl. 165—36 **12 Claims**



1. An energy recovery apparatus comprising, in combination, heat exchanger means having a first flow path and an independent second flow path in thermal communication with said first flow path,

blower means for providing a flow of gas through said second flow path of said heat exchanger,

duct means for bypassing said second flow path of said heat exchanger,

duct means for receiving said second flow of gas from said heat exchanger and said bypass duct means,

first damper means for controlling the flow of gas through said bypassing duct means,

second damper means for controlling the flow of gas from said blower means,

third damper means for controlling a flow of gas through said second flow path of said heat exchanger,

first control means for sensing the temperature of said second flow of gas in said receiving duct means and adjusting the positions of said first and said third damper means, and

second control means for sensing the temprature of said second flow of gas in said receiving duct means and adjusting the position of said second damper means.

4,516,629

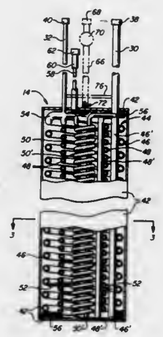
EARTH-TYPE HEAT EXCHANGER FOR HEAT PUMP SYSTEM

Grady A. Bingham, Morehead City, N.C., assignor to Thermal Concepts, Inc., Morehead City, N.C.

Continuation-in-part of Ser. No. 365,992, Apr. 6, 1982, abandoned. This application Sep. 22, 1982, Ser. No. 421,143

Int. Cl.³ F24J *3/02;* **F28F** *13/14*

U.S. Cl. 165—45 **3 Claims**



1. An earth-type heat exchanger unit for a heat pump heating and/or cooling system containing freon type fluid and having above-ground system components, comprising:

a coil assembly formed of heat conductive and corrosion resistant tubing, said coil assembly being located during operation of said system below ground level;

conduit means communicating with and extending from said coil assembly for, during use of said system, conducting said fluid between said coil assembly and said system below ground level;

said coil assembly including means for directing separate portions of said fluid conducted thereto during operation of said system along separate flow paths, said means for directing including a plurality of coils each defining part of respective ones of said flow paths, said coil assembly being of generally cylindrical shape having a central axis, each of said coils being of generally cylindrical shape, each of said coils comprising a plurality of adjacent convolutions, said coils extending in radially spaced and substantially concentric relationship relative to each other about the central axis of said assembly, said adjacent convolutions of each of said coils spaced from each other and said coils being formed of said tubing and in different ones of said coils said tubing being of different diameter.

4,516,630

MOTORCYCLE RADIATOR

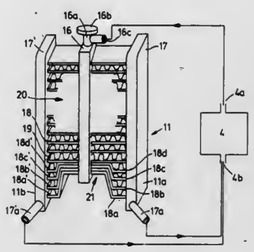
Ken Yamaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,299

Claims priority, application Japan, Jul. 27, 1982, 57-113589[U]; Aug. 11, 1982, 57-121868[U]

Int. Cl.³ F24H *3/00*

U.S. Cl. 165—47 **7 Claims**



1. Heat exchange device for mounting between the power unit and the front fork of a motorcycle, said device comprising an open space of generally inverted U shape in the bottom region of said device, said space being formed by a plurality of tubes bent so as to jointly form said generally inverted U shape, said bent tubes being located beneath a plurality of straight tubes and, together with said straight tubes, constituting the core of said device, whereby sufficient clearance is provided between the front fender of said motorcycle and said heat exchange device to accommodate the expansion and contraction strokes of said front fork.

4,516,631

NOZZLE COOLED BY HEAT PIPE MEANS

Cornelius R. Russell, Goshen, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 318,247, Nov. 4, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 564,662

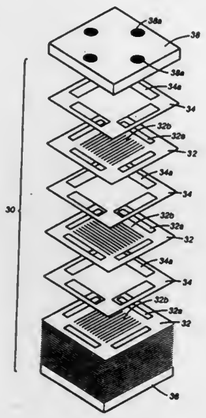
Int. Cl.³ F28D *15/00*

U.S. Cl. 165—47 **3 Claims**

1. In an apparatus embodying a combustion chamber, a nozzle assembly including a hollow member having one end thereof in fluid flow communication with the interior of the combustion chamber, the nozzle assembly being operative to effect the conveyance therethrough as well as the introduction therefrom into the combustion chamber of one of the substances that is required in order to support combustion within the combustion chamber, the improvement comprising heat pipe means operative to effect cooling of the hollow member, said heat pipe means including a member having an evaporator end and a condenser end, said member being mounted in concentric relation to the hollow member, said member including a first wall surface, a second wall surface and a divider wall surface, said first wall surface supported in abutting relation to the exterior of the hollow member, said first wall surface having a length less than the length of the hollow member, said second wall surface extending in parallel relation to said first wall surface and having a length less than the length of said first wall surface, said first wall surface being joined to said second wall surface at said evaporator end of said member, said divider wall surface being perforated for a portion of the length thereof and extending in parallel relation to both said first wall surface and said second wall surface, said divider wall surface having a length less than the length of said first wall surface, said divider wall surface being joined to said first wall suffface at said condenser end of said member and being joined to said second wall surface at a point intermediate the length of said divider wall surface, said divider wall surface being operative to divide said member into a first chamber located between said divider wall surface and said first wall surface and a second chamber located between said divider wall surface and said second wall surface, said heat pipe means further including wick-like material located within said second chamber and at said evaporator end of said member, said heat pipe means also including a reservoir, an inlet pipe and an outlet pipe, said reservoir being located externally of said member, said inlet pipe having one end thereof connected in fluid flow relation to said reservoir and the other end thereof connected in fluid flow relation to said first chamber at said condenser end of said member, said outlet pipe having one end thereof connected in fluid flow relation to said reservoir and the other end thereof connected in fluid flow relation to said second chamber adjacent the point of joinder of said second wall surface to said divider wall surface, said heat pipe means further including heat-dissipating means including a multiplicity of fin-like members mounted on the exterior of said divider wall surface intermediate said inlet pipe and said outlet pipe, said multiplicity of fin-like members being mounted so as to extend outwardly in a radial direction from said divider wall surface, said heat pipe means containing a supply of coolant fluid and having a fluid flow path established therewithin for said coolant fluid, said wick-like material being operative to cause said coolant fluid to flow as a liquid by capillary action through said second chamber along said fluid flow path from said condenser end to said evaporator end of said member, at said evaporator end said coolant fluid absorbing heat from the combustion chamber so as to become vaporized, as vapor said coolant fluid flowing through said first chamber along said fluid flow path from said evaporator end to said condenser end of said member, at said condenser end said coolant fluid being cooled so as to condense, at said condenser end said coolant fluid flowing from said first chamber through said inlet pipe to said reservoir and through said reservoir to said outlet pipe and from said outlet pipe into said second chamber, said coolant fluid being continuously circulated through said second cham-

ber and said first chamber so as to thereby effect a cooling of the hollow member that is surrounded by said heat pipe means.

4,516,632
MICROCHANNEL CROSSFLOW FLUID HEAT EXCHANGER AND METHOD FOR ITS FABRICATION
Gregory W. Swift, Los Alamos; Albert Migliori, Santa Fe, and John C. Wheatley, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Deparment of Energy, Washington, D.C.
Filed Aug. 31, 1982, Ser. No. 413,635
Int. Cl.³ F28F *3/00, 3/08*
U.S. Cl. 165—167 **3 Claims**



1. A crossflow fluid heat exchanger comprising a stack of thin metal sheets brazed together so as to be bonded by integral metal-to-metal bonds, said stack including alternating slotted and unslotted sheets, each of said slotted sheets having a plurality of parallel slots formed therein which extend over rectangular central regions of said sheets and which form fluid flow channels when sandwiched between said unslotted sheets, successive slotted sheets in the stack being oriented with their slots extending substantially orthogonally so as to form two sets of fluid flow channels arranged in a crossflow configuration, each of said unslotted sheets including a set of four rectangular manifold openings positioned adjacent the peripheral edges of said unslotted sheet, and wherein each of said slotted sheets includes a set of four rectangular manifold openings adjacent the peripheral edges of said slotted sheet, the manifold openings in said unslotted sheets being wider than the manifold openings in said slotted sheets so as to overlap the ends of the slots in said slotted sheets, whereby said manifold openings of said unslotted sheets and said manifold openings of said slotted sheets are aligned to form internal fluid flow manifolds connecting the opposite ends of the two orthogonal sets of fluid flow channels.

4,516,633
BLIND SHAFT DRILLING
Paul Richardson, Santa Ana; Daniel C. Albers, El Toro, and David A. Whitley, Brea, all of Calif., assignors to Santa Fe International Corporation, Alhambra, Calif.
Filed Sep. 18, 1981, Ser. No. 303,511
Int. Cl.³ E21D *13/06;* **E21B** *17/18, 17/10*
U.S. Cl. 166—69 **34 Claims**

32. Apparatus for drilling a blind shaft hole having a diameter in excess of 10 feet to a depth of over 2000 ft., said apparatus comprising:

(a) reverse circulation drilling means including a high torque drill bit and a plurality of non-rotating stabilizer rings attached at the end of a drill string, arranging the stabilizer rings on the drill string so as to allow the drill string to rotate within the stabilizer rings while the stabilizer rings do not rotate with respect to the walls of the hole being drilled and therefore such stabilizer rings being non-rotating stabilizer rings;

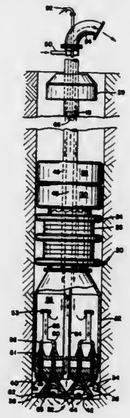
(b) weights in excess of approximately 300,000 pounds along said non-rotating stabilizer rings being arranged on said drill string near the bottom of said drill string within approximately 50 feet of said drill bit;

(c) said non-rotating stabilizer rings having an outer diameter substantially equal to the diameter of the hole being drilled and spaced longitudinally along said drill string for providing contact with the walls of the hole at different vertical positions for maintaining the alignment of the drilling bits;

(d) means for maintaining fluid in the drilled hole during the drilling operation at a sufficent level for creating a hydrostatic head for exerting an opposing pressure on any zone of instability on the walls of the drilled hole so as to prevent inflow of water and debris;

(e) liquid circulating means for circulating liquid through said drill string across the surface of said drill bit with sufficient turbulence so as to clean said drill bit;

(f) liquid extracting means for extracting liquid from the hole for removing broken materials from the drilled hole, extracting such liquid through an inner cylinder of the drill string with sufficient velocity so as to exceed the slip velocity;



(g) air supply means for forcing air down the drill string through an outer cylinder in the drill string, such air then helping to create sufficient force for extracting liquid with the broken material up through the inner cylinder in the drill string; and

(h) means for reinforcing weak permeable spots on the walls of the drilled hole by pumping a packing material into such spots when encountered during the drilling operation.

34. Apparatus for drilling a blind shaft hole having a diameter in excess of 10 feet, said apparatus comprising:

(a) reverse circulation drilling means including a high torque drill bit and a plurality of non-rotating stabilizer rings attached at the end of a drill string and arranged so as to allow the drill string to rotate with the stabilizer rings while the stabilizer rings do not rotate with respect to the walls of the holes being drilled;

(b) said non-rotating stabilizer rings having an outer diameter substantially equal to the diameter of the hole being drilled and spaced longitudinally along said drill string near the bottom of said drill string adjacent to the drill bit for providing contact with the walls of the hole at different vertical positions and for maintaining the alignment of the drilling bit;

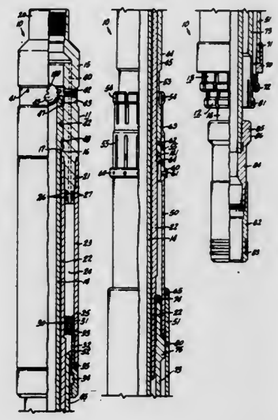
(c) means for maintaining fluid in the drilling hole during the drilling operation at a sufficient level for creating a hydrostatic head for exerting an opposing pressure on any zone of instability on the walls of the drilling hole so as to prevent inflow of water and debris;

(d) liquid circulating means for circulating liquid through said drill string across the surface of said drill bit with sufficient turbulence so as to clean said drill bit;

(e) liquid extracting means for extracting liquid from the hole for removing broken materials from the drilled hole, extracting such liquid through an inner cylinder of the drill string with sufficient velocity so as to exceed the slip velocity; and

(f) air supply means for forcing air down the drill string through an outer cylinder in the drill string to create sufficient force for extracting liquid containing broken material up through the inner cylinder in the drill string.

4,516,634
HYDRAULIC RUNNING AND SETTING TOOL FOR WELL PACKER
Glen E. Pitts, The Colony, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 14, 1983, Ser. No. 485,017
Int. Cl.³ E21B *33/128*
U.S. Cl. 166—120 **16 Claims**



1. A running and setting tool for a well packer having a body mandrel, a seal assembly, upper and lower slip assemblies, a setting sleeve for setting said upper slip assembly, and means on said body mandrel for setting said lower slip assembly, said tool comprising: a head assembly connectible with a supporting tubing string and including an annular cylinder and an annular piston; a tubular tool body secured at a first end into said head assembly; first releasable locking means on the second opposite end of said tool body for coupling said tool with said packer mandrel and applying weight forces on said packer mandrel to said tool; second locking means coupled with said annular piston for releasable locking with and operating said packer setting sleeve to set said upper slip assembly; and an operating tube releasably connected at a first end with said tool head assembly and having means along a second opposite end for operating said first locking means to release said tool from said packer mandrel after said packer is set in a well bore.

4,516,635
METHOD OF EXTRACTING AND REUTILIZING SURFACTANTS FROM EMULSIONS WITH SULFONATED ALKYL BENZENES AND ALCOHOLS
Jim Maddox, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Dec. 7, 1983, Ser. No. 559,077
Int. Cl.³ E21B *43/22, 43/40*
U.S. Cl. 166—266 **25 Claims**

1. A method for extracting and concentrating enhanced oil recovery surfactants into a relatively small volume surfactant-rich middle phase from produced emulsions comprising oil, water and surfactant, which comprises:

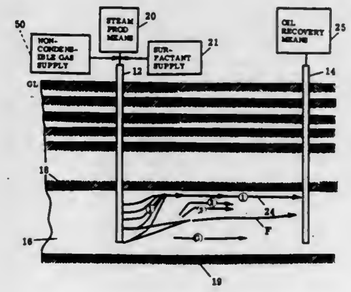
mixing a produced emulsion with an extracting compound solution of water containing about 0.3% to about 6.0% of a first extracting compound selected from the group consisting of the alkali metal salts and ammonium salts of propyl benzene sulfonate, cumene sulfonate, ethyl benzene sulfonate, methyl ethyl benzene sulfonate, diethyl benzene sulfonate, methyl propyl benzene sulfonate, xylene sulfonate and dicyclopentadiene sulfonate;

allowing the mixture of produced emulsion and first extracting compound solution to separate into at least three phases, including a substantially surfactant-free and water-free crude oil phase, a first relatively low volume middle phase containing surfactant, oil and water, and an oil-free aqueous phase;

mixing a second extracting compound with said first relatively low volume middle phase in the quantity of about 0.5% to about 3% volume per volume of first middle phase, said second extracting compound consisting of an alkanol having two to four carbon atoms; and

allowing the mixture of first low volume middle phase and alkanol to separate into at least three phases, including a substantially surfactant-free and water-free crude oil phase, a second relatively smaller volume surfactant-rich middle phase containing surfactant, oil and water, and an oil-free aqueous phase.

4,516,636
ENHANCED STEAM DRIVE RECOVERY OF HEAVY OIL
Todd M. Doscher, 740 A E. Main St., Ventura, Calif. 93001
Continuation-in-part of Ser. No. 342,465, Jan. 25, 1982. This application Dec. 22, 1982, Ser. No. 452,200
Int. Cl.³ E21B *43/24, 43/25*
U.S. Cl. 166—272 **7 Claims**

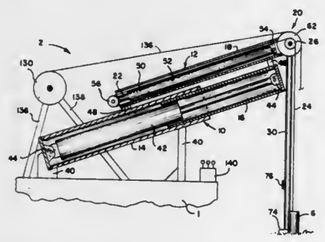


1. A method of enhanced steam drive recovery of oil from an oil zone disposed below an overburden, said method comprising the steps of:

injecting a surface active agent continuously into a supply of driving steam to uniformly mix said surfactant with said steam injecting a non-condensible gas into said steam-surfactant mixture at a rate of at least 100,000 standard cubic feet per day but no more than 10,000,000 standard cubic feet per day per injection well to provide a driving fluid which includes steam surfactants and non-condensible gas, and

introducing said driving fluid into said oil zone under sufficient pressure to cause said fluid to drive through a flow channel between the interface of the oil zone and the overburden thereabove and spread said surfactant evenly therethrough said surfactant reacting with said oil to enable said fluid to strip away a top layer of said oil which is driven to a production well for removal thereof.

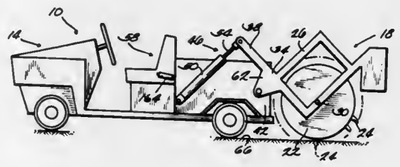
4,516,637
HOISTING APPARATUS AND METHOD FOR RAISING OIL TUBING
Elmer Winckler, Anchorage, Ak., assignor to James W. McManus, Bakersville, N.C. and James Backus, Cheyenne, Wyo.
Filed Aug. 8, 1983, Ser. No. 521,618
Int. Cl.[3] E21B *19/00*
U.S. Cl. 166—377 **23 Claims**



12. A vehicle for raising an oil tubing string, comprising:
a support frame mounted on the vehicle;
a first telescoping boom assembly mounted on said support frame, including a first secured member and a first extending member oriented to extend in a first direction;
a second telescoping boom assembly mounted on said first boom assembly and secured to said first extending member for movement therewith, said second telescoping boom assembly having a lifting upper end and a lower end from which a second extending member is adapted to extend in a direction parallel to but opposite from said first direction;
first pulley means having means for receiving a lifting cable and for allowing a lifting cable to ride thereon and movably depend from said lifting upper end;
a lifting cable extending from the extended free end of said second extending member to said first pulley means and depending therefrom to an oil tubing connector;
second pulley means mounted on said second extending member and having means for receiving a lifting cable and for allowing said lifting cable to ride thereon and for changing the direction of travel of said lifting cable at the extended free end of said second extending member, said lifting cable extending from a secured portion of said second telescoping boom assembly around said second pulley means and to said first pulley means,
whereby said first extending member can be extended to position said lifting cable over the tubing and said second extending member can be extended to raise said lifting cable and connected tubing and the position of said second pulley means relative to said first pulley means is independent of the extension of said first telescoping boom assembly.

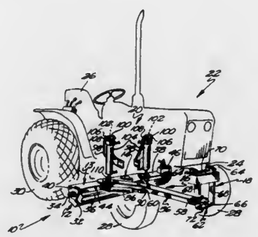
18. A vehicle as defined in claim **12**, further comprising clamping means for clamping onto and securing the hoisted object to said lifting upper end other than by said lifting cable in order to allow said lifting cable to be disconnected from the hoisted object, said clamping means depending from said lifting upper end and positioned beneath said first pulley means.

4,516,638
SOIL AERATING APPARATUS WITH HYDRAULIC VALVE ARRANGEMENT
John E. Hicks, and James J. Kubat, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed May 25, 1983, Ser. No. 497,747
Int. Cl.[3] A01B *45/02;* **F16K** *31/28*
U.S. Cl. 172—22 **10 Claims**



1. A hydraulic valve arrangement comprising valve means adapted to be operably connected to a hydraulic cylinder including a piston rod, said valve means including a valve member movable between a first position wherein the piston rod is extended or retracted, a neutral position wherein the piston rod is in a fixed position, and a float position wherein the piston rod can move freely, means for biasing said valve member towards said neutral position, means for moving said valve member between said valve member positions comprising a lever operably connected to said valve member, and manual release means associated with said lever for permitting said lever to be moved between said first and neutral positions but positively preventing said lever from being accidentally moved to the float position until released and for selectively permitting said lever to be moved to said float position.

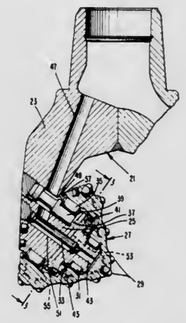
4,516,639
POWERED LANDSCAPE RAKE
Kenneth Hammarlund, 226 Ratikas Rd., and Wilford Hammarlund, 57 Riverside Rd. West, both of Esko, Minn. 55733
Filed Mar. 28, 1983, Ser. No. 479,606
Int. Cl.[3] A01B *33/02, 65/02*
U.S. Cl. 172—99 **13 Claims**



1. Powered landscape rake for fine grading and for stone and debris removal from a landscape surface for mounting to a tractor having a frame, front wheels, and rear wheels comprising, in combination: a drum including a cylindrical member; axial extending elongated ribs formed on the cylindrical member for providing a kicking type action to be landscape surface when the cylinder member is rotated and engages the landscape surface; a drum frame including means for rotatably mounting the drum with respect to the drum frame; means for rotating the drum in the drum frame in either a clockwise or a counterclockwise direction; a turntable assembly for allowing the drum frame to pivot about an axis generally perpendicular to the drum frame and assembly midway of the drum frame, with the turntable assembly including a first member in a rotatable relation to a second member and means for rotating and locking the second member relative to the first member about the turntable pivot axis, with the first member of the turntable assembly being attached to the drum frame; a main

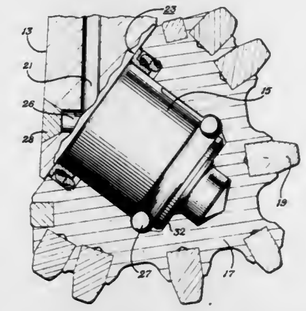
frame member having a first end and a second end, with the second end of the main frame member being attached to the second member of the turntable assembly, with the first end of the main frame being adapted to extend to a point located generally below the frame of the tractor and in front of the front wheels of the tractor; a front frame attachment member for attachment to the frame of the tractor in front of the front wheels; wherein the front frame attachment member comprises, in combination: a U-shaped subframe having a central portion and upstanding vertical legs attached to the opposite ends of the central portion, tractor frame attachment members, and means for pivotally attaching the free ends of the vertical legs of the subframe to the tractor attachment members; means for attaching the first end of the main frame to the front frame attachment member for allowing swivelling of the main frame with respect to the front frame attachment member about a point located beneath the frame of the tractor and for allowing the turntable to pivot about a generally vertical axis; with the means for attaching the first end of the main frame to the front frame attachment member being positioned on the central portion of the U-shaped subframe; first and second hydraulic cylinders locatable on opposite sides of the tractor frme; means for attaching the upper ends of the hydraulic cylinders to the tractor frame for allowing pivotal and swivel movement of the hydraulic cylinders with respect to the tractor frame; and means for attaching the lower ends of the hydraulic cylinders to the second member of the turntable assembly allowing pivotal and swivel movement of the hydraulic cylinders with respect to the turntable assembly, with the hydraulic cylinder attaching means allowing the turntable assembly to sway in a horizontal plane locatable parallel to the landscape surface and in a direction generally perpendicular to the frame of the tractor, and with the hydraulic cylinders raising and lowering the drum frame in a generally vertical plane to be spaced from the landscape surface or to engage the landscape surface.

4,516,640
ROTARY DRILL BIT
Harry L. Karlsson, Sandviken, Sweden, assignor to Santrade Ltd., Switzerland
Filed Dec. 8, 1983, Ser. No. 559,483
Int. Cl.[3] E21B *10/22*
U.S. Cl. 175—227 **19 Claims**



1. A rotary drill bit comprising at least one roller cutter which is rotatably carried on a bearing pin over a bearing system, said bearing system comprising at least a forward bearing and a rear bearing, said rear bearing being a roller bearing, at least one inflow passage being provided in a bit body, at least one outflow passage, means for supplying fluid through the at least one inflow passage to the rear bearing during operation of the bit to establish a flow of the fluid from the inflow to the outflow passage for flushing and for aiding cooling of the rear bearing, the bearing pin including a flange for axially fixing a forward end of the rollers of the rear bearing, said inflow passage including a plurality of radially extending passages arranged in the flange, the radially extending passage terminating in the bearing system ahead of the forward end of the rear bearing between intermediate sealing means and the outflow passage, said sealing means separating the bearing system into a forward bearing space and a rear bearing space, and the forward bearing space being filled with lubricant.

4,516,641
EARTH BORING BIT WITH PRESSURE COMPENSATING RIGID FACE SEAL
Bruce H. Burr, Houston, Tex., assignor to Hughes Tool Company-USA, Houston, Tex.
Filed Oct. 17, 1983, Ser. No. 542,801
Int. Cl.[3] E21B *10/08;* **F16J** *15/16*
U.S. Cl. 175—228 **12 Claims**

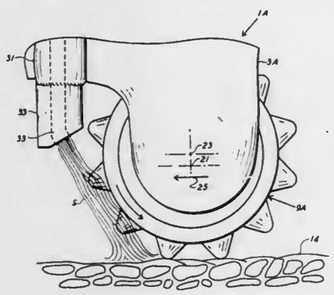


5. An earth boring bit with an improved seal means and pressure compensating system, said bit comprising:
a body;
a cantilevered bearing shaft extending obliquely inwardly and downwardly from the body;
a cutter secured for rotation about the bearing shaft, with axial and radial play due to clearances;
a lubrication system in the body, including a hydrostatic pressure compensator;
a seal groove including a pair of an inclined, contoured and oppositely facing circumferential walls, one located on the cutter and the other on the bearing shaft, each of which intersects a generally radial end wall;
a pair of metal rings positioned in the seal groove and having opposed, sealing faces and inclined, contoured circumferential portions, which oppose, but are spaced radially from, the circumferential walls on the cutter and shaft;
a pair of O-ring type resilient energizer rings, each of which sealingly and continuously engages a respective one of the inclined, contoured walls of the seal groove and the opposed inclined, contoured portion of one of the metal rings to define a seal assembly positioned between the end walls of the seal groove;
the seal assembly being exposed to and biased axially by dynamic pressure differentials between the lubricant and the ambient drilling fluids;
the axial width of the engaged rigid rings and seal assembly being less than the axial, minimum width of the seal groove when the cutter is thrust outwardly on the bearing shaft to define at least one axial clearance to permit unrestricted axial movement of the rigid rings between the end walls of the groove when the cutter moves relative to the bearing shaft.

4,516,642
DRILL BIT HAVING ANGLED NOZZLES FOR IMPROVED BIT AND WELL BORE CLEANING

John S. Childers, Greenville, and Paul E. Pastusek, Houston, both of Tex., assignors to Reed Rock Bit Company, Houston, Tex.

Continuation-in-part of Ser. No. 132,950, Mar. 24, 1980, abandoned. This application Nov. 1, 1982, Ser. No. 437,927
Int. Cl.³ E21B *10/18*
U.S. Cl. 175—340 **14 Claims**



1. A rotary drill bit for drilling a well bore, the bit comprising:

a bit body having a threaded pin at its upper end adapted to be detachably secured to drill pipe or the like for rotating the bit and delivering drilling fluid under pressure to the bit, a plurality of depending legs at its lower end, each leg being spaced from the other legs and having an inwardly and downwardly extending bearing journal at its lower end, and a plurality of nozzles for exit of the drilling fluid from the bit body; and

a plurality of roller cutters, one for each leg, each roller cutter comprising a generally conical cutter body rotatably mounted on the bearing journal of the respective leg and a plurality of cutting elements on the body;

each of said nozzles having a nozzle orifice below the top of an adjacent roller cutter but above the central axis of the respective bearing journal at its outer end with respect to the bit body, each nozzle directing the drilling fluid to flow downwardly in a stream flowing past the cutter body of the adjacent roller cutter along a line generally tangent thereto and thereafter impinging portions of the bottom of the well bore forward, with respect to the direction of rotation of the bit, of all points at which the cutting elements of the adjacent roller cutter then engages the bottom of the bore, whereby the drilling fluid sequentially impinges and cleans cutting elements on the adjacent roller cutter and then the well bore bottom immediately prior to the engagement of said portions of the well bore bottom by the cutting elements for enhanced drill bit cutting action.

4,516,643
COMBINATORIAL WEIGHING METHOD AND APPARATUS

Yukio Nakagawa, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

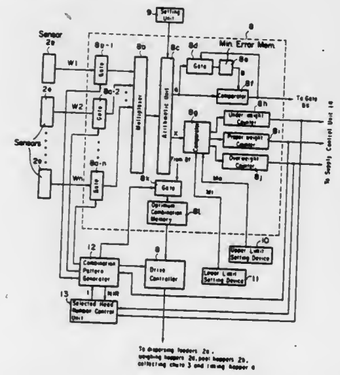
Filed Jun. 22, 1983, Ser. No. 506,796
Claims priority, application Japan, Jun. 23, 1982, 57-107790; Dec. 11, 1982, 57-217581
Int. Cl.³ G01G *9/00, 19/22, 19/413, 19/417*
U.S. Cl. 177—1 **17 Claims**

1. A combinatorial weighing method in which weight data from N weighing machines (where N is an integer) containing articles are combined to obtain an optimum combination of weighing machines having a total combined weight value of articles equal to a preset value Wa or closest to the preset value Wa within preset allowable limits, the articles being discharged from the obtained optimum combination of weighing machines, comprising the steps of:

(a) forming combinations of i weighing machines from among the N weighing machines, where i is a specific number of weighing machines which tends to afford the optimum combination more readily than other numbers of the weighing machines, and where i is an integer less than N;

(b) generating continuously only combinations which select i weighing machines from among the N weighing machines;

(c) determining whether the total weight value of each combination composed of the i weighing machines falls within the preset allowable limits;



(d) assigning the total weight of each of the combinations generated to one of an overweight rank which is outside the preset allowable limits on the high side, a proper weight rank which is within the preset allowable limits, and an underweight rank which is outside the preset allowable limits on the low side;

(e) counting the occurrence of weight values in each of the overweight, proper weight and underweight ranks;

(f) storing an optimum combination which is within the preset allowable limits; and

(g) discharging articles based on the stored optimum combination from among all combinations composed of i weighing machines.

4,516,644
APPARATUS FOR REGULATING FLOW OF ARTICLES IN COMPUTER SCALE

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Dec. 13, 1982, Ser. No. 449,253
Claims priority, application Japan, Dec. 17, 1981, 56-204988
Int. Cl.³ G01G *19/22, 13/02*; B67D *3/00*
U.S. Cl. 177—25 **10 Claims**

1. A computer scale of the combinatorial weighing type, comprising:

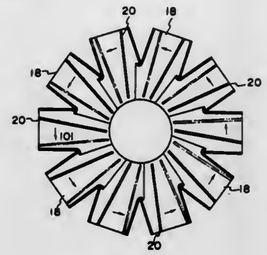
a dispersing table for dispersing articles to be weighed, said dispersing table having a center;

a supply feeder, having a plurality of supply troughs extending radially from said dispersing table, for receiving articles from said dispersing table;

a plurality of regulating plates respectively associated with and disposed in the supply troughs, for regulating the flow of articles in the supply trough, said regulating plates being approximately the same length as said supply troughs and rotatable around a center of rotation which is offset from said center of said dispersing table;

a plurality of pool hoppers respectively associated with said supply troughs for receiving articles from said supply troughs;

a plurality of weighing hoppers respectively associated with said pool hoppers for receiving the articles from said pool hoppers; and

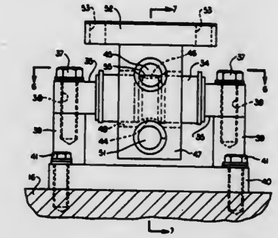


a plurality of weighing mechanisms respectively associated with said weighing hoppers for measuring the weights of the articles received by said weighing hoppers.

4,516,645
LOAD CHECKING ARRANGEMENT FOR A CENTER-LOADED TYPE LOAD CELL

Donald C. Wetzel, Berea, Ohio, assignor to Quest Corporation, Macedonia, Ohio

Continuation-in-part of Ser. No. 314,361, Oct. 23, 1981, Pat. No. 4,413,691. This application Nov. 7, 1983, Ser. No. 549,671
Int. Cl.³ B66C *1/40*; G01G *21/12*
U.S. Cl. 177—147 **22 Claims**



1. A weighing system, which comprises:

a load-bearing member attached to and supported by support means;

a plurality of center-loaded load cells fixed on the load bearing member;

a plurality of load rods, each load rod extending across and supported on one of the load cells, each load rod having a centering recess therein; and

a load supporting member supported on the load rods, the load supporting member capable of lateral movement with respect to the load bearing member, the centering recess of the load rod tending to urge the load supporting member back to its original position with respect to the load bearing member when such lateral movement occurs.

4,516,646
SHEAR BEAM LOAD CELL WITH BUILT-IN BEARING ELEMENTS

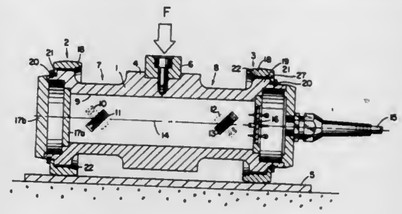
Björn Bergfalk, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Mar. 7, 1983, Ser. No. 472,694
Claims priority, application Sweden, Mar. 7, 1982, 8201365
Int. Cl.³ G01G *3/14, 21/02*
U.S. Cl. 177—211 **7 Claims**

1. A load cell comprising:

a beam-shaped measuring body including strain gages for providing electrical signals in response to a shear force applied through said measuring body by a measurement force, and

first and second cylindrical end pieces supporting said measuring body through first and second built-in bearing means above a support surface, said end pieces having a

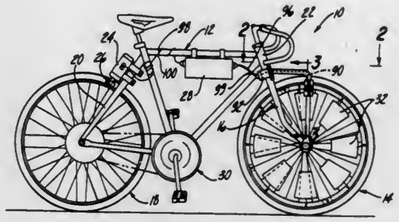


diameter which maintains said measuring body above said support surface when deflected by an applied measuring force, and said built-in bearing means preventing said measuring body from measuring extraneously applied forces.

4,516,647
SOLAR POWERED VEHICLE

Thaddeus Novak, P.O. Box 487, Dearborn, Mich. 48121

Filed Feb. 8, 1982, Ser. No. 346,659
Int. Cl.³ B60L *9/00*
U.S. Cl. 180—2.2 **9 Claims**



1. A vehicle comprising:

a frame,

a wheel rotatably mounted to said frame,

an electrical load secured to said frame,

means for converting solar energy to electrical energy secured to said wheel, and

means for electrically connecting said converting means to said load despite rotation of said wheel.

4,516,648
CHILD'S RIDE-ON TOY WITH REVERSING DRIVE FOR REAR WHEELS

Hans S. Berger, Plainville; Frank Mercurio, and Norbert L. Reiner, both of Wallingford, all of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.

Filed Apr. 25, 1983, Ser. No. 488,050
Int. Cl.³ B62D *11/04*
U.S. Cl. 180—6.66 **19 Claims**

1. In a child's motor powered vehicle, the combination comprising:

A. a body adapted to seat a child with the legs supported thereon;

B. a first wheel assembly;

C. means mounting said first wheel assembly on said body for pivoting about a vertical axis;

D. an axle supported on said body in spaced relationship to said first wheel assembly;

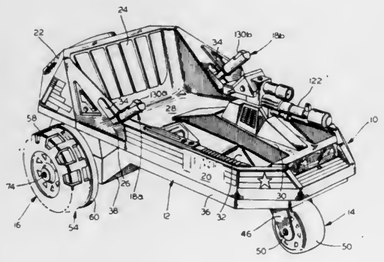
E. a pair of drive wheels rotatably supported on said axle,

said wheels each having a drive portion on the inner face thereof including a concentric annular channel extending axially about said axle, said channel being defined by a base wall and a pair of radially spaced opposed walls providing drive surfaces extending coaxially about said axle;

F. a drive shaft supported on said body in spaced relationship to said axle and generally parallel thereto in its at rest position;

G. drive members on the ends of said drive shaft for rotation therewith and disposed in said channels adjacent said drive surfaces, said drive elements being of lesser dimension than said base wall of said channel, said drive elements and drive surfaces being engageable to effect driving engagement therebetween upon surface engagement thereof;

H. power means for effecting rotation of said drive shaft in one direction of rotation;



I. a pair of control levers extending upwardly of said body and pivotably mounted thereon adjacent their lower ends, said control levers each being engageable with an end portion of said drive shaft upon pivoting of said levers from a first position to a second position which effects movement of the respective drive shaft end portions and the drive elements carried thereby from engagement with one drive surface of the adjacent wheel and into engagement with the other drive surface thereof,

whereby pivoting of the control levers from one position to another will effect a change in direction of rotation of that wheel and positioning of the two control levers to effect engagement of the drive elements with opposite drive surfaces on said rear wheels will effect rotation of the wheels in opposite directions and turning of the vehicle, and whereby positioning of the control levers to effect engagement of the drive elements with the same drive surfaces will effect generally straight line motion of the vehicle forwardly and rearwardly.

4,516,649

TERRAIN-TRAVELLING MOTOR VEHICLE

Thor F. Braathen, N-3358 N. Eggedal, Norway

PCT No. PCT/NO82/00026, § 371 Date Dec. 21, 1982, § 102(e) Date Dec. 21, 1982, PCT Pub. No. WO82/04022, PCT Pub. Date Nov. 25, 1982

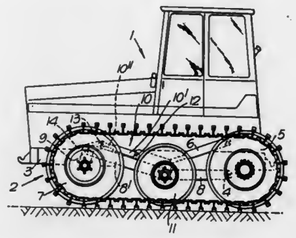
PCT Filed May 11, 1982, Ser. No. 457,108

Claims priority, application Norway, May 11, 1981, 811604

Int. Cl.³ B62D *55/30*

U.S. Cl. 180—9.1 **2 Claims**

1. In a terrain-travelling motor vehicle (1) having twin caterpillar tracks and bogie assemblies (2) pivotally attached to the frame (3) of the vehicle and comprising a rear pair of drive wheels (5) mounted on the frame (3) of the vehicle, and a front pair of wheels (7) wherein each wheel of said front pair is supported on a pivotable belt-tensioning arm (9) at the forward end of a bogie arm (8) for each bogie assembly (2), the rearward end of said arm (8) being supported by means of shaft journals (4) proximate to and in front of the center axis of the rear pair of wheels (5), each belt-tensioning arm (9) and bogie arm (8) being movable in the vertical plane by means of a hydraulic pressure cylinder (6) for pivoting the bogie assemblies upwardly and downwardly simultaneously or independently of each other and for tautening the bogie tracks; the improvement in which each belt-tensioning arm (9) is movable independently of its respective bogie arm (8) by means of a hydraulic pressure cylinder (10) which is pressurized at a



desired adjustable pressure for maintaining a desired tautness in the belt during the pivoting movement of the bogie arm (8), as well as during the continual changes in configuration of the lower perimeter of the track which occur as the vehicle drives over irregular ground terrain.

4,516,650

VEHICLE BODY STRUCTURE FOR PREVENTING WATER SUCTION INTO AN AIR CLEANER

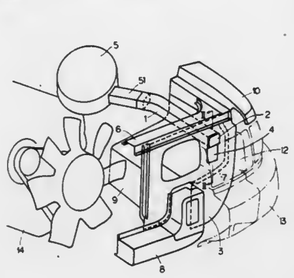
Hitohisa Yamaguchi; Kenichiro Fuse, both of Toyota, and Takeshi Yoshida, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 16, 1983, Ser. No. 504,822

Claims priority, application Japan, Sep. 15, 1982, 57-139351[U]

Int. Cl.³ B60K *13/02*

U.S. Cl. 180—68.3 **17 Claims**



1. A vehicle body structure for preventing suction of exterior water into an air cleaner installed in the vehicle, comprising:

an air cleaner for introducing outside air into an engine;

a radiator support panel extending laterally across the vehicle;

an air cleaner duct connected to the air cleaner at one of its ends and extending to the radiator support panel at its other end for permitting air to flow through said air cleaner duct; and

said radiator support panel including a longitudinally extending passage having an open forward end and an open rearward end, said open forward end being located adjacent to and just below said other end of said air cleaner duct and said open rearward end communicates with a road surface which the vehicle traverses, whereby water rising along the radiator support panel enters the open forward end of said longitudinally extending passage and is returned to the road surface by passing through said passage and out said open rearward end thereof.

4,516,651

VEHICLES TRAVELLING ON AIR CUSHIONS ALLOWING MOVEMENT OF THE LATTER OVER ALL TYPES OF TERRAIN

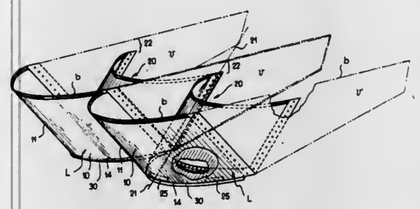
Claude M. Duchateau, Rueil Malmaison, France, assignor to Societe d'Etudes et de Developpement des Aeroglisseurs Marins, Terrestres et Amphibies S.E.D.A.M., Paris, France

Filed Dec. 20, 1982, Ser. No. 451,256

Claims priority, application France, Dec. 23, 1981, 81 24134

Int. Cl.³ B60V *1/16*

U.S. Cl. 180—127 **12 Claims**



1. In a ground effect vehicle including a vehicle structure and a lifting arrangement supporting the structure, the improvement wherein said lifting arrangement comprises:

(a) at least one multilobular skirt having a plurality of first lobes open toward the inside of the vehicle, each said first lobe including side walls having a lower part which converges in a downward direction with respect to the structure; and

(b) anti-damage lobes disposed at least at the rear of the vehicle on the inside of said first lobes;

said anti-damage lobes diverging in a downward direction with respect to the structure at an inclination such that the values of the angles formed by the respective outermost generatrices of the two lobes with respect to the vertical are substantially equal;

said anti-damage lobes having a concave shape toward the inside of the vehicle and having a lower part and an upper part; and

wherein each anti-damage lobe is connected laterally and along a rectilinear connection to the side walls of an associated first lobe and by its lower part to the base of the associated first lobe in a horizontal plane.

4,516,652

APPARATUS FOR CONTROLLING THE SPEED OF AN AUTOMOBILE

Kou Tanigawa, Akashi; Jiro Masuda, Kobe; Kazumasa Nakamura, Okazaki, and Kazuhiko Hayashi, Toyota, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 21, 1982, Ser. No. 451,839

Claims priority, application Japan, Dec. 21, 1981, 56-207563; Dec. 26, 1981, 56-214983; Jan. 25, 1982, 57-10637

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—177 **24 Claims**

1. In an automobile having transmission gears, wherein a reduction ratio establishes a relationship between said gears, an apparatus for controlling the speed of an automobile so that said automobile conforms with a preset speed when a resume switch is manipulated, said apparatus comprising:

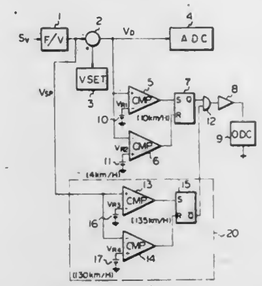
a speed-detecting means for generating a signal representing the actual speed of the automobile;

a memory means for storing data corresponding to said preset speed;

a speed-difference detecting means for detecting the difference between said preset speed and the actual speed of the automobile on the basis of said signal generated by said speed-detecting means and said data stored in said memory means;

a switching means for switching the reduction ratio of the gears on the basis of an output signal generated by said speed-difference detecting means; and

a gating means for transferring said output signal generated by said speed-difference detecting means to said switching means, said switching means decreasing the reduction



ratio when said actual speed approaches said preset speed and increasing the reduction ratio when said actual speed becomes a predetermined value less than said preset speed and when a speed related predetermined condition of the automobile is established.

4,516,653

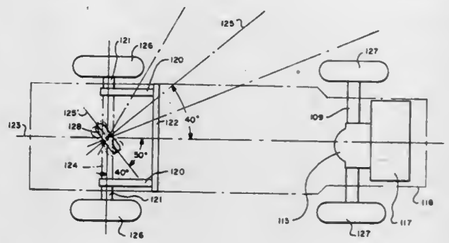
VEHICLE MOUNTED PARKING DEVICE FOR USE ON FRONT WHEEL DRIVE VEHICLES

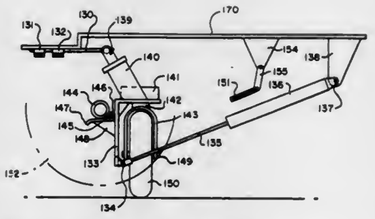
Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Continuation-in-part of Ser. No. 394,529, Jun. 2, 1982, abandoned. This application Mar. 29, 1984, Ser. No. 594,691

Int. Cl.³ B60K *7/00*

U.S. Cl. 180—199 **20 Claims**





1. A vehicle mounted parking device for use on a front wheel drive motor vehicle having motive means, frame means, yieldable means for yieldable supporting the rear end of the vehicle attached to said frame means, rear axle means carried by the yieldable means for yieldably supporting the rear end of the vehicle, at least two rear wheels rotatably attached to said rear axle means, at least two front wheels, steering means for selectively directing the front wheels of the vehicle, and motive means for selectively applying power to certain of the

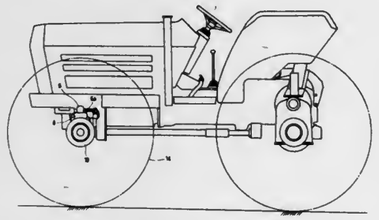
wheels, the device comprising a wheel mount, an auxiliary wheel rotatably supported on said wheel mount, mounting means adapted to be carried by the rear portion of the vehicle for supporting the wheel mount for movement of the auxiliary wheel between an operative ground engaging and rear end of the vehicle lifting position and out-of-the-way position, power means connected to the wheel mount to cause the wheel mount to be moved from the out-of-the-way position to the ground engaging and rear end of the vehicle lifting position, whereby the rear wheels of the vehicle are lifted off the ground and the mounting means for said wheel mount engages the rear axle means and provides support to the rear portion of the vehicle through the yieldable means for supporting the rear portion of the vehicle, and said auxiliary wheel when in said ground engaging and rear end of the vehicle lifting position is disposed substantially between and equidistant from each of the rear wheels and is disposed with its axis of rotation inclined at a substantial angle from the longitudinal center line of the vehicle so that the axis of rotation of the auxiliary wheel passes between the front and rear wheels on one of two sides of the vehicle, said vehicle moving generally in a sidewise direction when the auxiliary wheel is in said ground engaging and vehicle lifting position and when said front wheels are directed by said steering means in a direction similar to the auxiliary wheel and power is applied to the front wheels from the motive means to cause rotation of the front wheels.

4,516,654

FRONT-WHEEL DRIVE DEVICE FOR VEHICLE

Tadao Nishihara, Ehime, Japan, assignor to Iseki & Co., Ltd., Japan

Filed Jul. 8, 1983, Ser. No. 512,039
Claims priority, application Japan, Oct. 9, 1982, 57-177728
Int. Cl.³ B60K *17/30*
U.S. Cl. 180—255 **3 Claims**



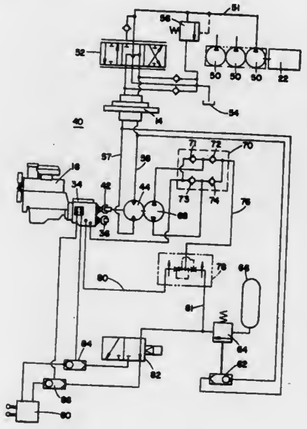
1. In a front-wheel drive device for a vehicle in which an inner gear case is mounted onto an outer end of a front axle housing which contains
a front-wheel drive axle,
an outer gear case having a gear chamber opening toward the outside and fitted onto the inner gear case while maintaining the freedoms of steering and turning,
a planetary gear mechanism in the gear chamber,
the opening being closed by attaching a cover supporting the front wheel axle over the outer gear case, and
the front wheel axle being driven at a reduced speed by the planetary gear mechanism via a bevel gear mechanism driven by the front-wheel drive axle,
the improvement wherein
an inner member of the front wheel axle extends into the gear chamber, and
the sun gear of the planetary gear mechanism and the bevel gear mechanism are allowed to freely rotate as a unitary structure about the inner member.

4,516,655

REMOTE DRIVE WITH POWERSHIFT TRANSMISSION

John M. Donahue, Strasburg, and Michael J. Gagner, New Philadelphia, both of Ohio, assignors to The Gradall Company, New Philadelphia, Ohio

Filed Aug. 12, 1983, Ser. No. 522,921
Int. Cl.³ E02F *3/00*
U.S. Cl. 180—321 **9 Claims**



1. A material handling vehicle comprising:
a power driven chassis having a main cab;
an upper structure supported by said chassis and being moveable relative thereto having an operator cab;
the main drive engine supported on said power driven chassis;
a powershift transmission connected to be driven by said main engine having a power takeoff;
a swing bearing connecting said chassis and said upper structure;
an upper hydraulic power supply disposed on said upper structure providing an output of pressurized hydraulic fluid;
a hydraulic torque motor disposed on said chassis connected to be driven by pressurized hydraulic fluid supplied from said upper hydraulic power supply;
said hydraulic torque motor connected to provide power to the power takeoff connection on said powershift transmission and driving a hydraulic pump;
said hydraulic pump providing a pressurized output of hydraulic fluid and supplying said hydraulic fluid to the transmission lubrication system and the transmission gear range control clutches.

4,516,656

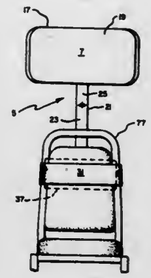
ACOUSTICAL ATTENUATING DEVICE AND CHAIR EQUIPPED THEREWITH

Bernard Fleshler, 67 Covington Rd., Buffalo, N.Y. 14216

Filed Dec. 9, 1982, Ser. No. 448,320
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—175 **21 Claims**

1. A sound attenuating device affixable to the back of a chair, which comprises a generally arched shaped acoustic pad having a rear sound shield and a frontal sound absorption panel, the pad being sufficiently arched to circumscribe the backside

of the user's head and ears without covering the side of the user's head, said device including means for mounting the pad



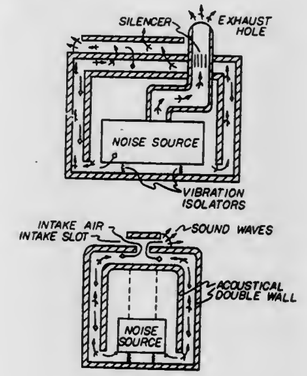
over the chair back such that the frontal sound absorption panel is proximate to the user's head.

4,516,657

SOUND SUPPRESSION OF ENGINE NOISE

Edward F. Allard, 7830 Greeley Blvd., Springfield, Va. 22152

Filed Sep. 29, 1982, Ser. No. 428,073
Int. Cl.³ F01N *1/02, 1/24*
U.S. Cl. 181—204 **5 Claims**



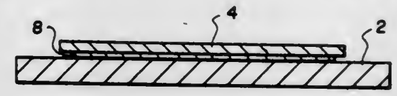
1. A sound suppressor including:
a first means for totally encasing a device generating a noise to be suppressed;
a second means encasing said first means and the noise generating device whereby a space is provided between the two encasements;
sound attenuating and absorbing material cover the outer surface of the first encasement means and the inner surface of the second encasement means;
said second means containing intake vents for communicating with the outside environment;
said first means containing vents for communicating with the space between the first and second encasements, whereby air is caused to flow from the outside of the second encasement through the intake vents thereof, through the space between the two encasements and through the vents of the first encasement into the first encasement containing the noise generating device where the air is used to cool and supply combustion to the noise generating device and is then directed out of the encasements through exhaust means associated with said device into the outside environment;
said exhaust means having a minimized opening where exiting from the encasement means for maximum sound attenuation.

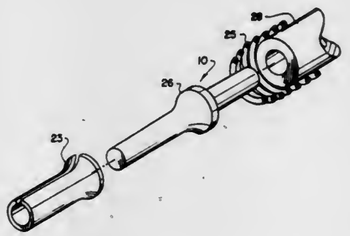
4,516,658

COULOME FRICTION NOISE AND VIBRATION DAMPING

Henry A. Scarton, Troy; John A. DiBianca, Webster, both of N.Y.; James A. Lacey, Pittsburgh, Pa., and Warren C. Kennedy, Schenectady, N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,515
Int. Cl.³ F16F *15/00*
U.S. Cl. 181—208 **24 Claims**





1. A device for reducing noise generated by transverse vibrations in an elongated rod-like member having an annular member surface which undergoes bending due to such transverse vibrations, comprising:
a friction ring having an inner friction surface engaged with the annular member surface; and
retaining means associated with said friction ring for establishing a selected normal force between said friction surface and the member surface to increase a frictional engagement therebetween so that bending of the member surface due to transverse vibrations produces frictional sliding between said friction surface and the member surface.

4,516,659

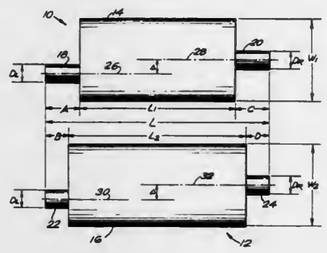
REPLACEMENT MUFFLER AND PROCESS FOR MAKING SAME

James R. Hall, Toledo, Ohio; Donald P. Harter, Ottawa Lake, Mich.; Michael W. Clegg, Toledo, and James E. Gerber, Walbridge, both of Ohio, assignors to APX Group, Inc., Toledo, Ohio

Division of Ser. No. 405,925, Aug. 6, 1982. This application Feb. 6, 1984, Ser. No. 577,281
Int. Cl.³ F01N *7/18*
U.S. Cl. 181—243 **2 Claims**

1. A replacement muffler adapted to replace an original equipment muffler with substantially no modifications to said replacement muffler after its manufacture, said replacement muffler comprising:
(i) a replacement muffler body which only approximates the body of said original equipment muffler, said replacement muffler body comprising an outer casing and internal portions disposed therein;
(ii) a pair of replacement muffler heads fixedly mounted on opposed ends of said replacement muffler body, said replacement muffler heads each being provided with a nipple aperture, said nipple apertures in said replacement muffler heads being at predetermined locations offset from each other by a distance substantially equal to the corresponding distance on said original equipment muffler; and

(iii) a pair of replacement muffler nipples fixedly secured to said replacement muffler heads at the nipple apertures thereof, said replacement muffler nipples having diameters substantially equal to the corresponding nipple diameters of said original equipment muffler, and having lengths adapted to produce an overall replacement muffler length substantially equal to the corresponding length of said original equipment muffler.



4,516,660

EJECTOR AND METHOD FOR CONTROLLING JET ENGINE NOISE

Alfred L. Greenlaw, 12017 210th Pl. Southeast, Issaquah, Wash. 98027

Continuation of Ser. No. 189,105, Sep. 22, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 475,711

Int. Cl.³ G10K *11/00;* **B63H** *25/46*

U.S. Cl. 181—296 **3 Claims**



1. A method for suppressing the noise of the exhaust of a jet engine at all frequencies with a minimum loss of thrust wherein the diameter of an ejector is selected for a particular jet engine such that the length of the mixing section or zone of the ejector is adequate for practical installation in jet aircraft, comprising:

providing a primary nozzle section delivering at least one jet of engine exhaust gases at a predetermined velocity, temperature and pressure into the mixing zone of the ejector,

providing means to deliver a secondary gas stream at a predetermined velocity, temperature and pressure into the mixing zone of the ejector,

selecting the diameter of the ejector in relation to its length to have a mixing section or zone length equal to about one diameter of the ejector and in relation to the predetermined velocities, temperatures and pressures of the primary and secondary gas flows to achieve a choked flow (Mach 1.0) condition of the mixture of primary and secondary gases at the end of the mixing zone, thereby utilizing the gas flow characteristics in the Mach 1.0 transistion to obtain rapid mixing of the primary and secondary gas flows in the mixing zone, and

discharging the mixed gas stream into a diffusion zone downstream from the mixing zone having an expanding area section greater than that of the mixing zone, a normal shock occurring in the diffusion zone, with the location of the shock being at a point in the diffusion zone prior to when the gas mixture slows down in the expanding diffusion zone to where the mixed gas stream static pressure equals the ambient static pressure at the end of the diffusion zone.

4,516,661

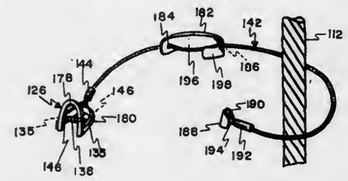
SAFETY DEVICE FOR SCAFFOLD

Lawrence R. Stafford, 8 Gracemore St., Albany, N.Y. 12203

Continuation-in-part of Ser. No. 415,756, Sep. 7, 1982. This application Sep. 2, 1983, Ser. No. 529,010

Int. Cl.³ E04G *5/04*

U.S. Cl. 182—82 **7 Claims**



1. A safety system, comprising:

(a) a plurality of anchors having support posts and heads and secured to and disposed vertically at spaced intervals along the outside surface of a building;

(b) yoke means a generally U shaped yoke configured and dimensioned to be fitted on and secured around one of said plurality of anchors, with a side of said yoke facing said building, having a pair of holes at its ends;

(c) spring means comprising a coil spring with each of the ends of said spring positioned adjacent one of the holes of said yoke for maintaining said yoke on its respective anchor;

(d) a scaffold; and

(e) a lanyard having two ends, said lanyard being secured to said scaffold and comprising a pair of loops at its ends, each of said loops passing through one of said holes of said yoke, and said loops being secured to said spring adjacent the side of said yoke which is opposite the side of said yoke which is adjacent the building.

4,516,662

ROD-CLAMPING MEANS OF A PERCUSSIVE AIR TOOL FOR DRIVING INTO THE GROUND AND REMOVING THEREFROM ROD-LIKE PIECES

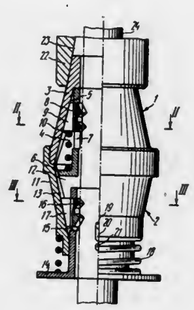
Alexandr D. Kostylev, ulitsa Derzhavina 18, kv. 44; Jury N. Syryamin, ulitsa D. Kovalchuk, 266/1, kv. 51; Boris N. Smolyanitsky, ulitsa O. Dundicha, 27, kv. 18; Vladimir P. Boginsky, ulitsa Tsvetnoi proezd, 17, kv. 62, and Alexei D. Terskov, ulitsa Ippodromskaya, 31, kv. 154, all of Novosibirsk, U.S.S.R.

Filed Feb. 24, 1983, Ser. No. 469,577

Claims priority, application U.S.S.R., Mar. 1, 1982, 3402727

Int. Cl.³ E21B *1/00*

U.S. Cl. 173—53 **9 Claims**



1. A rod-clamping means of a percussive air tool for driving into the ground and removing therefrom rod-like elements comprising:

an assembly for transmitting impact loads to a rod being driven into the ground;

said impact load transmission assembly including a housing having a through axial cavity, a system of jamming elements, and a sleeve;

an assembly for taking up recoil forces from the percussive air tool;

said recoil force take up assembly including a housing having a through axial cavity, a system of jamming elements and a collar sleeve; and

separate resilient means in the said two assemblies for urging said systems of jamming elements to said housings and said rod.

4,516,663

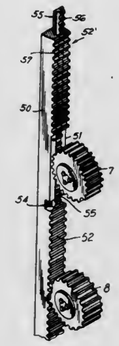
SAFETY DEVICE

Michael D'Alessio, Flushing, and Charles Matcovich, Pearl River, both of N.Y., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Mar. 15, 1982, Ser. No. 358,311

Int. Cl.³ B66B *11/04*

U.S. Cl. 187—19 **19 Claims**



1. A drive overload safety device for personnel hoists incorporating a rack and a drive pinion of the type further carrying a safety pinion for continuous engagement with said rack below said drive pinion, comprising disengaging means for disengaging said drive pinion from said rack approximately at a predetermined height of said hoist in response to a predetermined excess drive load on said drive pinion thereat, said means comprising a disengagable portion of said rack having teeth drivingly disengagable by being displaced relative to the remaining portion of said rack by said drive pinion when the latter is subjected to said predetermined excess drive load and is positioned on said rack at said approximate predetermined height, and at least that part of the rack adjacently above the disengagable portion having teeth more resistant to being displaced by said drive pinion so as to safely support said personnel hoist particularly when subject to precipitous descent.

4,516,664

APPARATUS FOR CONTROLLING AN A-C POWERED ELEVATOR

Nobuo Anzai, and Hiroyuki Ikejima, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

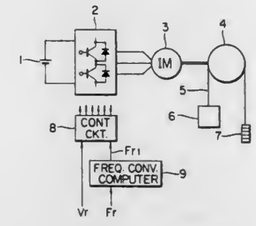
Filed Mar. 9, 1983, Ser. No. 473,723

Claims priority, application Japan, Apr. 30, 1982, 57-72928

Int. Cl.³ B66B *5/02*

U.S. Cl. 187—29 R **6 Claims**

1. An improved apparatus for controlling an AC powered elevator, the apparatus being of the type having an inverter connected to a DC power supply, the inverter being controlled by a varying voltage instruction value and a varying frequency instruction value, DC electric power being inverted by said inverter into AC electric power having a variable voltage and a variable frequency, and an AC electric motor energized by the thus inverted AC electric power so as to drive an elevator cage, wherein the improvement comprises:



a frequency converter which, when said frequency instruction value is a frequency value within a range developing resonance in a mechanical system of the elevator, provides said inverter with a converted frequency instruction value lying outside the resonance frequency range of said mechanical system, so as to suppress resonance in said system.

4,516,665

ELEVATOR CONTROL SYSTEM

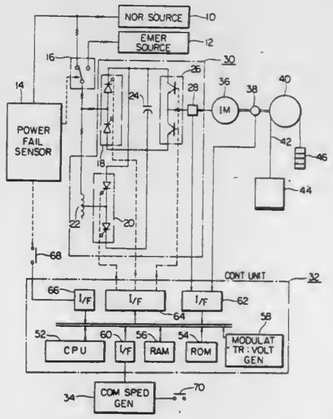
Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1984, Ser. No. 607,113

Claims priority, application Japan, May 10, 1983, 58-81409

Int. Cl.³ B66B *5/00*

U.S. Cl. 187—29 R **12 Claims**



1. An elevator control system comprising a normal power source for generating an AC power at a constant voltage, a converter for converting the AC power from said normal power source to a DC power having a variable voltage, an inverter for inverting said DC power with said variable voltage to an AC power having a variable voltage and a variable frequency, and an induction motor for an elevator car driven and controlled by said inverter wherein there are provided power failure sensor for sensing the occurrence of a power failure on said normal power source and generating a power failure indicating signal; an emergency power source for generating an AC power during a power failure occurring on said normal power source; a change-over switch disposed between said normal and emergency power sources and said converter to change the connection of said converter so that a power

supply to said converter is effected by either one of said normal and emergency power source, said change-over switch performing the change-over operation in response to the power failure indicating signal from said power failure sensor so that, when the normal power source is normally operated, said normal power source supplies an electric power to said converter and that, when a powers failure occurs on said normal power source, the emergency power source supplies an electric power to said converter; and a control unit for applying a control signal to said converter to deliver said DC power having said variable voltage, said control unit being responsive to said power failure indicating signal from said power failure sensor to supply a signal to said converter so as to cause said converter to generate a DC voltage higher than that generated by said converter when the latter receives the power supply from said normal power source.

4,516,666

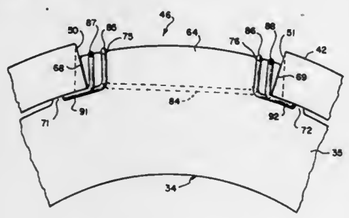
DISC BRAKE ANTI-RATTLE MEANS

David D. Sheill, Farmington Hills, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 487,551, Apr. 22, 1983, abandoned, which is a continuation of Ser. No. 212,003, Dec. 1, 1980, abandoned. This application Jun. 25, 1984, Ser. No. 623,864

Int. Cl.³ F16D *65/40*

U.S. Cl. 188—73.38 **3 Claims**



1. In a disc brake, a rotor having axially spaced friction braking surfaces, a caliper including a leg extending radially inward adjacent a friction surface of said rotor, a wall extending radially inward adjacent the other friction surface and said rotor and a bridge straddling the periphery of said rotor and joining said leg and said wall, load applying means carried by said wall, a first friction pad between said leg of said caliper and said adjacent friction surface of said rotor, a second friction pad between said load applying means and said other friction surface of said rotor, each said friction pad comprising a backing plate having a tab extending radially outward therefrom bounded by circumferentially spaced, radially converging edges and a radially outer edge, friction material secured to a part of said backing plate, an aperture in said bridge defined on two sides by circumferentially spaced, axially extending, radially converging edges, said circumferentially spaced converging edges of said backing plate tabs slidably mounting said friction pads on said radially converging edges of said aperture and an anti-rattle spring clip having segments thereof formed to abut and abutting the radially outer edges of said first and second friction pad backing plate tabs in said aperture and other segments formed to extend radially inward and under said radially converging edges of said aperture to engage a surface of said bridge and spring load said segments abutting said first and second friction pad backing tabs thereby urging said circumferentially spaced converging edges of said friction pad backing plate(s) into anti-rattle abutment with said radially converging edges of said aperture.

4,516,667

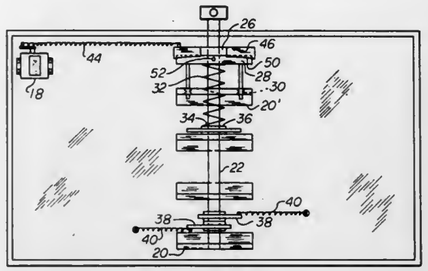
ROTARY MOTION DAMPING MEANS

William A. Lambertson, Pine Ridge Family Campground, Otts Shoals Rd. (Rte. 1), Roebuck, S.C. 29376

Filed Jul. 25, 1983, Ser. No. 517,068

Int. Cl.³ F16D *63/00*

U.S. Cl. 188—82.34 **11 Claims**



1. In a device including a member rotatable by force applied thereto in one direction about a fixed axis from a normally stopped position thereof and in opposition to a bias means tending to rotate said member in an opposite direction, damping means operable upon release of said applied force for checking return rotative movement of said member in said opposite direction to terminate said return movement at said normally stopped position without override therefrom, said damping means comprising a second member disposed in coaxial face-to-face, but non-rotatable relationship with said rotatable member, one of said rotary member and said second member being slideable axially relatively of the other,

bias force applying means normally urging said one of said members in to face-to-face contact with the other to establish frictional contact therebetween,

means carried on one of said members and operable during rotative movement of said rotatable member in said one direction to engage the other member and counter the effect of said bias force applying means for urging the axially slideable one of said members out of face-to-face engagement with the other, said last-mentioned means during return movement of said rotatable member disengaging from the said other member whereby frictional contact between the faces of said members is reestablished and absorbs the movement momentum in said rotatable member terminating said return movement when said rotatable member arrives at its normally stopped position.

4,516,668

KNOCK-DOWN COMBINATION HANDBAG AND MAT AND METHOD OF MAKING SAME

Rose M. Grayek, 33 Happy Hollow Cir., Stratford, Conn. 06497

Filed Oct. 28, 1983, Ser. No. 546,278

Int. Cl.³ A47C *17/82*

U.S. Cl. 190—2 **10 Claims**

1. A combination knock-down handbag and mat comprising a blank of foldable sheet material of a predetermined length and width which in the folded position thereof defines a handbag and in the knockdown position thereof a mat;

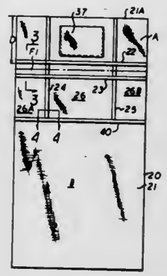
means defining a first pair of spaced apart seams extending transversely the width of said blank at a point intermediate the length of said blank and spaced from a transverse end thereof a distance equal to substantially the depth of the assembled handbag;

means defining a second pair of spaced apart seams extending longitudinally of said blank from said transverse end a distance substantially equal to twice the depth of the assembled handbag;

said blank of sheet material being reversely folded transversely along a foldline disposd intermediate said first pair of transversely extending seams to define a doubled-over portion whereby said second pair of seams are deposed between said doubled-over portion; and an extended portion;

means for securing the doubled-over portion to one another to define a pocket having an open end;

said extended portion of said blank being reversely folded along a transversely extending foldline whereby said extending portion is gathered in one or more folds substantially equal in depth to the said doubled-over fold and disposed contiguous and congruent to said doubled over portion;



said contiguous folds and doubled over portion defining a center portion and opposed end portions whereby said end portions are reversely folded relative to said center portion and disposed contiguous thereto, and said pocket being turned inside out to define the assembled handbag whereby said reversely folded end portions are disposed within said pocket.

4,516,669

GEAR SHIFTING DEVICE

Karl J. Boström, 24 Vretgatan, Skellefteå S-931 33, Sweden

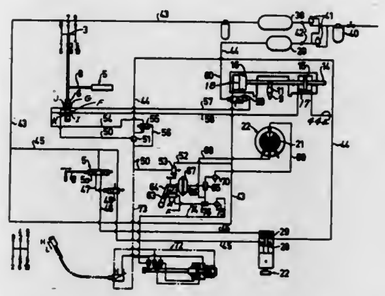
PCT No. PCT/SE81/00113, § 371 Date Dec. 10, 1981, § 102(e) Date Dec. 10, 1981, PCT Pub. No. WO81/03000, PCT Pub. Date Oct. 29, 1981

PCT Filed Apr. 13, 1981, Ser. No. 333,857

Claims priority, application Sweden, Apr. 14, 1980, 8002794; Sep. 30, 1980, 8006835

Int. Cl.³ B60K *41/22*

U.S. Cl. 192—3.58 **10 Claims**



1. A gear shifting device for a manual gearbox having a shifter, the shifting device comprising a side position cylinder for controlling the shifter in a sideways movement and a shift point cylinder for controlling the shifter movement perpendicular to the sideways movement, said cylinders having piston rods connected to said shifter and arranged perpendicular to each other for controlling its movement corresponding to a selected gear for its entering in the gearbox, said cylinders each comprising at least two pressure-medium actuated pistons connected to each other by a connecting rod, the pistons having a high pressure side and a low pressure side, said pistons being movable to one of two end positions for displacement of the piston rod of the respective cylinder in one of two directions, characterized in that the gearbox in a neutral position has one of the pistons in each cylinder centered in its cylinder chamber by the other piston, said other piston, by actuation from a first operating pressure at its high-pressure side, being held in one of its end positions, and that in the neutral position said one piston is at its low pressure side permanently actuated by a second operating pressure being greater than atmospheric and lower than the first operating pressure, said one piston being movable from its centered position to one of its two end positions together with said other piston in the respective cylinder, by the first operating pressure at selected sides of said one piston and said other piston carried out by a side position valve disposed on the side position cylinder and a shift point valve disposed on the shift point cylinder respectively, where the shift point valve admits the first operating pressure to the pistons of the shift point cylinder only after declutching, and that a clutch lock means is arranged to, depending on the motion of the piston of the shift point cylinder, stop the return of a clutch to engagement until the selected gear has been engaged in the gearbox.

4,516,670

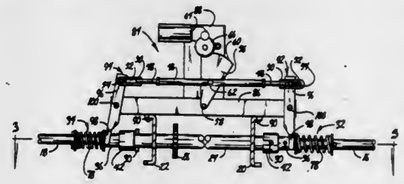
MEANS FOR CONTROLLING ROW PLANTERS

Edward C. Sorensen, Jr., Rte. 1, Box 5, Prescott, Iowa 50859

Filed Sep. 29, 1982, Ser. No. 427,775

Int. Cl.³ A01C *5/00*; F16D *11/10*

U.S. Cl. 192—48.8 **8 Claims**



1. A planter selector device for use with a planter having a planter frame, a plurality of row planters on said frame, a first planter shaft drivingly connected to a first group of said planters and a second planter shaft drivingly connected to a second group of said planters, a drive shaft, power means for rotating said drive shaft, first clutch means movable from an engaged position drivingly connecting said power shaft to said first planter shaft to a disengaged position, second clutch means movable from an engaged position drivingly connecting said power shaft to said second planter shaft to a disengaged position, spring means yieldably urging said first and second clutch means to their engaged positions; said selector device comprising:

first and second actuator links movably connected to said frame, said first and second actuator links each having a pawl engaging one of said first and second clutches and being movable from a first position to a second position to cause said one clutch to move from its said engaged position to its said disengaged position;

selector power means;

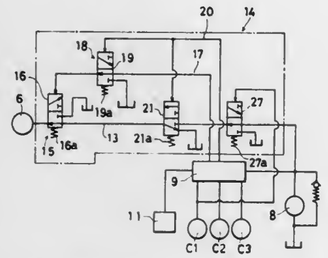
control means interconnecting said power means to said first and second actuator links for selectively causing movement of said first and second actuator links one at a time from their first positions to their second positions.

4,516,671

CONTROL APPARATUS FOR A TORQUE CONVERTOR CLUTCH

Masao Nishikawa, Tokyo; Takashi Aoki, Wako; Shinzo Sakai, and Hiroshi Yoshizawa, both of Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,610
Claims priority, application Japan, Jun. 1, 1981, 56-82520
Int. Cl.³ B60K *41/02*
U.S. Cl. 192—.076 **6 Claims**



1. A control apparatus for a torque convertor clutch in a transmission, in a vehicle between an engine producing an output and a driving wheel, the transmission including a torque convertor having a pump, a turbine, and a clutch for mechanically interconnecting the pump to the turbine, said control apparatus comprising:

means for engaging the clutch,

release means for disabling the means for engaging when the engine output increases above a predetermined set output value thereby releasing the clutch, and

a release-preventing means operatively associated with said release means for preventing operation of said release means when the vehicle speed increases above a predetermined set speed value even though the engine output increases above the predetermined set output value;

said transmission further including engine output signal means for producing an output signal proportionate to engine the output, an oil pressure source, and vehicle speed signal means for producing a speed signal proportionate to vehicle speed; said means for engaging including an oil supply passage from said oil pressure source to said clutch, said clutch being engaged by oil pressure from said oil pressure source; said release means comprising a first control valve interposed in said oil supply passage having an open position in which oil pressure is supplied to said clutch and a closed position in which oil pressure is cut off from being supplied to said clutch, a first spring urging said first control valve towards said open position, and a first control line applying said output signal from said engine output signal means urging said first control valve towards said closed position, said first spring having sufficient spring force to hold said first control valve in said open position until said output signal from said engine output signal means reaches said predetermined set output value.

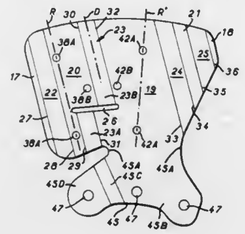
4,516,672

PROGRESSIVE ENGAGEMENT FRICTION DISC

André Caray, Paris, France, assignor to Valeo, Paris, France

Filed Aug. 3, 1982, Ser. No. 404,922
Claims priority, application France, Aug. 20, 1981, 81 16001
Int. Cl.³ F16D *13/68, 13/64*
U.S. Cl. 192—107 C **23 Claims**

1. A progressive engagement friction disc comprising a hub, at least one washer coupled to said hub, at least two friction linings fixed one on each side of blades disposed in a circular series and fastened to said at least one washer, each of said blades having plane areas divided into at least two sets for fixing the respective friction linings thereto, said plane areas extending at slightly different levels in two parallel planes, and ramp means connecting the plane areas of one of the sets to the plane areas of the other set through bend lines at the levels of the respective plane areas, at least one of the ramp means



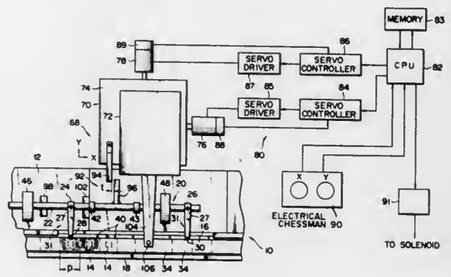
comprising at least two radially extending parts offset from each other in a circumferential direction, and said offset parts of the said ramp means being separated from each other by a closed circumferentially extending slot disposed transversely to said at least one ramp means.

4,516,673

APPARATUS FOR CONVEYING A LEAD FRAME MOUNTING SEMICONDUCTOR PELLETS

Tomio Kashihara, Yokohama; Toshiro Tsuruta; Masayoshi Yamaguchi, both of Kawasaki; Kiyotachi Yokoi, Yokohama, and Etsuji Suzuki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 29, 1982, Ser. No. 426,754
Claims priority, application Japan, Nov. 25, 1981, 56-188839
Int. Cl.³ B65G *43/00*
U.S. Cl. 198—341 **14 Claims**



1. An apparatus for conveying a lead frame mounting semiconductor pellets comprising:

a guide path for guiding the lead frame;

a feed member movably disposed between an initial position and a forward position along the guide path and movably disposed between a first position where the feed member is separated from the lead frame and a second position where the feed member engages with the lead frame;

first driving means for moving the feed member from the first position to the second position; and

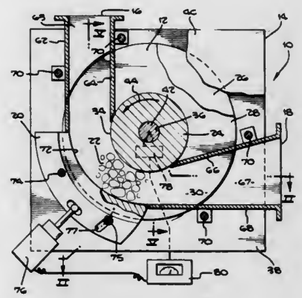
second driving means which is separate from the first driving means and includes an X-Y table for moving the feed member positioned in the second position from the initial position to the forward position, the X-Y table having a first drive motor for linearly driving the X-Y table along the guide path, whereby the lead frame is conveyed along the guide path by a predetermined distance.

4,516,674

METHOD AND APPARATUS FOR CONVEYING AND METERING SOLID MATERIAL

Donald Firth, 2277 Mandeville Canyon, Los Angeles, Calif. 90049

Continuation of Ser. No. 284,560, Jul. 20, 1981, abandoned. This application Sep. 12, 1984, Ser. No. 649,736
Int. Cl.³ B65G *31/04*
U.S. Cl. 198—617 **5 Claims**



5. A process for conveying solid material comprising the steps of:

feeding solid material to an inlet end of a passageway formed between a friction drive wall and a stationary wall, said friction drive wall having a greater surface area for contacting said solid material than said stationary wall;

moving said friction drive wall towards an outlet end of said passageway;

monitoring the torque needed to move said friction drive wall;

compacting said solid material within said passageway by converging said stationary drive wall with respect to said friction drive wall; and

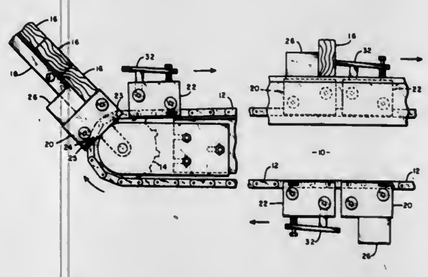
varying the degree of convergence of said stationary wall with respect to said friction drive wall in response to changes in said torque.

4,516,675

CONVEYOR FEED MECHANISM

Jerome E. Koskovich, R.R. 2, Byron, Minn. 55920

Filed Jun. 1, 1982, Ser. No. 383,502
Int. Cl.³ B65G *47/74*
U.S. Cl. 198—654 **3 Claims**



1. A conveyor feed and transport mechanism adapted for use with an endless conveyor, for supporting a workpiece in vertical registration and transporting same along a horizontal path of said conveyor, comprising

(a) a pair of parallel channel members longitudinally aligned adjacent respective sides of said endless conveyor, each of said channels comprising a pair of spaced apart horizontal planes adjacent said endless conveyor and a vertical edge positioned higher than said conveyor, said vertical edge having an inclined surface from a first conveyor entrant position to a second higher position, and a horizontal surface thereafter parallel to said horizontal planes;

(b) a pair of trucks attached to said endless conveyor and each truck having a first pair of wheels positioned for rolling against one of said spaced apart horizontal planes, and a second pair of wheels positioned for rolling against the other of said spaced apart horizontal planes, and each truck having an upper surface bridging said endless conveyor, said upper surface being lower than said vertical edge horizontal surface;

(c) a backrest member rotatably attached on the upper surface of one of said trucks and spring-biased detent means between said backrest member and said upper surface of said one of said trucks, for presetting said backrest member into either of two positions; and

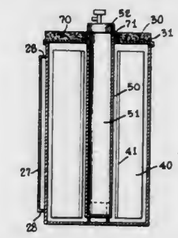
(d) a clamp arm member attached to the other of said trucks, said clamp arm member being supported above the upper surface of said other of said trucks and projecting toward said backrest member, and spring means for biasing said clamp arm member toward said backrest member.

4,516,676

HOUSEHOLD CLEANING KIT

Roger J. A. Cournoyer, 17200 Libby Rd., Maple Heights, Ohio 44137

Filed Dec. 27, 1983, Ser. No. 566,106
Int. Cl.³ B65D *83/14*
U.S. Cl. 206—226 **1 Claim**



1. A household cleaning kit for use with a roll of paper wound upon a core, comprising:

a fluid spray applicator having an elongated tubular receptacle and activator and nozzle means fixed to said receptacle;

a cylindrical container body forming an interior space, and having an elongated dispenser slot formed through said body and communicating with said interior space, an elongated exterior severing strip fixed to said body and disposed parallel to, and spaced apart from, said slot, a U-shaped member fixed to said body between, and parallel to, said slot and said strip, and an open end communicating with said interior space, said applicator being received by said interior space to form a generally annular space, said applicator being aligned with said strip, slot and U-shaped member, said activator and nozzle means projecting through said open end;

cover means for sealing said container body attached over said open end aperture means being formed therethrough for allowing said activator and nozzle means to project beyond said cover means while retaining said applicator in said container body, said applicator being rotatable with respect to said cover means, aperture means and container body;

a sponge having a gripping aperture for receiving said activator and nozzle means, said sponge being secured to said activator and nozzle means but rotatable with respect thereto and removable therefrom; and

the roll being received in said generally annular space, said

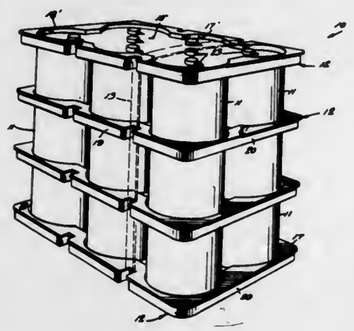
tubular receptacle frictionally engaging the core whereby the roll and said tubular receptacle rotate together with respect to said container body, the paper being extendable through said slot and said U-shaped member and over said strip upon such rotation.

4,516,677

MODULAR PALLET AND SHIPPING TRAY

Nelson Rowland, Asheboro, and Robert D. Getto, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 12, 1983, Ser. No. 560,501
Int. Cl.³ B65D *71/00*
U.S. Cl. 206—394 **24 Claims**



1. A pallet formed of two sheets of fused, molded material, comprising:

a generally planar top surface, and a generally planar bottom surface sufficiently spaced from the said top surface to provide a rigid pallet, said top surface formed by one of said sheets and said bottom surface by the other of said sheets;

a pattern of nubs upstanding from said top surface, each nub surrounded by a recess in said top surface;

a pattern of depressions formed on said bottom surface, said pattern of depressions tracking said pattern of nubs upstanding from said top surface;

each of said nubs shaped and dimensioned to receive the inner surface of a first tube thereover, and provide maximum resilient surface contact with the inside of the first tube when a bottom portion of the tube is received in said recess surrounding said nub; and

each depression in said bottom surface dimensioned to receive another tube substantially indentical to said first tube therein.

4,516,678

FLOPPY DISK CANISTER

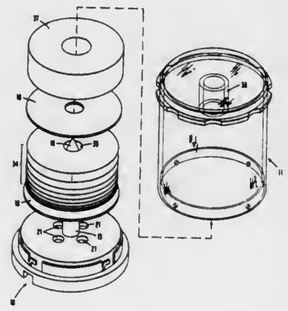
Emanuel Fotiadis; Edward J. Kozol, both of Ft. Lauderdale; Tak L. Leung, Boca Raton, and Robert J. Paul, Lighthouse Point, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1983, Ser. No. 499,085
Int. Cl.³ B65D *85/57*
U.S. Cl. 206—444 **19 Claims**

1. A canister for holding a stack of floppy magnetic recording disks, comprising:

a stack of floppy magnetic recording disks;

a base member having a flat surface which is larger than said disks supporting said disk stack by way of a centrally located, upwardly extending post which forms a right angle to said flat surface, the cross section of said post substantially conforming to the collet opening which is formed in the center of the disks, said post being of a length to extend beyond the top disk in the stack, and said base member's flat surface having a boundary portion including cover latch means;



a relatively deep cover having a rim including latch means adapted to cooperate with the latch means of said base member's boundary portion; and

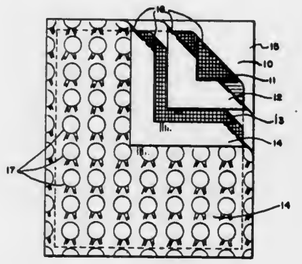
compressible means located between the top disk of the stack and the internal top surface of said cover, and operable to be compressed as said cover is latched to said base member, to thereby provide a force which loads said disk stack so as to prevent relative movement between adjacent disks in said stack.

4,516,679

TAMPER-PROOF WRAP

Carolyn N. Simpson, 1946 E. 6400 South, Salt Lake City, Utah 84121, and John A. Perry, 1838 Wasatch Dr., Salt Lake City, Utah 84104

Filed Nov. 4, 1982, Ser. No. 439,303
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—459 **27 Claims**



1. A tamper-proof wrap for encasing a consumer product for shelf display comprising, interior and exterior sheets of a thin plastic material positoned over one another and bonded together around the outer edge and including a layer of a select chemical sealed therebetween such that on puncture of a wrap exterior sheet, a chemical response will occur that will produce a visual indication at the wrap puncture; and distinctive seal means fixed at spaced intervals over said wrap exterior sheet.

4,516,680

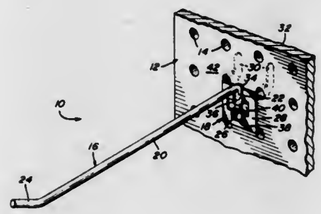
Patent Not Issued For This Number

4,516,681

COLLAPSIBLE DISPLAY HANGER FOR PERFORATED DISPLAY PANELS

Alfred Jahel, 500 Deguire, Ville St-Laurent, Quebec, Canada H4L 1L2

Filed Apr. 5, 1982, Ser. No. 365,233
Int. Cl.³ A47F *5/13*
U.S. Cl. 211—59.1 **15 Claims**



1. A collapsible display hanger for detachable engagement with a perforated display panel provided with regularly spaced perforations arranged in horizontal and vertical rows, comprising:

a hanger member having an elongate hanger arm adapted to extend outwardly from said panel and substantially perpendicular to the plane thereof, in a normal merchandise display position;

a bracket member adapted to be removably anchored to said panel through a pair of horizontally disposed perforations; and

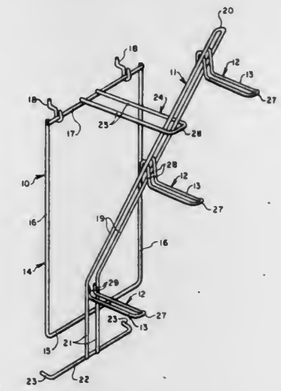
hinge means slidably interconnecting said hanger member with said bracket member for pivotal movement of said hanger arm about a pivot axis between said normal display position and a collapsed position whereat said hanger arm lies closely adjacent said panel, said hanger member being slidably engaged with said bracket member for shifting displacement of said hanger member in a direction parallel with said pivot axis such that said hanger arm clears an adjacent display hanger disposed in the pivotal path thereof when said hanger arm is pivotally moved to said collapsed position, said hanger member and said bracket member cooperating together upon disengagement of said bracket member from said panel to provide an articulation of said bracket member about a horizontal axis such that said bracket member is released from said panel in an arcuate movement when said hanger arm is pulled away from said panel while being maintained substantially perpendicular to the plane thereof, said hanger member including means which cooperates with said bracket member for retaining said hanger member and said bracket member in engagement with one another upon release of said bracket member from said panel, while permitting said shifting displacement of said hanger member.

4,516,682

MERCHANDISE DISPLAY RACK

Ted A. Bell, Coshocton, Ohio, assignor to Pretty Products, Inc., Coshocton, Ohio

Filed Apr. 26, 1983, Ser. No. 488,775
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—59.1 **8 Claims**



1. A merchandise display rack for vertically suspending articles of predetermined vertical extent from their upper end portions in a plurality of vertically displaced tiers comprising

a support standard having means for cooperatively engaging with base support means to maintain said standard in an upright position, including a vertically disposed planar base frame adapted to be positioned against a vertical support surface of base support means for thereby stabilizing said support standard, said support standard having a support element projecting upwardly from a bottom end portion in forwardly inclined relationship toward the direction of viewing of merchandise carried in the rack, and

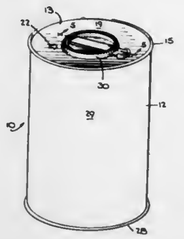
a plurality of merchandise support brackets mounted on said support element in relatively spaced relationship to support articles of merchandise in a plurality of vertically displaced tiers, each of said brackets including a leg for suspension of articles therefrom disposed substantially horizontal in forwardly projecting relationship to said support element and adapted to cooperatively engage with articles in suspension of the articles therefrom, each of said brackets being vertically spaced relative to a next adjacent bracket a distance less than the vertical height of the articles suspened therefrom whereby lowermost portions of articles suspended from one bracket will depend in front of the next lower bracket leg in overlapping relationship to upper portions of articles suspended from said next lower bracket, but which vertical spacing of next adjacent brackets leaves a bottom portion of articles on the next lower bracket exposed to visual observation from the front of the display rack.

4,516,683

CHILD-RESISTANT CLOSURE

Anthony Delia, West Redding, Conn., assignor to The Drackett Company, Cincinnati, Ohio

Filed Apr. 23, 1984, Ser. No. 602,880
Int. Cl.³ B65D *55/02, 85/56;* **A61J** *1/00*
U.S. Cl. 215—211 **28 Claims**



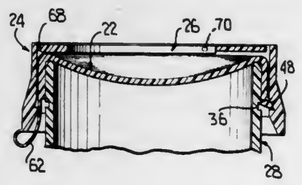
1. A child-resistant closure comprising:
(a) a can ring provided with an orifice through which the container is filled or emptied, the orifice having a peripheral rim having a downwardly extending flange, a minor portion of said flange extending below the lower edge of the major portion thereof, said minor portion being an unlocking tab, said can ring being further provided with indicia in its top surface to designate the location of said unlocking tab, and
(b) a cap, the cap comprising:
(i) a disc portion;
(ii) an annular ring portion disposed in a plane parallel to said disc portion, said annular ring portion having a peripheral sealing skirt;
(iii) an annular wall connecting the disc portion and the annular ring portion;
(iv) a pull tab extending outwardly horizontally from the periphery of the annular ring portion;
(v) an annular retaining flange extending through the periphery of the disc portion; and
(vi) a first protrusion extending outwardly horizontally from said annular retaining flange, the protrusion being proximate to and in alignment with the pull tab; the cap being adapted for snap fit retention within the can ring orifice,
whereby the cap is removed from the orifice by rotating the cap such that the pull tab is in alignment with the indicia, the protrusion thereby being compressed and deflected downwardly by the unlocking tab, and applying a pull force to the pull tab.

4,516,684

RESEALABLE CLOSURE

John Walter, Evergreen Park, Ill., assignor to Continental Packaging Company, Inc., Stamford, Conn.

Filed Apr. 10, 1984, Ser. No. 598,765
Int. Cl.³ B65D *45/32*
U.S. Cl. 215—272 **13 Claims**



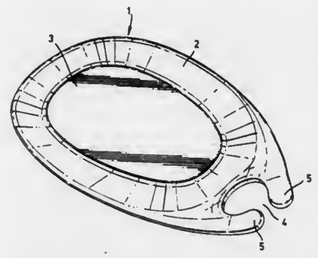
1. A resealable closure for a container having a tubular neck having an external neck finish including a free end and a peripheral groove in an external surface thereof axially spaced from the free end: said closure comprising a closure element including an end panel for sealingly engaging a container, a skirt depending from said end panel, and locking means depending from said skirt, said locking means in an as formed state projecting radially outwardly from and beyond said skirt; a retaining sleeve hingedly connected to said closure element, said retaining sleeve having an internal surface of a size and shape substantially corresponding to the size and shape of the exterior surface of said skirt and forming means for radially inwardly deflecting said locking means into a container peripheral groove for locking said closure element onto a container, said retaining sleeve having formed in said internal surface thereof a locking groove for receiving radially outer portions of said locking means to lock said retaining sleeve on said closure element, and the relationship of said locking means, said locking groove and said retaining sleeve being one wherein said locking sleeve may be removed from the closure element as a unit and replaced.

4,516,685

SUPPORTING A CONTAINER WITH RESPECT TO A PLATE

Michael J. French, 12, Cedar House, Ancastle Green, Henley on Thames, Oxfordshire, England

Continuation of Ser. No. 341,522, Jan. 21, 1982, abandoned. This application Apr. 13, 1983, Ser. No. 483,205
Claims priority, application United Kingdom, Feb. 2, 1981, 8103097
Int. Cl.³ A47G *19/03, 19/06*
U.S. Cl. 220—23.83 **7 Claims**



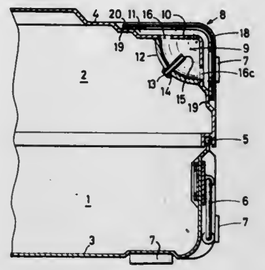
1. A plate for supporting food and a container provided with a stem or waist connected to a bowl portion, said plate comprising:
a first portion having an upper surface for supporting the food and a lower surface, said lower surface constituting the lowest level of said plate when said plate is in the horizontal position; and
a rim connected to said first portion and forming the periphery of said plate, said rim including a second portion provided with an aperture and defining a slot through the periphery of said rim which joins said aperture, said slot being shaped for passing the stem or waist of the container through the periphery of said plate into said aperture, said second portion sloping upwardly away from said first portion to stably support the bowl portion of the container, so that the container does not tend to slide out from the aperture through the slot when the plate is tilted from the horizontal.

4,516,686

PRESSURE BALANCING DEVICE WHICH IS WATERTIGHT AS CONCERNS RAINWATER OR TRICKLING WATER, IN PARTICULAR FOR A TRANSPORTING CONTAINER

Jacques E. C. Chaussepied, Saint Medard en Jalles, France, assignor to Soclete Nationale Industrielle Aerospatiale, France

Filed May 21, 1984, Ser. No. 612,605
Claims priority, application France, May 20, 1983, 83 08364
Int. Cl.³ B65B *3/04;* **B65D** *51/16*
U.S. Cl. 220—85 R **16 Claims**



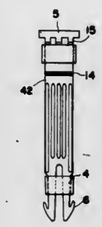
16. An enclosure in combination with a pressure balancing device which is watertight as concerns rainwater or trickling water, said device comprising a chamber having an outer wall and an inner wall, which inner wall separates said chamber from the interior of said enclosure, at least one orifice in said outer wall for putting said chamber in communication with the exterior, a tube extending through said inner wall and projecting into said chamber for putting the interior of said chamber in communication with the interior of said enclosure, said inner wall having such shape and said orifice having such position that, in any position of said enclosure, at least a part of said orifice is located at a level lower than a level of the end of said tube in said chamber.

4,516,687

HANDLE FOR A VESSEL

Haruyoshi Taguchi, Osaka; Hideo Tsujimura, Kyoto, and Masamichi Imanishi, Ikoma, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Dec. 7, 1982, Ser. No. 447,690
Claims priority, application Japan, Jan. 5, 1982, 57-436[U]; Jan. 18, 1982, 57-6619; Jan. 26, 1982, 57-11278
Int. Cl.³ B65D *23/10*
U.S. Cl. 220—94 R **21 Claims**



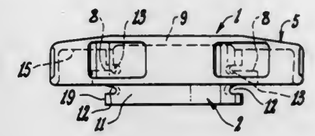
1. A vessel with a handle, comprising:
a vessel having a side wall; and upper and lower spaced apart mounts on the upper and lower portions of said side wall, respectively, each of said upper and lower mounts being generally U-shaped and having a pair of transversely spaced opposite arms extending from said side wall of said vessel and a comparatively long cross member extending therebetween such that each of said upper and lower mounts is in the shape of a short-armed letter U and defines an opening of given length between the respective mount and the side wall of the vessel, the upper mount defining an opening of greater length between its opposite arms than said lower mount; and
a generally tabular, flexible elongated handle made of synthetic resin and adapted to be attached to said vessel by passing through and engaging both of said upper and lower mounts, said handle having a greater longitudinal length than the distance between an upper edge of said upper mount and a lower edge of said lower mount, said handle comprising first disengagement preventing means for preventing the upper end of said handle from downwardly slipping out of said upper mount and second disengagement preventing means passable through both said upper and lower mounts in said downward direction and for preventing the lower end of said handle from upwardly slipping out of said lower mount, said upper mount having upper and lower edges;
said first disengagement preventing means for preventing the upper end of said handle from downwardly slipping out of said upper mount comprising a pair of barbs which project sideways from the upper end of said handle and point in the downward direction of said handle, for engaging upper edges of said transversely spaced opposite arms of said upper mount;
said barbs having free end portions, and projections on said free end portions which project inwardly toward said handle to engage lower edges of said transversely spaced opposite arms of said upper mount to prevent disengagement of said barbs from said upper mount and preventing said upper end of said handle from upwardly slipping out of engagement with said upper mount; and
said handle having an upper portion and a lower portion, said upper portion having a width greater than that of said lower portion such that said lower portion is passable through the openings defined by both said upper and lower mounts and said upper portion is passable only through the opening defined by said upper mount.

4,516,688

CLOSURE CAP HAVING INTEGRATED FASTENING MEANS

Warwick P. Freeland, Mount Waverley, Australia, assignor to W. A. Deutsher Proprietary Limited, Moorabbin, Australia

Filed Feb. 27, 1984, Ser. No. 583,568
Int. Cl.³ B65D *41/06*
U.S. Cl. 220—293 **12 Claims**



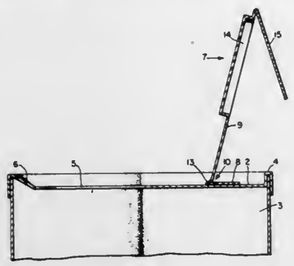
1. A one-piece plastics material closure cap for closing an opening in a hollow receptacle or container including, a cylindrical body section which is insertable into said opening, an enlarged head section at one end of the body section and formed integral therewith, a plurality of locking lugs provided on said body section in circumferentially spaced relationship and each projecting radially outwards from said body section, resilient means connecting each said locking lug to said body section aand being formed integral with both said body section and the respective said lug, said resilient means allowing movement of the respective said locking lug relative to said body section in the axial direction of said body section, and stop means limiting the extent of said relative movement so as to prevent over-stressing of said resilient means.

4,516,689

EASY OPEN/RECLOSABLE CONTAINER WITH POURING LIP AND HOLD-OPEN FEATURE

Dale E. Barker, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 22, 1984, Ser. No. 623,792
Int. Cl.³ B65D *51/22*
U.S. Cl. 220—335 **11 Claims**



1. An easy-open, reclosable container comprising:
(a) a hollow body portion having an uppermost and lowermost edge, said lowermost edge having a bottom end panel attached thereto;
(b) a top lid attached to said uppermost edge of said body portion, said top lid having a discrete dispensing aperture therein and an upwardly-projecting, peripheral rim;
(c) a pouring lip integrally formed within said top lid between said dispensing aperture and said peripheral rim;
(d) a closure element having a movable portion, a fixed portion, and an over-center hinge, said movable portion having a downwardly-projecting plug that is shaped complementary to said dispensing aperture whereby said aperture will readily receive said plug, said fixed portion being attached to said top lid adjacent to said dispensing aperture; and
(e) means for releasably securing said plug within said dispensing aperture.

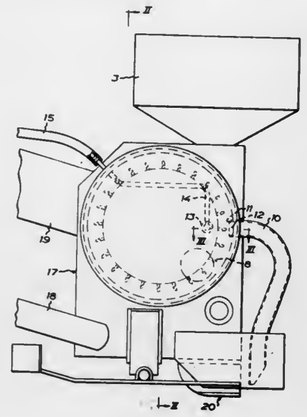
4,516,690

APPARATUS FOR PLANTING SEEDS IN DRILLS AT PREDETERMINED INTERVALS

Alf H. Andersson, Box 23, Ödåkra, Sweden

PCT No. PCT/SE81/00380, § 371 Date Aug. 10, 1982, § 102(e) Date Aug. 10, 1982, PCT Pub. No. WO82/02142, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 18, 1981, Ser. No. 414,346
Claims priority, application Sweden, Dec. 19, 1980, 8008973
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—233 **1 Claim**

1. An apparatus for planting seeds in drills at predetermined intervals, comprising a housing, a seed store in said housing, a wheel rotatably mounted in a vertical plane in said housing, said wheel having a plurality of spoons fixed in succession along the periphery of the wheel and disposed to pass through said seed store and to move upwardly therefrom, each spoon having a concave surface configured and oriented to pick up one seed from said seed store as the spoon moves through the seed store with said surface facing substantially outwardly away from one side of the wheel and to lift the seed to a position at said one side of the wheel, at which said surface faces substantially upwardly, with the seed supported on the surface by gravity, an outlet duct having an inlet portion in said housing at said position, and means including a nozzle connected to a source of compressed air and disposed opposite to and spaced from said inlet portion for providing a jet of compressed air directed toward said inlet portion, said wheel being disposed relative to said nozzle and said inlet portion such that each spoon moves upwardly into the space between said nozzle and said inlet portion at said position for causing the seed supported



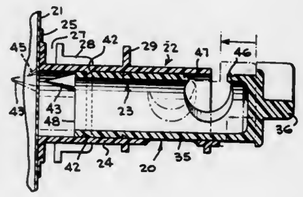
on the spoon to be transported into said inlet portion by said jet of compressed air.

4,516,691

PIERCE TURN TAP

William C. Christine, Catasauqua, Pa., and Charles H. Trillich, Long Valley, N.J., assignors to Trinity Foundation, Nazareth, Pa.

Filed Jan. 25, 1982, Ser. No. 342,660
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—83.5 **7 Claims**



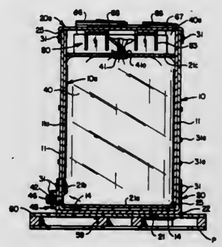
7. A two piece plastic turn tap consisting of two parts, one of said parts comprising a body member including a sleeve having a flange for attachment to a pouch, a rim on said sleeve spaced from said flange, said flange and rim co-acting to provide a space for receiving a portion of a box container, and wherein there is provided a locking means that includes members extending transversely from the rim to receive tabs of a box container to prevent rotation of the tap relative to the box container, an inner piercer member including a sharp pointed portion, said piercer member being made of relatively soft material, a flange portion mounted on the sleeve providing a convenient hand grip to facilitate manual manipulation of the tap, there being an aperture in said sleeve, a keeper disposed inwardly on the sleeve, there being an annular groove in said piercer member for selective engagement by said keeper, said piercer member having an aperture for selective registry with the aperture in the sleeve, a handle on said piercer member, and inter-engaging stop elements on said piercer element and sleeve for selectively limiting movement of the piercer member.

4,516,692

DISPOSABLE CONTAINER ASSEMBLY FOR LIQUIDS OR SEMI-LIQUIDS IN BULK

Thomas E. Croley, Worthington, Ohio, assignor to Williamette Industries, Inc., Delaware, Ohio

Continuation-in-part of Ser. No. 349,696, Feb. 17, 1982, Pat. No. 4,421,253. This application Feb. 28, 1983, Ser. No. 470,274
The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.
Int. Cl.³ B65D *35/14*
U.S. Cl. 222—105 **20 Claims**



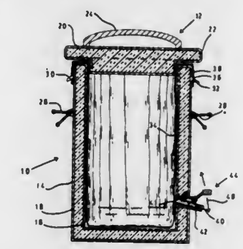
1. A container and support assembly including:
a disposable fiberboard assembly comprising a tubular body of fiberboard or the like composed of a plurality of vertical panels hinged together at vertical hinge joints to form a multi-sided polygonal body of tubular form open at both its upper and lower ends which is set up from a blank folded flat at opposed hinge joints, a bottom tray of fiberboard or the like with upstanding flanges hinged to a flat disc-like bottom wall which has an outer polygonal periphery corresponding substantially to that of the tubular body and with flanges hinged thereto at horizontal hinge joints and being set-up from a flat blank with the flanges turned upwardly from the disc-like bottom, at least one surrounding tie-band securing the flanges in upstanding position, said tubular body being telescoped downwardly into the tray with its vertical panels within the corresponding upstanding flanges of the bottom tray and having its lower end resting on the bottom disc-like wall of the tray, a pallet on which said tray disc-like bottom wall rests, a cap of fiberboard or the like with depending flanges hinged to a disc-like top wall which has an outer-polygonal periphery corresponding substantially to that of the tubular body and with flanges hinged thereto at horizontal hinge joints and being set-up from a flat blank with the flanges turned downwardly, at least one surrounding tie-band securing the flanges in depending position, said cap being telescoped downwardly over the upper end of the tubular body with its depending flanges overlapping the corresponding vertical panels of the body and with its disc-like top wall resting on the upper end of the body; and stabilizing means for securing the fiberboard assembly to the pallet comprising tension members at angularly-spaced positions around the tubular fiberboard container body extending completely vertically around the cap and along the vertical panels of the body and tightened and secured to the pallet to clamp these members axially together; said body having a flexible bag therein filled with contents to a level spaced below the disc-like top wall of the cap and a spacer unit between that cap wall and the upper end of the filled bag to apply pressure thereto, said tubular body having flanges at its lower end hinged to the corresponding panels at horizontal hinge joints and turned inwardly horizontally so they will rest on said disc-like bottom wall of the tray, said assembly including a liner disc having an outer polygonal edge complemental to the polygonal shape of the body and inerted axially therein to rest on said horizontal flanges, and a tubular body liner of a polygonal shape like the body set up from a similar flat blank composed of a corresponding number of hinged panels which are disposed in flat contact with the inner surfaces of the corresponding body panels, said liner having a lower edge resting on the liner disc and an upper edge engaging the top disc-like wall of the cap; and a pressure-applying disc in engagement with the upper end of the filled bag and engaged by said spacer unit, said disc having an outer polygonal edge complemental to the liner in which it is inserted, said stabilizing means including an upper stabilizing frame in contact with the flat disc-like top wall of the cap, said frame including frame members disposed in angular relationship across said flat top wall of the cap to provide outwardly-extending arms which extend to the edge of the cap, said pallet being of a size to extend to the edge of the tray, said pallet having an upper support surface and spaces therebeneath, said tension members extending vertically completely around the stabilizing frame along the arms thereof and beneath the support surface of the pallet and through the said spaces thereof.

4,516,693

SANITARY DRINKING WATER SYSTEM

Roy T. Gaston, Rte. 2, Box 483-H, Pell City, Ala. 35125

Filed Sep. 6, 1983, Ser. No. 529,384
Int. Cl.³ B65D *25/16, 25/42*
U.S. Cl. 222—105 **3 Claims**



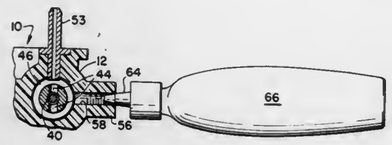
1. A sanitary drinking water system for construction sites and the like, which comprises:
a barrel having an open top end and a closed bottom end and a cylindrical wall defining a cylindrical cavity, said barrel being provided with an opening through said wall adjacent said closed end, said opening defining an extended surface;
a removable lid for said open end of said barrel;
a plurality of hooks projecting outwardly from said barrel proximate said open end;
a replaceable flexible liner disposed within said cavity, said liner having a closed end disposed adjacent said closed end of said barrel and an open end extending from said open end of said barrel, said open end of said liner being provided with reinforced apertures releasably engaged with said hooks;
a spout attached to and communicating with said liner disposed adjacent said closed end of said liner and disposed within said opening in said wall of said barrel; and
a pinch valve mounted on the external surface of said barrel proximate said opening for normally closing said spout against any flow from said liner, said valve including a lever pivoted from said barrel wall, said lever carrying a cylindrical cut off bar to deform said spout against said extended surface upon action of gravity, and for permitting flow from said liner upon upward movement of said lever.

4,516,694

SOLVENT FLUSHING ARRANGEMENT FOR FOAM DISPENSING GUN

Clifford J. Finn, Wauwatosa, Wis., assignor to Universal Foam Systems, Inc., Cudahy, Wis.

Filed Aug. 8, 1983, Ser. No. 521,420
Int. Cl.³ B67D *1/08*
U.S. Cl. 222—148 **4 Claims**



1. In a foam dispensing kit comprising a pair of pressurized tanks respectively containing an A resin and a B resin, said A resin being settable on exposure to air, a container of A resin solvent having a solvent discharging tip and means for dispensing said solvent through said discharging tip under pressure, and a dispensing gun having a body to establish a pair of internal resin passageways in separate fluid flow communication with said tanks, respectively, a removable mixing nozzle to receive and mix said A resin and said B resin and to discharge the mixed resins as foam, and separate valves in each of said internal resin passageways, each of said valves having a seat and means engageable with said seat to close said passageways upstream from an internal gun passageway portion, the improvement comprising:

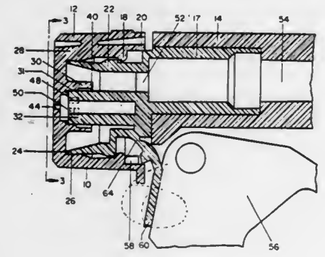
means defining a solvent flushing port in said gun body, said port providing an opening in said body to receive said solvent discharging tip and extending to the internal gun passageway for said A resin at a point downstream from and adjacent to said valve seat in such passageway, whereby discharge of solvent from said container through said port after removal of said nozzle flushes only said internal passageway portion to remove residual amounts of said A resin remaining in said internal passageway portion after closure of the valve means therein.

4,516,695

CHILD-RESISTANT LIQUID DISPENSER SPRAYER OR LIKE APPARATUS

Richard P. Garneau, Davie, Fla., assignor to The AFA Corporation, Hialeah, Fla.

Filed Feb. 9, 1981, Ser. No. 232,782
Int. Cl.³ B05B *1/12*
U.S. Cl. 222—153 **13 Claims**



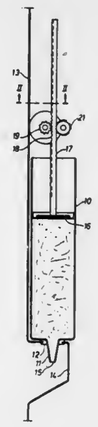
13. A child-resistant adjustable nozzle for a hand-operated liquid ejection apparatus, said apparatus including a discharge end which has an upper side and a lower side, insertable means having an upper side and a lower side in said discharge end for coupling said nozzle to said apparatus, said nozzle being movable into different positions relative to said insertable means including a liquid flow OFF position for said apparatus, passage means in said nozzle and on said insertable means in said discharge end adapted to form passageways for liquid conducted to said discharge end for ejection from said nozzle, which passageways are formed when said passage means are brought into register by adjustment of said nozzle relative to said insertable means and thereby determine the ejection or discharge mode of said apparatus, deflection means on the lower side of one of said nozzle and said insertable means and cooperating engagement means on the lower side of the other of said nozzle and insertable means adapted to engage said deflection means and lock said nozzle in child-resistant relationship with said apparatus when said nozzle and insertable means are moved into said liquid flow OFF position and said deflection means being integral with said insertable means.

4,516,696

AUTOMATIC DISPENSER FOR A DETERGENT

Per O. E. Eknor, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

PCT No. PCT/SE81/00225, § 371 Date Apr. 16, 1982, § 102(e) Date Apr. 16, 1982, PCT Pub. No. WO82/00753, PCT Pub. Date Mar. 18, 1982
Continuation of Ser. No. 375,031, Apr. 16, 1982, abandoned.
This PCT application Aug. 10, 1981, Ser. No. 578,988
Claims priority, application Sweden, Aug. 28, 1980, 8006035
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—181 **4 Claims**



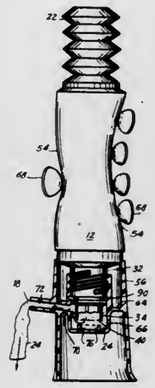
1. A device mounted on a wall adjacent a wet cabinet of a laundry or dishwashing machine for automatic apportioning and dispensing of a detergent in the form of a paste to the wet cabinet, comprising a container having a discharge hole and provided with a supply of said paste, and apportioning and dispensing means for transferring a portion of said paste from said container through said discharge hole to said wet cabinet of the machine, said apportioning and dispensing means further comprising a piston provided with a rod inserted in said container, a motor and movement transmitting means, said rod being connected to said motor through said transmitting means, said piston rod further being provided with teeth engaging with a part of said movement transmitting means in the form of a drive wheel, a support idle wheel engaging the piston rod on the side opposite the toothed side wherein means are provided for pivotally mounting the support idle wheel to be moved into and out of engagement with said piston rod, a locking device being provided for releasably locking said support idle wheel in a position of engagement with said piston rod, said support idle wheel mounting means being operable to move said wheel to a position permitting the removal of said container and piston together with the piston rod from said wall.

4,516,697

LIQUID PRODUCT DISPENSER

James R. Dreps, Kinnelon, and Edward J. Drozd, Lake Hiawatha, both of N.J., assignors to Captive Plastics Inc., Piscataway, N.J.

Filed Sep. 22, 1982, Ser. No. 421,545
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—212 **8 Claims**



1. A hand dispenser for a liquid, in combination, comprising:

a base,

a closed container mounted on said base for storing said liquid, said container having a discharge port, said container being vertically movable between a first lowered position and a second raised position, said discharge port being closed in said first position and open in said second position,

passage means for discharging said liquid contained in said container to the atmosphere, said passage means being connected to said discharge port at one end and having a dispensing orifice at the other end, said dispensing orifice being positioned outside of said dispenser,

means for manually ejecting a portion of said liquid from said container into said passage means and to the atmosphere,

means for lowering the liquid level in said container and creating a lower pressure in said container above the liquid level than exists in the atmosphere after the ejection of said portion of said liquid,

whereby when the portion of the liquid is ejected from teh dispenser, atmospheric pressure prevents the remaining liquid in the container and in the passage means from passing to the atmosphere,

said hand dispenser further including a cylinder mounted to said base, said cylinder forming a closed chamber having an open side disposed beneath and forming a liquid passage with said discharge port, said cylinder being capable of receiving the bottom portion of the container,

thread means formed by the chamber and the container for allowing rotation and raising and lowering of the container in said chamber between said first and second positions, the thread means forming a substantially sealed interconnection between said cylinder and said container,

a neck member connected to the bottom of said container, said neck member forming a connecting passage between said container and said chamber, said neck member being smaller in cross-sectional area than the bottom of said container, said thread means forming by said container being mounted on said neck member,

said discharge port including a peripheral edge disposed at the bottom portion of said neck member, said cylinder including a bottom wall, said peripheral edge being in substantially sealed alignment with said bottom wall when said container is in said first position, and being removed from said bottom wall when said container is in said second position,

a raised ring portion connected to said bottom wall of said cylinder, said raised ring portion being capable of being in sealing alignment with the inner surface of said neck when said container is in said first position, whereby said discharge port is sealed around the periphery of the port in the first position,

a duct extension member disposed at the bottom of said neck member, said discharge port being positioned at the bottom of said duct member, said duct member having a smaller cross-sectional area than said container,

said discharge port being disposed at the bottom of said duct member, said discharge port being formed by edge portions of the bottom of said duct member,

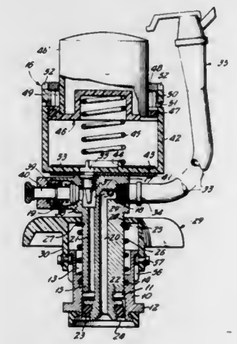
and a discharge spout connected to said cylinder chamber and extending through said base, said spout including said dispensing orifice and an opposed inner orifice positioned in the side wall of said chamber and spaced above the bottom wall of said chamber.

4,516,698

KEG-PUMP CONSTRUCTION

Vincent J. Cerrato, Camarillo, Calif., assignor to Vending Components, Inc., Hackensack, N.J.

Filed Feb. 2, 1983, Ser. No. 463,135
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—341 **8 Claims**



1. A keg-pump assembly for removable attachment to a keg for pressurized delivery of beer or other beverage within the keg, comprising a generally annular body having a keg-engageable flanged lower end and a cylindrical bore extending upwardly from said lower end, an elongate probe having a cylindrical lower portion in longitudinally and rotatably displaceable sealed relation to said bore and extending upward beyond the upper end of said body, said probe having a first internal passage communicating between the lower end of the probe and an outwardly directed beverage-dispensing port at a location above said body, said probe having a second internal passage communicating between the upper end of the probe and open at the lower end of the probe at a location offset from the lower end of the first passage, reciprocable manual air-pump means carried by the upper end of said probe for directional delivery of pressurized air down the second passage, radially outward shoulder means on said probe at a location between said beverage-dispensing port and the upper end of said body, compressionally loaded spring means reacting between said body and said shoulder means to urge said probe upwardly with respect to said body, and a handle including an annular hub circumferentially encompassing and rotatably engaged to said shoulder means and in axial overlap with the upper end of said body, said body and handle having in their region of overlap coacting cam and follower formations determining axial compression of said spring in the course of rela-

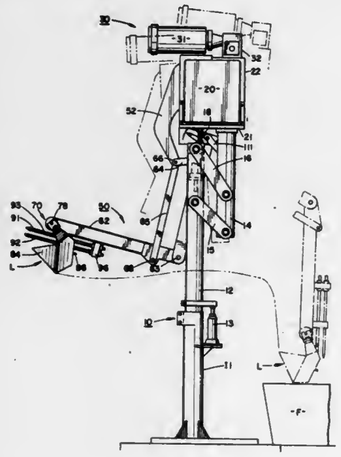
tive rotation of said handle and body from a fixedly limited upper position of said handle to a lower handle position of greatest spring compression and of maximum downward displacement of the lower end of said probe beyond the lower end of said body.

4,516,699

AUTOMATIC LADLING APPARATUS

Charles A. Burton, and Peter Banovic, both of Columbus, Ohio, assignors to Yellowstone Ltd., Columbus, Ohio

Filed Jun. 10, 1983, Ser. No. 503,164
Int. Cl.³ B22D *41/12*
U.S. Cl. 222—591 **17 Claims**



1. Apparatus for transporting a charge of molten metal from a furnace to a casting means and for pouring said charge into a receiver for said casting means, comprising:

a support assembly;

a ladle dipper;

a crankshaft journaled in said support assembly;

drive means for turning said crankshaft in forward and reverse directions;

a crank arm fixed to said crankshaft;

a generating arm pivotally connected at one end to said crank arm;

link means operatively connected between said generating arm and said support assembly whereby the other end of said generating arm defines a predetermined motion path in response to turning of said crank arm;

a main link connected at one end to said support assembly for pivotal movement about a main axis parallel to the axis of said crankshaft;

a carrier link pivotally connected at its inner end to the other end of said main link and adapted to support said ladle dipper at its outer end for pivotal movement relative thereto about a tilt axis parallel to said main axis;

means operatively connecting said other end of said generating arm to both said main link and said carrier link whereby in response to movement of said generating arm said main link and said carrier link are operable to transport said ladle dipper in forward and reverse directions through a controlled path of travel between a fill position wherein said ladle dipper is lowered into a furnace reservoir to receive a charge of molten metal and wherein said carrier link is generally vertical, and a pour position wherein said ladle dipper is over said receiver for said casting means and wherein said carrier link is generally horizontal; and

means for controlling the attitude of said ladle dipper relative to said tilt axis.

4,516,700

HOT MELT ANTI-SURGE DISPENSING SYSTEM

Raymond J. Guzowski, New Hudson, Mich., assignor to Pyles Division, Wixom, Mich.

Filed Mar. 31, 1982, Ser. No. 363,943
Int. Cl.³ B67D *5/46*
U.S. Cl. 222—330 **7 Claims**

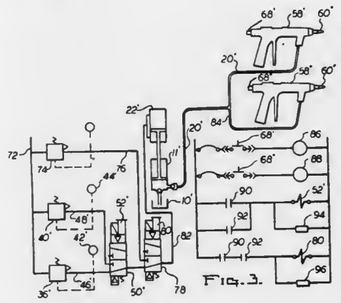


Fig. 3.

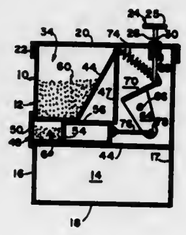
1. An anti-surge dispensing system for viscous materials wherein the system includes a pump for the material operated by an expansible chamber air motor powered by a compressed air source and a valved dispensing nozzle in communication with the pump, the improvement comprising air pressure control means interposed between the air motor and compressed air source controlling the air pressure supplied to the air motor in accordance with the condition of the valve of the dispensing nozzle, said air pressure control means including a first air pressure regulator having a low air pressure output, a second air pressure regulator having an air pressure output higher than that of said first regulator, electrically operated valve means communicating with said regulators and the air motor having a first position supplying low pressure air to the air motor and a second position supplying higher pressure air to the air motor, and an electric switch simultaneouly operated with the valve of the dispensing nozzle controlling the position of said valve means whereby a low air pressure is supplied to the air motor when the dispensing nozzle valve is closed and a higher air pressure is supplied to the air motor when the dispensing nozzle valve is opened.

4,516,701

DISPENSER FOR PARTICULATE MATERIAL IN MEASURED QUANTITIES

Terry B. Tribble, Roberta, Ga. 31078

Continuation of Ser. No. 310,608, Oct. 13, 1981, abandoned.
This application Feb. 8, 1984, Ser. No. 578,292
Int. Cl.³ G01F *11/10*
U.S. Cl. 222—361 **1 Claim**



1. In a dispensing device for particulate material:

a three-dimensional housing comprising a storage hopper for storing and dispensing the particulate material, said hopper having a sloped interior and a dispensing outlet therein from which the particulate material may exit by gravity for dispensing a measured amount,

a receptacle mounted for movement to reciprocate in straight extension and retraction beneath said hopper to receive a quantity of particulate material therein, said receptable having an open top to receive the material therein from said hopper outlet and an open bottom to dispense the material therefrom,

a removable closure on said housing having a hole therein,

means on said housing closing the bottom of said receptacle while in substantially retracted position beneath said hopper comprising a shelf member within said housing providing a bottom for said receptacle when in retracted, non-dispensing position,

control means in said housing and rearwardly of said receptacle having a pivoting means and a means engaging said pivoting means with said receptacle, a plunger mounted in the hole in said closure, said plunger being movable vertically and having an unattached terminal contact and whereby said closure may be removed with said plunger therein without detaching said plunger, said pivoting means including a first portion contacted by and free of the unattached terminal end of said plunger and a shifting means comprising a portion depending therefrom for driving said receptacle in response to movement of said plunger to drive from a non-dispensing to a dispensing position,

spaced first and second supports for said pivoting means,

spring means normally biasing said receptacle to retracted position, said spring means resisting the movement of said pivoting means by said plunger and tending to return said receptacle to retracted position,

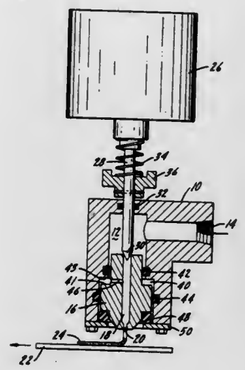
said means engaging comprising a connecting means for engaging said second portion of said pivoting means with said receptacle.

4,516,702

DRIPLESS VALVE

Robert W. Schmidt, Oak Lawn, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed Dec. 6, 1982, Ser. No. 447,154
Int. Cl.³ B05B *1/28*
U.S. Cl. 222—514 **5 Claims**



1. A valve for applying a flowable material in which it is desired to provide a sharp cutoff in application of the material including:

a valve body and a chamber therein, said chamber being in communication with a source of the material to be applied,

a movable piston positioned within said valve body, a passage in said piston opening to said chamber, said passage terminating in an application opening,

a movable valve stem positioned to open and close upon said passage chamber opening to control the flow of material to said passage and application opening,

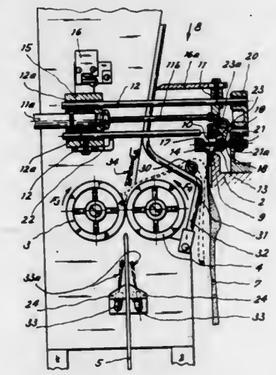
and means for creating a negative pressure at said application opening at or immediately after closure of said valve stem upon said passage chamber opening to thereby provide a sharp cutoff in the application of the material from said opening.

4,516,703

APPARATUS FOR REVERSING HOSE

Mario Orosei, Reggio Emilia, Italy, assignor to Fadis S.p.A., Solbiate Arno, Italy

Filed Mar. 7, 1984, Ser. No. 587,213
Claims priority, application Italy, Mar. 9, 1983, 19972 A/83
Int. Cl.³ D05B *21/00*
U.S. Cl. 223—39 **14 Claims**



1. Apparatus for turning hose inside out after a seaming operation to form a closed end in the hose comprising a pair of contra-rotatable rollers urged towards each other to form a nip therebetween, transport means engageable with said closed end of the hose and operable to present said closed end to said nip, a rod displaceable through said nip to engage said presented closed end, roller rotating means operable to contra-rotate said rollers in the sense to draw said presented closed end and said hose into said nip, rod displacing means operable in synchronism with said roller rotating means to enter said rod into said nip as said closed end is drawn into said nip and to advance said rod through said nip in engagement with said closed end to displace said closed end away from said rollers as said rollers continue to draw said hose into said nip and about said rod.

4,516,704

HOSIERY DONNING AID

Harry C. Hagman, 6122 Portland Ave. South, Minneapolis, Minn. 55417

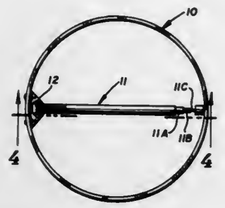
Filed Jul. 16, 1984, Ser. No. 631,217
Int. Cl.³ A47J *51/06*
U.S. Cl. 223—111 **2 Claims**

1. A device for aiding the infirm in donning hosiery, said device comprising:

(A) a rigid hoop of a size sufficiently large to permit the user's foot to fit loosely therein, said hoop having smooth inner and outer surfaces, the outer surface being engageable by the stretched open end of a sock or stocking, and

(B) a single slender rigid elongated telescopic handle pivot-

ally secured to the inside surface of one side of said hoop, the length of said handle when telescoped being less than



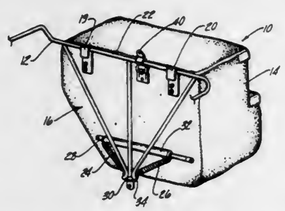
the inside diameter of the hoop, whereby the handle may be collapsed within the hoop for storage of the device.

4,516,705

PANNIER WITH HOOK AND SPRING MECHANISM

W. Shaun Jackson, Eclipse, Inc. P.O. Box 7370, Ann Arbor, Mich. 48107

Filed Jan. 6, 1984, Ser. No. 568,632
Int. Cl.³ B62J *9/00*
U.S. Cl. 224—32 A **5 Claims**



1. A pannier bag mounting mechanism including:
a plurality of hook members adapted to grasp the upper horizontal member of a bicycle carrier frame;
a rigid elongate member secured in a generally horizontal position to the back portion of the pannier bag;
a spacing member slideably mounted on the rigid elongate member; and
a resilient member slideably mounted at two points along the rigid elongate member with the spacing member located on the elongate member between the two points, the resilient member including means for releasably securing the resilient member to a lower portion of a bicycle carrier frame, whereby
when the resilient member is anchored to the lower portion of the carrier frame, a downward force is exerted upon the rigid elongate member at each of the points where the resilient member is slideably mounted upon the rigid elongate member, tending to urge the hook members downward over the upper horizontal member of the carrier frame in a secure and balanced fashion.

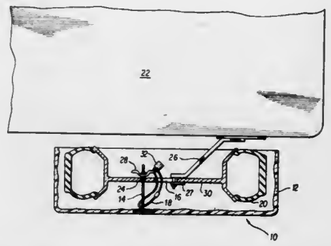
4,516,706

SPARE TIRE COVER

Roy G. Niehaus, 3611½ Ponciana Dr., Akron, Ohio 44319

Filed Aug. 3, 1983, Ser. No. 519,976
Int. Cl.³ B62D *43/02*
U.S. Cl. 224—42.2 **4 Claims**

1. A device for securing a tire and wheel to the outside of a vehicle comprising:
a rigid shroud covering the exposed portions of the tire;
a bolt secured to the inner surface of said shroud in an off center manner and having a threaded portion;
a loop of flexible cable encircling said bolt; and
a nut in threadable communication with said bolt and having an aperture at its extremity for receiving a lock mechanism;
wherein a tire, mounted on a wheel, is positioned within said shroud, said bolt passing through a lug nut aperture of said wheel, said flexible cable extending through the axle aperture of said wheel;
wherein said nut is threadably engaged onto said bolt engaging said wheel; and



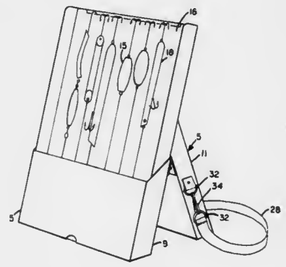
wherein said flexible cable and said nut are secured by said locking mechanism, thereby preventing rotation and disengagement of said nut from said bolt.

4,516,707

FISHING PLUG AND LURE ORGANIZER

Joseph R. Crapanzano, 602 Shore Ave., Ship Bottom, N.J. 08008

Filed Feb. 24, 1984, Ser. No. 583,444
Int. Cl.³ A01K *97/06*
U.S. Cl. 224—202 **3 Claims**



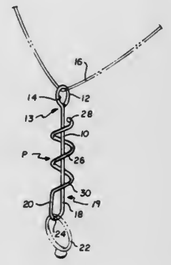
1. A fishing plug and lure organizer in the form of a portable container for supporting and displaying fishing plugs and lures arranged in an orderly manner for ease of transport and selection comprising,
(a) a housing unit,
(b) cover means for said unit telescopically slidable thereover and being composed of distinct upper and lower sections hinged along a single common edge and surface intermediate their extremities, the upper section being disposed to reside outside the housing to form a support therefore, and the lower section simultaneously residing over and covering the lower portion of said housing to allow viewing the contents of said housing,
(c) transparent means in said cover in the upper section thereof disposed to permit viewing the contents of said container including fishing plugs and lures located therein when both cover sections telescopically enclose the housing,
(d) a removable holder carried by said housing including mounting means thereon and forming a part thereof disposed to individually maintain said plugs and lures in an orderly array and display for the selection thereof, and
(e) securing means carried by said housing and cover during the transport thereof.

4,516,708

FINGER RING HOLDER

Lee A. Elliott, 7425 Lamon Ave., Skokie, Ill. 60077

Filed Jan. 30, 1984, Ser. No. 574,973
Int. Cl.³ A44C *11/02, 9/00*
U.S. Cl. 224—257 **7 Claims**



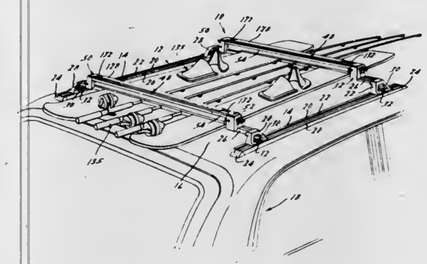
1. A ring holder for attachment to a necklace or the like, which does not require resiliency to retain a ring thereon, comprising:
(a) a first member having first and second end portions including means disposed at said first end portion for vertically suspending said first member from said necklace;
(b) a generally U-shaped loop, one leg of said loop extending from said second end portion of said first member for receiving a ring thereon;
(c) a second member extending from the other leg of said loop and including a plurality of spirals spaced from said first member a distance sufficient to permit a ring to be freely placed between said first and second members and generally helically disposed about said first member;
(d) said second member terminating in an end spaced from said first end portion a distance sufficient to permit a ring to be placed about said terminating end and between said first and second end portions;
(e) whereby said ring will spiral about said second member and be received and stored on said loop and thereby retained by said spirals without permitting substantial vertical movement of the ring when vertical motion is imparted to the ring holder and thus avoiding accidental removal therefrom.

4,516,709

VEHICLE ARTICLE CARRYING DEVICE

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Filed Jul. 11, 1983, Ser. No. 512,394
Int. Cl.³ B60R *9/12*
U.S. Cl. 224—315 **15 Claims**



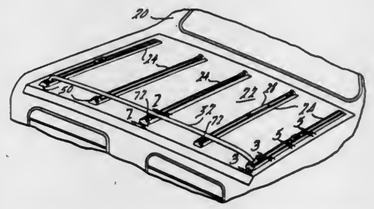
1. A vehicle article carrier for the horizontal body surface of an automotive vehicle comprising:
a cross member extending laterally of said body surface, having an article engaging surface;
first and second bracket means;
means for removably and adjustably mounting said first and second bracket means to said cross member;
means for removably clampingly engaging said mounting means to said cross member; and
an article restraint element extending between and secured to said first and second bracket means;
wherein said bracket means includes a housing which combines with said cross member to encapsulate said mounting means and said engaging means and said article restraint element and said article engaging surface of said cross member cooperate to restrain articles disposed upon said carrier.

4,516,710

ARTICLE CARRIER FOR AUTOMOTIVE VEHICLES

John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 485,859, Apr. 18, 1983, Pat. No. 4,440,333, which is a continuation of Ser. No. 242,138, Mar. 9, 1981, abandoned, which is a continuation of Ser. No. 56,373, Jul. 10, 1979, abandoned, which is a division of Ser. No. 924,072, Jul. 7, 1978, Pat. No. 4,182,471, which is a division of Ser. No. 743,602, Nov. 22, 1976, Pat. No. 4,099,658, which is a continuation of Ser. No. 486,415, Jul. 8, 1974, abandoned. This application Nov. 23, 1983, Ser. No. 554,683
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—324 **5 Claims**



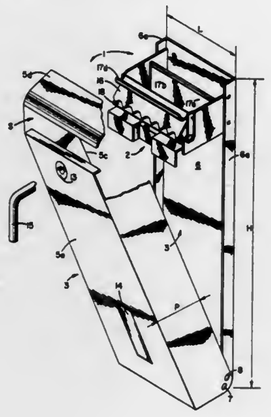
1. An article carrier for an automobile including at least two parallel slat-like elements fixedly secured on a generally horizontally extending exterior body surface,
said slat-like elements on said surface in respective positions on opposite sides of the longitudinal axis of said automobile and extending substantially parallel to the longitudinal axis of the automobile and each having an upper article supporting surface,
said support surfaces being located between said body surface and the lower side of articles on said carrier, each of said slat-like elements having major and minor transverse dimensions with said major dimensions being parallel to said body surface and said supporting surface,
first fastening means associated with said slat-like elements,
a pair of article securing members disposed upon said slat-like elements and a restraining bar extending laterally between and secured adjacent its opposite ends to said members,
said restraining bar being located above said automobile body surface and said slats, and
second fastening means on each of said members and cooperable with said first fastening means for longitudinally slideably adjusting said members and said restraining bar upon said slat-like elements.

4,516,711

DISPENSER FOR CONTINUOUS, SEVERABLE STRIPS

Jacqueline Barege, 2 rue de General Hoche, 31200 Toulouse, France

Filed Oct. 12, 1983, Ser. No. 541,038
Claims priority, application France, Oct. 13, 1982, 82 17420; Jan. 21, 1983, 83 01050
Int. Cl.³ B65D 85/671
U.S. Cl. 225—20 13 Claims



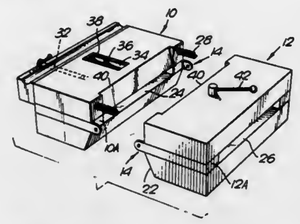
1. A dispenser for continuous, severable strips, in particular paper strips, comprising:
a case (1) for holding said strip including a passageway (S) for the end of said strip,
a guide wall (10) in said case near the passageway (S) and having an inside zone (10*a*) extending into the case and a sill (10*b*) at the exit of this case at the edge of the passageway (S),
a cutting blade (16) having cutter means (16*a*) and being hinged near the passageway (S) about a shaft (X) for allowing said cutting blade to pivot between a natural rest position adjacent the plane of said passageway and a cutting position wherein said cutting means (16*a*) projects through the plane of the passageway,
a first auxiliary blade (17) hingedly mounted on a shaft (Y) adjacent said passageway (S),
said first auxiliary blade including a cover section (17*a*) extending from one side of its hinge (Y) into the case and contacting the inside zone (10*a*) of the guide wall to bound a path (C) for the strip and a stop section (17*b*) arranged on the other side of its hinge (Y) whereby the cutting blade (16) when in the cutting position abuts against said stop section (17*b*) under pressure and in the natural rest position of the cutting blade (16), said cover section (17*a*) rests against the guide wall (10) for braking the strip in the path (C), and so that in the cutting position of said cutting blade (16) said auxiliary blade (17) is subjected by the pressure exerted on said stop section (17*b*) to a moment (M) so that said cover section (17*c*) pinches and locks the strip within the path (C),
a second auxiliary blade comprising a protection section (18*a*) for said cutting means (16*a*) of said cutting blade and being,
this second auxiliary blade hinged about a shaft (Y) offset from the shaft of said cutting blade (16) in order to pivot between a natural rest position corresponding to the natural rest position of the cutting blade (16), wherein said auxiliary blade (18) is near the sill (10*b*) of the guide wall and acts as a support to the cutting blade (16), the cutting means (16*a*) of said cutting blade (16) being withdrawn against the protection section (18*a*) of said auxiliary blade (18), and a retracted position corresponding to the cutting position of the cutting blade (16) wherein said auxiliary blade (18) is behind said cutting blade and said cutting means.

4,516,712

CUTTING DEVICES FOR TILES

Leslie A. Whalley, 109 College Rd., Norwich, England (NR2 3JP)

Filed Mar. 31, 1983, Ser. No. 480,891
Claims priority, application United Kingdom, Dec. 31, 1982, 8237084
Int. Cl.³ B26F 3/00
U.S. Cl. 225—96.5 9 Claims



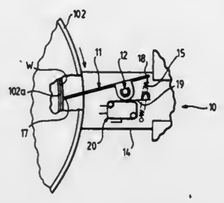
1. A tile cutter comprising first and second blocks having proximate edge faces at which the two blocks are hinged together, respective slots in said blocks which are coplanar in one position of the relatively hinged blocks and which then extend through said two blocks in a plane parallel to and at least passing close to the hinge axis, whereby a tile can be inserted through the slot in the second block and past the proximate edge faces to enter the slot in the first block, means enabling an inserted tile to be positioned so that the two blocks can subsequently be folded to snap the tile at a scribed line thereon, said proximate edge faces having regions which are in substantially abutting relationship, and said edge faces also being cut away on one side of the slots.

4,516,713

LOW-WIRE SENSOR

Wilhelmus Meijer, Venlo, Netherlands, assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1983, Ser. No. 511,038
Claims priority, application United Kingdom, Jul. 7, 1982, 8219708
Int. Cl.³ B27F 7/27, 7/38
U.S. Cl. 227—2 3 Claims



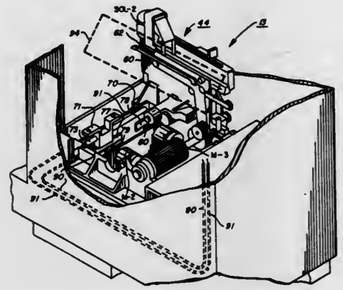
1. A low-wire sensor for apparatus in which wire is supplied from a spool, for sensing when the amount of wire remaining on the spool falls below a predetermined low level, comprising a pivoted spring-biased lever having an end engageable with the outer surface of the wire wound on the spool and movable under the influence of said spring through a position in which said lever extends along a radius of the spool and the end of the lever is spaced a predetermined distance from the core of the spool, towards a low-wire indicating position at one side of the radius from positions on the other side of said radius in which it engages and is restrained by wire exceeding said low level.

4,516,714

HIGH SPEED DUPLICATOR WITH SORTER/STAPLING APPARATUS AND STAPLER POSITIONING CONTROL

Oskar J. Braun, Williamson, and Lawrence C. Hubler, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1983, Ser. No. 563,736
Int. Cl.³ B27F 7/17
U.S. Cl. 227—78 3 Claims



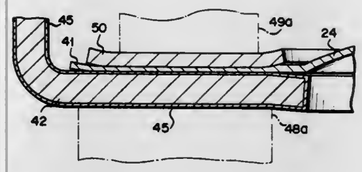
1. In a fastening apparatus having two or more fastening devices adapted to apply one or more fastening elements relative to an edge of sheets of material to bind the same, the improvement comprising:
a drive means associated with each of the fastening devices for moving the respective device in either direction along a line parallel to the edge to be fastened,
control means connected to each of said drive means for actuating the same selectively in either direction and for a desired distance along said line, and
means for indicating the location of each of the fastening devices in relation to an edge of various sizes of sheets to be fastened.

4,516,715

VACUUM CONTAINER OF RADIATION IMAGE MULTIPLIER TUBE AND METHOD OF MANUFACTURING THE SAME

Fumio Sugimori, Yokohama; Chikae Nishino, Sagamihara, and Norio Harao, Ayase, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Division of Ser. No. 260,399, May 4, 1981, Pat. No. 4,423,351.
This application Feb. 18, 1983, Ser. No. 467,918
Claims priority, application Japan, May 6, 1980, 55-59710; May 29, 1980, 55-70760
Int. Cl.³ H01J 9/26; B23K 20/02
U.S. Cl. 228—208 4 Claims



1. A method of manufacturing a vacuum container of a radiation image multiplier tube in which a member of Al or an Al alloy containing a radiation input window is airtightly joined to an insulation member of glass or ceramic containing an output portion for outputting radiation image multiplied signals through a first ring made of Fe or Fe alloy, wherein, in bonding the first ring with the member of Al or Al alloy, one or more thin layers of a metal selected from the group consisting of Ni, Cu and Al are previously formed by metal plating or deposition on a portion to be joined of the member of Al or Al alloy and/or a portion to be joined of the first ring, are superposed in planes perpendicular to the axis of the tube and are airtightly joined by hot pressure-bonding while applying pressure in the direction of the tube axis by means of a press apparatus in such a manner that said portion to be joined of the member Al or Al alloy is compressed and caused to be substantially thinner than its initial thickness by the hot pressure-bonding.

4,516,716

METHOD OF BRAZING WITH IRON-BASED AND HARD SURFACING ALLOYS

Brian C. Coad, San Francisco, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 442,537, Nov. 18, 1982, abandoned.
This application Sep. 29, 1983, Ser. No. 536,827
Int. Cl.³ B23K 1/04
U.S. Cl. 228—263.15 6 Claims

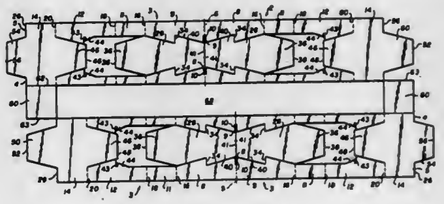
1. A method of brazing two similar ferrous based alloys substrates comprising:
(a) determining the chromium, nickel, manganese, molybdenum, vanadium, tungsten, columbium, and a titannium content of said ferrous based substrates,
(b) providing brazing alloy consisting essentially of from about 2% to about 6% by weight of boron, from about 5% to about 12% by weight of silicon and at least one element selected from the group consisting of chromium, nickel, manganese, molybdenum, vanadium, tungsten, columbium and titanium, said elements, when present, being present in an amount of up to about 35% by weight of chromium, and in an amount of up to about 25% by weight of nickel, up to about 12% by weight of manganese, up to about 5% by weight of molybdenum, up to about 5% by weight of vanadium, up to about 15% by weight of tungsten, up to about 3% by weight of columbium and up to about 2% by weight of titanium, the balance of said alloy being iron in amounts greater than about 50% by weight of said alloy wherein said chromium, nickel, manganese, molybdenum, vanadium, tungsten, columbium and titanium are at approximately the same weight level as these elements are present in the ferrous based alloys substrate being brazed,
(c) providing a mutual contact between said alloy and said substrates to achieve an assembly,
(d) heating said assembly to at least the liquidus temperature of said brazing alloy for a sufficient time to achieve flow, and
(e) cooling said brazed assembly to the ambient temperature.

4,516,717

CONTAINER DIVIDER

John J. Curran, 4470 Granville St., Vancouver, British Columbia, Canada V6M 3L8

Filed Nov. 14, 1983, Ser. No. 550,964
Claims priority, application Canada, Nov. 25, 1982, 416410
Int. Cl.³ B65O 5/48
U.S. Cl. 229—15 9 Claims



1. A container divider, comprising:
(a) a first side panel, a first end panel, a second side panel,

and a second end panel, said panels being hingedly connected together end to end in the foregoing sequence so as to be inwardly swingable about connected ends from coplanar positions when the divider is in a flat position, to respective swung positions when the divider is in an erected position defining an enclosed quadrilateral with lengthwise remote ends of said first side and second end panels abutting one another;

(b) a cross member with an upstanding end hingedly connected to said first side so as to be inwardly swingable about the connected end from a position coplanar with said panels when the divider is in the flat position, to a swung position when the divider is in the erected position and, in which an end of said cross member abuts said second side panel; and

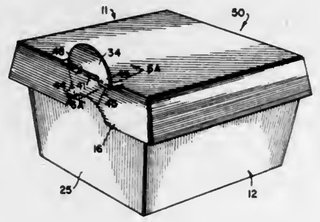
(c) two tongue and mating receptacle combinations, the tongue and mating receptacle of one combination extending from respective abutting portions of said first side and second end panels, and the tongue and mating receptacle of the other combination extending from respective abutting portions of said cross member and said second side panels, so that the two combinations can retain abutting portions in engagement when the divider is in the erected position.

4,516,718

CARTON WITH AUTOMATIC LOCK

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 20, 1983, Ser. No. 534,069
Int. Cl.³ B65D *5/22*
U.S. Cl. 229—33 **13 Claims**



1. A carton with an automatic locking closure means comprising:

(a) A tray member including side walls extending upwardly from a bottom panel about score lines;

(b) a lid member including side walls extending downwardly from a top panel about score lines;

(c) at least one male locking element connected to and extending upwardly from the upper edge of one of the side walls of the tray member in the same general plane of the side wall as an integral extension thereof, said locking element including a first shoulder portion which extends above the top edge of the side wall, a locking post integral with said shoulder portion which extends above the shoulder portion, and a tongue member integral with said locking post which extends above the locking post, said shoulder portion having a greater width than both said locking post and tongue member and said tongue member having a greater width than said locking post, said tongue member including a leading edge which tapers rearwardly to a pair of opposed shoulders which are formed from the material between said locking post and said first shoulder portion;

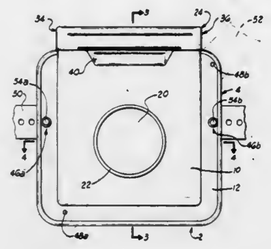
(d) at least one cooperating female locking slot located generally along the score line connecting the lid top panel to an adjacent side wall, said slot being in the form of a continuous cut line comprising a central segment located in the top panel portion of the lid closely adjacent to said score line and at the ends of said central segment a pair of terminal segments located partly in the top panel and partly in the adjacent side wall to provide locking tabs which automatically engage the locking shoulders of said tongue element when the lid and tray are brought together to form the carton.

4,516,719

WELL SITE DOCUMENT CONTAINER

Randell D. Ball, 1141 Elk, Yukon, Okla. 73099

Filed Aug. 18, 1983, Ser. No. 524,450
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—1 D **12 Claims**



1. A container for holding an object at a well site, comprising:

a substantially planar housing having an open-ended cavity defined therein for receiving said object and having a flanged edge portion extending adjacent at least a portion of said cavity;

a window disposed in said housing so that said object can be seen at a distance from said housing when said object is disposed in said cavity;

a lid;

means for connecting said lid to said housing so that said lid provides a substantially fluid-tight enclosure to said open-ended cavity when said lid is in a closed position; and

attachment means in said flanged edge portion for enabling said housing to be attached to a plurality of structures at said well site, said structures including a horizontal strut and an angular strut, said attachment means including a first pair of holes defined in said edge portion near opposite corners thereof so that said first pair of holes defines a line parallel to said angular strut and said attachment means further including a second pair of holes defined in said edge portion and spaced from said first pair of holes so that said second pair of holes defines a line parallel to said horizontal strut.

4,516,720

AUTOMATIC TEMPERATURE ADJUSTMENT APPARATUS

James E. Chaplin, 66 Overlook Rd., Bloomingdale, N.J. 07403

Filed Jul. 28, 1983, Ser. No. 518,118
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—8 R **10 Claims**

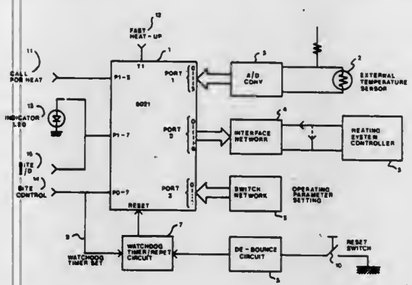
1. An apparatus for controlling the operation of a heating system, said heating system being for the purpose of maintaining the temperature of a structure at a selected value, said heating system consisting of a central heat source, a temperature sensing thermostat used to control the operation of said heat source by sensing the internal temperature of the structure being heated, heat radiating elements distributed throughout said structure, and a fluid heating medium capable of existing in a useful form over a wide temperature range, said medium being used to distribute the heat from said central heat source to said heat radiating elements, said apparatus comprising:

means for measuring the temperature external to said structure being heated;

means for measuring the percentage of time that a heating system control signal is in a state indicating that heat is required to maintain said structure at the desired temperature level, said control signal typically being generated by the said heating system's temperature sensing thermostat;

a closed-loop process for setting the temperature of said fluid heating medium to the minimum, and also most efficient, value possible with the current conditions external to said structure being heated, said process comprising:

first function for periodically determining the change, if any, required in the current value of the temperature of said fluid heating medium, based on the said measured temperature external to said structure, and an operating parameter, and modifying said value as required, and



second function for periodically determining the change, if any, required in the current value of said operating parameter, based on said measurement of the percentage of time that the heating system control signal is in a state indicating that heat is required, compared to a reference percentage, and modifying said value as required, the closed loop nature of said process being caused by the fact that the said measurement of the heating control signal is itself affected by the said temperature of the fluid heating medium; and

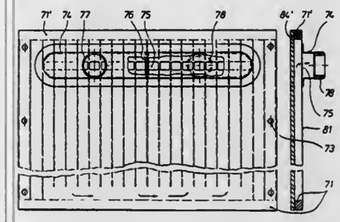
means for controlling the said heat source of the heating system to obtain the temperature of said fluid heating medium as determined by said closed-loop process.

4,516,721

PRESSURELESS LARGE-AREA HEATING SYSTEM

Karsten Laing, Kaiserallee 51, 7500 Karlsruhe; Oliver Laing, Weissdornweg 14, 7400 Tübingen, both of Fed. Rep. of Germany, and Ludwig Ludin, Kesselackerweg, 5611 Anglikon, Switzerland

Filed Mar. 16, 1982, Ser. No. 358,807
Claims priority, application Switzerland, Mar. 16, 1981, 1753/81
Int. Cl.³ F24D *5/10*
U.S. Cl. 237—69 **4 Claims**



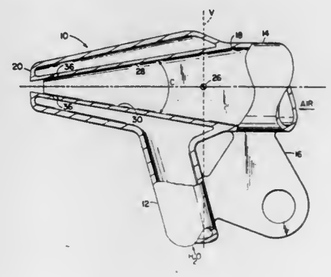
1. A large-area heating system having a passage forming a hollow body through which a first heat carrier having a relatively low pressure and low temperature is adapted to flow and capable of being integrated into ceilings, walls or floors, a pump for circulating said first heat carrier through said passage, said pump and said passage forming part of a first heat carrier circuit, a second heat carrier circuit through which a second heat carrier having a higher pressure and a higher temperature than said first heat carrier is adapted to flow, and a heat exchanger for exchanging heat relatively between said first and said second heat carriers, characterized in that said passage comprises a plurality of parallel juxtaposed channels formed by a pair of spaced thermo-plastic wall members connected by a plurality of parallel extending webs to form a panel with a plurality of the channels being connected to an inlet manifold and to an outlet manifold whereby flow of said first heat carrier is in parallel through a plurality of said channels and whereby substantially the complete area of the wall members is contacted by said first heat carrier.

4,516,722

SNOW-MAKING NOZZLE

Joseph J. Avery, Rutland, Vt., assignor to Sherburne Corporation, Killington, Vt.

Filed Aug. 22, 1983, Ser. No. 525,326
Int. Cl.³ F25C *3/04*
U.S. Cl. 239—14 **7 Claims**



1. In a system for making snow from compressed air and water, an improved nozzle structure comprising:

means defining a longitudinally extending air passageway with a generally cylindrical inlet end portion for connection with a source of air under pressure,

said air passageway including an outlet of generally rectangular cross section and with the ratio of the longer side of said outlet to the shorter side of said rectangular outlet being in the range of at least ten to one,

said air passageway further including an intermediate portion between said air inlet and outlet, said intermediate portion being of rectangular cross section with side walls arranged in opposed pairs, one pair being longer than the other,

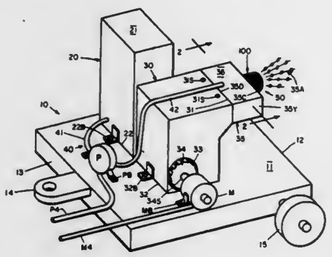
said longer pair of said pairs of opposed side walls continuously converging in a downstream direction to form the longer sides of said generally rectangular outlet and the other pair of opposed side walls diverging in said downstream direction to form the shorter sides of said rectangular outlet,

housing means defining a water jacket surrounding said intermediate passageway portion and including at least one water inlet opening for connection with a source of water under pressure, and

a plurality of water ports opening into said air passageway at said longer sides, all of said water ports having its axis inclined in said downstream direction at an angle in the range between 35 to 40 degrees with respect to a horizontal plane of symmetry through said longitudinal axis of said air passageway, all ports being equally spaced from one another along a line in each of said longer side walls, and said port axes located in vertically opposed relation so that said opposed ports are spaced from one another vertically inside said outlet in said opposed side walls by a dimension X at

least approximately equal to the longitudinal spacing of the intersection of the port axes from said outlet.

4,516,723
FINE-DROPLETS SPRAYER SYSTEM FOR TERRAIN VEHICULAR USE
Myron C. Hesse, 9955 Bloomfield Dr., Omaha, Nebr. 68114
Filed Aug. 27, 1982, Ser. No. 412,097
Int. Cl.³ B05B *3/02*; A01G *25/09*
U.S. Cl. 239—77 **3 Claims**



1. In combination with a longitudinally extending surface vehicle means for rollably traversing along agricultural terrain, a fine-droplets agricultural sprayer system for castably spraying highly concentrated chemical in liquid form from said traversing vehicle toward growing vegetation, and comprising:

A. a reservoir tank for said highly concentrated chemical, said reservoir tank being attached to said vehicle means;

B. a housed blower means attached to said vehicle means and said blower means communicating with an attached volute extending along a substantially horizontal longitudinal-axis, said volute having an inlet-mouth and an outlet-mouth for respectively receiving and discharging an airstream from the blower means;

C. pumping means attached to said surface vehicle means and adapted to pump said liquid from said reservoir along a hose means into the volute;

D. said hose means including a reservoir-hose extending from the reservoir to the pump means and a volute-hose extending from the pump means to the volute and therewithin communicating with the inlet-end of a sprayhead means axial tube portion; and

E. said sprayhead means being attached to and surrounded by the volute and comprising:

Ei. said axial tube lying substantially parallel to the volute longitudinal-axis and including said inlet-end located nearer to the volute inlet-mouth and an outlet-end located nearer to the volute outlet-mouth,

Eii. a plurality of web-like deflectors radiating outwardly from said axial tube at the outlet-end thereof,

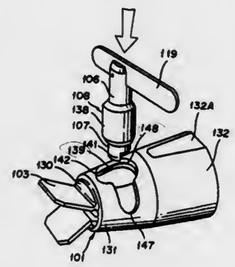
Eiii. a shank revolvably surrounding the axial tube between inlet-end and outlet-end,

Eiv. a longitudinal multi-perforate diffuser surrounding the tube outlet-end and said web-like deflectors and being threadedly engaged with said shank,

Ev. a sleeve-like screen surrounding said diffuser and being co-rotatable with said shank and diffuser, and

Evi. a plurality of vanes respectively radiating from the shank along a vane-axis and being of the contoured blade type whereby said blower means airstream impinging upon the vanes causes rotation of the shank about the tube, each contoured blade vane having a baseend adjustably twistably secured to said shank about the vane-axis whereby rotational speed of the shank diffuser and screen might be controllably adjusted for substantially constant velocity of the airstream emerging from said housed blower means, whereby liquid being pumped into the tube inlet-end and emerging from the tube outlet-end will be whipped by the rotating diffuser and screen into fine-droplets which is also castably sprayed by the blower airstream toward growing vegetation.

4,516,724
SPRAYING DEVICE
Gösta Hellman, Svedjevägen 21, 436 00 Askim, Sweden
PCT No. PCT/SE82/00024, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02501, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 29, 1982, Ser. No. 432,927
Claims priority, application Sweden, Jan. 29, 1981, 8100603
Int. Cl.³ B05B *15/02*
U.S. Cl. 239—119 **9 Claims**



1. A spraying device comprising: a housing, a spray nozzle holder having a nozzle holding portion, and two mounting elements extending in opposite directions transverse to the housing, one of said mounting elements being adapted to bear a rotating handle, said holder being rotatable in said housing transverse to the spraying direction of said nozzle between a spraying position and a reversed position for blowing the nozzle clean, said housing having two openings substantially opposite to each other for accommodating respectively said two mounting elements, at least one of said openings having a width which is less than the width of said nozzle holding portion, said housing also having at least one slot-shaped opening in which said holder is movable transverse to said housing when said holder is being mounted in, or dismounted from, said housing.

4,516,725
DUAL COMPONENT PUMPING SYSTEM
James E. Cavanaugh; Robert D. Hetherington, both of Sunland, and Thomas A. Parmley, Downey, all of Calif., assignors to 501 Binks Manufacturing Co., Franklin Park, Ill.
Filed Sep. 30, 1982, Ser. No. 432,081
Int. Cl.³ B05B *7/24*
U.S. Cl. 239—127 **8 Claims**

1. A dual fluid component supply system comprising;

a pair of alternating reciprocal pumps;

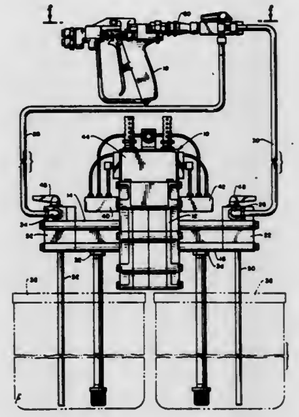
a double-acting reciprocal air motor connected by a common shaft to each of said pumps to alternately drive said reciprocal pumps;

a pair of separate fluid supply means connected to a separate inlet to each of said pair of reciprocal pumps for delivering a fluid to each of said pumps;

discharge means connected to respective outlets from each of said reciprocal pumps for delivering fluids from said reciprocal pumps;

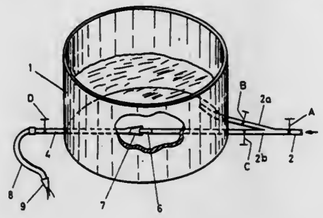
switch means for selectively switching said discharge means alternately from one of said pump outlets to the other;

said switch means adapted to switch the other of said pumps into a bypass made so that fluid from said supply means continuously circulates from said supply means through said other pump back to said supply means while said one of said pumps is delivering fluid to said discharge means; whereby fluid is continuously supplied to said discharge means from one of said pumps while the other of said



pumps continuously circulates fluid in a bypass mode to keep said fluid in said supply means ready for use.

4,516,726
MIXING AND SPRAYING APPARATUS FOR LIQUIDS, OPTIONALLY FOR POWDER AND LIQUID
Karl H. Hoie, Hemings vei 4, Oslo 3, Norway
Filed Apr. 19, 1983, Ser. No. 487,191
Claims priority, application Norway, Feb. 24, 1983, 830657
Int. Cl.³ B05B *7/26*
U.S. Cl. 239—317 **14 Claims**



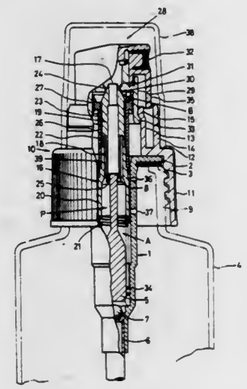
1. A mixing and spraying apparatus for liquids, optionally for powder and liquid in admixture, including a preferably round mixing tank with a feed line for liquid under pressure and an outlet conduit with a control valve/spigot, wherein additional liquid or powder is introduced into the tank via the top opening of the tank, the liquid feed line being divided into a first, and a second, branch, the second branch discharging via a nozzle into an open end of the outlet conduit within the tank at the lower section of the tank thereby forming an injection pump for carrying and conveying the admixed media through the outlet conduit to an optional connected hose with a spray nozzle or some other spray means, the mixing and spraying apparatus comprising:

said mixing tank being at atmospheric pressure,

said first branch discharging into the lower section of the mixing tank for introducing liquid into the tank and for forming a vortex to facilitate admixture of said liquid with a powder or optionally with another liquid which may be introduced from the top of the tank, and

each branch including a control valve or spigot.

4,516,727
MANUALLY-OPERATED SPRAYER
Tadao Saito; Takao Kishi, and Yoshiyuki Kakuta, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Japan
Filed May 26, 1983, Ser. No. 498,508
Int. Cl.³ B05B *9/043*
U.S. Cl. 239—333 **4 Claims**



1. A manually-operated sprayer comprising:

a container for liquid;

a first lower cylinder depending into the container and inserted into the same;

a suction valve disposed at the bottom portion of the first lower cylinder;

a mounting member engaged with the neck portion of the container;

a spray head elevationally movably associated with an upper portion of the mounting member, said spray head including a nozzle hole and a discharge valve hole communicating with said nozzle hole;

a movable member having its upper end portion formed as a discharge valve body;

a cylindrical plunger fixed to the outer surface of the movable member, said cylindrical plunger including a first piston formed at a lower end portion thereof and a second piston formed at an upper end portion thereof, said first piston being slidably received by an inner surface of the first lower cylinder, and said second piston having a larger diameter than said first piston;

a second upper cylinder formed within the spray head in axial alignment with the first lower cylinder, said second upper cylinder having a larger diameter than the first lower cylinder and receiving in a slidable manner the second piston of the cylindrical plunger;

a spring upwardly biasing the movable member and the cylindrical plunger;

a discharge valve comprising the discharge valve body and the discharge valve hole; and

a pump chamber comprising the internal spaces of said first and second cylinders and a passage communicating between both of said cylinders;

whereby, when the pressure in the pump chamber is increased by a pumping action, the movable member and the cylindrical plunger are moved down against the biasing force of the spring so that the discharge valve is opened thereby to atomize the liquid out of the nozzle hole;

an air cylinder formed inside the movable member and communicating with the nozzle hole through an opening axially perforated in the upper end portion of the movable member; and

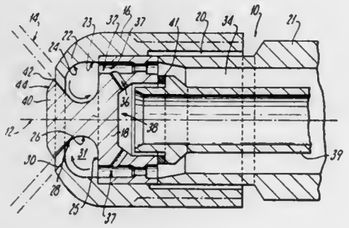
an air cylinder plunger provided within the first lower cylinder and having its upper end portion slidably received by the inner surface of said air cylinder, whereby when the

spray head is moved down to depress the pump chamber, air is blown out from the air cylinder to the nozzle hole and mixed with the pressurized liquid from the pump chamber, and, when the spray head is moved up to expand the pump chamber, external air is sucked into the air cylinder through the nozzle hole.

4,516,728
LIQUID FUEL ATOMIZER

Dennis R. Whinfrey, Derby, England, assignor to Northern Engineering Industries plc, England

Filed Mar. 4, 1983, Ser. No. 472,041
Claims priority, application United Kingdom, Mar. 26, 1982, 8208898
Int. Cl.³ B05B *7/00*
U.S. Cl. 239—399 **10 Claims**



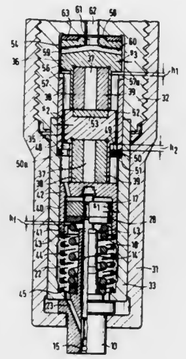
2. A liquid fuel atomizer comprising:
(a) a body;
(b) an annular chamber defined within said body, said chamber being bounded substantially by opposed surfaces of revolution generated by opposed arcs which have centres of curvature within said chamber, which are disposed generally transversely to the plane of said chamber and which have revolved about the central axis of said chamber;
(c) exit formations defined by said body for directing media leaving said chamber through said formations into a hollow diverging frusto-conical pattern;
(d) annularly-distributed internal passages defined within said body through which flows of fuel medium and atomising medium pass, the directions of said passages for one medium and the directions of respective passages for the other medium making intersections one with the other whereby media passing through said passages interact one with the other at said intersections; and
(e) openings defined with said body by which said media enter said chamber from said passages at positions which are such as to produce rotation of media therein and which are closer than said formations to said intersections.

4,516,729
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Paul Füssner, Sindelfingen; Karl Hofmann, Remseck; Iwan Komaroff, Regensburg; Katsuoki Itoh, Leonberg; Kurt Seifert, Esslingen; Dietrich Trachte, Kornwestheim; Wilhelm Vogel, Stuttgart, and Hans-Jörg Vogtmann, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,195
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149276
Int. Cl.³ B05B *1/32*
U.S. Cl. 239—453 **14 Claims**

1. A fuel injection nozzle for internal combustion engines, having a housing, a nozzle body in said housing, said nozzle body having a valve seat, and a displaceably guided valve closing member, said member being acted upon by a closing spring and capable of being urged counter thereto by a fuel pressure, and a supplementary body coupled with the valve closing member at the end of a first partial stroke thereof and together with a shoulder integral with the housing is arranged to effect an abrupt change in the course of the opening pressure, characterized in that said supplementary body at the end of the first partial stroke, is also coupled with said shoulder integral with said said housing, means for magnetically coupling between said supplementary body and said valve closing member and said shoulder via a magnetic force which exerts a

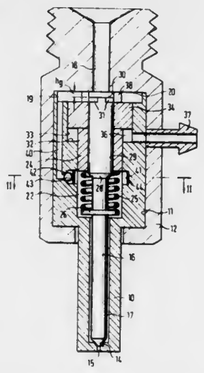


holding force counteracting the fuel pressure applied to said valve closing member, said holding force being smaller than the maximum displacement force exerted by the fuel pressure upon said valve closing member, and that the elements are embodied and disposed such that after overcoming the magnetic coupling or holding force, the supplementary body tears away from its magnetic counterpart, i.e., said valve closing member and said shoulder, and the valve closing member is capable of moving onward to its fully open position.

4,516,730
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Paul Füssner, Sindelfingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,640
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228079
Int. Cl.³ F02M *47/02*
U.S. Cl. 239—533.8 **13 Claims**



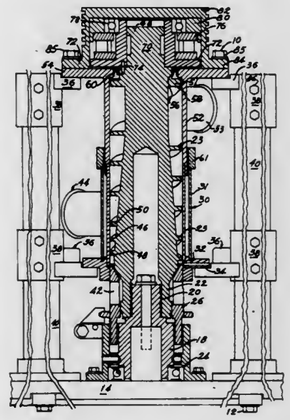
1. A fuel injection nozzle for internal combustion engines having a housing and further comprising a stepped piston acted upon by a spring means, said piston including a larger piston surface area and a smaller piston area, said larger piston surface

area defining a medium-pressure chamber communicating with a fuel inlet connection and the smaller piston surface area defining a high-pressure chamber formed directly in said housing, said high-pressure chamber arranged to communicate with the medium-pressure chamber via an overflow valve opening counter to a high pressure, and a valve needle means disposed coaxially within the stepped piston and the high-pressure chamber, which valve needle means is loaded by said spring means, said valve needle means monitoring at least one injection port communicating with the high-pressure chamber and has a high-pressure shoulder which is engaged by the high fuel pressure such as to effect opening.

4,516,731
DEBONING APPARATUS HAVING AUGER SEAL ON ONE END AND SUPPORT MEANS THEREFOR

Jack A. Prince, and Bobby D. Standridge, both of Gainesville, Ga., assignors to Jack Prince, Inc., Gainesville, Ga.

Filed Sep. 30, 1982, Ser. No. 431,544
Int. Cl.³ B02C *19/22, 23/16*
U.S. Cl. 241—24 **18 Claims**

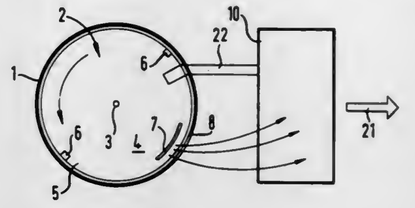


1. In a deboning machine for separating mixed particles of bone and meat products, such as obtained by grinding fish or chicken bones having meat thereon, comprising a machine frame, a motor mounted on said frame, a product auger having a first end and an opposed second end, said first end being driven by said motor, said auger being tapered on the outside and comprising auger blades arranged in a continuous helix for removing meat products, support means on the base for supporting said auger for rotation by said motor, bearing means for said auger, an auger housing mounted on said base and having said auger mounted therein and there being a product space between the inside of said housing and the exterior of said auger near the second end thereof, a bone outlet, a sleeve having holes therein mounted over said auger, a meat outlet, a product inlet mounted on said machines adjacent said second end of said auger and being in communication with said auger, and a seal adjacent the second end of said auger, the improvement comprising:
means adjacent the second end of said auger for directing the product mixture including fluids away from the second end of said auger and the seal and towards the first end of said auger and the product outlet.

4,516,732
METHOD AND APPARATUS FOR COMMINUTING STUMPS

Heino Kela, Ämmänsaari, and Matti Läspä, Ullava, both of Finland, assignors to Kajaani Oy, Finland

Filed Jan. 24, 1983, Ser. No. 460,622
Claims priority, application Finland, Jan. 25, 1982, 820227
Int. Cl.³ B02C *18/08, 19/12*
U.S. Cl. 241—24 **10 Claims**

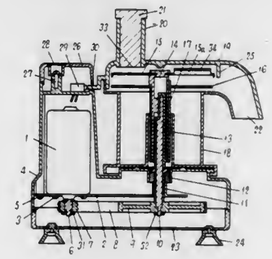


1. A method of comminuting stumps, comprising the steps of feeding stumps into the upper end portion of a fixed generally cylindrical drum having a rotatable bottom surface, rotating said bottom surface to throw the stumps outwardly by centrifugal force against the drum, engaging the stumps with an abutment located on the peripheral edge of said bottom surface, moving the rotating stump into contact with a fixed generally curved blade disposed concentrically of said drum and located radially inward of said drum to comminute the stump to form comminuted particles, and discharging the comminuted particles in a generally horizontal plane tangentially through a discharge opening in the drum.

4,516,733
ELECTRIC FOOD CUTTING MACHINE

Shuichi Funagura, Ibaraki, and Katsufumi Nishio, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP82/00455, § 371 Date Jul. 20, 1983, § 102(e) Date Jul. 20, 1983, PCT Pub. No. WO83/01891, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 30, 1982, Ser. No. 522,365
Claims priority, application Japan, Dec. 3, 1981, 56-195193; Dec. 3, 1981, 56-195194; Dec. 3, 1981, 56-195196; Dec. 3, 1981, 56-195197; Dec. 2, 1982, 56-194043
Int. Cl.³ B02C *18/22*
U.S. Cl. 241—79 **25 Claims**



1. An electric food cutting machine, comprising:
a main body;
an electric motor mounted on said main body;
a container mounted on said main body;
a disc-shaped cutter in said container, rotatively driven by said motor for cutting cut pieces from a food object to be cut;
a disc member positioned in said container below said cutter

for rotation by said motor in the same rotational direction as said cutter;

means, defining a cut pieces path terminating at said disc member, for directing the cut pieces cut from the food object to be cut to said disc member;

means, including said disc member, for discharging the cut pieces from said container; and

passage means, defining a passage in said container spaced from said cut pieces path extending away from said cutter, for directing any uncut portion of the food object to be cut not cut therefrom into the cut pieces, along the passage away from said cutter so as to separate the cut pieces from the uncut portion.

4,516,734

METHOD FOR LOADING AUTOMATICALLY MACHINES FOR TREATING BULK MATERIALS AND DEVICE FOR WORKING SUCH METHOD

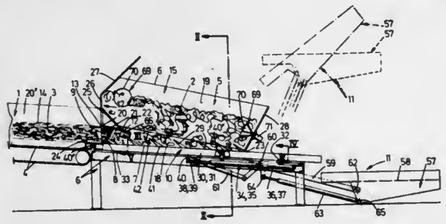
Luc A. Pierret, deceased, late of Corbion, Belgium; by Joseph Robert, administrator, rue du Tambour, 32, Corbion (Bouillon), Belgium; Hubert Pierret, rue du Tambour 29, Corbion (Bouillon), Belgium; Gabriel L. Pierret, rue du Tambour 33, Corbion (Bouillon), Belgium; Maurice J. Pierret, rue de l'Eglise 15, Corbion (Bouillon), Belgium, and Jean-Marie M. Pierret, rue du Sommet 14, Corbion (Bouillon), Belgium

Filed Dec. 15, 1982, Ser. No. 449,855

Claims priority, application Belgium, Dec. 16, 1981, 0/206850

Int. Cl.³ B02C *18/02*

U.S. Cl. 241—283 **16 Claims**



1. An apparatus for automatically loading a machine which treats bulk materials, said bulk materials having some length and including materials such as fibers, yarns, fragments from woven or unwoven textiles, and plastics, said apparatus extracting from the bottom of a material mass, by means of projecting elements entering said mass, an amount of material to be formed into a strip which is to be fed to said machine, said apparatus comprising:

a hopper having a top and a bottom and four sides and being mounted on a fixed frame, the hopper top and bottom being open and along the hopper edge nearest to the machine to be loaded is provided a quadrangular opening extending from the hopper bottom, the cross-section of said opening substantially corresponding to the cross-section of said strip to be formed, the hopper bottom being shaped as a quadrilateral with four right angles and said opening being provided along one quadrilaterial side;

at least two rows of projecting elements arranged in the hopper bottom, substantially at right angle to the hopper edge along which said opening is provided and at a lower level than the edge of said opening opposite the hopper bottom;

two movable bars on which are fixed the at least two rows of projecting elements, said two movable bars closing—off the hopper bottom and extending at right angles to said opening;

guides for causing said two movable bars to move along their lengthwise axis, the length of said bars being longer than the length of the hopper bottom, so that said two movable bars always close-off the hopper bottom;

control means provided to drive each one of said two movable bars with an alternating motion such that the projecting elements from each row move from the hopper side opposite said opening to beyond said opening, said control means being arranged so that during the time interval where one bar moves from said opening to said hopper side opposite said opening, the other bar moves in the opposite direction or is stopped; and

means to feed said material to said hopper.

4,516,735

METHOD AND APPARATUS FOR WINDING WEBS

Keijo K. Snygg, Karhula, Finland, assignor to Lenox Machine Company, Inc., Lenox, Mass.

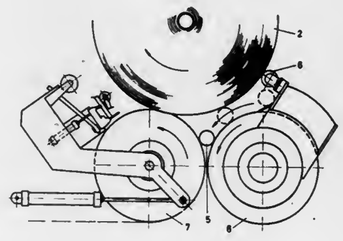
Filed Mar. 2, 1977, Ser. No. 773,400

Claims priority, application Finland, Mar. 12, 1976, 760642

The portion of the term of this patent subsequent to Mar. 14, 1996, has been disclaimed.

Int. Cl.³ B65H *17/12, 19/26*

U.S. Cl. 242—56 R **10 Claims**



1. In the method of winding a web into a roll upon a core and in which the web roll is supported by two parallel rotatable drums in adjacent spaced-apart relation to each other, and the infed web passes about one of the drums upwardly through the space between said drums and onto the web roll upon said drums, the improvement which comprises the steps of pushing the web roll laterally in one direction into a position in which the web roll contacts one of said drums and does not contact the other drum but defines therewith a first clearance passage; moving through said first clearance passage a new core until same is positioned in the space between said drums; pushing the web roll laterally in the opposite direction into a position in which the web roll contacts said other drum and does not contact said one drum but defines therewith a second clearance passage; positioning the infed web against the new core; moving a fastener applying means through said second clearance passage into engagement with the infed web against the new core; operating said fastener applying means to apply at least one fastener connecting the infed web to the new core; moving a cutter through said second clearance passage into engagement with the infed web to sever same between the connection thereof to the new core and said web roll; and removing said web roll to accommodate winding of the web upon the new core.

4,516,736

METHOD AND APPARATUS FOR SLITTING METAL STRIP

Poul Andersen, Wallingford, Conn., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 8, 1982, Ser. No. 440,151

Int. Cl.³ B65H *35/02*

U.S. Cl. 242—56.2 **8 Claims**

1. An apparatus for longitudinally slitting metal strip comprising:

(a) driven roll means for frictionally engaging and forwarding the strip, said means controlling the speed of the strip through the apparatus;

(b) means for driving said driven roll means;

(c) means for slitting the strip under tension, said means located after the driven roll means;

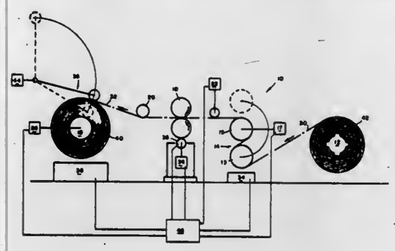
(d) means for driving said slitting means;

(e) take-up winder means for winding coils of slit metal strip thereon;

(f) means for driving said take-up winder means;

(g) means for separately measuring the speed of the slitting means, driven roll means and take-up winder means and the speed of the strip before the slitting means; and

(h) means for controlling the speed of the strip and slitting means separately from the take-up winder means and



driven roll means for providing a predetermined speed of the strip as it passes through said slitting means under tension,

said controlling means includes having the means for driving the take-up winder means speed-slaved from the driven roll means, and said controlling means includes having the means for measuring the strip speed in communication with the means for measuring the speed of the slitting means for separately comparing the strip speed and speed of said slitting means and adjusting the speed of the slitting means as a function of the comparison.

4,516,737

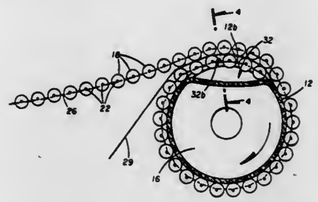
STORAGE REEL WITH PERIPHERAL CORE RELIEF

William F. Gliwa, Alsip, and Robert F. Kalina, Lombard, both of Ill., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 27, 1983, Ser. No. 499,072

Int. Cl.³ B65H *75/28;* **B21B** *41/08*

U.S. Cl. 242—77 **4 Claims**



1. A bandoliered package of cylindrical electrical components, each of the components having a pair of oppositely extending axial leads, which comprises:

a cylindrical core having a peripheral relief of a depth greater than one-half the diameter of the cylindrical electrical component and a width greater than the length of electrical component, said relief having peripheral length exceeding the length of a predetermined number of the electrical components spaced apart by predetermined uniform distances;

said core having unrelieved sections adjacent said relief of lengths exceeding the length of the leads projecting from the electrical components;

a pair of adhesive coated strip means adhered to the axially extending leads of the components to provide a bandolier of electrical components which are spaced apart by said predetermined uniform distances, said bandolier convoluted about said core with a leading inner convoluted section consisting of said predetermined number of said bandolier electrical components received in said relief; and

said bandoliered leads projecting from the components within said relief to rest on and be supported against bending by said unrelieved sections of said core.

4,516,738

THREAD-BRAKING DEVICE FOR A TEXTILE MACHINE

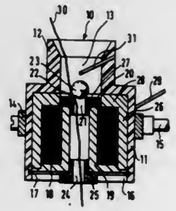
Siegfried Nürk, Albstadt, Fed. Rep. of Germany, assignor to Sipra, Patententwicklungs-und Beteiligungsgegesellschaft gmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 543,998

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239495

Int. Cl.³ B65H *59/22*

U.S. Cl. 242—152.1 **7 Claims**



1. A thread-braking device for textile threads, comprising an axially symmetrical outer housing open at two ends thereof and having a through passage for passing a textile thread therethrough; and an axially symmetrical thread brake insert releasably insertable into said outer housing and including a cup-shaped casing of magnetizable material which is surrounded by said outer housing, a ball of magnetizable material, a ring-shaped ball seat-forming element of non-magnetizable material and forming a brake surface at which a thread is braked by said ball, said cup-shaped casing receiving said ball seat-forming element concentrically with the casing, and an electromagnetic spool concentrically positioned in said cup-shaped casing, said casing having means of magnetizable material forming a pole shoe for said spool, whereby a magnetic force is exerted on said ball which can be adjusted by adjusting a current applied to said electromagnetic spool.

4,516,739

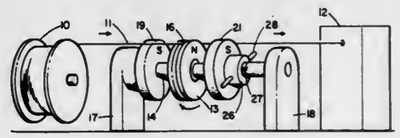
MAGNETICALLY CONTROLLED WIRE TENSIONING DEVICE

Kenneth L. Wyatt, Oklahoma City, Okla., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,135

Int. Cl.³ B65H *59/16*

U.S. Cl. 242—155 M **18 Claims**



1. A device for tensioning strand advancing between a supply reel and a utilization device, which comprises:

a shaft;

a sheave rotatably mounted on said shaft for receiving a

wrap of strand, said sheave being magnetized to present opposite magnetic poles on opposite sides thereof;

a pair of discs movably mounted on said shaft with said sheave positioned therebetween, said discs being magnetized to present like magnetic poles to the magnetic poles of said sheave and to cause repelling magnetic fields therebetween; and

means for moving at least one of said discs toward and away from said sheave to vary a drag effect resulting from the repelling magnetic fields between the discs and the sheave thereby adjusting the tension on said wrap of strand.

4,516,740

TAPE DRIVING CONTROL APPARATUS

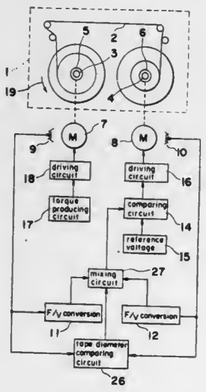
Tadashi Yoshino, Neyagawa, and Masayuki Mamei, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 18, 1983, Ser. No. 543,451

Claims priority, application Japan, Oct. 21, 1982, 57-185660; Mar. 23, 1983, 58-49234

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—203 **4 Claims**



1. A tape driving control apparatus comprising a feed reel stand, a winding reel stand, a rotational speed information detecting means for detecting the rotational speed information in accordance with the respective rotational speed of the feed reel stand and the winding reel stand, a mixing circuit for adding, as voltages, the rotational speed information from both of said rotational speed information detecting means, a means for comparing the outputs of the mixing means with reference signals, a controlling means for controlling the rotational speed of a winding reel motor driving said winding reel stand in accordance with the comparison output, a tape-winding-diameter detecting means for detecting that at least the tape-winding-diameter of said winding reel is a given diameter or less with the use of the rotational speed information from both of said rotational speed information detecting means and a speed varying means for varying either the output of said mixing circuit or the reference signal by the output of the tape-winding-diameter detecting means.

4,516,741

SPOOL BRAKING DEVICE FOR DOUBLE-BEARING FISHING REEL

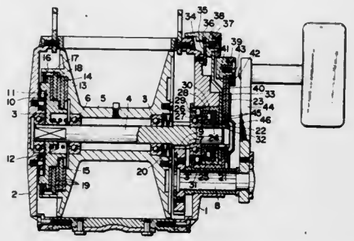
Hiroshi Hashimoto, Tokyo, Japan, assignor to Daiwa Seiko Inc., Higashikurume, Japan

Filed Dec. 27, 1982, Ser. No. 452,960

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—217 **6 Claims**

1. A fishing reel comprising a pair of reel side plates, a spool shaft and bearing means to mount said spool shaft on said pair of reel side plates for rotational motion around its axis and for axial motion along its axis, a spool and means to mount said spool on said spool shaft, friction transmission means interconnecting said spool and said spool shaft, means for adjusting the friction force provided by said friction transmission means, said means for adjusting said friction force comprising fine and coarse adjustment means, said fine and coarse adjustment means being substantially separated from each other and each including a separate operating lever and separate cam means, both of said fine and coarse adjustment cam means being arranged for cooperation with said spool shaft to move said spool shaft axially to in turn control the friction force provided by said friction transmission means, means to mount said two separate operating levers outside one of said reel side plates in such a manner that a user of said fishing reel can operate both said levers substantially simultaneously with no more than two fingers of one hand to thereby quickly and easily adjust both



said fine and coarse adjustment means substantially simultaneously, each of said fine and coarse cam means comprising a cam surface and said fine and coarse cam means cam surfaces being so configured that substantially equal motions of said two levers will produce a substantially larger axial translation of said spool shaft under the control of said coarse adjustment cam means that the relatively smaller amount of axial translation of said axial spool shaft produced by said fine adjustment cam means;

each of said fine and coarse adjustment means comprising a separate cylinder-like member, each of said cylinder-like members being formed with one of said fine and coarse cam surfaces, and said cylinder-like members being mounted in nested arrangement at one end of said spool shaft with both said cam surfaces being operative to urge said bearing means at said one end of said spool shaft in an axial direction.

4,516,742

TURRET ARRANGEMENT FOR CONTINUOUS WEB REWINDER

Ellsworth D. Townsend, Wausaukee, Wis., assignor to Industrial Engraving and Manufacturing Corp., Pulaski, Wis.

Filed May 5, 1983, Ser. No. 491,935

Int. Cl.³ B65H *19/06*

U.S. Cl. 242—64 **8 Claims**

1. In an automatic continuous web rewinding machine of the type comprising a frame, an apron pivotably mounted to the frame, a mandrel spider pivotably mounted to the apron, a plurality of mandrels mounted to the spider, means for indexing a geneva cam, and a bedroll mounted adjacent the mandrels to pass a web to a core mounted on one of the mandrels when said one of the mandrels is in a take-up position, the improvement comprising:

means for locking the apron in place with respect to the frame to prevent pivotal movement therebetween;

a geneva cam which defines an array of elongated mounting slots;

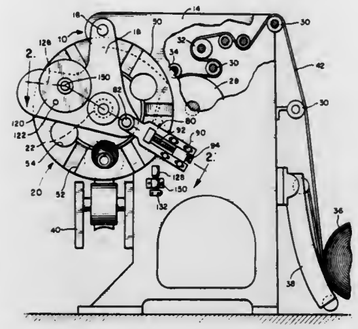
a hub secured rigidly to the spider by a first plurality of fasteners;

fastener means for securing the geneva cam to the hub such that the angular position of the geneva cam with respect to the hub is adjustable, said fastener means comprising a second plurality of fasteners, each of which extends through a respective one of the mounting slots;

said geneva cam positioned to be indexed by the indexing means such that the take-up position is within the range of three degrees above to four degrees below a horizontal line passing through the center of the bedroll;

a timing plate secured to the indexing means to move with the indexing means, said timing plate defining a timing hole;

means for defining a timing opening in the apron adjacent



the timing plate, said timing hole and opening situated such that they are in alignment when the geneva cam is in alignment with respect to the apron;

a timing pin sized to fit through the timing hole into the timing opening to hold the geneva cam in alignment during cam adjustment;

a bracket mounted to the frame to hold the timing pin; and

a switch mounted to the frame in alignment with the bracket such that the switch is actuated by the pin when the pin is in the bracket, said switch operative to allow operation of the machine only when the switch is actuated.

4,516,743

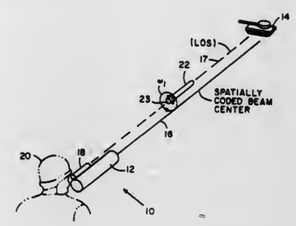
SCANNING BEAM BEAMRIDER MISSILE GUIDANCE SYSTEM

Donald W. Sweeney, Livermore, Calif.; Neal C. Gallagher, West Lafayette, Ind., and Charles R. Christensen, Athens, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 18, 1983, Ser. No. 486,127

Int. Cl.³ F41G *7/26*

U.S. Cl. 244—3.13 **8 Claims**



1. In a beamrider missile guidance system wherein a target is tracked by line-of-sight from a tracking station and a missile is directed toward the target substantially along the line-of-sight axis, a method of directing the missile toward the target and comprising the steps of:

visually tracking a target from a target tracking station,

directing a laser beam of optical energy from said target tracking station toward said target and along a path offset a constantly varying distance from said line-of-sight;

directing a missile toward said target within the path of said optical energy beam; and

generating correctional guidance within the missile in response to the position of said missile away from the line-of-sight and within said beam.

4,516,744

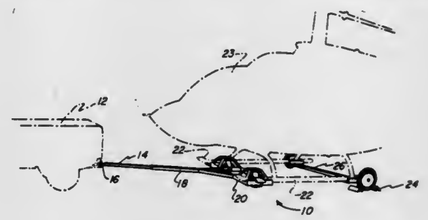
HELICOPTER DOLLY

Donald L. Burnside, 6312 Caballero, Coral Gables, Fla. 33152

Filed Nov. 23, 1982, Ser. No. 444,196

Int. Cl.³ B64F *1/04*

U.S. Cl. 244—17.17 **24 Claims**



1. A ground handling system for a helicopter equipped with two opposed, landing skids, comprising:

a front support means for retaining the front portion of the two skids of the helicopter and for supporting the weight of the helicopter on the front portion of the two skids, said front support means connectable to a propulsion means for towing said front support means; and

a means connected to said front support means for maneuvering said front support means,

said means includes a front wheel assembly means connected to said front support means for turning and maneuvering said front support mans, and for supporting said front support means out of ground contact to provide clearance between the helicopter and said front support means,

said front support means includes an elongated framework assembly connected to said wheel assembly means, said framework assembly having a first skid retaining means connected thereto for cradling the front portion of the skids and accomodating varying width between skid tubes, and said front wheel assembly means connected to said framework assembly includes a suspended wheel means in contact with the ground, said first skid retainer means includes a tray means for supporting the underside of the skids and a skid latch cover means for containing the skids,

a rear wheel assembly means connected to the rear portion of the skids for supporting the weight of the helicopter on the rear portion of the skids and for transporting the helicopter,

said wheel means includes at least one wheel connected to said front wheel assembly adjacent to each end of said framework assembly, said whel having a locking means for securing said wheel in a fixed position for control during rearward movement of said front support means,

said rear wheel assembly means includes at least two wheels and an axle assembly,

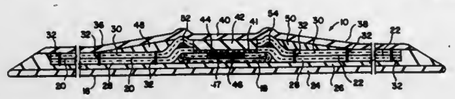
said axle assembly includes a skid retaining means connected to said axle for cradling the rear portion of the skids and accomodating varying width between skid tubes, said skid retaining means includes a tray means for supporting the underside of the skids and a skid latch cover means for containing the skids.

4,516,745

PNEUMATIC DEICER AND DEICING METHOD

Duain N. Ely, Uniontown, and Joseph H. Macarchenia, Tallmadge, both of Ohio, assignors to B. F. Goodrich Company, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,952
Int. Cl.³ B64D *15/18*
U.S. Cl. 244—134 A **6 Claims**



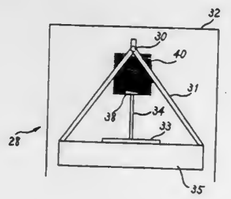
1. A pneumatically inflatable deicer boot for mounting on an airfoil, said boot having a leading edge centerline, said centerline dividing said boot into an upper section and a lower section, said upper section and lower section being formed of two piece fabric outer plys and inner plys sewn to provide a carcass providing a plurality of upper inflatable passages in said upper section and a plurality of lower inflatable passages in said lower section, the fabric supporting air transport within the boot, said boot being characterized by at least one leading edge, continuously integral, tubular member formed of resilient rubberlike material with spaced apart edges and including a fabric strip fastened to a fabric tape backed by a filler member bridging the edges, the fabric strip having a plurality of stiff fibers defining a channel; the tubular member being positioned in the area of said leading edge centerline; and means to substantially inflate said leading edge tubular member and thence operative to inflate said upper and lower inflatable passages while maintaining substantial inflation of said leading edge tubular member for cracking of ice formed on the outside surface of said boot at said leading edge centerline whereby the ejection of ice covering said upper and lower sections of said boot is facilitated.

4,516,746

NUTATION DAMPER SYSTEM COMPRISING A CONTROL MEMBER FOR VARYING A NATURAL FREQUENCY OF A PENDULUM

Susumu Takezawa; Ken'ichi Ikebe; Haruki Ayada; Tatsuyuki Fukui, and Munenori Okada, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Apr. 8, 1983, Ser. No. 482,970
Claims priority, application Japan, Apr. 9, 1982, 57-58322
Int. Cl.³ B64G *1/38*
U.S. Cl. 244—170 **8 Claims**



1. An improved nutation damper system for use in an artificial satellite having a body which may be subject to a rotation accompanied by a nutation around an axis of rotation, said body being subjected to a variable acceleration force having a component along said axis, said nutation having a nutation frequency which is dependent on a spin rate and a moment of inertia associated with said satellite, said nutation damper system being of the type which include a damping mechanism incorporating a pendulum which swings about a fulcrum at a natural frequency in response to said nutation, said damping mechanism acting through said pendulum to dampen said nutation, the improvement wherein said system further comprises:

acceleration component detecting means for detecting said component and for producing an acceleration signal representative of said component;

calculating means responsive to said acceleration signal for calculating said nutation frequency from said component to produce a nutation signal representative of said nutation frequency;

control signal producing means responsive to said nutation signal for producing a control signal dependent on said nutation frequency; and

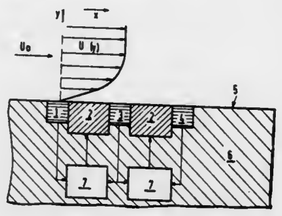
control means coupled to said pendulum and responsive to said control signal for controlling said swinging movement to vary said natural frequency to a forced frequency which is substantially equal to said nutation frequency.

4,516,747

METHOD OF AND APPARATUS FOR CONTROLLING THE BOUNDARY LAYER FLOW OVER THE SURFACE OF A BODY

Werner Lurz, Hamburg, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,689
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228939
Int. Cl.³ B64C *23/00*
U.S. Cl. 244—204 **5 Claims**



1. Method for controlling the flow in the boundary layer at the surface of a body cover which flow takes place, based on the active change of the original motion of flow particles in close proximity to the surface, comprising the steps of continuously measuring at least at two locations at least two of the physical values of the flow, as the frequency spectrum, the amplitudes and/or the phase position of the fluctuation velocities, directing the measured values to a control circuit, analyzing the measured values in the control circuit and determining the predominant frequency, and, based on the predominant frequency, transmitting a corresponding vibration signal to an active vibration transmitter located on the surface over which the flow takes place, and locating the measuring locations one adjacent to and upstream from the active vibration transmitter and the other adjacent to and downstream from the active vibration transmitter.

4,516,748

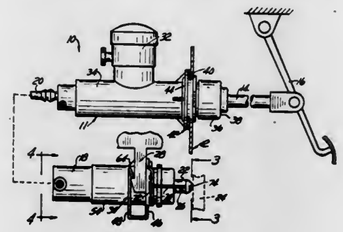
QUICK CONNECT CYLINDER MOUNT STUCTURE

Richard Nix, Utica, and David J. Compton, Troy, both of Mich., assignors to Automotive Products, plc, Leamington Spa, England

Filed Jun. 10, 1982, Ser. No. 387,017
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—1 **5 Claims**

1. A mounting structure for coupling a housing to a support member, said support member comprising a bifurcated portion having a pair of substantially spaced apart lug members, said structure comprising a generally U-shaped clip member having a frontal wall and a pair of springingly deflectable legs spaced apart from said frontal wall and extending substantially parallel

thereto, and opening in said frontal wall encircling said housing, a step-like abutment on each of said lug members, corresponding abutment means on each of said deflectable legs of said clip, and inclined surface means springingly causing deflection of said clip legs for passage over said step-like abutment on each said lug members during introduction of said clip



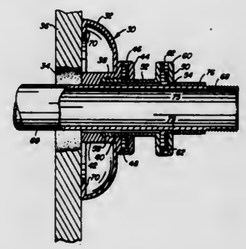
over said lug members, whereby when said clip is introduced over said lug members said legs are springingly deflected and snap back to a position causing said step-like abutment on each of said leg members to form with said abutment means on each of said legs a one-way interference preventing removal of said clip from over said lug members.

4,516,749

MECHANICAL STABILIZER

William B. Sullivan, 1609 E. Butler Dr., Phoenix, Ariz. 85020

Filed May 6, 1983, Ser. No. 492,204
Int. Cl.³ F16L *5/00*
U.S. Cl. 248—56 **6 Claims**



1. A stabilizer for securing a generally cylindrical member at one side of a surface generally perpendicular with respect to said cylindrical member and attachable from one side of said surface, said stabilizer comprising:

(a) a canopy having a hub with first and second ends, said hub defining a generally axial bore and first adjustment means associated with said bore at said first end, the said canopy extending radially outward and terminating at a location in substantially the same plane as the terminus of the hub at said second end to provide a bearing surface;

(b) an adapter having a body defining a generally axial bore and axially slidable along said member, said adapter having second adjustment means adapted to engage said first adjustment means of said canopy;

(c) first securement means associated with said canopy; and

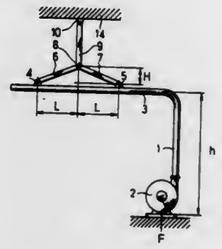
(d) second securement means associated with said adapter whereby the canopy and adapter are slidable about said cylindrical member at said first side and engageable at said first and second adjustment means with the second end of said canopy engaging said surface with said second securement means engaging said member and thereafter permitting said canopy to be adjusted to the desired position relative to said member and surface and secured in said position at said first securement means.

4,516,750

MEANS FOR SUSPENDING PIPEWORK

Alfred Brunner, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 29, 1981, Ser. No. 335,455
Claims priority, application Switzerland, Jan. 8, 1981, 83/81
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—58 **4 Claims**



1. In combination,

a piping system having a horizontal portion and a second portion fixed at a point in a horizontal plane vertically spaced from said horizontal portion;

a first means pivotally secured to said horizontal portion at two spaced apart positions of said horizontal portion, said first means including a pair of links, each link being pivotally connected at one end to a respective position of said horizontal portion and to each other at an opposite end; and

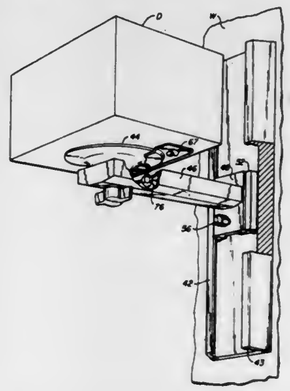
a vertically disposed support member pivotally connected to each link at said opposite ends thereof for supporting said first means at a mid-point of said first means for suspension of said horizontal portion.

4,516,751

WALL BRACKET SYSTEM

Charles Westbrook, 182 Flying Mist Isle, Foster City, Calif. 94404

Filed Sep. 17, 1982, Ser. No. 419,349
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—276 **11 Claims**



1. A wall bracket system for vertically adjustably mounting a device on a vertical surface, said system comprising:

a channel defining a generally linear path and having means for securing to the vertical surface;

a bracket arm having means at one end for slidably engaging the channel so that said arm is capable of translating along the path, and further having a socket spaced inward from said one end;

a mounting plate having a generally spherical bearing surface including a radial slot, said bearing surface being received within the socket of the bracket arm so that said mounting plate is simultaneously capable of rotating about an axis which is generally parallel to the vertical path and tilting relative to said axis; and

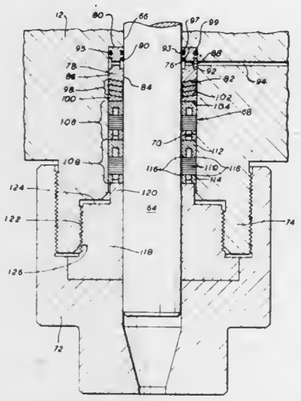
means for retaining the mounting plate within the socket and for tilting the mounting plate relative to the vertical axis, said means for retaining including a threaded shaft rotatably secured to the bracket arm and projecting through the radial slot; means for rotating the shaft; a block having a threaded passage and mounted on the threaded shaft so that it translates along said shaft as said shaft is rotated; and means for operatively coupling the mounting plate to the block so that the mounting plate tilts within the socket as the shaft is rotated.

4,516,752

MECHANICALLY PRELOADED PACKING ASSEMBLY

Brett A. Babbitt, Katy, and Tri C. Le, Missouri City, both of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 12, 1984, Ser. No. 570,110
Int. Cl.³ F16K *31/44*; F16J *15/00*
U.S. Cl. 251—214 **6 Claims**



1. An improved mechanically preloaded packing assembly in a valve of the type having a valve body with a fluid flow passage therethrough, a valve member mounted for movement between an open position and a closed position relative to the flow passage, and a movable valve stem connected with the valve member to effect movement thereof between the open and closed positions, the valve body receiving the valve stem and defining an annular space about the stem terminating in a shoulder facing outwardly away from the flow passage, the improvement comprising:

an energizer ring positioned within the annular space surrounding the valve stem in contiguous relation to the outwardly facing shoulder, the energizer ring having an outwardly facing frusto-conical end surface;

a spring means having at least one metal spring washer in contiguous relation to the other end surface of the energizer ring and having an outwardly facing frusto-conical shape being defined by a cone angle smaller than the cone angle of the energizer ring end surface;

a packing ring means positioned within the annular space arranged in contiguous relation to the spring washer and disposed closely around the stem to effect a high pressure seal between the stem and the valve body; and

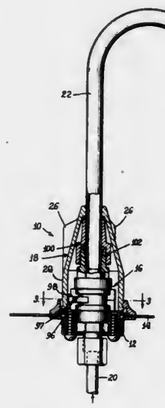
a packing gland nut disposed in contiguous relation to the outer end of the packing ring means, the packing gland nut being provided with external threads for accommodating its connection with an internally threaded section of the valve body, the packing gland nut being axially adjustable within the annular space of the valve body for applying an axial force on the packing ring means and spring means until the cone angle of the spring washer matches the cone angle of the energizer ring whereby the spring means applies a predetermined load unto the packing ring means such that the packing ring means is sufficiently preloaded to effect a low pressure seal between the stem and valve body.

4,516,753

FAUCET DEVICE WITH REPLACEABLE VALVE CARTRIDGE

Jack W. Thomsen, 921 N. Stone Ave., LaGrange, Ill. 60525

Filed Jun. 15, 1983, Ser. No. 504,670
Int. Cl.³ F16K *31/00*
U.S. Cl. 251—346 **32 Claims**



1. A faucet device adapted to be connected to a liquid inlet line comprising:

faucet mounting means;

an in-line valve including a valve body having inlet and outlet ports at opposite ends of said valve, said inlet being connectable to a liquid inlet line and said outlet being connectable to a discharge pipe;

a sleeve valve member disposed in said valve body for axial movement therein including a plug valve member mounted centrally within said sleeve valve member;

means defining a pair of axially extending annular channels disposed within and at opposite ends of said valve body, said channels providing recesses for supporting said sleeve valve member therein;

combination valve seat and seal means attached to the inner end of at least one of said inlet and outlet ports, said seal means being disposed so as to form a seal between said sleeve valve member and the inner end of said inlet or outlet; and

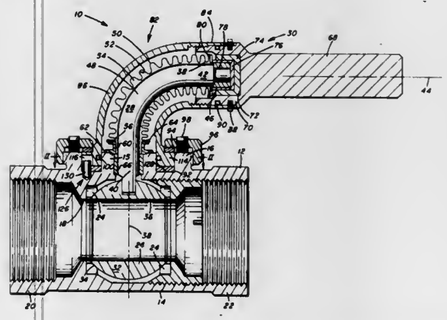
means associated with said valve body for opening and closing said faucet including means for effecting axial movement of said sleeve valve member in said valve body to seat and unseat said plug valve.

4,516,754

BENT BELLOWS SEALED ROTARY VALVE

James R. Owoc, Pittsburgh, Pa., assignor to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Continuation of Ser. No. 357,258, Mar. 11, 1982, Pat. No. 4,452,246. This application May 14, 1984, Ser. No. 609,867
The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.
Int. Cl.³ F16K *41/10*
U.S. Cl. 251—335 B **11 Claims**



1. An actuating device for movement of a member mounted in an enclosure comprising,

actuating means rotatable in an orbital path about a first axis for moving said member,

a stem extending between said member and said actuating means,

said stem having a lower end portion aligned with said first axis and connected to said member for rotation with said member about said first axis,

said stem having an upper end portion aligned with a second axis and connected to said actuating means,

a bearing assembly retained in said actuating means for supporting said stem upper end portion,

an internally pressurized bellows surrounding said stem, said bellows having a lower end portion and an upper end portion,

a primary pressure boundary formed by said bellows around said stem to prevent the escape of fluid through said bellows,

said primary pressure boundary at said bellows lower end portion including a bellows plate surrounding said stem lower end portion and sealingly connected to said enclosure, said bellows lower end portion being welded to said bellows plate to form a hermetic seal around said stem lower end portion,

said primary pressure boundary at said bellows upper end portion including a bellows cap received within said actuating means and surrounding said stem upper end portion to permit rotation of said bellows cap relative to said stem upper end portion, said bellows upper end portion being welded to said bellows cap to form a hermetic seal around said stem upper end portion,

a secondary pressure boundary surrounding said bellows to back up said primary pressure boundary and prevent the escape of any fluid from said primary pressure boundary to the surrounding atmosphere,

said secondary pressure boundary including said actuating means and a rotatable housing connected in surrounding relation with said bellows at an upper end to said actuating means and at a lower end of said enclosure,

said housing having a configuration corresponding to the configuration of said bellows and said stem,

said housing upper end being sealingly connected to said actuating means to rotate with said actuating means, and

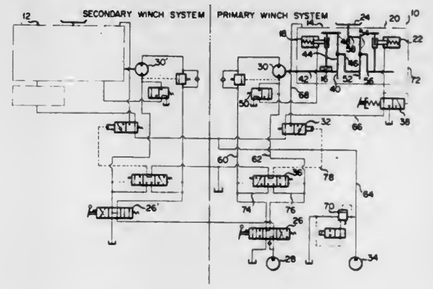
said housing lower end being rotatably positioned on and sealingly connected to said enclosure to permit said housing to rotate about said first axis upon movement of said member.

4,516,755

HYDRAULIC WINCH CONTROL SYSTEM

Toshio Uchimura, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,414
Int. Cl.³ B66D *1/00, 1/30*
U.S. Cl. 254—344 **4 Claims**



1. A hydraulic control system for a reversible hoisting winch, wherein the winch has a spooling drum driven by a bidirectional hydraulic motor via planetary drive means including a brake which is responsive to fluid pressure actuation to allow the drum to freewheel, the control system comprising:

(a) a first source means of hydraulic fluid under pressure;

(b) a motor control valve for controlling communication between the first pressurized fluid source means and the bidirectional hydraulic motor in order to set the motor into and out of rotation in either of opposite directions;

(c) a second source means of hydraulic fluid under pressure for supplying pressurized fluid for lubrication purposes when the hydraulic motor is in rotation in either direction, and for conditioning the spooling drum for freewheeling when the motor control valve is in neutral;

(d) a pilot-operated selector valve normally positioned to cause the pressurized fluid from the second source means to be used for the actuation of the brake of the planetary drive means and responsive to a pilot signal to cause the pressurized fluid from the second source means to be used for the lubrication of the winch; and

(e) means for applying the pilot signal to the pilot-operated selector valve in response to the delivery of the pressurized fluid from the first source means to the hydraulic motor, for the actuation of the motor in either direction, via the motor control valve.

4,516,756

PLASTIC SHEATH FOR FENCING

Gary L. Beatty, 450 S. Mason St., Harrisonburg, Va. 22801

Filed Jun. 13, 1983, Ser. No. 503,620
Int. Cl.³ E04H *17/00*
U.S. Cl. 256—1 **4 Claims**

1. A hollow fence element for use in combination with a wood core picket fence element and comprising a hollow plastic rigid tubular sheath having a length co-extensive with the length of the fence element, having a closed tapered end congruent with the pointed end of the picket and an open end,

and having interior dimensions which are congruent with the exterior dimensions of the core element such that the sheath



can be slipped over the pointed end of the core element and surround the exterior surface of the core element.

4,516,757

TILTABLE METALLURGICAL CONVERTER HAVING MATERIAL CARRYING LINES

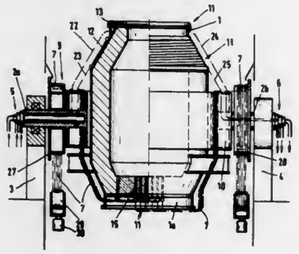
Karlheinz Langlitz, Mulheim, and Gunter Schmitz, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,050

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048199

Int. Cl.³ C21C *5/50*

U.S. Cl. 266—245 **9 Claims**



1. A tiltable metallurgical converter comprising:
(a) a metallurgical vessel having at least one operational site;
(b) a pair of pivot pins secured to said vessel;
(c) support bearings for said pivot pins;
(d) said pivot pins and support bearings serving to allow rotation of said vessel about a horizontal axis passing through said pivot pins when said pivot pins are selectively rotated;
(e) at least one of said pivot pins being hollow;
(f) at least one material carrying line passing through the interior of said hollow pivot pins, said material carrying lines connected on its first end to a remote source of material;
(g) at least one enlarged, in diameter, portion of said hollow pivot pin, located between said support bearing of said hollow pivot pin and said vessel;
(h) at least one additional material carrying line having its first end connected to a stationary tapping point;
(i) said tapping point being connected to a second remote source of material;
(j) said additional material carrying lines being guided by at least one full turn around said enlarged, in diameter, portion of said hollow pivot pin; and
(k) the second ends of said material carrying lines and said additional material carrying lines being connected to said operational sites.

4,516,758

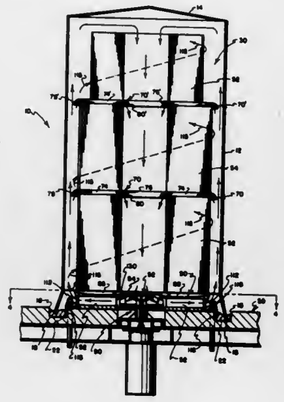
DIFFUSER SYSTEM FOR ANNEALING FURNACE

Gary L. Coble, 12065 Greenwick Rd., Homerville, Ohio 44234

Filed Jan. 10, 1983, Ser. No. 456,823

Int. Cl.³ F27B *5/06*

U.S. Cl. 266—263 **9 Claims**



1. A convection diffuser and charge support system for an annealing furnace, comprising:
(a) a generally annular base structure having inner and outer portions that define substantially concentric circles that are radially spaced one from the other, the base structure being formed from at least one base structure casting, the base structure casting having as integral formations thereof a bottom wall, a top wall, a plurality of curved vane structures that extend substantially vertically between and interconnect the top and bottom walls to define an array of curved, substantially horizontally extending primary flow passage means which underlie and are shielded from above by the integrally formed top wall of the base structure casting, with the top and bottom walls of the base structure casting being of generally annular configuration when viewed from above, and with the curved primary flow passage means having inner and outer openings near the inner and outer portions of the base structure for ducting gas flows along curved, radially-outwardly-directed paths that extend from the inner opening toward the outer opening;
(b) the base structure casting also having a plurality of vane structure extensions which project upwardly from the top wall, the extensions having upper edge portions which extend in a common horizontal plane for receiving and supporting a charge of material to be annealed, which charge is generally annular in configuration when viewed from above,
(c) a base-encircling ring structure separately fromed from at least one relatively massive ring structure casting, the ring structure casting being configured and disposed to surround and closely receive peripheral portions of the base structure casting, said ring structure defining an array of curved, upwardly-opening flow passage means which cooperate with the horizontally extending primary flow passage means of the base structure casting for ducting gases that discharge from the primary flow passages and for ducting such discharged gases upwardly along generally helical paths of flow about a charge of material which is positioned atop the base structure for annealing, and,
(d) a cooling conduit within said ring structure casting for ducting cooling fluid therethrough, said conduit being disposed in said casting in non-obstructing relation to said upwardly-opening flow passage means.

4,516,759

ROTARY PRINTING MACHINE OUTPUT SPEED MATCHING SYSTEM FOR SHEET FOLDER

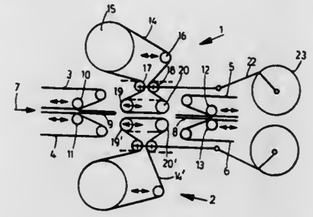
Ingo Kobler, Anhausen, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,176

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321811

Int. Cl.³ B41F *13/64*

U.S. Cl. 270—12 **15 Claims**



1. In and for combination with a paper folding apparatus receiving staggered, sequential sheets (**8**, **9**) from a rotary printing machine having
a high-speed transport system (**3**, **4**, **10**, **11**) operating at a first and high speed;
a low-speed transport system (**5**, **6**, **12**, **13**) operating at a second speed lower than said high speed;
and comprising, in accordance with the invention,
a speed matching belt system to transport the sheets between the first and second systems and decelerate the sheets from the first, high speed to the second, lower speed, including
a third system (**1**, **2**, **14**, **14'**) having belts operating at a variable speed,
said third belt system being operable at a first high speed when the leading edge of the sheet (**8**) reaches the third belt system, and then decelerating to the second and slower speed;
said third belt system then again reaccelerating to reach the first high speed when the leading edge of a subsequent sheet (**9**) reaches the third belt system;
the length of the third belt system and the transport speed of the first belt system being matched to permit respective deceleration and acceleration of the third belt system between the first and second speeds while transporting sequential sheets from the first to the second transport system.

4,516,760

APPARATUS FOR LAYING WEB MATERIAL

Günter O. Stumpf, Ostendstrasse 13, D-7432 Urach, Fed. Rep. of Germany

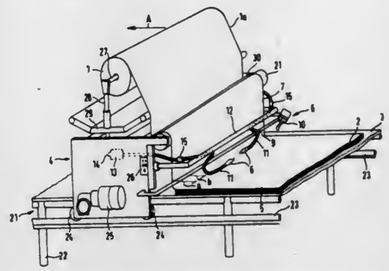
Filed Aug. 27, 1982, Ser. No. 412,262

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137876

Int. Cl.³ B65H *29/46*

U.S. Cl. 270—31 **21 Claims**

1. An apparatus for laying soft thin fabric, such as nylon, woven goods, jersey, plush weave or the like on a flat laying surface for cutting, said apparatus comprising:
(a) a laying surface for receiving layers of fabric,
(b) a laying carriage which is movable over the laying surface to deposit the fabric on the laying surface, the carriage having means to provide the fabric as a vertically suspended web from the laying carriage to the laying surface,
(c) at least one pivoting air nozzle mounted on the laying carriage at the end of a flexible air supply line for directing air in a horizontal plane at the decending web material, said pivoting nozzle being pivotal over an angular range of approximately 180°,
(d) a mounting means for suspending the nozzle behind the suspended web with respect to the travel direction of the laying carriage during the laying of the fabric.



(e) a drive means for pivoting the nozzel during the depositing travel of the laying carriage.

4,516,761

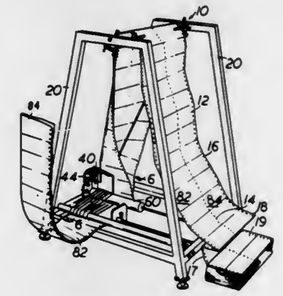
MOTOR DRIVEN CONTINUOUS FORM FOLDER

Mario Ricciardi, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 23, 1984, Ser. No. 602,990

Int. Cl.³ B41L *43/04*

U.S. Cl. 270—41 **12 Claims**



1. A web folding device for folding an unfolded web longitudinally along a weakened fold line and wherein the web has opposite side edges, the device for use in combination with a web processing machine which draws the web from the web folding device in a downstream path of travel, the device comprising:
a frame;
an upper roller means mounted to the frame and extending horizontally across the path of travel of the unfolded web;
motor driven roller means mounted to the frame below the upper roller means and extending horizontally across the path of travel of the folded web;
a pair of fold plates mounted to the frame and disposed between the upper roller means and motor driven roller means, the fold plates defining a channel through which the web passes and is gradually folded by the fold plates contacting the surface of the web on opposite sides of the fold line;
a driven exit roller mounted to the frame and positioned downstream from the motor driven roller means;
at least one drive belt connecting the motor driven roller means to the driven exit roller, such that both rollers rotate in the same downstream direction;
whereby when the web processing machine is not drawing the web from the device the web is slack and does not tightly engage the drive belt such that the web is not driven in the downstream direction of travel, and when

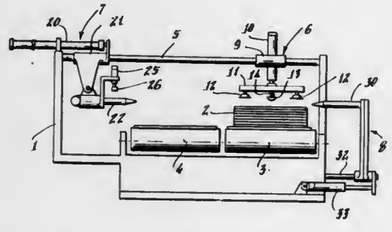
the web processing machine is drawing the web from the device the web is placed in tension and frictionally engages the drive belt such that the belt aids in driving the web in the downstream direction of travel.

4,516,762

SYSTEM FOR PICKING UP AND SEPARATING BAGS FROM A PACK TO BE APPLIED TO AUTOMATIC BAG INSERTING APPARATUS

Mario Moltrasio, and Vincenzo Perrucchini, both of Bergamo, Italy, assignors to Car-ventomatic S.p.A., Bergamo, Italy

Filed Jul. 19, 1982, Ser. No. 399,908
Claims priority, application Italy, Feb. 12, 1982, 19630 A/82
Int. Cl.³ B65H *5/08*
U.S. Cl. 271—11 **3 Claims**



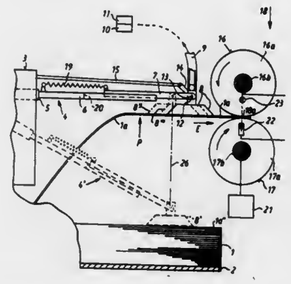
1. System for picking up and separating bags from a pack for feeding them to an automatic bag inserting apparatus, comprising a lifting device for lifting transversally the uppermost bag of the pack, grasping said uppermost bag at its transversal central position, where said bag can never be glued to the next underlying bag, so as to allow to insert under said uppermost bag, from each side of said uppermost bag, at least first and second devices acting under said uppermost bag and causing said uppermost bag to be unstuck from said next underlying bag, the first device being coupled to means pinching, finally separating and transferring said bags one by one and sequentially, to feeding means of said bag inserting apparatus, the second device also providing for holding the underlying bags, during final unsticking and transfer of the bag picked up from the pack, said first device for unsticking and transferring said uppermost bag comprises a body adapted to slide on a guide parallel to the bag transversal middle portion which in the forward stroke brings the unsticking unit to act under the bag, and in the return stroke moves the bag on the means for feeding the bag inserting apparatus, the unsticking unit mounted on said body comprising two bars adapted to assume a first close position for insertion under the bag, and a second open position for unsticking the bag, said two positions being obtained by causing said bars to slide along a bar transversal to the movement of said device, by means of two pistons, said first device also including a picking and transfer unit comprising two vertically movable pads by means of two pistons pinching the bag edges against said unsticking bars when they are in the open position and transfer it, during the return stroke, on the feeding means for the bag inserting apparatus, during the return stroke said unit stripping and finally separating the uppermost bag from the next underlying bag of the pack.

4,516,763

METHOD AND APPARATUS FOR SINGULARIZING STACKED X-RAY FILMS OR THE LIKE

Werner Stahl, Kirchheim-Heimstetten, and Jürgen Müller, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,178
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211610
Int. Cl.³ B65H *5/08*
U.S. Cl. 271—11 **21 Claims**



1. Apparatus for transferring successive outermost sheets from a stack of sheets into a predetermined plane, particularly for transferring X-ray films, comprising a source of stacked sheets; transporting means operable to advance successive sheets in a predetermined direction in said plane; and singularizing means including a mobile support, at least one suction-operated transfer element on said support, and means for moving said support between at least one first position in which said transfer element can attract the outermost sheet in said source and a plurality of second positions in some of which said transfer element maintains at least a portion of the thus attracted sheet in said plane, said transporting means including means for engaging and advancing said sheet portion in said predetermined direction in said plane in at least one second position of said support to thereby entrain said transfer element in said predetermined direction while transfer element continues to adhere to the sheet, said moving means including means for yieldably opposing such entrainment of said transfer element in said predetermined direction.

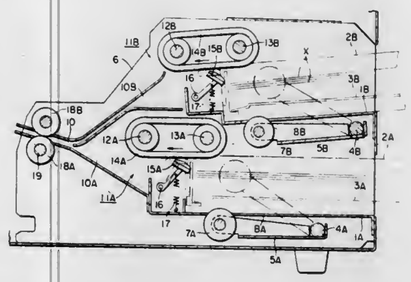
4,516,764

PAPER FEEDING DEVICE

Takashi Tamura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,510
Claims priority, application Japan, Nov. 30, 1981, 56-192300
Int. Cl.³ B65H *3/04*
U.S. Cl. 271—34 **1 Claim**

1. In a paper feeding device comprising a paper feeding member for feeding out paper from a cassette inserted on a stand, a driving system for driving the paper feeding member upon a paper feeding command, and a lifting member for lifting papers loaded on a bottom plate of the cassette against the paper feeding member during a paper feeding operation, the improvement comprising a first spring clutch and a locking member deterring said first spring clutch which are incorporated in said driving system for driving the paper feeding member upon a paper feeding command, a lift-operating member coupled with said locking member for operating said lifting meber upon said paper feeding command, an energizing member connected between said lift-operating member and said lifting member for applying a lifting force to said lifting member only upon activation of said lift-operating member, and a second spring clutch engaged with said driving system for applying rotational movement to said lift-operating member when said driving system is operated upon a paper feeding command, said lift-operating member being moved to a non-



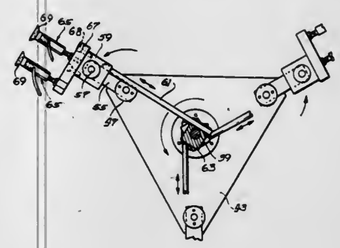
operating position and said energizing member being deenergized during the period when a paper feeding command is not in effect.

4,516,765

ROTARY PICK AND PLACEMENT MACHINE

Sam Stocco, Brooklyn Park, and Stanley Davis, Maple Grove, both of Minn., assignors to Thiele Engineering Company, Minneapolis, Minn.

Filed Nov. 15, 1982, Ser. No. 441,781
Int. Cl.³ B65H *3/12*
U.S. Cl. 271—95 **4 Claims**



1. A pick and placement machine comprising a drive shaft, a radially extending rod on said drive shaft movable inwardly and outwardly relative to said drive shaft, a continuously rotating crank connected to the outer end of said rod and journalled outwardly of said drive shaft, the crank effecting inward and outward movement of said rod, suction means on the outer end of said rod, and means connected between said drive shaft and said crank to effect rotation therof.

4,516,766

RESILIENT SUPPORT FOR PLAYGROUND SEAT

Wesley D. Sutton, Jr., Fort Payne, Ala., assignor to Game Time, Inc., Fort Payne, Ala.

Continuation of Ser. No. 469,804, Feb. 25, 1983, abandoned. This application Jul. 11, 1984, Ser. No. 628,968
Int. Cl.³ A63G *17/00*
U.S. Cl. 272—52 **17 Claims**

1. A rocking seat for children's amusement positionable on a support surface comprising:

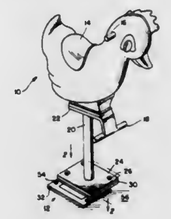
a seat assembly adapted to seat a child,

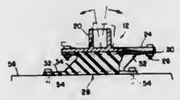
an upright means comprising a generally vertically disposed pole having an upper end secured to said seat assembly and having a lower end,

a body of resilient material having an upper surface, positioned generally below said seat assembly, and supporting said seat assembly,

a retaining means for retaining and securing said lower end on and generally above said upper surface of said body of resilient material,

said body of resilient material including an upper flange formed of resilient material to which said retaining means is attached, a lower flange formed of resilient material parallel to and spaced below said upper flange, and a web portion formed of resilient material interconnecting said upper flange and said lower flange,





a securing means for securing said lower flange of resilient material to the support surface, and

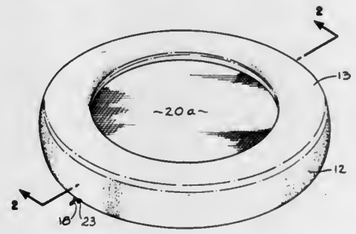
said body being configured to enhance the rocking motion between said lower end and the support surface as a child seated in said seat assembly shifts his weight forwardly and rearwardly and side to side, and said body of resilient material including a forward overhanging portion formed of resilient material and adapted to enhance said rocking motion.

4,516,767

INFLATABLE PLATFORM FOR REPETITIVE BOUNCING

Luther Eskijian, 2223 Midlothian Dr., Altadena, Calif. 91001

Filed Aug. 9, 1982, Ser. No. 406,269
Int. Cl.³ A47C *27/08*; A63B *5/00*
U.S. Cl. 272—65 **2 Claims**



1. Apparatus for use in repetitive bouncing to improve blood and lymphatic solution circulation, the apparatus comprising

(a) an inflated platform, that consists of flexible elastomeric material defining a hollow interior in which pressurized gas is received,

(b) the platform having a central upper wall and there being a reinforced layer on said upper wall on which to stand; during bouncing, the platform having an annular top wal

at substantially higher level than said layer, and a bottom wall beneath said upper wall,

(c) the platform having a side wall which integrally merges with said top and bottom walls, and which is reinforced to resist outward expansion during bouncing, the annular top wall merging with said central upper wall,

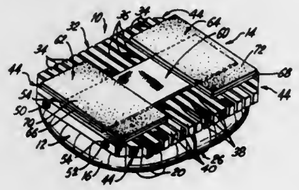
(d) said side wall being everywhere openly and unobstructedly exposed to all of said hollow interior below said upper central wall and above said bottom wall, and also below said annular top wall,

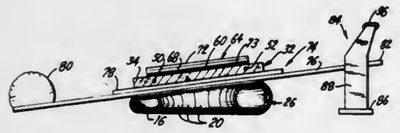
(e) there being a flat reinforcement layer on and covering said central upper wall,

(f) the platform being deflectible and frameless, the platform defining an upwardly opening recess immediately above said upper layer, the depth of said hollow interior below said central wall being sufficient to prevent bottoming of said wall during bouncing,

(g) the platform annular side wall having associated glass fiber reinforcement, the thickness of said side wall and reinforcement substantially exceeding the thickness of each said top and bottom walls, and a gas fill valve in said side wall near said bottom wall.

4,516,768
EXERCISE DEVICE
Carmelo Gallaro, 490 Henry St., Brooklyn, N.Y. 11231
Filed Sep. 27, 1982, Ser. No. 424,079
Int. Cl.³ A63B *5/00, 23/02*
U.S. Cl. 272—65 **21 Claims**





1. An exercising device comprising:

an inflatable flexible toroidal member;

a substantially rigid platform disposed over and supported by said toroidal member;

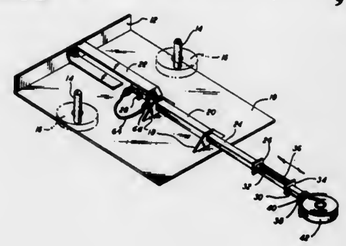
at least one foot tread positioned on an upper surface of said platform;

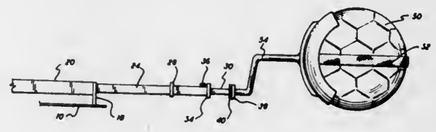
said platform including flexing means for permitting flexing of one section of said platform relative to another section thereof, said platform including a plurality of elongated rigid slats having upper and lower surfaces;

said flexing means including resilient spacers secured between adjacent slats; and

said upper and lower surfaces of said slats respectively lying in parallel planes, said upper surfaces of said slats defining said upper surface of said platform.

4,516,769
REBOUND SPORTS TRAINING APPARATUS
Harold W. Kopp, 137 Daytona Ave., Narragansett, R.I. 02882
Filed Mar. 12, 1984, Ser. No. 588,288
Int. Cl.³ A63B *69/00*
U.S. Cl. 273—1 B **9 Claims**





1. Apparatus for training a player in sports involving the forceful projection of a game object, said apparatus comprising:

(a) stationary base structure;

(b) at least one member mounted for reciprocal motion between first and second positions with respect to said base structure said member including a first element mounted for reciprocal, sliding movement upon said base structure;

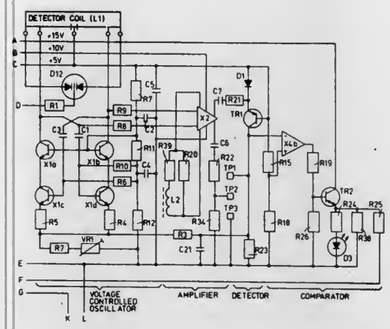
(c) a game object fixedly attached to one end of said member for application of a propelling force by a player, thereby moving said member from said first to said second position thereof;

(d) stretchable means connected between said base structure and said member for movement from a normally contracted to a flexed condition as said member is moved from said first to said second position thereof, whereby movement of said stretchable means back to said contracted position returns said member to said first position thereof and;

(e) a second element mounted for reciprocal, sliding movement upon said first element and movable therewith between said first and second positions.

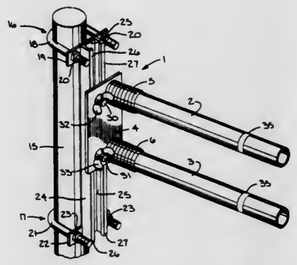
4,516,770
BALL IDENTIFICATION FOR A TABLE BALL GAME
David L. Brookes; John D. Weatherly, and Colin R. Dillicar, all of Auckland, New Zealand, assignors to Development Finance Corporation of New Zealand, Auckland, New Zealand
Filed Dec. 23, 1982, Ser. No. 452,729
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—11 R **7 Claims**

1. A table ball game having a playing surface and ball traps, electronic detection means associated with one or more of the ball traps, a plurality of balls having identification means associated therewith, said identification means comprising at least one resonant circuit in each said ball, said at least one circuit in each said ball being tuned to resonate at a different frequency than at least one said circuit in each of the other said balls, said at least one circuit of each said ball being capable of being individually detected by said electronic detection means, said electronic detection means being coupled to scoring means to record the entry of balls into said ball traps, the electronic detection means comprising plural coils or a single coil with taps in a complex pattern, either of these coil means arranged



to generate a complex field having a plurality of orthogonal axes, and means for detecting perturbations in said field.

4,516,771
BATTING AID
Alan J. Nau, 14640 Tulane St., Brookfield, Wis. 53005
Filed Dec. 23, 1982, Ser. No. 452,740
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 R **7 Claims**



1. A batting practice device, comprising:

a mounting plate;

a pair of elongated arms resiliently mounted at their inner ends on said plate and projecting outwardly therefrom, said resilient mounting includes spring means between the inner end of each of said elongated arms and said mounting plate, said elongated arms being spaced apart and parallel to one another and disposed at an upward inclination from said mounting plate to form an unobstructed target area for passage of a bat therebetween during a practice swing; and

means for releasably securing said plate to a supporting structure.

4,516,772
BASEBALL BATTING TRAINER
William P. Stratton, 815 Coronado Ct., San Diego, Calif. 92109
Filed Feb. 14, 1983, Ser. No. 466,098
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 R **10 Claims**

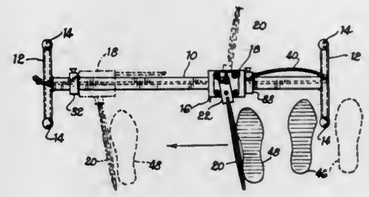
1. A baseball batter's trainer for training batters in proper foot position and movement during the batting swing comprising:

(a) means for positioning the batter's rear foot;

(b) a rail extending along the desired path of the batter's front foot during a swing; and

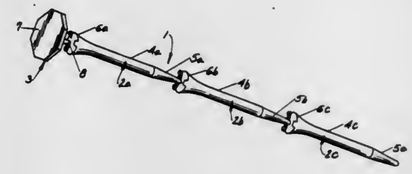
(c) a front foot guide slideably movable along said rail;

said front foot guide comprising a rider slideably movable on said guide rail; a paddle extended from said rider to engage the



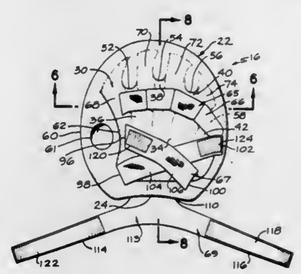
forward portion of the foot; and means for biasing said paddle rearwardly.

4,516,773
GOLF TEES AND BALL MARKER ASSEMBLY
Clyde J. Martin, 8767 Appleknoll La., Cincinnati, Ohio 45236
Filed Oct. 18, 1982, Ser. No. 434,757
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—32 A **3 Claims**



1. A one-piece package for golfers including at one end thereof a ball marker having a flat first end and a pointed second end, and connected to said pointed second end of said ball marker a plurality of solid golf tees, wherein each tee has a central portion, a first pointed end, and a second flat enlarged end containing at least 3 prongs by which a golf ball may be supported, said tees being separably connected in an end-to-end relationship so that said plurality of connected tees and ball marker may first be used as a swizzle stick, said tees being separable from one-another by a readily fracturable joint.

4,516,774
HAND PADDLE FOR A PADDLE BALL GAME
David L. Nankivell, 5792 Carell Ave., Agoura Hills, Calif. 91301
Filed Jun. 1, 1983, Ser. No. 499,937
Int. Cl.³ A63B *59/00*
U.S. Cl. 273—67 B **26 Claims**



1. A paddleball game hand paddle for being worn on the fingered hand of a user comprising:

a back member having a lower edge for positioning adjacent

the wrist of a user and a hand conformed back surface comprising:

a contoured palm support region;

a plurality of elongated depressions extending from the palm support region, each for receiving a finger of the hand of the user at least one of the elongated depressions having a finger gripping ridge transverse thereto at a distal location relative to the palm support region for being gripped by the end of the finger positioned in that elongated depression;

a thumb manipulation region adjacent both the palm support region and the elongated depressions for receiving the thumb of the user and allowing side-to-side and upward manipulation thereof;

a ball contacting front member affixed to the back member at a location opposite the hand conformed back surface;

retention strap means attached to the back member for holding the hand paddle on the user's hand; and

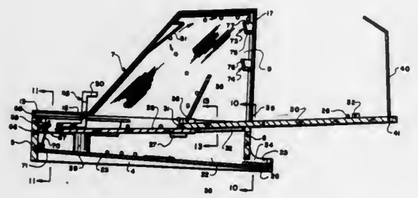
a ball receiving depression in the thumb manipulation region.

4,516,775

BASEBALL GAME

Benjamin D. Suarez, 2000 - 49th St., NW., Canton, Ohio 44709

Filed Jan. 4, 1984, Ser. No. 568,054
Int. Cl.³ A63F *7/06*
U.S. Cl. 273—89 **24 Claims**



1. A baseball game adapted to be played by two players, including:

(a) a base;

(b) a generally transparent enclosure mounted on the base;

(c) inclined surface means mounted on the base and extending upwardly outwardly beyond the enclosure for forming a ball delivery path and a pitching station at an outer end thereof;

(d) a pivotally mounted bat located adjacent an inner end of the inclined surface means adapted to be manually moved by one of the players for striking a ball propelled by the other player;

(e) a ball adapted to be propelled by the other player from the pitching station along the ball delivery path of the inclined surface means toward the bat;

(f) a hand manipulated wand adapted to be operated by said other player for propelling the ball toward the bat;

(g) a plurality of elevated ball receiving compartment means located within the enclosure for capturing a batted ball, with certain of the compartments designating a particular type of a hit;

(h) ramp means located within the enclosure for directing a ball struck by the bat upwardly toward the compartments; and

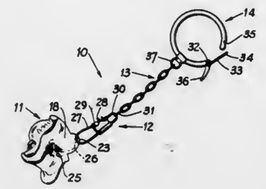
(i) a transparent shield extending upwardly from the extended end of the inclined surface means for protecting said other player from being struck by a batted ball.

4,516,776

GAME AND KEY CHAIN DEVICE

Harry J. Nicholas, 44-4 Candlewood Lake Rd., New Milford, Conn. 06776

Filed Aug. 8, 1983, Ser. No. 521,038
Int. Cl.³ A63F *9/04*
U.S. Cl. 273—146 **9 Claims**



1. A game device, comprising:

a dice means having a nonsymmetrical configuration including a first (**15**), a second (**16**), a third (**17**) and a fourth (**18**) sides, and having a first end portion defined by a pair of spaced substantially rounded ear projections (**23**) and a second end portion defined by a pair of spaced leg projections (**24**), said first side being S-shaped with an S-shaped trough (**19**), said second side being opposite to said first side and having a whip-shaped curved ridge (**20**) extending from a knob like projection (**21**), said third side being substantially rectangular shaped with a central outwardly curved portion (**22**), said fourth side being opposite to said third side and having a substantially rectangular shape with a central recessed portion (**25**), said dice means configured for being tossed or rolled onto a playing surface such that one of five different resting positions each having an assigned game significance being possible by said dice means with each toss or roll thereof; and

a substantially flat rectangular playing surface board means having a plurality of mythography pictures each provided generally about a respective corner region of said board means and a central picture.

7. A method of entertaining or playing a game with one or more persons comprising the steps of:

providing a single dice member having a shape substantially similar to an ankle bone portion of a sheep; assigning a meaning or associative significance to one or more of a possible five distinctive positions of the dice member with being tossed or rolled onto a substantially flat playing surface by a player;

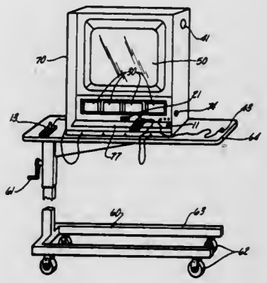
providing a plurality of playing chips to each player; providing a jack pot having a plurality of playing chips; effecting game rules and activity including (a) each player taking a turn at rolling/tossing the dice member onto a playing surface, (b) if a predetermined first position whereby a designated king side of the dice member is rolled/tossed by a player that player is thence anointed the current king, (c) if a predetermined second position whereby a designated tax collector side of the dice member is rolled/tossed by a player that player collects a chip from the jack pot, (d) if a predetermined third position whereby a designated baker side of the dice member is rolled/tossed by a player that player gets an additional toss/roll of the dice member and if this player tosses/rolls three consecutive baker sides that player collects a chip from the jack pot, (e) if a predetermined fourth position whereby a designated punishment side of the dice member is rolled/tossed by a player that player must pay one chip to the king or if no king has yet been anointed this player must put one chip into the jack pot, (e) if a predetermined fifth position designated as Pegasus of the dice member is rolled/tossed by a player that player collects all the chips in the jack pot thereby ending the game, (f) the player having the must chips at the end of the game is declared the winner.

4,516,777

MOBILE SELF-CONTAINED VIDEO GAME SYSTEM WITH INSTANTANEOUSLY SELECTABLE GAME CARTRIDGES

Robert J. Nikora, 6690 Windmill La., Union Lake, Mich. 48085

Filed Nov. 21, 1983, Ser. No. 553,540
Int. Cl.³ A63F *9/22;* **H05K** *5/00;* **A47F** *81/06*
U.S. Cl. 273—148 B **5 Claims**



1. A mobile, self-contained video game system comprising:

a plurality of video game cartridges each containing program instructions for playing a video game;

a video game console including means to receive a single video game cartridge and means for generating video and audio signals as determined by the program instructions contained on a video game cartridge;

a cartridge magazine connected to the means for receiving a single video game cartridge for receiving the plurality of video game cartridges and for providing electrical connections between a selected one of the plurality of video game cartridges and the video game console;

a video display device for displaying the video signals generated by the video game console;

a housing having an upper portion which encloses and retains the video game console, the cartridge magazine, and the video monitor in predetermined locations within the housing and a lower portion;

means for selecting one of the plurality of video game cartridges from without the housing;

video game controllers connected through the housing to the video game console for controlling the operation of the video game console; and,

a mobile base unit attached to the lower portion of the housing for providing means for transporting the video game system cross floor surfaces.

4,516,778

GOLF CLUB

Roger C. Cleveland, 7322 Madison St., Paramount, Calif. 90723

Filed Mar. 17, 1983, Ser. No. 476,278
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—80.3 **5 Claims**



1. A golf club comprising a head and a shaft fitted thereto, said head including a stainless steel hollow body defining a hitting surface, a top wall, a sole member, a rear wall, a pair of side walls and a neck, characterized in that,

(a) said neck has a first shoulder at its lower end,

(b) said neck has a cylindrical portion extending upwardly from said first shoulder,

(c) said cylindrical portion has a relatively thin and substantially even thickness therearound,

(d) said cylindrical portion has fitted therein said shaft,

(e) a first radius is provided between said cylindrical portion and said first shoulder,

(f) a second radius is provided between said first shoulder and an inside wall of said head, and

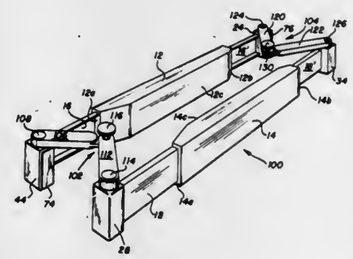
(g) a plastic ferrule is mounted around said cylindrical portion such that said plastic ferrule stands on said first shoulder.

4,516,779

GOLF TRAINING AID

Gardner H. Miller, Albuquerque, N. Mex., assignor to Trustroke International, Inc., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 409,418, Aug. 19, 1982, Pat. No. 4,423,875, which is a continuation-in-part of Ser. No. 398,112, Jul. 14, 1982, Pat. No. 4,413,826. This application Mar. 23, 1983, Ser. No. 478,165
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 C **6 Claims**



1. A golf training aid comprising:

first and second elongated telescopically extendable rail means each having first and second ends and being extendable to an operational position or retracted to a storage position;

first arm member having first and second ends, said first end being pivotally connected to said first end of said first elongated telescopically extendable rail means;

second arm member having first and second ends, said first end being pivotally connected to said first end of said second elongated telescopically extendable rail means;

said second ends of said first and second arm members being pivotally connected to thereby couple said first ends of said first and second elongated telescopically extendable rail means;

third arm member having first and second ends, said first end being pivotally connected to said second end of said first elongated telescopically extendable rail means;

fourth arm member having first and second ends, said first end being pivotally connected to said second end of said second elongated telescopically extendable rail means;

said second ends of said third and fourth arm members being pivotally connected to thereby couple said second ends of said first and second elongated telescopically extendable rail means;

said arm members being disposed between said first and second elongated telescopically extendable rail means, such that the spacing between said first and second elon-

gated telescopically extendable rail means is selected by pivoting said first and second arm members with respect to each other and said third and fourth arm members with respect to each other to thereby maintain said first and second elongated telescopically extendable rail means in a preselected spaced apart relationship throughout the entire length of said first and second elongated telescopically extendable rail means in said operational position; and

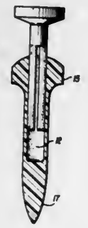
said arm members being disposed parallel to said first and second elongated telescopically extendable rail means in said storage position to enable the golf training aid to collapse to a compact configuration.

4,516,780

ADJUSTABLE GOLF BALL TEE

Michael J. Tabet, Tabet Manufacturing Co., 1336 Ballentine Blvd., Norfolk, Va. 23516

Filed Dec. 11, 1979, Ser. No. 102,551
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—202 **4 Claims**



1. A golf ball tee which is adapted to be fixed in the ground in an upright position and to support a golf ball at a selected elevation above the ground, said golf ball tee comprising a peg having a pointed end for penetration of the ground and an opposite end, a bore extending longitudinally in the peg commencing with an open end in said opposite end of the peg and extending longitudinally towards said pointed end of the peg, said bore terminating in a closed end, an elongated ball supporting member slidably disposed in said bore, having a ball seat on one end exposed above said open end of the bore, and having a longitudinal slit therein, and a means for restraining said ball supporting member against complete removal from the bore comprising a pin disposed laterally across said bore and through said slit and means disposed across the slit and at an angle with respect to the longitudinal axis of the pin closing said slit against movement over said pin, said pin being disposed inwardly in the bore from the pin whereby the slit closing means strikes the pin when the support member slides in the direction from the said pointed end and the elongated support member is prevented from being completely removed from the said bore.

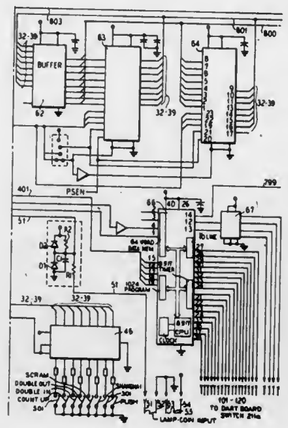
4,516,781

DART GAME WITH TWO MICROCOMPUTERS

Donald P. DeVale, Sycamore; Robert J. Brejcha, St. Charles, and Robert W. Van Naarden, Hinkley, all of Ill., assignors to Industrial Design Electronic Associates, Inc., Sycamore, Ill.

Filed Nov. 17, 1982, Ser. No. 442,356
Int. Cl.³ F41J *3/00, 3/02*
U.S. Cl. 273—373 **7 Claims**

1. A dart game comprising a segmented dart target, a switch matrix associated with said segmented dart target, a first microcomputer connected to said switch marix and continuously scanning said matrix, a second microcomputer connected to said first microcomputer, a scoring indicator connected to said second microcomputer, means within said second microcomputer for controlling said first and second microcomputers so that they can operate together, including a game selector switch connected to said second microcomputer, including a plurality of indicator lights connected to said second microcomputer, and wherein said segmented dart target is formed with segments with holes for receiving darts and feet



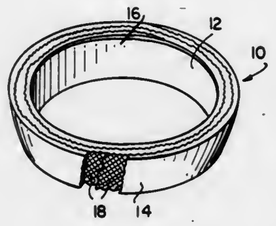
attached to said segments and moveable to close selected ones of said matrix switches when a dart strikes a segment, wherein said continuous scanning of said matrix by said first microprocessor prevents any double scoring.

4,516,782

METHOD OF PRODUCING HIGH TEMPERATURE COMPOSITE SEAL

Peter P. Usher, Union, N.J., assignor to Metex Corporation, Edison, N.J.

Division of Ser. No. 856,174, Nov. 30, 1977,. This application Aug. 29, 1983, Ser. No. 527,247
Int. Cl.³ F16J *15/12;* **B32B** *31/06*
U.S. Cl. 277—1 **3 Claims**



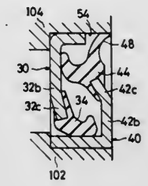
1. A method of producing substantially coherent high temperature exhaust seal adapted to sealingly engage confronting surfaces on pipes and flanges to be joined to one another to form a flexible joint comprising the steps of constructing a generally cylindrical preform by convoluting a strip of flexible refractory sheet material with one or more overlaying pieces of flexbile knitted wire mesh said wire mesh being formed of wire and having voids of given size between said wires, disposing said preform in a compression die, said die having a cavity size and shape which is substantially the same as the desired exhaust seal, and applying an axial load to said preform, said load being of sufficient force to collapse said preform to substantially the size and shape of said exhaust seal and to cause said refractory material to substantially fill the openings in said wire mesh and substantially all other air voids within said exhaust seal and to become firmly interlocked with said wire mesh.

4,516,783

SEAL ASSEMBLY WITH RADIALLY OVERLAPPING SEAL MEANS

Naoki Mitsue, and Hideki Takahashi, both of Fujisawa, Japan, assignors to Nippon Seiko K.K., Tokyo, Japan

Continuation of Ser. No. 575,763, Feb. 1, 1984, abandoned. This application Jun. 8, 1984, Ser. No. 618,555
Claims priority, application Japan, Feb. 12, 1983, 58-21842
Int. Cl.³ F16J *15/32, 15/38;* **F16C** *33/72*
U.S. Cl. 277—50 **5 Claims**



1. A seal assembly for sealing a chamber formed between radially inner and outer members disposed coaxially and spaced apart radially from each other, the members being rotatably relative to each other,

the seal assembly comprising:

a first radial member extended radially inwardly from the outer member toward the outer periphery of the inner member,

a second radial member disposed axially outside from the first radial member and extended radially outwardly from the inner member toward the outer member so that the first and second radial members may oppose to each other,

a first seal means disposed between the tip end of the first radial member and the inner member,

a second seal means disposed between a side surface of the first radial member and the second radial member,

a third seal means disposed between the outer member and the second radial member, and

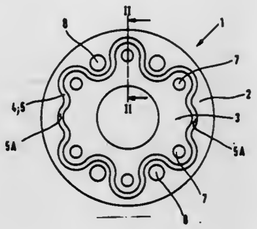
the first, second and third seal means being so formed that leak of lubricant contained in the chamber may be permitted, while flow of foreign material from exterior may be prevented.

4,516,784

SEAL ASSEMBLY WITH RADIALLY UNDULATED SEALING ELEMENT

Johann Merz, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 9, 1984, Ser. No. 639,209
Claims priority, application PCT Int'l Appl., Aug. 27, 1983, PCT/EP83/00226
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—180 **9 Claims**



1. A seal assembly for sealing registering flow passages (**21, 22**) of assembled components (**18, 23**) and wherein said seal assembly comprises a pair of carrier rings with radial spacing therebetween for carrying a sealing element of compressible material in said spacing, wherein said sealing element extends axially beyond the thickness of said carrier rings;

one said ring (**3**) having flow passage apertures (**7**) for registering, respectively, with said flow passages of said assembled components and the other said ring (**2**) having assembly screw bores (**8**) therethrough for accommodating assembly screws securing said assembled components together;

the improvement wherein:

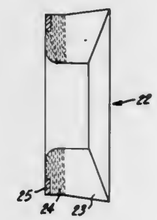
said sealing element comprises a sealing ring radially undulated to continuously wind around said flow passage apertures and said assembly screw bores and being convex radially outward of said flow passage apertures to effect sealing thereof within said sealing ring upon being compressed when said components are assembled, and being concave radially around said assembly screw bores.

4,516,785

PISTON WITH A CONTROLLED EXPANSION PISTON ANTI-EXTRUSION RING

John E. Miller, Dallas, and Dennis J. Fortino, Plano, both of Tex., assignors to Chromium Corporation, Richardson, Tex.

Filed Dec. 10, 1982, Ser. No. 448,430
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—188 A **7 Claims**



1. In a pump sealing device for a reciprocating pump used to pump abrasive liquids, said pump having a cylinder, a piston with a flange, and a gap between the cylinder and flange, said sealing device comprising an elastomeric seal for sealing said fluid having a first face in contact with the fluid being pumped, a second face in sealing contact with the cylinder, and a heel section resting at least in part in contact against the flange; and an anti-extrusion ring;

the improvement wherein said anti-extrusion ring is expandable and bonded to the heel section of said elastomeric seal so that the expansion of said ring is controlled by the expansion of the heel section of said elastomeric seal, said ring being sized to be in intimate, movable contact with said cylinder, being located adjacent to the flange and to the heel section of the seal, having at least one split through it to allow for radial expansion of the ring, and being of a material having a modulus of elasticity of at least 10,000,000 psi and a yield strength, size and shape sufficient to prevent the ring from permanently deforming under hydrostatic pressures generated in the cylinder during pumping operations.

4,516,786

CORE CHUCK

Arnold M. Lund, 1210 Avocado Ave., Escondido, Calif. 92026

Filed Mar. 8, 1983, Ser. No. 473,240
Int. Cl.³ B23B *31/40*
U.S. Cl. 279—2 R **8 Claims**

1. A chuck for a tubular core, comprising:

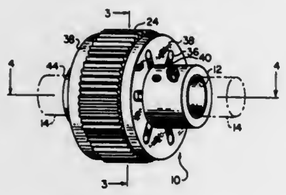
a cylindrical sleeve;

a plurality of spaced apart cams surrounding the intermedi-

ate portion of the sleeve and having a plurality of flat aligned faces;

a like plurality of circumferentially spaced segments freely positioned in overlying relationship with the cams, each segment having a flat inner surface overlying a corresponding set of aligned faces of the cams, outwardly diverging side surfaces, an arcuate outer surface, a pair of opposing end surfaces, and guide pins extending perpendicular from the end surfaces;

a pair of disks mounted on opposite ends of the sleeve with the segments positioned therebetween, each disk having a plurality of circumferentially spaced, radially extending



slots for receiving the guide pins of the segments to limit radial movement of the segments;

a plurality of spring rings surrounding the sleeve and positioned between adjacent ones of the cams for yieldingly urging the segments radially outwardly into uniformly spaced relationship relative to the sleeve; and

means for locking the position of the sleeve relative to a shaft inserted through the sleeve;

the slots and springs being dimensioned so that when the cams rotate relative to the segments, the cams engage the inner surfaces of the segments and move the segments radially outwardly.

4,516,787

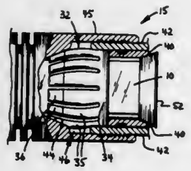
LIGHTGUIDE PREFORM CHUCK

Edward R. Venable, Gwinnett County, Ga., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Nov. 10, 1982, Ser. No. 440,774

Int. Cl.³ B23B *31/16*

U.S. Cl. 279—1 SG **9 Claims**



1. Apparatus for holding an object under elevated temperature conditions comprising a collet made of a material and so constructed to permit lateral deflection of intermediate portions and end portions thereof and being of a size and structure such as to have portions thereof adapted to be placed adjacent to the object and in clamping engagement therewith, said collet also being formed of a material having a selected coefficient of thermal expansion, and collet restraining means being formed of a material having a coefficient of thermal expansion less than said selected coefficient of thermal expansion, said collet restraining means being in engagement with each end portion of said collet to restrain normal longitudinal movement of said collet during relative thermal expansion of said collet with respect to said collet restraining means while permitting and causing lateral deflection of end and intermediate portions thereof to maintain clamping engagement of the end portions with the object, said collet restraining means being spaced from an intermediate portion of said collet to permit lateral deflection of the intermediate portions of said collet so that during conditions of elevated temperatures stresses set up in the material of the collet caused by the restraint of the normal longitudinal thermal expansion of the collet are translated into lateral deflection of the end portions of the collet to maintain the end portions of the collet in clamping engagement with the object and lateral deflection of intermediate portions of the collet to maintain kinetic clamping force on the object caused by the resiliency of the laterally deflected intermediate portions of the collet.

4,516,788

SEATING POSITION ADJUSTING DEVICE FOR AN AUTOMOTIVE VEHICLE SEAT

Yoshihiro Umetsu, Zama; Masakazu Muraishi, Isehara; Osamu Ito, Ebina, and Masakatsu Kakeba, Tanashi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

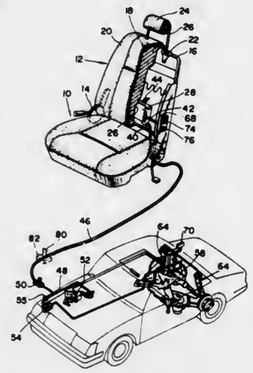
PCT No. PCT/JP82/00477, § 371 Date Aug. 12, 1983, § 102(e) Date Aug. 12, 1983, PCT Pub. No. WO83/02219, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 24, 1982, Ser. No. 532,030

Claims priority, application Japan, Dec. 29, 1981, 56-211640

Int. Cl.³ A47C *7/46*; B60N *1/06*; B60G *17/00*

U.S. Cl. 280—6 R **10 Claims**



1. An adjusting device for an automotive vehicle seat comprising:

means defining a pneumatic chamber in a seat for an automotive vehicle;

a vehicle height adjusting means which detects the relative displacement between the vehicle body and the axle of a wheel of the vehicle and regulates the pressure of the working gas supplied by a pressure supply source included therein so as to maintain the displacement within a predetermined range;

a pressure increasing means for increasing the pressure in the pneumatic chamber, said pressure increasing means being so arranged between the pneumatic chamber and the pressure supply source of said vehicle height adjusting means as to introduce the working gas fed from the pressure supply source into the pneumatic chamber to increase the volume of the pneumatic chamber;

a pressure decreasing means for decreasing the pressure in the pneumatic chamber, said pressure decreasing means being adapted to vent the pneumatic chamber to the ambient air so as to exhaust the working gas from pneumatic chamber to the ambient air to decrease the volume of the pneumatic chamber; and

operation means for adjusting the seating position of the seat

by selectively actuating said pressure increasing means or pressure decreasing means.

4,516,789

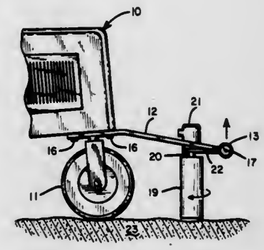
CROP CLEARING MECHANISM

Donald E. Dufner, Rte. 1, Box 124, Buxton, N. Dak. 58218

Filed Sep. 27, 1982, Ser. No. 423,668

Int. Cl.³ B60R *19/00*

U.S. Cl. 280—160 **4 Claims**



1. Apparatus for clearing or displacing a crop to either side of the wheel of a tractor comprising, in combination:

a pair of support bars secured to said tractor, one on either side of said wheel, in cantilevered attachment with forwardly projecting ends having limited vertical deflection;

a draw bar mounted to and extending between said forwardly projecting ends;

a pair of rearwardly projecting motor mounts pivotally attached to said draw bar, including a stop member for limiting pivotal motion of said motor mounts to a predetermined angular range; and

a rotatable cylinder and means for rotatably driving said cylinder attached to each of said rearwardly projecting motor mounts, with said cylinder projecting downwardly and forward of said tractor wheel;

whereby said cylinders may be rotatably driven in opposite directions and said cylinders may each be deflected upwardly upon contacting obstacles while clearing or displacing a crop.

4,516,790

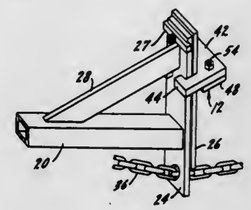
SLIDE ADJUSTMENT MEMBER FOR A VEHICLE TOWBAR

Lawrence E. Hampel, St. Charles, and Edward O. Freese, North Aurora, both of Ill., assignors to Moline Corporation, St. Charles, Ill.

Filed Oct. 28, 1982, Ser. No. 437,350

Int. Cl.³ B60D *1/14*

U.S. Cl. 280—502 **4 Claims**



1. In a towbar assembly of the type having a coupler head, a pair of channel arms each-pivotally connected at one end to the coupler head, a vertically-disposed face plate connected to each of the other ends of the channel arms, and tow chains secured to the channel arms, the improvement comprising a slide adjustment member associated with each face plate, each slide adjustment member having a body-portion and a slot defined by a pair of fingers, the face plate being disposed within the slot with the fingers encompassing the face plate such that when the slide adjustment member is substantially perpendicular to the face plate the adjustment member will readily slide up and down on the face plate whereas when the slide adjustment member is disposed at an angle to the face plate the adjustment member will bind on the face plate and remain fixed.

4,516,791

SAFETY SKI BINDING

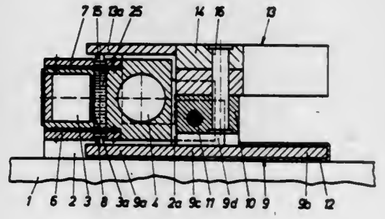
Wilfried Riss; Theodor Nitschko, both of Vienna; Engelbert Spitaler, Wr. Neudorf, and Gerhard Oberleitner, Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Mar. 28, 1983, Ser. No. 479,407

Claims priority, application Austria, Mar. 30, 1982, 1230/82

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—612 **5 Claims**



1. In a safety ski binding which includes two jaws which hold a ski boot, of which one can be released in an electric manner and the other one is constructed as a holding jaw which has a sensing element for detecting forces which act onto the ski boot upwardly, downwardly, and transversely, wherein signals which are produced by the sensing element can be processed in a control circuit which, if predetermined limit values are exceeded, emits a release signal, the improvement comprising wherein the holding jaw has two sole holders which hold the ski boot sole from above and from the side, are hinged slightly swingably on a pin which extends perpendicular to the upper side of the ski and are also slightly swingable about a further pin which extends transversely to the longitudinal direction of the ski and parallel to the upper side of the ski, wherein the sole holders are each provided with a pressure piston which acts on at least one of a differential pressure cell and a respective absolute pressure cell, wherein at least one of the sole holders has in a region which does not face the ski boot a pressure pin which can act on a further absolute pressure cell, and wherein a stepping plate is slightly pivotally supported a small distance from the upper side of the ski on the further pin which extends transversely to the longitudinal direction of the ski and parallel to the upper side of the ski, which stepping plate carries at its end which does not face the ski boot a pressure pin which can also act on the further absolute pressure cell, each of the pressure cells being part of the sensing element.

4,516,792

LATERALLY RELEASABLE TOE UNIT FOR A SKI SAFETY BINDING

Georg Scheck, Leonberg, and Martin Bogner, Ostfildern, both of Fed. Rep. of Germany, assignors to GEZE GmbH, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,219

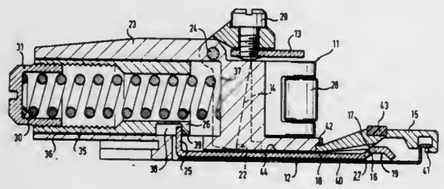
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230187

Int. Cl.³ A63C *9/085*

U.S. Cl. 280—625 **3 Claims**

1. A laterally releasable toe unit for a ski safety binding for securing a ski boot to a ski, said toe unit comprising first and

second laterally pivotable side jaws; a yoke for holding said first and second laterally pivotable side jaws in a ski boot retaining position; a release spring disposed to bias said yoke in a direction to hold said side jaws in said ski boot retaining position, said side jaws being pivotable laterally against the spring bias to release the ski boot; a toe plate disposed to receive a toe portion of a ski boot thereon, said toe plate being movable in a direction perpendicular to said ski; a force deflecting transmission means operative between said toe plate and said spring for exerting a force on said spring against the spring bias, said force being dependent on a contact force acting on said toe plate perpendicular to said ski, said force

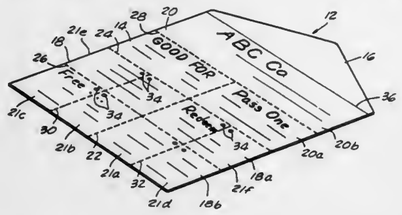


deflecting transmission means comprising a bar member extending in the longitudinal direction of the ski and bearing against said yoke; a laterally fixedly located toe restrainer for restraining upward movement of said toe portion away from said ski, said toe restrainer being movable in an upward direction away from said ski; and at least one lever operatively associated with said toe restrainer and responsive to an upwardly directed force acting on said toe restrainer to act on said bar member to move same in a direction to exert a relief force against said spring bias in the same sense as said force deflecting transmission means exerts, said relief force being related to said upwardly directed force.

4,516,793
ADVERTISING ARTICLE AND METHOD OF MAKING SAME

Jerrilyn C. Kiyokane, Long Beach, Calif., assignor to Namkung Promotions Inc., Costa Mesa, Calif.

Filed Mar. 10, 1983, Ser. No. 473,953
Int. Cl.³ B42D *15/00*; **B41L** *1/20*
U.S. Cl. 283—103 **3 Claims**



1. A method of making a device for use in advertising comprising the steps of:

(a) printing indicia on a first side of a planar sheet having first and second sides;

(b) cutting said planar sheet to form a shaped sheet having an upper tab portion, a lower portion and an intermediate portion;

(c) perforating said shaped sheet along a first line dividing said lower and intermediate portions, along a second line bisecting said lower portion to form first and second portions and along a third line bisecting said intermediate portion to form third and fourth portions, said fourth portion having advertising indicia imprinted thereon;

(d) perforating said shaped sheet along a fourth line extending substantially perpendicular to said first, second and third lines, said fourth line substantially bisecting said first, second and third portions to form an advertising display portion and at least six removable, redeemable coupon portions;

(e) folding said shaped sheet along said first line to form a folded sheet wherein the second sides of said lower and intermediate portions are in engagement;

(f) folding said folded sheet along said second line to bring the first sides of said first and second portions into engagement;

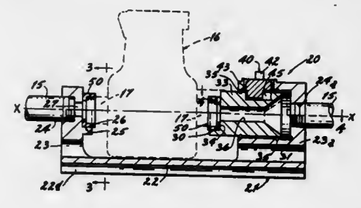
(g) folding said tab portion of the device thus formed along a line dividing said tab portion and said intermediate portion to bring the second side of said tab portion into engagement with the first side of said third portion; and

(h) removably affixing said second side of said tab portion to said third portion to form an advertising device displaying advertising indicia on said fourth portion but substantially concealing said redeemable coupons from view.

4,516,794
METER PIT MOUNTED HOLDER FOR A WATER FLOW CONTROL DEVICE

Larry D. Zorb, and L. Harvey Wicklund, both of Bigfork, Mont., assignors to Zorwick Corp., Bigfork, Mont.

Filed Nov. 5, 1982, Ser. No. 439,353
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—30 **10 Claims**



1. A pit holder for releasably mounting a flow control device such as a water meter having opposed coaxial pipe connectors to a waterline at the bottom of an excavated meter pit, the holder comprising;

a cradle frame including an elongated cradle base adapted to rest against the bottom of a meter pit;

rigid upstanding legs at opposite ends of the base, having coaxial bores adapted for connection to a water line and for holding the water line stationary to the frame;

first and second saddle members on the cradle frame legs having coaxial bores formed on a prescribed axis, with each saddle having a pipe connector receiving saddle facing upwardly and adapted to vertically receive and release the pipe connectors;

the first saddle member being stationary on one of the cradle legs;

the second saddle member being mounted to the remaining leg of the cradle frame for horizontal sliding translational movement along the prescribed axis independently of the water line between an operative position adapted to axially clamp a flow control device by the saddle members between its pipe connectors, and an inoperative position in which the device can be moved vertically to engage or disengage the pipe connectors thereof with the saddle members;

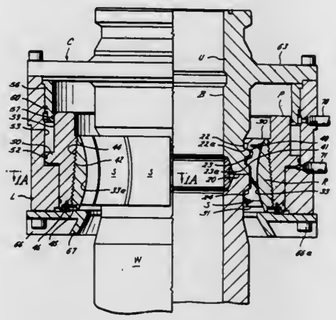
linkage means between the second saddle member and cradle frame adapted for operation from above the excavated meter pit for moving the second saddle member between its operative and inoperative positions; and

wherein the linkage means includes a cam locking means selectively operable to lock the second saddle member in its operative position.

4,516,795
TORUS TYPE CONNECTOR

Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079

Filed Jan. 28, 1982, Ser. No. 343,496
Int. Cl.³ F16L *37/18*
U.S. Cl. 285—315 **12 Claims**



1. A connector for connecting tubular members to a wellhead, comprising:

a. a connector body having a passage extending therethrough and including a lower end with a locking surface formed thereon for receiving locking means;

b. a plurality of circumferentially spaced locking segments adjacent the lower end said connector body, said locking segments having upper ends and lower ends with a generally concave torodial outer surface between such ends and upper and lower inner locking surfaces for engaging said locking surface on said connector body and a locking surface on said well head;

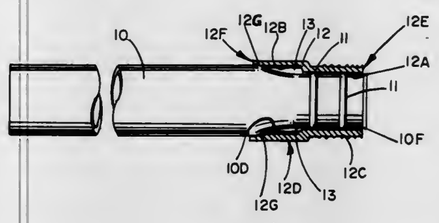
c. torus drive means surrounding the locking segments having a generally torodial curved inner surface for engaging the concave torodial curved surfaces on said locking segments for moving the lower ends of said locking segments inwardly into locking engagement with the well head as said torus drive means is moved axially of said connector body in a first direction and moving the lower ends of said locking segments outwardly as said drive means is moved axially of said connector body in the opposite direction; and

d. means for moving said torus drive means axially in said first and opposite directions with respect to said connector body.

4,516,796
FLUID COUPLING

Steven L. Hudson, Howell, Mich., assignor to The Estate of Thomas S. Krause, Howell, Mich.

Filed Mar. 28, 1983, Ser. No. 479,684
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—321 **10 Claims**



1. A fluid coupling which comprises:

(a) conduit means (**10**, **20**) with an enlarged section (**10A**, **20A**) having a first outside cross-sectional width and having at one end (**10C**, **20C**) a reduced section (**10B**, **20B**) with a cylindrical exterior surface which has an outside diameter smaller than the width of the conduit means and with a truncated conical shoulder (**10D**, **20D**) between the sections;

(b) connector means (**12**, **22**) mounted on the cylindrical surface adjacent the one end with (**1**) a first cylindrical interior opening (**12A**, **22A**) adjacent a first end (**12E**, **22E**) of the connector means having a first inside diameter to provide a precision rotational fit with a portion of the reduced section of the conduit means and (**2**) an enlarged second opening (**12B**, **22B**) adjacent a second end (**12F**, **22F**) of the connector means opposite the first end, the second opening being larger than the outside diameter of the exterior surface of the reduced section and smaller than the width of enlarged section of the conduit means, the connector means having an exterior threaded surface (**12C**, **22C**) adapted to fit a mating threaded opening and having an exterior wrench engaging surface (**12D**, **22D**) for threading the connector means into the threaded opening such that there is a sealed fluid connection with the conduit means;

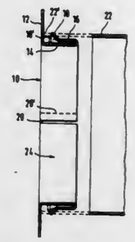
(c) retaining means (**10F**, **23**) for rotatably holding the conduit means and connector means together such that the shoulder abuts the connector means adjacent to second end; and

(d) seal means (**11**, **21**) between and in sealing engagement with the exterior surface of the conduit means and the interior surface of the connector means.

4,516,797
FLANGED RING FOR TUBES

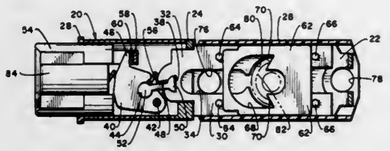
Manfred Meinig, Weilheim, Fed. Rep. of Germany, assignor to Karl Meinig, KG, Weilheim, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,151
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143893
Int. Cl.³ F16L *23/00*, *17/00*
U.S. Cl. 285—405 **19 Claims**



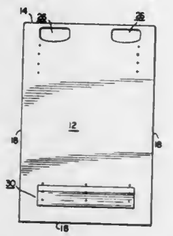
1. A one-piece flanged ring which can be mounted on a thin-walled, round sheet-metal tube, for making a butt joint between two tube sections, having an approximately radially outwardly protruding securing flange and an arm projecting from the inner end of the securing flange, characterized by a ring land (**18**) bent obliquely outward toward the securing flange (**12**) by the arm (**14**), the arm (**14**) and the ring land (**18**) being drivable with pre-stressing into the interior of the tube, wherein the largest diameter of the arm (**14**) is smaller, and the largest diameter of the ring land (**18**) in the unstressed state is larger, than the inside diameter of the tube (**22**), wherein the arm (**14**) projects approximately perpendicularly from the securing flange (**12**), and wherein the arm (**14**) has a centering arm (**16**) bent back approximately parallel to itself and supporting the ring land (**18**).

4,516,798
LATCH BOLT OPERATING ASSEMBLY HAVING BOLT OPERATING IMPROVEMENTS
Gary R. Bergen, Yorba Linda, Calif., assignor to Emhart Industries, Inc., Farmington, Conn.
Filed Apr. 11, 1983, Ser. No. 483,550
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—169.13 **22 Claims**



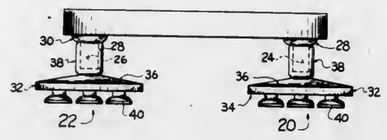
1. In a latch construction of the type having a frame mounting a bolt movable from a forward extended position to a rearward retracted position by motion of a rearward operator acting through latch operating mechanism; the latch operating mechanism including: a retractor forwardly and rearwardly movable in said frame and having a rearward portion operably connected to the rearward operator for transferring rearward operator motions into rearward retractor movements, a cam with a base end thereof pivotally connected to said frame and a free portion thereof pivotal forwardly and rearwardly of said frame, said cam free portion being operably connected to said bolt conveying rearward motion to said bolt upon rearward pivoting of said cam; a link pivotally connected at a rearward end thereof to a forward portion of said retractor and at a forward end thereof to said cam free portion spaced from said base end; a bolt extension secured extending rearwardly from said bolt and said cam free portion positioned extending into said bolt extension.

4,516,799
SNOW REMOVAL DEVICE
Brian C. O'Donnell, 172 Courtenay La., Schaumburg, Ill. 60193
Filed Mar. 15, 1984, Ser. No. 589,947
Int. Cl.³ E01H *5/02*
U.S. Cl. 294—54.5 **8 Claims**



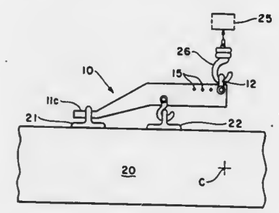
1. A snow removal device operable by a user while maintaining the user's back in a generally upright position for reducing strain on the back muscles during snow removal, comprising a generally flat polygonal member having a scraping edge at a lower end thereof, gripping means adjacent an upper end of said member, said member adapted to be normally maintained at an angular position with the scraping edge in sliding engagement with a surface from which snow is being removed and a polygonal kick plate releasably secured to said member between said scraping edge and said upper end and being positioned substantially closer to said scraping edge than said upper edge so that a user's foot can engage said kick plate and produce a substantial force forwardly and outwardly on said member as said member is pulled backwardly and upwardly by said gripping means for removing the snow accumulated by said scraping edge and said device, said polygonal member having a plurality of sets of holes with fasteners extending through said holes and said polygonal kick plate so that said kick plate can be secured to said member in a plurality of adjusted positions using different sets of holes.

4,516,800
DEVICE FOR PICKING UP AND HANDLING DRAFTING TEMPLATES, TRIANGLES AND THE LIKE
Rodolfo A. Coronado, 35012 Hollyhock St., Union City, Calif. 94587
Filed Mar. 11, 1983, Ser. No. 474,568
Int. Cl.³ A47B *97/06*
U.S. Cl. 294—64.1 **10 Claims**



1. A device for handling flat-sided drafting templates having various shaped through holes extending between opposite flat sides of the latter in spaced apart relationship to one another, said device comprising a handle adapted to be held by the fingers of a draftsman and a plurality of suction cups fixedly connected with said handle and positioned relative to the latter so as to easily attach to a flat side of any of said templates by means of suction while said handle is being held by said draftsman, whereby the device can be used to pick up and manipulate said tools, said plurality of suction cups including a group thereof, positioned adjacent to one another, each of which is at least as small in cross section as most, if not all, of spaces between said through holes in said templates, whereby at least one of said suction cups can be attached in its entirety to a given one of said templates.

4,516,801
POD LIFTING ADAPTOR
David E. Burd, 5968 Albrecht Ave., Marysville, Calif. 95901
Filed Dec. 16, 1983, Ser. No. 562,264
Int. Cl.³ B66C *1/66*
U.S. Cl. 294—81.5 **1 Claim**



1. A lifting adaptor for use in lifting and moving an elongate load having a pair of spaced lifting brackets attached thereto, comprising:

a. a beam having a substantially horizontal first portion and a second portion attached at a predetermined angle to said first portion at respective first ends thereof;

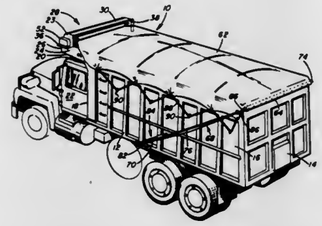
b. connector means near the second end of said first beam portion for removeably attaching a hoist;

c. the second end of said second beam portion terminating in a narrow tongue of predetermined size for insertion into a first of said lifting brackets, said tongue disposed substantially parallel to said first beam portion at;

d. a lifting hook attached to said first beam portion intermediate said connector means and said tongue for engaging the second of said lifting brackets, said hook disposed in substantial alignment with said tongue whereby said tongue and said lifting hook engage both said lifting brackets simultaneously; and

e. said first beam portion sized to define a lifting point at said connector means near said second end of said first beam portion, said point lying on a vertical line passing near the center of gravity of said load.

4,516,802
TRUCK COVER
Warren L. Compton, Rte. 5, Box 87, Fairmont, W. Va. 26554
Filed Dec. 2, 1982, Ser. No. 446,260
Int. Cl.³ B60P *7/04*
U.S. Cl. 296—98 **10 Claims**



1. A cover roll assembly for a vehicle having a headboard positioned forwardly of an open body comprising,

a take-up roll mounted transversely on the headboard,

support means connected to the take-up roll for rotatably supporting the take-up roll,

a flexible cover rolled up on said take-up roll and extending substantially across the width of the vehicle headboard,

a bail assembly including a pair of parallel legs spaced apart substantially the width of the open body and having end portions pivotally connected on opposite sides of the open body,

a cross bar connecting said pair of parallel legs movable between an open position closely adjacent said take-up roll at one end of the open body and a closed position displaced from said take-up roll at an opposite end of the open body,

said flexible cover having one end secured to said take-up roll and an opposite end secured to said cross bar,

biasing means for exerting a force upon the bail assembly to move said cross bar from said open position with said flexible cover rolled up on said take-up roll to said closed position with said flexible cover unrolled and extending over and covering the open body,

power means drivingly connected to said take-up roll for rotating said take-up roll in a first direction to initiate unrolling of said flexible cover and operation of said biasing means to actuate pivotal movement of said bail assembly to move said cross bar from said open position to said closed position and unroll said flexible cover to cover the open body,

said power means being operable to rotate in a second direction and actuate pivotal movement of said bail assembly and return said cross bar to said open position and roll up said flexible cover on said take-up roll,

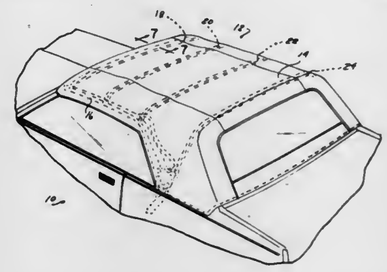
guide means mounted adjacent the end portions of said cross bar and engageable with said flexible cover for maintaining said flexible cover centered on said take-up roll as said flexible cover is unrolled and rolled on said take-up roll,

said flexible cover including lateral edge portions,

said guide means including a pair of guide rollers rotatably positioned in contact with said lateral edge portions, and

said guide rollers being vertically positioned and spaced a preselected distance apart to maintain contact with said lateral edge portions so that as said cover is rolled up on said take-up roll said guide rollers guide said cover to a centered position on said take-up roll.

4,516,803
VEHICLE WITH A CONVERTIBLE TOP
Milton C. Kaltz, Allen Park; Michael P. Alexander, Grosse Ile, and Richard Cichoski, Sterling Heights, all of Mich., assignors to ASC Incorporated, Southgate, Mich.
Filed Apr. 29, 1983, Ser. No. 489,817
Int. Cl.³ B60J *7/00*
U.S. Cl. 296—107 **6 Claims**



1. In a vehicle having a folding top comprised of a plurality of articulatable interconnected members movable between raised and lowered positions and mounted within a passenger compartment defined by a floor pan, front windshield, spaced rocker panels, rear quarter panels, wheelhouse panels, an upper back panel extending between the rear quarter panels and a trunk compartment formed between the rear quarter panels, the upper back panel and a trunk floor pan, the improvement comprising:

vehicle support structure including:

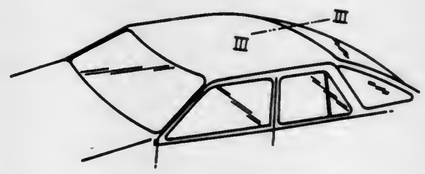
quarter panel reinforcement means mounted to and extending between the rear quarter panels and the floor pan;

brace means extending between and mounted to the wheelhouse panels and the quarter panel reinforcement means;

belt line reinforcement means secured to the upper back panel and spaced above the floor pan of the vehicle; and

means for attaching the belt line reinforcement means to the quarter panel reinforcement means such that an aperture is formed between the wheelhouse panels, the floor pan, and the belt line reinforcement means disposing the passenger and trunk compartments of the vehicle in communication.

4,516,804
VEHICLE BODY CEILING SEAL CONSTRUCTION
Takeshi Yamawaki, Okazaki; Tatuya Saitou, and Sigemi Sugimori, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Jul. 7, 1983, Ser. No. 511,451
Claims priority, application Japan, Oct. 5, 1982, 57-150968[U]
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—214 **13 Claims**



1. A vehicle body construction having an outer roof panel,

an inner roof panel located on the inner side of said outer roof panel, a weather strip attached to the end of said outer roof panel, a ceiling in the passenger compartment of the vehicle located on the inner side of said inner roof panel and a ceiling trim device for fixing said ceiling to said roof panels, wherein the improvement comprises:

the ceiling trim device is provided with a curved outer flange for concealing a gap between an inner edge of said weather strip and said inner roof panel and a curved inner flange for resiliently holding said ceiling to said roof panels; and

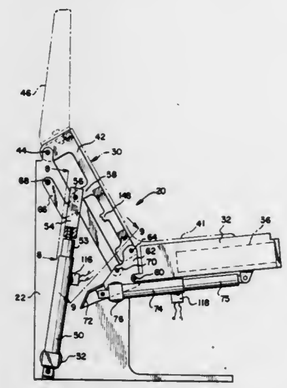
a plurality of clips are located between said ceiling trim device and said inner roof panel, each clip having a clasping end adjacent to, and inside of, said curved outer flange of the ceiling trim device and a biasing end located adjacent to, and inside of, said curved inner flange of the ceiling trim device, whereby said clasping end of each clip attaches to said inner roof panel and said biasing end of each clip, in conjunction with the curved inner flange of the ceiling trim device, upwardly resiliently holds said ceiling against said roof panels.

4,516,805

MULTI-POSITION EXAMINATION CHAIR

Marvin A. Leeper, Versailles; Richard L. Turner, Coldwater, both of Ohio, and Terry J. Simpkins, Snowmass Village, Colo., assignors to Midmark Corporation, Versailles, Ohio

Filed Feb. 15, 1983, Ser. No. 466,706
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—330 **9 Claims**



1. A multi-position examination chair for supporting a patient and assuming sequentially a plurality of examination positions which permit a plurality of standard obstetric and gynecologic examinations to be performed upon the patient, comprising:

base means for providing support;

a back portion supported by and pivotally attached to said base means;

first power means for pivotally moving said back portion into a desired position relative to said base means;

a seat portion;

mounting means pivotally attached to said back portion and pivotally attached to said seat portion;

linkage means for defining a pivotally connected quadrilateral having first, second, third and fourth sides, said first side being fixed with respect to said back portion, said second side being connected to said first side and fixed with respect to said mounting means, said third side being connected to said second side, and said fourth side being connected between said third and first sides and fixed with respect to said base means;

said linkage means causing a predetermined amount of pivotal movement of said mounting means relative to said base means in response to pivotal movement of said back portion;

second power means for pivotally moving said seat portion into a desired position relative to said mounting means;

a plurality of switch means, each such switch means associated with movement of said back and said seat portions from one of said examination positions to at least a next following one of said positions within said sequence; and

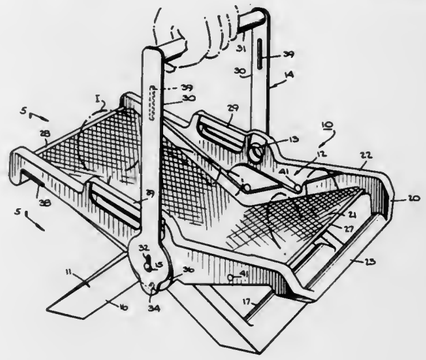
control means, responsive to said plurality of switch means, for controlling operation of said first and second power means in accordance with at least a portion of a predetermined sequence which results in said back and said seat portions moving through the steps of said sequence of said examination positions associated with the actuated switch means.

4,516,806

PORTABLE INFANT CARRIER

Quentin H. McDonald, 95 Morris La., Scarsdale, N.Y. 10583; Anthony P. Montalbano, Glen Cove, and Philip Sieczkowski, Woodside, both of N.Y., assignors to Quentin H. McDonald, Scarsdale, N.Y.

Filed Jan. 10, 1983, Ser. No. 457,022
Int. Cl.³ A47C *7/14, 7/16*
U.S. Cl. 297—457 **8 Claims**



1. A carrier for an infant comprising

a contoured skeletal frame; and

a mesh body secured to and across said frame for receiving an infant thereon in a cradled manner, said mesh body being secured at each of two opposite sides to said frame and being separated from said frame at each of two opposite edges and at each end of each said edge to permit said mesh body to deform between said sides under the weight of an infant.

4,516,807

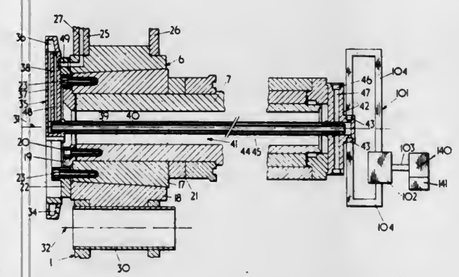
FLUID SUPPLY SYSTEMS FOR ROTARY CUTTER HEADS FOR MINING MACHINES AND ROTARY CUTTER HEADS COMPRISING FLUID SUPPLY SYSTEMS

Brian A. Eagles, Johannesburg, South Africa, assignor to Coal Industry (Patents) Limited, London, England

Filed Sep. 21, 1982, Ser. No. 420,925
Claims priority, application United Kingdom, Oct. 13, 1981, 8130875
Int. Cl.³ E21C *35/22, 35/04*
U.S. Cl. 299—1 **5 Claims**

1. A fluid supply system for a rotary cutter head of a mining machine, comprising a fluid feed arrangement for feeding pressurized fluid from an inlet port on the mining machine along a tube extending axially of the rotary cutter head to a distributor block within the rotary cutter head mounted for

rotation therewith, the distributor block further defining a first and second passage means for low and high pressure fluids and a radially extending passage for said high pressure fluid in hydraulic connection with an annular passage extending



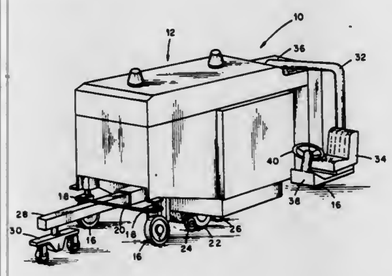
around the distributor block for fluid flow, and a plurality of nozzles adapted to emit air flow inducing sprays, the nozzles being provided on the distributor block in hydraulic connection with the annular passage defined by the distributor block.

4,516,808

PAVEMENT GRINDING APPARATUS

Donald C. Staab, Warrington, Pa., and Clayton E. Farley, Lebanon, Tenn., assignors to MU, Inc., Lebanon, Tenn.

Filed Dec. 29, 1982, Ser. No. 454,423
Int. Cl.³ E01C *23/09*
U.S. Cl. 299—39 **15 Claims**



1. A pavement grinding apparatus for moving across and grinding a paved surface comprising:

a main frame having a plurality of wheels supporting said main frame on the paved surface;

means for propelling said main frame across the paved surface in a direction defined as longitudinal which is perpendicular to a direction defined as lateral;

a subframe disposed adjacent said main frame;

at least one sliding connector attaching said subframe to said main frame for imparting substantially only horizontal longitudinal and lateral forces with respect to said main frame between said subframe and said main frame and for allowing substantially free vertical motion of said subframe relative to said main frame at the position of said sliding connector;

a grinding unit mounted on said subframe for grinding the paved surface at a selected grinding depth; and

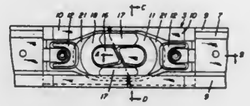
at least one grinding unit roller mounted on said subframe for supporting said subframe at a selected elevation with respect to the paved surface to control the grinding depth of said grinding unit, said roller being operable to control the grinding depth of said grinding unit independently of the position of said main frame.

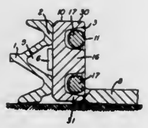
4,516,809

DEVICE FOR INTERCONNECTING TWO SECTIONS OF A LONGWALL MINING MACHINE TRACK

Hugo Klimeck, Velbert, and Gerhard Wilken, Bochum, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,254
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 323488
Int. Cl.³ E21C *35/12*
U.S. Cl. 299—43 **3 Claims**





1. A device for interconnecting two sections of a longwall mining machine track secured to the side wall of a face conveyor, comprising lugs projecting outwardly from the sides of adjacent end portions of the respective track sections, an oval chain link element extending around said lugs and bridging the joint between the respective track sections, and fastening elements on the track sections for securing the chain link element in place, the chain link element being characterized in having horizontally-extending portions interconnecting semicircular end portions which extend around said lugs, the horizontally-extending portions being of larger cross-sectional areas than the semicircular end portions, whereby elongation of the interconnecting device is limited as is the separation between said adjacent end portions.

4,516,810

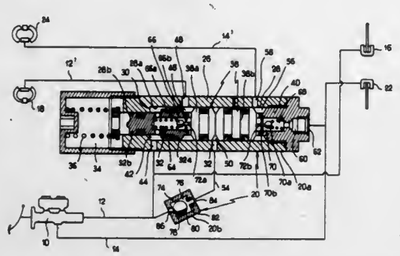
DUAL-CIRCUIT BRAKE CORRECTOR UNDER DECELERATION CONTROL

Jean-Jacques Carré, Le Raincy, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Nov. 10, 1983, Ser. No. 550,426
Claims priority, application France, Nov. 23, 1982, 82 19573
Int. Cl.³ B60T *8/14*
U.S. Cl. 303—24 F **5 Claims**

1. Dual-circuit brake corrector under deceleration control for the brake system of a vehicle, comprising a housing (**26**) having a bore (**28**) therein, having two parts of large and small diameter (**28***a*, **28***b*) respectively, a stepped corrector piston (**32**) having a head (**32***a*) and a tail (**32***b*) sliding respectively in the parts of large and small diameter (**28**), a control piston (**38**) adjacent to the head (**32***a*) of the stepped piston and likewise sliding in the part of large diameter (**28***a*) of the bore, and a closure member (**40**) closing the bore (**28**) in a position opposite the control piston, a spring (**36**) bearing on the tail (**32***b*) of the stepped piston and urging the latter up against the control piston (**38**) and the control piston up against the said closure member (**40**), thus defining the rest position of the said pistons, a first inlet chamber (**42**) defined between the said stepped

piston (**32**) and the said bore (**28***a*), a first outlet chamber (**46**) defined between the piston head (**32***a*) and the control piston (**38**), a second outlet chamber (**56**) between the control piston (**38**) and the closure member (**40**), and a second inlet chamber (**60**) defined in the said closure member (**40**), the said inlet chambers being intended to be connected to the two outlets of a pressure generator of the tandem type (**10**), and the said outlet chambers being intended to be connected to rear brakes (**18, 24**) on each side of the vehicle, a first passage (**64**) between the first inlet chamber (**42**) and first outlet chamber (**46**), a



second passage (**68**) between the second inlet chamber (**60**) and second outlet chamber (**56**), a first and a second corrector valve (**66, 70**) in the said passages, the first (**66**) being controlled both by the said stepped piston (**32**) and by the said control piston (**38**), and the second (**70**) being controlled by the said control piston (**38**), characterized in that the said control piston (**38**) is made in two adjacent parts (**38***a*, **38***b*) which define a control chamber (**50**) between them, the latter being connected to the first inlet chamber (**42**) via an isolating valve (**20***b*) known per se, which is controlled by an inertial mass (**78**) sensitive to the deceleration of the said vehicle.

4,516,811

SLIDER MECHANISM FOR A VEHICLE SEAT

Yoshinori Akiyama, Yokohama; Shinichi Nishimura, Zama, and Isamu Harigaya, Tokyo, all of Japan, assignors to Nissan Motor Company, Ltd. and Ohi Seisakusho Company, Ltd., both of Yokohama, Japan

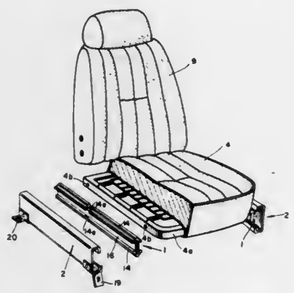
PCT No. PCT/JP82/00208, § 371 Date Jan. 27, 1983, § 102(e) Date Jan. 27, 1983, PCT Pub. No. WO82/04228, PCT Pub. Date Dec. 9, 1982

PCT Filed May 28, 1982, Ser. No. 464,508

Claims priority, application Japan, May 29, 1981, 56-80724

Int. Cl.³ B60N *1/08;* **F16M** *13/00;* **F16C** *29/02*

U.S. Cl. 308—3 R **9 Claims**



1. A slider mechanism for a vehicle seat comprising:
a fixed rail which is fixed to a vehicle floor;
a movable rail which is fixed to a vehicle seat and so arranged as to slidingly engage said fixed rail; and
a pair of synthetic resin slider blocks, each of which is molded in place around an edge portion of one of said rails where said one of said rails slidingly contacts the other rail, each said slider block being integrally formed with a holding means permanently locked in a recess formed in said edge portion of said one of said rails to hold said slider block onto said one of said rails, and each of said slider blocks extending along approximately the overall length of the associated edge portion of said one of said rails and being formed with an intermediate discontinuous portion of smaller cross-section.

4,516,812

STORAGE APPARATUS

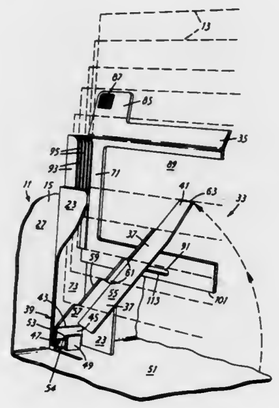
Terence W. Gander, 47 Fernbank Pl., North Ascot, Berkshire, England, and Charles G. Widden, 313 Ashford Rd., Staines, Middlesex, England TW18 1QJ

Continuation of Ser. No. 410,020, Aug. 20, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,067

Claims priority, application United Kingdom, Sep. 11, 1981, 8127482

Int. Cl.³ G11B *1/02*

U.S. Cl. 312—12 **12 Claims**



1. Storage apparatus comprising a housing and a mechanism supported in the housing having a carrier adapted to hold a plurality of articles in respective planes, wherein the carrier comprises a slider constrained within the housing to move rectilinearly relative thereto and a lever pivotally connected with the housing and coupled with the slider for movement in conjunction therewith from a storage position to an access position, the carrier being adapted so as to displace articles rectilinearly along said respective planes and differentially relative to one another during movement thereof to the access position, and wherein retaining means are provided on the carrier and the position of the carrier is maintained when in the access position by the weight of articles held therein acting on the retaining means.

4,516,813

CABINET DOOR MOUNTING MECHANISM

Michael Sekerich, Spring Valley, N.Y., assignor to Grant Hardware Company, Wesy Nyack, N.Y.

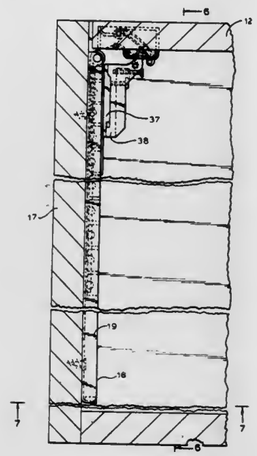
Filed Apr. 11, 1983, Ser. No. 483,920

Int. Cl.³ A47B *87/02*

U.S. Cl. 312—323 **3 Claims**

1. A cabinet structure comprising:
a cabinet body including top, bottom and side walls whose front edges delineate a rectangular front opening, the top wall having top and bottom faces;
a rectangular door corresponding in shape to said cabinet body front opening; and
coupling means swingably and slidably connecting said door and top wall; the improvement wherein said coupling means comprises an anchor member affixed to the under-

face of said top wall inwardly and proximate to said front opening, a bracket member, hinge means connecting said bracket member to said anchor member for swinging about a transverse axis between a vertical closed position depending from said anchor member and a horizontal open position projecting forwardly of and at about the level of said anchor member, said hinge means including a plurality of transversely spaced first hinge pins located on said anchor member, a plurality of transversely spaced second hinge pins located on said bracket member, a pair of link members extending between respective pair of said first and second hinge pins whereby said door in its open position is spaced above said top wall and a leaf spring



extending between a pair of said first and second pins and urging said door to its closed position when at less than a predetermined angle to the vertical, a follower mounted on and angularly adjustable relative to said bracket member and projecting upwardly when said bracket member is in open position and being below the level of said top wall when said bracket member is in closed position and a track affixed to the inside face of said door and forwardly rearwardly slidably engaging said follower whereby said door is swingable between a vertical closed position registering with said front opening and an open position above and parallel to said top wall and being forwardly and rearwardly slidable.

4,516,814

COUPLING DEVICE

Hugh C. Ireland, Ayr, Scotland, assignor to Simplex-GE Limited, Ayr, Scotland

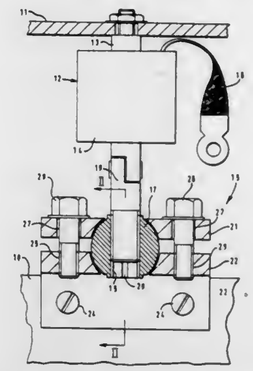
Filed Aug. 8, 1983, Ser. No. 521,426

Claims priority, application United Kingdom, Aug. 26, 1982, 8224586; Oct. 26, 1982, 8230568

Int. Cl.³ H01R *35/00*

U.S. Cl. 339—7 **5 Claims**

1. An adjustable electrical connection comprising
first and second electrical conductors each carrying respective first and second members of an electrically conducive coupling,
said first conductor has an externally screw-threaded part;
said first coupling member has an external clamping surface of curved configuration, an internal screw-threaded bore in which said threaded part of the first conductor is threadedly received in an axially adjustable manner, and a slot extending outwardly from said bore; and
said second coupling member comprises two clamping elements having respective recesses which face towards one another and define clamping surfaces which engage the clamping surface of the first coupling member over a range of positions of engagement, and releasable fastening members which are operable to draw the clamping elements towards one another and thereby clamp said elements onto the first coupling member and hold said surfaces at any selected position of engagement whilst simultaneously clamping the first coupling member onto said threaded part of the first conductor and holding said threaded part at any selected axial position.



4,516,815

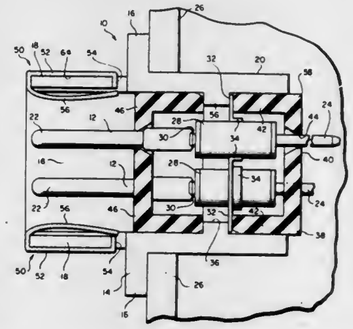
RF FILTER CONNECTOR

Thomas L. Venable; Geoffrey C. Robinson, both of Erie, and Raymond D. Loeslein, Fairview, all of Pa., assignors to Spectrum Control, Inc., Fairview, Pa.

Filed Jun. 7, 1982, Ser. No. 386,037

Int. Cl.³ H01R *4/66, 15/06, 13/648*

U.S. Cl. 339—14 R **7 Claims**



1. A filter connector with electromagnetic (EMI) shielding comprising:
a housing formed of electrically conductive material and having at least one slot at one end of said housing;
a plurality of elongated contacts, each having a front contact engaging portion and a rear termination portion, locatable within said housing with said front contact engaging portion at said one end of said housing and said rear termination portion at the other end of said housing;
an EMI filter element mounted intermediate the front contact engaging portion and the rear termination portion on each of said contacts;
a conductive ground plate insertable into said housing adapted for conductive engagement with each of said EMI filter elements and said housing for conductively grounding any EMI on said contacts; and
a C-shaped spring clip member with the open end of the

C-shape engaging said slot and said clip mounted on said housing at said one end with a portion of the housing in the open end for reliably insuring electrical conductive engagement between respective housings when mated with another connector;

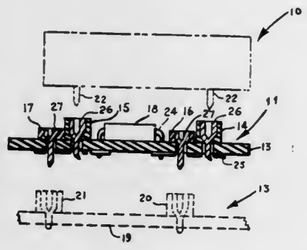
said spring clip member including a spring leaf arm formed as a continuous extension of and oppositely facing a latch arm having a hook end, said hook end insertably engaged in said slot, and said latch arm and spring leaf arm being clip mounted on said housing with said housing portion captured therebetween to enable said spring leaf arm to be depressed between respective housings during connector mating, thereby securing electrically conductive engagement therebetween.

4,516,816

IN CIRCUIT MODIFICATION DEVICE FOR DUAL IN LINE PACKAGED COMPONENTS

Michael F. Winthrop, 727 W. Holly Ave., Sterling, Va. 22170

Filed Jan. 5, 1983, Ser. No. 455,714
Int. Cl.[3] H05K *1/00*
U.S. Cl. 339—17 CF
5 Claims



1. In a dual in line packaged large scale integration device having first and second rows of pins that plug into a companion device socket, the improvement residing in a circuit modification device, said circuit modification device comprising

a printed circuit board,

first and second rows of spaced apart header pins mounted on said printed circuit board, said rows of header pins constituting a socket and being positioned to receive respectively the first and second rows of pins of said large scale intergrating device, said first and second rows of spaced apart header pins being comprised of first and second single in line packaged solder tail devices,

a first row of feedthrough pins juxtaposed with said first row of header pins and comprising a feedthrough pin for each header pin therein, said first row of feedthrough pins comprising a single in line packaged device having integrated circuit pin terminals,

a second row of feedthrough pins juxtaposed with said second row of header pins and comprising a feedthrough pin for each header pin therein, said second row of feedthrough pins comprising a single in line packaged device having integrated circuit pin terminals, said first and second rows of feedthrough pins extending through said printed circuit board and constituting a plug connection to mate with said companion device socket,

electrical connection means interconnecting header pins and feedthrough pins in a preselected arrangement, said electrical connection means comprising a discrete printed circuit on said printed circuit board, and

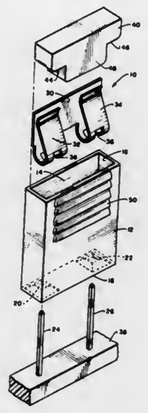
at least one integrated circuit component having connector pins mounted on said printed circuit board between said first row of header pins and said second row of feedthrough pins, said integrated circuit component connector pins extending through said printed circuit board, said connector pins being electrically interconnected with said feedthrough pins in a preselected arrangement.

4,516,817

ELECTRICAL JUMPER ASSEMBLY

Paul M. Deters, 2105 Harkness St., Manhattan Beach, Calif. 90266

Filed Apr. 25, 1983, Ser. No. 488,165
Int. Cl.[3] H01R *31/08*
U.S. Cl. 339—19
11 Claims



1. An electrical jumper assembly for establishing an electrical connection between a pair of spaced-apart terminal posts comprising:

a housing, said housing having an internal chamber enclosed by a side wall assembly, said side wall assembly terminating in a top wall and a bottom wall, a first opening arrangement formed within said top wall, a second opening arrangement formed within said bottom wall, an electrical conducting bar, said bar having a spring biased clip assembly, said clip assembly forming two in number of clips located in a spaced-apart manner, said bar being totally located within said internal chamber in a closefitting manner, each said clip assembly to engage with a said terminal post and be spring biased in a continuous contact therewith;

retaining means connected with said housing for holding said bar in position within said internal chamber;

said internal chamber having a wall surface, said first opening arrangement having a periphery in alignment with said wall surface;

said second opening arrangement comprising two separate spaced-apart openings, a said terminal post being adapted to be conducted through each said separate spaced-apart openings;

each said clip being basically U-shaped in configuration and defining a pair of spaced-apart leg members, one of said leg members being integrally attached to said bar, the other of said leg members having an outer free end, each said clip having a apex interconnecting said leg members, each said apex to be located directly adjacent said second opening arrangement;

each said apex including an access opening, a said terminal post to extend through said access opening to be biasingly held between said legs of said clip; and

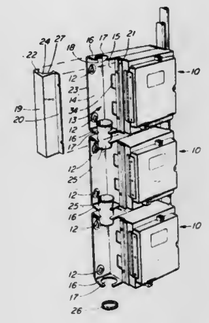
a plug located in a closefitting manner within said first opening arrangement, said plug having recesses formed at each longitudinal end thereof, a said terminal post to be locatable within a said recess.

4,516,818

ENTRANCE TERMINAL FOR TELECOMMUNICATIONS CABLES

Harold Johnston, Dorval, and Richard E. Benoit, Longueuil, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 21, 1982, Ser. No. 451,811
Int. Cl.[3] H01R *13/44*
U.S. Cl. 339—36
12 Claims



1. An entrance terminal for telephone cables, comprising:

a housing, including a cable trough extending down one side of the housing, the housing including a back part and a front part hingedly connected to the back part at a side opposite to that of said trough;

said trough comprising a back member extending laterally from the back of the housing, a side member formed by a side of the housing, an end wall at each end of the trough, and a circular aperture in each end wall, the aperture breaking through an edge of the end wall to form a gap;

an interconnect block in said back part of said housing, and apertures in said side member of said trough for passage of conductors laterally from said trough to said interconnect block;

a plurality of elongate terminal strips mounted in said interconnect block and a plurality of terminal members spaced along each terminal strip and extending through said terminal strip, a back end of each terminal member accessed from the rear of the interconnect block and a front end of each terminal member accessed from the front of the interconnect block, conductors fed from said trough connected to the front ends of said terminal members;

the front portion having a protector module block mounted therein;

a plurality of terminal pins in said protector module block and extending from a rear surface of the protector module block;

means for feeding conductors from the back ends of the terminal members to preselected ones of said terminal pins;

means for mounting protector modules on a front surface of the protector module block, said means including terminals connected to said terminal pins and adapted to receive terminals on said protector modules;

a cover removably mounted on said trough to form an enclosure for passage of conductors of a cable along said trough; and

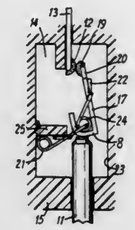
a hinged front cover on said front part of said housing.

4,516,819

MAKE AND BREAK ELECTRICAL CONNECTOR

Yves Le Magourou, Ermont, France, assignor to Societe d'Exploitation des Procedes Marechal, Paris, France

Filed Aug. 3, 1983, Ser. No. 519,868
Claims priority, application France, Aug. 9, 1982, 82 13891
Int. Cl.[3] H01R *13/635*
U.S. Cl. 339—46
12 Claims



1. A pressure contact adapted to establish an electrical connection between a movable conductive connector-pin rigidly attached to a support and a stationary contact bead electrically connected to an input terminal and located within a plug socket chamber, when said connector-pin is axially introduced into said plug socket chamber, said support and said socket including means for guiding said connector pin into said socket, said pressure contact comprising:

(a) a rigid and movable conductive member located within said plug socket chamber, said conductive member adapted to be biased towards an end wall of said chamber by continued axial movement of a free end of said connector-pin, said rigid conductive member including a heel at one end thereof which is contacted by said connector-pin free end as it moves longitudinally through said chamber;

(b) first resilient means for biasing said heel against the edge of a bore located within said chamber;

(c) means for guiding said movable member in a first direction which is substantially parallel to the axis of said member, until an end of said member which is located remote from said heel is substantially longitudinally aligned with said stationary contact bead; and

(d) second resilient means for biasing the rigid conductive member away from said guiding means to tilt a movable contact bead at said remote end of said rigid conductive member forwardly and into abutment with said stationary contact bead, said second resilient means further comprising means for assisting in the separation of said movable contact bead from said stationary contact bead when said plug connector-pin is withdrawn from said chamber.

4,516,820

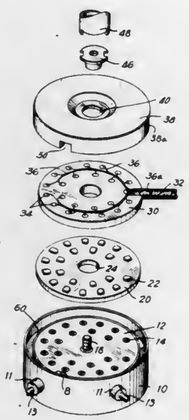
COCHLEAR PROSTHESIS PACKAGE CONNECTOR

Janusz Kuzma, Stanmore, Australia, assignor to The Commonwealth of Australia, Australia

Filed Jan. 27, 1983, Ser. No. 461,617
Int. Cl.[3] H01R *25/00*
U.S. Cl. 339—48
10 Claims

1. A connector arrangement for connecting to each other first and second parts of a cochlear prosthesis, said first part having an hermetically sealed case adapted to contain an electronic circuit therein and said second part having a plurality of conductors extending therefrom; each of said first and second parts having a carrier with a plurality of noble-metal conducting hollow-tube feedthroughs extended therethrough and hermetically sealed thereto by reaction bonds; the two pluralities of feedthroughs having alignable patterns; a deformable sheet permanently adhered to the carrier of said first part and having a plurality of noble-metal foil contacts extending through respective slits each having its two ends bent over so that they lie flush against respective faces of said sheet, said

plurality of contacts having a pattern which is alignable with the patterns of the feedthroughs in said two pluralities; each of said feedthroughs being open at that end which faces said deformable sheet and the face of each of said carriers which is disposed adjacent to said deformable sheet being lapped to a mirror finish; a screw extending outwardly of the carrier of said first part and passing through a central hole in the carrier of said second part for securing said sheet between said first and second parts to allow said plurality of contacts to establish



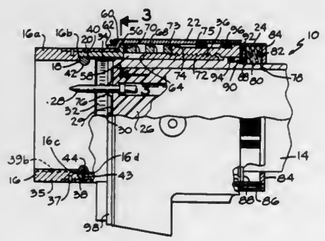
electrical connections between respective ones of the feedthroughs in said two pluralities; said second part including a backing plate having a central hole therein, and said securing means further including a nut screwable onto the end of said screw which extends through said backing plate hole; and a plurality of conductors connected to respective ones of the feedthroughs in said second part, said plurality of conductors being wound in the form of a spiral and exiting said second part through an additional hole in said backing plate.

4,516,821

ELECTRICAL CONNECTOR LOCKING MECHANISM

Gerald R. Nieman, Glendale, Ariz., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Jun. 28, 1982, Ser. No. 393,094
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **21 Claims**



1. An electrical connector member adapted to mate with a second connector member having a shell formed with a circular locking groove, comprising:

a housing having an insulator therein containing a plurality of electrical contacts;

a sleeve extending forwardly from said housing adapted to telescopically engage with said shell,

a resilient lock ring carried by said sleeve and being located inside said sleeve;

in its unstressed condition said ring having its outer periphery spaced from a surface of said sleeve providing a gap therebetween and its inner periphery dimensioned to fit into said locking groove in locking engagement therewith;

said ring being capable of deflecting radially outwardly toward said sleeve surface when the connector member is engaged with or disengaged from said second connector member;

a plurality of axially movable lock pins slidable into said gap for locking said ring in said locking groove when said connector members are mated; and

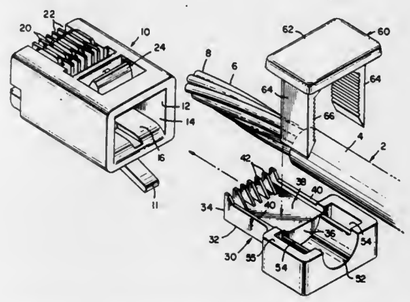
means for axially shifting said lock pins between a forward locking position in said gap and a rear release position behind said ring.

4,516,822

ROUND CABLE ADAPTOR FOR MODULAR PLUG

Lee A. Wolfel, Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1984, Ser. No. 584,199
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **4 Claims**



1. An adaptor for terminating round multiconductor cable to a modular phone plug of the type having an input aperture leading to a cavity, conductor aligning troughs in the floor of the cavity remote from the aperture, terminals in slots aligned above the troughs, and a hinged anchoring member above the cavity towards the aperture, the adaptor comprising:

a base having a planar portion bounded by a first end, an opposed second end, and a planar surface extending therebetween, said base having comb means upstanding from said planar surface at said first end, said planar portion being profiled for reception in said cavity of said plug with said comb means adjacent said troughs,

said comb means comprising partitions which space conductors laid on said planar surface in alignment with said troughs, whereby conductors extending through said comb means and beyond said first end will overlie respective troughs when said planar portion is received in said cavity, said comb means being captured in said cavity and said conductors being captured between said anchoring member and said planar surface when said anchoring member is hinged down into anchoring position.

4,516,823

LOADBREAK BUSHING AND SNUFFER/CONTACT ASSEMBLY THEREFOR

Reinhard Filter, 14 Charles St., Georgetown, Ontario, Canada L7G 2Z2, and Donald J. Stonkus, 271 Lakeview Ave., Burlington, Ontario, Canada L7N 1Y7

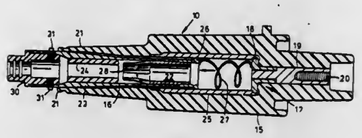
Filed Dec. 7, 1983, Ser. No. 559,095
Claims priority, application Canada, Sep. 19, 1983, 436950
Int. Cl.³ H01R *13/53*
U.S. Cl. 339—111 **14 Claims**

1. For a loadbreak bushing comprising an insulating housing having an axially extending bore therein, and terminal contact means closing one end of the bore, the other end of the bore being open to receive a terminator probe, the housing having

an end portion providing radial abutment means adjacent said open end of the bore:

a snuffer/contact assembly adapted to be supported within the bore for reciprocal movement therealong, the snuffer/contact assembly being axially displaceable from a first seated position to a second position in response to prestrike arcing under fault conditions,

the snuffer/contact assembly comprising a tubular insulating sleeve having an inner end portion carrying a bore contact and an outer end portion adapted to cooperate with said end portion of the housing,



electrically conductive means providing a current path between said bore contact and the terminal contact means, and

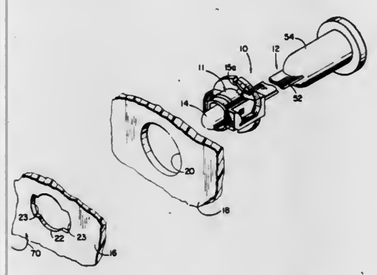
gas-actuated radial lockout means carried by said outer end portion of the sleeve, said lockout means being responsive to the generation of gas pressure within the bore and engageable with said abutment means of the housing end portion when the snuffer/contact assembly is in the second position thereby to prevent return of the snuffer/contact assembly to the first position.

4,516,824

LAMP SOCKET ASSEMBLY FOR MOUNTING ON PRINTED CIRCUIT BOARD

Ray F. Winogrocki, East Detroit, Mich., and Daniel J. DuRocher, Nauvoo, Ill., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Dec. 14, 1983, Ser. No. 561,421
Int. Cl.³ H02B *1/02*
U.S. Cl. 339—126 R **11 Claims**



1. A lamp socket assembly adapted to be mounted on one side of a printed circuit with a tubular portion thereof extending through a small aperture with cutouts in the printed circuit, comprising:

a socket having a substantially tubular portion thereof of small diameter adapted to extend forwardly through said aperture in said printed circuit for receiving a lamp having electrical lead means;

a key member adapted to receive said socket in latched relation therewith near the forward end of said key member;

a base flange formed near the rearward end of said socket, at least part of said flange being of greater diameter than at least part of said aperture in said printed circuit and including a forward-facing surface for supporting said lamp electrical lead means thereon for contact with a rearward-facing surface of the printed circuit;

said key member and said socket including complementary latching means for latching said socket to said key member in a manner allowing limited relative longitudinal displacement therebetween;

biasing means being integrally formed with one of said key member and said socket and disposed to engage the other of said key member and said socket for urging said socket forward longitudinally relative to said key member; and

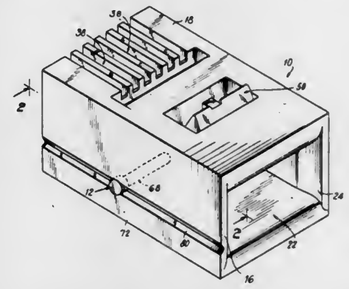
said key member including a securing member disposed thereon for insertion into said printed circuit aperture and subsequent twisting with said key member to lock said socket assembly on said printed circuit board such that said socket flange urges the lamp electrical lead means into said contact with the printed circuit board.

4,516,825

MODULAR CONNECTOR FOR TERMINATING EMI/RFI SHIELDED CORDAGE

Robert J. Brennan, Ossining, and Terrence Meighen, Stormville, both of N.Y., assignors to Stewart Stamping Corporation, Yonkers, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,375
Int. Cl.³ H01R *13/658*
U.S. Cl. 339—143 R **10 Claims**



1. A modular plug connector for terminating a shielded cord having a plurality of insulated conductors enclosed within an outer jacket and a shield sheath between the jacket and conductors and enclosing the latter substantially along their length, comprising: a dielectric housing having a top wall and side walls defining a forward free end and a rearward cord input end having an aperture formed therein opening into a longitudinally extending cord-receiving cavity formed within the housing, said cord-receiving cavity having a forward conductor-receiving portion and a rearward jacket-receiving portion, a plurality of slot-like openings formed through said housing top wall adapted to receive flat contact terminals, each of said openings being aligned with a corresponding conductor upon termination of a cord; and means formed of electrically conductive material extending through at least one of said housing side walls for terminating the cord shield sheath, said cord shield sheath terminating means having an inner portion situated in said cord-receiving cavity extending transversely therein adapted to make electrical contact with the cord shield sheath and an outer portion situated externally of said housing.

4,516,826

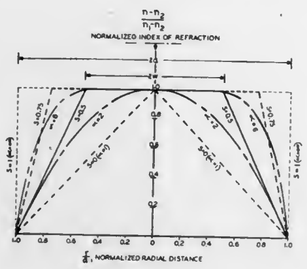
SINGLE MODE LIGHTGUIDE FIBER HAVING A TRAPEZOIDAL REFRACTIVE INDEX PROFILE

Un-Chul Paek, West Windsor Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,402
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.31 **3 Claims**

3. A graded refractive index single mode lightguide fiber, wherein:

the gradation of the refractive index, which is a function of the radial position transverse to the central longitudinal



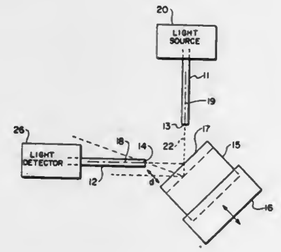
axis of the fiber, has a trapezoid shape with an upper base to lower base ratio between 0 and 0.3.

4,516,827

VARIABLE OPTICAL ATTENUATOR

Clyde E. Lance, Riner, and Wanda S. Hutchison, Salem, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 16, 1982, Ser. No. 399,153
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.15 **7 Claims**



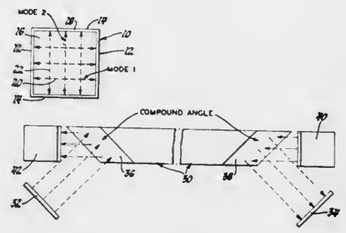
1. A variable optical attenuator comprising:
first and second optical fibers having respective longitudinal axes disposed at an angle and a pair of respective ends positioned adjacent and spaced from one another, said first fiber having an output face at one said end for emitting light, said second fiber having an input face at said adjacent end for collecting light;
light beam director means having a uniformly reflective surface positioned proximate to and spaced from said ends for reflecting light emitted from said output face to said input face and having a longitudinal axis extending in a direction between said axes of said fibers; and adjustable holding means for supporting and mechanically adjusting movement of said light beam director to and fro along the longitudinal axis thereof to a continuously selectable position in a path between said end faces to determine the spacing of said reflective surface from said ends and the amount of light incident upon said input face, said adjustable holding means having a longitudinal axis coinciding with said light beam director axis, the entire length of said adjustable holding means being freely moveable therealong.

4,516,828

DUPLEX COMMUNICATION ON A SINGLE OPTICAL FIBER

Robert E. Steele, Cortland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 3, 1982, Ser. No. 374,406
Int. Cl.³ G02B 5/14
U.S. Cl, 350—96.16 **4 Claims**



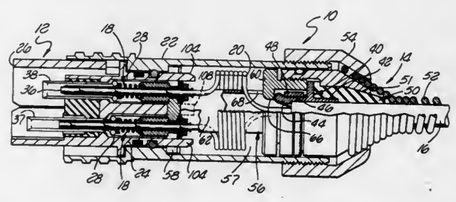
1. A multiplex optical fiber capable of simultaneously transmitting information in the form of light in the same direction or in opposite directions between transmitting and receiving locations comprising:
a substantially rectangular cross section optical fiber having two pairs of parallel internally reflective sides defining first and second orthogonally related light propagating channels;
and transmitting and receiving light coupling means at said locations for each channel constructed and arranged to couple light to and from the respective channels in a manner to provide propagation in the two channels whereby each channel of the fiber transmits light energy between respective transmitting and receiving locations without substantial interference from the other.

4,516,829

FIBER OPTIC CONTACT RETENTION ASSEMBLY

Leslie M. Borsuk, Los Alamitos, and Patrick G. Corrales, Garden Grove, both of Calif., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Filed May 12, 1982, Ser. No. 377,302
Int. Cl.³ G02B 5/14, 7/26
U.S. Cl. 350—96.20 **13 Claims**



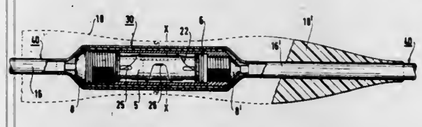
1. A fiber optic contact retention assembly comprising:
a fiber optic contact having spaced shoulders thereon facing each other;
a yoke having a slot therein extending axially therethrough and opening at its outer periphery;
said contact being mounted radially inwardly into said slot with one shoulder engaging one side of said yoke and the other shoulder being spaced outwardly from the other side of said yoke;
resilient means between said other shoulder and said other side of said yoke; and
said resilient means being compressed between said other shoulder and said other side of said yoke.

4,516,830

JUNCTION FOR JOINING THE ENDS OF TWO UNDER WATER OPTICAL FIBER CABLES, AND METHOD OF MANUFACTURE

Lucien Guazzo, Calais, France, assignor to Les Cables de Lyon, France

Filed Dec. 28, 1982, Ser. No. 453,868
Claims priority, application France, Dec. 30, 1981, 81 24514
Int. Cl.³ G02B 5/14, 5/16
U.S. Cl. 350—96.22 **16 Claims**



1. A junction for joining the ends of two under water optical fiber cables, each cable comprising an optical core inside a protective arch of helically wound steel wires, a copper tube swaged down on the arch, and an insulating outer sheath covering the copper tube, the junction comprising two cable-receiving end portions for receiving respective ends of the two cables to be joined and a central portion for interconnecting said end portions, and wherein each end portion comprises:
an anchor member at least partially made of high strength metal, said anchor member having an axially extending cable-receiving bore passing therethrough, said bore having a cable-exit end and a cable-insertion end, a conically flared portion at said cable-exit end and a cylindrical portion at said cable-insertion end, said cylindrical portion having a diameter sized to closely receive the end of a cable stripped down to its copper tube; and
a cable-retaining conical wedge member fitted in the conical portion of the anchor member bore, the outer conical surface of the wedge member being configured and sized for co-operating with the conical surface of the anchor member bore to wedge the steel wires of the cable when splayed out between said conical surfaces, a setting synthetic resin filling voids between and around the steel wires, said wedge member further having an axial bore for passing the optical core of the cable through to the central portion of the junction;
the improvement wherein the central portion of the junction comprises:
an inner mandrel mounting connections between individual pairs of optical fibers and an outer tube mechanically interconnecting the anchor members, the inner mandrel being received, when the junction is assembled, inside the outer tube between the anchor members, and means for anchoring said mandrel to at least one of said anchor members to prevent the mandrel from rotating or moving axially relative to the anchor members;
the mandrel being open at both ends and receiving the optical fiber cores of the cables to be joined where they leave the axial bores of the wedge members, at said open ends, said optical fibers from each of the cores passing into respective mandrel at said open ends and through a plurality of radial fiber passing holes through the wall of said mandrel to the outside surface of said mandrel, end-to-end connections joining said optical fibers from each of the cores and said optical fibers at said end-to-end connections being wrapped around the outside of said mandrel after end-to-end connection with corresponding optical fibers from the other core; and
the outer tube being made of a high strength metal, having a bore that leaves a clearance around the mandrel, having means for fastening said anchor members to each end thereof, and being covered in a layer of insulating material and closure mouldings of thermoplastics material cast over the ends of the anchor members after the junction has been used to interconnect two cables for continuing the insulating outer sheaths of the cables, such that the optical fibers of the cables are connected end-to-end with enough slack optical fiber to avoid breakage in the event of traction being applied to the cable, the structural protective arches of the steel wires on the two cables are mechanically joined with sufficient strength to withstand the traction to which the cable is subjected during handling, and wherein the junction is watertight even against high pressure at the bottom of the ocean.

11. A method of joining two optical fiber cable ends wherein each cable comprises an optical core inside a protective arch of helically wound steel wires, a copper tube swaged down on the arch, and an insulating outer sheath covering the copper tube, a junction for joining the ends of the fiber cables, said junction comprising two cable-receiving end portions for receiving respective ends of the two cables to be joined and a central portion for interconnecting said end portions, and wherein each end portion comprises an anchor member at least partially made of high strength metal, said anchor member having an axially extending cable-receiving bore passing therethrough, said bore having a cable-exit end and a cable-insertion end, a conically flared portion at said cable-exit end and a cylindrical portion at said cable-insertion end, said cylindrical portion having a diameter sized to closely receive the end of a cable stripped down to its copper tube; and a cable-retaining conical wedge member for fitting in the conical portion of the anchor member bore, the outer conical surface of the wedge member being configured and sized for co-operating with the conical surface of the anchor member, the central portion of the junction comprising an inner mandrel for mounting connections between individual pairs of optical fibers and an outer tube for mechanically interconnecting the anchor members, and means to prevent the inner mandrel from rotating or moving axially relative to the anchor members, the mandrel being open at both ends to receive the optical fiber cores of the cables to be joined, having a plurality of fiber passing holes through its wall near each end thereof, the outer tube being made of a high strength metal having a bore that leaves a clearance around the mandrel; said method comprising the following steps:
(a) stripping the ends of the cables to bare lengths of their optical fibers which are considerably longer than the length of the junction;
(b) engaging the outer sleeves, the outer tube, and the anchor members in that order over the ends of the cables;
(c) cutting the arch-forming steel wires, the copper tubes and the outer sheaths of the cables to suitable lengths;
(d) inserting a quantity of setting resin into the conical bores of the anchor members and splaying the steel wires out in the conical bores;
(e) inserting the conical wedge members to wedge the steel wires in the anchor members, and filling voids between and around the steel wires with setting resin, and setting the resin;
(f) threading the optical fibers to be joined end to end through the end openings of the mandrel and then out through its fiber passing holes, and putting the mandrel in place between the anchor members;
(g) interconnecting the optical fibers end to end and wrapping the surplus length of optical fiber around the mandrel;
(h) placing the outer tube over the mandrel and fixing its ends to the anchor members;
(i) filling the inside of the mandrel and the clearance between the mandrel and the outer tube via filler orifices provided through the anchor members with viscous material; and
(j) casting the closure mouldings over the ends of the anchor members and the adjacent portions of cable.

4,516,831

LIGHT CONDUCTING CABLE INCLUDING A HEAT REMOVABLE LAYER FOR PREVENTING TENSION AND A METHOD OF MAKING SAME

Rolf Meistring, Glonn; Hans-Friedrich Siegling, Egmating, and Siegfried Pfahl, Hagen, all of Fed. Rep. of Germany, assignors to Heermann GmbH, Hagen, Fed. Rep. of Germany

Filed Jul. 28, 1982, Ser. No. 402,997

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1981, 3133274

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.23 **12 Claims**



1. A light conducting cable suitable for winding onto a reel and rapidly unwinding from the reel, comprising a light conducting optical fiber (**1** or **11**) centrally located in the cable, a protective coating (**2** or **12**) surrounding the light conducting optical fiber for protecting the fiber, an outer casing (**5** or **15**) surrounding said protective coating and a certain free space between said protective coating (**2** or **12**) and said outer casing (**5** or **15**) for preventing tension and/or compression loads from affecting the transmission characteristic of the cable, said cable further comprising a layer (**4**, **14**) of heat removable material substantially entirely surrounding said light conducting optical fiber for a limited time inside said free space between said outer casing and said protective coating, and wherein said outer casing is permeable to said heat removable material of said layer substantially along the entire length of said outer casing for the removal or partial removal of said layer of heat removable material through the permeable outer casing substantially along the entire length of said cable for providing said free space inside said cable substantially along its entire length when said heat removable material of said layer (**4**, **14**) has been removed through said outer casing by heating the cable.

9. A method of producing a light conducting cable, comprising the following steps: coating a light conducting fiber with a protective coating, enclosing said protective coating with a layer of heat removable material, surrounding said layer of heat removable material by an outer casing which is permeable substantially along its entire length to said heat removable material when the latter is heated, said outer casing protecting said light conducting cable, and heating said cable sufficiently for at least partially removing said heat removable material through said permeable outer casing substantially along the entire length of said cable to thereby provide a certain free space in said cable along its entire length to prevent tension and/or compression loads effective on said outer casing from affecting the transmission characteristic of the cable.

4,516,832

APPARATUS FOR TRANSFORMATION OF A COLLIMATED BEAM INTO A SOURCE OF REQUIRED SHAPE AND NUMERICAL APERTURE

Kantilal Jain, and Milton R. Latta, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,099

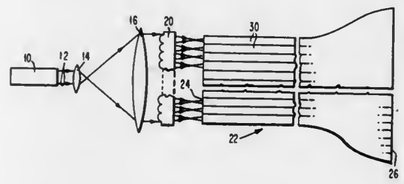
Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.24 **17 Claims**

1. Apparatus for producing a line source of a predetermined shape and numerical aperture from a collimated light source comprising:

first optical means for directing a collimated light source along a predetermined path;

second optical means fixed in position along said predetermined path so that said light source impinges upon said second optical means, said second optical means comprising a two dimensional lens array having multiple lenses in each of said two dimensions, said light source simultaneously impinging on all of the lenses of said lens array to



form a plurality of sources having a predetermined numerical aperture;

an optical fiber array, said fiber array having the input end of each of the fibers of said array positioned to receive the light from a different one of the lenses of said lens array to produce a plurality of self-luminous sources; and

means for positioning the other end of each of said optical fibers to produce a self-luminous source of said predetermined shape and numerical aperture.

4,516,833

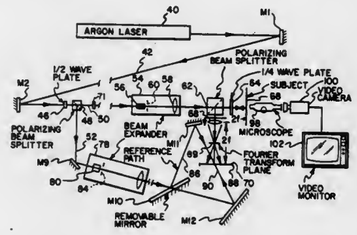
PRODUCTION OF HIGH PERFORMANCE OPTICAL SPATIAL FILTERS

Richard L. Fusek, Dayton, Ohio, assignor to University of Dayton, Dayton, Ohio

Filed Dec. 27, 1982, Ser. No. 453,408

Int. Cl.³ G03H *1/16*; G02B *5/22*

U.S. Cl. 350—162.12 **18 Claims**



1. A method of producing an optical spatial filter corresponding to a subject disposed within a subject plane, comprising the steps of:

directing a first coherent beam of light at said subject such that said light is diffracted and/or reflected thereby, whereafter said light contains optical information regarding said subject;

focusing said light containing said subject information so as to define a Fourier transform plane;

disposing a first optical recording means at said Fourier transform plane and exposing said recording means with said light containing said subject information;

recording upon said first recording means at least partially opaque areas corresponding to at least a portion of said subject information as said information appears within said transform plane;

attenuating at least a portion of said subject information by directing said light containing said information through said first recording means located within said transform plane;

directing a second coherent beam of light, through a holographic recording plane located beyond said transform plane, from a first direction so as to form an interference pattern in said recording plane with said light containing said subject information minus said information partially attenuated by said first recording means;

recording at said recording plane a first hologram of said partially attenuated subject information;

removing said first beam;

removing said first recording means from said transform plane;

disposing a second optical recording means at said transform plane;

redirecting said second beam through said hologram at said recording plane from a second direction opposite said first direction, whereby said second recording means is exposed with light from said second beam containing optical information from said hologram; and

recording upon said second recording means at least partially opaque areas corresponding to at least a portion of said hologram information as said information appears within said transform plane.

4,516,834

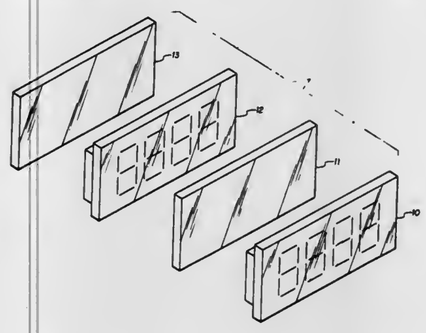
CONTRAST ENHANCED LIQUID CRYSTAL DISPLAY

Michael R. Cascini, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 8, 1983, Ser. No. 483,402

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—335 **10 Claims**



1. A liquid crystal display comprising two distinct liquid crystal displays in a spaced parallel relationship and having a transflector disposed interjacent said displays.

4,516,835

LIQUID CRYSTAL DISPLAY SYSTEM

Ryoichi Suzuki, Kanagawa; Seiichi Matsumoto, Yokohama; Takashi Amikura, Tokyo; Tokuichi Tsunekawa, and Takashi Uchiyama, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 768,432, Feb. 14, 1977, abandoned. This application Jan. 23, 1979, Ser. No. 5,763

Claims priority, application Japan, Feb. 17, 1976, 51-16296; Feb. 20, 1976, 51-17756; Feb. 24, 1976, 51-19136

The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—336 **15 Claims**

1. A liquid crystal display system to display photographic information of a camera, comprising:

(A) a liquid crystal device including:

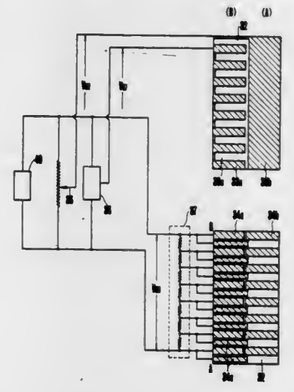
(a) a continuous transparent first electrode and a first transparent base plate which transmits light for supporting said electrode;

(b) a plurality of transparent second electrodes, a second transparent base plate for supporting the second electrodes with intervals from each other;

(c) a liquid crystal material sandwiched between said continuous transparent first electrode and said second electrodes and arranged to exhibit an electro-optical effect;

(B) resistance means including a plurality of resistors connected in series, each one of said resistors being connected between the second electrodes;

(C) power means to supply power to said resistance means; and



(D) information output means for applying an electrical signal corresponding to exposure information of a camera to said continuous transparent first electrode;

(E) the electrical signal corresponding to exposure information and being applied to said continuous transparent electrode in the liquid crystal display system having a relationship to the power means impressed to both ends of said resistance means such that only a portion or zone of the above-mentioned transparent electrode can be visually recognized.

4,516,836

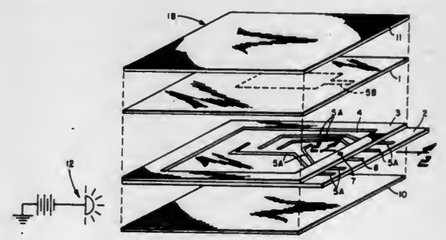
CONDUCTOR FOR USE IN ELECTRO-OPTICAL DISPLAYS

Joseph P. Ferrato, Stow, Ohio, assignor to Crystaloid Electronics Company, Hudson, Ohio

Filed Sep. 20, 1982, Ser. No. 419,880

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—336 **17 Claims**



1. An improved electrically conductive material for use in providing electrical interconnections in an electro-optical display, comprising:

said material characterized as being resilient and having the ability to maintain a continuous electrical contacting relationship while the display is subjected to temperature cycling of from about −30° C. to about 80° C. as a result of said material comprising a resilient blend of a resin

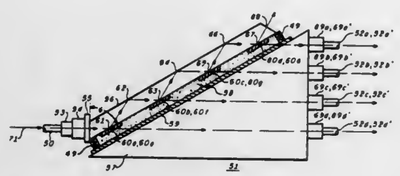
selected from the group consisting of epoxy and thermoplastic phenoxy resins and mixtures thereof with an amount of electrically conductive particles sufficient to impart said electrical interconnections with a resistance of from about 1 ohm to about 20 ohms and consisting essentially of from about 10 percent to about 40 percent by weight based upon the total weight of said glycol and said resin of an organic glycol so that said material maintains continuous flexible and electrical contact during the temperature cycling.

4,516,837

ELECTRO-OPTICAL SWITCH FOR UNPOLARIZED OPTICAL SIGNALS

Richard A. Soref, Newton Centre, and Donald H. McMahon, Carlisle, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,526
Int. Cl.³ G02F 1/13
U.S. Cl. 350—347 V **20 Claims**



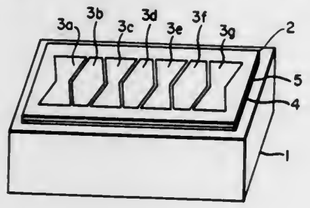
1. An optical switch comprising:
(a) polarizing beam splitter means having first and second faces, for separating an incident light beam of arbitrary polarization into first and second light beams with first and second orthogonal linearly polarized states respectively, said first light beam refracted to propagate along a first path, and said second light beam refracted to propagate along a second path,
(b) first reflector means positioned to deflect said second light beam along a path parallel to said first path,
(c) first polarization converter means positioned in said second path for rotating said light beam polarization from said second linearly polarized state to substantially said first linearly polarized state, and
(d) first and second electrically responsive path selector means positioned in said parallel paths of said first and second light beams for selecting one of a first plurality of optical paths for said first light beam and one of a second plurality of optical paths for said second light beam.

4,516,838

OVERLAPPING ELECTRODE STRUCTURE FOR MULTI-CHANNEL ACOUSTO-OPTIC DEVICES

Leon Bademian, Vienna, Va., assignor to Isomet Corporation, Springfield, Va.

Filed Sep. 26, 1983, Ser. No. 536,005
Int. Cl.³ G02F 1/11, 1/33
U.S. Cl. 350—358 **14 Claims**



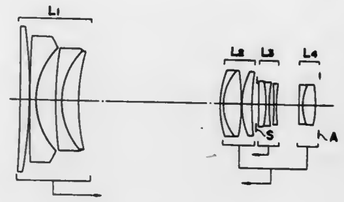
1. Apparatus for acousto-optic interaction, comprising a body of acousto-optic material through which a beam of light is to be directed and means mounted on said body for generating columns of acoustic energy therein, said generating means including a plurality of electrodes arranged successively along a line transverse to the direction of the light beam, said plurality including adjacent electrodes positioned in such a manner that projections of portions thereof on said line overlap, whereby said light beam is converted into a plurality of overlapping diffracted light beams.

4,516,839

ZOOM LENS SYSTEM

Hisashi Tokumaru, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 29, 1985, Ser. No. 393,492
Claims priority, application Japan, Jun. 30, 1981, 56-102669
Int. Cl.³ G02B 9/64, 15/18
U.S. Cl. 350—426 **13 Claims**



1. A zoom lens system comprising:
a first lens unit of a negative refractive power;
a second lens unit of a positive refractive power located on the image side of the first lens unit with a first variable air space between the first and second lens unit;
a third lens unit of a negative refractive power located on the image side of the second lens unit with a second variable air space between the second and third lens units; and
a fourth lens unit of a positive refractive power located on the image side of the third lens unit with a third variable air space between the third lens unit and the fourth lens unit, wherein the first and third variable air spaces are reduced and the second variable air space is increased in accordance with an increase of the focal length of the whole lens system during zooming, wherein the lens system fulfills the following condition:

$$1 < \frac{|f_3|}{f_2} < 2$$

whereby:
f_2 represents the focal length of the second lens unit; and
f_3 represents the focal length of the third lens unit.

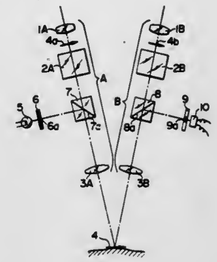
4,516,840

IN-FOCUS DETECTOR FOR A BINOCULAR STEREOMICROSCOPE

Ken-ichi Nakahashi, and Shin-ichi Mihara, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jun. 25, 1982, Ser. No. 392,350
Claims priority, application Japan, Jul. 31, 1981, 56-119262
Int. Cl.³ G02B 21/00
U.S. Cl. 350—515 **16 Claims**

1. An in-focus detector for a binocular stereomicroscope, comprising:
a first observation optical system including an objective lens and an eyepiece;
a second observation optical system including an objective lens and an eyepiece;
a first beam splitter disposed intermediate said objective lens and said eyepiece of said first observation optical system for projecting the optical image of a mark, which is used for detecting an in-focus condition, onto an object being observed through said optical systems;
a second beam splitter disposed intermediate said objective lens and said eyepiece of said second observation optical systems for passing the optical image of the mark reflected off the object and passing through said objective lens of said second observation optical system to a position outside of said second observation optical system;
projecting means, including a mark member, for projecting said optical image of said mark through said first beam splitter and said first objective lens onto said object, said mark member being so located that it is conjugate to said



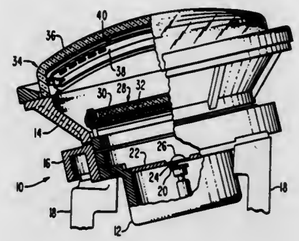
object with respect to said first objective lens when said stereomicroscope is in focus;
a photoelectric transducer element located at said position outside said second observation optical system for receiving said optical image of said mark; and
a mask located between said transducer element and said second beam splitter, the relative location of said mask and said object with respect to said stereomicroscope being such that said mask is conjugate with said object whenever said stereomicroscope is in focus, the relationship of said mask and said mark being such that the amount of light received by said transducer element is at one of a minimum or maximum level when said stereomicroscope is in focus.

4,516,841

METHOD FOR SCREENING LINE SCREEN SLIT MASK COLOR PICTURE TUBES

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 19, 1983, Ser. No. 524,543
Int. Cl.³ G03B 41/00; G03C 5/00
U.S. Cl. 354—1 **7 Claims**



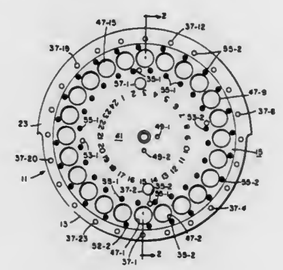
1. In a method of screening a line screen slit mask color picture tube including coating a faceplate panel of said tube with a photosensitive material, said faceplate panel having a major axis and a minor axis, inserting a slit shadow mask into said panel and exposing said photosensitive material by passing light from a line light source through the slits of said mask, the improvement comprising:
positioning at least one generally cylindrical shaped lens between said line light source and said faceplate panel, during exposure said photosensitive material, with the longitudinal axis of said lens substantially perpendicular to the longitudinal axis of said line light source, whereby the images of said line light source projected through the slits of said mask onto said photosensitive material at locations off said major and minor axes are rotated toward parallelism with said minor axis thereby resulting in exposure of straight smooth lines on said photosensitive material.

4,516,842

APERTURE WHEEL

John F. Trombert, 8 Old Summer St., Medway, Mass. 02054

Filed May 2, 1983, Ser. No. 490,436
Int. Cl.³ G03B 41/00
U.S. Cl. 354—4 **20 Claims**



1. An aperture wheel for use in selectively varying the characteristics of a beam of light, said aperture wheel comprising:
a. a circular frame adapted to be supported for rotation about its central axis, said frame having a plurality of circumaxially spaced openings,
b. a plurality of indexing pins mounted on said frame for use in indexing the angular position of said frame, each pin being associated with and precisely located with respect to one of said openings,
c. a circular disc seated on said frame member in axial alignment therewith said disc having a plurality of circumaxially spaced openings, said openings being positioned thereon so that they may be brought into registration with said circumaxially spaced openings on said frame.
d. means for fixing the angular position of said disc relative to said frame, and
e. means on said disc for use in mounting thereon a plurality of aperture plates, one over each of said circumaxially spaced openings.

4,516,843

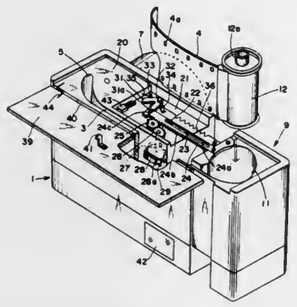
CAMERA

Hiroshi Ohmura, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1984, Ser. No. 615,768
Claims priority, application Japan, Jun. 6, 1983, 58-99535
Int. Cl.³ G03B 1/18, 17/02
U.S. Cl. 354—173.1 **13 Claims**

1. A camera having a film supply chamber into which a film container with a drawn film leader is inserted axially, a film take-up chamber including a film take-up spool around which the film drawn out of the film container is wound and a film passage way connecting between the film supply and film take-up chambers into which the drawn leader is inserted upon inserting the film container into the film supply chamber; said camera comprising;
a camera body having either one of said chambers and a part of said film passage way;

a movable member having the other of said chambers and the remaining part of said film passage way, said movable member being mounted on said camera body so that said movable member is extensibly moved from a position



where incorporated with said camera body to a position where allowing insertion of a film container thereinto in order to substantially elongate said film passage way; and

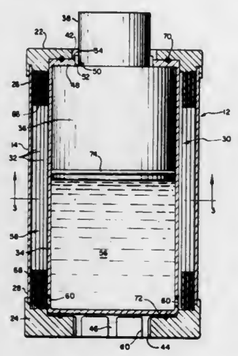
a film loading door for closing and shielding said film supply chamber and film passage way.

4,516,844

FILM CASSETTE USABLE AS PROCESSING CHAMBER

Richard C. Kee, Chestnut Hill, and Philip R. Norris, No. Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1984, Ser. No. 606,203
Int. Cl.[3] G03B *17/26, 17/50;* G03D *13/02*
U.S. Cl. 354—275 **5 Claims**



1. A photographic film assemblage for use with commercially available, compact, still picture cameras of the type having means for operably locating a film cassette containing a single roll of film in a position in which the film is adapted to be progressively withdrawn from the film cassette and exposed prior to being rewound into the film cassette, said film assemblage comprising:

a film cassette for housing a roll of self-developing type film, said film cassette including means defining a lighttight opening through which the film is adapted to be moved to the exterior of said film cassette for exposure thereof;

a length of self-developing type film coiled within said film cassette, said film including a first end which is adapted to be attached to a support member located within said film cassette and a second opposite end which is adapted to extend through said opening in said film cassette for subsequent attachment to a film take-up member of a camera;

a support member including a tube and a piston rotatably supported as a unit within said film cassette, said tube cooperating with an interior surface of said film cassette to define a chamber, said tube having at least one rupturable port leading from the interior of said tube to said chamber, said piston being mounted within said tube for movement between a first position in which a portion of said piston extends exteriorly of said tube and a second position in which said piston is located deeper within said tube; and

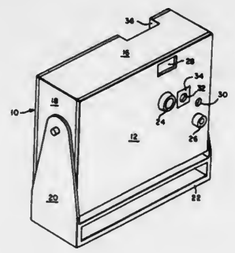
a supply of processing fluid located within said tube, said processing fluid being pressurizable, by said piston to a degree sufficient to rupture said at least one port to thereby permit the flow of said fluid into said chamber where it will initiate the formation of visible images in any photographically exposed film contained therein as said piston moves toward said second position.

4,516,845

SECURITY CONTROL SYSTEM AND METHOD FOR IDENTIFICATION CARD CAMERAS

Linda L. Blakely, Belmont; John C. Goodman, Marblehead, and David B. Walker, Belmont, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 538,375, Oct. 3, 1983, abandoned. This application Apr. 30, 1984, Ser. No. 605,618
Int. Cl.[3] G03B *17/24*
U.S. Cl. 354—412 **25 Claims**



1. A photographic identification camera of the type that produces a photoprint identification card having data and subject images in respective data and subject image areas thereof, and a record film image of the identification card, said identification card camera comprising:

means for supporting photosensitive film at first and second film planes, for supporting a data-carrying media, and for forming an image of a data-carrying media supported by said data-carrying media support means in a first area of the film at said first film plane and on the film at said second film plane and for forming an image of a subject in a second area of the film at said first film plane and on the film at said second film plane;

stored-program controlled processor means coupled to said first-mentioned means for effecting cyclic control of said first-mentioned means to expose an image of a data-carrying media to a first area of the film at said first film plane and to the film at said second film plane and to expose an image of a subject to a second area of the film at said first film plane and to the film at said second film plane.

4,516,846

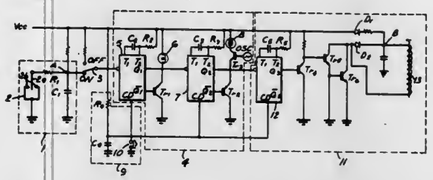
RECORDING ERROR-PREVENTION SYSTEM

Hiromasa Hino, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 2, 1983, Ser. No. 519,669
Claims priority, application Japan, Aug. 10, 1982, 57-137855
Int. Cl.[3] G03B *17/18*
U.S. Cl. 354—465 **12 Claims**

1. A recording error-prevention system for a camera of the type that is set in a continous-recording mode of operation upon turning to ON a recording switch, comprising:

a position-sensing device for sensing an abnormal position of the camera relative to its horizontal position for ordinary recording; and



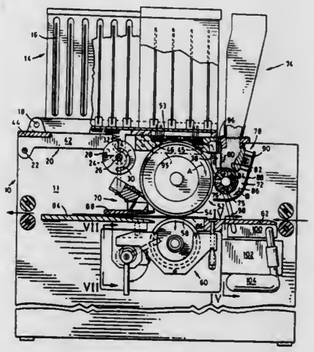
an alarm device for raising an alarm under the conditions that the recording switch is in the ON state and that the abnormal position of the camera is sensed by the position-sensing device.

4,516,847

ELECTROSTATIC PRINTING APPARATUS AND METHOD

Andrzej Maczuszenko, Etobicoke; Ernest Davison, Brockville; Brian Otter; Brian F. Whittaker, both of Toronto; Christopher Novak, Whitby, and Dolf Landheer, Toronto, all of Canada, assignors to Delphax Systems, Mississauga, Canada

Filed Dec. 3, 1982, Ser. No. 446,759
Claims priority, application Canada, Dec. 4, 1981, 391561
Int. Cl.[3] G03G *15/16*
U.S. Cl. 355—3 TR **6 Claims**



1. In an electrostatic printing apparatus including:

an electrostatically chargeable cylinder;

means for forming a toner image on said electrostatically chargeable cylinder; and

a pressure cylinder co-operating with said electrostatically chargeable cylinder;

the improvement comprising:

means for selectively displacing said pressure cylinder between a first position in which said pressure cylinder defines with said electrostatically chargeable cylinder a nip for receiving a sheet of copy material therebetween, and a second position, in which said pressure cylinder is spaced from said electrostatically chargeable cylinder; and

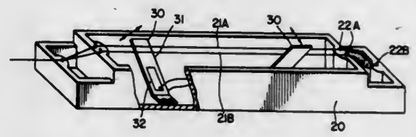
means for adjusting the axis of said pressure cylinder relative to said electrostatically chargeable cylinder and thereby adjusting the locations of said first and second positions.

4,516,848

CHARGING DEVICE FOR AN ELECTROSTATIC COPYING MACHINE

Shigeru Moriya, Nikaho, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,434
Claims priority, application Japan, Mar. 5, 1982, 57-31198[U]
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 CH **8 Claims**



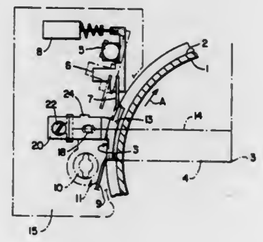
1. In a charging device for an electrostatic copying machine that includes a charging wire means positioned adjacent a surface to be electrostatically charged, the improvement comprising vibratory means for applying a vibration for a desired duration of time to said charging wire means, said vibratory means comprising tongue piece means positioned adjacent to said charging wire means and capable of being flexed into and out of contact with said charging wire means, said tongue piece means including piezoelectric element means which, when energized, causes said tongue piece means to be flexed, and signal means for applying a DC signal to said piezoelectric element means to flex said tongue piece means to a position in contact with or closely adjacent to said charging wire means, said signal means including means for superimposing a high frequency signal onto said DC signal so as to flex and vibrate said tongue piece means against said charging wire means.

4,516,849

CLEANING DEVICE FOR AN ELECTROSTATIC PHOTOGRAPHIC COPYING MACHINE

Eiji Tsutsui, Amagasaki; Masahiro Yoshioka; Masahiro Murakami, both of Osaka, and Noriyuki Iwao, Kobe, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 17, 1983, Ser. No. 476,373
Claims priority, application Japan, Apr. 4, 1982, 57-56455
Int. Cl.[3] G03G *15/08*
U.S. Cl. 355—15 **14 Claims**



1. A cleaning device for use in an electrostatic photographic copying machine of the type including a sensitive drum rotatable about an axis and provided at one axial end with an annular paper-stripping groove, for removing residual toner from the surface of the drum, said cleaning device comprising:

an upper blade mounted to contact the drum to strip therefrom residual toner;

a lower blade mounted below said upper blade and upstream thereof in the rotary direction of the drum for guiding the stripped residual toner to a toner withdrawal device; and

means for preventing the stripped toner from entering the paper-stripping groove, said means comprising a groove cover mounted to extend into and cover the paper-strip-

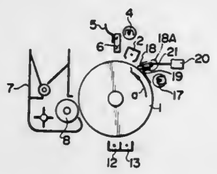
ping groove at least from the position of contact of said upper blade with the drum to the position of contact of said lower blade with the drum, said groove cover being in contact with said lower blade.

4,516,850

TONER CLEANING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,060
Claims priority, application Japan, Jun. 11, 1982, 57-99347
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—15 **13 Claims**



1. A toner cleaning unit for an electrophotographic copying machine including a charge retaining member on which an electrostatic latent image is formed and is converted into a toner image by means of a developing unit which utilizes a dry developer, the resulting toner image being transferred onto a record sheet, the cleaning unit being operative to remove any residual toner from the charge retaining member after the transfer of the toner image; comprising:
- a movable cleaning blade disposed for selective contact with the charge retaining member to collect any toner which remains thereon after the transfer of the toner image,
- means for selectively moving said cleaning blade towards and away from the charge retaining member,
- and an intercept member disposed adjacent to the cleaning blade and upstream thereof as viewed in the direction of rotation of the charge retaining member and in contact with or in proximity to the latter, the intercept member being coextensive with the cleaning blade, a toner pile being formed in the region of contact between the blade and the charge retaining member as the blade is disposed in contact with the retaining member by said blade moving means, the intercept member intercepting any toner which might freely fall down from the pile when the cleaning blade is moved away from the charge retaining member by said blade moving means to permit the toner pile to be conveyed into the developing unit by the charge retaining member as the charge retaining member rotates.

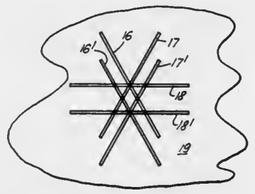
4,516,851

VELOCITY MEASUREMENT

John C. Parker, 56 Stirling Rd., Edinburgh 5, and James A. Blake, 11 Fingzies Pl., Leith Links, Edinburgh, both of Scotland

Filed Mar. 26, 1982, Ser. No. 361,841
Claims priority, application United Kingdom, Mar. 26, 1981, 8109469
Int. Cl.³ G01P *3/36*
U.S. Cl. 356—28 **20 Claims**

1. Apparatus for measuring the velocity of an object in relation to two orthogonal axes in a first plane containing a radiation source, the apparatus including two spaced optical units disposed in a second plane, the object being movable in one of the first or second planes and the source or the two optical units in said one plane being movable with the object, each unit including at least two crossed detectors, the centers of the detectors in each unit being coincident and each detector being arranged to receive radiation instantaneously exclusively from an associated elongated, linearly-extending portion of the first plane, the two detectors of a unit being arranged to receive radiation from different associated portions of the first plane which are angularly oriented relative to each other, each detector having an associated detector in the other unit so as to form an associated pair of detectors which are arranged to receive radiation simultaneously from two, corresponding, parallel, spaced portions of the first plane and which are arranged such that longitudinal axes of symmetry of each of said two, corresponding, parallel portions of the first plane are spaced apart by the same predetermined distance along an axis parallel to a common axis between the two spaced optical



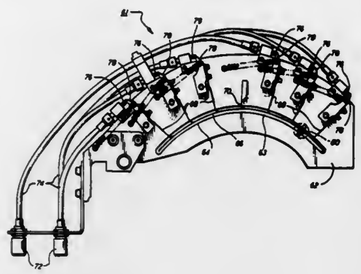
units; separate comparing means for each pair of associated detectors for receiving signals representative of the detected intensities of radiation in a predetermined measurement period exclusively from their pair of associated detectors, each associated pair of detectors being arranged to receive during the measurement period radiation instantaneously from a plurality of two, corresponding, parallel portions of the first plane, and the comparing means determining from the signals received in the measurement period the delay between signals from the detectors of a pair corresponding to the same part of the same portion of the first plane; and means for computing the object's velocity in relation to said orthogonal axes from delays determined by the comparing means in the measurement period.

4,516,852

METHOD AND APPARATUS FOR MEASURING INTENSITY VARIATION IN A LIGHT SOURCE

Raymond C. Liu, and David A. Markle, both of Norwalk, Conn., assignors to The Perkin-Elmer Corp., Norwalk, Conn.

Continuation of Ser. No. 292,466, Aug. 13, 1981. This application Jan. 6, 1984, Ser. No. 568,764
Int. Cl.³ G03B *27/58*
U.S. Cl. 356—121 **8 Claims**



1. In a method for eliminating the tilt of a trace resulting from plotting the detected energy from a lamp that is imaged along a tapered arcuate slit versus position along the slit, the steps comprising: detecting the light energy at positions along the length of the slit, obtaining a signal representative of the light energy along the length of the slit, providing a taper correction function based upon the position along the slit, and multiplying said intensity signal by said correction factor to produce a signal representative of the exposure uniformity

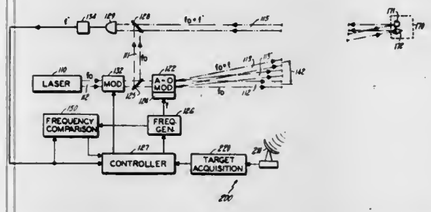
produced by the system and which ideally does not have a linear variation with slit position.

4,516,853

LASER RADAR ADAPTIVE TRACKING SYSTEM

James E. Pearson, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 31, 1982, Ser. No. 364,138
Int. Cl.³ G01B *11/26*; G01C *1/00*; G01J *1/20*
U.S. Cl. 356—152 **5 Claims**



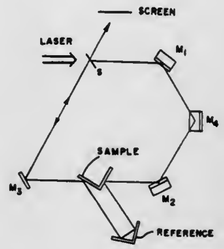
1. An adaptive laser system for tracking a target comprising:
- a laser for generating an output beam,
- signal-generating means for generating a control signal containing a plurality of frequencies,
- acousto-optical means responsive to a control signal containing a plurality of control frequencies having control signal frequency amplitudes for steering a portion of said output beam to form a steered beam directed at said target,
- transducer means adjacent to a first side of said acousto-optical means, for coupling simultaneously at least two frequencies of said plurality of frequencies into said first side of said acousto-optical means, so that said steered beam comprises simultaneously at least two steered sub-beams, each of which steered sub-beams is steered in a direction depending on one of said at least two frequencies,
- detector means for receiving radiation reflected from said target, and
- control means for controlling said acousto-optical means by increasing selected ones of said control signal amplitudes of said control signal frequencies, whereby said steered beam is increased in power.

4,516,854

INTERFEROMETRIC ANGULAR MEASUREMENT SYSTEM

Jacques E. Ludman, 98 Old Lowell Rd., Westford, Mass. 01886

Filed Dec. 3, 1981, Ser. No. 326,857
Int. Cl.³ G01B *11/26*
U.S. Cl. 356—363 **3 Claims**



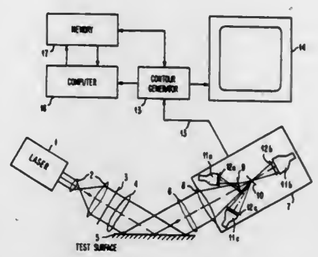
1. An interferometric angular measurement system for measuring the angle between a first subject mirror and a second subject mirror comprising:
- a source of coherent radiation directed along an initial path;
- an observation screen for the radiation;
- means in said path for splitting said radiation into two substantially equal intensity beams, a first beam and a second beam;
- first optical means including first, second, and third mutually perpendicular reflecting surfaces for directing the first beam to said first subject mirror;
- second optical means for directing the second beam to said second subject mirror;
- third optical means including two reflecting surfaces and a tilt adjustment mechanism with an angle between the two reflecting surfaces which is approximately equal to the angle between said first and second subject mirrors for directing the first beam after it has been reflected off the first subject mirror to the second subject mirror, and for directing the second beam after it has reflected off the second subject mirror to the first subject mirror;
- wherein said tilt adjustment serves to eliminate any vertical angular deviation of said first and second beams,
- wherein said second angled subject mirror serves to direct the first beam to the second optical means,
- wherein said first angled subject mirror serves to direct the second beam to the first optical means,
- wherein the first optical means serves to direct the second beam back to the beam splitting means,
- wherein the second optical means serves to direct the first beam back to the beam splitting means,
- and wherein at said beam splitting means a substantial portion of said first and second beams are superimposed and directed to said observation screen,
- whereby light patterns appearing on said observation screen are successively indicative of the angular difference between the subject mirrors versus the reflective surfaces of the third optical means.

4,516,855

METHOD AND APPARATUS FOR DETERMINING THE POLARIZATION-STATE OF A LIGHT WAVE FIELD

Hans E. Korth, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,406
Claims priority, application European Pat. Off., Apr. 4, 1981, 81102533.5
Int. Cl.³ G01J *4/04*
U.S. Cl. 356—367 **7 Claims**



1. A method for interferometrically determining the topography of a surface by investigating the polarization state of a light wave field reflected from said surface comprising the steps of:
- illuminating the surface to be investigated with a first circularly polarized light beam to obtain a beam reflected from said surface to be investigated;
- deriving a plane polarized beam from said first circularly polarized beam;
- illuminating a reference surface with said plane polarized beam to obtain a corresponding plane polarized beam reflected from said reference surface;
- converting said beam reflected from the reference surface into a second circularly polarized beam, the direction of

polarization of said second circularly polarized beam being opposite to the direction of polarization of said first beam;

superimposing said two circularly polarized light beams to form a combined light wave field containing, by way of its resultant polarization state, data characterizing the surface topography of the surface to be investigated;

directing said combined light wave field onto polarization camera means; and

measuring for each point of the combined light wave field the intensity transmitted by said polarization camera means for three different transmission directions, each differing from the other by 60°.

4,516,856

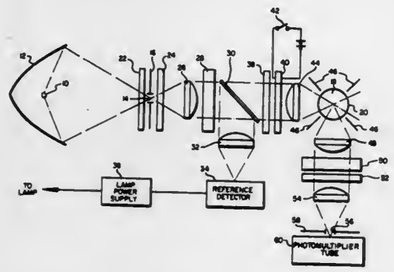
OPTICAL APPARATUS FOR FLUORESCENCE POLARIZATION INSTRUMENT

Susan R. Popelka, Gurnee, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 223,633, Jan. 9, 1981, abandoned. This application Aug. 5, 1982, Ser. No. 405,459

Int. Cl.³ G01N *21/64*; G01J *4/04*

U.S. Cl. 356—368 **5 Claims**



1. Optical apparatus for a fluorescence polarization analyzer wherein a fluorescent liquid sample is irradiated with excitation light and radiates an emission light from which the polarization, P, is determined in accordance with the expression: $I(Z)-I(Y)/I(Z)+I(Y)$, where I(Z) is the measured intensity of one polarization component of the emitted light at a first polarization angle when the liquid sample is irradiated with polarized excitation light at the first polarization angle, and where I(Y) is the measured intensity of the polarization component of emitted light at the first polarization angle when the liquid sample is irradiated with polarized excitation light at a second polarization angle perpendicular with respect to said first polarization angle,

said optical apparatus comprising:

a sample tube for containing said liquid sample, said sample tube having a substantially circular peripheral cross-sectional configuration;

a focused light source for irradiating said liquid sample with excitation light focused substantially at the center of said sample;

said focussed light source comprising a relatively low wattage, low intensity tungsten halogen lamp;

a narrow bandwith filter intermediate said focused light source and said sample for passing excitation light corresponding substantially to the absorption band of the fluorescent sample;

a first polarizer intermediate said narrow bandwidth filter and said sample, said polarizer having a fixed plane of polarization at said first polarization angle;

a field effect liquid crystal intermediate said polarizer and said sample, including means for alternately applying an electric field to said liquid crystal to alternately apply excitation light polarized at the first or second polarization angles to said liquid sample;

a photomultiplier detector including an input aperture restricting the emission light viewed by said photomultiplier;

baffle means adjacent the sample tube substantially preventing reflections of excitation light from entering the path of said emission light to said photomultiplier input aperture;

emission light focusing lenses intermediate said sample and said photomultiplier for focusing emitted light to said photomultiplier input aperture;

a second polarizer intermediate said sample and said photomultiplier having a fixed plane of polarization at said first polarization angle; and

a wide bandwidth filter intermediate said sample and said photomultiplier for passing emitted light corresponding substantially to the emission band of the fluorescent sample.

4,516,857

CORRELATION SPECTROMETER FOR NERVE AGENTS

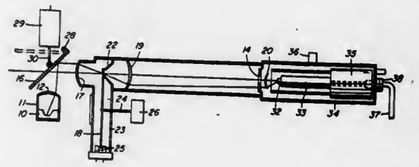
John M. Preston, Ottawa; Thomas V. Ward, Thornhill, and William H. Morrow, Cookstown, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed May 4, 1982, Ser. No. 374,701

Claims priority, application Canada, May 4, 1981, 376763

Int. Cl.³ G01N *21/61*

U.S. Cl. 356—418 **16 Claims**



1. A correlation spectrometer for the detection of a toxic substance in the atmosphere comprising:

light responsive means for providing electrical signals;

means for directing ambient light onto said light responsive means;

said light directing means comprising means for passing a first portion of the light onto said light responsive means through a solid reference substance in the form of a foil and for passing a second portion of the light onto said light responsive means without passage through the reference substance, whereby said light responsive means provides first and second electrical signals corresponding respectively, to said first and second light portions; and

signal processing means for comparing said first and second electrical signals;

wherein said reference substance is a surrogate substance different from the toxic substance to be detected by the spectrometer but which has a spectrum which correlates with that of the toxic substance to be detected.

4,516,858

MULTIPLE SITE LASER EXCITED POLLUTION MONITORING SYSTEM

Jerry A. Gelbwachs, Manhattan Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1982, Ser. No. 347,391

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—437 **6 Claims**

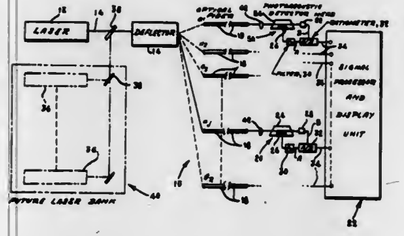
1. A multiple site laser excited pollution monitoring system, comprising:

a laser situated at one preselected location, said laser producing an output beam of electromagnetic radiation at a predetermined wavelength;

a beam deflector optically aligned with said laser beam for deflecting said laser beam in a predetermined timed sequence to a plurality of distinct different positions;

means for receiving each of said deflected laser beams at each of said distinct different positions and for transmitting each of said deflected laser beams at said predetermined sequence of time to a plurality of other preselected locations remote from each other and from said one preselected location;

a plurality of laser excited photoacoustic pollution detectors, each of said laser excited pollution detectors being located at a different one of said other preselected locations and each of said detectors receiving each of said deflected laser beams, respectively, at a different time in accordance with said predetermined timed sequence;



each of said laser excited pollution detectors providing an electrical output signal representative of the presence of pollutants at said plurality of other locations, respectively;

a separate electrical wire connected to each of said laser excited pollution detectors for transmitting each of said electrical output signals to said one preselected location; and

means located at said one preselected location for connecting thereto each of said separate electrical wires and for receiving each of said electrical output signals from said pollution detectors, analyzing said signals, and providing an output indicating the presence and quantity of pollutants present at each of said plurality of other preselected locations.

4,516,859

APPARATUS FOR CLOSING A DISCHARGE OPENING IN A ROTARY TABLE

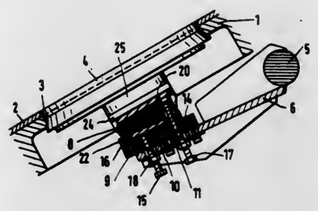
Adolf Spengler, Külsheim, and Josef Hasenhündl, Ahorn, both of Fed. Rep. of Germany, assignors to Hubert, Eirich Eirich, Hardheim, Fed. Rep. of Germany

Continuation of Ser. No. 110,970, Jan. 10, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 341,426

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903951

Int. Cl.³ B28C *7/16*

U.S. Cl. 366—77 **6 Claims**



1. A rotary closure apparatus for closing a discharge opening in a container, comprising:

a shaft supported on said container for rotation abouts its longitudinal axis;

a support arm rigidly connected to said shaft for rotation therewith;

a closure cover carried by said support arm for closing or opening said discharge opening upon rotation of said shaft;

pivot bearing means for rigidly interconnecting said closure cover to said support arm for relative pivotal movement therebetween about a single axis disposed transverse to said discharge opening; and

resilient means engaging said support arm and said closure cover for yieldably supporting said closure cover in a desired position relative to said support arm so that said closure cover can pivot about said single axis upon application of a force thereto but will return to said desired position upon removal of said force.

4,516,860

MIXER FOR DRILL CUTTINGS AND DRILLING MUD ON A DRILLING LOCATION

Jan G. J. van der Laan, Warnsveld, and Willem Entrop, Gemeente Noordwijkerhout, both of Netherlands, assignors to Hosokawa-Nauta B.V., Netherlands

Filed May 4, 1983, Ser. No. 491,453

Claims priority, application Netherlands, Jun. 5, 1982, 8201868

Int. Cl.³ B01F *7/08*

U.S. Cl. 366—287 **8 Claims**

1. A device for keeping drill cuttings in suspension in a viscous drilling mud comprising:

a mixing vessel (**1**) for containing the mud and cuttings;

a plurality of agitating devices (**6**) mounted on the vessel to project into the vessel, each of said agitating devices comprising:

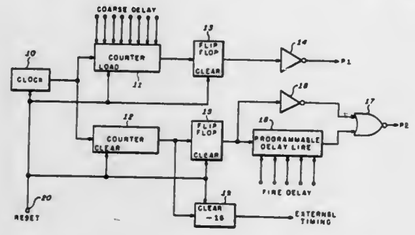
a pair of generally horizontal support arms (**23**, **24**) connected to a head (**21**), one of said support arms (**24**) being longer than the other of said support arms (**23**);

first drive means (**13**, **14**) coupled to said head for rotating said arms about a generally vertical axis (**22**);

an elongated mixing screw (**17**, **18**) mounted on the end of each of said arms and extending downwardly into said vessel, said mixing screws being of equal length, the mixing screw (**27**) mounted on the end of said shorter support arm (**23**) having a larger outside diameter than the mixing screw (**28**) mounted on said longer support arm (**24**); and

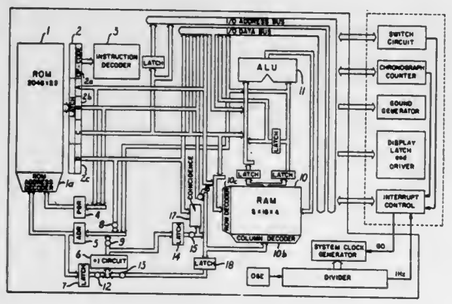
second drive means (**15**) coupled to said mixing screws for rotating each of said screws about its own longitudinal axis.

4,516,861
HIGH RESOLUTION AND HIGH ACCURACY TIME INTERVAL GENERATOR
John W. Frew, Chelmsford, and Kenneth W. Robbins, North Reading, both of Mass., assignors to Sperry Corporation, New York, N.Y.
Filed Oct. 7, 1983, Ser. No. 540,081
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—120 **10 Claims**



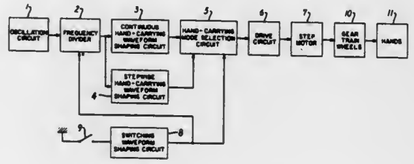
1. Time interval generation apparatus, comprising:
a source of clock pulses,
first and second counter means coupled to receive said clock pulses,
one of said first and second counter means being presettable to a coarse delay value by a coarse delay signal,
said first and second counter means providing respective first and second transition signals in response to said clock pulses and separated in time in accordance with said coarse delay signal, and
programmable delay means responsive to said second transition signal and to a fine delay signal for delaying said second transition signal in accordance with said fine delay signal, so that said first transition signal is separated in time from said delayed second transition signal by a time interval determined by said coarse and fine delay signals.

4,516,862
ELECTRONIC TIMEPIECE HAVING ADDRESS DESIGNATION CIRCUITS OF ROM AND RAM
Yosuke Yoshida, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Jun. 2, 1983, Ser. No. 500,252
Claims priority, application Japan, Jun. 4, 1982, 57-95887; Jun. 4, 1982, 57-95888
Int. Cl.³ G04C *15/00*
U.S. Cl. 368—155 **4 Claims**



1. In an electronic timepiece having a ROM and a RAM: an address designation circuit for the ROM comprising an address register for storing the content of an emit-field through first gate means, a ROM address decoder for receiving the output of said address register and designating the address of the ROM, a +1 circuit for computing the content of said address register plus 1, and second gate means for controlling the connection between said +1 circuit and said address register.

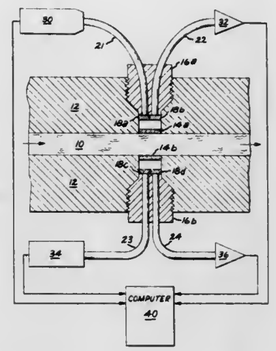
4,516,863
ELECTRONIC TIMEPIECE OPERABLE IN CONTINUOUS AND STEPWISE MODES
Yukio Ikehata, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Oct. 6, 1983, Ser. No. 539,713
Claims priority, application Japan, Oct. 7, 1982, 57-176577
Int. Cl.³ G06F *1/04*; G04F *5/00*
U.S. Cl. 368—157 **4 Claims**



1. In an electronic timepiece having an oscillation circuit, a frequency-dividing circuit, a drive circuit, a step motor, and gear train wheels for driving a set of hands including a second hand, the improvement wherein: the drive circuit has means for producing an output of n pulses (where n is an integer of 2 or greater) per second; a first circuit for producing n pulses serving as continuous hand-carrying pulses having a period of 1/n second; a second circuit for producing n pulses serving as stepwise hand-carrying pulses that occur in a concentrated manner in a particular section of a second; a mode selection circuit operative to select said continuous hand-carrying pulses and said stepwise hand-carrying pulses upon operation of an external switch; and wherein when the number of poles of said step motor is k, the reduction ratio of the gear train wheels from the rotor of the step motor to the wheel on which the second hand is mounted, is 1 to 60n/k.

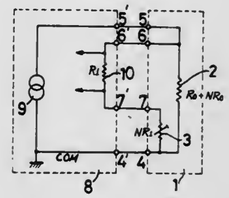
4,516,864
NON-CONTACT SENSING APPARATUS AND METHOD FOR POLYMER MELT TEMPERATURE PROFILE DETERMINATION
Wontaik Kim, Clifton Park, and Farzin H. Azad, Troy, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 27, 1982, Ser. No. 453,667
Int. Cl.³ G01J *5/00*
U.S. Cl. 374—130 **9 Claims**

1. An apparatus for temperature profile determination in flowing polymer melts comprising:
a conduit section for flow-through transport of said melt;
at least two optical windows disposed in said conduit section, said windows being disposed on opposite sides thereof;
means for irradiating said polymer melt, through a first of said windows, with electromagnetic radiation of a select wavelength, so that said radiation is transmitted through said melt;
means for detecting the level of radiation transmitted through said melt and through the second of said windows, said detecting means generating electrical signals responsive to the intensity of said transmitted radiation;
means for providing temperature data with respect to the surface temperature of said melt, within said conduit, in the vicinity of at least one wall of said conduit windows; and
computing means receiving electrical signals from said transmission detection means and operating thereon, along with said surface temperature data, so as to provide an



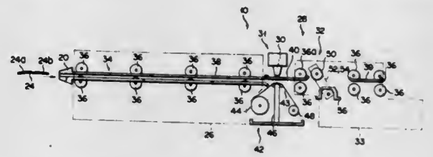
indication of the temperature profile of said melt between said windows.

4,516,865
RESISTANCE THERMOMETER
Sugimori Hideo, 12-2, Koaza Shimokubota, Ohaza Hohsono, Seikacho, Sohrakugun, Kyoto-fu, Japan
Filed May 31, 1983, Ser. No. 499,427
Claims priority, application Japan, May 31, 1982, 57-093306
Int. Cl.³ G01K *7/20, 7/22*
U.S. Cl. 374—172 **1 Claim**



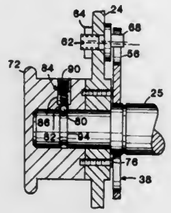
1. A resistance thermometer comprising:
a temperature sensing circuit unit consisting of a temperature sensing resistor to be subject to a temperature to be measured and a compensating resistor, said temperature sensing resistor and said compensating resistor each having first and second terminals, wherein said first terminals of said temperature sensing resistor and said compensating resistor are connected together so as to comprise a common terminal, and said second terminal of said temperature sensing resistor comprised a current input terminal, and said second terminal of said compensating resistor comprises a signal output terminal;
a current source connected between said current input terminal and said common terminal;
a signal output resistor connected between said current input terminal and said signal output terminal;
wherein the ratio of resistance of said signal output resistor compared with resistance of said compensating resistor is equal to the ratio of desired resistance of said temperature sensing resistor compared with a positive resistance error of said temperature sensing resistor.

4,516,866
PRINTING APPARATUS
Masahide Yamauchi, Kawasaki, and Kunio Fukatsu, Ebina, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jul. 26, 1982, Ser. No. 401,711
Claims priority, application Japan, Jul. 31, 1981, 56-120143
The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.
Int. Cl.³ B41J *3/28*
U.S. Cl. 400—25 **18 Claims**



6. An apparatus for printing a page of a book which is opened to expose a pair of pages lying within a plane of conveyance of the book, said apparatus comprising:
printing means for printing onto one page of said exposed pair of pages of the book;
page turning means adjacent to and separated from said printing means to define a path of book conveyance, said page turning means for turning said one page of said exposed pair of pages; and
guide means for guiding the book along said book conveyance path defined between said print means and said page turning means, said guide means movable between a print position wherein said guide means is disposed inside of said page turning means to expose a page of the book to said printing means to thereby permit said print means to print upon the page exposed thereto and, a page turning position wherein said guide means is disposed inside of said printing means to expose a page of the book to said page turning means to thereby permit said page turning means to turn the page exposed thereto; and
first driving means operatively coupled to said guide means for moving said guide means between said print and page turning positions; wherein said page turning means includes
(a) a roller selectively rotatable in first and second opposite directions;
(b) first transfer means for selectively transferring said roller along said conveyance path between a first position above said one page and a second position above the other page of said pair of exposed pages, wherein said one and other pages are picked up and caused to run onto said roller when said roller is in said first and second positions, respectively;
(c) pressing means for pressing said one and other pages against said roller when said roller is in said first and second positions, respectively;
(d) second driving means for rotating said roller in said first direction when said roller is in said first position so that said one page is picked up and caused to run onto said roller, and for rotating said roller in said second direction, opposite to said first direction, when said roller is in said second position so that said other page is picked up and caused to run onto said roller; and
(e) second transfer means for transferring said book in a conveyance directly within said conveyance path when said one page is located on said roller in said first position so that said roller is shifted from said first position toward said second position thereby turning said one page, and for transferring said book when said other page is located on said roller in said second position so that said roller is shifted from said second position toward said first position thereby turning said other page.

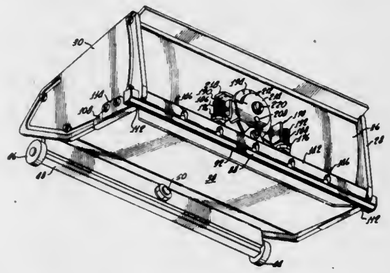
4,516,867
PRINTING WHEEL CONNECTING AND ADJUSTING MEANS
Roy A. Schacht, 744 Des Peres Rd., St. Louis, Mo. 63131
Filed Sep. 22, 1982, Ser. No. 421,300
Int. Cl.³ B41J *1/54*
U.S. Cl. 400—175 **4 Claims**



1. A marking machine having a printing wheel with printing characters supported on a periphery of the wheel, means for supporting the wheel upon a drive shaft, means for rotating the drive shaft and wheel to a selected position to move a character on the wheel in a printing position over a work piece, the improvement comprising means for rotatably adjusting the wheel independently of the shaft, said means comprising a support means on said shaft and eccentric means supported upon the wheel and engageable with said support means, said eccentric means being moveable to adjust said wheel in a rotated position with respect to said shaft to adjust the printing position of said characters with respect to said workpiece, said support means comprising a backing member fixed to said drive shaft, said wheel being slidably mounted on said drive shaft and said eccentric means connecting said wheel and said backing member to provide a drive train from said drive shaft to said wheel, said eccentric means comprising a wheel adjustment shaft element rotatably journalled in said wheel and an eccentric shaft rotatably journalled in said backing member and means for rotating said wheel adjustment shaft element to provide for relative movement between said backing member and said drive shaft with respect to said wheel to rotatably adjust the wheel with respect to said drive shaft, said eccentric shaft being connected to a plate-like member which plate-like member is in abutting relation against an interior surface of said wheel and said eccentric shaft extending from said plate-like member to said backing member and a tightening element receivable on an exterior end of said wheel adjustment shaft element in clamping relation against said eccentric means and said wheel.

4,516,868
MASTIC APPLICATOR AND ADJUSTABLE BLADE ASSEMBLY
Rick K. Molnar, Long Beach, Calif., assignor to Hawk Industries, Inc., Signal Hill, Calif.
Filed May 28, 1982, Ser. No. 383,094
Int. Cl.³ B28B *3/00;* **B29C** *3/04*
U.S. Cl. 401—5 **6 Claims**

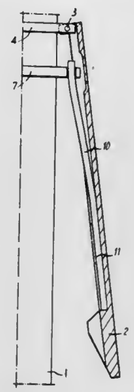
1. Apparatus for applying and dispensing mastic comprising
a container for confining a quantity of mastic, said container including an opening for dispensing mastic from the container, and means for causing mastic to flow from said container through said opening, and
an adjustable curvature blade assembly for distributing and contouring mastic dispensed from the container, said assembly comprising
a blade carrier connected at end portions thereof to said container,
a flexible blade secured to said carrier, and
adjustment means interconnected between said container and an intermediate portion of said carrier for shifting the intermediate portion of the carrier relative to said end portions thereof to control curvature of the blade, said adjustment means comprising rigid linkage means connected to said container and connected to said carrier for effecting a positive bidirectional adjustment of said blade to increase or decrease curvature of the blade, and means for selectively changing the effective length of said linkage means,
said rigid linkage means restraining motion of an intermediate portion of said blade in both directions from adjusted position to thereby hold the blade in its adjusted position,
said adjustment means comprising first and second interconnected linkage members connected respectively to said blade carrier and said container,
said first linkage member comprising a yoke plate pivot-



ally connected to said blade carrier, and said second linkage member comprising a cam interengaged with said yoke plate and having a pivotal connection to said container on a pivot axis substantially fixed to said container, and including means for adjustably pivoting said cam to thereby cause said cam to positively drive said yoke plate and blade in either of two opposite directions,
said yoke plate comprising a plate having a circular aperture and said cam comprising a disc mounted to said container for pivotal motion about a pivot axis, said disc having a circular periphery received within the circular aperture of said yoke plate, said circular periphery being centered upon an axis offset from said pivot axis.

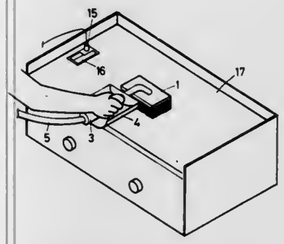
4,516,869
CLIP FOR WRITING PEN OR SIMILAR OBJECT
Marcel Corpataux, Fribourg, Switzerland, assignor to USI-FLAMME S.A., Villars-sur-Glane, Switzerland
Filed Oct. 21, 1980, Ser. No. 199,272
Claims priority, application France, Oct. 26, 1979, 79 26650
Int. Cl.³ B43K *25/00*
U.S. Cl. 401—131 **5 Claims**

1. A writing pen or similar article comprising
a body
a rigid fastening clip extending along the outside of the body, said clip having a mounting end and a free end,
means rigid with and outside said body for pivotally connecting said mounting end of said clip to said body for pivotal movement about an axis,
a leaf spring for urging said clip toward said body, said spring having a first end secured to said fastening clip near the free end of the clip, and a second end spaced from the first end, and
means rigid with and outside said body and having an opening near said axis and between said axis and the free end of said clip, for receiving said second end of said leaf spring to connect said second end to said body, said opening



being slightly greater than the second end of said leaf spring.

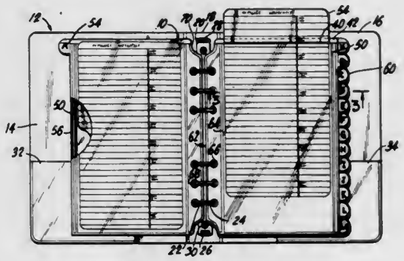
4,516,870
GRIDDLE CLEANING DEVICE
Teiji Nakazato, 9-12, Higashi Azabu 1-chome, Minato-ku, Tokyo, Japan
Filed Sep. 19, 1983, Ser. No. 533,446
Int. Cl.³ A46B *11/06*
U.S. Cl. 401—146 **7 Claims**



1. A griddle cleaning device comprising: a brush, means for selectively supplying cleaning liquid, rinsing liquid and water to said brush, control means for controlling said supplying means to selectively and timely supply the cleaning liquid, rinsing liquid and water in a predetermined sequence, a concentration sensor means attachable to the upper surface of a griddle and connected to said control means to continuously send information indicative of concentration of the cleaning liquid on the upper surface of the griddle during water washing to the control means, said control means being operatable on the basis of the concentration information.

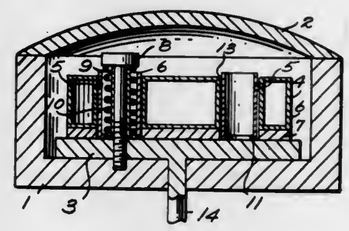
2. A griddle cleaning device comprising a brush having a base with an outlet opening, a multitude of bristles secured to said base, a hollow handle connected with said base and having one end in communication with said outlet opening in said base and the other end coupled with a hose, and means for selectively feeding one of a cleaning liquid, water and a rinsing liquid to said hose and, wherein said means for selectively feeding one of a cleaning liquid, water and a rinsing liquid to said hose comprises a control unit including a pump connected to said hose, a first tank for storing said cleaning liquid, a second tank for storing said rinsing liquid, said first and second tanks being connected to said pump through respective valve means, a water conduit leading from a water source to said pump and having a valve means inserted therein, a by-pass conduit leading from said water source to said hose while by-passing said water conduit and said pump, said by-pass conduit having a valve means inserted therein, and a power source and control section for controlling operations of said pump and all of said valve means.

4,516,871
TABULATED SHEET PROTECTORS
Ervin Leitman, 1682 53rd St., Brooklyn, N.Y. 11204
Filed Jul. 29, 1982, Ser. No. 403,128
Int. Cl.³ B42F *13/00, 21/00, 21/02;* **B42D** *17/00*
U.S. Cl. 402—79 **11 Claims**



1. A sheet protector, comprising:
upper and lower layers of substantially transparent plastic material;
a pair of complementary tabs, each tab laterally extending from the edge of a respective layer and integrally formed therewith, each tab comprising an identification means thereon;
a heat sealed indent securing together at least a portion of the peripheries of said layers;
a separate heat sealed indent which forms said indentification means on said tabs, and
opening means defining a pocket in combination with said layers, whereby a sheet may be inserted in said pocket.

4,516,872
APPARATUS FOR FASTENING ELECTRIC STRUCTURAL PARTS INTO THE CONNECTING HEAD OF ELECTRICAL THERMOMETERS
Kurt Eiermann, Pfungstadt, and Thomas Kayser, Dietzenbach, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 29, 1983, Ser. No. 556,116
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244718[U]
Int. Cl.³ F16B *1/04*
U.S. Cl. 403—24 **3 Claims**



1. A connection device for fastening an electrical member in a connection means for an electrical thermometer having a plate member, said connection means including a housing and fastening means comprising a bolt, a casing and a spring means, said electrical member having a bore, said casing being inserted in said bore, said spring means being disposed at least partly in

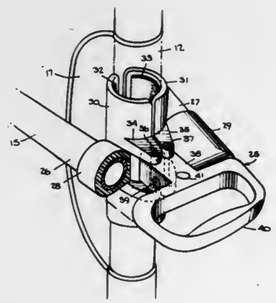
said casing with said bolt having a head engaging said spring means and said spring means having a portion engaging said casing so that when said bolt is attached to said housing said spring means will urge said casing toward said plate member of said thermometer.

4,516,873

SAILBOARD BOOM-TO-MAST CONNECTOR

David R. Humble, 2696 Emerald Way, Deerfield Beach, Fla. 33441, and Hans Barth, 1720 NE. 17th Ave., Ft. Lauderdale, Fla. 33305

Filed Apr. 6, 1983, Ser. No. 482,470
Int. Cl.³ B63B *15/00*
U.S. Cl. 403—191 **4 Claims**



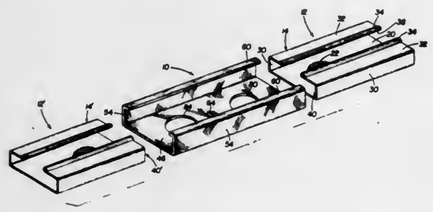
1. A connector for establishing a boom-to-mast connection between the boom and the mast of a sailboard comprising in combination a pair of complemental semi cylindrical jaws each joined to a body member for separate movement selectively between mast clasping and releasing positions, and at least one socket for receiving an end of said boom therein, said socket being pivotally and operatively joined to said body member for independent rotation about its pivot relative to said jaws in one direction or the other, rotation of said at least one socket about its pivot in said one direction being operative to urge at least one of said jaws into clasping embrace of said mast while rotation in said other direct enables said jaws to release said mast.

4,516,874

CHANNEL CONNECTOR

James H. C. Yang, Cleveland, and Walter Tomaszewski, Canton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 23, 1984, Ser. No. 602,871
Int. Cl.³ F16B *2/02*
U.S. Cl. 403—313 **12 Claims**



1. The combination of a channel connector for physically connecting and spacing the adjacent end portions of a pair of first and second axially aligned substantially similar channel members, each of said channel member being of generally rectangular form, in transverse cross section, having a substantially flat bottom wall, similarly projecting side walls, and top walls parallel to said bottom wall, said top walls having contoured inner edges separated by a continuous central longitudinal slot, each of said channel members further including an outwardly directed protrusion centered a first distance from the channel member axial outer end surface and having a first dimension, said channel connector being comprised of a flexible resilient material of a generally rectangular form, in transverse cross section, and of a predetermined axial extent having:

(a) bottom and side walls enveloping the corresponding adjacent walls of said channel members, said channel connector also having top walls enveloping at least the transverse outermost portions of the top walls of said channel members;

(b) transverse spacer means, having opposed first and second sides, on said bottom wall, intermediate the ends of said channel connector;

(c) said channel connector bottom wall having a first aperture of a dimension so as to permit the physical retention of the channel member protrusion of the first of said channel members, said first aperture being centered a distance, from the first side of said spacer means, greater than said first distance of said first channel member; and

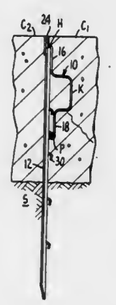
(d) said channel connector bottom wall having a second aperture of a dimension greater than the first dimension of the protrusion of the second of said channel members, said second aperture being centered a distance from the second side of said spacer means less than the first distance of said second channel member, said second aperture cooperating with the protrusion of said second channel member so as to physically bias said second channel member axial outer end surface against the second side of said spacer means.

4,516,875

CONCRETE SLAB KEY JOINT FORMING STRIP AND SUPPORTING STAKE THEREFOR

Frank E. Turner, San Mateo, Calif., assignor to The Burke Company, San Mateo, Calif.

Filed Mar. 28, 1983, Ser. No. 479,355
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—50 **19 Claims**



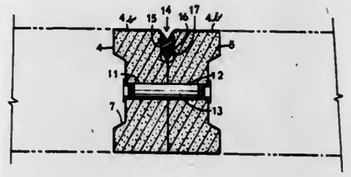
11. An improved stake for supporting a strip used to form a key joint between adjacent concrete slabs, said stake comprising: an elongated body member having an upwardly facing ledge at one end thereof proportioned for receipt within a hook segment on an upper end of a strip to suspend the strip from the ledge; and, an outwardly extending hook formed in the body member intermediate the length thereof to engage a lower portion of the strip suspended from the stake, said hook having a downwardly facing distal end engagement with the lower portion of a strip suspending from the body to maintain the strip in tension between said end and the ledge and said hook having an angled portion extending downwardly and inwardly to said distal end providing an outer cam surface to facilitate such engagement.

4,516,876

PRECAST CONCRETE EXPANSION JOINT FOR ROADS AND THE LIKE

Harry O. Wicks, 5563 Meadow Dr., Hamburg, N.Y. 14075

Filed Jan. 10, 1983, Ser. No. 456,554
Int. Cl.³ E01C *11/14*
U.S. Cl. 404—60 **10 Claims**



1. For use in a poured concrete roadway of the type requiring at least one expansion joint at a predetermined location along the length of the roadway, and having forms at opposite sides of the roadway defining the depth of the concrete to be poured, a precast concrete beam to be installed in said forms at said location requiring an expansion joint, said beam having its length and depth corresponding to the width and depth of the concrete to be poured and having its upper surface flush with the concrete to be poured, said beam remaining in place in the poured concrete as a permanent part of the road, and said beam having opposite sides consisting of separate precast units of concrete movable toward and away from each other and cooperating to form an expansion joint groove in said upper surface extending between said forms.

4,516,877

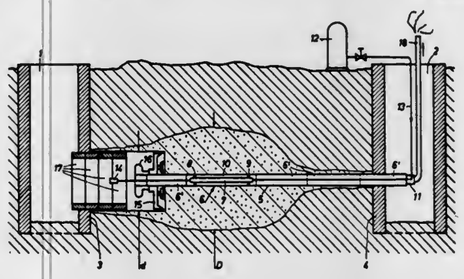
Patent Not Issued For This Number

4,516,878

TUNNEL CONSTRUCTING

Dieter Rebhan, Gelting, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,200
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140672
Int. Cl.³ E02D *19/14;* **E21D** *1/06, 9/00*
U.S. Cl. 405—130 **3 Claims**



1. A method of constructing a horizontal tunnel between two vertical shafts comprising the steps of

(1) driving a drill pipe between the two vertical shafts thereby interconnecting the two vertical shafts and leaving the drill pipe in place after drilling, the drill pipe comprising a plurality of axially aligned segments being screw-threaded to each other,

(2) slidably inserting an internal pipe into the drill pipe, the internal pipe having an enlarged diameter portion near an end thereof, the enlarged portion being provided with annular rubber seals at its opposite ends which engage the inner cylindrical surface of the drill pipe to create a watertight chamber between the annular rubber seals, the enlarged diameter portion further being approximately equal in length to a pipe segment,

(3) introducing water into the chamber,

(4) introducing a freezing liquid into the internal pipe to freeze the water contained within the chamber thereby creating a thermal bridge between the internal pipe and the drill pipe which facilitates freezing the ground in segments surrounding the drill pipe, the freeze area being greater in diameter than the tunnel,

(5) thawing the water in the chamber,

(6) releasing evaporated freezing liquid through conduit to the atmosphere,

(7) providing rotary excavating means on one end of the drill pipe, the excavating means being supported on the outer surface of the drill pipe,

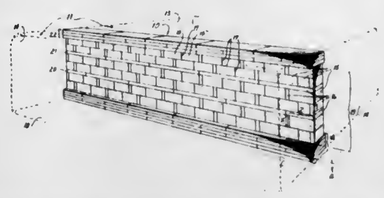
(8) rotating and axially advancing the excavating means sequentially toward the enlarged diameter portion of the drill pipe to remove frozen soil.

4,516,879

FOAM SLABS IN MINE TUNNEL STOPPINGS

James A. Berry; Morton Sherman, both of St. Petersburg, Fla., and John W. Stevenson, Birmingham, Ala., assignors to The Celotex Corporation, Tampa, Fla.

Filed May 26, 1983, Ser. No. 498,362
Int. Cl.³ F21F *1/14;* **F24F** *7/00*
U.S. Cl. 405—132 **26 Claims**



1. A stopping for use in improving underground mine ventilation comprising an assembly of wall elements, said wall elements comprising:

(a) a plurality of rigid non-yielding components, and

(b) a plurality of compliant sealing members, the sealing members being composed of flame spread-resistant and gas flow-impervious material, the rigid components and sealing members being arranged in courses which extend from one side to the other of a tunnel opening and from the floor to the ceiling of the opening to form a wall which extends over substantially the entire cross section of the opening being stopped, the sealing members being positioned at the top and bottom perimeters of the wall and between the rigid components so as to (i) accommodate convergence loads imposed on the wall, and (ii) form, together with the rigid components, a barrier against the flow of gas through the tunnel.

4,516,880

UNDERWATER TRENCHING APPARATUS

Charles F. Martin, P.O. Box 197, Porter, Tex. 77365

Filed Apr. 19, 1982, Ser. No. 369,488
Int. Cl.³ F16L *1/04;* **E02F** *5/02*
U.S. Cl. 405—160 **20 Claims**

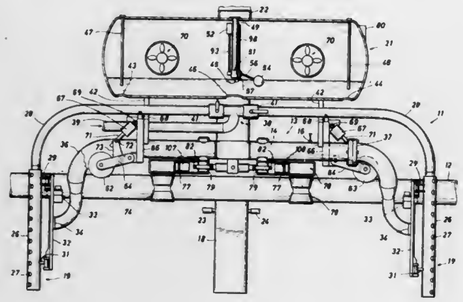
1. An underwater trenching apparatus for burying a line member such as a pipeline, beneath the bottom of a body of water, comprising:

(a) a frame for positioning on the line member to be buried beneath the bottom;

(b) means supported by said frame for excavating a trench in the bottom beneath said frame;

(c) a pair of line member engaging rollers supported by said

frame and arranged to engage said line member on directly opposite face portions thereof;
(d) variable force producing means for urging both of said rollers into gripping contact with said line member;
(e) flexible mounting means for said rollers for urging said rollers toward the line member so that said rollers can only move toward and away from the line member;



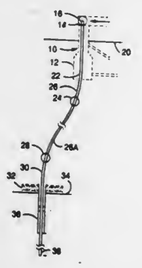
(f) wherein said rollers are comprised of a deformable material and have a longitudinally concave exposed face to provide mating contact between the outside surface of the roller and a circular line member; and
(g) further including voids formed within the wall of said rollers to permit said roller wall to partially collapse into a shape conforming to the outer peripheral surface of the line member.

4,516,881

MULTITERMINATORS FOR RISER PIPES

Pierre A. Beynet, Tulsa, Okla., and J. Thomas von Aschwege, Pinner, England, assignors to Standard Oil Company, Chicago, Ill.

Filed Feb. 25, 1982, Ser. No. 352,496
Int. Cl.³ E21B *43/01*
U.S. Cl. 405—195 **9 Claims**



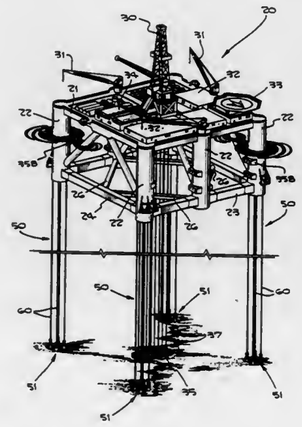
1. A multiterminator assembly for use with a riser pipe used to anchor a floating structure, comprising:
(a) a first terminator comprising a tubular assembly, having a mid-section of cylindrical shape and selected length and diameter, with two conical end portions; a first conical end portion of lesser conical angle and greater length than the second conical end portion;
(b) a vertical tubular sleeve attached to and downwardly depending from said floating structure and carrying a first horizontal bearing at the level of said mid-section of the first terminator;
(c) the first conical end portion of said first terminator connected to the top end of said riser pipe which is anchored at its bottom end in the earth below the mudline;
(d) a second terminator having two conical end portions;
(e) the second conical end portion of said first terminator connected to a first length of riser pipe which is connected to a first end of said second terminator; the second end of said second terminator connected by a second length of riser pipe to the floating structure; and
(f) a second bearing carried inside said tubular sleeve at the level of said second terminator.

4,516,882

METHOD AND APPARATUS FOR CONVERSION OF SEMI-SUBMERSIBLE PLATFORM TO TENSION LEG PLATFORM FOR CONDUCTING OFFSHORE WELL OPERATIONS

John H. Brewer, Irvine, and Hobart A. Cress, Rancho Palos Verdes, both of Calif., assignors to Fluor Subsea Services, Inc., Irvine, Calif.

Filed Jun. 11, 1982, Ser. No. 387,419
Int. Cl.³ E02B *17/00;* **B63B** *35/44*
U.S. Cl. 405—224 **28 Claims**



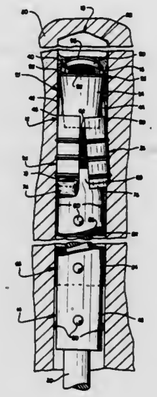
1. In a method of conducting offshore well operations including exploration drilling and production from a single floatable platform having vertical and horizontal buoyant members adapted to be ballasted and deballasted, provided with drilling and production equipment, and including means for anchoring and utilizing said platform in semi-submersible exploratory mode with catenary mooring and means for anchoring and using said platform in tension leg production mode with tension legs, comprising the steps of:
towing said platform to an ocean well site;
mooring said platform with virtual mass trap means in semisubmersible mode over said site with catenary mooring lines and temporary anchor means;
conducting exploration and drilling operations from said platform in semisubmersible mode at said site to establish production capabilities of said well site;
lowering and setting anchor guide means at selected anchor locations at said site and beneath said platform while said platform is in semisubmersible mode;
shifting said platform in semisubmersible mode for drilling at each anchor guide means;
setting permanent anchor members in the sea floor at said anchor guide means;
connecting tension leg means to said anchor members and to said platform;
initially tensioning said tension leg means to a selected tension;
releasing said platform from said catenary mooring mode;
rendering inoperable said mass trap means; and
further tensioning said tension leg means by deballasting certain buoyant members for operation of said platform in tension leg mode.

4,516,883

MINE ROOF BOLT MOUNTING ASSEMBLY

Louie Zeitler, Brecksville, Ohio, assignor to Die-Matic Corporation, Brooklyn Heights, Ohio

Filed Apr. 1, 1983, Ser. No. 481,400
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 **4 Claims**



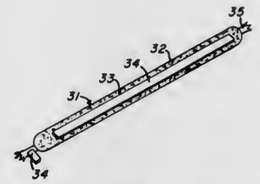
1. An assembly adapted to be received in an elongated opening in a body and to cooperate with the body to hold a bolt in a selected position relative to the body, said assembly comprising expandable anchor means for gripping a side surface of the opening, said expandable anchor means including retainer means for engaging the side surface of the opening and expander means for engaging an end portion of the bolt and forcing at least a portion of said retainer means outwardly away from a central axis of said expandable anchor means against the side surface of the opening to hold said assembly against movement relative to the opening, and tubular means connected with and extending axially from said expandable anchor means for engaging a body of adhesive material disposed between an outer side surface of said tubular means and the side surface of the opening at a location below said expandable anchor means to further hold said assembly against movement relative to the opening, said tubular means includes a rigid metal tube having a generally cylindrical configuration, said retainer means including a pair of rigid metal leaves each of which has a generally semi-cylindrical shape, an axially inner end portion of a first one of said leaves being fixedly connected to an end portion of said rigid metal tube, a generally U-shaped bail strap connected with axially outer end portions of said leaves, said bail strap having a pair of leg portions interconnected by a bight portion, an axially inner end portion of a second one of said leaves being disposed adjacent to the side surface of said rigid metal tube at a location diametrically opposite from the inner end portion of said first one of said leaves, said inner end portion of said second one of said leaves being movable diametrically outwardly away from an outer side surface of said rigid metal tube, said expander means including a nut disposed between said leg portions of said bail strap, said nut having a frustoconical outer side surface which tapers inwardly from a relatively large outer end portion of said nut disposed adjacent to said bight portion of said bail strap to a relatively small inner end portion disposed adjacent to the axially outer end portions of said leaves, said nut having internal thread means for engaging a threaded end portion of said bolt, said nut being movable axially inwardly toward said inner end portions of said leaves under the influence of force applied against said nut by the bolt to force the inner end portion of said second one of said leaves to move diametrically outwardly away from said first one of said leaves against the side surface of the opening.

4,516,884

GROUTING COMPOSITION CARTRIDGE

Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 1, 1983, Ser. No. 528,381
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—261 **10 Claims**



1. A cartridge for grouting an anchor element in an elongated hole of a support structure, comprising (1) an elongated tubular casing fabricated of a frangible material capable of being punctured and shredded by an anchor element thrust into said cartridge and having a diameter between enclosed ends sufficient to enable said cartridge to be introduced into said hole; (2) a substantially homogeneous mixture of cartridge filler ingredients comprising (a) a dry hydraulic cement powder, and (b) water-containing capsules substantially uniformly dispersed in said cement powder that fills the interior of said tubular casing between said enclosed ends; and (3) a flexible reinforcing member fixedly attached to said tubular casing to thereby add lengthwise rigidity to said casing; and wherein said capsules have inert, frangible shells enclosing droplets of water, and wherein said capsules are pressure sensitive and are capable of being progressively ruptured by the force of said anchor element being thrust into said cartridge when said cartridge is positioned in said hole to thereby dispense the water substantially uniformly throughout said cement powder to enable said water and said cement powder to thoroughly interact to form a flowable cement paste in contact with the hole wall and said anchor element, which when solidified forms a grout about said anchor element to secure said anchor element to said support structure.

4,516,885

METHOD AND APPARATUS FOR COMBINING RESIN BONDING AND MECHANICAL ANCHORING OF A BOLT IN A ROCK FORMATION

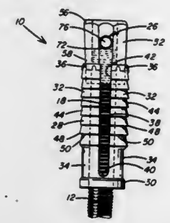
Frank Calandra, Jr., Johnstown, Pa., assignor to Jennmar Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 497,113, Jul. 5, 1983, which is a division of Ser. No. 209,134, Nov. 21, 1980, Pat. No. 4,419,805. This application Apr. 19, 1984, Ser. No. 602,204
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.³ B23P *25/00;* **F16B** *13/06*
U.S. Cl. 405—261 **9 Claims**

1. A method of anchoring a bolt in a bore hole comprising the steps of,
positioning a camming plug having an internally threaded bore and an outer surface into the upper portion of an expansion shell with a portion of said camming plug outer surface in abutting relation with a portion of the inner surface of a plurality of fingers extending upwardly from a lower ring portion of said expansion shell,
positioning said expansion shell on the threaded end portion of said bolt and threadedly engaging said camming plug to the end of said threaded portion of said bolt in a manner that said camming plug is movable longitudinally on said bolt threaded portion,
inserting a bonding material into a bolt hole,

inserting said bolt with said camming plug threadedly engaged thereto into a bore hole,

rotating said bore in a preselected direction while maintaining said camming plug in fixed relation with said expansion shell to thereby mix at least a portion of said bonding material, and



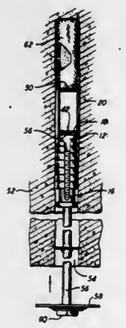
thereafter rotating said bolt in said same preselected direction and moving said camming plug on said bolt to expand the fingers of said expansion shell and apply a tension to said bolt in said bore hole.

4,516,886

COMBINED RESIN-MECHANICAL MINE ROOF SUPPORT ANCHOR

Raymond L. Wright, Syracuse, N.Y., assignor to The Eastern Company, Naugatuck, Conn.

Filed May 14, 1984, Ser. No. 610,042
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—261 **8 Claims**



1. An expansion anchor assembly for use on a threaded rod of predetermined diameter, in conjunction with a breakable cartridge of resin components which harden upon mixing to anchor said rod in a drill hole, in cooperation with said expansion anchor, the latter comprising, in combination:

(a) an expansion shell;

(b) a tapered nut having a threaded opening for engagement with said threaded rod and adapted to be advanced axially into said shell to effect outward, radial expansion thereof;

(c) bail means including a pair of bail legs secured on opposite sides of said shell and connected by a bail medial portion extending over said nut to retain the latter in assembled relation with said shell, said bail medial portion including breakable means positioned for contact by the end of said rod to limit the extent of advance thereof through said nut;

(d) a bail extension including a pair of extension legs connected by an extension medial portion having a sharp projection extending outwardly therefrom in a direction opposite to that of said bail medial portion; and

(e) attachment means fixedly positioning said bail extension with respect to said shell and bail means with said extension medial portion aligned with and spaced from said bail medial portion along the axis of said anchor;

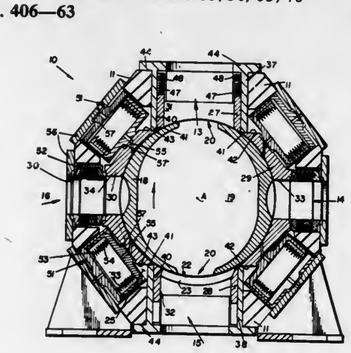
(f) said breakable means being constructed and arranged to cause said anchor to rotate together with said rod until application of a restraint to rotation of said shell, whereupon application of excess torque to said rod will cause said breakable means to fracture and permit further threaded advance of said rod through said nut until the end of said rod abuts said extension medial portion, continued rotation of said rod causing said nut to move axially thereon and expand said shell radially outward.

4,516,887

FEEDER DEFLECTION COMPENSATION

Ole J. Richter, Karlstad, Sweden, and Johan C. F. C. Richter, Oslo, Norway, assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,747
Int. Cl.³ B65G *53/30, 53/46*
U.S. Cl. 406—63 **14 Claims**



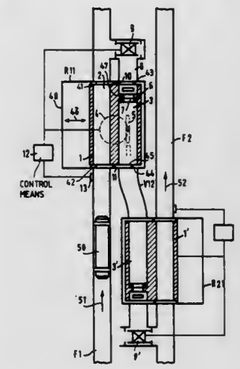
1. A high-pressure transfer device including: a cylindrical pocketed rotor containing a plurality of diametrically through-going pockets, said rotor rotatable about an axis; a housing enclosing said rotor and having an exterior periphery having four ports including a high-pressure inlet opposite a high-pressure outlet, and a low-pressure intlet opposite a low-pressure outlet; means for mounting said rotor for rotation with respect to said housing ports about said given axis of rotation in a given direction of rotation; screen means for screening particulate material above a predetermined size out of the liquid passing through at least one of said ports; at least one high-pressure shoe associated with said high-pressure inlet and at least one high-pressure shoe associated with said high-pressure outlet; at least one low-pressure shoe having an opening aligned with said low-pressure inlet and at least one low-pressure shoe having an opening aligned with said low-pressure outlet; each of said shoes disposed between said rotor and said housing; and retainer means for guiding radial movement of all of said shoes, and preventing rotation thereof with respect to said housing.

4,516,888

PNEUMATIC DISPATCH SYSTEM HAVING A PLURALITY OF FORWARDING TUBE PATHS AND AN ARRANGEMENT TO TRANSFER BETWEEN TWO TUBE PATHS

Hans-Joachim Kardinal, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,895
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3206075
The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.
Int. Cl.³ B65G *51/24*
U.S. Cl. 406—182 **18 Claims**



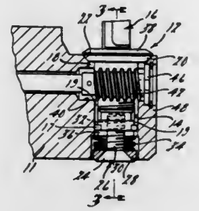
1. In a pneumatic dispatch system having a plurality of forwarding tube paths, each tube path comprising a plurality of tubular sections arranged in a single tube line for transporting pneumatic dispatch cases, and means for pneumatically transporting the dispatch cases in both directions along each tube line in a single-tube communication mode, said system having connecting means for selectively connecting two forwarding tube paths, said connecting means comprising each of the two tube paths having a pneumatic post station with a housing inserted between two sections of the single-tube line and a connecting tube line extending between the housings of the two post stations, each of said post stations having a first tube chamber open at each end and means for moving the first tube chamber in said housing between a first position in alignment with the two tube sections of the forwarding tube path and a second position out of alignment therewith, the improvements comprising each of the first chambers being connected to a second tube chamber extending parallel thereto, said second tube chamber being a reception chamber having one open end and a second end provided with retaining means for blocking passage of a dispatch case being pneumatically transported in the tube path when the second chamber is aligned with the tube sections of the forwarding tube path and retaining the case in the second chamber, said connecting tube line being connected to the housing of each station at a distance from the tube section of the tube path equal to the spacing between the axes of the first and second chambers so that when the first chamber is in the first position, the one open end of the reception chamber is aligned with the connecting tube line for transfer of a case therebetween, each of the second chambers having means for forming a port for passage of air communicating with the reception chamber at a point spaced from the one open end, and each of the housings of the post stations having a feed line, said feed line having one end connected to the forwarding tube path and the other end positioned for communication with the means for forming a port when the second chamber has the one open end aligned with the connecting tube line, said feed line having valve means for controlling the flow therein.

4,516,889

PRECISION ADJUSTABLE CUTTING TOOL

Robert M. Ortlieb, Southfield, Mich., assignor to DeVlieg Machine Company, Royal Oak, Mich.

Filed Sep. 7, 1982, Ser. No. 415,663
Int. Cl.³ B23B *29/02*
U.S. Cl. 408—152 **26 Claims**



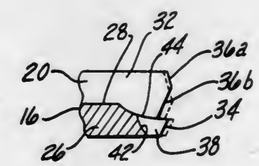
1. In a cutting tool assembly including a tool having an opening provided with a seat, an internally-threaded collar member having a surface engageable with said seat, externally-threaded tool bit adjustment means threadably engaging said collar member, said tool bit adjustment means being axially movable relative to the axis of said opening in response to rotation of said collar member, for selectively adjusting the position of a cutting tool bit relative to said tool, the improvement comprising: retention means engaged with said tool bit adjustment means for resiliently biasing said surface of said collar member against said seat to maintain said collar member in a self-centering relationship relative to said opening; first gear means on said collar; worm gear means in a driving relationship with said first gear means, rotation of said worm gear means causing rotation of said collar member in order to perform fine adjustments to the axial position of said tool bit adjustment means relative to said opening, said worm gear means and said retention means cooperating to maintain said collar member in said self-centering relationship as said fine adjustments are performed; said seat of said opening being conical in shape and said surface on said collar member having a complimentary conical shape, said conical seat and said conical surface tending to maintain said collar member in said self-centering relationship; said tool further having at least one longitudinally-extending aperture extending therethrough; and shaft means rotatably disposed within said aperture, said shaft means being drivingly connected to said worm gear means for rotating said worm gear means in order to perform said fine adjustment of the position of said tool bit adjustment means.

4,516,890

ANNULAR CUTTER

Michael Beharry, Flint, Mich., assignor to Hougen Manufacturing, Inc., Flint, Mich.

Filed Sep. 12, 1983, Ser. No. 531,347
Int. Cl.³ B23B *41/02, 51/00*
U.S. Cl. 408—204 **5 Claims**



1. An annular hole cutter comprising a cutter body having a generally circular cylindrical side wall provided with a plurality of cutting teeth spaced circumferentially around the lower end thereof, a plurality of flutes extending upwardly around the side wall from the lower end thereof, each tooth being connected with the next adjacent tooth by a circumferentially

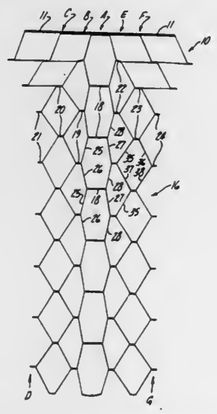
extending web disposed radially adjacent the inner periphery of the side wall and having a thickness of about one-half the thickness of said side wall, said webs being juxtaposed radially with said flutes, each flute having circumferentially spaced leading and trailing side walls and a circumferentially extending inner wall which defines the radially outer face of the web, each tooth having two radially extending cutting edges disposed relative to one another so that each cuts a separate chip when the cutter is rotated and fed into a workpiece, said cutting edges comprising a radially inner cutting edge and a radially outer cutting edge, said radially inner cutting edge being spaced forwardly in the direction of rotation of the cutter from said radially outer cutting edge, the bottom face of each tooth comprising a pair of inner and outer radially oppositely inclined back-off surfaces which intersect in a downwardly extending crest, the lower forward end of said crest intersecting the outer cutting edge, said inner cutting edge extending outwardly from the inner periphery of the cutter for a distance less than the thickness of said web and the radially outer cutting edge extending inwardly from the outer periphery of the cutter and into said web for a distance greater than the depth of said flute, there being a shoulder extending circumferentially between the radially outer end of the inner cutting edge and the radially inner end of the outer cutting edge, the radially outer back-off face of alternate teeth being relieved vertically upward relative to the outer back-off faces of the teeth disposed circumferentially intermediate the alternate teeth and the radially inner back-off faces of said intermediate teeth being relieved vertically upward relative to the inner back-off faces of the alternate teeth.

4,516,891

SUSPENDED TYPE CELLULAR VOID FILLER

Paul A. Wnuk, Stockton, Calif.; Thomas J. Hamilton, Palos Heights, Ill.; Anthony Trassare, Jr., Lodi, Calif., and Michael J. Oliver, Park Forest South, Ill., assignors to Down River International, Inc., Sacramento, Calif.

Filed Jun. 30, 1982, Ser. No. 393,662
Int. Cl.³ B61D *45/00;* **B32B** *3/12*
U.S. Cl. 410—154 **9 Claims**



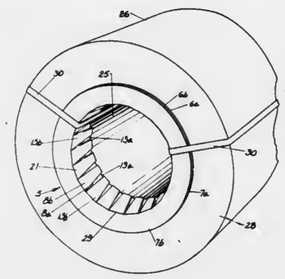
9. An expansible cellular void filler having a plurality of rows of directly hingedly connected cell walls which extend in the direction of expansibility of the void filler as the void filler is expanded, one or more of said rows being shorter than the others.

4,516,892

PROTECTOR FOR THE CORE AND ADJACENT EDGES AND FACE PORTIONS OF A COIL OF MATERIAL

Dominic Curro, Jr., Mason, Ohio, assignor to Loroco Industries, Inc., Cincinnati, Ohio

Filed May 2, 1983, Ser. No. 490,961
Int. Cl.³ B65D *85/66;* **B61D** *45/00*
U.S. Cl. 410—155 **9 Claims**



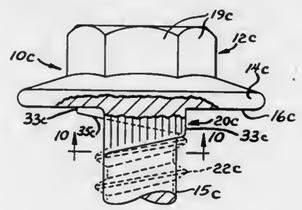
1. A protector for the core and adjacent edges and face portions of a coil of material, comprising first and second substantially identical circular discs each having an outer annular portion, an inner annular portion and a central circular aperture forming a circular inner edge, said outer annular portions of said first and second discs being joined together in superposed relationship, said inner annular portions of said first and second discs having cuts therein extending transversely thereof from said inner circular edges and forming a plurality of tabs capable of being bent at a substantially right angle to said outer annular portions, said cuts of said first disc each lying at the same acute angle to a radial line intersecting the same point as said cut on said circular inner edge of said first disc, said cuts of said second disc each lying at the same acute angle to a radial line intersecting the same point as said cut on said circular inner edge of said second disc, said angle of said cuts of said second disc being substantially equal to said angle of said cuts of said first disc and constituting the reverse thereof, said tabs of said first and second discs forming a continuous band when positioned at a substantially right angle to said outer annular portions, said continuous band of tabs being so sized as to be just nicely received in said core of said coil.

4,516,893

SHEET METAL SCREW

Gerald D. Barth, South Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 316,260, Oct. 29, 1981, , which is a continuation-in-part of Ser. No. 276,228, Jun. 22, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,459
Int. Cl.³ F16B *39/30, 5/02*
U.S. Cl. 411—184 **19 Claims**



1. A rotary fastener for use in attachment of a first panel with a clearance hole to a second panel, said fastener comprising a generally cylindrical shank, an enlarged head having drive-

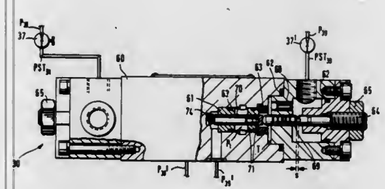
inducing surfaces on one end of said shank, said head having an under surface, said cylindrical shank having at least one helical thread thereon, said thread extending outwardly for a predetermined height that extends from a thread root diameter to a thread crest diameter, a helical ramp beginning substantially at one termination point of said helical thread and forming a continuation thereof, said ramp extending along the shank to said head under surface, said ramp having a generally axially oriented surface which varies in axial length from one end of said ramp to another, said ramp having a generally radially oriented surface of generally increasing radial dimension from one end of said ramp to another and said ramp radially extending surface having a minimum radial extent at a point where said ramp axially oriented surface is at a maximum length, whereby said helical ramp will deflect outwardly some of the material of at least one of said panels thereby greatly increasing the stripping torque of the screw relative to the panel.

4,516,894

LOAD PRESSURE FEEDBACK SYSTEM HAVING AT LEAST ONE CONTROL VALVE FOR CONTROLLING AN APPARATUS

Siegfried Stolpp, Niederfischbach, Fed. Rep. of Germany, assignor to ALB Klein GmbH & Co. KG, Niederfischbach, Fed. Rep. of Germany

PCT No. PCT/DE81/00099, § 371 Date Feb. 22, 1982, § 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00112, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 27, 1981, Ser. No. 355,585
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024402
Int. Cl.³ B25J *3/04;* **F15B** *13/14*
U.S. Cl. 414—5 **10 Claims**



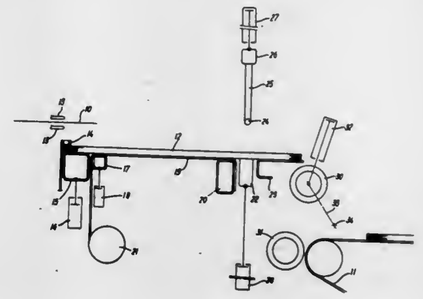
1. In a load pressure feedback system having at least one load pressure control valve for controlling a load arm in response to a control arm based on load pressures respectively in a first line connected to the load arm and a second line connected to the control arm, the improvement wherein said control valve comprises a housing having a first connection for a fluid at a pressure representative of the pressure in the load arm and a second connection for a fluid at a pressure representative of the pressure in the control arm, a throttle aperture in said line connected to the load arm, a screw-in aperture in said housing between the first and second connections, a first piston in said housing subject to the pressure at said first connection for undergoing displacement in response to varying pressures at said first connection, a control sleeve in said housing, and a control piston in said control sleeve forming control edges with said sleeve for balancing the pressures at said connections, said first piston and control piston being coaxially arranged in abutting relation under resilient action.

4,516,895

BAG FORMING MACHINES OF THE TOP STACKING TYPE WITH STACK CLAMP

Arthur Hall, Rochdale, England, assignor to Alpine Plastics Machinery Limited, Runcorn, England

Filed Mar. 31, 1983, Ser. No. 480,864
Claims priority, application United Kingdom, Apr. 5, 1982, 8210065
Int. Cl.³ B65H *31/30*
U.S. Cl. 414—43 **9 Claims**



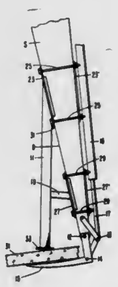
1. In a bag forming machine of the top stacking type having a delivery line for rhythmically top stacking formed bags at a stacking station, the improvement comprising a support at the stacking station for the rear end of the stack, and means at the stacking station for removing a stack of bags, when formed, from the station without interrupting the rhythm of bag delivery to the station, said means comprising a clamp acting on the stack and movable transversely of the stack so as to move the front end of the stack transversely and apply a dragging motion to the rear end of the stack to move the rear end of the stack forwardly sufficiently to move the rear end of said stack off said support to permit said support to receive and support the rear end of the first bag of the next stack to be formed.

4,516,896

APPARATUS FOR REMOVAL OF PAVING MATERIAL

Joseph J. Freebery, 2626 Sherwood Dr., Wilmington, Del. 19808

Filed Sep. 16, 1982, Ser. No. 419,051
Int. Cl.³ E02F *3/96*
U.S. Cl. 414—740 **2 Claims**



1. Apparatus for removing paving material from a paved surface comprising, in combination, an arm member comprised of a rear arm element and a forward arm element; said rear arm element being pivotably secured to a mechanized unit and to said forward arm element whereby said forward arm element is adapted to pivot in the direction of said mechanized unit, a rigid stationary member attached to the inboard surface of said forward arm element and having a lower extremity comprising a flat surface, a horizontally tapered elongated blade pivotably

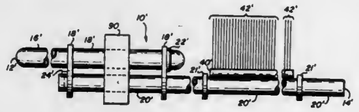
attached to the extremity of the forward arm element, being at least as wide as said forward arm element and having a slight curvature on its upper surface, oriented in the direction of the mechanized unit and adapted to pivot in order to make contact with the flat lower extremity of the stationary member whereby a section of paving can be gripped between the upper surface of the horizontally tapered elongated blade and the lower extremity of the stationary member, and means associated with the mechanized unit for causing the aforesaid members to effect pivoting movements in operational sequence.

4,516,897

CANTILEVER PADDLE FOR USE WITH WAFER BOATS

Wendall L. Snider, and Edward A. Wagner, both of Alamo, Calif., assignors to Berkeley Glasslab, Pleasanton, Calif.

Filed May 23, 1983, Ser. No. 496,835
Int. Cl.³ F27D *5/00*; B27B *9/14*
U.S. Cl. 414—180 **18 Claims**



1. A cantilever paddle for supporting and suspending wafer boats within a wafer fabrication furnace with loaded wafers, and paddle spaced from the interior walls of said furnace and comprising:

a first support means supported by and mounting in a wafer paddle drive device, the support means being fabricated from a single refractory material; and

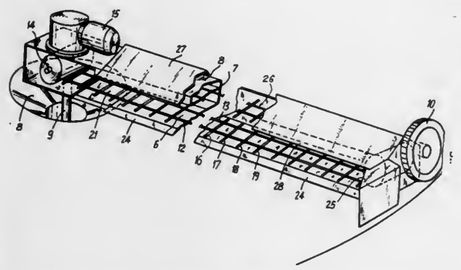
a suspension means for supporting and positioning said wafer boats in suspension within said furnace, the suspension means being positioned below the support means, and including at least one alignment brace, said alignment brace having portions defining at least one aperture through which said suspension means may pass through, and the suspension means being completely located within said furnace when said panel is in its operational position.

4,516,898

DEVICES FOR EXTRACTING SOLID MATERIALS IN BULK IN THE FINELY DIVIDED STATE, FROM THE BOTTOM OF A SILO

Laurence Cantenot, 12, avenue de la Division Leclerc, 92340 Bourg la Reine, France

Filed Mar. 3, 1982, Ser. No. 354,283
Claims priority, application France, Mar. 12, 1981, 81 04981
Int. Cl.³ B65G *65/42*
U.S. Cl. 414—309 **4 Claims**



1. A device, for removing a residual pile of granular or pulverulent matter from a silo, said device comprising:

a means for removing material;

a means for moving said means for removing material over a floor of a silo so as to sweep across said floor as said means for removing material moves, said means for removing material including a conveyor for pushing granular matter towards an evacuation orifice in said floor of said silo;

said means for removing material including an elongated box having a bottom side, a top side, and a vertical side interconnecting said top and bottom sides, said top and bottom sides being substantially parallel to said floor of said silo, said conveyor being enclosed within said elongated box, an upper surface of said bottom side being disposed slightly above said floor of said silo, and an open side of said elongated box which is open so that, when said elongated box is advanced toward a residual pile, material from said residual pile enters said elongated box;

said conveyor being an elongated loop having substantially parallel spaced apart upper and lower elongated sections; said conveyor including at least one flexible elongated member bearing a plurality of spaced apart transverse bars, each of said transverse bars having a height substantially less than a height of said open vertical side of said elongated box; said conveyor being mounted on a plurality of pulleys, at least one of which is a drive pulley, each of said transverse bars having a lower edge; each of the lower edges of said transverse bars being in mating contact with said upper surface of bottom side of said vertical box along substantially all of said upper surface of said bottom side exposed to said residual pile by said open vertical side of said elongated box; said transverse bars in said lower elongated section being adapted to scrape an inside surface of said horizontal bottom side of said elongated box, so as to move said material from said residual pile towards a trap located in said horizontal bottom side of said elongated box, said trap being located just above said evacuation orifice in said silo;

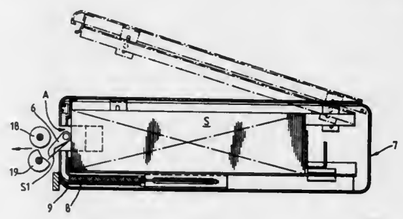
said top side of said elongated box forming a portion of a canopy for limiting the quantity of said material from said residual pile which enters said box and which canopy prevents weight of any of said material atop said canopy from interfering with movement of material by said transverse bars beneath said canopy; whereby said material which has entered said elongated box is moved in generally plug flow, since the material higher than the height of said transverse bars rests upon material trapped between said transverse bars and, being protected from the weight of matter overlying said top side of said elongated box, said material higher than the height of said transverse bars is carried along with said material trapped between said transverse bars.

4,516,899

SHEET FEEDING APPARATUS

John Wood, Southsea; Christopher M. Tinson, Rustington, and Stuart M. Jenkins, Bognor Regis, all of England, assignors to De La Rue Systems Limited, London, England

Filed Oct. 5, 1982, Ser. No. 432,864
Claims priority, application United Kingdom, Oct. 5, 1981, 8130014
Int. Cl.³ B65H *3/46*
U.S. Cl. 414—330 **8 Claims**



8. Sheet feeding apparatus comprising a holder for a stack of sheets having a sheet outlet, and single-sheet removing means including a suction feeder acting on an end sheet of the stack for removing sheets singly from that end through the sheet outlet and further comprising:

means sensing the failure of the single-sheet removing means to remove a sheet from the end of the stack and providing a failure signal; and

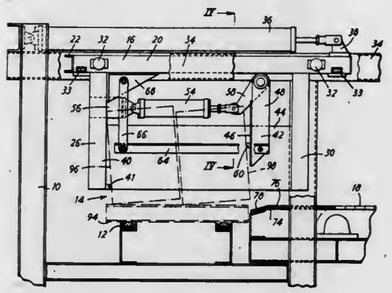
multiple-sheet feeding means including a member movable independently of the operation of the single-sheet feeding means in response to the failure signal to urge a batch consisting of a plurality of sheets from the same end of the stack through the sheet outlet.

4,516,900

DE-PALLETIZER

Kenneth F. C. Avey, Epping, England, assignor to The British Matthews Limited, Epping, Great Britain

Filed Sep. 29, 1982, Ser. No. 426,766
Claims priority, application United Kingdom, Aug. 12, 1982, 8223242
Int. Cl.³ B65G *49/00*
U.S. Cl. 414—417 **7 Claims**



1. In a de-palletizer for removing articles such as kegs or drums from a pallet where the de-palletizer is of the type having

(a) a pallet conveyor for moving loaded pallets to an unloading station,

(b) pusher means for pushing articles from a pallet at the unloading station onto a discharge table, and

(c) means for discharging articles from the discharge table, the improvement wherein the pusher means includes tilting means for tilting articles on edge in the direction opposite to the direction in which the articles are pushed from the pallet onto the discharge table, the tilting means traveling with the articles as the articles are pushed along the pallet.

4,516,901

MOVABLE LIFTING AND DEPOSITING DEVICE FOR PORTABLE CONTAINERS, E.G., CABINS, CONTAINERS, SHELTERS OR THE LIKE

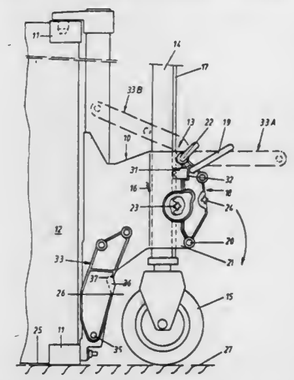
Reinhold Riedl, Gensingen, Fed. Rep. of Germany, assignor to Haacon hebetechnik GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1983, Ser. No. 513,522
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 3226882
Int. Cl.³ B60P *1/12*
U.S. Cl. 414—458 **10 Claims**

1. A movable lifting and depositing device for portable containers, e.g., cabins, containers, shelters or the like, with rack and pinion jacks connected by means of brackets to the corners of the containers, the jacks having racks for the containers which are provided on movable columns having track wheels, the columns being raised for depositing of the container, e.g., on the ground, or for lifting of the wheels by the rack and pinion jacks to the level of the container bottom, characterized in that:

(a) each rack and pinion jack (**13**) has a swivel mechanism (**18**) with two vertically spaced work positions;

(b) the swivel mechanism (**18**) in its bottom work position, being folded down from a main column guide (**16**) onto the associated bracket (**10**), for connection with an auxiliary column guide (**33**) arranged beneath the main column



guide (**16**), which can be removed when the swivel mechanism (**18**) of the associated column support (**14**) is in the top work position; and

(c) stop means (**29**) between the main column guide (**16**) and the associated rack (**17**) and column (**14**) to enable movement of the swivel mechanism (**18**) into one of said two work positions when the lifting and depositing device is loaded.

4,516,902

BUMPER APPARATUS FOR LOW BED TRAILER

Donald F. Matson, Mitchell, S. Dak., assignor to Western AG-Sales Inc., Mitchell, S. Dak.

Filed Aug. 23, 1982, Ser. No. 410,488
Int. Cl.³ B60P *1/28*
U.S. Cl. 414—480 **12 Claims**



1. A low-bed trailer adapted to be connected to a powered vehicle comprising,

a bed structure for supporting a load and including a wheel assembly for transport of said bed structure,

connection means attaching a central portion of said bed structure to said wheel assembly, said bed structure extending forwardly of said wheel assembly to a tractor connection and extending rearwardly of said wheel assembly, said connection means permitting pivoting of the bed structure between a substantially horizontal transport position and a tilted loading position,

a bumper/ramp unit secured to the bed structure and movable between a first position defining a depending position extending substantially downwardly of said bed structure and a second position defining an extension of said bed structure, and

a separate mechanical linkage means connected to said wheel assembly and to said bed structure and to said bumper/ramp unit and operable by said pivoting of said bed structure to move said bumper/ramp unit between

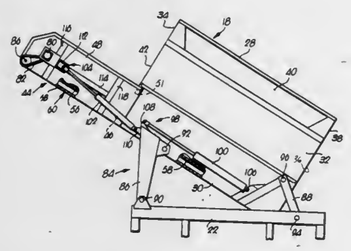
said first and second positions, said separate mechanical linkage being directly moved by pivoting of said bed structure relative to said wheel assembly to move said bumper/ramp unit between said first and second positions in response to positioning said bed structure between said horizontal transport position and said tilted loading position.

4,516,903

ELEVATOR POSITION-CONTROL MECHANISM FOR ROTATABLE FORAGE CONTAINER

Amos G. Hill, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Feb. 16, 1983, Ser. No. 466,974
Int. Cl.³ A01D *90/00*
U.S. Cl. 414—491 **9 Claims**



1. A vehicle for use in transporting harvested crops comprising:

a mobile frame;

a crop container having a top, a bottom, and sides extending between said top and bottom,

one of said sides having a crop entry opening therein for filling said container with crop material;

means mounting said container on said frame for movement into and out of a tilted position in which said bottom is sloped generally upwardly and outwardly,

a second one of said sides having an unloading spout shiftable from a normally raised position in which it serves as a crop confining and containing portion of the container to a lowered position generally aligned with and as an extension of said bottom in which it is disposed for unloading crop from the container;

power means operably associated with said container for effecting said movement thereof; and

mechanism responsive to said movement of the container for effecting said shifting of the spout into and out of its lowered position as the container is moved into and out of its tilted position,

said mechanism including means for selective shifting of said spout independently of the position of said container.

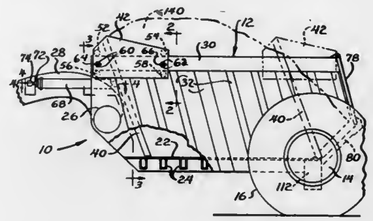
4,516,904

EJECTOR WAGON

Lovel R. Simmons, P.O. Box 199, Flora, Miss. 39071

Continuation of Ser. No. 318,620, Nov. 5, 1981, abandoned. This application May 21, 1984, Ser. No. 611,935
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—517 **7 Claims**

1. An ejector wagon comprising a body having sidewalls and a floor, said sidewalls sloping upwardly and outwardly from said floor to upper edges and having substantially flat inner surfaces, said walls having horizontal rails adjacent said upper edges, a rear end having an openable closure, wheels rotatably mounted from said body for moving wagon over the ground or the like, a gooseneck extending forwardly from said wagon for attachment to a tractor, an ejector at the front of said body mounted transversely thereof for movement of said ejector from the front of said body toward the rear thereof, said ejector including a substantially upright plate inclined at a shallow angle to the vertical with the lower portion thereof being disposed rearwardly of the upper portion thereof, said plate having tapered side edges and conforming to the interior shape of said wagon body, hydraulic cylinder means mounted on said gooseneck and acting on said ejector for movement thereof, said gooseneck being otherwise free of hydraulic



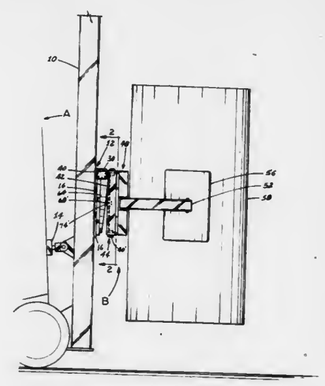
cylinder means, and a plurality of carriages connected to said ejector and riding on said rails for movably mounting said ejector, said hydraulic cylinder means being directly connected to and acting on said ejector plate above the horizontal center line thereof but substantially at the center of area of said plate.

4,516,905

ROLL CLAMP

J. N. Cavin, Houston, Tex., and Kenneth A. Frees, St. Peters, Mo., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Nov. 17, 1982, Ser. No. 442,354
Int. Cl.³ B66F *9/18*
U.S. Cl. 414—620 **9 Claims**



1. A roll clamp for being carried by the lift mast of a lift truck or like vehicle for picking up and transporting rolls or like cylindrical objects, said clamp including a pair of clamp arms swingably disposed relative to one another for closing and opening by movement toward and away from each other, means for closing and opening of said clamp arms, clamp pads at the distal ends of said arms for contacting the surfaces of such roll or like cylindrical object, and a base for being mounted upon said lift mast for the raising or lowering of said arms to a desired vertical position by said lift mast, a rotator providing rotation of said arms relative to said mast about an axis of clamp rotation extending forwardly from said mast, and characterized by an attachment structure carried by said rotator for being rotated by said rotator about said axis of clamp rotation, a frame pivotally secured to said attachment structure for permitting angular movement of said frame relative to said base about an axis of clamp shifting, and means interengaging

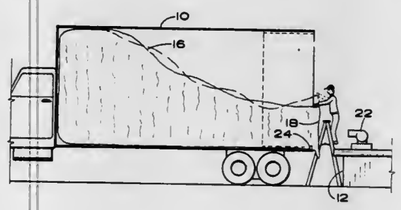
said base and frame for causing said frame to rotate about said axis of clamp shifting as said attachment structure is rotated by said rotator about said axis of clamp rotation, whereby said clamp arms are automatically shifted during rotation of said clamp, said means interengaging said base and frame comprising a structural projection carried by said base and defining a surface inclined relative to said base, and follower means engaged with said inclined surface for causing said frame to be oriented relative to said surface as said attachment structure is rotated about said axis of clamp rotation.

4,516,906

FREE STANDING, WATERPROOF LINING FOR TRUCK INDUSTRY

Reuben Krein, 812 N. 2nd, Fort Smith, Ark. 72903

Filed Jun. 9, 1983, Ser. No. 502,696
Int. Cl.³ B65D *88/12*
U.S. Cl. 414—786 **8 Claims**



5. A method of installing a continuous film liner within an enclosed cargo container such as to serve as a moisture barrier protecting the cargo to be shipped within said container comprising the steps of:

(a) providing an enclosed cargo container having doors at one end wherein said container is intended to be used to ship moisture sensitive cargo;

(b) providing a deflated moisture proof film bag of dimensions slightly in excess of the interior dimensions of said container and having an opening in said film bag that corresponds to the doorway of said container;

(c) placing said deflated bag within said empty container such that the opening of said bag is located at the doorway of said container prior to placing cargo within said container;

(d) temporarily attaching the lower edge of said bag opening to the lower edge of said doorway such that said bag is directed into the interior of said container;

(e) physically restraining the upper edge of said bag opening from making contact with the upper portion of said container and container doorway;

(f) directing and blowing a stream of air into said bag opening while physically restraining the upper edge of said bag opening according to step (e) such that said air is directed towards the back end of said container;

(g) maintaining sufficient tension on said upper edge of said bag opening while said blowing of air into said bag continues such as to direct all of said air to the far end of said container thus causing the inflating bag to make continuous contact with the interior of said container from the frontmost portion of said container forward to the container doorway, thus displacing the air between the inflating bag and the interior of the container out the container doorway; and

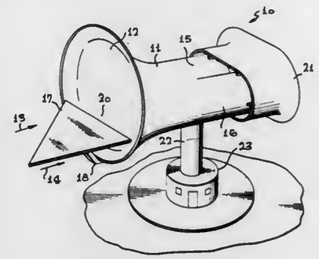
(h) temporarily attaching the bag opening of the inflated bag to the perimeter of the container doorway such as to allow cargo to be loaded within the container and inflated liner.

4,516,907

WIND ENERGY CONVERTER UTILIZING VORTEX AUGMENTATION

Samuel S. Edwards, 17401 Marilia St., Northridge, Calif. 91325

Filed Mar. 14, 1983, Ser. No. 475,219
Int. Cl.³ F03D *1/02*
U.S. Cl. 415—2 A **6 Claims**



1. In a wind energy conversion apparatus for converting the linear momentum of approaching wind energy into regions of high angular momentum comprising the combination of:

an elongated duct having an inlet bellmouth chamber at one end in fluid communication with a bifurcated mid-section leading into a pair of circular duct portions constituting an exit or exhaust for said duct;

propellor means movably carried in each of said duct exit portions to extract energy from the angular momentum of airflow passing through said duct from said inlet;

a swept airfoil wing having a variable angle of attack operably mounted on said duct at said inlet bellmouth chamber;

a diffuser augmenter secured to said duct encircling said exit or exhaust end of said duct in fixed spaced apart relationship thereto;

said elongated duct is provided with an upper, inner surface of marked reflex curvature in side elevational view wherein general airflow is conducted along a substantially sinusoidal path between said inlet and said exit whereby said circular duct portions characterized as enclosing a pair of concentrated, counter-rotating regions of high angular airflow momentum derived from the linear airflow momentum;

said elongated duct bifurcated mid-section includes curved inner wall surfaces constituting an angular airflow momentum guide, a vorticity augmenter and an angular modulator; and

said diffuser augmenter includes a flared outlet in fixed space relationship to said elongated duct outlet effective to lower the pressure across the aft facing area of said duct exit and which augments the airflow gradients through said upper, inner surface of marked reflex curvature.

4,516,908

POWER STAGE OF A GAS TURBINE

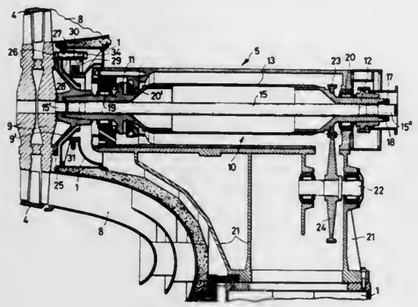
Constantino Vinciguerra, Florence, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

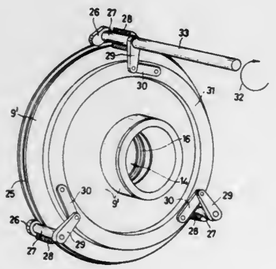
Filed Apr. 8, 1982, Ser. No. 366,482
Claims priority, application Italy, Apr. 17, 1981, 21243 A/81
Int. Cl.³ F01D *5/30*
U.S. Cl. 415—122 R **6 Claims**

1. A gas turbine having a body (**1**) and a power stage (**5**) therein including a stator (**4**) and a rotor (**9**) with a plurality of blade-carrier disks, comprising:

a hollow power shaft (**10**) of the power stage (**5**) which support the disks in a cantilever fashion, and wherein said shaft (**10**) includes a pair of frustoconical hollow forged ends (**11, 12**) made of case-hardened and milled steel on their surfaces and connected together by a hollow central tube (**13**), wherein one frustoconical end (**11**) is inserted into a corresponding axial space (**14**) of the rotor (**9**) and

wherein the other frustoconical end (12) is supported by the body (10), a stud (15) extending through said hollow tube (13) and from said frustoconical ends (11, 12) having threaded ends (15', 15''), wherein one end (15') is releasably threaded into a correspondingly threaded portion (16) about the axial space (14) of the rotor (9) and wherein the other end (15'') is threaded into a nut (17) which cooperates with the other frustoconical end (15') to tighten and place said stud (15) under tension,





bearing means (19, 20, 20') within the body 1 which support said hollow shaft (10) at said case-hardened and milled frustoconical ends (11, 12),

gear means (22, 23, 24) which are connected to said shaft (10) for taking the drive therefrom, and

cam means (26) on the body 1 which engage and support the rotor (9) in its correct central position as said stud (15) is released from the threaded portion (16) in the axial hollow space (14).

4,516,909

HELICOPTER ROTOR

Vittorio Caramaschi, Gallarate, and Pier Luigi Castelli, Busto Arsizio, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed Mar. 2, 1983, Ser. No. 471,344

Claims priority, application Italy, Mar. 11, 1982, 67303 A/82

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—134 A **4 Claims**

1. A helicopter rotor comprising:

a central hub rotatable about its axis;

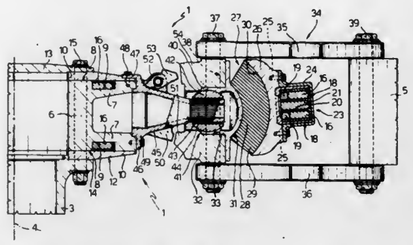
a plurality of blades connected to and extending in a substantially radial direction outward form the hub, each blade having associated therewith:

an attachment element (34) coupled to the blade and extending through an axial aperture (22) of the hub;

a first elastomeric coupling adapted to provide cooperation between the attachment element (34) and an inner surface of a peripheral bridge element (23) of the hub;

the peripheral bridge element (23) which closes the radially outward part of the aperture (22);

the aperture (22) located radially outward of a central support structure (12) of the hub wherein a radial projection (45) extends into the aperture and towards the bridge element (23), and the projection (45) further extends through a radial hole (33) formed in the attachment ele-



ment (34), the projection (45) being connected to the hole (33) in an axially slideable manner, a second elastomeric coupling (41) being disposed between the projection (45) and the radial hole (33).

4,516,910

RETRACTABLE DAMPING DEVICE FOR BLADES OF A TURBOJET

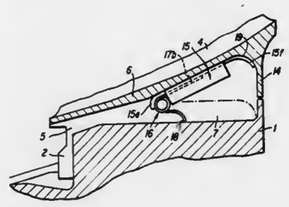
Jean G. Bouiller, Brunoy; Jean-Claude L. Delonge, Corbeil Essonnes; Marcel L. A. Rigo, Paray Vieille Poste, and Didier G. Zietek, Seynod, all of France, assignors to S.N.E.C.M.A., Paris, France

Filed May 18, 1983, Ser. No. 495,830

Claims priority, application France, May 18, 1982, 82 08635

Int. Cl.³ F01D *5/10, 5/22*

U.S. Cl. 416—190 **4 Claims**



1. A turbojet rotor assembly comprising:

a rotor disk having a rotational axis;

a plurality of blades mounted in a rim of said disk, each of said blades having a platform, platforms of adjacent ones of said blades defining a dihedral, and a space defined between each said dihedral and said desk rim;

a damping element in each said space, each said damping element having an upper part forming a projecting dihedral whose shape corresponds to said dihedral defined by said platforms, each said damping element further comprising means for pivoting said upper part about an axis extending transverse to said rim axis and in a plane of said disk; and

an elastic element for elastically biasing said damping element to pivot said upper part such that said projecting dihedral contacts and presses against said dihedral defined by said platforms.

4,516,911

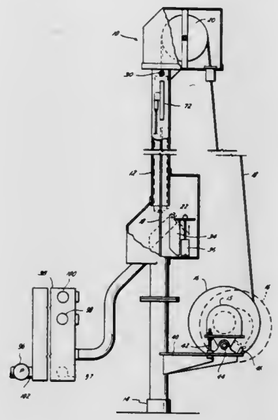
SOLID STATE CONTROL SYSTEM FOR OIL WELL BAILER PUMP

Karl A. Senghaas, and Peter Senghaas, both of San Antonio, Tex., assignors to Southwest Bailer Pump Company, San Antonio, Tex.

Filed Dec. 29, 1983, Ser. No. 566,831

Int. Cl.³ F04B *41/06, 49/00;* **E21B** *27/00*

U.S. Cl. 417—2 **11 Claims**



1. An electric control system for an oil well bailer pump having a reversible electric motor for actuating a cable for lowering a bailer into an oil well, filling the bailer, raising the bailer, and dumping the oil into a tank and recycling comprising,

a winch up circuit for actuating the motor to raise the bailer,

an up overshoot circuit for opening the bailer for emptying oil therefrom, said overshoot circuit actuated by the end of the winch up circuit,

an up hold circuit for directing the draining oil into the tank and actuated by the end of the overshoot circuit,

a winch down circuit for lowering the bailer to the surface of the oil in the well, said winch down circuit actuated in response to the up hold circuit,

a down overshoot circuit for lowering the bailer a predetermined distance below the oil level in the well for filling said bail with oil, said down overshoot circuit actuated in response to the end of the winch down circuit,

a down hold circuit for allowing time for the bailer to fill, said down hold circuit actuated by the end of the down overshoot circuit, said down hold circuit actuating the winch up circuit, and

individual adjustable timers connected to each of the winch up, up overshoot, up hold, winch down, down overshoot and down hold circuits.

4,516,912

COMPRESSOR ARRANGEMENT FOR A HEAT PUMP INSTALLATION

Wilhelm Leitgeb, and Siegfried Schönwald, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,428

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215814

Int. Cl.³ F04B *49/06*

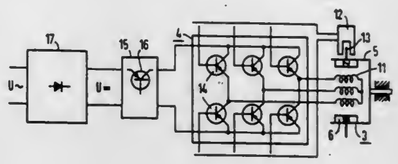
U.S. Cl. 417—45 **1 Claim**

1. In a compressor arrangement for a heat pump installation in which an electric motor is provided as the drive means for the compressor, the improvement comprising:

said electric motor comprising a permanent magnet-excited d-c motor having a stator winding and a rotor;

electronic commutating means for controlling said d-c motor so as to provide said stator winding with electrical current of the proper polarity at selected times in dependence on the position of said rotor;

d-c voltage control means coupled to said commutating means for controlling the starting current of said d-c



motor so as to maintain said starting current within permissible limits, said d-c voltage control means including means for controlling the speed of said d-c motor; and

rectifier means coupling said d-c voltage control means to an a-c electric network for powering said motor;

said compressor comprising a radial piston compressor.

4,516,913

MULTISTAGE DRUM COMPRESSOR

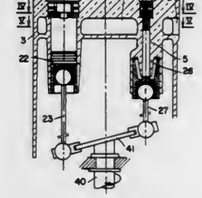
Marius G. Girodin, Paris, France, assignor to Techniques Girodin, Paris, France

Continuation-in-part of Ser. No. 962,608, Nov. 21, 1978, abandoned. This application Aug. 4, 1981, Ser. No. 289,892

Claims priority, application France, Nov. 30, 1977, 77 36022

Int. Cl.³ F04B *39/06, 3/00, 1/14*

U.S. Cl. 417—243 **2 Claims**



1. A multistage drum compressor, comprising:

a drum having a longitudinal axis;

a plurality of piston and cylinder stages of different volume defined in said drum at angularly spaced locations in a first direction about said longitudinal axis, said stages defining an angular positional sequence about said longitudinal axis in which a first stage in the sequence has the largest volume of the stages, the last stage in the sequence has the smallest volume of the stages, and each stage in the sequence has a smaller volume than the preceding stage in the sequence;

a first plurality of flow passage means defined in said drum for conducting gas to be compressed to each of said stages sequentially in said angular positional sequence;

actuator means for sequentially actuating the pistons in said stages to compress gas therein in an order which is opposite to said angular positional sequence; and

a second plurality of flow passage means defined in said drum for conducting a coolant fluid in flow-isolated heat exchange relation with said first plurality of flow passage means;

wherein each of said first plurality of flow passage means each includes:

an outlet duct defined in said drum and extending from a

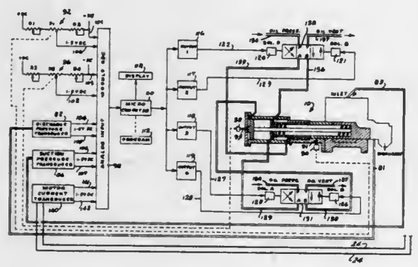
respective one of said stages in a direction generally perpendicular to said longitudinal axis;
a first longitudinal passage means defined in said drum extending parallel to said longitudinal axis and connected to said outlet duct to receive pressurized gas therefrom;
an intermediate duct defined in said drum, connected to said first longitudinal passage means to receive pressurized gas therefrom, and extending generally perpendicular to said longitudinal axis;
a second longitudinal passage means defined in said drum extending parallel to said longitudinal axis transversely spaced from said first longitudinal passage means, and connected to intermediate duct to receive pressurized gas therefrom; and
an inlet duct for the next stage in said sequence which follows said respective one of said stages, said inlet duct being defined in said drum and extending between said second longitudinal passage means and said next stage generally perpendicular to said longitudinal axis;
wherein said first and second longitudinal passages means conduct pressurized gas in opposite longitudinal directions within said drum.

4,516,914

MICRO-PROCESSOR CONTROL OF MOVEABLE SLIDE STOP AND A MOVEABLE SLIDE VALVE IN A HELICAL SCREW ROTARY COMPRESSOR

David A. Murphy, Chambersburg, Pa., and Peter C. Spellar, Hagerstown, Md., assignors to Frick Company, Waynesboro, Pa.

Continuation of Ser. No. 416,768, Sep. 10, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,038
Int. Cl.³ F01C *1/16;* **F04B** *49/06*
U.S. Cl. 417—282 **10 Claims**



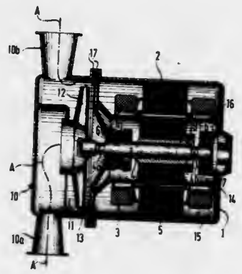
1. In a screw compressor having meshing helical rotors on parallel axes and mounted in a housing having intersecting cylindrical bores, a high pressure end wall at one end of said housing and a low pressure end wall at the other end thereof, the low pressure end wall having an inlet opening for the inlet of the compressor and the high pressure end wall having a discharge opening for the outlet of the compressor, an axially extending recess in the housing in open communication with said bores, a slide valve member mounted for axial movement in the recess, said slide valve member having an inner face in sealing relationship with said rotors, said slide valve member having a discharge face at one end thereof which is adjacent to the high pressure end wall and having a rear face at its other end, and a slide stop member mounted for axial movement in said recess, said slide stop member having an inner face in sealing relationship with said rotors, said slide stop member having a front face, the slide stop front face being adapted to engage the slide valve member rear face to form a continuous composite member which is selectively operative to close the axially extending recess to the inlet opening, said slide member and slide stop being movable apart to provide an opening therebetween of variable selected size and axial position in communication with the inlet opening, the improvement comprising first means sensing the pressure at the discharge opening, second means sensing the pressure at the inlet opening, third means sensing the position of said slide stop member, fourth means sensing the position of said slide valve member, and means responsive to said first, second, third and fourth sensing means for controlling the movement of said stop member and said slide valve member.

4,516,915

PUMPING PLANT

N. Due Jensen, and K. Frank Nielsen, both of Bjerringbro, Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Mar. 10, 1983, Ser. No. 473,943
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210761
Int. Cl.³ F04B *17/00, 35/04;* **H02K** *5/132*
U.S. Cl. 417—365 **1 Claim**



1. In a pumping plant for installations carrying water, comprising a split-tube motor and for driving a centrifugal pump and having an impeller which is located on the extremity of a shaft present in the pumping space, said shaft being borne by two radial anti-friction bearings located at either side of a stack of laminations of said rotor and said shaft consisting of ceramic material at least in the area of said anti-friction bearings and being longitudinally movable with respect to said ceramic bearing rings of the radial anti-friction bearings under forces acting axially on the impeller, the maximum length x of this longitudinal displacement being delimited by two axial anti-friction bearings, the invention which consists in that an annular groove is situated in each case right beside said two bearing areas of said two radial anti-friction bearings in said shaft, that is to say, in each case adjacent the extremity of said bearing areas directed towards the impeller, and that said length x is smaller than the width b of said radial anti-friction bearings and also smaller than the width l of said annular grooves, wherein the following relationship is obtained:

$$0.5 \leqq d/D \leqq 0.9$$

$$0.5 \leqq x/l \leqq 0.9$$

$$0.1 \leqq x/b \leqq 0.8$$

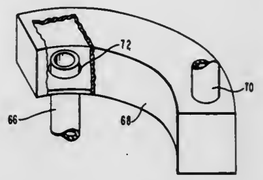
wherein,
d=diameter of the annular grooves, as measured along the bottom of the grooves,
D=diameter of the shaft in the area supporting the radial bearing,
l=width of the annular grooves,
b=width of the bearing surface of the radial anti-friction bearings.

4,516,916

OIL COOLED, HERMETIC REFRIGERANT COMPRESSOR

William A. English, and Robert R. Young, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 9, 1982, Ser. No. 447,927
Int. Cl.³ F04B *39/06;* **F25B** *43/02*
U.S. Cl. 417—368 **3 Claims**



1. An oil cooled, hermetic refrigerant compressor of the vertical crankshaft type, comprising:
a hermetic shell with an oil sump in the bottom thereof;
a motor-compressor assembly therein including an upper electric motor having an inner rotor and an outer stator having end turns, and a lower compressor crankcase having its lower end immersed in said pump;
means providing a confined space at the top of said motor;
means for pumping oil from said sump to oil cooling means external of said shell and returning the cooled oil to said confined space for discharge against the top of said rotor;
means for channeling at least the major portion of said oil delivered to said confined space along the exterior of said stator;
passage means in said rotor for flowing oil delivered to said confined space down through said rotor to cool said rotor;
an annular space at the bottom of said motor to receive said remainder of oil, said annular space having outlet means at its periphery to flow oil down along the exterior of said crankcase;
means for delivering suction gas with any oil entrained therein into said shell;
means for separating at least a part of said entrained oil from said suction gas and conveying said suction gas in a confined path to a suction plenum;
said confined space means comprises a cap encompassing the top of said motor; and
said oil channeling means comprises a multiplicity of openings spaced around the lower periphery of said cap.

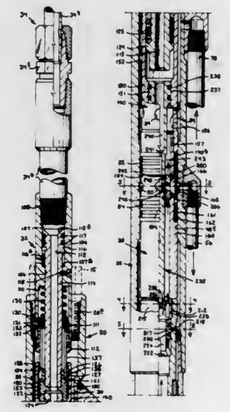
4,516,917

WELL PUMPING APPARATUS AND METHOD

Carlos R. Canalizo, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 28, 1983, Ser. No. 479,458
Int. Cl.³ F04B *47/08;* **E21B** *17/046*
U.S. Cl. 417—390 **14 Claims**

1. A downhole well pump, comprising:
a. downhole pump means installable in a well flow conductor for pumping production fluids to the surface, said pump means being operable by pressurized power fluid conducted thereto from the surface through a power fluid conduit connectable to said pump means, said pump means having a fishing neck at its upper end providing a downwardly facing shoulder; and
b. connecting means connectable between said power fluid conduit and said pump means, said connecting means including:
i. a latch housing having a bore therethrough, said latch housing being connectable to a power fluid conduit and having a lateral breather port through its wall;
ii. a latch mandrel having a bore therethrough, said latch mandrel having its upper portion slidably mounted in said bore of said latch housing and having expander means thereon;
iii. frangible means releasably holding said latch mandrel in position in said latch housing;
iv. collect means slidably mounted about said latch mandrel and having collet fingers thereon each having an upwardly facing shoulder engageable with said downwardly facing shoulder of said pump means, said collet means being slidable longitudinally on said latch mandrel between engaged and disengaged positions;
v. means biasing said collet means longitudinally of said latch mandrel toward engaged position; and



vi. means sealing between said latch mandrel and said latch housing above said lateral breather port and between said latch mandrel and said housing of said well pump, said connecting means being releasable from said pump means remotely by causing said latch mandrel to shear said frangible means and move longitudinally of said latch housing and said collet means to move said holding means of said latch mandrel to a position to release said collet fingers from engagement with said downwardly facing shoulder of said pump means, whereby said power fluid conduit is removable from said well flow conductor independent of said downhole pump means.

4,516,918

PUMP ASSEMBLY

Gilbert H. Drutchas, Birmingham, and Phillip B. Spencer, Troy, both of Mich., assignors to TRW Inc., Cleveland, Ohio

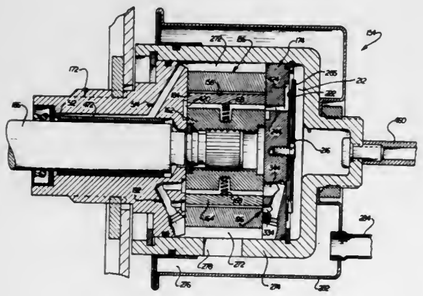
Filed May 25, 1982, Ser. No. 381,702
Int. Cl.³ F04C *2/00, 15/02*
U.S. Cl. 418—15 **13 Claims**

1. A rotary pump assembly comprising
cam means for defining fluid inlet and outlet arcs disposed in a circular array,
means cooperating with said cam means for defining a plurality of pumping chambers for holding liquid or liquid and air, said plurality of pumping chambers being sequentially movable along a circular path which extends along the inlet and outlet arcs, said means for defining a plurality of pumping chambers includes a rotor rotatable about its central axis and circumscribed by said cam means, a plurality of pumping elements mounted on and rotatable with said rotor and extending radially outwardly into engagement with said means, and first and second end members disposed adjacent to opposite axial ends of said rotor and cooperating with said cam means, pumping elements and rotor to at least partially define said pumping chambers,
inlet port means connected in fluid communication with said

inlet arc for directing liquid to each of said pumping chambers as it moves along said inlet arc,

an array of outlet ports extending along and connected in fluid communication with the outlet arc for conducting fluid flow from each of said pumping chambers as it moves along the outlet arc, said outlet ports being disposed in said first end member, and

flow control means for maintaining the rate of flow of liquid from said pump assembly substantially constant at a predetermined flow rate at pump operating speeds above a predetermined speed by reducing the volume of liquid discharged from each of said pumping chambers as it moves along the outlet arc as pump operating speed increases above the predetermined speed, said flow control means including (a) orifice means for limiting the rate of flow of liquid into said pump assembly to the predetermined flow rate as the operating speed of said pump assembly increases above the predetermined speed and (b) valve means for reducing the number of outlet ports through which fluid flow is discharged from each of said pumping chambers as pump operating speed increases above the predetermined operating speed by blocking fluid flow from each of said pumping chambers during pumping chamber movement along the outlet arc through an arcuate distance which increases as the operating speed of said pump assembly increases, said valve means including a plurality of elongated spring fingers each of which is mounted on said first end member and has a fixed end portion and a free end portion movable from a closed condition blocking fluid flow through one of the outlet ports to an open condition under the influence of fluid pressure in one of said pumping chambers,



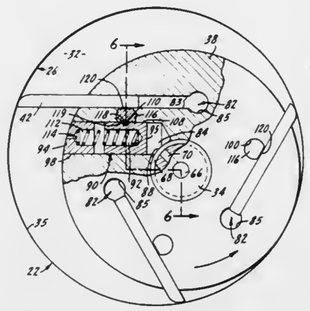
said rotor having an outer circumferential surface which is spaced from an initial end portion of said outlet arc by a first radial distance and which is spaced from a final end portion of said outlet arc by a second radial distance which is smaller than said first distance, said pumping elements being movable radially inwardly toward the central axis of said rotor under the influence of forces applied against said pumping elements by said cam means as the pumping chambers move along the outlet arc, said outlet ports including a plurality of recesses disposed in one of said end members and having radial extents which decrease along the outlet arc from a recess which is disposed adjacent to the initial end portion of the outlet arc and has a relatively large radial extent to a recess which is disposed adjacent to the final end of the outlet arc and has a relatively small radial extent to provide a generally constant spatial relationship between radially outer edge portions of the recess and the pumping elements as the pumping elements move along the outlet arc and move inwardly toward the central axis of said rotor.

4,516,919

CAPACITY CONTROL OF ROTARY VANE APPARATUS

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,834
Int. Cl.³ F04C *18/00, 29/10*
U.S. Cl. 418—23 **12 Claims**



1. A capacity control arrangement for a rotary vane fluid displacement apparatus which apparatus includes a housing having a reference axis, at least one endplate affixed to said housing to define therewith a compression chamber having an internal wall, a source of hydraulic control fluid at a pressure, a shaft extending through said housing and having an axis parallel to the reference axis, said shaft defining an outer wall and a blind-hole bore communicating with said source of fluid at a pressure, said shaft further defining a crossdrilled passage communicating between said blind-hole bore and said outer wall, a rotor mounted on said shaft in said compression chamber, said rotor defining a front face, a rear face and a plurality of longitudinal guide slits, each slit having side walls and a root in proximity to said shaft, a plurality of slidable vanes respectively disposed in said guide slits, each vane being operable between an extended working position and a retracted non-working position, an inlet port and a discharge valve connected to provide ingress to and egress from said compression chamber for a compressible fluid, a control means, and means for selectively communicating a hydraulic control fluid through said blind-hole bore in response to said control means,

a retaining means positioned in said rotor for each of said vanes to normally engage and maintain said vanes in said retracted non-working position;

wherein said fluid displacement apparatus includes said shaft defining a fluid communication passage open to fluid communication from said source of fluid at a pressure through said cross-drilled passage and said rotor defines a plurality of lateral passages, each lateral passage communicating between said fluid communication passage and one of said retaining means to communicate fluid above a predetermined pressure to disengage said retaining means from said vanes.

4,516,920

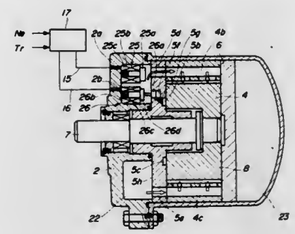
VARIABLE CAPACITY VANE COMPRESSOR CAPABLE OF CONTROLLING BACK PRESSURE ACTING UPON VANES

Tsunenori Shibuya, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 596,001
Claims priority, application Japan, Apr. 6, 1983, 58-60566
Int. Cl.³ F01C *21/16*
U.S. Cl. 418—23 **6 Claims**

1. A variable capacity vane compressor comprising: a cylinder having an endless camming inner peripheral surface; a pair of side blocks secured to opposite ends of said cylinder and

cooperating with said cylinder to define a pump housing, said pump housing having at least two pump inlets and at least two pump outlets; a rotor rotatably received within said pump housing and having an outer peripheral surface thereof formed therein with a plurality of slits each having a radially inner end, said rotor cooperating with said pump housing to define therebetween at least two cavities, said pump inlets and said pump outlets opening in different ones of said cavities; a plurality of back pressure chambers formed in said rotor and communicating with said radially inner ends of respective ones of said slits; a plurality of vanes radially slidably fitted in said slits for sliding contact with said endless camming inner peripheral surface of said cylinder; a suction chamber; first valve means for selectively establishing and interrupting communication between at least one of said pump inlets and said suction chamber; at least two passage means formed in at least one of said side blocks at locations corresponding to different ones of said cavities and separated from each other, for supplying said back



pressure chambers with compressed fluid as back pressure from respective ones of said cavities; at least one communication means formed in said at least one of said side blocks for communicating at least one of said passage means corresponding to said at least one of said pump inlets with said suction chamber; second valve means for selectively establishing and interrupting communication between said at least one of said passage means and said suction chamber by way of said communication means; and control means for controlling said first valve means and said second valve means, said control means being adapted to cause said first valve means to interrupt the communication between said at least one of said pump inlets and said suction chamber, and at the same time cause said second valve means to establish communication between said at least one of said passage means and said suction chamber by way of said communication means, thereby reducing the pressure of said compressed fluid supplied to said back pressure chambers by way of said at least one of said passage means.

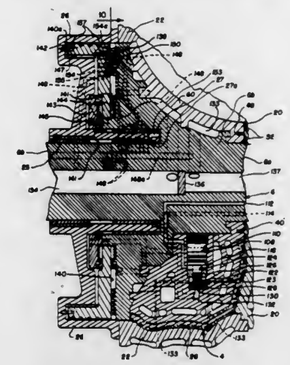
4,516,921

END SEALS FOR A ROTARY MACHINE

Gail W. Kemp, Dallas, Tex., assignor to Vida M. Kemp, Dallas; Phyllis J. Carter, Richardson; Ruth E. Kemp, Dallas and Allan E. Kemp, Dallas, all of, Tex.

Continuation of Ser. No. 203,966, Nov. 4, 1980, abandoned, which is a division of Ser. No. 857,208, Dec. 5, 1977, Pat. No. 4,239,469, which is a continuation-in-part of Ser. No. 779,172, Mar. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 544,427, Jan. 27, 1975, Pat. No. 4,013,046. This application Mar. 21, 1984, Ser. No. 591,883
Int. Cl.³ F01C *19/00*
U.S. Cl. 418—141 **4 Claims**

1. In a rotary machine: a rotor; a housing having a working space formed therein, said rotor being disposed in said working space; a shaft extending through said housing and rigidly secured to said rotor, said shaft being rotably supported by said housing; seal means on at least one end of said rotor, said seal means being formed by two facing members separated by a plurality of circular fins formed on at least one of the facing members and arranged with the ends of said fins formed on at least one facing member engaging the other facing member, the first facing member being formed on the end of the rotor, and the second facing member being non-rotatably but moveably secured and sealed to said housing; means on one of said facing members to rake the space between fins formed on the opposite facing member to dislodge foreign matter, said raking means consisting of a plurality of relatively short length circumferential teeth, each tooth formed in substantially the shape of the space between adjacent fins on the opposite facing member; and means to circulate flushing lubricant fluid adjacent to the leading end of said teeth to flush out collected loose foreign matter; and a thrust control means to position said facing members in sealing relation.

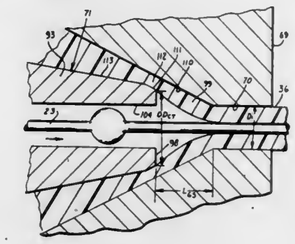


4,516,922

HYBRID APPARATUS FOR INSULATING CONDUCTORS

William M. Kanotz, Baldwin, Md., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 306,820, Sep. 29, 1981, Pat. No. 4,425,292. This application Oct. 3, 1983, Ser. No. 538,706
Int. Cl.³ B29F *3/10*
U.S. Cl. 425—113 **5 Claims**



1. An apparatus for extruding a plastic material about a substrate, said apparatus including:

an extrusion crosshead;

a die being mounted in said extrusion crosshead and having an exit orifice which communicates through a land thereof with a cavity of said die;

a core tube having a passageway which has a cross-sectional size that is substantially greater than that of the substrate so that it is capable of passing irregularities in the substrate and which is mounted in said cavity of said die to align said passageway with said exit orifice of said die and to form a first portion of a flow passage between an outer surface of said core tube and a wall of said die cavity which converges toward a free end of said core tube, and wherein said free end of said core tube is beveled to form a surface which is parallel to a wall which defines said die cavity with said free end of said core tube having a circu-

lar cross section and being spaced a distance from an entrance of said land to form a second portion of the flow passage having a predetermined configuration and extending from a restriction formed at the end of the first portion of the flow passage to the entrance of the land of the die, the distance being such that a ratio having a numerator comprising the difference between an outer diameter of the end of the core tube and an outer dimension of the substrate and having a denominator of the distance is at least 1 and such that the ratio of the distance to an inner diameter of the die is in the range of about 0.5 to 1.3, and the predetermined configuration being such that the second portion of the flow passage becomes less than completely filled with the plastic material during the operation of said apparatus thereby preventing backflow of the plastic material into the core tube;

moving means for advancing successive increments of a length of the substrate through said passageway and said die; and

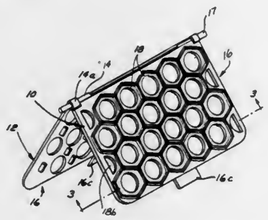
means for moving a plastic material along said flow passage to cover the substrate with the pressure in the plastic material being maximized as it flows through the minimum area of said converging first portion of said flow passage at said free end of said core tube and with the configuration of the second portion of the flow passage controlling the expansion of the plastic material occurring between said free end of said core tube and said land of said die to prevent the plastic material from filling completely the second portion.

4,516,923

FOOD PRESS FORMS

Igor Lifshitz, and Ifim Lifshitz, both of 1635 N. Martel Ave., #316, Los Angeles, Calif. 90046

Filed Mar. 29, 1984, Ser. No. 594,740
Int. Cl.³ B29C *1/00*; A21C *5/00, 9/05, 11/10*
U.S. Cl. 425—289 **4 Claims**



1. A food processing device in combination, comprising:

a. a first planar tray, having upper and bottom surfaces and surrounding edge portions;

b. a second planar tray, having upper and bottom surfaces and surrounding edge portions each of said trays having a plurality of rows of separate food product molding apertures, arranged therein staggered relative to one another;

c. hinging means mounted along and between facing edge portions of the trays, so that said trays, when joined, can swing from an aligned to a superposed position;

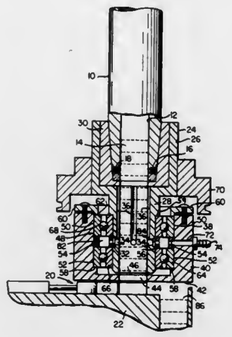
d. a plurality of rows of multiple elongated feet members projecting integrally from the bottom surface of each tray, at least one of each of said feet members being positioned adjacent to and in alignment with one of said molding apertures, so that at least one of said feet members of one tray, being, respectively, sized and arranged to cooperate with and intrude into one of said molding apertures of the other tray, will, when the trays are being inwardly swung from an aligned into a superposed position, eject the molded food products therefrom.

4,516,924

RETAINING MEANS FOR DEVICE FOR CENTRIFUGALLY CASTING SYMMETRICAL OR ASYMMETRICAL ARTICLES

David L. Rawlings, Bayville, N.Y., assignor to International Hydron Corporation, New York, N.Y.

Filed May 4, 1983, Ser. No. 491,159
Int. Cl.³ B29C *5/04*; B29J *1/00*
U.S. Cl. 425—434 **11 Claims**



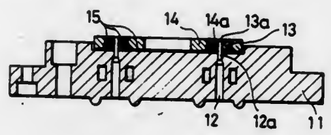
1. A device for the centrifugal casting of contact lenses comprising a rotatable polymerization column adapted for receiving in vertical series and in free falling arrangement a plurality of molds containing a polymerizable or curable composition, said column having an inlet for receiving said molds and an outlet for discharging said molds, means for rotating said column at a desired rate of speed, gas means for introducing gas up said column and retaining means disposed in the lower end of said column for retaining a lower mold in said column for a desired length of time, said retaining means being adapted to hold said mold for synchronous rotation with said column and to impart said synchronous rotation to said other vertically arranged molds and to release said lower mold during rotation of said column under the influence of pressure directed from said other vertically arranged molds.

4,516,925

PELLETIZING DIE FOR SYNTHETIC RESIN EXTRUDING MACHINE

Daijiro Fujita; Akihiko Motoo, and Yoshiki Maki, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,307
Claims priority, application Japan, Dec. 10, 1982, 57-186008[U]
Int. Cl.³ A01J *21/00*
U.S. Cl. 425—463 **6 Claims**



1. A pellitizing die for a synthetic resin extruding machine, said die comprising:

a die body having a nozzle with a predetermined diameter through which melted synthetic resin is to be extruded;

a tip having end surface portions and an outer surface portion of a predetermined shape and predetermined maximum dimensions, and having a centrally located hole of said predetermined diameter; and

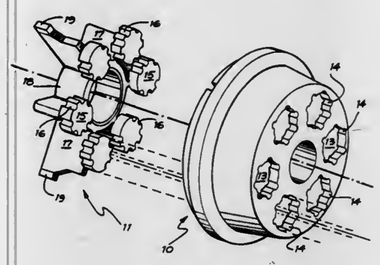
a tip pressing plate having an aperture formed to surround said outer surface portion of said tip and having dimensions at an outwardly facing end thereof which are smaller than said maximum dimensions of said tip, for securing said tip against said die body.

4,516,926

EXTRUSION DIES

Shu W. Yip, Hong Kong, Hong Kong, assignor to Breville Holdings Pty. Limited, New South Wales, Australia

Filed Jul. 13, 1983, Ser. No. 513,252
Claims priority, application Australia, Jul. 26, 1982, PF5048
Int. Cl.³ B29F *3/04*; A21C *3/04*
U.S. Cl. 425—464 **5 Claims**



1. A two-part extrusion die comprising:

a first member having a substantially flat annular die plate portion, a central annular portion extending perpendicularly from said die plate portion having a central bore extending axially therethrough and extending axially through said die plate portion, a plurality of apertures through said die plate portion circumferentially spaced about said central bore and having axially extending walls, and a plurality of axially extending grooves in said walls; and

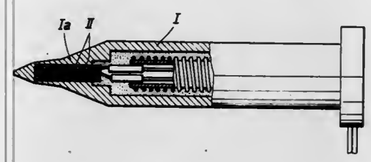
a second member having an annular sleeve portion for slidably accommodating said central annular portion of said first member having a bore extending coaxially with said central bore in said first member, radially extending arms extending outwardly from said annular sleeve portion, a plurality of core members attached to said arms corresponding to said apertures through said die plate portion and insertable into said apertures, and a plurality of axially extending grooves in the periphery of each core member for mating with said grooves in said walls of said apertures in said die plate to form extrusion openings arranged in a plurality of discrete groups spaced around said central bore.

4,516,927

POINTED HEAT-GENERATING DEVICE FOR MOLDS OF INJECTION MOLDING MACHINES

Yoshiichi Yoshida, Yonezawa, Japan, assignor to Shigeru Tsutsume and Seiki Engineering & Research Co. Ltd., both of Yonezawa, Japan

Filed Jun. 19, 1981, Ser. No. 275,230
Claims priority, application Japan, Jun. 25, 1980, 55-88001[U]
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—549 **5 Claims**



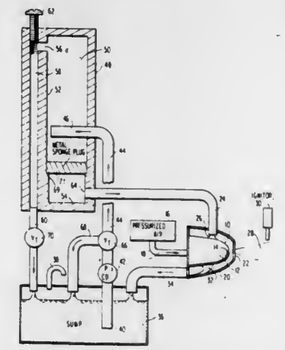
1. An improved pointed heat-generating device for molds of injection molding machines comprising a metal casing, a pointed projectile heat-generating means fixed with an end of the metal casing, a gate formed at the pointed heat-generating means and communicated to a cavity of the molds, and a synthetic resin material being fused or cooled or solidified at the gate by an electric ON-OFF switching of the pointed heat-generating means, thereby the gate being opened or closed intermittently, wherein the improvement comprises an alloy portion formed by fusing of an end of a heat-generating wire penetrated wholly into a passage which is bored in a non-processed cylindrical material, with the non-processed cylindrical material, and thereby the alloy portion can be shaped as a pointed part of the heat generating means by machining.

4,516,928

FLOW CONTROL MODULE AND METHOD FOR LIQUID FUEL BURNERS AND LIQUID ATOMIZERS

Robert S. Babington, McLean, Va., assignor to Owens-Illinois, Toledo, Ohio

Filed Mar. 17, 1983, Ser. No. 476,455
Int. Cl.³ F23H *1/00*
U.S. Cl. 431—12 **35 Claims**



1. Apparatus for controlling the flow of liquid to a liquid atomizer comprising:

a source of liquid;

an enclosed volume adapted to be positioned above the liquid atomizer;

first conduit means for delivering a first flow of liquid from said source into said enclosed volume at a position for enhancing separation of entrained gases from said liquid;

second conduit means for receiving a second flow of liquid, not exceeding the magnitude of said first flow, from said enclosed volume at a location near the lower end thereof and for feeding said second flow to the liquid atomizer, said second conduit means being open to ambient pressure at the location of the liquid atomizer for draining said enclosed volume through said second conduit means when said first flow ceases and for permitting the initial flow of liquid through said second conduit means to flush air therefrom, after which said second flow increases as said enclosed volume fills; and

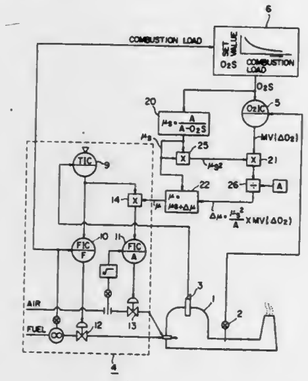
means for sucking a third flow of liquid from said enclosed volume at a location near the upper end thereof when the level of liquid in said enclosed volume reaches said means for sucking, at which time said third flow commences and reduces said second flow.

4,516,929

METHOD FOR CONTROLLING OXYGEN DENSITY IN COMBUSTION EXHAUST GAS

Kazuo Hiroi, Hachioji, and Kenji Kojima, Kunitachi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1984, Ser. No. 610,587
Claims priority, application Japan, May 16, 1983, 58-85432
Int. Cl.³ F23N *1/00, 5/00*
U.S. Cl. 431—12 **3 Claims**



1. A method for controlling oxygen density in exhaust gas of a combustion system comprising the steps of:

detecting oxygen density in said exhaust gas;

finding out a set value O_{2s} corresponding to the desired oxygen density in the exhaust gas;

calculating an air excess ratio μ_s required for maintaining the oxygen density at the set value O_{2s} by the following equation,

$$\mu_s = \frac{A}{A - O_{2s}}$$

wherein A represents oxygen content in air;

finding out the difference ΔO_2 between said set value O_{2s} and said detected value of the oxygen density in the exhaust gas;

calculating a corrected value μ of said air excess ratio μ_s, that is corrected against a control output $MV(\Delta O_2)$ corresponding to said difference ΔO_2, according to the following equation,

$$\mu = \mu_s + \frac{\mu_s^2}{A} \times MV(\Delta O_2);$$

and

controlling air-fuel mixing ratio of said combustion system according to said corrected value so that the oxygen density in the exhaust gas is held to be equal to said set value O_{2s}.

4,516,930

APPARATUS AND METHOD FOR CONTROLLING A MAIN FUEL VALVE IN A STANDING PILOT BURNER SYSTEM

Gerald E. Dietz, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

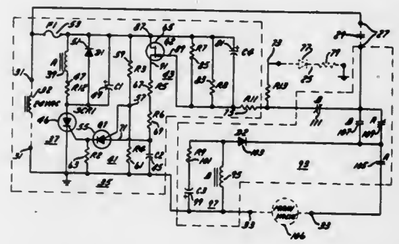
Filed Sep. 30, 1982, Ser. No. 431,341
Int. Cl.³ F23Q *23/00*
U.S. Cl. 431—26 **9 Claims**

1. An apparatus for repetitively verifying the integrity of a main fuel valve control circuit in a standing pilot burner system comprising:

a probe circuit for providing an electrical signal representative of the presence of a standing pilot flame;

a first circuit including a controllably gated transistor for receiving said electrical signal and responsively energizing a gating network, thereby energizing a first relay prior to the occurrence of a heat demand signal;

a second circuit adapted to be connected to a thermostat contact, said contact providing a heat demand signal to



said apparatus, said second circuit including a conductive path for disabling said probe circuit upon closure of said thermostat contact;

said first circuit responsively de-energizing said gating network and said first relay upon said disabling of said probe circuit;

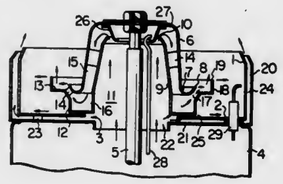
said second circuit energizing a second relay in response to said first relay de-energization, thereby sequentially re-enabling said probe circuit and re-energizing said first relay to actuate a main fuel valve.

4,516,931

FUEL GASIFYING BURNER

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,929
Claims priority, application Japan, Nov. 25, 1982, 57-206778
Int. Cl.³ F23D *11/04*
U.S. Cl. 431—168 **6 Claims**



1. A fuel gasifying burner comprising:

a combustion cylinder open at one end and closed at the other end, said other end being formed substantially at its central portion with an air supply port;

a rotary shaft extending through said air supply port into said combustion cylinder;

a frustoconical rotary gasifying member closed at its forward end and open at its base, said frustoconical rotary gasifying member being rotatably mounted in said combustion cylinder and connected to said rotary shaft and formed at a lower end of its wall with a bent portion extending outwardly from said lower end of said wall and having at its peripheral end a liquid fuel scattering end;

an inner gasifying member of frustoconical shape formed at its forward end with an air supply opening and in its interior with an air passage maintained in communication through said air supply port with an air blowing chamber connected to a base of said inner gasifying member, said

inner gasifying member being located inside said frustoconical rotary gasifying member and connected thereto to form a unit therewith and having connected to a lower end of its wall a fuel-air mixture gas diffusing wall extending outwardly a greater distance than said bent portion at said lower end of said wall of said frustoconical rotary gasifying member;

a fuel-air mixture passage, a gas chamber and a gas ejecting passageway defined between an inner wall surface of said frustoconical rotary gasifying member and an outer wall surface of said inner gasifying member and arranged in the indicated order from said forward end of said frustoconical rotary gasifying member toward said base of said inner gasifying member; and

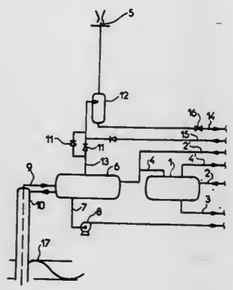
an annular flame ejecting upright wall contiguous with said fuel-air mixture gas diffusing wall connected to the lower end of the wall of the inner gasifying member and formed at its forward end with a liquid fuel rescattering end, said flame ejecting upright wall being operative when said mixture impinges thereon to reduce the pressure under which said fuel-air mixture gas is ejected through said gas ejecting passageway, whereby said mixture can be diffused into the interior of said combustion cylinder in flames of reduced vigor.

4,516,932

SAFETY SYSTEM INTENDED IN PARTICULAR TO ELMINATE ENTRAINED OR CONDENSED LIQUIDS, AND TO LIMIT THE HEAT RADIATION WHEN FLARING OR DISPERSING HYDROCARBON GASES

Gérard Chaudot, Andresy, France, assignor to Cabinet Brot, Paris, France

Filed Apr. 29, 1983, Ser. No. 489,857
Claims priority, application France, Jun. 5, 1982, 82 07917
Int. Cl.³ F23D *13/20*
U.S. Cl. 431—202 **12 Claims**



12. A safety system to eliminate liquids, as well as to limit the heat radiation and the intensity of noises received, during the discharge of gases from an installation handling flammable fluids characterized in that the system introduces, in the flow chain of the gas (4) between a potential source of liquid and a vent to the atmosphere, a flare base flask connected at its upper part to a flare stack (13), characterized in that the flare stack comprises:

a back pressure device (11) to maintain the velocity of flow of the gas inside the flare stack relatively high; and

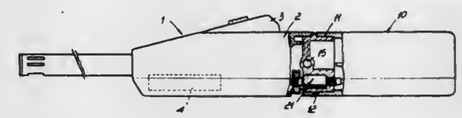
a venting orifice (5) equipped with means to pulverize into a mist any drops of liquid remaining in the gas flow and to quickly assure an intimiate mixture of the gas with the ambient air in order to obtain rapid and complete combustion and thereby avoid the condensation and fallout of the liquid drops in the vacinity thereof, as well as a short flame with little radiation.

4,516,933

HOUSEHOLD LIGHTER

Enrico Buzzi, Via Europa 120, Concesio (Province of Brescia), Italy

Filed May 21, 1984, Ser. No. 612,232
Claims priority, application Italy, Nov. 11, 1983, 23530/83[U]
Int. Cl.³ F23Q *7/12*
U.S. Cl. 431—255 **6 Claims**



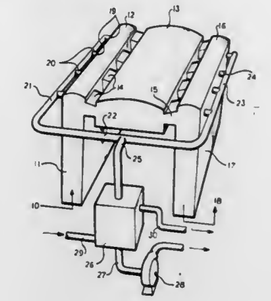
1. A household lighter comprising an outer housing containing a spark generating cartridge for operation by a pushbutton barely protruding from said housing, characterized in that it comprises a liquefied gas supply reservoir forming a handle for the lighter and being closed at one end by a small block constituting a connective element to said outer housing.

4,516,934

WASTE HEAT RECOVERY FROM REGENERATIVE FURNACES

Frederick J. Nelson, Swanton, and Ray S. Richards, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 25, 1983, Ser. No. 555,249
Int. Cl.³ F24H *7/00;* **F27D** *17/00*
U.S. Cl. 432—30 **7 Claims**



1. A method of extracting clean hot gases from a reversing regenerative furnace having a pair of regenerators for preheating combustion air on the inlet side and extracting waste gas heat on the exhaust side, comprising the steps of providing a duct extending between the upper air inlet side and upper exhaust outlet side of the furnace regenerators, tapping the duct intermediate its length and passing the tapped air in the duct to a heat-utilizing system to recover the heat from said air.

4,516,935

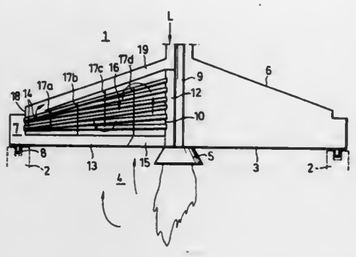
ARRANGEMENT FOR HEATING AND/OR HEAT RETAINING OF CONTAINERS

Gerhard Sanders, Silberstr. 1, 7570 Baden-Baden, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 517,358
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227504
Int. Cl.³ F27D *1/00*
U.S. Cl. 432—247 **24 Claims**

1. Arrangement for heating and/or heat retaining of containers and their contents, for example ladles to be filled with molten metal, the arrangement comprising a burner arranged

to be directed into the interior of the container; a cover for covering a container opening; and a preheating device for preheating a combustion air, said preheating device being formed as a component of said cover wherein said cover has a



wall which faces toward the interior of the container and limits a combustion chamber, said wall being at least partially a component of at least one cooling passage for supplying substantially cold combustion air.

4,516,936
ORTHODONTIC DEVICE
Jan H. Hulsink, Zuylensteinseweg 19, 3958 BA Amerongen, Netherlands
Filed May 13, 1983, Ser. No. 494,180
Claims priority, application Netherlands, Mar. 4, 1983, 8300810
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—6 **7 Claims**

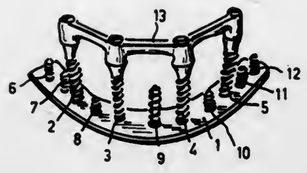


6. An orthodontic device for the jaw comprising, a plastic dental plate adapted to be fitted to the jaw and the lingual surfaces of the teeth to apply moving forces to the teeth, wire clamp means extending from the sides of said plate for engagement with the posterior teeth, anchoring means at the front of said plate adapted to grippingly fit about the front and rear surfaces of a plurality of anterior teeth, said anchoring means being formed completely from plastic and being shaped to complementally fit closely against substantially the entire front and rear surfaces of said anterior teeth and to have an opening through which at least the cutting faces of the central incisors may freely project.

4,516,937
SYSTEM FOR DENTURE SUPPORT USING A TRANSMANDIBULAR IMPLANT
Hans Bosker, Essen 14, 9751 NC Haren, Netherlands
Filed Nov. 30, 1983, Ser. No. 556,520
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **15 Claims**

1. An apparatus providing support on the lower jaw for a submaxillary denture characterized by a base plate comprising an arcuate metal strip having an intermediate portion, the centerline of which in plan view bring an arc across a subtending chord approximately 34 mm in length and with a height of approximately 8 to 10 mm; a bridging means comprising hooking means for coupling means included in a submaxillary denture;

a set of posts to stand on said intermediate portion for carrying said bridging means;



a fixing means for each of said posts to fix said bridging means; and a set of cortical screws to adjoin said base plate fixedly to the lower face of the lower jaw at locations on either side of each of said posts.

4,516,938
BONDABLE LINGUAL RETAINER
Arthur B. Hall, LaPorte, Ind., assignor to TP Laboratories, Inc., Westville, Ind.
Filed Jan. 31, 1984, Ser. No. 575,656
Int. Cl.³ A61C *5/00*
U.S. Cl. 433—215 **11 Claims**



1. A dental bondable lingual retainer comprising, a plurality of spaced bonding pads each of which is bondable to a tooth, and a bar interconnecting said adjacent pads, said bonding pads and bar being integrally formed from a laminated sheet consisting of a layer of metal foil fused to a layer of metal mesh, and means for filling and closing the mesh of said bar to enhance the strength of the bar.

4,516,939
FINGER CONTROL SYSTEM
Arthur G. Crimmins, Jr., Tillamook, Oreg., assignor to Quill Licensing, Ottowa, Canada
Continuation-in-part of Ser. No. 42,077, May 24, 1979, abandoned. This application Apr. 21, 1982, Ser. No. 370,195
Int. Cl.³ G09B *21/00*
U.S. Cl. 434—114 **10 Claims**

1. An apparatus for the generation of a binary code comprising:

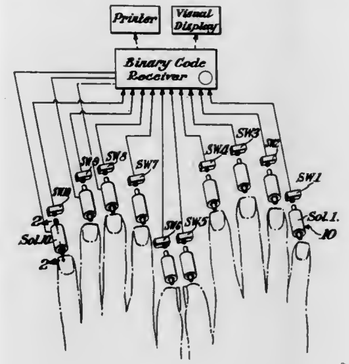
(a) ten switches arranged in two groups of five and each group on handles adapted to the right and left hand of a human operator, each switch having a neutral mode and a depressed mode;

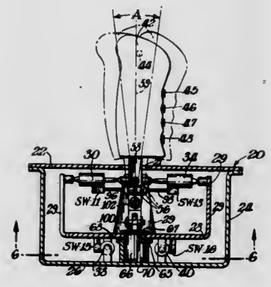
(b) drive means coupled to said switches whereby the switches may be moved from the neutral mode to the depressed mode;

(c) a binary code receiver responsive to the two modes of the switches and to a signal generated when the human operator releases the fingers of his left and right hand from the two groups of five switches whereby the sequence of switches selected is transmitted to the binary code receiver and capable of operating the drive means;

(d) processor means connected to the binary code receiver and connected to equipment whereby the equipment receives and acts on commands transmitted by the binary code receiver; and

(e) feedback means connected to the binary code receiver and a teaching system means whereby a person is taught





how switch sequences generate commands which will operate equipment and corrections are indicated to the person by the drive means being activated by the binary code receiver.

4,516,940
PROPULSION UNIT FOR A WATER-BORNE VESSEL
Ernest F. Roberts, 164, Marine Parade, Leigh-on-Sea, Southend, Essex, England
Filed May 18, 1982, Ser. No. 379,450
Claims priority, application United Kingdom, May 19, 1981, 8115382
Int. Cl.³ B63H *1/14, 23/06*
U.S. Cl. 440—53 **8 Claims**

2. A propulsion unit for a water-borne vessel, the unit comprising:

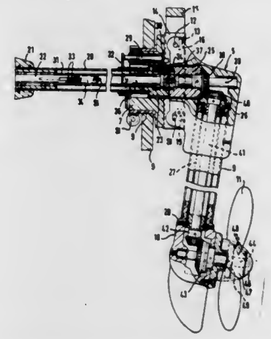
a drive transmission assembly comprising a generally horizontal input drive shaft for connection to an inboard engine and an input steering shaft;

a leg depending from the drive transmission assembly, the leg being mounted on the drive transmission assembly by mounting means comprising a substantially horizontal athwartships axis pivot connection, whereby the leg can be swung up about the pivot connection on striking an obstruction;

a propeller housing supported on the lower end portion of the leg for rotary movement generally about the axis of the leg, the propeller housing being rotatable through substantially more than 180° so as to enable the vessel to go astern without changing the direction of rotation of the input drive shaft;

steering transmission means connecting the propeller housing to said input steering shaft, for rotating the propeller housing to steer the vessel;

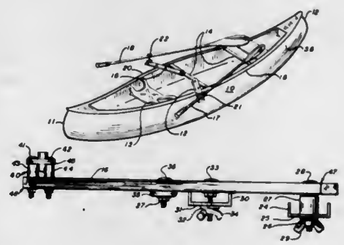
automatic locking means for locking the leg in its fully extended position when the propeller housing is rotated through at least 90° from its direct forward position, the automatic locking means comprising a cam associated with the steering shaft, a cam follower which follows the cam, and a locking member actuated by the cam follower to prevent the leg swinging up about the pivot connection;



a propeller rotatably mounted on the propeller housing; and

drive transmission means connecting the propeller to said input drive shaft, for driving the vessel, the drive transmission means comprising disengageable clutch means between the drive transmission assembly and the leg, and below the level of said pivot connection, whereby the disengagable clutch means is disengaged when the leg is swung up.

4,516,941
ROWING OUTRIGGER
Norman C. Reid, 5417 Vera Cruz Ave. North, Crystal, Minn. 55429
Filed Oct. 14, 1983, Ser. No. 541,959
Int. Cl.³ B63H *16/06*
U.S. Cl. 440—105 **6 Claims**



1. A portable rowing outrigger for one side of a canoe comprising, in combination;

a flat substantially rectangular and elongated outrigger base having inboard and outboard ends and upper and lower major surfaces;

means for operatively receiving an oarlock disposed at the upper outboard end of said base;

means extending downwardly of the bottom of said base for resiliently, frictionally engaging at least one side of a thwart of a canoe at the inboard end; and

means extending downwardly of the bottom and disposed intermediate said inboard and outboard ends of said base for resiliently, frictionally engaging one side of the gunwale of a canoe and clampably engaging the other side and bottom of said gunwale whereby said elongated out-

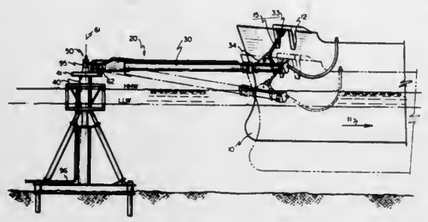
rigger extends horizontally, angularly outwardly on the top of a canoe from a thwart, over said gunwale and said means for receiving said oarlock is disposed outwardly of the side of the canoe and said means for frictionally engaging said thwart and said gunwale are operable under propelling force applied to said oarlock to increase said frictional engagement with said thwart and said gunwale.

4,516,942

TOWER MOUNTED MOORING APPARATUS

Kristen I. Pedersen, Houston, Tex., assignor to Sofec, Inc., Houston, Tex.

Filed Mar. 25, 1983, Ser. No. 478,837
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—5 **7 Claims**



1. Mooring apparatus for mooring and loading or discharging a tanker vessel in a body of water comprising,

a stationary tower fixed to the floor of the body of water, said tower fixed in a vertical position having a tower shaft extending above the surface of the water,

unitary yoke means having two arms forming a "V" shape, the closed end of the V shaped yoke means attached to the tower shaft by a triaxial articulation means disposed on said shaft above the surface of the water for allowing the yoke means to move in yaw, pitch and roll with respect to the tower,

yoke suspsension means for connecting the outer ends of the two arms of the yoke means to the vessel for maintaining the yoke means substantially above water under conditions of a fully loaded vessel at low low water, and for allowing the yoke means to move in yaw, pitch and roll with respect to the vessel, and

weighting means removably disposed in the outer ends of the two arms of the yoke means to provide in combination with the yoke suspension means, a self-acting restoring force to the vessel with respect to the tower means.

4,516,943

AMUSEMENT RIDE RAFT

Robert Spieldiener, Im Winkel 13, FL-9496 Balzers, Liechtenstein; Reinhold Spieldiener, Aussichtsstrasse 23, CH-8704 Herrliberg, and Alfons Saiko, Speerstrasse 26A, CH-8942 Oberrieden, all of Switzerland

Continuation-in-part of Ser. No. 274,639, Jun. 17, 1981, abandoned. This application Jun. 24, 1983, Ser. No. 507,993
Int. Cl.³ B63B *35/58*
U.S. Cl. 441—35 **2 Claims**

1. A raft for carrying a plurality of raft riders on a rapid flow water course amusement ride having water course banks and objects disposed in said water course with which said raft is intended to collide and bounce off of, said raft comprising

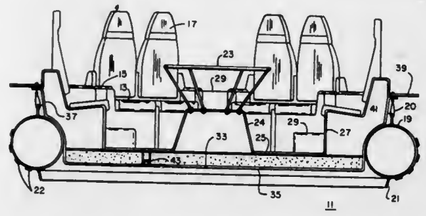
a generally circular shaped unitary raft hull formed by two mating inner and outer hull sections formed to provide a circular hull bottom and perimeter sides,

a multiplicity of pairs of inwardly facing, high-back seats substantially evenly distributed around the inner periphery of said hull,

an outer peripheral deck and a floor board area formed in said inner hull section,

entrance and exit steps formed in the inner hull section between said pairs of seats, said steps extending from said peripheral deck to said floor boards,

a cushion means surrounding the outer periphery of hull substantially in the plane of the bottom of said hull and extending radially of said hull periphery to act as a bumper which will absorb the shock of collisions with said water course banks and objects, said cushion means being so constructed as to provide floatation to said raft,



a hand-hold mount formed in the center of the inner hull section of said raft for a circular hand-hold secured to said hand-hold mount which can be grasped for balance by all the raft riders seated in said inwardly facing high backed seats, and

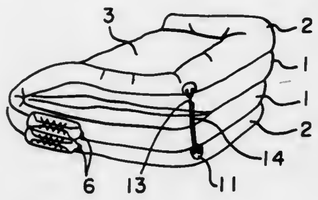
redundant safety floatation material disposed substantially throughout the bottom of said outer hull section between said inner and outer sections to provide buoyancy to said raft in addition to the buoyancy provided by said cushion means.

4,516,944

EXPANSION TYPE LIFE-SAVING RAFT

Saito Hirobumi; Ito Kiyoshi; Higuchi Kaichi, and Yamamoto Masao, all of Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00459, § 371 Date Aug. 3, 1983, § 102(e) Date Aug. 3, 1983, PCT Pub. No. WO83/01933, PCT Pub. Date Jun. 9, 1983
PCT Filed Dec. 2, 1982, Ser. No. 531,832
Claims priority, application Japan, Dec. 3, 1981, 56-195072
Int. Cl.³ B63C *9/04*
U.S. Cl. 441—40 **11 Claims**



1. A flexible, expansion type life-saving raft, comprising:

at least one annular gas chamber of ring shape;

at least one lower gas chamber fixedly secured to a bottom surface of said at least one annular gas chamber;

stanchion gas chambers provided on a top part of said annular gas chamber;

an awning which forms a roof part by being supported on said stanchion gas chambers and having an entrance formed therein, said life saving raft being folded and housed in a container when not in use, and being expanded by filling said at least one annular gas chamber, the at least one lower gas chamber and the stanchion gas chambers with gas at the time of its use, wherein at the time of

housing said raft in the container, said raft is folded with said awning being placed inside;

fitting means fixedly provided at opposite positions on an outer peripheral part of said at least one annular gas chamber in a folded mutual confrontation state; and

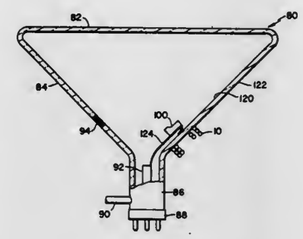
fastening means provided at least at one point between said opposite positions of said fitting means.

4,516,945

METHOD TO EVENLY HEAT AN ASYMMETRIC GETTER DEVICE BY INDUCTION

Daniele Martelli, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Apr. 26, 1983, Ser. No. 488,698
Claims priority, application Italy, Apr. 28, 1982, 20971 A/82
Int. Cl.³ H01J *9/395*
U.S. Cl. 445—19 **8 Claims**



1. A method for evaporating a getter metal from a getter device within a kinescope which getter device comprises a container holding the getter-metal releasing material, wherein the container has an outside wall having a high portion and a low portion, wherein the container has a central axis; said method comprising the steps of:

I. placing the getter device within the kinescope on the inside surface of the wall of the kinescope; and then

II. placing an induction coil comprising a major coil having an axis and a smaller minor coil wherein a portion of the major coil is substantially coincidental with a portion of the minor coil, and wherein a portion of the major coil is offset with respect to the minor coil; on the outside surface of the wall of the kinescope with the axis of the major coil substantially coincidental with the axis of the getter device and with the high portion of the outside wall of the getter device adjacent to that portion of the major coil which is coincidental with the minor coil; and then

III. passing an alternating radio-frequency current through the induction coil to heat the getter device and thereby evaporate the getter metal.

4,516,946

AERODYNAMIC THROWING IMPLEMENT

Michael R. Rodarte, 12371 Nutwood St., Garden Grove, Calif. 92640

Filed May 9, 1983, Ser. No. 493,031
Int. Cl.³ A63H *27/00*
U.S. Cl. 446—46 **12 Claims**



10. An improved aerodynamic shaped throwing implement, comprising:

a saucer-shaped hull member comprising a circular body member having a center axis and a rim extending around the periphery of the body member, said body member and rim being adapted to form an upper convex surface and a lower concave surface, the circular body member further comprising a central dome member centered about the center axis of the hull and defining a cavity on the concave side of the hull; and

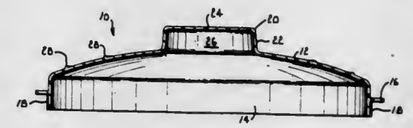
a rotatable member coupled to said hull member by a bearing means comprising inner and outer journal members, said bearing member being received in said cavity, the rotatable member arranged to rotate freely with respect to the hull member and on an axis which substantially coincides with the axis about which the hull member rotates, said rotatable member having a surface disposed adjacent said concave surface of said hull member.

4,516,947

DISCOIDAL AMUSEMENT DEVICE

Donna S. Pircher, and Reinhold A. Pircher, both of 2701 Sioux, Independence, Mo. 64057

Filed Oct. 3, 1983, Ser. No. 538,091
Int. Cl.³ A63H *27/00*
U.S. Cl. 446—46 **5 Claims**



1. A discoidal toy comprising:

a discoidal body having a convex top side and a concave bottom side and presenting a generally circular periphery;

a cylindrical flange on the periphery of said body providing a hand grip to facilitate throwing and catching of the body, said flange having an outer surface and presenting a free edge and an opposite edge connected with said periphery of the body;

a planar fin projecting outwardly from said flange at a location thereon between said free and opposite edges, said fin being annular and having flat and parallel opposite surfaces and said fin occupying a substantially horizontal plane when said bottom side of the body faces downwardly in flight; and

a plurality of ribs on said flange for stabilizing said body in flight, each rib extending only below said fin and having a top end adjacent said fin and a bottom end adjacent said free edge of the flange, said ribs being spaced apart from one another substantially equidistantly on the outer surface of said flange and each rib having a generally vertical orientation when said concave side of the body faces downwardly in flight.

4,516,948

RECONFIGURABLE TOY ASSEMBLY

Hiroyuki Obara, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

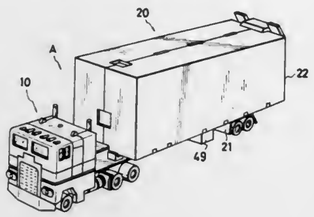
Filed Feb. 28, 1984, Ser. No. 584,460
Claims priority, application Japan, Sep. 22, 1983, 58-146785[U]
Int. Cl.³ A63H *17/00*
U.S. Cl. 446—95 **11 Claims**

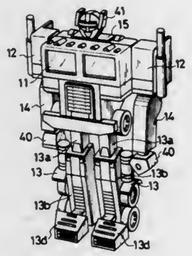
1. A reconfigurable toy assembly wherein a toy vehicle is reversibly reconfigured into a toy robotic humanoid and a play space, said assembly comprising:

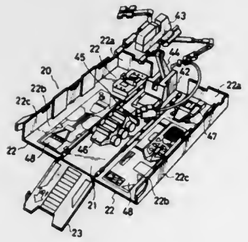
a tractive unit; and

a trailer section; said tractive unit and trailer section being separatably connected to each other and adapted to form said toy vehicle in the connected state, and said tractive unit being adapted to be foldable and pivotal at proper portions thereof so as to be reversibly reconfigured into

said toy robotic humanoid, while said trailer section being adapted to open and close at proper portions thereof and







having therein an unfoldable play space to be used for a play with said toy robotic humanoid.

4,516,949

SELF SEALING VALVE ASSEMBLY

Joel Schwartz, Brooklyn, N.Y., assignor to U.S. Balloon Mfg. Co., Inc., Brooklyn, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,307
Int. Cl.³ A63H *3/06*
U.S. Cl. 446—222 **19 Claims**

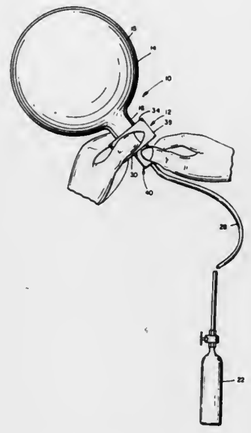
1. An inflatable assembly comprising:

A. A device having an inflatable body with a neck thereon, said neck terminating in a free end and having an opening extending from said free end and communicating with the interior of said body which is capable of being inflated;

B. a tube initially extending at least partially into said neck through said opening;

C. closure means including an adhesive element adhesively mounted externally on said neck and having a substantial, adhesive-coated area protruding beyond said free end, said closure means being adapted to be moved from an open condition in which said tube extends into said neck such that a gas entering said device through said tube inflates said body to a closed condition in which at least a portion of said coated area of said adhesive element which extends beyond said free end is sealed to another portion thereof when said tube is removed from said opening to seal said neck opening;

D. guide means extending intermediate a surface of said tube and a portion of said adhesive-coated area of said adhesive element, said guide means including surface means adapting it to be retracted from said closure means with the tube such that said adhesive element when compressed is



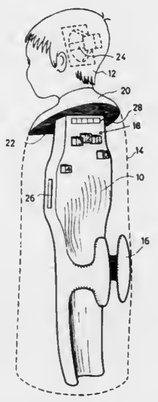
sealed together beyond said free end and said closure means is in its closed condition so as to obtain a sealing of said neck to prevent gas from escaping therethrough.

4,516,950

SPEAKING TOY EMPLOYING CHORDIC INPUT

Oded Berman, Tel Aviv; Zohar Eilam, Ramat Aviv, and Zeev B. Itzchak, Haifa, all of Israel, assignors to Ergoplic Ltd., An Israel Company, Kiron, Israel

Filed Jan. 27, 1982, Ser. No. 343,373
Int. Cl.³ A63H *33/26*
U.S. Cl. 446—297 **16 Claims**



1. A single hand held and operated toy comprising:

a base;

means for mounting said base onto the wrist of a user;

means for producing a desired sequence of sounds; and

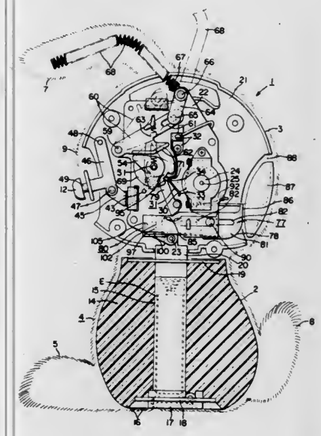
chordic keyboard apparatus mounted onto said base and arranged to be operated by the fingers of the same hand of the user as the wrist onto which the base is mounted, said chordic keyboard apparatus being manually engageable in a selectable sequence for operating said producing means.

4,516,951

MOVABLE TOY ANIMAL

Hiroshi Saigo, Kasukabe, and Hiroshi Kaneko, Tokyo, both of Japan, assignors to Iwaya Corporation, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,848
Claims priority, application Japan, Nov. 29, 1982, 57-208972
Int. Cl.³ A63H *3/36*
U.S. Cl. 446—338 **3 Claims**



1. A movable toy animal comprising a toy body consisting of a trunk containing a battery case therein and made of a soft, elastic material, a head provided on said trunk and having a face with eyes and a nose thereon and ears attached to both side portions of said head, and a skin covering said trunk and said head and covered with hair; an electric motor set on a frame in said head and electrically connected to a battery in said battery case; gearing operatively connected to said electric motor; an axially-movable change-over gear meshed with a first output gear in said gearing and adapted to be engaged with and disengaged from a nose-driving gear, which is adapted to move said nose forward and backward and mounted fixedly on a crankshaft; a driving shaft having an input gear meshed with a second output gear in said gearing; a cam disc mounted fixedly on said driving shaft and having on its inner side surface a projection adated to urge a pressure-receiving portion of a slide shaft, on which said change-over gear is fixedly mounted; first and second cam plates of different shapes mounted fixedly on both end portions of said driving shaft and connected operatively to operating members, which are adapted to move said ears up and down; and a switch unit, which is provided in a rear portion of said head so as to constitute a part thereof, and which has a push element provided retractably and adapted to be pressed to actuate said electric motor.

4,516,952

PUSH-DOWN ACTUATED TOY

Derek A. Brand, Camarillo; Derek R. Brand, Carpinteria, and Kenneth J. Brand, Camarillo, all of Calif., assignors to Derek and Derek, Ventura, Calif.

Filed Apr. 22, 1982, Ser. No. 371,494
Int. Cl.³ A63H *17/14*
U.S. Cl. 446—427 **3 Claims**

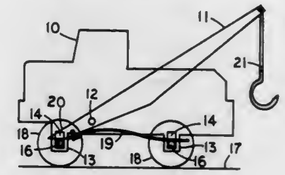
1. A toy vehicle supported on a play surface and having actuation of a part comprising:

(a) a rigid vehicle body;

(b) means for supporting the vehicle with respect to the play surface and allowing generally vertical movement between the vehicle body and said means for supporting the vehicle body;

(c) resilient means exerting a force between the support means and the vehicle body to hold the vehicle body upwardly with respect to the vehicle support means and having a strength that is overcome by manually pushing the vehicle body toward the play surface;

(d) an actuated part mounted on the vehicle body and moveable through a normal range and having a physical engagement with said means for supporting the vehicle,



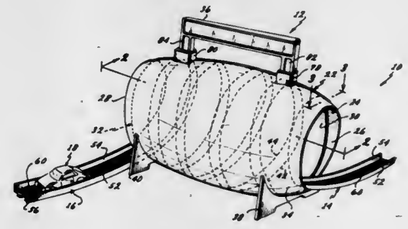
whereby manually pressing the rigid vehicle body causes the means for supporting the vehicle to move with respect to the vehicle and simultaneously move the actuated part because of its engagement with the means for supporting the vehicle.

4,516,953

TOY VEHICULAR PLAYSET

Keith A. Hippely, Manhattan Beach, and Samuel M. Goldstein, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 27, 1983, Ser. No. 565,558
Int. Cl.³ A63H *18/00*
U.S. Cl. 446—444 **6 Claims**



1. In a toy vehicular playset, the combination comprising:

a transparent hollow member having an encompassing sidewall, a first open end and a second open end, said encompassing sidewall including an inner surface and an outer surface; and

a toy vehicular track formed integrally with said inner surface of said sidewall, said track spiraling from one of said open ends of said hollow member to the other end thereof, whereby toy vehicles may be guided along said inner surface of said sidewall from either one of said open ends to the other of said open ends.

4,516,954

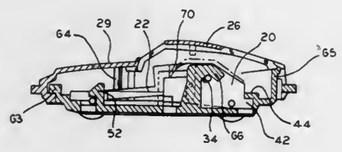
TOY VEHICLE

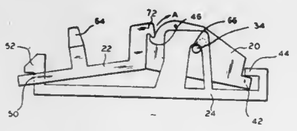
Kwong-Wai Chow, Kowloon; Alfred T. Y. Lau; Ming-Ngar Chow, both of Hong Kong, all of Hong Kong, and James S. W. Lee, 4528 42nd St. Apt. 4A, Long Island, N.Y. 11104, assignors to James S. Lee, Long Island, N.Y.

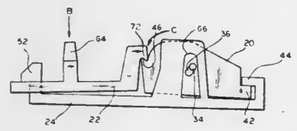
Filed Mar. 10, 1983, Ser. No. 473,991
Claims priority, application United Kingdom, Jan. 11, 1983, 8300589
Int. Cl.³ A63H *29/24*
U.S. Cl. 446—461 **9 Claims**

1. A toy vehicle having toggle-linkage means comprising a gear box containing a spring and a trigger lever arm, said gear box having a first end pivotally attached onto said vehicle at a particular point, said trigger lever arm having one end pivot-

ally attached to said vehicle at a different point which is remote from said particular point, a second end of said gear box engaging another end of said trigger lever arm, the relative lengths of said gear box and trigger lever arm being such that said toggle-linkage may move back and forth between two over center positions, said spring urging said toggle-linkage to one of said two over center positions when said spring is wound, means responsive to backward motion of said vehicle on a support surface while said toggle-linkage is in said one of







said positions for storing energy in said spring, and control means for applying a force to said toggle-linkage for moving said linkage to the other of said two over center positions, said gear box being coupled to drive said vehicle in a forward direction responsive to said toggle-linkage in said other over center position, whereby said gear box winds said spring responsive to a rotation of gears in said gear box in one direction and drives said vehicle on a support surface responsive to rotation of the gears in said gear box in an opposite direction with an unwinding of said spring.

4,516,955

INSTALLATION FOR DAMPING VIBRATIONS IN THE DRIVE TRAIN OF A MOTOR VEHICLE

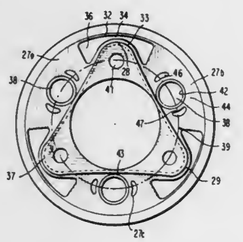
Günter Wörner, Kernen; Franz Kosik, Ostfildern, and Hartmut Gösele, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,150

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134310

Int. Cl.³ F16F *15/12, 15/14*

U.S. Cl. 464—89 **11 Claims**



1. An installation for damping vibrations in the drive connection of a motor vehicle comprising a vibration absorber in coaxial arrangement with a shaft of the drive connection, the vibration absorber including an annular mass, a carrier flange adapted to be secured to said shaft, and resilient body means of an elastomeric material for connecting the carrier flange with the annular mass and effecting the vibration-coupling of the annular mass with the shaft, stiffening elements in said resilient body means for influencing in a defined manner the frequencies of the natural vibrations of the vibration absorber by the arrangement thereof within the resilient body means and the configuration thereof, the stiffening elements being constructed as a plurality of generally cylindrical sleeves extending generally parallel to the axial direction of said shaft, each of said plurality of sleeves being arranged between an outer bridge of the resilient body means on the side of the annular mass and an inner bridge of the resilient body means on the side of the carrier flange, aperture means in the resilient body means disposed on both sides of and adjacent to each of the plurality of sleeves, as viewed in the direction of rotation of said shaft for reducing the torsional stiffness of the resilient body means.

4,516,956

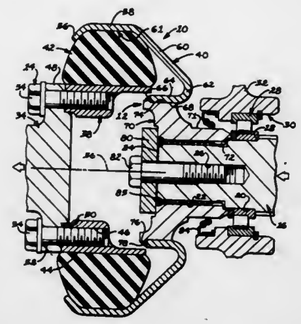
WELD JOINT STRUCTURE FOR AN ELASTOMERIC FLEXIBLE COUPLING

Richard W. Staiert, Geneseo, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 19, 1983, Ser. No. 533,476

Int. Cl.³ F16D *3/26, 3/14*

U.S. Cl. 464—89 **9 Claims**



1. In an elastomeric flexible coupling for connecting first and second shafts and being of the type having an inner hub connectable to the first shaft, an outer cup, and elastomeric ring means therebetween for torsional vibration and shock protection of a drive line, a weld joint structure comprising:

the cup being formed of a plurality of serially connected surfaces of revolution including a peripheral portion, a radially inwardly extending wall portion, a reverse bend transition portion, and a radially inner tubular portion extending from said reverse bend portion toward said peripheral portion defining an internal annular seat;

an adapter member connectable to the second shaft and defining an external annular seat; and

weld joint means for connecting the tubular portion of the cup to the adapter member with the seats in supporting and facing relation.

4,516,957

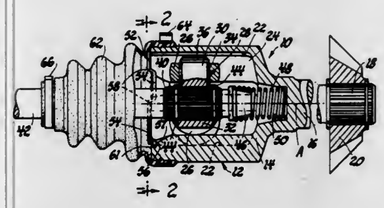
TRIPOT JOINT WITH SPIDER RETAINER

George W. Chyz, Grosse Pointe Woods, and David J. McGregor, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1984, Ser. No. 601,609

Int. Cl.³ F16D *3/30*

U.S. Cl. 464—111 **4 Claims**



1. In a universal joint having a centralized inner drive shaft, a drive assembly with a plurality of arcuately disposed drive elements operatively carried by said shaft, an outer drive housing disposed around said drive elements having an inner wall, a plurality of arcuately spaced drive channels in said inner wall of said housing, each of said drive elements being rotatably mounted with respect to said drive shaft and respectively disposed in said drive channels of said housing, the improvement comprising a curved resilient spring wire retainer, a retainer groove formed in said wall of said housing, said retainer having first segments releasably mounted within said retainer groove, said wire retainer further having blocker steps at the ends of the ends of said first segments projecting into the ends of said drive channels to reduce the effective width thereof to prevent the withdrawal of said drive elements and said inner drive shaft from drive connection with said drive housing and large diameter access segments interconnecting each of the blocker steps and extending externally of the housing and adjacent to one end thereof to provide external structure facilitating deflection of said retainer for the removal thereof from said groove and said housing and for the installation of said retainer into said groove and said housing.

4,516,958

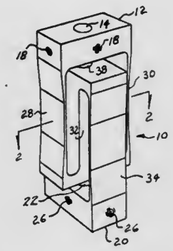
FLEXIBLE SHAFT COUPLING DEVICE

Edward H. Phillips, Middletown, Calif., assignor to Hidden Valley Associates, Inc., Middletown, Calif.

Filed Nov. 3, 1983, Ser. No. 548,450

Int. Cl.³ F16D *3/56, 3/50*

U.S. Cl. 464—153 **11 Claims**



1. A shaft coupler for coupling rotational motion from a first shaft to a second parallel shaft while permitting relative movement of the shafts along axes orthogonal to the longitudinal axes of the shafts, the coupler comprising:

first and second shaft attachment means for attaching the coupler to the first and second shafts;

a first pair of parallel arms attached to the first shaft attachment means and bendable about a first axis orthogonal to the longitudinal axes of the shafts;

a second pair of parallel arms attached to the second shaft attachment means and bendable about a second axis orthogonal to the longitudinal axes of the shafts, said first and second axes being orthogonal; and

a connecting member connected to the ends of the first pair of arms distant from the first attachment means and to the ends of the second pair of arms distant from the second attachment means, the connecting member being situated between the first and second pairs of arms.

7. A shaft coupler for rotatably coupling two parallel shafts and allowing displacement of the shafts perpendicular to the axes of rotation of the shafts, the coupler comprising:

first and second shaft attachment means for attaching the coupler to the shafts;

first flexible support means attached to the first shaft attachment means comprising a first pair of parallel support members each of which is more compliant to bending about an axis normal to the axes of rotation of the shafts than it is about any other axis for permitting translational movement of the first shaft attachment means along a first direction substantially perpendicular to the axes of rotation of the shafts;

second flexible support means attached to the second shaft attachment means comprising a second pair of parallel support members each of which is more compliant to bending about an axis normal to the axes of rotation of the shafts than it is about any other axis for permitting translational movement of the second shaft attachment means along a second direction substantially perpendicular to the axes of rotation of the shafts and to the first direction; and

connecting means connected to the first and second flexible support means and being situated between the first and second flexible support means for transmitting torque from the first flexible support means to the second flexible support means.

4,516,959

SEALING BOOT FOR UNIVERSAL JOINT

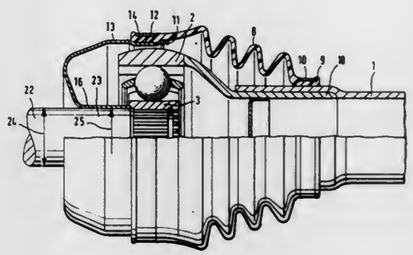
Werner Krude, Siegburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,523

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206127

Int. Cl.³ F16D *3/84*

U.S. Cl. 464—175 **1 Claim**



1. A universal joint comprising:

an inner joint member and an outer joint member arranged to be angularly movable relative to each other;

a driveshaft connected in driving engagement with said outer joint member;

a sealing boot made of resilient material for sealing the interior of said joint having a first end formed with a smaller diameter and a second end formed with a larger diameter;

an intermediate element formed as a member bent upon itself shaped to define an inner annular part and an outer annu-

lar part which are radially overlapping, said outer annular part having a diameter larger than said inner annular part and extending thereabout generally concentrically therewith;

a pin member extending from said inner joint member having said inner annular part of said intermediate element mounted thereon for connecting said intermediate element with said inner joint member;

said inner annular part having a diameter engaging said pin member with a press fit;

said sealing boot being arranged with said first smaller diameter end connected with said driveshaft and with said second larger diameter end connected about said outer annular part of said intermediate element so that said sealing boot stretches over said outer joint member and is tightly connected to said driveshaft and to said intermediate element;

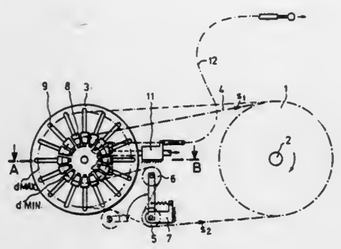
said outer annular part of said intermediate element being formed with a diameter which extends outwardly of and radially about said outer joint member and being shaped to comprise a receiving seat provided for receiving said second larger diameter end of said sealing boot, said receiving seat being directed toward said joint.

4,516,960

VARIABLE SPEED CHAIN DRIVE

Horst Rathert, Minden, Fed. Rep. of Germany, assignor to Rahdener Maschinenfabrik August Kolbus, Rahden, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 506,177
Int. Cl.³ F16H *55/54, 9/00, 11/02, 55/30*
U.S. Cl. 474—49 **17 Claims**



1. A variable speed chain drive comprising a pair of pulleys and a drive chain, at least a first one of said pulleys being in part defined by at least a first disk-shaped member, said disk-shaped member supporting a plurality of uniformly spaced drive means, said drive means being in part positioned in radial slots in the said disk-shaped member, said drive means defining a space for receiving said chain, said drive means gripping said drive chain in pincer fashion in non-positive drive, said drive means being movable in a radial direction relative to the axis of rotation of said first pulley and locking automatically against the radial component of the tractive force of the chain, and adjusting means for imparting radial motion in a desired direction to said drive means.

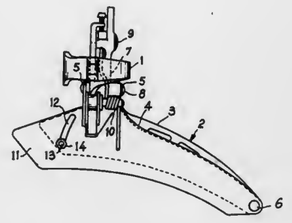
4,516,961

DERAILLEUR HAVING AN ADJUSTABLE FORK MEMBER FOR A CRANK-GEAR

Maurice E. L. Coué , Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Dec. 23, 1982, Ser. No. 452,716
Claims priority, application France, Dec. 30, 1981, 81 24504
Int. Cl.³ F16H *9/00*
U.S. Cl. 474—80 **13 Claims**

1. A derailleur of a bicycle crank-gear having a small chain wheel and a larger chain wheel and a chain for engaging a selected one of said chain wheels, said derailleur comprising a support for fixing to a frame of the bicycle, a chain guiding and shifting means including a fork member articulated to the support, the fork member having a web and two wings depending from opposite sides of the web, a first of said wings being provided for engaging a first side of said chain when shifting the chain from said small chain wheel to said larger chain wheel and a second of said wings being provided for engaging a second side opposite said first side of said chain when shifting



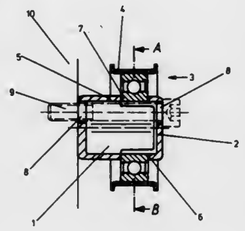
said chain from said larger chain wheel to said small chain wheel, said first wing comprising a first wing part and a second wing part which define therebetween a width of the first wing and said first wing part being adjustable to a fixed position relative to said second wing part so as to adapt said width of said first wing to various diameters of the small chain wheel, and means for immobilizing said first wing part in the adjusted position thereof.

4,516,962

TENSION ROLLER FOR DRIVE BELTS

Manfred Brandenstein, Eussenheim; Roland Haas, Hofheim; Ludwig Edelmann, Schweinfurt, and Rüdiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 14, 1983, Ser. No. 561,189
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 8235715[U]
Int. Cl.³ F16H *7/10*
U.S. Cl. 474—112 **3 Claims**



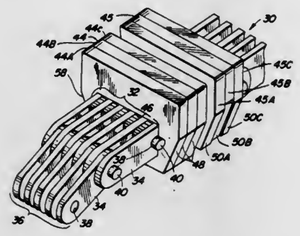
1. In a tension roller for drive belts, comprised of a support having a first eccentric bore, a rolling bearing having an inner ring mounted on a bearing seat of said support, and a roller rotatably arranged on said support by means of said rolling bearing, wherein said support is fastened to a machine frame by a screw arranged in said first eccentric bore and is eccentrically adjustable by rotation about said screw, the improvement wherein said support comprises a substantially solid pin on which said bearing seat is formed and a cup-shaped cover which engages said bearing seat, and said screw abuts said inner ring.

4,516,963

POWER TRANSMISSION CHAIN-BELT

Philip J. Mott, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 23, 1983, Ser. No. 497,478
Int. Cl.³ F16G *5/18*
U.S. Cl. 474—245 **14 Claims**



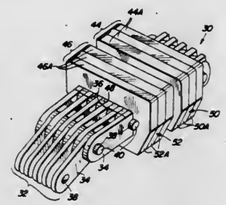
1. A chain-belt for drivingly connecting the pulleys of a pulley transmission, each pulley having a pair of flanges, comprising a plurality of sets of links interleaved with other sets of links, each link having a pair of spaced apertures, the apertures in one set of links being transversely aligned with the apertures of the next adjacent set of links which is interleaved therewith to form groups of aligned apertures, pivot means positioned in each group of aligned apertures to join said sets of links and to permit articulation of the chain-belt, and a generally trapezoidal-shaped load block transversely surrounding each set of links and positioned between the adjacent pivot means, each load block having angled side edges defining an engaging area for drivingly contacting the flanges of said pulleys, at least one load block having a pulley engaging area different than the pulley engaging areas of other load blocks.

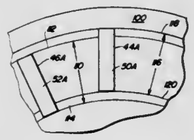
4,516,964

POWER TRANSMISSION CHAIN-BELT

Walter R. Laster, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 23, 1983, Ser. No. 497,479
Int. Cl.³ F16G *5/18*
U.S. Cl. 474—245 **6 Claims**





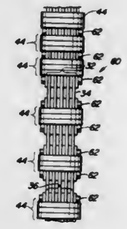
1. A chain-belt for drivingly connecting the pulleys of a pulley transmission, each pulley having a pair of flanges, said chain-belt comprising a plurality of sets of links interleaved with other sets of links, each link having a pair of spaced apertures, the apertures in one set of links being transversely aligned with the apertures of the next adjacent set of links which is interleaved therewith to form groups of aligned apertures, pivot means positioned in each group of aligned apertures both to join said sets of links and to permit articulation of the chain-belt, and a generally trapezoidal-shaped load block transversely surrounding each set of links and positioned between the adjacent pivot means, each load block having angled side surfaces adapted to drivingly contact the flanges of said pulleys at least one of said load blocks having a different transverse width than the transverse width of others of said load blocks, so as to drivingly contact the pulley flanges at a different time and different radial location than do the other load blocks.

4,516,965

POWER TRANSMISSION CHAIN-BELT

Philip J. Mott, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 23, 1983, Ser. No. 497,480
Int. Cl.³ F16G *5/18*
U.S. Cl. 474—245 **6 Claims**



1. An endless chain-belt for drivingly connecting the pulleys of a pulley transmission, each pulley having a pair of flanges, comprising a plurality of sets of links interleaved with other sets of links, each link having a pair of spaced apertures, the apertures in one set of links being transversely aligned with the apertures of the next adjacent set of links which is interleaved therewith to form groups of aligned apertures, pivot means positioned in each group of aligned apertures to both join said sets of links and to permit articulation of the chain-belt, and contacting means surrounding sets of links and carried on the chain-belt for drivingly contacting the flanges of said pulleys, said contacting means surrounding only some sets of links and located between adjacent pivot means.

4,516,966

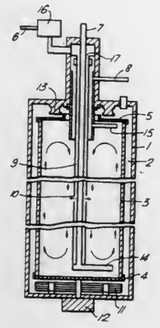
CENTRIFUGES, CENTRIFUGE PLANTS AND FLOW CONTROL ARRANGEMENTS THEREFOR

Geoffrey W. Alderton, Warrington, and Peter C. Davidge, Holmrook, both of England, assignors to British Nuclear Fuels Limited, Warrington, England

Filed Jul. 2, 1982, Ser. No. 394,883
Claims priority, application United Kingdom, Jul. 21, 1981, 8122371
Int. Cl.³ B04B *7/06*
U.S. Cl. 494—1 **6 Claims**

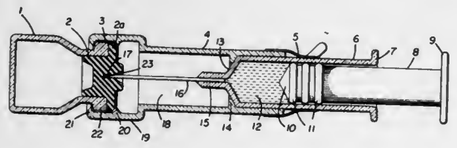
1. In a gas centrifuge assembly comprising a cascade of individual gas centrifuge machines, the improvement comprising flow-operated valve means located in at least one of the gas flow lines associated with each machine in the cascade, the valve means being constructed and arranged to close in re-

sponse to an abnormal gas flow in the line and out of the machine arising from gaseous impurity within the machine,



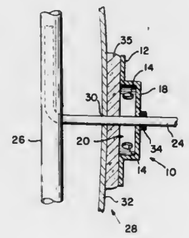
whereby to inhibit the spread of the impurity to other centrifuge machines in the cascade.

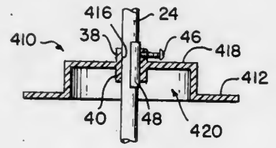
4,516,967
WET-DRY COMPARTMENTAL SYRINGE
Rudolph J. Kopfer, 1321 S. Eliseo Dr., Greenbrae, Calif. 94904
Continuation of Ser. No. 332,548, Dec. 21, 1981, abandoned.
This application Jul. 27, 1983, Ser. No. 517,050
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—87 **23 Claims**



1. A completely enclosed compartmental syringe disposed for storing and mixing a powdered medicament and a liquid solvent prior to injection comprising:
a container for storage of a predetermined quantity of said powdered medicament;
a puncturable seal of elastomeric material engaging an opening in said container;
a hollow tube projecting from said container and tightly engaging the circumference of said seal; said tube enclosing the entire syringe and forming a hermetically sealed compartment therefor;
said tube being made of flexible plastic material;
said tube being disposed for limited axial movement along the outside of said seal while maintaining tight contact therewith;
a cylindrical syringe barrel slidably positioned within said tube;
a removable hermetic seal joining said barrel and said tube;
a hypodermic needle having its first end positioned on one end of said barrel within said tube and connecting with the interior of said barrel;
a second end of said needle being positioned hermetically against said puncturable seal within said tube and partially penetrating said puncturable seal thus maintaining a seal on the interior of said barrel;
a plunger slidably mounted within said barrel;
said barrel containing a predetermined amount of said liquid solvent;
means for simultaneously advancing said tube and said barrel towards said puncturable seal on said container until said second end of said needle punctures said puncturable seal;
means for advancing said plunger in said barrel and discharging said solvent into said container thereby causing said powdered medicament to dissolve;
means for withdrawing said plunger thereby sucking such dissolved medicament into said barrel; and
means for removing said barrel together with said plunger and said needle from said tube,
said tube preventing contact between moving parts of said syringe with the outside atmosphere.

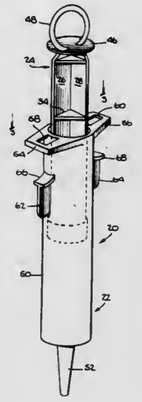
4,516,968
CATHETER SHIELD AND METHOD OF USE
Charles A. Marshall, 2937 - 181st Ave., N.E, Seattle, Wash. 98052, and Jeremiah B. Ray, 4546 Thacksray Pl., NE., Seattle, Wash. 98105
Filed Sep. 28, 1982, Ser. No. 425,494
Int. Cl.³ A61M *25/02*
U.S. Cl. 604—174 **8 Claims**





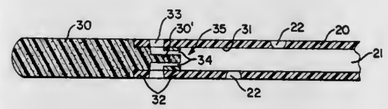
1. A catheter shield kit, wherein said kit comprises an elastic catheter adapted to enter a body through a catheter entrance site, wherein during use a portion of said catheter is anchored in said body, and wherein during use a portion of said catheter is outside said body and is under tension;
wherein said kit further comprises a catheter anchor means and a catheter shield comprising a relatively stiff shield dome defining a shield cavity, a peripheral shield flange extending at least partially around said shield dome, and a catheter shield hole in the top of said shield dome generally aligned with said catheter entrance site;
wherein said catheter shield hole is sized to be adapted to receive said catheter therethrough;
wherein said catheter shield, during use, is adapted to be placed with said shield flange against said body, with said catheter entrance site under said shield dome, and with said catheter extending through said catheter shield hole;
wherein said catheter anchor means, during use, are for securing at least one of said catheter and said catheter shield, and wherein said catheter anchor means, during use, are adapted to prevent longitudinal motion of said catheter shield away from said body with respect to said catheter; and wherein, during use, said tension of said portion of said catheter outside said body is adapted to pull on said catheter anchor means to urge said catheter shield snugly against said body, thereby eliminating the need to use adhesive media on said body to secure said catheter shield to said body.

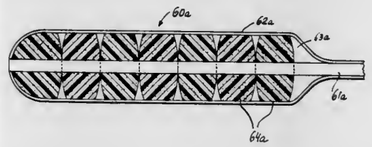
4,516,969
CONTROL SYRINGE
Michael H. Kintner, Manville, N.J., assignor to Medtech Plastics, Inc., South Plainfield, N.J.
Filed Apr. 14, 1983, Ser. No. 484,863
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—187 **5 Claims**



1. A control syringe barrel, comprising:
a substantially cylindrical body;
a pair of opposing, horizontal flanges extending from the top of the cylindrical body;
a pair of opposing, substantially horizontal flanges extending from the cylindrical body and located below the horizontal flanges; and
a substantially straight vertical flange located beneath each of the substantially horizontal flanges and contiguous therewith and with said cylindrical body said substantially straight vertical flange having a surface radially remote from and parallel to the axis of said cylindrical body, said surface extending substantially the entire length of said vertical flange.

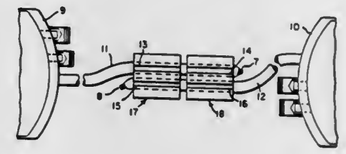
4,516,970
MEDICAL DEVICE
Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566, and Donald E. Gardner, 89, The Helm, East Islip, N.Y. 11730
Filed Sep. 13, 1982, Ser. No. 417,695
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—270 **26 Claims**





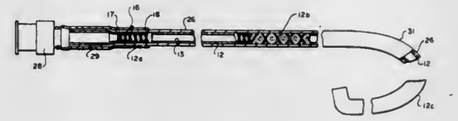
1. A medical device, particularly a catheter or feed tube, comprising a tube having a passage and being provided with a trailing end portion adapted to receive a flowable substance and a leading end portion; weighting means at said leading end portion and comprising an element composed of a mixture of powdered metal and synthetic plastic binder therefor, said element having two spaced ends and a channel which is open at said ends and communicates with said passage so that the flowable substance can pass from said tube into and through said element without hindrance; and outlet means for egress of flowable substance from said passage of said tube.

4,516,971
STERILE DOCKING PROCESS, APPARATUS AND SYSTEM
Dudley W. C. Spencer, 619 Shipley Rd., Wilmington, Del. 19809
Filed Jul. 6, 1982, Ser. No. 395,795
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—280 **21 Claims**



1. A process of joining first and second thermoplastic tubes together transversely of the axis of each tube comprising urging an array of hot parallel wires through both said tubes at a rate such that the thermoplastic resin from which said tubes are formed and which is in contact with said array becomes molten, thereby forming molten ends, maintaining the array of parallel wires at a temperature such that ambient air immediately within the vicinity of urging is kept sterile, moving the respective molten ends of said tubes together to form a joint between said tubes.

4,516,972
GUIDING CATHETER AND METHOD OF MANUFACTURE
Wilfred J. Samson, Saratoga, Calif., assignor to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 343,588, Jan. 28, 1982, abandoned. This application Aug. 12, 1983, Ser. No. 522,833
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—282 **6 Claims**



1. In a guiding catheter for insertion into a body passage of a patient, an elongate flexible tubular plastic member having a lumen extending therethrough, the member having a distal end adapted to be inserted into the body passage and a proximal end adapted to remain outside the body passage, a flat flexible ribbon wound helically in a first single layer in one direction onto the exterior of the tubular plastic member and a second single layer overlying the first layer and wound helically in an opposite direction onto the exterior of the tubular plastic member, each of the first and second layers having different pitches in different regions along the length of the tubular plastic member, means bonding the helically wound ribbon to the exterior surface of the plastic member, said first and second layers of ribbon providing torsional rigidity to the catheter facilitating steering and turning of the catheter in the body passage, and an outer flexible tube formed of a heat shrinkable

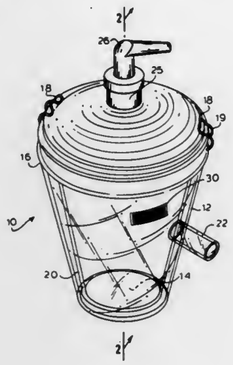
material shrunk onto said elongate flexible tubular member with the ribbons bonded thereto to form a unitary assembly.

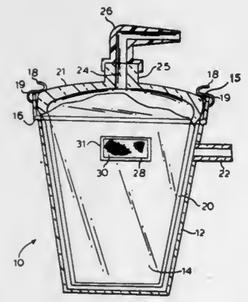
4,516,973

ONE-PIECE DISPOSABLE COLLECTION BAG HAVING A RIGID COVER FOR A SUCTION CANISTER UNIT

Anil Telang, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Mar. 14, 1983, Ser. No. 474,770
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—319 **19 Claims**





9. A suction canister assembly comprising:

a receptacle having an open end;

a one-piece, flexible enclosed liquid collection container positioned in said receptacle, said container including an integrally formed top wall means serving as an exterior cover for the canister assembly;

means for providing suction to the interior of said container and for drawing liquid in said container under said suction conditions; and

means for supporting said flexible container in said receptacle to prevent the container from collapsing and interfering with suction when the suction is applied to the interior of said container.

4,516,974

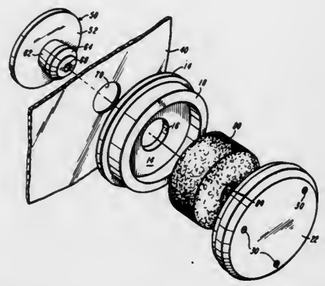
UNIVERSAL VENT DEVICE AND METHOD FOR OSTOMY APPLIANCES

Jeffrey J. Davis, New Lebanon, Ohio, assignor to Imnetec Inc., Vandalia, Ohio

Filed Dec. 13, 1982, Ser. No. 449,455
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—333 **25 Claims**

1. A universal vent device for attachment to a pouch of an ostomy appliance, the pouch having an enclosure wall, comprising:

a housing including a base provided with a cylindrical wall, the base of the housing having an opening therethrough, a cover member having a cylindrical flange tightly encompassing and removably attached to the cylindrical wall, the cover member having a vent opening therethrough, a connector member provided with a base and stem means extending from the base, the stem means having a cutter part, the stem means having a passage therethrough, the base of the connector member being within the pouch with the stem means cutting the enclosure wall of the pouch in a die-cutting action and extending through the enclosure wall of the pouch, the housing being on the exterior surface of the enclosure wall of the pouch, the



stem means snugly extending through the opening in the base of the housing and attaching the connector member to the base of the housing, the part of the enclosure wall of the pouch which encompasses the opening in the enclosure wall thus being clamped between the base of the housing and the base of the connector member, a portion of the stem means being within the housing, and a gas permeable filter element encompassing the stem means within the housing, gases within the pouch traveling from the pouch through the passage within the stem means, then through the gas permeable filter element in the housing and outwardly from the housing through the vent opening in the cover member, the cover member being readily removable from the cylindrical wall to permit access to the gas permeable filter element for replacement thereof.

4,516,975

FORMED AND WASHABLE DIAPER

Debra J. Mitchell, 110 Calvert Ct., Piedmont, Calif. 94611

Filed Mar. 12, 1984, Ser. No. 588,349
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—385 A **3 Claims**

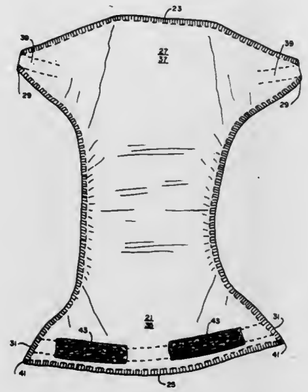
1. A formed and washable diaper comprised of

a multiplicity of layers of material including a non-allergenic outer layer forming a moisture barrier cover,

a moisture retentive mildew resistant washable felt layer,

a middle layer of batting forming the frame of the diaper, and

an inner facing layer of soft non-irritating absorbent washable fabric, said diaper having a particular body enclosing configuration due to its construction which includes an hour-glass outline with each of the hour-glass shaped sides forming a continuous sculpted crescent shaped concave curve with the top and bottom edges of the diaper being generally curved slightly convex upward and downward respectively, the upper end of said diaper being slightly longer in lateral length than the bottom end whereby when the diaper is placed on the wearer with the top end disposed at the back of the wearer's body and with the bottom end pulled up between the wearer's legs and disposed on the front of the wearer's body on the stomach, the two lateral edges of the top end of the diaper will wrap around the wearer's body from behind and overlap the two lateral edges at the bottom end of the diaper disposed on the wearer's stomach, the laterally curved vertically disposed edges of the diaper being provided with an elastic edging which is secured to said material for a portion of the length of the curved edges which surround the wearer's leg when the diaper is disposed in operative position whereby when the elastic is released after being secured to the diaper in a stretched condition along the edge of said diaper and allowed to retract, said diaper is retracted into a U-shaped configuration with the resulting



opposed portions being the front and rear flaps of said diaper, the outer edges of said inner, middle, and outer layers of said material being co-extensive throughout the extent of the configuration of the diaper, said absorbent felt layer being disposed in a narrow rectangular strip from the top to the bottom down the middle of said diaper to provide extra absorbency throughout the middle portion of said diaper, and

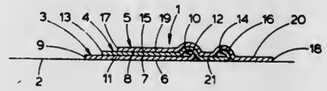
tabs formed by the top and bottom lateral edges or corners of said diaper being provided with adjustable stick and grip fasteners for securing said overlapping lateral edges together to hold the diaper on the wearer's body.

4,516,976

ADHESIVE TAPE FASTENERS

John E. Bell, Columbia, S.C., assignor to Anchor Continental Inc., Columbia, S.C.

Filed Jun. 13, 1983, Ser. No. 504,026
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—389 **8 Claims**



1. In a user-operable, finger-manipulable, adhesive tape-fastener for a disposable sanitary absorbent baby-diaper, which diaper has a front pervious body-contacting surface and also a moisture-impermeable back surface,

a first adhesive tape, a second adhesive tape, and a third adhesive tape, each of which has a back face and a front face,

said front faces each being coated with pressure-sensitive adhesive,

said first adhesive tape having a free end, a fixed end, and a portion between the free end and the fixed end,

said first adhesive tape adapted for attachment to a marginal portion of the front surface of the diaper to form a first anchor tab,

said fixed end of the first adhesive tape being joined to the adhesive face of the second adhesive tape to form a first join,

said second adhesive tape having a free end, a fixed end, and a portion between the first join and free end to form a first fastener tab,

said fixed end of said second adhesive tape being joined to the adhesive face of the third adhesive tape to form a second join,

said third adhesive tape having a first free end, a second free end, and a first portion between the first free end and the second join adapted to form a second fastener tab,

said second adhesive tape having a second portion between the second free end and the second join adapted for user-operable attachment to a marginal portion of the back surface of the diaper to form a second anchor tab,

said first adhesive tape having a release surface on the back face thereof,

said fastener tab adhesive tape being removably attached to the release surface of the back face of the first adhesive tape,

said first fastening tab having a release surface on the back face thereof;

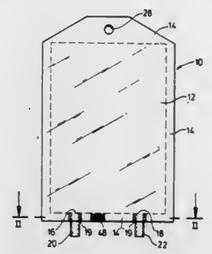
the adhesive face of the second fastener tab being removably attached to the release surface of the back face of the first fastening tab.

4,516,977

STORAGE BAG

Reinhold Herbert, Neu-Anspach, Fed. Rep. of Germany, assignor to Fresenius, AG, Fed. Rep. of Germany

Filed Feb. 16, 1984, Ser. No. 580,850
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305365
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—415 **19 Claims**



1. A medical bag for containing liquids comprising a flexible bag body of plasticizer free thermoplastic polymeric material durable to autoclave sterilization to at least 120° C.,

at least one substantially dimensionally stable tubular polymeric port member inserted into said bag body, wherein the polymer of said port member is different from the polymeric bag material,

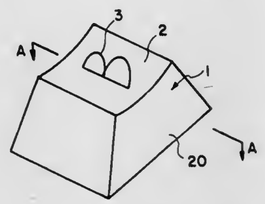
a bonding layer between said port member and the portions of the bag body in contact therewith of uncross-linked copolymer of olefin and vinyl acetate or of polyurethane.

4,516,978

COLORED CHARACTER PRINTED ON KEY BUTTON

Hideo Goto; Takeo Hosoe; Toshinori Oda, and Sosuke Ohtsuka, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 19, 1983, Ser. No. 533,573
Claims priority, application Japan, Sep. 29, 1982, 57-170577
Int. Cl.³ H01H *13/14*
U.S. Cl. 8—510 **7 Claims**



1. A key button formed by molding a synthetic resin and provided on a top surface thereof with a character or symbol, wherein said character or symbol is printed on said top surface with a coloring agent comprising methyl violet dye, a nitrocellulose binder and a ketonic solvent, said solvent being capable of dissolving said dye and said synthetic resin, whereby said solvent acts on said synthetic resin to cause said dye to permeate through said top surface and into said button, and said binder acts to bind the molecules of said methyl violet to each other and to the molecules of said synthetic resin, wherein said synthetic resin is acrylonitrile-butadiene-styrene resin.

4,516,979

POLYBENZOATES AS DISPERSE DYEING ASSISTANTS

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 23, 1982, Ser. No. 452,230
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151433; Jan. 2, 1982, 3200003
Int. Cl.³ D06P *1/65;* C09B *1/60*
U.S. Cl. 8—583 **20 Claims**

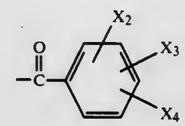
1. A composition comprising an aqueous emulsion of a compound of formula III

$$X\text{—}OX_1)_p \qquad \text{III}$$

wherein

X is a divalent $C_{2\text{-}8}$ saturated aliphatic hydrocarbon radical, a trivalent $C_{3\text{-}6}$ saturated aliphatic hydrocarbon radical, a pentavalent residue of glucose less its hydroxyl groups, a polyvalent residue of a disaccharide less its hydroxyl groups, or a divalent radical of the formula $—C_qH_{2q}—O—C_rH_{2r}—$ wherein q and r are independently 2, 3, or 4,

each X_1, independently, is hydrogen or a radical of formula IV



IV

in which X_2, X_3 and X_4 are the same or different and are hydrogen, chloro, $C_{1\text{-}4}$alkyl or $C_{1\text{-}4}$alkoxy

and p is a whole number equal to the valence of X, with the proviso that when p is 2 both X_1's are radicals of formula IV and when p is greater than 2 more than an average value of 50% of the X_1's are radicals of formula IV,

and 5 to 30%, based on the weight of said compound, of an anionic emulsifying agent.

4,516,980

PROCESS FOR PRODUCING LOW-ASH, LOW-SULFUR COAL

Thomas D. Wheelock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 20, 1983, Ser. No. 506,031
Int. Cl.³ C10L *9/02*
U.S. Cl. 44—1 SR **4 Claims**

1. The process of treating finely ground coal for removal of pyritic sulfur, organic sulfur, and ash-forming minerals, including the steps of treating the coal in an aqueous alkaline solution at an elevated temperature followed by extraction with an aqueous acidic solution, wherein the improvement comprises:

(a) forming a slury of finely-divided coal with an aqueous solution of a carbonate reagent selected from the class consisting of sodium carbonate and bicarbonate, and heating said slurry in a pressurized reactor while in contact with dissolved oxygen, said reactor being maintained at a temperature of from 120° to 150° C. and at an oxygen pressure or partial pressure of 50 to 200 psia;

(b) next heating the coal from step (a) in an aqueous slurry of said carbonate reagent at a temperature of from 250° to 330° C. under substantially non-oxidizing conditions; and

(c) after separating the coal from the slurry of step (b) carrying out an aqueous acidic extraction with a strong mineral acid to solubilize ash-forming minerals.

4,516,981

RESIDUAL OIL SLUDGE DISPERSANT

Otis L. Nelson, Jr., and Mark L. Nelson, both of 2543 So. Two Mile Rd., Bay City, Mich. 48706

Filed Jan. 9, 1984, Ser. No. 569,160
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—53 **13 Claims**

1. A residual oil sludge dispersant comprising a low molecular weight alkyl alcohol; a glycol ether; and a polyethoxylated compound, said alcohol being present in an amount of 20–30 percent by weight, said glycol ether comprising a glycol alkyl ether present in an amount of 10–20 percent by weight, and said ethoxylated compound being present in an amount of 50–75 percent by weight.

10. In combination;

a residual oil having sludge and water; and a dispersant 1 part of dispersant to 1,000–4,000 parts of oil consisting essentially of a low molecular weight alcohol 20–30 percent by weight, a glycol ether 10–20 percent by weight, and a polyethoxylated compound 50–70 percent by weight, wherein the dispersant disperses sludge and precipitates out water from the residual oil.

4,516,982

ANTIMISTING SYSTEM FOR HYDROCARBON FLUIDS

Ilan Duvdevani, Leonia; Dennis G. Peiffer, East Brunswick; John A. Eckert, Mountainside, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,905
Int. Cl.³ C10L *1/24*
U.S. Cl. 44—62 **10 Claims**

1. An antimisting hydrocarbon solution comprising a jet fuel and a polymer complex, wherein the concentration of said polymer complex in said solution is about 0.01 to about 2 grams per 100 ml of said solution and said polymer complex comprises the interaction product of a metal neutralized sulfonated polymer and an amine containing polymer which has a vinyl pyridine comonomer incorporated therein, said metal neutralized sulfonated polymer having a polymer backbone which has a solubility parameter of less than about 10.5 and a crystallinity of less than about 25%, said metal neutralized sulfonated poly-

mer containing about 4 to about 200 meq. of metal neutralized sulfonate groups per 100 gram of polymer, said metal neutralized sulfonate groups being neutralized with a metal ion selected from the groups consisting of zinc, copper, iron, nickel, cobalt, antimony and lead, the nitrogen content of the amine containing polymer is about 4 meq. to about 500 meq. per 100 gram of polymer, said amine containing polymer being soluble in said jet fuel.

4,516,983

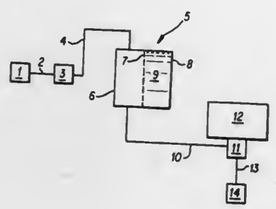
Patent Not Issued For This Number

4,516,984

DEGASSING PROCESS AND APPARATUS FOR REMOVAL OF OXYGEN

Isiah M. Warner, Stone Mountain, Ga., and Chu-Ngi Ho, Johnson City, Tenn., assignors to Emory University, Atlanta, Ga.

Filed Nov. 8, 1983, Ser. No. 549,737
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 **23 Claims**



1. A method for decreasing the oxygen content of a fluid stream which comprises:

contacting said fluid with one side of a membrane capable of passing oxygen and retarding the passage of said fluid wherein said contacting takes place in a container permeable to oxygen only through said membrane and the second side of said membrane is in contact with a chemically deoxygenating environments.

13. An apparatus for deoxygenating a fluid stream, which comprises:

a membrane capable of passing oxygen and retarding the passage of said fluid;

first containing means for maintaining said fluid in contact with one side of said membrane, said first containing means being impermeable to oxygen except through said membrane and having inlet and outlet means through which said fluid is conducted into and out of said first containing means; and

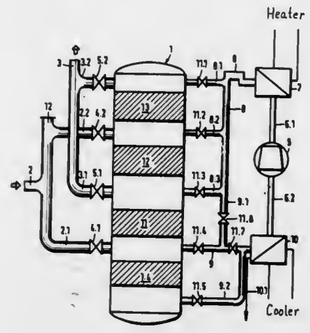
second containing means for maintaining a chemically deoxygenating environment in contact with a second side of said membrane wherein said liquid containing means contains a chemically deoxygenating environment selected from the group consisting of solutions of chromus ions, mixtures of lithium aluminum hydride and benzopinacolone in pyridine, alkaline aqueous solutions of pyrogallol, Fieser's solutions, aqueous sodium dithionite solutions, benzophenone ketyl-containing organic solvents, reduced BTS catalyst, solutions of sodium sulfite, solutions of hydrazine, and solutions of vanadous sulfate.

4,516,985

METHOD FOR THE ABSORPTIVE PURIFICATION OF A GAS STREAM OF VAPOROUS OR GASEOUS IMPURITIES

Karl Winter, Dortmund, Fed. Rep. of Germany, assignor to Rekuperator KG Dr.-Ing. Schack & Co., Düsseldorf, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,555
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232134; Jun. 9, 1983, 3320735
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—18 **6 Claims**



1. Method for operating a multi-layer sorption filter with a plurality of sorption material layers in which the number of layers is designated n, wherein n is an integer and has a value of at least 4, for purification of a gas stream containing gaseous or vaporous impurities, desorption of the sorption material layers loaded with the adsorbed impurities and cooling of the sorption material layers after their desorption, which comprises;

purifying a gas stream containing said impurities by dividing said gas stream in (n − 1) smaller gas streams, passing these smaller gas streams through (n − 1) of said n layers in parallel flow, with the n^{th} sorption material layer remaining outside the flow of the gas streams being purified, and discharging purified gas from the sorption filter;

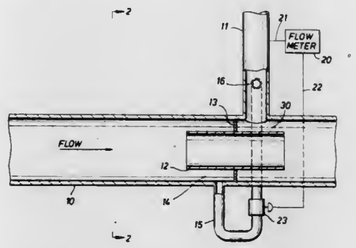
desorption of all n sorption material layers by feeding heated gaseous desorption medium through said layers, wherein the n^{th} of said layers is the last layer the direction of the flow of the desorption gas through which all the desorption gas is circulated in a closed loop, in which the gaseous desorption medium containing desorbate from the sorption filter is cooled to condense the desorbate, reheated, and recirculated to the sorption filter, and discharging the condensed desorbate; cooling the group of (n − 1) sorption material layers independently of the cooling of the n^{th} sorption material layer by feeding cooled desorption gas through either one of the group of (n − 1) sorption material layers and the n^{th} sorption material layer and changing the feeding to the other after the first has become cold.

4,516,986

TWO-PHASE FLOW SPLITTER

John C. Jepsen, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 29, 1984, Ser. No. 594,500
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—18 **14 Claims**



9. A method for withdrawing, with minimum pressure loss, a portion of a vapor-liquid fluid flowing in a main line while maintaining a preset vapor-liquid ratio in the withdrawn fluid, said method comprising:

restricting the flow of the fluid in the main line;

removing a portion of the liquid from the fluid in the main line upstream of the restricted flow;

withdrawing a portion of the fluid from the main line in the low pressure area produced by said flow restriction; and

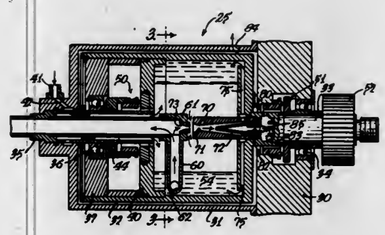
combining a preset portion of the liquid removed from the main line with the portion of the fluid withdrawn from the main line.

4,516,987

DEAERATOR USABLE IN A SYSTEM FOR A STEAM POWERED TORPEDO AND DEAERATING METHOD

Richard E. Niggemann, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 21, 1983, Ser. No. 515,591
Int. Cl.³ B01D *19/00;* **F42B** *19/00;* **F04B** *23/04*
U.S. Cl. 55—52 **11 Claims**



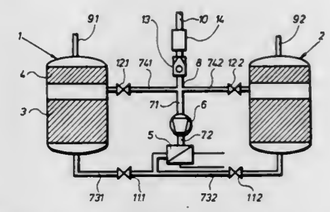
11. The method of removing air from liquid with entrained air comprising, centrifuging a volume of liquid and air within a rotatable drum to separate the liquid from the air, positioning a pitot probe within the rotatable drum to draw liquid from the rotatable drum under pressure, diverting a portion of said liquid under pressure to a liquid-driven air jet pump located within the rotatable drum and communicating with the separated air to pump air into a collection chamber and build up the pressure of the air in said collection chamber, and discharging pressurized air from the collection chamber.

4,516,988

METHOD AND APPARATUS FOR PURIFYING A GAS STREAM IN A SORPTION FILTER

Karl Winter, Dortmund, Fed. Rep. of Germany, assignor to Rekuperator KG Dr.-Ing. Schack & Co., Düsseldorf, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,557
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—59 **14 Claims**



1. Method for the purification by adsorption in a sorption medium of a gas stream loaded with organic gases or vapors, especially up to near the saturation limit, in a sorption filter, which comprises circulating a gas in a loop through a sorption medium layer, introducing a gas stream to be purified containing organic impurities from a source outside of the loop into the circulating gas stream at a point in the loop prior to passage through the sorption medium layer, maintaining a volumetric flow of the circulating gas which is larger than the volumetric flow of the gas to be purified introduced into the circulating gas stream passing the mixture of circulating gas and gas containing organic impurities through the sorption medium layer to remove organic impurities, withdrawing a portion of said purified mixture of gases after passage through the sorption medium layer, maintaining a volumetric flow of said portion of gases which substantially corresponds to the volumetric flow of the gas to be purified, and continuing the circulation of the remainder of the purified mixture of gases as circulating gas to the mixing point to be mixed with gas to be purified and circulating this mixture of gases to the sorption medium layer.

8. Apparatus for the purification of a gas stream loaded with organic gases or vapors comprising a gas loop with a circulatory blower and connecting pipes connected to a container of a sorption filter, a feedline for the gas to be purified opening into the loop on the suction side of the blower, said container of the sorption filter having at least two sorption medium layers which are separated from each other to provide a space therebetween said loop having its return line from the container opening into said space between the two layers, and a purified gas outlet in the container above the sorption medium layer above said space for the discharge of purified gas.

4,516,989

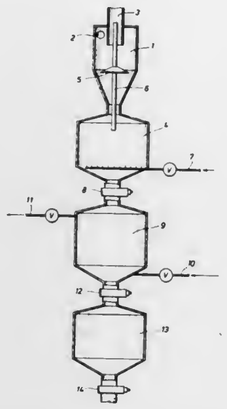
PROCESS FOR REMOVING FLY ASH PARTICLES FROM A GAS AT ELEVATED PRESSURE

Bernardus H. Mink, and Willem J. A. H. Schoeber, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 429,779, Sep. 30, 1982, abandoned. This application May 31, 1984, Ser. No. 615,849
Claims priority, application Netherlands, Dec. 30, 1981, 8105903
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—68 **8 Claims**

1. A process for removing fly ash particles from a gas at elevated pressure comprising separating the fly ash particles in a cyclone, and collecting the separated fly ash particles in a collecting vessel, emptying said vessel at intervals via a sluice into a vessel having a lower pressure, the gas entering the

collecting vessel from the sluice while the vessel is being emptied being discharged via a pipe coaxially arranged in the

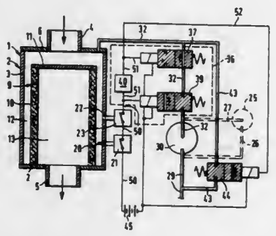


cyclone and extending from the collecting vessel to a point in the gas outlet of the cyclone.

4,516,990
METHOD OF REMOVING SOOT FROM EXHAUST GASES

Hans Erdmannsdörfer, Ludwigsburg; Manfred Wagner, Stuttgart; Rudi Numrich, Weinstadt, and Gerd Weyh, Leonberg-Eltingen, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,088
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325391
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—96 **9 Claims**



1. A method of removing soot form the exhaust gas of an internal combustion engine, particularly of a diesel engine, comprising the steps of:

filtering the soot particles from the exhaust gas by means of an exhaust filter which retains and collects the soot;

during operation of the engine, form time to time burning off the collected soot to a gas which passes through the exhaust filter by adding to the soot a dose of a flowable combustion-inducing substance which lowers the soot ignition temperature and by also adding a supply of combustion air, the combustion-inducing substance being a mixture of copper(I) chloride and ammonium nitrate;

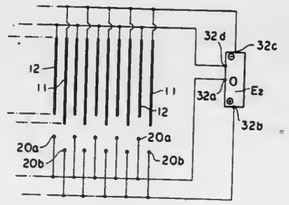
monitoring the temperature inside the exhaust filter and using the presence of an operating temperature above a predetermined level as a precondition for the initiation of the burn-off step; and

monitoring the accumulation of soot in the exhaust filter, in terms of the resultant increase in the flow resistance across the filter, and using the presence of a predetermined flow resistance as a trigger condition for the initiation of the burn-off step.

4,516,991
AIR CLEANING APPARATUS

Ryozo Kawashima, Kanagawa, Japan, assignor to Nihon Electric Co. Ltd., Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 487,952
Claims priority, application Japan, Dec. 30, 1982, 57-228284; Feb. 18, 1983, 58-24831
Int. Cl.³ B03C *3/08, 3/32*
U.S. Cl. 55—124 **2 Claims**

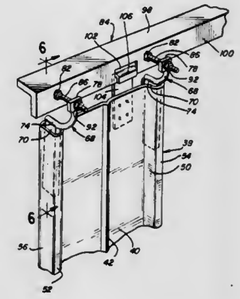


1. An air cleaning apparatus, comprising a casing having an air flow inlet and air flow outlet, a plurality of dust collecting panel electrodes arranged in parallel and spaced from each other at predetermined intervals to form air flow passages therebetween, said electrodes having ends, a first group of ionizing wires arranged at a first predetermined distance from said ends and extended along imaginary lines projecting intermediate said intervals and away from said intervals; a second group of ionizing wires positioned at a greater predetermined distance from said ends than that of said first group, the ionizing wires of the second group extending substantially along imaginary extension lines projecting from the respective dust collecting electrodes; a voltage source connected to said dust collecting electrodes and said first and second group of ionizing wires such that said first group and said second group of the ionizing wires are of one and the same polarity and said dust collecting electrodes are of the opposite polarity, said voltage source being constructed so as to apply between said dust collecting electrodes and said first and second second group of ionizing wires a voltage so that corona discharges are produced between said dust collecting electrodes and said first group of ionizing wires and between said first group of ionizing wires and said second group of ionizing wires and an air stream is generated at each of said intervals by the corona discharges, and a predetermined potential gradient is produced between respective dust collecting electrodes; connecting means for connecting said voltage source to said first and second group of ionizing wires so as to apply between said dust collecting panel electrodes and said first group a voltage value of substantially ½ of the voltage value applied between said dust collecting electrodes and said second group of ionizing wires, said dust collecting panel electrodes being each coated with an ozone decomposion-accelerating noble metal plating layer; ozone insulating plates mounted at said inlet and at ends of said ionizing wires and said dust collecting electrodes so as to prevent ozone generation thereon; and an ozone depositing activated coal filter arranged at said air flow outlet.

4,516,992
APPARATUS AND METHOD FOR STRAIGHTENING ELECTROSTATIC PRECIPITATOR COLLECTOR PLATES

Robert E. Jonelis, 142 W. Lake Shore Dr., Tower Lakes, Barrington, Ill. 60010

Filed Nov. 28, 1983, Ser. No. 555,530
Int. Cl.³ B03C *3/47*
U.S. Cl. 55—145 **14 Claims**



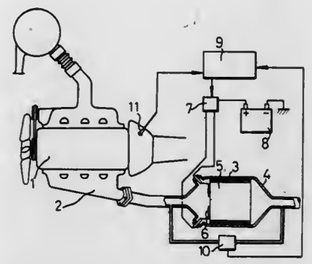
1. In an electrostatic precipitator having a plurality of substantially vertical collector plates held by a support with electrodes positioned between the collector plates, the improvement comprising; an elongated bar connected to one of the collector plates adjacent to one end of the plate, a bracket fixed to the bar, a connector having one end fixed relative to the support, and a lock connected to the bracket securing the bracket to the connector at a selected position so as to hold the bar in a selected attitude relative to the plate and to apply a torque to the one end of the plate.

11. A method of straightening a collector plate in an electrostatic precipitator wherein the collector plate is bowed comprising the following steps; connecting an elongated bar to the collector plate, securing one end of a connector to a fixed portion of the electrostatic precipitator, applying a torque moment to the elongated bar to apply a torque moment to the plate to remove the bowed condition, and locking the elongated bar relative to the connector to hold the torque bar in a selected attitude relative to the collector plate to hold the plate in an unbowed condition.

4,516,993
CARBON PARTICULATES CLEANING DEVICE

Yukihisa Takeuchi, Chita, and Masahiro Tomita, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed May 31, 1983, Ser. No. 499,404
Claims priority, application Japan, Jun. 1, 1982, 57-93325
Int. Cl.³ B01D *46/42*
U.S. Cl. 55—283 **11 Claims**



1. An exhaust gas cleaning device for collecting carbon particulates in exhaust gases discharged from an engine and burning off the collected carbon particulates, comprising:

a casing having an inlet port and a discharge port for introducing and discharging said exhaust gases;

a filter member for collecting carbon particulates in said exhaust gases which is disposed within said casing between said inlet port and said discharge port; said filter member being made of heat resistant material and being provided with a large number of open passages through which said exhaust gases flow;

an electric heater means for heating and igniting the carbon particulates collected by said filter member; said electric heater means being composed of at least two kinds of heating resistors which are constructed so as to provide different electric power densities to be applied to said filter member, said at least two kinds of heating resistors being adhered to the upstream end surface of said filter member so as to be distributed thereon uniformly;

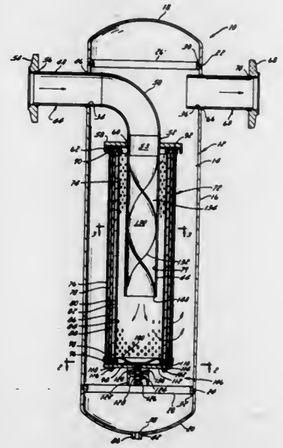
an electric current supplying means connected to said heater means for supplying electric current from an electric power source to said at least two kinds of heating resistors in succession in the order of from one providing the maximum electric power density to one providing the minimum electric power density at predetermined time intervals; and

means connected to said electric current supplying means for detecting when the amount of the carbon particulates collected by said filter member reaches a predetermined level and for initiating operation of said electric current supplying means.

4,516,994
APPARATUS FOR SEPARATING LIQUID DROPLETS FROM GAS

Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Apr. 11, 1984, Ser. No. 598,992
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—337 **9 Claims**



1. Apparatus for separating liquid droplets from gas in which they are suspended comprising:

a hollow housing having a chamber therein;

a filter element mounted in said chamber and spaced from the walls thereof and above the floor thereof,

said filter element having a bore therein open at its upper end and closed at its lower end,

said filter element having a porous exterior surface and a porous interior surface confronting said bore;

an inlet conduit extending into said housing and into the

open end of said bore for directing a mixture of liquid droplets and gas into said bore, said inlet conduit having a passage therethrough defined by a wall, said inlet conduit being spaced from said interior surface of said bore and from said closed lower end of said filter element;

means for sealing the space at the open end of said bore between the outside of said inlet conduit and said filter element;

deflector means mounted in said inlet conduit for directing said mixture therethrough and transversely against said wall of said passage and from thence into said bore and through said filter element;

a gas outlet conduit extending into said housing and communicating with said chamber for conducting filtered gas from said chamber;

and a liquid outlet conduit extending into said housing near the bottom of said chamber for conducting filtered liquid drained from the exterior of said filter from said chamber.

4,516,995

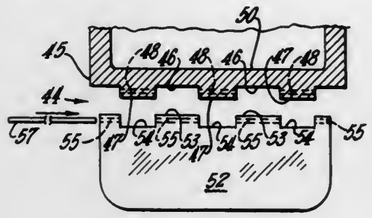
APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, Granville; Thomas J. Porzio, and Monte L. Nagy, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 20, 1984, Ser. No. 632,762

Int. Cl.³ C03B *37/09*

U.S. Cl. 65—1 **8 Claims**



1. A feeder for supplying streams of molten glass to be drawn into filaments comprising:

a body having an orificed discharge wall adapted to permit said molten glass to flow therethrough to provide said streams; and

a terminal member joined to said body, said member being adapted to be connected to a source of electrical energy to heat said body, said terminal member being a laminate comprised of:

(a) a refractory metal core having at least one articulated edge portion;

(b) a oxygen impervious, precious metal connector section joined to said body, said connector section having an articulated edge portion mechanically interlocked with said articulated edge portion of said refractory metal core; and

(c) an oxygen impervious, precious metal sheath positioned around said core and in contact with said connector section, said core, connector section and sheath being intimately bonded together by hot isostatic pressing to form a unitary laminate, wherein the connector section and sheath protect the core from oxidation at elevated temperatures.

4,516,996

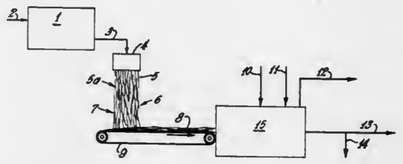
FORMATION OF MOLDED GLASS FIBER PARTS FROM GLASS FIBER BLANKETS AND PRODUCT

G. Fred Willard, and David A. Hutchings, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 483,011, Apr. 7, 1983, abandoned. This application Aug. 29, 1984, Ser. No. 645,537

Int. Cl.³ C03C *24/02*

U.S. Cl. 65—3.43 **9 Claims**



1. A method of forming a molded glass fiber part which comprises:

(a) melting glass batch to form molten glass;

(b) forming glass fibers from said molten glass, said glass fibers being discharged from a spinner;

(c) contacting the discharged fibers with a binder, a phenolic resin and a liquid polyisocyanate as the discharged fibers are descending from said spinner;

(d) accumulating the discharged fibers in contact with the binder, a phenolic resin and a liquid polyisocyanate on a conveyor;

(e) introducing the discharged fibers from (d) into a mold; and

(f) contacting the fibers within the mold with a tertiary amine while molding the fibers to form a molded glass fiber part.

4,516,997

METHOD OF AND APPARATUS FOR VACUUM SHAPING A GLASS SHEET

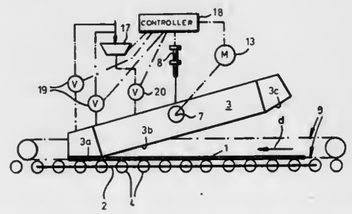
Paul Derner, Gelsenkirchen; Rüdolf Eckardt, and Hans-Christoph Neuendorf, both of Wesel, all of Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Fürth, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,579

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236400; Jan. 7, 1983, 3300388

Int. Cl.³ C03B *23/035*

U.S. Cl. 65—106 **19 Claims**



1. A method of deforming a plastic glass sheet from a generally two-dimensional shape into a generally three-dimensional shape, the method comprising the steps of sequentially:

supporting the plastic glass sheet on a conveyor with the sheet's two-dimensional upper face juxtaposed underneath the three-dimensional lower face of a vacuum-forming die;

relatively displacing the conveyor and die vertically toward each other so that one portion of the sheet face engages a respective portion of the die face;

securing the two portions together by suction, whereby the sheet adheres at the one portion of its face to the respective portion of the die face; and

relatively rocking the conveyor and die about a horizontal axis with deformation of the sheet to press the rest of the sheet face and die face together and adhering the faces entirely together by suction.

13. An apparatus for deforming a plastic glass sheet from a generally two-dimensional shape into a generally three-dimensional shape, the apparatus comprising:

a vacuum-forming die having a downwardly directed die face;

conveyor means for supporting the plastic glass sheet with its two-dimensional upper face juxtaposed underneath the die face; and

means for relatively displacing the sheet and die vertically toward each other so that one portion of the sheet face engages a respective portion of the die face, for securing the two portions together by suction, and for relatively rocking the sheet and conveyor means about a horizontal axis with deformation of the sheet to press the rest of the sheet face and die face together and adhering the faces entirely together by suction.

4,516,998

METHOD OF MAKING TUBULAR VIALS AND AMPULES

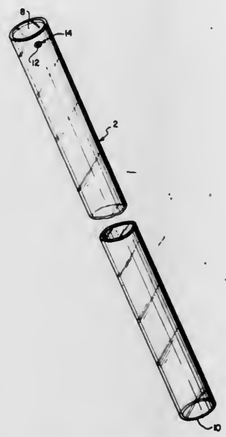
Hans-Georg Ritt, Budenheim; Hartmut Luneberg, Mitterteich; Reinhard Mannl, Mitterteich, and Alfred Grillmeier, Mitterteich, all of Fed. Rep. of Germany, assignors to Schott-Ruhrglas GmbH, Bayreuth, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,321

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242326

Int. Cl.³ C03B *23/12*

U.S. Cl. 65—108 **10 Claims**



1. Production method for vials whereby vials are produced from vertically mounted glass tubes in a production machine, said method comprising:

vertically mounting a glass tube, which has both ends sealed, in a production machine,

heating a portion of the sides of the tube adjacent to the top portion of the tube,

forming a bottom portion of a vial in the vicinity of said heated portion, whereby excess pressure develops within the tube below said bottom portion causing said bottom portion to burst open immediately forming a mouth portion for a vial,

separating said top portion of the tube above said mouth portion,

separating said vial from the tube at a distance from said mouth portion corresponding to the length of said vial whereby the bottom portion of said vial and a second bottom portion for the remaining length of tube are formed simultaneously, and whereby said second bottom portion bursts open immediately as a result of excess pressure accumulated within said tube below said second bottom portion thus forming a mouth portion for said second vial, and

repeating said steps of heating, forming and separating until the glass tube has been used.

4,516,999

PROCESS FOR THE THERMAL TEMPERING OF GLASS

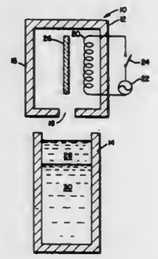
Werner Kiefer, Mainz, and Klaus Stetter, Möhrendorf, both of Fed. Rep. of Germany, assignors to JENAer Glaswerk, Schott & Gen., Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 226,845, Jan. 21, 1981, abandoned. This application Jun. 1, 1982, Ser. No. 383,938

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001944

Int. Cl.³ C03B *27/02*

U.S. Cl. 65—116 **7 Claims**



1. A process for tempering glass consisting of the steps of:

I. heating the glass to a temperature above the glass transformation temperature and below the softening temperature to produce heated glass; and then

II. passing the heated glass into a liquid of lower density; and then

III. passing the heated glass into a liquid of higher density;

wherein the residence time of the glass in the liquid of lower density is long enough such that the glass does not crack upon entering the liquid of higher density but is not so long as to completely cool the glass; and

wherein the liquid of lower density is immisible with the liquid of higher density and wherein both liquids are contained in a single vessel; and

wherein the liquid of higher density is water.

4,517,000

APPARATUS FOR PRODUCING MOLTEN GLASS

Paul Burget, Welkenraedt, Belgium, and Michel Zortea, Chalon sur Saone, France, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Division of Ser. No. 241,093, Mar. 6, 1981, abandoned. This application Sep. 16, 1982, Ser. No. 418,787

Claims priority, application France, Mar. 11, 1980, 80 05405

Int. Cl.³ C03B *5/18, 5/04*

U.S. Cl. 65—178 **9 Claims**

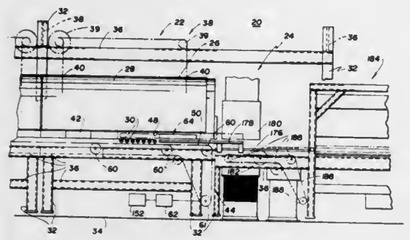
1. An apparatus for making molten glass from a vitrifiable composition comprising:

(a) charge-receiving means for melting the vitrifiable composition to form the molten glass;

(b) means for refining the molten glass flowing from the charge-receiving means and refining means located adjacent to and being in fluid flow connection with said charge-receiving means;

(c) means for heating the molten glass in the refining means;

(d) conditioning means for homogenizing and lowering the temperature of the glass to a suitable value;
(e) means for connecting the refining means to the conditioning means; said connecting means having more narrow dimensions than said refining or conditioning means;
(f) means for feeding the molten glass in a forward current from the refining means to the conditioning means, said feeding means comprising a row of agitators being located in said connecting means in a dissymmetrical arrangement such that the row of agitators is located closer to the wall of the connecting means toward which the direction of



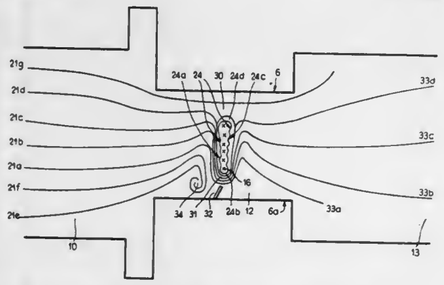
the agitators' rotation directs the molten glass; each agitator being spaced from the agitator which precedes it in the row by the same distance that the next agitator in the row is spaced from it, and each agitator rotating in the same direction at approximately identical speeds, and being immersed in the forward current of said molten glass in a row aligned transversely to the direction of flow in the connecting means; and
(g) means for drawing off the conditioned molten glass, said drawing off means located adjacent to and in fluid flow connection with said conditioning means.

4,517,001

APPARATUS FOR BENDING GLASS SHEETS

Ronald A. McMaster, Woodville, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Mar. 19, 1984, Ser. No. 590,770
Int. Cl.³ C03B *23/033, 35/14*
U.S. Cl. 65—273 **15 Claims**



1. Apparatus for bending glass sheets comprising:
a furnace for providing a heated ambient for heating glass sheets to a sufficiently high temperature for bending thereof;
a conveyor for conveying glass sheets through the heated ambient;
a holder having a downwardly facing planar surface spaced immediately above the conveyor in close proximity to a heated glass sheet conveyed under the holder;
means for applying a differential gas pressure to said heated glass sheet to provide support thereof against the holder surface;
a curved mold movable into the heated ambient to a first position at an elevation below the holder surface and thereafter movable to a second position out of the heated ambient;
means for horizontally moving the holder within the heated ambient from above the conveyor to above the mold while the mold is in the first position whereupon the differential gas pressure is terminated to release the heated glass sheet onto the mold for bending by gravity;
an actuator for moving the mold with the glass sheet thereon from the first position to the second position for cooling; and
control means for coordinating the holder moving means and the conveyor to synchronize horizontal movement of the holder within the heated ambient with the movement of the conveyed heated glass sheets.

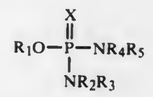
4,517,002

PHOSPHORODIAMIDE UREASE INHIBITORS AND UREASE INHIBITED UREA BASED FERTILIZER COMPOSITIONS

Louis G. Anello, Hamburg; Michael Van Der Puy, Cheektowaga; Larry L. Hendrickson, Camillus, all of N.Y.; Milorad M. Rogic, Whippany, N.J.; Michael D. Swerdloff, Parsippany, N.J., and Jaroslav F. Kolc, Randolph Township, Morris County, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 16, 1983, Ser. No. 475,989
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **48 Claims**

1. A composition comprising an acceptable carrier and a urease inhibiting effective amount of one or more phosphorodiamide compounds of the formula:



wherein
X is oxygen or sulfur;
R_1 is alkyl, aralkyl, alkenyl, heterocycle, cycloalkyl, cycloalkenyl or alkynyl, either unsubstituted or substituted with one or more halo, heterocycle, hydroxy, alkoxy, alkylmercapto, carboxyalkyl, quaternary ammonium radical, arylmercapto, aryloxy, cyano, acyloxy, $-ONO_2$, nitro, alkylamino, amino, arylamino, dialkylamino, alkanoyl, isocyanato, isocyano, mercapto, $-SO_2OH$, $-OPO(OH)_2$, $-OB(OH)_2$ or $-OPO(OR)OH$, $-OPO(OR)_2$, $-OSO_2OR$, $-SO_2R$ and $-OSO_2R$ wherein R is aliphatic or aryl, or a combination thereof; and
R_2, R_3, R_4 and R_5 are the same or different and are individually hydrogen or alkyl having from 1 to 4 carbon atoms.

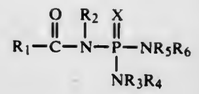
4,517,003

N-ACYL PHOSPHORIC TRIAMIDE UREASE INHIBITORS AND UREASE INHIBITED UREA BASED FERTILIZER COMPOSITIONS

Jaroslav F. Kolc, Randolph; Michael D. Swerdloff, Parsippany; Milorad M. Rogic, Whippany, all of N.J., and Larry L. Hendrickson, Camillus, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 8, 1983, Ser. No. 502,394
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **52 Claims**

1. A composition comprising an acceptable carrier and a urease inhibiting effective amount of one or more phosphoric triamide compounds of the formula:



wherein:
X is oxygen or sulfur;
R_1 is alkyl or cycloalkyl either unsubstituted or substituted with one or more substituents selected from the group consisting of alkylamino, amino, dialkylamino, arylmercapto, alkylmercapto, isocyanato, alkoxy, nitro, halogen, mercapto, cyano, phenoxy, quaternary ammonium materials and hydroxy;
R_2 is hydrogen, or cycloalkyl, alkyl or phenyl either unsubstituted or substituted with one or more substituents selected from the group consisting of halo, alkyl, trihalomethyl, phenyl, cyano, alkylmercapto, mercapto, alkoxy, alkylamino, dialkylamino, amino, nitro and phenoxy; and
R_3, R_4, R_5 and R_6 are individually hydrogen or alkyl having from 1 to about 4 carbon atoms.

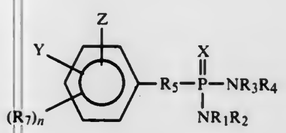
4,517,004

ARYL PHOSPHORIC TRIAMIDE AND ARYL PHOSPHORODIAMIDATE UREASE AND NITRIFICATION INHIBITORS AND UREASE AND NITRIFICATION INHIBITED UREA AND REDUCED NITROGEN BASED FERTILIZER COMPOSITIONS

Michael D. Swerdloff, Parsippany; Jaroslav F. Kolc, Randolph Township, Morris County; Milorad M. Rogic, Whippany, all of N.J., and Larry L. Hendrickson, Camillus, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 8, 1983, Ser. No. 502,395
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **35 Claims**

1. A composition comprising an acceptable carrier and a urease inhibiting effective amount of one or more compounds of the formula:



wherein:
X is oxygen or sulfur;
n is 1, 2 or 3;
Z and Y are the same or different and are hydrogen, alkyl, aryl, heterocycle, alkenyl, aralkyl, alkaryl, nitro, cyano, halogen, trihalomethyl, hydroxy, mercapto, carboxy, carbamyl, alkylmercapto, amino, dialkylamino, phenoxy, sulfonic acid, alkoxy, or Z or Y together may form an alkylene or alkenylene chain which may optionally include one or more heteroatoms of divalent oxygen, sulfur or nitrogen to form a fused or spiro aromatic, cycloaliphatic or heterocyclic ring structure;
R_1, R_2, R_3 and R_4 are the same or different and are hydrogen or alkyl having from 1 to about 4 carbon atoms;
R_5 is devalent oxygen or a divalent moiety of the formula:



wherein:
R_6 is hydrogen, or unsubstituted or substituted phenyl, cycloalkyl, or alkyl wherein permissible substituents are one or more halogen, mercapto, nitro, cyano, carboxyalkyl, amido, alkylmercapto, aryloxy, acyloxy, carboxy, amino, dialkylamino, N-diaminophosphinyl, O-diaminophosphinyl, S-diaminophosphinyl, N-(diaminophosphinyl)carbamyl, diaminophosphinyl, biscarboxyalkyl, alkylcarbonyl, hydroxy and thiocyano; and
R_7 is hydroxy, mercapto or a moiety of the formula:

—OM, —SM, or $—NR_8R_9$

wherein:
M is a metal cation; and
R_8 and R_9 are the same or different and are selected from the group consisting of permissible R_6 groups; with the proviso that at least one R_7 group is substituted at the ortho or para position relative to the R_5 group and that at least one of R_5 and R_7 contains a divalent oxygen bonded to the phenyl ring.

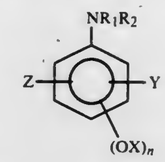
4,517,005

AMINOPHENOL UREASE INHIBITORS AND UREASE INHIBITED UREA BASED FERTILIZER COMPOSITIONS

Jaroslav F. Kolc, Randolph Township, Morris County; Michael D. Swerdloff, Parsippany; Milorad M. Rogic, Whippany, all of N.J., and Larry L. Hendrickson, Camillus, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 8, 1983, Ser. No. 502,401
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **34 Claims**

1. An composition comprising an acceptable carrier urease inhibiting effective amount of one or more aminophenol compounds of the formula:



and acid salts thereof,
wherein:
n is 1, 2 or 3;
X is hydrogen or a metal cation;
Z and Y are the same or different and are hydrogen, alkyl, aryl, heterocycle, nitro, cyano, halogen, trihalomethyl, carbamyl, sulfonic acid, mercapto, hydroxy, amino, alkylmercapto, alkylamino, carboxyl, dialkylamino or phenoxy; or Z and Y together may form an alkylene or alkenylene chain which may optionally include one or more heteroatoms of divalent oxygen, nitrogen, sulfur, sulfinyl or sulfonyl to form a fused or spiro aliphatic, aromatic or heterocyclic ring structure; and
R_1 and R_2 are the same or different and are hydrogen, or substituted or unsubstituted alkyl or phenyl wherein permissible substituents are one or more halogens, alkoxy, cyano, aryloxy, acyloxy, nitro, mercapto, alkylmercapto, and arylmercapto, thiocyano, amido, quaternary ammonium radical, amino, alkylamino, dialkylamino, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, carboxy, carboxyalkyl, bis-carboxyalkyl, or R_1 and R_2 together may form an alkylene chain completing a 3, 4, 5 or 6 membered ring structure or R_1, R_2 and N together may form an iminoaliphatic, iminocycloaliphatic or iminoaromatic group.

4,517,006

COMPOSITE MATERIALS COMPRISING WATER-SOLUBLE GLASS PARTICLES

Cyril F. Drake, Harlow, and Ronald Jones, Sawbridgeworth, both of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 17, 1982, Ser. No. 442,376
Claims priority, application United Kingdom, Nov. 18, 1981, 8134752
Int. Cl.[3] A01N *25/26;* A61K *9/26, 9/52;* C05B *17/00*
U.S. Cl. 71—64.11 10 Claims

1. A coherent composite structure releasably incorporating an active material therein, said composite structure comprising a polymeric matrix material and a particulate glass composition dispersed in said matrix material, said polymeric matrix material being essentially insoluble in aqueous medium and said particulate glass composition being soluble at a controlled dissolution rate in said aqueous medium whereby said composite structure shields said active material from release until contacted by said aqueous medium and when said composite structure is contacted by said aqueous medium, said particulate glass composition dissolves at a controlled rate thereby increasing the aqueous permeability of said composite structure to release said active material incorporated therein at a controlled rate, said particulate glass composition consisting essentially of from 50–75 mole percent of phosphorus pentoxide as a glass forming oxide; from 1–20 mole percent of an alkali metal oxide as the principal glass modifier, the remainder including from 1–25 mole percent of an oxide selected from the group consisting of an alkaline earth metal oxide, an oxide of a metal of Group III A of the Periodic Table, a transition metal oxide and combinations of the foregoing.

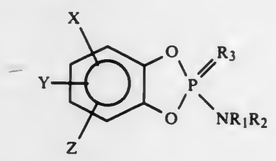
4,517,007

PHOSPHOROAMIDE UREASE INHIBITORS AND UREASE INHIBITED UREA BASED FERTILIZER COMPOSITIONS

Michael D. Swerdloff, Parsippany; Jaroslav F. Kolc, Randolph; Milorad M. Rogic, Whippany, all of N.J., and Larry L. Hendrickson, Camillus, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 9, 1983, Ser. No. 502,439
Int. Cl.[3] C05C *9/00*
U.S. Cl. 71—28 27 Claims

1. A composition comprising an acceptable carrier and a urease inhibiting effective amount of one or more phosphoroamide compounds of the formula:



wherein:

R_1 and R_2 are the same or different and are hydrogen or alkyl having from 1 to about 4 carbon atoms;

R_3 is oxygen or sulfur; and

X, Y or Z are the same or different and are hydrogen, alkyl, N-diaminophosphinyl, O-diaminophosphinyl, S-diaminophosphinyl, arylamino, diarylamino, halogen, hydroxy, mercapto, alkylmercapto, diaminophosphinyl, amino, cyano, nitro, alkylamino, dialkylamino, arylmercapto, isocyano, isocyanato, trihalomethyl, alkoxy, thiocyano, alkanoyl, or any two X, Y and Z group together may form an alkylene or alkenylene chain which may optionally include one or more divalent oxygen, nitrogen, or sulfur moieties forming a 3,4,5 or 6 membered fused ring structure.

4,517,008

COMPOSITIONS CONTAINING AND METHODS OF USE OF AN INFECTIVITY-CURED HR PLASMID-BEARING MICROORGANISM

Gary A. Strobel; Andrea H. Gavlak, and Jesse M. Jaynes, all of Bozeman, Mont., assignors to Research and Development Institute, Inc. at Montana State University, Bozeman, Mont.

Continuation-in-part of Ser. No. 260,167, May 4, 1981, Pat. No. 4,425,150. This application Jun. 16, 1982, Ser. No. 389,070
The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.
Int. Cl.[3] A01N *63/00*
U.S. Cl. 71—77 13 Claims

1. A method for enhancing root elongation of a germinating seed selected from the group consisting of pea, wheat, barley, corn, sorghum and soybean, which method comprises treating said seed with a root elongation enhancing amount of an infectivity-cured Hr plasmid-bearing microorganism free from pathogenicity to carrots, said microorganism being an *A. rhizogenes* A_4 microorganism selected from the group consisting of (a) a first microorganism type characterized by an induction of significantly enhanced shoot length in a germinating corn seed, and having the characteristics of *A. rhizogenes* A_4 ATCC 31798, and (b) a second microorganism type characterized by significant germination induction of Kentucky bluegrass seed and having the characteristics of *A. rhizogenes* A_4 ATCC 31798.

4,517,009

HERBICIDAL MIXTURES

Fred W. Slife, Urbana, Ill., assignor to FBC Limited, Cambridge, England

Continuation-in-part of Ser. No. 225,099, Jan. 14, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 480,576
Claims priority, application United Kingdom, Jan. 15, 1980, 8001228
Int. Cl.[3] A01N *43/78*
U.S. Cl. 71—90 2 Claims

1. A herbicidal composition, the active components of which consist essentially of a herbicidally-effective amount of benazolin and acifluorfen in a synergistic proportion of benazolin to acifluorfen from 2:1 to 1:2 based upon the weight of the active components expressed as the free acid.

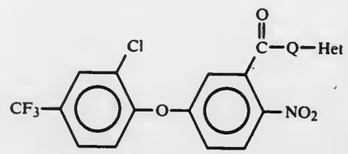
4,517,010

2-NITRO-5(SUBSTITUTED-PHENOXY) BENZOYL DERIVATIVES AS HERBICIDES

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-Poulenc Inc., Monmouth Junction, N.J.

Division of Ser. No. 282,316, Jul. 10, 1981, , which is a continuation-in-part of Ser. No. 117,732, Feb. 1, 1980, abandoned. This application Apr. 15, 1983, Ser. No. 485,265
Int. Cl.[3] A01N *43/40, 43/28;* C07D *339/04, 213/64*
U.S. Cl. 71—90 20 Claims

1. A herbicidal compound of the formula:



wherein Q is O or S and Het is a heterocyclic ring selected from the group consisting of s-triazinyl; 2,3-dihydro-pyridazinyl; 1,2,5-thiadiazolyl; 1,3,4-thiadiazol-5-yl; 1,2-dithio-5-21; a tetrahydro-thiophene-1,1-dioxide; 2-chloro-6-pyridinyl,1,2-dihydro-1,6-dimethyl-2-oxo-4-pyridinyl with a provision that the term Q is S when Het represents 2-pyridinyl-N-oxide.

16. A method for combatting undesirable herbs which comprises contacting them with a herbicidally effective amount of a compound according to claim 1.

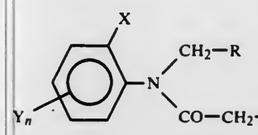
4,517,011

N-SUBSTITUTED HALOGENOACETANILIDES AND THEIR USE AS HERBICIDES

Rudolf Thomas; Wilfried Draber, both of Wuppertal; Robert R. Schmidt, Cologne, and Ludwig Eue, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 869,068
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704281; Sep. 22, 1977, 2742583
Int. Cl.[3] A01N *43/50, 43/64;* C07D *231/12, 233/61*
U.S. Cl. 71—92 17 Claims

1. An N-substituted halogenoacetanilide of the formula



in which

R represents pyrazol-1-yl or substituted pyrazol-1-yl wherein the substituent is at least one of halogen and alkyl of 1 to 4 carbon atoms,

X and Y which may be identical or different, each represent alkyl of 1 to 4 carbon atoms,

Z represents chlorine or bromine and

n represents 0, 1 or 2

and its acid addition salts.

10. A process of combating weeds which comprises applying to the weeds or to their habitat a compound according to claim 1 alone or in the form of a composition containing the same in a herbicidally effective amount in admixture with a diluent or carrier.

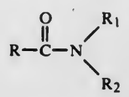
4,517,012

HERBICIDE COMPOSITIONS

Ferenc M. Pallos, Walnut Creek; Mervin E. Brokke, Moraga, and Duane R. Arneklev, Sunnyvale, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 55,578, Jul. 9, 1979, Pat. No. 4,341,550, which is a division of Ser. No. 930,967, Aug. 4, 1978, Pat. No. 4,269,618, which is a continuation-in-part of Ser. No. 134,868, Apr. 16, 1971, abandoned. This application Mar. 30, 1982, Ser. No. 363,673
Int. Cl.[3] A01N *43/40, 37/00*
U.S. Cl. 71—94 22 Claims

1. A herbicidal composition comprising an active thiolcarbamate herbicide and a non-phytotoxic antidotally effective amount of an antidote therefore corresponding to the formula



wherein R is C_1–C_6 haloalkyl and R_1 and R_2 taken together form a structure selected from piperidinyl, alkylpiperidinyl and alkyltetrahydropyridyl; said antidote compound being antidotally active with said thiolcarbamate herbicide compound wherein said compound is present in an amount varying between about 0.001 to 30 parts by weight for each part by weight of the active thiolcarbamate herbicide compound.

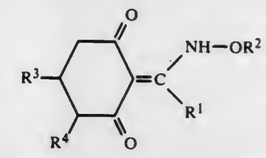
4,517,013

CYCLOHEXANE-1,3-DIONE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Rainer Becker, Bad Durkheim; Dieter Jahn, Edingen-Neckarhausen; Michael Keil, Ludwigshafen; Walter Himmele, Walldorf, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 21, 1983, Ser. No. 515,898
Int. Cl.[3] A01N *31/04, 33/24;* C07C *149/14*
U.S. Cl. 71—98 7 Claims

1. A cyclohexane-1,3-dione derivative of the formula



where R^1 is C_1–C_4-alkyl, R^2 is C_1–C_5-alkyl, unsubstituted or halogen-substituted C_2–C_5-alkenyl or C_2–C_5-alkynyl, R^3 is C_1–C_{10}-alkyl, which contains 2, 3 or 4 of the hetero-atoms O and/or S and/or the groups —SO— and/or —SO_2— in any desired position and R^4 is hydrogen, cyano, methyl or —$COOR^5$, where R^5 is C_1–C_5-alkyl, or a salt thereof.

7. A process for combating the growth of unwanted grasses, wherein the unwanted grasses and/or the area to be kept free from the unwanted grasses are treated with a herbicidally effective amount of a cyclohexane-1,3-dione derivative of the formula I as claimed in claim 1, or a salt of a cyclohexane-1, 3-dione derivative of the formula I as claimed in claim 1.

4,517,014

METHOD OF PRODUCING AN ORE PELLET

Marty K. Vadis, Star Rte 4, Box 91B, East, Hibbing, Minn. 55746

Division of Ser. No. 422,834, Sep. 24, 1982, Pat. No. 4,474,603. This application Sep. 17, 1984, Ser. No. 650,790
Int. Cl.[3] C22B *1/08*
U.S. Cl. 75—3 5 Claims

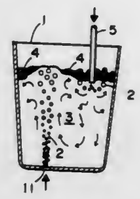
1. An ore pellet comprising a plurality of finely ground ore particles bound together in a matrix of Gyttja.

4,517,015

STEEL REFINING METHOD

Hideaki Inaba, Chita, and Shuzi Sakakibara, Handa, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 13, 1984, Ser. No. 579,822
Claims priority, application Japan, Feb. 12, 1983, 58-21887
Int. Cl.[3] C21C *5/52*
U.S. Cl. 75—12 4 Claims



1. In a steel refining method wherein the steel is refined in a vessel through an interfacial reaction between the molten steel and a layer of slag on the molten steel, the improvement comprising, blowing a gas consisting of an inert gas into the molten steel from the bottom of said vessel to stir the molten steel by

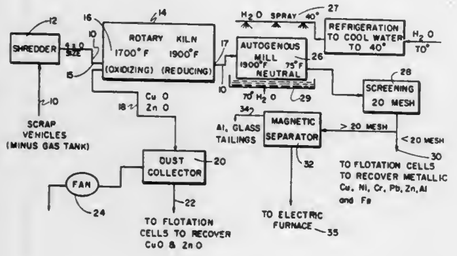
bubbling and, at the same time, blowing a gas consisting of an inert gas from the upper side of the vessel into a zone of the slag where movement of the slag is slow relative to other zones of the slag whereby stirring of the molten steel is enhanced thereby promoting the refining reaction.

4,517,016

METHOD FOR PREPARING A LOW RESIDUAL ALLOY STEEL CHARGE FROM SCRAP METAL

Carl J. Herter, 1638 Walnut St., Allentown, Pa. 18102

Filed Sep. 6, 1983, Ser. No. 529,290
Int. Cl.³ C22B *1/00*
U.S. Cl. 75—28 **11 Claims**



1. A method of preparing a low residual alloy for steel charge from steel and iron scrap metal containing at least one nonferrous metal selected from the group consisting of copper, nickel, lead, chromium, zinc and aluminum as contaminents comprising:

(a) introducing said scrap into a feed end of a three zone rotary or the like kiln, said zone's coexisting simultaneously in said kiln, said kiln's feed end zone having an oxidizing atmosphere and a temperature of not less than about 1650 degrees F. to oxidize zinc and copper present in said scrap to their respective oxides and producing thereby an oxide laden dust;

(b) removing said oxide laden dust from said kiln;

(c) advancing said charge from said feed end of said kiln to said kiln's midsection and therein at said kiln's midsection causing said zone atmosphere to change from said oxidizing atmosphere to a neutral atmosphere and thereafter advancing said charge from said midsection of said kiln to said kiln's exit end and therein at said kiln's exit end zone causing said atmosphere to change from said neutral atmosphere to a reducing atmosphere, and raising said kiln temperature in said area of reducing atmosphere to not less than about 1800 degrees F. to induce brittle metallic scale formation of copper, nickel, lead, chromium, zinc and wherein only aluminum forms a melt while simultaneously reducing iron oxides formed during the oxidizing step to metallic iron scale; and,

(d) mechanically separating and removing said scale from said feed to leave a ferrous based scrap metal feed with lowered nonferrous metal contamination suitable for use as a charge in a steel making furnace.

4,517,017

TEMPERATURE SENSITIVE AMORPHOUS MAGNETIC ALLOY

Koichiro Inomata, Yokohama, and Shinichi Murata, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 8, 1982, Ser. No. 346,952
Claims priority, application Japan, Feb. 10, 1981, 56-17431
Int. Cl.³ C22C *33/00*
U.S. Cl. 75—123 B **7 Claims**

1. A temperature sensitive amorphous magnetic alloy for use in a temperature sensor, having a Curie point of not higher than 200° C., said alloy consisting essentially of a composition represented by the formula

$$(M_{1-a-b}Ni_aCrb)_{100-z}X_z$$

wherein

M represents a cobalt atom (Co) or an iron atom (Fe);

X represents at least one of a phosphorous atom (P), a boron atom (B), a carbon atom (C) and a silicon atom (Si);

a is a numeral ranging between 0.2 and 0.8 inclusive when M is Co, or a is a numeral ranging between 0.4 and 0.9 inclusive when M is Fe;

b is a numeral between 0 and 0.05; such that the sum of a and b does not exceed 0.8 when M is cobalt or 0.9 when M is iron; and

z is a numeral ranging between 15 an 30 inclusive, wherein a and z are selected such that the temperature difference between the temperature showing the maximum value of effective permeability at 10 kHz and the temperature of the Curie point is less than 10 centigrade degrees.

4,517,018

CAST IRON ALLOY AND METHOD FOR PRODUCING SAME

Ii Tadashi, Okayama, and Egusa Saichi, Hiroshima, both of Japan, assignors to Kabushikigaisha Kyowa Chuzosho, Okayama; Yugengaisha Kyowa Chuzosho, Hiroshima; Otsuka Chemical Co., Ltd., Osaka and Ando Parachemie Co., Ltd., Tokyo, all of, Japan

Filed Feb. 28, 1983, Ser. No. 470,459
Claims priority, application Japan, Feb. 27, 1982, 57-31456
Int. Cl.³ C22C *33/08*
U.S. Cl. 75—129 **15 Claims**

1. A composite cast iron alloy produced by the process comprising the steps of:

melting and reacting iron raw material and other raw materials including calcium-containing substances, coke, and titanates;

mixing aluminum metal with the melted material obtained from the foregoing step; and

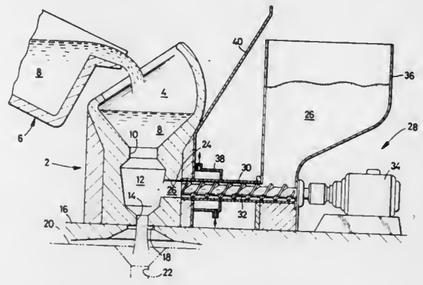
casting the mixture into a composite alloy.

4,517,019

METHOD FOR CONTINUOUSLY TREATING MOLTEN METAL

Hirotoshi Taniguchi, 81-173, Aza-Tendoshinden, Oaza-Maehara, Inuyama-shi, Aichi-ken, Japan

Division of Ser. No. 522,721, Aug. 12, 1983,. This application Apr. 5, 1984, Ser. No. 597,055
Claims priority, application Japan, May 12, 1983, 58-82989
Int. Cl.³ C22C *33/08*
U.S. Cl. 75—130 R **5 Claims**



1. A method for continuously treating molten metal with a solid treating agent, comprising the steps of:

continuously pouring the molten metal into a treating vessel having at an upper portion thereof an inlet receiver into which the molten metal is poured, and at a lower portion thereof an outlet passage through which the molten metal is discharged out of said treating vessel after the metal is treated, said treating vessel further having, at a portion thereof between said upper and lower portions, a reaction chamber which communicates with said inlet receiver and said outlet passage and in which the molten metal is brought into contact with the treating agent;

continuously introducing the treating agent into said treating vessel through a supply passage formed through the side wall of said treating vessel substantially perpendicularly to the direction of thickness of said side wall and communicating with said reaction chamber, for effecting a continuous contact of the molten metal with the introduced treating agent; and

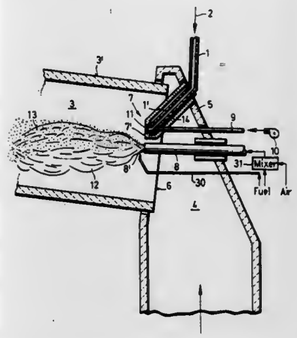
discharging the molten metal from the lower portion of said treating vessel after the molten metal is treated with the treating agent in said treating vessel.

4,517,020

APPARATUS FOR RAPID BURNING OF THERMALLY PRETREATED FINE GRAINED PRODUCT AND METHOD

Eberhard Steinbiss, Düsseldorf, and Horst Herchenbach, Hennef, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Nov. 8, 1983, Ser. No. 549,771
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242508
Int. Cl.³ C04B *7/02*; D06F *58/00*; F27B *15/00, 7/32*
U.S. Cl. 106—100 **13 Claims**



12. A method for rapid burning of a thermally pretreated, at least partially calcined fine grained product into cement clinker comprising:

dropping particles of said product at a temperature of about 800° to 900° C. with sufficient velocity against a deflector to break up agglomerates of said product and form a cloud of particles, and

directing the cloud of particles into substantially parallel relation to a flame at a temperature sufficient to provide extremely high heating gradients and complete the sintering of said particles at a temperature of at least 1250° C.

4,517,021

SEMI-CRYSTALLINE FRUCTOSE

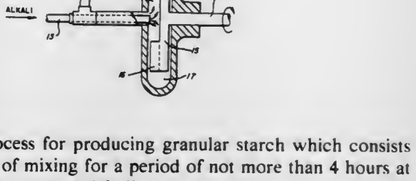
Charles E. Schollmeier, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Oct. 28, 1983, Ser. No. 546,348
Int. Cl.³ C13K *11/00*
U.S. Cl. 127—30 **10 Claims**

1. A process for preparing free-flowing, granular, semi-crystalline, solid fructose which comprises:

(a) combining together an aqueous fructose syrup comprising about 60 to 93 weight percent saccharide, about 85 to 100 weight percent of the saccharide being fructose, and a solid crystallization initiator in a weight ratio of crystallization initiator to fructose syrup of about 5:1 to 40:1;

(b) contacting the combined fructose syrup and crystallization initiator with air having an initial temperature of about 50° to 80° C. and a final relative humidity of less than about 20 percent for a period of time of about 12 to 48 hours to transform the combined fructose syrup and crystallization initiator to a free-flowing, granular, solid fructose product comprising less than about 2 weight percent water and greater than about 60 weight percent crystalline fructose; and



(c) recovering the free-flowing, granular, semi-crystalline, solid fructose product.

9. A free-flowing, granular, semi-crystalline, solid fructose composition which consists essentially of:

(a) less than about 2 weight percent water;

(b) greater than about 60 weight percent crystalline fructose;

(c) less than about 35 weight percent amorphous fructose;

(d) about 2 to 8 weight percent glucose; and

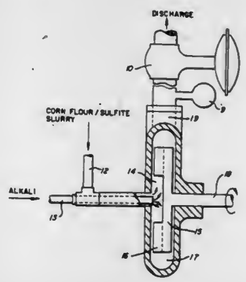
(e) about 2 to 8 weight percent polysaccharides distributed predominantly at or on the surface of the granules such that the hygroscopicity of the granule is reduced from that of a granule having a uniform distribution of polysaccharides.

4,517,022

STARCH PRODUCTION FROM CORN

Richard D. Harvey, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa

Continuation of Ser. No. 338,363, Jan. 11, 1982, abandoned. This application Oct. 17, 1983, Ser. No. 530,747
Int. Cl.³ C13L *1/00*
U.S. Cl. 127—68 **3 Claims**



1. A process for producing granular starch which consists essentially of mixing for a period of not more than 4 hours at ambient temperature dehulled and degermed corn containing starch and protein with water to form an aqueous slurry, treating said aqueous slurry with alkali, subjecting the alkali containing slurry to high intensity mixing and then recovering granular starch from which at least 75% of the original protein content has been separated.

4,517,023

RUST REMOVAL PROCESS USING REMOVABLE COATINGS OF MALEIC ACID COPOLYMERS

Eugene S. Barabas, Watchung, N.J., assignor to GAF Corporation, Wayne, N.J.

Division of Ser. No. 454,127, Dec. 29, 1982, Pat. No. 4,451,296, which is a continuation-in-part of Ser. No. 364,000, Mar. 31, 1982, Pat. No. 4,424,079. This application May 22, 1984, Ser. No. 612,777

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.[3] **B08B** *7/00;* **C11D** *3/37, 7/26;* **C23G** *5/00*

U.S. Cl. 134—4 **7 Claims**

1. Process for removing rust from a rusty metal surface which comprises:

(a) applying to said rusty surface a layer of rust removal coating composition consisting essentially of an aqueous solution of a copolymer of maleic acid and monomer of the formula CH_2=CHR wherein R represents OR^1 and R^1 represents CH_3 or CH_2CH_3; and

(b) allowing said layer of coating composition to dry whereby rust becomes incorporated into said layer and the layer containing the rust detaches itself from the surface.

3. Process according to claim 1 wherein:

(a) the coating composition consists essentially of between about 5 and about 60 wt % of said copolymer and between about 40 and about 95 wt % water;

(b) the coating composition is applied to the rusty surface to form a layer between about 0.01 and about 20 mm thick;

(c) the coating composition has a viscosity between about 50 and about 250,000 cps; and

(d) the applied coating composition is allowed to dry for between about 0.5 and about 8 hours whereby the rust becomes incorporated into the layer of coating composition and the layer becomes detached from the metal surface.

4,517,024

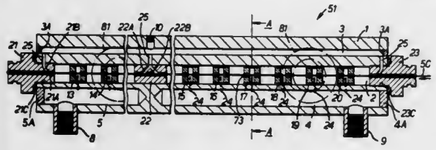
SCOURING OF ELONGATE MATERIAL AND APPARATUS THEREFOR

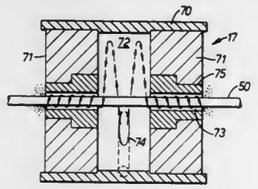
Robert P. Gough, 3 Hopstone Gardens Penn., Wolverhampton, England

Filed Jul. 13, 1982, Ser. No. 398,850

Int. Cl.[3] **B08B** *3/10*

U.S. Cl. 134—15 **9 Claims**





1. A device for scouring the surface of elongate material including

a primary generally cylindrical chamber having at least one substantially tangentially directed inlet for fluid and

a pair of secondary generally cylindrical chambers which are axially aligned with, and on opposite sides of the primary chamber, and each having a substantially smaller radius than the primary chamber, the primary and secondary chambers being arranged to allow elongate material to be passed axially through them and the secondary chambers forming outlets for fluid from the primary chamber,

the primary chamber consisting of a tube and a pair of annular end caps fitted to the tube, the end caps also defining the secondary chambers,

the arrangement being such that when the device is in use fluid forced into the primary chamber via the inlet forms a rotating body of fluid in the chambers, the angular velocity of which increases as the radius of rotation decreases when the fluid passes in opposite directions relative to the length of the material into the respective secondary chambers so that the elongate material is scoured and the fluid escapes from the said secondary chambers.

2. A method of scouring elongate material including the step of passing the elongated material axially through a device as claimed in claim 1 while forcing a liquid into the primary chamber of said device and allowing said liquid to escape from the secondary chambers thereof.

4,517,025

METHOD FOR REMOVING SEALANT CONTAMINATION

Stuart E. Plante, Abington, and Susan V. Hess, Norristown, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed May 17, 1982, Ser. No. 379,108

Int. Cl.[3] **B08B** *3/08*

U.S. Cl. 134—38 **10 Claims**

1. A process for removing a sealant containing a resin, a heavy blending oil, a fixotrope, and a filler from a water-insoluble surface contaminated therewith comprising contacting said surface with an aqueous solution at ambient temperature consisting essentially of

(a) from about 0.8 to about 150 g/l of at least one C_5–C_9 alkanoic acid;

(b) from about 6 to about 130 g/l of at least one of an alkali metal phosphate and a condensed phosphate salt;

(c) from about 0.1 to about 50 g/l of at least one surfactant;

(d) 0 to about 130 g/l of at least one of a phosphonic acid and a sulfonic acid;

(e) 0 to about 130 g/l of at least one alkali metal silicate;

(f) 0 to about 125 g/l of at least one of an alkali metal borate and a condensed borate;

(g) 0 to about 200 g/l of at least one of an alkali metal hydroxide and an amine;

(h) 0 to a quantity of at least one of a C_1–C_3 alkanol and a C_2–C_3 glycol sufficient to solubilize component (a);

(i) 0 to about 150 g/l of a biocide; and, optionally,

(j) a small quantity of at least one of a thickening agent, a water soluble dye, and a perfume.

4,517,026

METHOD OF BACKSIDE HEATING A SEMICONDUCTOR SUBSTRATE IN AN EVACUATED CHAMBER BY DIRECTED MICROWAVES FOR VACUUM TREATING AND HEATING A SEMICONDUCTOR SUBSTRATE

Minoru Inoue, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 8, 1983, Ser. No. 483,131

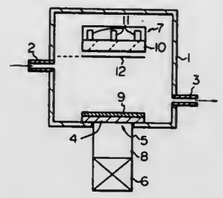
Claims priority, application Japan, Apr. 9, 1982, 57-059895

Int. Cl.[3] **H01L** *21/263;* **H05B** *9/03, 9/80*

U.S. Cl. 148—1.5 **2 Claims**

1. A method of heating a semiconductor substrate, having a back and a surface to be treated, under a reduced pressure within a vacuum treating chamber having a window which is pervious to microwaves, comprising the steps of:

(a) arranging the semiconductor substrate so as to expose the surface to be treated to the inside space of the vacuum treating chamber and to cover the window pervious to microwaves with the back of the semiconductor substrate; and



(b) irradiating the semiconductor substrate with microwaves through the window pervious to microwaves so that the microwaves heat only the substrate.

4,517,027

BULK PRODUCTION OF ALLOYS BY DEPOSITION FROM THE VAPOR PHASE AND APPARATUS THEREFOR

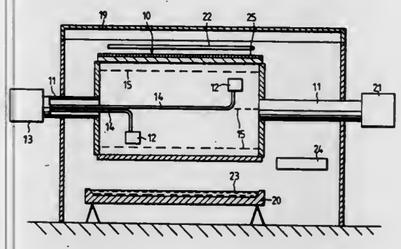
Robert L. Bickerdike, Alton, and Garyth Hughes, Farnham, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Great Britain

Filed Dec. 15, 1981, Ser. No. 331,084

Claims priority, application United Kingdom, Dec. 16, 1980, 8040242

Int. Cl.[3] **C23C** *13/00, 11/00*

U.S. Cl. 148—6.3 **12 Claims**



1. A reusable collector for use in a process for the production of an alloy layer by deposition thereof from the vapour phase, the collector comprising:

a thin outer cylindrical skin having an outer surface which defines a deposition surface;

a main drum structure comprising a plurality of axial bars arranged to accommodate thermal and/or mechanical stresses;

resilient support means axially and adjustably carrying said axial bars;

an alloy between said main drum structure and said outer cylindrical skin, wherein

said alloy consists of a solder alloy having a melting temperature at which the onset of fusion occurs above the peak operating temperature at said deposition surface, said alloy being meltable upon completion of deposition from the vapour phase to detach said deposited alloy layer and said outer cylindrical outer skin from said main drum structure.

4,517,028

TREATMENT OF METAL WITH DERIVATIVE OF POLY-ALKENYLPHENOL

Andreas Lindert, Troy, Mich., assignor to Parker Chemical Company, Madison Heights, Mich.

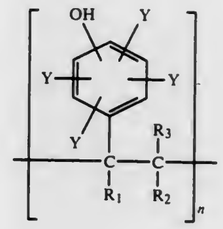
Continuation-in-part of Ser. No. 366,449, Apr. 7, 1982, Pat. No. 4,433,015. This application May 9, 1983, Ser. No. 490,579

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.[3] **C23C** *1/10;* **C23F** *5/02, 11/00;* **C09K** *3/00*

U.S. Cl. 148—6.14 R **22 Claims**

1. The process of treating a metal surface comprising contacting the metal surface with a solution comprising an effective amount of a soluble or dispersible compound selected from the group consisting of a polymer having the following general formula, acid salts thereof and mixtures thereof:

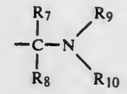


where:

R_1 through R_3 are hydrogen or an alkyl group having from 1 to about 5 carbon atoms;

each Y is hydrogen, Z, $CR_4R_5OR_6$, CH_2Cl, or an alkyl or aryl group having from 1 to 18 carbon atoms;

Z is



R_4 through R_{10} are hydrogen, or an alkyl, aryl, hydroxyalkyl, amino-alkyl, mercapto-alkyl or phospho-alkyl moiety, said R_4 through R_{10} being of carbon chain lengths up to a length at which the compound is not soluble or dispersible; and

n is from 2 up to a number at which the polymer is not soluble or dispersible.

4,517,029

PROCESS FOR THE COLD FORMING OF IRON AND STEEL

Sakae Sonoda, Yokohama; Yoshio Nagae, Ayase, and Seishi Kano, Ichikawa, all of Japan, assignors to Parker Chemical Company, Madison Heights, Mich.

Filed Jun. 3, 1983, Ser. No. 500,713

Claims priority, application Japan, Jun. 4, 1982, 57-94686

Int. Cl.[3] **C23F** *7/10*

U.S. Cl. 148—6.15 Z **3 Claims**

1. In a process for treating iron and steel articles to form, on the surface thereof, a lubricant coating suitable for providing lubricity during a cold forming operation by first forming a phosphate film on the surface of the iron and steel articles and, thereafter, forming a coating of a soap-type lubricant on the phosphate film, the improvement which comprises forming the phosphate film by treating the article with an aqueous phosphatizing solution comprising from about 0.1 to about 0.35% by weight calcium ions, from about 0.1 to about 1.5% by weight zinc ions, from about 0.5 to about 3.0% by weight PO_4 and from about 3.0 to about 5.0% by weight nitrate ions, which solution has a weight ratio of calcium ions: zinc ions of about 0.1–1.0:1 and weight ratio of nitrate ions: PO_4 of about

1.0–5.0:1, to form a zinc phosphate film which contains from about 5 to about 80% by weight of the total phosphate film of zinc calcium phosphate and thereafter contacting the phosphate film with an aqueous reactive alkali metal soap composition which reacts to form a coating thereon followed by drying.

4,517,030

PROCESS FOR ACTIVATING STEEL SURFACE PRIOR TO PHOSPHATING TREATMENT AQUEOUS ACTIVATING SOLUTION THEREFOR

Tsukasa Yamamoto; Asao Mochizuki, both of Toyota; Hiroshi Okita, Nihonbashi; Toshi Miyawaki, Nihonbashi; Yoshiji Shirogane, Nihonbashi, and Kazuhiko Mori, Nihonbashi, all of Japan, assignors to Toyota Motor Corp. and Nihon Parkerizing Co., both of, Japan

Filed Aug. 6, 1984, Ser. No. 637,755
Int. Cl.³ C23F *7/10*
U.S. Cl. 148—6.15 R **11 Claims**

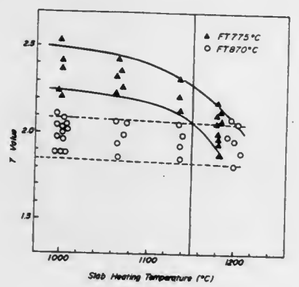
1. A process for activating steel surface prior to phosphating treatment wherein the steel surface is cleaned, the cleaned steel surface is then treated with an aqueous activating solution comprising 3–100 ppm of titanium, 60–360 ppm of pyrophosphate ion, 150–3000 ppm of the total phosphate ion as PO_4, and 0.4–1.1 molar ratio magnesium ion to said pyrophosphate ion, and with a pH of 8.0–9.5, and thereafter the steel surface is treated with a phosphating solution, wherein said magnesium ion is included in said aqueous activating solution in order to suppress formation of an inactive film on said steel surface due to the presence of said pyrophosphate ion.

4,517,031

METHOD OF MANUFACTURING COLD ROLLED STEEL SHEETS FOR EXTRA DEEP DRAWING WITH AN EXCELLENT PRESS FORMABILITY

Junsuke Takasaki; Hirotake Sato, and Akira Yasuda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 8, 1983, Ser. No. 549,781
Claims priority, application Japan, Nov. 12, 1982, 57-197766
Int. Cl.³ C21D *8/04*
U.S. Cl. 148—12 C **2 Claims**



1. A method of manufacturing cold rolled steel sheets for extra deep drawing with an excellent press formability, which comprises the steps of:

melting a steel material containing not more than 0.0060% by weight of C, 0.01 to less than 0.10% by weight of Mn, 0.005–0.10% by weight of Al and Ti corresponding to Ti(%) represented by the following equation (1) when an effective Ti amount expressed by Ti* in the equation (1) satisfies the following ineqality (2);

continuously casting the resulting molten steel to produce a cast slab;

hot rolling the resulting cast slab immediately or after the slab is heated at a temperature of 900°–1,150° C., during which a hot finishing temperature is made to a temperature of not more than 780° C.;

cold rolling the resulting hot rolled sheet in the usual manner; and

subjecting the resulting cold rolled sheet to a recrystallization annealing at a temperature of not less than the recrystallization temperature but not more than 1,000° C.;

$$Ti^*(\%) = Ti(\%) - (48/14)N(\%) - (48/32)S(\%) \quad (1)$$

$$4.0 \times C(\%) \leqq Ti^*(\%) \leqq 0.10 \quad (2)$$

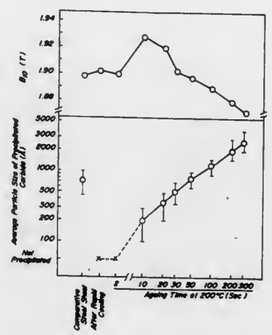
whereby the resulting cold rolled sheet has an $\bar{r}$ value of $\geqq 2.0$.

4,517,032

METHOD OF PRODUCING GRAIN-ORIENTED SILICON STEEL SHEETS HAVING EXCELLENT MAGNETIC PROPERTIES

Tomomichi Goto, Kobe; Katsuo Iwamoto, Kakogawa; Yoshinori Kobayashi, Takarazuka, and Isao Matoba, Kobe, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 11, 1983, Ser. No. 474,556
Claims priority, application Japan, Mar. 15, 1982, 57-39557
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **4 Claims**



1. In a method of producing grain-oriented silicon steel sheets having excellent magnetic properties, wherein a silicon steel having a composition containing, in % by weight, 0.02–0.10% of C, 2.5–4.0% of Si, 0.02–0.15% of Mn, 0.008–0.080% in a total amount of at least one of S and Se is hot rolled into a hot rolled sheet, the hot rolled sheet is subjected to two cold rollings with an intermediate annealing at a temperature of 770°–1,100° C. between them, wherein the final cold rolling is carried out at a reduction rate of 40–80%, to produce a finally cold rolled sheet having a final gauge, and the finally cold rolled sheet is subjected to a decarburization annealing and then to a final annealing, an improvement comprising cooling rapidly from 770° C. to 100° C. within 30 seconds the steel sheet heated in the intermediate annealing, immediately subjecting the rapidly cooled sheet to an ageing treatment at a temperature of 150°–250° C. for 2–60 seconds to precipitate carbide particles having a very fine size of substantially 100–500 Å in a fully dispersed state in the crystal grains of the steel sheet, and then subjecting the steel sheet to the final cold rolling.

2. In a method of producing grain-oriented silicon steel sheets having excellent magnetic properties, wherein a silicon steel having a composition containing, in % by weight, 0.02–0.10% of C, 2.5–4.0% of Si, 0.02–0.15% of Mn, 0.008–0.080% in a total amount of at least one of S and Se is hot rolled into a hot rolled sheet, the hot rolled sheet is subjected to two cold rollings with an intermediate annealing at a temperature of 770°–1,100° C. between them, wherein the final cold rolling is carried out at a reduction rate of 40–80%, to

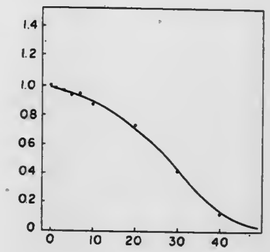
produce a finally cold rolled sheet having a final gauge, and the finally cold rolled sheet is subjected to a decarburization annealing and then to a final annealing, an improvement comprising cooling rapidly from 770° C. to 300° C. within 20 seconds the steel sheet heated in the intermediate annealing, cooling the rapidly cooled sheet from 300° C. to 150° C. in 8–30 seconds to precipitate carbide particles having a very fine size of substantially 100–500 Å in a fully dispersed state in the crystal grains of the steel sheet, and then subjecting the steel sheet to the final cold rolling.

4,517,033

CONTACT MATERIAL FOR VACUUM CIRCUIT BREAKER

Mitsuhiro Okumura, Sakai; Eizo Naya, Ibaragi, and Michinosuke Demizu, Takarazuka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 547,218
Claims priority, application Japan, Nov. 1, 1982, 57-192785; Apr. 28, 1983, 58-76615; Apr. 28, 1983, 58-76616; Apr. 28, 1983, 58-76617
Int. Cl.³ C22C *9/00, 30/02*
U.S. Cl. 148—432 **20 Claims**



1. A contact material for a vacuum circuit breaker which consists essentially of copper as the basic component, and, as the other component, an amount of chromium between 0.0 and up to 35% weight and an amount of tantalum between 0.0 and up to 50% weight, the total quantity of chromium and tantalum in said contact material being 10% by weight and above.

4,517,034

STRIP CAST ALUMINUM ALLOY SUITABLE FOR CAN MAKING

Harish D. Merchant, Fairfield, Conn., and Edgar Lossack, Bonn, Fed. Rep. of Germany, assignors to Continental Can Company, Stamford, Conn.

Continuation-in-part of Ser. No. 398,734, Jul. 15, 1982, abandoned. This application Apr. 8, 1983, Ser. No. 483,337
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—439 **14 Claims**

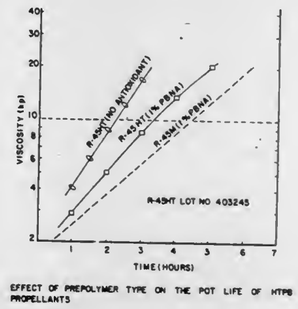
13. An aluminum alloy sheet fabricated from a continuous strip cast aluminum alloy having a thickness of up to one inch, said sheet having a thickness of 0.008 to 0.017 inch that has received a reduction in thickness of at least 50% by cold rolling to provide a hard temper, the alloy being comprised of about 0.5 to about 1.5% by weight magnesium, about 0.5 to 1.5% by weight manganese, about 0.1 to about 1.0% by weight iron, about 0.1 to about 0.5% by weight silicon, about 0.0 to about 0.25% by weight zinc, about 0.0 to about 0.25% by weight copper and about 0.1 to about 0.4% by weight chromium the balance being aluminum.

4,517,035

METHOD OF MAKING A CASTABLE PROPELLANT

Gonzague L. Duchesne, and Guy Perrault, both of Ste-Foy, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

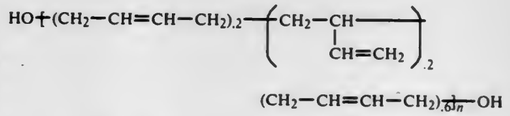
Division of Ser. No. 213,670, Dec. 5, 1980, abandoned, which is a continuation of Ser. No. 888,542, Mar. 21, 1978, Pat. No. 4,427,468, which is a continuation-in-part of Ser. No. 803,992, Jun. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 663,214, Mar. 3, 1976, abandoned. This application Feb. 3, 1984, Ser. No. 575,727
Claims priority, application Canada, Jan. 16, 1976, 243659; Norway, Jan. 4, 1977, 770011; Canada, Dec. 13, 1977, 292954
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.92 **8 Claims**



EFFECT OF PREPOLYMER TYPE ON THE POT LIFE OF HTPB PROPELLANTS

1. A method for the manufacture of a castable propellant which comprises:

(a) mixing together at atmospheric pressure liquid ingredients comprising a hydroxy-terminated butadiene polymer of the structural formula:



wherein n=57–65,

a plasticizer, a bonding agent comprising an aziridine polyester, which is the reaction product of an aziridinyl phosphine oxide and a polycarboxylic acid, and an amine polyester, which is the reaction product of an alkalolamine and a saturated aliphatic polycarboxylic acid, and an antioxidant comprising by weight 25%–75% of di-tert-butylhydroquinone in conjunction with 75%–25% of one of N-phenyl-N'-(1,3-dimethylbutyl)-p-phenylene-diamine and N-phenyl-N'-cyclohexyl-p-phenylene-diamine, the amount of antioxidant being about 1% by weight of the polybutadiene polymer,

(b) adding solid ingredients comprising finely-divided aluminum, ferric oxide as a burning rate catalyst and ammonium perchlorate oxidizer in an amount of about 75% by weight of the total amount of such oxidizer required, and mixing to give a substantially even dispersion,

(c) heating the mixture at approximately 60° C. under vacuum for about 1 hour,

(d) releasing the vacuum,

(e) adding and mixing in the remainder of the ammonium perchlorate oxidizer and a diisocyanate curing agent,

(f) reapplying vacuum and heating to about 60° C. for about 45 minutes, and

(g) casting the resulting mixture in molds under vacuum.

4,517,036

MAKING OF PRINTING PLATES

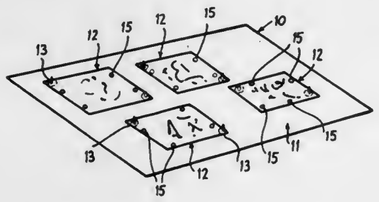
John H. Elworthy, Bedfordshire, and Donald Mayston, Suffolk, both of England, assignors to Protocol Engineering Limited, Berkhamsted, England

Continuation of Ser. No. 281,274, Jul. 8, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,204

Claims priority, application United Kingdom, Jul. 11, 1980, 8022763

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—64 **14 Claims**



1. A method of assembling a montage, for example in making a printing plate, said method comprising the steps of:

(1) applying a dry heat-sensitive adhesive coating which does not exihibit any tacky characteristics at ambient temperatures even if pressure is applied theeto to one face surface of a carrier sheet,

(2) positioning at least one sheet-like member on said carrier sheet face surface in a predetermined register position and in overlying relation to said adhesive coating to provide a montage, and

(3) applying localized heating to the montage at any desired locations where said sheet-like member is positioned at selected localized areas, said localized heating having a temperature sufficient to melt at such localized areas only said adhesive coating without damage to said sheet-like member or to said carrier sheet, whereby to provide a montage in which said sheet-like member is bonded by solid, dry adhesive bonds to said carrier sheet at said localized areas only and in which any area of said adhesive coating which is not covered by said sheet-like member remains dry and still exhibit said non-tacky characteristics, and whereby said solid dry bonds are breakable to permit said sheet-like member to be removed without heating from said carrier sheet leaving said dry adhesive coating substantially intact thereon at said localized areas.

4,517,037

REFRACTORY COMPOSITION COMPRISING NITRIDE FILLER AND COLLOIDAL SOL BINDER

Thomas L. Francis, Murrysville, and Frankie E. Phelps, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 316,810, Nov. 2, 1981, abandoned. This application Mar. 13, 1984, Ser. No. 589,138

Int. Cl.³ C04B *35/58*

U.S. Cl. 156—89 **17 Claims**

1. A refractory composition having high resistance to corrosion by molten metal chlorides and chlorine gas at elevated temperatures, said composition comprising

(a) about 100 parts by weight of a nitride refractory filler selected from the group consisting of nitrides of silicon, aluminum, titanium, chromium, hafnium, zirconium, beryllium, magnesium, manganese, iron, scandium, yttrium and rare earth elements; silicon oxynitride; aluminum oxynitride; and silicon aluminum oxynitride wherein the aluminum and oxygen are in a solid solution of silicon nitride;

(b) about 30 to 100 parts by weight of a colloidal sol binder selected from the group consisting of silica, silicon aluminum oxynitride wherein the aluminum and oxygen are in a solid solution of silicon nitride, silicon oxynitride, silicon nitride, aluminum nitride, boron nitride and alumina, all in colloidal sol form, said binder comprising an aqueous suspension containing up to about 50 wt.% solids, the quantity of binder and the concentration of binder solids being sufficient to coat substantially all of the filler and to form a plastic mixture with the filler; and

(c) less than about 2 parts by weight of the oxides or hydroxides of magnesium, calcium, chromium and manganese.

14. A method for joining refractory bricks comprising the steps of:

(a) preparing a mortar mix comprising:

(i) about 100 parts by weight of a particulate nitride refractory filler selected from the group consisting of nitrides of silicon, aluminum, titanium, chromium, hafnium, zirconium, beryllium, magnesium, and manganese, iron, scandium, yttrium and rare earth elements; silicon oxynitride; aluminum oxynitride and silicon aluminum oxynitride wherein the aluminum and oxygen are in a solid solution of silicon nitride, substantially all of said particulate filler passing through a 48 mesh screen (Tyler Series);

(ii) about 30 to 100 parts by weight, based on the weight of the filler, of a colloidal sol binder and the concentration of binder solids selected from the group consisting of silica, silicon aluminum oxynitride. wherein the aluminum and oxygen are in a solid solution of silicon nitride, silicon nitride, silicon oxynitride, aluminum nitride, boron nitride and alumina, all in colloidal sol form, said binder comprising an aqueous suspension containing up to about 50 wt.% solids, the quantity of binder being sufficient to coat substantially all of the filler particles and to form a plastic mixture with the filler; and

(iii) less than about 2 parts by weight of the oxides or hydroxides of magnesium, calcium, chromium and manganese;

(b) applying the mortar mix to form a seam between a pair of opposed refractory bricks, said seam and bricks comprising, in combination, a refractory assembly; and

(c) firing the refractory assembly at an elevated temperature of about 700° to 800° C.

4,517,038

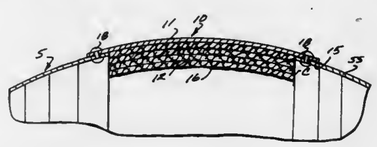
METHOD OF REPAIRING BALLISTIC DAMAGE

Robert W. Miller, 1235 - 19th St., Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 493,323, May 10, 1983,. This application Nov. 21, 1983, Ser. No. 553,575

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—98 **4 Claims**



1. A method for making repairs in a stressed panel, comprising the steps of:

cutting out preselected openings in said panel;

selecting a patch assembly having an exterior metal skin larger than said opening adhered to a stack of filament layers of a plan form substantially equal to said opening;

bending said skin to match the surface of said panel adjacent said opening;

coating said filament layers with resin; and

attaching said patch assembly to the edges of said opening.

4,517,039

METHOD AND APPARATUS FOR MAKING BRAIDED REINFORCED HOSE

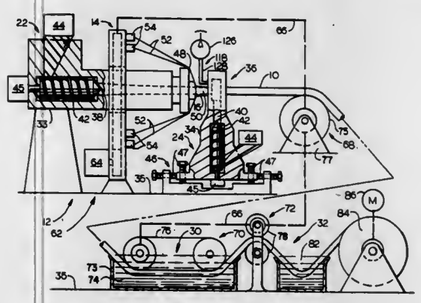
Ronald L. Satzler, Princeville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 29, 1983, Ser. No. 509,110

The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.

Int. Cl.³ B29D *23/05*; B65H *81/00*

U.S. Cl. 156—149 **11 Claims**



1. A method of manufacturing a reinforced elastomeric hose (**10**), comprising the steps of:

braiding a tubular reinforcement member (**16**) on a tapered mandrel (**50**) at a first braid angle, said reinforcement member (**16**) having inner and outer surfaces (**18, 20**);

progressively pushing the reinforcement member (**16**) from the mandrel (**50**) in response to the braiding action;

extruding and forming an elastomeric liner (**26**) from a first extruder (**33**) onto the inner surface (**18**) of the braided reinforcement member (**16**) after it leaves the mandrel;

extruding and forming an elastomeric cover (**28**) from a second extruder (**34**) onto the outer surface (**20**) of the braided reinforcement member (**16**), said extruding of the elastomeric liner (**26**) and cover (**28**) occurring at approximately the same axial location and adjacent the mandrel (**50**);

progressively curing the elastomeric hose (**10**) after exiting the extruders (**33,34**);

changing the braid angle of the reinforcement member (**16**) to a predetermined braid angle smaller than an optimum braid angle by pulling the elastomeric hose (**10**) after it exits the second extruder through the curing apparatus (**30**) at a linear rate fastener than the rate of extruding the hose (**10**); and

obtaining the predetermined optimum braid angle by releasing the pulling force on the elastomeric hose (**10**) after curing to free the braids of the reinforcement member (**16**) to rebound to the predetermined optimum braid angle.

3. An apparatus (**12**) for forming an elastomeric reinforced hose (**10**), comprising;

a tapered mandrel (**50**) having an end portion (**92**);

a braiding machine (**14**) adapted to continuously braid a reinforcement member (**16**) on the tapered mandrel (**50**) and progressively push the reinforcement member (**16**) from the tapered mandrel (**50**) by the braiding action, the reinforcement member (**16**) having inner and outer surfaces (**18,20**);

first means (**22**) for extruding an elastomeric liner (**26**) onto the inner surface (**18**) of the reinforcement member (**16**) as it is being pushed from the mandrel by the braiding action;

second means (**24**) for extruding an elastomeric cover (**28**) onto the outer surface (**20**) of the reinforcement member (**16**), said liner (**26**) and cover (**28**) being extruded at approximately the same axial location and adjacent the end portion (**92**) of the tapered mandrel (**50**);

curing means (**30**) for curing the hose (**10**) after the hose exits the extruders (**33,34**); and

haul-off means (**32**) for continuously pulling the hose after it exits the second extruder through the curing means at a linear rate faster than the rate of extruding the hose (**10**) to change the braid angle to a braid angle smaller than an optimum braid angle and releasing the pulling force on the hose after curing to free the braids of the reinforcement member (**16**) to rebound so that the optimum braid angle is achieved.

4,517,040

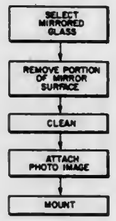
METHOD OF MAKING A DECORATIVE PHOTO MIRROR

Linda J. Whitted, 728 E. Michigan Ave. #134, Orlando, Fla. 32806

Filed Jan. 16, 1984, Ser. No. 571,112

Int. Cl.³ B32B *31/22*

U.S. Cl. 156—153 **6 Claims**



1. A method of making a decorative photo mirror apparatus comprising the step of:

cutting a glass mirror to a predetermined size and shape;

removing a portion of the mirrored surface in a vignetted pattern, said removing a portion of the mirrored surface including applying a paint remover with an abrasive material for removing the mirrored surface;

cleaning the mirror to remove residue chemicals from the mirrored surface;

attaching an image over the glass portion having the mirrored surface removed; and

mounting the mirror and image for display, whereby a decorative photo mirror is formed and mounted.

4,517,041

METHOD FOR ATTACHING A WORKPIECE TO A WORKPIECE CARRIER

Douglas J. Hennenfent, New Hope; Allan L. Holmstrand, Bloomington, and Alan G. Kracke, Minnetonka, all of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Division of Ser. No. 430,195, Sep. 30, 1982, Pat. No. 4,457,114. This application Jun. 27, 1984, Ser. No. 600,266

Int. Cl.³ B32B *31/24*

U.S. Cl. 156—155 **5 Claims**

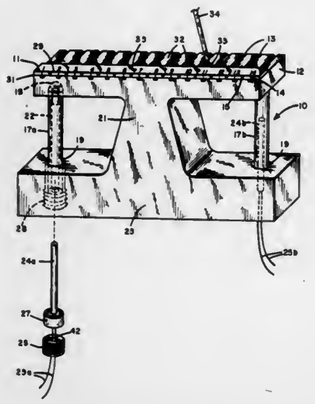
1. In a method for mounting on a workpiece carrier a relatively thin, elongate workpiece having an elongate, flat surface, said workpiece carrier having a support surface which may be elastically bent into a more concave shape responsive to power input to the workpiece carrier, an improvement for creating a convex bend in the workpiece, including the steps of

(a) supporting the carrier with the support surface facing upwardly; then

(b) supplying power at a predetermined rate to the workpiece carrier, thereby causing said support surface to assume a predetermined more concave shape;

(c) laying the workpiece, flat surface down, on the support surface; then

(d) bonding the workpiece along its flat surface to the support surface; and then



(e) reducing the rate of power supplied to the workpiece carrier, whereby the support surface elastically returns to a less concave shape.

4,517,042

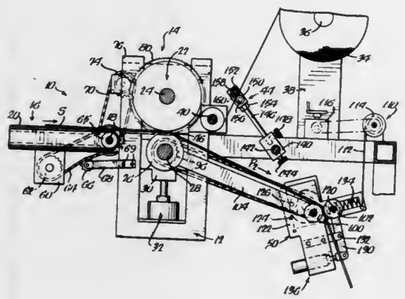
METHOD AND APPARATUS FOR DECURLING LAMINATED STOCK

Karl Singer, Palatine, Ill., assignor to D&K Custom Machine Design, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 429,616, Sep. 30, 1982, Pat. No. 4,470,589. This application May 14, 1984, Ser. No. 609,776

Int. Cl.³ B65H *3/02*

U.S. Cl. 156—164 **16 Claims**



1. A method of laminating a flexible film to a discrete article comprising feeding the discrete article along a path to a laminating station between a heated laminating roller and gripping roller, providing a laminating film from a supply into contacting engagement with said laminating roller and between said laminating roller and said gripping roller in said laminating station, driving said laminating roller to draw said film from said supply through said laminating station, and maintaining a controlled driving speed on said gripping roller so that the peripheral speed of the gripping roll is less than the peripheral speed of said laminating roll to decurl said flexible film while the film is being laminated to said discrete article in said laminating station.

4,517,043

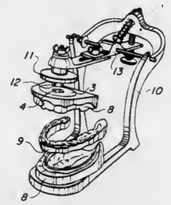
CUSTOM DENTURE FABRICATION TECHNIC

Raymond H. Martin, 88 Brisbon Rd., Somerset, Mass. 02726; Ugo S. Garganese, 1790 Warwick Ave., Warwick, R.I. 02889, and John R. Griffin, 5 Franconia St., Dorchester, Mass. 02122

Continuation-in-part of Ser. No. 271,806, Jun. 8, 1981, abandoned, and Ser. No. 405,427, Aug. 5, 1982. Pat. No. 4,500,289, and Ser. No. 71,948, Sep. 4, 1979, Pat. No. 4,337,039. This application Sep. 26, 1983, Ser. No. 536,363

Int. Cl.³ B29C *27/00, 17/03, 17/10, 23/00*

U.S. Cl. 156—196 **5 Claims**



1. A method for forming dentures from stock preformed dental arches having teeth pre-mounted thereon, and custom-made dental bases, comprising: forming cast stone jaw models against jaw impressions in suitable molds; removing the material of said impressions leaving the jaw molds; luting a wax bite registration impression between said jaw models to form an assembly; positioning said assembly on an articulator with said models keyed to the articulator in reproducible positions; removing the models from the articulator and heating and vacuum forming thermoformable plastic sheet material about said models and cooling said sheet material to form custom fitted denture bases; and returning the denture bases to said models; positioning said models in the same position on the articulator as before; attaching a suitable preformed plastics dental arch with preset teeth to each of said bases on said articulator to form said dentures.

4,517,044

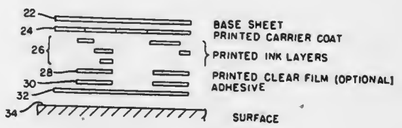
DRY TRANSFER DECAL AND METHOD OF MANUFACTURE

Raymond M. Arnold, Chicago, Ill., assignor to Advanced Graphic Technology, Chicago, Ill.

Division of Ser. No. 322,596, Nov. 18, 1981, Pat. No. 4,421,816. This application Oct. 28, 1983, Ser. No. 546,521

Int. Cl.³ B44C *1/16;* **B32B** *31/00, 3/18;* **B41M** *3/12*

U.S. Cl. 156—277 **3 Claims**



1. A method of manufacture of an improved pressure sensitive, laminated, dry transfer decal that does not require complex or expensive processing steps comprising the steps of:

printing a carrier coat of cross linked, polymeric material in a range of 0.005 to 0.020 inches thickness and in form and extent of a complete image of a decal on a polymeric base sheet;

subsequently drying the carrier coat to form a dried carrier coat;

printing at least one ink layer on the dried carrier coat within the form and extent of the carrier coat to define a portion of the image;

printing a second coat of cross linked, polymeric material over the printed ink layers, said carrier coat and second coat providing protection for the ink layers to form a combination of layers; and

coating the combination of layers with a high tack adhesive over the total form and extent thereof to provide a releasable, pressure sensitive decal on a support backing of a base sheet.

4,517,045

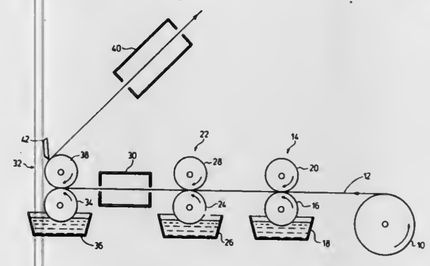
APPARATUS FOR FORMATION OF PACKAGING MATERIAL

Donald E. Beckett, 963 Tennyson Ave., Mississauga, Ontario, Canada L5H 2Y9

Division of Ser. No. 302,370, Sep. 15, 1981, Pat. No. 4,398,994. This application Jun. 13, 1983, Ser. No. 489,070

Int. Cl.³ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—345 **5 Claims**



1. Apparatus for forming a repetitive pattern on a roll of aluminized polymer film, comprising

holder means for holding said roll of aluminized polymer film so that a web may be drawn therefrom;

printing station means for printing a desired pattern on said web, said printing station means including a rotary patterned printing surface for engagement with the aluminized surface of said web and etchant-resistant material application means for applying etchant-resistant material to said pattern on said printing surface;

etchant material-applying station means located spaced from said printing station means in a direction downstream of the intended direction of motion of said web, said etchant-material applying station means including a rotary surface for engagement with the patterned surface of said web and etchant-material application means for applying a film of sodium hydroxide solution to said rotary surface;

washing station means located spaced from said etchant material-applying station means in a direction downstream of the intended direction of motion of said web, said washing station means including wash water applying and removal means for application of wash water to the etchant-applied surface of the web to wash spent sodium hydroxide therefrom and removal of the resulting spent wash water therefrom

drying means for drying said washed web; and

take up means for taking up a roll of the dried web of patterned film.

4,517,046

DEVICE FOR MAKING GROOVES IN CIGARETTE FILTERS

Richard Heaney, Campbell, and Erik I. Naslund, Los Gatos, both of Calif., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 18, 1984, Ser. No. 631,963

Int. Cl.³ B29C *17/00;* **A24C** *5/50*

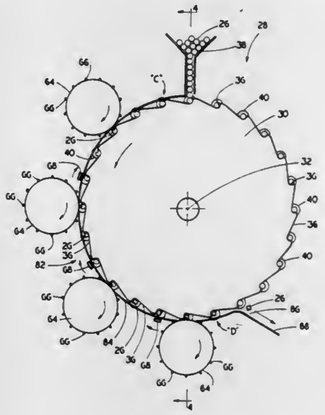
U.S. Cl. 156—500 **21 Claims**

1. An apparatus for making elongated grooves in the peripheral surface of a filter rod, comprising:

a generally cylindrical, rotatably drum;

means defining a plurality of filter rod receiving channels in the peripheral surface of the drum, the filter rod receiving channels being open to the peripheral surface of the drum, the longitudinal axes of the channels being parallel to the rotational axis of the drum;

means located adjacent to the periphery of the drum for successively forming a plurality of circumferentially



spaced apart grooves in the peripheral surface of the filter rods disposed in the channels; and,

means for indexing filter rods in selected ones of the channels about the longitudinal axes of the filter rods to position the filter rods for succeeding groove formation by the groove forming means.

4,517,047

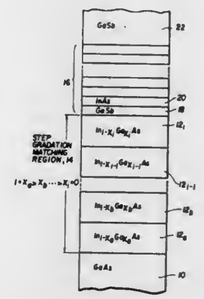
MBE GROWTH TECHNIQUE FOR MATCHING SUPERLATTICES GROWN ON GAAS SUBSTRATES

Chin-An Chang, Peekskill; Leroy L. Chang, Goldens Bridge, and Leo Esaki, Chappaqua, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 23, 1981, Ser. No. 227,889

Int. Cl.³ C30B *25/02*

U.S. Cl. 156—610 **14 Claims**



1. The method of growing multilayer semiconductor devices wherein lattice mismatch between first and second semiconductor layers having respective different compositions is overcome by substantially reducing the misfit dislocation density while enhancing electron mobility therebetween, comprising the steps of:

sequentially growing on said first layer a plurality of successive intermediate semiconductor layers of predetermined thickness whose composition varies in discrete graded steps of semiconductor composition from a composition

which substantially matches the lattice parameters of the first layer to a composition which substantially matches the lattice parameters of the second layer; and

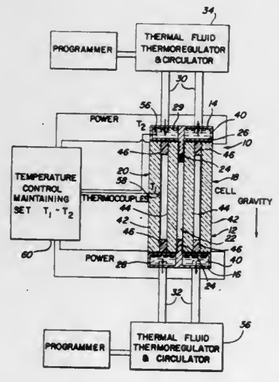
thereafter growing said second layer on the outermost inner intermediate layer.

4,517,048

METHOD FOR MINIMIZING CONVECTION DURING CRYSTAL GROWTH FROM SOLUTION

Paul J. Shlichta, San Pedro, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 31, 1983, Ser. No. 547,175
Int. Cl.³ C30B *19/02*
U.S. Cl. 156—621 **10 Claims**



1. A method of growing in a gravitational field a macroscopic crystal from a solution including the material from which the crystal is made and a solvent for the material, comprising:

(a) holding the solution in a chamber which is relatively thin, this thin dimension being generally perpendicular to the vertical;

(b) disposing in the chamber at either end a substrate crystal from which the crystal grows; and

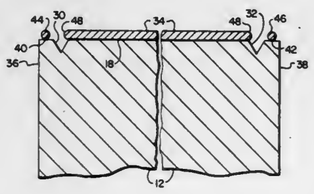
(c) controlling the temperature conditions of the solution so that the crystal forms, and as the crystal forms, the effect of buoyant convection within the solution is minimized.

4,517,049

SILICON RIBBON GROWTH WHEEL WITH EDGE DEFINING GROOVES

G. Felix Wakefield, Woodland Hills; David L. Bender, and Samuel N. Rea, both of Thousand Oaks, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 23, 1982, Ser. No. 391,095
Int. Cl.³ B30B *19/12*
U.S. Cl. 156—622 **11 Claims**



1. In apparatus for production of semiconductor ribbon in which molten semiconductor material is brought into contact with a moving chill surface, the improvement comprising:

a chill surface having a pair of longitudinal grooves, said grooves spaced apart by a desired ribbon width.

4,517,050

PROCESS FOR FORMING CONDUCTIVE THROUGH-HOLES THROUGH A DIELECTRIC LAYER

Daniel D. Johnson, Yorklyn, Del., and Herbert L. Fritz, Englishtown, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1983, Ser. No. 558,307
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*
U.S. Cl. 156—643 **16 Claims**



1. A process for making an electrically conducting path in a dielectric layer sandwiched between two conductive layers comprising

(a) forming a noncircular hole completely through one of the conductive layers without substantially removing material from the dielectric layer by etching a portion of the conductive layer;

(b) through said hole etching the dielectric whereby a pathway is formed completely through the dielectric layer between the conductive layers and whereby the conductive layer is undercut of dielectric material adjacent the hole in said conductive layer;

(c) deforming the conductive layer which has been undercut toward the other conductive layer, and

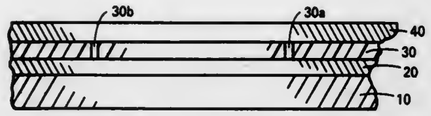
(d) forming an electrical conducting path between the two conductive layers through the pathway.

4,517,051

MULTI-LAYER FLEXIBLE FILM MODULE

Charles E. Gazdik, Endicott, and Donald G. McBride, Binghamton, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 453,443, Dec. 27, 1982,. This application Apr. 13, 1984, Ser. No. 599,839
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00*; B29C *17/08*
U.S. Cl. 156—644 **6 Claims**



1. The method of making double-sided thin, flexible circuitry by

depositing a first layer of circuitry on a substrate,

covering said first layer of circuitry with a thin layer of polyimide,

etching vias into said layer of polyimide,

curing said polyimide,

depositing a second layer of circuitry on top of said polyimide, and

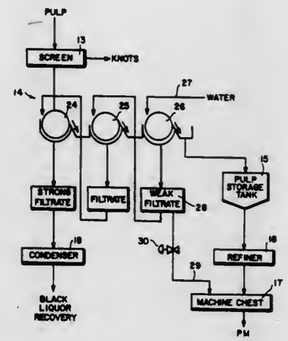
etching away said substrate with a material that attacks said substrate but which does not attack said first layer of circuitry.

4,517,052

INTERNAL SIZING WITH BLACK LIQUID

Edmund M. Choy, Cloquet, Minn., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 8, 1983, Ser. No. 559,379
Int. Cl.³ D21D *3/00*
U.S. Cl. 162—11 **3 Claims**



1. A method for manufacturing unbleached, presized paper comprising the steps:

(a) cooking wood chips or the like in a digester to delignify the wood chips;

(b) discharging the cooked chips into a blow tank to make pulp;

(c) screening the pulp to remove knots and the like;

(d) washing the pulp in a multiple stage washer to remove the cooking liquor from the pulp;

(e) directing the washed pulp to a pulp storage tank for use in the machine chest of a papermachine; and,

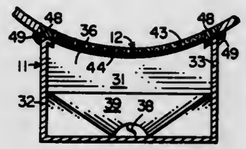
(f) directing the wash water containing the spent cooking liquor to a distillation process where it is concentrated and separated, the improvement wherein a portion of the wash water from the final stage of the washing step is diverted without further treatment to the machine chest of a papermachine to pre-size the washed pulp, said diverted wash water containing from about 0.08–0.23 weight percent rosin.

4,517,053

APPARATUS FOR SAMPLING PAPER PULP LIQUOR

James B. Devine, 505 S. Wilbur, Walla Walla, Wash. 99362

Filed Nov. 8, 1982, Ser. No. 440,093
Int. Cl.³ D21C *7/12*
U.S. Cl. 162—251 **1 Claim**



1. Apparatus for withdrawing a sample of the liquid fraction of paper pulp stock from the periphery of a conduit carrying such stock under pressure above the pressure of the ambient atmosphere comprising, in combination:

a sampler having a peripherally defined extraction chamber carried externally of the conduit with a permeable member forming an interface between the interior member comprising

a plate and screen joined at their edges by a rigid frame substantially the same size and configuration as the interface and the thickness of the screen and the plate being substantially the same as the thickness of the conduit wall, and wherein the frame containing the permeable member is sealed to the conduit and sampler so that the outer surface of the screen is coincident with the inner surface of the conduit;

valve means for adjustably regulating the pressure in the sampler chamber between that of the pulp stock and that of the ambient atmosphere; and

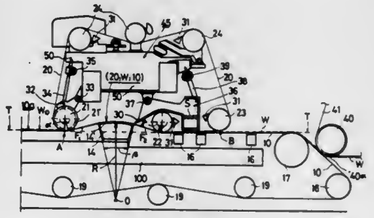
conduit means for removing the liquid fraction in the sampler chamber for subsequent testing.

4,517,054

WEB-FORMING SECTION OF A PAPER MACHINE INTENDED FOR MODERNIZATION OF A FOURDRINIER WIRE

Jorma Hujàla, and Martti Koponen, both of Jyväskylä, Finland, assignors to Valmet OY, Finland

Filed Sep. 29, 1982, Ser. No. 430,232
Claims priority, application Finland, Mar. 2, 1982, 82 0743
Int. Cl.³ D21F *7/02, 9/02*
U.S. Cl. 162—301 **16 Claims**



1. In a web-forming section of a paper machine, such as modernization of a fourdrinier-wire part, comprising a fourdrinier wire loop having a wire run constituting a lower wire of said web-forming section and a single-wire, substantially horizontal initial portion of a dewatering zone of the web-forming section within which web-forming stock is dewatered through the lower wire by draining means, said web-forming section further comprising an upper wire unit including a looped upper wire guided by guide and web-forming rolls, said upper wire together with a run of said lower wire forming a two-wire dewatering zone within which dewatering takes place substantially through the upper wire, the improvement comprising a combination of the following components arranged so as to be jointly operative as follows:

a first forming roll having an open face situated inside the upper wire loop, said two-wire dewatering zone beginning in the region of said first forming roll where said two-wire dewatering zone is curved upwardly over a sector of said first forming roll, and wherein a horizontal plane tangent to the lower part of said first forming roll is substantially coplanar with the plane of said lower wire and the open face of said first forming roll has an open area which is at least 50% of the entire area of said roll;

a forming shoe within the two-wire dewatering zone situated within the fourdrinier wire loop after said first open forming roll in the direction of web travel, said forming shoe being provided with a curved deck which contacts the lower wire, said deck being curved downwardly over a certain angle and wherein said deck has an upper face which is located above the plane of said lower wire;

a reversing roll situated inside the upper wire loop after said forming shoe in the direction of web travel and guiding a joint run of the upper and lower wires over an upwardly curved sector of said reversing roll until said joint run substantially coincides with the plane of said lower fourdrinier wire;

a second reversing roll situated within the upper wire loop for separating the upper wire from the lower wire before the upper wire reaches said second reversing roll; and

wherein said forming and reversing rolls and forming shoe situated therebetween are situated with respect to each other such that after the initial dewatering occurs in the single-wire initial portion of the dewatering zone to an appropriate extent through the lower wire, dewatering takes place within the two-wire dewatering zone, first within said sector of said first open forming roll in two directions through both said upper and lower wires, whereupon within the region of said forming shoe, the dewatering takes place primarily upwardly through the upper wire, and

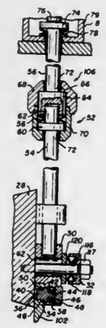
wherein lowermost points of said first forming roll, said first reversing roll, and said second reversing roll are all disposed at substantially the same level.

4,517,055

SLICE LIP CONTROL

Norman F. Dove, 1493 Crown St., North Vancouver, British Columbia, Canada V7J 1G4

Filed Jun. 6, 1983, Ser. No. 501,530
Int. Cl.³ D21F *1/06*
U.S. Cl. 162—344 **26 Claims**



1. In a paper making machine having a slice lip to control the feed from a head box to a wire on which the paper is formed;

a coupling to attach the lip of the head box to the head box, the coupling comprising a body adapted to be attached to an adjuster extending from an actuator, means attaching the body to the head box to permit movement of the body relative to the head box, under the influence of the actuator, the improvement whereby the body has a first recess adapted to receive the lip;

means defining a second recess, generally perpendicular to the first recess;

means located in the second recess to engage the lip received in the first recess to pivotally clamp the lip against the head box.

20. A position transmitter to signal the position of a lip on a head box of a paper making machine, the transmitter comprising a first flexible vessel to contain a substantially incompressible fluid;

a sensor attached to the first flexible vessel and attached to the lip;

a second flexible vessel;

means tending to compress the second flexible vessel;

a conduit connected to the first and second flexible vessels whereby movement of the lip moves the sensor to expand or contract the first flexible vessel to move the incompressible fluid through the conduit to expand or contract the second flexible vessel; and

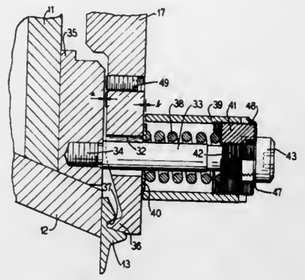
means to sense the movement of the second vessel.

4,517,056

SLICE LIP ADJUSTMENT

Arnold J. Roerig, and Robert W. Schroeder, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Dec. 1, 1983, Ser. No. 556,896
Int. Cl.³ D21F *1/02. 1/04. 1/06*
U.S. Cl. 162—344 **5 Claims**



1. In a papermaking machine for depositing a fiber suspension onto a forming wire through a slice opening of adjustable dimension,

a slice body,

a slice lip abutting said slice body and movable relative thereto,

an adjusting arm having an aperture extending therethrough,

engagement means interconnecting said adjusting arm and said slice lip,

a threaded, headed bolt passing through the aperture in said adjusting arm and received in threaded engagement in said slice body,

a plug received in threaded engagement at the head of said bolt,

a compressed spring acting between said plug and said adjusting arm,

a tube having two opposing ends and having an internally threaded portion receiving the plug in threaded engagement at one of said ends, the opposite end of said tube being spaced from said adjusting arm by a small predetermined clearance, and

locking means locking said tube in an adjusted position relative to said plug.

4,517,057

METHOD AND APPARATUS FOR SHORT-PATH DISTILLATION

Friedrich Fauser, Hammersbach, and Willi Fischer, Seligenstadt, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,236
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122652
Int. Cl.³ B01D *3/12*
U.S. Cl. 202—205 **15 Claims**

1. In a method for short-path distillation of a liquid in a vacuum, wherein the liquid flows for at least quasi-turbulant flow and along an evaporating surface from an inlet to an outlet for distillable fractions of the liquid to evaporate therefrom and condense onto a condensation surface arranged a short distance away, the improvement comprising:

placing the liquid upon the evaporating surface at the inlet at a temperature such that the energy required for the evaporation of the distillable fractions therefrom is taken at least partially from the still-unevaporated fraction of the liquid thereon; and

decreasing the temperatures of the condensation surface and, continually, the evaporation pressures from the inlet toward the outlet, the evaporation pressures being in the range of from about 10 to about 0.1 mgar.

4. Apparatus for short-path distillation of a distillable fraction of a liquid, comprising:

a vacuum chamber;

an evaporation surface in the vacuum chamber from which the distillable fraction of the liquid can evaporate;

a condensation surface in the vacuum chamber along and at a sufficiently short distance from the evaporation surface for the evaporated distillable fraction of the liquid to condense thereonto;

inlet means for applying the liquid to the evaporation surface at a temperature such that the energy required for the evaporation is taken at least partially from the still-



unevaporated fraction of the liquid on the evaporation surface;

means designed for producing at least quasi-turbulent flow of the liquid along the evaporation surface away from the inlet means;

means for decreasing the temperatures of the condensation surface away from the inlet means; and

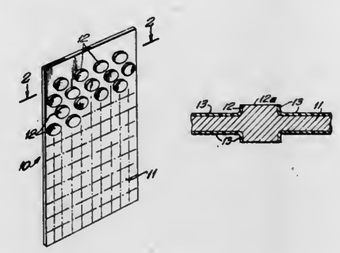
vacuum means for providing pressure in the vacuum chamber in the range of from about 10 to about 0.1 mbar and decreasing the same continually away from the inlet means.

4,517,058

METHOD FOR ELECTROFORMING METAL SLUGS AND REUSABLE INTEGRATED CATHODE UNIT

Donald R. Hodges, Denver, and William G. Sherwood, Golden, both of Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Nov. 2, 1983, Ser. No. 548,125
Int. Cl.³ C25D *1/00, 17/12*
U.S. Cl. 204—4 **9 Claims**



6. A method for producing electrolytically deposited metal slugs which comprises,

inserting into a metal-containing electrolyte an anode and a cathode,

said cathode comprising a cathode matrix in the form of a laminar metal substrate having an array of raised cylindrical bosses with sidewalls and having exposed flat faces distributed over said substrate and integral therewith,

the total surface of said cathode including the sidewalls of the bosses being covered with a coating of an adherent layer of an electrolyte resistant, substantially impermeable, low conductivity material, except for the exposed faces of said bosses which are adapted to receive electrodeposited metal thereon,

the coated sidewalls of said raised bosses extending upwardly from the coated laminar metal substrate,

passing a current from said anode to said cathode whereby metal is electrodeposited on the raised exposed faces of said bosses,

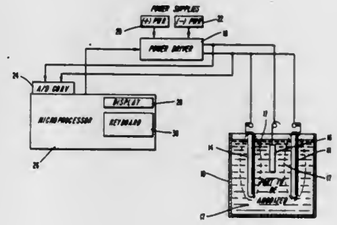
and continuing said deposition until the desired size of electrodeposited slugs is obtained on the raised faces of said bosses.

4,517,059

AUTOMATED ALTERNATING POLARITY DIRECT CURRENT PULSE ELECTROLYTIC PROCESSING OF METALS

David M. Loch, Seattle, and Dale D. Henkes, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 31, 1981, Ser. No. 289,105
Int. Cl.³ C25D *5/18. 11/02*
U.S. Cl. 204—14.1 **29 Claims**



1. A method for electroprocessing the surface of a metal, said method comprising the steps of:

immersing said metal surface and an electrode means in an electrolyte:

flowing anodizing and degassing current pulses between said surface and said electrode means, said anodizing and degassing current pulses having pulse widths defining anodizing and degassing time durations respectively which define an anodizing to degassing time ratio, said anodizing pulses being of a polarity which causes said metal surface to be anodic with respect to said electrode means and said degassing pulses being of a polarity opposite to that of the anodizing pulses or of a zero magnitude wherein the flowing of said anodizing and degassing current pulses results in a process voltage V_p between said metal surface and said electrode means;

sensing the process voltage V_p during the flowing of said anodizing and degassing current pulses and

varying said time ratio by means of a preprogrammed microprocessor responsive to the sensed process voltage V_p to maintain the process voltage V_p at a level below a predetermined burn voltage V_b.

4,517,060

METHOD AND BATH FOR ELECTRODEPOSITING A VIOLET-COLORED GOLD-COPPER-BISMUTH ALLOY

Manfred Dettke, and Rudolf Klein, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 615,471
Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319772
Int. Cl.³ C25D *3/62*
U.S. Cl. 204—44 **15 Claims**

1. Aqueous bath for the galvanic deposition of uniformly rose to violet-colored gold alloys, comprising

an alkali- or ammonium-dicyanoaurate-I,

an alkali copper cyanide,

an alkali cyanide and

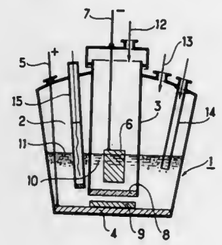
a water-soluble complex compound of bismuth.

4,517,061

PROCESS FOR PREPARING ARYLACETIC AND ARYLPROPIONIC ACIDS

Jean-Francois Fauvarque; Anny Jutand, both of Paris; Claude Chevrot, Saint-Germain en Laye; Fernando Pfluger, Saint-Denis, and Michel Troupel, Maincy, all of France, assignors to Compagnie General d'Electricite and Centre National de la Recherche Scientifique (CNRS), both of Paris, France

Filed Jul. 13, 1983, Ser. No. 513,497
Claims priority, application France, Jul. 13, 1982, 82 12275
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—59 R **18 Claims**



1. A process for preparing arylacetic and arylpropionic acids, including an electrochemical reduction, under carbon dioxide atmosphere at or close to atmospheric pressure, of benzyl type halogenides with the formula $ArCH_2X$ or, $ArCH(CH_3)X$ characterized by the fact that said reduction is effected in the presence of a catalyst comprising at least one organometallic complex comprising a transition metal complexed with a bidentate or tetradentate coordinate.

4,517,062

PROCESS FOR THE ELECTROCHEMICAL SYNTHESIS OF ETHYLENE GLYCOL FROM FORMALDEHYDE

James J. Barber, Montvale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,461
Int. Cl.³ C25B *3/10*
U.S. Cl. 204—77 **15 Claims**

1. A process for the formation of glycols through the electrochemical coupling of formaldehyde in neutral or acidic solutions comprising:

forming an aqueous solution of formaldehyde of effective strength;

adding an effective amount of a suitable electrolyte selected from the group of salts having a composition MX, wherein M represents any univalent cation and X represents an anionic species including the halides, sulfates, tetrafluoroborates, and perchlorates, as well as mixtures thereof;

forming the predetermined glycol product by passing an effective amount of electrical current between a cathode, formed from a carbon-based material, and an anode, formed from a non-corrodible substance, immersed in the electrolytic solution;

separating the resultant formed glycol from the reaction mixture.

4,517,063

PHOTOCHEMICAL REACTOR AND METHOD FOR CARRYING OUT PHOTOCHEMICAL REACTIONS THEREIN

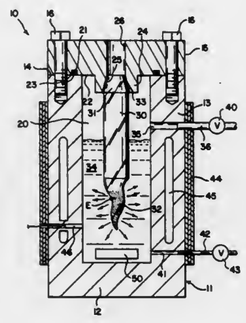
Larry M. Cirjak, Burton, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Feb. 13, 1984, Ser. No. 579,255
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—157.1 R **26 Claims**

8. A method for carrying out a photochemical reaction in a reaction chamber having means extending substantially into said reaction chamber for transmitting light energy from a source external thereof into said reaction chamber, comprising the steps of:

introducing a reactant solution into said reaction chamber;

exposing a first end of said means for transmitting light energy to a light source;



dispersing light from a second end of said means for transmitting light energy within said reaction chamber; and,

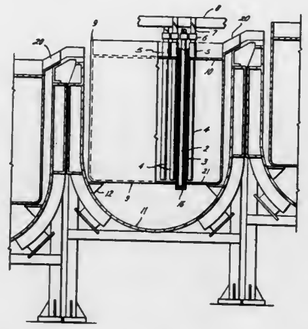
irradiating said reactant solution with said dispersed light within the reaction chamber thereby enabling reaction of said reactant solution to occur.

4,517,064

ELECTROLYTIC CELL

Melvin S. Cook, Tucson, Ariz., assignor to Duval Corporation, Tucson, Ariz.

Filed Sep. 23, 1983, Ser. No. 535,235
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—105 R **6 Claims**



1. A process for electrolytically producing a particulate crystalline metal product having limited adherence to the surface of a cathode, comprising:

providing a cathode, an anode, a diaphragm spaced from said cathode and disposed between said cathode and anode, and a mesh member disposed adjacent the surface of said diaphragm nearest said cathode, and

agitating said mesh member relative to said cathode to effectively influence and contribute to the control of crystalline product size and density as well as the structural integrity of crystalline dendrites and to dislodge a portion of the dendritic growths from said cathode by engaging said mesh member with said growths.

4,517,065

ALLOYED-LEAD CORROSION-RESISTING ANODE

Renato Guerriero, Mestre, Italy, assignor to SAMIN Societe Azionaria Minero-Metallurgicia S.p.A., Rome, Italy

Division of Ser. No. 311,613, Oct. 15, 1981,. This application Nov. 30, 1983, Ser. No. 556,558
Claims priority, application Italy, Oct. 20, 1980, 25458 A/80
Int. Cl.³ C25C *1/14*
U.S. Cl. 204—119 **7 Claims**

1. A method for the electrowinning of a non-ferrous metal, said method comprising subjecting an acidic solution containing said non-ferrous metal to an electric current in an electrolytic cell in which the anode is composed of from 98.9% to 99.9% of lead, from 0.1% to 1% calcium and 0% to 0.1% silver, on a weight basis, and thereafter recovering said non-ferrous metal.

4,517,066

ION BEAM DEPOSITION OR ETCHING RE RUBBER-METAL ADHESION

David A. Benko, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 401,201, Jul. 23, 1982, Pat. No. 4,446,197. This application Feb. 16, 1984, Ser. No. 580,585
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C **8 Claims**

1. A process for preparing a metal surface for adhesion to rubber, comprising the steps of:

applying a metal to a metal substrate utilizing an ion beam sputter deposition process until a coating of from about 5 to about 4,000 angstrom units is obtained;

the coating metal being selected from the group consisting of steel, zinc, copper, iron, nickel, aluminum, cobalt, and alloys thereof including brass, and

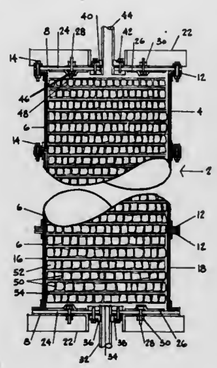
applying rubber to said coated metal surface.

4,517,067

DISCRETE PARTICULATE BIPOLAR REACTOR

John J. Byerley, 154 Chelford Crescent, and Kurt Enns, 345 Dale Crescent, both of Waterloo, Ontario, Canada

Filed Jan. 26, 1983, Ser. No. 461,279
Claims priority, application Canada, Sep. 29, 1982, 412431
Int. Cl.³ C25B *13/04*
U.S. Cl. 204—255 **8 Claims**



1. An electrochemical bipolar reactor comprising a reactor tank having an inlet and an outlet, said tank having an inert inner surface and containing numerous conductive particles in a reaction zone between said inlet and outlet, said particles being held in a fixed relationship to one another and each particle or small group of particles being at least partially covered with a fluid permeable membrane of non-conductive material so that each particle or small group of particles is electrically insulated from adjacent particles or adjacent small groups of particles, said conductive particles being located between two primary electrodes, one primary electrode being located at a start of said reaction zone and another primary electrode being located at an end of said reaction zone, said primary electrodes being insulated from the particles by a layer of non-conductive material, said particles being essentially piled on top of one another from a bottom to a top of the reactor tank and means for applying an electrochemical potential across said primary electrodes.

4,517,068

ELECTROCATALYTIC ELECTRODE

Jean M. Hinden, Chambesy, Switzerland; Lynne M. Ernes, Euclid, and Patrick E. Visel, North Madison, both of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

PCT No. PCT/US81/01763, § 371 Date Aug. 26, 1983, § 102(e) Date Aug. 26, 1983, PCT Pub. No. WO83/02288, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 28, 1981, Ser. No. 527,552
Int. Cl.³ C25B *11/03, 11/00*
U.S. Cl. 204—283 **10 Claims**

1. An electrode comprising an electrocatalyst based on the oxides of ruthenium, palladium and titanium, characterized in that the electrocatalyst consists of a three-component mixed oxide containing:

22–55% Ru
0.2–22% Pd and
44–77.8% Ti

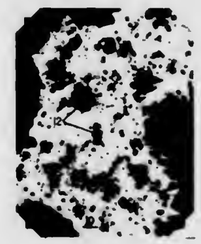
calculated as molar percentages of the respective oxides.

4,517,069

TITANIUM AND TITANIUM HYDRIDE RETICULATES AND METHOD FOR MAKING

Marilyn J. Harney, Painesville; Elvin M. Vauss, Jr., Cleveland, and Ajit Y. Sane, Willoughby, all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 396,747, Jul. 9, 1982, abandoned. This application Jul. 1, 1983, Ser. No. 509,731
Int. Cl.³ C25B *11/00*; C25C *7/02*
U.S. Cl. 204—290 F **20 Claims**



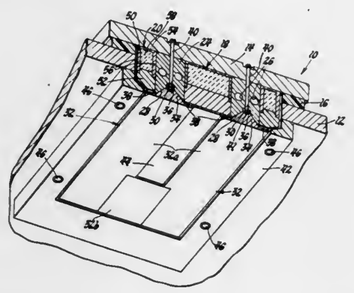
1. A self-supporting reticulate of titanium hydride essentially free of carbonaceous matter or a self-supporting reticulate of titanium essentially free of carbonaceous matter, said reticulate having an open cell foam morphology including interconnected pores in the size range from about 0.04 cm to about 1.0 cm bounded by strands having an average thickness of less than 10 mils.

4,517,070

MAGNETRON SPUTTERING CATHODE ASSEMBLY AND MAGNET ASSEMBLY THEREFOR

Howard D. Kisner, Wichita Falls, Tex., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1984, Ser. No. 625,847
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **5 Claims**



1. A planar magnetron sputtering cathode assembly comprising:

a backing plate of magnetic material;

a bar-shaped inner magnet assembly and an elongated annular outer magnet assembly surrounding the inner magnet assembly, the assemblies having mutually facing surfaces bounding a space between the assemblies, each assembly having a first pole directly attached to the backing plate for support thereby and for efficient magnetic coupling and a second pole spaced from the backing plate to establish a magnetic field between the two said second poles;

each magnet assembly including magnet means having two poles, a magnetic steel polepiece engaging one of the magnet poles, a nonmagnetic steel channel snugly surrounding the other of the magnet poles and the sides of the magnet means and engaging the polepiece, and a weldment for hermetically sealing the channel to the polepiece, whereby the magnet means is completely encased in steel and isolated from the sputtering cathode environment;

a water-cooled heat sink in the space between the inner and outer magnet assemblies in intimate thermal contact with the said surfaces bounding the space to cool the magnet assemblies, the heat sink having a face directed away from and spaced from the backing plate; and

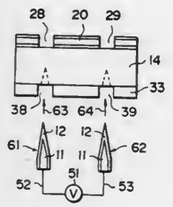
an elongated annular target thermally coupled to the said heat sink face in the magnetic field.

4,517,071

IONIC ACTIVITY MEASURING DEVICE

Osamu Seshimoto, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Aug. 30, 1982, Ser. No. 413,087
Claims priority, application Japan, Sep. 17, 1981, 56-146730
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—419 **12 Claims**



1. An ionic activity measuring device comprising a substrate provided with at least one opening for receiving at least one terminal, said at least one terminal consisting of a metal layer and a water-insoluble layer made of a salt of the same metal as that forming said metal layer, an ion selecting layer supported by said substrate, and a means for bringing liquid into contact with said ion selecting layer at the point vertically aligned with said at least one opening in said substrate.

4,517,072

PROCESS FOR MODIFYING COAL TAR MATERIALS

Samuel Cukier, Toronto, and Henry A. F. L. Kremer, Thornhill, both of Canada, assignors to Domtar Inc., Montreal, Canada

Continuation of Ser. No. 264,294, May 18, 1981, abandoned. This application Nov. 16, 1983, Ser. No. 552,252
Int. Cl.³ C10C *1/18, 3/08*
U.S. Cl. 208—45 **8 Claims**

1. In a process to obtain a pitch material from an undistilled coal tar material containing the mixture of hydrocarbon compounds which are normally separated by tar distillation, and normally including light oil, carbolic oil, wash oil and the pitch forming components, the improvement which consists essentially in decreasing the content of guinoline-insolubles (Q.I.) of said pitch material prior to distilling said coal-tar material by mixing said undistilled coal-tar material with a solvent which consists of at least one of the following: n-methyl-2-pyrrolidone and the fraction of a coal-tar distillate which boils between 100° and 350° C., said mixing being carried out at a temperature such as to form a solvent-dissolved fraction and a solvent-undissolved fraction, separating and removing said solvent-undissolved fraction of said undistilled coal-tar material, said undissolved fraction containing Q.I. having a high content of ash-forming impurities and using said solvent-dissolved fraction to produce coal-tar material with a decrease Q.I. and lower impurities by distilling said solvent-dissolved fraction of said undistilled coal-tar material so as to obtain from said solvent-dissolved product a pitch material, having a lower Q.I. and lower impurities than pitch material typically obtained by the conventional distillation of said coal-tar material.

4,517,073

HYDROCRACKING PROCESS AND CATALYST THEREFOR

John W. Ward, Yorba Linda, Calif., and Timothy L. Carlson, Grand Junction, Colo., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 9, 1982, Ser. No. 406,498
Int. Cl.³ C10G *47/20*
U.S. Cl. 208—111 **39 Claims**

1. In a catalytic hydrocracking process, the improvement comprising contacting a hydrocarbon feedstock with a hydrocracking catalyst under hydrocracking conditions producing a product hydrocarbon of lower average molecular weight than said feedstock, said catalyst comprising an active hydrogenation metal component on a support comprising in admixture a dispersion of silica-alumina in alumina and a crystalline aluminosilicate zeolite having the zeolite Y crystal structure, a silica-to-alumina mole ratio above about 6.0, and a water adsorption capacity at 25° C. and 4.6 mm Hg water vapor partial pressure of at least 20 percent by weight of the zeolite in its anhydrous form.

4,517,074

HYDROCARBON CONVERSION PROCESS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271. This application Sep. 13, 1983, Ser. No. 531,924
Int. Cl.³ C10G *45/12, 47/18, 47/20*
U.S. Cl. 208—111 **44 Claims**

7. In a process for hydrocracking hydrocarbons to more valuable products of lower average molecular weight and

lower average boiling point, the improvement comprising contacting a hydrocarbon feedstock at an elevated temperature and pressure in the presence of hydrogen with a catalyst comprising in intimate admixture at least one hydrogenation component, a crystalline aluminosilicate zeolite having cracking activity, and a dispersion of silica-alumina in a matrix consisting essentially of alumina.

8. A process as defined in claim 7 wherein said hydrogenation component is one or more components selected from the group consisting of platinum, palladium, cobalt, nickel, tungsten, molybdenum, their oxides, and their sulfides.

4,517,075

CATALYSIS OVER ACTIVATED ZEOLITES

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 319,175, Nov. 9, 1981, Pat. No. 4,438,215. This application Dec. 28, 1983, Ser. No. 566,376
Int. Cl.³ C10G *11/05, 47/08, 47/16*
U.S. Cl. 208—111 **20 Claims**

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite material prepared by a method comprising calcining a crystalline zeolite material having an initial silica:alumina mole ratio of at least about 100:1, said crystalline material having been synthesized from a reaction mixture containing quaternary onium ions, contacting said calcined crystalline material with aluminum chloride vapor at a temperature of from about 100° C. to about 600° C., hydrolyzing said aluminum chloride contacted crystalline material and calcining said hydrolyzed crystalline material.

4,517,076

REACTIVATION OF IRIDIUM-CONTAINING CATALYSTS

Joseph P. Boyle, and John B. Gilbert, both of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 24, 1984, Ser. No. 643,870
Int. Cl.³ B01J *23/90*
U.S. Cl. 208—140 **18 Claims**

1. In a process for the catalytic conversion of hydrocarbons wherein a hydrocarbon feedstock is contacted with a catalyst comprised of an iridium component composited with a porous refractory inorganic oxide support at hydrocarbon conversion conditions, the catalyst having been at least partially deactivated during contact with said feedstock by coke deposition thereon, said catalyst having been regenerated after discontinuing contact of said catalyst with said feedstock in a series of steps which include

(i) providing a bed of said catalyst in a reaction zone with a chloride level on the catalyst ranging from about 0.9 percent to about 1.5 percent, based on the weight of the catalyst,

(ii) burning a preponderance of the coke from the catalyst while adding a gas containing hydrogen chloride sufficient to maintain the chloride level on the catalyst within a range of from about 0.9 percent to about 1.5 percent, based on the weight of the catalyst, and oxygen in concentration ranging up to about 5000 parts, based on the volume of gas, to provide a flame front temperature not exceeding about 425° C. sufficient to burn the coke from the catalyst, but wherein the iridium component of the catalyst is agglomerated as via inadvertent departure from the prescribed burn conditions,

(iii) the chloride level of the catalyst is increased further to at least about 1.6 percent, based on the weight of the catalyst,

the improvement comprising

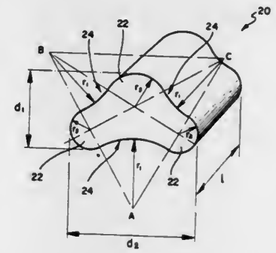
contacting said catalyst subsequent to raising the chloride level of the catalyst as in (iii) with a gas containing hydrogen chloride in concentration ranging from about 150 parts to about 5000 parts, based on the volume of the gas, and up to about 5000 parts per million parts oxygen, based on the volume of the gas to provide a flame front temperature greater than about 425° C. sufficient to redisperse the agglomerated iridium and substantially complete the removal of coke from the catalyst.

4,517,077

SHAPED CATALYST PARTICLE FOR USE IN HYDROPROCESSING OF PETROLEUM OILS

Porter Clements, Whiting, Ind., assignor to Katalco Corporation, Oak Brook, Ill.

Division of Ser. No. 551,063, Nov. 14, 1983, Pat. No. 4,495,307. This application Sep. 17, 1984, Ser. No. 651,447
Int. Cl.³ C10G *45/08*
U.S. Cl. 208—216 R **2 Claims**



1. A process of hydrotreating a petroleum distillate to remove sulfur-containing or nitrogen-containing components which comprises the step of contacting the distillate with hydrogen and with a catalyst particle comprising one or more hydrogenation metals selected from Group VIB and Group VIII of the Periodic Table of Elements and a porous, inorganic oxide substrate supporting said metal or metals, said particle having a generally cylindric configuration with a cross-section of trilobular shape having concave interlobular interstices bluntly rounded with greater curvature than the curvature of the lobes, wherein the trilobular shape is defined by an equilateral triangle, the midpoints of adjacent sides of the triangle serving as the centers for two lobe-defining radii of curvature (r_2), the vertices of the triangle defining the centers for the interstitial radii of curvature (r_1), and the common intersection of the bisectors of the included angles of the triangle serving as the center for the remaining lobe-defining radius of curvature (r_3), said contacting being made to occur at a temperature in the range of about 500° F. to about 800° F. and a total pressure of from about 100 to about 3000 p.s.i.g.

4,517,078

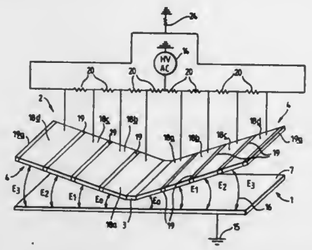
METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATERIALS

Ion I. Inculet, London, Canada; Anna K. E. Norberg, Mölndal, Sweden, and Nicholas M. Hepher, Lamberhurst, England, assignors to Blue Circle Industries PLC, London, England

Filed Nov. 15, 1983, Ser. No. 551,810
Claims priority, application United Kingdom, Nov. 17, 1982, 8232855
Int. Cl.³ B03C *7/04*
U.S. Cl. 209—127.3 **22 Claims**

1. A method of separating particles having different physical properties, which comprises generating an alternating electric field, the electric field having a first region having field lines curved convexly in a first direction generally perpendicular to a given direction; introducing the particles into the field;

charging at least some of the particles; and causing the particles to move along the field in the said given direction, whereby a charged particle acted upon by the electric field in the said first



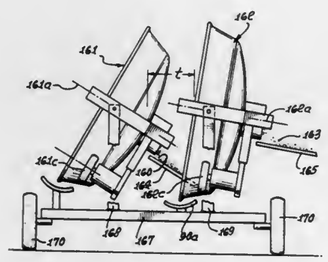
region is subjected to a centrifugal force in the said first direction, characterised in that the electrical potential across the said first region of the field varies with distance along the said first direction.

4,517,079

ORE SEPARATION SYSTEM

Keith B. Cleland, 3189 Industrial Dr., Yuba City, Calif. 95991

Filed Oct. 6, 1983, Ser. No. 539,716
Int. Cl.³ B03B *5/74*
U.S. Cl. 209—452 **21 Claims**



1. In apparatus of the character described, the combination comprising

(a) first and second rotary bowls each having rotary surfaces for separating particles of ore received into the bowls, each bowl having an axis of rotation, the bowls mounted for selective and independent tilting of said axes, both bowls facing generally frontwardly,

(b) the second bowl having an open interior portion thereof openly facing toward a portion of the rear of the first bowl, with said axes offset from one another, the bowls located in closely spaced relation with the first bowl having a rearward discharge opening in particle discharge communication with said open interior portion of the second bowl,

(c) and including, for each bowl, drive means including a drive rotor suspended to engage the bowl outer surface facing away from said axis for rotating the bowl, a prime mover operatively connected with said drive rotor, and and idler roller engaging said bowl outer surface, said idler roller and said drive rotor being located to exert supporting forces on the underside of the bowl at opposite side of a vertical plane bisecting the bowl, said plane containing said axis of rotation,

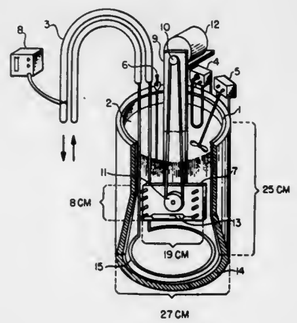
(d) and including two heads respectively suspending said drive means and said idler roller, and including support means supporting the bowl for rotation and tilting, and carrying said heads.

4,517,080

APPARATUS FOR ENCAPSULATING ADDITIVES IN RESEALED ERYTHROCYTES

John R. DeLoach; Robert L. Harris; Richard T. Mayer, all of Bryan, and Garret M. Ihler, College Station, all of Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 160,753, Jun. 18, 1980, Pat. No. 4,327,710.
This application Dec. 21, 1981, Ser. No. 332,906
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—85 **4 Claims**



1. An apparatus for the preparation of "resealed erythrocytes" by the use of dialysis comprising:

(a) a dialyzer container consisting of a large, well insulated vessel which provides structural support to the assembled components, and within which substantially all other component parts are housed and contained therein,

(b) a dialyzing solution,

(c) a means for agitating the dialyzing solution during dialysis,

(d) a means for measuring the temperature of the dialyzing solution,

(e) a means for cooling the dialyzing solution,

(f) a means for heating the dialyzing solution,

(g) a thermostat device for activating and deactivating the cooling means (e) and the heating means (f),

(h) a specimen support and rotation assembly consisting of . . .

(1) a vertically positioned elongated member supporting . . .

a. a horizontally positioned shaft upon which is mounted an upper pulley, which turns above and outside the dialyzing solution,

b. a horizontally positioned shaft upon which is mounted a lower pulley, which turns distally near the bottom of and within the dialyzing solution,

c. a belt to transmit the turning energy from the upper pulley to the lower pulley,

d. a belt-tensioning means, and

e. a specimen holding and rotating member having pegs at each end to provide means for securing dialysis tubes thereto, said member being secured to said lower pulley,

(2) a plurality of specimen dialysis tubes, and

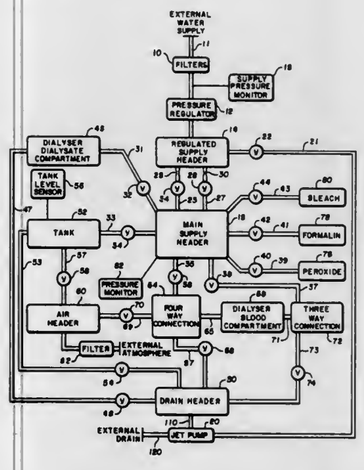
(i) an energizing means to provide rotational energy for the pulley thus rotating said dialysis tubes.

4,517,081

DIALYZER REUSE MACHINE

Bruce P. Amiot, St. Louis Park; Larry E. Fuller, Minnetonka; Felix J. Martinez, Plymouth; Louis C. Cosentino, Wayzata; William H. Harm, Columbia Heights, and Wayne I. Nelson, Brooklyn Park, all of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 322,167, Nov. 17, 1981, abandoned. This application Mar. 4, 1983, Ser. No. 472,075
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—85 **16 Claims**



11. A machine for cleansing and disinfecting a hemodialyzer device so that it may be reused, the dialyzer device including a dialysate compartment and a blood compartment and each said compartment communicating with an inlet port and an outlet port, the machine comprising:

a regulated supply header;

a supply header;

tank means;

an air header open to the atmosphere;

a drain header;

jet pump means including a pump fluid inlet, a pump fluid inlet and a discharge outlet open to the atmosphere;

means for supplying water of regulated pressure to the regulated supply header;

a four-way fluid communication means;

a three-way fluid communication means;

first conduit means for supplying water at or above about 30 lbs pressure to said jet pump pumping fluid inlet;

second conduit means extending between said main supply header and said tank;

third conduit means extending between said main supply header and one branch of said four-way conduit union;

fourth conduit means extending between said main supply header and one branch of said three-way communication means;

fifth conduit means extending between a second branch of said four-way communication and said drain header;

sixth conduit means extending between a second branch of said three-way communication means and said drain header;

seventh conduit means extending between said tank and said drain header;

eighth conduit means extending between said tank and said air header;

ninth conduit means extending between a third branch of said four-way communication means and said air header;

tenth conduit means for removably connecting said main supply header to one port of said dialyzer dialysate compartment;

eleventh conduit means for removably connecting said drain header to the other port of said dialyzer dialysate compartment;

twelfth conduit means for removably connecting the fourth branch of said four-way communication means to one port of the dialyzer blood compartment;

thirteenth conduit means for removably connecting the third arm of said three-way communication means to the other port of said dialyzer blood compartment;

fourteenth conduit means between said drain header and said jet pump fluid inlet;

said first through eleventh conduit means each including a valve means therein for interrupting fluid flow therethrough;

a plurality of chemical supply conduit means, each said chemical supply conduit means connected to said main supply header and including means for connecting a chemical supply source thereto and further including a control valve means therein for interrupting flow between said chemical supply source and said main supply header;

fifteenth conduit means between said regulated supply header and said main supply header, said fifteenth conduit means including variable flow supply means for interruptably supplying water at a plurality of flow rates to said main supply header; and,

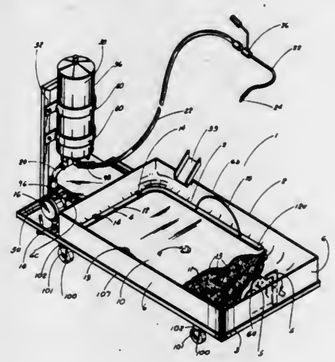
electronic control means for opening and closing said valve means and variable flow supply means according to predetermined sequences to pass fluids through the machine and dialyzer compartments for cleansing, testing and disinfecting the dialyzer, said electronic control means including means responsive to liquid volume within the tank for monitoring the liquid volume in the tank and initiating said predetermined sequences in response thereto.

4,517,082

ADVANCED DUAL-FILTERING APPARATUS

Malcolm J. Prudhomme, P.O. Box 510, Sunset, La. 70584

Filed Sep. 30, 1982, Ser. No. 432,009
Int. Cl.³ B01D *23/20*
U.S. Cl. 210—117 **12 Claims**



1. A dual-filtering apparatus for filtering and purifying contaminated oils, particularly edible cooking oils contained in deep fat frying vats used in deep fat frying operations, comprising:

a. a filter tub for receiving said contaminated oils from said deep fat frying vats;

b. at least one primary filtering means mounted in a covering relationship to the bottom wall of said tub;

c. tub sump means attached through the bottom wall of said tub for facilitating transmission of partially filtered oils from said tub;

d. a combination vacuum/pressure pump disposed adjacent

to said tub for creating negative and positive pressure within the filter apparatus;

e. first conduit means connecting said tub sump means to said pump for conveying said partially filtered oils from said tub by a negative pressure created by the vacuum side of said pump;

f. a fine filtering assembly disposed upstream of said pump, fluidly communicating with a pressure side of said pump, said fine filtering assembly comprising a generally cylindrical cannister having inlet and outlet means through its bottom wall and a removable cap covering said cannister on the top; a central conduit means connected to a first outlet means for delivering finely purified oils back to said vats;

a perforated lower retainer plate fixedly attached to the central conduit of said cannister at a distance from said bottom wall and defining an annular lower sediment settlement area between said bottom wall and said lower retainer plate;

a perforated upper retainer plate mounted adjacent to the top cap of said cannister, said upper retainer plate and said cap defining an annular upper void area, which fluidly communicates with said central conduit;

a tightly wound fibrous filter element, mounted between said upper and lower retainer plates in surrounding relationship to said central conduit;

a second outlet means having a drain conduit means fluidly communicating with said lower sediment settlement area at one end and provided with a check valve at its other end, said second outlet means communicating with an exterior of said cannister through said drain conduit means;

a pair of compression sealing means fixedly attached to the upper plate in surrounding relationship to said central conduit and attached to said upper plate circumferentially around its periphery adjaacent the inner wall of said cannister in sealing engagement thereof;

g. a cannister inlet conduit means connecting said pump to said inlet means of said cannister for conveying said partially filtered oils from the pressure side of said pump into the lower sediment settlement area of said cannister for upflow filtration thereof, for thereby effecting removal of contaminated particles down to at least 1/10 of a micron in size from said oils;

h. a filtered oil conduit means connected on one end to said first outlet means of said cannister and open-ended on its opposite end for transporting the filtered oils from said cannister back to said deep fat frying vats for re-use;

i. an excess oil conduit means, connected to said second outlet means of said cannister, mounted above said filter tub for allowing excess oil and contaminants collected in the lower sediment settlement area to be expelled back to the filter tub for re-circulation in the filter system.

4,517,083

FILTER DEVICE HAVING RELIEF VALVE FOR USE IN POWER STEERING SYSTEM

Willliam Hayes, Elmont, N.Y., and James W. Dohrenwend, Wheaton, Ill., assignors to ARC Rebuilders, Inc., Astoria, N.Y.

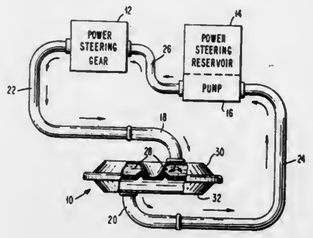
Filed Mar. 12, 1984, Ser. No. 588,540
Int. Cl.³ B01D *29/14*
U.S. Cl. 210—131 **17 Claims**

1. A filter device for filtering the fine solid particles present in the fluid line of an automotive system comprising:

a filter housing including an upper body wall and a lower body wall, inlet means for receiving fluid in said housing, and outlet means for passing fluid out of said housing into said fluid system;

a perforated support plate comprising a thin, disc-shaped substantially rigid material designed to flex when subjected to a predetermined pressure, said support plate being mounted in said filter housing and extending across the interior of said housing for separating said housing into an inlet chamber and an outlet chamber, said support plate having a plurality of perforations for passing filtered fluid from said inlet chamber to said outlet chamber, and said support plate having a valve opening therein defined by a rim which together constitute a relief valve opening for said fluid and valve seat;

a disc-shaped filter material for filtering solid particles of a given size from said fluid, said filter material being located in said inlet chamber and covering each of said perforations in intimate contact with said support plate for filtering said particles prior to the passage of fluid through said filter material and said perforations to said outlet chamber, said filter material having a means defining a valve opening therein which is positioned in alignment with said valve opening in said support plate;



said upper body wall having a boss portion which extends through said inlet chamber and into said valve openings in both said filter material and said support plate, said boss portion pressing said filter material against said valve seat rim of said support plate to thereby seal off said valve opening from said particles under normal filtering conditions;

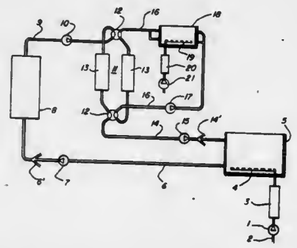
said support plate being designed to flex upon the buildup of a predetermined amount of fluid pressure in said inlet chamber when said filter material becomes clogged with said particles such that the support plate will be caused to move away from said valve boss portion to open said relief valve and permit fluid to bypass said filter material and pass into said outlet chamber.

4,517,084

ACTIVATED AIR AND ION EXCHANGE TREATMENT OF WATER

Andrew J. Pincon, 421 Liberty Dr., Bolingbrook, Ill. 60439

Filed Nov. 5, 1982, Ser. No. 439,340
Int. Cl.³ A01K *63/00*
U.S. Cl. 210—169 **3 Claims**



1. A system for removing suspended organic matter and dissolved contaminants including ammonia in water to be recycled for reuse, said system comprising:

a tank for holding a supply of recycled water,

a first generating means for generating activated air and a carrier air stream,

air dispersing means near the bottom of said tank for receiving said activated air and carrier air stream in the tank and for dispersing said activated air into the tank to decompose organic matter in the tank and to travel upwardly through the water in the tank,

a filter means having a filter media to remove suspended organic matter from water supplied thereto from said tank,

an ion exchange means for receiving water from said filter means to remove dissolved contaminants including ammonia from the water,

means for conveying cleaned water from said ion exchange means back to said tank, and

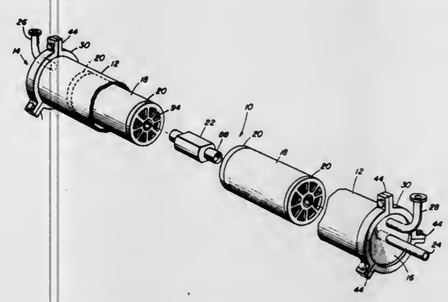
a regenerating system for said ion exchange means including a vessel for holding an aqueous solution used to regenerate said ion exchange means and a second generating means for generating activated air and a carrier air stream and a second dispersing means in said vessel to disperse air and activated air from said second generating means in said vessel to oxidize dissolved contaminants including ammonia removed from said ion exchange means and returned to said vessel in said aqueous solution.

4,517,085

FILTRATION DEVICES

Michael A. Driscoll, Bedford, and James H. Edwards, Winchester, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Sep. 15, 1983, Ser. No. 532,733
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—232 **8 Claims**



5. A filtration apparatus comprising:

a pressure vessel,

a plurality of spiral wound filtration modules serially arranged within the vessel,

each module including a filtration membrane wound around a filtrate collection tube having conical internally tapered portions at each end,

retaining means secured to each collection tube and engageable with the filtration membrane, and

means for removably connecting adjacent filtration modules comprising,

an interconnector comprising a rigid tubular member having conical externally tapered portions at opposite ends to form fluid tight connections with the conical internally tapered portions of the tubes of two adjacent filtration modules when the interconnector is inserted into the tubes,

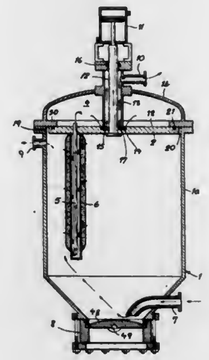
the open ends of the tubular interconnector being chamfered internally and forming an acute angle and a linear anular intersection with the internally tapered portions of the filtrate tubes to permit an unrestricted flow of fluid between two adjacent filtration modules.

4,517,086

TUBULAR FILTER APPARATUS

Ingo Romey, Hünxe, and Rüdiger Lennartz, Pulheim, both of Fed. Rep. of Germany, assignors to Bergwerksverband, Essen and Boll & Kirch Filterbau GmbH, Kerpen, both of, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,290
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212316
Int. Cl.³ B01D *25/32*
U.S. Cl. 210—323.2 **10 Claims**



1. A filtration apparatus comprising:

a housing internally divided by a limitedly vertically displaceable horizontal partition into a lower filtrand chamber and an upper filtrate compartment, said filtrand chamber being provided with means defining a first inlet port for the admission of a slurry to be filtered in a working phase and with means defining a second inlet port for the introduction of a scavenger gas under pressure in a purging phase;

a plurality of tubular filter elements suspended from said partition into said filtrand chamber, each of said filter elements having a closed bottom and a perforated peripheral wall spacedly surrounding a riser tube projecting above said partition for delivering liquid from said slurry to said filtrate compartment while entrained solids are retained on the outer surface of said peripheral wall to form a filter cake;

a discharge duct rising in said filtrate compartment with an open lower end closely overlying said partition and reaching to a depression formed in an upper surface of said partition while leaving a narrow gap therebetween at least in an upper position of said partition, said duct being provided at a level above said gap with means defining an outlet port for the discharge of liquid forced from said filtrate compartment through said gap under pressure of entering slurry in said working phase and of said scavenger gas in said purging phase;

an impactor coupled with said partition for shaking same in regeneration phase following said purging phase to dislodge adhering filter cake from the peripheral walls of said filter elements;

gate means at the bottom of said filtrand chamber enabling the removal of dislodged filter cake from said housing; and

means at said second inlet port for deflecting scavenger gas entering said filtrand chamber away from said filter elements.

4,517,087

FILTRATION/SEPARATION APPARATUS

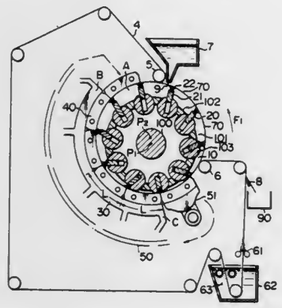
Hyosuke Nagase, 21-11, Josai-3-chome, Nishi-ku, Nagoya; Tetsuya Sato, Yachiyo; Kazuo Kobayashi, Chiba; Norio Masumoto, Ichinomiya, and Yuji Nagase, Nagoya, all of Japan, assignors to Hitachi, Ltd. and Hyosuke Nagase, both of Tokyo, Japan

Filed Oct. 6, 1983, Ser. No. 539,389

Claims priority, application Japan, Oct. 6, 1982, 57-174571

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—396 **10 Claims**



9. A continuous filtration/separation apparatus comprising:

(a) a rotor mounted for rotation about a first center and having a cylindrical outer surface,

(b) guide means having an inner surface arcuate about a second center which is eccentric with respect to said first center,

(c) a plurality of frame segments mounted for travelling along the inner arcuate surface of said guide means in a direction in which a space between said guide means and said rotor is narrowed,

(d) an endless filter cloth mounted for travelling between said plurality of frame segments and said rotor in a direction in which a space therebetween is narrowed,

(e) a plurality of vanes each disposed retractably from and into the surface of said rotor and having a tip end brought into contact with said filter cloth always in a normal direction with respect to said filter cloth,

(f) a supply port for supplying a material to be processed between said filter cloth and said rotor,

(g) a take-out port for discharging the material, said take-out port being located at a position where the space between said guide means and said rotor is narrower than that of said supply port,

(h) a pair of side plates positioned at opposite end faces of said rotor for closing regions extending at lease from said supply port to said take-out port as viewed in a rotational direction of said rotor and defined by said frame segments and said rotor, said pair of side plates having said tip ends of said vanes fixed thereto,

(i) a scraping plate having a free end toward the outer surface of said rotor, and

(j) a scraping plate drive mechanism for bringing the scraping plate into contact with the outer surface of of said rotor, subsequently advancing said scraping plate in a direction opposite to the rotational direction of said rotor under the condition that said scraping plate is brought into contact with the outer surface of the rotor, and thereafter moving the scraping plate away from the outer surface of said rotor and moving said scraping plate in said rotational direction of said rotor.

4,517,088

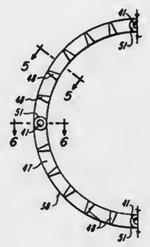
FILTERING APPARATUS

Wendell R. Miller, Denver, Colo., assignor to Quantum Systems Corporation, Denver, Colo.

Continuation of Ser. No. 375,554, May 6, 1982, Pat. No. 4,427,547. This application Jul. 29, 1983, Ser. No. 518,346

Int. Cl.³ B01D *25/02, 27/12*

U.S. Cl. 210—411 **1 Claim**



1. In filtering apparatus for removing solid Particles and the like from a liquid including an outer housing and an inner filter having an inner flow passage and disposed within the housing defining therebetween an annular outer flow passage and first means including an inlet into said outer flow passage providing a forward flow through said outer passage, through said filter, and out an outlet in said inner flow passage and second means including an inlet into said inner flow passage providing a backflow through said inner flow passage, said filter, and an outlet in said outer flow passage, an improved inner filter assembly comprising:

a generally cylindrical support grid body having a plurality of liquid flow openings extending between the outer and inner faces to pass a liquid therethrough,

said body being made up of a plurality of ring-like segments stacked end to end and having means to hold said segments together, each segment having a centrally disposed continuous ring portion, and a plurality of circumferentially spaced pairs of axial portions of substantially equal length projecting axially out from opposite sides of the ring portion and having ends that abut an adjacent axial portion of an adjacent ring-like segment for forming said liquid flow openings; and

a filter medium covering the outer face of said grid body so that, in said forward flow, the liquid passes through the filter medium and then through said fluid flow openings and solid particles are deposited on said filter medium and, in said backflow, the liquid passes through said flow openings and then through said filter medium to remove said deposited particles,

each said ring portion and said axial portions having a similar cross section, said cross section being generally V-shaped, said cross section with each said ring portion and said axial portions being narrower in thickness and an outer peripheral surface supporting said filter medium than at an inner surface of said support grid body opposite said outer peripheral surface,

each ring portion encompassing a central opening, said central opening having a radial extent greater than the radial extent of said ring portion to direct the backflow liquid first in an axial direction and then in a radial direction producing a liquid flow between adjacent ring portions as well as the axial portions and at the filter medium that enhances the removal of said solid particles collected on said filter medium during said backflow of liquid.

4,517,089

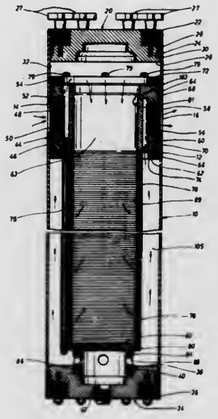
METHOD AND APPARATUS FOR CONSTRUCTING FILTER ELEMENT

Johnny Arnaud, Houston, Tex., assignor to Hydrotreat, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 428,345, Sep. 29, 1982,. This application May 5, 1983, Ser. No. 491,711

Int. Cl.³ B01D *39/10*

U.S. Cl. 210—488 **10 Claims**



1. A filter mesh, comprising a plurality of structural components, each structural component including a body portion and further including a plurality of extensions extending relative to one side of said body portion, said plurality of structural components adapted to cooperatively assemble and being cooperatively shaped to form a surface having a contour similar to the general contour of a woven mesh.

4,517,090

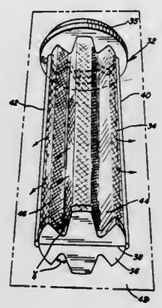
LOW VOLUME, LARGE AREA FILTERS FOR IV OR BLOOD FILTRATION

Jean Kersten, Villers St. Amand, and Jean M. Mathias, Loupoigne, both of Belgium, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 363,632, Mar. 30, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,564

Int. Cl.³ B01D *27/04, 29/16*

U.S. Cl. 210—493.2 **17 Claims**



1. A flow-through medical filter element which includes filter media means and frame-like means for supporting and positioning said filter media wherein:

(a) said frame-like means is a molded member and includes a ring-like inlet end, a fluid-impervious terminal end spaced from said ring-like inlet, and a plurality of rib-like members which extend between and interconnect the inlet end and terminal end, said inlet end also having internally-extending pleat-supporting projections and said terminal end having complementary external pleat-supporting shoulders, said frame-like means being symmetrical about an axial plane which includes a mold parting line and said external shoulders being formed at angles which are not re-entrant with respect to said parting line and which permit separation of a mold along the parting line and release of the part; and

(b) said filter media means having longitudinal pleats therein and said media being bonded to internal pleat-supporting projections at the inlet end and to the external pleat-supporting shoulders at the terminal end, whereby fluid enters the filter through the inlet, flows through the filter media and thereafter exits the filter element.

4,517,091

SOLIDS-LIQUID SEPARATOR

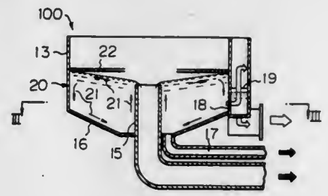
Koichi Yamanaka, Tokyo; Tetsuro Gotoh; Masanori Aoki, both of Kanagawa; Isao Kataoka, Chiba, and Shunro Nishiwaki, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 538,992

Claims priority, application Japan, Nov. 2, 1982, 57-191887; Dec. 15, 1982, 57-218397; Dec. 22, 1982, 57-223858; Mar. 28, 1983, 58-50367

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—512.1 **16 Claims**



1. A solids-liquid separator for use in a sewerage system also including an upstream combined sewer and a downstream sewage treatment plant for treating sewerage comprising:

a basin having a side wall and a bottom;

an inlet port in said side wall of said basin for introducing solids-liquid into the basin so as to cause a swirling flow of solids-liquid within said basin;

foul discharge means for discharging solids settled from the liquid from the center portion of the bottom of said basin;

means for preventing incoming sewerage from exceeding processing capacity of said plant including means for defining an outflow opening in said side wall between upper and lower edges thereof for discharging treated liquid outside said system, said outflow opening being disposed in said basin wall remote from and downstream of said inlet port with respect to the direction of flow of said swirling flow so that separation between said inlet port and said outflow opening measured circumferentially with respect to said swirling flow subtends at least 180° about the center of said basin; and

overflow means for directing an overflow portion of the liquid with floatable solids to said plant including means for defining an overflow opening in said basin bottom at the center of said basin which opening is defined by an overflow edge higher than said upper edge of said outflow opening so that the surface of said swirling flow flows outwardly from the center of said basin.

4,517,092

DECANTER-TYPE SEPARATING APPARATUS

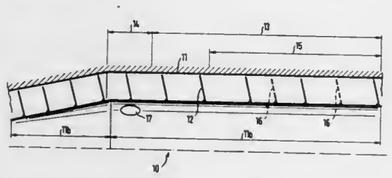
Werner Stahl, Stalbuehlweg 8, D-6740 Landau, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 423,746

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139345

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—512.1 **7 Claims**



1. A decanter-type separating apparatus for separating a solids-liquid suspension into solids and liquid, said apparatus comprising:

a conico-cylindrical barrel having a tapered section adjacent to a cylindrical barrel section said conico-cylindrical barrel rotatable at a first speed;

a solids-transporting screw rotatable at a second speed, said screw rotatable in said barrel and extending throughout said tapered and cylindrical sections of said barrel;

an intensive clarification region extending along at least part of said cylindrical barrel section;

a first pitch of said screw being greater than ten degrees in said intensive clarification region, the pith of said screw increasing in said intensive clarification region in the longitudinal direction away from said tapered section;

inlet means lying in said cylindrical section adjacent to said tapered section for introducing the solids-liquid suspension into said conico-cylindrical barrel;

first outlet means included in said tapered section for removing the solids from said tapered section; and

second outlet means included in said cylindrical section for removing the liquid from said cylindrical section.

4,517,093

PROCESS FOR THE BIOLOGICAL PURIFICATION OF WASTE WATER

Gerhard Leistner, Schmitten; Gerhard Müller, Kelkheim; Günther Sell, Hattersheim am Main, and Alexander Bauer, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 572,608, Jan. 20, 1984, abandoned, which is a continuation of Ser. No. 130,070, Mar. 13, 1980, abandoned, which is a continuation of Ser. No. 10,535, Feb. 8, 1979, abandoned. This application Sep. 26, 1984, Ser. No. 655,295

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805793

Int. Cl.³ C02F *3/12*

U.S. Cl. 210—629 **7 Claims**

1. A process for biological purification of waste water, which process comprises

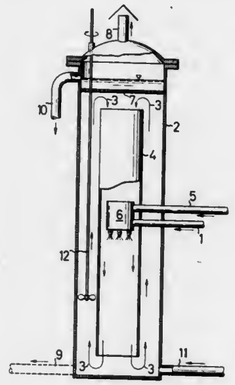
continuous charging an oxygen-containing gas, waste water, and activated sludge to a first reaction zone of an activation chamber 10 to 30 meters in height;

mixing said gas, said waste water, and said activated sludge within said first reaction zone to form a mixture of said gas, said water, and said sludge;

guiding a portion of said mixture of sludge, water, and gas in a loop-shaped flow within said first reaction zone;

feeding the remaining portion of said mixture of sludge, water, and gas, not guided in a loop-shaped flow, upwardly from the top of the first reaction zone to a second reaction zone within said activation chamber and disposed directly atop said first reaction zone;

preventing said mixture in said second reaction zone from any substantial backmixing into said first reaction zone; and



degassing said mixture in said second reaction zone to remove dissolved gasses therefrom, while biological reaction continues in the second reaction zone.

4,517,094

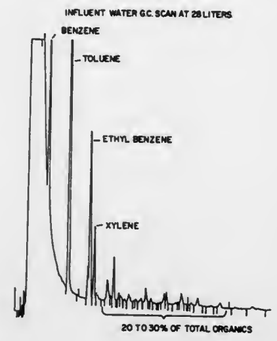
PROCESS FOR TREATING ORGANICS CONTAMINATED WATER

Gary W. Beall, Austin, Tex., assignor to Radecca, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 307,300, Sep. 30, 1981, abandoned, and a continuation-in-part of Ser. No. 419,301, Sep. 20, 1982, , and a continuation-in-part of Ser. No. 419,303, Sep. 20, 1982,. This application Jun. 28, 1983, Ser. No. 518,010

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—664 **13 Claims**



1. A method for removing organic contaminants from an aqueous composition contaminated with mixtures of said organic contaminants, comprising:

passing the composition through a first column packed with an organoclay, to adsorb substantial quantities of high molecular weight and/or emulsified components of said organic contaminants; and

passing the effluent from said first column through further separating means consisting of activated carbon, air stripping means and combinations of the same for separating substantial quantities of the low molecular weight components of said organic contaminants which remain in the effluent from said first column; and

recovering the effluent from said further separating means as product.

4,517,095

FLUORIDE CONTAINING COMPOSITIONS FOR REMOVAL OF POLLUTANTS FROM WASTE WATERS AND METHODS OF UTILIZING SAME

Anthony V. Ceaser, Cemetary Rd., Great Meadows, N.J. 07838

Division of Ser. No. 424,902, Sep. 27, 1982, Pat. No. 4,436,645. This application Dec. 8, 1983, Ser. No. 546,367

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—665 **12 Claims**

1. A method for the removal of pollutants from waste water which comprises contacting the waste waters to be treated with a composition comprising

at least members of groups (b) and (c) of the following groups (a), (b), (c) and (d):

(a) ion exchange absorbent gels, consisting of at least one member selected from the group consisting of calcined clays, amorphous silicas, aluminas, natural and artificial zeolites, perlites or vermiculite,

(b) cementitious materials selected from the group consisting of Portland cements, aluminous cements, puzzalan cements, gypsum plasters, alkaline earth metal oxides and alkaline earth metals hydrated oxides,

(c) water soluble fluoride containing salts, and

(d) alkali metal ortho phosphates,

provided that where no alkali metal ortho phosphate is present an additional component is selected from the group (a) or group (b), further provided that where no alkali metal ortho phosphate or group (a) components are present, three components are selected from group (b), at a pH above pH 6.0 and allowing the sludge formed thereby to cure for at least 24 hours.

4,517,096

METHOD OF SELECTIVE SEPARATION AND CONCENTRATION OF GALLIUM AND/OR INDIUM FROM SOLUTIONS CONTAINING LOW LEVELS OF THEM AND HIGH LEVELS OF OTHER METAL IONS

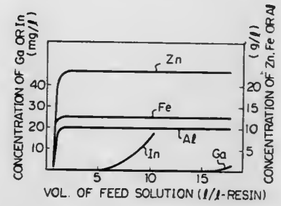
Kunio Sekine, Narashino; Hitoshi Masuda; Kodo Ishibashi, both of Kosakamachi; Masahide Hirai, Kusatsu; Shozo Tomoshige, and Kozo Kondo, both of Uji, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo and Unitika, Ltd., Amagasaki, both of, Japan

Filed Apr. 4, 1984, Ser. No. 596,539

Claims priority, application Japan, Apr. 7, 1983, 58-60013

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—668 **9 Claims**



1. A method of selective separation and concentration of at least one of gallium and indium from a solution containing them in low concentrations and containing other metal ions in relatively high concentrations, which comprises the steps of

(1) providing a solution containing at least one of gallium and indium, said solution also containing metal ions other than gallium and indium in concentrations at least ten times that of gallium and indium and having a pH between 1.0 and 4.0;

(2) passing said solution through a bed of a chelating ion exchange resin having an amino carboxylic acid group whereby said at least one of gallium and indium is adsorbed in said ion exchange resin;

(3) eluting said ion exchange resin with a mineral acid to desorb said at least one of gallium and indium and to form an eluate containing the desorbed metals;

(4) adjusting the pH of the eluate to between 1.0 and 4.0;

(5) passing the adjusted eluate through a bed of a chelating ion exchange resin having an amino carboxylic acid group whereby said at least one of gallium and indium is adsorbed on said ion exchange resin; and

(6) eluting the materials on the resin with a mineral acid to desorb said at least one of gallium and indium and recovering said at least one of gallium and indium from the resulting eluate wherein it is present in a concentrated amount.

4,517,097

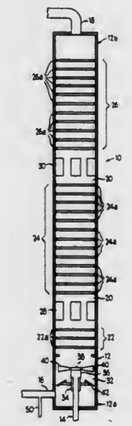
PROCESS FOR DILUTING AQUEOUS POLYMER SOLUTIONS

LaVaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 16, 1984, Ser. No. 580,967

Int. Cl.³ C02F *5/08*

U.S. Cl. 210—696 **7 Claims**



1. A process for preventing, or at least substantially reducing, scaling in apparatus used for diluting an aqueous solution of a partially hydrolyzed polyacrylamide which solution contains scale forming substances, comprising the step of introducing carbon dioxide gas into the solution in an amount sufficient to maintain the pH of the solution at a level which acts to keep scale forming substances in solution during dilution.

4,517,098

METHOD OF DISPERSING INORGANIC MATERIALS IN AQUEOUS SYSTEMS WITH LOW MOLECULAR WEIGHT ACRYLIC ACID COPOLYMERS

William M. Hann, Pennsburg; Jean DuPre, Levittown, and John Natoli, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

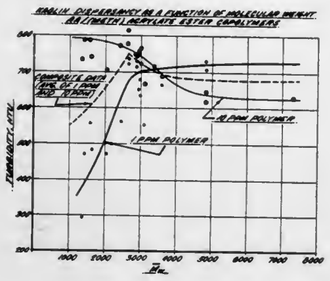
Filed Apr. 15, 1983, Ser. No. 485,559

Int. Cl.³ C02F *5/10*

U.S. Cl. 210—701 **11 Claims**

1. A method for dispersing inorganic particulate matter and inhibiting the formation of hardness ion salt scale in aqueous systems comprising adding an effective scale inhibiting and particulate dispersant amount of a water soluble, low molecular weight copolymer formed from about 85 to about 97 weight percent acrylic acid and from about 15 to about 3 weight percent of a hydrophobic comonomer selected from the group

consisting of lower alkyl acrylates, having 2 to 8 carbon atoms in the alkyl group, and lower alkyl methacrylates, having 1 to



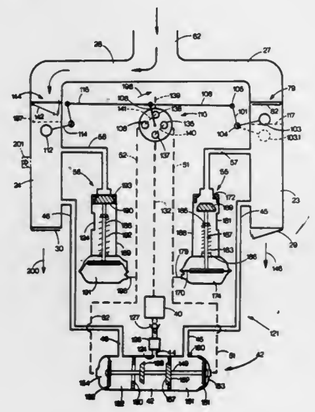
8 carbon atoms in the alkyl group to said aqueous systems, and where said copolymer has a weight average molecular weight of from about 2,000 to about 5,000.

4,517,099

APPARATUS AND METHOD FOR HANDLING SOLIDS IN LIQUID

Raymond A. Breckner, 11360 Granville Ave., Richmond, British Columbia, Canada V6Y 1R6

Filed Oct. 7, 1983, Ser. No. 540,166
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—741 **14 Claims**



1. An apparatus for handling a solid/liquid mixture comprising solids carried in a liquid, the apparatus having a receiving chamber adapted to receive the mixture from a delivery duct and to hold the mixture temporarily, the chamber communicating with a low air pressure source or a vacuum source through a main directional valve, the chamber having an inlet valve communicating with the delivery duct to receive the mixture, an outlet valve to discharge the mixture from the chamber, an admitting valve to raise pressure in the chamber, and a quantity sensing means responsive to a predetermined quantity of mixture within the chamber, the apparatus being characterized by:

(a) the inlet valve being positioned adjacent an upper portion of the chamber above a maximum upper level of mixture within the chamber, and the chamber being connectable, as required, to the low pressure source to expose the inlet valve to a pressure difference so as to open the inlet valve and to draw the mixture therethrough,

(b) a riser means positioned upstream of the inlet valve and adapted to receive and to constrain the mixture to move initially upwardly prior to discharging through the inlet valve into the chamber, the riser means being shaped so as to cause solids, that might other wise tend to rest adjacent the inlet valve when the mixture flow therethrough ceases, to fall under gravity either forwardly through the inlet valve and into the chamber, or backwardly towards the mixture within the delivery duct,

(c) time delay means reponsive to the quantity sensing means to actuate the main directional valve when the predetermined quantity is attached to disconnect the vacuum source from the chamber, while concurrently permitting the mixture to continue to flow through the inlet valve under a gradually reducing pressure difference, so that flow through the inlet valve eventually ceases at a time when the maximum upper level is attained, prior to opening of the admitting valve to raise pressure in the chamber which closes the inlet valve, so as to provide time for solids to clear the inlet valve before closure thereof.

4,517,100

LUBRICATING WELLBORE FLUID AND METHOD OF DRILLING

Weldon B. Nance, Lafayette, La., and Jack M. Calkins, Houston, Tex., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,631
Int. Cl.³ C09K *7/02, 7/06;* **C10M** *3/24, 3/32*
U.S. Cl. 252—8.5 C **20 Claims**

1. An aqueous wellbore fluid composition comprising water and as the sole lubricating component 0.5 to 5 volume % of a lubricant composition consisting of a mixture of:

(a) a chlorinated component of chlorinated normal paraffins having 9 to 20 carbon atoms, chlorinated esters of fatty acids, chlorinated waxes, chlorinated olefins or mixtures thereof, and

(b) a sulfurized component of sulfurized fatty acids, sulfurized esters of fatty acids, sulfurized polymerized fatty acids, sulfurized olefins or mixtures thereof,

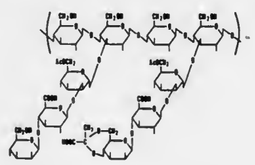
in proportions to produce a lubricant composition containing 15 to 30 weight percent chlorine and 2 to 10 weight percent sulfur.

4,517,101

REDUCED BIODEGRADABILITY IN A POLYMER FLOOD PROCESS

David Williams, 2708 S. Elder St., and Douglas M. Munnecke, 2712 S. Elder St., both of Broken Arrow, Okla. 74012

Filed Aug. 22, 1983, Ser. No. 525,532
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **5 Claims**



Repeating subunit sugar residues of xanthan gum.

1. In an enhanced oil recovery process, a method for modifying xanthan gum polymers to make them more resistant to bacterial enzymatic degradation, comprising

(a) methylating a xanthan gum polymer in an aqueous solution, and

(b) recovering the methylated polymer.

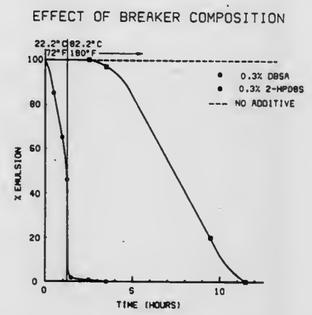
2. A process of enhanced oil recovery of a micellar polymer flood type wherein the biodegradability of the polymer is suppressed by the use of a methylated xanthan gum in the polymer flood.

4,517,102

METHOD OF BREAKING AN EMULSION AND AN EMULSION-EMULSION BREAKER COMPOSITION

William M. Salathiel, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Jun. 30, 1980, Ser. No. 164,703
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 R **25 Claims**



1. A method of treating a subterranean formation, said method comprising the steps of:

(a) preparing an emulsion comprising water, oil, a surfactant and an ester, said ester comprising an emulsion breaker group bonded to a protecting group by an ester bond, said emulsion breaker group being selected from the group consisting of alkylbenzenesulfonic acid esters and alkylbenzenephosphoric acid esters wherein the alkyl group has between 4 and 18 carbon atoms and sulfate esters of ethoxylated alcohols and alkylphenols wherein the alkyl group has between 4 and 24 carbon atoms, said protecting group being selected from the group consisting of methyl, ethyl, propyl, butyl and compounds represented by the formula

$$\text{+CH}_2\text{—CH(C}_l\text{H}_{2l+1})\text{—O+}_m\text{H}$$

wherein m=1, 2, or 3 and l=0, 1, or 2 and said ester bond being adapted to hydrolyze and release said emulsion breaker group from said protecting group at the temperature of said subterranean formation;

(b) injecting said emulsion into said subterranean formation; and

(c) permitting said ester bond to hydrolyze, thereby releasing said emulsion breaker group from said protecting group and resulting in the breaking of said emulsion.

21. A composition of matter for treating subterranean formations which comprises a water-in-oil emulsion comprising an internal aqueous phase and an external oil phase, said external oil phase comprising a blend of liquid hydrocarbon, a surfactant and an ester, said ester comprising an emulsion breaker group bonded to a protecting group by an ester bond, said emulsion breaker group being selected from the group consisting of alkylbenzenesulfonic acid esters and alkylbenzenephosphoric acid esters wherein the alkyl group has between 4 and 18 carbon atoms, said protecting group being selected from the group consisting of methyl, ethyl, propyl, butyl and compounds represented by the formula

$$\text{+CH}_2\text{—CH(C}_l\text{H}_{2l+1})\text{—O+}_m\text{H}$$

wherein m=1, 2, or 3 and l=0, 1, or 2, and said ester bond being adapted to hydrolyze and release said emulsion breaker group from said protecting group at the temperature of said subterranean formation, said external oil phase comprising between about 3 and 50 volume percent of said emulsion, said surfactant comprising between about 0.5 and 40 weight percent of said external oil phase, and said ester being incorporated in sufficient amount so that upon hydrolyzing, said emulsion will break.

4,517,103

LUBRICATING COMPOSITIONS CONTAINING 5,5'-DITHIOBIS(1,3,4-THIADIAZOLE-2-THIOL)

David M. Hoffman, Weston; John J. Feher, Milford, and Homer H. Farmer, Westport, all of Conn., assignors to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Apr. 18, 1983, Ser. No. 485,817
Int. Cl.³ C10M *5/22*
U.S. Cl. 252—28 **4 Claims**

1. A lubricating composition comprising a major amount of an oil of lubricating viscosity wherein said oil is a petroleum hydrocarbon oil or a synthetic oil and dispersed therein from about 0.1 to 10 percent of 5,5'-dithiobis(1,3,4-thiadiazole-2-thiol).

2. A process for preparation of a lubricating composition by forming a mixture of an oil of lubricating viscosity, thickener and grease forming additives, the improvement of which comprises the steps of:

(1) adding to the mixture from about 0.1 to 10 percent 5,5'-dithiobis(1,3,4-thiadiazole-2-thiol);

(2) agitating to a homogeneous mixture; and

(3) milling to a grease consistency.

4,517,104

ETHYLENE COPOLYMER VISCOSITY INDEX IMPROVER-DISPERSANT ADDITIVE USEFUL IN OIL COMPOSITIONS

Ricardo Bloch, Scotch Plains; Thomas J. McCrary, Jr., Plainfield, and Darrell W. Brownawell, Scotch Plains, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 6, 1981, Ser. No. 260,883
Int. Cl.³ C10M *1/32, 1/40, 1/20*
U.S. Cl. 252—51.5 A **33 Claims**

1. Oil soluble reaction product, useful as a V.I.-dispersant for lubricating oil, comprising the reaction product of:

(a) an oil soluble ethylene copolymer comprising within the range of about 15 to 90 wt. % ethylene and about 10 to 85 wt. % of one or more C_3 to C_{28} alpha-olefin, having a number average molecular weight within a range of about 5,000 to 500,000 and grafted with an ethylenically unsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride groups;

(b) an alkylene or oxyalkylene amine having at least two primary amine groups selected from the group consisting of alkylene polyamines having alkylene groups of about 2 to 7 carbon atoms and 2 to 11 nitrogens, and polyoxyalkylene polyamines, wherein the alkylene groups contain 2 to 7 carbon atoms and the number of oxyalkylene groups will be about 3 to 70; and,

(c) a long chain hydrocarbyl substituted succinic anhydride or acid having 50 to 400 carbon atoms.

4,517,105

METALWORKING LUBRICANT COMPOSITION CONTAINING A NOVEL SUBSTITUTED MALONIC ACID DIESTER

Joseph T. Laemmle, Delmont, and John Bohaychick, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 7, 1983, Ser. No. 472,585
Int. Cl.³ C10M *1/26*
U.S. Cl. 252—56 R **19 Claims**

1. A metalworking lubricant composition comprising

(a) a minor proportion of a substituted malonic acid diester

having the formula $R_1R_2C(COOR_3)(COOR_4)$, wherein R_1 is a C_8–C_{30} alkyl aryl group; R_2 is H or a C_1–C_{18} linear alkyl group or a C_8–C_{30} branched alkyl group or a C_8–C_{30} alkyl aryl group; and R_3 and R_4 are C_1–C_4 linear or branched alkyl groups and

(b) a major proportion of mineral oil, said substituted malonic acid diester constituting an additive dissolved in said mineral oil.

4,517,106

SOLUBLE SURFACTANT ADDITIVES FOR AMMONIUM FLUORIDE/HYDROFLUORIC ACID OXIDE ETCHANT SOLUTIONS

Ronald J. Hopkins, Orchard Park; Evan G. Thomas, East Aurora, and Harold J. Kieta, Buffalo, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 26, 1984, Ser. No. 604,112

Int. Cl.³ C09K *13/06, 13/08;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 252—79.4 **10 Claims**

1. An etching solution containing a surfactant which is stable against precipitation of the surfactant comprising an aqueous mixture of ammonium fluoride and surfactant that contains between 13.5 and 45 weight percent ammonium fluoride (NH_4F) and between 25 and 20,000 ppm of a fluoroalkylsulfonate surfactant of the formula

$$XF_2C(CFY)_nSO_3A$$

wherein n has a value of up to 12, the carbon chain may be linear or branched, X may be F, OH, or SO_3A, Y may be F, H, OH or be omitted and A may be H^+, NH_4^+, Na^+, K^+, Li^+, R^+ or NR_4^+ wherein R is a 1 to 4 carbon atom alkyl group and mixtures thereof and the remainder being water.

4,517,107

DETERGENT BAR

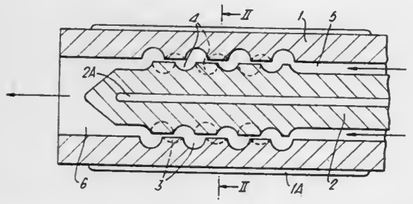
Terence A. Clarke; Richard B. Edwards, and Graeme N. Irving, all of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 479,630, Mar. 28, 1983, abandoned. This application Mar. 14, 1984, Ser. No. 587,876

Claims priority, application United Kingdom, Mar. 29, 1982, 8209148; Jan. 24, 1983, 8301905

Int. Cl.³ B01F *7/02;* **B29B** *1/06;* **C11D** *13/10, 17/00*

U.S. Cl. 252—108 **5 Claims**



1. The process of increasing the transparency of soap-containing detergent material in which shear sensitive soap-containing material is subjected to working by passing the material between two closely spaced mutually displaceable surfaces each having a pattern of cavities which overlap during movement of the surfaces so that the material moved between the surfaces traces a path through cavities alternately in each surface, whereby the bulk of the material passes through the shear zone in the material generated by displacement of the surfaces.

4,517,108

CLEANING COMPOSITION

Iwao Hisamoto, Suita; Yukio Omure, Takatsuki, and Sueyoshi Ishikawa, Kishiwada, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 23, 1983, Ser. No. 535,095

Claims priority, application Japan, Sep. 27, 1982, 57-169118

Int. Cl.³ C11D *7/30*

U.S. Cl. 252—162 **5 Claims**

1. A method for cleaning a surface of a material with the improvement that essentially no moisture is formed over the cleaned surface, using a composition consisting essentially of 1,1,2,2-tetrachloro-1,2-difluoroethane, 1,1,2-trichloro-1,2,2-trifluoroethane and 1 to 15% by weight of at least one other organic solvent having a melting point of not more than 15° C. and a boiling point of 40° to 150° C. and capable of forming an azeotrope with at least one of said 1,1,2,2-tetrachloro-1,2-difluoroethane and 1,1,2-trichloro 1,2,2-trifluoroethane, the ratio of 1,1,2,2-tetrachloro-1,2-difluoroethane to 1,1,2-trichloro-1,2,2-trifluoroethane being from 20:80 to 80:20 by weight.

4,517,109

PROCESS FOR MAKING MIXED GRANULATES FROM CONDENSED PHOSPHATES AND BUILDER SALTS

Karl Merkenich, Rimbach; Horst-Dieter Wasel-Nielen, Hürth; Alexander Maurer, Hürth, and Renate Adrian, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 359,380, Mar. 18, 1982, abandoned. This application Oct. 14, 1983, Ser. No. 542,075

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111617

Int. Cl.³ C11D *3/06, 7/16*

U.S. Cl. 252—135 **6 Claims**

1. A process for making granulates from a mixture consisting essentially of water-soluble condensed phosphates of the following general formula (I)

$$M_2O(MPO_3)_n \quad (I)$$

in which M stands for sodium, potassium or ammonium and n stands for a number between 4 and about 100, and at least one builder salt for detergent or cleaning compositions by subjecting the said mixture to granulation in the presence of water, the process which comprises the steps:

(a) carrying out the granulation with a granulation aid consisting essentially of an ammonium polyphosphate corresponding to the following general formula (II)

$$H_{(n-m)+2}(NH_4)_mP_nO_{3n+1} \quad (II)$$

in which n stands for an integral average value of 3 to 1000, m stands for a whole number of at most n+2, and m/n is between 1.0 and 1.67;

(b) selecting the builder salt from the group consisting of alkali metal salts of nitrilotriacetic acid, poly-α-hydroxyacrylic acid and polyacrylic acid, the latter having a molecular weight of about 2000 to 30 000;

(c) granulating a mixture corresponding essentially of the condensed phosphate (I), the said builder salt and the ammonium polyphosphate (II) by placing this mixture on a rotating plate and spraying water on to this mixture or granulating a mixture consisting essentially of the condensed polyphate (I) and the said builder salt by placing this mixture on a rotating plate and spraying an aqueous solution or suspension of the ammoniumpolyphosphate (II) on to the mixture;

(e) the builder salt being used in a proportion of about 5 up to 100 weight %, the ammonium polyphosphate (II) in a proportion of about 0.003 to 1 weight % and the water in a proportion of about 0.5 to 10 weight % , the percentages being based on the quantity of condensed phosphate (I).

4,517,110

RUST PREVENTIVE AGENT OF HYDROXYPOLYBASIC ACID SALT TYPE

Hiroshi Suzuki; Yasuo Gama, and Shoji Miyazaki, all of Higashi, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

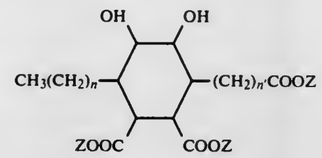
Filed Nov. 15, 1983, Ser. No. 551,728

Claims priority, application Japan, Nov. 15, 1982, 57-200181

Int. Cl.³ C02F *5/10;* **C07C** *61/09, 62/04;* **C23F** *11/12*

U.S. Cl. 252—180 **7 Claims**

1. A rust preventive agent comprising salt of hydroxycarboxylic acid represented by the general formula;



wherein n and n' are integers from 4 to 10, and each Z is selected from the group consisting of hydrogen, lower alkyl group, alkali metal, or ammonium ion, which may be either the same or different from each other, at least one of Zs being alkali metal or ammonium ion.

4,517,111

ABSORBENTS FOR AIRBORNE FORMALDEHYDE

Linneaus C. Dorman, and Vernon A. Stenger, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 16, 1984, Ser. No. 571,039

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—186.25 **16 Claims**

8. A method for decreasing the amount of formaldehyde present in an atmosphere comprising:

exposing to said atmosphere a composition formed from a solid alkaline support portion, and a permanganate salt portion in an amount of from about 0.1 to about 10.0 percent per total weight of said solid alkaline support adsorbed or chemisorbed onto the surface of said solid alkaline support.

4,517,112

MODIFIED ORGANOPHILIC CLAY COMPLEXES, THEIR PREPARATION AND NON-AQUEOUS SYSTEMS CONTAINING THEM

Wilbur S. Mardis, Trenton, N.J., and Claude M. Finlayson, Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 348,641

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—315.2 **24 Claims**

1. An organophilic clay gellant useful for gelling organic liquids which comprises the reaction product of:

(a) a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay;

(b) a primary anion selected from the group consisting of anions derived from organic sulfonic acids, alkylsulfates and mixtures thereof containing at least one lineal or branched alkyl group having greater than 9 carbon atoms, aromatic sulfonic acids and mixtures thereof;

(c) a secondary anion different from said primary anion and selected from the group consisting of anions derived from organic acids having pKa of less than about 11.0 and mixtures thereof; and

(d) an organic cation in an amount sufficient to satisfy the cation exchange capacity of said clay and the cationic activity of the primary and secondary anions wherein the resulting organic cation—organic anion complexes are intercalated with the smectite-type clay and wherein the combination of said primary and secondary anions increases the ease of dispersion of said organophilic clay gellant in an organic liquid to a degree greater than an equivalent amount of either the primary or secondary anion alone.

22. A non-aqueous fluid system which comprises a non-aqueous fluid composition and a self-activating organophilic clay rheological composition useful as an additive for non-aqueous fluid systems which comprises: the reaction product of an organic cation, a primary anion selected from the group consisting of anions derived from organic sulfonic acids, alkylsulfates and mixtures thereof, a secondary anion different from said primary anion and selected from the group consisting of anions derived from organic acids having a pK_A of less than about 11.0 and mixtures thereof and a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay such that organic cation—organic anion complexes are present which are intercalated with the smectite-type clay and the cation exchange sites of the smectite-type clay are substituted with the organic cation wherein the amount of organic cation present is at least (100+n) milliequivalents where n is the amout of the primary anion expressed in milliequivalents per 100 grams of clay, 100% clay basis wherein the combination of said primary and secondary anions increases the ease of dispersion of said organophilic clay rheological composition in an organic liquid to a degree greater than an equivalent amount of either the primary or secondary anion alone.

4,517,113

PROCESS FOR REMOVAL OF UNREACTED OIL FROM SURFACTANT SLURRY

Hideo Ando, Katsushika; Kentaro Kiyama, Chofu, and Kyozo Kitano, Narashino, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,224

Claims priority, application Japan, Sep. 12, 1982, 57-214618

Int. Cl.³ B01D *3/10;* **B01F** *17/02;* **C07C** *143/02*

U.S. Cl. 252—353 **4 Claims**

1. A process for removing unreacted oil from a surfactant slurry containing the same comprising:

continuously feeding steam from one side of a pressure vessel into an anionic surfactant slurry containing unreacted oil in the pressure vessel while maintaining a pressure in the system of at least 5 kg/cm²; and

simultaneously discharging the anionic surfactant slurry from the other side of the pressure vessel into a low pressure region to effect vaporization of the unreacted oil from the anionic surfactant slurry.

4,517,114

INHIBITORS AGAINST CORROSION CAUSED BY CO_2 AND H_2S IN WATER-IN-OIL EMULSIONS

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim, and Klaus Barthold, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,614

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1982, 3232921

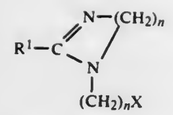
Int. Cl.³ C09K *3/00;* **C23F** *11/00*

U.S. Cl. 252—389 R **4 Claims**

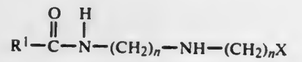
1. An inhibitor against corrosion caused by CO_2 and H_2S in water-in-oil emulsions comprising a mixture of

(A) a compound selected from the group consisting of

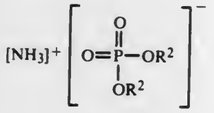
(i) a compound or salt thereof having the formula



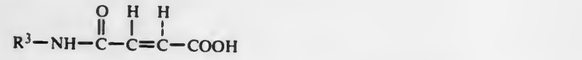
(ii) a precursor of (i) having the formula



in which
R^1=C_6 to C_{22} alkyl or alkenyl;
X=—OH, —NH_2 or



R^2=C_4 to C_{18} alkyl, n=2 or 3; and
(B) a maleinamidic acid having the formula



in which R^3 is a saturated or unsaturated C_8 to C_{22} alkyl, wherein the ratio of A:B is from 1:4 to 4:1.

4,517,115

SYNERGISTIC VINYL HALIDE STABILIZER COMPOSITIONS OF ANTIMONY ORGANIC SULFUR-CONTAINING COMPOUNDS, ALKALINE EARTH CARBOXYLATES, AND ALKALI METAL CARBONATES

Dale J. Dieckmann, Cleveland, and Charles W. Fletcher, Highland Heights, both of Ohio, assignors to Plastic Specialties and Technologies, Inc., Cleveland, Ohio

Division of Ser. No. 176,473, Aug. 8, 1980, Pat. No. 4,440,674. This application Sep. 30, 1982, Ser. No. 431,580
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.³ C09K *15/32*
U.S. Cl. 252—400 R **9 Claims**

1. A vinyl halide resin stabilizer composition which consists essentially of,
an antimony organic sulfur-containing compound having an Sb—S group, and mixtures thereof,
a metal carboxylate selected from the group consisting of an alkaline earth metal salt of a carboxylic or thiocarboxylic acid, and mixtures thereof, and
an alkali metal carbonate, said antimony compound, metal carboxylates and carbonate components in relative amounts which together provide a synergistic stabilizing effectiveness upon said resin.

4,517,116

ELECTRICALLY CONDUCTING COMPOSITIONS OF DOPED POLYPHENYLENES AND SHAPED ARTICLES COMPRISING THE SAME

Dawn M. Ivory, Stanhope; Granville G. Miller, Morristown; Ronald R. Chance, and Ray H. Baughman, both of Morris Plains, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 234,511, Feb. 17, 1981, Pat. No. 4,440,669, which is a continuation-in-part of Ser. No. 022,237, Mar. 20, 1979, abandoned. This application Jan. 9, 1984, Ser. No. 569,426
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 **8 Claims**

1. A process for producing a composition having a direct current conductivity at least 10^{-3} ohm^{-1} cm^{-1} which comprises contacting a polymer consisting essentially of units having paraphenylene linkages or of mixtures of such units with units having meta-phenylene linkages with a halogenating agent selected from the group consisting of chlorine, fluorine and mixed halogens containing fluorine or chlorine or both, and annealing the resulting composition at temperatures at least 200° C. and not exceeding 800° C.

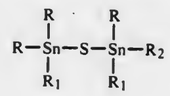
4,517,117

STABILIZERS FOR CED COMPOSITIONS

Mohamed E. Labib, Princeton, and Chin C. Wang, Hightstown, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 20, 1984, Ser. No. 622,648
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 **18 Claims**

1. In a conductive molding composition for a capacitive electronic disc comprising from about 70 to about 85 percent by weight of a thermoplastic resin selected from the group consisting of: a homopolymer or copolymer of vinyl chloride, or a mixture thereof; and a homopolymer of styrene or an acrylic monomer, or their copolymers, from about 12 to about 20 percent by weight of finely divided conductive carbon black, from about 1 to about 5 percent by weight of compatible stabilizers, from about 0.5 to about 3 percent by weight of compatible lubricants, from about 1 to about 5 percent by weight of compatible plasticizers, and from 0 to about 4 percent by weight of compatible modifiers, the improvement wherein said stabilizer comprises at least one compound selected from those represented by the formulae



and



wherein R is a straight-chain alkyl radical having from 4 to 8 carbon atoms;
R_1 is —S—CH_2—$COOR_3$ or —S—R_3;
R_2 is R or R_1; and
R_3 is a straight-chain alkyl radical having from 8 to 18 carbon atoms.

4,517,118

NEW NICKEL COATING COMPOSITION FOR SHIELDING ELECTRONIC EQUIPMENT AND THE LIKE

Steven R. Stoetzer, Port Huron, Mich., assignor to Acheson Industries, Inc., Port Huron, Mich.

Filed Jun. 27, 1983, Ser. No. 508,285
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—513 **16 Claims**

1. A new nickel-containing composition which is liquid when applied to a substrate, and forms a shielding coating on the substrate, said composition being comprised of:
(a) a nickel pigment material, said pigment being finely particulated and having an average particle size of about 10 microns or less,
(b) a ferro alloy pigment material which is selected from at least one of the group consisting of ferrophosphorous, ferromanganese, ferromolybdenum, ferrosilicon, ferrochrome, ferrovanadium, ferrozirconium, ferrotitanium, ferrotungsten, ferroboron and ferrocarbide,
said ferro alloy pigment material is present in amount of about 5% to about 90% by weight of the total solids, said ferro alloy pigment material has an average particle size of less than about 70 microns,
(c) a binder resin which is selected from at least one of the group consisting of aqueous silicate solutions, thermoplastic acrylic, vinyl, urethane, alkyd, polyester, hydrocarbon, fluoroelastomer and cellulosic resins, and thermosetting acrylic, polyester, epoxy, phenolic, urethane and alkyd resins,
(d) the pigment to binder weight ratio in said composition being between about 10 to 1 and about 3 to 1, and
(e) said composition containing a weight percent total solids from about 30% to about 85%, and a solvent carrier for the composition being used as required.

4,517,119

SYNTHESIS OF THYMOSIN α_1

Arthur M. Felix, West Caldwell, N.J.; Dieter Gillessen, Pratteln; William Lergier, Kaiseraugst, both of Switzerland; Johannes A. Meienhofer, Upper Montclair, N.J., and Arnold Trzeciak, Schopfheim, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 4, 1983, Ser. No. 482,113
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **2 Claims**

1. A compound of the formula Z-Thr(tBu)-Ser(tBu)-Ser(-tBu)-Glu(OtBu)-Ile-Thr(tBu)-Thr(tBu)-Lys(Boc)-Asp(OtBu)-Leu-Lys(Boc)-Glu(OtBu)-Lys(Boc)-Lys(Boc)-GLu(OtBu)-Val-Val-Glu(OtBu)-Glu(OtBu)-Ala-Glu(OtBu)-Asn-OtBu, wherein Z is benzyloxycarbonyl, Boc is t-butyloxycarbonyl and tBu is t-butyl.

4,517,120

COFFEE OIL TREATMENT

Rathindra N. Roychoudhury, Marysville, Ohio, assignor to Nestec, S.A., Vevey, Switzerland

Filed Oct. 19, 1983, Ser. No. 543,401
Int. Cl.³ C07G *17/00*
U.S. Cl. 426—655 **6 Claims**

1. A process for reducing the cafestol content of coffee oil while retaining oxidative stability consisting essentially of:
(a) heating the coffee oil to a temperature of from 150° C. to 270° C. for a period of from 1 minute to 6 hours;
(b) sufficiently cooling the heated coffee oil to permit the addition of isopropanol;
(c) extracting the cooled coffee oil with an aqueous isopropanol solution containing at least 50% by weight of isopropanol; and then
(d) separating the extracted coffee oil from the aqueous isopropanol layer.

4,517,121

METHOD OF INCREASING THE SUPRACONDUCTIVE CRITICAL TEMPERATURE IN QUASI UNIDIMENSIONAL ORGANIC SUPRACONDUCTORS AND NEW SUPRACONDUCTIVE COMPOUNDS THUS OBTAINED

Denis Jerome, Jouy en Josas; Claude More, Vaison la Romaine; Guy-Roland Roger, Plan de Cuques; Jean-Pierre Sorbier, Marseilles; Jean-Marc Delrieu, Gif sur Yvette; Michel Ribault, Bures sur Yvette; Jean M. Fabre, Montpellier; André Fournel, St. Savournin; Louis Giral, Montpellier, all of France, and Klaus Bechgaard, Aabovaenge, Denmark, assignors to Centre National de la Recherche Scientifique, Paris, France

PCT No. PCT/FR82/00123, § 371 Date Mar. 22, 1983, § 102(e) Date Mar. 22, 1983, PCT Pub. No. WO83/00410, PCT Pub. Date Feb. 3, 1983
PCT Filed Jul. 21, 1982, Ser. No. 479,068
Claims priority, application France, Jul. 22, 1981, 81 14291
Int. Cl.³ C07F *9/90, 5/06, 7/24, 1/12*
U.S. Cl. 260—239 R **6 Claims**

1. A process for increasing the critical supraconductive temperature of the organic molecular crystalline compound $(TMTSF)_2X$ in which TMTSF is di-$\Delta^{2,2'}$-bi-4,5-dimethyl-1,3-diselenol and X is ClO_4, PF_6, TaF_6, SbF_6, AsF_6 or ReO_4 comprising cross-linking the chains of the crystalline compound with at least one metal selected from gold, silver, aluminum, lead, indium, gallium or selenium.

4,517,122

CYCLIC PEPTIDES

Donald A. Tomalia, and Larry R. Wilson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1982, Ser. No. 348,528
Int. Cl.³ C07D *210/00, 103/52;* **C07C** *103/52*
U.S. Cl. 260—239.3 R **5 Claims**

1. A cyclic peptide corresponding to the formula

—NHCRHCRHNHCH_2CR'HC(O)—$_2$

wherein R and R' independently each occurrence are hydrogen or C_{1-4} alkyl.

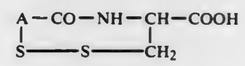
4,517,123

CYSTEINE DERIVATIVES OF DISULFIDE FORM

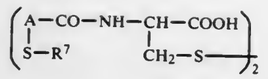
Tadashi Iso, Sakai, and Masayuki Oya, Ibaraki, both of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00235, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. WO82/01000, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 18, 1981, Ser. No. 380,665
Claims priority, application Japan, Sep. 20, 1980, 55-131349
Int. Cl.³ C07D *210/00;* **C07C** *153/017, 147/02, 101/42*
U.S. Cl. 260—239.3 R **9 Claims**

1. A compound of the formula



wherein
A is a straight or branched alkylene group containing 1 to 3 carbon atoms, and pharmaceutically acceptable salts thereof.
2. A compound of the formula



wherein

A is a straight or branched alkylene group containing 1 to 3 carbon atoms; and

R^7 is a lower alkyl group, and pharmaceutically acceptable salts thereof.

4,517,124

PROCESS FOR PREPARING PENEM DERIVATIVES

Nigel J. P. Broom, Reigate, England, assignor to Beecham Group Limited, England

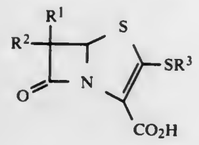
Continuation of Ser. No. 291,389, Aug. 10, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 550,968

Claims priority, application United Kingdom, Aug. 16, 1980, 8026733; European Pat. Off., Apr. 15, 1981, 81301683

Int. Cl.³ C07D *499/00;* **A61K** *31/425*

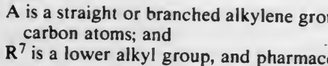
U.S. Cl. 260—245.2 R **7 Claims**

1. A process for the preparation of a 2-thio penem derivative of formula (IV) or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof:



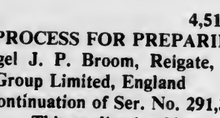
(IV)

wherein R^1 and R^2 are independently hydrogen; substituted or unsubstituted: C_{1-10} alkyl, alkenyl and alkynyl having from 2–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties thereof; phenyl; aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the linear chain has 1–6 carbon atoms; wherein the substituent or substituents relative to the above named radicals are selected from the group consisting of: amino, alkanoylamino, mono- and di-alkylamino, hydroxyl, alkoxyl, alkanoyloxy, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxy, and wherein the alkyl moieties of the above-recited substituents have 1–6 carbon atoms; a free hydroxy or mercapto group; an amino or acylamino group of formula (d), (e), (f) or (g):

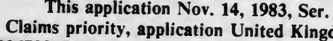


(d)

(e)

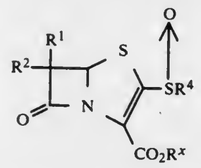


(f)



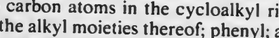
(g)

wherein n is 0, 1 or 2; m is 0, 1 or 2; A_7 is an alkyl group of 1–6 carbon atoms, a cycloalkyl group of 3–6 carbon atoms, cyclohexenyl, cyclohexadienyl, phenyl, hydroxyphenyl, thienyl or pyridyl group; x is a hydrogen, bromine or chlorine atom, a carboxylic acid, carboxylate ester, hydroxy, acetoxy, amino, ureido, guanidino or acetylureido group; A_8 is a phenyl, 2,5-dimethoxyphenyl, 2-alkoxy-1-naphthyl, isothiazolyl, 3-phenyl-5-methyl-4-isoxazolyl, 3-o-chlorophenyl-5-methyl-4-isoxazolyl, 3-o,o-dichlorophenyl-5-methyl-4-isoxazolyl, 3-o,o-fluorochlorophenyl-5-methyl-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 3-o-chlorophenyl-4-isoxazolyl, 3-o,o-dichlorophenyl-4-isoxazolyl, 3-o,o-fluorochlorophenyl-4-isoxazolyl group wherein the aryl moiety is phenyl unsubstituted or substituted by up to two halo atoms; X_1 is a CH_2OCH_2, CH_2SCH_2 or $(CH_2)_n$ group; and X_2 is an oxygen or sulphur atom; or together R^1 and R^2 represent a group $=CR^5R^6$ wherein R^5 and R^6 are the same or different and each represents hydrogen or a C_{1-10} hydrocarbon group; and R^3 represents an organic radical having up to 18 carbon atoms selected from a saturated or unsaturated aliphatic, cycloaliphatic, cycloaliphaticaliphatic, phenyl or aralkyl, wherein the aryl moiety is phenyl and the alkyl part has 1–6 carbon atoms, or a heterocyclyl or heterocyclyl-alkyl radical having up to 10 carbon atoms and up to 4 ring hetero atoms selected from the group nitrogen, oxygen and/or sulphur, any of which R^3 groups may be optionally substituted by amino, mono-, di- and tri-(C_{1-6}) alkylamino, C_{1-6} alkanoylamino, hydroxyl, C_{1-6} alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano, carboxyl, C_{1-6} alkoxycarbonyl, and C_{1-6} alkanoyloxy which process comprises reacting a sulphoxide of formula (V):



(V)

wherein R^1 and R^2 are as defined with respect to formula (IV) above, R^x represents hydrogen or a salt, ester or anhydride of the carboxylic acid group which may be readily cleaved under conventional conditions, and R^4 is an organic radical as defined in relation to R^3 in formula (IV) provided that R^4 is different to R^3; with a thiol of formula (VI) or a reactive salt thereof:



(VI)

and thereafter if necessary carrying out one or more of the following steps:

(i) removal of any carboxyl-blocking group R^x;

(ii) converting the product to a pharmaceutically acceptable salt or in vivo hydrolysable ester group.

4,517,125

NOVEL VITAMIN D_3 DERIVATIVES AND PROCESS FOR PRODUCING THE SAME

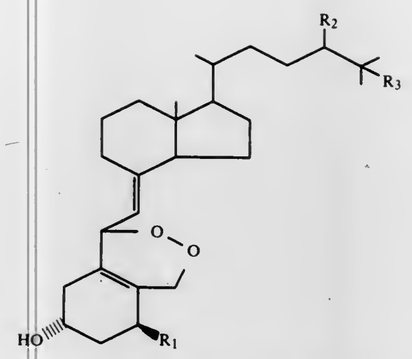
Hiroaki Takayama; Sachiko Yamada; Keiko Nakayama, and Tatsuo Suda, all of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1983, Ser. No. 463,616

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **4 Claims**

1. A 6,19-epidioxyvitamin D_3 derivative of the formula:



(wherein R_1, R_2 and R_3 are each a hydrogen atom or a hydroxyl group; when R_1 is a hydrogen atom, R_2 represents a hydroxyl group and R_3 is a hydrogen atom or a hydroxyl group; when both R_1 and R_2 represent a hydroxyl group, R_3 is a hydrogen atom or a hydroxyl group; and when R_1 is a hydroxyl group and R_2 is a hydrogen atom, R_3 represents a hydroxyl group).

4,517,126

PENICILLANIC ACID DERIVATIVE

Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 96,832, Nov. 23, 1979, , which is a continuation-in-part of Ser. No. 17,809, Mar. 5, 1979, abandoned. This application Apr. 11, 1983, Ser. No. 483,921

Int. Cl.³ C07D *499/00;* **A61K** *31/425*

U.S. Cl. 260—245.2 R **1 Claim**

1. The compound 6-β-bromo penicillanic acid pivaloyloxymethyl ester substantially free of the corresponding 6-α-isomer.

4,517,127

β-LACTAM DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Takeo Yoshioka, Ayase; Kenichi Yamamoto, Fujisawa; Yasuo Fukagawa, Kamakura; Yasutaka Shimauchi, Kanagawa, and Tomoyuki Ishikura, Chigasaki, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

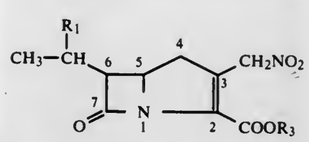
Filed Dec. 9, 1983, Ser. No. 559,681

Claims priority, application Japan, Dec. 10, 1982, 57-215539

Int. Cl.³ C07D *487/04;* **A61K** *31/40*

U.S. Cl. 260—245.2 T **3 Claims**

1. A compound represented by the following formula:



wherein R_1 represents hydrogen or hydroxyl and R_3 represents hydrogen, lower alkyl or lower alkyl substituted by 1 to 3 phenyl groups which phenyl groups are unsubstituted or are substituted by at least one substituent selected from halogen, lower alkyl, lower alkoxy, phenoxy, lower haloalkyl, C_1–C_{10} alkanoyloxy, benzoyloxyl, lower alkanoylamino, benzoylamino, carboxy, lower alkoxycarbonyl, hydroxy, and nitro.

4,517,128

TWO-TAILED SURFACTANTS HAVING ONE AROMATIC CONTAINING TAIL AND THEIR USE IN CHEMICAL WATERFLOODING

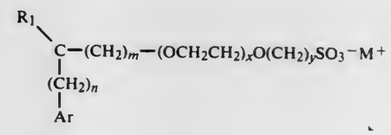
Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,576

Int. Cl.³ C07C *141/02, 143/42*

U.S. Cl. 260—458 C **4 Claims**

1. A compound of the formula



(I)

where:

(i) n and m are from 0 to 3;

(ii) y is from 0 to 5;

(iii) x is a rational number from 2 to 8;

(iv) R_1 is C_4–C_{10} alkyl;

(v) Ar is substituted or unsubstituted phenyl; and

(vi) M is a cation.

4,517,129

PROCESS FOR THE PREPARATION OF CYANOTETRACHLOROBENZENES

David J. Milner, Manchester, England, assignor to Imperial Chemical Industries PLC, London, England

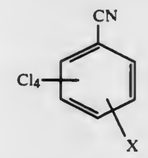
Filed Feb. 1, 1984, Ser. No. 575,997

Claims priority, application United Kingdom, Feb. 15, 1983, 8304161

Int. Cl.³ C07C *121/50*

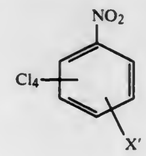
U.S. Cl. 260—465 G **7 Claims**

1. A process for the preparation of a compound of formula (I):



(I)

in which X is CN or, when X is in a position *meta* to the CN group in formula (I), CN or NO_2, which process comprises reacting in a liquid medium a compound of formula (II):



(II)

in which X', which is in a corresponding position to X, is CN or NO_2 with, in solution, an inorganic cyanide, whereby at least one NO_2 group is replaced by a cyano group.

4,517,130

SUBSTITUTED AMINO ACID PROCESS

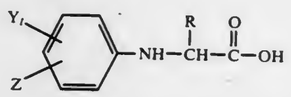
Ted A. Baer, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 370,720, Apr. 22, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,385

Int. Cl.³ C07C *121/78, 101/447*

U.S. Cl. 260—465 E **17 Claims**

6. A process for preparing a compound of formula (I):



(I)

wherein,

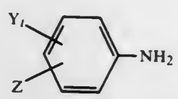
t is zero, one, two, three or four;

Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, lower alkylthio, lower haloalkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, and halogen;

Z is independently selected from the values of Y and cycloalkyl; or Y and Z together form a methylenedioxy group; and

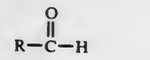
R is lower alkyl, lower alkenyl, cycloalkyl or hydrogen; which comprises:

(a) reacting an amine of formula (II):



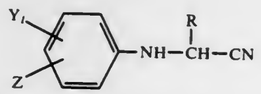
(II)

with at least one molar equivalent of hydrogen cyanide and at least one molar equivalent of an aldehyde of the formula



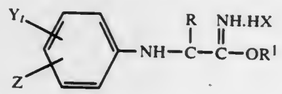
(III)

to form a nitrile of formula (IV):



(IV)

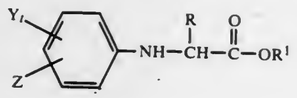
(b) reacting a nitrile of formula (IV) with a strong acid in R^1OH, wherein R^1 is methyl or ethyl, to yield a non-aqueous solution of the imidate salt of formula (V):



(V)

wherein X is the anion of a strong mineral acid,

(c) adding water to the non-aqueous solution of an imidate of formula (IV) to form an ester of formula (VI):



(VI)

and,

(d) reacting said ester with sodium hydroxide in methanol or ethanol and acidifying it to form an acid of formula (I).

4,517,131

HIGH YIELD PROCESS FOR THE CYANOALKYLATION OR AMIDOALKYLATION OR HYDROXYAROMATIC COMPOUNDS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 11, 1981, Ser. No. 301,170

Int. Cl.³ C07C *121/75*

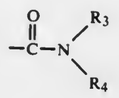
U.S. Cl. 260—465 F **11 Claims**

1. A process for amido-alkylating or cyano-alkylating hydroxyaromatic compounds, which comprises:

(a) in the presence of a catalyst and water, contacting a hydroxyaromatic compound with a haloamidohydrocarbylene or halocyanohydrocarbylene of the formula



wherein X is a halogen and R_1 and R_2 are independently hydrogen or C_1–C_{10} alkyl; Y is —C≡N or



wherein R_3 and R_4 are independently H or C_{1-10} alkyl; and

(b) adding an alkaline agent to the mixture under conditions sufficient to form the corresponding amido- or cyanoalkylated aromatic compound.

4,517,132

PROCESS FOR PREPARATION OF CYANOHYDRINS

John K. Chan, Raleigh, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1983, Ser. No. 509,135

Int. Cl.³ C07C *121/75, 121/36*

U.S. Cl. 260—465 F **8 Claims**

1. A method of preparing cyanohydrins which comprises:

(a) reacting a compound of Formula A

(A)



wherein R_1 and R_2 are individually hydrogen, alkyl, haloalkyl, alkoxyalkyl, aryl, alkylaryl, haloaryl or alkoxyaryl; with

(B) a metallic cyanide; and

(c) hydrochloric acid; in the presence of a solvent; and

(b) recovering the cyanohydrin.

4,517,133

METHOD OF PREPARING SULFONYL ISOCYANATES

Karl Reich, Carlsberg, Austria, assignor to Teroson GmbH, Heidelberg, Fed. Rep. of Germany

Filed Sep. 20, 1983, Ser. No. 534,029

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235045

Int. Cl.³ C07C *153/00*

U.S. Cl. 260—545 R **6 Claims**

1. A method of preparing sulfonyl isocyanates having the general formula

$$R—SO_2—NCO \qquad I,$$

wherein R is a linear or branched C_1- to C_{18}-alkyl radical, a phenyl radical, an alkyl phenyl radical having at least one linear or branched alkyl group containing from 1 to 18 C-atoms, or an isocyanate group, by reacting the corresponding sulfonylchlorides having the general formula

$$R—SO_2—CL \qquad II,$$

wherein R has the meaning as set forth above, with an isocyanate, characterized in that trimethyl silylisocyanate is used as the isocyanate and that the reaction is carried out in the presence of catalytic amounts of Lewis acids.

4,517,134

VARIABLE VENTURI CARBURETOR

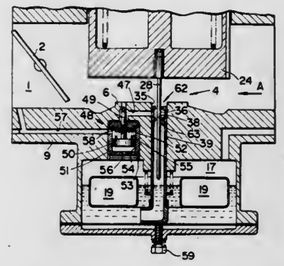
Ken Nakamura, Kawasaki; Tadashi Nagai, Yokosuka; Giichi Shioyama, Yokosuka; Yutaka Matayoshi, Yokosuka; Eiichi Ohnishi, Yokosuka; Junichi Yokoyama, Ebina, and Atsushi Yonezawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Dec. 13, 1983, Ser. No. 560,973

Claims priority, application Japan, Dec. 27, 1982, 57-234714; Mar. 15, 1983, 58-37111[U]; Mar. 17, 1983, 58-38812[U]

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—39 A **13 Claims**



1. A variable venturi carburetor comprising:

(a) a fixed venturi portion;

(b) a nozzle body having at least two nozzle portions arranged in series, said nozzle body being disposed in said fixed venturi portion;

(c) a suction piston serving as a movable venturi portion for forming a venturi between said fixed venturi portion and said movable venturi portion within an intake passage, said suction piston movable toward or away from said fixed venturi portion in response to the vacuum generated due to air passing through the venturi, the movement of said suction piston varying the cross-sectional area of the venturi;

(d) a tapered jet needle attached to the lower end of said suction piston so as to pass through the nozzle portions formed in said nozzle body, said at least two nozzle portions and said tapered jet needle defining at least two nozzle passages adapted to convey fuel from a source to said venturi;

(e) an auxiliary fuel passage, one end of which communicates with the intake passage at a downstream region of said venturi and the other end of which communicates with a space formed between two adjacent nozzle portions; and

(f) means for controlling the cross-sectional area of said auxiliary fuel passage according to engine operating conditions to supply, as required, a greater amount of fuel to the intake passage through at least one nozzle passage and said auxiliary fuel passage and a smaller amount of fuel to the intake passage through at least two nozzle passages.

4,517,135

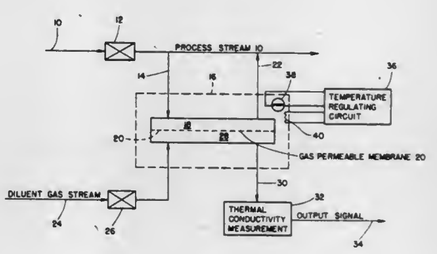
CARBONATION MEASURING SYSTEM AND PROCESS

Peter Szerenyi, Cross River, and Colin J. Ringleib, Shenorock, both of N.Y., assignors to PepsiCo, Inc., Purchase, N.Y.

Filed Jun. 21, 1983, Ser. No. 506,701

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—104 **17 Claims**



1. A process for continuously measuring the carbonation level of a carbonated and pressurized water based liquid beverage having carbon dioxide under pressure applied thereto, in a beverage carbonation process, from a continuous process stream, comprising the steps of:

a. continuously contacting a first side of a gas permeable element with the carbonated and pressurized liquid beverage from the continuous process stream such that carbon dioxide permeates through the element substantially in proportion to the extent of carbonation of the liquid beverage;

b. continuously contacting a second opposite side of said gas permeable element with a diluent gas stream such that carbon dioxide permeating through the element is picked up by the diluent gas stream;

c. continuously detecting the concentration of carbon dioxide in the diluent gas stream to provide a continuous measurement of the extent of carbonation of the liquid beverage in the continuous process stream; and

d. utilizing the result of said detecting step to control the carbonation of the beverage in the carbonation process to obtain a carbonated beverage having a suitable beverage carbonation level.

9. A system for continuously measuring the carbonation level of a carbonated and pressurized water based liquid beverage, having carbon dioxide applied thereto, in a beverage carbonation system, from a continuous process stream comprising:

a. an enclosure separated by a gas permeable element into first and second chambers;

b. means for continuously introducing the carbonated and pressurized liquid beverage from the continuous process stream into said first chamber adjacent to a first side of said gas permeable element;

c. means for continuously introducing a diluent gas stream into said second chamber adjacent to a second, opposite side of said gas permeable element, such that carbon dioxide permeating through the element is picked up by the diluent gas stream;

d. means for continuously detecting the concentration of carbon dioxide in the diluent gas stream to provide a continuous measurement of the extent of carbonation of the liquid beverage from the continuous process stream;

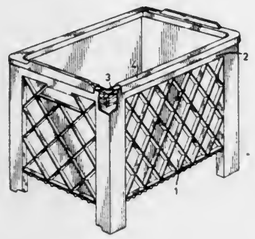
e. means, coupled to said detecting means, for controlling the carbonation of the beverage in the beverage carbonation system to obtain a carbonated beverage having a suitable beverage carbonation level.

4,517,136

PREPARING REINFORCED IMPERVIOUS ARTICLES

Andre Hemery, Les Andelys, France, assignor to Allibert S.A., France

Filed Aug. 26, 1982, Ser. No. 411,884
Claims priority, application France, Sep. 18, 1981, 81 17615
Int. Cl.³ B29C *6/04*
U.S. Cl. 264—25 **9 Claims**



1. A process for preparing an impervious article including a reinforcing frame member disposed between shock resistant, thermoplastic walls, comprising the steps of

disposing the reinforcing frame member between the shock resistant, thermoplastic walls,

after disposing the reinforcing frame member between the shock resistant, thermoplastic walls, heating the walls of shock resistant, thermoplastic disposed on either side of the reinforcing frame member, the walls defining a channel in which the reinforcing frame member is situated, the channel open on one side thereof, said heating carried out along an area of the walls on outer sides thereof opposite sides defining the channel and over an area proximate to the open part of the channel, to at least the softening point of the shock resistant, thermoplastic in the areas of the walls, over a depth between about $\frac{1}{4}$–$\frac{3}{4}$ of the respective thicknesses of the walls,

after softening of the areas of the walls, and while the walls are in softened condition, injecting under pressure onto the outer sides of these walls and over the open part of the channel, a compatible plastic material substantially resistant to cracking under stress, and

allowing the injected plastic material and the heated areas of the walls to cool, whereby the injected plastic material becomes heat welded to the walls to form a capping material over the reinforcing frame member substantially resistant to cracking under stress.

4,517,137

METHOD AND APPARATUS FOR IMPREGNATING POROUS ELECTRODES OR THE LIKE

Christian O. Schön, Römerstrasse 1, D-7590 Achern 18, Fed. Rep. of Germany

Continuation of Ser. No. 323,884, Nov. 23, 1981, abandoned. This application Nov. 30, 1983, Ser. No. 557,403
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046171
Int. Cl.³ C01B *31/00*
U.S. Cl. 264—29.5 **41 Claims**

1. A method of impregnating porous solid bodies comprising the steps of:

(a) introducing a porous solid body into a sealable mobile vessel;

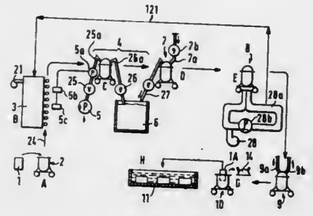
(b) heating the body at a heating station while the body is in the vessel;

(c) transporting the vessel with the heated body therein to a contacting station;

(d) contacting the body in the vessel with a flowable filler material at said contacting station for impregnation of the body;

(e) sealing the interior of the vessel from the atmosphere subsequent to said introducing step and prior to said contacting step, said contacting step including establishing communication between the interior of the vessel and a source of the flowable filler material while maintaining the vessel otherwise sealed;

(f) transporting the sealed vessel with the body therein from said contacting station to a cooling station;



(g) cooling the body in the vessel with a cooling medium at said cooling station, said cooling step including establishing communication between the interior of the vessel and a cooling system while maintaining the vessel otherwise sealed; and

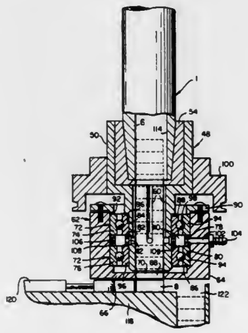
(h) removing the body from the vessel subsequent to said cooling step.

4,517,138

DEVICE AND METHOD FOR CENTRIFUGALLY CASTING ARTICLES

David L. Rawlings, Bayville, and Robert E. Glick, Huntington Station, both of N.Y., assignors to International Hydron Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,634
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—2.1 **20 Claims**



13. A method for the centrifugal casting of shaped plastic contact lenses which comprises the steps of:

(a) rotating a polymerization column about its longitudinal axis to provide an elongated zone at least a portion of which comprises an elongated tubular polymerization zone, said polymerization column adapted to receive and accommodate a plurality of vertically arranged molds in interference fitting relationship;

(b) force feeding into one end of said polymerization column a series of said molds, one at a time, each containing a lens forming material of a fluid polymerizable or curable material in the cavity of the mold, such that each of said molds is secured in an interference fitting relationship within said polymerization column whereupon the rotation of said polymerization column about its longitudinal axis causes the synchronized rotation of said molds while maintaining concentricity of said molds with the longitudinal axis of said polymerization column;

(c) rotating said polymerization column about its longitudinal axis at a speed sufficient to cause radially outward displacement of said polymerizable or curable material in the cavity of the molds within the elongated zone to assume a predetermined configuration;

(d) maintaining the elongated polymerization zone under polymerizable conditions to convert said polymerizable or curable material of predetermined configuration into the predetermined shaped solid contact lenses; and

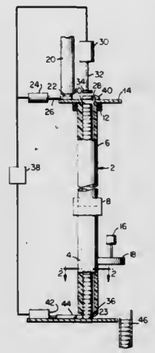
(e) withdrawing each of said molds from said polymerization column after at least the polymerizable or curable material therein is formed into the predetermined shaped solid contact lenses.

4,517,139

DEVICE AND METHOD FOR CENTRIFUGALLY CASTING ARTICLES ON A CONTINUOUS BASIS

David L. Rawlings, Bayville, and Robert E. Glick, Centerport, both of N.Y., assignors to International Hydron Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,642
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—2.1 **10 Claims**



7. A method for centrifugally casting of shaped contact lenses on a continuous basis comprising the steps:

(a) rotating a polymerization column about its longitudinal axis to provide an elongated polymerization zone, said polymerization column being adapted for receiving a plurality of molds in vertical series, and restraining means associated with said polymerization column and said molds for maintaining said plurality of molds within said polymerization column;

(b) intermittently force feeding a series of said molds one at a time into the inlet end of said polymerization column, said molds containing a polymerizable or curable composition and each of said forced fed molds causing a displacement of the series of said molds with said polymerization column by an amount sufficient to eject the bottommost mold out the outlet end of said polymerization column and the time interval between the advancing and force feeding cycle of successive molds being sufficient so that the rotation of said polymerization column causes and/or maintains the radially outward displacement of said polymerization or curable composition in the cavity of each of said molds within said polymerization zone to assume a predetermine liquid configuration and being sufficient so that said bottom most mold being ejected out the outlet end of said polymerization column has its polymerizable or curable composition at least substantially formed into a predetermined shaped contact lenses; and

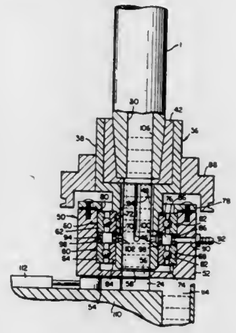
(c) collecting said intermittent ejected molds containing the predetermined shaped contact lenses.

4,517,140

DEVICE AND METHOD FOR CENTRIFUGALLY CASTING ARTICLES

David L. Rawlings, Bayville, N.Y., assignor to International Hydron Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,598
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—2.1 **11 Claims**



9. A method for centrifugally casting of shaped contact lenses comprising the steps:

(a) providing an elongated tubular polymerization zone within a polymerization column, said column being adapted for receiving a plurality of gravity fed, free falling molds, and said polymerization column and said molds having cooperative mating means for aligning said molds within said polymerization column;

(b) gravity feeding into one end of said polymerization column a series of said molds each containing a polymerizable or curable composition;

(c) rotating said polymerization column such that the cooperative mating means associated with said polymerization column and said molds maintains the rotation of said molds in synchronization with the same speed of rotation of said polymerization column, said rotation speed being sufficient to cause the polymerizable or curable composition to flow radially outward by centrifugal force in the cavity of each of said molds thereby said composition assuming a predetermined shaped contact lenses; and

(d) stopping the rotation of the polymerization column and withdrawing said gravity fed molds from the opposite end of said polymerization column after at least said polymerizable or curable composition is formed into a predetermined shaped contact lenses in said polymerization zone.

4,517,141

PRODUCTION OF MICROCAPSULES HAVING WALLS OF POLYADDITION PRODUCTS OF WATER-INSOLUBLE POLYAMINES WITH WATER-SOLUBLE POLYISOCYANATE ADDUCTS

Manfred Dahm; Norbert Weimann; Ulrich Nehen, all of Leverkusen; Hanns P. Müller, Odenthal-Blecher; Gert Jabs; Albert Awater, both of Odenthal, and James M. Barnes, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,451
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224454; Jun. 30, 1982, 3224456
Int. Cl.³ B01J *13/02*
U.S. Cl. 264—4.7 **4 Claims**

1. A process for the production of a microcapsule having a hydrophobic core material and a capsule wall formed from the reaction of a polyisocyanate adduct and a polyamine, said process comprising emulsifying in water or in an aqueous protective colloid solution a mixture of a hydrophobic core

material and a water-insoluble polyamine, adding a water-soluble polyisocyanate bisulphite adduct in the form of powder or an aqueous solution and allowing the mixture to react to completion at a temperature of from 1° to 140° C.

4,517,142

METHOD FOR PRODUCING PERMEABLE POLYMERIC MEMBRANES

Avraham M. Baniel, Jerusalem, Israel, assignor to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Aug. 6, 1981, Ser. No. 290,604
Claims priority, application Israel, Aug. 20, 1980, 60886
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—22 **14 Claims**

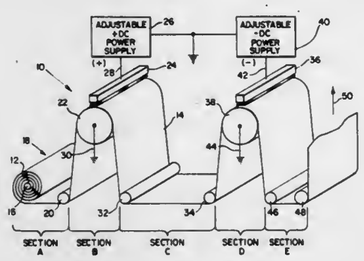
1. In a method for producing permeable polymeric membranes by removal of substances contained in a polymeric mass resulting in the formation of pores, the improvement comprising providing a single phase thermoplastic polymeric mass consisting essentially of a polymeric backbone and having either (a) pendant groups having decomposable molecular units chemically bound to said polymeric backbone or (b) compounds having decomposable molecular units molecularly dispersed in said polymeric mass and inducing the decomposition of said molecular units into smaller, discrete molecular units which spontaneously leave the polymeric mass by diffusion without melting of the polymer mass and/or decomposition of said polymeric backbone.

4,517,143

METHOD AND APPARATUS FOR UNIFORMLY CHARGING A MOVING WEB

Semyon Kisler, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 3, 1983, Ser. No. 538,221
Int. Cl.³ H05F *3/00*
U.S. Cl. 264—22 **17 Claims**



1. Apparatus for establishing a uniform electrostatic charge level on a web of material having random bounded-type electrostatic charges thereon, comprising:

means for generating a first electrostatic field of predetermined intensity and polarity at a particular spatial location;

means for establishing a second electrostatic field of different intensity and of opposite polarity with respect to said first electrostatic field at a different spatial location; and

means for initially moving said randomly charged web through said first electrostatic field for the purposes of changing the polarity of either the

positive or the negative random bounded-type electrostatic web charges and subsequently moving said web from said first electrostatic field and through said second electrostatic field to change the polarity of the electrostatic charge on said web after exposure to said first electrostatic field and to thereby produce a uniform electrostatic charge level on said moving web.

9. A method of establishing a uniform charge level on a randomly charged web having bounded-type electrostatic charges thereon, comprising the steps of:

establishing a first electrostatic field of predetermined polarity and intensity at a particular spatial location;

establishing a second electrostatic field of different intensity and of opposite polarity with respect to said first electrostatic field at a different spatial location; and

moving said randomly charged web through said first electrostatic field for the purpose of changing the polarity of either the positive or the negative random elecrostatic web charges and subsequently moving said web from said first electrostatic field and through said second electrostatic field to change the polarity of the electrostatic charge on said web after exposure to said first electrostatic field and to thereby produce a uniform electrostatic charge level on said moving web.

4,517,144

METHOD FOR CUTTING AND SEPARATING GREEN CERAMIC CAPACITOR BODIES

Gary D. Harland, and Dean B. Brownell, both of Wichita Falls, Tex., assignors to Sprague Electric Company, North Adams, Mass.

Filed Nov. 21, 1983, Ser. No. 553,613
Int. Cl.³ B28B *11/00*
U.S. Cl. 264—28 **10 Claims**

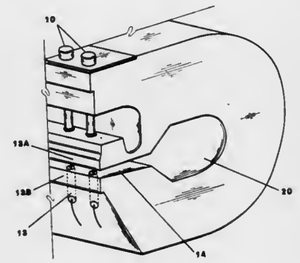
1. A method for cutting and separating green ceramic capacitor bodies containing buried electrodes comprising forming a green ceramic cake containing said buried electrodes on a porous substrate; cutting said cake by pressing a long sharp blade into and substantially through said cake to establish a cutting plane there through and with drawing said blade; chilling said cake to a temperature colder than −100° C.; and mechanically stressing said cake to break said green cake cleanly at said plane of said cutting.

4,517,145

EXTRUSION DIE AND PROCESS FOR THICKNESS CONTROL

William H. Knopf, Taylors, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Nov. 7, 1983, Ser. No. 549,097
Int. Cl.³ B29D *7/22*
U.S. Cl. 264—40.2 **14 Claims**



1. An improved adjustable extrusion die comprising

(a) a plurality of inner flow surfaces in opposed relationship to each other, thereby defining a die gap,

(b) means for adjustment of the relationship of said inner flow surfaces to each other whereby said die gap may be expanded or contracted,

(c) at least one proximity sensor, selected from the group consisting of capacitance-effect and optical fiber sensors, mounted within and flush with at least one of said inner flow surfaces, said sensor possessing a working surface substantially as smooth as said inner flow surface, such that the actual die gap can be directly measured by said proximity sensor during operation of said adjustable extrusion die.

14. A method of sheet thickness control comprising

(i) extruding a plastic melt through a sheet-forming die comprising

(a) a plurality of inner flow surfaces in opposed relationship to each other, thereby defining a die gap

(b) means for adjustment of the relationship of said inner flow surfaces to each other whereby said die gap may be expanded or contracted,

(c) at least one proximity sensor, selected from the group consisting of capacitance-effect and optical fiber sensors, mounted within and flush with at least one of said inner flow surfaces, said sensor prossessing a working surface substantially as smooth as said inner flow surface, such that the actual die gap can be measured by said proximity sensor during operation of said adjustable extrusion die,

thereby forming a sheet of plastic;

(ii) directly measuring the actual die gap while said plastic melt is flowing through said die

(iii) measuring the thickness of the sheet of plastic with thickness measuring means

(iv) correcting any deviation in

(a) the measured die gap or

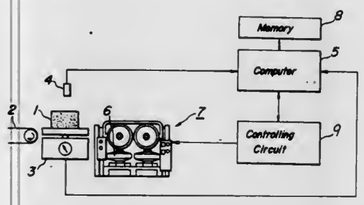
(b) the measured thickness of the sheet of plastic by appropriate adjustment of said means for adjustment of the relationship of said inner flow surface to each other.

4,517,146

METHOD FOR CONTROLLING TIRE VULCANIZATION

Ryo Takasu, Kodaira, and Makoto Nakao, Higashimurayama, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,607
Claims priority, application Japan, Oct. 1, 1982, 57-172697
Int. Cl.³ B29H *5/02*
U.S. Cl. 264—40.6 **6 Claims**



1. A method for controlling a tire vulcanization of a vulcanizing apparatus comprising the steps of:

measuring an initial temperature of a green tire before vulcanization;

estimating tire temperatures during vulcanization without actually measuring the temperature of the tire during vulcanization, said tire temperatures being successively calculated from the initial tire temperature in accordance with a first order approximation;

calculating a sum of products of vulcanizing rates derived from said estimated tire temperature during vulcanization; and

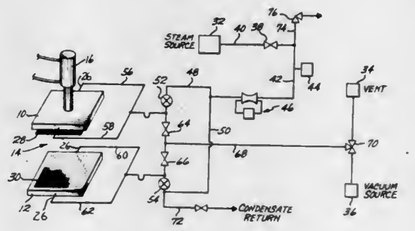
stopping said tire vulcanization when said sum of products of vulcanizing rates becomes equal to a predetermined value.

4,517,147

PRESSING PROCESS FOR COMPOSITE WOOD PANELS

Michael N. Taylor, and Timothy H. Reid, both of Tacoma, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 576,786, Feb. 3, 1984, abandoned, which is a continuation of Ser. No. 435,140, Oct. 18, 1982, abandoned. This application Apr. 13, 1984, Ser. No. 599,599
Int. Cl.³ B29J *5/02*
U.S. Cl. 264—83 **13 Claims**



1. A method of forming a panel or the like from a mat of lignocellulosic material and a curable binder, comprising the steps of:

compressing the mat between a pair of heated press platens to a first density within an intermediate-density range which is less than a final density and to a thickness within an intermediate thickness range which is greater than the final thickness,

injecting steam into both major surfaces of the mat while the mat is within the intermediate density and thickness ranges for a period of time sufficient to substantially saturate the mat with steam while allowing excess steam to exhaust through the edges of the partially compressed mat,

passing steam substantially through the mat from one major surface to the other while the mat is still within the intermediate density and thickness ranges to assure complete saturation,

compressing the mat to a higher density and a lower thickness to consolidate the mat and cure the binder, and

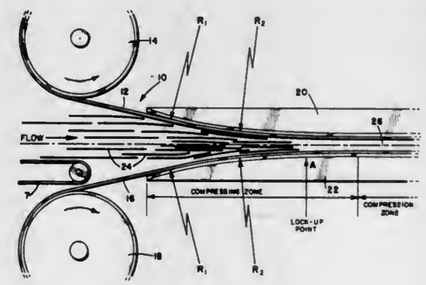
opening the platens after curing the binder and removing the so formed panel.

4,517,148

METHOD FOR PRESSING A COMPOSITE ASSEMBLY

Mark T. Churchland, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Nov. 1, 1983, Ser. No. 547,574
Int. Cl.³ D04H *1/16*
U.S. Cl. 264—112 **14 Claims**



1. In a continuous process of forming an extended elongate product from a plurality of elongate strands by subjecting the strands to heat and pressure wherein the improvement com-

prises a method of compressing the strands in a manner to reduce internal stresses imparted to the product during compressing, including the steps of:

(a) transporting a mat containing generally parallel strands in a generally random overlapping relationship through a compressing zone of a press assembly; and

(b) increasing the pressure on the strands as they pass from an inlet end to an outlet end of the compressing zone by gradually converging facing walls of the press assembly so that:

(i) the strands being compressed move relative to one another through at least a portion of the compressing zone, and

(ii) the strands being compressed lock-up so that they no longer move relative to one another but rather only compress relative to one another at a point in the compressing zone where the radius of curvature in the longitudinal direction on either side of a central reference plane of the mat being compressed is at least about 30 feet to provide a low remembered internal stress.

4,517,149

PROCESS FOR PRODUCING POLYESTER FIBER

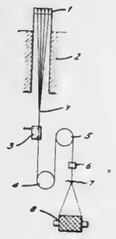
Ken-ichiro Oka; Masatoshi Mineo, both of Mishima, and Terumichi Ono, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 276,058, Jun. 22, 1981, Pat. No. 4,390,685. This application Dec. 2, 1982, Ser. No. 446,352

Claims priority, application Japan, Jun. 27, 1980, 55-86575; Jun. 27, 1980, 55-86576

Int. Cl.³ D02G *3/00*; B29F *3/08*

U.S. Cl. 264—210.8 **5 Claims**



1. A process for producing a polyester fiber from a thermoplastic polyester feed stock having a moisture regain not less than 0.005% comprising maintaining the thermoplastic polyester at melt spinning temperature for more than 15 minutes prior to spinning, melt spinning the thermoplastic polyester at a spinning temperature not lower than 300° C. through a spinneret into a filament and taking up the filament after solidifying the spun filamentary polymer, characterized in that the thermoplastic polyester feed stock has an inherent viscosity of not higher than 0.63, the whole process from spinning through take-up is carried out without heating the filament, the filament is subject to stretch treatment at a stretch ratio of not more than 20% after the solidification of the filament but before take-up, and take-up is carried out at a take-up of not less than 5,000 m/min.

4,517,150

METHOD FOR MANUFACTURING REACTIVE INJECTION-MOLDED PRODUCTS

Asao Harashima; Takashi Nakamura, and Keiichi Kishimoto, all of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 565,079

Claims priority, application Japan, Feb. 17, 1983, 58-25309

Int. Cl.³ B29C *1/04*; B29F *1/00*; B29D *27/00*; C08K *5/54*

U.S. Cl. 264—300 **20 Claims**

1. In a process of reaction injection molding of polyurethanes which includes the mixing of one or more of each of polyols, polyisocyanates and catalysts, the reaction of the foregoing ingredients, and the molding and curing of the foregoing mixture into the desired configuration, the improvement comprising mixing with the other ingredients an organopolysiloxane which contains per molecule at least one —COOA group bonded to a silicon atom through a carbon to silicon bond, wherein A is an alkali metal.

4,517,151

METHOD FOR MOLDING HOLLOW BLOW-MOLDED ARTICLES

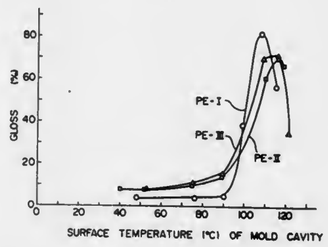
Kazuhiro Masumoto, Ohtake; Mituaki Fujimura, Iwakuni, and Masauki Sawazaki, Iwata, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo and Yazaki Plastics Industries Co., Ltd., Shizuoka, both of, Japan

Filed Dec. 1, 1982, Ser. No. 445,972

Claims priority, application Japan, Dec. 4, 1981, 56-195452; Mar. 15, 1982, 57-41138

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—540 **2 Claims**



1. A blow molding method which comprises melt-extruding a hot parison of a thermoplastic crystalline olefin resin and introducing the as-extruded parison into a mold cavity and blow molding it under such temperature conditions that the surface temperature, T° C., of the mold cavity satisfies the following expression (1),

$$T_c - T_1 - \Delta T < T < T_c + T_2 \quad (1)$$

wherein

T_c is the DSC crystallizing temperature in °C. of the olefin resin,

T_1 is 20° C. when the olefin resin is a C_2 olefin and 30° C. when it is another olefin resin,

T_2 is 10° C., and

ΔT is a corrected value in °C. which is represented by the following equation (2) and holds good only when a mold having a heat insulating layer on the surface of its cavity is used,

$$\Delta T = (-12.7 \log_{10}\lambda - 15.2 + 25t) \quad (2)$$

wherein λ is the heat conductivity of the heat insulating layer in cal/cm·sec·°C., and t is the thickness in cm of the heat-insulating layer.

4,517,152

METHOD OF TESTING FUEL ELEMENT TUBES FOR DEFECTS

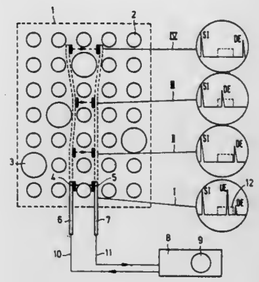
Kurt Pieper, Troisdorf, and Rainer Scharpenberg, Waldmichelbach, both of Fed. Rep. of Germany, assignors to Krautkramer GmbH, Cologne and Brown Boveri Reaktor GmbH, Mannheim, both of, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,039

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149362

Int. Cl.³ G21C *17/06*

U.S. Cl. 376—252 **1 Claim**



1. The method of testing spaced fuel element tubes which are assembled in bundles to form a reactor core by ultrasonic energy, wherein an ultrasonic transmit transducer and an ultrasonic receive transducer are moved through open spaces between the tubes and when testing a tube are disposed with a tube in the space between said transducers, said transmit transducer when in position for testing a tube being energized to cause ultrasonic energy to propagate in said tubing and the resulting revolving echo signal being received by said receive transducer and if occurring within a predetermined gated time interval (12) being passed to an evaluation means, the improvement comprising:

determining anew for each tube to be tested the start of said gated time interval (12) by measuring the transit time value (T_L) of ultrasonic signals traversing the distance from said transmit transducer (4) to said receive transducer (5) when said transducers are in the open space between the last tested tube and the next to be tested tube, and

subtracting a constant value (C) from the transit time value (T_L), said constant value (C) being selected to cause the transmitted ultrasonic signal (DE) received during the transit time measurement to fall just outside said gated time interval (12).

4,517,153

DEVICE FOR REMOVING COOLING FLUID, MAKING IT POSSIBLE TO LOCATE DEFECTIVE ARRAYS IN A NUCLEAR REACTOR IN OPERATION

Alain Plaziaud, Sevres, France, assignor to Novatome, Le Plessis Robinson, France

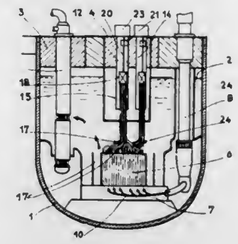
Filed Mar. 29, 1982, Ser. No. 362,821

Claims priority, application France, Apr. 30, 1981, 81 08634

Int. Cl.³ G21C *17/04*

U.S. Cl. 376—253 **4 Claims**

1. In a fast neutron nuclear reactor comprising a core consisting of fuel assemblies arranged side by side with their lateral faces in contact in va vessel containing a reactor cooling fluid circulated by means of pumping, so as to traverse the core in the longitudinal direction of said assemblies, and a device incorporating means for detecting and localizing defective assemblies by detecting fission products in the cooling fluid, consisting of at least one localizing module and sampling conduits for abstracting the cooling fluid, each being associated with a fuel assembly, independently joining each of the zones situated at the exit of each of said assemblies to the localizing module and assuring the transport of said cooling fluid from the core exit as far as said modules, the improvement consisting of at least two completely independent localizing modules and an arrangement of the sampling conduits joining the exit of said



assemblies to said modules such that, for each assembly of said core, there is at least one adjacent assembly in contact through the intermediary of one of its lateral faces, which is connected by its sampling conduit to a localizing module different from the module to which the first assembly is connected by its sampling conduit.

4,517,154

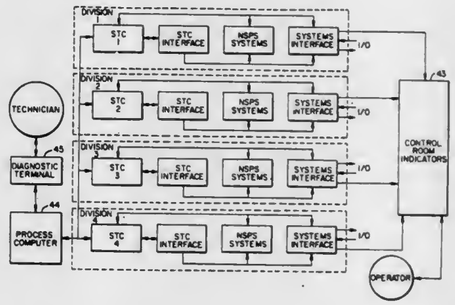
SELF-TEST SUBSYSTEM FOR NUCLEAR REACTOR PROTECTION SYSTEM

Ulric E. Dennis; Dennis W. Hollenbeck; John A. Kirtland; Kenneth B. Stackhouse; Patricia A. Wilson; William D. Hill, all of San Jose; David D. Akers, Los Gatos, and Elmer D. Hill, Sacramento, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 27, 1982, Ser. No. 402,053

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—259 **29 Claims**



1. A self-test system for a nuclear reactor protection system (RPS), comprising:

a processor for generating a series of RPS test pattens and test vectors, said processor including a series of related expected test results;

a plurality of self-test elements coupled to said processor for receiving said test vectors and adapted to receive and store related actual test results from the RPS;

first means responsive to commands from said processor for selecting from said self-test elements those self-test elements corresponding to said RPS test patterns;

second means responsive to commands from said processor for generating a short duration test pulse which is transmitted along the actual RPS operating path without causing an RPS response, and adapted to effect injection of said test vectors into the RPS by said self-test elements;

means coupled to said self-test elements for monitoring said actual test results and coupled to said processor for com-

paring said actual test results with said expected test results; and

means coupled to said monitoring and comparing means and for indicating differences between said actual test results and said expected test results.

4,517,155

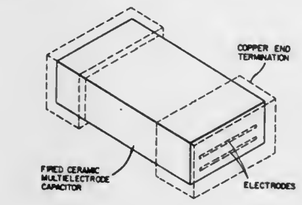
COPPER BASE METAL TERMINATION FOR MULTILAYER CERAMIC CAPACITORS

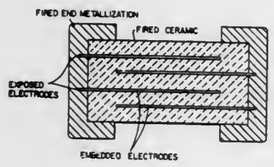
Sri Prakash, Simpsonville, and William B. Snyder, Jr., Greenville, both of S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 379,503, May 18, 1982, abandoned. This application May 3, 1984, Ser. No. 606,608

Int. Cl.³ B22F 7/00

U.S. Cl. 419—19 **5 Claims**





1. A method for providing a copper metallization end termination on a fired ceramic capacitor having a dielectric formed of barium or neodymium titanates which comprises

(i) providing a termination paste consisting essentially of about

(a) 75% to 97% by weight of solids in the paste being finely divided copper particles

(b) 3 to 25% by weight of solids the paste being cadmium-free and bismuth-free glass frit

(c) a volatile and decomposable organic liquid vehicle suspending the solids

(ii) applying the copper containing paste to an electrode exposed end portion of a matured ceramic multielectrode capacitor body having a dielectric formed of barium or neodymium titanates

(iii) heating the copper containing paste-covered end portion of the ceramic capacitor body to a temperature in the range of about 300° to 800° C. in a gaseous environment containing a small amount of oxygen which is in excess of 20 ppm and sufficient to prevent chemical reduction of ceramic during said heating but insufficient to oxidize said copper, the heating initially being at a lower temperature in said range for a period of time sufficient to remove substantially all organic binder and solvent constituents from the applied paste and thereafter being at a higher temperature in said range for a period of time sufficient to sinter the copper constituent of said applied paste and melt the glass constituent of said applied paste and bond the same said ceramic capacitor body.

4,517,156

ELECTRICAL RESISTANT ALLOYS HAVING A SMALL TEMPERATURE DEPENDENCE OF ELECTRIC RESISTANCE OVER A WIDE TEMPERATURE RANGE AND A METHOD OF PRODUCING THE SAME

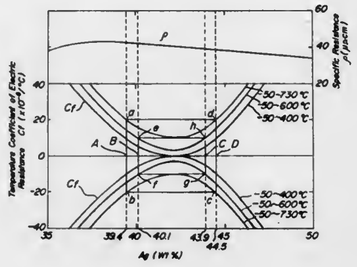
Hakaru Masumoto, and Naoji Nakamura, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Continuation of Ser. No. 397,226, Jul. 12, 1982, Pat. No. 4,468,570, which is a division of Ser. No. 151,712, May 20, 1980, Pat. No. 4,374,679. This application Mar. 13, 1984, Ser. No. 589,213

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclosed.

Int. Cl.³ C22C 5/00

U.S. Cl. 420—463 **2 Claims**



1. A shaped article having a temperature coefficient of electric resistance of $\pm 10 \times 10^{-6}$/°C. over a temperature range of −50° C. to +600° C., and comprising an electrical resistant alloy consisting essentially of 56.1 to 59.9 wt% of palladium and 43.9 to 40.1 wt% of silver and produced by shaping said electrical resistant alloy into a desired shape of wire on thin sheet by hot working and cold working, heating the shaped article at a recrystallization temperature of 500° to 1,000° C. in air or a non-oxidizing atmosphere or in vacuo for a time of not less than 2 seconds to not more than 100 hours, and slow cooling said shaped article to remove internal stress.

4,517,157

COPPER BASED BRAZING ALLOY

Brian C. Coad, San Francisco, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Oct. 11, 1984, Ser. No. 659,811

Int. Cl.³ C22C 9/10

U.S. Cl. 420—490 **3 Claims**

1. A brazing alloy having a composition consisting essentially of from about 1 to about 3% by weight boron, from about 8% to about 12% by weight silicon, and the balance copper.

4,517,158

ALLOY WITH CONSTANT MODULUS OF ELASTICITY

Masami Miyauchi, Yokohama, and Masayuki Itoh, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

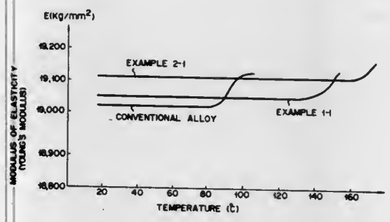
Filed Feb. 9, 1984, Ser. No. 578,702

Claims priority, application Japan, Mar. 31, 1983, 58-53555; Mar. 31, 1983, 58-53570

Int. Cl.³ C22C 30/00

U.S. Cl. 420—584 **8 Claims**

1. An alloy with constant modulus of elasticity consisting essentially of from 40 to 44.5% by wt of nickel, from 4 to 6.5% by wt of chromium, from 0.5 to 1.9% by wt of titanium, from



0.1 to 1% by wt of aluminium, and from 0.2 to 2% by wt of zirconium, with the remainder being comprised of iron.

4,517,159

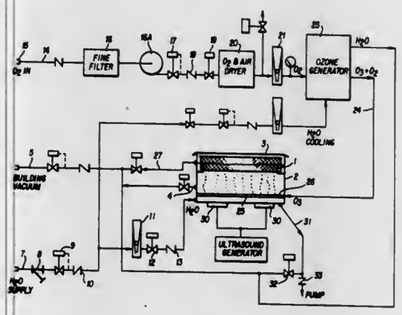
STERILIZER

Eskil L. Karlson, 4634 State St., Erie, Pa. 16509

Filed Jul. 5, 1983, Ser. No. 510,552

Int. Cl.³ A61L 2/00, 2/02, 2/20

U.S. Cl. 422—20 **13 Claims**



1. The method of sterilizing in which an article to be sterilized is submerged in water, and ozone from a separate ozone rich source is bubbled through the water and over said article while it is submerged thereby providing ozone concentration in excess of water saturation alone and releasing ozone from the water in the form of ozone filled bubbles which break in contact with said article and have a scrubbing action tending to dislodge surface contamination.

13. The method of sterilizing in which an article to be sterilized is submerged in water, and ozone from a separate ozone rich source is bubbled through the water and over the article while it is submerged, thereby providing ozone concentration in excess of water saturation alone and the submerged article is concurrently subjected to short bursts of ultrasonic vibration with dwell periods between bursts longer than the burst periods.

4,517,160

AUTOMATIC ANALYZING APPARATUS

Kevin Galle, New City, N.Y.; Ryoichi Orimo, Ohme, Japan; Masahiko Sakurada, Machida, Japan; Taiichi Banno, Hachioji, Japan, and Sugio Manabe, Kodaira, Japan, assignors to Olympus Optical Company Limited, Japan

Division of Ser. No. 139,469, Apr. 11, 1980, abandoned. This application Jan. 25, 1983, Ser. No. 460,915

Claims priority, application Japan, Apr. 14, 1979, 54-44912

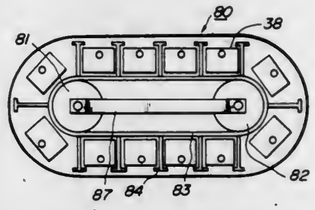
Int. Cl.³ G01N 35/04

U.S. Cl. 422—65 **4 Claims**

1. An apparatus for delivering a certain amount of a given reagent selected from a plurality of reagents comprising:

cassette-like means holding a plurality of reagent bottles each containing more respective reagent of said plurality of reagents, said cassette-like means having a base member and upstanding vertical walls with a plurality of reagent containing bottles therein, said base member defining a path along which the bottles are conveyed;

means for detachably supporting said cassette-like means;



means for reciprocally moving the reagent bottles settled in the cassette-like in clockwise and counterclockwise rotation along said given path in order to index a desired reagent bottle to a reagent aspiration position;

means for aspirating into a probe a given amount of a selected reagent contained in the reagent bottle which is situated at the aspiration position and discharging the aspirated reagent into a reaction vessel.

4,517,161

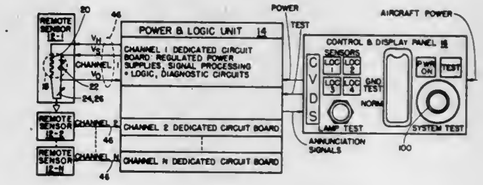
COMBUSTIBLE VAPOR DETECTION SYSTEM

Anthony N. Gravina, Deer Park; Murray Keitel, Kings Park; Harvey Weiss, Port Jefferson; Joseph N. Wiley, Dix Hills, and Edmund G. Charland, Jr., Selden, all of N.Y., assignors to Grumman Aerospace Corp., Bethpage, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,608

Int. Cl.³ G01N 27/16; G08B 21/00

U.S. Cl. 422—95 **10 Claims**



1. A combustible vapor detection system for an aircraft for detecting and annunciating the pressure and location of combustible vapors at a plurality of locations on the aircraft, comprising:

a. a plurality of combustible vapor detectors, each adapted to be placed at a location to be monitored on an aircraft at which combustible vapors may be present, each combustible vapor detector having a resistance which varies in dependence upon the concentration of a combustible vapor to be detected, such that it produces an electrical output signal which varies in dependence upon the concentration of the combustible vapor, each vapor detector comprising a semiconductor gas detecting element wherein adsorption of select types of gases on its surface decreases its resistance, and having a greater element for thermally activating surface reactions on the semi-conductor element, and each vapor detector having a temperature compensation circuit, including a thermistor, for providing thermally stable operation for the vapor detector;

b. a central control means, which receives the plurality of electrical output signals, comprising: (1) means for comparing each electrical signal with a separate threshold

value for each vapor detector, such that individual characteristics of each vapor detector are considered in setting its threshold value, and the threshold value for each vapor detector being set at a level corresponding to a fraction of the concentration of combustible vapors in air which will just support combustion; (2) means for generating an annunciation signal when at least one of the electrical output signals surpasses its threshold value; (3) and a plurality of annunciator indicators, one corresponding to each combustible vapor detector, for signaling the occurrence of each annunciation signal to an operator; and (4) a separate electrical channel for each vapor detector, each separate electrical channel comprising a dedicated circuit board for that channel, each electrical channel including separate first and second power supplies, the first power supply being for the vapor detecting element and the second power supply being for the heater element, and each electrical channel including a separate signal processing circuit for comparing the electrical signal from the vapor detector for that channel with a threshold value for that channel, each said dedicated circuit board comprising annunicator lights thereon for indicating proper operation of the components of that electrical channel, said annunciator lights including five LEDs, first and second LEDs for indicating operation of the first and second power supplies, a third LEd for indicating operation of the semiconductor vapor detecting element, a fourth LED for indicating operation of the temperature compensation circuit, and a fifth LED for indicating operation of the heater element; and

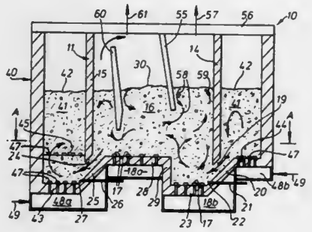
c. diagnostic means for testing the combustible vapor detectors for operation, and for indicating a malfunction thereof to the operator.

4,517,162

APPARATUS FOR USE IN PROCESSING A SUBSTANCE IN A FLUIDIZED BED

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 3, 1982, Ser. No. 384,472
Int. Cl.³ B01J *8/18*; F27B *15/00*
U.S. Cl. 422—142 **13 Claims**



1. Apparatus comprising a fixed vessel, wherein the vessel comprises:

(a) outer walls;

(b) inner wall means which define at least two compartments within the vessel, wherein said inner wall means comprises at least one dividing wall, each said dividing wall extending inwardly from an outer wall towards the interior of the vessel to define a discharge end of a first compartment on one side of the dividing wall and a receiving end of a second compartment on the other side thereof;

(c) at least one distributor for distributing fluidizing fluid into the bottom of each compartment for fluidizing a bed of fluidizable particles which, when present, is supported above and bounded by said distributor;

(d) each distributor comprising a substantially horizontal first distributor portion extending, at a first level, from the receiving end of the respective compartment to an edge region of the distributor portion at a location part-way towards the discharge end of the compartment; a substantially horizontal second distributor portion extending at a second level, higher than the said first level, from the discharge end of the compartment to an edge region of the second distributor portion which is located substantially vertically above the said edge region of the first distributor portion; a substantially vertical step connecting the edge regions of the first and second distributor portions; and a plenum defined beneath each distributor portion for the supply of fluidizing fluid to each distributor portion;

(e) said at least one dividing wall defining at least part of at least one particles-transfer port means which slopes downwardly from an entrance-opening on said one side of the dividing wall to an exit-opening on the other side thereof, the bottom of the port means on the said other side of the dividing wall being no lower than the said first level.

4,517,163

PROCESS FOR MAKING TITANIUM DIOXIDE CONCENTRATES

Klaus Jödden; Gero Heymer, both of Erftstadt, and Hans-Werner Stephan, Cologne, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,220
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210729
Int. Cl.³ C01G *23/07, 23/08*
U.S. Cl. 423—75 **5 Claims**

1. In a process for making titanium dioxide concentrates by removing iron from material containing titanium oxide and iron oxides, wherein the titanium oxide-containing material is calcined at temperatures of 870° to 1300° C., and wherein the calcined titanium oxide-containing material is treated in countercurrent fashion wit a chlorine-containing gas at temperatures of 800° to 1300° C., the improvement according to which the titanium oxide-containing material is calcined under inert gas, whereby sintering of said material during chlorine-containing gas treatment is prevented.

4,517,164

PURIFICATION OF ALKALI METAL NITRATES

Louis C. Fiorucci, Hamden, Conn., and Kevin M. Gregory, Woodridge, Ill., assignors to Olin Corporation, Cheshire, Conn.

Filed May 24, 1984, Ser. No. 613,666
Int. Cl.³ C01F *11/36*
U.S. Cl. 423—184 **14 Claims**

1. The process for removing heavy metal contaminants from an impure alkali metal nitrate containing them, said impure alkali metal nitrate being comprised of a mixture of between about 30 and 70 percent by weight of sodium nitrate and between about 30 and about 70 percent by weight of potassium nitrate, wherein said process comprises:

a. admixing said impure alkali metal nitrate with sufficient water to form a concentrated aqueous solution thereof containing from between about 20 and about 70 percent by weight of alkali metal nitrate;

b. adjusting the pH of said concentrated aqueous solution to within the range from between 2 and about 7;

c. admixing sufficient reducing agent with said concentrated aqueous solution of alkali metal nitrate to provide at least the stoichiometric proportion necessary to react with heavy metal impurities contained therein, wherein said reducing agent is selected from the group consisting of alkali metal sulfide, alkali metal bisulfite, alkali metal borohydride, and hydrazine;

d. admixing sufficient base with the aqueous alkali metal nitrate solution containing said reducing agent to raise the pH of the resulting mixture to above about 6, whereby a precipitate of solid heavy metal contaminants forms within said aqueous solution; and

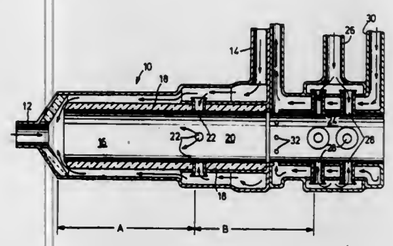
e. separating said solid heavy metal contaminants from the resulting purified aqueous solution of alkali metal nitrate.

4,517,165

COMBUSTION METHOD

Michael P. Moriarty, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 239,943, Mar. 3, 1981, abandoned. This application Feb. 2, 1982, Ser. No. 344,067
Int. Cl.³ B01J *8/00*
U.S. Cl. 423—244 **11 Claims**



1. A method for the entrained flow combustion of a carbon- and sulfur-containing fuel for substantially reducing emission of gaseous sulfur compounds formed during the combustion of the fuel with a substoichiometric amount of oxygen, comprising:

introducing said fuel, an inorganic alkaline absorbent and an oxygen-containing gas into a first combustion sulfur capture zone of an entrained-flow combustor to form a fluent mixture therein of fuel and absorbent entrained in said gas, the oxygen being present in said zone in an amount to provide from about 25% to 40% of the total stoichiometric amount required for complete combustion of the fuel,

the inorganic alkaline absorbent being present in an amount to provide a molar ratio of alkaline absorbent to sulfur compounds of from about 1.0:1 to 3.0:1, said ratio including any alkaline absorbents contained in the fuel;

reacting said fuel and absorbent entrained in said oxygen-containing gas by maintaining them in said zone at a temperature of from about 1000° to 1800° K. for a time sufficient

(a) to gasify at least about 75% of the carbon content of the fuel and substantially all of the sulfur in the fuel,

(b) to combust the gasified fuel and oxygen to produce a fuel-rich stoichiometry in the gas phase, and

(c) to react in excess of about 70% of the fuel sulfur with the inorganic alkaline absorbent to form a solid alkaline sulfide compound; and

discharging the resultant combustion mixture having a substantially reduced gaseous sulfur compound content.

4,517,166

TWO-STAGE CHLORINATION PROCESS FOR THE PRODUCTION OF SOLID BLEACHING POWDER WITH A HIGH ACTIVE CHLORINE CONTENT

Giuseppe Busacca, Milan, Italy, assignor to Consito SpA, Milan, Italy

Filed Jun. 12, 1984, Ser. No. 619,753
Int. Cl.³ C01B *11/06*
U.S. Cl. 423—474 **5 Claims**

1. Two-stage chlorination process for the production of bleaching powder with a high chlorine content characterised by

(a) suspending slaked lime with a calcium hydroxide content above 95% in an aqueous medium constituted by the mother liquor resulting from the liquid/solid separation of the reaction product from the second chlorination stage, with a weight ratio of the lime to the aqueous medium of between 1:2 and 1:2.5;

(b) passing gaseous chlorine into the suspension thus obtained and, agitation being maintained, adjusting the rate of immission of the chlorine to between 5 and 10 kg/h per 100 kg of calcium hydroxide present in the suspension, keeping the temperature at between 35° and 45° C., and stopping the immission of chlorine when more than 40% but less than 55% of the calcium hydroxide originally loaded in is still present in the suspension;

(c) separating the solid from the suspension by filtration or centrifuging and re-suspending the solid in water, with a weight ratio of the solid to the water of between 1:1 and 1.5:1;

(d) adding to the suspension a quantity of aqueous sodium hydroxide solution having a concentration of from 20% to 40% such as to bring the pH of the suspension to between 12 and 14;

(e) conducting a second chlorination stage by passing gaseous chlorine into the suspension at a rate of from 1.5 to 2 times the rate used in the first chlorination stage and keeping the temperature of the suspension at about 10 C. degrees below that of the first chlorination stage, continuing the immission of chlorine until the quantity of calcium hydroxide in the suspension is reduced to less than 0.2 parts by weight per 100 parts by weight of suspension;

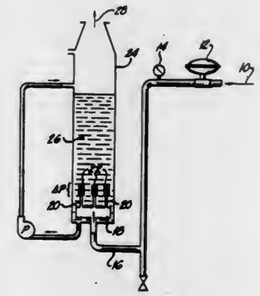
(f) separating the solid from the suspension, by filtration or centrifuging, washing the solid residue with about ⅓ its weight of water and drying the washed product with hot air or under vacuum at a temperature no higher than 80° C. until the residual moisture content of the dried solid is reduced to between 5% and 10% by weight.

4,517,167

CONTINUOUS REMOVAL OF ETHYLENE OXIDE FROM GASEOUS STREAMS

Miron Popescu, Trevose, and Edward K. Gunsalus, Norristown, both of Pa., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed May 25, 1983, Ser. No. 497,990
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—245 **9 Claims**



1. A method for removing ethylene oxide from a gaseous stream comprising:

providing a vessel containing an aqueous acid solution, said solution having a normality ranging from about 0.35 to about 1.5;

providing said vessel with a gas diffusion means submerged in said solution;

continuously introducing said gaseous stream into said acid solution by diffusing said gas through said gas diffusion means, the pressure drop of the gas across said gas diffusion means being controlled to between about 1 and about 15 millimeters of mercury;

continuously withdrawing undissolved gas from the vessel;

whereby said gas being diffused in said diffusion means to a degree sufficient to result in at least 95% of said ethylene oxide introduced into said vessel being retained in the aqueous solution.

4,517,168

GRINDING AMORPHOUS SILICON NITRIDE POWDER PRIOR TO HEATING TO PRODUCE CRYSTALLINE SILICON NITRIDE POWDER

Takashi Kawahito; Yoshinori Himukashi, and Tetsuo Yamada, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Jul. 26, 1983, Ser. No. 517,420
Claims priority, application Japan, Jul. 27, 1982, 57-129572
Int. Cl.³ C01B *21/068;* C04B *35/58*
U.S. Cl. 423—344 **4 Claims**



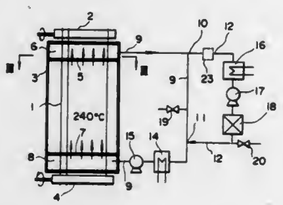
1. A process for producing equiaxed crystalline silicon nitride powder having an average diameter of not more than 1.5 microns by heating amorphous silicon nitride powder under an inert or reducing gas atmosphere, wherein said amorphous silicon nitride powder is ground prior to heating and subsequently maintained at a temperature of 1250° C. to 1430° C. for at least one hour.

4,517,169

METHOD OF PRODUCING CARBON FIBERS

Atsushi Sumida, Ehime; Keiichiro Ozaki, Iyo, and Shizuo Watanabe, Ehime, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,434
Claims priority, application Japan, Jun. 2, 1982, 57-92971
Int. Cl.³ D01F *9/14*
U.S. Cl. 423—447.4 **17 Claims**



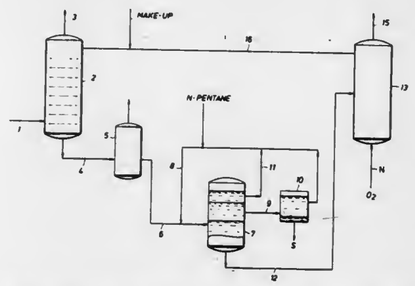
1. In a method for producing carbonizable oxidized fibers comprising:
introducing the fibers to be oxidized into a heat-treating device; and
oxidizing the fibers in said heat-treating device with an appropriate oxidizing gas at a temperature sufficient to effect oxidation; the improvement comprising
withdrawing the spent oxidizing gas from said heat-treating device as an exhaust gas;
dividing said exhaust gas into a first and second portion;
returning the first portion, untreated, to said heat-treating device;
treating the second portion by passing it over an oxidation catalyst system at a temperature of 280°–400° C. to purify said second portion; and
returning the purified second portion of said gas to said heat-treating device for reuse.
17. In a method for producing carbon fibers comprising:
introducing fibers to be oxidized into a heat-treating device;
oxidizing the fibers in said heat-treating device with an appropriate oxidizing gas at a temperature sufficient to effect oxidation to produce oxidized fibers and carbonizing the oxidized fibers in a carbonizing furnace; the improvement comprising
withdrawing the spent oxidizing gas from said heat-treating device as an exhaust gas;
dividing said exhaust gas into a first and second portion;
returning the first portion, untreated, to said heat-treating device;
treating the second portion by passing it over an oxidation catalyst system at a temperature of 280°–400° C. to purify said second portion; and
returning the purified second portion of said gas to said heat-treating device for resue.

4,517,170

REMOVAL OF H_2S FROM SOUR GAS STREAMS WITH SUBSEQUENT SULFUR SEPARATION

Miro E. Klecka, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1982, Ser. No. 451,706
Int. Cl.³ C01B *17/05;* B01D *53/34*
U.S. Cl. 423—573 R **24 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising
(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution comprising an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, or mixture of such chelates, to produce a sweet gas stream and an aqueous admixture containing sulfur and reduced reactant;
(b) removing aqueous admixture from the contacting zone;
(c) contacting aqueous admixture in an extraction zone with a liquid composition selected from compounds having the formula $C_nH_{2(n+1)}$, wherein n is a number from 4 through 8, and mixtures thereof, in an amount sufficient to remove at least the bulk of the sulfur from said admixture and form a separate phase containing sulfur and said composition, and forming a three phase mass comprising an upper mass containing solid sulfur and said liquid composition, and a lower phase in contact with said upper mass, said lower phase comprising aqueous admixture containing reduced reactant;
(d) separating at least a portion of the upper mass, and recovering sulfur from the portion separated;
(e) separating aqueous admixture containing reduced reactant from the lower phase, and regenerating said separated aqueous admixture in a regeneration zone to produce an aqueous admixture containing a regenerated reactant;

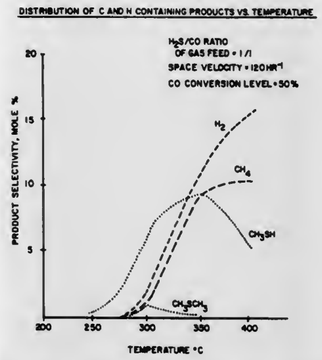
(f) returning aqueous admixture from the regeneration zone to the contacting zone.

4,517,171

SYNTHESIS OF H_2 AND CH_4 FROM H_2S AND CO

Charles T. Ratcliffe, Pittstown, N.J., and Petrus J. Tromp, Amsterdam, Netherlands, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1984, Ser. No. 626,458
Int. Cl.³ C01B *31/26*
U.S. Cl. 423—648 R **19 Claims**



1. A process for producing hydrogen and methane from a gaseous feed comprising a mixture of CO and H_2S, said process comprising contacting said feed, at a temperature of at least about 275° C., with a catalyst comprising rutile titania for a time sufficient to convert at least a portion of said feed to said hydrogen and methane.

4,517,172

PLAQUE DISCLOSING AGENT

George L. Southard, Fort Collins, Colo., assignor to Vipont Laboratories, Inc., Fort Collins, Colo.

Filed Dec. 29, 1983, Ser. No. 566,916
Int. Cl.³ A61K *7/26, 35/78*
U.S. Cl. 424—7.1 **8 Claims**

1. A method for visualizing plaque formation in the oral cavity and rendering such plaque formation visible to the naked eye under long wavelength ultraviolet light by applying to the oral cavity a sanguinarine salt selected from the group consisting of sanguinarine chloride, sanguinarine nitrate, sanguinarine sulfate, and a mixture of said salts precipitated from extracts of plants selected from the group consisting of *Sanguinaria canadensis, Macleaya cordata, Corydalis sevctvozii, C. ledebouni, Chelidonium majus,* and mixtures thereof.

4,517,173

MUCOUS MEMBRANE-ADHERING FILM PREPARATION AND PROCESS FOR ITS PREPARATION

Hidenori Kizawa; Norimasa Fujiyama, both of Tokyo; Jitsuo Kobayashi, Kanagawa, and Akinori Ito, Niigata, all of Japan, assignors to Nippon Soda Co. Ltd., Tokyo, Japan

PCT No. PCT/JP81/00254, § 371 Date May 25, 1982, § 102(e) Date May 25, 1982. PCT Pub. No. WO82/01129, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 25, 1981, Ser. No. 385,647
Claims priority, application Japan, Sep. 26, 1980, 55/33947
Int. Cl.³ A61L *15/03;* A61F *13/00;* A61K *9/70*
U.S. Cl. 424—16 **2 Claims**

1. A mucous membrane-adhering film preparation with a flat contact side so formed as to be applied to an oral cavity and to adhere onto a mucous membrane, said preparation consisting of at least three layers, namely, a pharmaceutical layer (a), a poor water-soluble layer (b), and an intermediate layer (c), wherein:
(a) said pharmaceutical layer (a) is a material selected from the group consisting of predonisolone and allantoin together with water-solluble cellulose derivatives selected from the group consisting of hydroxypropyl cellulose, methyl cellulose, hydroxy propyl methyl cellulose and mixtures thereof, as a thin film base;
(b) said poor water-soluble layer (b) consists of water-soluble cellulose derivative together with poor-water-soluble components, said components being selected from the group consisting of shellack, higher fatty acids, and mixtures thereof; and,
(c) said intermediate layer consists of water-soluble cellulose derivatives not containing a pharmaceutical agent and not-containing poor water-soluble components.

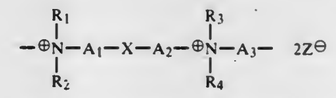
4,517,174

HAIR TREATMENT COMPOSITIONS BASED ON POLYCATIONIC POLYMERS

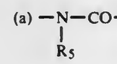
Bernard Jacquet, Antony; Gérard Lang, Epinay-sur-Seine; Alain Malaval, Aulnay-sous-Bois; Serge Forestier, Claye Souilly, and Do Le Trung, Drancy, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

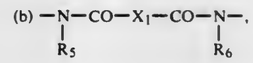
Division of Ser. No. 217,411, Dec. 17, 1980, Pat. No. 4,411,884. This application Sep. 21, 1983, Ser. No. 534,366
Claims priority, application France, Dec. 21, 1979, 79 31431
Int. Cl.³ A61K *7/06, 7/135*
U.S. Cl. 424—62 **13 Claims**

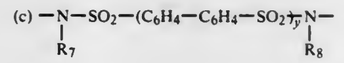
1. A hair dye composition comprising an aqueous solution of a quaternized polymer containing units of the formula

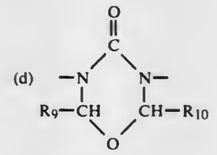


R_1, R_2, R_3 and R_4 each independently represent a hydrocarbon group, or at least one of the pairs R_1, R_2 and R_3, R_4 represents together with the nitrogen atom to which it is attached a heterocycle optionally containing an oxygen or sulfur heteroatom;
A_1 and A_2, each independently, represent linear or branched alkylene or arylene, substituted or not, containing up to 20 carbon atoms;
X represents a bivalent group of the formula

(a)  ,

(b)  ,

(c) 

(d) 

(e) —CO—NH—,
(f) —CO—O—,
(g) —O—CO—NH—,
(h) —CO—X_2—CO—,
(i) —CO—X'_2—CO—, or

(j) —O—CO—X_3—CO—O—,

wherein

y is equal to 0 or 1,

R_5, R_6, R_7, R_8, R_9 and R_{10} represent hydrogen or lower alkyl,

X_1 represents alkylene, alkylene including an —S—S— group, alkenylene, arylene, diaminoalkylene, diaminoarylene, dioxyalkylene, dioxyarylene or polyoxyalkylene, or X_1 represents a direct covalent bond,

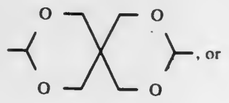
X_2 represents diaminoalkylene, dioxyalkylene or polyoxyalkylene bivalent group,

X'_2 represents dithioalkylene,

X_3 represents alkylene, cycloalkylene, arylene, diaminoalkylene, diaminocycloalkylene or diaminoarylene,

A_3 represents —B_1—Y—B_2, wherein B_1 and B_2 represent alkylene or arylene and Y has the same meaning as X above, or

Y represents



, or

A_3 represents —B_3—Y_1—B_4, wherein B_3 and B_4 represent arylene and Y_1 represents linear or branched alkylene, or linear or branched alkylene substituted by at least one —OH or =O group, or Y_1 represents a heteroatom selected from oxygen, sulfur or nitrogen, or

A_3 represents

(a) —E—O—$D)_{z'}$, O—E— or

(b) —E—O—G—O—E—, wherein

z' is a number ranging from 2 to 600,

E represents alkylene having 1-4 carbon atoms or —CH_2—CHOH—CH_2—,

D represents a bivalent hydrocarbon group containing 1-5 carbon atoms, and

G represents alkylene, cycloalkylene, arylene or aralkylene, or

when X is other than —CO—X_2—CO—, A_3 represents linear or branched alkylene or hydroxyalkylene, alkenylene or hydroxyalkenylene, cycloalkylene, or cycloalkenylene, containing up to 20 carbon atoms;

and $Z^{\ominus}$ represents a halide anion;

with the proviso that when X represents —N—H—CO—NH—, A_3 represents —E—(O—D)$_2$O—E— or —B_1—Y—B_2, wherein Y has the meaning given for X above except for the value —NH—CO—NH—, or A_3 represents —E—O—G—O—E— wherein E and G have the meanings given above with the proviso that E and G are not simultaneously alkylene;

and a hair dyeing amount of a hair dye.

4,517,175

HAIR COSMETICS

Hidetoshi Iwabuchi, Sakura, and Takeo Okumura, Funabashi, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 23, 1983, Ser. No. 497,410

Claims priority, application Japan, Jun. 7, 1982, 57-96343

Int. Cl.³ A61K *7/06, 37/00;* **A45D** *7/00*

U.S. Cl. 424—70 **10 Claims**

1. A hair cosmetic, comprising:

(a) at least one flavanol derivative selected from the group consisting of epicatechin, epigallocatechin, epicatechin gallate, epigallocatechin gallate, catechin, and gallocatechin; and

(b) at least one peptide compound selected from the group consisting of collagen, keratin and silk.

4,517,176

ANTICHOLINERGIC GLUCURONIDE COMPOUNDS AND ANTIPERSPIRANT USE THEREOF

Carl B. Felger, College Park, Md., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 13, 1983, Ser. No. 504,018

Int. Cl.³ A61K *7/32, 7/34, 7/38, 9/12*

U.S. Cl. 424—47 **6 Claims**

1. An antiperspirant composition comprising about 0.1% by weight up to 20% by weight of a material selected from the group consisting of the O-β-D-glucuronide of anticholinergic compounds having a primary alcohol and base acid addition salts thereof, incorporated into a dermatologically acceptable carrier lotions, ointments, aerosols, water solutions, creams, pulverulent mixtures and gelled sticks.

4,517,177

METHOD OF COMBATTING PLANT DISEASES

Peter G. Markham; Rodney Townsend, and Jeffrey W. Davies, all of Norwich, England, assignors to National Research Development Corporation, London, England

Filed Dec. 15, 1981, Ser. No. 330,859

Claims priority, application United Kingdom, Dec. 17, 1980, 8040438; Apr. 1, 1981, 8110117

Int. Cl.³ A61K *39/12, 37/00;* **A01N** *63/00*

U.S. Cl. 424—93 **8 Claims**

1. A method of combatting a yellows disease associated with a mycoplasma-like organism (MLO) in a plant, characterised by introducing into the phloem of the plant a virus capable of growing in the MLO; said virus being associated with *Spiroplasma citri* and being capable, when introduced into the plant phloem, of imparting to the plant resistance to the MLO-associated disease.

4,517,178

NOVEL ANTIBIOTIC 76-11, PROCESS FOR THE PRODUCTION THEREOF, ANTICOCCIDIOSIS AGENT AND DOMESTIC ANIMALS GROWTH ACCELERATOR COMPRISING THE SAME AS AN EFFECTIVE INGREDIENT

Kiyoshi Isono, Niiza; Goto Nakamura, Urawa, and Shigeo Fujita, Tokyo, all of Japan, assignors to Rikagaku Kenkyusho, Wako and Kaken Kagaku Kabushiki Kiasha, Tokyo, both of, Japan

Continuation-in-part of Ser. No. 353,641, Mar. 1, 1982, abandoned. This application Jun. 13, 1983, Ser. No. 502,533

Claims priority, application Japan, Aug. 4, 1981, 56-122210; Dec. 22, 1981, 56-207464

Int. Cl.³ A61K *35/74;* **C12P** *1/06, 1/04*

U.S. Cl. 424—122 **7 Claims**

1. The antibiotic 76-11 having the following physicochemical and biological properties:

(1) Elemental Analysis:

Free acid: C; 62.61%, H; 8.27%, N; 0%

Na salt: C; 60.57%, H; 8.04%, N; 0%,

The antibiotic containing no element other than carbon, hydrogen and oxygen;

(2) Molecular Weight:

843 (measured by a titration method)

873 (measured by FD mass spectrum method)

(3) Melting Point:

Free acid: 108°-112° C.

Na salt: 210°-212° C. (Decomposed)

(4) Specific Rotatory Power:

$[\alpha]_D^{25}$ + 36.6° (C=0.382, in chloroform solution)

(5) Ultraviolet Absorption Spectrum:

The maximum absorption bands;

In MeOH and HCl—MeOH:

-continued

λ_{max} = 217 mμ ($E^{1\%}_{1\ cm}$ 303)

262 mμ ($E^{1\%}_{1\ cm}$ 182)

301 mμ ($E^{1\%}_{1\ cm}$ 68)

In alkaline MeOH:

λ_{max} = 260 mμ ($E^{1\%}_{1\ cm}$ 87)

308 mμ ($E^{1\%}_{1\ cm}$ 50)

(6) Infrared Absorption Spectrum:

Main specific absorption bands in KBr plate:

Free acid: 3450, 2960, 1720, 1640, 1610, 1578, 1446, 1380, 1315, 1292, 1250, 1209, 1151, 1100, 1035, 975, 940 cm^{-1}

Na salt: 3390, 2960, 1718, 1640, 1609, 1578, 1450, 1380, 1340, 1316, 1250, 1197, 1152, 1108, 1092, 1060, 1040, 1002, 980, 930 cm^{-1}

(7) Solvent Solubility:

Easily soluble in benzene, chloroform, ethyl acetate and acetone, soluble in methanol, ethanol and dimethylformamide, and hardly soluble in water and hexane

(8) Coloring Reactions:

Positive to potassium permanganate reaction but negative to periodic acid-benzidine reaction

(9) Basicity, Acidity or Neutrality:

Acidic substance, pKa' 4.6 (in 66.7% dioxane)

(10) Color:

Colorless crystal

(11) Antimicrobial Activity:

Growth inhibition against Gram positive coccus, bacillus and acid-fast bacteria reveals in the concentration of 0.4 mcg/ml.

4,517,179

RAPID DISSOLVING, UNIFORM DRUG COMPOSITIONS AND THEIR PREPARATION

Yegnasawami Raghunathan, Fairport, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 490,056, Apr. 29, 1983, abandoned. This application Mar. 6, 1984, Ser. No. 586,605

Int. Cl.³ A61K *33/06, 45/08*

U.S. Cl. 514—249 **14 Claims**

1. A rapid dissolving pharmaceutical composition prepared from a dry mixture comprising from about 0.05 to 12.5 weight percent of a low solubility drug having a particle size distribution such that the major portion by weight of the particles are less than about 155 μm in diameter, from about 10 to 90 weight percent of microcrystalline cellulose, from about 10 to 90 weight percent of unmilled or coarse milled dibasic calcium phosphate, from about 0.1 to 3.0 percent of lubricant, and from about 1 to 20 weight percent of starch.

4,517,180

PEPTIDES, PROCESS FOR PREPARING THE SAME AND PSYCHODEPRESSANT COMPOSITIONS CONTAINING THE SAME

Noboru Yanaihara, Shizuoka; Nobuo Sugiura, Hashima, and Takashi Hiyama, Tokushima, all of Japan, assignors to Amano Pharmaceutical Co., Ltd, Aichi and Otsuka Pharmaceutical Co., Ltd., Tokyo, both of, Japan

Filed Oct. 27, 1983, Ser. No. 545,994

Claims priority, application Japan, Oct. 27, 1982, 57-189740; Jul. 20, 1983, 58-133065

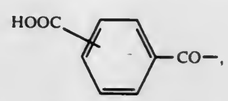
Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—16 **12 Claims**

1. A peptide represented by the formula

R—Tyr(SO_3H)—Met—Gly—Trp—Met—Asp—W—NH_2

wherein R is HOOC—A—CO—Asp— (wherein A is lower alkylene), pGlu—Asp—, HOOC—A—CO— (wherein A is lower alkylene) or



and W is Phe or N^{α}-lower alkyl-Phe, or a salt thereof.

4,517,181

MAMMALIAN PGRF

Nicholas C. Ling, San Diego; Frederick S. Esch, Oceanside; Peter Bohlen, Encinitas; Paul E. Brazeau, Jr., San Diego, and Roger C. L. Guillemin, La Jolla, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Sep. 15, 1982, Ser. No. 418,248

Int. Cl.³ A61K *37/02;* **C07C** *103/52*

U.S. Cl. 514—12 **20 Claims**

1. A synthetic peptide having the formula:

H—Tyr—Ala—Asp—Ala—Ile—Phe—Thr—Asn—Ser—Tyr—Arg—Lys—Val—Leu—Gly—Gln—Leu—Ser—Ala—Arg—Lys—Leu—Leu—Gln—Asp—Ile—Met—Ser—Arg—Gln—Gln—Gly—Glu—R_{34}—Asn—Gln—Glu—R_{38}—Gly—R_{40}—R_{41}—R

wherein R is OH or NH_2, R_{34} is Ser or Ala, R_{38} is Arg or Ser, R_{40} is Ala or Arg and R_{41} is Arg, Arg-Ala, Arg-Ala-Arg or Arg-Ala-Arg-Leu, or a fragment of such peptide which fragment is biologically active to effect the release of GH, or a nontoxic salt of such peptide or peptide fragment.

4,517,182

3-(HALOETHYL)-4-OXOPYRAZOLO-[5,1-d]-1,2,3,5-TETRAZINE-8-CARBOXAMIDE COMPOSITION

Chia-Chung Cheng, Leawood, Kans., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 497,587, May 24, 1983,. This application Apr. 3, 1984, Ser. No. 594,919

Int. Cl.³ A61K *31/395, 31/55;* **C07D** *257/08*

U.S. Cl. 514—413 **4 Claims**

1. A pharmaceutical composition for treating microbial infection in a dosage form comprising a microbe-inhibiting amount of a 3-(2 haloethyl)-4-oxopyrazolo[5,1-d]-1,2,3,5-tetrazine-8-carboxamide compound having the structural formula where Hal is a halogen, in combination with a pharmaceutically acceptable carrier.

4,517,183

N-SUBSTITUTED AZIRIDINE-2-CARBOXYLIC ACID DERIVATIVES

Elmar Bosies, Weinheim; Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Uwe Bicker, Lorsch, and Dietmar Boerner, Lampertheim-Hüttenfeld, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

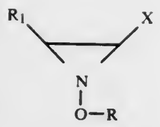
Division of Ser. No. 236,375, Feb. 20, 1981, Pat. No. 4,397,848, which is a continuation of Ser. No. 117,165, Jan. 3, 1980, abandoned. This application May 17, 1983, Ser. No. 495,548

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906603

Int. Cl.³ C07D *203/22, 401/12, 403/12;* **A61K** *31/395*

U.S. Cl. 514—183 **13 Claims**

1. A compound having the formula



wherein X is a carboxyl, a cyano, an alkoxycarbonyl or a carbamoyl radical optionally substituted by lower alkyl, cycloalkyl, aryl and/or acyl, R is a hydrogen atom, an aliphatic hydrocarbon radical of up to 8 carbon atoms which is substituted up to three times by halogen, alkoxy, hydroxyl, dialkylamino, dialkylaminoxy, cycloalkylamino, acylamino, acyl, nitro, alkylthio, alkylsulphinyl, alkylsulphonyl, cyano, carboxyl, alkoxycarbonyl and carbamoyl or by cycloalkyl or cycloalkenyl radicals optionally carrying up to three alkyl, alkoxy and alkoxycarbonyl radicals, or by norbornyl, adamantyl, tetrahydrofuryl, tetrahydropyranyl or thienyl, or by an aryl, hetaryl, aryloxy, arylthio, acyloxy, alkoxycarbonylamino and isothio-ureido radical, or R is a cycloalkyl or cycloalkenyl radical optionally substituted by up to three alkyl, alkoxy and oxo groups, or is norbornyl, adamantyl, tetrahydrofuryl, tetrahydropyranyl or thienyl, or is a hetaryl radical which can be substituted up to three times by halogen, alkoxy, alkyl, hydroxyl, alkoxycarbonyl, carbamoyl, dialkylamino, cycloalkylamino, acylamino, nitro, cyano, acyl, alkylthio, alkylsulphinyl, alkylsulphonyl, sulphamoyl, phenyl, trifluoromethyl, aryloxy, acyloxy or methylenedioxy radicals, and R_1 is a hydrogen atom or an alkyl or phenyl radical, with the proviso that when X is carbamoyl or an alkoxycarbonyl radical and R_1 is a hydrogen atom, R is not a benzyl radical, acyl as employed hereinabove being selected from the group consisting of formyl, acetyl, benzoyl, furoyl, tosyl, and methylsulphonyl, hetaryl as employed hereinabove being pyridyl, quinolyl, furyl, thienyl, benzofuryl, imidazolyl, pyrazolyl, thiazolyl, pyrimidinyl, pyridazinyl, s-triazolyl, 3-triazinyl or purinyl, alkyl as employed hereinabove unless otherwise specified containing up to 8 carbon atoms, cycloalkyl and cycloalkenyl as employed hereinabove containing 3 to 10 carbon atoms, and aryl being selected from the group consisting of phenyl, napthyl, anthracenyl, phenanthrenyl and fluorenyl; or a pharmacologically acceptable salt thereof.

9. An immunostimulating composition of matter consisting essentially of an immunostimulating effective amount of a compound or salt according to claim **1** in admixture with a pharmaceutically acceptable diluent.

4,517,184

BENZODIOXOLE DERIVATIVES

Ernst Habicht, Oberwil, and Paul Zbinden, Witterswil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 369,873, Apr. 19, 1982, Pat. No. 4,414,214. This application Aug. 8, 1983, Ser. No. 521,483

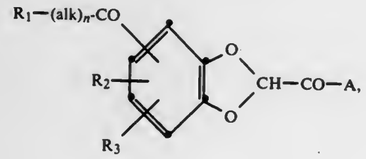
Claims priority, application Switzerland, Apr. 24, 1981, 2698/81

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.[3] **A61K** *31/455;* **C07D** *407/06*

U.S. Cl. 514—212 **5 Claims**

1. A benzodiozole derivative of the formula I



(I)

in which

R_1 represents phenyl, thienyl, pyridyl or furyl, each of which is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen, or dilower alkyl sulfamoyl,

alk represents an alkylene or alkylidene radical having a maximum of 5 carbon atoms,

n represents 0 or 1,

R_2 and R_3 each represents, independently of the other, hydrogen, lower alkyl, lower alkoxy or halogen, and

A represents the radical O-R_4, wherein R_4 represents hydrogen or lower alkyl, or A represents the radical



in which either R_5 and R_6 represents, independently of the other, hydrogen or lower alkyl, or R_5 and R_6 are bonded to one another and, together with the adjacent nitrogen atom, represent unsubstituted or lower alkyl-substituted tetra- to hexamethyleneimino or 4-morpholinyl, in the form of racemates or optical antipodes, an the salts of a compound of the formula I in which A represents OR_4 wherein R_4 represents hydrogen, with bases, and the acid addition salts of a compound of the formula I in which the radical R_1 has a basic character.

4. A pharmaceutical composition having diuretic activity comprising a therapeutically effective amount of a compound according to claim **1** or of a pharmaceutically acceptable salt of a compound according to claim **1** that is capable of salt formation, together with at least one pharmaceutical carrier.

4,517,185

2-PYRROLIN-3-CARBONITRILE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR ANTI-INFLAMMATORY AND ULCER PROTECTIVE ACTIVITY

Hubert Barth, Emmendingen; Edgar Fritschi, St. Peter; Volker Ganser, Freiburg; Johannes Hartenstein, Stegen-Wittental; Manfred Herrmann, St. Peter, and Gerhard Satzinger, Denzlingen, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

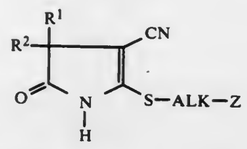
Filed Mar. 25, 1983, Ser. No. 478,762

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212591

Int. Cl.[3] **C07D** *401/04, 401/14;* **A61K** *31/44, 31/535*

U.S. Cl. 514—232 **4 Claims**

1. A compound of the general formula:



I

wherein R^1 and R^2 are the same or different and are phenyl, or pyridyl rings optionally substituted by up to two halogen atoms, C_{1-4} alkoxy radicals, C_{1-4} dialkylamino radicals or trifluoromethyl radicals, Alk is a straight-chained or branched C_{1-4} alkylene chain and Z is a hydrogen atom, with the proviso that when Alk is a straight-chained alkylene chain, Z can also be an amino radical of the general formula II:



II

in which R^3 and R^4 are the same or different and are hydrogen

atoms or methyl, ethyl, n-propyl or isopropyl radicals or, together with the nitrogen atom to which they are attached, can also form a pyrrolidino, piperidino, morpholino or piperazino radical.

3. A pharmaceutical composition, comprising a compound according to claim **1**, in admixture with a pharmaceutical carrier and/or adjuvant.

4. A method of treating inflammation and gastrointestinal ulcers which comprises administering orally or parenterally to a host suffering therefrom with an effective amount of a pharmaceutical composition according to claim **3**.

4,517,186

2-AMINO-3,5-DICYANO-6-(SUBSTITUTED)PYRAZINE ANTIMICROBIAL COMPOUNDS

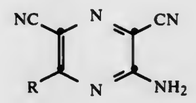
David B. R. Johnston, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1982, Ser. No. 430,919

Int. Cl.[3] **C07D** *241/18, 241/20;* **A01N** *43/60*

U.S. Cl. 514—255 **10 Claims**

1. A method of inhibiting the growth of bacteria and fungi comprising contacting said bacteria and fungi with a bactericidally and fungicidally effective amount of a compound of the formula:



(I.)

wherein:

R is mono- or di-, or substituted mono- or di-, loweralkylamino, wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; thiocyano; mercapto; straight or branched chain C^{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; loweralkylsulfoxy; or loweralkylsulfonyl.

4,517,187

1,3,4,6,7-11B-HEXAHYDRO-7-PHENYL-2H-PYRAZINO[2,1-A]ISOQUINOLINES METHODS OF PREPARATION, AND USE AS ANTIDEPRESSANTS

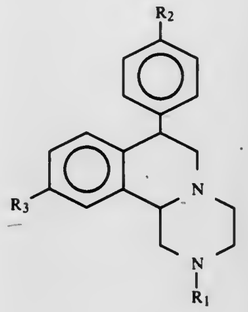
Ronald C. Griffith, Pittsford, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 18, 1982, Ser. No. 435,132

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/495*

U.S. Cl. 514—250 **18 Claims**

1. The compound



wherein R_1 is hydrogen, C_1-C_7 alkyl, C_3-C_7 cycloalkyl, C_1-C_7 alkanoyl, C_7-C_8 phenylalkyl, phenylacetyl, phenyl or benzoyl, and R_2 and R_3 are the same or independently hydrogen, halogen, hydroxy, C_1-C_7 alkanoyloxy, nitro, amino C_1-C_7 aminoalkyl, trifluoromethyl, C_1-C_7 alkyl, C_1-C_7 alkoxy, C_1-C_7 alkanoyl, cyano, C_1-C_7 alkylamino and acid addition salts thereof.

18. A process for relieving depression in warm-blooded animals requiring such relief which comprises providing to said animals an effective dosage of the compound of claim **1** in association with a compatible pharmaceutical carrier.

4,517,188

1-PYRIMIDINYLOXY-3-HETARYL-ALKYLAMINO-2-PROPANOLS

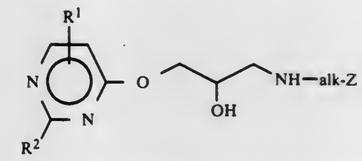
John E. Lawson, Evansville, Ind.; William L. Matier, Libertyville, Ill., and Herbert R. Roth, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed May 9, 1983, Ser. No. 493,124

Int. Cl.[3] **C07D** *239/47;* **A61K** *31/505*

U.S. Cl. 514—394 **36 Claims**

1. A pyrimidine compound of Formula IA

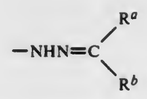


(IA)

or a pharmaceutically acceptable salt thereof wherein

R^1 is hydrogen, C_{1-6} alkyl, amino, C_{1-4} alkylcarbonylamino, cyano, or halogen;

R^2 is $-NHNH_2$ or

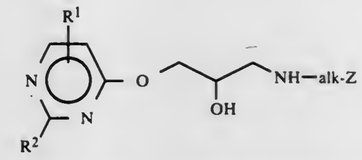


with R^a and R^b being the same or different and representing C_{1-3} alkyl or phenyl;

alk is C_{1-6} alkylene, either straight chain or branched; and

Z is selected from the group consisting of hydrogen, phenyl, indole, thiophene, benzothiophene, benzofuran, and benzimidazole.

4. A pyrimidine compound of Formula IB



(IB)

or a pharmaceutically acceptable salt thereof wherein

R^1 is hydrogen, C_{1-6} alkyl, amino, C_{1-4} alkylcarbonylamino, cyano, or halogen;

R^2 is hydrogen, amino, C_{1-4} alkylcarbonylamino, halogen, or phenyl;

alk is C_{1-6} alkylene, either straight chain or branched; and

Z is selected from the group consisting of indole, thiophene, benzothiphene, benzofuran, and benzimidazole.

4,517,189

2,6,7,8-SUBSTITUTED QUINAZOLINES, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF

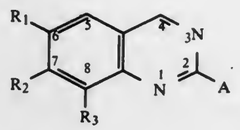
Masayuki Ishikawa, Tokyo; Hiroshi Azuma, Asaka; Akiko Sugimoto, Hino; Noriko Takahashi, Tokyo, and Yoshimi Takashima, Akishima, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Aug. 2, 1983, Ser. No. 519,235

Int. Cl.³ A61K *31/505;* **C79D** *239/74*

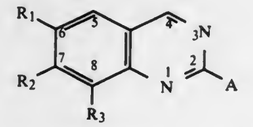
U.S. Cl. 514—259 **10 Claims**

1. A 2,6,7,8-substituted quinazoline represented by the following formula



wherein R_1 and R_3 each represent a lower alkyl group, R_2 represents a lower alkoxy-carbonyl group, and A represents a lower alkyl group, or a phenyl or benzyl group which is unsubstituted or substituted by a substituent selected from the class consisting of halogen atoms, a trifluoromethyl group and lower alkyl groups, or its pharmaceutically acceptable acid addition salt.

6. A pharmaceutical composition composed of a pharmaceutically effective amount of a 2,6,7,8-substituted quinazoline represented by the following formula



wherein R_1 and R_3 each represents a lower alkyl group, R_2 represents a lower alkoxy-carbonyl group, and A represents a lower alkyl group, or a phenyl or benzyl group which is unsubstituted or substituted by a substituent selected from the class consisting of halogen atoms, a trifluoromethyl group and lower alkyl groups, or its pharmaceutically acceptable acid addition salt, and a pharmaceutically acceptable diluent or carrier.

4,517,190

5-ALKYL-1,6-NAPHTHYRIDIN-2(1H)-ONES AND CARDIOTONIC USE THEREOF

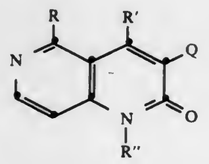
George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 404,454, Aug. 2, 1982, Pat. No. 4,415,580. This application Jun. 9, 1983, Ser. No. 502,858

Int. Cl.³ C07D *471/04;* **A61K** *31/44*

U.S. Cl. 514—300 **19 Claims**

1. 1-R″-3-Q-4-R′-5-R-1,6-naphthyridin-2(1H)-one having the formula



or a pharmaceutically acceptable acid-addition or cationic salt thereof, where R is lower-alkyl, R′ is hydrogen or methyl, R″ is hydrogen or lower-alkyl, and Q is hydrogen, hydroxy or amino.

14. A method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonically effective amount of the 1-R″-3-Q-4-R′-5-R-1,6-naphthyridin-2(1H)-one of claim **1** or 1,6-naphthyridin-2(1H)-one or pharmaceutically acceptable acid-addition or cationic salt thereof, where R, R′ and R″ have the meanings given in claim **1** and Q is hydrogen, hydroxy or amino.

4,517,191

1-AMINO-1,8-NAPHTHYRIDINE COMPOUNDS USEFUL AS BACTERICIDES

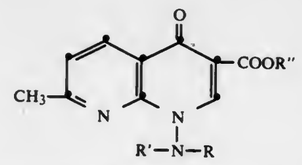
Mark P. Wentland, North Greenbush, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,195

Int. Cl.³ A61K *31/44;* **C07D** *471/04*

U.S. Cl. 514—300 **12 Claims**

1. A compound having the formula



wherein R is hydrogen or formyl; and R′ and R″ are hydrogen or lower-alkyl; or an alkali metal or pharmaceutically acceptable amine salt of a compound where R″ is hydrogen.

2. A compound according to claim **1** wherein R and R″ are hydrogen and R′ is lower-alkyl.

11. A composition for combatting bacteria, which comprises an antibacterially effective amount of a compound according to claim **2** together with one or more pharmaceutically acceptable excipients.

4,517,192

6-ALKYL-5-[4-(ALKYLSULFINYL OR ALKYLSULFONYL)PHENYL]-2(1H)-PYRIDINONES AND THEIR USE AS CARDIATONICS

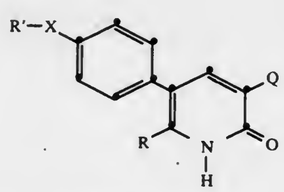
George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,661

Int. Cl.³ C07D *211/42, 211/86;* **A61K** *31/44*

U.S. Cl. 514—345 **11 Claims**

1. 3-Q-5-[4-(R′-X)phenyl]-6-R-2(1H)-pyridinone having the formula



where R and R′ are each methyl or ethyl, X is sulfinyl when Q is hydrogen or cyano, or X is sulfonyl when Q is cyano.

4,517,193

PESTICIDAL BENZOYLUREA COMPOUNDS

Martin Anderson, Whitstable, England, assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 7, 1983, Ser. No. 529,909

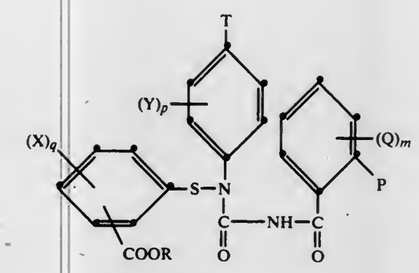
Claims priority, application United Kingdom, Sep. 16, 1982, 8226386

Int. Cl.³ C07C *145/04;* **A01N** *47/34*

U.S. Cl. 514—471 **4 Claims**

1. A benzoylurea compound of formula:

(I)



in which each of P and Q independently represents a halogen atom or an alkyl group; m represents 0, 1 or 2; R represents an alkyl, alkenyl or alkynyl group which may be substituted by one or more halogen atoms or one of alkoxy, haloalkoxy, hydroxy, carboxy, alkoxycarbonyl, cycloalkyl, tetrahydrofuryl, a group $—O—CH_2CH_2O)_n$ alkyl wherein n=1, 2, 3 or 4, or phenyl which may be substituted by halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, alkenyl, haloalkenyl, nitro or cyano; a cycloalkyl group which may be substituted as indicated above, or by alkyl or haloalkyl; or a phenyl group which may be substituted as indicated above; a hydrogen atom; one equivalent of an alkali metal or alkaline earth metal; or an ammonium or C_1–C_6 alkyl-substituted ammonium group; each X independently represents a halogen atom, a cyano, nitro or carboxy group, or an alkyl, alkoxy, alkylthio, cycloalkyl, cycloalkyloxy, cycloalkylthio, alkenyl, alkenylthio, alkylcarbonyl, alkoxycarbonyl, alkylsulphonyl, alkynyl, phenyl, phenoxy, phenylthio or amino group which groups may be substituted as described for the moiety R, above; q=0, 1, 2, 3 or 4; T represents a halogen atom, an alkyl, haloalkyl, alkoxy, haloalkoxy, alkenyloxy or haloalkenyloxy group, or a phenoxy or pyridyloxy group which group may be substituted by one or more of halogen atoms, and nitro, alkyl, haloalkyl and cyano groups; each Y independently represents a halogen atom or a nitro, cyano, alkyl or haloalkyl group; and p=0, 1, 2, 3 or 4.

4. An insecticidal and miticidal composition that comprises an effective amount of a compound of claim **1** together with an inert carrier.

4,517,194

AZOLYLMANDELIC ACID DERIVATIVES AND USE THEREOF FOR CONTROLLING MICROORGANISMS

Walter Kunz, Oberwil, Switzerland, and Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

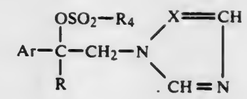
Filed Jun. 13, 1983, Ser. No. 503,966

Claims priority, application Switzerland, Jun. 25, 1982, 3922/82

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/60, 249/06*

U.S. Cl. 514—184 **25 Claims**

1. A compound selected from the group consisting of (i) a mandelic acid derivative of the formula

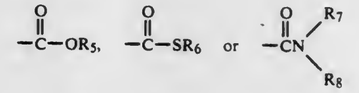


wherein

X is N or CH;

Ar is an aryl group selected from the group consisting of phenyl, biphenylyl and naphthyl which aryl group is unsubstituted or substituted with one, two or three like or different members selected from the group consisting of nitro, halo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, and haloalkoxy of 1 to 3 carbon atoms;

R is group of the formulae



in which

R_5 is alkyl of 1 to 4 carbon atom, phenyl or benzyl, said phenyl and benzyl groups being unsubstituted or substituted with nitro, halo or methyl,

R_6 is alkyl of 1 to 3 carbon atoms; and

each of R_7 and R_8 independently of the other is hydrogen, alkyl of 1 to 3 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, phenyl or benzyl; and

R_4 is alkyl of 1 to 6 carbon atoms, unsubstituted phenyl, unsubstituted benzyl, phenyl or benzyl substituted with halo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, haloalkoxy of 1 to 4 carbon atoms or cyano, or



in which

R_9 is alkyl of 1 to 6 carbon atoms and

R_{10} is hydrogen, alkyl of 1 to 4 carbon atoms, haloalkylsulfenyl, $—SC_6H_5$ or $—SC(CH_3)_2CN$,

and (ii) the acid addition salts and metal complexes thereof.

24. A method of combatting fungal and bacterial attack on cultivated plants which comprises applying to the plants or their locus an effective amount of a compound according to claim **1**.

4,517,195

PYRROLO[1,2-b][1,2,5]TRIAZEPINES AND PHARMACEUTICAL COMPOSITIONS THEREOF

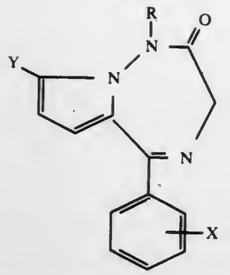
Richard C. Effland; Joseph T. Klein, both of Bridgewater, and R. Richard L. Hamer, Budd Lake, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jul. 2, 1984, Ser. No. 627,329

Int. Cl.³ A61K *31/55;* **C07D** *255/02, 255/04*

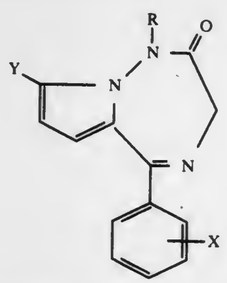
U.S. Cl. 514—413 **32 Claims**

1. A compound of the formula



where X is hydrogen, halogen, loweralkyl, CF_3 or NO_2; Y is hydrogen, halogen or loweralkyl; and R is hydrogen, loweralkyl, loweralkylaminoloweralkyl or diloweralkylaminoloweralkyl, or a pharmaceutically acceptable acid addition salt thereof.

32. An anxiolytic composition comprising an effective amount of anxiety alleviating amount of a compound of the formula



where X is hydrogen, halogen, loweralkyl, CF_3 or NO_2; Y is hydrogen, halogen or loweralkyl; and R is hydrogen, loweralkyl, loweralkylaminoloweralkyl, or diloweralkylaminoloweralkyl, or a pharmaceutically acceptable acid addition salt thereof.

4,517,196

TRICYCLIC THIAZOLYLOXAMIC ACIDS AND THEIR DERIVATIVES, THEIR PREPARATION, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Rainer Schlecker, Bissersheim; Ludwig Friedrich, Bruehl, and Dieter Lenke, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

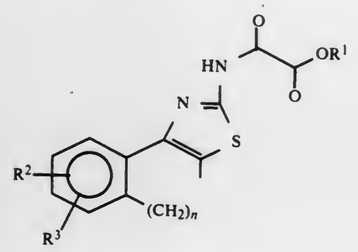
Filed Aug. 26, 1982, Ser. No. 411,612

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135250

Int. Cl.³ C07D *277/60;* **A61K** *31/425*

U.S. Cl. 514—371 **5 Claims**

1. A compound of the formula I



I

where n is an integer from 1 to 6, and one hydrogen atom in the $-(CH_2)_n-$ group may be replaced by lower alkyl of 1 to 6 carbon atoms or by phenyl, or two geminal hydrogen atoms may be replaced by oxygen, R^1 is hydrogen or a physiologically tolerated metal or amine cation, or is alkyl of 1 to 6 carbon atoms, R^2 and R^3 are identical or different and are each hydrogen, fluorine, chlorine, bromine, iodine, nitro or amino, or alkylamino, dialkylamino, acetylamino, alkoxy, alkylthio, alkylsulfenyl or alkylsulfonyl where each alkyl is of 1 to 6 carbon atoms, or are each hydroxyl, acetyl, cyano or carboxyl, or alkyl of 1 to 5 carbon atoms.

4,517,197

-N-SUBSTITUTED PHENYL-5-METHOXYMETHYL-2-OXAZOLIDINONES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Jean-Francois R. Ancher, Rueil Malmaison; Guy R. Bourgery, Colombes; Philippe L. Dostert; Colette A. Douzon, both of Paris; Patrick G. Guerret, Rueil Malmaison; Alain P. Lacour, La Varenne, and Michel Langlois, Buc, all of France, assignors to Delalande S.A., Courbevoie, France

Continuation of Ser. No. 265,501, May 20, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 518,320

Claims priority, application France, Jun. 4, 1980, 80 12423

Int. Cl.³ C07D *263/24;* **A61K** *631/42*

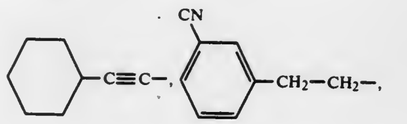
U.S. Cl. 514—376 **9 Claims**

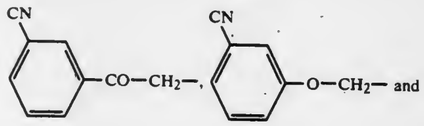
1. A compound having the formula



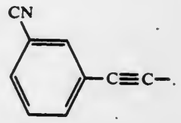
in which R is selected from the group consisting of

$CH_3-CO-(CH_2)_2-O-$, $CN-(CH_2)_5-$,





and



4,517,198

DIURETIC IMIDAZOLE DERIVATIVES

Kauko O. A. Kurkela, and Arto J. Karjalainen, both of Oulu, Finland, assignors to Farmos Group Ltd., Turku, Finland

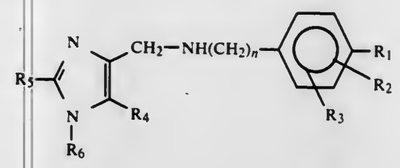
Filed Dec. 3, 1982, Ser. No. 446,717

Claims priority, application United Kingdom, Dec. 4, 1981, 8136646

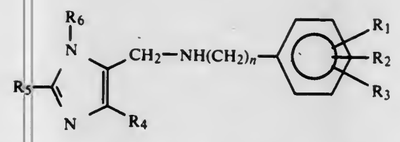
Int. Cl.³ A61K *31/415;* **C07D** *233/64*

U.S. Cl. 514—400 **18 Claims**

1. A method of producing in a subject a diuretic, antithrombotic or antihypertensive effect which comprises administering to such subject an effective amount of an imidazole of the formula:



or



wherein each of R_1, R_2 and R_3, which can be the same or different, is hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro; R_4 is hydrogen or alkyl of 1 to 7 carbon atoms; R_5 is hydrogen or a straight or branched alkyl group of 1 to 5 carbon atoms or a phenyl group; R_6 is hydrogen or an alkyl group of 1 to 7 carbon atoms or a benzyl group; and n is 0 or 1; provided that when n is 0 at least two of R_1, R_2 and R_3 must be other than hydrogen; and further provided that R_1, R_2 and R_3 cannot all be chloro and that two of R_1, R_2 and R_3 cannot be chloro when the third is hydrogen; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

11. A method of producing in a subject a diuretic, antithrombotic or antihypertensive effect which comprises administering to such subject an effective amount of an imidazole as claimed in claim **1** or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,517,199

METHOD FOR LOWERING INTRAOCULAR PRESSURE USING PHENYLIMINO-IMIDAZOLES

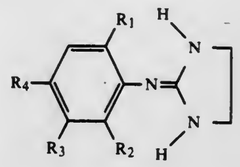
Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 323,369, Nov. 20, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,791

Int. Cl.³ A61K *31/415*

U.S. Cl. 514—392 **14 Claims**

1. A method for lowering intraocular pressure comprising topically applying to the eye an effective amount for lowering such intraocular pressure of a 2-(trisubstituted phenylimino)-imidazoline, or a pharmaceutically acceptable salt thereof, having the formula

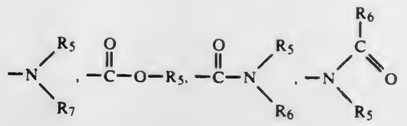


where R_1, R_2, R_3 and R_4 are defined in accordance with either I, II, or III as follows:

I. $R_1=R_2=$methyl, ethyl, trifluoromethyl, chloro or bromo.

$R_1 \neq R_2$ and each=methyl, ethyl, trifluoromethyl, fluoro, chloro and bromo,

one of R_3 and R_4 is H and the other is selected from



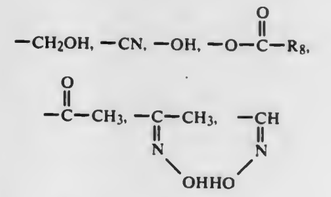
(a)

$R_5 \neq R_6=$H or lower alkyl,

$R_5=R_6$ and each=H, lower alkyl,

$R_7=$H, lower alkyl 2-hydroxyethyl, 2-hydroxypropyl or 3-hydroxypropyl,

the sum of the carbon atoms in R_5 and R_6 or R_5 and R_7 being 4 or less, or



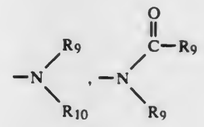
(b)

$R_8=$lower alkyl;

II. $R_1=$methyl, ethyl, trifluoromethyl, chloro or bromo,

$R_2=$H,

$R_3=$is selected from



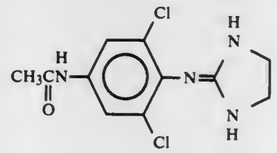
$R_4=$methyl, chloro or bromo

$R_9=$H or lower alkyl,

$R_{10}=$H, lower alkyl, 2-hydroxymethyl, 2-hydroxypropyl or 3-hydroxypropyl,

the sum of the carbon atoms in R_9 and R_{10} being 4 or less;

III. In no event shall said 2-(trisubstituted phenylimino)-imidazoline have the formula:



4,517,200

METHOD FOR TREATING ALLERGIC REACTIONS WITH FORSKOLIN

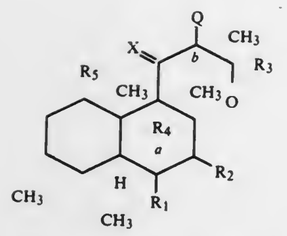
William Kreutner, West Caldwell; Michael J. Green, Skillman; Ho-Jane Shue, Pine Brook, and Anil K. Saksena, Upper Montclair, all of N.J., assignors to Schering-Plough Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 453,436, Dec. 27, 1982, abandoned. This application Oct. 17, 1983, Ser. No. 542,825

Int. Cl.³ A61K *31/35;* **C07D** *311/02*

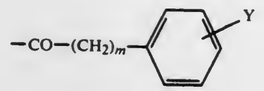
U.S. Cl. 514—455 **10 Claims**

1. A compound having structural formula I:



I

wherein R_1 is hydrogen and R_2 is =O, H, or OR_{11} wherein R_{11} is H, alkanoyl having from 1 to 6 carbon atoms or

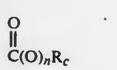


$-CO-(CH_2)_m$

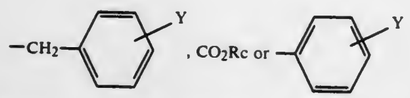
wherein m is 0, 1, 2 or 3 and Y is hydrogen, halogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, alkylthio having from 1 to 6 carbon atoms, OH, CF_3, NO_2, CN, phenyl, benzyl, phenoxy or NR_aR_b wherein R_a and R_b are the same or different and are H or alkyl having from 1 to 6 carbon atoms; or R_2 may be SO_3OR' or OR' wherein R' is alkyl having from 1 to 6 carbon atoms; R_3 is hydrogen; alkyl having from 1 to 10 carbon atoms; CH_2OH; CHO; CO_2R_{15} wherein R_{15} is H or alkyl having from 1 to 6 carbon atoms;

$-CH=CR_{16}R_{17}$ wherein R_{16} is H, halogen, alkyl having from 1 to 6 carbon atoms,

CN,



wherein n is 0 or 1 and R_c is H, alkyl having from 1 to 6 carbon atoms, phenyl or benzyl, $CHOHR_c$ or $C(OR_d)_2R_c$ wherein R_c is defined above and R_d is alkyl having from 1 to 6 carbon atoms, R_{17} is H, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, benzyl, phenyl or halogen; $-C\equiv C-R_{18}$ wherein R_{18} is H, alkyl having from 1 to 12 carbon atoms, alkoxy having from 1 to 6 carbon atoms,

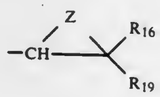


wherein Y and R_c are defined above;

$-CHOH-C\equiv C-R_{19}$ wherein R_{19} is H, alkyl of from 1 to 6 carbon atoms, phenyl or benzyl;

$-CH=C=CHR_{19}$ wherein R_{19} is defined above;

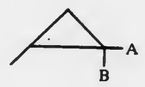
$=CH=N-OR_{19}$ wherein R_{19} is defined above;



wherein

Z is O or S, and

R_{16} and R_{19} are defined above; $-CH(ZR_{20})_2$ wherein Z is defined above and R_{20} is alkyl having from 1 to 6 carbon atoms, phenyl, benzyl or the two groups R_{20} may together form $-(CH_2)p-$ wherein p is 2 or 3;



wherein

A and B are H, halogen, alkyl having from 1 to 6 carbon atoms, phenyl, benzyl or

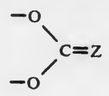


wherein n and R_c are defined above; $-CH=N-NDE$ wherein D and E are H, alkyl having from 1 to 6 carbon atoms, benzyl; phenyl, COG, SO_2G or CO_2G wherein G is alkyl having from 1 to 6 carbon atoms, benzyl or phenyl;

R_4 is H or OH;

R_5 is OH; or when

R_4 and R_5 are taken together they may form



wherein Z is defined above;

a is a 5,6 bond;

b is an optional bond, when present Q and R_3 are missing;

X is O or H/OR'' wherein R'' is H, alkanoyl having from 1 to 6 carbon atoms or trifluoroacetyl; and

Q is hydrogen, chlorine or bromine.

6. A pharmaceutical composition useful for treating allergic reactions in a mammal which comprises an antiallergic effective amount of a compound defined in claim **1**, in combination with a pharmaceutically acceptable carrier.

4,517,201

SYNERGISTIC COMPOSITIONS AND METHODS OF COMBATING INSECTS EMPLOYING AMITRAZ AND CYPERMETHRIN

John C. Kerry, Edwalton, and David M. Weighton, Saffron Walden, both of England, assignors to FBC Limited, Cambridge, England

Continuation-in-part of Ser. No. 305,211, Sep. 24, 1981, abandoned, which is a continuation-in-part of Ser. No. 172,392, Jul. 25, 1980, abandoned, which is a continuation of Ser. No. 920,155, Jun. 29, 1978, abandoned. This application Jul. 22, 1983, Ser. No. 516,455

Claims priority, application United Kingdom, Jul. 1, 1977, 27536/77

Int. Cl.[3] **A01N** *33/02, 37/34*

U.S. Cl. 514—521 **7 Claims**

1. An insecticidal composition comprising amitraz and the synthetic pyrethroid cypermethrin in a ratio of from 100:1 to 4:1 by weight.

4,517,202

PROSTAGLANDIN ANALOGUES

Clive W. Bird, Upminster; Helene I. Butler, Blandford; Michael P. L. Caton; Edward C. J. Coffee, both of Upminster; Geoffrey Darnbrough, Maldon, and Terance W. Hart, Brentwood, all of England, assignors to May & Baker Limited, Essex, England

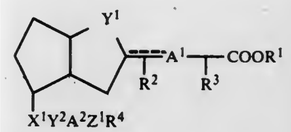
Filed May 26, 1983, Ser. No. 498,315

Claims priority, application United Kingdom, May 28, 1982, 8215742

Int. Cl.[3] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 514—530 **21 Claims**

1. A prostaglandin analogue of the formula:



II

(wherein R^1 represents a hydrogen atom or a straight- or branched-chain alkyl group of 1 to 6 carbon atoms, Y^1 represents a carbonyl or hydroxymethylene group, ═══ represents a single or double bond, A^1 represents an alkylene linkage containing 2 or 3 carbon atoms and optionally bearing a methyl or ethyl substituent, R^2 represents a hydrogen atom or a methyl or ethyl group and R^3 represents a hydrogen atom or else R^2 and R^3 form an alkylene linkage containing 2 or 3 carbon atoms, optionally bearing a methyl or ethyl substituent, such that the symbols A^1, R^2 and R^3, together with the carbon atoms through which they are connected, form a cycloalkyl ring of 6, 7 or 8 carbon atoms, optionally bearing one or two methyl or ethyl substituents, X^1 represents an ethylene or trans-vinylene group, Y^2 represents a carbonyl or hydroxymethylene group, and either (i) A^2 represents a straight- or branched-alkylene chain containing from 1 to 3 carbon atoms, Z^1 represents a direct bond or an oxygen or sulphur atom, and R^4 represents a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms, optionally substituted by a cycloalkyl group containing from 3 to 8 carbon atoms, or represents a cycloalkyl group containing from 3 to 8 carbon atoms, or represents a phenyl group optionally substituted by a halogen atom or by a trifluoromethyl group or by a straight- or branched-chain alkyl or alkoxy group containing from 1 to 6 carbon atoms, or (ii) A^2 and Z^1 both represent direct bonds and R^4 represents a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms, optionally substituted by a cycloalkyl group containing from 3 to 8 carbon atoms, or represents a cycloalkyl group containing from 3 to 8 carbon atoms) or a cyclodextrin clathrate thereof or; when R^1 represents a hydrogen atom, a non-toxic salt thereof.

4,517,203

PROCESS FOR MAKING A FRIED FRUIT FILLING COMPOSITION-CONTAINING FOOD PRODUCT

Lawrence W. Levine, Teaneck, N.H., and Carolyn C. Mullins, Seattle, Wash., assignors to Carlin Foods Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 268,624, May 29, 1981, abandoned. This application May 6, 1983, Ser. No. 492,911

Int. Cl.[3] **A21D** *13/08*

U.S. Cl. 426—19 **13 Claims**

1. A process for making a fried fruit filled, yeast dough product which comprises: forming a fruit filled, yeast dough product by enveloping a fruit filling in an envelope of a yeast dough which is capable of being cooked by frying, said fruit filling being impervious to contact with a frying medium under cooking conditions and having a soluble solids content of about 47% to about 51% by weight and about 12.2 to about 15.0% dehydrated fruit, at least a portion of which is evaporated apple, said yeast dough envelope having one or more perforations exposing said fruit filling, and immersing at least a portion of the fruit filling, yeast dough product in a frying medium under frying conditions for a time sufficient to allow the frying medium to fry said yeast dough envelope.

4,517,204

REDUCED CALORIE PUFFED SNACK FOOD PRODUCTS

George P. Mottur, Danville, Pa., and Richard W. Glass, College Station, Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Feb. 27, 1984, Ser. No. 583,971

Int. Cl.[3] **A23L** *1/18;* **A21D** *13/08*

U.S. Cl. 426—94 **23 Claims**

1. A process for producing a comestible reduced calorie puffed snack product comprising:

(a) introducing into a cooking extruder a mixture of a puff extrudable edible meal or flour, microcrystalline cellulose coated with from about 9% to about 15% by weight hydrophilic polysaccharide, and sufficient moisture to form a puff extrudable batter, wherein the ratio of edible meal or flour to hydrophilic polysaccharide coated microcrystalline cellulose is from about 9:1 to about 3:1 by weight;

(b) cooking said mixture in said cooking extruder under puff extrusion cooking conditions;

(c) extruding said mixture from said cooking extruder to form puffed collets; and

(d) drying said collets to reduce the moisture content of said collets to less than about 2% by weight.

4,517,205

CO-DEPOSITED TWO-COMPONENT HARD CANDY

Deborah G. Aldrich, Stamford, Conn., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jan. 3, 1983, Ser. No. 455,162

Int. Cl.[3] **A23G** *3/00, 3/20, 9/24*

U.S. Cl. 426—103 **18 Claims**

1. A codeposited two-component hard candy comprising:

50 to 95% by weight of a clear hard candy component shell portion and consisting essentially of a sweetener selected from the group consisting of sucrose, fructose, corn syrup, invert sugar and intensive sweeteners and combinations thereof, and, optionally, a flavoring ingredient and a coloring agent or dye, and

5 to 50% by weight of a fondant, liquid or viscous core portion completely encased in said shell portion, said core portion having a moisture content of no more than 20% by weight and comprising ingredients selected from the group consisting of glycerin, honey, sucrose, corn syrup, sugar alcohols, fructose, a heat stable active ingredient, flavoring and milk based products,

said core portion having color and light transmission characteristics different from those of said shell portion, and

wherein the difference between the specific gravity of said shell portion and the specific gravity of said core portion composition is not more than about 0.20 and the core portion comprises a core component with an overall boiling point which is not less than the boiling point of the hard candy component of the shell portion.

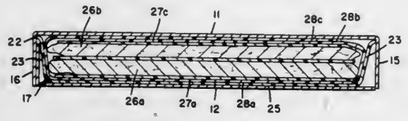
4,517,206
FOOD PACKAGE AND STORAGE UNIT

Gordon D. Murphy, Mahwah, N.J., and Ernest C. Bishop, St. John's, Canada, assignors to Fishery Products, Inc., Danvers, Mass.

Continuation of Ser. No. 378,219, May 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 244,879, Mar. 18, 1981, abandoned, which is a continuation of Ser. No. 76,939, Sep. 19, 1979, abandoned. This application Nov. 7, 1983, Ser. No. 549,639

Int. Cl.³ B65D *85/62, 57/00*

U.S. Cl. 426—115 **1 Claim**



1. A frozen fish package and storage unit comprising:

(a) a hollow rectangular carton having a top wall, a bottom wall, two side walls, and two end walls, said carton forming an outer enclosure;

(b) a rectangular tray having a bottom wall, two relatively long side walls, two relatively short end walls, and an open top, said tray being correspondingly sized and shaped to slide into and out of said carton, said tray functioning as a frozen fish storage container separate and apart from said carton, said tray having a continuous rim formed at and running around the upper edges of said tray side walls and tray end walls, said tray having a plurality of spaced-apart flutes formed in said tray side walls and tray end walls, said rim and said flutes causing said tray to be substantially self-supporting;

(c) a first sheet of elongated, continuous, flexible, moisture-impervious, non-stick material having leading and trailing ends and two continuous surfaces, said first sheet trailing end being positioned adjacent one of said tray side walls, said first sheet extending across the width of said tray to a position adjacent the other of said side walls, one surface of said two continuous surfaces of said first sheet being above, downwardly facing, and parallel to the upper surface of said tray bottom wall, a first elongated single serving of frozen fish extending across the width of said first sheet in contact with the other upwardly facing surface of said two continuous surfaces of said first sheet, said first sheet being folded upwardly around and back over said first fish serving, said first sheet extending back across the width of said tray to a position adjacent said one of said tray side walls, said first sheet being wider than the length of said first fish serving thereby forming a food pocket containing said first fish serving, a second elongated single serving of frozen fish extending across the width of said first sheet in contact with said one surface of said first sheet, said second fish serving being spaced vertically apart and separated from said first fish serving by said interleaved first sheet, said first sheet being folded upwardly around and back over said second fish serving, said second sheet extending back across the width of said tray to a position adjacent said other of said tray side walls, said first sheet forming a food pocket containing said second fish serving, said first sheet being successively folded upwardly around and back over one or more additional similar elongated single servings of frozen fish thereby forming one or more additional vertically spaced-apart, open-ended, separated food pockets, each pocket containing a single fish serving, said pocket open ends facing said tray end walls, the longitudinal axes of said pockets being substantially perpendicular to said tray end walls, said first sheet leading end being positioned adjacent one of said tray side walls; and

(d) a second sheet of elongated, continuous, flexible, moisture-impervious, non-stick material, said second sheet extending lengthwise of said tray and perpendicular to said first sheet, said second sheet being entirely wrapped around and covering the open pocket ends of said folded first sheet, said second sheet forming a barrier against the entry of air and moisture into the open ends of said food pockets;

(e) said food pockets each containing a single serving of frozen fish in a separate substantially air barrier environment enhancing food freshness and ease of sequential removal of single fish servings from said tray.

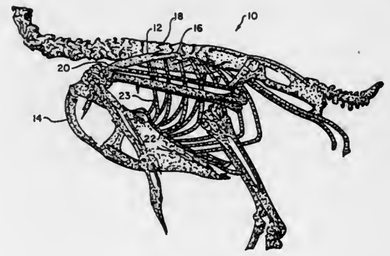
4,517,207
METHOD FOR PROCESSING AN AVIAN CARCASS

Jack L. Kress, Wilton, Iowa, assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Feb. 22, 1983, Ser. No. 468,535

Int. Cl.³ A22C *21/00;* **A23B** *4/00;* **A23L** *1/315*

U.S. Cl. 426—315 **19 Claims**



1. A method for processing an advancing avian carcass which comprises:

(a) removing warm muscle parts from an advancing avian carcass prior to rigor mortis on a continuous line wherein the avian carcass advances at a rate of at least ten carcasses per minute per line;

(b) eviscerating the advancing avian carcass by severing both of its scapula or their articulation, and separating the coracoids associated with the severed scapulas or their articulation from the vertebral column so that the entrails are exposed for inspection and wherein the evisceration occurs after warm parts have been removed from the advancing avian carcass; and

(c) initiating preservation of the removed warm muscle parts within two hours of removal.

4,517,208
COMPOSITION FOR TREATING FISH TO INCREASE FISH YIELD

David L. Crawford, Astoria, Oreg., assignor to Benckiser-Knapsack GmbH, Ladenburg/Neckar, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 364,715, Apr. 2, 1982, Pat. No. 4,431,679. This application Jan. 13, 1984, Ser. No. 570,312

The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.

Int. Cl.³ A23B *4/02, 4/10*

U.S. Cl. 426—332 **20 Claims**

1. A fish treatment composition which comprises:

(a) a phosphate mixture containing at least two of the following groups:

(i) up to about 95% of sodium pyrophosphate (-diphosphate), potassium pyrophosphate (-diphosphate), or a mixture thereof;

(ii) from about 14% to about 90% of sodium tripolyphosphate, potassium tripolyphosphate, or a mixture thereof;

(iii) from about 5% to about 50% of sodium hexametaphosphate, potassium hexametaphosphate or a mixture thereof, wherein said percentages are by weight based on the weight of the phosphate mixture, and said phosphate mixture has a statistical average content by weight of P_2O_5 of about 47% to about 68%; and

(b) a preservative consisting of potassium sorbate, sorbic acid or a mixture thereof, in an amount by weight of about 0.1 to about 0.2 parts per part of said phosphate mixture; and,

(c) a sufficient amount of an acid component selected from the group consisting of one or more of malic, tartaric, and gluconic acids or the edible salts thereof, such that when said composition is present in a suitable liquid vehicle, a pH in the range of about 5.4 to about 6.7 is attained.

14. A method of treating fish comprising applying to the surface of said fish an effective amount of the composition of claim 1.

4,517,209
METHOD OF PREPARING A BISCUIT OR COOKIE PRODUCT

Ian Thornton, Flackwell Heath; Kenneth W. DeWitt, Reading, and Simon A. Robertson, West Reading, all of England, assignors to Keebler Company, Elmhurst, Ill.

Filed Aug. 18, 1982, Ser. No. 409,115

Int. Cl.³ A21D *8/00*

U.S. Cl. 426—383 **16 Claims**

1. A method of manufacture of a randomly fissured biscuit or cookie product, which comprises the steps of:

providing a predetermined quantity of an unbaked dough;

forming the quantity of the dough into a shaped unbaked dough piece having an upper surface which incorporates a network of impressed lines, a major proportion of the lines in the network being non-terminated and a minor proportion of the lines in the network being terminated at least at one location; and

baking the shaped dough piece under such baking conditions whereby its diameter increases and its upper surface includes random superficial fissures along at least some of the impressed lines of the network and also at least some of those areas of the upper surface of the unbaked dough piece which were not provided with any of the impressed lines of the network.

4,517,210
PROCESS FOR PREPARING A FRUIT AND CEREAL PRODUCT

Harvey P. Fogel, Richland, Mich., assignor to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 293,070, Aug. 17, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 500,803

Int. Cl.³ A23L *1/164;* **A23B** *7/00*

U.S. Cl. 426—392 **12 Claims**

1. A process of preparing a breakfast food having discrete pieces of fruit blended with discrete pieces of cereal particles which comprises:

(a) preparing discrete bran cereal particles with a moisture of about 2.2%;

(b) hydrating said cereal particles with an amount of moisture effective to give said cereal particles:

(i) an A_w of at least about 0.51 and a moisture content in excess of about 7.3%, and

(ii) a density between about 0.05 **and** 0.30 oz/in^3;

(c) preparing discrete fruit particles wherein said fruit particles are whole fruit units, fruit pieces, and combinations thereof having:

(i) an A_w such that there is a (A_w cereal particles-A_w fruit particles) difference between about 0.20 and about 0.35,

(ii) a moisture content below 5%, and

(iii) a density between about 0.05 and about 0.30 oz/in^3;

(d) admixing the discrete cereal particles with the discrete fruit particles to form a ready-to-eat breakfast cereal, wherein said cereal particles comprise between about 65 and about 95% of said admixture;

(e) packaging said admixture in a container wherein said container is effective to minimize water vapor transfer between the product and the atmosphere; and

(f) transferring moisture from the cereal particles to the fruit particles by storing the cereal-fruit admixture for at least 7 days.

4,517,211
METHOD FOR THE PRODUCTION OF CONCENTRATED, FROZEN POTATO PUREE

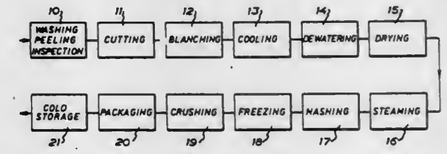
Roland Haraldsson, Bromölla; Jan Bengtsson, Hässleholm, and Claes Friberg, Monopolvägen, all of Sweden, assignors to Fjalkinge Potato Processing Machinery AB, Hassleholm, Sweden

Filed Jan. 31, 1983, Ser. No. 462,193

Claims priority, application Sweden, Feb. 5, 1982, 8200664

Int. Cl.³ A23L *1/216*

U.S. Cl. 426—444 **5 Claims**



1. A method for the production of concentrated, frozen potatoe puree from potatoes, the method comprising the sequential steps of: washing the potatoes; peeling the potatoes; cutting the potatoes into pieces; blanching the potatoes; cooling the potatoes; dewatering the potatoes; drying the potatoes to reduce the weight of the potatoes by approximately 40–60%; steaming the potatoes; mashing the potatoes; freezing the potatoes; and then crushing the potatoes;

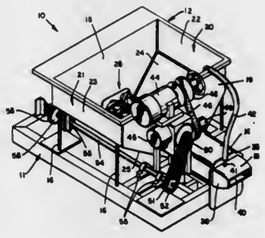
4,517,212
METHOD OF DISPENSING DOUGH

Sterrett P. Campbell, Norcross, Ga., assignor to AMF Incorporated, White Plains, N.Y.

Division of Ser. No. 257,261, Apr. 6, 1981, Pat. No. 4,449,908, which is a continuation-in-part of Ser. No. 58,120, Jul. 16, 1979, abandoned. This application Jan. 19, 1984, Ser. No. 571,999

Int. Cl.³ A21D *6/00*

U.S. Cl. 426—496 **5 Claims**



1. A method of dispensing dough from the lower portion of a mass of dough comprising the steps of slicing dough from the lower portion of the mass of dough with a pair of interference helical screw elements each with a helical thread, with the thread of the first of said screw elements projecting into the spaces formed by the thread of the second of said screw elements, each thread of said screw elements including a conveying surface and an outer periphery, the conveying surfaces of the threads of the screw elements being concave and inclined at their peripheries toward a discharge conduit and intersecting the outer peripheries of the threads at a sharp acute angle to form a spiral cutting edge about each screw element; moving the dough with the conveying surfaces of the screw ele-

ments along a path and through a conduit; dividing the dough into batches as the dough is moved along the path; displacing each batch of dough through the conduit toward a discharge nozzle; and venting air from the dough as the dough approaches the discharge nozzle.

4,517,213

FLAVORING WITH NORBORNYL ESTERS

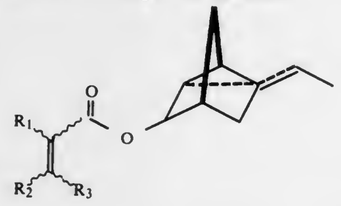
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 574,183, Jan. 26, 1984, , which is a division of Ser. No. 507,290, Jun. 23, 1983, Pat. No. 4,480,648, which is a division of Ser. No. 396,288, Jul. 8, 1982, Pat. No. 4,435,316. This application Aug. 24, 1984, Ser. No. 643,680

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—538 **8 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff an aroma or taste augmenting or enhancing quantity of at least one ester defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon bond and the other of the dashed lines represents no bond; wherein the wavy lines represent a "cis" or a "trans" juxtaposition of the R_1, R_2, R_3 and carboalkoxy moieties around the carbon-carbon double bond; wherein R_1, R_2 and R_3 each represents methyl or hydrogen with the proviso that at least one of R_1, R_2 and R_3 is hydrogen.

4,517,214

SWEETENING COMPOSITION AND METHOD

Myron D. Shoaf, and La Monte D. Pischke, both of Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 175,114, Aug. 4, 1980, abandoned, which is a continuation of Ser. No. 88,920, Oct. 29, 1979, abandoned, which is a continuation of Ser. No. 673,836, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 461,577, Apr. 17, 1974, abandoned. This application May 3, 1983, Ser. No. 491,237

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 **1 Claim**

1. A process for producing a flowable form of the dipeptide sweetener L-aspartyl-L-phenylalanine methyl ester, which form has a high rate of solubility and dispersibility, comprising the steps of:

(a) forming an aqueous slurry, the ingredients consisting of water and a minor weight percent of crystalline particles of L-aspartyl-L-phenylalanine methyl ester;

(b) maintaining said slurry at a temperature below 150° F. such that the vast majority of the crystalline material remains as undissolved particles and a minor amount of this material dissolves in the water with the resulting solution being distributed throughout the undissolved particles;

(c) hydro-milling the slurry to a particle size of less than 125 microns; and

(d) spray drying the milled slurry to produce a dry powder wherein subdivided discrete crystals of the dipeptide sweetener nest with one another and are permanently bound to one another at spaced points of contact by the dried solution.

4,517,215

PREPARATION OF VEGETABLE PASTAS

Jau Y. Hsu, Brookfield, Conn., assignor to Nestec, S.A., Vevey, Switzerland

Filed May 26, 1983, Ser. No. 498,283

Int. Cl.³ A23L *1/16*

U.S. Cl. 426—557 **6 Claims**

1. A process for the preparation of a vegetable pasta which comprises mixing a composition comprising a seed or tuberous vegetable in particulate form and, based on the total weight of the composition, from 0.1 to 4% by weight of sodium or potassium alginate or a mixture thereof, from 0.1 to 4% by weight of propylene glycol alginate and from 0 to 75% by weight of starch, said composition containing substantially no wheat flours, with an amount of water sufficient to moisten the composition and render it extrudable, extruding said mixture into a pasta shape, and finally drying the extruded mixture, with the proviso that at least 10% by weight of starch must be present when a high protein vegetable or potato powder is used.

4,517,216

GELLAN GUM/GELATIN BLENDS

Jaewon L. Shim, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 5, 1984, Ser. No. 586,472

Int. Cl.³ A23L *1/04, 1/06*

U.S. Cl. 426—573 **10 Claims**

1. A blend consisting essentially of gellan gum and gelatin wherein the wt:wt ratio ranges from 5:1 to 1:5.

4,517,217

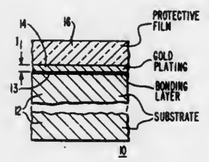
PROTECTIVE COATING MEANS FOR ARTICLES SUCH AS GOLD-PLATED JEWELRY AND WRISTWATCH COMPONENTS

Richard A. Hoffman, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 185,655, Sep. 9, 1980,. This application May 18, 1981, Ser. No. 264,322

Int. Cl.³ C23L *15/00*

U.S. Cl. 428—632 **19 Claims**



1. In combination with an article of manufacture that is composed of metal and has a metallic surface which enhances the aesthetic appeal of the article but is susceptible to abrasion damage and/or environmental degradation such as corrosion and tarnishing, said article being of a type that is subjected to frequent human contact during normal usage of the article and is thus exposed to additional surface damage by such contact and usage,

an adherent coating that protects said article from such abrasion damage and degradation without materially altering the natural pleasing appearance of the metallic surface, said coating consisting essentially of a thin substantially transparent film of a sputter-deposited non-metallic inert material that has;

a Knoop hardness in the range of from about 400 to about 2500 and is thus of sufficient hardness to be abrasion-resistant, and

a refractive index in the range of from about 1.4 to about 2.8, said protective film having a thickness that is in the range of from about 14,000 to about 40,000 Angstroms and is also so correlated relative to the refractive index of the non-metallic inert material comprising said film that the film, in addition to being substantially transparent, is (a) substantially devoid of discoloration due to interference effects that otherwise would be produced by incident light rays and thus alter the natural aesthetic appearance of the underlying metallic surface of the article, and (b) is of sufficient thickness to protect the metallic surface of the article from abrasion damage and degradation when in use and subjected to frequent human contact.

4,517,218

PREPARATION OF IMITATION FOODS OF A TENDER TEXTURE FROM PROTEINACEOUS EXTRUDATES

Walter C. Yackel, Jr., Oreana, and William E. Hebenstreit, Decatur, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 339,811, Jan. 15, 1982, abandoned. This application Sep. 21, 1983, Ser. No. 534,450

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—656 **13 Claims**

1. A method for providing cooked food pieces having non-fibrous texture which simulate the tender and succulent textural properties of freshly cooked natural products; said method comprising preparing a homogeneous fluid molten mass from a mixture comprising a proteinaceous material and water, wherein said mixture contains for each 100 parts by weight proteinaceous material at least 110 parts by weight water, by subjecting said mixture, at superatmospheric pressure and at a temperature of from about 130° C. to about 160° C., to mechanical working, shearing and frictional forces which are sufficient to form said homogeneous fluid molten mass but which are insufficient to impart a tough fibrous meat-like character to the aforementioned cooked food pieces; moving the mass into a confined cooling zone; cooling the molten mass to a temperature below the normal boiling point of the water contained within the mass with the temperature and pressure of the confined cooling zone being maintained to prevent volatile constituents within said molten mass from forming voids within the cooled mass and to permit a continuous flow of the mass through the cooling zone; solidifying the cooled mass by extruding the cooled mass into a solidification zone maintained at a temperature below the solidification temperature of the cooled mass under soldifying conditions sufficient to provide an extrudate having a smooth surface and having a void volume of less than 0.1 void cm^3/cm^3 mass as determined upon an extrudate of a 6% by weight moisture content; piercing the solidified extrudate into the configuration of imitation food pieces; and impairing a tender texture to the imitation pieces by heating the pierced extrudate under superatmospheric pressure in the presence of a saline solution at a temperature greater than 95° C.

4,517,219

ELECTROSTATIC POWDER COATING CONTROL APPARATUS AND METHOD

Bedrich Hajek, New Haven, Conn., assignor to Electrostatic Equipment Corp., New Haven, Conn.

Filed Oct. 20, 1983, Ser. No. 543,858

Int. Cl.³ B05D *1/24*

U.S. Cl. 427—8 **19 Claims**

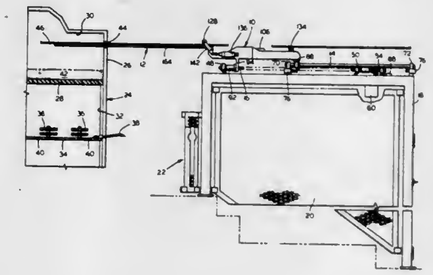
7. In a method for the electrostatic powder coating of a continuous length workpiece, wherein the build upon said workpiece is controlled, the steps comprising:

a. conveying a continuous length workpiece along a horizontal path proximate to an underlying electrostatic fluidized bed coating unit, to deposit thereupon electrostatically charged powder particles from a cloud thereof generated in said unit beneath said workpiece;

b. interposing between said workpiece and said cloud of particles an elongated rectilinear build control bar peripherally configured to define thereabout a plurality of longitudinally extending surface portions, and horizontally supported with a leading end portion thereof unsupported, said surface portions being different from one another in width dimensions and/or cross-sectional configuration;

c. selectively rotating said bar about its longitudinal axis to dispose, in an upward orientation directly under said workpiece, an appropriate one of said surface portions corresponding to the cross-sectional dimensions and configuration thereof; and

d. extending said bar as necessary to enable said leading end portion to effectively mask said workpiece from a portion



of said cloud, so as to thereby control the characteristics of the powder build produced thereupon.

8. The method of claim 7 wherein the extension of said bar is automatically adjusted to provide the desired build on said workpiece.

9. The method of claim 8 wherein said adjustment is made in response to a signal that is indicative of the characteristics of the build on said workpiece, and wherein said method includes steps for integrating said powder on said workpiece into a solidified coating, said signal being generated by means for sensing the nature of said coating upon said product.

4,517,220

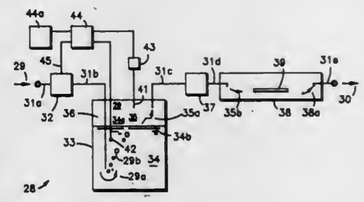
DEPOSITION AND DIFFUSION SOURCE CONTROL MEANS AND METHOD

John W. Rose, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1983, Ser. No. 523,214

Int. Cl.³ B05D *5/12;* **C23C** *11/00, 13/00;* **H01L** *21/306*

U.S. Cl. 427—8 **8 Claims**



1. A process for controlling the formation of a layer derived at least in part from a source material having at least one constituent of said layer, comprising:

providing a reaction vessel for forming said layer;

providing in series with said reaction vessel a region for containing said source material;

providing in series with said region containing said source material a variable flow means for a carrier gas, wherein said carrier gas is adapted to transport said source material, and wherein said variable flow means is adapted for varying the pressure of said carrier gas in said region;

providing means for sensing the temperature of said source material;

vaporizing a portion of said source material to provide

within said region containing said source material a partial pressure of said source material for mixing with said carrier gas;

flowing said carrier gas through said region containing said source material and into said reaction vessel; and

in response to variations in temperature of said source material, adjusting said variable flow means of said carrier gas to maintain a total pressure within said region containing said source material so that said partial pressure of said source material remains a predetermined fraction of said total pressure.

4,517,221

ARRANGEMENT IN PRINTING MACHINES HAVING A VARNISHING UNIT FOR VARNISHING PRINTED SHEETS

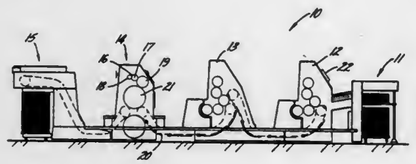
Roland Holl, Weiterstadt, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 2, 1984, Ser. No. 596,004

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3312128

Int. Cl.³ B41F *5/16, 5/18*

U.S. Cl. 427—8 **12 Claims**



7. A control method for a varnishing system for a sheet-fed printing machine capable of continuous printing, said varnishing system having a supply of varnish, at least one varnish applicator roller cooperating with a cylinder, means for selectively transferring varnish from the supply of varnish to the varnish applicator roller, and means for feeding sheets to receive varnish from the varnish applicator roller, said control method comprising the steps of:

sensing a printing disturbance requiring continuous printing to be interrupted,

thereafter preventing the transfer of varnish from the supply of varnish to the varnish applicator roller,

thereafter waiting for at least one sheet to be fed to receive varnish from the varnish applicator roller, and

thereafter inhibiting the means for feeding sheets to the varnish application cylinder, so that said sheet receiving the varnish from the varnish applicator roller thereby reduces the likelihood of fed sheets becoming stuck to the varnish applicator roller or the cooperating cylinder when continuous printing resumes.

4,517,222

VAPOROUS AMINE CATALYST SPRAY METHOD OF APPLYING A FILM TO A SUBSTRATE

James R. Blegen, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 474,156, Mar. 10, 1983, abandoned. This application May 30, 1984, Ser. No. 615,135

Int. Cl.³ B05D *1/04, 1/06*

U.S. Cl. 427—30 **35 Claims**

1. A method for applying onto a substrate a film of a coating composition in liquid form and which comprises a hydroxy-functional compound and a multiisocyanate cross-linking agent, wherein said applied film is curable rapidly at room temperature, which comprises:

(a) concurrently generating an atomizate of said coating composition and a carrier gas bearing a catalytic amount of a vaporous tertiary amine;

(b) mixing said atomizate and said vaporous catalytic amine-bearing carrier gas flow; and

(c) directing said mixture of step (b) onto said substrate to form said applied 10 film.

17. The method of claim 1 wherein said concurrent generation is conducted under electrostatic spray conditions.

4,517,223

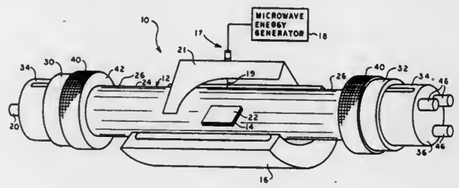
METHOD OF MAKING AMORPHOUS SEMICONDUCTOR ALLOYS AND DEVICES USING MICROWAVE ENERGY

Stanford R. Ovshinsky, Bloomfield Hills; David D. Allred, Troy; Lee Walter, Bloomfield Hills, and Stephen J. Hudgens, Southfield, all of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Filed Sep. 24, 1982, Ser. No. 423,424

Int. Cl.³ C23C *11/02*

U.S. Cl. 427—39 **37 Claims**



1. A process for depositing amorphous semiconductor alloy films onto a substrate comprising:

providing a source of microwave energy;

coupling said microwave energy into a substantially enclosed reaction vessel containing said substrate;

maintaining the pressure within said vessel at about 0.2 Torr or less; and

introducing into said vessel reaction gases including at least one semiconductor containing compound to form a glow discharge plasma within said vessel and to deposit an amorphous semiconductor film from said reaction gases onto said substrate.

4,517,224

METHOD FOR REMOVING A PHOSPHOR LAYER FROM A SUPPORT SURFACE

Lawrence H. Ditty, Clarks Summit, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 18, 1983, Ser. No. 524,156

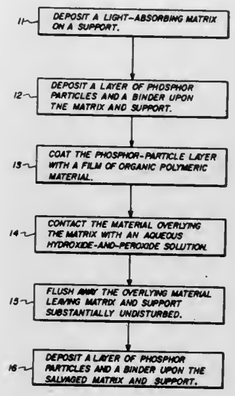
Int. Cl.³ B32B *3/02*

U.S. Cl. 427—64 **6 Claims**

1. In a method for preparing a luminescent viewing screen including depositing a layer of phosphor particles and a binder therefor upon a surface of a support and coating said phosphor layer with a film of organic polymeric material, the steps, before metallizing said film, for substantially entirely removing said phosphor layer and film comprising

(a) contacting said phosphor layer and film with an aqueous solution of ammonium hydroxide and hydrogen peroxide, said solution having a pH in the range of about 9 to 11,

until said film material and binder are at least partially solubilized



(b) and then flushing said surface with an aqueous medium until said film and phosphor layer are substantially entirely removed.

4,517,225

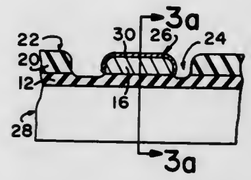
METHOD FOR MANUFACTURING AN ELECTRICAL INTERCONNECTION BY SELECTIVE TUNGSTEN DEPOSITION

Eliot K. Broadbent, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed May 2, 1983, Ser. No. 490,381

Int. Cl.³ H01L *21/285, 21/88*

U.S. Cl. 427—89 **24 Claims**



1. A method of forming a structure for an electrical interconnection of an electrical device in which a first patterned electrically conductive layer is defined over a first electrically insulating layer, a second electrically insulating layer is formed over the first conductive layer and over adjacent material of the first insulating layer not underlying the first conductive layer, and an aperture is created through the second insulating layer to expose a surface portion of the first conductive layer, characterized by the steps of:

depositing tungsten on substantially all of the surface portion to form an intermediate electrically conductive layer whose thickness is proportionally much greater than the thickness of any tungsten then accruing on nearby material of the second insulating layer;

depositing a further electrically conductive layer on the intermediate conductive layer and over the remainder of the second insulating layer; and

patterning the further conductive layer with etchant that does not significantly attack tungsten or the material of the second insulating layer to define a second patterned electrically conductive layer having a part in contact with at least a part of the intermediate conductive layer.

4,517,226

METALLIZATION PROCESS OF A WAFER BACK

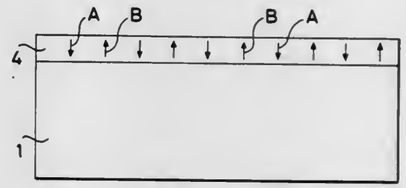
Livio Baldi, Tortona, and Aldo Maggis, Vimercate, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed Jun. 10, 1983, Ser. No. 503,255

Claims priority, application Italy, Jul. 29, 1982, 22627 A/82

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—90 **6 Claims**



1. Metallization process of a silicon wafer back, comprising, in succession, the deposition of a first gold layer, the deposition of a second layer of aluminum and the thermic treatment by annealing to temperature lower than the eutectic gold-silicon temperature of the wafer with superimposed layers whereby the aluminum migrates through the gold layer toward the wafer.

4,517,227

FORMING OF THICK-LAYER, HYBRID ELECTRONIC PRINTED CIRCUITS

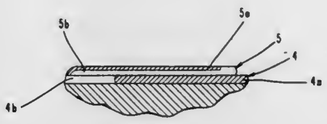
Robert Cassat, Ternay, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Nov. 12, 1982, Ser. No. 441,153

Claims priority, application France, Nov. 17, 1981, 81 21642

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—96 **16 Claims**



1. In a process for forming a thick-layer hybrid electronic printed circuit, including printing predetermined circuit pattern onto an insulating substrate by deposition of predetermined ink pattern thereupon and thence baking said ink circuit pattern, and repeating said deposition/baking steps as required, the improvement which comprises employing an insulating ink comprising a non-conducting oxide derived from a non-noble metal which is either potentially conducting or potentially resistant, and then developing either the conductivity or resistivity of the said ink after it has been deposited and baked, by reducing same with a borohydride reducing agent adapted to readily and quantitatively convert said metal oxide into a conducting metal.

4,517,228

PIGMENTED PREPRESS COATINGS FOR COMPOSITION BOARD

Robert C. Matejka, and Nellie M. Moretz, both of High Point, N.C., assignors to Reliance Universal, Inc., Louisville, Ky.

Filed Dec. 23, 1983, Ser. No. 564,732

Int. Cl.³ B05D *1/18, 3/12;* **B32B** *3/26, 31/00*

U.S. Cl. 427—370 **9 Claims**

1. In a process for manufacturing composition boards under heat and pressure comprising providing a composition board

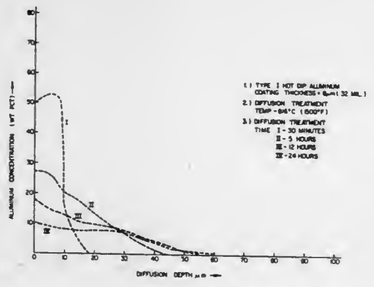
stock, coating the surface of the stock, hot pressing the coated stock at elevated temperatures and pressure into a solid composition board product, and releasing the composition board product from the press, the improvement of which comprises utilizing as a composition board coating composition, an acrylic emulsion present at about the 2.5 to 58 percent by weight solids level, in combination with a platelet talc present at about the 25 to 97 percent by weight solids level, a crosslinking agent for the acrylic emulsion present at about the 0.3 to 18 percent by weight solids level, and a high melting wax present at about the 0.2 to 12 percent by weight solids level.

4,517,229

DIFFUSION TREATED HOT-DIP ALUMINUM COATED STEEL AND METHOD OF TREATING

Richard A. Nickola, Highland, and Shashi B. Agarwal, Griffith, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jul. 7, 1983, Ser. No. 511,568
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—383.9 **6 Claims**



1. A method of providing a hot-dip aluminum coated low carbon steel strip which has improved room temperature formability and good high temperature oxidation resistance after being severely deformed at room temperature comprising;

(a) applying on a continuous hot-dip coating line a hot-dip aluminum coating having a thickness range between about 8 μm (0.31 mil) and 37 μm (1.5 mil) selected from the group consisting of aluminum and aluminum-silicon alloy containing up to about 12 wt. percent silicon to a clean surface of a low-titanium alloy low carbon steel strip; and

(b) heating said strip having said hot-dip aluminum coating in a diffusion heating zone containing a non-oxidizing atmosphere at a temperature of about 1500° F. and for a period of between 24–50 hours which avoids significantly increasing the grain size of the hot-dip coated steel strip and transforms the said hot-dip aluminum coating into a surface coating of solid solution diffusion alloy selected from the group consisting of iron-aluminum diffusion alloy and iron-aluminum-silicon diffusion alloy containing up to about 12 wt. percent silicon with a surface concentration between about 8 and about 10 wt. percent aluminum, and

(c) said diffusion alloy coated steel strip characterized by having good resistance to oxidation at a temperature between 704° C. (1300° F.) and 982° C. (1800° F.) after being subjected to severe deformation at room temperature.

4,517,230

ARTIFICIAL CAMOUFLAGE LEAF CONSTRUCTION

Tad E. Crawford, 6645 Cleveland Ave. S., East Sparta, Ohio 44626

Filed Mar. 8, 1984, Ser. No. 587,600
Int. Cl.³ F41H *3/00*
U.S. Cl. 428—17 **6 Claims**



1. Artificial camouflage for attaching to a hunter's clothing or equipment, said construction including:

(a) a first elongated piece of separable fabric fastening material adapted to be permanently secured to the hunter's clothing or equipment, said first piece of material having a looped pile covering on an exposed surface thereof when said fastening material is attached to the clothing or equipment;

(b) a second elongated piece of separable fabric fastening material for removable attachment to said first piece of fastening material, said second piece of fabric fastening material having a hooked covering on one side thereof for removable attachment with the looped pile covering of said first fastening material;

(c) a plurality of pieces of fabric shaped to simulate a plurality of leaves;

(d) a stem formed of a nylon monofilament strand secured to each of the fabric leaves and extending generally throughout the length of each leaf, said stems being flexible with sufficient memory to retain a shape imparted thereto; and

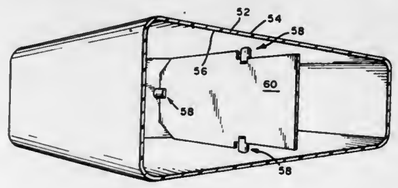
(e) attachment means for securing the respective fabric leaves and stems in a spaced relationship on the second piece of fastening material whereby said fabric leaves and stems are removably attached in elongated strips to the hunter's clothing or equipment and the stems bent so that the fabric leaves project outwardly from the clothing or equipment disrupting the silhouette thereof.

4,517,231

HOLLOW ENCLOSED SEAMLESS POLYMERIC ARTICLE CONTAINING A BAFFLE

Joseph R. May, Chatham; Frank Petruccelli, Parsippany-Troy Hills; Robert L. Lang, Florham Park, and Herman P. de Haan, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 13, 1982, Ser. No. 416,797
Int. Cl.³ B32B *1/02, 27/00*
U.S. Cl. 428—35 **11 Claims**



1. A hollow, enclosed, seamless polymeric article comprising:

an outer wall having an outside surface and an inside surface;

at least one baffle; and

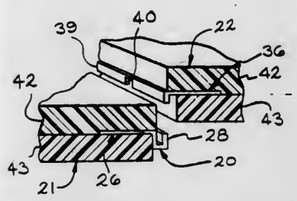
a rod containing a longitudinal slot to receive the baffle, wherein the rod is made of a polymeric material compatible with the polymeric material of the outer wall, the rod being connected to the inner surface of the outer wall and connecting the baffle to the outer wall inside of the article.

4,517,232

TABLE PAD INTERLOCK ASSEMBLY

Christopher P. Krauser, Toledo, Ohio, assignor to The Ohio Table Pad Company, Toledo, Ohio

Filed Mar. 26, 1984, Ser. No. 593,517
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—57 **18 Claims**



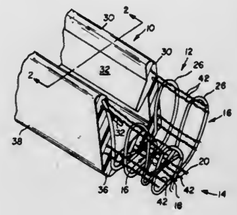
1. A table pad interlock assembly comprising, in combination, a first member including a first base and a channel extending along one side of said first base, a second member including a second base and a depending flange extending along one side and perpendicular to said second base, said channel of said first base receiving said flange when said assembly is in a locked position, said first and second members being restrained from movement transverse to the direction of the channel and means for preventing movement of said first and second members longitudinally in the direction of the channel when said assembly is in such locked position.

4,517,233

TWO-WIRE CARRIER EDGE PROTECTOR TRIM STRIP

Edward C. Welchman, Rock Hill, S.C., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,192
Int. Cl.³ E06B *7/22;* **E04F** *19/02*
U.S. Cl. 428—108 **5 Claims**



1. A longitudinally extending two-wire carrier adapted to be formed into a U-shape including two relatively straight side portions and a base portion for use in an edge protector trim strip comprising:

a continuous metallic serpentine support wire having oppositely facing first bights joined by first lengths of said wire extending transversely and spaced from one another longitudinally of said carrier, said oppositely facing first bights being spaced from one another a predetermined distance between parallel lines tangent to said first bights for defining the width of said support wire;

a continuous metallic serpentine reinforcing wire having oppositely facing second bights joined by second lengths of wire extending transversely and spaced from one another longitudinally of said carrier, said oppositely facing second bights being spaced from one another a finite distance substantially less than said predetermined distance between parallel lines tangent to said second bights for defining the width of said reinforcing wire, the entire width of said reinforcing wire being selectively arranged in juxtaposed relation with no more than a portion of said support wire; and

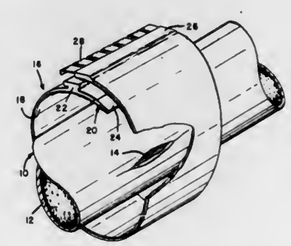
a plurality of strands of material extending longitudinally of said carrier and interwoven with said support and reinforcing wires to maintain the spaced relation of said first and second wire lengths thereof.

4,517,234

HEAT RECOVERABLE SLEEVE FORMING WRAP

Howard Z. Fisher, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 18, 1981, Ser. No. 264,739
Int. Cl.³ H02G *15/18, 3/04*
U.S. Cl. 428—119 **3 Claims**



1. A heat recoverable, sleeve forming wrap, comprising,

a. a length of cross-linked, expanded, heat recoverable material having first and second ends with the second end being thicker than the first end to provide an outwardly facing surface;

b. An elongated upright rib positioned adjacent the first end and having on a side facing away from the first end, a downwardly facing shoulder and on the opposite side a vertical surface of about the same thickness as the outwardly facing surface on the second end;

c. an elongated clasp having projecting C-shaped means along one side, said clasp being attached to the second end of the material with the C-shaped means extending outwardly over the outwardly facing surface so that upon forming the wrap into a sleeve, the two ends thereof may be fastened together by latching the C-shaped means in under the downwardly facing shoulder on the one side of the rib and removably locking the C-shaped means by abutting the outwardly facing surface against the vertical surface on the opposite side of the rib.

4,517,235

TRANSFER COATING OF ABRASION-RESISTANT LAYERS

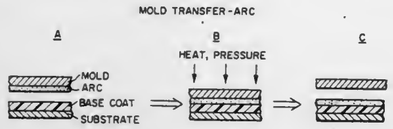
Israel S. Ungar; Herbert I. Scher, both of Randallstown, and Nelson L. O'Neill, Crofton, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Filed Nov. 16, 1982, Ser. No. 442,070
Int. Cl.³ D06N *7/04;* **B41C** *1/06;* **B32C** *3/00*
U.S. Cl. 428—148 **29 Claims**

1. A process for providing an abrasion-resistant deposit on the surface of a substrate having a flowable surface, comprising providing a transfer carrier having a dried ultra-thin deposit or coating consisting essentially of a non-resinous binder material and mineral abrasive particles, which ultra-thin deposit has been dried at a temperature of at least 140° F., and transferring said ultra-thin deposit from said carrier into the flowable surface of said substrate under conditions of heat and pressure

whereby said deposit becomes combined with the surface of said substrate, and removing said carrier.

8. A process according to claim 1 wherein said surface of said substrate is a thermosettable material or a thermoplastic.



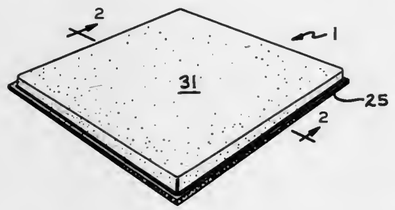
19. A product obtained by the process of claim 8, with the proviso that said product is not a decorative laminate.

4,517,236

FIBROUS PRODUCT

Brian L. Meeker, Maumee; John W. Ferguson, Perrysburg, and Henry G. Werner, Rossford, all of Ohio, assignors to Fiber-Lite Corporation, Toledo, Ohio

Filed Sep. 6, 1983, Ser. No. 529,229
Int. Cl.³ B32B *23/02*
U.S. Cl. 428—192 **29 Claims**



1. A ceiling tile for suspension in a grid-type support structure comprising:

a first layer of high density substantially rigid fibrous material, said first layer having a first surface and a second surface, said first layer defining an edge around the outer periphery of said first and second surfaces;

a second layer of fibrous material positioned adjacent said second surface of said first layer, said second layer being substantially the same size and shape as said first layer, said second layer being substantially in alignment with said first layer, said second layer being at least twice as thick as said first layer and said second layer having less than ½ of the density and rigidity of said first layer, an edge being defined around the outer periphery of said second layer, said edge of said second layer being substantially in alignment with said edge of said first layer; and,

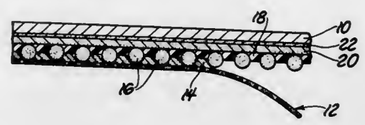
a projection extending from said edge of said second layer, said projection being spaced apart from said first layer, said projection extending around the entire outer periphery of said second layer, said projection being disposed for engaging said support grids, said projection formed from said fibrous material of said second layer, said projection extending from substantially the mid point of said edge of said second layer, a portion of said second layer extending from said projection in a direction away from said first layer, said projection having a thickness that is substantially the same as the thickness of said first layer caused by compressing said second layer in the region of said projection, thereby giving said projection a density and rigidity substantially the same as the density and rigidity of said first layer.

4,517,237

TRANSFER INCLUDING SUBSTRATE WITH DEFORMABLE THERMOPLASTIC COAT

Vincent S. Pernicano, 2833 Railroad St., Boyne Falls, Mich. 49713

Filed Sep. 30, 1982, Ser. No. 431,226
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 **21 Claims**



1. A heat transfer sheeting combination of the type for being applied onto a fibrous article (10) to imprint a design thereon, said combination comprising: a substrate including a support layer (24); a design coating disposed on said substrate (12); an adhesive layer (22) disposed on said design coating for adhesively securing said design coating to the article (10); and characterized by said substrate (12) including deformable means (28) disposed over said support layer (24) and between said substrate (12) and said design coating for deforming about the fibers of the article (10) during application of said design coating to form a reversible mechanical bond with the article (10).

4,517,238

METHOD OF MAKING INTEGRAL MOLDED SILICONE PRODUCTS WITH DIFFERENT PHASES AND THE MOLDED PRODUCTS PREPARED THEREFROM

Katsutoshi Mine; Toshio Suzuki, and Tsuneo Hanada, all of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,206
Claims priority, application Japan, Mar. 25, 1982, 57-47644
Int. Cl.³ B05D *3/02;* **B32B** *7/02*
U.S. Cl. 428—212 **14 Claims**

1. A method for producing an integral silicone molded product comprising a unitary structure with different phases comprising coating a substrate with an addition-reaction curable polyorganosiloxane consisting essentially of

(i) a polyorganosiloxane having at least two silicon-bonded alkenyl radicals per molecule where said alkenyl radicals have two to three carbon atoms per radical,

(ii) a polyorganohydrogensiloxane having at least two silicon-bonded hydrogen atoms per molecule where the sum of the number of alkenyl radicals per molecule in component (i) and the number of silicon-bonded hydrogen atoms per molecule in component (ii) is at least 5, and

(iii) an addition-reaction catalyst,

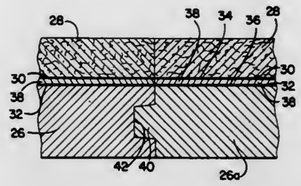
where at least one of components (i), (ii), and (iii) is applied onto the substrate and a composition which necessarily contains the remainder of component (i), (ii), and (iii) but does not simultaneously contain all of components (i), (ii), and (iii) is then applied and diffuses with the result that the addition-reaction curable polyorganosiloxane composition coating is composed of a polyorganosiloxane phase whose degree of crosslinking is relatively low and a polyorganosiloxane phase whose degree of crosslinking is relatively high and the phase whose degree of crosslinking is relatively low is formed next to the substrate.

4,517,239

FIBER-CEMENT/PLYWOOD WALKING SURFACE

Thomas L. Thompson, Costa Mesa, Calif., assignor to Thom-McI, Inc., Balboa, Calif.

Filed Nov. 26, 1982, Ser. No. 444,802
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—307.3 **3 Claims**



1. A flooring structure for walkways and the like, comprising:

a first panel member formed from a sheet of plywood having a predetermined size and configuration, said first panel defining a substructure;

a second panel member consisting essentially of cement; crushed limestone, volcanic ash and asbestos fibers, and having a predetermined size and configuration so as to be affixed to said first panel on one surface thereof, said second panel defining the walking surface of said flooring structure;

means for securing said first panel to said second panel, whereby said flooring structure is formed;

said securing means comprising:

a first bonding layer of catalized resin material coated on the top surface of said sheet of plywood;

a second bonding layer of catalized resin material coated on the underside of said sheet of fiber cement; and

a third intermediate layer of a catalized resin material interposed between said first and second bonding layers,

said third intermedite layer comprising a catalized polyester resin mixed with a thickening agent.

4,517,240

PROCESS FOR PREPARING FIBERBOARD

Arthur A. Tracton, Somerville, N.J., and John N. Guidice, Charlotte, N.C., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 350,947, Feb. 22, 1982, abandoned. This application Oct. 3, 1984, Ser. No. 657,286
Int. Cl.³ B32B *23/00;* **B05D** *3/02*
U.S. Cl. 428—326 **20 Claims**

1. A one-step process for simultaneously compressing and tempering a fiberboard panel, which comprises the step of applying to the panel prior to compression thereof an aqueous treating composition which comprises about 3–20% by weight of an acrylic or vinyl acetate emulsion or solution polymer and about 0.05–3.0% by weight of a fluid, water-soluble organosilicone copolymer of dimethylpolysiloxane-polyoxyalkylene ether wherein the alkylene moiety is ethylene or propylene or mixtures thereof, characterized in that the treating composition acts both as a platen release agent during compression and as a tempering agent for imparting water-resistance.

19. The fiberboard produced by the process of claim 1.

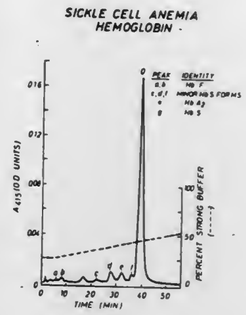
4,517,241

CHROMATOGRAPHIC SUPPORT MATERIAL

Andrew J. Alpert, 4417 Darsey, Bellaire, Tex. 77401

Filed Dec. 2, 1982, Ser. No. 446,391
Int. Cl.³ B01D *15/08;* **B05D** *3/14;* **G01H** *31/08*
U.S. Cl. 428—332 **43 Claims**

1. A coated support material comprising a chromatographically suitable substrate; and an uniform immobilized coating, susceptible to derivatization to a form suitable for protein



chromatography, on said substrate formed by the reaction of a polymer containing succinimide units with said substrate.

4,517,242

PROTECTIVE COATING FOR DRY HEAT STERILIZABLE GLASSWARE

Kamal R. Sinha, Millville, and Brian E. Caldwell, Laurel Lake, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Continuation-in-part of Ser. No. 486,104, Apr. 18, 1983,. This application Jun. 6, 1983, Ser. No. 501,506
Int. Cl.³ B32B *17/10, 27/28*
U.S. Cl. 428—336 **10 Claims**

1. A glass product having a continuous hydrophilic, water removable, abrasion-resistant, protective coating thereon, said coating consisting essentially of from 20% to 95%, by weight, of a styrene-maleic anhydride copolymer and from 5% to 80%, by weight, of a lubricious inclusion whereby said glass product may be sterilized at temperatures above 400° F. without dischlorization.

4,517,243

GLASS COATING COMPOSITION AND METHOD

Kamal R. Sinha, Millville, and Brian E. Caldwell, Laurel Lake, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Apr. 18, 1983, Ser. No. 486,104
Int. Cl.³ B32B *17/10, 27/28*
U.S. Cl. 428—336 **8 Claims**

1. A glass product having a continuous hydrophilic, water insoluble, abrasion-resistant, protective coating thereon, said coating consisting essentially of from 20% to 95%, by weight, of a cross-linked styrene-maleic anhydride copolymer and from 5% to 80%, by weight, of a lubricious inclusion.

4,517,244

RECORDING MEDIUM AND INK JET RECORDING PAPER

Masatsune Kobayashi, Yokohama; Masahiro Haruta, Funabashi; Tsuyoshi Eida, Ichikawa, and Tokuya Ohta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,013
Claims priority, application Japan, Aug. 6, 1981, 56-123320; Aug. 6, 1981, 56-123321
Int. Cl.³ B41M *5/00;* **G01D** *15/34;* **D21H** *1/38;* **B32B** *27/10*
U.S. Cl. 428—342 **15 Claims**

1. A recording medium comprising a substrate material including a highly water-absorptive resin having a water-absorbing capacity of 50 to 1000 times its own weight.

4,517,245

NON-IONIC EPOXY RESIN EMULSION FINISHES FOR CARBON FIBERS

Raymond G. Spain, Huntington Beach, Calif., assignor to Hitco, Newport Beach, Calif.

Filed Jan. 26, 1984, Ser. No. 574,016
Int. Cl.³ B32B *9/00;* **B05D** *3/02*
U.S. Cl. 428—367 **14 Claims**

1. In a method of treating carbon fibers to provide an epoxy resin finish thereon in which the aqueous emulsion of an epoxy resin is applied to said fibers and said fibers are thereafter dried, the improvement which comprises using an effective amount of a non-ionic emulsifier in said epoxy resin emulsion, said emulsifier being a block polymer consisting of a poly(oxypropylene) chain having poly(oxyethylene) groups at both ends of said chain, said polymer terminating in a primary hydroxyl group, said polymer having a molecular weight ranging from about 1100 to about 14,000.

8. Carbon fibers having a uniform coating of epoxy resin thereon obtained by the process of claim 1.

4,517,246

PARTICULATE POLYOLEFIN MOLDING MATERIAL

Kiyoshi Matsuyama; Kenji Ochi; Hiroyuki Ogawa, all of Ehime; Takuya Suzaki, and Kazuyoshi Imai, both of Shizuoka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 29, 1982, Ser. No. 437,597
Int. Cl.³ B32B *5/16, 9/00;* **B05D** *1/02*
U.S. Cl. 428—407 **10 Claims**

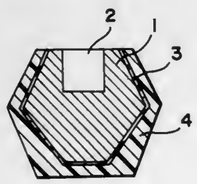
1. A particulate polyolefin molding material, comprising a particulate polyolefin particle having a bulk density of 0.45 g/cc or more and a mean particle size of 150 to 2,000μ, and having a coating of at least one layer comprising at least one compounding additive and an organic binder formed on the surface of said particle.

4,517,247

FLUORORESIN FORMED BODY AND METHOD FOR PRODUCING THE SAME

Hirosuke Suzuki, Tokorozawa, and Yoshiaki Sato, Hitaka, both of Japan, assignors to Junkosha Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,685
Claims priority, application Japan, May 21, 1982, 57-86762
Int. Cl.³ B32B *27/30, 1/10*
U.S. Cl. 428—421 **6 Claims**



1. A method for producing a fluoropolymer-coated shaped article comprising:
heating a heat-conductive mold having a thin layer of a fluoropolymer resin thereon to a temperature above the melting point of said resin to form a thin fluoropolymer weld layer on said mold;
treating the external surface of said weld layer to enhance its bondabiity to form-maintaining synthetic resins;
forming a form-maintaining synthetic resin integrally on the treated surface of said fluoropolymer weld layer; and
removing said heat-conductive mold.

6. A shaped article comprising a synthetic resinous body and a thin fluoropolymer weld layer formed on the surface of said synthetic resinous body, wherein said thin fluoropolymer weld layer is formed from a powder of fluoropolymer.

4,517,248

PROCESS FOR APPLYING A COATING COMPOSITION TO A SUBSTRATE, AND THE COATED SUBSTRATE THUS OBTAINED

Leendert A. Kik, Wassenaar, and Pieter H. J. Schuurink, Noordwijk-binnen, both of Netherlands, assignors to Akzo nv, Arnhem, Netherlands

Continuation of Ser. No. 393,878, Jun. 30, 1982, abandoned.
This application Dec. 29, 1983, Ser. No. 566,960
Claims priority, application Netherlands, Jul. 2, 1981, 8103172
Int. Cl.³ B32B *15/04;* **B05D** *1/02*
U.S. Cl. 428—457 **10 Claims**

1. A process for applying a coating composition to an iron-containing metal substrate, comprising:
cleaning the metal substrate by means of an abrasive blasting treatment in which the metal substrate is hit by a stream containing abrasive blasting particles, said stream comprising a stream of gas emanating from a blast nozzle at a pressure in the range of 2 to 10 bar and at a feed rate of 0.1 to 12 m^3/min; and
applying a coating composition comprising a film-forming binder to the metal substrate by means of a coating treatment in which the metal substrate is hit with a stream of the film-forming binder simultaneously with the abrasive blasting treatment, said film-forming binder being selected from the group consisting of thermohardening, thermoplastic and elastomeric film-forming binders.

4,517,249

SUPER JET BLACK COATINGS

Sol Panush, Farmington Hills, Mich., assignor to Inmont Corporation, Clifton, N.J.

Division of Ser. No. 535,020, Sep. 23, 1983, Pat. No. 4,487,869.
This application Jun. 4, 1984, Ser. No. 617,206
Int. Cl.³ B32B *15/08, 27/00*
U.S. Cl. 428—463 **10 Claims**

1. A substrate material coated with a super jet black coating composition comprising a polymer component containing at least about 25% by weight of a thermosetting resin and a pigment component containing at least about 5% by weight of a 1:2 chromium complex of a mono-AZO dye substituted with amino-phenol and coupled with 2-napthol and, as the outer most layer, a transparent topcoat comprising a thermoplastic or thermosetting resin layer.

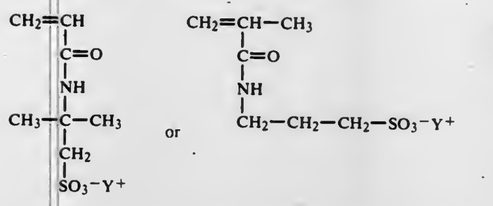
4,517,250

EMULSION TYPE ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield; Robert D. Lundberg, Bridgewater; Joseph Wagensomer, Westfield, all of N.J., and Frank C. Jagisch, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 26, 1984, Ser. No. 593,564
Int. Cl.³ C08L *57/02*
U.S. Cl. 428—483 **10 Claims**

1. A water based emulsion pressure sensitive adhesive composition derived from a composition which comprises a mixture of:
(a) an emulsion of a metal neutralized sulfonated elastomeric copolymer, said neutralized sulfonated copolymer having about 5 to about 250 meq. of neutralized sulfonated groups per 100 grams of said metal neutralized sulfonated copolymer; and
(b) about 25 to about 200 parts by weight of a hydrocarbon tackifying resin based on a petroleum or coal tar distillate per 100 parts by weight of said metal neutralized sulfonated elastomeric copolymer, wherein said emulsion of metal neutralized sulfonated elastomeric copolymer comprises at least 80% by weight of at least one conjugated diene having from 4 to 12 carbon atoms or a combination of at least 80% by weight of at least one conjugated diene and styrene, wherein the combination contains less than 50 weight percent styrene of the total 80 weight percent and a minor proportion of a metal or amine neutralized sulfonate monomer characterized by the formula:



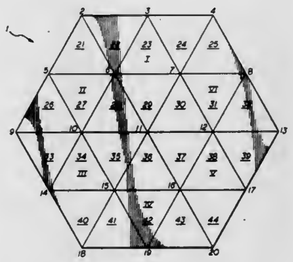
wherein Y^+ is a cation selected from Groups IA, IIA, IB, and IIB of the Periodic Table;
said copolymer being water insoluble, substantially gel-free, thermally stable and oxidatively stable having at least 0.5 weight percent chemically combined to less than 5 weight percent chemical combined sulfur, with a reduced viscosity as measured in a solvent at a concentration of 10 gm/liter of greater than 0.2 and less than 5.0.

4,517,251

BLANK FOR FOLDING AN OCTAHEDRON AND FOLDED PRODUCT

Jeannine Mosely, 48 Teel St., Arlington, Mass. 02174

Filed Sep. 30, 1982, Ser. No. 430,974
Int. Cl.³ A47G *33/08;* **G09F** *1/00*
U.S. Cl. 428—542.8 **7 Claims**



1. A blank of foldable sheet material for folding a regular octahedron comprising
a sheet of foldable material having the shape of a regular hexagon, without interior cuts or exterior tabs
scored or marked for scoring along lines subdividing said hexagon into exactly 24 areas of equal size and shape comprising 24 equilateral triangles of equal size, each having sides one half the length of a side of said hexagon.

4,517,252

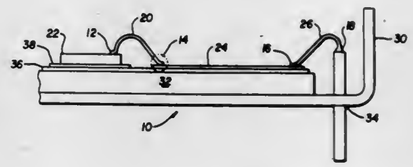
PRE-ALLOYED THICK FILM CONDUCTOR FOR USE WITH ALUMINUM WIRE BONDING AND METHOD OF BONDING

Steven C. Hugh, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 6, 1983, Ser. No. 492,512
Int. Cl.³ H01B *1/02;* **B22F** *7/04;* **B32B** *15/02*
U.S. Cl. 428—553 **15 Claims**

1. A thick film composition essentially free of glass frit or fluxing agents, said composition comprising metal particles containing gold prealloyed with at least one additional element, the gold and said at least one additional element being uniformly dispersed through the material and prealloyed in ratios effective to impede the growth of intermetallic compounds at any metallic bonds on said material, said composition bonded to Al wire.

9. A method of forming a thick film conductor essentially free of glass frit or fluxing agents comprising:
prealloying particles comprising Au with at least one additional element in ratios effective to impede intermetallic compound growth;
preparing an ink from the prealloyed particles;
screening the ink onto a vitreous dielectric;



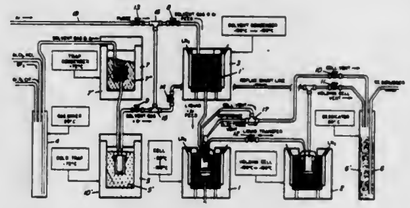
firing the ink on the dielectric at a temperature of between about 750° C. and 1000° C. to form a thick film conductor; and
bonding the thick film conductor to Al wire to provide a high strength, low resistance bond which is resistant to the formation of intermetallic compounds throughout the conductor.

4,517,253

CRYOELECTRODEPOSITION

Robert M. Rose, 18 Morgan St., Wenham, Mass. 01984, and Donald R. Sadoway, 53 Vernon Rd., Belmont, Mass. 02178

Filed Jan. 23, 1984, Ser. No. 572,822
Int. Cl.³ C25B *1/00*
U.S. Cl. 428—620 **51 Claims**



1. A method of electrodeposition of a reactive metal, an elemental semiconductor, a noble or precious metal and compounds and alloys thereof onto a subtrate, that comprises:
establishing an anhydrous ion solution of the material to be deposited in a liquid electrolyte consisting of a mixture taken from the group consisting of liquid halides and halogens having an appropriate electrical conductance and said material;
immersing electrodes in the ion solution; and establishing an electrical potential between the electrodes to attract material ions in the solution to one of the electrodes which serves as a substrate for deposition.

4,517,254

ADHESIVE METALLIZATION OF POLYIMIDE

Joachim Grapentin; Hartmut Mahlkow, and Jürgen Skupsch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,492
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149919
Int. Cl.³ B32B *15/08;* **B05D** *3/10;* **C25D** *5/54*
U.S. Cl. 428—626 **14 Claims**

1. In a process for the adhesive metallization of polyimide through pretreatment of the polyimide and subsequent activation as well as chemical metallizing followed, if necessary, by

galvanic metal deposition, the improvement comprising pretreating the polyimide with an aqueous solution of alkali hydroxide and an organic nitrogen compound selected from the group consisting of N,N,N',N'-tetra-(2-hydroxypropyl)-ethylenediamine, ethylenediaminetetraacetic acid and nitrilotriacetic acid.

13. Polyimide-metal composite material, produced according to the process of claim 1.

4,517,255

METHOD FOR PRODUCTION OF METAL SHEET COVERED WITH POLYESTER RESIN FILM

Katsumi Kanda, Kudamatsu; Takaaki Okamura, Yanai; Takashi Minamigi, Hikari; Tsuneo Inui, Tokuyama, and Yoshikazu Kondo, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 398,694, Jul. 15, 1982, abandoned. This application Dec. 7, 1983, Ser. No. 559,029

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—626 **17 Claims**

1. A method for laminating a polyester resin film to a metal sheet covered with double layer consisting of an upper layer of hydrated chromium oxide having sulfur and fluorine therein, the atomic ratio of sulfur and fluorine to the total of chromium, oxygen, sulfur and fluorine in the hydrated chromium oxide being 0.1 to 2.5 atomic % and 0.5 to 10 atomic %, respectively, and a lower layer of metallic chromium, which comprises heating the metal sheet to a temperature above the melting point of said polyester resin film, placing the film thereon and then quenching the laminate.

17. The polyester resin film laminated metal sheet which is covered with double layer consisting of an upper layer of hydrated chromium oxide and a lower layer of metallic chromium according to any one of claims 1 to 8 or 9 to 16.

4,517,256

WELDED CAN BODIES

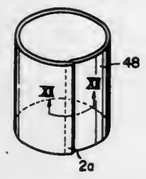
Kenji Matsuno, Yokohama, and Hiroyuki Funamoto, Tokyo, both of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Continuation of Ser. No. 336,229, Dec. 31, 1981, abandoned, which is a division of Ser. No. 150,775, May 19, 1980, abandoned. This application Aug. 26, 1983, Ser. No. 526,928

Claims priority, application Japan, Dec. 29, 1978, 53-165078; Aug. 6, 1979, 54-99479; Aug. 23, 1979, 54-106696

Int. Cl.³ B65D *7/34, 7/42*

U.S. Cl. 428—629 **14 Claims**



1. In a tinfree steel welded can body having a side seam made from a can body preform having a side lapped portion by effecting a resistance mash seam forge welding of said lapped portion while pressing said lapped portion between opposing electrodes, said preform being formed from a blank of tinfree steel having a surface layer consisting of a metallic chromium layer and a chromium oxide layer and covering an area around the portion to be welded, said side seam having a thickness of 1.0 to 1.6 times as large as the thickness of the blank, the improvement wherein

said electrodes are a cooled elongated electrode and a cooled rotary electrode, the latter rolling on the lapped portion,

the surface layer of the area around the portion to be welded is not removed such that at least the portion of the inner surface of said side seam which was brought into contact with said elongated electrode is covered with said surface layer,

said electrodes are supplied with sufficient current, and have a sufficiently large contact area with said lapped portion so as to sufficiently cool the surface layer area of the lapped portion wherein

solid phase weld portions are formed in the vicinity of the surfaces of said side seam, and

a melt weld portion is formed to be confined inside said side seam such as to cross said solid phase weld portion and is uniform along the length of said side seam, and wherein the seam meets substantially flush with the can body at the inside surface of the latter.

4,517,257

RECORDING MEDIA COMPRISING VERTICAL MAGNETIZATION LAYERS ESSENTIALLY CONSISTING OF QUATERNARY Co—Ni—Zn—P ALLOYS

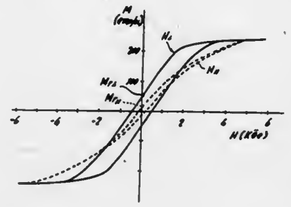
Shigeo Shimizu, Yokohama, and Toshio Kato, Yamato, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 13, 1983, Ser. No. 531,681

Claims priority, application Japan, Sep. 14, 1982, 57-158926

Int. Cl.³ G11B *5/64*

U.S. Cl. 428—694 **4 Claims**



1. A magnetic recording medium for vertical magnetization recording which comprises a substrate and a magnetic film of a Co—Ni—Zn—P alloy formed on at least one side of the substrate, said alloy consisting essentially of from 3 to 42 wt% of Co, from 54 to 89 wt% of Ni, from 4 to 8 wt% of P, and from 0.1 to 3.2 wt% of Zn provided that $(7.2\ X_p+12.8)$ wt% $\leqq X_{Ni} \leqq (7.2\ X_p+43.2)$ wt% in which X_p represents a content of P and X_{Ni} represents a content of Ni, both expressed by wt% whereby said magnetic film satisfies the following inequality: $K\perp > 2\pi Ms^2$ wherein $K\perp$ is an intrinsic vertical anisotropy constant, and $2\pi Ms^2$ is a saturation magnetization.

4,517,258

ELECTROCHEMICAL GENERATOR OPERATING DEVICE WITH A ZINC NEGATIVE ELECTRODE

Guy Bronoël, Versailles, France, assignor to T.R.E.G.I.E., Rueil Malmaison, France

Filed Oct. 21, 1983, Ser. No. 544,229

Claims priority, application France, Oct. 21, 1982, 82 17625

Int. Cl.³ H01M *8/18*

U.S. Cl. 429—21 **13 Claims**



1. An electric storage battery having a plurality of electrochemical generator operating devices each having a zinc negative electrode and operating in a charge and a recharge phase with each of said devices comprising:

a plurality of approximately horizontal parallel pipes (15) having a rectangular cross section whose lower face consists of a negative upper face (6) of a flat bipolar current collector (3) and wherein a upper face of each of said parallel pipes includes a separator (4) and whose lateral faces are made of an inert material resistant to an alkaline medium;

a positive electrode;

a fluid capable of circulating in said plurality of horizontal pipes wherein said fluid includes a alkaline electrolyte charged with zinc salts and a plurality of spherical-shaped particles with said particles having a core made of a material resistant to electrochemical attack and which core is at least partially coated with a conductive coating whereby the density of said particles is greater than that of said electrolyte and whereby said particles come into contact by sedimentation with said negative upper face of said flat bipolar current collector when said fluid consisting of said alkaline electrolyte and said particles is not in circulation and wherein said particles are charged with zinc at said collector; wherein each of said plurality of operating devices are superposed vertically on one another so that said horizontal pipes of each operating device are superposed on the horizontal pipes of another operating device and wherein each of said superposed pipes are connected to each other by transfer pipes for transferring said fluid successively to each of said superposed pipes and wherein the output of said fluid from an upper element is opposite the input of the fluid in the element immediately below said upper element and whereby said fluid at the input of said upper element is discharged and recovered so that said particles of said fluid entrained by the flow of said electrolyte make a zig-zag parallel back and forth travel in successive elements in said vertically disposed devices by the continuous contact of said particles against the negative face of said current collector of each of said elements; and wherein said electric storage battery further comprises;

intermittent pump means for intermittently circulating said fluid into said plurality of horizontal parallel pipes of each of said operating devices wherein said intermittent pump means operates according to a periodic off-on cycle during both said recharge and said discharge phases of said device in such a manner that the off time of said pump is greater than the on time of said pump.

4,517,259

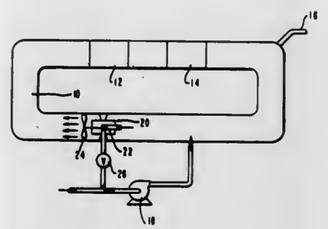
AIR MOTOR DRIVE FOR FUEL CELL POWER PLANT AIR CIRCULATOR

Joseph R. Lance, North Huntingdon Township, West Moreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 23, 1984, Ser. No. 592,982

Int. Cl.³ H01M *8/04*

U.S. Cl. 429—26 **6 Claims**



1. A fuel cell power plant comprising:

a fuel cell assembly for production of electric power and heat,

compressor means for providing relatively high pressure oxygen bearing gas to the fuel cell power plant from relatively low pressure oxygen bearing gas,

means for supplying said relatively low pressure gas to the compressor means,

means for exhausting said relatively high pressure gas from the fuel cell power plant,

conduit means for containing the relatively high pressure gas and directing flow of said high pressure gas to and from the fuel cell assembly,

cooling means for rejecting the heat produced by the fuel cell assembly, and

circulation means for moving the relatively high pressure gas contained within the conduit means in the direction and at a rate that are predetermined, said circulation means powered by a gas driven motor deriving power from one of the group consisting of a gas pressure difference within said fuel cell power plant and a gas pressure difference between said fuel cell power plant and atmospheric pressure.

4,517,260

SINGLE COMPONENT CELL FOR PHOSPHORIC ACID TYPE FUEL CELL

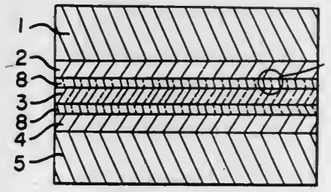
Kenro Mitsuda, Takatsuki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1984, Ser. No. 607,211

Claims priority, application Japan, May 17, 1983, 58-87873

Int. Cl.³ H01M *8/02*

U.S. Cl. 429—41 **5 Claims**



1. A single component cell for a phosphoric acid type fuel cell, which comprises in combination:

(a) an oxidant electrode and a fuel electrode, each having a catalyst layer;

(b) a matrix base interposed between the catalyst layers of said both electrodes, and consisting principally of phosphoric-acid-resistant inorganic substance powder; and

(c) a buffer layer consisting principally of zirconium phosphate, and interposed between said matrix base and at least one of said catalyst layers for said both electrodes.

4,517,261

HYDROGEN GAS RELIEF VALVE

Curtis C. Whittlesey, Birmingham, Mich., assignor to Energy Development Associates, Inc., Madison Hgts., Mich.

Filed Jul. 1, 1983, Ser. No. 510,401

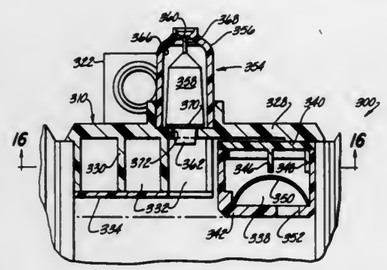
Int. Cl.³ H01M *2/12*

U.S. Cl. 429—64 **9 Claims**

1. In a zinc-chloride battery having a plurality of electrically connected cells from which hydrogen gas is generated when a zinc deposit is present on the negative electrodes of said cells and an aqueous zinc-chloride electrolyte is in communication with said cells, and means for circulating said electrolyte through said cells, the improvement comprising:

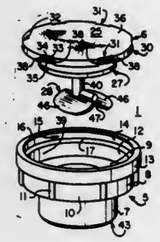
means for defining a substantially closed compartment in said battery for containing said cells and at least a portion of said electrolyte; and

means in association with said compartment means for selectively venting said hydrogen gas from the interior of said



compartment means in response to the level of said electrolyte within said compartment means.

4,517,262
VENT FOR A STORAGE BATTERY
David B. Beidler, Gilbertsville, Pa., assignor to General Battery Corporation, Reading, Pa.
Filed Dec. 21, 1983, Ser. No. 564,013
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—87 **20 Claims**



1. A vent cap for enclosing a filler opening of a storage battery, comprising:

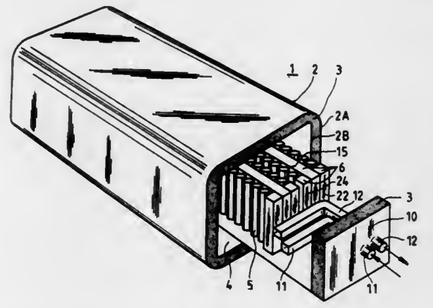
(a) a generally cylindrical base portion adapted at a first end thereof to enter into and to engage the filler opening and terminating at the other end thereof in a rim including an inwardly disposed, essentially U-shaped channel said first end further having a closure member which extends inwardly and defines an aperture which is less in diameter than the diameter at said rim, with the cylinder being unrestricted as it extends from said first end toward said rim; and

(b) a cover portion having a periphery engaging the channel of the base portion and a downwardly depending member which terminates a first baffle means which project outwardly from the depending stem at an angle which progresses generally away from the cover portion and toward the aperture defined in said closure member;

(c) wherein the periphery of the cover portion incorporates an essentially planar face having a chamfered termination and a plurality of circumferentially spaced shaped portions formed therein; and

(d) wherein the shaped portions cooperate with the channel to develop a plurality of apertures disposed about the interface between the base portion and the cover portion.

4,517,263
HIGH-TEMPERATURE STORAGE BATTERY
Harald Reiss, Leimen, and Botho Ziegenbein, Neckarsteinach, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany
Filed Nov. 21, 1983, Ser. No. 553,700
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242901
Int. Cl.³ H01M *10/50*
U.S. Cl. 429—120 **6 Claims**



1. A high-temperature storage battery comprising a double-walled housing with insulating material between the two walls of the housing, a plurality of storage cells in the interior of the housing associated with one or more heat exchangers in the form of a slab-shaped heat sink which have at least two large cooling surfaces and in their interior several cooling loops, each cooling loop formed by at least two canals arranged vertically one below the other and connected to each other at a first end of the heat sink via a deflection opening, each cooling loop having only one entrance opening and only one exit opening for introduction and discharge of a cooling medium, the entrance opening is in communication with a common feed canal and the exit opening is likewise in communication with a common discharge canal for the coolant, the entrance opening of the cooling loop is arranged at a second end of the heat sink in the vicinity of a first cooling surface of said two large cooling surfaces and the exit opening of the cooling loop is installed at the second end in the vicinity of the second cooling surface of said two large cooling surfaces, the storage cells having their longitudinal axes perpendicular to the canals of the cooling loops, and the storage cells arranged in a row and installed in a heat-conducting connection along the cooling surfaces.

4,517,264
LIGHTWEIGHT METAL-HYDROGEN CELL WITH IMPROVED PLATE STACK SUPPORTING MEANS
Lee E. Miller, Carl Junction; Dennis D. Carr, Jasper, both of Mo., and Donald L. Smith, Miami, Okla., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed Aug. 24, 1983, Ser. No. 525,986
Int. Cl.³ H01M *2/00*
U.S. Cl. 429—163 **7 Claims**

1. A metal-gas cell having a casing with a center portion and domed ends at opposite ends of the center portion, comprising:

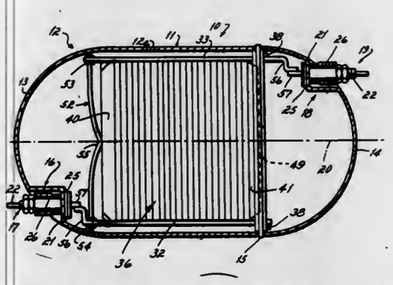
a plate stack within said casing and having two ends,

plate stack support means carried by the casing and supporting one end of said stack,

a spring exerting force on the other end of said plate stack opposite said support means and compressing said stack in an longitudinal axial direction, said spring comprising an arcuate spring which bears centrally on said plate stack, and

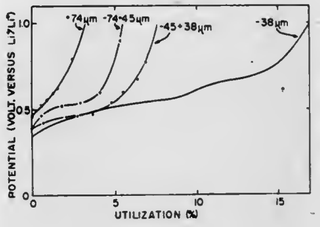
a spring mounting means mounting the spring in fixed position in relation to said casing, said spring mounting means

comprising a stop on the inside surface of the casing against which an edge portion of said spring is seated, said



spring being external to the plate stack and located between the plate stack and said casing.

4,517,265
COMPOSITE AND FLEXIBLE ANODES FOR LITHIUM CELLS IN NON-AQUEOUS MEDIUM
André Bélanger; Denis Fauteux, both of Ste-Julie, and Michel Gauthier, Laprairie, all of Canada, assignors to Hydro-Quebec, Montreal, Canada
Filed Sep. 30, 1982, Ser. No. 430,696
Claims priority, application Canada, Jun. 30, 1982, 406358
Int. Cl.³ H01M *4/62, 4/60*
U.S. Cl. 429—217 **18 Claims**



1. An anode in the form of a flexible composite thin film comprising a composition of the combination of the following ingredients:

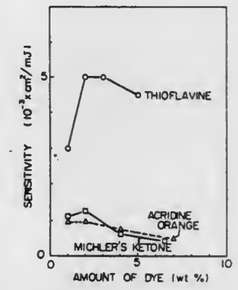
a plastic or elastomeric macromolecular material with ionic conduction;

a finely divided alloy of lithium having a granulometry lower than 40 μm and selected so that the activity in the lithium in said alloy corresponds to potentials which are lower than +1.2 volts with respect to a lithium electrode; and

particles of a carbon compound of the formula: Li_xC where $0 \leqq x < 0.3$, said particles of the carbon compound being finely divided to a granulometry lower than 40 μm, and being present in an amount ranging from about 15 to about 40 volume percent of the anode composition.

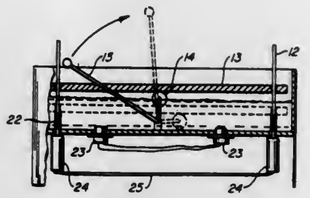
4,517,266
HOLOGRAPHIC RECORDING MATERIAL AND PROCESS FOR PRODUCING HOLOGRAMS
Kasumi Ikegami, Kokubunji, and Hirofumi Okuyama, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 18, 1983, Ser. No. 458,850
Claims priority, application Japan, Jan. 18, 1982, 57-5695
Int. Cl.³ G03C *1/70, 9/08;* G03H *1/04*
U.S. Cl. 430—2 **4 Claims**

1. A holographic recording material comprising a vinylcarbazole polymer containing carbazolyl rings, a cyclic cis-α-dicarbonyl compound capable of forming a radical by light



irradiation and Thioflavine as a photosensitizer or a spectral sensitizer.

4,517,267
PROCESSING MACHINE FOR PRINTING
Charles Berger, Ben Lomond, and Kenneth Ruth, Davenport, both of Calif., assignors to Archival Color Technologies, San Francisco, Calif.
Filed Jan. 13, 1983, Ser. No. 457,639
Int. Cl.³ G03H *3/00;* G03C *5/24*
U.S. Cl. 430—3 **1 Claim**



1. In a pigment process for producing an image comprising substantially water insoluble pigmented gelatin on a support sheet, the improvement comprising the step of selectively removing soft substantially water soluble gelatin in an aqueous environment in the presence of said image by ultrasonic vibration and mechanical agitation, wherein said mechanical agitation is provided by vibration of a plate accommodating said sheet, said plate being loosely accommodated by a plurality of rods vertically disposed in a container, said rods affixed to motors providing vibratory motion whereby vibrational movement of each of said rods by said motors imparts agitational motion to said plate; and said ultrasonic vibration is provided by ultrasonic frequency transducing means; whereby said ultrasonic vibration and said mechanical agitation are sufficient to cause separation of said soft gelatin from said sheet while retaining said image intact.

4,517,268
PROCESS FOR MAGNETIC IMAGE CHARACTER RECOGNITION
Robert J. Gruber, Pittsford; John F. Knapp, Fairport, and Steven B. Bolte, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 12, 1983, Ser. No. 531,520
Int. Cl.³ G03G *9/02*
U.S. Cl. 430—39 **12 Claims**

1. An improved process for generating documents which comprises providing the document desired, imprinting characters thereon by electrostatographic methods with a high speed

electronic printing device, and developing the characters with a magnetic developer composition comprised of from about 20 percent by weight to about 70 percent by weight of magnetite, and from about 30 percent by weight to about 80 percent by weight of toner resin particles, selected from the group consisting of styrene methacrylate copolymers, styrene butadiene copolymers, and styrene acrylate copolymers; and carrier particles comprised of ferrite cores coated with polymeric compositions.

4,517,269

PHOTOCONDUCTIVE MEMBER

Isamu Shimizu, and Kozo Arao, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,940

Claims priority, application Japan, Apr. 27, 1982, 57-70771; Apr. 27, 1982, 57-70774; Apr. 27, 1982, 57-70776; Apr. 28, 1982, 57-71951; Apr. 28, 1982, 57-71953; Apr. 28, 1982, 57-71954; Apr. 28, 1982, 57-71956; Apr. 30, 1982, 57-73025

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—57 **45 Claims**

1. A photoconductive member comprising a support for a photoconductive member, a first amorphous layer having a layer constitution comprising a first layer region comprising an amorphous material containing silicon atoms and 1 to 9.5×10^5 atomic ppm of germanium atoms and 0.01 to 40 atomic % of at least one of hydrogen atoms and halogen atoms, and a second layer region comprising an amorphous material containing silicon atoms and exhibiting photoconductivity, said first and second layer regions being provided successively from the side of said support; and a second amorphous layer comprising an amorphous material containing silicon atoms and carbon atoms.

4,517,270

ELECTROPHOTOGRAPHIC RECORDING MEDIUM

Fritz Graser, Ludwigshafen; Gerhard Hoffmann, Otterstadt; Reinhold J. Leyrer, Ludwigshafen; Peter Neumann, Wiesloch, and Manfred Patsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 16, 1982, Ser. No. 358,527

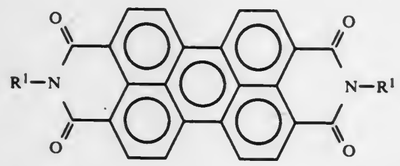
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110954

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—58 **3 Claims**

1. An electrophotographic recording medium which consists essentially of an electrically conductive base, a first layer containing charge carrier-producing dyes, and a second layer which is substantially transparent to actinic light and is composed to an insulating organic material containing at least one compound which is charge carrier-transporting when exposed to light, wherein the charge carrier-producing dye contained in the first layer is dark in color, possesses substantially panchromatic adsorption characteristics, and is of the formula II

$(Z)_n$ (II)



where n is 1-6, Z is p-phenylazoanilino, phenylthio or anilino, and R^1 is hydrogen.

4,517,271

ELECTROPHOTOGRAPHIC CDS PHOTOSENSITIVE MEMBER WITH ACRYLIC RESIN BINDER

Masaaki Hirooka, Toride; Keiji Kubo, Kawasaki, and Toshiyuki Yoshihara, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 384,609, Jun. 3, 1982, abandoned. This application Mar. 1, 1984, Ser. No. 583,799

Claims priority, application Japan, Jun. 12, 1981, 56-90456; Jun. 15, 1981, 56-91880

Int. Cl.³ G03G *5/087*

U.S. Cl. 430—94 **6 Claims**

1. An electrophotographic photosensitive member which comprises a photoconductive layer comprising cadmium sulfide bonded with a binder resin, and an insulating layer laid on said photoconductive layer, characterized in that said binder resin is an acrylic resin not labile to moisture having a glass transition point of 15° to 70° C., an acid valve of 10 to 40, and a number average molecular weight of 10,000 or more.

4,517,272

ELECTROSTATIC DRY TONER COMPOSITION

Thomas A. Jadwin, Rochester, and Donald S. Rimai, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,955

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—110 **6 Claims**

1. An electrostatic dry toner composition comprising finely divided polymer particles admixed with a silicone oil.

4,517,273

PRESSURE FIXABLE CAPSULE TONER

Sukejiro Inoue, Toride; Tetsuo Hasegawa, Tokyo, and Yoshihiro Nishikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 263,607, May 14, 1981, abandoned, which is a continuation of Ser. No. 092,069, Nov. 7, 1979, abandoned. This application Dec. 29, 1983, Ser. No. 565,532

Claims priority, application Japan, Nov. 9, 1978, 53-138187

Int. Cl.³ G03G *9/16*

U.S. Cl. 430—111 **7 Claims**

1. A pressure fixable capsule toner comprising a pressure fixable core material encapsulated with a coating material in which the main particle size of the capsule toner, a in microns, the main particle size of the core material, b in microns, and the hardness of the core material, y in dmm, by Japanese Industrial Standard-K2530 satisfy the formula:

$$0.01\exp(a-b)\leqq y\leqq 5\exp(a-b)$$

wherein y is from 0.1-100 dmm and wherein 70% or more of the capsule toner particles are within (∓)3 microns of the main particle size, a.

4,517,274

METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Nobuyasu Honda, Tenri; Toshiro Yamakawa, Osaka, and Toshimitsu Ikeda, Himeji, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 30, 1983, Ser. No. 527,822

Claims priority, application Japan, Aug. 31, 1982, 57-149888; Oct. 22, 1982, 57-184730; Feb. 28, 1983, 58-31033

Int. Cl.³ G03G *9/14, 13/09*

U.S. Cl. 430—122 **8 Claims**

1. A method for developing electrostatic latent images, which comprises frictionally contacting the surface of a substrate having an electrostatic latent image formed thereon with a magnetic brush of a developer formed on a developer-delivering sleeve having a magnet disposed therein, wherein a magnetic brush is formed on the sleeve with an earing promoting component consisting essentially of sintered ferrite particles having a residual magnetism of 0 to 1.0 e.m.u./g, a coercive force of 0 to 5 Oe and a particle size of 20 to 100 microns, and a developer component comprising particles of a dispersion of a magnetic powder in a binder medium having a particle size of 5 to 50 microns, and the ratio of the earing-promoting component to the developer component being within the range of 80:20 to 10:90, and wherein the electrostatic latent image is developed only by the developer component.

4,517,275

LIGHT-SENSITIVE MIXTURE BASED ON O-NAPHTHOQUINONE-DIAZIDES, AND LIGHT-SENSITIVE COPYING MATERIAL PREPARED THEREFROM

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

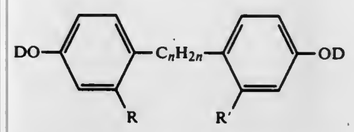
Filed Jun. 23, 1982, Ser. No. 391,005

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124936

Int. Cl.³ G03F *7/08;* **G03C** *1/54;* **C07C** *113/00*

U.S. Cl. 430—165 **5 Claims**

1. A light-sensitive mixture which contains a binder which is insoluble in water, but soluble or at least swellable in aqueous alkaline solutions, and as the light-sensitive compound, a 1,2-naphthoquinone-2-diazide-4-sulfonic or 1,2-naphthoquinone-2-diazide-5-sulfonic acid ester of a bis-hydroxy-phenylalkane, wherein the naphthoquinonediazide sulfonic acid ester corresponds to the general formula I



in which D is the 1,2-naphthoquinone-2-diazide-5-sulfonyl radical or the 1,2-naphthoquinone-2-diazide-4-sulfonyl radical, R and R' are hydrogen atoms, alkyl groups having 1 to 4 carbon atoms or radicals of the formula DO, and n denotes an integer from 10 to 18.

4,517,276

METAL-CONTAINING ORGANIC PHOTORESISTS

Carol R. Lewis, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 29, 1982, Ser. No. 445,353

Int. Cl.³ G03C *1/60, 1/72;* **G03F** *7/26*

U.S. Cl. 430—192 **10 Claims**

1. An electron beam sensitive negative photoresist composition having improved radiation sensitivity and requiring shortened exposure time comprising a cresol formaldehyde resin which has been pre-reacted with an organometallic halide of the formula:

$$R_yMX$$

wherein R is an alkyl or aryl, M is a metal, and X is a halogen, and $1<y<4$.

5. An electron beam sensitive negative photoresist composition which possesses negative photoresist properties having improved radiation sensitivity and requiring shortened exposure time comprising in admixture:

(a) the pre-reaction product of an organic resist resin which has a reactive hydroxyl group and an organometallic halide compound of the formula:

$$R_yMX$$

wherein R is an alkyl, aryl, alkaryl, or aralkyl group, M is a metal, X is a halogen, and $1<y<4$ wherein the organic resist resin which has been pre-reacted with the organometallic halide compound contains 0.4–45 weight percent of metal based on the weight percent of the resin and contains at least 50–99 percent available hydrogen sites after reaction with said organometallic compound,

(b) an o-quinone diazide, and

(c) an organic solvent.

4,517,277

PHOTOSENSITIVE RECORDING MATERIAL SUITABLE FOR THE PRODUCTION OF PRINTING PLATES AND RELIEF PLATES, AND THE PRODUCTION OF THESE PLATES USING THIS RECORDING MATERIAL

John Lynch, Monsheim; Herbert Naarmann, Wattenheim; Günther Schulz; Rudolf Vyvial, both of Ludwigshafen; Günter Wallbillich, Schifferstadt, and Manfred Zürger, Sinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,699

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144905

Int. Cl.³ G03C *1/68;* **C08F** *8/02*

U.S. Cl. 430—281 **5 Claims**

1. A photosensitive recording material which is suitable for the production of printing plates and relief plates and comprises

(a) a dimensionally stable base B and

(b) a photopolymerizable, relief-forming layer R having a thickness of from 300 μm to 7 mm which is firmly bonded to the base,

can be developed with water and consists of a mixture of

(b1) a polymeric binder containing a polymerizable polyvinylalcohol derivative,

(b2) at least one ethylenically unsaturated, photopolymerizable, low molecular weight compound which is compatible with the polymeric binder, and

(b3) at least one photopolymerization initiator, with or without

(b4) further conventional additives and/or assistants, wherein the photopolymerizable relief-forming layer R contains, as the polymeric binder, not less than 1% by weight, based on the total polymeric binder (b1), of a polyvinylalcohol derivative which is obtained by reacting polyvinylalcohol with an acylating agent which possesses groups which can be polymerized by free radicals, the reaction being carried out in the heterogeneous phase, in an aprotic dispersant, using the acylating agent in an amount which corresponds to not less than twice the molar amount required to achieve the desired degree of acylation.

4,517,278

FLEXOGRAPHIC PRINTING PLATES AND PROCESS FOR MAKING THE SAME

Kiyomi Sakurai, Neyagawa, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 224,499, Jan. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 647,717, Jan. 9, 1976, abandoned, and a continuation of Ser. No. 92,291, Nov. 8, 1979, abandoned. This application Aug. 13, 1982, Ser. No. 407,825

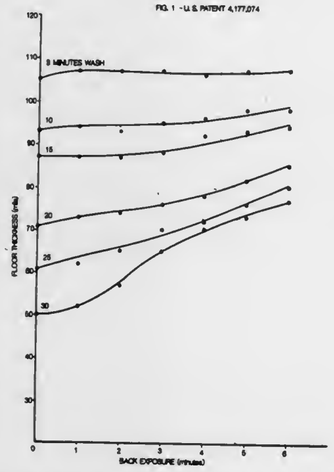
Int. Cl.³ G03C *1/72*

U.S. Cl. 430—286 **3 Claims**

1. A molded sheet suitable for use as a flexographic printing plate which is melt-molded from a photosensitive resin composition comprising syndiotactic 1,2-polybutadiene permeated with a solution of an ethylenically unsaturated monomer and a photo-polymerization initiator, the syndiotactic 1,2-polybutadiene having an average molecular weight of from about 10,000 to 300,000, a 1,2-unit content of at least about 80 percent and a crystallinity of about 10 to 30 percent, the ethylenically unsaturated monomer being an ester of acrylic or methacrylic acid with an alkanol having from 4 to 20 carbon

atoms, and the photo-polymerization initiator being benzoin or an alkyl ether thereof.

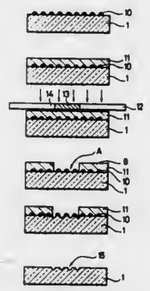
4,517,279
PHOTOSENSITIVE ELASTOMERIC POLYMER COMPOSITION FOR FLEXOGRAPHIC PRINTING PLATES - PROCESSABLE IN SEMI-AQUEOUS BASIC SOLUTION OR SOLVENT SYSTEMS
John R. Worns, Mishawaka, Ind., assignor to Uniroyal, Inc., Middlebury, Conn.
Continuation of Ser. No. 413,581, Aug. 31, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,732
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—286 **7 Claims**



1. A homogeneous elastomeric photosensitive composition suitable for inclusion in a flexographic printing plate consisting essentially of:
(A) 40 to 90% by weight of the total composition of a high molecular weight butadiene/acrylonitrile carboxylated copolymer having a number average molecular weight of 30,000 to 125,000, an acrylonitrile content of 10 to 50%, and a carboxyl content of 1% to 15% by weight.
(B) 5 to 60% by weight of the total composition of a high molecular weight butadiene/acrylonitrile noncarboxylated copolymer having a number average molecular weight of 50,000 to 100,000, an acrylonitrile content of 10 to 30% so that the combination of the carboxylated and noncarboxylated high molecular weight copolymers give a composition with a carboxyl content of 3 to 10%.
(C) 2 to 40% by weight of the total composition of an addition photopolymerizable ethylenically unsaturated monomer and
(D) 0.1 to 10% by weight of the total composition of a photoinitiator activatable by actinic radiation.

4,517,280
PROCESS FOR FABRICATING INTEGRATED OPTICS
Kenji Okamoto; Yoshikazu Nishiwaki; Shunji Matsuoka, and Yozo Nishiura, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Nov. 3, 1983, Ser. No. 548,591
Claims priority, application Japan, Nov. 4, 1982, 57-194150; Nov. 6, 1982, 57-194817
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—321 **12 Claims**

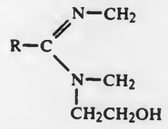
1. A process for making a diffraction grating pattern on a substrate, said process comprising the steps of:
applying a first material and a second material onto said substrate such that one of said first and second material forms a diffraction grating pattern on a first area of said substrate and the other one of said first and second materials substantially covers a second area of said substrate and does not cover said first area;



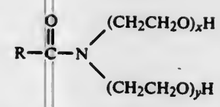
etching the portions of said first area not covered by said one material;
removing said first and second materials.

4,517,281
DEVELOPMENT PROCESS FOR AQUEOUS DEVELOPABLE PHOTOPOLYMERIZABLE ELEMENTS
Gary C. Briney, and Stephen J. Fuerniss, both of Sayre, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 392,795, Jun. 28, 1982, Pat. No. 4,485,167, which is a continuation of Ser. No. 193,919, Oct. 6, 1980, abandoned. This application Feb. 6, 1984, Ser. No. 577,551
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—322 **7 Claims**

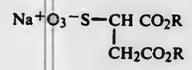
1. A process for improving the rate of development of an aqueous developable photopolymerizable element comprising a support bearing at least one layer of a photopolymerizable composition consisting essentially of
(a) at least one nongaseous ethylenically unsaturated compound capable of forming a high polymer by free-radical initiated chain propagating addition polymerization;
(b) at least one organic acidic polymeric binder soluble in solely aqueous alkaline solvent devoid of organic solvents;
(c) an organic, radiation-sensitive, free-radical generating photoinitiator or photoinitiator system taken from the class consisting of polynuclear quinones, vicinal ketaldonyl alcohols, acyloin ethers, alpha-hydrocarbon-substituted aromatic acyloins, photoreducible dyes and reducing agents including dyes of the phenazine, oxazine and quinone classes, Michler's ketone, benzophenone, 2,4,5-triphenylimidazolyl dimers with hydrogen donors, and mixtures, and
(d) at least 4.0% by weight based on the weight of solids in the photopolymerizable composition of an organic compound or salt of an organic compound taken from the group consisting of


(1)

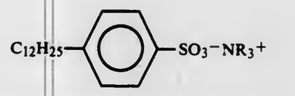
wherein R is an alkyl chain with 7 to 17 carbon atoms


(2)

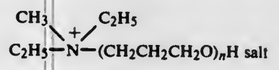
wherein R is $CH_3(CH_2)_7CH{=}CH(CH_2)_8$—, or a mixture of alkyl chains with 16 and 18 carbon atoms and $CH_3(CH_2)_7CH{=}CH(CH_2)_8$—, and x+y is 2 to 10;


(3)

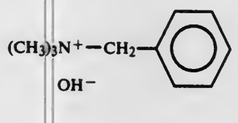
wherein R is a straight or branched alkyl chain of 8 to 13 carbon atoms;


(4)

wherein R is an alkyl chain with 1 to 9 carbon atoms;


(5)

wherein n is 10 to 50;


(6)

$[C_{16}H_{33}N(CH_3)_3{}^+]Br^-$;

$RNHCH_2CH_2COO^-Na^+$

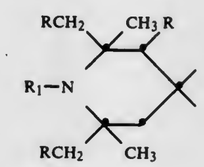
wherein R is an alkyl group derived from coconut oil; and combinations thereof;
which comprises (a) exposing the element imagewise to actinic radiation thereby forming hardened image areas, and (b) removing the unexposed areas unhardened by the actinic radiation by treating the photopolymerized layer with an aqueous developer solution.

4,517,282
PROCESS FOR DEVELOPING OR PEELING ALKALI-TYPE PHOTOSENSITIVE FILM AND APPARATUS USED THEREIN
Yoshiaki Tomisawa, Hitachi; Seiji Kinoda, Fujisawa; Eiji Fujita, Hitachi; Masanori Murata, Hitachi; Toshio Takeuchi, Hitachi, and Ken Ogawa, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan
Filed Oct. 12, 1982, Ser. No. 434,041
Claims priority, application Japan, Oct. 14, 1981, 56-164764
Int. Cl.³ G03C *3/00, 5/30*
U.S. Cl. 430—399 **2 Claims**

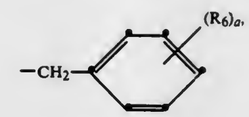
1. A process for developing or imagewisely peeling an alkali-type photosensitive film which comprises
developing or imagewisely peeling an alkali-type photosensitive film with an alkali developing or peeling solution,
taking off the developing or peeling solution containing a released photosensitive film suspension from a developing or peeling device,
introducing a cationic polyamine resin, methyl isobutyl carbinol and a gas into the developing or peeling solution to effect flocculation of particles of the released photosensitive film suspension,
removing the flocculated particles in a floating state from the developing or peeling solution, and
recycling the resulting developing or peeling solution to the developing or peeling device.

4,517,283
COLOR-PHOTOGRAPHIC RECORDING MATERIAL
David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Dec. 15, 1983, Ser. No. 562,190
Claims priority, application Switzerland, Dec. 16, 1982, 7314/82
Int. Cl.³ G03C *7/40, 7/26*
U.S. Cl. 430—512 **23 Claims**

1. A colour-photographic recording material which, in at least one light-sensitive silver halide emulsion layer, an interlayer and/or a protective layer, contains a light stabilizing amount of a stabiliser mixture comprising
(i) a compound which contains at least one group of the formula I


(I)

or a polymer, the recurring structural units of which contain a group of the formula I or are linked via a bivalent group corresponding to the formula I, in which R_1 is a free valency and in which, moreover, R is hydrogen or methyl and R_1 is methyl, a group $—CH_2—C(R_2){=}C(R_3)(R_4)$, $—CH_2—C{\equiv}C—R_5$,



$—CH_2—COOR_7$, $—CH_2—CON(R_8)(R_9)$, $—COR_{10}$, $—COOR_7$, $—CON(R_8)(R_9)$, $—OR_7$, $—(CH_2)_bOCOR_{10}$, $—CH_2—CH(R_{11})OR_{12}$, $—SOR_{13}$ or $—SO_2R_{13}$, a and b are 0, 1 or 2, R_2, R_3 and R_4 independently of one another are hydrogen or C_1-C_3-alkyl, R_5 is hydrogen or methyl, R_6 is C_1-C_4-alkyl, R_7 is C_1-C_{12}-alkyl, allyl, benzyl or cyclohexyl, R_8 is C_1-C_{12}-alkyl, allyl, cyclohexyl, benzyl or phenyl, R_9 is hydrogen, C_1-C_{12}-alkyl or allyl, or R_8 and R_9, together with the N atom to which they are linked, form a 5-membered or 6-membered heterocyclic ring, and R_{10} is hydrogen, C_4-C_{12}-alkyl, C_2-C_6 alkenyl, chloromethyl, C_5-C_8-cycloalkyl, C_7-C_{14}-aralkyl or C_7-C_{10}-alkylphenyl, R_{11} is hydrogen, C_1-C_4-alkyl, C_2-C_{13}-alkoxymethyl, phenyl or phenoxymethyl, R_{12} is hydrogen, C_1-C_{12}-alkyl, $—COR_{10}$ or $—CON(R_8)(R_9)$ R_8, R_9 and R_{10} being as defined above, and R_{13} is C_1-C_{12}-alkyl, phenyl or C_7-C_{14}-alkaryl, and
(ii) a phenolic antioxidant.

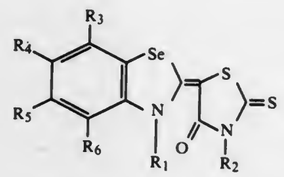
4,517,284

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Nobuaki Kagawa; Noboru Fujimori, both of Hino; Shigeo Tanaka, and Kaoru Onodera, both of Odawara, all of Japan, assignors to Konishiroku Photo Ind. Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,768
Claims priority, application Japan, Nov. 26, 1981, 56-190383; Nov. 26, 1981, 56-190384
Int. Cl.[3] G03C *1/02*
U.S. Cl. 430—591 12 Claims

1. A light-sensitive silver halide photographic material having at least one silver halide emulsion layer on a support characterized in that silver halide in said emulsion layer comprises silver halide grains containing at least 80 molar % of silver chloride and at least one merocyanine dye having the formula (I)



(I)

wherein R_1 is selected from the group consisting of an alkyl group, an alkenyl group and an aryl group and R_2 is selected from the group consisting of an alkyl having a sulfo substituent and an aryl having a sulfo substituent; and R_3, R_4, R_5 and R_6 are each selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group and a phenyl group and any one pair of R_3 and R_4, R_5 and R_6, R_1 and R_6 or R_4 and R_5 may join to form a ring.

4,517,285

PAPERMAKING OF POLYOLEFIN COATED SUPPORTS BY CONTROLLING STREAMING POTENTIAL

Antony I. Woodward, Chesham; David G. Clarke, Marlow, both of England, and Sunil Shahaney, Madras, India, assignors to The Wiggins Teape Group Limited, Buckinghamshire, England

Filed Oct. 19, 1983, Ser. No. 543,477
Claims priority, application United Kingdom, Oct. 20, 1982, 8229986; Aug. 18, 1983, 8322323
Int. Cl.[3] G03C *1/78;* D21H *3/78*
U.S. Cl. 430—538 13 Claims

1. A method of making a resin coated paper which comprises making a base paper by an alkaline paper making method from a cellulosic fibrous stock containing from 0.2 to 2% by weight on the fibre content of the stock of an alkyl ketene dimer size, from 0.3 to 4% by weight on the fibre content of the stock of a cationic wet strength resin and an amount, within the range 0.02 to 5% by weight on the fibre content of the stock, of an anionic polyelectrolyte which is adsorbable on the cellulosic fibres, which is such as to maintain the streaming potential of the stock equivalent to a streaming potential in the range of from −1 to −2.5 millivolts per bar (measured at 15° C.) on a stock having a conductivity of about 585 microsiemens (measured at 25° C.), forming a paper from the stock and providing a coating of a polyolefin resin on at least one side of the paper.

4,517,286

COLOR DIFFUSION TRANSFER LIGHT-SENSITIVE ELEMENT WITH AMINE SOLVENT

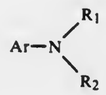
Yasuhiro Noguchi, and Masakazu Morigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Dec. 2, 1983, Ser. No. 557,301
Claims priority, application Japan, Dec. 2, 1982, 57-211943
Int. Cl.[3] G03C *1/40, 5/54*
U.S. Cl. 430—562 18 Claims

1. A diffusion transfer process light-sensitive element, comprising:

a suprport having coated thereon:

a light-sensitive silver halide emulsion layer associated with a dye image-providing compound which provides a transferred dye image when processed with an alkaline processing composition, wherein said dye image-providing compound is dispersed in a photographic layer in a copresent state with a liquid comprising an organic solvent represented by the following general formula (I):



(I)

wherein R_1 represents a substituted or unsubstituted alkyl, aralkyl, cycloalkyl or alkenyl group, R_2 represents a hydrogen atom or the same substituent as defined for R_1, Ar represents an unsubstituted phenyl group, a methylenedioxyphenyl group, or a phenyl or naphthyl group substituted by a halogen atom, a carboxy group or a substituted or unsubstituted alkyl, aralkyl, alkenyl, cycloalkyl, alkylthio, phenyl, alkoxy, aryloxy, alkylamino, acylamino, carbamoyl, sulfonamido or sulfamoyl group, with the phenyl or naphthyl group being optionally substituted by two or more, same or different, substituents in two or more positions, or R_1 and R_2 may be connected to each other to form a ring, or either R_1 or R_2 may be connected to Ar to form a fused ring.

4,517,287

METHOD AND REAGENT FOR THE ENZYMATIC DETERMINATION OF ENZYME SUBSTRATES

Peter Scheibe; Erich Bernt, both of Munich, and Sigmar Klose, Berg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,722
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913553
Int. Cl.[3] C12Q *1/00, 1/50, 1/62, 1/28*
U.S. Cl. 435—4 11 Claims

1. In a reagent for the enzymatic determination of an enzyme substrate, containing a substrate determination system including at least one enzyme, at least one buffer substance and at least one indicator substance, the improvement comprising including in said reagent a defined amount of the enzyme substrate to be determined, which amount is less than the substrate determination capacity of the said system but is sufficient to react with interfering reagent ingredients.

7. Method for the enzymatic determination of an enzyme substrate with a reagent which contains a system for determining the substrate and interfering substances which can react with the substrate or an intermediate or end product of the indicator reaction, which method comprises reacting, before the addition of the sample to be analyzed, a defined amount of the substrate with said reagent until reaction is complete, and then contacting the sample to be determined with said reagent.

4,517,288

SOLID PHASE SYSTEM FOR LIGAND ASSAY

Joseph L. Giegel, and Mary M. Brotherton, both of Miami, Fla., assignors to American Hospital Supply Corp., Evanston, Ill.

Filed Jan. 23, 1981, Ser. No. 227,664
Int. Cl.[3] G01N *33/54;* C12N *9/96*
U.S. Cl. 435—7 23 Claims

1. A competitive method for conducting a solid phase enzyme immunoassay of a fluid sample within the interstices of a solid, inert porous medium, said fluid sample containing an unknown level of analyte, the method comprising

a. immobilizing a binding material within a finite zone of the interstices of the solid, inert porous medium, said binding material being capable of immunological reaction with said analyte from among the constituents of the fluid sample;

b. applying, under binding conditions, to substantially the center of said finite zone, containing said immobilized binding material, a fluid sample containing the analyte for which said binding material is specific, said analyte being applied as a solution so as to permit diffusion thereof within the interstices of a reaction zone of the porous medium;

c. applying an enzyme-labeled indicator to substantially the center of said reaction zone, under conditions which allow said indicator and said analyte to compete for binding sites on said immobilized binding material, said indicator, which comprises an enzyme conjugated to a ligand, being immunochemically bound to said immobilized binding material in a amount which can be correlated to the amount of analyte in said reaction zone;

d. applying, to substantially the center of said reaction zone a stream of eluting solvent containing a substrate for the enzyme of said enzyme-labeled indicator, the quantity of said eluting solvent being sufficient to effect radial chromatographic separation, within said porous medium, of unbound enzyme-labeled indicator from bound enzyme-labeled indicator within said reaction zone; and

e. observing the extent to which the bound enzyme-labeled indicator is present within a delimited area of said reaction zone by measurement of the level of chromophore or fluorophore produced by the action of the bound enzyme-labeled indicator on said substrate, said delimited area of said reaction zone being essentially free of unbound indicator.

4,517,289

MONOCLONAL ANTIBODIES FOR HUMAN TISSUE CROSS-MATCHING

Edgar L. Milford, Dover; Charles B. Carpenter, Weston, and Jean M. Paradysz, Brighton, all of Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Filed Aug. 18, 1982, Ser. No. 409,183
Int. Cl.[3] G01N *33/54;* C12N *5/00, 15/00;* C12R *1/91;* A61K *39/395*
U.S. Cl. 435—7 12 Claims

1. A hybridoma cell line selected from a group consisting of ATCC HB8156 and ATCC HB8157.

7. A method of typing human tissue, comprising the step of: contacting an antibody produced by a hybridoma cell line selected from the group consisting of ATCC HB8156 and ATCC HB8157 with cells obtained from a human whose tissue type is being determined.

4,517,290

METHOD FOR ENZYME IMMUNOASSAY AND PEPTIDE-ENZYME CONJUGATE AND ANTIBODY THEREFOR

Susumu Iwasa, Tsuzuki; Isamu Yoshida, Takatsuki, and Koichi Kondo, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 244,323, Mar. 16, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,619
Claims priority, application Japan, Mar. 31, 1980, 55-42484; Jun. 13, 1980, 55-80467; Jan. 14, 1981, 56-4507
Int. Cl.[3] G01N *33/54, 33/56;* A61K *39/395;* C12N *9/96*
U.S. Cl. 435—7 10 Claims

1. An enzyme immunoassay method involving the use of an antibody as a reagent, which comprises using an antibody obtained by inoculating human chorionic gonadotropin into an animal to produce an anti-human chorionic gonadotropin antibody, contacting a body fluid containing the anti-human chorionic gonadotropin antibody thus produced with a peptide of the formula:

H-R_1-Pro-Ser-Asp-Thr-Pro-Ile-Leu-Pro-Gln-OH

wherein R_1 is a peptide fragment consisting of 1 to 14 amino acid residues including Gly in the 14-position of

Ala^1-Pro^2-Pro^3-Pro^4-Ser^5-Leu^6-Pro^7-Ser^8-Pro^9-Ser^{10}-Arg^{11}-Leu^{12}-Pro^{13}-Gly^{14},

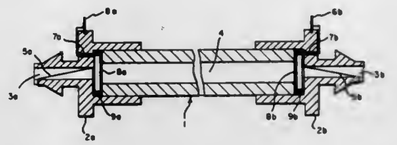
wherein said peptide is synthetically prepared by chemically combining at least one member selected from the group consisting of amino acids and peptide fragments of fewer amino acids than said peptide, said peptide being insolubilized on a carrier, and eluting the anti-human chorionic gonadotropin antibody thus specifically absorbed.

4,517,291

BIOLOGICAL DETECTION PROCESS USING POLYMER-COATED ELECTRODES

James L. Seago, Bear, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 15, 1983, Ser. No. 523,168
Int. Cl.[3] C12Q *1/54*
U.S. Cl. 435—14 9 Claims



1. In a method for the amperometric determination of the concentration of a constituent of interest in a biological sample, said method comprising:

(1) contacting said constituent with an oxidase enzyme for which the constituent is a substrate, thereby producing a change in the concentration of an electroactive substance in said sample;

(2) contacting said sample containing said electroactive substance with an inert metal indicator electrode;

(3) measuring the current flow between said indicator electrode and a counter electrode at a preselected potential difference between said electrodes; and

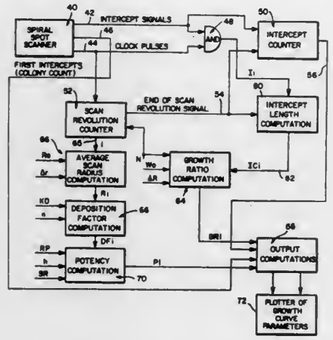
(4) relating the current to the concentration of the substrate initially present in the biological sample; the improvement comprising: using as the inert metal indicator electrode a noble metal having intimately coated thereon a thin film of perfluorosulfonic acid polymer.

4,517,292

METHOD AND APPARATUS FOR TESTING MICROBIAL INTERACTION WITH GROWTH AFFECTING SUBSTANCES

Samuel Schalkowsky, Chevy Chase, and William Pepper, Jr., Bethesda, both of Md., assignors to Spiral System Instruments, Inc., Bethesda, Md.

Filed May 18, 1982, Ser. No. 379,367
Int. Cl.³ C12Q *1/18, 1/24;* C12M *1/26, 1/32*
U.S. Cl. 435—32 **22 Claims**



1. A method for determining the effect of a growth interacting substance on microbial growth by utilizing an interaction plate which contains visible microbial colonies in a track produced by the programmed deposition of a microbe containing solution on a track on the plate and the programmed deposition of a track of a growth interacting substance on the interaction plate in contact with the microbes and incubating the plate to produce visible colonies of microbes comprising:

(a) scanning the interaction plate with a scanner which scans a spot in a series of adjacent lines to detect a length of interception Li of the spot with the visible colonies of microbes to produce a measurement of the number and size of visible colonies along a line of intersection of the spot with the track;

(b) calculating the width of the track of visible colonies of microbes along the line of intersection of the spot with the track from the detected length of interception; and

(c) calculating the growth ratio GRi for each intersection of the spot with the track of visible colonies of microbes by calculating a ratio of the width of the track for the line of intersection of the spot with the interaction plate and a reference width.

4,517,293

HIGH YIELD PROCESS FOR IN VITRO PRODUCTION OF SERUM-FREE AND MITOGEN-FREE INTERLEUKIN-2 USING A ROLLER BOTTLE CULTURE SYSTEM

Hans-Åke Fabricius, Breisach, and Roland Stahn, Holzhausen, both of Fed. Rep. of Germany, assignors to Hooper Trading Co. N.V., Curacao,

Division of Ser. No. 418,378, Sep. 15, 1982, Pat. No. 4,448,879, which is a continuation-in-part of Ser. No. 247,769, Mar. 26, 1981, Pat. No. 4,390,623, which is a continuation-in-part of Ser. No. 193,112, Oct. 2, 1980, abandoned. This application Feb. 3, 1984, Ser. No. 576,894
Int. Cl.³ C12P *21/00*
U.S. Cl. 435—68 **4 Claims**

1. A process for producing a serum-free and mitogen-free interleukin-2 containing supernatant comprising:

(1) stimulating IL-2 producing primary cells which have been washed to remove substantially all proteins bound to the external cell membrane surface by incubating the washed cells in a liquid tissue culture medium supplemented with serum protein and a mitogen in a roller bottle cultivation system which is caused to rotate at a speed sufficient to rotate said roller bottle at from about 5 to 20 revolutions per minute to thereby provide a homogeneous culture medium, disperse metabolic products and synthesized proteins throughout the culture medium, and maintain a uniform cell suspension in the culture medium;

(2) separating and washing the stimulated cells to remove substantially all of the serum and mitogen; and

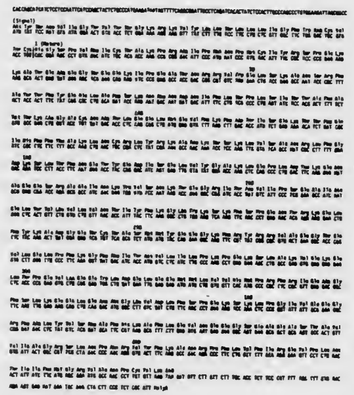
(3) conditioning the cells obtained in step (2) by incubating the cells in the presence of a serum-free and mitogen-free liquid tissue culture medium in a roller bottle cultivation system which is caused to rotate at a speed sufficient to rotate said roller bottle at from about 5 to 20 revolutions per minute to thereby provide a homogeneous culture medium, disperse metabolic products and synthesized proteins throughout the culture medium, and maintain a uniform cell suspension in the culture medium to thereby transfer interleukin-2 into the liquid phase.

4,517,294

HUMAN ANTITHROMBIN III

Susan C. Bock, Palo Alto, and Richard M. Lawn, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jul. 30, 1982, Ser. No. 403,600
Claims priority, application United Kingdom, Mar. 3, 1982, 8206262
Int. Cl.³ C12P *21/02;* C12N *15/00, 1/20, 1/00;* C07H *15/12*
U.S. Cl. 435—70 **10 Claims**



1. A DNA sequence consisting of a sequence encoding human antithrombin III.

4,517,295

HYALURONIC ACID FROM BACTERIAL CULTURE

James W. Bracke, Minnetonka, and Kipling Thacker, Minneapolis, both of Minn., assignors to Diagnostic, Inc., Minneapolis, Minn.

Filed Feb. 18, 1983, Ser. No. 467,925
Int. Cl.³ C12P *19/04;* C12R *1/46*
U.S. Cl. 435—101 **30 Claims**

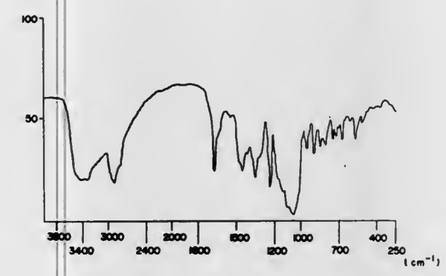
18. In the method of producing hyaluronic acid involving production of same by streptococcus bacteria, the improvement involving the maintenance of CO_2-enriched anerobic conditions in the environment of the bacteria growth medium.

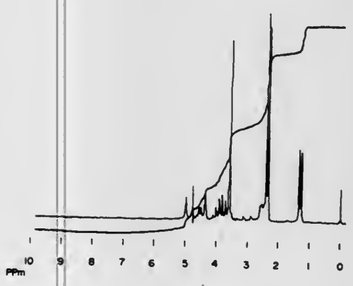
4,517,296

ANTIBIOTIC ACMIMYCIN AND ITS PRODUCTION

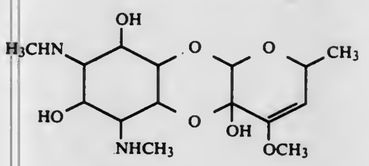
Hideo Sakakibara; Masashi Awata; Shuzo Satoi; Naoki Mutoh; Masaki Takada, and Mitsuo Hayashi, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 9, 1983, Ser. No. 530,668
Claims priority, application Japan, Sep. 9, 1982, 57-157921
Int. Cl.³ C12P *17/18;* C07D *323/04*
U.S. Cl. 435—119 **3 Claims**





1. Antibiotic acmimycin of the formula



or a pharmaceutically-acceptable acid addition salt thereof.

2. A process for the production of antibiotic acmimycin which comprises culturing an acmimycin-producing microorganism belonging to the genus Streptomyces, and isolating antibiotic acmimycin from the cultured broth.

3. A process according to claim 2, wherein the acmimycin-producing microorganism is Streptomyces sp. AC4559 FERM P-6645.

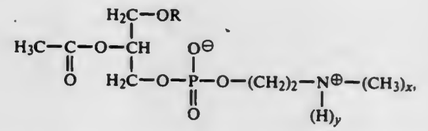
4,517,297

METHOD FOR THE PREPARATION OF PHYSIOLOGICAL EFFECTORS

Toshio Muramatsu; Nagao Totani, both of Chiba, Japan, and Helmut K. Mangold, Muenster, Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

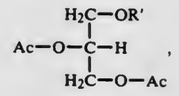
Continuation of Ser. No. 400,871, Jul. 22, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,981
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131524
Int. Cl.³ C12P *13/00;* C07F *9/08*
U.S. Cl. 435—128 **18 Claims**

1. A method for making a compound of the formula

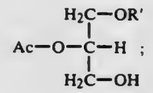


wherein R is alkyl or alkenyl, x is 1, 2, or 3, y is 0, 1, or 2, and (x+y) is 3, which method comprises

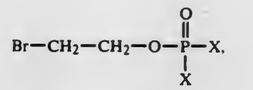
partially deacylating a starting compound of the formula



wherein R′ is alkyl or alkenyl and Ac is fatty acid acyl, to form a first intermediate of the formula



reacting said first intermediate with a bromoethylphosphoric acid halide of the formula

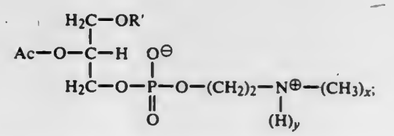


wherein X is bromine or chlorine, to form a second intermediate;

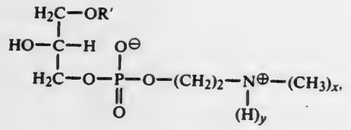
reacting said second intermediate with an amine of the formula

$(H)_yN(CH_3)_x$

to form a third intermediate of the formula



hydrolyzing said third intermediate to form a fourth intermediate of the formula



and then acetylating said fourth intermediate to form the desired compound.

4,517,298

PROCESS FOR PRODUCING FUEL GRADE ETHANOL BY CONTINUOUS FERMENTATION, SOLVENT EXTRACTION AND ALCOHOL SEPARATION

Daniel W. Tedder, Marietta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 265,328, May 8, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,262

Int. Cl.³ C12P *7/16, 7/06;* **C10L** *1/02*

U.S. Cl. 435—160 **14 Claims**

1. A continuous method of preparing alcohol, comprising:
continuously fermenting with fermentation microorganisms a fermentable biomass feedstock in water in a fermentation unit, thereby forming an aqueous fermentation liquor containing alcohol;
withdrawing a sludge waste and fermentation liquor comprising microorganisms and alcohol obtained during the processing of the biomass in the processing unit;
supplying additional feedstock and microorganisms to said fermentation unit;
continuously extracting a low-level alcohol from said fermentation liquor with a chemically stable organic solvent system containing an extractant for said alcohol and a hydrocarbon solvent for said extractant, said hydrocarbon solvent having ten or more carbons in its atom, thereby forming an alcohol-organic solvent extract phase and an aqueous raffinate;
separating said alcohol from said alcohol-organic solvent phase;
wherein said low-level alcohol-organic solvent extract phase from the fermentation liquor is such that the alcohol content in the remaining fermentation liquor is maintained sufficiently low so that it does not destroy the microorganisms in the fermentation liquor; and
returning all material components of said aqueous raffinate comprising microorganisms and unextracted alcohol to said fermentation unit.

4,517,299

ACETYLESTERASES

Hiroshi Imanaka, Osaka; Toshio Miyoshi, Fuji; Toshio Konomi, Tsushima; Yoshiaki Kubochi; Seiziro Hattori, both of Aichi, and Takeshi Kawakita, Tsu, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

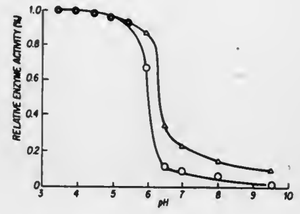
Division of Ser. No. 283,962, Jul. 16, 1981, Pat. No. 4,414,328. This application Jun. 3, 1983, Ser. No. 500,883

Claims priority, application United Kingdom, Jul. 21, 1980, 8023834

Int. Cl.³ C12N *9/18*

U.S. Cl. 435—197 **1 Claim**

1. An acetylesterase obtainable from *Aureobasidium pullulans* IFO 4466 selected from acetylesterase 4466-I having the properties of
(a) Capability of hydrolyzing Cephalosporin C to deacetylcephalosporin C
(b) Substrate Specificity
Hydrolyzable: Acetic ester
Not Hydrolyzable: Ester besides acetic ester
(c) Optimum pH: Below pH 4
(d) Stable pH range: pH 4.0–6.0
(e) Optimum temperature: Around 37° C.
(f) Stable temperature range: Below 60° C.
(g) Km value: 11.5 mM and
(h) Effect of metal ion: the enzyme activity is not affected by a metal ion selected from Cu^{2+}, Mn^{2+}, Mg^{2+}, Zn^{2+}, Ni^{2+}, Ca^{2+}, Ba^{2+} and Fe^{3+},
provided that the substrate is cephalosporin C in the above (c)–(h), and Acetylesterase 4466-II having the properties of
(a) Capability of hydrolyzing cephalosporin C to deacetylcephalosporin C
(b) Substrate Specificity
Hydrolyzable: Acetic ester



Not Hydrolyzable: Ester besides acetic ester
(c) Optimum pH: Below pH 4
(d) Stable pH range: pH 4.0–6.0
(e) Optimum temperature: Around 37° C.
(f) Stable temperature range: Below 60° C.
(g) Km value: 13.7 mM and
(h) Effect of metal ion: The enzyme activity is not affected by a metal ion selected from Cu^{2+}, Mn^{2+}, Mg^{2+}, Zn^{2+}, Ni^{2+}, Ca^{2+}, Ba^{2+} and Fe^{3+},
provided that the substrate is cephalosporin C in the above (c)–(h).

4,517,300

PLASMID PSAN 181

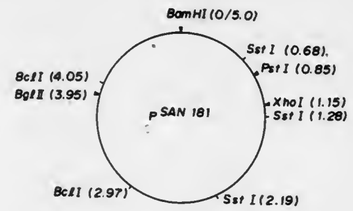
Taichi Manome; Toshinori Ohmine; Takao Okazaki, and Mamoru Arai, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,245

Claims priority, application Japan, Mar. 16, 1982, 57-41227

Int. Cl.³ C12N *1/00, 15/00;* **C12P** *19/34*

U.S. Cl. 435—317 **2 Claims**



1. Isolated plasmid pSAN 181 having a molecular weight of 5±0.2 megadaltons and having single cleavage sites for each of the restriction endonucleases BamHI, PstI; XhoI and BglII, the positions of said cleavage sites being 0, about 0.85, about 1.15 and about 3.95, and multiple cleavage sites for the restriction endonuclease BclI at about 2.97 and 4.05 and for the restriction endonuclease SstI at about 0.68, 1.28 and 2.19 megadaltons, respectively, from the cleavage site of BamHI.

4,517,301

KETONE CONTROL TEST COMPOSITION, METHOD AND TEST DEVICE

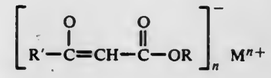
Carmine M. Greene, Mishawaka, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 6, 1982, Ser. No. 447,321

Int. Cl.³ G01N *33/48*

U.S. Cl. 436—14 **18 Claims**

1. A stable composition useful for preparing a ketone control solution, said composition comprising dimethylformamide and a predetermined quantity of a β-keto ester salt capable of being hydrolyzed in aqueous solution to a β-keto acid and having the formula



in which R is lower alkyl of 1 to 6 carbon atoms, R′ is an aliphatic group having 1 to 7 carbon atoms or cyclic group, M is a Group I, II or III metal ion and n is 1, 2 or 3.

4,517,302

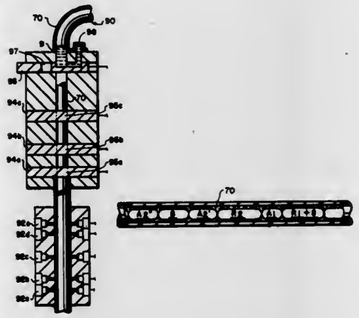
CONTINUOUS FLOW METERING APPARATUS

Stephen Saros, Wantagh, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,720

Int. Cl.³ G01N *1/14, 35/08*

U.S. Cl. 436—180 **23 Claims**



1. A method for metering the introduction of a sequence of fluid segments into a conduit, which method comprises:
sensing a flow parameter of an alternating sequence of gas and liquid stream segments along a conduit; and
stopping stream introduction along a conduit downstream of and in response to sensing of a flow parameter by selected ones of a series of flow stopping valves, each of which intersects a preceding gas segment at a different position during passage along said conduit.

14. An apparatus for metering the introduction of a sequence of fluid segments into a conduit having an inlet, which apparatus comprises;
means defining a conduit having an inlet means;
a series of sensing means disposed along said conduit for sensing a flow parameter of an alternating sequence of gas and liquid stream segments; and
a series of flow stopping means for stopping stream introduction of a sequence of fluid segments into said conduit, said flow stopping means being disposed at different locations along and within said conduit downstream of and individually responsive to sensing of said flow parameter by selected ones of said sensing means, which flow stopping means each intersect a preceding gas segment at a different position during passage along said conduit.

4,517,303

SPECIFIC BINDING ASSAYS UTILIZING ANALYTE-CYTOLYSIN CONJUGATES

J. William Freytag, Wilmington, and William J. Litchfield, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 20, 1982, Ser. No. 435,455

Int. Cl.³ G01N *33/54, 33/50, 33/74*

U.S. Cl. 436—501 **40 Claims**

1. A conjugate for the detection of an analyte in a test sample, comprising in combination:
(1) cytolysin means for altering the permeability of a membrane of a vesicle, said means being conjugated to
(2) at least one analyte molecule.

15. A method for determining the amount of an analyte in liquid medium comprising the steps of:
(A) forming a reaction system by contacting said liquid medium with
(1) analyte specific binding agent;
(2) analyte-cytolysin conjugate; and
(3) vesicles containing marker material sequestered within the vesicle
in proportions such that the interaction of unbound analyte-cytolysin conjugate with said vesicles results in the release of said marker material; and
(B) measuring said marker material thereby released which is related to the amount of said analyte initially present in said liquid medium.

16. The method of claim 15 wherein the analyte is a drug, metabolite, hormone, steroid, pesticide, environmental pollutant, food toxin, vitamin, protein, microbial surface marker, cancer cell marker, fungus, protozoan, virus, cell or tissue antigen.

4,517,304

PRODUCTION OF VIRAL ANTIGENS

Edward J. Stott; Lewis H. Thomas, and Norma J. Jebbett, all of Newbury, England, assignors to National Research Development Corporation, London, England

Filed Jun. 29, 1981, Ser. No. 278,052

Claims priority, application United Kingdom, Jul. 1, 1980, 8021434

Int. Cl.³ G01N *33/54;* **C12N** *5/00;* **C12Q** *1/29;* **C12P** *1/00*

U.S. Cl. 436—518 **17 Claims**

1. A process of producing a cell strain useful in the production of antigen(s) specific to respiratory syncytial virus, which process comprises:
(1) culturing in vitro cells derived from a human or animal respiratory tract mucosa,
(2) inoculating the cultured cells with respiratory syncytial virus, and
(3) selecting virally infected cells from the culture.

9. A method of diagnosing respiratory syncytial virus infection by detecting antibody to that virus in a biological sample taken from a human or animal, which method comprises utilizing cells of a cell strain as claimed in claim 1 in an immunological diagnostic method.

4,517,305

FINELY DIVIDED SILICON CARBIDE HAVING A HIGH CONTENT OF 2H-TYPE SILICON CARBIDE AND METHOD OF PRODUCING THE SAME

Hiroshige Suzuki, No. 39-9, 2-Chome, Kitasenzuku, Ohta-Ku, Tokyo, Japan, and Teizo Hase, Tokyo, Japan, assignors to Hiroshige Suzuki, Japan

Continuation of Ser. No. 299,929, Sep. 8, 1981, abandoned, which is a continuation of Ser. No. 154,215, May 29, 1980, abandoned, which is a continuation of Ser. No. 18,632, Mar. 8, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 428,627

Claims priority, application Japan, Mar. 15, 1978, 53-28597; Mar. 15, 1978, 53-28598; Mar. 15, 1978, 53-28600

Int. Cl.³ C01B *31/36;* **C04B** *35/56*

U.S. Cl. 501—89 **12 Claims**

5. Finely divided submicron silicon carbide powder consisting essentially of at least 10% by weight of 2H-type silicon carbide; aluminum, present in an effective amount for sintering from 0.3 to 4.9% by weight, said aluminum being homogeneously dispersed in said submicron silicon carbide powder, said submicron silicon carbide powder having a specific surface area of at least 5 m^2/g, and the remainder of said powder being β-type silicon carbide, the submicron silicon carbide powder being made by a method comprising reacting a mixture of carbon powders consisting of finely divided particles or an organic compound which is converted into finely divided carbon by heating, with a silicon source selected from the group of sources consisting of silicon, silicon monoxide, silicon dioxide and silicon compounds which are converted into silicon, silicon monoxide or silicon dioxide by heating, said reacting occurring at a temperature of 1,200°–1,500° C. under a reduced pressure having a vacuum degree of not lower than 10 mm Hg in the presence of metallic aluminum or an organic or an inorganic aluminum compound which is converted into aluminum by heating, said metallic aluminum or aluminum compound being dispersed homogeneously in said mixture, the amount of said metallic aluminum or aluminum compound calculated as aluminum, being 1–20 parts by weight based on 100 parts by weight of silicon carbide to be formed.

6. Finely divided submicron silicon carbide powder consisting essentially of at least 10% by weight of 2H-type silicon carbide; aluminum, present in an effective amount for sintering from 0.3–4.9% by weight, said aluminum being homogeneously dispersed in said submicron silicon carbide powder and the remainder being β-type silicon carbide, said submicron silicon carbide powder having a specific surface area of at least 5 m^2/g made by a method comprising either reacting a mixture consisting essentially of vapors of a silicon halide and a hydrocarbon or decomposing trichloromethysilane vapors, said reacting and said decomposing occurring at a temperature of 1,200°–1,500° C. in the presence of a vapor of aluminum halide dispersed homogeneously in said vapors, the amount of said aluminum halide being 0.5–5 parts by weight, calculated as aluminum, based on 100 parts by weight of silicon carbide to be formed.

4,517,306

COMPOSITION AND A METHOD FOR ITS USE IN DEHYDROCYCLIZATION OF ALKANES

Waldeen C. Buss, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 344,571, Feb. 1, 1982, Pat. No. 4,447,316. This application Jan. 3, 1984, Ser. No. 567,834

Int. Cl.³ B01J *29/12*

U.S. Cl. 502—74 **7 Claims**

1. A composition comprising:

(a) a type L zeolite;

(b) at least one Group VIII metal; and

(c) an alkalline earth metal selected from the group consisting of barium, strontium and calcium, wherein said compositon is reduced in a hydrogen atmosphere at a temperature of from 480° C. to 620° C.

5. A composition consisting essentially of:

(a) a type L zeolite;

(b) an inorganic oxide binder;

(c) platinum; and

(d) barium; wherein said composition is reduced in a hydrogen atmosphere at a temperature of from 480° C. to 620° C.

4,517,307

CATALYST COMPONENTS FOR THE POLYMERIZATION OF ETHYLENE AND OF MIXTURES THEREOF WITH OLEFINS AND CATALYSTS OBTAINED THEREFROM

Illaro Cuffiani, Ferrara; Paolo Longi, Milan; Umberto Zucchini, Ferrara, and Gianni Pennini, Porotto, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 22, 1982, Ser. No. 452,152

Claims priority, application Italy, Dec. 24, 1981, 25840 A/81

Int. Cl.³ C08F *4/62, 4/64, 4/68*

U.S. Cl. 502—119 **14 Claims**

1. An emulsion or dispersion, in an inert liquid medium or in an inert gas phase of a liquid phase, of a catalyst component selected from the group consisting of

(1) compounds of transition metals of Groups IV to VI, inclusive, of the Mendelyeev Periodic System and which, in the liquid state, are immiscible in aliphatic hydrocarbons;

(2) compositions comprising transition metal compounds of the Groups indicated in (1) above and which, in the liquid state, are immiscible in aliphatic hydrocarbons; and

(3) transformation products of precursors of components (1) and (2), said precursors of components (1) and (2), said precursors in the liquid state being immiscible in aliphatic hydrocarbons;

said emulsion or dispersion being directly usable in the preparation of coordination catalysts having a controlled morphology and/or particle size, which catalysts polymerize ethylene and mixtures thereof with other olefins to polymers having controlled morphology and/or particle size.

3. A catalyst component according to claim 1, in which the dispersed liquid phase comprises compunds of Ti and Mg.

4. A catalyst component according to claim 3, in which the dispersed liquid phase containing the Ti and Mg compounds is obtained by reacting an anhydrous halide of Ti and Mg and an aluminum halide or alkyl-Al-dihalide in an aromatic liquid hydrocarbon, in the presence of a halogenated hydrocarbon, or by reacting an anhydrous halide of Mg and a Ti alcoholate, in the presence of an anhydrous hydrohalogenic acid.

4,517,308

METHOD OF PRODUCING A SORPTIVE BODY, PARTICULARLY FOR ELIMINATING ODORS, AIR FRESHENING, ETC. AND THE RESULTANT PRODUCT

Peter Ehlenz, Königswinter, and Lutz Irgel, St. Augustin, both of Fed. Rep. of Germany, assignors to Collo GmbH, Bornheim-Hersel, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,310

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135025

Int. Cl.³ B29D *27/00;* **B01J** *20/10, 20/20, 20/30*

U.S. Cl. 502—401 **21 Claims**

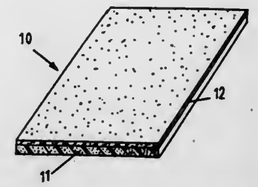
1. In a method of producing a sorptive body for use in filtering air and/or in eliminating odors, providing air freshening, and the like, in which finely ground solid particles of a sorptive substance or a composition containing a sorptive substance are mixed with a binding agent and are thereby bound into a cohesive body, the improvement comprising:

combining said finely ground solid particles with at least one liquid sorbate before mixing said solid particles with a binding agent, said solid particles having pores and capillaries for absorbing said sorbate, said sorbate being absorbable in said pores and capillaries, and the conditions of said combining being such that said sorbate is absorbed in said capillaries and pores;

mixing said combined solid particles and absorbed sorbate with a binding agent comprising a settable binder composition in a liquid solvent, said binder composition being settable upon evaporation of said liquid solvent at a temperature higher than the boiling point of said sorbate so as to bind said solid particles together as a cohesive sorptive body;

shaping said mixture and/or applying said mixture to a carrier body so as to form a cohesive sorptive body for use in filtering air and/or in eliminating odors, providing air freshening and the like; and,

applying heat to said shaped and/or supported mixture so as to cause evaporation of said liquid solvent from said mixture, setting of said binder composition so as to bind said solid particles together in said cohesive sorptive body, and expulsion of said sorbate from said solid particles during the setting of said binder composition, the amount of said binder composition not exceeding 30% of the weight of said sorptive substance and the amount of said sorbate expelled from said solid particles during setting of said binder composition providing a connected open system of pores and capillaries in said binder composition for passage of air through said cohesive body and contact of said air with said sorptive substance.



18. The product made by the method of claim 1 to produce a filter mat and/or an air purifier, especially in kitchen extractor-hoods, air-conditioning devices, wherein the granular sorptive body, e.g. active carbon, taken up in the binding agent is fastened to a carrier (11, 14), e.g. a fibrous fleece, foam strip.

4,517,309

METHOD FOR THE TREATMENT OF CALCIFYING PANCREATITIS

Aiji Noda, 204-402, No. 2-3, Fujiyamadai 2-chome, Kasugai-shi, Aichi-ken, Japan

Filed Feb. 1, 1984, Ser. No. 575,897

Claims priority, application Japan, Apr. 6, 1983, 58-61666

Int. Cl.³ A61K *31/42*

U.S. Cl. 514—376 **5 Claims**

1. A method for the treatment of calcifying pancreatitis which comprises orally administering trimethadione in a dose of 0.5 to 3 g/day at least for one month to a patient suffering from calcifying pancreatitis to thereby dissolve pancreatic stones.

4,517,310

N-[2-HYDROXY-2-(3-HYDROXYPHENYL)ETHYL]-1H-BENZIMIDAZOLE-1-BUTANAMINE AND USE THEREOF AS A CARDIOTONIC AGENT

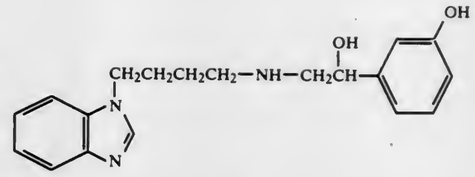
Julius Diamond, Mountain Lakes, and Ronald A. Wohl, Morris Plains, both of N.J., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Filed Jul. 28, 1981, Ser. No. 287,605

Int. Cl.³ A61K *31/415;* **C07D** *235/06*

U.S. Cl. 514—394 **7 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof.

5. The method of eliciting a cardiotonic effect in a mammalian host having a disease condition in which therapeutic benefit is derived from elicitation of a cardiotonic effect, which comprises administering to said host a non-toxic cardiotonically effective amount of a compound of claim 1.

4,517,311

2'-SUBSTITUTED-SPIRO[BENZOFURAN-2(3H),1'-CYCLOALKANES] AND THEIR ANALGESIC AND ANTI-DEPRESSANT COMPOSITIONS

Edward J. Glamkowski, Warren, N.J.; Michael C. Jones, deceased, late of Somerville, N.J., and by Herbert Jones, administrator, Montague, Mich., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

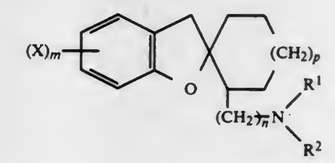
Continuation-in-part of Ser. No. 313,097, Oct. 19, 1981, Pat. No. 4,404,221. This application Sep. 13, 1982, Ser. No. 416,446

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.³ A61K *31/34;* **C07D** *307/94*

U.S. Cl. 514—462 **14 Claims**

1. A compound of the formula



wherein X is hydrogen, halogen, amino, alkyl-substituted amino, hydroxy, alkyl, and alkoxy, halogen being any of fluorine, chlorine, bromine and iodine; m is an integer of 1, 2, or 3, X being the same or different when m is larger than 1; n is an integer of 0, 1 or 2; p is an integer of 0 or 2 and R^1 and R^2 are each independently hydrogen and alkyl; a stereoisomer thereof and a pharmaceutically acceptable acid addition salt of any of the foregoing.

7. A method of treatment which comprises administering to a depressed patient a pharmaceutically effective amount of a compound defined in claim 1.

4,517,312

PROCESS FOR REGENERATING RESIN

Sadao Kumasaka; Satomi Tada, both of Tokyo; Shigeo Horikoshi; Tamaki Kamanaka, both of Kawagoe, and Hiroshi Taniguchi, Tokyo, all of Japan, assignors to Toyo Rubber Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 563,644

Claims priority, application Japan, Dec. 23, 1982, 57-229202

Int. Cl.³ C08J *11/04*

U.S. Cl. 521—47 **3 Claims**

1. A process for regenerating a resin from substantially water insoluble waste resin which has a lower specific gravity than water, comprising:

dissolving such a waste resin in an organic solvent which is immiscible with water and which has a larger specific gravity than water to provide a resin solution;

admixing water with said resin solution thereby precipitating

the resin in the solution in the form of resin particles and forming a stratified liquid having a lower layer of said organic solvent with a water layer on top of said organic solvent and said precipitated resin particles floating on said water layer, said water being at a temperature below the boiling point of said organic solvent; and

recovering said resin particles from said water layer.

4,517,313

METHOD OF MAKING POLYURETHANE FOAM

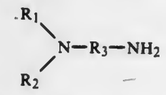
Keiichi Nakatani, Kyoto, Japan, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 11, 1984, Ser. No. 598,776

Int. Cl.³ C08G *18/14, 18/18, 18/20*

U.S. Cl. 521—51 **4 Claims**

1. In a method of manufacturing polyurethane foam by reacting organic polyisocyanates and polyols in the presence of a foaming agent, a catalyst, and the like, the improvement comprising employing as the catalyst, a salt of carbonic acid and a polyamine represented by the general formula:



wherein R_1 and R_2 are an alkyl group having 1–4 carbon atoms or R_1 and R_2 are combined to form a heterocyclic ring having 3–6 carbon atoms together with the nitrogen atom; and R_3 is an alkylene group.

4,517,314

FINE PARTICULATE, EXPANDABLE STYRENE POLYMERS SUITABLE FOR THE PRODUCTION OF RAPIDLY MOLD-EJECTED CELLULAR BODIES

Dirk Reese, Marl, and Josef K. Rigler, Recklinghausen, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Division of Ser. No. 621,270, Jun. 18, 1984, Pat. No. 4,497,912. This application Oct. 17, 1984, Ser. No. 661,811

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325392

Int. Cl.³ C08V *9/20*

U.S. Cl. 521—59 **7 Claims**

1. In a particulate molding composition for the production of foamed articles consisting essentially of a mixture of an expanding agent, a polymerized reaction product of styrene monomer or styrene monomer in admixture with comonomers, and a water insoluble compound of high molecular weight which is soluble in the monomers and forms a non continuous phase with the styrene polymers,

the improvement comprising said high molecular weight compound comprising about 0.01 to 2.0 percent by weight of a polyoctenamer based on the weight of said monomers and comonomers.

4,517,315

PRODUCTION OF A FILM-LIKE OR FIBROUS STRUCTURE OF AN AROMATIC POLYESTER

Shunichi Matsumura, Hachioji, and Hiroo Inata, Hino, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 18, 1982, Ser. No. 340,036

Claims priority, application Japan, Jan. 27, 1981, 56-9606; Jan. 30, 1981, 56-11547; Sep. 18, 1981, 56-146199

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

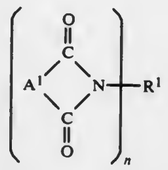
Int. Cl.³ B29D *27/00;* **C08G** *8/00*

U.S. Cl. 521—64 **25 Claims**

1. A process for producing a film-like or fibrous structure of an aromatic polyester which does not contain pores which open to both surfaces, which comprises

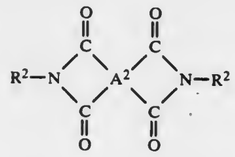
(1) forming an unstretched film-like or fibrous structure by melt-shaping a blend comprising 100 parts by weight of (A) an aromatic polyester having a high degree of polymerization and containing an aromatic dicarboxylic acid as a main acid component and an aliphatic diol and/or an alicyclic diol as a main glycol component and (B) 3 to 300 parts by weight of a low-molecular-weight compound being substantially non-reactive with the aromatic polyester (A) and having a boiling point of at least about 200° C. under atmospheric pressure and a molecular weight of not more than 1,000 and being a compound selected from the group consisting of imide compounds of the formula (1)-a

(1)-a



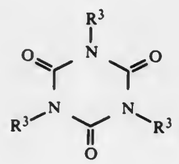
wherein A^1 represents a divalent aromatic group or linear or cyclic aliphatic group which may be substituted R^1 represents an aromatic group or linear or cyclic aliphatic group having a valence of n; n is 1 or 2; and the imide ring is 5- or 6-membered, imide compounds of the following formula (1)-b

(1)-b



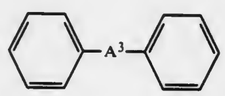
wherein A^2 represents a tetravalent aromatic group which may be substituted, R^2 represents a monovalent linear or cyclic aliphatic group which may be substituted, and the imide rings are 5- or 6-membered, trialkylisocyanurates of the formula (1)-c

(1)-c



wherein R^3 represents a monovalent alkyl group, diphenyl compounds of the formula (1)-d

(1)-d



wherein A^3 represents —O—, —SO_2—, —CO—, or an alkylene group, and the phenyl rings may be substituted, nitrobenzene, nitrotoluene, and nitronaphthalene,

(2) stretching the resulting film-like or fibrous structure, the stretching ratio being from about 3 to about 7 in the case of the fibrous structure and from about 3 to about 30 in terms of area ratio in the case of the film-like structure, and

(3) extracting at least a major portion of the low-molecular-weight compound from the stretched film-like or fibrous structure by using an organic solvent which does not substantially dissolve the aromatic polyester under the extracting conditions.

25. A film-like or fibrous structure of an aromatic polyester, prepared by the process of claim 1, said structure substantially containing no low-molecular-weight compound or containing the low-molecular-weight compound in an amount of up to about 1 part by weight at most per 100 parts by weight of the aromatic polyester.

4,517,316

POROUS IRRIGATION PIPE PREPARED FROM PARTICULATE ELASTOMER AND THERMOPLASTIC BINDER CONTAINING CONTROLLED MOISTURE CONTENT

James W. Mason, Huntington Beach, Calif., assignor to Dasurat Enterprises PTE Ltd., Singapore

Filed Jan. 24, 1984, Ser. No. 573,497

Int. Cl.³ A01G *27/00*

U.S. Cl. 521—81 **19 Claims**

1. An extrudable composition having a controlled moisture content from 0.5 to 3 percent by weight and formed from a mixture consisting essentially of:

100 parts by weight of particulate elastomer;

10 to 60 phr of a thermoplastic binder;

1.0 t0 6.0 phr of a slip agent; and

0.1 to 1.0 phr of a lubricant.

4,517,317

POLYMER COMPOSITION

Seiichi Tada, Ichihara, Japan, assignor to Du Pont-Mitsui Polychemicals Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,835

Claims priority, application Japan, Jul. 22, 1983, 58-133940; Jul. 22, 1983, 58-133941; Nov. 8, 1983, 58-209537

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—95 **13 Claims**

1. A foamable polymer composition comprising an ethylene-vinyl acetate-carbon monoxide copolymer, a heat-decomposable organic blowing agent having a decomposition temperature of at least 90° C., and an epoxy compound selected from the group consisting of a nitrogen-containing epoxy compound and an alicyclic epoxy compound.

4,517,318

PHOTO-DEGRADABLE STYRENE RESIN COMPOSITIONS

Hiroshi Miyoshi, Takatsuki; Hirohumi Mori, Suita, and Yoriko Tanoue, Suita, all of Japan, assignors to Sekisu Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

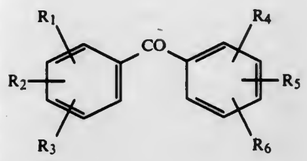
Continuation of Ser. No. 153,013, Jun. 14, 1971, abandoned. This application Sep. 9, 1974, Ser. No. 504,160

Claims priority, application Japan, Sep. 18, 1970, 45-82135; Sep. 19, 1970, 45-82381; Dec. 4, 1970, 45-107896; Dec. 28, 1970, 45-126948

Int. Cl.³ C08F *8/00*

U.S. Cl. 523—126 **40 Claims**

1. A photo-degradable styrene resin composition which comprises a styrene resin and, incorporated therein, at least one photo-degradable agent selected from compounds of the following formula



wherein

R_1, R_2, R_3, R_4, R_5 and R_6, which may be the same or different, represent a member selected from the group consisting of hydrogen, chlorine, bromine, hydroxyl, methyl, ethyl, methoxy, ethoxy and nitro; with the proviso that when at least one of R_1, R_2, R_3, R_4, R_5 and R_6 is a hydroxyl group, said hydroxyl group is not present at the ortho-position to the —CO— group,

in an amount sufficient to exhibit a photo-degradative effect.

4,517,319

TOUGHENED POLYOXYMETHYLENE AND SHAPED ARTICLES PRODUCED THEREFROM

Eckart Reske, Hofheim am Taunus, and Ernst Wolters, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,115

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303760

Int. Cl.³ C08K *9/02, 3/10;* **C08L** *59/00, 75/04*

U.S. Cl. 523—200 **10 Claims**

1. A mixture consisting essentially of a polyoxymethylene, a polyurethane and a filler, wherein the polyurethane has a Shore hardness A of not more than 90 and the filler has an average particle size less than 10 μm, and wherein the composition of the mixture is given by the equations

$$P_1 = 100 - (P_2 + P_3)$$

$$P_2 = \frac{100\,\rho_2\,(1-a)\,b}{\rho_1\,(1-b) + \rho_2\,(1-a)\,b + \rho_3\,a\,b}$$

$$P_3 = \frac{P_2\,\rho_3\,a}{\rho_2\,(1-a)}$$

in which the symbols have the following meaning:

P_1 = % by weight of polyoxymethylene

P_2 = % by weight of polyurethane

P_3 = % by weight of filler

ρ_1 = density of the polyoxymethylene in g.cm^{-3} ρ_2 = density of the polyurethane in g.cm^{-3}

ρ_3 = density of the filler material in g.cm^{-3}

a = a numerical value between 0 and 0.4,

b = a numerical value between 0.03 and 0.55, and

P_3 is at least 0.5.

4,517,320

STOVING LACQUERS CONTAINING GRAPHITE

Fridolin Bäbler, Marly, Switzerland, and Adolf Weissmüller, Kandern, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 8, 1983, Ser. No. 520,931

Claims priority, application Switzerland, Aug. 20, 1982, 4981/82

Int. Cl.³ C08K *3/04*

U.S. Cl. 523—215 **12 Claims**

1. A stoving-lacquer, which after stoving gives a coating having a thickness of 3–60 μm and with a metallic effect having a fine, uniform gleaming lustre, which consists essentially of

(a) a thermoset acrylic resin, a thermoset alkyd resin, an epoxy resin, a phenolic resin, melamine resin, urea resin, polyester, benzoguanamine resin, cellulose ester resin or combinations thereof,

(b) 0.001 to 30% by weight, relative to the dry lacquer coating, of one or more organic pigments or polymer-soluble dyes, and

(c) 0.001 to 30% by weight, relative to the dry lacquer coating, of graphite with a particle diameter of less than 100 microns.

4,517,321

PREIMPREGNATED REINFORCEMENTS AND HIGH STRENGTH COMPOSITES THEREFROM

Hugh C. Gardner, Somerville; Michael J. Michno, Jr., and George L. Brode, both of Bridgewater, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

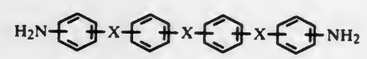
Filed May 20, 1983, Ser. No. 496,504

Int. Cl.³ C08K *7/02, 7/10, 7/14;* **C08L** *63/00*

U.S. Cl. 523—400 **37 Claims**

1. A composition comprising:

(a) a diamine hardener represented by the following general formula:



wherein the X's are independently selected from a direct bond, O, S, SO_2, CO, COO, $C(CF_3)_2$ and $C(R_1R_2)_2$ wherein R_1 and R_2 are independently hydrogen or alkyl of 1 to 4 carbon atoms,

(b) an epoxy resin containing two or more 1,2-epoxide groups per molecule, and

(c) a structural fiber having a tensile strength of greater than 100,000 psi, a tensile modulus of greater than two million psi and a decomposition temperature of greater than 200° C.

4,517,322

ACRYLATED ALKYD AND POLYESTER RESINS

William J. Birkmeyer, Oakmont; Ralph C. Gray, Allison Park; Rostyslaw Dowbenko; David C. Kapp, both of Gibsonia; Ellor J. VanBuskirk, and Rudolf Maska, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 22, 1983, Ser. No. 534,916

Int. Cl.³ C09D *3/66, 3/68*

U.S. Cl. 523—501 **12 Claims**

1. A non-gelled resin formed by reacting:

(a) an ethylenically unsaturated polyester having an ethylenically unsaturated component which contains two carboxylic acid moieties with

(b) ethylenically unsaturated monomers which include an ethylenically unsaturated acid, said resin being dispersed with base in aqueous medium.

4,517,323

MOLDED PRODUCTS

Larry W. Ferguson, and Roger A. McFarland, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 20, 1981, Ser. No. 284,440

Int. Cl.³ B29D *3/02;* **B32B** *7/00, 5/16, 31/04*

U.S. Cl. 523—514 **9 Claims**

1. A method for producing a molded object comprising an appearance surface and a reinforcing surface which comprises incorporating in the appearance surface an amount of unsaturated polymeric resin equal to from about 40 to about 50 volume percent of the total volume of the appearance surface, a volume of glass fibers equal to from about 28 to about 30 volume percent of the total volume of the appearance surface, a volume of filler equal to from about 28 to about 30 volume percent of the total volume of the appearance surface, the amount of glass fibers equal to from about 35 to about 42 weight percent of the total weight of the components comprising the appearance surface and incorporating in the reinforcing surface an amount of unsaturated polymeric resin equal to from about 40 to about 43 volume percent of the total volume of the reinforcing surface, a volume of glass equal to from about 16 to about 20 volume percent of the total volume of reinforcing surface, a volume of filler equal to from about 34 to about 40 volume percent of the total volume of the reinforcing surface, the amount of glass equal to from about 22 to about 28 weight percent of the total weight of the components comprising the reinforcing surface.

9. A molded object produced by the method of claim 1.

4,517,324

VISCOUS CELLULOSE-CONTAINING MIXTURE (PASTE) AND A PROCESS FOR THE PRODUCTION OF AQUEOUS COATING EMULSIONS THEREFROM

Erhard Lühmann, Bomlitz; Lutz Hoppe; Klaus Szablikowski, both of Walsrode, and Friedrich-Karl Lampert, Bomlitz, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,469

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139840

Int. Cl.³ C09D *3/12;* **C08L** *1/00*

U.S. Cl. 524—27 **11 Claims**

1. A stable aqueous coating emulsion based on a viscous cellulose-containing mixture or paste, comprising:

(a) from 5.0 to 60% by weight of a cellulose substance,

(b) from 0.0 to 55% by weight of at least one resin,

(c) from 0.5 to 55% by weight of at least one ethoxylated plasticiser,

(d) from 0.0 to 20% by weight of at least one emulsifier,

(e) from 0.0 to 25% by weight of at least one organic solvent,

(f) from 0.0 to 30% by weight of water,

the sum of (a) to (f) always must amount to 100% by weight, and the ratio of solids to organic solvent phase is greater than or equal to 1.

4,517,325

CORROSION RESISTANT CORE-PLATE AND COATINGS THEREFOR

Bruno M. Perfetti, Jeannette, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1983, Ser. No. 541,613

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—188 **4 Claims**

1. Composition useful for coating substrates comprising a solution or dispersion in an aqueous medium of

a. quaternary ammonium silicate of the formula $WM_2O.X(N_nR_p)_2O.Y\ SiO_2Z\ H_2O$ where W is a number from 0 to 1, X is a number from 0.33 to 1.5, Y is a number from 2 to 10, Z is a number from 1 to 20, M is an alkali metal, R is an organic radical that forms an NR base selected from alkyl, alkanol, and heterocyclic groups, each independently selected, having from 1 to 20 carbon atoms, n is an integer from 1 to 10, and p is at least 4, and

b. ethylene polymer selected from the group consisting of copolymers, terpolymers and ionomers of ethylene with acrylic, methacrylic or crotonic acids or esters thereof or vinyl acetate, wherein the portion of ethylene polymer derived from ethylene is from about 60 to about 90 weight percent, the weight ratio of SiO_2 derived from the quaternary ammonium silicate to ethylene polymer being from about 20:1 to about 1:20, and

c. about 0.1% to about 5%, based on the total of a and b, of a chromate selected from the group consisting of barium chromate, strontium chromate, and lead chromate.

4,517,326

AQUEOUS LIQUID FILLED POLYURETHANE GELS AND METHOD OF MAKING THE SAME

Howard P. Cordts, Grafton, and Joan E. Karloske, Saukville, both of Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Continuation-in-part of Ser. No. 273,499, Jun. 15, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 487,507

Int. Cl.³ C08L *75/08*

U.S. Cl. 524—310 **18 Claims**

1. A method for producing a thermoset article having a polyurethane elastomer continuous phase and having dispersed liquid-phase droplets as a discontinuous phase, comprising:

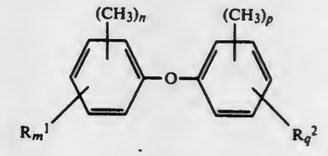
A. obtaining polyisocyanate prepolymer having an NCO—value of 2.5–3.0, formed from the reaction of organic di-isocyanate and organic polyether polyol, containing at least 40 percent by weight ethylene oxide adducts;

B. mixing said polyisocyanate prepolymer under reactive conditions with an aqueous reactant including 25 to 65 percent by weight water and 75 to 35 percent by weight of organic polyol, the weight of said aqueous reactant being from 3 to 20 times the weight of said polyisocyanate prepolymer;

C. after gelation of the mixture has commenced but before gelation has completed, forming the mixture into a desired shape until the mixture cures with discrete droplets of unreacted aqueous reactant homogeneously dispersed therethrough; and

D. recovering a homogeneous shaped article containing from 75 to 95 percent by weight of the said aqueous reactant.

B. from 0.5 to 5% by weight, based on the total of A and B, of at least one compound corresponding to the formula:



(I)

wherein

R^1, R^2 represent an alkyl radical having from 2 to 24 carbon atoms,

n,m,p,q represent zero or an integer from 1 to 4, provided that the total of

m+q is at least 1, and the total of

n+m+p+q is at most 6.

4,517,327

LOW TEMPERATURE CURABLE COATING COMPOSITION

John F. Heaps, Springfield, and Dennis E. Erickson, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 26, 1984, Ser. No. 574,238

Int. Cl.³ C08J *3/10;* **C08L** *61/32, 67/00, 29/08*

U.S. Cl. 524—315 **16 Claims**

1. A process for preparing a coating composition which comprises:

(1) forming a solution of a water-soluble aminoplast selected from the group consisting of methoxymethyl derivatives of urea, melamine and methyl- and ethyl-guanamines and a styrene-(meth)allyl alcohol polymer in a polar solvent wherein the ratio of the aminoplast to styrene-(meth)allyl alcohol copolymer is in the range of about 3:2 to about 50:1 by weight; and

(2) adding the solution to an aqueous solution or dispersion of a hydroxyl-containing resin and mixing to obtain a uniform dispersion;

wherein the styrene-(meth)allyl alcohol copolymer has a molecular weight in the range of about 1000 to about 2500 and a hydroxyl content in the range of about 4.0 to about 10.0 weight percent and wherein the hydroxyl containing resin is selected from the group consisting of acrylic, and polyester hydroxyl-containing resins containing about 1.3–10 weight % hydroxyl and an acid number in the range of about 2 to about 12.

4. The process according to claim 1 wherein the polar solvent is selected from the group consisting of alcohols, ketones, ethers, glycol ethers and acetates.

4,517,328

MIXTURES OF SUBSTITUTED DIPHENYL ETHERS WITH AROMATIC POLYESTERS AND POLYESTER CARBONATES HAVING AN IMPROVED PROCESSIBILITY

Manfred Schmidt, Krefeld; Dietrich Rathmann, Leverkusen, and Klaus Reinking, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,742

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309766

Int. Cl.³ C08L *67/02*

U.S. Cl. 524—370 **7 Claims**

1. A composition comprising a mixture of

A. from 95 to 99.5% by weight, based on the total of A and B, of aromatic polyesters and/or aromatic polyester carbonates based on diphenols and iso- and/or terephthalic acid, and

---

4,517,329

POLYMERIC ANTITUMOR AGENT

Edward H. Mottus, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 274,596, Jun. 17, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 540,085

Int. Cl.³ C08K *3/16;* **C08F** *214/02, 222/06*

U.S. Cl. 524—401 **9 Claims**

1. An antitumor active, water-soluble composition of matter selected from the group consisting of low molecular weight copolymers of chloroethyl vinyl ether and maleic anhydride, wherein said molecular weight is less than about 3000 and wherein said copolymer is derivatized to contain half-amide, half-carboxyl acid groups in which from 0 weight percent to about 25 weight percent of the half-amide, half-carboxyl acid groups are converted to imide groups, and the pharmaceutically acceptable cationic salt derivatives of said derivatized copolymers.

4,517,330

FLOOR POLISH COMPOSITION HAVING IMPROVED DURABILITY

Richard E. Zdanowski, Ft. Washington, and Joseph M. Owens, Hatboro, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1983, Ser. No. 480,549

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—408 **24 Claims**

1. A floor polish vehicle composition which yields floor polishes with improved durability and which includes an emulsion copolymer containing from about 3% to 50% by weight of residues of at least one acidic monomer, and from at least about 15% of the equivalent of the copolymer acid residues of dissolved polyvalent metal ionic crosslinking agent wherein the improvement comprises at least one basic salt of an alkali metal such that the molar ratio of the polyvalent metal ion to the alkali metal ion is from about 10:0.10 to 1.0:3.0.

4,517,331

ACTIVATING PLASTICIZER FOR URETHANE PREPOLYMERS AND COMPLEX OF ALKALI METAL SALT WITH 4,4'-METHYLENEDIANILINE

Dane K. Parker, Massillon; Joseph A. Kuczkowski, Munroe Falls, both of Ohio, and Michael E. Kimball, West Brook, Me., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 5, 1984, Ser. No. 586,369

Int. Cl.³ C08G *18/32, 18/16, 18/50, 18/48*

U.S. Cl. 524—451 **8 Claims**

1. The storable polypropylene ether polyurethane composition comprising a mixture of

(a) an equivalent of a prepolymer formed by reacting a

polypropylene ether polyol of 2 to 6 OH with sufficient organic polyisocyanate to give an excess of about 3 to 15 percent by weight of free NCO in said prepolymer with the proviso that the free NCO is obtained from methane di(phenyl isocyanate);

(b) 0.7 to 1.05 equivalents of a complex of an alkali metal salt with 4,4'-methylenedianiline, said alkali metal being selected from the class consisting of sodium, potassium and lithium; and

(c) a catalyst for said complex consisting of a crown or pseudocrown ether, said ether being composed of radicals having the structural formula $-(-y-CH_2-CH_2)_n$ where y can be nitrogen, sulfur or oxygen and n is a number 3 to 100.

4,517,332

RUBBER COMPOSITION CONTAINING A SILICONE RAW RUBBER

Noriaki Wada, Kobe, Japan, assignor to Japan Synthetic Rubber Co., Ltd., Tokyo and Bando Chemical Industries, Ltd., Kobe, both of, Japan

Filed May 12, 1983, Ser. No. 494,051

Claims priority, application Japan, May 16, 1982, 57-82795

Int. Cl.³ C08L *7/00, 9/00, 9/02, 83/06*

U.S. Cl. 524—506 **11 Claims**

1. A rubber composition consisting essentially of:

(1) 100 parts by weight of a rubber mixture of 98 to 80% by weight of at least one organic diene rubber selected from the group consisting of natural rubber and organic synthetic rubbers and 2 to 20% by weight of a silicone raw rubber having a molecular weight of 100,000 to 1,000,000 formed from an organopolysiloxane represented by the general formula $-R_2SiO-$, wherein R is alkyl, alkenyl, aryl, aralkyl, haloalkyl or cyanoalkyl;

(2) 0.1 to 10 parts by weight of a vulcanizing agent; and

(3) 10 to 200 parts by weight of a filler.

4,517,333

NOVEL VISCOSIFIERS FOR AQUEOUS FLUIDS BASED ON POLYMER COMPLEXES

Robert D. Lundberg, Bridgewater; Robert R. Phillips, Spring Lake Heights, and Dennis G. Peiffer, East Brunswick, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 12, 1983, Ser. No. 560,516

Int. Cl.³ C08L *33/00, 33/26, 41/00*

U.S. Cl. 524—516 **9 Claims**

1. A polymer complex dissolved in water solution which comprises a mixture of:

(a) a copolymer of a first water soluble polymer backbone and an anionic comonomer, said, anionic comonomer being about 1 to about 50 weight percent of said copolymer; and

(b) a copolymer of a second water soluble polymer backbone and a cationic comonomer, said cationic comonomer being about 1 to about 50 weight percent of said copolymer wherein the equivalence ratio of the copolymer of the water soluble polymer backbone and cationic comonomer to the copolymer of the water soluble polymer backbone and anionic comonomer is about 30/1 to 1.1/1 or 0.9/1 to 1/30.

4,517,334

POLYOL-MODIFIED ALKYD RESINS

Hans-Christoph Wilk, Neuss; Bernd Wegemund, Haan, and Manfred Gorzinski, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,630

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246616; European Pat. Off., Jul. 22, 1983, 83107207.9

Int. Cl.³ C08L *67/00*

U.S. Cl. 524—539 **21 Claims**

1. An alkyd resin mixture for use in stoving water lacquers comprising a mixture of alkyd resins containing the reaction products of polybasic carboxylic acids or reactive derivatives thereof and polyhydric alcohols, and, optionally, monofunctional modifying agents, wherein the polyhydric alcohol component thereof is at least in part one or more polyols having an average molecular weight of from about 200 to about 2000 g/mole, an average —OH functionality of >2, and at least 2 terminal next to terminal hydroxyl groups of the formula —CHR—OH wherein R is —H and/or $-CH_3$.

19. A stoving water lacquer containing the alkyl resin mixture of claim 1.

4,517,335

PROCESS FOR VULCANIZATION OR CROSS-LINKING HALOGEN CONTAINING RUBBERS IN THE PRESENCE OF SILICON CONTAINING ISOTHIURONIUM COMPOUNDS

Siegfried Wolff, Bornheum-Merten; Heinz Grewatta, Cologne, both of Fed. Rep. of Germany, and Wolfgang Buder, Salvador-Bahia, Brazil, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

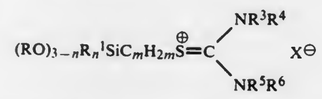
Continuation of Ser. No. 614,170, May 25, 1984, now abandoned. This application Jun. 18, 1984, Ser. No. 621,626

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319251

Int. Cl.³ C08J *3/24;* **C08K** *3/34, 5/54;* **C08L** *23/28*

U.S. Cl. 524—552 **20 Claims**

1. A vulcanizable rubber composition comprising at least one halogen containing rubber, a silicate filler, and an isothiuronium compound of the formula



I

in an amount of 0.1 to 5 parts by weight based on 100 parts by weight of the halogen containing rubber, and wherein

X is chloride, bromide or iodide,

m is a number from 1 to 6,

R^1 is a C_1 to C_5 alkyl group, a C_5 or C_6-cycloalkyl group or the phenyl group,

R is a C_1 to C_5 alkyl group, a C_5 or C_6 cycloalkyl group, the α-methoxyethyl group, the phenyl group or the benzyl group,

n is 0, 1 or 2,

R^3, R^4, R^5, R^6 are the same or different and are hydrogen, or C_1–C_5 alkyl group, or R^3, R^5 are hydrogen and R^4, R^6 are the same or different and are hydrogen, a C_5–C_6-cycloalkyl group, the phenyl group or the benzyl group, or R^4 and R^6 together are a connected C_2–C_4 alkylene chain.

4,517,336

RUBBER MIXTURES GIVING REVERSION-FREE VULCANIZATES AND PROCESS OF VULCANIZATION

Siegfried Wolff, Bornheim-Merten, and Ewe-Hong Tan, Brühl, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 92,519, Nov. 8, 1979, abandoned. This application Jun. 3, 1981, Ser. No. 270,131

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848559

Int. Cl.³ C08L *9/00, 83/08*

U.S. Cl. 524—571 **53 Claims**

1. A composition which is a formable and vulcanisable rubber mixture comprising a rubber (A) which still contains double bonds and which can be cross-linked with sulphur and a vulcanisation accelerator to form an elastomer or a mixture of such a rubber (A) with a different rubber (B) and from 0.2 to 10 parts by weight of sulphur, from 0.2 to 10 parts by weight of at least one vulcanisation accelerator and from 1 to 10 parts by weight of a silane corresponding to the formula

$$[R_n^1(RO)_{3-n}Si\text{-}Alk\text{-}]_2S_x \qquad (I)$$

in which

R and R^1 represent an alkyl group containing from 1 to 4 carbon atoms, a cycloalkyl group containing from 5 to 8 carbon atoms or the phenyl radical; all the radicals R and R^1 may be the same or different in meaning,

n=0, 1 or 2,

Alk is a difunctional hydrocarbon radical containing 1 to 10 carbon atoms, and

x is a number of from 2.0 to 8.0,

or its hydrolysate, all parts by weight being based on 100 parts by weight of rubber, wherein the rubber mixture contains the silane, vulcanisation accelerator and sulphur, expressed as S_8, in such a molar ratio that, at the vulcanisation temperature, the rubber mixture has a reversion R resulting from the cross-linking isotherm (DIN 53 529) of 0 (±5%), the reversion R being calculated in accordance with the following formula:

$$R = \frac{D_{max} - D_{(max+60\ mins)}}{D_{max} - D_{min}} \cdot 100 \qquad (II)$$

in which

D_{max} is the maximum vulcameter torque,

D_{min} is the minimum vulcameter torque,

$D_{(max+60\ mins)}$ is the vulcameter torque as measured 60 minutes after appearance of the maximum torque.

3. A rubber mixture according to claim 1 containing (1) 1 to 300 parts by weight of silicate filler, (2) from 0.1 to 150 parts by weight of carbon black filler or (3) a mixture of a silicate filler and a carbon black filler, the total amount of filler being 1 to 300 parts by weight of which 0.1 to 150 parts by weight is carbon black, all parts by weight being based on 100 parts by weight of rubber.

4,517,337

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Thomas P. Lockhart, Bethesda, Md., and Jeffrey H. Wengrovius, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 24, 1984, Ser. No. 583,530

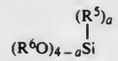
Int. Cl.³ C08L *83/02*

U.S. Cl. 524—859 **21 Claims**

1. Room temperature vulcanizable compositions comprising by weight,

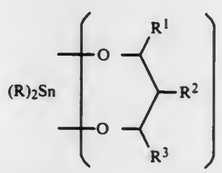
(A) 100 parts of organopolysiloxane consisting essentially of chemically combined diorganosiloxy and terminated with polyalkoxy siloxy units,

(B) 0 to 10 parts of a polyalkoxy silane of the formula

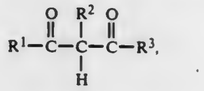


(C) 0 to 5 parts of amine accelerator,

(D) an effective amount of a tin condensation catalyst of the formula



(E) 0 to 5 parts of a β-diketone of the formula



(F) 0 to 700 parts of filler,

where R is selected from $C_{(1\text{-}18)}$ monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals, and R^1, R^2 and R^3 are the same or different monovalent radials selected from the class consisting of hydrogen, R, $-Si(R)_3$, acyl and nitrile R^5 is a monovalent radical selected from $C_{(1\text{-}13)}$ hydrocarbon radicals and substituted $C_{(1\text{-}13)}$ hydrocarbon radicals, R^6 is a $C_{(1\text{-}8)}$ aliphatic organic radical selected from alkyl radicals, alkylether radicals, alkyl ester radicals, alkylketone radicals and alkylcyano or a $C_{(7\text{-}13)}$ aralkyl radical and a is a whole number equal to 0 or 1.

4,517,338

MULTIPLE REACTOR SYSTEM AND METHOD FOR POLYNUCLEOTIDE SYNTHESIS

Mickey S. Urdea, San Francisco, Calif., and Brian D. Warner, Eau Claire, Wis., assignors to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 506,153, Jun. 20, 1983, Pat. No. 4,483,964. This application Jul. 13, 1984, Ser. No. 630,781

Int. Cl.³ C12M *1/00*

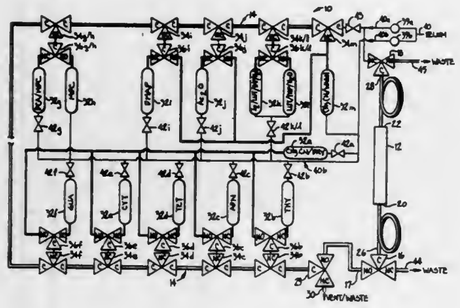
U.S. Cl. 525—54.11 **19 Claims**

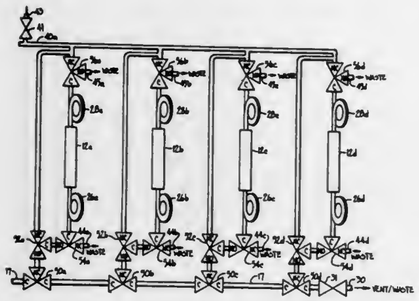
1. A reactor system for the sequential modification of two more linear polymers attached to dispersed solid-phase support, said reactor system comprising:

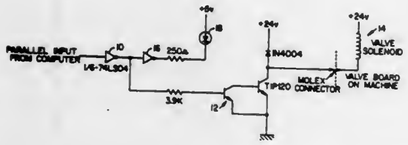
a plurality of reactor zones for holding said dispersed solid-phase supports, said reactor zones having at least two access ports defined by porous barriers;

a reagent manifold for selectively delivering particular reagents to each reactor zone one at a time through said porous barriers;

means for selectively blocking the flow of reagents to the reactor zones from the reagent manifold; and







means for selectively inducing a continuously reversing flow of reagent through each reactor zone when the flow of reagents to that reactor is blocked.

4,517,339

BLEND OF IMPACT MODIFIER, VINYL CHLORIDE POLYMER, AND GLASSY AMORPHOUS POLYMER

Anthony C. Aliberto, Briarcliff Manor, and Joseph Silberberg, Brooklyn, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 382,538, May 27, 1982, abandoned. This application Aug. 4, 1983, Ser. No. 520,104

Int. Cl.³ C08L *51/00, 33/08, 33/10, 27/06*

U.S. Cl. 525—85 **20 Claims**

1. A flame retardant blend having good impact resistance and a high heat deflection temperature comprising:

(1) a three stage interpolymer comprising: (a) crosslinked (meth)acrylate; (b) crosslinked styrene-acrylonitrile; and (c), as the third stage, uncrosslinked styrene-acrylonitrile components;

(2) a glassy amorphous polymer which is an acrylic resin or a polymer comprising styrene; and

(3) a vinyl chloride polymer.

4,517,340

ADHESIVE COMPOSITION

Michael R. Read, Whelford, Nr. Fairford, England, and Nicholas T. Corke, Keerbergen, Belgium, assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 411,246, Aug. 25, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 630,335

Int. Cl.³ C08F *8/00;* **C08L** *63/00*

U.S. Cl. 525—113 **9 Claims**

1. A dimensionally-recoverable article having on at least part of a surface thereof an adhesive composition which comprises:

(a) a thermoplastic polyamide having reactive amine groups;

(b) a thermoplastic copolymer of an alkene with an ethylenically unsaturated ester of an alkanol and a carboxylic acid, the ester having up to 6 carbon atoms, and optionally one or more acidic comonomers, said copolymer having an acid number of at least 1;

(c) an epoxy resin;

components (a) and (b) being present in a ratio of from 35:65 to 75:25 by weight and component (c) being present in an amount of from 8 to 79 parts per hundred parts of components (a) and (b) by weight, components (a), (b) and (c) existing separately from one another in the form of particles that are mixed together.

4,517,341

PROCESS FOR PREPARING POLYPHENYLENE OXIDE-RUBBER GRAFT COPOLYMERS AND PRODUCTS OBTAINED THEREBY

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 402,398, Jul. 27, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 544,341

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—152 **16 Claims**

1. A process for producing a polyphenylene oxide-rubber graft copolymer which comprises the steps of:

(A) forming a polyphenylene oxide by oxidative coupling of at least one phenol in the presence of a catalyst which includes at least one compound selected from the group consisting of primary and secondary amines, said compound producing grafting sites on said polyphenylene oxide;

(B) intimately contacting said polyphenylene oxide having grafting sites with at least one unsaturated rubber which is free from any substantial amount of crosslinking; and subsequently

(C) heating the resulting blend at a temperature of about 250°–350° C. and a pressure of about 1,000–20,000 psig for a time sufficient to form said graft copolymer;

said polyphenylene oxide being maintained at a temperature substantially below its glass transition temperature at all times prior to grafting.

4,517,342

HEAT CURABLE COMPOSITIONS

Hong-Son Ryang, Camarillo, Calif., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 507,182, Jun. 23, 1983, abandoned. This application May 11, 1984, Ser. No. 609,365

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—431 **13 Claims**

1. A heat curable composition comprising

(A) a norbornane silicone block copolymer having chemically combined blocks selected from

(i) polyorganosiloxane having chemically combined $\equiv SiH$ or $\equiv SiC_2H_3$ units, and

(ii) and mixture of (i) and polyimide,

(B) a polyfunctional organosilicon material capable of undergoing a polyaddition reaction with (A) involving addition between chemically combined $\equiv SiH$ or $\equiv SiC_2H_3$ units, which polyfunctional organosilicon material has at least two chemically combined $\equiv SiH$ or $\equiv SiC_2H_3$ units and is selected from organosilanes, organopolysilanes, organosiloxanes, organopolysiloxanes and cyclopolyorganosiloxanes, and

(C) an effective amount of a platinum catalyst.

4,517,343

CATHODICALLY ELECTRODEPOSITABLE SURFACE COATING BINDER

Eberhard Schupp, Schwetzingen, and Fritz E. Kempter, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 15, 1982, Ser. No. 441,806

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146640

Int. Cl.³ C08L *61/12, 63/02*

U.S. Cl. 525—488 **9 Claims**

1. A cathodic electrocoating binder which is based on polyadducts, copolymers of polycondensates possessing basic nitrogen groups in each case, and can be diluted with water when protonated with an acid, wherein the binder comprises a mixture of

(A) from 50 to 95 percent by weight of one or more polyadducts, copolymers or polycondensates which possess basic nitrogen groups in each case and

(B) from 50 to 5 percent by weight of one or more amideamines obtained by reacting a monocarboxylic acid of 6 to 24 carbon atoms or a dicarboxylic acid of 4 to 48 carbon atoms, or their esters, with a diamine which possesses one primary and one secondary amino group per molecule, the secondary amino group carrying a β-hydroxyalkyl group, with the proviso that component (A) consists of (A_1) one or more phenolic Mannich bases, which are obtained from

(a) monophenols or polyphenols,

(b) one or more secondary amines, each of which possesses one or more hydroxyalkyl groups, or a mixture of a secondary amine of this type with another secondary or primary amine and

(c) formaldehyde or a formaldehyde donor, or

(A_2) one or more polyadducts, copolymers, or polycondensates possessing acrylic, methacrylic or crotonic double bonds which are incorporated via an amide or ester group, some or all of which can be blocked by adduct formation with a secondary amine, or a mixture of (A_1) and (A_2), and, instead of a mixture of (A) and (B), the reaction product of component (B) with component (A) or with an intermediate of component (A) can also be used.

4,517,344

PROCESS FOR POLYMERIZATION OF ACRYLATE OR METHACRYLATE

Toragoro Mitani, Takasago; Hideo Yasui, Kobe, and Hisashi Morikawa, Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

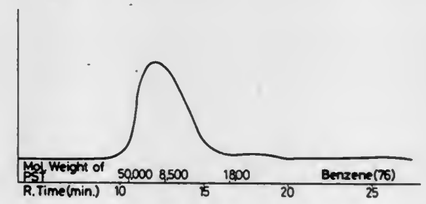
Continuation-in-part of Ser. No. 540,155, Oct. 7, 1983, abandoned. This application Jul. 25, 1984, Ser. No. 634,067

Claims priority, application Japan, Oct. 12, 1982, 57-179575; Jun. 20, 1984, 59-126990

Int. Cl.³ C08F *2/00*

U.S. Cl. 526—62 **12 Claims**

1. In a process for emulsion-polymerizing an acrylate or a methacrylate monomer alone, a mixture thereof or a mixture of an acrylate or a methacrylate monomer as a main component and other copolymerizable monomers in the presence of water, an emulsifier and a polymerization initiator soluble in water or the monomers, wherein the amount of said acrylate monomer, methacrylate monomer or mixture thereof becomes not less than 60% by weight of the monomer mixture in the course of the emulsion polymerization; the improvement which comprises carrying out the emulsion polymerization in a polymerization vessel having a film on an inner surface thereof and on surfaces of attached instruments within the vessel, said film being formed by applying a solution of an aromatic quinone-amine compound having an average molecular weight of not less than 3,000 dissolved in an organic solvent, said quinone-amine compound being prepared by subjecting an aromatic



diamine and an aromatic quinone to addition reaction in an organic solvent medium having a solubility parameter of 9.0 to 12.2 alone, a mixture thereof or a mixed medium of said organic solvent medium with an alcohol in an amount of the same or less than the weight of the organic solvent medium.

4,517,345

POLYMERIZATION PROCESS

Paul L. Eve, and John G. Speakman, both of West Lothian, Scotland, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 133,825, Mar. 25, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,576

Claims priority, application United Kingdom, Mar. 28, 1979, 7911257

Int. Cl.³ C08F *4/24, 10/02*

U.S. Cl. 526—105 **10 Claims**

1. A process for polymerizing ethylene or a mixture of ethylene with up to 40 wt % (based on a total monomer) of other 1-olefinic monomer comprising (a) supporting chromium oxide, or a compound calcinable thereto, at the heating temperature stated in part (c) hereof, on the refractory oxide support material comprising silica, (b) adding a tetravalent titanium compound having the formula $Ti(OR)_mX_n$, wherein m+n is 4, m is zero or an integer from 1 to 4, R is an organic hydrocarbon group having 1 to 12 carbon atoms, X is halogen or a hydrocarbon group and when the compound contains more than one R or X group, the groups may be the same or different, (c) heating the product at a temperature of from about 400° to 900° C. such that an active polymerization catalyst is formed, and (d) contacting the monomer with the active polymerization catalyst in the presence of an aluminum trialkyl, said tetravalent titanium compound being added in an amount sufficient to give a titanium concentration in the range of 0.05 to 20% by weight and said aluminum trialkyl being employed in the amount of 0.1 to 100% by weight based on the total weight of the catalyst.

4,517,346

ACTIVATOR COMPRISING A DIALKYLALUMINUM MONOFLUORIDE FOR THE POLYMERIZATION OF ETHYLENE

Karel Bujadoux, Lens, France, assignor to Societe Chimique des Charbonnages S.A., France

Division of Ser. No. 324,957, Nov. 25, 1981, Pat. No. 4,396,532. This application May 9, 1983, Ser. No. 492,655

Claims priority, application France, Dec. 23, 1980, 80 27270

Int. Cl.³ C08F *4/64, 10/02*

U.S. Cl. 526—153 **3 Claims**

1. A process for polymerizing ethylene and copolymerizing ethylene with an alpha-olefin having from 3 to 8 carbon atoms, comprising reacting ethylene under a pressure between 200 and 2,500 bars and at a temperature between 160° and 300° C. in a polymerization reactor in the presence of a catalytic sys-

tem, the mean residence time of the catalytic system in the polymerization reaction being from 2 to 100 seconds, wherein said catalytic system comprises:

(a) at least one organoaluminum activator compound selected from the group consisting of

(i) compounds having the formula (AlR_2F) $(AlR_2H)_b$ $(AlR_3)_c$ wherein R is an alkyl group having 1 to 12 carbon atoms, $0.1 \leqq b \leqq 0.4$, and $0.05 \leqq c \leqq 0.2$; and

(ii) compounds having the formula (AlR_2F) $(AlR_2X)_a$ wherein R is an alkyl group having from 1 to 12 carbon atoms, X is a halogen other than fluorine, and $0.1 \leqq a \leqq 0.4$; and

(b) at least one halide of a transition metal of Group IVB to VIB of the Periodic System, the valency of said metal in said halide being not more than 3 and the atomic ratio of aluminum in the activator to said transition metal lying between 0.1 and 10.

4,517,347

METHOD FOR COPOLYMERIZATION OF STYRENE AND ACRYLONITRILE

John W. Gowan, Jr., and Carlton G. Force, both of Mt. Pleasant, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Jul. 25, 1984, Ser. No. 634,223

Int. Cl.³ C08F *212/10*

U.S. Cl. 526—216 **12 Claims**

1. In a method of emulsion polymerization of styrene and acrylonitrile wherein styrene and acrylonitrile are copolymerized in an aqueous medium in the presence of an emulsifier, the improvement comprising adding to said medium an anti-oxidant selected from the group consisting of an anti-oxidant compound comprising an aromatic portion and a fatty acid portion, octadecyl hydroquinone, and 4-dodecyloxy-2-hydrobenzophenone in an amount sufficient to increase the yield of styrene-acrylonitrile copolymer.

4,517,348

RUBBERY POLYMER COMPOSITION

Kohki Takahashi; Takeo Kondoh, both of Sagamihara; Masao Koga, Machida, and Kenichiro Nishiwaki, Ichihara, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

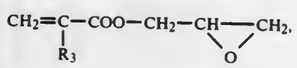
Continuation of Ser. No. 274,537, Jun. 17, 1981, abandoned, which is a division of Ser. No. 94,951, Nov. 16, 1979, Pat. No. 4,303,560. This application Jul. 18, 1983, Ser. No. 514,366

Claims priority, application Japan, Mar. 17, 1979, 54-31590; Mar. 17, 1979, 54-31591

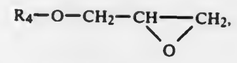
Int. Cl.³ C08F *218/08, 218/10*

U.S. Cl. 526—273 **6 Claims**

1. A rubber polymer composition, consisting essentially of: a crosslinkable polymer having a Mooney viscosity (ML_{1+4}) of 35 to 50 at 100° C. prepared by copolymerizing (A) from 15 to 40 parts by weight of a vinyl carboxylate of the formula: $RCOO—CH=CH_2$, wherein R is a C_{1-4} alkyl group, (B) from 60 to 85 parts by weight of an alkoxyalkyl acrylate of the formula: $CH_2=CHCOO—R_1—O—R_2$, wherein R_1 is a C_{1-4} alkylene group and R_2 is a C_{1-4} alkyl or alkoxyalkyl group, (C) from 4 to 15 parts by weight of ethylene, with the total of components A, B and C constituting 100 parts by weight, and (D) from 0.3 to 5 parts by weight of a comonomer selected from the group consisting of



wherein R_3 is hydrogen or methyl,



wherein R_4 is a vinyl, allyl or methallyl group, and $CH_2=CH—O—R_5$, wherein R_5 is $CH_2Cl—CH_2—$ or $CH_2Cl—CO—$.

4,517,349

PROCESS FOR THE PRODUCTION OF P-VINYL PHENOL POLYMER

Hiroshi Fujiwara; Hatsutaro Yamazaki, both of Saitama, and Kazuo Ozawa, Ibaraki, all of Japan, assignors to Maruzen Oil Company, Limited, Osaka, Japan

Filed Nov. 2, 1983, Ser. No. 548,255

Claims priority, application Japan, Nov. 4, 1982, 57-194449

Int. Cl.³ C08F *4/70, 12/24*

U.S. Cl. 526—313 **12 Claims**

1. A process for the production of p-vinyl phenol homopolymer which comprises polymerizing p-vinyl phenol in the presence of (a) phenols that do not have any unsaturated side chains and (b) a polymerization accelerator; wherein said polymerization is additionally carried out in the presence of water and iron wherein the amount of water present is 10 to 800% by weight based on the amount of the p-vinyl phenol and the amount of dissolved iron present is 3 to 500 PPM based on the amount of the p-vinyl phenol and wherein the amount of the phenols that do not have any unsaturated side chains is 10 to 100% by weight based on the amount of the p-vinyl phenol.

4,517,350

PROCESS FOR REMOVING POLYMER SCALE ADHERING TO A POLYMERIZATION VESSEL

Akio Hata, and Michifumi Tanga, both of Yamaguchi, Japan, assignors to Tokuyama Sekisui Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 527,423, Aug. 29, 1983, abandoned. This application Apr. 27, 1984, Ser. No. 604,751

Claims priority, application Japan, Aug. 27, 1982, 57-149485

Int. Cl.³ C08F *114/06*

U.S. Cl. 526—344.2 **2 Claims**

1. A method for removing polymer scale adhering to the inner surface of a polymerization vessel, which method comprises polymerizing vinyl chloride monomer in an aqueous medium, discharging the resulting polymer of vinyl chloride together with the aqueous medium from the polymerization vessel, thereafter placing in the vessel both a reaction product and an organic liquid, and washing the inner surface of the vessel with the organic liquid solution of the said reaction product, wherein the said reaction product is obtained by heating and reacting an amine compound with an acrylic compound at a temperature higher than 50° C., the said amine compound being selected from the group consisting of an aliphatic amine compound, alicyclic amine compound and aromatic amine compound having therein one or more amino-group(s) or iminogroup(s), the said acrylic compound being selected from the group consisting of acrylic acid, methacrylic acid, acrylic acid ester, methacrylic acid ester and acryl amide, and said organic liquid can dissolve or swell the polymer of vinyl chloride.

4,517,351

PROCESS FOR REACTING QUATERNARY AMMONIUM MONOMER IN THE PRESENCE OF ANIONIC POLYMERS

Chester D. Szymanski, Martinsville, and Dennis Neigel, Whitehouse Station, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 407,014, Aug. 11, 1982, Pat. No. 4,455,408. This application Jun. 18, 1984, Ser. No. 621,403

Int. Cl.³ C08L *99/00*

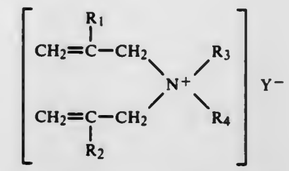
U.S. Cl. 527—312 **12 Claims**

1. A process for reacting quarternary ammonium monomers in the presence of anionic polymers to directly form a dry coacervate consisting essentially of the steps of:

(a) forming a solution of the monomer(s), anionic polymer, solvent and free-radical initiator;

(b) simultaneously polymerizing the monomers and drying the solution at a temperature above the boiling point of the solvent to obtain a dry solid without further separating and drying or otherwise isolating the polymerizate; and

(c) recovering the resultant dry product; wherein the quaternary ammonium monomers are represented by the following formula:



where R_1 and R_2 each represent a member selected from the group consisting of hydrogen and methyl and ethyl radicals; R_3 and R_4 each represent a member selected from the group consisting of alkyl, aryl, cycloalkyl, hydroxyalkyl and alkoxyalkyl radicals having from 1 to 18 carbon atoms, and Y^- represents an anion; and wherein the anionic polymer is an anionic polysaccharide derivative and is present in an amount of 0.1 to 3 parts by weight per part of the monomeric components.

4,517,352

ONE PACKAGE, STABLE, MOISTURE CURABLE, POLYALKOXY-TERMINATED ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Mary A. White; Melvin D. Beers, both of Schenectady; Gary M. Lucas, Scotia; Robert A. Smith, and Roger T. Swiger, both of Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 277,524, Jun. 26, 1981, Pat. No. 4,395,526. This application Apr. 20, 1983, Ser. No. 486,975

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—18 **13 Claims**

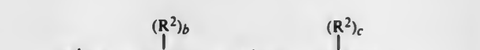
1. A method of making a one-package and substantially acid-free room temperature vulcanizable composition curable to the solid elastomeric state, which method comprises agitating under substantially anhydrous conditions at a temperature in the range of from 0° C. to 180° C., a room temperature vulcanizable material selected from

(i) a mixture comprising

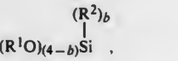
(a) 100 parts of a silanol-terminated polydiorganosiloxane consisting essentially of chemically combined units of the formula



(b) a stabilizing amount of a silane scavenger for hydroxy functional groups of the formula



(c) 0.01 to 10 parts of cross-linking silane of the formula

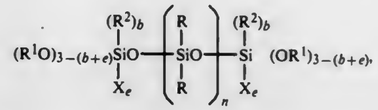


(d) an effective amount of a condensation catalyst, and

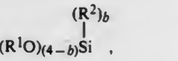
(e) 0 to 5 parts of a curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof; and

(ii) a mixture comprising

(a) 100 parts of a polyalkoxy-terminated polydiorganosiloxane of the formula

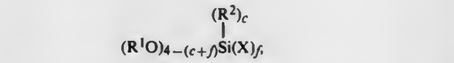


(iii) 0 to 10 parts of a cross-linking silane of the formula,



(iv) an effective amount of a condensation catalyst

(v) a stabilizing amount of a silane scavenger for hydroxy functional groups having the formula



and

(vi) 0 to 5 parts of a curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof,

where R is selected from $C_{(1-13)}$ monovalent substituted or unsubstituted hydrocarbon radicals, R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from the group consisting of alkyl, alkylether, alkylester, alkylketone and alkylcyano radicals, or a $C_{(7-13)}$ alkaryl radical, R^2 is a $C_{(1-13)}$ monovalent substituted or unsubstituted hydrocarbon radical, X is a hydrolyzable leaving group selected from the group consisting of amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals and, a is an integer equal to 1 or 2, b is a whole number equal to 0 or 1, and the sum of a+b is equal to 1 or 2, c is a whole number equal to 0 to 3 inclusive, d is an integer equal to 1 to 4 inclusive, and the sum of c+d is equal to 3 or 4, e is a whole number equal to 0 or 1 and the sum of b+e is equal to 0 to 1, n is an integer having a value of from about 50 to about 2500 inclusive, c is a whole number equal to 0 to 3 inclusive, f is an integer equal to 1 to 4 inclusive and the sum of c+f is equal to 1 to 4 inclusive, and in either mixture where X is enoxy, there is also added, before or with the scavenger, 0.1 to 5 parts of a curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof.

4,517,353

PROCESS FOR PREPARATION OF HYDANTOIN ESTERS THROUGH A MASKED POLYISOCYANATE-CARBODIIMIDE ROUTE

Wilfried Zecher; Rudolf Merten, and Willi Dünwald, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

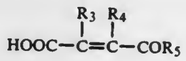
Filed Dec. 6, 1983, Ser. No. 558,902

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247350

Int. Cl.³ C08G *18/80*

U.S. Cl. 528—45 **9 Claims**

1. A process for the preparation of polymers containing hydantoin groups wherein polyisocyanates masked with from 0.5 to 0.005 mol of lactam per isocyanate group in the polyisocyanate are converted into (poly)carbodiimides, and these carbodiimides are reacted with α,β-unsaturated carboxylic acids to form (poly)hydantoins, and these (poly)hydantoins are reacted with additional carboxylic acids or anhydrides or esters thereof which contain at least one free carboxylic acid group capable of reacting with acylureas, and said α,β-unsaturated carboxylic acids are of the formula



wherein

R^5 represents -OR^6 or



R^6, R^7 and R^8 represent, independently of each other, alkyl, cycloalkyl, alkenyl, alkinyl, aryl or aralkyl groups and additionally,

R^7 and R^8 may also represent hydrogen, and

R^3 and R^4 represent, independently of each other, either hydrogen or alkyl.

4,517,354

POLYSULFONE COMPOSITIONS AND DERIVATIVES THEREOF

Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), assignor to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 280,950, Jul. 6, 1981, abandoned. This application Oct. 31, 1983, Ser. No. 547,021

Int. Cl.³ C08G *69/32, 69/40, 69/42*

U.S. Cl. 528—172 **30 Claims**

1. A polysulfone composition having the formula M—Ar-SO_2Ar'QAr'SO_2Ar—M wherein:

Ar and Ar' represent divalent aromatic groups and 2-5 of said divalent aromatic groups linked by O, S, C(O), N(R''), SO_2 or an aliphatic hydrocarbon group:

Q is either O or SO_2, and

M is a group selected from the class consisting of:

(a) DOOCArO—

(b) R_2NOCArO—

(c) KO—

(d) HOArO—

(e) R''C(O)ArO—

(f) $(DOOC)_2$ArO—

(g) $O(OC)_2$ArO—

(h)—NR—R'—NR(O)CArO—A—OArC(O)—

(i) —OR'O(O)CArO—A—OArC(O)—

(j) —CHRAr''(OH)O—A—OAr''(OH)—

(k) —(O)CArC(O)OArO—A—OArO—

(l) —(O)COArO—A—OArO—

(m) —(O)CArO—A—OArC(O)OArO—A—OArO—

(n) —N(R)ArO—A—OArN(R)(O)CAr—A—ArC(O)—

wherein

Ar is as defined above:

D represents hydrogen, halogen or a monovalent hydrocarbon group of one to 20 carbon atoms;

R is a hydrogen or a hydrocarbon group or 2-5 of hydrocarbon groups joined by —O—, —S—, —COO—, —OOC— or —SO_2—;

R' is a divalent hydrocarbon group;

R'' is a hydrocarbon group of 1-20 carbon atoms;

K is an aromatic group having a terminal vinyl or acetylene radical;

Ar'' is a trivalent aromatic group; and

A represents the divalent radical —ArSO_2Ar'QAr'-SO_2Ar—.

4,517,355

FLAMEPROOF LINEAR POLYESTER, A PROCESS FOR ITS PREPARATION, AND ARTICLES FORMED FROM SAID POLYESTER

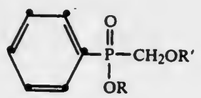
Giorgio Mercati, Monza; Armando Mariano, Pisticci Scalo; Fulvio Pertot, Crema; Antonio Glionna, and Mario Ferri, both of Matera, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Apr. 20, 1983, Ser. No. 486,902

Int. Cl.³ C08G *63/68, 79/02*

U.S. Cl. 528—287 **11 Claims**

1. A flameproof linear polyester constituted by the polycondensation product of a dicarboxylic aromatic acid with an alkylene glycol, characterised by containing, bonded in the macromolecule, a phosphorus compound of formula:



where R is a hydrogen atom, an alkyl group of 1 to 4 carbon atoms or a hydroxyalkyl group, and R' is a hydrogen atom, a hydroxyalkyl group or the group $-(CH_2CH_2O)_nH$, where n varies from 1 to 4, the quantity of said bonded monomer being such as to obtain a quantity of phosphorus (expressed as the metal) in the linear polyester of between 0.4 and 0.8% by weight.

4. A process for preparing the linear polyester as claimed in claims 1 to 3, characterised in that:

the dicarboxylic aromatic acid and the alkylene glycol are reacted together in a molar ratio of the order of 1:1.5 at a temperature in the range of 180°-240° C. and in the presence of a catalyst, until a precondensate is obtained having a molecular weight of between about 400 and about 1000;

the phosphorus compound is added to said precondensate;

the mixture is polycondensed at a temperature in the range of 265°-280° C. under a pressure decreasing from 760 torr to less than 1 torr in the presence of a catalyst, until the content of free carboxyl groups is reduced to a value of the order of 10-20 meq/kg.

4,517,356

PROCESS FOR POLYMERIZING THERMOSETTING RESINS

Francois Lambert, 85 Rue de la Convention, 75015 Paris, and Christian Val, 81 Rue de Paris, 78470 St Remy lès Chevreuse, both of France

Filed Oct. 7, 1983, Ser. No. 539,914

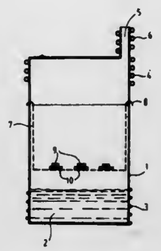
Claims priority, application France, Oct. 8, 1982, 82 17180

Int. Cl.³ C08F *6/00;* **B29C** *25/00*

U.S. Cl. 528—483 **3 Claims**

1. A process for the polymerization of a thermosetting resin which comprises the steps of:

placing a cold shaped body of thermosetting resin to be polymerized, in the vapor phase of an organic boiling liquid, to obtain polymerization of said resin at a temperature of more than 100° C. wherein the temperature and pressure are held constant at the boiling point of said



liquid and heat is transferred to said body of condensation of said liquid at said temperature directly on said body; and

recovering the shaped body of polymerized thermosetting resin.

4,517,357

SYMMETRICAL BIS-(TRIAZINYAMINO PHENYL AZO ACETOACETANILIDE) DYESTUFFS

Klaus Kunde, Leverkusen, and Frank-Michael Stöhr, Burscheid, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

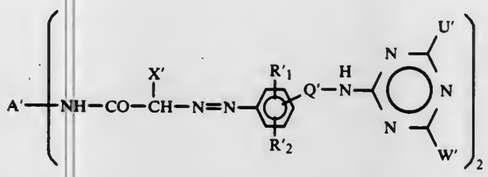
Filed Aug. 30, 1982, Ser. No. 413,004

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136679

Int. Cl.³ C09B *31/11, 33/153, 44/08, 44/10*

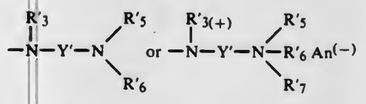
U.S. Cl. 534—605 **2 Claims**

1. A dyestuff of the formula

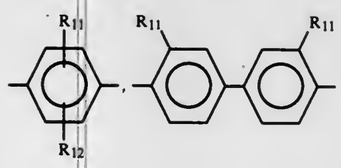


wherein

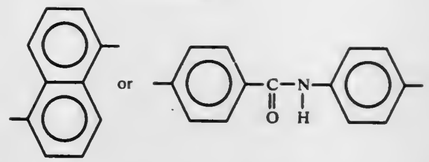
U' and W' independently of each other are radicals of the formulae



A' is a radical of the formula



-continued



wherein

R_{11} and R_{12}, in turn and independently of each other, designate H, Cl, Br, OCH_3, OC_2H_5, CH_3 or C_2H_5,

Q' is a direct bond or a radical p-$NHCOC_6H_4$— or p-$CONHC_6H_4$—,

X' is a radical of the formula —$COCH_3$, —CN, —$COOCH_3$, —$COOC_2H_5$, —$CONH_2$—COC_6H_5 or —CON(R'-3)—Y'N(R'5R'6R'7)$^{(+)}$ An$^{(-)}$,

Y' is a direct bond, C_2-C_5-alkylene, C_5-C_7-oxaalkylene, phenylene or benzylene,

R'1 and R'2 independently of each other are H, Cl, Cl, Br, —OCH_3—, —OC_2H_5, —CH_3 or C_2H_5,

R'3 is hydrogen, C_1-C_4-alkyl, β- or γ-C_2-C_4-hydroxyalkyl,

R'5-R'7 independently of each other are hydrogen, C_1-C_4-alkyl or C_2-C_4-alkyl which is substituted by hydroxyl, amino, C_1-C_4-alkylamino, di-C_1-C_4-alkylamino or tri-C_1-C_4-alkylammonium, phenyl, or benzyl or

R'5 and R'6 in each case together with the nitrogen, form a pyrrolidine, morpholine, piperazine or piperidine radical, or a C_1-C_4 alkyl substituted pyrrolidine, morpholine, piperazine or piperidine radical or Y', R'3 and R'5, together with the particular nitrogen, form a peperazine radical or a C_1-C_4-alkyl substituted piperazine radical,

R'5, R'6 and R'7 together with the nitrogen, are a pyridinium radical or a C_1-C_4 alkyl substituted pyridinium radical, and

An$^{(-)}$ is an anion.

4,517,358

DISAZO BIS-BENZTHIAZOLYL COMPOUNDS

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

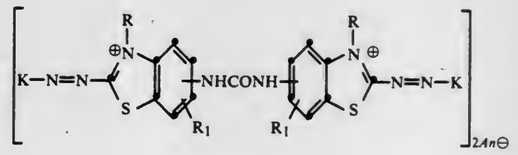
Filed Sep. 14, 1982, Ser. No. 418,177

Claims priority, application Switzerland, Sep. 22, 1981, 6106/81

Int. Cl.³ C09B *35/03, 35/26, 44/08, 44/20*

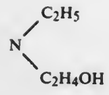
U.S. Cl. 534—608 **8 Claims**

1. A disazo compound of the formula



wherein

the K groups independently of one another are each a coupling component selected from radicals of compounds of the group consisting of an acetoacetic acid anilide, a phenol, an aminopyrimidine, a pyridone, quinolone, pyrazolone, aminopyrazole, indole, aniline, aminopyridine, naphthol, naphthol carboxylic acid anilide, naphthylamine, aminothiazole, thiophene, tetrahydroquinoline and benzomorpholine, said groups being unsubstituted or substituted by (1) C_1-C_4-alkyl or C_1-C_4 alkyl substituted by NH_2, OH, or Cl, (2) C_1-C_4-alkoxy or C_1-C_4 alkoxy substituted by OH or Cl, (3) halogen from the group of F, Cl and Br, (4) NO_2, (5) OH, (6) CN or (7)



the R groups independently of one another are each C_1–C_4 alkyl which is unsubstituted or substituted by OH, halogen, $CONH_2$ or phenyl

the R_1 groups independently of one another are each (1) hydrogen, (2) C_1–C_4-alkyl which is unsubstituted or substituted by halogen, OH or CN, (3) C_1–C_4-alkoxy which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or CN, or (4) halogen, and

An is an anion.

4,517,359

11-METHYL-11-AZA-4-0-CLADINOSYL-6-0-DESOSAMINYL-15-ETHYL-7,13,14-TRIHYDROXY-3,5,7,9,12,14-HEXAMETHYL-OXACYCLOPENTADECANE-2-ONE AND DERIVATIVES THEREOF

Gabrijela Kobrehel, and Slobodan Djokic, both of Zagreb, Yugoslavia, assignors to Sour Pliva farmaceutska, kemijska prehrambena i kozmeticka industrija, n.sol.o., Zagreb, Yugoslavia

Filed Sep. 22, 1981, Ser. No. 304,481

Claims priority, application Yugoslavia, Mar. 6, 1981, 592/81

Int. Cl.³ C07H *17/08*

U.S. Cl. 536—7.4 **1 Claim**

1. N-methyl-11-aza-10-deoxo-10-dihydro erythromycin A.

4,517,360

SYNTHESIS OF HIGHER POLYOL FATTY ACID POLYESTERS USING CARBONATE CATALYSTS

Robert A. Volpenhein, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1983, Ser. No. 507,825

Int. Cl.³ C07H *1/00*

U.S. Cl. 536—119 **17 Claims**

1. In a solvent-free transesterification process for synthesizing higher polyol fatty acid polyesters comprising the steps of:

(1) heating a mixture of (a) a polyol selected from a group consisting of monosaccharides, disaccharides and sugar alcohols, (b) a fatty acid ester selected from the group consisting of methyl esters, 2-methoxy ethyl esters, benzyl esters, and mixtures thereof, (c) an alkali metal fatty acid soap, and (d) a basic catalyst, to a temperature of from about 110° C. to about 180° C. at a pressure of from about 0.1 mm of mercury to about 760 mm of mercury to form a homogeneous melt; and

(2) subsequently adding to the reaction product of step (1) excess fatty acid ester selected from the group consisting of methyl esters, 2-methoxy ethyl esters, benzyl esters and mixtures thereof;

the improvement wherein the basic catalyst is potassium carbonate.

4,517,361

CEPHALOSPORIN DERIVATIVES

Mitsuo Numata, Osaka; Isao Minamida, Kyoto; Masayoshi Yamaoka; Mitsuru Shiraishi, both of Osaka, and Toshio Miyawaki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

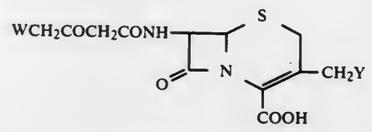
Division of Ser. No. 235,609, Feb. 18, 1981, Pat. No. 4,421,912, which is a division of Ser. No. 863,719, Dec. 23, 1977, Pat. No. 4,379,924, which is a division of Ser. No. 534,782, Dec. 20, 1974, Pat. No. 4,080,498. This application Mar. 31, 1983, Ser. No. 480,791

Claims priority, application Japan, Dec. 25, 1973, 48-1521; Feb. 20, 1974, 49-20752; Apr. 15, 1974, 49-42574; Jul. 17, 1974, 49-82623; Nov. 13, 1974, 49-131381

Int. Cl.³ C07D *501/28*

U.S. Cl. 544—24 **20 Claims**

1. A compound of the formula,



wherein W is chlorine or bromine and Y represents acetoxy or a group of formula $-SR_3$ (where R^3 is a nitrogen-containing heterocyclic group), or a salt thereof.

4,517,362

PROCESS FOR PREPARING β′ FORM OF COPPER 8-HYDROXYQUINOLINE

Bernard Muller, St-Germain-en-Laye; René Piat, Bois-Guillaume; Cornelis Rensing, Oissel, and Jean-Paul Trajin, Rouen, all of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 393,219, Jun. 28, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,606

Claims priority, application France, Jul. 6, 1981, 81 13249

Int. Cl.³ C07D *215/30;* **A61K** *31/47*

U.S. Cl. 546—7 **7 Claims**

1. A process for preparing the β′ form of copper 8-hydroxyquinoline which comprises:

(a) reacting an acid addition salt of 8-hydroxyquinoline with a copper (II) salt in water;

(b) adding a base to adjust the pH of the reaction mixture to pH 2–9;

(c) recovering the precipitate, and

(d) drying the precipitate at a temperature between about 40° to about 220° C.

4,517,363

VINYLACETYLENE-TERMINATED POLYIMIDE DERIVATIVES

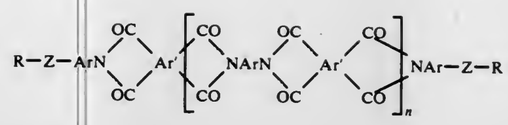
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (St. Joseph Bank and Trust Company, legal representative), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Division of Ser. No. 353,871, Mar. 2, 1982, Pat. No. 4,435,323, and a continuation-in-part of Ser. No. 199,616, Oct. 22, 1980, abandoned. This application Dec. 12, 1983, Ser. No. 560,231

Int. Cl.³ C07D *209/34, 471/00;* **C08F** *22/40*

U.S. Cl. 546—66 **45 Claims**

1. The polyimide comprising the Diels-Alder addition product of (1) a conjugated enyne compound of the formula:



wherein:

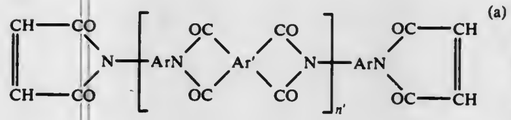
Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

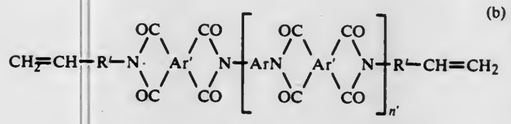
n is zero or an integer having a value of one to 20;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

Z is the structure —CH=CH—C≡C— or —C≡C–CH=CH—; and (2) a dienophile selected from the class consisting of

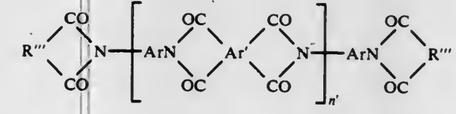


(a)



(b)

and



(c)

wherein

Ar and Ar′ in (a), (b) and (c) are the same as defined for Ar and Ar′ in the enyne compound,

n′ in (a), (b) and (c) is the same as defined for n in the said enyne compound,

R′ in (b) is a divalent organic moiety containing 1 to 12 carbon atoms, and

R‴ in (c) represents R°CH=CHAr<, and

R° in the R‴ of (c) is the same as defined above for R in the said enyne compound,

the addition being primarily between the enyne groups and the unsaturated groups of the dienophile.

4,517,364

VINYLACETYLENE-TERMINATED POLYIMIDE DERIVATIVES

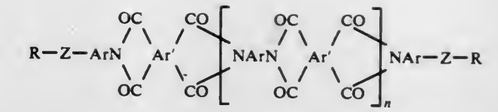
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Division of Ser. No. 353,871, Mar. 2, 1982, Pat. No. 4,435,323, which is a continuation-in-part of Ser. No. 199,616, Oct. 22, 1980, abandoned. This application Dec. 27, 1983, Ser. No. 565,337

Int. Cl.³ C07D *209/34, 471/00;* **C08F** *22/40*

U.S. Cl. 546—66 **22 Claims**

1. The Diels-Alder addition product of (1) a conjugated diacetylene compound having the formula:



wherein:

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to the adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

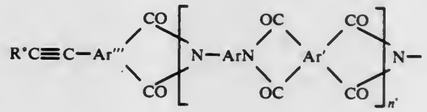
Ar is a divalent aromatic organic radical;

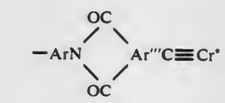
n is zero or an integer having a value of one to 20;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

Z is the structure —CH=CH—C≡C— or —C≡C—CH=CH—;

and (2) a dienophile containing at least one acceptor moiety having the formula R°C≡C— wherein R° is as defined above for R and the R°C≡C— is a non-conjugated acetylenic group, said dienophile being selected from the class consisting of diethynyl benzene, dipropargyl phthalate, 4,4′-diethynyl diphenyloxide, N-(ethynylphenyl) maleimide, dipropargyl maleate, $HC{\equiv}C{-}COOCH_2CH{=}CH_2$, $C_6H_5C{\equiv}C{-}COOCH_2CH{=}CH_2$, $C_6H_5C{\equiv}COOCH_2C{\equiv}CH$, $HC{\equiv}C{-}C_6H_4OOCC{\equiv}CCOOC_6H_4C{\equiv}CH$, $H_2C{=}CHC_6H_4OOCC{\equiv}C{-}COOC_6H_4CH{=}CH_2$ and





wherein:

n′ is zero or an integer having a value of one to 20; and Ar‴ is a trivalent aromatic radical containing 6 to 12 carbon atoms to which the attached pair of carbonyl groups is attached to adjacent or peri carbon atoms in said Ar‴ radical.

4,517,365

ISOCARBOSTYRIL DERIVATIVE

Hiroyasu Koyama, Ageo; Masahiro Tsuji, Ohi, and Yoshikuni Suzuki, Ohmiya, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,977

Claims priority, application Japan, Jun. 25, 1981, 56-97430

Int. Cl.³ C07D *217/28;* **A61K** *31/47*

U.S. Cl. 546—142 **1 Claim**

1. 4-(3-tert.-butylamino-2-hydroxy)propoxyisocarbostyril hydrochloride.

4,517,366

INTERMEDIATES FOR PREPARING 3,4-DIAMINO-1,2,5-THIADIAZOLES

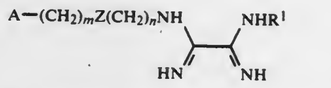
Ronnie R. Crenshaw, Dewitt, and Aldo A. Algieri, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 473,791, Mar. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 363,207, Mar. 29, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,864

Int. Cl.³ C07D *295/14, 211/06, 401/12*

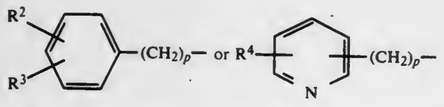
U.S. Cl. 546—231 **6 Claims**

1. A compound of the formula



II

wherein R^1 is hydrogen, (lower)alkyl, 2-fluoroethyl, 2,2,2-trifluoroethyl, allyl, propargyl,

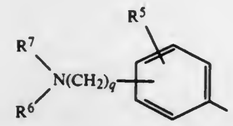


in which p is 1 or 2, R^2 and R^3 each are independently hydrogen, (lower)alkyl, (lower)alkoxy or halogen, and, when R^2 is hydrogen, R^3 also may be trifluoromethyl, or R^2 and R^3, taken together, may be methylenedioxy, and R^4 is hydrogen, (lower-)alkyl or (lower)alkoxy;

m is an integer of from 0 to 2 inclusive;

n is an integer of from 2 to 5 inclusive;

Z is oxygen, sulfur or methylene; and



in which R^5 is hydrogen, (lower)alkyl or (lower)alkoxy, q is an integer of from 1 to 4 inclusive and R^6 and R^7 each are independently (lower)alkyl, (lower)alkoxy(lower)alkyl in which the (lower)alkoxy moiety is at least two carbon atoms removed from the nitrogen atom, or phenyl(lower)alkyl, and, when R^6 is hydrogen, R^7 also may be cyclo(lower)alkyl, or R^6 and R^7, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, morpholino, thiomorpholino, piperidino, methylpiperidino, dimethylpiperidino, N-methylpiperazino, 1,2,3,6-tetrahydropyridyl, homopiperidino, heptamethyleneimino, octamethyleneimino, 3-azabicyclo[3.2.2]non-3-yl or 3-pyrrolino; or a salt, hydrate or solvate thereof.

4. The compound of claim **1** which is N-{3-(3-piperidinomethylphenoxy)propyl]ethanediimidamide, or a salt, hydrate or solvate thereof.

4,517,367

AZOLYL-PENTENE DERIVATIVES AND BIOCIDAL COMPOSITIONS CONTAINING THE SAME

Carlo Skötsch; Dietrich Baumert; Hansjörg Krähmer, and Friedrich Arndt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkaman, Fed. Rep. of Germany

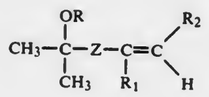
Filed Dec. 6, 1982, Ser. No. 447,624

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148742

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 546—276 **77 Claims**

1. Azolyl-pentene derivative of the formula



I

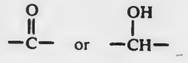
in which

R is C_1-C_{10}-alkyl or C_3-C_8-alkenyl,

R_1 is imidazol-1-yl or 1,2,4-triazol-1-yl,

R_2 is phenyl, 2-fluorophenyl, 4-fluorophenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 4-bromophenyl, 2,4-dichlorophenyl, 3,4-dichlorophenyl, 2,6-dichlorophenyl, 2-methylphenyl, 4-methylphenyl, 4-methoxyphenyl, 4-nitrophenyl, 2-naphthyl, 2-pyridyl, 3-pyridyl, 2-thienyl or 2-furyl, and

Z is



and its acid addition salt with an inorganic or an organic acid.

4,517,368

2,3-DICHLORO-5-IODOPYRIDINE AND METHODS OF MAKING AND USING THE SAME

Richard L. Burson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 6, 1983, Ser. No. 529,200

Int. Cl.³ C07D *213/61*

U.S. Cl. 546—303 **20 Claims**

1. 2,3-Dichloro-5-iodopyridine.

6. 2,3-Dichloro-5-lithiopyridine.

14. 3-Chloro-5-iodo-2-pyridinol.

4,517,369

PREPARATION OF MIXTURES RICH IN 3,4,5,6-TETRACHLORO-2-TRICHLOROMETHYL PYRIDINE

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Filed Sep. 29, 1982, Ser. No. 426,916

Int. Cl.³ C07D *213/61*

U.S. Cl. 546—345 **4 Claims**

1. The process of producing a polychloro pyridine reaction product rich in 3,4,5,6-tetrachloro-2-trichloromethyl pyridine, said process comprising:

(a) charging a reactor means with an initial charge which contains 3,4,5-trichloro-2-trichloromethyl pyridine;

(b) adding ferric chloride catalyst to such initial charge, in the amount of at least about 3% by weight relative to the initial charge;

(c) while maintaining the catalyzed charge in the reactor at a temperature in the range of from about 170° C. to about 220° C., sparging chlorine through the charge at a rate sufficient to maintain at least 50% excess chlorine in the gases from the reactor; and

(d) continuing chlorine addition and heating of the charge under the indicated conditions until substantial conversion of the charge to 3,4,5,6-tetrachloro-2-trichloromethyl pyridine occurs.

4,517,370

PROCESS FOR PREPARING 2-CHLOROBENZOXAZOLES

Johannes Becherer, Maintal; Klaus Kühlein, Kelkheim, and Ulrich Kussmaul, Niederdorfelden, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

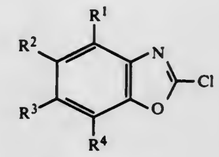
Filed Feb. 18, 1983, Ser. No. 467,742

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207153

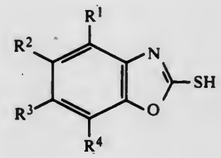
Int. Cl.³ C07D *263/54*

U.S. Cl. 548—217 **11 Claims**

1. In the process for preparing 2-chlorobenzoxazoles of the formula



wherein each of R^1, R^2, R^3 and R^4 is independently of one another, H, chloro or alkyl having 1 to 4 carbon atoms, which comprises reacting chlorine with 2-mercaptobenzoxazoles of the formula



wherein the improvement comprises providing a melt of previously prepared 2-chloro-benzoxazole, adding the 2-mercaptobenzoxazole reactant to the 2-chlorobenzoxazole melt and simultaneously or subsequently passing chlorine into the melt, with the proviso that substituents R^1 to R^4 are identical in both the 2-chlorobenzoxazole melt and the 2-mercaptobenzoxazole reactant.

4,517,371

PROCESS FOR THE SYNTHESIS OF CARBOXYLIC ANHYDRIDES USING A VANADIUM, PHOSPHORUS OXYGEN CONTAINING CATALYST COMPOSITION

Tai-Cheng Yang, Mahwah; Krishna K. Rao, Paterson, and I-Der Huang, Upper Saddle River, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 326,543, Dec. 2, 1981, Pat. No. 4,392,986, which is a continuation-in-part of Ser. No. 309,725, Oct. 8, 1981, abandoned, which is a continuation of Ser. No. 202,262, Oct. 30, 1980, abandoned. This application May 9, 1983, Ser. No. 492,995

Int. Cl.³ C07D *493/04, 307/89, 307/60*

U.S. Cl. 549—239 **7 Claims**

1. A process for oxidizing in the vapor phase at least one feed hydrocarbon to a carboxylic anhydride, said feed hydrocarbon being selected from the group consisting of C_4 to C_{10} alkane, C_4 to C_{10} alkene, C_4 to C_{14} cycloalkane, C_4 to C_{14} cycloalkene, alkaryl hydrocarbon wherein the alkyl portion thereof contains from 1 to 10 carbons, and the aryl portion contains from 6 to 14 carbons, and mixtures thereof, which process comprises contacting the feed hydrocarbon, under conditions and in a manner to form at least one carboxylic anhydride, with a catalyst composition comprising vanadium, phosphorus, and oxygen, said catalyst composition prepared by the process which comprises:

(1) reacting in the presence of a liquid organic media, a vanadium containing compound present in said liquid organic media as a heterogeneous suspension, and a phosphorus containing compound, in a manner and under conditions sufficient to form in said liquid organic media a heterogeneous vanadium-phosphorus-oxygen containing first catalyst precursor composition having an atomic ratio of phosphorus to vanadium of from about 0.5:1 to about 2:1, and an average vanadium valence of from about 3.9 to about 4.7;

(2) separating said first catalyst precursor composition from said liquid organic media;

(3) treating said first catalyst precursor composition with at least one part by weight liquid water per part by weight first catalyst precursor composition at a temperature of at least about 30° C. for a period of at least about 0.5 hour to form a second vanadium-phosphorus-oxygen catalyst precursor composition;

(4) separating said second catalyst precursor composition from said water; and

(5) activating said second catalyst precursor composition in an atmosphere which excludes the presence of air alone therein.

4,517,372

PROCESS FOR THE PREPARATION OF 4-FLUOROPHTHALIC ANHYDRIDE

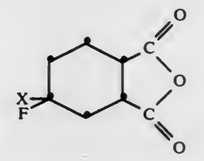
David Y. Tang, E. Amherst, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 493,849, May 12, 1983, abandoned. This application May 2, 1984, Ser. No. 604,272

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—246 **20 Claims**

1. A process for preparing 4-fluorophthalic anhydride which comprises contacting a dihalohexahydrophthalic anhydride of the formula



where X is Cl or F with a dehydrogenation catalyst.

4,517,373

ISOMB-530B DERIVATIVES

Akira Terahara, and Minoru Tanaka, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

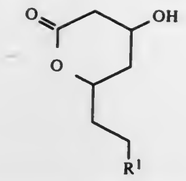
Filed Aug. 24, 1982, Ser. No. 410,889

Claims priority, application Japan, Aug. 27, 1981, 56-134558

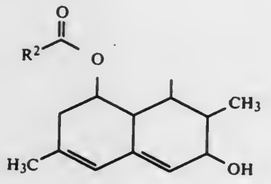
Int. Cl.³ C07D *309/30*

U.S. Cl. 549—292 **3 Claims**

1. A 1-acyloxy-6-hydroxy-IsoMB-530B lactone of the formula (I):



wherein R^1 represents a group of the formula



wherein R^2 is a C_1–C_{10} alkyl group.

4,517,374

CYCLOALKANE EPOXIDES PRODUCED BY AIR OXIDATION OF CYCLOALKENES OVER OXIDE CATALYSTS

John R. Sanderson; Lewis W. Watts, Jr., and Terry L. Renken, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 1, 1983, Ser. No. 510,142
Int. Cl.³ C07D *301/06*
U.S. Cl. 549—533 **2 Claims**

1. A method for the production of cyclododecane epoxide comprising

reacting cyclododecene with oxygen in the presence of zinc oxide as catalyst where acetic acid is also present under a temperature in the range of about 50° to 150° C.

4,517,375

STABLE AQUEOUS IMPREGNATING SOLUTIONS PREPARED FROM HYDROLYZED ALKYLTRIALKOXYSILANES

Werner Schmidt, St. Augustin, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 304,480, Sep. 22, 1981, Pat. No. 4,352,894. This application May 7, 1982, Ser. No. 375,941
Claims priority, appiication Fed. Rep. of Germany, Oct. 2, 1980, 3037220
Int. Cl.³ C07F *7/08, 7/18*
U.S. Cl. 556—463 **5 Claims**

1. Stable aqueous solution of hydrolyzed alkyltrialkoxysilanes wherein the solution has a pH value from 2 to 7.

4,517,376

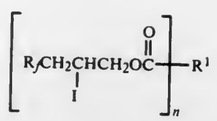
MANUFACTURE OF CHLOROMETHYL-SUBSTITUTED POLYFLUOROALKYL ESTERS

Stanley E. Krahler, and William R. Remington, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

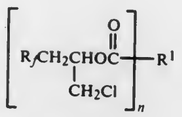
Continuation-in-part of Ser. No. 338,617, Jan. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 39,162, May 15, 1979, abandoned. This application Aug. 23, 1982, Ser. No. 410,516
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—87 **10 Claims**

1. A process which comprises reacting chlorine with a reactant compound having the formula:

(I)



so as to produce an end-product compound having the formula:



wherein

R_f is a saturated, monovalent, nonaromatic fluorinated aliphatic which is straight or branched chain or cyclic and contains at least 3 carbons;

R^1 is optionally substituted alkyl, aryl, alkenyl, aralkyl, cycloalkyl, or cycloalkenyl; and

n is a number from 1 to 4; during said reaction, said reactant compound being in molten form or dissolved or suspended in a liquid medium which is inert under the reaction conditions.

4,517,377

PROCESS FOR PRODUCING VINYL ACETATE

Tomiya Isshiki; Takanari Nawata, both of Tokyo; Yasuhiko Kijima; Akira Ito, both of Chiba, and Takayuki Watanabe, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 390,074
Claims priority, application Japan, Jun. 22, 1981, 56-96296
Int. Cl.³ C07C *67/297, 69/15*
U.S. Cl. 560—261 **18 Claims**

1. A process for producing vinyl acetate which comprises decomposing ethylidene diacetate in a liquid phase at a temperature within the range of 80° to 250° C. in the presence of at least one halide compound selected from the group consisting of:

(a) metal halides selected from the group consisting of bromides and iodides of metals, and mixtures thereof, said metal being selected from the group consisting of Li, Mg, Ca, Sr, Ba, Zn, Sn and Sb;

(b) organic halides represented by R^1Xp wherein R^1 is selected from alkyl having 1–10 carbon atoms, cycloalkyl having 3–10 carbon atoms or aromatic hydrocarbon having 6–10 carbon atoms, X is selected from I, Br, F or Cl and p is an integer of 1–3;

(c) organic halides represented by R^2COX wherein R^2 is selected from alkyl having 1–10 carbon atoms, cycloalkyl having 3–10 carbon atoms or aryl, and X is as defined above; and

(d) onium salts of (i) a nitrogen group compound and (ii) HX wherein X is as defined above, or a halide represented by R^1Xp or R^2COX wherein X, R^1, R^2 and p are as defined above.

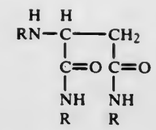
4,517,378

CURING AGENT FOR FLUOROCARBON POLYMER COATING COMPOSITIONS

Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,705
Int. Cl.³ C07C *102/06, 103/87, 103/10*
U.S. Cl. 564—160 **5 Claims**

1. A curing agent for fluorocarbon polymers consisting of



wherein R is R^1NH_2 and R^1 is an aliphatic or cycloaliphatic hydrocarbon radical.

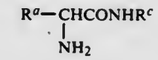
4,517,379

BRANCHED AMIDES OF L-ASPARTYL-D-AMINO ACID DIPEPTIDES

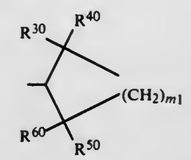
Thomas M. Brennan, Old Lyme, and Michael E. Hendrick, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 276,243, Jun. 26, 1981, Pat. No. 4,399,163, which is a continuation-in-part of Ser. No. 201,745, Nov. 5, 1980, Pat. No. 4,411,925, which is a continuation-in-part of Ser. No. 113,800, Jan. 21, 1980, abandoned. This application Apr. 1, 1983, Ser. No. 481,456
Int. Cl.³ C07C *103/37, 103/52*
U.S. Cl. 564—193 **17 Claims**

1. A D-amino acid amide compound of the formula



wherein R^a is CH_2OH or CH_2OCH_3, and R^c is a member selected from the group consisting of fenchyl, diisopropylcarbinyl, d-methyl-t-butylcarbinyl, d-ethyl-t-butylcarbinyl, di-t-butylcarbinyl, cyclopropyl-t-butylcarbinyl, cyclopentyl-t-butylcarbinyl, dicyclopropylcarbinyl,



where m_1 is 1, 2 or 3 and when m_1 is 1: R^{30}, R^{40}, R^{50} and R^{60} are each methyl, when m_1 is 2: R^{30} is methyl, ethyl or isopropyl and

R^{40}, R^{50} and R^{60} are each hydrogen, or R^{30}, and R^{50} are each methyl and R^{40} and R^{60} are each hydrogen, and when m_1 is 3:

(a) R^{30} is isopropyl or t-butyl and R^{40}, R^{50} and R^{60} are each hydrogen,

(b) R^{30} is ethyl, R^{50} is methyl and R^{40} and R^{60} are each hydrogen or

(c) R^{30}, and R^{50} and R^{40} are each methyl and R^{60} is hydrogen or methyl.

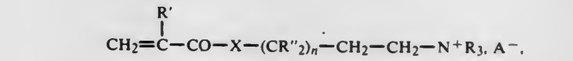
4,517,380

METHOD FOR PURIFYING METHACRYLAMIDOPROPYL TRIMETHYLAMMONIUM CHLORIDE AND RELATED COMPOUNDS

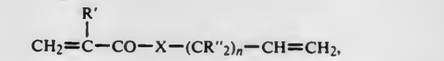
Peter J. Arndt, Seeheim-Jugenheim; Manfred Müller, Rossdorf; Fritz Schlosser, and Franz Wenzel, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,443
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1983, 3328350
Int. Cl.³ C07C *103/44*
U.S. Cl. 564—206 **2 Claims**

1. A method for purifying a compound of the formula



by the removal of impurities therefrom, including an impurity of the formula



wherein R is the same or different alkyl, R′ is hydrogen or methyl, R″ is hydrogen or lower alkyl, X is oxygen or —NH—, A^- is an anion of an acid, and n is an integer from 0 to 3, which method comprises extracting an aqueous solution of said compound with dichloromethane.

4,517,381

2-METHYL-4′-ISOPROPYL-2-PENTENOYL ANILIDE

Tetsuo Takematsu, Utsunomiya; Mitihiko Nakaya, Mobara; Koichi Moriyasu, Yokohama, and Nobuo Komoto, Mitaka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,605
Claims priority, application Japan, Jul. 19, 1983, 58-130161
Int. Cl.³ C07C *102/04, 102/06, 103/133;* A01N *9/20*
U.S. Cl. 564—207 **4 Claims**

1. 2-Methyl-4′-isopropyl-2-pentenoyl anilide.

4,517,382

1-FORMYL-TRI- AND TETRAMETHYL-CYCLOHEX-1-EN-3-ONE OXIMES

Lothar Janitschke, Kleinniedesheim, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,605
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137802
Int. Cl.³ C07C *131/10*
U.S. Cl. 564—267 **2 Claims**

1. 1-Formyl-2,6,6-trimethyl-3-oximido-cyclohex-1-ene.

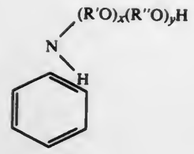
4,517,383

ALKYLENE OXIDE ADDUCTS OF ANILINE HAVING REDUCED VISCOSITY

Alexander Korczak, Grosse Ile, and William W. Levis, Jr., Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 5, 1983, Ser. No. 510,441
Int. Cl.³ C07C *93/00*
U.S. Cl. 564—443 **9 Claims**

1. A cogeneric mixture of compounds having the following structural formula:



wherein
R′ and R″ are alkylene radicals which may be the same or different having from 2 to 4 carbon atoms;
x is an integer from 0 to 50;
y is an integer from 0 to 50; and
x+y must be greater than 1 and less than 50.

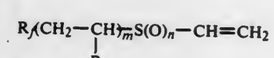
4,517,384

PERFLUOROALKYL ALKYLENE VINYL SULFOXIDES AND SULFONES

Neal O. Brace, Wheaton, Ill., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,739
Int. Cl.³ C07C *147/02, 149/06*
U.S. Cl. 568—27 **4 Claims**

1. A compound of the formula



wherein
R_f is perfluoroalkyl of 4 to 12 carbon atoms,
R_1 is hydrogen,
m is 1, and
n is 1 or 2.

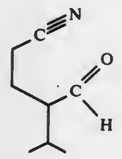
4,517,385

PROCESS FOR PRODUCING SOLANONE, NORSOLANADIONE AND INTERMEDIATES THEREFOR

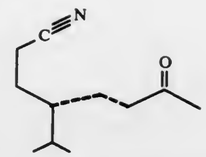
Kenneth K. Light, North Ogden, Utah; William L. Schreiber, Jackson, N.J.; Joseph A. McGhie, Montclair, N.J.; Ronald P. Schreck, Old Bridge, N.J.; Takao Yoshida, West Long Branch, N.J.; Loren B. Schreiber, Aberdeen, N.J., and Ranya Muralidhara, Fair Haven, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 511,966, Jul. 8, 1983, Pat. No. 4,483,995, which is a division of Ser. No. 357,158, Mar. 11, 1982, Pat. No. 4,412,083. This application Jul. 31, 1984, Ser. No. 636,226
Int. Cl.³ C07C *49/16, 49/12*
U.S. Cl. 568—386 **1 Claim**

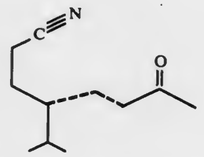
1. A process for forming norsolanadione comprising the steps of reacting a compound having the structure:



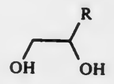
with acetone in the presence of base to form at least one compound defined according to the structure:



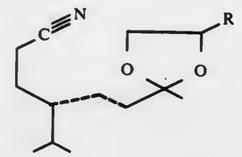
wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; reacting one of the compounds having the structure:



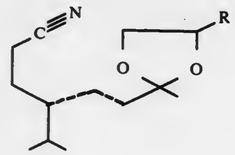
with an alkylene glycol having the structure:



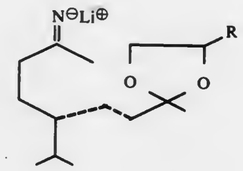
to form a ketal having the structure:



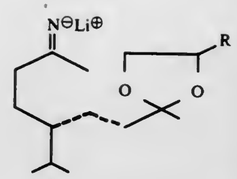
wherein R represents hydrogen or C_1–C_4 alkyl and one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond; reacting at least one of the ketals having the structure:



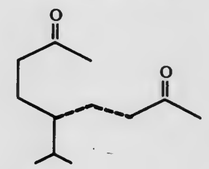
with methyl lithium in order to form the organometallic compound having the structure:



reacting the organometallic compound having the structure:



with aqueous acid in order to form the norsolanadione having a structure defined according to the genus:



wherein the dashed lines are as defined above.

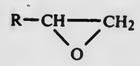
4,517,386

PROCESS FOR THE REARRANGEMENT OF EPOXIDES

Richard E. Naipawer, Wallington, and Alan J. Chalk, Kinnelon, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed May 11, 1984, Ser. No. 609,403
Int. Cl.³ C07C *45/58*
U.S. Cl. 568—483 **7 Claims**

1. A process for the preparation of an aldehyde of the formula R—CH_2CHO wherein R is an alkyl group of from three to eighteen carbon atoms which comprises adding an epoxide of the formula



to a mixture of lithium tetrafluoroborate and a polyether at a temperature between 80° C. and 200° C. and isolating the aldehyde formed therefrom.

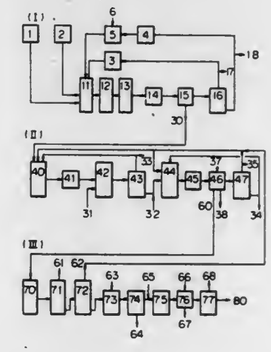
4,517,387

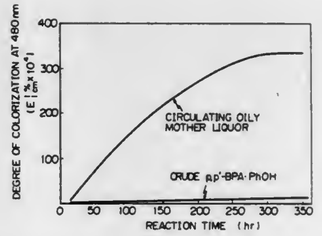
PROCESS FOR PRODUCTION OF 2,2-BIS(4-HYDROXYPHENYL) PROPANE

Fujihisa Matsunaga; Tadahiko Nishimura, both of Iwakuni; Etsuo Miyake, and Kiyotaka Banba, both of Wakayama, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and Honshu Chemical Ind. Co. Ltd., both of Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 536,029
Claims priority, application Japan, Sep. 30, 1982, 57-169858; Sep. 30, 1982, 57-169859; Sep. 30, 1982, 57-169860
Int. Cl.³ C07C *39/16*
U.S. Cl. 568—728 **6 Claims**

1. A process for continuously producing high quality 2,2-bis(4-hydroxyphenyl)propane from a reaction of phenol and acetone in the presence of a hydrochloric acid containing catalyst comprising the steps of:
(A) carrying out said reaction by continuously charging additional phenol, the below-mentioned circulating phenol, additional acetone, additional hydrogen chloride or hydrochloric acid, the below-mentioned circulating oily mother liquor, and the below-mentioned aqueous phase mother liquid, into a reactor to form a reaction mixture slurry comprising the crude phenol adduct of 2,2-bis(4-hydroxyphenyl)propane in the form of crystal and two liquid phase reaction mother liquors of an oily mother liquor and an aqueous mother liquor;
(B) separating said reaction mixture slurry into the crude phenol adduct of 2,2-bis(4-hydroxyphenyl)propane and the two liquid phase mother liquors after discharging the reacting mixture slurry from the reactor;
(C) separating said two liquid phase mother liquors obtained in the above-mentioned step (B) into the oily mother liquor and the aqueous mother liquor, whereby the oily mother liquor is circulated as a circulating oily mother liquor to the reactor and the remaining portion of the aqueous mother liquor, after discharging a portion thereof, is circulated as a circulating aqueous mother liquor to the reactor;
(D) dissolving said crude phenol adduct of 2,2-bis(4-hydroxyphenyl)propane obtained in the above-mentioned step (B) in a phenol solvent and, after neutralizing the hydrogen chloride or hydrochloric acid contained in the crude phenol adduct with a base, crystallizing and separating the phenol adduct of 2,2-bis(4-hydroxyphenyl)propane from the solution to obtain the purified phenol adduct of 2,2-bis(4-hydroxyphenyl)propane;
(E) decomposing said purified phenol adduct of 2,2-bis(4-hydroxyphenyl)propane obtained in the above-mentioned step (D), on heating, at a temperature in the range of 100° C. to 200° C. and a pressure of 1 to 500 mm Hg, to form a thermally decomposed product containing phenol and 2,2-bis(4-hydroxyphenyl)propane;
(F) recovering the phenol and 2,2-bis(4-hydroxyphenyl)propane from said thermally decomposed product obtained in the above-mentioned step (E); and
(G) circulating said phenol recovered in the above-mentioned step (F) to a reactor in the above-mentioned step (A) as a circulating phenol or to the above-mentioned step (D) as a phenol solvent.





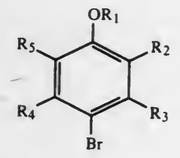
4,517,388

PROCESS FOR THE SELECTIVE PREPARATION OF PARABROMOPHENOL AND ITS DERIVATIVES

Samuel Braverman, 65/26 Harey-Yehuda St., Ganei Tiqva 55900, Israel

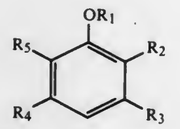
Filed Oct. 25, 1983, Ser. No. 545,212
Claims priority, application Israel, Oct. 29, 1982, 67117
Int. Cl.³ C07C *39/27*
U.S. Cl. 568—779 **7 Claims**

1. A process for the preparation of para-bromophenol derivatives of formula I



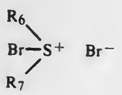
I

wherein R_1, R_2, R_3, R_4, and R_5 each independently represent hydrogen or lower alkyl radical of 1 to 6 carbon atoms, characterized in that a phenol derivative of formula II



II

wherein R_1, R_2, R_3, R_4 and R_5 are as defined above is reacted preferably at a temperature of between 20° and 30° C., in the presence of a solvent with a compound of the formula



III

or with bromine and a compound of the formula



IV

wherein R_6 and R_7 in formulae III and IV being each independently a lower alkyl radical of 1 to 6 carbon atoms, an aryl radical or they form together with the S-atom to which they are attached a 4 to 6 membered ring.

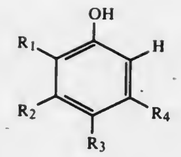
4,517,389

PROCESS FOR METHYLATING THE ORTHO POSITION OF A PHENOL

Tsutomu Katsumata, and Masahisa Yokota, both of Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1983, Ser. No. 521,205
Claims priority, application Japan, Aug. 10, 1982, 57-137931; Sep. 3, 1982, 57-152675; Oct. 5, 1982, 57-173852; Feb. 7, 1983, 58-18573
Int. Cl.³ C07C *37/16*
U.S. Cl. 568—804 **3 Claims**

1. A process for methylating a phenol at the ortho position which comprises flowing a gaseous stream containing methanol and a phenol having the general formula



wherein R_1, R_2, R_3 and R_4 each independently represent a saturated aliphatic hydrocarbon substituent selected from the group consisting of hydrogen, methyl, ethyl, isopropyl and tertiary butyl, through a fluidized bed, operated at a temperature of 250° to 600° C., of particles of a catalyst comprising 30 to 70% by weight of silica and 70 to 30% by weight of a metal oxide having a catalytic activity in the methylation of the ortho position of a phenol and supported on said silica, said metal oxide containing as the metal component at least one metal selected from the group consisting of iron, vanadium, manganese, magnesium, chromium and indium, said catalyst having been calcined at 500° to 900° C.

4,517,390

HYDROGENATION OF OLEFINS AND ALDEHYDES

Michael J. H. Russell, Reading, and Barry A. Murrer, Henley on Thames, both of England, assignors to Johnson Matthey Public Limited Company, London, England

Continuation of Ser. No. 361,051, Mar. 23, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 580,294
Claims priority, application United Kingdom, Mar. 25, 1981, 8109303
Int. Cl.³ C07C *29/14, 5/03*
U.S. Cl. 568—881 **4 Claims**

1. A catalytic process for the hydrogenation of an unsaturated organic compound selected from (a) the group consisting of open-chain olefins having from 3 to 20 carbon atoms and cyclic olefins to produce the corresponding alkene, (b) styrenes to produce the corresponding alkyl benzenes, (c) styrene-butadiene copolymers to selectively hydrogenate the olefinic groups, and (d) aliphatic aldehydes to produce the corresponding alcohols comprising reacting together the said compound and hydrogen in the presence of a catalyst comprising a water-soluble complex of a platinum group metal containing as a ligand therein a water-soluble phosphine selected from carboxy-triaryl phosphines and hydroxy-triaryl phosphines in a reaction medium comprising an aqueous phase and an organic phase, wherein the reaction medium also includes an amphiphilic reagent, the aqueous phase contains the catalyst and the organic phase contains the said compound, the amphiphilic reagent containing polar and non-polar moieties and being substantially soluble in the aqueous phase and substantially insoluble in the organic phase, the reaction temperature being in the range 40°–150° C., the initial reaction pressure being in the range 100–10,000 kPa, the pH of the aqueous phase being sufficiently high to solubilize the water-soluble complex, the ratio of aqueous phase to organic phase being in the range 0.33 to 5:1, the concentration of amphiphilic reagent to platinum group metal being up to 100:1 on a molar basis and the concentration of the platinum group metal being in the range 100 to 500 ppm based on the aqueous phase.

4,517,391

CONTINUOUS PREPARATION OF ETHANOL

Schuster, Ludwig, Limburgerhof; Franz-Josef Mueller, Wachenheim; Axel Anderlohr, Mannheim; Peter Blei, Bad Durkheim; Gerhart Eigenberger; Bernd Höppner, both of Neustadt; Gerd Kaibel, Lampertheim, and Wolfgang Steiner, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,573
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221077
Int. Cl.³ C07C *29/136, 31/08*
U.S. Cl. 568—885 **13 Claims**

1. In a process for the continuous catalytic preparation of ethanol by hydrogenating acetic acid under superatmospheric pressure and at an elevated temperature, the improvement which comprises:

carrying out the hydrogenation in a reactor using a catalyst consisting of: either

(a) Cobalt;

(b) Cobalt and an essentially inert carrier;

(c) No less than 50% Cobalt plus one or more members selected from the group consisting of copper manganese, molybdenum, chromium and phosphoric acid; or

(d) an essentially inert carrier and an active component which is no less than 50% cobalt plus one or more members selected from the group consisting of copper manganese, molybdenum, chromium and phosphooric acid; and

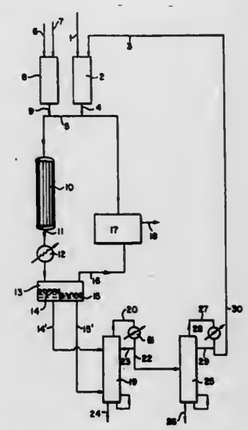
---

4,517,392

PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF ORGANIC ALCOHOLS

Shu-Chieh P. Wang, Columbia, and Martin B. Sherwin, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 510,860, Jul. 5, 1983, abandoned. This application Dec. 19, 1983, Ser. No. 563,215
Int. Cl.³ C07C *79/02*
U.S. Cl. 568—948 **19 Claims**



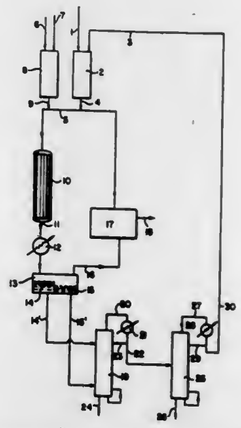
1. A process for selectively forming nitroalkanes comprising contacting, in a reaction zone in a homogeneous gas phase and at an elevated pressure of about 5 to 20 bars, a elevated temperature of from about 100° C. to about 500° C. and a time of from about 0.5 to 20 seconds, at least one C_2–C_{10} organic aliphatic alcohol with NO_2 and recovering the formed nitro compound.

4,517,393

PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF KETONES

Shu-Shieh P. Wang, Columbia, and Martin B. Sherwin, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 510,860, Jul. 5, 1983, abandoned. This application Dec. 19, 1983, Ser. No. 563,208
Int. Cl.³ C07C *79/02*
U.S. Cl. 568—948 **27 Claims**



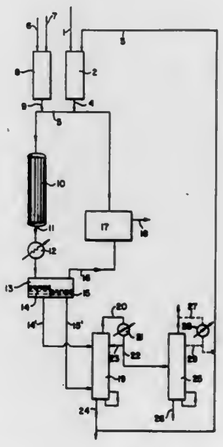
1. A process for selectively forming nitroalkanes comprising contacting in a reaction zone in a homogeneous gas phase and at an elevated pressure of about 5 to 20 bars, a temperature of from about 100° C. to about 500° C. and a time of from 0.5 to 20 seconds, a C_3–C_{10} aliphatic ketone with nitrogen dioxide and recovering the formed nitroalkane compound.

4,517,394

PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF CARBOXYLIC ACIDS

Shu-Chieh P. Wang, Columbia, and Martin B. Sherwin, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 510,858, Jul. 5, 1983, abandoned. This application Dec. 19, 1983, Ser. No. 563,216
Int. Cl.³ C07C *79/02*
U.S. Cl. 568—948 **25 Claims**



1. A process for selectively forming nitroalkanes and nitroar-

omatics comprising contacting in a reaction zone a homogeneous gas phase of a carboxylic acid selected from C_2–C_{10} aliphatic monocarboxylic acids, C_3–C_{10} dicarboxylic acids, aromatic carboxylic acids composed of a phenyl group attached to the carboxylic acid group via a C_1–C_3 alkylene group and mixtures thereof and NO_2under the pressure of from about 1 to 20 bars, a temperature of from about 200° C. to about 500° C. and a time to have the Reaction Condition Product (RCP) of pressure (in bars) and time (in seconds) to be at least 3, and recovering the formed nitro compound.

4,517,395

PROCESS FOR THE SELECTIVE HYDROGENATION OF POLYUNSATURATED HYDROCARBONS IN HYDROCARBON MIXTURES

Fritz Obenaus; Franz Nierlich; Otto Reitemeyer, and Bernhard Scholz, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Nov. 2, 1982, Ser. No. 438,465

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143647

Int. Cl.³ C07C *5/03, 5/08*

U.S. Cl. 585—259 **12 Claims**

1. A process for the selective hydrogenation of hydrocarbons having conjugated double bonds, cumulative double bonds or acetylenic triple bonds or combinations thereof in a monoene-containing mixture of hydrocarbons having at least three carbon atoms in the liquid phase on a fixed catalyst on an inert support, which comprises:

adding hydrogen to the hydrocarbon mixture to be hydrogenated, in a finely divided form and in such quantitative ratios that the hydrogen is completely dissolved in the hydrocarbon mixture and a homogeneous liquid phase is obtained before the hydrocarbon mixture enters a hydrogenation zone, said hydrogen being added in an amount from once to twice the stoichiometric quantity for effecting the hydrogenation of the polyunsaturated and acetylenic compounds to the corresponding monoenes;

adding carbon monoxide to the hydrocarbon mixture to be hydrogenated, in a finely divided form, wherein the carbon monoxide is completely dissolved in the hydrocarbon mixture and a homogeneous liquid phase is obtained before the hydrocarbon mixture enters the hydrogenation zone, and wherein the proportion of carbon monoxide amounts to at least 0.05 ppm by weight based on the weight of the hydrocarbon mixture; and

passing the resulting reaction mixture in the liquid phase over a fixed catalyst containing 0.01 to 3% by weight of palladium, based on the weight of the support in a hydrogenation zone maintained at the reaction conditions required for effecting selective hydrogenation whereby the content of hydrocarbons having conjugated double bonds cumulative double bonds or acetylenic triple bonds or combinations thereof is reduced by said selective hydrogenation.

4,517,396

PROCESS FOR THE PREPARATION OF MIDDLE DISTILLATES

Arend Hoek, and Eduard P. Kieffer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 15, 1984, Ser. No. 610,543

Claims priority, application Netherlands, May 17, 1983, 8301747

Int. Cl.³ C07C *3/03, 3/10*

U.S. Cl. 585—415 **14 Claims**

1. A process for the preparation of middle distillates, characterized in that a feed comprising one or more mono-olefins having at most five carbon atoms per molecule, or aliphatic hydrocarbon mixtures consisting more than 50%w of said olefins, is contacted at a temperature between 175° and 250° C. with a catalyst comprising a crystalline metal silicate which after one hour's calcination in air at 500° C. has the following properties:

(a) an X-ray powder diffraction pattern which the strongest lines are the four lines mentioned in Table A,

TABLE A

d(Å)
11.1 ± 0.2
10.0 ± 0.2
3.84 ± 0.07
3.72 ± 0.06; and

(b) in addition to SiO_2, one or more oxides of a trivalent metal A chosen from aluminum, iron, gallium, rhodium, chromium and scandium are present, and in which the SiO_2/A_2O_3 molar ratio is higher than 10;

which metal silicate comprises at least 0.1%w nickel and/or cobalt which has been deposited thereon by means of ion exchange.

4,517,397

OXIDATIVE DIMERIZATION OF TOLUENE

Takashi Terauchi, Iwaki; Koji Sato, Kita-Ibaraki, and Shoichi Hoshi, Iwaki, all of Japan, assignors to Kureha Kaguku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Division of Ser. No. 450,649, Dec. 17, 1982, Pat. No. 4,460,705. This application Jan. 24, 1984, Ser. No. 573,328

Claims priority, application Japan, Dec. 29, 1981, 56–214257

Int. Cl.³ C07C *3/02*

U.S. Cl. 585—428 **3 Claims**

1. A process for producing 1,2-diphenylethane and 1,2-diphenylethylene by the oxidative dimerization of toluene, comprising reacting toluene at a temperature of 400° to 650° C. in the presence of a catalyst comprising a composition represented by the general formula:

$$Tl_1M_aM'_bO_c$$

wherein

M represents at least one element selected from the group consisting of beryllium, magnesium, calcium, strontium and barium; M′ represents at least one element selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, titanium, zirconium, hafnium, niobium, tantalum, zinc, alumium, gallium, indium and antimony;

a is 0.05 to 15;

b is 0.05 to 15;

c is a number determined by the valences of thallium, M and M′;

with the proviso that the number of alkali metal atoms is at most 20% of the number of total atoms constituting the catalyst except for oxygen when alkali metal is included in M′.

4,517,398

HYDROXYLATED MAGNESIA SUPPORT

John A. Sofranko, Malvern, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 600,940

Int. Cl.³ C07C *2/00*

U.S. Cl. 585—500 **15 Claims**

1. In an improved method for converting methane to higher hydrocarbons which comprises contacting a gas comprising methane with a contact agent comprising: (a) at least one reducible oxide of at least one metal, which oxide when with methane at a temperature within the range of about 500° to 1000° C. is reduced and produces higher hydrocarbon products and water, and (b) a support comprising a magnesia derived from magnesium hydroxide or from a magnesium-containing component contacted with hydroxyl-containing material; the improvement which comprises employing a contact agent wherein said support has been calcined prior to the addition of said reducible metal oxide.

4,517,399

PROCESS FOR THE PRODUCTION OF HIGH VISCOSITY INDEX LUBRICATING OILS FROM OLEFINS

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield, both of N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 492,855, May 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 359,964, Mar. 19, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 639,529

Int. Cl.³ C07C *3/10*

U.S. Cl. 585—533 **11 Claims**

1. In a process for the production of lubricating oils from olefins wherein olefins are contacted over a ZSM-5 type zeolite at a temperature range of from 350° to 650° F., a pressure of from 1,000 to 5,000 psig and a space velocity from 0.1 to 10 WHSV in order to obtain a liquid product from which said lubricating oils boiling above about 600° F. are separated, the improvement which comprises utilizing said ZSM-5 type zeolite in a crystalline size greater than 2 microns.

4,517,400

DECARBONYLATION OF N-BUTYRALDEHYDE USING ZEOLITE CATALYSTS

Frederick A. Pesa, 764 Circlewood Dr., Aurora, Ohio 44202; Marcus W. Blaskie, 19007 Chagrin Blvd., Shaker Heights, Ohio 44122, and Joseph R. Fox, 32167 Hamilton Dr., Solon, Ohio 44139

Division of Ser. No. 376,331, May 10, 1982, abandoned. This application Jun. 27, 1983, Ser. No. 508,352

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—638 **13 Claims**

1. A process for selectively decarbonylating an n-aldehyde from a mixture comprising n-aldehydes and branched aldehydes to an olefin having one less carbon atom than the n-aldehyde, carbon oxide and hydrogen by passing the mixture over a catalyst comprising a metal selected from the group consisting of palladium, platinum, rhodium, copper, silver, gold and zinc, the metal being supported on or exchanged onto a zeolite.

4,517,401

OLEFIN METATHESIS AND CATALYST

Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Jul. 26, 1983, Ser. No. 517,298

Int. Cl.³ C07C *6/00*

U.S. Cl. 585—645 **10 Claims**

1. A process for disproportionating olefins comprising contacting at least one feed olefin having at least 3 carbon atoms per molecule under suitable reaction conditions which convert the feed olefin into other olefins having different numbers of carbon atoms with a catalytically effective amount of a catalyst composition comprising an inorganic refractory oxide and at least one metal oxide selected from molybdenum oxide and tungsten oxide promoted with an effective promoting amount of a methylating agent.

4,517,402

SELECTIVE SORPTION OF LINEAR ALIPHATIC COMPOUNDS BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 307,045, Sep. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 105,190, Dec. 19, 1979, Pat. No. 4,309,281. This application May 2, 1983, Ser. No. 490,910

Int. Cl.³ C07C *7/13*

U.S. Cl. 585—820 **8 Claims**

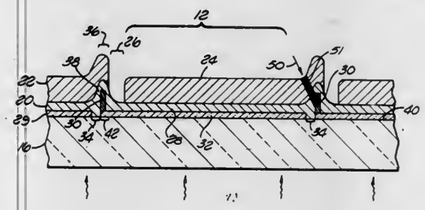
1. A process for selective separation of a linear paraffin compound in admixture with at least one branched paraffin compound, said compounds having a critical dimension of less than 6.8 Angstrom Units for sorption, which comprises contacting the mixture of paraffins with zeolite ZSM-11, said zeolite being characterized by a silica:alumina mole ratio of at least 12, to effect selective sorption of said linear paraffin by said zeolite.

4,517,403

SERIES CONNECTED SOLAR CELLS AND METHOD OF FORMATION

Don L. Morel, Woodland Hills; Robert R. Gay, Granada Hills, and Gary B. Turner, Canoga Park, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 16, 1983, Ser. No. 495,198
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—249 **14 Claims**



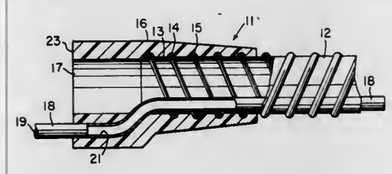
1. A photovoltaic device comprising:
a continuous thin film having front and back major surfaces and a plurality of spaced photovoltaic regions thereon;
transparent electrode means at the front surface having a plurality of discrete front electrode portions formed prior to formation of the continuous film and substantially coextensive with the respective photovoltaic regions;
other electrode means at the back surface having a plurality of discrete back electrode portions substantially coextensive with the respective photovoltaic regions;
each front electrode portion including at least one contact portion which is substantially thicker than said film and overlaps the back electrode portion of an adjacent photovoltaic region at a preselected area to establish electrical connection with said back electrode through the continuous film.

4,517,404

MULTIPLE FLUID CONVEYING HOSE ASSEMBLY AND METHOD OF MAKING SAME

William E. Hughes, Dayton; Keith E. Dare, Powell, both of Ohio, and Jerry W. Cooper, Haywood County, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 2, 1983, Ser. No. 463,354
Int. Cl.³ A47L *9/24;* **F16L** *11/12*
U.S. Cl. 174—47 **7 Claims**



1. A multiple fluid conveying hose assembly comprising of first hose having a tubular wall defining a passage internally thereof and axially spaced helical reinforcing coils for said tubular wall, a second hose linearly positioned within said passage of said first hose, and a connector on at least one end of said first hose having an end wall at right angles to the longitudinal axis of said first hose, said second hose being coextensive with the entire length of said first hose and said connector and passing through said end wall of said connector to the exterior of said first hose and having an outlet separate from the outlet of said first hose.

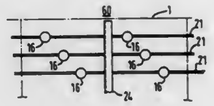
6. The method of making a multiple fluid conveying hose assembly comprising the steps of forming a first hose having an internal passage, locating axially spaced helical reinforcing coils within said first hose, said coils providing electrical continuity throughout the length of said hose; providing a connector having an end wall and an outer wall surrounding at least one end of said hose, placing electrical connection means within said connector and interconnecting said coils and said electrical connection means; positioning a second hose within said passage of said first hose and coextensive with the entire length of said first hose and said connector, and passing said second hose through said end wall of said connector to the exterior of said first hose.

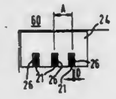
4,517,405

COMPACT CONDUCTOR DEVICE

Nobuo Masaki, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 24, 1982, Ser. No. 381,448
Claims priority, application Japan, Jun. 24, 1981, 56-96474
Int. Cl.³ H02G *5/00;* **H02B** *1/20, 13/06*
U.S. Cl. 174—68 B **7 Claims**

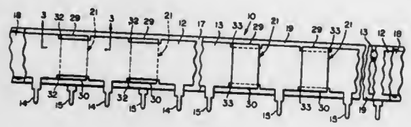


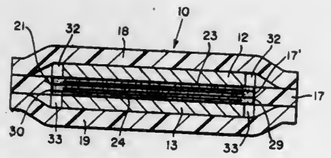


1. A compact conductor device comprising:
a plurality of conductors of a predetermined size extending mutually in parallel, said conductors being spaced apart from one another by a minimum interphase distance A that is sufficient to prevent any electrical interflow through the air separating the conductors;
a plurality of insulators;
each of said conductors being supported at two predetermined points by a pair of said insulators spaced apart from each other along the longitudinal direction of the conductor, each conductor because of its size, inherent properties and the predetermined points of support having a maximum bending point beyond which plastic deformation of the conductor will occur;
an insulating member positioned along the length of said conductors and between said two support points of each of said conductors, said insulating member having a plurality of space portions along a side thereof, said conductors being positioned in individual ones of said space portions;
the widths of said space portions being dimensioned for providing air gaps normally between the sides of said conductors and the sides of said space portions, the width of each gap (**1**) being large enough to prevent leakage of current between the positioned conductor and the adjacent insulating member so that the minimum distance A between the conductors can be selected solely in consideration of the insulating characteristics through air between the conductors, rather than by the insulating characteristics through the insulating member, and (**2**) being less than the maximum bending point beyond which the plastic deformation of the respective conductor occurs so that if a conductor is bent by an electromagnetic force created between the conductors, the conductors will return to their original positions when such an electromagnetic force is withdrawn; and
said predetermined points of support being selected so that the maximum bending point of each of said conductors is

less than the respective gap between each respective conductor and the adjacent insulating member.

4,517,406
LAMINATED BUS BAR CONTAINING MULTILAYER CERAMIC CAPACITORS
Jack A. Erdle, Rochester, N.Y., assignor to Eldre Components, Inc., Rochester, N.Y.
Filed May 14, 1984, Ser. No. 610,097
Int. Cl.[3] H01B *7/00*
U.S. Cl. 174—72 B **11 Claims**





1. A laminated bus bar having therein a pair of elongate, metal conductor strips, and at least one multilayer capacitor sandwiched between said strips, and wherein the improvement comprises

a pair of spaced, parallel external electrodes on said capacitor having coplanar engagement with confronting surfaces on said strips, and

a pair of spaced metal termination plates on said capacitor extending transversely of said external electrodes and electrically connected each to a different one of said external electrodes,

each of said termination plates having opposed edges thereof confronting upon said metal strips, and

each of said metal strips having therein a pair of spaced recesses registering with the confronting edges of said termination plates.

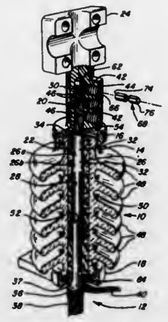
4,517,407
HIGH VOLTAGE CABLE TERMINATOR AND METHOD OF ASSEMBLY
James W. Fox, Orland Park, and Robert J. Hill, Lockport, both of Ill., assignors to G & W Electric Company, Blue Island, Ill.
Filed Sep. 21, 1982, Ser. No. 420,820
Int. Cl.[3] H02G *15/064;* **H01R** *43/00*
U.S. Cl. 174—73 R **8 Claims**

1. A termination assembly for a high voltage cable having an axial stranded conductor, a coaxial layer of insulation contacting the conductor, a coaxial layer of semiconductive material contacting the insulation, and a layer of grounded conductive wire wrapped around the semiconductive material, the assembly comprising:

a hood having a generally cylindrical cavity to receive an end portion of the high voltage cable and having means to attach a second conductor to its exterior,

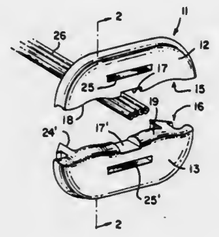
a rigid housing positioned beneath said hood and attached thereto, said housing including a generally cylindrical interior bore which coaxially surrounds a portion of said high voltage cable beneath and adjacent to said end portion of said axial conductor,

an elastomeric tubular stress relief element of the type which is installed by releasing it from a highly stretched condition by removing a removable core from its interior coaxially gripping a portion of said cable within said housing in a stretched condition so that said element exerts force radially inward upon the cable, and



a sleeve of elastomeric material having an outer surface which engages the interior bore of said housing and having an inner surface which slidably engages said stress relief element and portions of said cable adjacent thereto.

4,517,408
SELF-CENTERING CABLE FASTENER
Warren J. Pegram, Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 27, 1983, Ser. No. 517,593
Int. Cl.[3] H01B *17/26;* **F16L** *5/00*
U.S. Cl. 174—153 G **10 Claims**



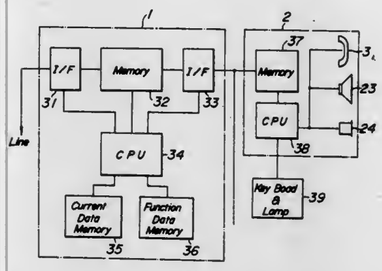
1. A cable fastener comprising first and second body parts having first and second faces, respectively, movable into abutment transversely of a cable to confine a cable between them, the first and second faces being formed with complementary, smoothly undulating, camming surfaces extending in orthogonal directions for substantially the entire areas of the faces precisely to center the body parts both axially and transversely of a cable during such movement.

4,517,409
METHOD FOR CHECKING FUNCTION STATES IN KEY TELEPHONE SYSTEM
Yoshio Nagasaki, Yokohama, Japan, assignor to Kanda Tushin Kogyo, Japan
Filed May 25, 1983, Ser. No. 498,048
Claims priority, application Japan, May 26, 1982, 57-89418
Int. Cl.[3] H04M *1/24*
U.S. Cl. 179—81 C **5 Claims**

1. A method for checking function states preset in a key telephone system comprising a central control equipment and a plurality of key telephones each having indicators for indicating states of subscribers and/or extension lines in a normal use, comprising the steps of:

setting the central control equipment into a function check mode;

reading function data out of a function data memory provided in the central control equipment;

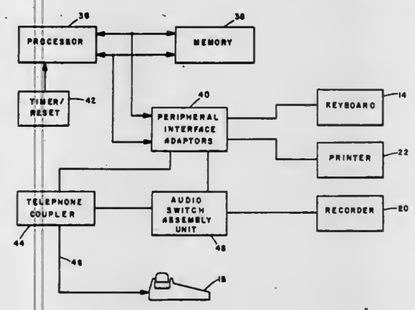


transmitting the function data thus read out to a key telephone;

driving the indicators of the relevant key telephone in accordance with the transmitted function data to produce indicator conditions which represent the transmitted function data; and

checking whether or not predetermined functions have been correctly preset by monitoring the conditions of the indicators.

4,517,410
AUTOMATIC USER SELECTED VARIABLE TELEPHONE MESSAGE RECORD AND PLAYBACK SYSTEM
Daniel E. Williams; John J. Carley, and Paul S. Eaton, all of San Diego County, Calif., assignors to Data Acquisition Services, San Marcos, Calif.
Filed Apr. 2, 1982, Ser. No. 365,020
Int. Cl.[3] H04M *1/64*
U.S. Cl. 179—6.04 **30 Claims**



1. An automatic user selected variable telephone message playback system, comprising:

a recorder unit for recording information messages in a series of predetermined message areas on a recording medium each of said message areas being associated with a respective multiple digit message identifier corresponding to a particular series of telephone Touch-Tone signals, said recorder unit including drive means for driving said recording medium to the beginning of any one of said message areas and means for playing the information message in that message area;

a telephone coupler unit including means for connection to a telephone line and means for detecting incoming calls by a user on said telephone line;

an audio switching unit including means for selectively connecting said telephone line via said telephone coupler unit to said recorder unit in response to detection by said telephone coupler unit of a telephone call;

said selectively connecting means of said audio switching unit comprising a multi-directional switch assembly means operated by said automatic controller, said assembly means having four inputs and three outputs, the controller including means for controlling which of the inputs is connected to which of the outputs;

the four inputs comprising: a message recording line input; a data input connected from said automatic controller; a telephone line input connected from the telephone coupler unit; an input connected from an output of the recorder unit; and

the three outputs comprising: an output connected to an input to the recorder unit; a data output connected to the input of the automatic controller; and an output connected to the telephone coupler unit;

an automatic controller for controlling the operation of said units, said controller including:

means for monitoring said telephone line of said connected telephone call to detect a series of Touch-Tone signals on said telephone line entered from a user-operated Touch-Tone telephone and representing a message selected by said user;

means for associating said user-entered Touch-Tone signals with the corresponding message identifies;

means for automatically operating said recorder unit drive means in response to said detected Touch-Tone signals to drive said recording medium to the beginning of the message area associated with said corresponding message identifier, and for operating said recorder unit to play the information message store in said message area over said telephone line via said switching unit and coupler unit;

said controller selectably controlling said audio switching unit to connect said message recording line input through the output to the recording unit input in order to record a message on said recording medium;

said controller selectably controlling said audio switching unit to connect said data input form the automatic controller through the output to the recording unit input in order to write a beginning of message marker and an end of message marker onto said recording medium;

said controller selectably controlling said audio switching unit to connect said input from the recorder unit output through the output to the telephone coupler unit in order to enable a user to listen to a selected recorder message; and

said controller selectably controlling said audio switching unit to connect said telephone line input from the telephone coupler unit through the output to the recorder unit input in order to enable a user to record a message onto said recording medium.

4,517,411
METHOD AND APPARATUS FOR PRIVATE BRANCH EXCHANGE BILLING
Kenneth H. Casner, 3004 Preston Ct., Rockwall, Tex. 75087, assignor to Kenneth H. Casner, Rockwall, Tex.
Filed Jun. 18, 1982, Ser. No. 389,855
Int. Cl.[3] H04M *15/34*
U.S. Cl. 179—7 R **21 Claims**

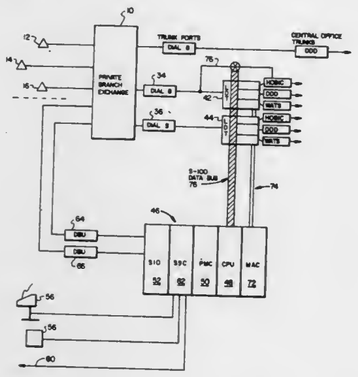
1. Apparatus for utilization with a private branch exchange having a plurality of telephone stations and central office trunks for verifying the particular call originating station of said plurality of telephone stations, said apparatus comprising:

first memory means for receiving and storing a telephone number entered by a station user at a selected one of a plurality of telephone stations;

first means responsive to the reception and storage of said

telephone number for requesting that said station user enter a particular station number corresponding to said selected one of said plurality of telephone stations;

verification means responsive to the entry of said particular station number for verifying the utilization of said selected one of said plurality of telephone stations; and



control means for accessing said first memory means in response to said verification and for transmitting said telephone number to one of said plurality of central office trunks.

4,517,412

CARD-ACTUATED TELECOMMUNICATION NETWORK

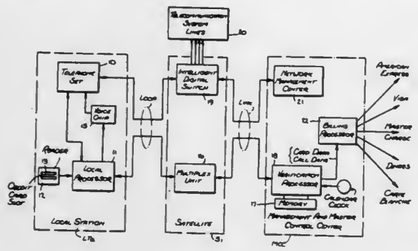
Martha Newkirk, and Larry Newkirk, both of 8 Park La., Madison, N.J. 07940

Continuation-in-part of Ser. No. 356,430, Mar. 9, 1982, Pat. No. 4,439,636. This application Nov. 23, 1983, Ser. No. 554,726

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.[3] H04M *17/02*

U.S. Cl. 179—7.1 R **7 Claims**



1. A public access network operating in conjunction with existing telecommunication lines, making it possible for a caller holding a credit card issued by any one of several companies to dial calls from any local station included in the network, said network comprising:

A. a satellite acting as a hub to connect local stations associated therewith to said telecommunication lines;

B. a plurality of local stations accessible to the public and associated with said satellite, each station being provided with a normally-inactive communication set linked to said satellite whereby when said set is activated, a call dialed therefrom goes through a line selected from said telecommunication lines to the called destination, and a credit card reader adapted to receive a caller's credit card to generate a digital signal representing the card and its holder;

C. means responsive to said signal to determine its acceptability to the network, thereby limiting access to the network to valid cards; and

D. means to generate data regarding the location of the local station from which each call originates as well as the destination of the call and its duration and to relate this data to data derived from the digital signal in regard to the identity of the credit card used by each caller to provide billing information to be supplied to the several companies, making it possible for each of these companies to bill its card holders for calls made through the network.

4,517,413

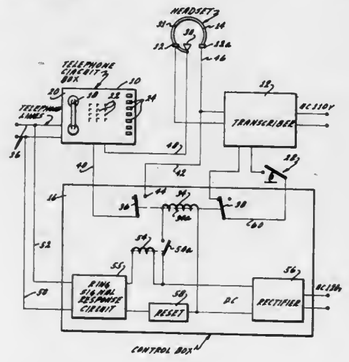
TELEPHONE TRIGGERED SWITCHING SYSTEM FOR TRANSCRIBER

William H. Pavitt, Jr., 1334 Charmel Pl., Pacific Palisades, Calif. 90272

Filed Jan. 23, 1984, Ser. No. 573,015

Int. Cl.[3] H04M *1/65*

U.S. Cl. 179—81 R **4 Claims**



1. A transcriber/telephone work station system, said system including:

(a) a telephone station box having an incoming line, circuitry connected thereto, and a telephone connected to said circuitry;

(b) a transcriber, said transcriber including on-off switching means, electronic means to convert electromagnetically recorded dictation to audio frequency output, and socket means to receive a headset plug through which the audio frequency output may be delivered to a headset for listening by a person utilizing the transcriber;

(c) a headset, said headset having at least one earphone and means to plug into said socket means to convey said audio frequency output to said earphone, and a microphone in circuit with said earphone and disposed for voice reception from the wearer of the headset;

(d) telephone signal actuated switching means, the last said means comprising: double acting switching means, the first switch of said switching means being connected between the telephone circuitry and the microphone/earphone circuit of said headset, and the second switch of said double acting switching means being interposed in the line of said on-off switching means, said double acting switching means, in its first and normal position, having its said first switch open and its second switch closed, and in its second position, its first switch closed and its second switch open; and means connected to said incoming telephone line and responsive to the ring signal arriving therethrough, to shift said double acting switching means from its first position to its second position and releaseably held in its second position, whereby said transcriber becomes turned off, and the telephone circuitry is connected to the microphone/earphone circuit of said headset to enable the person at the transcriber/telephone work station to receive the call arriving through said circuitry and indicated

by said ring signal, and to converse with the caller; and means to reset said double acting switching means to its first position.

4,517,414

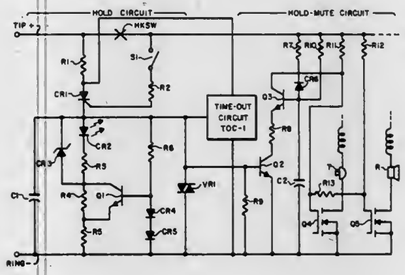
HOOKSWITCH BOUNCE RESISTANT TELEPHONE HOLD-MUTE CIRCUIT

Eduard F. B. Boeckmann, Huntsville, Ala., assignor to GTE Communication Systems Corp., Northlake, Ill.

Filed Dec. 12, 1983, Ser. No. 560,623

Int. Cl.[3] H04M *1/00*

U.S. Cl. 179—81 R **13 Claims**



1. A subscriber's telephone circuit connected to a pair of telephone line conductors and including a transmitter, a receiver, a hookswitch and a hold circuit comprising: a manually operated switch; a holding bridge including a plurality of resistances connected in series, connectable between said line conductors; gating means included in said holding bridge and including a circuit connection to said switch operated in response to the manual operation of said switch to complete a circuit path through said holding bridge between said line conductors; and there is further included shunt means connected in parallel with at least one of said resistances operated in response to a flow of less than a predetermined amount of current through said holding bridge, to provide a low impedence path around said parallel connected resistor.

4,517,415

HEARING AIDS

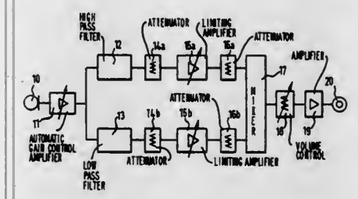
Roger F. Laurence, Camberley, England, assignor to Reynolds & Laurence Industries Limited, Channel Islands

Filed Oct. 20, 1982, Ser. No. 435,870

Claims priority, application United Kingdom, Oct. 20, 1981, 8131600

Int. Cl.[3] H04R *27/02*

U.S. Cl. 179—107 FD **10 Claims**



1. A hearing aid, comprising; a first electro-acoustic transducer for converting sound to an electrical signal; frequency dependent filtering means comprising a high pass filter and a low pass filter for dividing the electrical signal from said first transducer into two signals of different frequency bands; a high pass channel and a low pass channel comprising respective variable gain circuits arranged to reduce the dynamic range of the signals from said high pass filter and said low pass filter, respectively said filters having substantially the same turnover frequency, in the range 1000 to 2000 Hz; means for mixing the outputs of the channels; and a second electroacoustic transducer for converting the output of said mixing means to an acoustic signal; each of said variable gain circuits being arranged to provide constant gain amplification for the signals from said respective filter below a predetermined threshold and, for signals above said predetermined threshold, to provide a peak output which is substantially constant without distorting said signals.

4,517,416

ELECTRO-ACOUSTIC TRANSDUCER HAVING A DIAPHRAGM COMPRISING A LAYER OF POLYMETHACRYLIMIDE FOAM

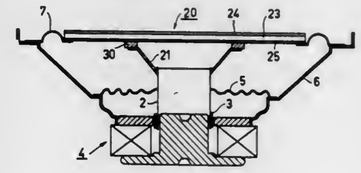
Urbanus P. M. Goossens, Dendermonde, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,539

Claims priority, application Netherlands, Feb. 22, 1982, 8200690

Int. Cl.[3] H04K *1/24, 1/28, 7/00*

U.S. Cl. 179—115.5 PS **23 Claims**



1. A diaphragm for an electro-acoustic transducer which comprises a layer of a polymethacrylimide foam having a modulus of elasticity between 15×10^6 and $120\times10^6 N/m^2$ and a density between 10 and 80 kg/m^3.

4,517,417

COMMUNICATION SYSTEM FOR A MOTOR VEHICLE

Masato Murayama, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1983, Ser. No. 477,926

Claims priority, application Japan, Mar. 25, 1982, 57-042176[U]; Mar. 25, 1982, 57-042177[U]; Mar. 25, 1982, 57-042178[U]; Mar. 25, 1982, 57-042179[U]; May 12, 1982, 57-069336[U]

Int. Cl.[3] H04R *1/08, 1/28*

U.S. Cl. 179—156 R **2 Claims**

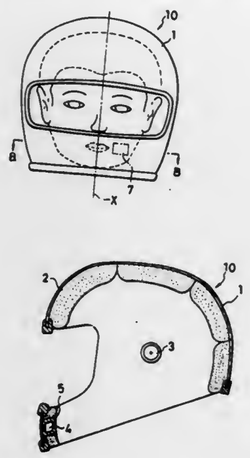
1. A protective headwear having a microphone and a speaker mounted therein, wherein the protective headwear is of a full-face type comprising:

a speaker operatively positioned so that a sound producing part thereof is located behind the ear of a user of the protective headwear;

a microphone having a first sound collecting surface and a second portion positioned to be buried in a front lower part of the protective headwear, offset from a central plane of the protective headwear, and arranged so that said first sound collecting surface of microphone is perpendicular to a surface of an inner wall of said front lower part and positioned to be closer to the central plane than said second portion of the microphone;

said microphone including a housing member with a sound

introducing passage leading from said sound collecting surface and opening in said inner wall, and an area of an



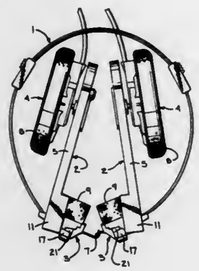
aperture of the sound introducing passage increases as the distance increases away from the sound collecting surface.

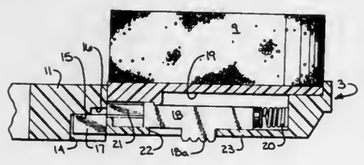
4,517,418

PORTABLE STEREOPHONE

Michael S. Baran, St. Francis; Joseph C. Besasie, Milwaukee; Wayne L. Warren, Port Washington, and Allen W. Montgomery, Milwaukee, all of Wis., assignors to Koss Corporation, Milwaukee, Wis.

Filed Nov. 7, 1983, Ser. No. 549,667
Int. Cl.³ H04M *1/05*; H04R *1/10*
U.S. Cl. 179—156 R **2 Claims**





1. In a stereophone having a headband with cup assemblies connected to each end of the headband, and wherein each cup assembly comprises:

(a) a temporal pad which connects to the headband and which engages the user's head above the ear when the stereophones are in use;

(b) a support arm pivotally connected to the temporal pad and extending downward therefrom when the stereophones are in use;

(c) an ear cup connected to the support arm and containing an acoustic transducer which is positioned over the user's ear when the stereophones are in use;

(d) a slider mounted in the temporal pad and having a wedge which extends out the end of the temporal pad to engage the support arm when the slider is in one position and which is retracted into the temporal pad when the slider is in a second position;

(e) a plurality of bearing surfaces formed on the support arm adjacent is pivotal connection with the temporal pad, each bearing surface being positioned to engage the slider wedge and lock the support arm in a different orientation; and

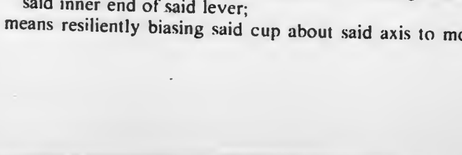
wherein the headband provides a clamping force which retains the stereophones to the user's head when in use, and the clamping force may be distributed between the temporal pads and the ear cups by adjusting the orientation of the support arms about their pivotal connections with the temporal pads.

4,517,419

CANTILEVER SPRING TELEPHONE HOOKSWITCH ADAPTED FOR PRINTED WIRING CARD MOUNTING

Richard B. Kosten, Huntsville, Ala., assignor to GTE Communication Systems Corp., Northlake, Ill.

Filed Nov. 1, 1982, Ser. No. 437,973
Int. Cl.³ H01H *1/18*; H04M *1/08*
U.S. Cl. 179—159 **10 Claims**



1. For use in a telephone instrument, a hookswitch assembly comprising: a planar base including an electrical contact mounted thereon; a first resilient cantilever arm including a support end fastened to said base and a flexible section including a cross section reduced in area relative to the cross section of the rest of said first cantilever arm; a second resilient cantilever arm including a free end and a contact engaging surface positioned against said electrical contact; connecting means joining said first cantilever arm to said second cantilever arm; and an actuator assembly initially operated in a first direction to depress said second arm, wiping said contact engaging surface across said contact and further operated in said first direction to depress said first arm, disengaging said contact engaging surface from said contact.

4,517,420

INTEGRAL CUP AND HOOKSWITCH ACTUATOR FOR A TELEPHONE SET

Steve W. Haskins, Mount Juliet, Tenn., assignor to Northern Telecom Limited, Montreal, Quebec, Canada

Filed Apr. 20, 1983, Ser. No. 486,722
Int. Cl.³ H04M *1/08*
U.S. Cl. 179—164 **12 Claims**

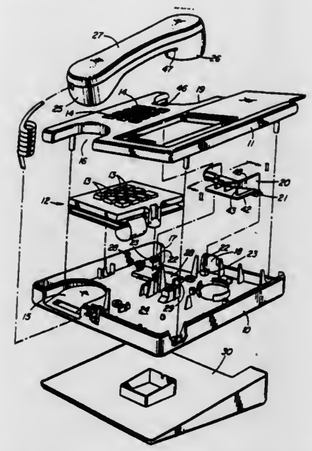
1. An integral cup and hookswitch for a telephone set, comprising;

a cup for receiving one end of a handset, said cup including a bottom surface and a lever extending below said bottom surface and having an inner end;

means pivotally mounting said cup at an outer edge on a telephone set base, for pivotal movement about an axis parallel to said outer edge, said lever extending inward from said axis;

a switch positioned in said telephone set base, said switch including contact actuating members extending beneath said inner end of said lever;

means resiliently biasing said cup about said axis to move said lever inner end upward to actuate said switch to an off hook condition;



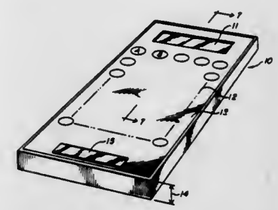
replacement of a handset pivoting said cup against said resilient biasing means to move said lever inner end downward and actuate said switch to an on hook condition.

4,517,421

RESILIENT DEFORMABLE KEYBOARD

George D. Margolin, 1815 Sherington Pl., Apt. V-203, Newport Beach, Calif. 92663

Continuation of Ser. No. 116,291, Jan. 28, 1980, abandoned. This application Feb. 18, 1983, Ser. No. 468,035
Int. Cl.³ H01H *9/00, 13/70*
U.S. Cl. 200—1 R **16 Claims**



1. An improved keyboard of the type having an array of keyfaces and a corresponding array of switches, wherein the improvement comprises:

a sheet having a first side and an opposing second side with a plurality of apertures extending from the first to the second side, such apertures each extending, from and in registry with a keyface on the first side, to the corresponding switch at the second side;

a plurality of closed cells, each cell being disposed in one of the apertures and having first and second elastically deformable surfaces defining first and second ends thereof proximate to the first and second sides of the sheet, respectively;

each such cell being filled with a deformable medium at least somewhat resistant to compression for tranducing deformations of the first surface caused by pressure on the keyface, into deformations of the second surface for operating the corresponding switch;

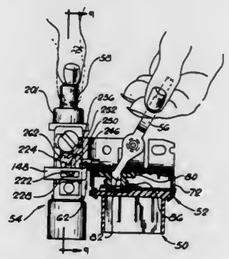
each aperture being of a dimension to laterally confine the sidewalls of the cell disposed therein so that motion of the first surface is transduced into motion substantially only of the second surface without motion of the cell sidewalls.

4,517,422

ELECTRICAL SWITCH HAVING INTERLOCKED BLOWER AND AIR CONDITIONER SWITCH COMPONENTS FOR VEHICLES

Charles E. Black, III, Mt. Prospect, and Raymond T. Halstead, Wheeling, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Apr. 10, 1984, Ser. No. 598,840
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—50 C **6 Claims**



1. A combination blower and air conditioner switch device for vehicles, comprising

a blower switch having first casing means,

an air conditioner switch having second casing means secured alongside said first casing means,

a blower control member movable in said first casing means along a path between an OFF position remote from said second casing means and at least one ON position along said path closer to said second casing means,

blower contact means operable by said blower control member to an open position when said blower control member is in said OFF position while being operable to a closed position with said blower control member in said ON position,

means for moving said blower control member along said path,

an air conditioner control member movable in said second casing means between circuit opening and closing positions,

a return spring for biasing said air conditioner control member toward said circuit opening position,

air conditioner contact means operable by said air conditioner control member to an open position with said air conditioner control member in said circuit opening position while being operable to a closed position with said air conditioner control member in said circuit closing position,

latching means for latching said air conditioner control member in said circuit closing position,

said latching means including a latching element,

and interlock means movable between enabling and disabling positions and including a disabling member for engaging said latching element to disable said latching means with said interlock means in said disabling position,

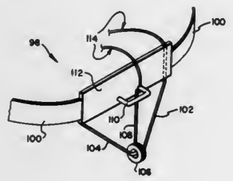
said interlock means including operating means connected to said disabling member for moving said disabling member to said disabling position when said blower control member is moved away from the direction of said second casing means to said OFF position while moving said disabling member to said enabling position when said blower control member is moved from said OFF position toward said second casing means,

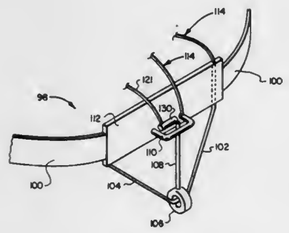
said latching means thereby being disabled from latching said air conditioner control member in said circuit closing position when said blower control member is in its OFF position,

said latching means being enabled to latch said air conditioner control member in said circuit closing position

when said blower control member is moved away from said OFF position to said ON position.

4,517,423
HUMAN BODY ACTIVATED SWITCH
William N. Smith, III, P.O. Box 1061, Carrollton, Tex. 75006
Filed Jun. 4, 1982, Ser. No. 385,016
Int. Cl.³ H01H *35/00*
U.S. Cl. 200—52 R **6 Claims**





1. An electrical switch for use by a person and including first and second wires for switchable connection, said switch comprising:

a nonconducting support frame mounted upon the persons body;

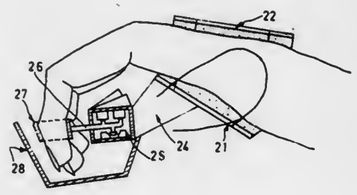
a first electrical contact mounted upon and extending from said frame and connected to said first wire; and

contacting means for providing contact between said first contact and a electrically conducting leverarm, said contacting means including a friction device positioned against a portion of the person's skin movable by the person in relation to the support frame and supported by a electrically conducting support arm pivotally mounted upon the support frame and connected thereto to said second wire, said leverarm having a first end mounted in said friction device in electrical contact with the support arm and having a second end positioned adjacent to said first contact wherein movement of the portion of the person's skin by the person will cause contact between the first contact and leverarm resulting in an electrical connection between the first and second wires.

4,517,424
HAND-SECURED PUSHBUTTON CONTROL DEVICE
Patrice Kroczynski, Vitry, France, assignor to Inro France, Nanterre, France
Continuation of Ser. No. 395,086, filed as PCT FR 81/00130, Oct. 15, 1981, published as WO 82/01345 on Apr. 29, 1982, § 102(e) date Jun. 15, 1982, abandoned.
This application Jun. 12, 1984, Ser. No. 619,408
Claims priority, application France, Oct. 17, 1980, 80 22205; Jun. 9, 1981, 81 11278; Oct. 15, 1981, PCT/FR81/00130
Int. Cl.³ H01H *35/00;* **B41J** *5/00;* **G08C** *9/00*
U.S. Cl. 200—52 R **5 Claims**

1. A control device comprising a body which can be maintained in a substantially fixed position relative to the palm and back of the user's hand without immobilizing the user's fingers; and a plurality of sets of switch means supported by said body, each of said sets of switch means being aligned with and adapted to be operated by a different finger, each of said pushbutton sets comprising first, second, third, and fourth switch means, said first and second switch means being adapted to be actuated by pivoting of the aligned finger in first and second senses, respectively, about the center of said hand, in directions substantially parallel to the palm, from a rest position to positions corresponding to the opening and closing of the hand; said third switch means in each set being adapted to be operated by the aligned finger through the movement of the finger in a direction substantially perpendicular to the palm from the rest position to a position relatively remote from the palm; and said fourth switch means in each set being adapted to be operated by the aligned finger through the movement of the finger in a direction substantially perpendicular to the palm, from the rest position to a position relatively proximate to the palm.





4,517,425
SELF-FLOW GENERATING GAS INTERRUPTER
Donald R. Martin, Racine, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Sep. 14, 1983, Ser. No. 532,012
Int. Cl.³ H01H *33/70*
U.S. Cl. 200—148 A **14 Claims**

1. A circuit interrupter comprising:

(a) a stationary casing adapted to be filled with an arc extinguishing gas;

(b) a first electrical contact carried by said stationery casing;

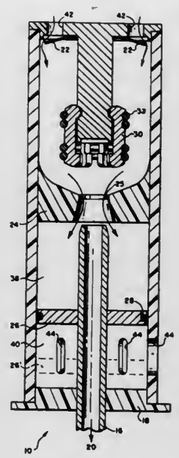
(c) a second electrical contact which is movably disposed within and carried by said stationery casing so as to engage and disengage said first contact;

(d) negative pressure means, comprising a suction chamber formed by a cylinder and a piston, for producing a negative pressure region within said cylinder in response to disengaging movement of said first and second contacts, one of said piston and cylinder being carried by said second electrical contact;

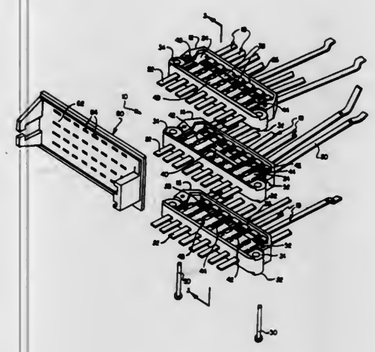
(e) a gas storage chamber formed by said stationary casing and said first and second contacts when said first and second contacts are engaged;

(f) a suction guide for connecting said storage chamber to said negative pressure region within said negative pressure means; and

(g) first valve means, in flow communication with said gas storage chamber, for supplying gas from said casing to said chamber in response to pressure within said chamber decreasing below a pre-selected first pressure value.

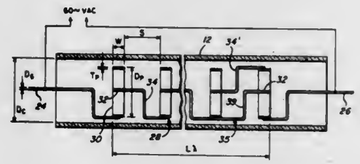


4,517,426
ELECTRICAL BUSSING FOR A SWITCH ARM CONNECTOR BLOCK
James D. Edwards, Brentwood, and Charles Malone, Franklin, both of Tenn., assignors to The Scott & Fetzer Company, Fairview, Tenn.
Filed Feb. 29, 1984, Ser. No. 584,782
Int. Cl.³ H01H *43/10, 1/26*
U.S. Cl. 200—38 A **20 Claims**



1. A switch arm connector block for mounting a plurality of spring switchblades in a predetermined array for sequential cooperation with a timer cam and for providing a quick disconnect connector for electrically connecting the blades to a wiring harness comprising insulating block means, a plurality of flat, parallel switchblades passing through and having body portions encapsulated by said block means, said switchblades defining a first series of parallel planes and having longitudinal axes defining a second series of parallel planes transverse to said first series, said blades extending transversely as cantilevers from an end face of said insulating block means, tunnel means in said block for providing passageways along said first series of planes between and among the encapsulated switchblade body portion defining each of said first series of parallel planes, bussing means within said passageways electrically connecting at least two switchblades in at least one of said first series of parallel planes, means defining channels at said end face of said block means, and bussing means in said channels providing an electrical connection between a switchblade in one of said first series of parallel planes and a switchblade in another one of said first series of parallel planes.

4,517,427
FREQUENCY RESONANCE HEATER
Charles H. Coy, Springport, Ind., assignor to Richard H. Williams, Muncie; Marion L. DeBolt and Daniel C. Burry, both of Decatur, all of, Ind.
Filed Jun. 17, 1983, Ser. No. 505,482
Int. Cl.³ H05B *5/00*
U.S. Cl. 219—10.51 **20 Claims**



1. In combination with a source of electrical energy having a relatively low pulsating frequency, an electrical heater, comprising an elongated container, a body of liquid confined to the container, electrode means mounted in the container for establishing an electrical current path within the body of liquid from which heat is evolved, and power terminal means connecting the source to the electrode means at fixedly spaced feeder end points between which the path extends for establising resonance conditions under which electromagnetic waves are propagated within a frequency band having a relatively high fundamental frequency that is a harmonic of the relaively low frequency of the source to generate said heat within the body of liquid.

4,517,428
MENU DISPLAY DEVICE
Kazufumi Matsushima, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 24, 1982, Ser. No. 381,512
Claims priority, application Japan, May 29, 1981, 56-78870[U]; Jun. 19, 1981, 56-90257[U]
Int. Cl.³ H05B *6/06*
U.S. Cl. 219—10.55 B **8 Claims**

1. A menu display device adapted for a cooking apparatus, comprising:

a cylindrical body supported for rotational movement about a center axis;

a plurality of menu cards turnably attached at one end thereof to an outer peripheral surface of said cylindrical body;

a housing in which said cylindrical body and said cards are housed;

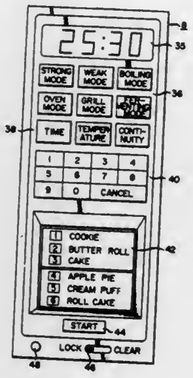
means for rotating said cylindrical body;

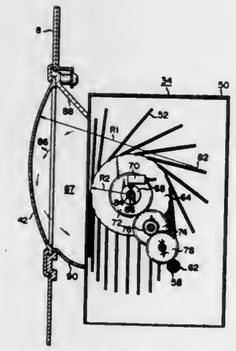
a curved transparent cover having concave and convex surfaces and a radius of curvature greater than a radius of said cylindrical body, said concave surface of the cover facing said cylindrical body to define a space therebetween through which sald menu cards pass while being turned upon rotation of the cylindrical body, said convex surface of the cover being fixed to said housing such that said convex surface projects from a surface of said housing; and

a stopper having an end against which the other end of the menu card abuts and adapted to hold the abutting menu card erect when said cylindrical body is stopped; and wherein

said transparent cover has a center of curvature which is

upwrdly displaced relative said center axis of said cylindrical body to permit said menu cards to be exposed to an





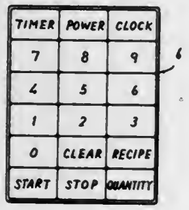
increased amount of external light which passes through said transparent cover.

4,517,429

ELECTRONIC CONTROLLED HEAT COOKING APPARATUS AND METHOD OF CONTROLLING THEREOF

Atsushi Horinouchi, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Continuation of Ser. No. 76,754, Sep. 18, 1979, abandoned. This application Jan. 13, 1982, Ser. No. 339,057
Claims priority, application Japan, Dec. 14, 1978, 53-158962
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **1 Claim**



1. A microwave oven, comprising:
means defining a chamber for receiving a quantity of a material to be cooked,
microwave generating means for supplying microwave energy to said chamber for heating the material to be cooked, said microwave oven having a non-linear relation between the quantity of a material being cooked and the rate at which microwave energy is supplied to said material from said microwave generating means in performing a cooking operation,
storage means for storing first data non-linearly associated with said quantity of material and compensating for said non-linear relation of said oven and storing second data defining a plurality of cooking conditions corresponding to a plurality of kinds of recipes,
entry means having a plurality of numeral keys and at least two function keys for entering data concerning a kind of recipe and a quantity of a material to be cooked,
cooking condition providing means responsive to said data concerning the kind of recipe and said quantity of a material being cooked entered by said entry means for accessing said second and first data in said storage means and for modifying the cooking condition data by the first data in said storage means for providing modified cooking condition data, and
control means for controlling said microwave generating means responsive to said modified cooking condition data provided by said cooking condition providing means,
wherein a plurality of said cooking conditions stored in said storage means corresponds to a unit quantity of a material to be cooked, and at least one function key is used for entering said quantity data as a multiple with respect to said unit quantity,
wherein said storage means includes means for storing said first data in terms of a plurality of expansion coefficients corresponding to a plurality of different quantities of a material to be cooked, and
wherein one or more of said cooking conditions stored in said storage means corresponds to a unit quantity of a material to be cooked, and said storage means stores each of said expansion coefficients with respect to each of a plurality of multiples of said unit quantity,
further comprising:
remaining time period evaluating means responsive to said control means for evaluating a remaining cooking time period of said microwave generating means,
wherein said second data of said storage means includes a cooking time period,
said oven further comprising display means responsive to said cooking condition providing means for displaying the cooking time period.

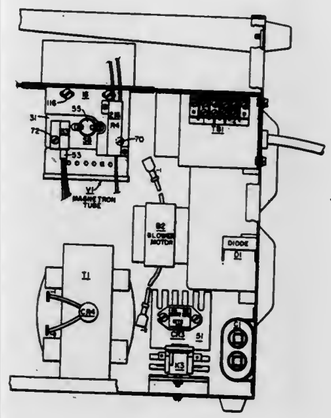
4,517,430

MICROWAVE HEATING DEVICE WITH CONSTANT TEMPERATURE CONTROL OF THE MAGNETRON

Mark J. Slottag, Chicago, Ill., assignor to GCA Corporation, Bedford, Mass.

Filed May 10, 1983, Ser. No. 493,368
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **18 Claims**

1. A heating device for use in laboratories and the like comprising:
an oven-type housing;
apparatus for generating microwaves for drying sample materials within said oven-type housing;
means for energizing the microwave generating apparatus for drying for a given portion of a cycle of input power depending upon a desired heat output setting for achieving substantially uniform heating; and
apparatus in heat conducting contact with said microwave generating apparatus for holding the microwave generating apparatus at practically a constant temperature for the purpose of providing an extremely steady output therefrom.

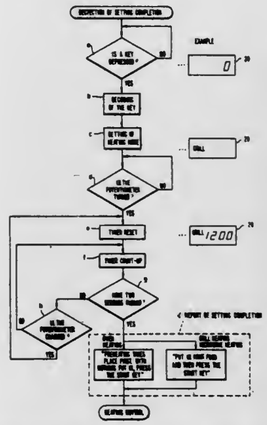


4,517,431

SAFETY DEVICE FOR A HEATING APPLIANCE

Shigeki Ueda, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP82/00162, § 371 Date Jan. 5, 1983, § 102(e) Date Jan. 5, 1983, PCT Pub. No. WO82/04114, PCT Pub. Date Nov. 25, 1982
PCT Filed May 11, 1982, Ser. No. 459,543
Claims priority, application Japan, May 11, 1982, 56-71714; May 13, 1981, 56-71715; May 4, 1981, 56-86421
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 B **5 Claims**



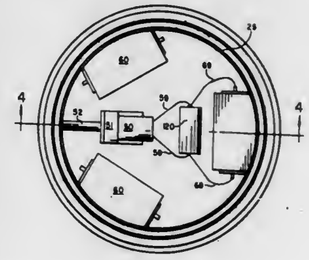
1. A heating appliance comprising: a heating chamber for receiving an object to be heated therein; a heating means connected to said heating chamber; a main control section for controlling electric power which is supplied to said heating means; a memory connected to said control section for storing data on heating; an input means connected to said memory for inputting said data to said memory; a timer means and a reporting means connected to said control section; wherein when data on heating is inputted or corrected by said input means, said timer is started, and if no data is inputted during the elapsing of a predetermined time period as determined by said timer, then said main control section determines that the setting or correcting of data on heating has been completed, and causes said reporting means to report that it is possible to start heating, wherein a voice synthesizing means comprises said reporting means.

4,517,432

CAVITY ANTENNA MICROWAVE POWERED TURNTABLE

Thomas K. Ishii, Brown Deer, Wis., and Jorgen A. Jorgensen, Bloomington, Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Mich.

Filed Dec. 13, 1982, Ser. No. 449,394
Int. Cl.³ H05B *6/78*
U.S. Cl. 219—10.55 F **29 Claims**



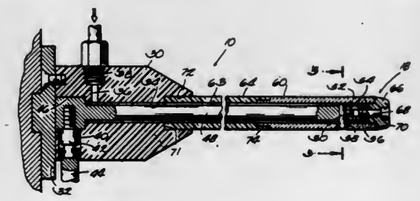
1. A portable turntable for use in microwave ovens comprising:
(a) a base formed from a microwave transmissive material,
(b) a turntable platform formed from a microwave transmissive material and situated above the base,
(c) a housing fixedly mounted to the base,
(d) a motor enclosed within the housing,
(e) transmission means driven by the motor and connected to the platform for moving the platform relative to the base,
(f) at least one cavity antenna for receiving microwave engergy defined by a plurality of electrically conductive walls and exposed to microwave energy via an opening through a side wall of the housing,
(g) a rectifier situated at the focal point of a resultant electric field produced within the cavity antenna for coverting microwave energy to electrical energy usable by the motor, and
(h) leads connecting the rectifier to the motor.

4,517,433

GAS WELDING ELECTRODE FOR A SMALL BORE

Andrew Chmela, New Berlin, Wis., assignor to Ameco Corporation, Menomonee Falls, Wis.

Continuation of Ser. No. 355,430, Mar. 8, 1982, abandoned. This application May 7, 1984, Ser. No. 608,270
Int. Cl.³ B23K *9/28*
U.S. Cl. 219—75 **3 Claims**



1. An integrated electric arc torch assembly of a conductor rod having a shoulder which forms an abutment at one end, a

mounting block, an electrical insulating sleeve, a refractory sleeve having an electrode aperture and means for securing said components in said assembly, said mounting block receiving and supporting said rod and said insulated sleeve extending from said mounting block and providing a gas passage between said conductor rod and said sleeve, said insulating sleeve being seated against an abutment on said mounting block, an electrode projecting from said conductor through said electrode aperture, means for adjustably securing said electrode to said conductor, a refractory sleeve surrounding the lower end of said conductor and said electrode and having wall means defining a gas outlet located in the side wall of said sleeve and said electrode projecting through said gas outlet and spaced from said gas outlet wall means to provide an annular gas passage therebetween, said means for securing said components in assembly including connector means for connecting said refractory sleeve to said conductor rod to connect said insulative sleeve and refractory sleeve in integrated assembly with said mounting block, said refractory sleeve and said insulative sleeve having interfitting joinable end parts, said connector means including an insulative end cap, and screw means extending through said cap, said cap having a shoulder engageable with said refractory sleeve and said screw means being threadably received in a threaded aperture in the end of said conductor to clamp said joinable end parts of said refractory sleeve and insulative sleeve in assembly against said conductor abutment and to provide a gas seal at said end parts.

4,517,434

METHOD AND APPARATUS FOR MANUFACTURING A TUBE BEND METAL

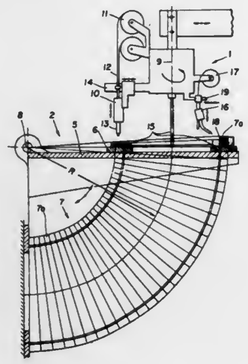
Karl Million, and Horst Zimmermann, both of Oberhausen, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 557,928

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245401

Int. Cl.³ B23K *31/06, 9/04*

U.S. Cl. 219—76.12 **9 Claims**



1. A method of manufacturing a tube bend having a radius of curvature and using welding equipment having at least one welding head and a base ring movable with respect to the welding head, comprising the steps of:

positioning the base ring in a horizontal plane below the welding head;

depositing a first ring section of metal using the welding head on the ring;

rotating the base ring about a horizontal axis and along the radius of curvature by substantially a thickness of the first ring ring section;

depositing a subsequent ring section using the welding head over the first ring section; and

repeating the moving and the depositing steps until the desired number of ring sections are formed for the tube bend.

4,517,435

ELECTRIC RESISTANCE WELDING APPARATUS

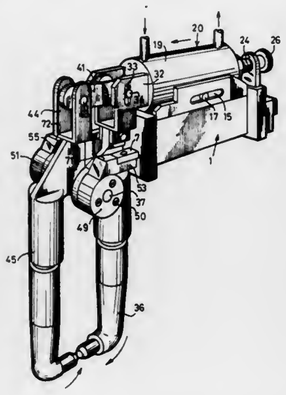
Bernard Humblot, 22, Chemin du Parc, 78580 Bazemont, France

Filed Oct. 31, 1983, Ser. No. 547,224

Claims priority, application France, Jul. 11, 1983, 83 11510

Int. Cl.³ B23K *11/10*

U.S. Cl. 219—89 **8 Claims**



1. Electrical resistance welding apparatus comprising;

(a) a frame on which is mounted a transformer having a primary winding adapted to be connected to a source of alternating current;

(b) a U-shaped, single turn secondary magnetically coupled to the primary winding and having a pair of spaced arms;

(c) a pair of electrodes pivotally mounted on a common shaft carried by said frame, each electrode having a contact with a circular surface that is concentric with the axis of the shaft;

(d) a fluid operated jack;

(e) coupling means interconnecting said jack to said pair of electrodes for causing said electrodes to pivot like scissors about said shaft in response to the application of fluid to said jack; and

(f) contact shoes electrically connected to the respective arms of said secondary and in electrical engagement with the circular surfaces of the contacts on said electrodes during their pivotal movement on said shaft.

4,517,436

LASER MARKER FOR ARTICLES OF MANUFACTURE

Merlin Lawrence, Fairview, Pa., assignor to Automated Industrial Systems, Erie, Pa.

Filed Sep. 20, 1982, Ser. No. 419,807

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LH **15 Claims**

1. A machine for marking indicia on articles of manufacture comprising:

a frame,

first support means on said frame for supporting a feed reel having a strip assembly of sheet material supporting said articles thereon,

second support means on said frame for supporting a take-up reel for rewinding said strip assembly thereon from said feed reel,

said strip assembly comprising said articles, a support strip, and means holding said articles to said articles to said support strip,

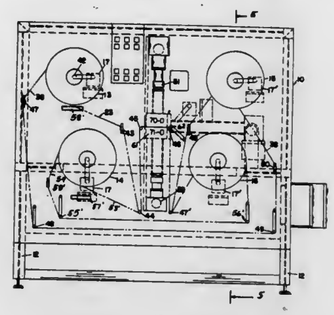
a cover strip and a means removably holding said cover strip to said articles,

said strip assembly being adapted to be wound on said take up reel, and unwound from said feed reel,

said cover strip separated from said articles,

said support strip passed under a marking means and said cover strip replaced on said support strip with said articles therebetween and said assembly reeled onto said take-up reel,

an individual motor connected to each said feed reel and to each said take-up reel, and means to control said motor for driving said motors at variable speeds,



means to support said strip between said reels,

said means to control said motors comprising linear transducer means on said frame and connected to said strip support means, and adapted to control the speed of each of said motors in response to the tension on said strip,

marking means on said frame between said reels for marking each said article.

4,517,437

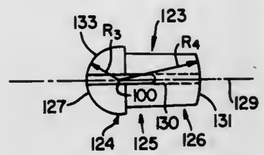
GAS SHIELDED PLASMA ARC TORCH AND COLLET ASSEMBLY

Yosef Yerushalmy, and Larry W. Stokes, both of Florence, S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 219,876, Dec. 24, 1980, abandoned. This application Jan. 24, 1983, Ser. No. 460,552

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PP **9 Claims**



1. A gas shielded plasma arc torch comprising:

a torch body having a longitudinal axis with a front end and a rear end having a bore for receiving an electrode;

a collet support member in said torch body having a seat;

a collet in said collet support member having a front section, an elongated center section and a rear section for receiving and gripping said electrode;

at least a portion of the surface of said collet front section being defined by a first selected sphere engaging said collet support member seat for rotation in said seat about the center of said first selected sphere;

a knob member screwed into the rear of said collet support member having seating means mounted on a forward facing surface;

at least a portion of the surface of said collet rear section being defined by a second selected sphere having a center essentially coincident with the center of said first selected sphere wherein the centers of the first and second spheres lie at essentially the same location along the longitudinal axis of the torch and with the radius of the first sphere being different than the radius of the second sphere; and

said knob member being tightenable for locking the position of said collet and causing said collet to grip said received electrode thereby locking and fixing the position of said received electrode and reversibly operable for releasing said collet and said received electrode.

4,517,438

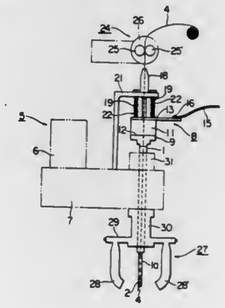
ROTARY ARC-WELDING APPARATUS

Yuji Sugitani, and Yukio Kobayashi, both of Tsu, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,887

Int. Cl.³ B23K *9/28*

U.S. Cl. 219—125.12 **1 Claim**



1. A rotary arc-welding apparatus which comprises:

a nozzle rotatable about the center axis thereof at a high speed, said nozzle having in the interior thereof a passage for directing a consumable welding electrode eccentrically from the center axis of said nozzle toward a groove formed between objects of welding;

a consumable welding electrode feeding mechanism, provided above said nozzle, for continuously directing said consumable welding electrode toward said groove through said nozzle;

a welding current feeding mechanism for feeding a welding current to said nozzle to produce an arc between said groove and the tip of said consumable welding electrode passing through said nozzle;

a nozzle rotating mechanism for rotating said nozzle about the center axis thereof at a high speed to cause a circular movement of said arc from the tip of said consumable welding electrode corresponding to the eccentricity thereof, said nozzle rotating mechanism comprising a motor fixed to a carriage, gears for transmitting the rotation of said motor to said nozzle, and a gear box for housing said gears, said gear box rotatably supporting said nozzle passing therethrough; and

a shielding gas feeding mechanism for feeding a shielding gas toward said arc and a weld zone to shield said arc and said weld zone from the open air;

characterized in that:

said welding current feeding mechanism (**8**) comprises:

a circular current receiving plate (**9**), which is fixed to the upper end of said nozzle (**1**) and rotates together with said nozzle (**1**) about said center axis, said current receiving plate (**9**) having at the center thereof a passage (**10**) for said consumable welding electrode (**4**);

a circular brush (**11**), having substantially the same diameter as that of said current receiving plate (**9**), for feeding said welding current to said current receiving plate (**9**), said brush (**11**) having on the upper surface thereof a current feeding plate (**13**), the lower surface of said brush (**11**) and the upper surface of said current receiving plate (**9**) having

a flat contact interface (12) therebetween, and said brush (11) and said current feeding plate (13) having at the center thereof a passage (23) for said consumable welding electrode (4);

a plurality of rods (19) for stationarily holding said brush (11) and said current feeding plate (13) so as to prevent same from rotating together with said nozzle (1) and said current receiving plate (9), the lower halves of said plurality of rods (19) being inserted into said brush (11) and said current feeding plate (13), and the upper end portions of said plurality of rods (19) being secured to a supporting plate (21) fixed to said carriage;

a plurality of springs (22) for applying a pressure onto said contact interface (12) between the lower surface of said brush (11) and the upper surface of said current receiving plate (9), said plurality of springs (22) being provided between said supporting plate (21) and said current feeding plate (13); and,

said pressure applied by said plurality of springs (22) onto said contact interface (12) between the lower surface of said brush (11) and the upper surface of said current receiving plate (9) being such that, when actuating said nozzle rotating mechanism (5), said nozzle (1) and said current receiving plate (9) rotate whereas said brush (11) and said current feeding plate (13) do not rotate, and said welding current smoothly flows from said brush (11) to said current receiving plate (9).

4,517,439

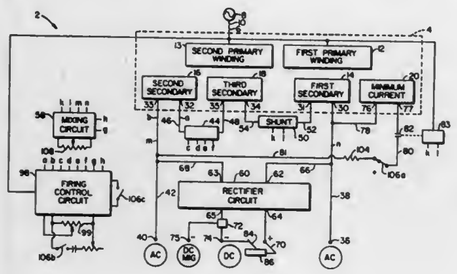
AC-DC WELDING POWER SUPPLY

Bruce H. Colley, 205 Teal Ct., Benicia, Calif. 94510

Filed May 7, 1984, Ser. No. 607,862

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—130.33 **18 Claims**



18. A welding power supply comprising:

a main transformer including a primary winding and first and second secondary winding, said first and second secondary windings connected in series, each said first and second secondary windings having first and second output terminals;

at least one of said secondary windings being partially electromagnetically decoupled from said primary winding to provide a relatively small amount of reactance to the power supply to produce a voltage drop during use equal to between about 5% to 15% of the voltage across said secondary windings when the current through said second secondary winding is about zero;

the first output terminal of said first secondary winding being electrically connected to a first AC supply terminal and the second output terminal of said second secondary winding electrically connected to a second AC supply terminal;

a minimum current secondary winding, electrically connected in parallel with said secondary windings, for providing a source of electrical current at an elevated voltage relative to the voltage across said first and second secondary windings;

a current regulating circuit;

means for electrically connecting said current regulating circuit between said first secondary winding and said second secondary winding thereby aiding isolation of said current regulating circuit from electrical interference;

a rectifier circuit including first and second rectifier input terminals electrically connected to said first and second output terminals of said first and second secondary windings, respectively, said rectifier circuit having first and second rectifier output terminals electrically connected to first and second DC supply terminals;

means for sensing current flow through and voltage drop across at least one of said secondary windings;

adjustable mixing circuit means, electrically connected to said sensing means, for creating a mixed current/voltage signal; and

control circuit means, electrically connected to said adjustable mixing circuit means, for controlling the operation of said current regulating circuit to regulate the current flow through said secondary windings according to said mixed current/voltage signal.

4,517,440

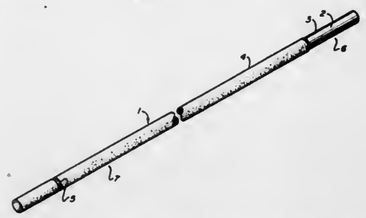
UNDERWATER ELECTRODE WITH WATERPROOF INTEGRITY

Raymond L. Sadauskas, Columbus, and Paul E. Moore, Lancaster, both of Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Feb. 22, 1980, Ser. No. 123,531

Int. Cl.³ B23K *35/02*

U.S. Cl. 219—145.1 **4 Claims**



1. An electrode for cutting or gouging a workpiece submerged in an aqueous environment comprising in combination:

a generally elongated substrate of a carbonaceous material having a first end for insertion into an underwater torch for carrying electrical current to said electrode and a second end adapted to contact said workpiece for establishing an arc therebetween, said substrate including a cicumferential recess proximate said second end said recess forming a snap-off end on said substrate;

a thin layer of conductive metal covering the entire surface of said substrate; and

a combined electrical insulating and waterproof coating covering said substrate except for said first end, whereby when said first end of said electrode is inserted in said torch said snap-off end can be removed to expose said substrate to said workpiece for striking and maintaining said arc underwater.

4,517,441

WELDING ELECTRODE

Jan Kaljee, Brits; Leo J. Lalor, Benoni; Sergio M. Pagani, Braamfontein, and Frederick P. A. Robinson, Sandton, all of South Africa, assignors to Nasionale Sweisware (Eiendoms) Beperk, Transvaal, South Africa

Filed Nov. 10, 1983, Ser. No. 550,544

Claims priority, application South Africa, Nov. 12, 1982, 82/8340

Int. Cl.³ B23K *35/22, 35/362*

U.S. Cl. 219—146.23 **16 Claims**

1. A welding electrode suitable for welding chromium containing ferritic corrosion resistant steels which comprises a low-carbon manganese steel core wire having a carbon content of less than 0.1% by mass, and a manganese content of 0.35–0.60% by mass, and a basic chromium alloyed flux coating, the electrode, upon welding, depositing a low-carbon chromium martensitic ferritic weld metal having a carbon content of less than 0.04% by mass, the core wire having the following composition on a mass basis:

CONSTITUENT	% mass/mass (m/m)
Carbon (C)	0.10 maximum (max)
Silicon (Si)	0.03 max.
Manganese (Mn)	0.35–0.60
Phosphorous (P)	0.025 max.
Sulphur (S)	0.025 max.
Copper (Cu)	0.1 max.
Chromium (Cr)	0.2 max.
Nickel (Ni)	0.2 max.
Molybdenum (Mo)	0.2 max.
Iron (Fe)	Balance.

4,517,442

SHOE PART HEATING APPARATUS

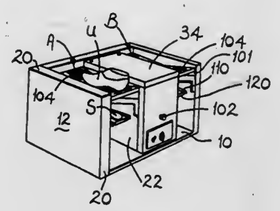
Frank C. Price; Nigel R. Tout; Raymond Hanson, and Malcolm Tillyard, all of Leicester, England, assignors to USM Corporation, Farmington, Conn.

Filed Apr. 7, 1983, Ser. No. 482,869

Claims priority, application United Kingdom, Apr. 17, 1982, 8211206

Int. Cl.³ H05B *3/06;* **A43D** *95/12*

U.S. Cl. 219—215 **15 Claims**



1. An apparatus for use in heating a shoe part to activate adhesive on a surface thereof, the apparatus comprising: a heating plate member arranged to emit infra-red radiation; and

a support for a shoe part on which a shoe part can be positioned to be heated by infra-red radiation emitted by the heating member, wherein the heating member is mounted for movement between a pair of operative positions thereof in which the heating member is operated in opposed static relationship with the support, and an inoperative position thereinbetween in which the heating member is substantially enclosed by infra-red radiation reflecting screens.

4,517,443

APPARATUS FOR HEATING AND DRYING SHOES

Klaus Dollst, Averhoffstrasse 24, D-2000 Hamburg 76, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,341

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 8234580[U]; May 13, 1983, 8314216[U]

Int. Cl.³ A43D *95/10;* **H05B** *3/06*

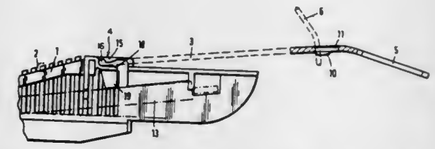
U.S. Cl. 219—215 **7 Claims**

1. An apparatus for heating and drying a shoe having an inner area and a heel area, the apparatus comprising:

(a) a stretching member having a forward portion adapted to the inner area of the shoe and a rear portion;

(b) electrical resistance heating means arranged in said stretching member;

(c) a clip joined to the rear portion of the stretching member for bracing in the heel area of the shoe; and



(d) means for joining the clip to the rear portion of the stretching member including a snap connection secured against detachment by the electrical resistance heating mean.

4,517,444

THERMAL PRINTHEAD

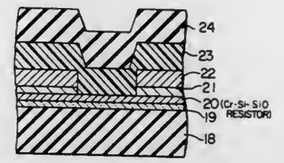
Tsuneyoshi Kawahito, Yokohama; Katsuo Abe, Yokosuka; Tsuneaki Kamei, Kanagawa; Kazuyuki Fujimoto, Tokyo; Masao Mitani, and Shigetoshi Hiratsuka, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 440,416, Nov. 9, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,519

Claims priority, application Japan, Nov. 13, 1981, 56-181151

Int. Cl.³ G01D *15/10;* **H05B** *3/00;* **H01C** *1/012*

U.S. Cl. 219—216 **2 Claims**



1. A thermal printhead comprising an insulating substrate, a heat generating resistor layer formed on said substrate and means for supplying said heat generating resistor layer with electric current, wherein said heat generating resistor layer is made of Cr-Si-SiO alloy, the Cr, Si and SiO contents falling within a region defined by points A, B, C and D in a triangular diagram, where said points A, B, C and D are determined as follows:

	Cr (mol %)	Si (mol %)	(SiO (mol %)
A	79.4	2.1	18.5
B	58.6	40.9	0.5
C	10.1	89.4	0.5
D	24.4	3.7	71.9.

4,517,445

VACUUM INSULATED HEAT POT WITH REMOVABLE ELECTRICALLY HEATED RESERVOIR TANK

Hisao Tatsumi, Nagoya, and Takashi Kawano, Seto, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 1, 1982, Ser. No. 384,054

Int. Cl.³ H05B *3/00;* **B67D** *5/62;* **F24H** *1/06*

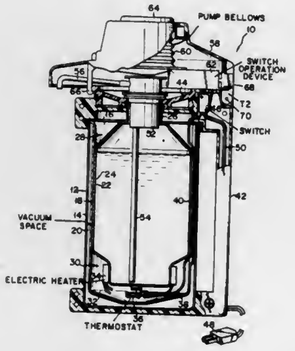
U.S. Cl. 219—297 **8 Claims**

1. A heat pot for heating and keeping warm a liquid comprising

a vacuum container including an external tank and a cylindrical internal tank having an opening at one end thereof, the internal tank being located within the external tank with its outer surface spaced from inner surface of the

external tank at a certain distance to define a vacuum region between its outer surface and the inner surface of the external tank;

a reservoir tank for accommodating the liquid therein, the reservoir tank being located within the internal tank and removable through said opening thereof, said reservoir tank having a cylindrical central portion, substantially the entire circumferential surface of which is in close contact with the inner surface of the internal tank, and a lower end portion connected to one end of the central portion apart from said internal tank opening, the outer surface of said



lower end portion being spaced from the inner surface of said internal tank to define a substantially sealed heater mounting room between its outer surface and the inner surface of the internal tank;

an electric heater mounted on the outer surface of the reservoir tank within the heater mounting room for heating the liquid within the reservoir tank; and

a power supply wire connected with the heater and led, along the length of the reservoir tank, to the outside of the vacuum container through the opening of the internal tank of the vacuum container for supplying the heater with electricity.

4,517,446

HEATING SHELF

Ralph R. Torning, Glastonbury, Conn., assignor to Safeway Products Inc., Middletown, Conn.

Continuation-in-part of Ser. No. 310,618, Oct. 13, 1981, abandoned. This application Apr. 26, 1982, Ser. No. 372,183
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—386 **19 Claims**

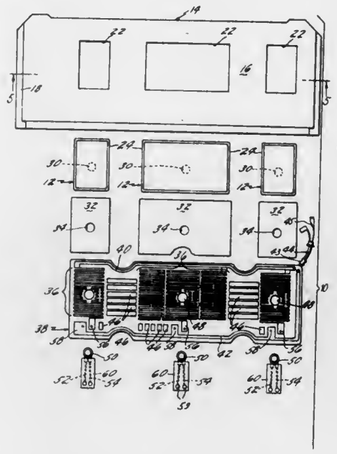
1. In apparatus for selectively heating at least a first portion of planar support without significant heat transfer to adjacent portions, the support including upper and lower housing defining members of thermally and electrically insulated material, the upper housing defining member including a flat surface with at least a first aperture therein, the improvement comprising:

a plate, said plate being commensurate in size and shape with the first aperture in the upper housing defining member, said plate being retained in the upper housing defining member first aperture, said plate having a planar upper surface, said plate having a recess in a lower surface disposed oppositely with respect to said upper surface, said plate having a peripheral portion, said plate being comprised of a material having high thermal conductively;

heater means, said heater means including an electric current responsive heating element;

means securing said heater means in close proximity to said plate lower surface, said securing means electrically insulating said heating element from said plate while establishing an intimate heat transfer relationship;

thermal insulating means, said thermal insulating means being positioned adjacent to said heater means on the side of said heater means disposed oppositely with respect to said plate; and



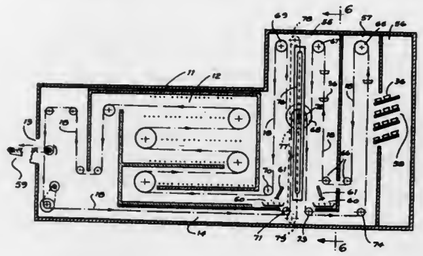
means responsive to the temperature of said plate upper surface for controlling said heater means, said temperature responsive means including a temperature sensor positioned in said plate lower surface recess.

4,517,447

FOOD PROCESSING APPARATUS

Kevin J. Hicks, 29-33 King St., Hornsby, New South Wales 2077, Australia

Filed Jun. 27, 1983, Ser. No. 508,478
Claims priority, application Australia, Aug. 17, 1982, PF5432
Int. Cl.³ F27B *9/06;* **A21B** *1/22;* **A21C** *13/02*
U.S. Cl. 219—388 **12 Claims**



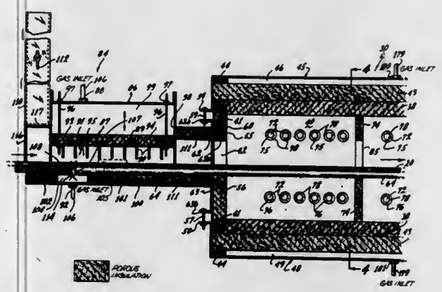
1. An oven comprising a baking chamber having an inlet which communicates with a lower region of the chamber, an outlet which communicates with an upper region of the chamber, an endless conveyor extending through the chamber and directed to follow a generally serpentine path which includes a plurality of horizontal passes at successively higher levels in the chamber, product support trays carried by the conveyor at spaced intervals along the length of the conveyor, a bank of horizontally disposed electric heating elements located at a level between each of the horizontal passes of the conveyor, means for sensing the temperature level in various regions of the chamber, means associated with the sensing means for controlling current flow to the heating elements whereby the temperature level in the various regions may be maintained substantially constant at selected levels, and a horizontally extending first tunnel located in the lowermost region of the chamber and connecting the inlet to the chamber by way of a horizontally extending second tunnel which is located immediately above the first tunnel and which extends in a direction opposite to that of the first tunnel, first and second heat shields which are constituted by roof portions of the first and second tunnels respectively, the heat shields being disposed to prevent heat from being radiated downwardly onto the product support trays during their conveyance through the tunnels, and a lowermost said bank of heating elements located in the second tunnel below the level of the horizontal pass made through the second tunnel by the conveyor.

4,517,448

INFRARED FURNACE WITH ATMOSPHERE CONTROL CAPABILITY

N. Robert Crain, Huntington Beach, and Carson T. Richert, Buena Park, both of Calif., assignors to Radiant Technology Corporation, Cerritos, Calif.

Continuation-in-part of Ser. No. 119,496, Feb. 7, 1980, abandoned, and Ser. No. 306,200, Sep. 28, 1981, abandoned. This application Nov. 6, 1981, Ser. No. 319,096
Int. Cl.³ F27B *9/04;* **F27D** *7/02*
U.S. Cl. 219—388 **45 Claims**



1. An infrared furnace comprising:

an elongated rectangularly shaped heating chamber having its interior top, bottom, side, and end walls formed of sheets of porous insulation;

a sheet metal housing enclosing the insulating walls of said heating chamber;

a conveyor belt passing into and out of the heating chamber through openings provided in the end walls thereof;

a first series of infrared heating elements in said heating chamber transversely disposed above said conveyor belt with their terminal ends extended through the side walls thereof;

a second series of infrared heating elements in said heating chamber transversely disposed below said conveyor belt with their terminal ends extending through the side walls thereof;

an upper plenum chamber formed between the top insulating wall of said heating chamber and the top wall of said sheet metal housing;

a lower plenum chamber formed between the bottom insulating wall of said heating chamber and the bottom wall of said sheet metal housing; and

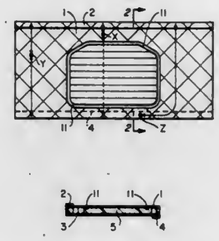
means for introducing a pressurized cover gas into the upper and lower plenum chambers which filters through the porous upper and lower insulating walls of said heating chamber into the interior thereof.

4,517,449

LAMINAR ELECTRICAL HEATERS

David Chazan, Palo Alto, and Michael J. Katila, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 11, 1983, Ser. No. 493,445
Int. Cl.³ H05B *3/34*
U.S. Cl. 219—549 **17 Claims**



1. A laminar heater which comprises

(1) a first laminar electrode which has low electrical resistance through the thickness thereof but has substantial electrical resistance along the thickness thereof;

(2) a first electrical connection means which

(a) makes distributed electrical contact with the first electrode in a first contact zone, and

(b) can be connected to a source of electrical power;

(3) a second laminar electrode which has low electrical resistance through the thickness thereof but has substantial electrical resistance along the thickness thereof;

(4) a second electrical connection means which

(a) makes distributed electrical contact with the second electrode in a second contact zone which is offset from the first contact zone, and

(b) can be connected to a source of electrical power; and

(5) a laminar resistive element which has substantial electrical resistance through the thickness thereof and which is sandwiched between the first and second electrodes;

said heater comprising

(a) a heating area which lies between the first contact zone and the second contact zone, in which, when the first and second connection means are connected to a source of electrical power, current flows through the thickness of the resistive element between the electrodes, and

(b) a connection area which lies between the first contact zone and the second contact zone in which the resistive element and the second electrode are present, and in which, if both electrodes are present, at least one of the electrodes is electrically insulated from the resistive element so that, when the first and second connection means are connected to a source of electrical power, heat is not generated in the resistive element in the connection area;

and the second electrical connection means being so connected to the second electrode that there are points on the second electrode which are in the heating area and which are connected to the second connection means by a path of least electrical resistance which passes through the connection area.

4,517,450

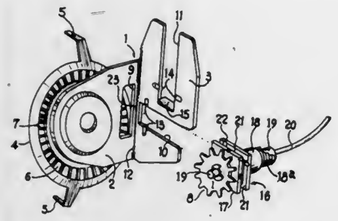
DETECTING DEVICE IN PARTICULAR FOR DRIVING A BICYCLE COUNTER

Maurice Coue, Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed May 3, 1983, Ser. No. 491,079
Claims priority, application France, May 6, 1982, 82 07912
Int. Cl.³ G01C *22/00*
U.S. Cl. 235—95 R **13 Claims**

1. A device for detecting motion of a rotary element such as a wheel, comprising an L-shaped support bracket having two branches, a disc for drivenly engaging the rotary element and

rotatively mounted on one of said branches, a member constituting a bearing, means for mounting said member constituting a bearing on the other of said branches, a motion take-off head of transmission means rotatively mounted in said member constituting a bearing, counter-transmission and speed-changing means interposed between and drivingly interconnecting the disc and said motion take-off head, said mounting means



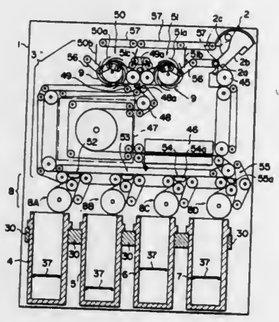
for mounting said member constituting a bearing on said other branch enabling the support bracket and the member constituting a bearing to occupy a plurality of different fixed relative positions, said counter-transmission and speed-changing means being part of a set of counter-transmission and speed-changing means which correspond to the various relative positions of the support bracket and the member constituting a bearing.

4,517,451

NOTE TRANSFER MECHANISM IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Junichi Arikawa; Kowichi Goi, and Shinichi Imura, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,607
Claims priority, application Japan, Oct. 15, 1981, 56-164436
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **3 Claims**



1. An automatic money depositing and disbursing machine in which notes thrown in a transacting port are transferred into a discriminating section to detect the presence or absence of abnormal notes and receive normal notes and at least portions of the received notes are used as notes to be defrayed, which comprises:

(a) at least one pressing member movably supported to be vertically moved toward an upper opening of each note accumulating box,

(b) a pulse driven motor connected to the pressing member through a connecting mechanism for vertically moving and setting the pressing member in a position by forward and reverse rotation pulses,

(c) a position data memory for renewing memorized position data for the pressing member by adding the forward rotation pulses to the position data or subtracting the reverse rotation pulses from the position data, and

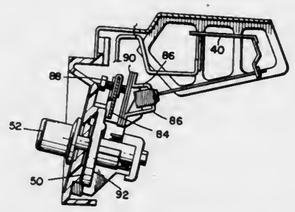
(d) a judging section for issuing a near-end signal by the position data for the pressing member memorized in the position data memory when the quantity of notes accumulated in each box becomes less than a previously set quantity of notes.

4,517,452

ELECTRIC TOASTER OVEN BROILER CONTROL

Charles Z. Krasznai, Trumbull, and Richard L. Norwood, Waterbury, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Oct. 31, 1983, Ser. No. 547,034
Int. Cl.³ F27D *11/02*; A21B *1/40*
U.S. Cl. 219—413 **5 Claims**



1. In an electric oven toaster including upper heating elements, lower heating elements, a thermostat switch which may be set to open when a particular preset threshold temperature has been reached, a main switch for energizing and deenergizing the oven toaster including both its upper and lower heating elements, and means operated upon opening of the thermostat switch to open the main switch for energizing and deenergizing the oven toaster including both its upper and lower heating elements, and means operated upon opening of the thermostat switch to open the main switch to deenergize both the upper and lower heating elements when the particular temperature set by the thermostat is reached, the improvement comprising:

a. a manually operable cam for setting the threshold temperature of the thermostat switch;

b. said thermostat switch including a temperature sensor, a first movable switch blade with a contact mounted thereon, said first movable switch blade being positioned for movement by said temperature sensor, and a second movable switch blade with a contact mounted thereon movable to a plurality of positions;

c. a cam follower blade positioned between said manually operable cam and said second movable switch blade;

d. said cam follower blade including a generally flat mounting portion, a short blade portion integrally formed with the mounting portion, and a slide portion urged into sliding contact with said manually operable cam;

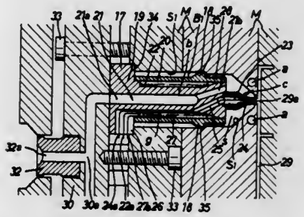
e. an adjusting screw threaded through the short blade portion between the mounting portion and the slide portion, said adjusting screw having an end portion in contact with said second movable switch blade so that the position of said cam may be manually adjusted to accurately move the short blade portion to accurately move the end of said adjusting screw to accurately set a position of the contact on the second movable switch blade to set the threshold temperature of said oven toaster.

4,517,453

HOT TIP BUSHING MEANS FOR A SYNTHETIC RESIN INJECTION MOLDING MACHINE

Shigeru Tsutsumi, Yamagata, Japan

Filed Jan. 24, 1984, Ser. No. 573,828
Claims priority, application Japan, Feb. 2, 1983, 58-14519
Int. Cl.³ F27B *14/06*
U.S. Cl. 219—421 **5 Claims**



1. Hot tip bushing means for a synthetic resin injection molding machine comprising:

a cylindrical body of heat conductive material;

a heating tip of heat conductive material provided with first heating means inside of said tip secured on the front of said cylindrical body and having a pointed end;

a straight resin flow passage formed axially in the interior of said cylindrical body and communicating with a side portion of said heating tip;

second heating means provided inside adjacent the periphery of said cylindrical body for heating resin passing through said straight flow passage; and

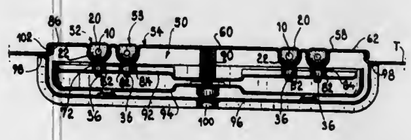
means on said cylindrical body near said heating tip for sealably positioning said tip in a mold sprue.

4,517,454

ELECTRIC HEATING ELEMENT, AND A HOT PLATE EQUIPPED WITH THE HEATING ELEMENT

Jean Mantelet, Paris, France, assignor to Cuisi-Technic S.a.r.l., Paris, France

Filed Nov. 29, 1983, Ser. No. 556,169
Claims priority, application France, Mar. 31, 1983, 83 05377; Dec. 9, 1983, 83 14469
Int. Cl.³ H05B *3/68*
U.S. Cl. 219—455 **8 Claims**



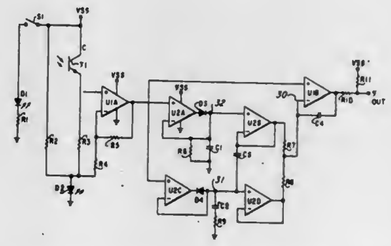
1. A hot plate for heating cooking vessels, equipped with at least one electric heating element in the shape of a closed ring (**52, 53**) arranged horizontally in a support (**50**) and having an upper face (**20**) forming a heating plane (P) on which the bottoms of the cooking vessels (R) are directly placed, the lower face (**22**) of the ring carrying electric end terminals (**12, 14**) and at least a fixing metal lug (**36**), said terminals and lug extending downwardly, said support (**50**) comprising a metal plate (**54**) arranged horizontally in which an annular groove (**56, 57**) is chased, said groove opening upwardly and receiving the heating element (**52, 53**), the depth of the groove being such that the upper face (**20**) of the heating element projects slightly above the upper face (**58**) of the plate (**54**), and the width (**64**) of the groove being substantially the same as the width (**66**) of the heating element such that there are substantially no gaps between the edges of the groove and the peripheral edges of the heating elements, at least one aperture (**70**) through which the end terminals (**12, 14**) extend being provided in the bottom of the groove, and at least one hole (**72**) for receiving the metal lug being provided in the bottom of the groove.

4,517,455

DUAL PEAK DETECTOR

Willie B. Benitez, III, Lubbock, and Billy R. Masten, Shallowater, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 4, 1982, Ser. No. 432,626
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—463 **9 Claims**



1. A dual peak detector circuit comprising:

a first circuit means for receiving an input voltage and storing the maximum value of said input voltage;

a second circuit means for receiving said input voltage and storing the minimum value of said input voltage; and

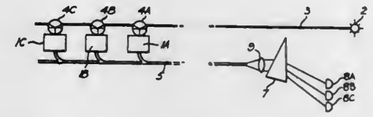
a third circuit means connected to said first and said second circuit means, said third circuit means for providing an output when said input voltage transitions from said maximum value to said minimum value by storing a selected portion of the voltage difference between said maximum voltage and said minimum voltage and providing said output when said input voltage is less than the sum of the selected portion and the minimum voltage.

4,517,456

COLOR MULTIPLEXING PASSIVE SENSOR ARRAY

James R. Halsall, Runcorn, and Robert T. Murray, Helsby, both of England, assignors to Imperial Chemical Industries PLC, Hertfordshire, England

Filed Dec. 8, 1981, Ser. No. 328,712
Claims priority, application United Kingdom, Dec. 17, 1980, 8040394
Int. Cl.³ G01J *3/34*
U.S. Cl. 250—226 **20 Claims**



1. Apparatus for gathering data about a plurality of chemical or physical conditions comprises:

(a) a plurality of passive optical sensors to modify light supplied to them as a function of changes in physical or chemical conditions applied to them;

(b) means for providing light for the sensors, comprising a broadband or multiband light source remote from the sensors and an optical fibre to distribute light from the source for access on behalf of each sensor;

(c) a plurality of dichroic beam splitters accessing the light distribution fibre to extract selected colours therefrom in turn while allowing the remainder of the light to continue along the distribution fibre for access by subsequent beam splitters, the colour extracted by each beam splitter being

supplied to a single sensor and being different from that supplied to the other sensors, the breadth of the light source waveband or numbers of wavebands being at least sufficient to include all the colours selected for supply to the sensors;

(d) an optical fibre data bus connected to receive light from each of the sensors and to convey it to a place remote from the sensors;

(e) means for separating each of the selected colours from other light conveyed by the data bus; and

(f) detection means connected to receive the separated colours for measuring or detecting modifications made to each colour by the sensors.

4,517,457

DEVICE FOR CONTROL OF LASTING MACHINE FOR SHOE TOES BY GLUING

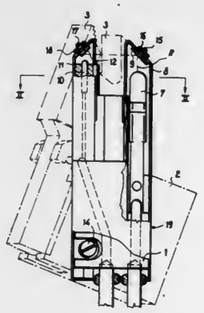
Miloslav Valásek; Frantisek Langer; Jaroslav Hrádek, and Jindrich Seeman, all of Gottwaldov,, Czechoslovakia, assignors to Tovarny strojirenske techniky, Prague, Czechoslovakia

Filed Feb. 4, 1982, Ser. No. 345,588

Claims priority, application Czechoslovakia, Feb. 16, 1981, 1091-81

Int. Cl.³ A43D *21/00;* H01J *5/02*

U.S. Cl. 250—239 **4 Claims**



1. In a lasting machine by which workpieces are assembled into shoes, a plurality of mold sections, each of said sections having a pair of plier bodies and a workpiece engaging jaw operably movable therebetween photoelectric apparatus for sensing the position of said workpiece in at least one of said mold sections and for providing a signal thereof comprising a light source mounted on one of the plier bodies of said at least one mold section, photo transistor mounted on the associated plier body, mirror means arranged to project the light from said source to said photo transistor intersecting the path of the associated jaw between said pliers, said photo transistor adapted to provide an electrical signal on interruption of said light by said workpiece which causes the closing of the associated jaw on said workpiece.

4,517,458

REMOTE DETECTION OF HYDROCARBON SEEPS

Anthony R. Barringer, 25060 Montane Dr. W., Golden, Colo. 80401

Filed Nov. 23, 1981, Ser. No. 324,248

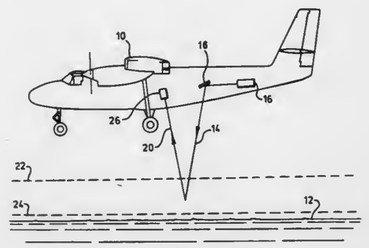
Int. Cl.³ G01V *5/00*

U.S. Cl. 250—253 **18 Claims**

1. A method of interrogating aerosols formed above a sea or earth surface to detect hydrocarbon gas seeps below the surface, comprising the steps of:

generating a beam of primary light radiation and directing the beam towards the surface, the beam being sufficiently intense and of such a spectral composition that the beam causes the aerosols to emit secondary light radiation;

detecting the secondary light radiation emanating from the aerosols; and,



analysing the spectral content of the detected secondary radiation to determine whether the composition of aerosols indicates the existence of a hydrocarbon gas seep.

4,517,459

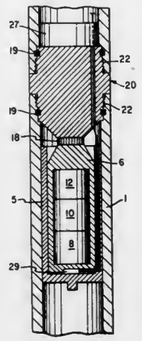
TEMPERATURE STABILIZATION SYSTEM FOR A RADIATION DETECTOR IN A WELL LOGGING TOOL

Albert P. Richter, Jr., and Harold E. Peelman, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,039

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—261 **8 Claims**



1. A temperature stabilization system for a radiation detector in a well logging tool comprising means for sensing the temperature in a well logging tool and providing a corresponding temperature signal,

means located within said logging tool and containing the radiation detector tool for providing a controllable temperature environment for the radiation detector,

means responsive to the temperature signal for transferring heat from the environment means so as to stabilize the temperature in the environment means for the radiation detector, and

means for disposing of transferred heat from the heat transfer means

4,517,460

METHOD OF CALIBRATING A GAMMA CAMERA, AND A GAMMA CAMERA INCLUDING A CALIBRATION DEVICE

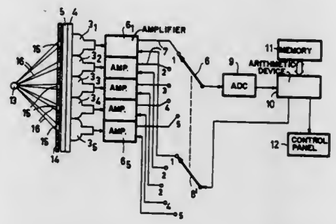
Hendrik J. Meulenbrugge, and Harm Fortuin, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,637

Claims priority, application Netherlands, Jun. 24, 1981, 8103058

Int. Cl.³ G01D *18/00*

U.S. Cl. 250—252.1 **11 Claims**



1. A method of calibrating a gamma camera comprising the steps of positioning a point source in front of a scintillation crystal of the scintillation camera, arranging a plurality of photomultiplier tubes behind said scintillation crystal, connecting amplifiers to said photomultiplier tubes, and generating controls signals for calibrating said photomultiplier tubes and said amplifiers,

characterized in that the following steps are carried out

arranging a diaphragm between said point source and said scintillation crystal, said diaphragm being provided with radiation transmitting domains, said domains being arranged in front of centers of said photomultiplier tubes,

sampling output signals of said photomultiplier tubes,

determining a mean amplitude of said output signals associated with relevant photomultiplier tubes for each photomultiplier tube, and

comparing said mean amplitude with a reference value to provide said control signals for controlling gains of at least one of said relevant photomultiplier tubes and associated amplifiers.

4,517,461

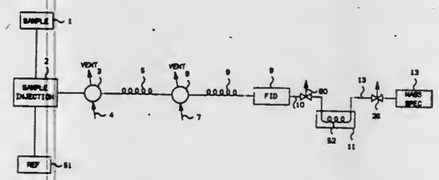
CARBON ISOTOPE ANALYSIS OF HYDROCARBONS

John A. Crandall, c/o Phillips Petroleum Co., Bartlesville, Okla. 74004

Filed Nov. 29, 1982, Ser. No. 445,312

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—282 **19 Claims**



1. A method comprising:

introducing a sample of matter containing an isotope of interest selected from isotopes of carbon and sulfur into an analytical detector selected from a flame ionization detector and a flame photometric detector operative to combust the sample and to detect a property representative of the presence of carbon or sulfur of the sample or a combustion product thereof, and producing combustion product comprising at least one of carbon dioxide and sulfur dioxide containing the isotope of interest; and

passing at least the isotope of interest portion of the combustion product to a mass spectrometer operative to make a quantitative isotopic analysis of the isotope of interest and producing an output from the mass spectrometer representative of the quantitative isotopic analysis of the isotope of interest.

4,517,462

DEVICE FOR MEASURING AN ION CURRENT PRODUCED BY AN ION BEAM

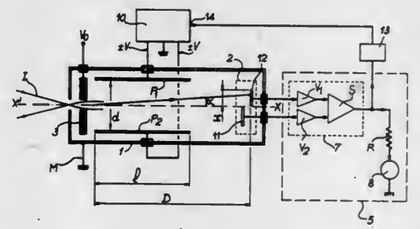
Robert Boyer, Pierrelatte, and Claude Duval, Saint Paul Trois Chateaux, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 18, 1982, Ser. No. 434,835

Claims priority, application France, Oct. 21, 1981, 81 19760

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—286 **7 Claims**

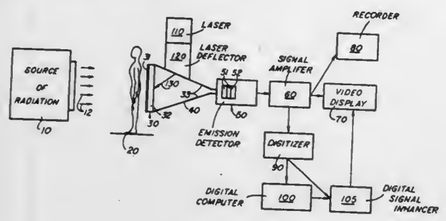


1. A device for measuring an ion current produced by an ion beam, comprising a vacuum chamber connected to a reference earth, a diaphragm for introducing the ion beam into said chamber and which is located at one end of the chamber, means for collecting the ions from the diaphragm and which are positioned at the opposite end of the chamber, means located between the diaphragm and the collection means, in order to bring about a periodic modulation of the intensity of the ion current circulating between the collection means and the reference earth, and means for measuring a periodic voltage between the collection means and the references earth, said modulation means comprising deflecting plates located in the chamber and insulated therefrom, said plates being parallel to the direction of the beam of ions from the diaphragm and connected to means for alternately and periodically applying to them opposite potentials, in such a way as to bring about a periodic alternating scanning of the ion beams on the collection means, the latter comprising two juxtaposed collecting electrodes, which are insulated from one another and from the chamber, and which are alternately and periodically scanned by the beam, said measuring means being current or frequency measuring means and comprising an amplifier chain for measuring a periodic voltage or current, said chain having two inputs respectively connected to each collecting electrode, said device further comprising a voltage-frequency converter, wherein one input is connected to an output of the amplifier chain, and wherein one output is connected to a control input of the means making it possible to alternately and periodically apply to the deflecting plates opposite potentials, in such a way that the scanning frequency of the collecting electrodes is made dependent on the intensity of the ion current.

4,517,463
METHOD AND APPARATUS FOR REAL-TIME RADIATION IMAGING

Jean Gasiot, Rue de Baillarguet 474, 34960 Clapiers, Herault, France; Peter F. Braunlich, SW. 730 City View, Pullman, Wash. 99163, and Jean-Pierre Fillard, St. - Gely-du-Fesc, Herault, France

Filed Feb. 28, 1983, Ser. No. 470,912
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 **20 Claims**



1. A method for producing a real-time electronic signal representing a radiation image of a body being examined, comprising:

directing a beam of ionizing radiation at the body and toward a luminescent phosphor screen positioned behind the body; the ionizing radiation causing migration of electrons within the phosphor screen which results in ionization of the phosphor screen; the degree of ionization of the phosphor screen being variable over the screen and dependent upon the amount of ionizing radiation which passes through or around the body and impinges upon a particular point of the screen;

scanning the phosphor screen with a laser beam having a wavelength approximately equal to the stimulation wavelength of the phosphor screen; the laser beam having a photon flux density sufficiently intense to rapidly stimulate the phosphor screen and cause very rapid and nearly complete detrapping of the electrons which migrated during ionization of the phosphor screen; the laser beam scanning across particular points of the phosphor screen so as to provide stimulation of the particular points for time periods of between 50 to 200 nanoseconds;

measuring the luminescent emissions which result from striking the phosphor screen with the laser beam;

converting the measurements of the luminescent emissions and their associated locations into an electronic signal which is representative of the radiation image impinging upon the phosphor screen; and

synchronizing the luminescent emission measurements for particular points of the screen with the location of the particular points upon the screen.

4,517,464
SENSOR SYSTEM

James E. Heath, and Hilmer W. Swenson, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,866
Int. Cl.³ G01T *1/24;* **H01L** *27/14*
U.S. Cl. 250—370 **8 Claims**

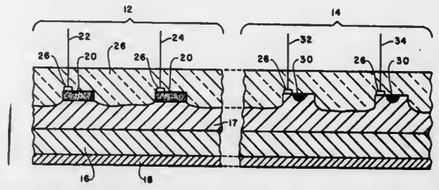
1. A sensor system comprising:

first and second arrays of sensor devices on at least one semiconductor substrate including a photovoltaic material of a first conductivity type;

said sensor devices formed of tri-metal photovoltaic material of a second conductivity type dispersed on said substrate in spaced apart relationship, and forming a plurality of p-n junctions;

said p-n junctions of said sensor devices of said second array having substantially smaller junction area than said junctions of said sensor devices of said first array;

whereby said first array of sensor devices becomes incapable of normal operation before said second array of sensor devices after exposure to a significant amount of radiation; and

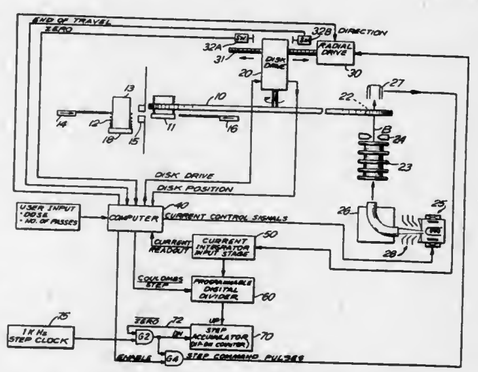


an electronic switching means coupled to said first and second arrays and operative to select said second array as an alternative to said first array as a resultant output in response to a cumulative radiation dose.

4,517,465
ION IMPLANTATION CONTROL SYSTEM

Roger B. Gault, and Larry L. Keutzer, both of Austin, Tex., assignors to VEECO/ai, Inc., Austin, Tex.

Filed Mar. 29, 1983, Ser. No. 480,095
Int. Cl.³ A61K *27/02;* **H01J** *37/00*
U.S. Cl. 250—492.2 **9 Claims**



1. In an ion implantation system having an ion beam, a rotating wafer support and displacement means for displacing the rotating support in a radial direction to expose successive sections of wafers carried on said support to said ion beam as the rotating support is displaced radially, the improvement comprising:

(a) means for computing a signal indicative of charge delivered to a section of said support;

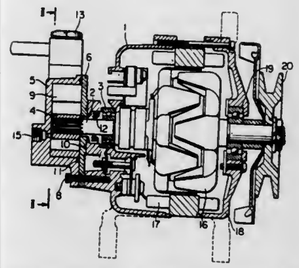
(b) means for generating a signal indicative of desired dosage;

(c) displacement control means responsive to said charge and dosage signals for producing a signal for causing a sequence of predetermined incremental displacements of said support by said displacement means, and wherein each incremental displacement occurs at substantially the same velocity with the number of said incremental displacements being responsive to the values of said charge and dosage signals.

4,517,466
VACUUM PUMP

Hitoshi Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00323, § 371 Date Mar. 24, 1983, § 102(e) Date Mar. 24, 1983, PCT Pub. No. WO83/00668, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 18, 1982, Ser. No. 486,280
Claims priority, application Japan, Aug. 18, 1981, 56-122894[U]
Int. Cl.³ F02B *77/00*
U.S. Cl. 290—36 R **2 Claims**



1. A vacuum pump arrangement comprising:

a. an engine starting motor having a rear bracket and a rotary shaft and means for rotating said rotary shaft;

b. an engine;

c. means for coupling said rotary shaft to said engine to start said engine when said rotary shaft is rotated by said rotating means;

d. means for decoupling said shaft and said engine when said engine is started;

e. a vacuum pump, said vacuum pump including:

(1) a rotor coupled to said shaft so as to be driven by rotation of said shaft,

(2) a housing having an inner cylindrical peripheral surface eccentric to the center of said rotor, and having a suction port and an exhaust port,

(3) a plate between said housing and said bracket closing said housing so as to define an operating compartment within said housing, and

(4) vanes on said rotor, in said operating compartment, rotatable with said rotor in sliding contact with said inner cylindrical peripheral surface, for pumping a fluid from said suction port to said exhaust port;

f. means, responsive to running of said engine, for stopping said starting motor;

g. a vacuum tank and a master bag having a pressure accumulating portion, communicating with said suction port; and

h. means, responsive to a vacuum in at least one of said vacuum tank and said pressure accumulating portion, for starting said starting motor to drive said vacuum pump.

4,517,467
WIND TURBINE WITH GALE PROTECTION

Heinrich Führing, Augsburg, Fed. Rep. of Germany, assignor to Messerschmidt-Bölkow-Blohm GmbH, Ottobrunn, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,786
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227700
Int. Cl.³ F03D *7/02, 7/04*
U.S. Cl. 290—44 **1 Claim**

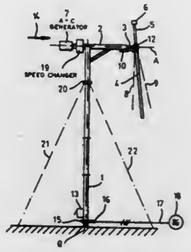
1. A wind turbine comprising, in combination:

a rotor having wind-driven blade means formed by a single blade on a shaft generally parallel to a prevailing wind direction;

an electrical power generator coupled with said shaft,

said power generator being an alternator connected in operation to an external alternating-current source imposing upon said alternator a synchronous speed less than a theoretical speed at which said rotor would be driven by wind velocities in a predetermined range if disconnected from said external source, said blade having a substantially constant aerodynamic profile in transverse section and a substantially rectangular contour in a longitudinal plane, said shaft being horizontally mounted atop an upright mast rotatable about a vertical axis, said blade being connected with an end of said shaft remote from said mast by a swivel coupling enabling limited swinging in a plane defined by the axis of said mast and said shaft; and

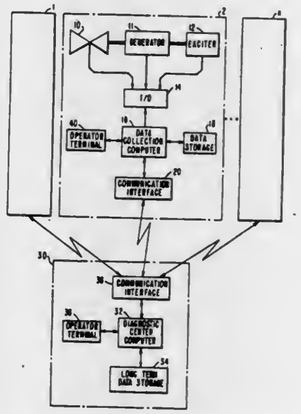
pitch-control means coupled with said blade for varying an angle of inclination included between said shaft and a rear surface of said blade confronting said mast, said pitch-control means including sensing means for orienting said blade in a manner maintaining laminar air flow over at least part of said rear surface with different wind velocities.



4,517,468
DIAGNOSTIC SYSTEM AND METHOD

Christian T. Kemper, Winter Park; Robert L. Osborne, Winter Springs, and James C. Bellows, Maitland, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1984, Ser. No. 605,703
Int. Cl.³ G06F *15/16, 15/46*
U.S. Cl. 290—52 **14 Claims**



1. A diagnostic system for monitoring a process at a first location, said process including a plurality of sensors generating output signals related to operating conditions of the process, comprising:

(A) first data storage means at said first location;

(B) first computer means at said first location operable to periodically scan said sensor output signals and place into

said first data storage means those signals which exhibit a predetermined difference from its value from a previous scan and those signals which exceed respective predetermined threshold values;

(C) a diagnostic center at a second location remote from said first location and including second data storage and second computer means operable to perform diagnostic analysis;

(D) first transmitter/receiver means, under control of said first computer means, for transmitting the contents of said first data storage means, via a data link, to said diagnostic center at predetermined scheduled periods of time and for transmitting said contents at an unscheduled period of time whenever a signal exceeds its predetermined threshold;

(E) said diagnostic center including second transmitter/-receiver means, under control of said second computer means to receive data sent from said first location whereby said second computer means may perform said diagnostic analysis;

(F) said second transmitter/receiver means being additionally operable to transmit, via said data link, information resulting from said analysis back to said first transmitter/-receiver means;

(G) said first transmitter/receiver means being additionally operable to receive said transmitted information.

4,517,469

CIRCUIT FOR A CURRENT CONSUMING DEVICE IN A MOTOR VEHICLE

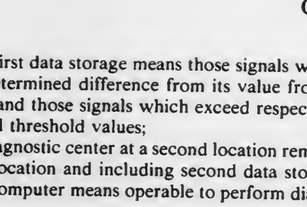
Axel Bier, Bad Rappenau, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,207

Claims priority, application Fed. Rep. of Germany, May 15, 1982, 3218479

Int. Cl.³ B60Q *3/02*

U.S. Cl. 307—10 LS **3 Claims**



1. A circuit for activating a motor vehicle device comprising:

a first switch operatively connected to a motor vehicle device and having a first position in which the device is directly activated; a second position which disables the device; and a third position;

a door switch for activating said device when a door of said motor vehicle is opened;

a semiconductor switch adapted to activate said device when said first switch is in said third position and said door switch is closed; and

means for deactivating said semiconductor switch when said first switch is in said second position.

4,517,470

HIGH FREQUENCY INVERTER

Harold H. Cheffer, Longwood, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 22, 1983, Ser. No. 525,371

Int. Cl.³ H02J *9/00;* **H02M** *7/537*

U.S. Cl. 307—64 **15 Claims**

8. In an uninterruptible power supply which includes a main source of A.C. signals for operating a load, an inverter circuit for outputting auxiliary A.C. signals to the load comprising:

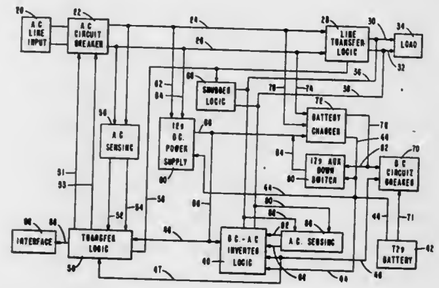
a source of reference A.C. signals;

pulse width modulating means connected to the output of the inverter circuit and receiving said reference A.C. signals for comparing the auxiliary A.C. signals and the reference A.C. signals and outputting a plurality of high frequency clock signals modulated in accordance with the voltage difference between the signals;

a D.C. source;

first switching means including a pair of first and second transistors connected to said modulating means, said transistors outputting said high frequency clock signals when enabled;

a source of first control signals transmitted to said first switching means for enabling said transistors upon failure of the main source to supply A.C. signals to the load;



a first transformer member connected to said pair of first transistors and said D.C. source to output a first portion of the auxiliary A.C. signals;

a second transformer member connected to said pair of second transistors and said D.C. source to output a second portion of the auxiliary A.C. signals;

a source of system clock signals;

second switching means connected to said first and second transformer members for outputting the first and second portions of the auxiliary A.C. signals to the load when enabled; and

control means connected to said second switching means and operated by said system clock signals for enabling said switching means in accordance with said system clock signals whereby said second switching means will output the auxiliary A.C. signals to the load.

4,517,471

ROTARY CONVERTER MACHINE FOR DIRECT TRANSFER OF ELECTRIC ENERGY BY FLUX LINKAGE BETWEEN WINDINGS ON A STATOR PACK

Klaus Sachs, Osterode/Harz, Fed. Rep. of Germany, assignor to Anton Piller GmbH & Co. KG, Harz, Fed. Rep. of Germany

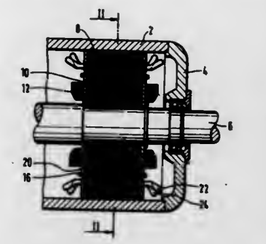
Filed Jul. 23, 1982, Ser. No. 401,317

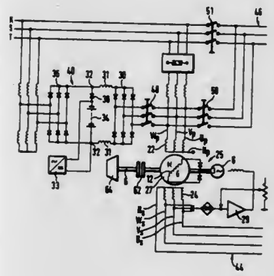
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129928

Int. Cl.³ H02J *9/08*

U.S. Cl. 307—67 **17 Claims**

1. A rotary converter machine comprising a stator with a three-phase primary winding and a three-phase secondary winding as well as a rotor being provided with a damping winding and rotatably mounted in the stator, said rotor being provided with a d.c. exciting coil, said primary winding and said secondary winding being arranged on a common stator pack and located in continuous slots in the stator, each of the





two windings extending over the whole axial length of said common stator pack.

4,517,472

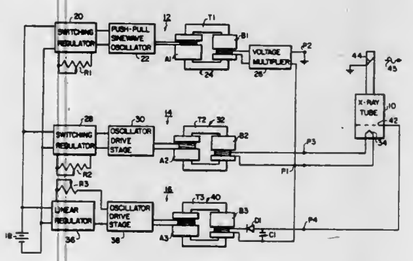
HIGH VOLTAGE POWER SUPPLY

Arthur P. Ruitberg, Germantown, and Kenneth M. Young, Lothian, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 6, 1983, Ser. No. 511,362

Int. Cl.³ H02J *1/10, 3/46*

U.S. Cl. 307—82 **18 Claims**



1. A high voltage power supply providing a plurality of concurrent output signals, comprising:

input terminal means (P5) for providing energization potential from a unidirectional source;

output terminal means (P1) for providing a common reference for each of the plurality of concurrent output signals;

a first voltage generating circuit (12) comprising:

first oscillator circuit means (22) having a first tuned network including first transformer means (46), for developing a first sinusoidal signal at the resonant frequency of said first tuned network,

first regulator circuit means (20) for developing pulses at a particular repetition rate and duty cycle, for controlling the amplitude of said sinusoidal signal by interrupting the flow of energization potential to said oscillator circuit means from said input terminal means,

second transformer means (24) for significantly increasing the amplitude of said sinusoidal signal, and

voltage multiplier and rectifier circuit means (76, 76') including a second output terminal (P2), coupled to said second transformer means (24) for developing a unidirectional output voltage of several tens of kilovolts amplitude across said common output terminal means (P1) and said second output terminal (P2);

a second voltage generating circuit (14) comprising:

second oscillator circuit means (30) having a second tuned network including a third output terminal (P3) and third transformer means (32) for developing a second sinusoidal signal at the resonant frequency of said tuned network floating at said unidirectional output voltage across said common output means (P1) and said third output terminal (P3),

second regulator circuit means (28) for developing pulses at a particular repetition rate and duty cycle for controlling the amplitude of said second sinusoidal signal by interrupting the flow of energizing potential to said second oscillator circuit means from said input terminal means; and a third voltage generating circuit (16) comprising:

third oscillator circuit means (38) having a third tuned network including fourth transformer means (40), for developing a third sinusoidal signal at the resonant frequency of said third tuned network,

third regulator circuit means (36) for controlling the amplitude of said third sinusoidal signal by varying the magnitude of the flow of energizing potential from said input terminal means (P5) to said third oscillator circuit means, and rectifier circuit means (D.C.) for converting said third sinusoidal signal into a unidirectional output signal of an amplitude varying slightly from that of said unidirectional output voltage across said first output terminal means (P1) and a fourth output terminal (P4).

4,517,473

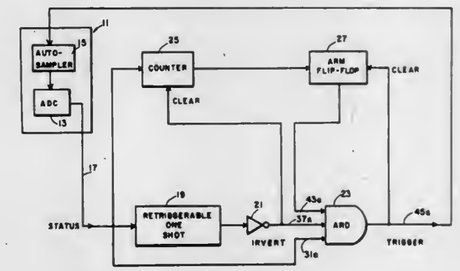
SOLID-STATE AUTOMATIC INJECTION CONTROL DEVICE

Dale H. Chidester, Levittown, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,633

Int. Cl.³ H03K *13/00, 17/18, 17/296*

U.S. Cl. 307—269 **17 Claims**



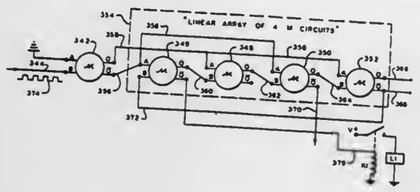
1. An automatic device for use in an instrument which includes a means responsive to a trigger signal to initiate an event; and a data acquisition means adapted to receive and convert data resulting from that event, said data acquisition means having a status output which is in one state when it is available to receive data and in another state when it is not available to receive data and which is pulsed during a conversion cycle; said automatic timing device synchronizing operation of the means responsive to trigger the data acquisition means comprising:

(a) means to count the pulses occurring during a conversion cycle and provide a first output signal when a predetermined count is reached;
(b) means for providing a second output signal a predetermined time after a last pulse is received; and
(c) means for ANDING said status signal in said one state, said first output signal, and said second output signal to provide a trigger output when all three of said signals are present, whereby said trigger signal will be provided only when said data acquisition means are available to receive an input and data acquisition is not in progress.

4,517,474
LOGIC CIRCUIT BUILDING BLOCK AND SYSTEMS CONSTRUCTED FROM SAME

Joseph J. Shepter, New Haven, Conn., assignor to Scientific Circuitry, Inc., Norwalk, Conn.

Division of Ser. No. 235,635, Feb. 18, 1981, Pat. No. 4,438,350, which is a division of Ser. No. 852,594, Nov. 17, 1977, Pat. No. 4,257,088, which is a division of Ser. No. 382,891, Jul. 26, 1973, abandoned. This application Jan. 20, 1984, Ser. No. 572,390
Int. Cl.³ H03K *23/04*
U.S. Cl. 307—272 R **3 Claims**



1. A logic system which includes a plurality of identical logic circuit building blocks, each referred to as an M Circuit, said M Circuits being connected in a linear array of interconnected M Circuits including first through last M Circuits, said linear array providing a latch operation, said system comprising:

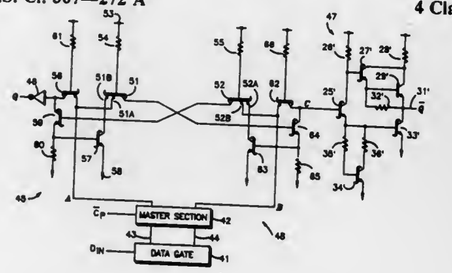
a plurality of M Circuits each of which responds to transitions of a two level binary input signal to provide a memory and a logic function which has a complete truth table for every possible combination of input signal transitions or changes in logic level at a pair of input terminals A and B, each of said M Circuits comprising gating means having two inputs connected to said A and B input terminals, respectively, and a set-reset flip flop means having its set input connected to the output of said gating means, its reset input connected to said B input terminal and its set and reset outputs connected respectively to output terminals Q and $\overline{Q}$ of said M Circuit, said Q and $\overline{Q}$ output terminals providing complementary binary output for any combination of binary inputs applied to said A and B input terminals, whereby said M Circuit is a four terminal device which responds to each transition of said input signal at said A and B terminals to provide outputs at said Q and $\overline{Q}$ terminals in accordance with its truth table function; and

means connecting one of said output terminals of each of the first through next to last M Circuits to the B input terminal of the succeeding M Circuit; means coupling the A input terminals of said M Circuits together, said A input terminals being coupled to a source of an input signal; and means connecting one of said output terminals of the last M Circuit as a reset line to the B input terminal of the first M Circuit; whereby one of said output terminals of said first M Circuit may be provided as a latch output line for operating an output device in response to said input signal.

4,517,475
MASTER-SLAVE FLIP-FLOP ARRANGEMENT WITH SLAVE SECTION HAVING A FASTER OUTPUT TRANSISTION AND A GREATER RESISTANCE TO OUTPUT DEGRADATION

Cleon Petty, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 29, 1983, Ser. No. 527,065
Int. Cl.³ H03K *3/289, 3/287, 3/29*
U.S. Cl. 307—272 A **4 Claims**



1. A flip-flop having a master section coupled to receive a data input signal and a clock pulse signal, said flip-flop including a first output terminal for providing a $\overline{Q}$ output signal and a second output terminal for providing a Q output signal, and having a slave section coupled between said first and second output terminals and said master section, said slave section comprising:

a first transistor having a collector to said second output terminal and an emitter coupled to said master section;
a second transistor having a first emitter coupled to said emitter of said first transistor;
a third transistor having a collector coupled to said collector of said first transistor;
a fourth transistor having a collector coupled to a second emitter of said second transistor, and a base coupled to an emitter of said third transistor;
a fifth transistor having a collector coupling to said frst output terminal and an emitter coupled to said master section;
a sixth transistor having a first emitter coupled to said emitter of said fifth transistor and a collector coupled to a base of said third transistor;
a seventh transistor having a collector coupled to said collector of said fifth transistor and a base coupled to a collector of said second transistor; and
an eighth transistor having a collector coupled to a second emitter of said sixth transistor and a base coupled to an emitter of said seventh transistor.

4,517,476
ECL GATE HAVING EMITTER BIAS CURRENT SWITCHED BY INPUT SIGNAL

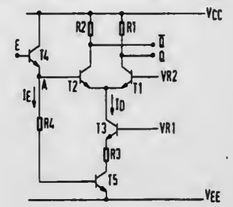
Claude Barre, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,991
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215518
Int. Cl.³ H03K *19/086, 19/003*
U.S. Cl. 307—455 **9 Claims**

5. A current mode logic element comprising:

first and second differential amplifier transistors each including a base, an emitter and a collector, said emitters connected to one another, said base of said first transistor serving as an input base, and said base of said second transistor connected to a first reference potential;
first and second resistors respectively connecting said collectors to a first voltage supply potential;

a constant current source connected to said emitters;
at least one input emitter follower comprising a third transistor including a collector connected to the first voltage supply potential, a base for receiving logic signals, and an emitter connected to said input base;

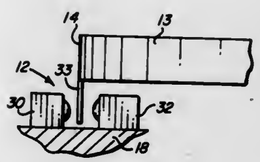


a fourth transistor including a collector connected to said constant current source, an emitter connected to the second voltage supply potential, and a base; and
bias means connected between said base of said fourth transistor and said emitter of said third transistor and providing an approximately constant bias current for said emitter of said third transistor.

4,517,477
MAGNETIC MOTOR

David P. Pankratz, 4611 E. Calle Redonda, Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 927,018, Jul. 24, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,030
Int. Cl.³ H02K *7/06*
U.S. Cl. 310—23 **11 Claims**



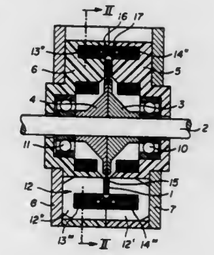
1. A magnetic motor for utilizing the energy stored in a permanent magnet to produce rotational force, said motor comprising:

a. a frame;
b. a rotor rotatably carried by said frame;
c. a permanent magnet carried by said rotor and having first and second poles of opposite polarity,
said first and second poles being spaced angularly relative said rotor;
d. magnetic stator means alternating between,
i. a first phase attracting the first pole of said permanent magnet, and
ii. a second phase repelling the second pole of said permanent magnet; and
e. timing means for detecting the position of said permanent magnet and for signalling said stator means for alternating between said first phase and said second phase for urging rotation of said rotor.

4,517,478
ELECTRIC STEPPER MOTOR

Claude Oudet, Besancon, France, assignor to Portescap, La Chaux-de-Fonds, Switzerland

Filed Apr. 3, 1984, Ser. No. 596,442
Claims priority, application Switzerland, Apr. 8, 1983, 1913/83
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **2 Claims**



1. An electric stepper motor comprising a rotary member formed essentially of a disc of magnetic material magnetized axially so as to present on each side of the disc 2N magnetic poles of alternate polarity arranged uniformly along an annular zone, the said rotary member being mounted on the shaft of the motor, the motor comprising in addition a plurality of elemental magnetic circuits which, as a whole, form at least two groups, and at least two electric coils each coupled to a number of elemental circuits belonging to one and the same group, each of these elemental magnetic circuits exhibiting an airgap, all of the airgaps being formed at the same radial distance from the motor shaft and each airgap being in addition substantially symmetrical with respect to the radial plane of symmetry of the magnetized disc, each elemental magnetic circuit including a first and a second flat U-shaped portion of stator of high magnetic permeability arranged essentially radially with respect to the motor shaft, the end of a first arm of the U of a first portion of stator in each circuit being arranged in contact with the end of the first arm of the U of a second portion of stator in the same circuit, the ends of the second arms of the U's of the first and second portions of stator being arranged essentially facing one another at a certain axial distance apart so as to form one of the said airgaps, the said electric coils being arranged respectively round the two arms of the U's of the said first and second portions of stator in the elemental magnetic circuits with which they are coupled, the centre of the end of the second arm of the U of each portion of stator in one elemental magnetic circuit being offset angularly with respect to the centre of the end of the first arm of the U and the two portions of stator in one elemental magnetic circuit being arranged so that the centres of the ends of the first arms of the U's coincide and that the centres of the ends of the second arms of the U's are offset angularly with respect to one another by an angle substantially equal to π/hN where h is the order of the harmonic which is to be compensated.

4,517,479
GENERATOR ARMATURE COOLING AND AIR GAP SEALING SYSTEM

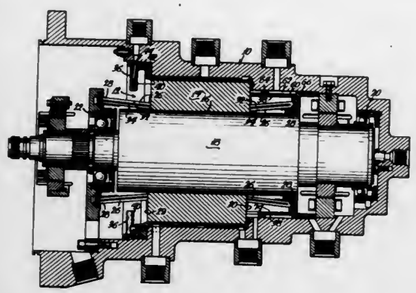
Mohd A. Aleem, Roscoe, and Alexander Krinickas, Jr., Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 7, 1983, Ser. No. 548,945
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—54 **8 Claims**

1. A rotary electric machine comprising:

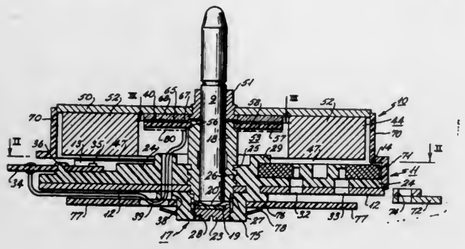
a housing;
a stator within said housing including an armature having a

winding including layered end turns extending from opposite ends of the armature;
a rotor journalled within said housing and said stator and separated from said stator by an air gap;
at least two nozzles within said housing, one adjacent each end of said armature and directed at the associated end turns;
a pair of partitions within said housing, one for each end of



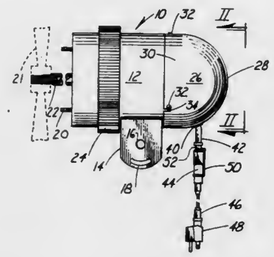
said armature, each being located axially outwardly of the associated end turns and nozzle;
first air gap sealing means including a resilient gasket sealingly engaging a corresponding one of said partitions and the tips of adjacent end turns and sheet-like seals engaging and conforming to said end turn tips and engaging and gasket; and
second air gap sealing means including sheet-like seals interposed between layers of said end turns.

4,517,480
TACHOGENERATOR FOR SPEED CONTROL OF ELECTRIC MOTORS
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren GmbH & Co, KG, St. Georgen, Fed. Rep. of Germany
Continuation of Ser. No. 166,806, Jul. 9, 1980, abandoned. This application Mar. 25, 1983, Ser. No. 478,701
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 R **22 Claims**



1. A tachogenerator for speed control of electrical motors having an axial bearing for compensating the axial forces acting on the rotor comprising
a flat multipole permanent magnet solidly connected to the rotor of the motor and having a number p of pairs of magnetic poles on its surface uniformly arranged on a circle of diameter d for the pole centers,
a circular wave winding solidly connected to the stator and separated from the permanent magnet by a flat air gap of a width g and having a number p of angular substantially repeat units of the wave winding wherein p is equal to from about 0.5 to 1.5 times the ratio of the diameter d divided by the width g, with d and g being measured in the same units; and
a corresponding return winding corresponding to the wave winding and disposed running in opposite angular direction to the wave winding for compensating the effect of the wave winding on a magnetic field component in axial direction running through the circle of the wave winding.

4,517,481
MODULAR SWITCH HOUSING FOR AN ELECTRIC MOTOR
Frank E. Breining, Jackson, Mich., assignor to Airmaster Fan Company, Jackson, Mich.
Filed Jun. 2, 1983, Ser. No. 500,564
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—71 **4 Claims**

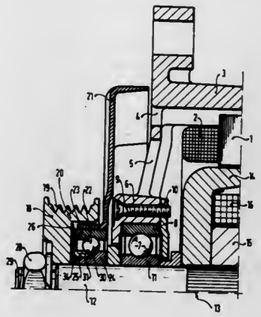


1. In an electric fan having an electric motor having a field coil, a housing including a casing, a front driveshaft end and a rear end, mounting means defined on said casing, the housing including a dome enclosing the motor rear end, and electrical conductors connected to the motor field coil, the improvement comprising an electric switch mounted within the housing dome, a motor capacitor mounted within the housing dome, a power cord mounted upon said housing dome extending thereunto, flexible electric conductors within said dome interconnecting said power cord, switch and capacitor, an electric connector within said housing dome having interconnectable and disconnectable first and second parts, said first connector part being electrically connected to said flexible conductors, said second connector part being electrically connected to the motor field coil, and fastening means releasably attaching said dome to the motor casing whereby release of said fasteners and disconnecting of said electric connector parts permits unitary removal and replacement of the dome, power cord, switch and capacitor.

4,517,482
VEHICULAR-TYPE ALTERNATOR WITH SPEED-RESPONSIVE FAN COUPLING
Gerhard Pflüger, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 23, 1983, Ser. No. 564,734
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305006
Int. Cl.³ F16C *19/12;* **H02K** *7/08*
U.S. Cl. 310—78 **17 Claims**

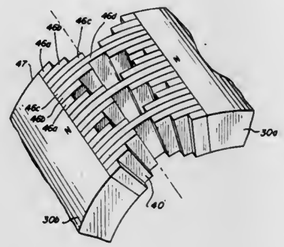
10. Vehicular-type alternator having
a drive shaft (**12, 13**);
a drive pulley (**18**) secured to the drive shaft for rotation of the drive shaft;
a fan wheel (**21**);
a ball bearing (**22**) interposed between the fan wheel and the drive shaft;
and means (**20**) for rotating the fan wheel upon rotation of the drive shaft within a limited speed range, but permitting relative rotation of the drive shaft and the fan wheel when the limited speed range is exceeded,
comprising, in accordance with the invention,
a pair of coaxially aligned inner ball bearing race elements (**24,25**) for said ball bearing, located on the drive shaft, one

of the race elements (**24**) having a hub-like axial extension (**34**) and the other race element being an axially slidable ring (**25**) located on said hub-like extension;
an outer race (**23**) secured to the fan wheel;
balls (**22**) interposed between said outer race and the pair of race elements,
each race element of said pair having a running surface (**30,31**) for the balls; and



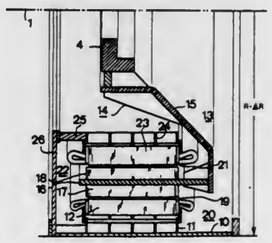
axial friction force means (**26**) applying an axial force against said pair of races to frictionally clamp the balls of the ball bearing, during rotation of the shaft within said limited speed range, against the races, but permit relative rotation of the shaft and the fan wheel when the loading reaction force exerted by the fan wheel, upon exceeding the speed range, on the outer race (**23**) rises above the axially directed friction clamping force.

4,517,483
PERMANENT MAGNET ROTOR WITH SATURABLE FLUX BRIDGES
David J. Hucker, and Donald A. Straznickas, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Dec. 27, 1983, Ser. No. 565,345
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 **10 Claims**



1. In a permanent magnet generator having a rotor rotatable within a stator, the stator having windings which develop output voltage in response to rotation of the rotor relative thereto, the output voltage being dependent upon the level of current in the stator windings, a magnetic structure for reducing the dependence of output voltage on the current in the stator windings, comprising:
a magnet on the rotor which develops magnetic flux linking the stator windings;
means connected in a magnetic circuit with the magnet for limiting the flux developed thereby to maintain the output voltage of the permanent magnet machine near a desired level substantially independent of current in the stator windings, wherein the flux limiting means includes a body of magnetically saturable material having means for increasing the flux density therein to a saturation point to thereby limit flux; and
a second magnet spaced apart from the aforementioned magnet and wherein the flux limiting means includes a plurality of magnetically saturable laminations of different lengths, only some of the laminations traversing the entire space between the magnets.

4,517,484
DOUBLE GAP ELECTRIC GENERATING MACHINES
Jacques Dacier, Mont-sur-Marchienne, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Brussels, Belgium
Filed Feb. 16, 1983, Ser. No. 467,186
Claims priority, application European Pat. Off., Feb. 18, 1982, EP82200189.7
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—266 **4 Claims**



1. An electric generating machine having an outer casing, an inner casing, and a shaft, comprising:
a first stator comprising a first annular wound magnetic hub having a first diameter, said first stator being mounted within the outer casing;
a second stator comprising an annular wound magnetic core having a second diameter less than the first diameter mounted about the inner casing so that the second stator is disposed within and concentric with the first stator; and
a rotor comprising:
an annular rim having a third diameter less than the first diameter and greater than the second diameter joined to the shaft, the rim having an inner face and outer face;
a plurality of first polar pieces disposed on the outer face of said rim so as to form a first annular gap between the plurality of said first polar pieces and the first stator; and
a plurality of second polar pieces disposed on the inner face of said rim so as to form a second annular gap between the plurality of said second polar pieces and the second stator, the second annular gap being concentric with the first annular gap.

4,517,485
HIGH-FREQUENCY PIEZOELECTRIC RESONATOR WITH REINFORCED ELECTRODE CONNECTION
Marc Berté ; Louis Bidard, and Serge Lechopier, all of Sartrouville, France, assignors to Compagnie d'Electronique et de Piezo-Electricite, Sartrouville, France
Filed May 26, 1983, Ser. No. 498,513
Claims priority, application France, Jun. 1, 1982, 82 09511
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—320 **2 Claims**

1. A high frequency piezoelectric resonator comprising:
a disk comprising a predetermined thickness of piezoelectric material, said disk defining, in said piezoelectric material, a first surface, said disk including:
means for defining a cavity in the first surface of said disk, said first surface surrounding said cavity, said cavity-defining means including:

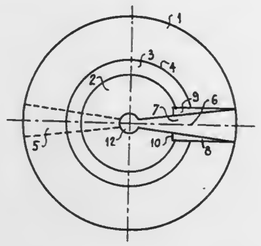
means for defining a second surface, said second surface defined in said piezoelectric material lying within said cavity, and

means for defining, in said piezoelectric material, at least one stepped zone disposed between said first surface and said second surface and connecting said first surface with said second surface; and

electrode means, disposed on said first surface, extending across said stepped zone, and disposed on said second surface, for establishing electrical contact with said second surface, said electrode means including:

an electrode member, and

conductive tongue means, extending across said stepped zone onto a portion of said second surface adjacent to said stepped zone, said conductive tongue means superimposed with said electrode member, said conductive tongue means comprising a layer of metallic film, said conductive tongue means for increasing the reliability



of the electrical contact provided across said stepped zone by said electrode means, wherein:

at least part of said conductive tongue means is disposed on said stepped zone,

at least a part of said electrode member is disposed on the part of said conductive tongue means disposed on said stepped zone, the surface area of the part of said conductive tongue means disposed on said stepped zone being greater than the surface area of the part of said electrode member disposed on the part of said conductive tongue means which is disposed on said stepped zone, and

said electrode member comprises a first portion shaped as a triangle having first and second sides of substantially equal length and a base of a length substantially different from the length of either of said first and second sides, said base being disposed on said first surface at the periphery of said disk, the vertex of said triangle connecting said first and second sides being disposed on said second surface at the center of said cavity.

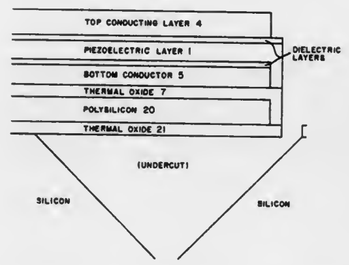
4,517,486

MONOLITIC BAND-PASS FILTER USING PIEZOELECTRIC CANTILEVERS

Angus P. Andrews, Westlake Village, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 21, 1984, Ser. No. 582,195
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—331 **2 Claims**

1. A device comprising a plurality of cantilever plates arranged in a series format from a first plate down to a last plate; each plate containing a piezoelectric element; conducting elements on each plate sandwiching each piezoelectric element; each of the series of plates except the first plate having the conducting elements adapted to be connected to an output signal of a preceding plate; and said piezoelectric elements and said conducting elements coupling each plate in a series fashion such that the strain caused by a deflection of a preceding plate will be transfered as an electrical signal to the next plate and so on down to the last plate; all plates are all identical to each other and have a resonant frequency; whereby a signal input to the first plate at this resonant frequency will pass through the device substantially unattenuated; and a signal input to the first plate which is not at this resonant frequency will be attenuated in its passage through the device; said piezoelectric element and said conducting elements are formed from thin film continuous layers; said layers being deposited on a silicon substrate;



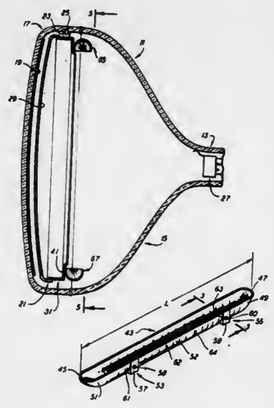
said silicon substrate and said layers being selectively removed to produce the cantilever plates; and a further polysilicon layer sandwiched by thermal oxide layers is placed between the continuous layers and said silicon substrate so as to give greater mechanical integrity to each plate.

4,517,487

CATHODE RAY TUBE INTERNAL SHIELDING MEANS

Richard A. Tamburrino, Auburn, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Mar. 14, 1983, Ser. No. 475,266
Int. Cl.³ H01J *29/06*
U.S. Cl. 313—407 **6 Claims**



1. Internal magnetic shielding means for a cathode ray tube having a substantially rectangular multiopening member spatially encompassed by the panel portion of said tube, said member having a perimetrical supporting frame integrally formed of two substantially horizontal framing elements of substantially twelve and six o'clock orientations and two substantially vertical elements of substantially three and nine o'clock orientations, and a continuous rear-oriented instanding ledge formed perimetrically thereabout, said magnetic shielding means comprising:

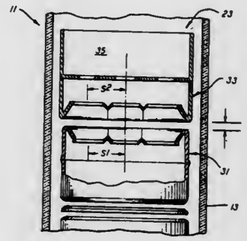
at least two substantially longitudinal open trough-like metallic shielding members of substantially arcuate cross-section, each of said members being formed free of angular bends as a continuous one-piece structure; a first of said shielding members being affixed horizontally to said twelve o'clock framing element and oriented with the longitudinal opening thereof facing said six o'clock framing element; and a second of said shielding members being affixed horizontally to said six o'clock framing element and oriented with the longitudinal opening thereof facing said twelve o'clock framing element, and wherein each of said substantially longitudinal shielding members has pedestal-like protruberance means on one side thereof seating on and affixed to the ledge of said frame.

4,517,488

IN-LINE ELECTRON GUN STRUCTURE FOR COLOR CATHODE RAY TUBE HAVING LENSING ELECTRODES WITH TAPERED APERTURES AND BEAM SPOT-SHAPING INSERTS

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,780
Int. Cl.³ H01J *29/50, 29/56*
U.S. Cl. 313—414 **6 Claims**



1. In an in-line electron gun structure for a color cathode ray tube, a lensing arrangement in the final focusing and accelerating electrodes comprising:

a first lensing structure in the forward portion of the focusing electrode, such structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having a front beam exit and a smaller dimensioned rear beam entrance, the entrances and exits separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate rounded saddle along the region of intersection, such structure resulting from the partial overlapping of geometric constructions of the volumetric configurations; and

a second lensing structure in the rear portion of the final accelerating electrode in adjacent, facing relationship with the first structure, such second structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having a rear beam entrance and a smaller dimensioned front beam exit, the entrances and exits separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate rounded saddle along the region of intersction, such structure resulting from the partial overlapping of geometric constructions of the volumetric configurations and

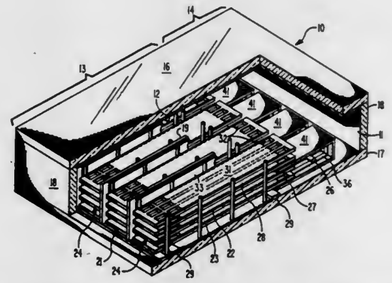
at least one pair of electron beam spot-shaping inserts located in facing relationship in the region of the smaller-dimensioned opening of the central aperture of at least one of said first and second lensing structures, the inserts being about equidistant from the axis of symmetry of the aperture, and separated by a distance less than the diameter of the smaller-dimensioned opening of the aperture.

4,517,489

MODULATOR STRUCTURE AND METHOD FOR FLAT PANEL DISPLAY DEVICES

Thomas L. Glock, Allentown, and Thomas L. Credelle, Lawrenceville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 22, 1983, Ser. No. 534,709
Int. Cl.³ H01J *29/52*
U.S. Cl. 313—422 **8 Claims**



1. In a display device having an envelope divided into channels by a plurality of internal support walls, cathode means for supplying electrons for propagation as beams along said channels, and a modulation assembly for modulating said electron beams with video information, said modulation assembly including a pair of electrically connected modulation electrodes arranged on opposite sides of said cathode means for each of said electron beams, and isolation electrode means for electrically separating said pairs of modulation electrodes; an improved modulation assembly wherein:

said isolation electrode means comprises a single substantially U-shaped member; and

each pair of said modulation electrodes is comprised of a bifilar conductive strip configured similarly to said U-shaped member and insulatively affixed to the inside surface of said U-shaped member.

6. A method of making a modulator assembly for modulating electron beams in a display device comprising the steps of:

forming an isolation member in a first blank of material;

forming a plurality of modulation electrode strips in a second blank of material;

insulatively affixing said strips to said isolation member;

separating said strips and said isolation member from said second and first blanks of material;

bending said isolation member and said strips to form a substantially U-shaped modulator assembly having said modulation electrodes on the inside surface of said isolation member.

4,517,490

DISPERSION TYPE ELECTROLUMINESCENT ELEMENT WITH LIQUID DIELECTRIC AND JELLING AGENT

Hideo Takahashi, and Mitsuo Nakatani, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,306
Claims priority, application Japan, May 27, 1981, 56-79353
Int. Cl.³ H05B *33/20*
U.S. Cl. 313—502 **11 Claims**

1. A dispersion-type electroluminescent element which comprises a pair of juxtaposed electrode plates, and a mixture of a dielectric and an electroluminescent phosphor existing between the electrode plates, the dielectric consisting of:

90 to 99.9% by weight of a liquid dielectric having a dielectric constant of 30 to 80 at a room temperature from −20° to +60° C. and being at least one of cyanoethylated polyol and cyanoethylated phthalic acid ester, and

10 to 0.1% by weight of a gelling agent that is at least one of

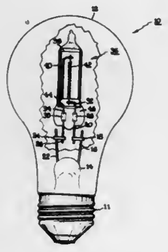
peroxyethylene, and acetals as condensates of benzaldehyde or nuclearly substituted benzaldehydes with a polyhydric alcohol having at least 5 hydroxyl groups.

4,517,491

INCANDESCENT LAMP SOURCE UTILIZING AN INTEGRAL CYLINDRICAL TRANSPARENT HEAT MIRROR

Lee W. Otto, Pepper Pike; John H. Ingold, and Rolf S. Bergman, both of Cleveland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,163
Int. Cl.³ H01K *1/34*
U.S. Cl. 313—579 **5 Claims**



1. An improved incandescent lamp comprising:
an outer envelope having an inner envelope spatially disposed in an axial manner therein;
said inner envelope having a tungsten filament of predetermined length spatially disposed coaxially therein, said inner envelope containing a halogen gas and a relatively high pressure inert fill gas;
a light-transmissive cylindrical member of predetermined length and diameter housed within said inner envelope and at least partially surrounding said tungsten filament;
said cylindrical member having an infrared reflecting film covering one of its surfaces, and effective during energization of said filament to intercept and reflect back toward said filament a major portion of the infrared radiation emitted by the filament;
and said infrared film being capable of withstanding and operating effectively at the operating temperature and in the halogen atmospheric environment of the film substrate.

4,517,492

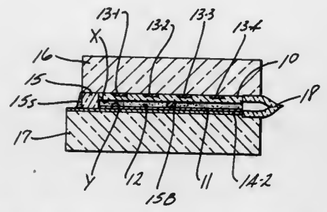
SELECTIVE CONTROL OF DISCHARGE POSITION IN GAS DISCHARGE DISPLAY/MEMORY DEVICE

Bernard W. Byrum, Jr., Toledo, and Roger E. Ernsthausen, Luckey, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 482,875, Jun. 25, 1974, Pat. No. 3,942,161, which is a continuation-in-part of Ser. No. 267,102, Jun. 28, 1972, Pat. No. 3,823,394. This application Jun. 2, 1975, Ser. No. 582,950
The portion of the term of this patent subsequent to Jul. 9, 1991, has been disclaimed.
Int. Cl.³ H01J *17/49*
U.S. Cl. 313—587 **2 Claims**

1. A display device utilizing gas discharge which is composed of:
(a) a pair of substrates which are facing each other so as to define a discharge gap which is filled with a gas capable of ionization;
(b) a plurality of electrodes which are disposed in parallel on at least one of said substrates on the side thereof closer to said gap; and
(c) dielectric means covering said electrodes and contacting said discharge gap, said dielectric means comprising a first portion which has a high secondary electron emissivity in accordance with a predetermined configuration and a second portion which has a secondary electron emissivity lower than that of said first portion, said second portion





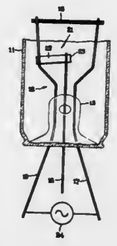
comprising a layer covering said electrodes and said first portion comprising a plurality of strips disposed in contact with said layer of said second dielectric portion and facing said gap.

4,517,493

FLUORESCENT LAMP WITH CATHODE HEAT SWITCHES

Peter V. Dembowski, Richmond Heights, and Quentin D. Dobras, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 27, 1983, Ser. No. 461,348
Int. Cl.³ H01J *7/44, 13/46, 19/78, 29/96*
U.S. Cl. 315—73 **7 Claims**



1. A rapid start type of fluorescent lamp comprising: an elongated bulb; a pair of lamp stems sealing the respective ends of said bulb; each lamp stem comprising a cathode mount having a cathode, first and second lead-in wires extending through said cathode mount for providing operating heating current to the cathode, and a third lead-in wire extending through said cathode mount and connected to said cathode; one of said first and second lead-in wires having a thermally operated switch associated therewith and disposed in operating relationship with said third lead-in wire for turning off said cathode heating current in response to heat from the cathode; and said third lead-in wire comprising a current path bypassing said switch.

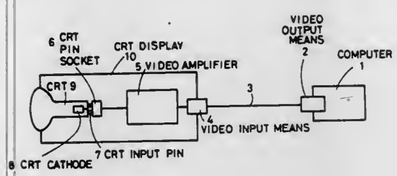
5. A method of activating a fluorescent lamp cathode in a lamp having a pair of first and second lead-in wires for providing operating current to the ends of and through the cathode, and a thermally operated cathode current cutout switch interposed in series with said first lead-in wire, wherein the improvement comprises the steps of providing a third lead-in wire connected to the end of the cathode to which said first lead-in wire provides current, and applying a source of cathode activation current to said second and third lead-in wires.

4,517,494

SCREENING STRUCTURE FOR A CATHODE RAY TUBE DISPLAY

Toru Yasui, Nara, and Haruo Nakatsuji, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1982, Ser. No. 438,504
Claims priority, application Japan, Nov. 9, 1981, 56-180181
Int. Cl.³ H01J *1/52, 5/02*
U.S. Cl. 315—85 **2 Claims**



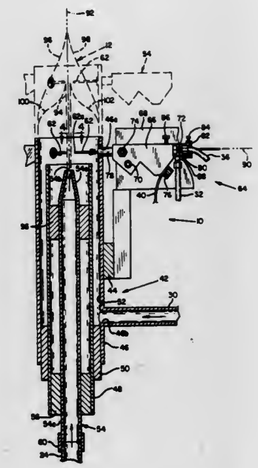
1. A screening structure for preventing radiation of electromagnetic waves from a cathode ray tube display comprising:
at least a cathode ray tube pin socket, a cathode ray tube input pin and a video amplifier section joined as one body and enveloped with a first screening member which has high conducting characteristics;
a cathode ray tube cathode section enveloped with a second screening member which has high conducting characteristics, said first and second screening members being in electrical contact with each other;
cable means connected to said amplifier section for providing a video signal thereto and enveloped by a third screening member which has high conducting characteristics, said first and third screening members being in electrical contact with each other; and
means having a low high-frequency impedance for joining said first, second and third screening members to the standard potential part of the cathode ray tube display.

4,517,495

MULTI-ELECTRODE PLASMA SOURCE

Edward H. Piepmeier, Oregon State University, Department of Chemistry, Corvallis, Oreg. 97331

Filed Sep. 21, 1982, Ser. No. 420,749
Int. Cl.³ H01J *7/24;* **H05B** *31/26*
U.S. Cl. 315—111.21 **9 Claims**



1. A multi-electrode plasma source usable for heating a stream of sample material traveling along a predetermined path comprising
at least one set of at least three spaced-apart electrodes having tips circumferentially distributed about the path in a manner defining a perimeter enclosing the path,
means for applying voltages to said electrodes in such a manner that the maximum average voltage between any one electrode and the other electrodes exists between said one electrode and a circumferentially adjacent electrode, and
means for directing flow of plasma gas into the region of said tips with the flow including flow portions extending between each pair of circumferentially adjacent electrodes,
such tip distribution, voltages and plasma gas flow being appropriate to maintain electrical plasma generally surrounding such a path and extending substantially only between adjacent pairs of electrodes, the plasma thereby forming a substantially closed-loop plasma expanse having a central, generally plasma-free aperture through which the path extends with the plasma gas not flowing toward the path at a flow rate sufficient to effectively extinguish the aperture.

8. A method of heating a stream of sample material traveling along a predetermined path using three electrodes circumferentially disposed about the path in a manner defining a triangle substantially enclosing the path comprising the steps of
applying three-phase voltages to the electrodes,
simultaneously with said applying, directing flow of plasma gas into the region between the electrodes with the flow including flow portions extending between each pair of circumferentially adjacent electrodes,
by said applying and directing, maintaining only an elongated electrical plasma extending between the tips of each pair of circumferentially adjacent electrodes with said directing not being toward the path at a flow rate sufficient to effectively extinguish the aperture, forming thereby, a substantially closed loop plasma expanse having a central, generally plasma-free aperture through which the path extends, and
directing a stream of sample material along the path through the aperture.

4,517,496

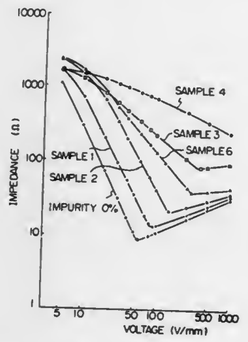
LIGHTING APPARATUS FOR A DISCHARGE LAMP

Hiromi Adachi, Kanagawa, and Shoichi Iwaya, Tokyo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and TDK Electronics Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP82/00057, § 371 Date Nov. 2, 1982, § 102(e) Date Nov. 2, 1982, PCT Pub. No. WO82/03149, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 2, 1982, Ser. No. 440,224
Claims priority, application Japan, Mar. 2, 1981, 56-28383
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—227 R **4 Claims**

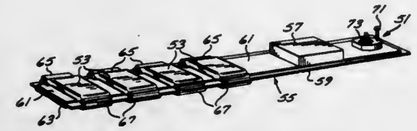
1. A lighting apparatus for a discharge lamp comprising a discharge lamp and a current limiting device connected in series with said discharge lamp, wherein said current limiting device is composed of a ferroelectric polycrystalline ceramic having an impedance ratio Z_1/Z_2 of a fractional value of 1/10 or less where the impedance Z_1 is calculated from the current value measured at an alternating field of 5 V/mm and the impedance Z_2 is calculated from the current value measured at an alternating field of 500 V/mm or less, said ferroelectric ceramic comprising mainly barium titanate ($BaTiO_3$) in which

a part of Ba in the $BaTiO_3$ is replaced with Sr or Pb and a part of Ti in the $BaTiO_3$ is replaced with Zr or Sn and a mineralizer



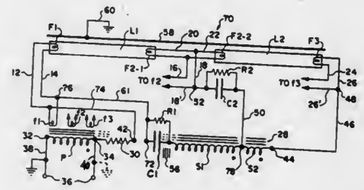
consisting of 0.005 to 0.3% by weight of Cr, 0.005 to 0.3% by weight of Mn, or a combination thereof.

4,517,497
CAPACITOR DISCHARGE APPARATUS
Edgar W. Malone, Goleta, Calif., assignor to Reynolds Industries Inc., Los Angeles, Calif.
Filed Nov. 2, 1983, Ser. No. 548,196
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—241 R **21 Claims**



1. A capacitor discharge apparatus comprising:
a flat capacitor having a flat terminal projecting from each of two opposite ends and configured such that electrical current flows through it along a short, substantially unidirectional path;
a spark gap device having two spaced electrodes and two flat terminals electrically connected to the respective electrodes; and
a transmission line having an elongated flat insulator strip and two elongated foil conductor strips located on opposite sides of the insulator strip, the transmission line providing two load terminals adapted for connection to a load and connecting directly to the terminals of the capacitor and spark gap device to configure them in series with the two load terminals;
wherein actuation of the spark gap device rapidly discharges any electrical charge stored on the capacitor for conduction through a load connected to the load terminals of the transmission line;
and wherein the electrical current path defined by the capacitor, spark gap device and transmission line is configured such that each path segment is located in close proximity to, but in the opposite direction of, a corresponding path segment, such that the magnetic field created by the current flowing through each path segment is substantially canceled by the magnetic field created by the oppositely-directed current flowing through its corresponding path segment, thereby reducing the series inductance of the apparatus such that it provides a correspondingly increased peak electrical current and a faster current rise time.

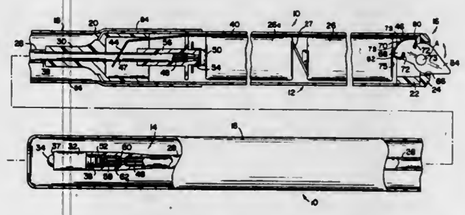
4,517,498
SEQUENCE START LAMP BALLAST WITH CURRENT SPIKE SUPPRESSION MEANS
Joseph A. Crawford, Cook County, Ill., assignor to Advance Transformer Co., Chicago, Ill.
Filed Feb. 22, 1982, Ser. No. 351,192
Int. Cl.³ H05B *37/00, 39/00, 41/00*
U.S. Cl. 315—323 **23 Claims**



1. Ballast apparatus for starting and operating a pair of low pressure gaseous discharge lamps of the rapid start type having end filaments from a source of a.c. power and in which the lamps are connected to be ignited in sequence and operated in series, comprising:
A. an iron core transformer having a primary winding and means for extending the terminals of said primary winding to said source, a secondary winding having a main winding part and an auxiliary winding part closely coupled together, the secondary winding including main and auxiliary winding parts being in transformer relationship with said primary winding whereby to generate an induced voltage when the primary is energized for igniting said lamps, the primary winding being loosely coupled to said secondary winding main and auxiliary winding parts whereby to provide a leakage reactance in the secondary winding for ballasting the lamps when said lamps are both operating,
B. means for connecting the lamps in series with one another and in series with at least the secondary winding,
C. a first capacitor in series with the secondary winding and adapted to be in series with said lamps during operation whereby to provide a leading current when the lamps are both operating and
D. a second capacitor connected with said lamp connecting means and in series with said auxiliary winding part of said secondary winding in such a manner that when the lamps are connected in circuit with said at least secondary winding the second capacitor and auxiliary winding part form a shunting branch around the second lamp,
the apparatus being operative when the primary winding is initially energized to apply the voltage of said at least secondary winding excluding the auxiliary winding part to the first lamp to ignite the same and thereafter the flow of current in said shunting branch generates a voltage across said second capacitor sufficient to ignite the second lamp notwithstanding the presence of the auxiliary winding part in series therewith and thereafter both lamps operate in series with the at least secondary winding including the auxiliary winding part and the first capacitor, the second capacitor being effectively bypassed.

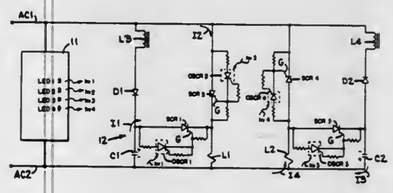
4,517,499
FLEXIBLE LIGHT
John R. Saron, St. Petersburg, Fla., assignor to Key Medical, Inc., Tampa, Fla.
Continuation-in-part of Ser. No. 314,721, Oct. 26, 1981, Pat. No. 4,347,553. This application Jul. 1, 1982, Ser. No. 394,478
Int. Cl.³ H05B *37/02, 39/06, 41/04, 41/18*
U.S. Cl. 315—362 **1 Claim**

1. A switch for use with a hand held battery powered device such as a light wherein the hand held device comprises an outer housing configured to retain a battery voltage source therein and having a light mounted on one end thereof and said switch pivotally mounted on the opposite end thereof and a conductor element extending substantially the length of the outer housing electrically connected to the light; said switch comprising a body including an arcuate cam member having a compound radius formed thereon forming a first and second conductive cam surface, said first conductive cam surface comprising a first substantially flat contact disposed to selectively engage said conductor element and said second conductive cam surface being substantially arcuate to engage the battery voltage source, said arcuate cam member being movable between a first and second position such that said first



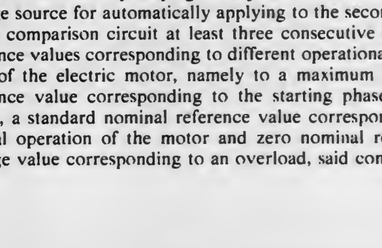
conductive cam surface is isolated from said conductor element when said switch is in said first position to deactivate the light and said first conductive cam surface engages said conductor element when in said second position to couple said conductor element to the battery voltage source to actuate the light, said second conductive cam surface engaging the battery voltage source off center relative to the longitudinal axis thereof opposite said conductor element when said switch is in said first position to lock said switch in said first position and engaging the battery voltage source off center relative to the longitudinal axis thereof adjacent said conductor element when said switch is in said second position to lock said switch in said second position.

4,517,500
CONTROLLER FOR ELECTROMAGNETIC EXCITER USING POWER LINE SUBHARMONIC
John D. Gotal, Bristol, R.I., and Junius D. Scott, Homer City, Pa., assignors to FMC Corporation, Chicago, Ill.
Filed Nov. 16, 1983, Ser. No. 552,597
Int. Cl.³ H02K *33/00*
U.S. Cl. 318—130 **9 Claims**



1. A controller for operating an electromagnetic exciter at a subharmonic of an electrical power line frequency using a single phase alternating current source for both operating power and for synchronizing said controller with said subharmonic, said controller comprising:
first and second electromagnetic coils;
first and second electrical capacitors;
means for connecting said capacitors to said current source to provide an electrical charge on said capacitors;
means for connecting said first capacitor to said first coil to provide an electrical current through said first coil during a portion of a positive half cycle at said subharmonic frequency;
means for connecting said current source to said first coil to provide additional electrical current through said first coil during said positive half cycle;
means for connecting said second capacitor to said second coil to provide an electrical current through said second coil during a portion of a negative half cycle at said subharmonic frequency; and
means for connecting said current source to said second coil to provide additional electrical current through said second coil during said negative half cycle.

4,517,501
ROTATION CONTROL SYSTEM
Hiroyuki Takimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 14, 1982, Ser. No. 449,614
Claims priority, application Japan, Dec. 15, 1981, 56-203342
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—314 **37 Claims**

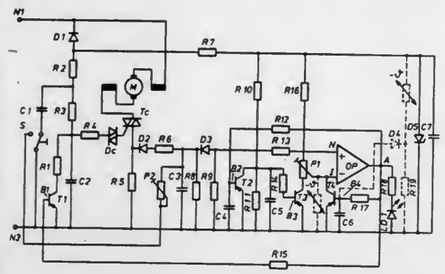


1. A control system for a rotator, comprising:
(a) feedback automatic speed control means for controlling the rotation speed of said rotator to a predetermined speed;
(b) feedback automatic phase control means for controlling the rotation phase of said rotator to a predetermined phase;
(c) changeover means for changing over at least one of a loop gain of said speed control means and a loop gain of said phase control means in a changeover period; and
(d) changeover control means for controlling said changeover means in association with the rotation of the rotator.

4,517,502
LOAD MONITORING CIRCUIT FOR ELECTRIC MOTORS
Hans-Joachim Aschoff, Wuppertal, and Lothar Cholewa, Herne, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany
Filed Mar. 26, 1984, Ser. No. 594,773
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311771
Int. Cl.³ H02P *1/18*
U.S. Cl. 318—474 **6 Claims**

1. A load monitoring circuit for monitoring different operational conditions of an electric motor having a stator winding, comprising a measuring resistor connected in series with the stator winding to produce an actual load value signal; a variable reference voltage source; a comparison circuit having one input coupled to said measuring resistor, a second input coupled to said variable reference voltage source and an output; means for successively varying the adjustment of the reference voltage source for automatically applying to the second input of the comparison circuit at least three consecutive nominal reference values corresponding to different operational conditions of the electric motor, namely to a maximum nominal reference value corresponding to the starting phase of the motor, a standard nominal reference value corresponding to normal operation of the motor and zero nominal reference voltage value corresponding to an overload, said comparison

circuit includes an operational amplifier having a non-inverting input coupled to said measuring resistor, an inverting input coupled to said variable reference voltage source, and an output, said variable reference voltage source including a voltage divider connected to a power supply for said electric motor and being series connected with a first switching transistor controlled by a timing circuit in response to the starting current of the motor so as to apply during the starting phase a



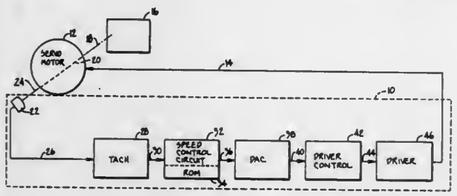
maximum nominal reference value to the comparison circuit and upon completion of the starting process to apply a standard nominal reference value corresponding to normal operational conditions of the motor; and a second transistor connected to the inverting input of the operational amplifier and having its base coupled to the output of the opertional amplifier so as to adjust the nominal reference voltage to a zero value when an overload is detected by the comparison circuit.

4,517,503

METHOD AND APPARATUS FOR NORMALIZING THE SPEED OF AN ELEMENT POSITIONABLE BY A SERVOMECHANISM

Frank W. Lin; Suhdok D. Moon, both of Los Altos; Tri S. Van, Union City, and Max I. Anzai, Belmont, all of Calif., assignors to Mechatron Systems, Inc., Sunnyvale, Calif.

Filed Sep. 27, 1983, Ser. No. 536,915
Int. Cl.³ G05B *13/00*
U.S. Cl. 318—561 **24 Claims**



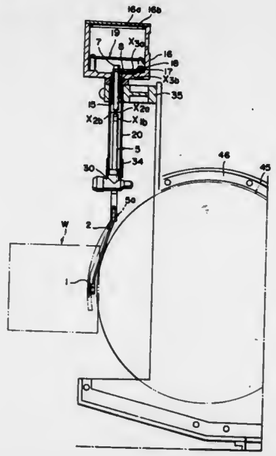
1. A method for adjusting the operating speed of a positionable element movable among various positions, comprising the steps of:
providing stored information correlated to a preselected nominal speed of movement for the positionable element during operation;
providing stored information correlated to at least one speed compensation value;
activating means for moving the positionable element;
applying a predetermined drive signal to the moving means for moving the positionable element from a first position to a second position in response to activation of the moving means, the predetermined drive signal being dependent upon the stored information correlated to the preselected nominal speed;
detecting the actual speed of the positionable element during movement from the first position to the second position in response to application of the predetermined drive signal to the moving means;
converting the detected actual speed of the positionable element during movement from the first position to the second position to information correlated to the actual speed of the positionable element during movement from the first position to the second position;
selecting information correlated to a speed compensation value dependent upon the information correlated to the actual speed of the positionable element during movement from the first position to the second position;
storing the selected information correlated to the speed compensation value; and
determining a compensated drive signal from the stored information correlated to the preselected nominal speed and the stored selected information correlated to the speed compensation value.

4,517,504

APPARATUS FOR SENSING AND MEMORIZING MODEL PROFILE AND FOR CONTROLLING MACHINING OPERATION THEREBY

Kunihiko Honji, Ina, and Toshiyuki Aoki, Shiojiri, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimosuwa, Japan

Filed Mar. 10, 1980, Ser. No. 128,756
Claims priority, application Japan, Mar. 12, 1979, 54-28422
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 **8 Claims**



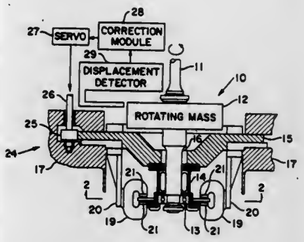
1. Automatic machining apparatus comprising
an arm having a machine tool mounted at a tip thereof,
motor means for driving said arm,
a table for mounting and clamping a work model or a work piece to be machined,
motor means for driving said table,
object-contour sensing means for sensing the contour of the work model, said object-contour sensing means being attached to the tip of said arm side-by-side with said machine tool and being detachable or retractable so as not to interrupt operation of the machine tool during machining,
means for manually moving said object-contour sensing means along the contour of the work model in three dimensions, said manually moving means actuating said table driving motor means and said arm driving motor means to sense the contour of the work model, the object-contour sensing means being in abutment with or spaced a predetermined distance from the work model, and
means for memorizing the movements of said table and said arm, and means for actuating the table driving motor means and the arm driving motor means to move the machine tool in three dimensions relative to the work piece in accordance with the memorized movements, and means for driving the machine tool to effect machining of the work piece.

4,517,505

VARIBLE FORCE, EDDY-CURRENT OR MAGNETIC DAMPER

Robert E. Cunningham, Cleveland, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 3, 1983, Ser. No. 463,456
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—611 **12 Claims**



1. A variable damper for substantially eliminating resonant vibrations in a rotating mass carried on a shaft in a housing and wherein the shaft is provided with at least one bearing, said damper comprising:
a resilient support for said bearing, said support being rotatable about the axis of rotation of said shaft;
a carrier plate for said bearing support comprising a rotatable plate, said bearing support being attached to said carrier plate for rotation therewith;
a plurality of tabs extending radially from said bearing support, said tabs being of electrically conductive, non-magnetic material;
a plurality of magnets equal in number to said plurality of tabs, each magnet having at least one pole face in non-contacting, maximum surface-to-surface confrontation with a respective tab when said plate is in a 0° index position; and
means for rotating said carrier plate whereby said tabs may be positioned from the 0° index position to one in which there is minimum surface-to-surface confrontation between the tabs and respective magnets.

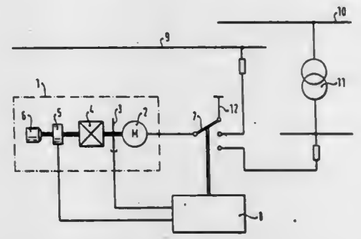
4,517,506

WRENCH PROVIDED WITH AN ALTERNATING CURRENT DRIVE MOTOR

Wulf-Dieter Heinrich, Wolfsburg, and Henning Otte, Parsau, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE81/00230, § 371 Date Jul. 23, 1982, § 102(e) Date Jul. 23, 1982, PCT Pub. No. WO82/02297, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 18, 1981, Ser. No. 403,621
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049200
Int. Cl.³ H02P *5/34*
U.S. Cl. 318—807 **3 Claims**

1. In a drive of a wrench for tightening screws, a combination comprising an asynchronous drive motor; a torque sensor; cycle control means, said torque sensor being connected to said cycle control means; a medium frequency line; a lower frequency line; and contactor means connected to said drive motor and to said cycle control means, said contactor means being operative for selectively switching said motor to the medium frequency line or from the medium frequency line to the lower frequency line, said drive motor having a rotor sweep frequency which is about the same as the lower line frequency, said torque sensor being operatively connected to said drive motor and immediately connected to the wrench, said torque sensor being operative for supplying signals to said



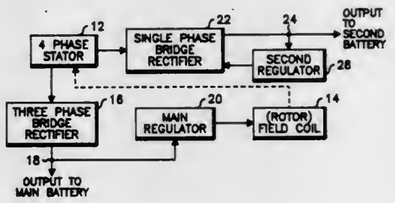
cycle control means so that said contactor means is actuated by said control means to switch said motor from the medium frequency line to the lower frequency line in response to the signals from said torque sensor when a setting moment on a screw being tightened by the wrench occurs.

4,517,507

MULTIPLE OUTPUT ALTERNATOR SYSTEM

Raymond E. Nordbrock, West Chicago, and Richard L. Spears, Union, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1983, Ser. No. 469,171
Int. Cl.³ H02J *7/14*
U.S. Cl. 322—28 **4 Claims**



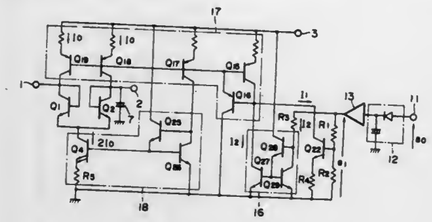
1. A multiple output alternator system for use with at least two series coupled loads and comprising:
a source of alternating current, said source including a field winding, a three-phase winding and a second winding and supplying two electrically isolated output currents;
a first output terminal for supplying direct current to a first one of said loads;
a second output terminal for supplying direct current to a second one of said loads;
a first rectifier coupled to receive and rectify a first one of said isolated output currents and to supply the rectified current to the first output terminal;
a first regulator coupled to the first output terminal and to the alternating current source for controlling the source outputs in response to the voltage at the first output terminal:
a second rectifier coupled to receive and rectify the second one of said isolated output currents and to supply the rectified current to the second output terminal; and
a second regulator coupled to the second output terminal and to the second rectifier for controlling the second rectifier in response to the voltage at the second output terminal.

4,517,508

VARIABLE IMPEDANCE CIRCUIT

Koichi Sakai, Tokyo, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,210
Claims priority, application Japan, May 8, 1982, 57-77330; May 31, 1982, 57-92339
Int. Cl.³ H03H *11/00*
U.S. Cl. 323—352 **2 Claims**



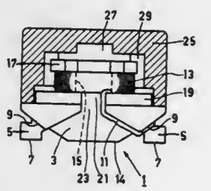
1. A variable impedance circuit, comprising:
a pair of diodes connected with each other;
a first current source circuit coupled to the connection point between said diodes;
a second and a third current source circuit connected to the anodes of said diodes respectively;
terminals provided at the anode sides of said diodes respectively so that a variable impedance element is established therebetween;
a first current mirror circuit for equally controlling forward currents flowing from said second and third current source circuits to said diodes respectively;
a second current mirror circuit for flowing, through said first current source circuit, a current substantially equal to the sum of the forward currents flowing out of said second and third current source circuits;
a transistor driven with a control voltage higher than a predetermined level to draw in a current from said first current mirror circuit; and
a third current mirror circuit driven with a control voltage lower than a predetermined level to draw in a current from said first current mirror circuit;
wherein currents derived from said transistor and said third current mirror circuit are caused to flow, through said first current mirror circuit, in said pair of diodes as equal forward currents, thereby making variable the impedance between said terminals.

4,517,509

INDUCTIVE DEVICE

Frans H. M. Smeets, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,578
Claims priority, application Netherlands, Nov. 17, 1981, 8105195
Int. Cl.³ H01F *27/24*
U.S. Cl. 323—362 **7 Claims**



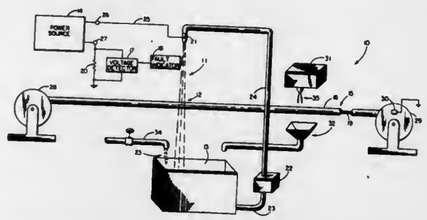
1. In an inductive device comprising a winding support having a base with electrical connection points and a ferromagnetic core arranged on the upper side of said base, said core having a cylindrical portion adjacent said base and a noncircumferentially symmetrical upper flange portion, said device further having a winding on said cylindrical portion and a ferromagnetic adjusting cap mounted over said ferromagnetic core and cooperating with said non-circumferentially symmetrical upper flange portion of said core, said cap being rotatable about the axis of the cylindrical portion of said core, said cap further being non-circumferentially symmetrical at least in the vicinity of the upper portion of said core whereby rotation of said cap with respect to the upper flange portion of said core produces changes in the inductance of said winding; the improvement wherein said support further comprises a centering member on said base, said centering member comprising at least one projection from the base having an exterior surface defining a cylindrical or conical surface coaxial with said cylindrical portion of said core, said cap having a portion closely engaging said centering member, at least the interior portion of said cap substantially corresponding in shape and radial dimensions to said cylindrical or conical surface of said centering member.

4,517,510

APPARATUS FOR TESTING THE INSULATION OF ELECTRIC WIRE OR CABLE

Henry H. Clinton, 10 Shore Rd., Clinton, Conn. 06410

Filed Apr. 20, 1983, Ser. No. 486,809
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 **16 Claims**



1. Apparatus using a conductive liquid for testing the insulation of an insulated wire having at least one electrical conductor and an electrical insulating jacket on the conductor, said apparatus comprising:
means for creating an unconfined stream of electrically conductive liquid flowing past a test station in one direction;
means for applying a first electrical potential to said stream;
means for passing a wire through said stream at said test station in a transverse direction to said one direction of said stream;
means for electrically connecting the conductor of said wire to a ground potential; and
means for detecting an electrical current flowing through said conductor from said stream.

4,517,511

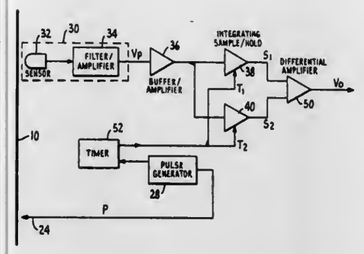
CURRENT PROBE SIGNAL PROCESSING CIRCUIT EMPLOYING SAMPLE AND HOLD TECHNIQUE TO LOCATE CIRCUIT FAULTS

Anthony J. Suto, Clifton Park, N.Y., assignor to Fairchild Camera And Instrument Corporation, Clifton Park, N.Y.

Continuation of Ser. No. 312,158, Oct. 16, 1981, abandoned. This application Jul. 13, 1984, Ser. No. 610,347
Int. Cl.³ G01R *31/08, 31/28*
U.S. Cl. 324—52 **18 Claims**

1. Apparatus for locating a fault within an electrical circuit comprising:
a pulse generator for applying electrical stimulus pulses to a current carrying conductor;

means for electrically connecting said pulse generator to the conductor;
a current responsive detector for producing an output signal related to the current flowing in said conductor;
means including a first and a second sample and hold circuit for processing said output signal to determine at least one parameter of the current flowing in said conductor; and



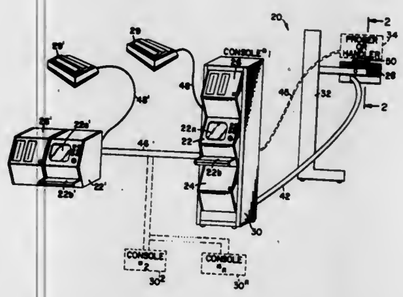
synchronizing means for actuating said first sample and hold circuit to sample said output signal during each of said stimulus pulses and for actuating said second sample and hold circuit to sample said output signal after termination of each of said stimulus pulses to thereby synchronize said processing means with said pulse generator.

4,517,512

INTEGRATED CIRCUIT TEST APPARATUS TEST HEAD

Dennis M. Petrich, Minnetonka; Christopher G. Amick, Mahtomedi, and Stanley L. Gruenenwald, Blaine, all of Minn., assignors to Micro Component Technology, Inc., Shoreview, Minn.

Filed May 24, 1982, Ser. No. 381,736
Int. Cl.³ G01R *31/28, 1/04, 15/12*
U.S. Cl. 324—73 R **43 Claims**



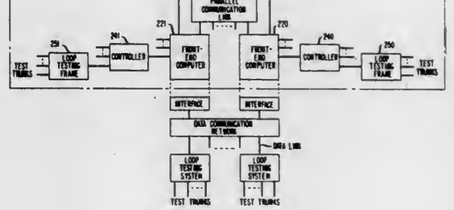
1. An automated test apparatus for testing various parameters of multiple-terminal integrated circuit devices at a test station by communicating with the terminals of a device via high-integrity test signals, each involving communication with a single terminal of the device, and via shared function signals, involving communication with all terminals of the device, comprising:
(a) A test head module, comprising:
(i) a chassis, sized and configured for ease of placement and use at a test station, having a test port configured for placement in direct proximity to the terminals of an integrated circuit device to be tested;
(ii) a plurality of discrete circuits mounted in said chassis proximate said test port, each of said circuits being responsive to received control signals and including means for generating and transmitting, and receiving high-integrity test signals communicated to and from, respectively, a corresponding terminal of the device at the test station to which said circuit is dedicated, each of said circuits being uniquely identifiable with, and having a signal output for, a different one of the terminals of the device;
(iii) at least one common circuit electronically communicating with each of said discrete circuits, said at least one common circuit being responsive to received control signals and including means for generating and transmitting, and receiving shared function signals communicated to and from, respectively, all terminals of the device via said discrete circuits;
(iv) means for operatively connecting said plurality of discrete circuits at said test port with said corresponding terminals of said integrated circuit device;
(b) controller means for producing said control signals to selectively activate said discrete circuits and said at least one common circuit, said controller means being operable to produce said control signals in a manner enabling simultaneous activation of a plurality of said discrete circuits and said at least one common circuit; and
(c) means operatively connecting said controller means with said plurality of discrete circuits and said at least one common circuit for carrying said control signals therebetween.

4,517,513

MAGNETIC DIFFERENTIAL CURRENT SENSOR

James M. Brown, Chatham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,173
Int. Cl.³ G01R *19/00, 1/02;* **H04M** *3/26*
U.S. Cl. 324—117 R **4 Claims**



1. Circuitry (**3300,3400**) for measuring, over a predetermined frequency band (e.g., DC-3200 Hz), current (I_L) supplied by a source (**3200**) to the input port (e.g., TIP) of a network (e.g., **180**), said circuitry comprising
a pair of substantially identical cores (e.g., **3307,3308**), each having line (L_1,L_2), sense (S_1,S_2) and control (C_1,C_2) windings,
said control windings being supplied with pulses (I_C) to produce magnetic fields of opposing orientations in said cores,
said sense windings, during periods of said pulses, being supplied with a sense signal (I_S) to produce magnetic intensities aiding one and opposing the other of said fields, and during intervals between said pulses, being connected to means (**34021,34024**) for cumulatively integrating the induced voltage to produce said sense signal, said cumulative voltage being proportional to said current after a preselected time period,
said line windings being connected in series with said source

and each is arranged to produce a field strength to oppose the corresponding one of said intensities,

buffer circuit means (e.g., **3309,3310,3312**), serially connected with said line windings and said input port, for providing a low impedance relative to said input impedance over said band and a high impedance relative to said input impedance at the rate (e.g., 50 kHz) of said pulses,

means (**3311,3309,3310,34025,34026**), coupled to said sense windings and said buffer means and responsive to said cumulative voltage, for selectively operating said circuitry in a calibrate mode wherein said cumulative voltage is minimized, and

means (**3311**), coupled to said line windings, for routing said current in one direction through said line windings to produce a first measure of said cumulative voltage and for reversing said current direction to obtain a second measure of said cumulative voltage, wherein said current is proportional to said first measure less said second measure.

4,517,514

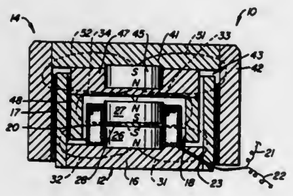
VIBRATION TRANSDUCER WITH DUAL OPPOSED MAGNETIC ASSEMBLIES AND COUNTERBALANCED MASS

Edward B. Howell, Carmel, Calif., assignor to Design Professionals Financial Corporation, Monterey, Calif.

Filed Sep. 30, 1982, Ser. No. 429,640

Int. Cl.[3] **G01B** *7/14;* **G01R** *33/038;* **G01H** *11/00;* **H04R** *11/00*

U.S. Cl. 324—207 **8 Claims**



1. A magnetic transducer comprising:

a first magnet assembly including a first magnetizable housing having a bottom and upstanding sidewalls defining a first upwardly opening interior volume with a central body axis normal to said bottom, a pair of magnetic field generating means secured within said first volume with the opposite poles of each field generating means aligned along said axis, a like polarity pole of each said pair being arranged in confronting relation, and coil means secured in said interior volume in flux cutting relationship with the magnetic fields generated by said pair; and

a second magnetic assembly arranged above said first magnetic assembly, said second magnetic assembly including a second magnetizable housing having a top and downwardly depending sidewalls partially surrounding the sidewalls of said first housing, an additional magnetic field generating means secured to the inner surface of said top, the facing poles of said additional magnetic field generating means and the proximate one of said pair of magnetic field generating means having the same polarity so that said first and second magnetic assemblies are mutually magnetically repelled with mutual motion therebetween being confined by said sidewalls to motion substantially along said axis, and a mass secured to said second housing for providing a force of sufficient magnitude to counteract the magnetic force of repulsion between said first and second magnetic assemblies.

4,517,515

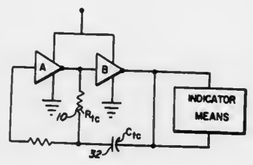
MAGNETOMETER WITH A SOLID-STATE MAGNETIC-FIELD SENSING MEANS

Karl Reinitz, Arnold, and Lynn Hart, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1981, Ser. No. 270,035

Int. Cl.[3] **G01R** *33/02*

U.S. Cl. 324—252 **3 Claims**



1. Apparatus for detecting a magnetic field comprising:

magnetic sensing means consisting of a solid-state material having the property that its magnetic permeability is a function of the strength of any magnetic field which penetrates the material, and its skin depth and therefore its resistance are functions of its permeability, said solid-state material having a maximum permeability of about 750,000 and a steep hysteresis loop;

signal-producing means, connected to said magnetic field sensing means, said signal-producing means comprising a multivibrator oscillator wherein said magnetic-field sensing means and a capacitor forms an RC-time-constant circuit of said oscillator, whereby a change in resistance of the sensing means changes the frequency of oscillation of said oscillator; and

indicator means, connected to said signal-producing means, for providing an indication of the existence of an output signal therefrom.

4,517,516

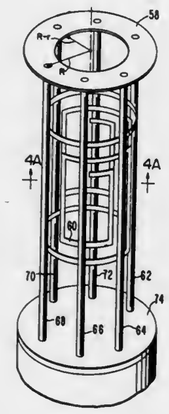
NMR PROBE COIL FORM STRUCTURE

Howard D. Hill, Cupertino, and Albert P. Zens, Fremont, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 8, 1983, Ser. No. 483,351

Int. Cl.[3] **G01R** *33/08*

U.S. Cl. 324—318 **5 Claims**



1. An RF probe for a spun sample gyromagnetic spectrometer comprising:

(a) sample containment means for holding a sample for analysis,

(b) sample spinning means for rapidly rotating said sample containment means about a rotation axis,

(c) RF saddle coil means surrounding said sample containment means for exciting and detecting gyromagnetic resonance in said sample,

(d) RF coil support means for supporting said RF coil in axial alignment with said rotation axis and spaced from said axis, said support means having at least one axially aligned slot in the lateral wall thereof, the axial length of said slot extending along substantially the axial length of said RF saddle coil means.

4,517,517

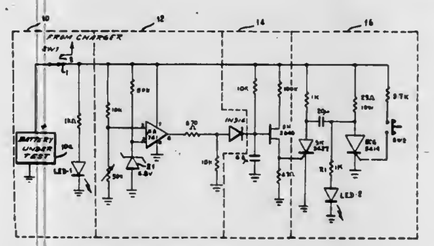
NICKEL-CADMIUM BATTERY CONDITIONER AND TESTER APPARATUS

Daniel C. Kinney, Springvale, Me., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,434

Int. Cl.[3] **G01N** *27/46*

U.S. Cl. 324—433 **2 Claims**



1. A nickel-cadmium battery conditioner and test apparatus comprising in combination:

a battery under test means to receive a battery,

a means for comparing voltage connected to said battery, said comparing means comparing the terminal voltage of said battery with a reference voltage, said comparing means providing a high output signal when said terminal voltage is high than said reference voltage, said comparing means providing a low output signal when said terminal voltage is lower than said reference voltage,

a means for oscillating connected to said comparing means to receive an output signal therefrom, said oscillating means operating in a quiescent state when said high output signal is received from said comparing means, said oscillating means going into oscillation when said low output signal is received from said comparing means, said oscillating means providing a pulsed output signal; and

a switching means connected to said oscillating means, said switching means including a first switch to initiate the discharge cycle of said battery through a discharge circuit, said switching means including a visual indicator means to indicate that said discharge cycle is in progress, said switching means receiving said pulsed output signal from said oscillating means when the terminal voltage of said battery is reached, said switching means terminating said discharge cycle and providing an indication that said terminal voltage has been reached, said switching means comprise a first and second SCR diode, said first SCR diode receiving the pulsed output signal from said oscillating means at its input gate, said second SCR diode in series with a resistor forms said discharge circuit, one end of said resistor is connected directly to said battery, the other end of said resistor being connected to the anode of said second SCR diode, the cathode of said second SCR diode being connected to ground, the gate of said second SCR diode being connected to said first switch, the anode of said first SCR diode being connected to said second SCR diode anode by a capacitor, said first SCR diode responding to said pulsed output signal by turning said second SCR diode off thereby terminating the discharge cycle of said battery.

4,517,518

CIRCUIT ARRANGEMENT FOR RECONSTRUCTING NOISE-AFFECTED SIGNALS

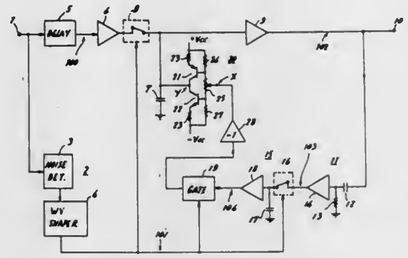
Yukinobu Ishigaki, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 29, 1983, Ser. No. 517,985

Claims priority, application Japan, Jul. 30, 1982, 57-133298; Jul. 30, 1982, 57-133299; Sep. 8, 1982, 57-155237; Sep. 10, 1982, 57-157751

Int. Cl.[3] **H03B** *1/04*

U.S. Cl. 328—165 **12 Claims**



1. A circuit arrangement for reconstructing a noise-affected portion of an analog signal having an input terminal to which said analog signal is applied and an output terminal to which a reconstructed signal is delivered, comprising:

means coupled to said input terminal for generating a sampling pulse in response to an impulse noise introduced into said analog signal;

a buffer amplifier coupled to said input terminal;

a first sample-and-hold circuit coupled between the output of said buffer amplifier and said output terminal, said circuit having a capacitor and switching means for applying said analog signal to said capacitor to develop therein a voltage which keeps track of the waveform of said analog signal in the absence of said sampling pulse and holding said voltage in response to said sampling pulse;

a differentiator coupled in a feedback loop from the output of said first sample-and-hold circuit for generating a signal representative of the slope ratio of said analog signal;

a second sample-and-hold circuit in said feedback loop for sampling and holding said slope ratio signal in response to said sampling pulse; and

means in said feedback loop for providing constant current charging and discharging of said capacitor in response to an output signal from said second sample-and-hold circuit.

4,517,519

FSK DEMODULATOR EMPLOYING A SWITCHED CAPACITOR FILTER AND PERIOD COUNTERS

Fumiaki Mukaiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,496

Claims priority, application Japan, Nov. 7, 1980, 55-157193; Mar. 16, 1981, 56-37602

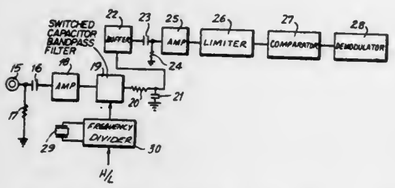
Int. Cl.[3] **H03D** *3/00;* **H04L** *27/14*

U.S. Cl. 329—126 **7 Claims**

1. In an FSK demodulation circuit including a zero-cross detection circuit to demodulate a received binary signal, said binary signal being produced by frequency shift keying techniques whereby marks and spaces are transmitted at different selected frequencies, the improvement comprising:

a signal period counter, said signal period counter including a plurality N of counter sections;

a counter section selector circuit, said selector circuit selecting said counter sections in sequence for reading out a count at every detected zero-cross of said received binary signal, said selector circuit selecting said counter sections in sequence for resetting each of said counter sections, counting pulses from a clock and holding the count accumulated in each of said counter sections between said



resetting and said reading out, said count being detected to determine whether said received frequency signal represents one of a mark and a space, said counting period for each of said counter sections equalling N zero-cross detection periods,

whereby the signal-to-noise ratio of said demodulation circuit is enhanced by an increase in the number of accumulated counts by a factor of N, relative to a substantially unvarying noise input.

4,517,520

CIRCUIT FOR CONVERTING A STAIRCASE WAVEFORM INTO A SMOOTHED ANALOG SIGNAL

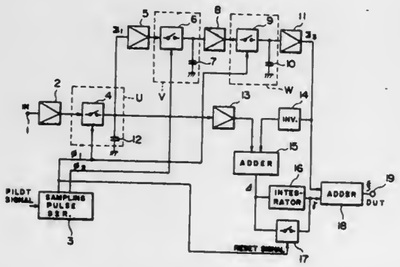
Atsushi Ogawa, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Japan

Filed Aug. 12, 1982, Ser. No. 407,601

Claims priority, application Japan, Aug. 24, 1981, 56-132422; Aug. 24, 1981, 56-132423

Int. Cl.³ H03K *5/00*

U.S. Cl. 329—145 **4 Claims**



1. A circuit for converting an input staircase waveform signal (e.g., Σ_1) with a regular stepping time interval but different stepping heights into a smoothed analog signal (e.g., ϵ) comprising:

a delay unit for delaying said input staircase signal for one said stepping interval,

means for producing a differential signal (e.g., Δ) by taking the difference between said input staircase signal and said one stepping interval delayed version (e.g., Σ_3) thereof,

means for integrating said differential signal with respect to time at every stepping interval to produce a sawtoothwave signal (e.g., γ) with substantially linear slopes, and

means for additively combining said sawtoothwave signal with said one stepping interval delayed version.

4,517,521

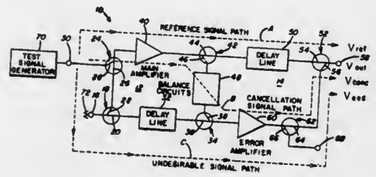
FEED FORWARD CIRCUIT AND A METHOD FOR ALIGNING AND BALANCING THE SAME

Joseph P. Preschutti, State College, and John C. Pavlic, Pleasant Gap, both of Pa., assignors to C-COR Electronics, Inc., State College, Pa.

Filed Feb. 28, 1984, Ser. No. 584,494

Int. Cl.³ H03F *1/32*

U.S. Cl. 330—2 **8 Claims**



1. An improved feed forward circuit, said feed forward circuit including a first circuit loop to isolate signal noise and distortion and a second circuit loop to reduce signal noise and distortion, said first circuit loop and said second circuit loop having directional coupler means, amplification means, and delay means, and said first circuit loop and said second circuit loop being interconnected through a pair of common directional coupler means having common balance circuitry connected therebetween, and said first circuit loop having a signal input terminal and an input test terminal and said second circuit loop having a signal output terminal and an output test terminal, wherein the improvement comprises,

a pair of additional directional coupler means, one of said additional directional coupler means being connected in circuit relationship with said first circuit loop and said input test terminal and the other of said additional directional coupler means being connected in circuit relationship with said second circuit loop and said output test terminal, said additional directional coupler means being operable to promote accurate alignment and balance of said feed forward circuit and improve gain flatness and reduce signal distortion during operation thereof.

4,517,522

SWITCHING AMPLIFIER

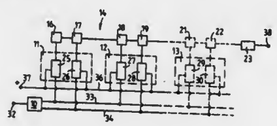
Andreas Furrer, Turgi, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

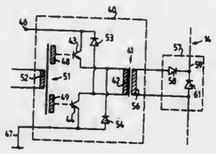
Filed Jun. 6, 1983, Ser. No. 501,179

Claims priority, application Switzerland, Jun. 25, 1982, 3920/82

Int. Cl.³ H03F *3/38*

U.S. Cl. 330—10 **6 Claims**





1. A high power switching amplifier comprising:

a signal converter which converts an input signal to be amplified into at least two pulse sequences;

a plurality of amplifier stages, each of said amplifier stages comprising at least one switching stage for amplifying a respective pulse sequence;

each of said switching stages comprising at least one switching element and a transformer having a primary winding connected to a supply-voltage source by means of said at least one switching element, said at least one switching element controlled by one of said two pulse sequences, and said transformer having a secondary winding connected in series with the secondary windings of the other switching stage transformers;

a low-pass filter connected to said series circuit for converting the pulse sequences amplified in said switching stages into an amplified output signal;

wherein each of said transformers comprises a toroidal core of low remanence material, each said secondary winding comprising plural turns of rf stranded wire wound on a respective toroidal core, an insulating housing provided around said secondary winding, said primary winding disposed on said insulating housing and comprising plural turns of rf stranded wire, an outer housing confining said transformer and being filled with an insulating material, and a metallic mandrel within a bore of said toroidal core.

4,517,523

OSCILLOSCOPE TRIGGER CIRCUIT COMBINING WIDEBAND TRIGGER SIGNAL AMPLIFICATION AND TRIGGER COUPLING MODE SELECTION

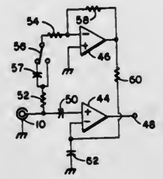
Frank Miles, Ann Arbor, Mich., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 3, 1983, Ser. No. 538,244

Claims priority, application Japan, Oct. 22, 1982, 57-184779

Int. Cl.³ H03F *3/68*

U.S. Cl. 330—126 **1 Claim**



1. A wideband trigger circuit for an oscilloscope, comprising:

an input terminal for receiving an input signal;

an input impedance network including at least one DC signal path connected to said input terminal for providing a plurality of selectable input signal coupling modes;

a low frequency amplifier coupled to said impedance network for amplifying low frequency components of said input signal;

a high frequency amplifier having a first input AC coupled to said input terminal and a second input coupled to the output of said low frequency amplifier for amplifying high frequency components of said input signal and for adding the low and high frequency components; and

means for selecting any one of said plurality of selectable input signal coupling modes thereby to establish the frequency response of said trigger circuit..

4,517,524

HIGH FREQUENCY OPERATIONAL AMPLIFIER

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1983, Ser. No. 510,015

Int. Cl.³ H03F *3/45*

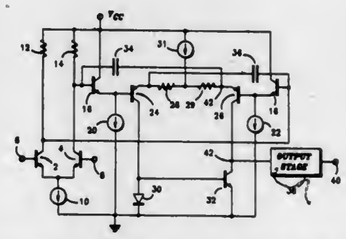
U.S. Cl. 330—257 **10 Claims**

1. A differential amplifier, comprising:

first and second input means responsive to first and second input signals;

first and second switching means coupled to said first and second input means respectively and responsive thereto;

current mirror means coupled to said first and second switching means and cooperating therewith to provide an output signal, said first and second switching means comprising: first and second transistors each having a base electrode coupled to said first and second input means respectively, a collector electrode coupled to said current mirror means and each having an emitter; impedance



means coupled between the emitters of said first and second transistors; and a first current source coupled to the emitters of said first and second transistors for supplying current thereto;

first capacitive transfer means coupled between the input of said first input means and the emitter of said second transistor for transferring signal to said second switching means to speed the operation thereof; and

second capacitive transfer means coupled between the input of said second input means and the emitter of said first transistor for transferring signal to said first switching means to speed the operation thereof.

4,517,525

BALANCING COMPENSATION IN DIFFERENTIAL AMPLIFIERS WITH A SINGLE-ENDED DRIVE

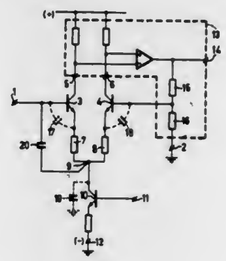
Else C. Dijkmans, and Rudy J. van de Plassche, both of Groenewoudseweg 1, Eindhoven, Netherlands

Filed Nov. 29, 1982, Ser. No. 445,334

Claims priority, application Netherlands, Dec. 9, 1981, 8105536

Int. Cl.³ H03F *1/14, 3/45*

U.S. Cl. 330—260 **8 Claims**



1. A differential amplifier comprising

a first input adapted to receive an input signal and a second input coupled to a first point of constant potential,

a first output and a second output for supplying two output signals which are in phase-opposition and depend on the input signal,

a first transistor having a control electrode, a first main electrode and a second main electrode coupled to the first input, the first output and to a common point respectively,

a second transistor having a control electrode, a first main electrode and a second main electrode coupled to the second input, the second output and to the common point respectively, and

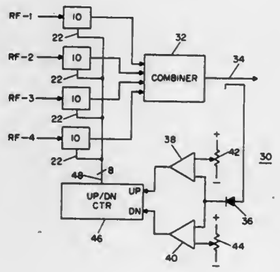
a third transistor arranged as a current source and having a first main electrode coupled to the common point and a second main electrode coupled to a second point of constant potential, and a balancing impedance which comprises at least a capacitor coupled between the control electrode of the first transistor and the common point.

4,517,526

DIGITALLY CONTROLLED AGC AMPLIFIER

Thomas A. Di Cicco, Farmingdale, N.Y., assignor to Comtech Telecommunications Corp., N.Y.

Filed May 25, 1983, Ser. No. 498,087
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—284 **20 Claims**



1. In a predetection combining system, responsive to a plurality of component signals in component signal channels, for combining said signals to form a composite output signal representative of the vector sum of said component signals, said system including means for providing automatic gain control of said component signals responsive to the signal level of said composite signals, the improvement wherein said means for providing automatic gain control includes:

means, responsive to said composite signal, for providing a first digital signal representative of a desired attenuation within a selected attenuation range, said first digital signal having at least a number of bits N selected to cause said first digital signal to have a number of values at least as great as the number of selected minimum attenuation steps in said attenuation range;

means in each of said component signal channels for attenuating said component signals, each of said attenuation means responsive to a corresponding applied analog attenuation control voltage, each of said voltages having a range of voltage values to cause said attenuation devices to provide attenuation over said selected attenuation range with a predetermined relation of attenuation to each of said voltage values, there being a minimum value of voltage change for each of said voltages corresponding to one of said minimum attenuation steps;

a plurality of digital-to-analog converters, one for each of said component signal channels, for providing analog attenuation control voltages with said ranges of voltage values, each of said converters responsive to a respective second digital signal, said second digital signal having at least M bits, the value M being selected to provide a number of second digital signal values that is at least as great as the ratio of said range of voltage values for said voltages to said minimum value of voltage change; and

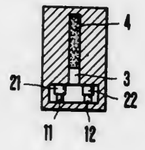
a plurality of programmed digital memory means, one for each of said component signal channels, each having at least N addresses of at least M bits, and each responsive to said first digital signal for providing said second digital signals to one of said digital to analog converters, said memory means being programmed to provide second digital signals which cause said digital to analog converters to provide said control voltages to said attenuation devices and cause equal increments of attenuation for equal changes of said first digital signal.

4,517,527

WAVEGUIDE AMPLIFIER CIRCUIT

Shigenobu Aihara, and Akio Yamada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,162
Claims priority, application Japan, Apr. 15, 1982, 57-62866
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—287 **4 Claims**



1. A waveguide reflection amplifier circuit comprising:

a waveguide circuit reflecting and amplifying an input electromagnetic wave, and having two semiconductor amplifier elements of the same electrical characteristics which are arranged on the same plane perpendicular to a propagation direction of said input electromagnetic wave;

an additional waveguide circuit arranged at the center between said semiconductor amplifier elements and extending in a direction which is perpendicular to a direction along a line connecting said semiconductor amplifier elements and to the electromagnetic wave propagation direction; and

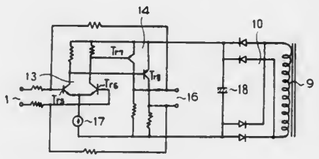
a termination circuit arranged at an end, remote from said semiconductor amplifier elements, of said additional waveguide circuit.

4,517,528

AMPLIFIER CIRCUIT DRIVEN BY GROUND ISOLATED POWER SUPPLY

Susumu Tanaka, and Ryosuke Ito, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,892
Claims priority, application Japan, Oct. 31, 1981, 56-162837[U]; Oct. 31, 1981, 56-162833[U]; Aug. 9, 1982, 57-119871[U]
Int. Cl.³ H03F *3/04, 3/20*
U.S. Cl. 330—297 **10 Claims**



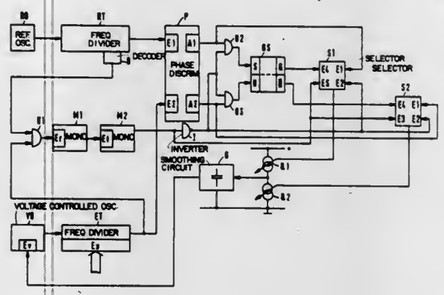
1. An amplifier comprising input means for preamplifying an input signal, output means for power-amplifying at least one output from said input means and haing a two terminal, balanced output circuit, a load connected between said two terminals, and power supply means for feeding electric power for driving said input means and said output means, said power supply means floating from a ground potential.

4,517,529

DIGITAL PHASE/FREQUENCY CONTROL CIRCUIT

Guenter Lindstedt, Freiburg, and Guido H. Nopper, Umkirch, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1982, Ser. No. 442,056
Claims priority, application European Pat. Off., Dec. 10, 1981, 81110300.1
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **3 Claims**



1. A digital phase control circuit wherein the output signal of a voltage-controlled oscillator (VO) which includes a varactor diode and whose frequency can be varied by a phase discriminator (P) is applied to the second input (E2) of the phase discriminator (P) through a presettable frequency divider (ET) serving to select the frequency of the oscillator, wherein the signal of a reference oscillator (RO) is applied to the first input (E1) of the phase discriminator (P) through a reference-frequency divider (RT), and wherein the phase discriminator has a first output (A1) for pulses raising the frequency of the oscillator and a second output (A2) for pulses lowering the frequency of the oscillator (VO), *characterized by the following features:*

A range of successive counts of the reference-frequency divider (RT) is monitored by means of a decoder (D) for forming a time window;

the output of the decoder is coupled to the first input of a first AND gate (U1) having its second input connected to the output of the presettable frequency divider (ET);

the reset input (Er) of a resettable first digital monostable multivibrator (M1) is connected to the output of the first AND gate (U1);

the trigger input (Et) of a second digital monostable multivibrator (M2) is connected to the output of the first monostable multivibrator (M1);

the S and R inputs of an RS flip-flop (RS) are connected to the outputs of a second AND gate (U2) and a third AND gate (U3), respectively, to whose first inputs the output signal of the second monostable multivibrator (M2) is applied through an inverter (I);

the second inputs of the second AND gate (U2) and the third AND gate (U3) are connected to the first output (A1) and the second output (A2), respectively, of the phase discriminator (P);

the first and second outputs of the phase discriminator are coupled to the first inputs (E1) of a first control signal selection circuit (S1) and a second control signal selection circuit (S2), respectively, to whose second inputs (E2) the output signal of the second monostable multivibrator (M2) is applied through the inverter (I), and whose third inputs (E3) are fed with the output signal of the second monostable multivibrator (M2) direct, while their fourth inputs (E4) are connected to the Q output and the $\overline{Q}$ output, respectively, of the RS flip-flop (RS);

the output of the first control signal selection cicuit (S1) is coupled to the control input of a first constant-current source (Q1) whose current charges a smoothing device (G), and the output of the second control signal selection circuit (S2) is coupled to the control input of a second constant-current source (Q2) which discharges the smoothing device, and

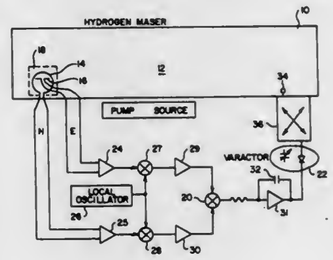
the output of the smoothing device is coupled to the control input (Ev) of the voltage-controlled oscillator (VO).

4,517,530

MASER CAVITY SERVO-TUNING SYSTEM

Richard L. Sydnor, Altadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, DC

Filed Nov. 30, 1983, Ser. No. 556,513
Int. Cl.³ H03L *7/26;* **H01P** *7/06*
U.S. Cl. 331—3 **11 Claims**



1. A method for servo tuning a finite Q cavity to stabilize its resonance frequency comprising the steps of

detecting the phase difference between the magnetic and the electric fields in the cavity, and

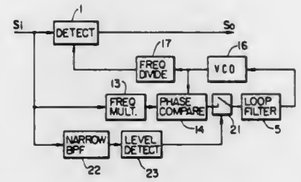
in response to the detected phase difference, changing the reactance inside said cavity to correct any drift in resonance frequency.

4,517,531

CARRIER WAVE REPRODUCING CIRCUIT IN SYNCHRONIZED DETECTION SYSTEM OF MEDIUM SPEED FACSIMILE

Yoichi Tan, and Fumio Miyao, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,190
Claims priority, application Japan, Jan. 9, 1981, 56-1901
Int. Cl.³ H03L *7/08;* **H03D** *3/00;* **H04N** *1/40*
U.S. Cl. 331—14 **8 Claims**



1. In a signal demodulator circuit for demodulating a modulated input signal containing black information and white information, said demodulator of the type including a synchronized detector for receiving said modulated input signal and detecting said modulated input signal, a carrier reproducing circuit for generating a reproduced carrier from said modulated input signal and applying said reproduced carrier to said synchronized detector, said modulated input signal including signal portions representing said black information and signal portions representing said white information, the improvement characterized in that: said carrier reproducing circuit includes

a phase synchronizing loop connected to receive said modulated input signal for providing said reproduced carrier to said synchronized detector; and

disabling means for disabling a phase locking of said phase synchronizing loop in response to a predetermined level of representation of said black information, said loop continues to provide an output even when not phase locked; and said phase synchronizing loop comprises:

a voltage controlled oscillator (**6**), a phase comparator (**14**) whose inputs are connected to receive said modulated input signal and to receive the output signal of said voltage controlled oscillator, and a loop filter (**5**) whose input is connected to the output of said phase comparator and whose output is connected to the control terminal of said voltage controlled oscillator through which the output signal of said comparator is applied to the control terminal of said voltage controlled oscillator for controlling the oscillation frequency of said oscillator, said disabling means comprising:

switching means (**21**) provided between the output of said phase comparator and the input of said loop filter; and

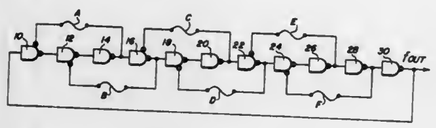
signal detection means for detecting said predetermined level of representation of said black information and controlling said switching means in accordance with said detected level; and

said signal detection means comprises:

a band-pass filter (**22**) of a narrow band connected to receive said modulated input signal for extracting frequency components applied thereto near the carrier frequency of said modulated input signal; and

a level detector (**23**) for controlling said switching means based on said level derived from the output signal of said band-pass filter.

4,517,532
PROGRAMMABLE RING OSCILLATOR
Robert A. Neidorff, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 1, 1983, Ser. No. 510,049
Int. Cl.³ H03K *3/03*
U.S. Cl. 331—57 **8 Claims**



1. A programmable ring oscillator comprising:

a plurality of series coupled inverter gates; and

a plurality of bypass means coupled between the outputs of selected ones of said plurality of inverter gates to alter the frequency of said oscillator, each of said bypass means including a laser trimmable fuse.

4,517,533
INTEGRATED CRYSTAL VCO
Wayne E. Bretl, Schaumburg, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Oct. 26, 1983, Ser. No. 545,803
Int. Cl.³ H03B *5/00*
U.S. Cl. 331—116 R **13 Claims**

1. An integrated voltage controlled oscillator coupled to a variable control voltage source for changing the frequency of oscillation thereof and coupled to a crystal network, said voltage controlled oscillator comprising:

first and second terminals coupled to said crystal network;

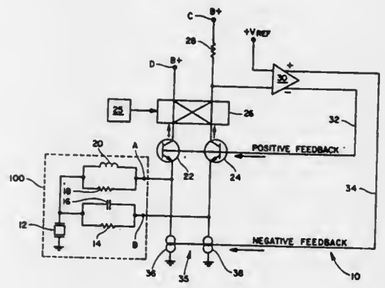
first and second conducting means respectively coupled to said first and second terminals;

a current source coupled to said first and second terminals and to said first and second conducting means;

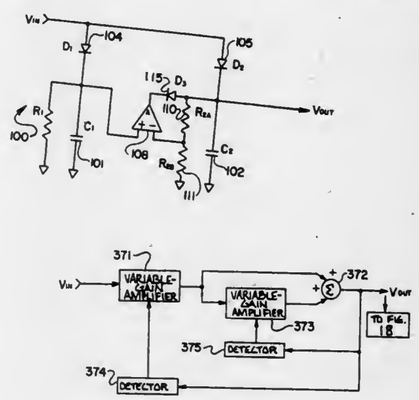
a current steering network coupled to said control voltage source and to said first and second conducting means for alternately directing a signal through said first and second conducting means in establishing the oscillating frequency of said voltage controlled oscillator;

a positive feedback path coupled between said first and second conducting means and said current steering network for generating a first amplifying signal for amplifying the output of said voltage controlled oscillator and for establishing the oscillation thereof; and

a negative feedback path coupled between said current source and said current steering network for generating a second stabilizing signal for stabilizing the thus amplified output of said voltage controlled oscillator.



4,517,534
CIRCUIT DETECTOR AND NOISE REDUCTION NETWORK WITH CIRCUIT DETECTOR
Stephen F. Smith, Knoxville, Tenn., assignor to Alpha-Omega Engineering, Inc., Knoxville, Tenn.
Filed Jul. 11, 1983, Ser. No. 512,869
Int. Cl.³ H04B *1/64;* **H03G** *7/00;* **H03K** *5/153*
U.S. Cl. 333—14 **24 Claims**



24. A compander circuit for compressing and expanding the dynamic range of an electrical intelligence signal comprising:

(a) first variable gain amplifier responsive to a first control signal, said first variable gain amplifier having a compressor input point for receiving an electrical intelligence signal and a compressor circuit output for providing a first primary electrical source signal with a compressed dynamic range;

(b) a first detector responsive to said first primary electrical source signal for providing said first control signal to control said first variable gain amplifier, said first detector comprising,

(c) first memory means for continuously receiving and storing input signals;

(d) a first directional conducting circuit for providing said input signals to said first memory means, said first directional conducting circuit for receiving said first primary electrical source signal and being connected between said compressor circuit output and said first memory means and comprising a first unidirectional conductor in electrical parallel arrangement with a first resistive element;

(e) second memory means for continuously receiving and storing input signals, said second memory means including means for providing said first control signal representative of the stored signal value of said second memory means;

(f) a second directional conductor circuit for providing said input signals to said second memory means, said second directional conducting circuit for receiving a first secondary electrical source signal and being connected between a first secondary input point and said second memory means, and comprising a second unidirectional conductor in electrical parallel arrangement with a second resistive element;

(g) means for providing said first secondary electrical source signal to said first secondary input point, said first secondary source signal being proportional to said first primary electrical source signal;

(h) an active signal amplifying device and a third unidirectional conductor in electrical series arrangement to provide a dynamically-controlled charge and/or discharge path for said second memory means which is dependent upon the instantaneous voltages on said first and second memory means such that,

for the discharge case, whenever the stored signal value of said first memory means is at least equal to a prescribed fraction of the stored signal value of the second memory means, the amplifying device produces an output signal such that said third unidirectional conductor does not conduct, and thus the stored signal values of said first and second memory means are essentially independent of each other and vary substantially only in response to changes in said input signals provided to said first and second memory means, respectively, as they discharge according to their respective time constants, and whenever said primary electrical source signal is less than the stored value of said second memory means and said stored value of said first memory means decreases to a value substantially equal to the prescribed fraction of the stored value of said second memory means, which value is greater than the stored value of said first memory means, said amplifying device causes said third unidirectional conductor to conduct and the stored signal values of said first and second memory means vary in a nearly proportional manner and remain substantially proportional to each other by the ratio of the said prescribed fraction as they both discharge according to a combined time constant which is essentially the time constant of said first memory means;

and for the charging case, whenever the stored signal value of said first memory means is at most equal to the inverse of a prescribed fraction of the stored signal value of the second memory means, the amplifying device produces an output signal such that said third unidirectional conductor is now reversed in orientation from the discharge case and does not conduct, and thus the stored signal values of said first and second memory means are essentially independent of each other and vary substantially only in response to changes in said input signals provided to said first and second memory means, respectively, as they charge or discharge according to the level of their said input signals and their respective time constants, and whenever said primary electrical source signal is greater than the stored value of said second memory means and said stored signal value of said first memory means increases to a value substantially equal to the inverse of the prescribed fraction of the stored value of said second memory means which

value is now less than the stored value of said first memory means by the ratio of the prescribed fraction, said amplifying device causes said third unidirectional conductor to conduct and the stored signal values of said first and second memory means vary in a nearly proportional manner and remain substantially proportional to each other by the ratio of the said prescribed fraction as they both charge according to a combined time constant which is essentially the time constant of said first memory means;

(i) a second variable gain amplifier responsive to a second control signal, said second variable gain amplifier having an expander input point for receiving said first primary electrical source signal and an expander circuit output for providing a second primary electrical source signal with an expanded dynamic range;

(j) a second detector responsive to said first primary electrical source signal for providing said second control signal to control said second variable gain amplifier, said second detector comprising:

(k) third memory means for continuously receiving and storing input signals;

(l) a third directional conducting circuit for providing said input signals to said third memory means, said third directional conducting circuit for receiving said first primary electrical source signal and being connected between said expander circuit input and said third memory means and comprising a fourth unidirectional conductor in electrical parallel arrangement with a third resistive element, fourth memory means for continuously receiving and storing input signals, said fourth memory means including means for providing said second control signal representative of the stored signal value of said fourth memory means;

(m) a fourth directional conductor circuit for providing said input signals to said fourth memory means, said fourth directional conducting circuit for receiving a second secondary electrical source signal and being connected between a second secondary input point and said second memory means, and comprising a fifth unidirectional conductor in electrical parallel arrangement with a fourth resistive element;

(n) means for providing said second secondary electrical source signal to said second secondary input point, said second secondary source signal being proportional to said first primary electrical source signal; and,

(o) an active signal amplifying device and a sixth unidirectional conductor in electrical series arrangement to provide a dynamically-controlled charge and/or discharge path for said fourth memory means which is dependent upon the instantaneous voltages on said third and fourth memory means such that,

for the discharge case, whenever the stored signal value of said third memory means is at least equal to a prescribed fraction of the stored signal value of the fourth memory means, the amplifying device produces an output signal such that said sixth unidirectional conductor does not conduct, and thus the stored signal values of said third and fourth memory means are essentially independent of each other and vary substantially only in response to changes in said input signals provided to said third and fourth memory means, respectively, as they discharge according to their respective time constants, and whenever said primary electrical source signal is less than the stored value of said fourth memory means and said stored value of said third memory means decreases to a value substantially equal to the prescribed fraction of the stored value of said fourth memory means, which value is greater than the stored value of said third memory means, said amplifying device causes said sixth unidirectional conductor to conduct and the stored signal values of said third and fourth memory means vary in a nearly proportional manner and remain substantially proportional to each other by the ratio of the said prescribed fraction as they both discharge

according to a combined time constant which is essentially the time constant of said third memory means;

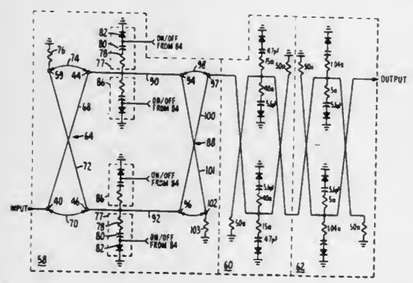
and for the charging case, whenever the stored signal value of said third memory means is at most equal to the inverse of a prescribed fraction of the stored signal value of the fourth memory means, the amplifying device produces an output signal such that said sixth unidirectional conductor is now reversed in orientation from the discharge case and does not conduct, and thus the stored signal values of said third and fourth memory means are essentially independent of each other and vary substantially only in response to changes in said input signals provided to said third and fourth memory means, respectively, as they charge or discharge according to the level of their said input signals and their respective time constants, and whenever said primary electrical source signal is greater than the stored value of said fourth memory means and said stored signal value of said third memory means increases to a value substantially equal to the inverse of the prescribed fraction of the stored value of said fourth memory means which value is now less than the stored value of said third memory means by the ratio of the prescribed fraction, said amplifying device causes said sixth unidirectional conductor to conduct and the stored signal values of said third and fourth memory means vary in a nearly proportional manner and remain substantially proportional to each other by the ratio of the said prescribed fraction as they both charge according to a combined time constant which is essentially the time constant of said third memory means.

4,517,535

HIGH SPEED HIGH POWER STEP ATTENUATOR METHOD AND APPARATUS

Chuck Y. Pon, Belmont, Calif., assignor to Dalmo Victor Operations, Bell Aerospace Textron, Div. of Textron, Inc., Belmont, Calif.

Filed Jul. 28, 1982, Ser. No. 402,622
Int. Cl.³ H01P *1/22*
U.S. Cl. 333—81 A **17 Claims**



1. Apparatus for attenuating a high frequency electromagnetic input signal having a predetermined magnitude comprising

means responsive to the input signal for splitting the input signal into a first signal and a second signal, each having a predetermined magnitude the sum of which is substantially equal to the input signal magnitude, the input signal splitting means having an input port for receiving the input signal, a first output port for outputting the first signal, and a second output port for outputting the second signal, the input port being isolated from the first and second output ports such that waveforms reflected from the first and second output ports and back into the input signal splitting means cancel one another at the input port and are additive with one another at a termination port for dissipation there;

mismatch means in communication with the first and second output ports for providing selectably connectable impedance mismatches at substantially the same electrical distance from each output port, wherein the impedance mismatch connected at one output port is substantially equal in magnitude to the impedance mismatch connected at the other output port, so that a portion of the first signal from the first output port and a portion of the second signal from the second output port are reflected back into the input signal splitting means for dissipation therein, and so that the unreflected portion of each of the first and second signals are transmitted; and

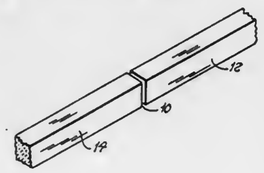
means responsive to the transmitted portion of the first signal and to the transmitted portion of the second signal for recombining the transmitted portions so that the recombined signal corresponds to the input signal, the magnitude of which has been attenuated by a quantity determined by the degree of impedance mismatch provided by the mismatch means.

4,517,536

LOW LOSS DIELECTRIC WAVEGUIDE JOINT AND METHOD OF FORMING SAME

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,504
Int. Cl.³ H01P *1/04;* **B65H** *69/02*
U.S. Cl. 333—254 **7 Claims**



1. A low loss joint between millimeter wavelength, dielectric components comprising:

a first longitudinal section of a magnesium titanate dielectric waveguide transmission line having a predetermined cross section,

a second longitudinal section of a magnesium titanate dielectric waveguide transmission line of the same cross section and dielectric material, said first and second sections having respective opposing ends aligned and closely spaced in a transverse butt joint, and a curved mixture of an barium titanate inorganic dielectric and an cellulose nitrate organic binder filling the space between said ends and solidly joining said sections, said mixture having a dielectric constant substantially the same as said two sections and wherein said filled joint provides a 65 percent improvement in insertion loss reduction.

5. A method of fabricating a low loss joint between millimeter wavelength, magnesium titanate dielectric components so that a 65 percent improvement in insertion loss reduction is provided, said method comprising:

preparing a slurry of an barium titanate inorganic dielectric and an cellulose nitrate organic binder;

placing said slurry in the joint between said barium titanate dielectric components; and curing the slurry.

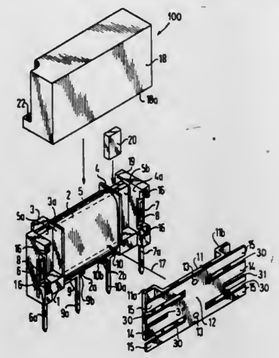
4,517,537

ELECTROMAGNETIC MINIATURE RELAY AND METHOD OF MANUFACTURE

Josef Weiser, Hohenschaftlarn; Alfred Heinzl, and Heinz Stadler, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,305
Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318493
Int. Cl.³ H01H *3/00*
U.S. Cl. 335—187 **11 Claims**

1. In an electromagnetic miniature relay having a base body containing a flat core being disposed inside of an excitation coil with ends of the core extending from both ends of the coil to form a pole piece at each end of the core for an armature having ends which armature is disposed next to the coil and is pressed against a spring arrangement to have the ends engage both pole pieces when the coil is energized, the improvements comprising said core being embedded in the base body, at least one stationary contact with a terminal pin being embedded in the base body adjacent each end of the coil and in the area of the armature ends, and a contact spring member being connected to a central portion of the armature and having contact



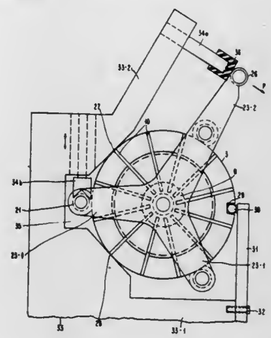
portions with a length along the length of the armature to extend beyond the ends of the armature to form movable contacts to overlie the stationary contacts, said movable contacts being moved with the armature so that when the coil is denergized, the ends of the armature form air gaps with each of the pole pieces and the movable contacts are spaced from the adjacent stationary contact elements and when the coil is energized the armature moves against the spring arrangement with the armature ends moving into contact with the pole pieces and the movable contacts which are formed by the ends of the contact portions engage the two stationary contacts to form an electric contact therebetween.

4,517,538

ELECTROMAGNETIC ROTARY ACTUATOR WITH ROCKING MOVEMENT, IN PARTICULAR FOR IMPACT PRINTERS

Armin Bohg, Weil-Neuweiler; Horst D. Matthaei, Waldenbuch, and Kurt Hartmann, Calw Heumaden, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,562
Claims priority, application European Pat. Off., Nov. 5, 1982, 82110213.4
Int. Cl.³ H01F *7/14*
U.S. Cl. 335—272 **7 Claims**



1. An electromagnetic actuator comprising an electromagnetic yoke assembly including magnetically permeable means forming at least one magnetizable path including a gap, coil means for selectively magnetizing said path, and armature means including a magnetizable element dimensioned to move into and out of said gap, wherein the improvement comprises:

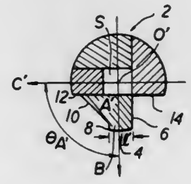
means supporting said yoke assembly and said armature means for relative movement about an axis of rotation, and means for restraining relative movement of said yoke assembly and said armature to a small angle of rotation.

4,517,539

MEGNETIC DEVICE

Yoshio Sakata, Yamato, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 31, 1983, Ser. No. 499,270
Claims priority, application Japan, Jun. 1, 1982, 57-81427[U]
Int. Cl.³ H01F *7/02*
U.S. Cl. 335—302 **10 Claims**



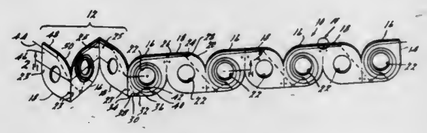
1. A magnetic body defining an axis comprised of at least one magnet, the revolution of said body about its axis defining a cylinder of revolution having a circular cross section, spaced first and second surface portions of the body lying coincident with the periphery of the cylinder of revolution, a pair of parallel surfaces defined by the body extending radially inwardly from opposite ends of said second surface, and surface means lying within the periphery of the cylinder of revolution connecting the radially inner edges of said parallel surfaces with opposite ends of the first surface, said body including at least one magnet at least a portion of which is bounded by said second surface and said parallel surfaces.

4,517,540

SPIRAL WINDINGS

John A. McDougal, 14388 Harbor Island, Detroit, Mich. 48215

Continuation of Ser. No. 796,533. May 13, 1977, abandoned.
This application Mar. 28, 1980, Ser. No. 135,188
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—205 **19 Claims**



1. A coil construction comprising:

an elongated flexible substrate having a high dielectric strength;

a single continuous electrically-conductive wire having an insulating coating thereon being wound without sever-

ances or splices so as to form a plurality of spaced apart spiral coils on one side of said substrate;

said wire having interconnecting portions extending between said spaced apart spiral coils, said interconnecting portions being disposed, at least in part, on another side of said substrate; and

said substrate having a slit provided therein, said slit extending inwardly from an outer edge portion of said substrate and being operative to allow said wire to pass through said substrate between said one side of said substrate and said another side of said substrate whereby said wire will be spaced inwardly from said edge portion as it extends between said one side and said another side of said substrate.

4,517,541

SNAP TYPE THERMALLY RESPONSIVE SWITCH DEVICE

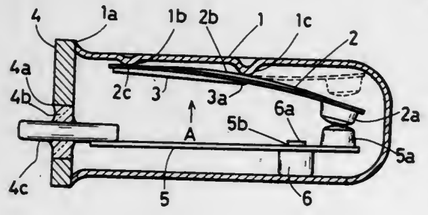
Susumu Ubukata; Yasukazu Mizutani, and Shozo Iyoda, all of Nagoya, Japan, assignors to Susumu Ubukata, Nagoya, Japan

Filed Nov. 9, 1983, Ser. No. 550,182

Claims priority, application Japan, Nov. 24, 1982, 57-177393[U]

Int. Cl.³ H01H *61/00, 37/04*

U.S. Cl. 337—89 **8 Claims**



1. A snap type thermally responsive switch device comprising:

(a) a thermally responsive element having a central dish-shaped portion to induce snap movement, the element being enclosed within a metallic enclosure in a manner to have one end secured to a stationary means so as to act as a support end, and the other end carrying a movable contact in making contact relationship with a fixed contact at the normal temperature which is disposed in said enclosure;

(b) a first projection in the enclosure disposed to always engage the central portion of said dish-shaped portion;

(c) a reinforcer extension having one end secured to said stationary means in the proximity of the support end of said thermally responsive element, and the other end sandwiching the central portion of said dish-shaped area in cooperation with said first projection, the reinforcer extension being adapted to allow said dish-shaped area to slide between said other end and said projection.

4,517,542

VOLTAGE AND TEMPERATURE COMPENSATED TIME DELAY RELAY

Hemming G. Siiberg, New Providence, N.J., assignor to Edison International Inc., Rolling Meadows, Ill.

Filed Oct. 18, 1982, Ser. No. 435,073

Int. Cl.³ H01H *61/06*

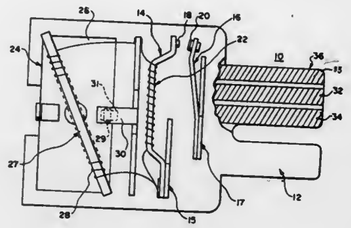
U.S. Cl. 337—92 **8 Claims**

1. A temperature and voltage compensated time delay relay adapted to be coupled electrically to a source of supply voltage, the magnitude of which is subject to variations, said time delay relay including in combination;

first and second contact carrying bimetallic elements,

electrically operated heating means positioned for heating said first bimetallic element to deflect said element with respect to said second element from a first open contact condition to a second closed contact condition, the time period for deflection of said first bimetallic element being dependent upon the heating time of said electrically operated heating means; and

voltage control circuit means coupled electrically between said heating means and said source of supply voltage for varying the application of voltage from said source to said heating means in accordance with variations in the magnitude of said supply voltage in order to maintain the heating time of said heating means substantially constant de-



spite voltage variations, said voltage control circuit means comprising intermittently operated electrical contacts operable between a first closed state for supplying voltage from said source to said heating means and to a second open state for removing the supply of voltage from said source from said heating means, the time period said voltage control circuit remains in said second open state being constant while the time period said voltage control means remains in said first closed state varies inversely proportionally with an increase in the magnitude of said supply voltage.

4,517,543

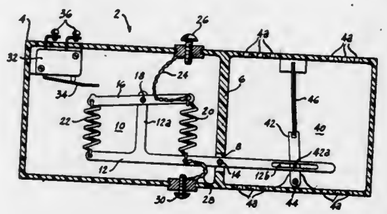
SME OVERCURRENT PROTECTIVE APPARATUS HAVING AMBIENT TEMPERATURE COMPENSATION

John R. Brubaker, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 1, 1983, Ser. No. 557,721

Int. Cl.³ H01H *61/08, 71/14*

U.S. Cl. 337—140 **31 Claims**



1. Electric overcurrent protective apparatus comprising, in combination:

switch means comprising switch contacts connectable in a circuit for controlling power supplied to protected apparatus and a switch operator movable for effecting operation of said contacts for disconnecting power to said protected apparatus;

actuating means adjustably positioned relative to said switch operator and engagable with said switch operator upon movement of said actuating means for effecting contact operating movement of said switch operator, said actuating means comprising current sensing shape memory effect (SME) means connectable in circuit with said protected apparatus, said SME means being thermally responsive to current flow in said protected apparatus and

temperature responsive for effecting said movement of said actuating means; and

temperature sensitive means thermally responsive to ambient temperature for adjusting the position of said actuating means relative to said switch operator for changing the amount of said actuating means movement required for effecting contact operating movement of said switch operator.

4,517,544

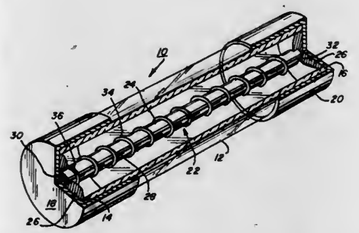
TIME DELAY ELECTRIC FUSE

Vernon R. Spaunhorst, Washington, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Oct. 24, 1983, Ser. No. 545,041

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—164 **18 Claims**



1. A time delay fuse comprising:

an insulative housing including first and second ends,

first and second electrically conductive ferrules attached on said first and second ends of said housing, respectively,

a fuse element including in combination, an elongated substantially straight electrically insulated core within said housing, at least one substantially straight wire extending along the external length of said core, a second longer wire being supported by said core and engaging said straight wire so as to establish a plurality of point contacts between said straight wire and said longer wire, and

said straight and longer wires each being electrically connected in series with said conductive ferrules, said straight and longer wires each having a first end and a second end, wherein said first end of said straight wire and said first end of said longer wire each being electrically connected to said first ferrule and wherein said second end of said straight wire and said second end of said longer wire each being electrically connected to said second ferrule.

4,517,545

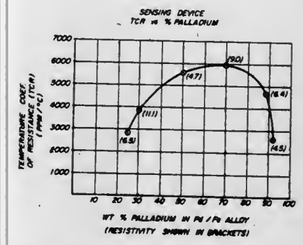
THICK FILM TEMPERATURE SENSITIVE DEVICE AND METHOD AND MATERIAL FOR MAKING THE SAME

Kenneth M. Merz, Gladwyne, Pa., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 22, 1982, Ser. No. 341,781

Int. Cl.³ H01C *7/04;* **B44D** *1/20;* **C23B** *5/62*

U.S. Cl. 338—25 **56 Claims**



1. A material for a temperature sensitive device comprising a mixture of glass frit and fine particles containing palladium and iron, the palladium and iron of the fine particles being present in the mixure in an amount having a total weight between about 15% and 65%, and the glass frit being present in an amount between 35% and 85% by weight.

4,517,546

RESISTOR SHEET INPUT TABLET FOR THE INPUT OF TWO-DIMENSIONAL PATTERNS

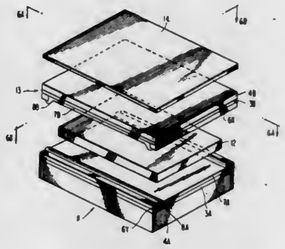
Takeshi Kakuhashi; Hiroshi Tahara, and Yoshihisa Mori, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 19, 1983, Ser. No. 515,228

Claims priority, application Japan, Jul. 19, 1982, 57-126069

Int. Cl.³ H01C *1/01*

U.S. Cl. 338—320 **7 Claims**



1. A resistor sheet input tablet comprising two rectangular resistor sheets which face each other and are contacted electrically together through an elastic presure-sensitive conductive sheet, wherein each resistor sheet is provided with electrodes at two opposite edges thereof, wherein said rectangular resistor sheets are superimposed such that the electrodes on one of said resistor sheets lie perpendicularly to those on the other resistor sheets, wherein each of said resistor sheets have a two resistor layer construction comprising (a) a main resistor layer consisting of a thin metal film deposited on a conductive layer, wherein said main resistor layer is bonded to (b) an electrically insulating layer and (c) a protective resistor layer formed on the surface of said main resistor layer.

4,517,547

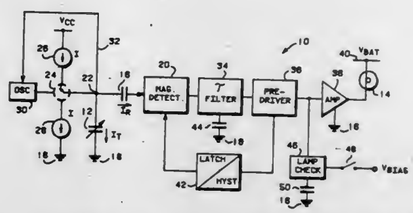
WATER-IN-FUEL SENSOR CIRCUIT AND METHOD

Randall C. Gray, Scottsdale, and W. Eric Main, Mesa, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Nov. 20, 1981, Ser. No. 323,643

Int. Cl.³ B60Q *1/00*

U.S. Cl. 340—59 **22 Claims**



1. A sensing circuit for detecting a change in the capacitance of a variable capacitor, comprising:

a first capacitor having a substantially constant and predetermined value, said first capacitor being connected at a first circuit node essentially in parallel with the variable capacitor;

means coupled to said first circuit node for alternately sourc-

ing a substantially constant current to and then from said first circuit node;

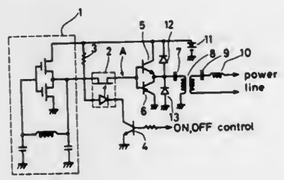
detector circuit means operative coupled to said first capacitor for detecting the absolute magnitude of the current flowing through said first capacitor as said first capacitor is alternately charged and then discharged by a portion of said current sourced to and from said first circuit node flowing therethrough and comparing said detected current to a current of predetermined and substantially constant magnitude, said current flowing through said first capacitor varying in magnitude as the capacitance of the variable capacitor varies such that the difference current between said detected current and said current of predetermined magnitude is indicative of the variation in the capacitance value of the variable capacitor.

4,517,548

TRANSMITTER/RECEIVER CIRCUIT FOR SIGNAL TRANSMISSION OVER POWER WIRING

Masahiro Ise, Kashihara; Katsuyuki Machino, Nara; Hidehiko Tanaka, and Toshiyuki Matsubara, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 20, 1982, Ser. No. 451,019
Int. Cl.³ H04B *3/54*
U.S. Cl. 340—310 R **1 Claim**



1. A transmitter/receiver circuit for power wiring transmission system comprising a transmitting circuit in which the output of a sine wave oscillator is fed to an emitter-follower through a photocoupler and this output is then fed to the indoor distribution line through a series resonance circuit after passing through a step-down transformer; and a receiving circuit in which the signal from the distribution line is fed to a parallel resonance circuit after passing through a series resonance circuit and that the input and output sections are resistor terminated.

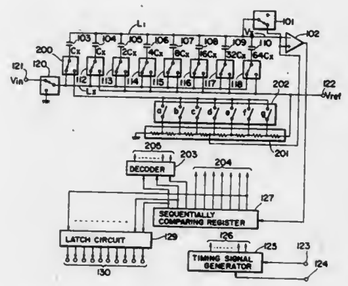
4,517,549

WEIGHTED CAPACITOR ANALOGUE-DIGITAL CONVERTERS

Shosaku Tsukakoshi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1981, Ser. No. 293,264
Claims priority, application Japan, Aug. 25, 1980, 55-115835; Sep. 22, 1980, 55-130605
Int. Cl.³ H03K *13/02, 13/17*
U.S. Cl. 340—347 AD **8 Claims**

1. In an analogue-digital converter of the type comprising a comparator having inverting and non-inverting input terminals, an array of a plurality of capacitors with their one terminals connected to said inverting input terminal of said comparator, a plurality of switches with their movable contacts respectively connected to the other terminals of said capacitors, one stationary contacts of said switches being commonly connected to an analogue signal input terminal through an additional switch which alternately connects said stationary contacts to a ground potential and the other stationary contacts of said switches being connected to a source of a reference voltage, said capacitors in said array respectively having capacitances of $1, 2, 4, \ldots 2^{n-1}$ times a unit capacitance in their order in said array, where n is an integer, a first capacitor having a unit capacitance and having one terminal connected to said inverting input terminal of said comparator, a sequentially comparing register which is supplied with outputs of said comparator for producing a digital signal corresponding to said input analog signal and switch control code signals adapted to control said switches, a timing signal generator for disconnecting said one stationary contacts of said switches from said analogue signal input terminal, the improvement which comprises a resistance voltage divider having a mid tap and connected between said source of reference voltage and



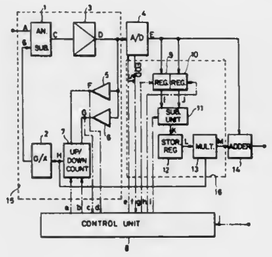
ground, said mid tap being connected to said non-inverting input terminal of said comparator, and further comprising a transfer switch having first and second stationary terminals and a moveable terminal, said moveable terminal of said transfer switch being connected to the other terminal of said first capacitor for transferring the connection of the other terminal of said first capacitor between said first stationary contact of said transfer switch which is connected to said analogue signal input terminal through said additional switch and said second stationary contact of said transfer switch.

4,517,550

ANALOG TO DIGITAL CONVERSION METHOD AND APPARATUS

Kenji Nakamura, Osaka, and Shigeru Ideno, Kyoto, both of Japan, assignors to Shimadu Corporation, Kyoto, Japan

Filed Mar. 19, 1982, Ser. No. 359,956
Claims priority, application Japan, Oct. 27, 1981, 56-172643
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC **6 Claims**



1. Apparatus for converting an analog input signal applied thereto to a digital output signal, said apparatus comprising:

analog to digital conversion means, said conversion means being adapted to convert an analog signal applied thereto to a digital signal so long as the magnitude of said analog signal lies within an acceptable range for said analog to digital conversion means;

means for scaling the analog signal applied to said analog to digital conversion means, said scaling means being adapted when necessary to (1) perform at least one adjustment step with respect to said analog input signal applied to said apparatus and thereby generate an adjusted analog signal lying within said range, and to (2) apply said adjusted analog signal to said analog to digital conversion means;

means for calibrating said scaling means by determining the effect of the performance of said scaling means upon the digital signal produced by said analog to digital conversion means and for producing a digital signal in accordance therewith wherein said calibration means comprises:

means for determining the effect of the performance of a single adjustment step by said scaling means upon the digital signal produced by said analog to digital conversion means and for generating a digital signal in accordance therewith;

means for storing said digital signal generated by said determining means; and,

means for multiplying said stored digital value by a digital value indicative of the number of adjustment steps required by said scaling means; and,

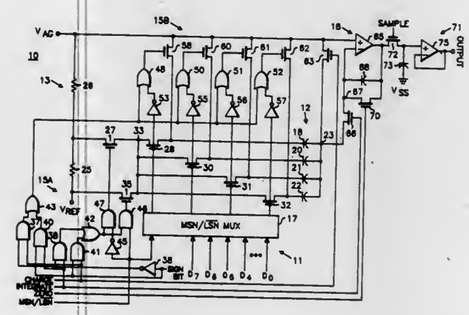
means for performing at least one mathematical operation with respect to said digital signal produced by said calibrating means and said digital signal produced by said analog to digital conversion means, the result of said mathematical operation being the digital output signal of said apparatus.

4,517,551

DIGITAL TO ANALOG CONVERTER CIRCUIT

Jules D. Campbell, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1983, Ser. No. 455,390
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **13 Claims**



1. A digital to analog converter for providing an analog output signal corresponding to a digital input number of either positive or negative polarity, comprising:

input means for receiving said digital input number having n bits including a sign bit and n−1 magnitude bits, where n is an integer, and for coupling either a first portion or a second portion of the n−1 magnitude bits to an output thereof;

capacitance means coupled to said input means comprising a rank ordered plurality of capacitor having selectively interconnected first electrodes and interconnected second electrodes, for developing a first electrical charge thereon proportional to the first portion of said n−1 magnitude bits and a second electrical charge thereon proportional to the second portion of said n−1 magnitude bits;

reference voltage means for providing a predetermined reference voltage;

reference voltage switching means coupled to both the reference voltage means and the output of the input means, for selectively coupling the reference voltage means to selective first electrodes of the capacitance means in response to the digital input number;

charge sequence control means coupled to the output of the input means, to said capacitance means and to said reference voltage means, for selectively charging and discharging said rank ordered plurality of capacitors in response to the polarity of said digital input number; and

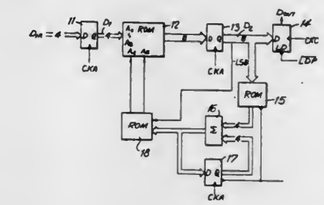
integration means coupled to the interconnected second electrodes of said capacitance means, for translating both the first and second electrical charge across said capacitance means into said analog output signal.

4,517,552

METHOD AND APPARATUS FOR N-TO-M ENCODING

Norihisa Shirota, Hadano, and Takao Abe, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,336
Claims priority, application Japan, May 26, 1981, 56-79677
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **22 Claims**



1. A method of encoding successive n-bit information words into successive m-bit words having a minimum interval between bit transitions of at least 2T (where T is the bit interval of each code word), and a predetermined maximum interval between bit transitions, and wherein m>n, comprising the steps of storing for each n-bit information word a respective set of m-bit code words, each of predetermined ones of said sets being formed of two code words having zero disparity and one of said two code words commencing with a binary "0" bit and the other commencing with a binary "1" bit, and each of the remaining ones of said sets being formed of four code words, two of said four code words having positive disparity and commencing with binary "0" and binary "1" bits, respectively, and the remaining two code words having negative disparity and commencing with binary "0" and binary "1" bits, respectively; identifying in each set of code words assigned to an input information word those code words commencing with the same bit as the last bit of the immediately preceding code word; and addressing among the selected code words the code word whose disparity, when combined with the digital sum variation of the preceding encoded code words, reduces the overall digital sum variation of the encoded code words toward zero.

4,517,553

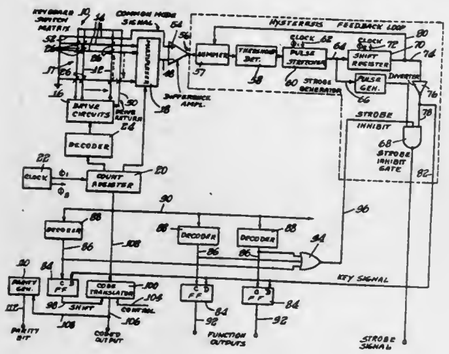
N-KEY ROLLOVER KEYBOARD

Keith A. Engstrom, River Grove, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 339,476, Mar. 8, 1973, abandoned, which is a continuation of Ser. No. 144,902, May 19, 1971, abandoned.
This application Apr. 4, 1974, Ser. No. 457,884
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ G06F *3/02*; G08C *15/12*
U.S. Cl. 340—365 S **27 Claims**

1. An N-Key Rollover Type Keyboard comprising: a switching matrix having a plurality of drive wires and a plurality of sense wires arranged to form a plurality of junctures where signal coupling between said drive wires and said sense wires can occur, means for scanning said drive wires and said sense wires in timed relation, a plurality of manually operable switches for selectively coupling said drive wires and said sense wires at their junctures for coupling a series of pulses

therebetween, a memory device having an output means sequentially coupling said sense wires to the input of said memory device to receive said series of pulses when present on the respective sense wires, a strobe generator, and means for coupling input signals of said memory device and output signals of said memory device to said strobe generator, said strobe generator comparing therein said input signals and said output signals to effect a strobe pulse output on the first scan of said sense wires when a switch at a given juncture is closed, said strobe

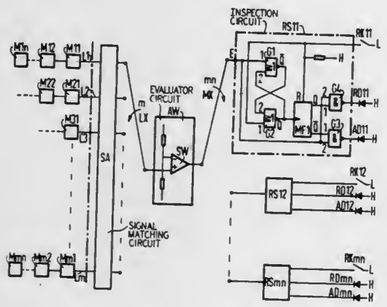


pulse output being produced when said input and output signals are different and thereafter preventing a strobe pulse output when said output signal is the same; and wherein said means for sequentially coupling the sense wires to the input of the memory device comprises a multiplexer having an input connected to said sense wires, a summer connected to the output of the multiplexer, the output of the summer being connected to a threshold detector, and a pulse stretcher interconnecting the threshold detector and the memory device.

4,517,554
METHOD AND APPARATUS FOR INSPECTING A DANGER ALARM SYSTEM

Otto W. Moser, and Peer Thilo, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,756
Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120986
Int. Cl.³ G08B *23/00*
U.S. Cl. 340—514 **15 Claims**

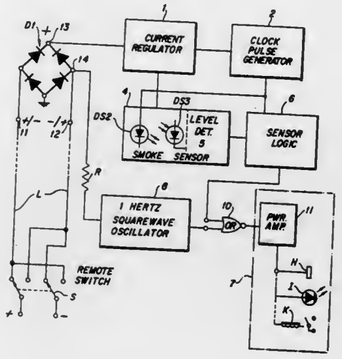


8. An apparatus for inspecting a danger alarm system having a plurality of alarm units respectively connected in series in a plurality of alarm lines, a central station, and a multiplexer means for cyclically connecting said alarm lines to said central station, said alarm units emitting an alarm signal upon the occurrence of danger conditions in an area monitored by said alarm unit, and emitting an inspection signal of shorter duration and said alarm signal during an inspection of said system, said apparatus being disposed at said central station and comprising:
an alarm display means;
an inspection display means; and
an evaluator means interconnected between said multiplexer and said alarm display means and said inspection display means for directing signals received from said alarm units during an inspection to said inspection display means, said evaluator means having a path during said inspection from said alarm unit being inspected to said alarm display means such that no suppression of alarm signals received from said alarm units during said inspection occurs.

4,517,555
SMOKE DETECTOR WITH REMOTE ALARM INDICATION

Angelo A. Marsocci, Duxbury, and Walter F. Schuchard, Hingham, both of Mass., assignors to American District Telegraph Co., Jersey City, N.J.

Filed Apr. 17, 1984, Ser. No. 601,256
Int. Cl.³ G08B *19/00, 17/10*
U.S. Cl. 340—522 **9 Claims**



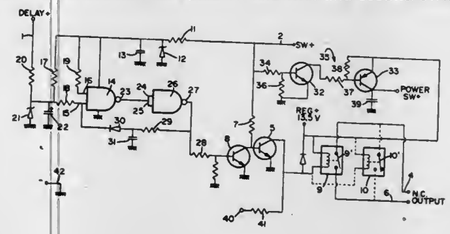
1. Apparatus for indicating an environmental alarm condition comprising:
two input terminals receiving direct current electrical power from a remote source supplying current in a normal and an alternative polarity,
an environmental sensor producing an alarm signal in response to an alarm condition, and
an alarm responsive to the alarm signal to indicate the alarm condition in a first mode of indication;
characterized by means for sensing the polarity of current at the power input terminals including a generator of a secondary signal distinguished from the alarm signal when current at the input terminals is in the alternative polarity; and
means coupling the sensing means and secondary signal to the alarm to cause the alarm to operate in a second mode of indication.

4,517,556
AUTOMATIC BYPASS SWITCH FOR HOUSEHOLD SECURITY SYSTEM

Ben Saul, Montreal, and Doug Hartley, Dollard des Ormeaux, both of Canada, assignors to Sur-Gard Security Systems Ltd., Montreal, Canada

Filed Dec. 23, 1982, Ser. No. 452,509
Int. Cl.³ G08B *23/00*
U.S. Cl. 340—528 **10 Claims**

1. An automatic electronic switch circuit for use with an electronic alarm system having intrusion detection means, means to arm or disarm said system, said alarm system having a delay circuit to safely identify intrusion after a time delay during which the user arms the system and vacates an area to be protected through a closure member, said switch circuit comprising a first switch circuit connected to a first input to sense when said system is armed or disarmed, a second switch circuit connected to a second input to which said delay circuit is also connected to sense when said delay circuit is closed or open, switch means connected to said first and second switch

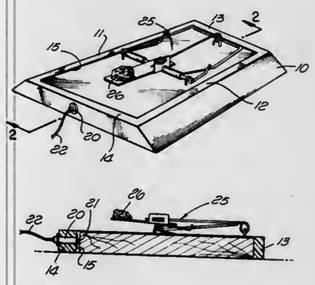


circuits for activating or deactivating said detection means depending on the condition of said first and second switch circuits, an alarm state sensing circuit connected to said second switch circuit to condition said switch means to operate upon receiving a positive signal from said first switch circuit that said area has been vacated through said closure member.

4,517,557
ALARM HOUSING FOR RODENT CONTROL DEVICE

Michael H. Agron, Santa Monica; James R. Buch, San Pedro, and Robert E. LaVoie, Thousand Oaks, all of Calif., assignors to Ace Pest & Termite Control Co., Culver City, Calif.

Filed Jun. 21, 1983, Ser. No. 506,287
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—540 **7 Claims**

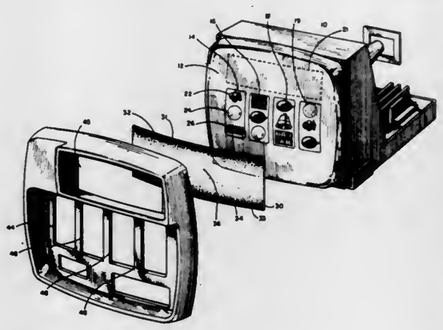


1. An alarm housing for a rodent control device, comprising in combination:
a frame having means defining a trap opening in said frame for receiving a rodent trap; and
an electrical switch mounted in said frame and having a switch actuating element movable between circuit open and circuit closed conditions, whereby a trap when positioned in said frame opening moves said switch actuating element to one of said circuit conditions, and tripping of the trap moves the trap out of said frame opening so that said switch actuating element may move to the other of said circuit conditions.

4,517,558
THREE DIMENSIONAL VIDEO SCREEN DISPLAY EFFECT

Robert E. Davids, Reno, Nev., assignor to International Game Technology, Reno, Nev.

Filed May 3, 1982, Ser. No. 374,016
Int. Cl.³ G07F *17/34*; G09G *1/00*
U.S. Cl. 340—700 **7 Claims**

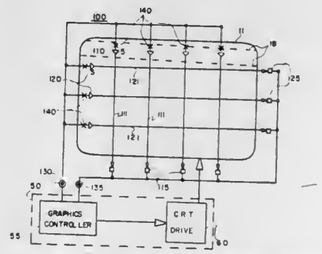


1. A video display apparatus comprising:
(a) a view screen showing a display of a plurality of horizontally aligned two dimensional display segments,
(b) a mask secured in front of said screen having one or more viewing ports formed thereon for framing said display, and
(c) a film secured to the front surface of said screen and covering the entire area of said viewing port said film having only two darkened areas, one extending horizontally across the top and the other horizontally across the bottom of said film, said darkened areas having a continuous tone gradient from darkest along the upper and lower edges of said film to lightest adjacent the center of said film to provide an unshaded horizontal substantially optically clear strip extending across the center of said film, said film being positioned relative to said viewing port so that said substantially clear strip is only along the approximate center thereof, whereby a three dimensional visual effect is given to said two dimensional display segments viewed through said film.

4,517,559
OPTICAL GATING SCHEME FOR DISPLAY TOUCH CONTROL

Leonard Deitch, Skokie, and Terrance Knowles, Lincolnshire, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 12, 1982, Ser. No. 407,419
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—712 **22 Claims**



1. A touch-operated interactive display system including a

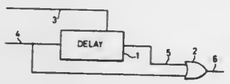
cathode ray tube having a phosphor covered faceplate and scansion means for energizing the phosphor to illuminate said faceplate;

graphics control means for controlling the graphics displayed on said faceplate in response to touching of selected areas thereof by the user;

grid producing means including light beam producing means responsive to the illumination from said faceplate for producing a grid of light beams adjacent said faceplate, said grid including said selected areas; and

signal means for generating a signal indicative of the faceplate location of any interruption of said grid by a user.

4,517,560
PRINTING SYSTEM
Tomio Murayama; Yoshiki Kikuchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed May 14, 1982, Ser. No. 378,445
Claims priority, application Japan, May 15, 1981, 56-72145
Int. Cl.[3] G09G *3/00;* **G01D** *15/18, 9/00*
U.S. Cl. 340—790 **3 Claims**





1. In a printing system for a printer in which a video signal representing the patterns of a character or symbol is produced to control a printing section to perform printing, the improvement comprising means for printing a character or symbol with emphasis, including means for delaying said video signal for a predetermined period of time to produce a delayed video signal representing a delayed version of an entire character or symbol, and means for logically adding said video signal and said delayed video signal to provide an emphasized video signal, said emphasized video signal being applied to said printing system for printing said character or symbol.

4,517,561
SELECTIVE CALL, PAGING AND PRIORITY SIGNALLING SYSTEM
Timothy M. Burke, Fort Worth, and Scott W. Noble, Bedford, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 28, 1982, Ser. No. 402,690
Int. Cl.[3] H04Q *9/00;* **H04B** *7/00;* **H04J** *3/02*
U.S. Cl. 340—825.07 **5 Claims**

1. In a communications system, for voice communications over a communications medium, having a primary station including an address entry port, and a plurality of remote stations, each remote station having a predetermined station address stored in a station address register, a method of automatic selective calling, comprising the steps of:

(a) at the primary station:

(i) entering a desired station address into the address port;

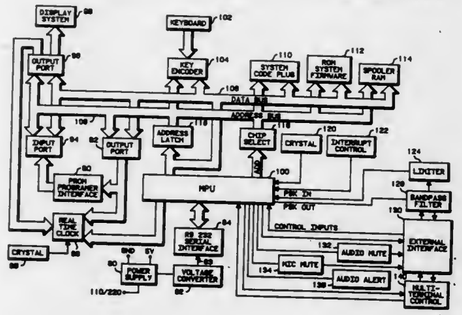
(ii) asynchronously transmitting, automatically, a preambled command signal containing a predetermined control code and the desired station address in response to initiating a voice transmission;

(iii) transmitting, automatically, a postambled command signal containing a second predetermined code, and the desired station address in response to the conclusion of the variable length voice transmission;

(b) at each of said remote stations

(i) receiving said transmitted first command signal;

(ii) detecting when the desired station address contained in the received preambled command signal is the same as the predetermined station address stored in the station

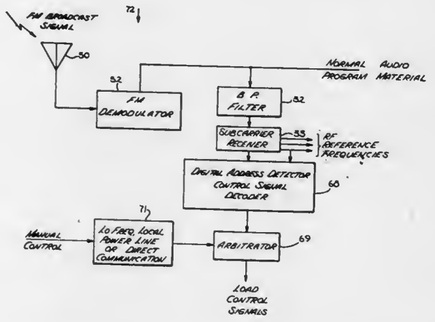


address register and unmuting the remote station receiver in response thereto;

(iii) receiving said transmitted second command signal;

(iv) detecting when the desired station address contained in the received postambled command signal is the same as the predetermined station address stored in the station register and muting the remote station receiver in response thereto.

4,517,562
FM COMMUNICATION SYSTEM
Louis Martinez, Carson, Calif., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Continuation-in-part of Ser. No. 87,543, Oct. 23, 1979, Pat. No. 4,322,842, and a continuation-in-part of Ser. No. 250,779, Apr. 3, 1981, Pat. No. 4,415,771. This application Mar. 29, 1982, Ser. No. 362,888
Int. Cl.[3] H04Q *9/00;* **H04B** *1/00;* **H04J** *6/00*
U.S. Cl. 340—825.07 **24 Claims**



1. A radio communication system for selectively addressing and controlling a plurality of remotely located apparatus comprising in combination:

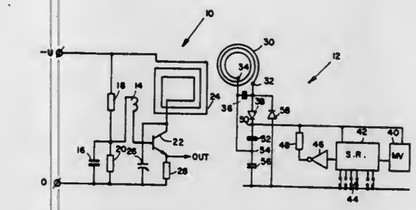
(a) central controller means adapted to generate digital address and control messages for transmission to at least one local FM radio broadcast station,

(b) a local FM radio broadcast station coupled to receive said digital address and control messages from said controller, and including means for generating inaudible modulated subcarrier signals derived from a subcarrier signal of a subcarrier oscillator, the subcarrier signal being modulated by digital address and control signals responsive to

said address and control messages and synchronized to said subcarrier oscillator and by occasional special sync signals generated at said local FM radio broadcast station, and for adding its normally broadcasted audio program signal to the modulated subcarrier signal and providing a frequency modulated RF signal in response thereto,

(c) a plurality of remotely addressable digital radio receivers controlling a plurality of external apparatus and tuned to receive and demodulate the frequency modulated signal of said broadcast station and comprising means to detect and lock onto said subcarrier signal, to detect special sync signals, to decode said address & control signals synchronously with said subcarrier signal and special sync signals, and selectively respond thereto to control said apparatus.

4,517,563
APPARATUS AND METHOD FOR IDENTIFICATION OF OBJECTS
Emanuel Diamant, Rosh Pina, Israel, assignor to Diuk Tsiyud Haliva, Korazin, Israel
Filed Jul. 30, 1982, Ser. No. 403,817
Claims priority, application Israel, Aug. 4, 1981, 63502
Int. Cl.[3] H04Q *9/00*
U.S. Cl. 340—825.54 **12 Claims**



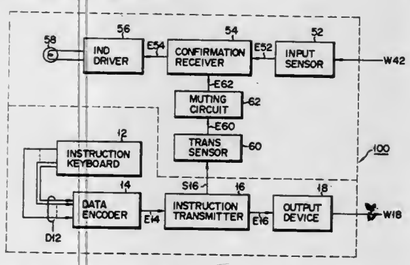
1. An object identification system comprising:

an active transponder including a signal generator comprising a transmitting coil and an inductor and means for detecting resonance circuit load modulation;

a passive transponder mounted on an object and including a resonance circuit receiving energy transmitted by the active transponder;

a coding circuit, associated with the passive transponder, powered by an electrical signal received from said resonance circuit for selectably modulating said electrical signal, thereby modulating the load on said resonance circuit.

4,517,564
CORDLESS REMOTE CONTROL APPARATUS
Tatsuo Morishita; Fumio Funakoshi, both of Yokohama; Kenichi Nakamura, Sagamihara, and Kazuo Takamori, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 15, 1982, Ser. No. 418,542
Claims priority, application Japan, Sep. 21, 1981, 56-148993
Int. Cl.[3] H04Q *9/00;* **H04B** *1/06*
U.S. Cl. 340—825.69 **21 Claims**



1. A cordless remote control arrangement for controlling a device, comprising:

a portable control unit including:

instruction means for generating an instruction wave and wirelessly transmitting it, said instruction wave including information for controlling said device, and

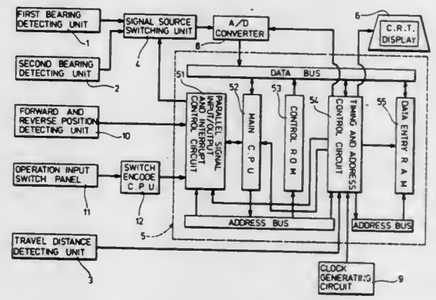
means for receiving a confirmation wave and indicating in response thereto that said device has been controlled in accordance with said instruction wave; and

a main body containing said device and having a controlled portion, said controlled portion including:

means for receiving said instruction wave and generating a first signal when said device has been controlled in accordance with said instruction wave, said instruction wave receiving means including means responsive to said instruction wave for generating a second signal only when said controlled portion is coupled to said control unit via said instruction wave and providing said device with a control command corresponding to the contents of said instruction wave, said control command directing the actuation of said device, and means for generating said first signal when said second signal disappears and said control command is provided, thereby avoiding overlapping between the instruction wave and the confirmation wave, and

means, coupled to said instruction wave receiving means, for generating, in response to said first signal, a confirmation wave for a given period of time after the generation of said first signal.

4,517,565
APPARATUS FOR VISUALLY INDICATING THE CURRENT LOCATION OF AN AUTOMOTIVE VEHICLE
Yukinobu Nakamura; Katsutoshi Tagami, and Tsuneo Takahashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 16, 1982, Ser. No. 408,273
Claims priority, application Japan, Aug. 21, 1981, 56-130941
Int. Cl.[3] G08G *1/12*
U.S. Cl. 340—995 **4 Claims**

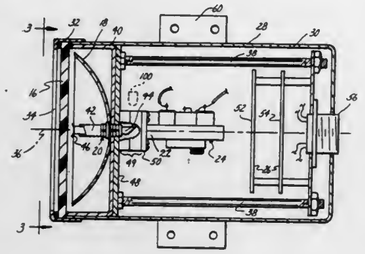


1. A current location indicating apparatus for use in an automotive vehicle wherein a current location of said automotive vehicle is arithmetically obtained in terms of two-dimensional coordinates by a signal processing unit on the basis of the outputs from a travel distance detecting unit and a bearing detecting unit, and the current location of the vehicle is visually indicated on the screen of a display from the thus-obtained data in connection with the current location thereof, which comprises, in operative cooperation:

two different types of bearing detecting means, one said bearing detecting means being of a rate gyroscope type and the other bearing detecting means being of an earth magnetism sensor type; and

bearing signal switching means for selectively switching between the outputs from said two types of bearing detecting means.

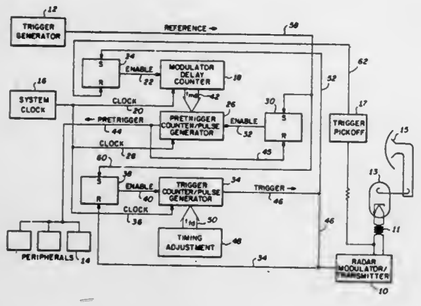
4,517,566
TRUE GROUND SPEED SENSOR
John H. Bryant, 1505 Sheridan, Ann Arbor, Mich. 48104, and Steven M. Schultz, Ann Arbor, Mich., assignors to John H. Bryant, Ann Arbor, Mich.
Filed Sep. 7, 1982, Ser. No. 415,061
Int. Cl.³ G01S *13/60*
U.S. Cl. 343—8 **27 Claims**



2. In a Doppler radar sensor for use such as a true ground speed sensor in a ground vehicle, said sensor having transmitter/detector means, antenna feed means coupled with said transmitter/detector means, and reflector means disposed to reflect electromagnetic radiation between the antenna feed and a target area illuminated by the radiation, the improvement comprising said reflector means having a contour corresponding to that of a portion of an ellipse and the antenna feed being centered substantially at one focus of the ellipse.

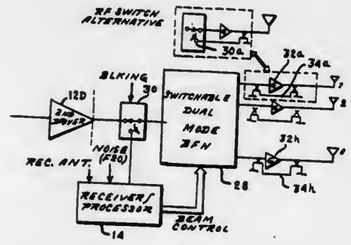
10. In a Doppler radar sensor having transmitter/detector means, antenna feed means and reflector means, the improvement in which said antenna feed means comprises a circular waveguide assembly having a termination substantially at a focus of the reflector means, said circular waveguide assembly having both microwave and optical transmission properties.

4,517,567
RADAR TRIGGER AND PRETRIGGER GENERATOR HAVING DELAY SENSING AND COMPENSATING CIRCUIT
Patrick G. Lee; Donald E. Bean, both of Ruckersville, and Randy T. Jones, Charlottesville, all of Va., assignors to Sperry Corporation, N.Y., N.Y.
Filed Feb. 25, 1982, Ser. No. 352,484
Int. Cl.³ H03K *5/15*
U.S. Cl. 343—17.7 **12 Claims**



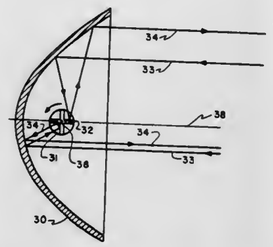
1. An apparatus for providing a trigger pulse to a circuit and a pretrigger pulse with a preselected time delay between the pretrigger pulse and the responsive signal output from the circuit comprising:
means for providing reference pulses,
means coupled to trigger input means of said circuit and responsive to said reference pulses for generating said trigger pulses after a preselected time delay from said reference pulses,
means coupled to said trigger input means to receive said trigger pulses and to output means of said circuit to receive output signals therefrom for measuring time delays between said trigger pulses and said output signals and for providing signals representative of said measured time delays, and
means coupled to receive said time delay representative signals and said reference pulses for providing pretrigger pulses at a time after receipt of said reference pulses that is equal to said measured time delay.

4,517,568
ANGLE SET-ON APPARATUS
Robert R. Willmore, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 9, 1982, Ser. No. 347,749
Int. Cl.³ G01S *7/38*
U.S. Cl. 343—18 E **7 Claims**



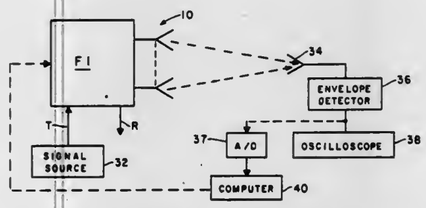
1. An angle set-on apparatus for an electronic countermeasure jamming system comprising in combination:
a receiving antenna to receive a hostile signal from a hostile emitter,
a jamming means to generate and transmit a jamming signal, said jamming means receiving said hostile signal from said receiving antenna and modulating a noise signal with the center frequency of said hostile signal,
a switching means connected to the output of said jamming means,
a beam forming network to receive said jamming signal from said switching means, said beam forming network including a dual mode phased array antenna system that is switchable between the receive and transmit mode, and
a receiver/processor means coupled to said receiving antenna, said receiver/processor means identifying said hostile signal and determining its center frequency; said receiver/processor means sampling said jamming signal to center it with respect to the center frequency of said hostile signal, said receiver/processor means providing a control signal, said jamming means providing in response to said hostile signal a window blanking signal which blanks said jamming signal while said receiver/processor means searches in angle for said hostile emitter using the receive mode of said dual mode phase array antenna, said beam forming network receiving said control signal from said receiver/processor means, said beam forming network under control from said receiver/processor means locking on to said hostile signal, said switching means coupling said hostile signal to said receiver/processor means, said beam forming network forming a transmission pattern in response to said control signal and radiating said jamming signal toward said hostile emitter.

4,517,569
PASSIVE RETROREFLECTIVE DOPPLER SHIFT SYSTEM
Reinhold Gerharz, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 17, 1982, Ser. No. 349,493
Int. Cl.³ G01S *13/58;* **H01Q** *15/16.*
U.S. Cl. 343—18 D **3 Claims**



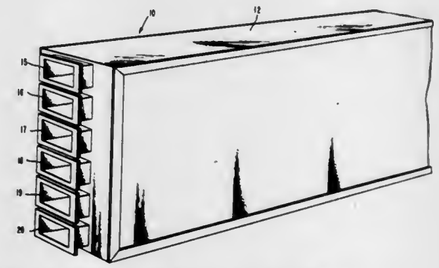
1. A retroreflector system for superposing doppler-shifted signals of known magnitudes on retroreflected carrier signals received from a doppler radar source, said system comprising:
a retroreflector device comprised of a parabolic dish having an activated reflective surface and a modulating means for movement thereof wherein said activated reflective surface is comprised of a rotatable metallic vane positioned with its spin axis close to the focal region of said parabolic dish and its length extending slightly past each side of the focal region wherein the extended reflective surfaces of said rotating metallic vane form said activated reflective surface in which each of said extended reflective surfaces are rotatable through said focal region to impose a doppler-shift frequency on the original carrier signals received from which is focused thereon from said parabolic dish and is reemitted from said retroreflective device back from said parabolic dish in which said doppler-shifted signals may be analyzed by said doppler radar signal source in terms of velocity and target-simulated linear motion wherein said parabolic dish is 15 centimeters diameter across the open front and wherein said rotatable metallic vane has four evenly spaced extended reflective surfaces 1 centimeter wide at said focal region.

4,517,570
METHOD FOR TUNING A PHASED ARRAY ANTENNA
Roger P. Gray, Jr., Sykesville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 2, 1983, Ser. No. 471,550
Int. Cl.³ H01Q *3/00*
U.S. Cl. 343—372 **4 Claims**



1. A method of phase tuning a phased array antenna system comprising a plurality of antenna elements, with each element coupled to a transmission line including a phase shift device individual to that element, said method comprising the steps
(a) supplying a signal which is divided to said transmission lines;
(b) phase modulating all of the phase shift devices except for the phase shift device of one element being tuned, the modulation being effectively plus and minus ninety degrees;
(c) the signal being radiated from the array and received by a test antenna placed a predetermined distance from the array and applied to an envelope detector;
(d) analyzing the envelope as detected by said envelope detector and adjusting the effective electrical length of the transmission line or phase shift for said one element being tuned to obtain a null of said envelope; and
(e) the steps (a) to (d) being repeated for tuning each of said elements.

4,517,571
LIGHTWEIGHT SLOT ARRAY ANTENNA STRUCTURE
Richard R. Mulliner, Fullerton, and Richard D. Rocke, La Habra, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.
Filed Jun. 19, 1981, Ser. No. 275,555
Int. Cl.³ H01Q *1/42*
U.S. Cl. 343—771 **20 Claims**



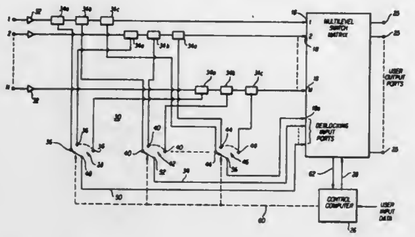
1. A lightweight slot array antenna comprising:
(a) an array of waveguides for radiating or receiving electromagnetic energy comprising:
(i) at least two slotted waveguides, and
(ii) honeycomb disposed between and supporting adjacent waveguides, the honeycomb having a surface area substantially equal to the surface area of the waveguide wall which it supports; and
(b) a radome means, bonded to the array of waveguides, for enclosing and structurally supporting the array of waveguides, the radome means comprising:
(i) at least six dielectric sheets, and
(ii) honeycombed dielectric material disposed between adjacent dielectric sheets.

4,517,572
SYSTEM FOR REDUCING BLOCKING IN AN ANTENNA SWITCHING MATRIX
Thomas Dixon, Seabrook, Md., assignor to Amstar Corporation, New York, N.Y.
Filed Jul. 28, 1982, Ser. No. 402,620
Int. Cl.³ H01Q *21/30;* **H01P** *1/10*
U.S. Cl. 343—876 **2 Claims**

1. An add-on system for facilitating connection between an input port and a desired output port in a multi-level antenna switching matrix of the type including a plurality of inputs each supplied by a respective antenna input signal, a selected number of said input ports being unused ports and wherein said matrix further includes a plurality of output ports supplying a signal to a plurality of receivers, the add-on system comprising:
a plurality of switch devices each one of which is selectively operable for coupling a portion of each one of said an-

tenna input signals to a different one of said unused input ports; and

control means responsive to the detection of a blocked condition which blocked condition is characterized by an attempted connection between a desired one of said input



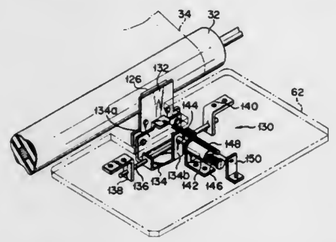
ports and a desired output port for operating said switching means for coupling the antenna input signal supplying said desired input port to said one of said unused input ports for facilitating the connection thereof to said desired output ports.

4,517,573

THERMAL INK TRANSFER PRINTING APPARATUS

Masasumi Yana, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 12, 1983, Ser. No. 541,028
Claims priority, application Japan, Oct. 18, 1982, 57-181372
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **18 Claims**



1. A thermal ink transfer printing apparatus for recording on a recording medium a plurality of characters consisting of letters and blanks comprising:

a platen roller having a rotating shaft and rotatable around the rotating shaft;

a carriage arranged adjacent to the platen roller;

a moving means for moving the carriage along the rotating shaft of the platen roller;

a thermal head including a plurality of heating elements arranged on a line crossing the moving direction of the carriage and selectively generating heat in response to electrical signals of the characters;

a supporting means for supporting the thermal head to the carriage in such a way that the thermal head can reciprocate in relation to the platen roller;

an ink film having a base layer and an ink layer on the base layer;

a running means for running the ink film between the thermal head and the platen roller with its base layer directed to the thermal head;

a pressing means for pressing the thermal head against the platen roller to bring the ink film into close contact with the recording medium supplied between the ink film and the platen roller;

a detecting means for detecting that the number of characters to be applied to the thermal head is a predetermined serial number of blanks to thereby generate a stop signal; and

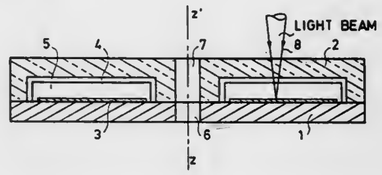
a releasing and stopping means for releasing, when the stop signal is applied, the thermal head from the pressing means and stopping the running of the ink film driven by the running means, upon laps of a certain time from the time when a signal relating to the last letter just before the blanks to be followed is applied to the thermal head.

4,517,574

OPTICAL DISC HUMIDITY PROTECTED

Jean Cornet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 21, 1983, Ser. No. 477,368
Claims priority, application France, Mar. 23, 1982, 82 04915
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **27 Claims**



1. A protected optical disc intended for recording information, comprising:

a casing having walls delimiting a chamber containing a layer sensitive to an optical radiation, said layer comprising a recording surface exposed to an atmosphere filling said chamber and carried by one of said walls, said casing being permeable to said optical radiation along at least one of said walls and another of said walls is coated with a surface condensate producing means having a water vapor hydrophylous surface exposed to said atmosphere, said hydrophylous surface having aqueous nuclei forming seeding sites for the growth of water droplets corresponding to deposition of humidity from said atmosphere below its dew point.

4,517,575

RECORDING PAPER CLAMPING APPARATUS

Atsushi Kakimoto, Yao, and Masaaki Takita, Ibaragi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00128, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03601, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 19, 1982, Ser. No. 457,079
Claims priority, application Japan, Apr. 20, 1981, 56-60191
Int. Cl.³ G01D *15/28;* **B41F** *27/06;* **B65R** *5/14;* **G03G** *15/00*
U.S. Cl. 346—138 **5 Claims**

1. Recording paper winding apparatus comprising:

a rotary drum having an air-pervious circumferential periphery for winding recording paper thereon, said drum having a longitudinal slot in said periphery;

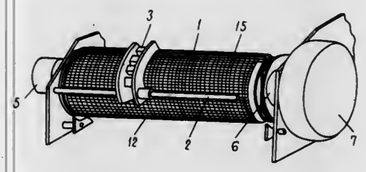
means for creating a negative pressure in said drum when paper is wound thereon;

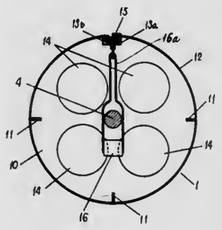
a bar having an L-shaped section arranged with one flange thereof movable radially in said slot and the other flange thereof opposed to said drum periphery for pinching therebetween the front end of recording paper so that rotation of said drum will wind the paper therearound with the paper being held tightly on said drum by the negative pressure therein;

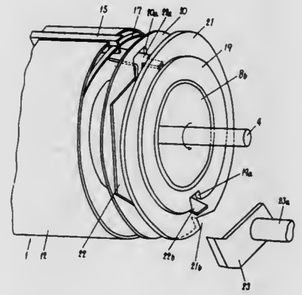
means engaged with said bar and drum for urging said bar to pinching position;

motor means for driving said drum; and

means engageable with said drum for stopping rotation thereof with said bar uppermost when said motor means is shut off, for raising said bar to paper-receiving position, and for allowing said bar to return to paper pinching position after the front end of the paper has been inserted between said one flange and said drum periphery, to wind the paper therearound when the motor means is restarted and thus hold the paper tightly on said drum by the negative pressure therein, said engageable means including:







bar-engaging and raising means mounted to the ends of said drum for rotation about the axis thereof and for linear movement diametrically of said axis;

disc means mounted to said drum ends for rotation about said axis and having notch means in the periphery thereof; and

detent means engageable in said notch means for stopping rotation of said drum with the bar uppermost and for pushing said bar-engaging and raising means upward to engage and raise said bar.

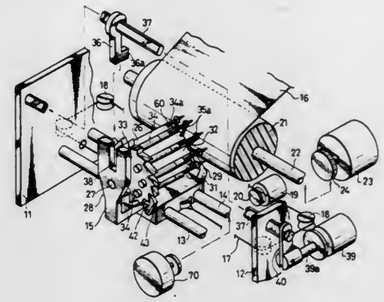
4,517,576

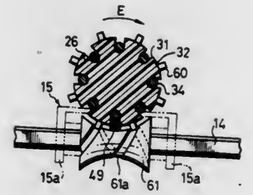
MULTI-COLOR PEN RECORDING DEVICE

Fukuo Sugawara, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Sep. 30, 1982, Ser. No. 431,060
Claims priority, application Japan, Feb. 25, 1982, 57-26085[U]
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—139 R **3 Claims**

1. A recording device for recording data in any of a plurality of colors; including a carriage adapted to be moved across a recording paper and having a rotary drum carrying a plurality of recording pens spaced around the periphery of said drum, said pens being capable of writing in respective colors; means for rotating said drum to bring a selected one of said pens into printing position, said rotation means including a cam carried slidably along a shaft extending along the path of movement of





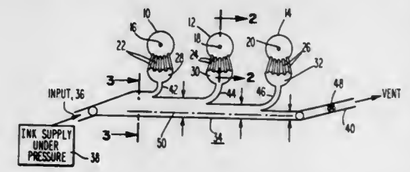
said carriage but rotatable with said shaft, and co-acting means formed respectively on said drum and said cam for rotating said drum upon rotation of said shaft; and means for bringing a pen in said printing position into engagement with said recording paper.

4,517,577

METHOD OF AND APPARATUS FOR PRIMING AN INK JET

Hector Miranda, Yorktown Heights, and Thomas W. DeYoung, Stormville, both of N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 10, 1983, Ser. No. 465,519
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **15 Claims**



1. An ink jet apparatus for producing droplets of ink on demand comprising:

a chamber for receiving ink including an ink inlet and orifice for ejecting droplets of ink;

transducer means coupled to said chamber for creating selective volumetric changes in said chamber in response to the state of energization of said transducer for ejecting droplets of ink on demand;

ink supply means including an input and a vent to atmosphere for supplying ink to said chamber, said supply

means creating a flow of ink during priming through said supply means from said input, past said inlet to said vent; and

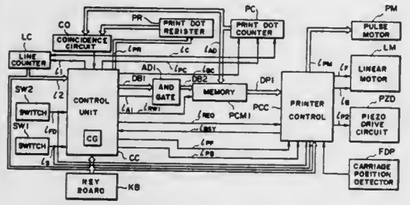
valve means coupled to said vent so as to permit said vent to be opened during priming and closed after priming.

4,517,578

ELECTRONIC APPARATUS WITH PRINTER

Shigemitsu Tazaki, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,816
Claims priority, application Japan, Dec. 1, 1982, 57-210905
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **3 Claims**



1. An electronic apparatus with a printer comprising:

dot printing means for printing a graph on a printing sheet;

first manual setting means for manually selecting the vertical dimension of said graph;

second manual setting means for manually selecting the lateral dimension of said graph; and

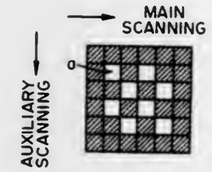
control means for graph printing in variable dimensions in the vertical and lateral directions by driving said dot printing means according to the selections provided by said first and second manual setting means.

4,517,579

ELECTROSTATIC RECORDING APPARATUS FORMING SMALL NON-RECORDING REGIONS IN A RECORDING FIELD

Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 186,583, Sep. 12, 1980, abandoned. This application Nov. 8, 1983, Ser. No. 550,057
Claims priority, application Japan, Sep. 20, 1979, 54-121500; Nov. 30, 1979, 54-155309; Dec. 26, 1979, 54-169563
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—160 **20 Claims**



1. Electrostatic recording apparatus for forming small non-recording regions in a recording field comprising:

beam generating means for generating a beam modulated with a modulation signal;

irradiating means for directing the beam obtained from said bean generating means to a photosensitive member for forming an electrostatic image;

determining means for determining if the electrostatic image formed by said beam on said photosensitive member exceeds a determined dimension;

interrupting means for interrupting intermittently emission of said beam at small time intervals; and

actuating means for actuating said interrupting means when said determining means determines that said electrostatic image formed by said beam exceeds the determined dimension.

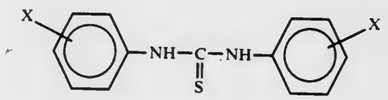
4,517,580

THERMOSENSITIVE RECORDING MATERIAL

Kiyotaka Iiyama, Mishima, and Keishi Taniguchi, Shizuoka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,847
Claims priority, application Japan, Jan. 19, 1983, 58-6897
Int. Cl.³ B41M *5/18, 5/22*
U.S. Cl. 346—214 **9 Claims**

1. A thermosensitive recording material comprising a support material and a thermosensitive coloring layer formed thereon, in which thermosensitive coloring layer, colored images are formed by the reaction between a colorless or light-colored leuco dye and a color-developer of the following formula capable of inducing color formation in said leuco dye upon application of heat thereto,



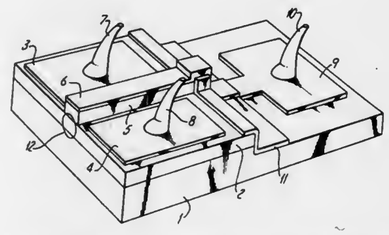
wherein X indicates halogen.

4,517,581

PHOTODETECTOR

George H. B. Thompson, Sawbridgeworth, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1982, Ser. No. 442,054
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **10 Claims**



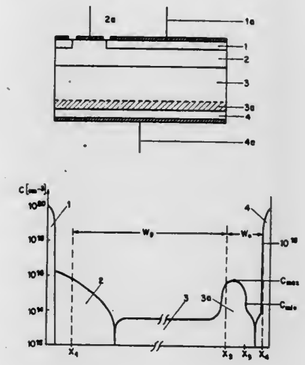
1. A junction field effect transistor photodetector comprising: a semi-insulating substrate; a semiconductive layer of one type deposited on the substrate; and a relatively narrow rib of semiconductive material of an opposite type deposited on the layer and protruding therefrom; wherein source and drain contacts are provided on the semiconductive layer on opposite sides of the rib and a gate contact is provided on said rib, the rib has a root portion adjacent the layer formed of a higher band gap lower refractive index material covering an optically absorbing lower band gap higher refractive index material of said layer at or immediately beneath the root of the rib disposed such that the rib forms an optical waveguide adapted to guide light, and the lower band gap higher refractive index material of the layer absorbs light in said optical absorbing material.

4,517,582

ASYMMETRICAL THYRISTOR WITH HIGHLY DOPED ANODE BASE LAYER REGION FOR OPTIMIZED BLOCKING AND FORWARD VOLTAGES

Roland Sittig, Umiken, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 25, 1982, Ser. No. 411,274
Claims priority, application Switzerland, Aug. 25, 1981, 5465/81
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **1 Claim**



1. An asymmetrical thyristor comprising:

at least four zones of alternately opposite conductivity type including a relatively high doped outer P emitter zone, a relatively lightly doped N base zone, a relatively lightly doped P base zone and a relatively highly doped N emitter zone layered one on top of the other, said P emitter and N emitter zones contacting respective main electrodes, and said N emitter zone having a recess through which said P base zone extends to contact a control electrode;

said N base zone having a partial region adjacent the P emitter zone, said partial region having a doping concentration (C) which is higher than that of remaining regions in the N base zone and which decreases from a higher value (C_{max}) to a lower value (C_{min}) in a direction towards the P emitter zone perpendicular to the four zones;

wherein with a predetermined maximum forward blocking voltage applied to the main electrodes there is formed a blocking layer in said N base zone and a neutral zone W_n extending from the edge of the blocking layer in the N base zone into the P emitter zone to a location X_4 where the doping concentration of the P emitter zone reaches $1 \cdot X10^{18}$ cm $^{-3}$;

said doping concentration (C) having the value C_{min} at a location X_3 which is at least 30 percent of the width of the neutral zone W_n away from the edge of the blocking layer; and

the width of the neutral zone (W_n) being in the range between $1 \cdot 10^{-3}$ cm and $8 \cdot 10^{-3}$ cm and having a value which is calculated in accordance with

$$W_n = \frac{0.6}{F} \cdot \frac{\tau_R}{\tau_G} \cdot \sqrt{\frac{10^{14}\text{cm}^{-3}}{C_{max}}} \cdot W_S$$

wherein τ_R refers to the mean recombination life span of the minority charge carriers in the partial region, τ_G refers to the mean generation life span of the minority charge carriers in the blocking layer having a width W_S and F is defined by

$$F = \frac{\int_{X_2}^{X_3} C(X)\,dx}{C_{max}(X_3 - X_2)}$$

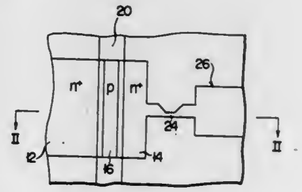
which is the integral across the doping concentration (C) from the edge of the blocking layer in the inner N doped zone at X_2 to the location X_3 at which the doping concentration (C) reaches the value C_{min} in the partial region and which is standardized to the integral across a constant doping concentration on the level of C_{max} between the same limits.

4,517,583

SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING A FUSE ELEMENT

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 351,280, Feb. 22, 1982, abandoned. This application Oct. 4, 1984, Ser. No. 657,478
Claims priority, application Japan, Mar. 3, 1981, 56-30207
Int. Cl.³ H01L *29/10, 29/12, 21/86, 29/76*
U.S. Cl. 357—41 **9 Claims**



1. A semiconductor integrated circuit comprising:

a MOS transistor element;

an insulating layer formed adjacent to said transistor element; and

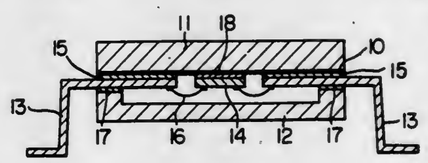
monocrystalline silicon wiring formed on said insulating layer, connected to said transistor element at one end thereof, and having a fuse as a part thereof, said monocrystalline silicon wiring being integrally formed with one of the source and drain of said MOS transistor element.

4,517,584

CERAMIC PACKAGED SEMICONDUCTOR DEVICE

Yasuo Matsushita; Kousuke Nakamura, and Mitsuru Ura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,592
Claims priority, application Japan, Dec. 11, 1981, 56-200644
Int. Cl.³ H01L *23/34, 23/36, 23/14*
U.S. Cl. 357—80 **23 Claims**



1. A semiconductor device, comprising:

an insulating substrate comprising non-oxide ceramic as the main component and having a coefficient of thermal expansion approximating to that of a semiconductor material and a thermal conductivity not smaller than 0.2 cal/sec.cm.° C. at room temperature, an oxide layer having

sufficient thickness to provide a good bonding strength provided on the substrate and a glass layer provided on the oxide layer;

at least one semiconductor element disposed at a predetermined location on one surface of the insulating substrate;

a cap member of ceramic bonded to be a preselected portion on the one surface of the insulating substrate, thereby forming a package hermetically enclosing the semiconductor element together with the insulating substrate; and

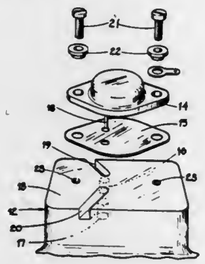
a terminal means whose one end is electrically connected to the semiconductor element within the package and whose other end is exposed at the outside of the package.

4,517,585

HEAT SINK FOR SEMI-CONDUCTOR DEVICES HAVING TERMINALS PROJECTING FROM A HEAT SINK TRANSFER FACE

Paul S. Ridout, and Colin Birks, both of Birmingham, England, assignors to Lucas Chloride EV Systems Limited, Birmingham, England

Filed Aug. 13, 1982, Ser. No. 407,874
Int. Cl.³ H01L *23/40, 23/34, 23/12, 23/14*
U.S. Cl. 357—81 **7 Claims**



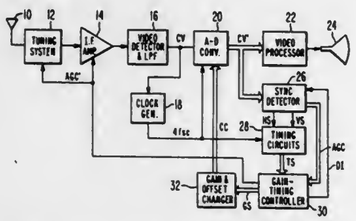
1. A heat sink for a semi-conductor device of the type which have terminal pins projecting from a heat transfer face of the semi-conductor device case; the heat sink having a thickness greater than the length of the terminal pins and having an integral mounting face against which the heat transfer face of the semi-conductor device case is to be mounted, such mounting face being formed with clearance bores to receive the pins and also with grooves extending along the mounting face to permit wires connected to the pins to lie on the same side of the heat sink as the semi-conductor device case.

4,517,586

DIGITAL TELEVISION RECEIVER WITH ANALOG-TO-DIGITAL CONVERTER HAVING TIME MULTIPLEXED GAIN

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 23, 1982, Ser. No. 443,929
Int. Cl.³ H04N *9/32*
U.S. Cl. 358—13 **18 Claims**



1. In a television receiver including a source of analog video signals having a predetermined range of analog levels and having repetitive line signals with at least first and second sequential signal portions therein, and processing means for processing digital video samples, apparatus comprising:

analog-to-digital converting means coupled to said source for developing digital video samples, having a full range of digital values, for representing said analog signals, wherein said converting means includes means responsive to a control signal for changing the correspondence between said digital video samples and said analog signals to substantially change the range of analog levels which may be represented by said full range of digital values;

timing means responsive to one of said analog video signals and said digital video samples for providing signals indicating times when said first and second sequential signal portions occur; and

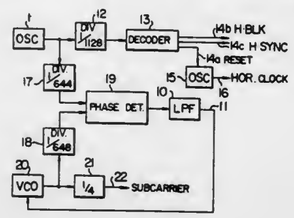
gain controlling means responsive to said indicating signals for developing said control signal to obtain said correspondence for said first sequential signal portion that is different than said corresendence for said second sequential signal portion.

4,517,587

SYNCHRONIZING SIGNAL GENERATING CIRCUIT FOR SOLID-STATE COLOR VIDEO CAMERA

Iwao Aizawa, Hiratsuka, and Michio Masuda, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,360
Claims priority, application Japan, Oct. 26, 1981, 56-170017
Int. Cl.³ H04N *5/06, 9/44*
U.S. Cl. 358—17 **4 Claims**



1. A synchronizing signal generating circuit for a solid-state color video camera comprising first oscillator means for generating an oscillation output signal having a frequeney which is n (n: an integer) times as high as the horizontal frequency, and first frequency divider means for dividing the frequency of the oscillation output signal from said first oscillator means to produce a pulse signal having a recurrence frequency equal to the horizontal frequency, said circuit further comprising second oscillator means for generating a horizontal scanning clock pulse signal for a solid-state image sensing device, said pulse signal having the recurrence frequency equal to the horizontal frequency being used to reset the oscillating operation of said second oscillator means, so that the horizontal scanning clock pulse signal can be controlled to be maintained at the same fixed phase in each horizontal period.

4,517,588

COLOR SOLID STATE IMAGE PICK-UP DEVICE

Tetsuro Kuwayama; Nobuyoshi Tanaka, and Seiji Hashimoto, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

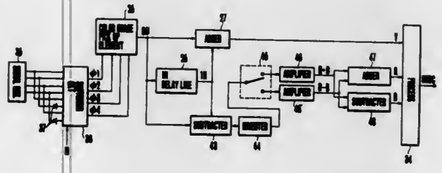
Filed Jul. 28, 1982, Ser. No. 402,602
Claims priority, application Japan, Jul. 31, 1981, 56-119175
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—44 **4 Claims**

1. A color solid state image pick-up apparatus, comprising:

(a) a solid state image pick-up device for transducing an optical picture image into an electrical signal, said pick-up device having a plurality of rows;

(b) filter means in an incident light path to the solid state image pick-up device for imparting different spectral characteristics to light incident on a portion of the solid state image pick-up device;

(c) operation means for forming a signal corresponding to a brightness by adding output signals from a plurality of rows of the solid state image pick-up device with a predetermined ratio;



(d) low-frequency selecting means for selecting and emitting a low-frequency component of the output signal from a predetermined row of the solid state image pick-up device; and

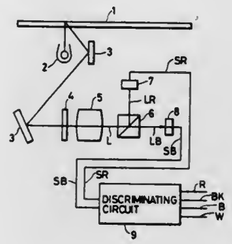
(e) mixing means for mixing the output of the operation means with the output of the low-frequency selecting means.

4,517,589

COLORED IMAGE READING APPARATUS

Takeshi Baba, and Kazuhiko Matsuoka, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1982, Ser. No. 433,223
Claims priority, application Japan, Oct. 13, 1981, 56-163632; Oct. 13, 1981, 56-163633
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **6 Claims**



1. An apparatus for reading a colored image on the surface of an original, comprising:

light source means for illuminating the surface of the original;

light detecting means;

a transmitting optical system for separating the light beam from the surface of the original into a light beam of short wavelength zone and a light beam of long wavelength zone and directing them to said light detecting means;

a processing circuit for effecting an operation between the signals from said light detecting means and obtaining a plurality of signals; and

a circuit for converting said plurality of electrical signals into signals corresponding to predetermined colors;

the overall spectral characteristic of a system comprising said light source means, said transmitting optical system and said light detecting means satisfying

$$540\ \text{nm} \leqq [\lambda'b+\lambda'r](\lambda'b+\lambda'r)/2 \leqq 600\ \text{nm}$$

$$60\ \text{nm} \leqq \lambda'r-\lambda'b \leqq 260\ \text{nm}$$

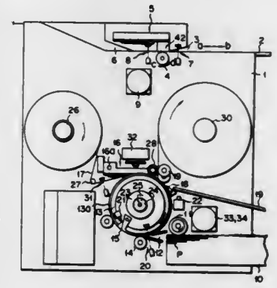
where $\lambda'b$ is a wavelength exhibiting a maximum transmission factor of the light beam of short wavelength zone and $\lambda'r$ is a wavelength exhibiting a maximum transmission factor of the light beam of long wavelength zone.

4,517,590

COLOR PRINTING APPARATUS

Masayoshi Nagashima, Chigasaki, and Hiroshi Yamane, Ebina, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 28, 1982, Ser. No. 437,194
Claims priority, application Japan, Oct. 31, 1981, 56-175449; Oct. 31, 1981, 56-175450; Oct. 31, 1981, 56-175451; Feb. 18, 1982, 57-23638; Feb. 18, 1982, 57-25022; Feb. 18, 1982, 57-25023
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **12 Claims**



1. A color printing apparatus comprising:

a reading section for scanning a document to produce a plurality of image signals corresponding to a plurality of fundamental colors in a document pattern of the document;

a coloring medium having a substrate sheet and a repeating pattern of a plurality of color ink layers which are formed on the substrate sheet and correspond to the fundamental colors;

a printing section including thermal head means coupled with the reading section, and a drum for holding a paper on its circumference, said drum rotating for a number of times corresponding to the number of fundamental colors for each color print;

said thermal head means being driven in accordance with the color image signals to thermally transfer one of said plurality of color ink layers to the paper during each rotation of said drum to form a color pattern corresponding to the document pattern on the paper.

4,517,591

COLOR PRINTING APPARATUS

Masayoshi Nagashima, Chigasaki; Hiroshi Yamane, Ebina, and Mitsuo Yamashita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 28, 1982, Ser. No. 437,193
Claims priority, application Japan, Oct. 31, 1981, 56-175448
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **7 Claims**

1. A color printing apparatus comprising:

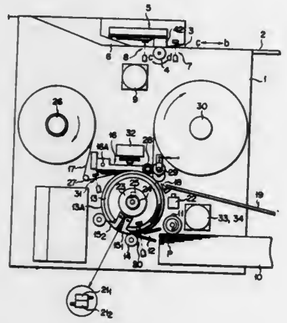
document moving means for reciprocatably moving a document plural times;

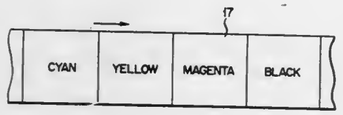
scanning means for scanning the document during one of the forward and backward movements of the document to produce image signals representative of different colors corresponding to a pattern of the scanned document;

paper moving means for reciprocatably moving a paper a plurality of times in synchronism with the reciprocal movement of the document;

thermal head means in close contact with a coloring medium with a repeating pattern of different color ink layers, said thermal head being driven by image signals from said scan-

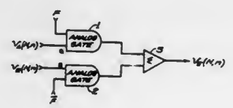
ning means to press said coloring medium against said paper during movement in one direction and to transfer successively the inks of said ink layer on said coloring medium to said paper; and





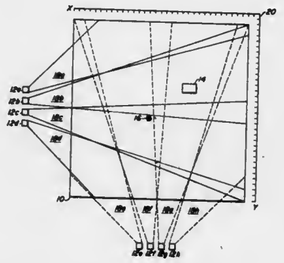
means for separating said thermal head means from said paper during movement in the other direction.

4,517,592
TELEVISION SYSTEM
Paul M. Levy, 3 Butternut Ct., Dix Hills, N.Y. 11746
Continuation-in-part of Ser. No. 410,121, Aug. 20, 1982, abandoned. This application Sep. 28, 1982, Ser. No. 425,912
Int. Cl.³ H04N *9/54*
U.S. Cl. 358—92 **63 Claims**



1. A television system comprising:
(a) encoding means for forming a composite video signal of a first video signal and a second video signal in time synchronism with said first video signal, said encoding means including means for time multiplexing at the frame rate said first and second video signals;
(b) means for transmitting said composite video signal to means for receiving said composite video signal, said receiving means including means for decoding said received composite video signal to obtain display video signals corresponding to said first and second video signals;
(c) said decoding means including:
(1) means for delaying said received composite video signal for one frame time:
(2) means for correcting the chrominance phase of said one frame delayed composite video signal relative to the chrominance subcarrier reference signal; and
(3) means for time multiplexing at the frame rate said received composite video signal and said chrominance phase corrected one frame delayed composite video signal to obtain said display video signals.

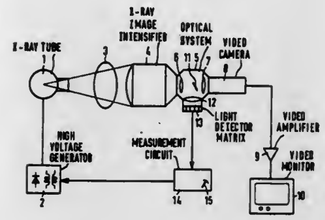
4,517,593
VIDEO MULTIPLEXER
Patrick N. Keller, and Clinton D. Seal, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 29, 1983, Ser. No. 489,987
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—107 **11 Claims**



1. A video multiplexer scoring system apparatus for scoring an event area comprising:
a plurality of cameras placed around the event area, such that it is viewed from at least two perpsectives, each of said cameras providing a standard video output including synchronization signals of a predetermined section of said event area;
means for synchronizing said plurality of camera's video output to provide a pattern of horizontal stripes, where said means for synchronizing comprises:
a synchronization, sync, stripper circuit electrically connected to the video output of one of said plurality of cameras, said camera titled camera **1**, said sync stripper circuit outputting vertical, horizontal, and composite synchronization signals;
a synchronization level shifter circuit connected to said sync stripper circuit output and to the remainder of said plurality of cameras such that said remainder of the plurality of cameras are synchronized, slaved, to camera **1**;
a level shifter connected to said sync stripper output to increase the voltage range of the video output of camera **1**, said level shifter outputting a vertical synchronization signal, a sample signal, and a horizontal synchronization signal;
a black clamp circuit connected to said sample signal output from said level shifter to ground the input signals of said video cameras;
a phase locked loop oscillator connected to the horizontal synchronization signal output of said level shifter, said phase locked loop oscillator synchronized to an integral multiple of the horizontal sync frequency of camera **1**;
a first counter connected to said phase locked loop oscillator which cycles through said integral multple of the horizontal sync frequency of camera **1**;
a second counter inputting said vertical and horizontal sync outputs of said level shifter to count the horizontal lines of said standard video signal and to reset said horizontal line counter after each vertical sync signal;
a programmable read only memory, PROM, connected to said second counter, said PROM programmed to select

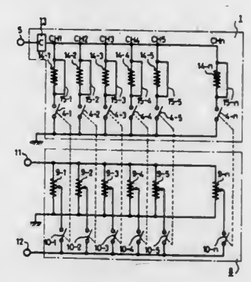
specific horizontal lines counted by said second counter and match those lines to a preselected pattern of said plurality of cameras;
a plurality of switches connected between said PROM and said plurality of cameras such that each switch is matched to a specific camera video input;
a flip-flop circuit connected between said first counter and said plurality of switches such that said switches are opened or closed for a preselected count in said first counter;
a composite video output circuit connected to said plurality of switches such that a given horizontal line of video signal is from only one of said plurality of cameras;
means for recording said composite video output connected to said composite video output circuit; and
means for scoring events that appear in said composite video output;
means for recording the occurrence of an event within said area by connecting said recording means to said synchronizing means, such that said pattern of horizontal stripes is recorded; and
means for locating said event within said area by triangulating said recorded synchronized horizontal stripes, said locating means connected to said recording means.

4,517,594
X-RAY DIAGNOSTIC INSTALLATION
Heinz Horbaschek, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 20, 1983, Ser. No. 505,963
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225061
Int. Cl.³ H04N *7/18;* **G03B** *41/16*
U.S. Cl. 358—111 **4 Claims**



1. An x-ray diagnostic installation, comprising an x-ray image intensifier television chain including an x-ray image intensifier for supplying a light image at its output in accordance with an incident x-ray image, a video camera, an optics system with a base lens and a camera lens for coupling the video camera with the light image from the x-ray image intensifier, a mirror being disposed in a parallel ray path of said optics system, a light detector coupled with the luminous flux from said image intensifier by means of said mirror, an additional lens being arranged between the mirror and the light detector, the light detector comprising a matrix of photosensors coupled with the luminous flux from said image intensifier by means of said mirror and said additional lens such that respective photosensors supply at their respective outputs respective signals representative of the luminous flux at respective different regions of the light image supplied by said image intensifier, a summing amplifier for supplying an output which is a measure of the brightness of the light image supplied by said image intensifier, and switch means selectively controlling the coupling of the respective photosensors of said matrix with said summing amplifier and selectively determining different configurations of said photosensors of said matrix which contribute to the output from said summing amplifier thereby to select the regions of the light image from said image intensifier which are to be dominant in the assessment of the brightness of said light image.

4,517,595
PAY TELEVISION CHANNEL SELECTOR
Katsumi Tobita, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Oct. 13, 1981, Ser. No. 311,061
Claims priority, application Japan, Oct. 15, 1980, 55-146598[U]
Int. Cl.³ H04N *7/16;* **H04K** *1/00*
U.S. Cl. 358—114 **3 Claims**



1. In a pay television channel selector for CATV having a channel selecting means including channel selecting switches for selecting among the various channels and potentiometers connected to said channel selecting switches for generating tuning voltages for the respective channels; and control means including a plurality of channel pay switches each corresponding to a respective channel selecting switch for producing a control voltage when the channel selected by the channel selected by the channel selecting switches is properly contracted for in order to activate a descrambler circuit; the improvement wherein said control means comprises a plurality of parallel circuits with each of said parallel circuits being connected to a respective one of said channel pay switches and having an output level changed according to an input signal having said common impedance so that a scrambled signal of a contracted channel may be descrambled on the basis of the output control signal of said control circuit.

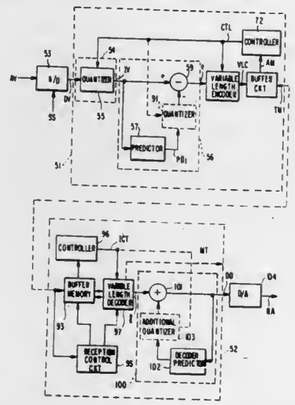
4,517,596
SYSTEM COMPRISING A PRELIMINARY PROCESSING DEVICE CONTROLLED IN ACCORDANCE WITH AN AMOUNT OF INFORMATION STORED IN A BUFFER
Norio Suzuki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Sep. 29, 1982, Ser. No. 428,501
Claims priority, application Japan, Sep. 29, 1981, 56-153019; Sep. 30, 1981, 56-155725; Oct. 9, 1981, 56-160341
Int. Cl.³ H04N *7/13*
U.S. Cl. 358—133 **15 Claims**

1. An encoding system for encoding input digital video signals to produce transmission variable length codes at a predetermined rate, said encoding system comprising:
buffer means for storing buffer input codes to produce the stored input codes as said transmission variable length codes at said predetermined rate and to additionally produce an amount signal representative of an instantaneous amount of the stored input codes, said buffer means producing said transmission variable length codes together with a transmission control signal representative of said instantaneous amount;
control means responsive to said amount signal for producing an internal control signal representative of said instantaneous amount;
preliminary processing means responsive to said internal

control signal for preliminarily processing said input digital video signals in consideration of said instantaneous amount to produce preliminarily processed digital video signals;

predictive encoding means for predictively encoding said preliminarily processed digital video signals in accordance with a predetermined encoding rule to produce encoded error signals, said predetermined encoding rule being reversible to a decoding rule which is for use in decoding reproductions of said encoded error signals to produce reproductions of said preliminarily processed digital video signals;

variable length encoding means having a plurality of select-



able encoding characteristics and being responsive to said internal control signal for further encoding said encoded error signals to produce preliminary variable length codes in compliance with one of said selectable encoding characteristics that is selected as a selected encoding characteristic in consideration of said instantaneous amount at each instant, said selectable encoding characteristics defining different code lengths, respectively, said preliminary variable length codes thereby being possessed of variable code lengths which are defined from time to time by said selected encoding characteristic; and

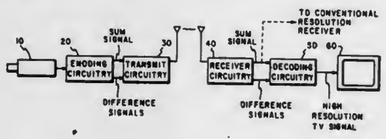
signal supplying means for supplying said preliminary variable length codes to said buffer means as said buffer input codes, respectively.

4,517,597

METHOD AND APPARATUS FOR ENCODING AND DECODING VIDEO

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Westbury, N.Y.

Filed Sep. 14, 1982, Ser. No. 418,055
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—141 **91 Claims**



1. Apparatus for encoding and decoding a video signal, comprising:

(A) an encoder, including:

means for storing an input video frame as an array of pixel values;

means for interrogating the stored array and for generating (i) a sum signal representative of the sum of the pixel values in a group of pixels, and (ii) a difference signal representative of the difference between the total of the pixel values of some of the pixels in the group and the total of the pixel values of other pixels in the group; the sum signal and the difference signal being generated for a multiplicity of groups which cover the video frame;

said sum signal being generated at a relatively high information rate, and said difference signal being generated at a relatively low information rate;

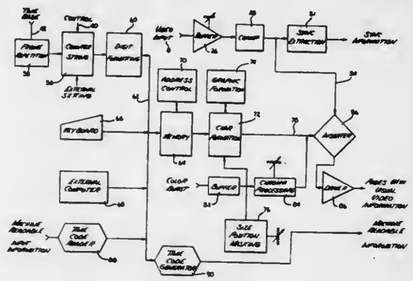
(B) a decoder, including means for combining the sum and difference signals to obtain an output pixel value for each pixel of an output video frame.

4,517,598

METHOD AND APPARATUS FOR ELECTRONIC PUBLISHING

George Van Valkenburg, 220 Lake Rd., Takapuna, Auckland, New Zealand, and John W. Carlquist, Glendale, Calif., assignors to George Van Valkenburg, New Zealand

Filed Oct. 22, 1982, Ser. No. 436,005
Int. Cl.³ H04N *7/08, 7/04*
U.S. Cl. 358—142 **14 Claims**



1. An apparatus for generating and inserting additional video information into a video signal, said video signal including a plurality of fields of video information, each of said fields identified by a pre-existing, predetermined code, said pre-existing code located in a non-visible portion of each of said fields, said pre-existing code comprised of a plurality of bits, a portion of said bits being user definable comprising:

video means for inputting said video signal;

character generation means for generating desired alphanumeric characters for insertion into at least one field of said video signal;

encoding means coupled to said character generation means for encoding data representative of said alphanumeric character into said user definable bits of said predetermined code for said field;

clocking means coupled to said character generation means for signalling said character generation means to generate said alphanumeric character for encoding into said user definable bits of said predetermined code independent of said video signal's frame frequency;

whereby said alphanumeric character may be encoded into a plurality of codes identifying a plurality of fields, independent of said video signal's frame frequency.

4,517,599

RESOLUTION ENHANCEMENT AND ZOOM BY DEGRADATION ESTIMATES

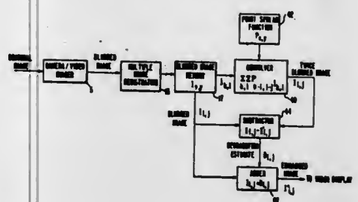
Robert Zwirn; Edward J. Dragavon, both of Los Angeles, and Brian Smithgall, Hermosa Beach, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 27, 1983, Ser. No. 461,354
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—166 **6 Claims**

1. In an imaging system comprising an imager which may view a scene through an aperture characterized by a point spread function and means responsive to said imager for generating successive frames of video data words characterized by a first sampling rate, a system for enhancing image resolution, comprising:

means for converting said video data words into a synthesized video frame of video data words, said synthesized video frame characterized by a second higher sampling rate;

means for enhancing the resolution of the image represented by said synthesized video frame, comprising:



means for convolving said synthesized video data words with said point spread function to generate a video data word corresponding to a twice-blurred image;

means for subtracting said twice-blurred image video data word from a corresponding one of said synthesized video data words to obtain a video data word corresponding to a degradation estimate; and

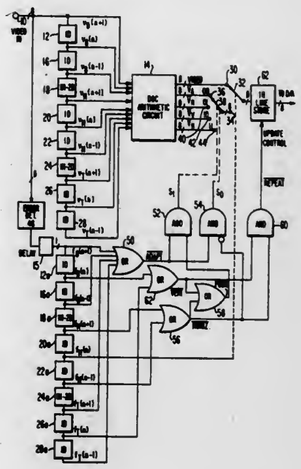
means for adding said degradation estimate video data word and said corresponding one of said synthesized video data words to obtain an enhanced image video data word.

4,517,600

ERROR CONCEALMENT SYSTEM USING DROPOUT SEVERITY INFORMATION FOR SELECTION OF CONCEALMENT METHOD

Glenn A. Reitmeier, Trenton, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 379,088, May 17, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,350
Int. Cl.³ H04N *5/21, 9/535*
U.S. Cl. 358—166 **4 Claims**



3. Apparatus for concealing an erroneous sample of a sampled video signal from a source of sampled video signal, said apparatus comprising:

first average estimate generating means coupled to said source of sampled video signal for generating a first estimate of the value of said erroneous sample by averaging the values of first proximate samples located adjacent said erroneous sample in a first direction;

second average estimate generating means coupled to said source of sampled video signal for generating a second estimate of the value of said erroneous sample by averaging the value of second proximate samples located adjacent said erroneous sample in a second direction;

control signal generating means coupled to said source of sampled video signal for generating a control signal indicative of the presence of a defect in one of said first and second proximate samples, whereby one of said first estimate and said second estimate, respectively, is incorrect; and

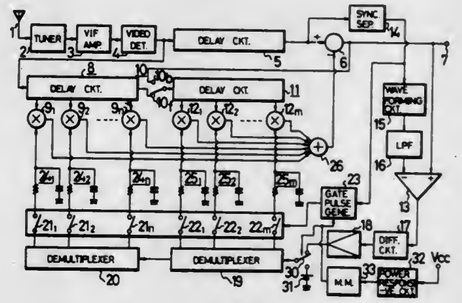
selecting means coupled to said first average estimate generating means, to said second average estimate generating means, and to said control signal generating means for selecting as a replacement signal for said erroneous sample said first estimate when said control signal indicates the presence of a defect in one of said second proximate samples and for selecting said second estimate when said control signal indicates a defect in one of said first proximate samples.

4,517,601

POWER-RESPONSIVE GHOST CANCELLING SYSTEM

Hisafumi Yamada, Tokyo; Junya Saito, Wakou, and Ichiro Tsutsui, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,748
Claims priority, application Japan, Mar. 9, 1982, 57-36967
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 **7 Claims**



1. A ghost cancelling system comprising:

(A) signal input means for receiving an input signal which includes desired and ghost signals;

(B) transversal filter means connected to said signal input means and responsive to said desired signal for forming a waveform corresponding to said ghost signal, said transversal filter means including a weighting circuit and memory means having a storage capacitor for storing a weighting function for said weighting circuit;

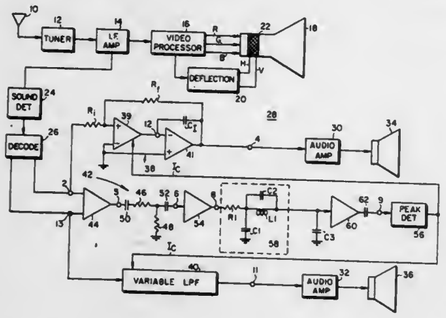
(C) subtracting means connected between said signal input means and said transversal filter means for subtracting an output of said transversal filter means from said input signal;

(D) a ghost detector connected between the output terminal of said subtracting means and said memory means for detecting a level of said ghost signal to control said memory means such that the weighting function changes in response to the detected level;

(E) signal output means connected to the output terminal of said subtracting means; power responsive means for detecting the time when a power switch is turned on; and activating means connected between said power responsive means and said storage capacitor for charging the

latter during a predetermined period when said power switch is turned on.

4,517,602
DYNAMIC NOISE FILTER FOR AN AUDIO SIGNAL IN A TELEVISION
Wesley W. Murphy, III, and James Hettiger, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.
Filed Oct. 18, 1982, Ser. No. 434,935
Int. Cl.³ H04N *5/60*
U.S. Cl. 358—198 **6 Claims**



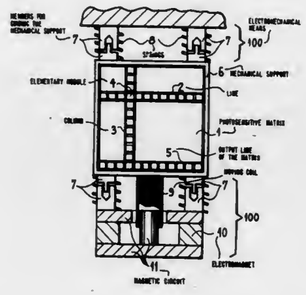
1. A dynamic noise filter for reducing perceived noise in a reproduced audio signal having an audio frequency range which is processed by an audio signal channel having a relatively wider channel frequency range in a television display device, said dynamic noise filter comprising:

means, coupled to receive said audio signal, for providing a variable amount of attenuation within an upper frequency portion of said audio signal frequency range, in response to the level of a control signal;

means for generating said control signal in response to the amplitude of signals within an upper frequency portion of said channel frequency range including said audio signals within said upper frequency portion of said audio frequency range;

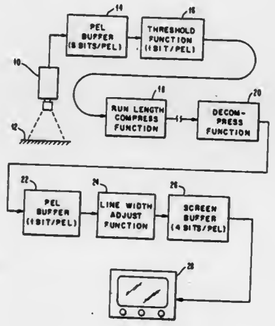
said generating means including a serially coupled filter and signal detector for determining the level of said control signal, said control signal controlling said audio signal attenuation provided by said first mentioned means in a manner inverse to the amplitude of said audio signal within said upper frequency portion of said audio frequency range, wherein said filter has an amplitude versus frequency response characteristic in said channel frequency range of substantially bandpass shape, for passing relatively unattenuated audio signals at frequencies within said upper frequency portion of said channel frequency range which are less than the fundamental frequency of the television horizontal line scanning signal and for providing substantial attenuation to signals at frequencies within said channel frequency range which are greater than said fundamental frequency and include the signals at frequencies of at least some of the lower harmonics of said horizontal line scanning signal such that said signal detector provides no substantial change in control signal level for signals at said fundamental and lower harmonics of said horizontal line scanning signal.

4,517,603
DEVICE FOR PRODUCING TELEVISED PICTURES WITH A CHARGE TRANSFER MATRIX
Bernard Epsztein, and Lucien Guyot, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Mar. 22, 1982, Ser. No. 360,699
Claims priority, application France, Mar. 27, 1981, 81 06188
Int. Cl.³ H04N *1/028*
U.S. Cl. 358—213 **5 Claims**



1. A device for producing televised pictures comprising a photosensitive matrix having a system of equidistant lines and columns with elementary modules at the intersection of the lines and columns; means for forming an optical image on said matrix; means for processing signals corresponding to points of the image impinging said elementary modules in accordance with an interlaced line scanning mode in which the points of a first interlaced half of the image are formed, and then the points of a second interlaced half are formed by lines alternating with the first; means for ensuring relative displacement of said image with respect to the matrix by a distance equal to half the width of the elementary module, after the processing of a half-image, and for maintaining in said relative displacement position throughout the processing time of the following half-image and for returning to an initial position after processing said following half-image.

4,517,604
METHOD FOR REDUCING LINE WIDTH VARIATIONS IN BILEVEL VIDEO IMAGES
Dana A. Lasher, Raleigh, and William K. Stelzenmuller, Morrisville, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 4, 1983, Ser. No. 481,610
Int. Cl.³ H04N *1/41, 1/40*
U.S. Cl. 358—262 **8 Claims**

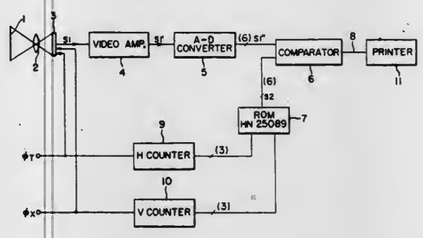


1. For use in a system wherein image pel data is thresholded to bilevel format for transmission to a remote display capable of producing at least trilevel pels, a method of reducing perceptible variations in the widths of lines in the image to be displayed, said method being characterized by the steps of:

analyzing received bilevel data along at least one pel direction to identify regions, each consisting of a run of one or more pels having a first bilevel value bounded at both ends by one or more pels having the second bilevel value; and

converting the pels at or adjacent the ends of selected ones of the runs as a function of run length to provide run-bordering pels having a third value intermediate the bilevel values.

4,517,605
IMAGE SIGNAL PROCESSING APPARATUS
Yoshikazu Yokomizo, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 16, 1982, Ser. No. 349,168
Claims priority, application Japan, Feb. 27, 1981, 56-27760
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **18 Claims**



1. An image signal processing apparatus comprising:

output means for generating density signals of an image; and

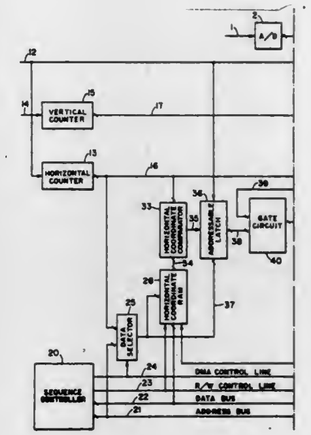
binary signal generating means for providing binary signals of said density signals, said binary signal generating means including dither converter means for performing dither conversion of said density signals by using at least a main dither matrix, said main dither matrix being divided into plural sub-dither matrices wherein parameters of said sub-dither matrices are set in such a manner that a spatial frequency of the dither pattern is low.

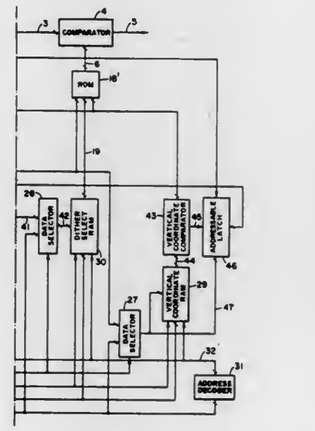
4,517,606
APPARATUS FOR PROCESSING VIDEO SIGNALS
Yoshikazu Yokomizo, Kawagoe; Takehiko Shibata, Kokubunji; Katsuichi Shimizu, Kunitachi; Ken Miyagi, Yokohama; Akira Suzuki, Kawasaki; Tadashi Yoshida, Tokyo; Masaharu Tsukata, Kawasaki; Koichi Murakami, Yokohama, and Nao Nagashima, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 285,405, Jul. 20, 1981, abandoned. This application Sep. 21, 1984, Ser. No. 654,039
Claims priority, application Japan, Jul. 23, 1980, 55-101658
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **45 Claims**

1. A video signal processing apparatus for providing binary encoded video signals employing a dither coding system, said apparatus comprising:

means for reading an original image;

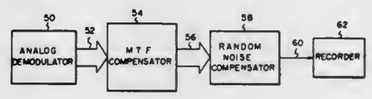
area setting means for dividing an original image into plural unequal areas; and





processing means for providing binary encoded signals for video signals from said reading means employing different dither patterns for each of said plural areas.

4,517,607
METHOD OF AND APPARATUS FOR COMPENSATING IMAGE IN IMAGE REPRODUCTION SYSTEM
Fusakichi Ohkouchi, Atsugi, and Kazuhiro Suzuki, Shimizu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 29, 1982, Ser. No. 437,781
Claims priority, application Japan, Nov. 9, 1981, 56-179272; Nov. 9, 1981, 56-179273
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—284 **14 Claims**



1. In an image reproduction system, a method of compensating an image, which is formed by a plurality of pixels each

being provided with one of two different conditions, by compensating a condition of observed one of the pixels or object pixel in accordance with conditions of the pixels adjacent to the object pixel or surrounding pixels, comprising the steps of:

(a) supplying the image reproduction system with an image signal containing image information; and

(b) compensating an image in response to the input image signal and delivering a compensated signal which indicates a condition of the object pixel;

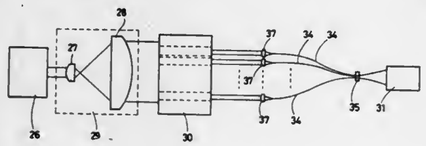
step (b) comprising the steps of delivering an MTF compensated signal through MTF compensation which accentuates boundary portions of an image in response to the image signal, and carrying out random noise compensation to remove smear from the image in response to the MTF compensated signal and signals indicative of conditions of the surrounding pixels.

4,517,608

IMAGE RECORDING DEVICE

Kiyoshi Maeda, Takatsuki, and Masashi Okamoto, Kobe, both of Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 14, 1982, Ser. No. 398,027
Claims priority, application Japan, Jul. 18, 1981, 56-112564
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—298 **7 Claims**



1. An image scanning and recording system having a recording unit for duplicating and recording halftone images on a photosensitive material, the system comprising:

a beam flattener made up of a pair of cylindrical lenses for flattening a beam of light from a light source and transferring the flattened beam of light to an acousto-optic modulating element;

an acousto-optic light modulating element having a plurality of ultrasonic wave exciting portions disposed side by side on a single acousto-optic medium for independently modulating incident light from the beam flattener with said ultrasonic wave exciting portions independently into a plurality of modulated light beams in response to image signals from a photo electrical scanning means;

a scale down optical system for reducing the diameter of the plurality of modulated light beams from the acousto-optic light modulating element, said scale-down optical system comprising a plurality of small lenses of a size sufficient to reduce the diameter of each one of the modulated light beams; and

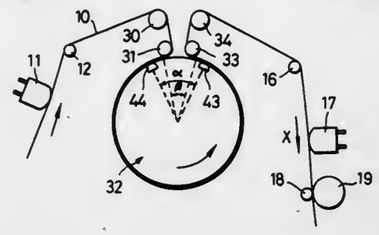
a plurality of light transfer means corresponding in number to said plurality of small lenses for transferring the light beams from said scale-down optical system to a focussing lens system for projecting from the focussing lens system, in a predetermined scale-down ratio, the light beams from the output ends of the plurality of light transfer means onto a film mounted on a recording cylinder, and wherein said plurality of light transfer means comprises an optical fiber bundle.

4,517,609

VIDEO SIGNAL RECORDING APPARATUS

Ota Yoshihiko, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 30, 1982, Ser. No. 445,658
Claims priority, application Japan, Dec. 18, 1981, 56-204867
Int. Cl.³ H04N *5/78*; G11B *5/02*
U.S. Cl. 360—22 **8 Claims**



1. A video signal recording apparatus comprising:

a guide drum having an outer peripheral surface;

guiding means for guiding a magnetic tape around a predetermined angular range of (360°-β), of the outer peripheral surface of said guide drum, where β is a small angle; and

a main head and a sub-head mounted on said guide drum for scanning over and recording a composite video signal on the magnetic tape which is guided by said guiding means,

said main head and said sub-head being separated by an angle α which is slightly larger than the angle β, and being mounted on said guide drum at two height positions which are separated by a distance d,

said main head scanning over said magnetic tape to record a signal by forming first track parts in a first region along the width direction of the magnetic tape, said first track parts being formed obliquely with respect to the longitudinal direction of the magnetic tape,

said sub-head scanning over said magnetic tape to record a signal by forming second track parts in a second region along the width direction of the magnetic tape, said second track parts being formed obliquely with respect to the longitudinal direction of the magnetic tape, said second region being different from said first region,

said angle α and said distance d having values such that a first predetermined part among said first track parts is continuously end-to-end adjacent a second predetermined track part among said second track parts along an extension of said second predetermined track part, and one track which is made up of said first predetermined track part and said continuous second predetermined track part is equivalent to a standard track of one field of a composite video signal.

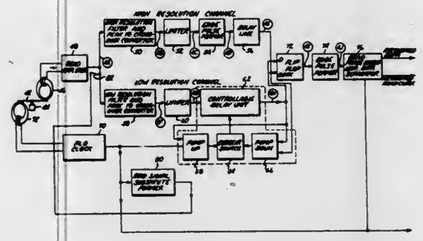
4,517,610

MULTICHANNEL SIGNAL RECOVERY CIRCUIT

Vadim B. Minuhin, Bloomington, Minn., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Dec. 9, 1982, Ser. No. 448,137
Int. Cl.³ G11B *5/02, 5/09*
U.S. Cl. 360—24 **14 Claims**

1. In a multichannel read signal recovery system having a high resolution channel for receiving a read signal and producing a high resolution pulse signal representative of digital information contained in said read signal, and having a low resolution channel for receiving said read signal and producing a low resolution pulse signal representative of digital information contained in said read signal, and having logic means responsive to said high and low resolution pulse signals to recover said digital information, the improvement comprising: variable delay means in one of said channels and connected to said high and low resolution channels, said variable delay means being responsive to said high and low resolution pulse signals to delay the resolution pulse signal in said one channel



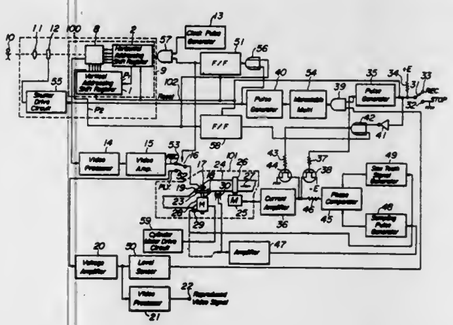
to match any delay of the resolution pulse signal in the other channel.

4,517,611

VIDEO RECORDING SYSTEM

Kenji Kimura, Tachikawa, Japan, assignor to Olumpus Optical Company Limited, Japan

Filed Jun. 15, 1982, Ser. No. 388,598
Claims priority, application Japan, Jun. 18, 1981, 56-94514
Int. Cl.³ H04N *5/782*
U.S. Cl. 360—33.1 **7 Claims**



1. In a video recording system including a solid state image sensing device having a number of cells, an optical system for projecting an image of an object to be recorded onto the solid state image sensing device, a shutter means for shielding said solid state image sensing device against the projection of the object image for a read-out period during which charges stored in respective cells are successively read-out to derive a video signal representing an image, a manual shutter release member constructed and arranged to be actuated by a user of the video recording system to provide an actuation signal, a video tape recording device including a magnetic tape moving means for moving a magnetic tape in a forward direction or in a rewinding direction and means for recording said derived video signal on a predetermined portion of said magnetic tape, and control means for controlling said solid state image sensing device, said shutter means, and said video tape recording device, the improvement in said control means comprising:

first timing signal generating means for issuing a first timing signal in response to said actuation signal;

rewind signal generating means responsive to said first timing signal for generating a rewind signal during a predetermined first time period immediately after receipt of said first timing signal, said magnetic tape moving means being responsive to said rewind signal for moving said magnetic tape in the rewinding direction during said first time period;

forward movement signal generating means responsive to the expiration of said first time period for generating a forward movement signal immediately after said first time period has terminated, said magnetic tape moving means being responsive to said forward movement signal for moving said magnetic tape in the forward direction at a given constant speed;

second timing signal generating means responsive to the termination of said first time period for generating a second timing signal immediately after said first time period has terminated;

detecting means coupled to detect the presence of a video signal recorded on said magnetic tape and for generating a third timing signal upon the detection of the absence of a video signal recorded on said magnetic tape;

fourth timing signal generating means responsive to the occurrence of both said second and third timing signals for generating a fourth timing signal following the receipt of both said second and third timing signals, said shutter means being responsive to said fourth timing signal to open said shutter for a predetermined second time period; and

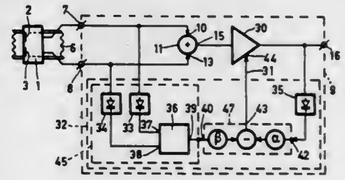
means responsive to said fourth timing signal for causing said successive read-out of the charges stored in the respective cells of said solid state imaging device to derive said video signal.

4,517,612

REPRODUCING APPARATUS WITH CONTROLLED GAIN OUTPUT INDEPENDENT OF TRACKING ERRORS

Albert M. A. Rijckaert, and Edmond de Niet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 401,042
Claims priority, application Netherlands, Aug. 17, 1981, 8103833
Int. Cl.³ G11B *5/02*
U.S. Cl. 360—67 **13 Claims**



13. An apparatus for reproducing information from a track on a magnetic record carrier, said apparatus comprising a reproducing head having two reproducing portions each supplying an information signal representative of information read from said track, means for combining said information signals so as produce a sum signal representative of the sum of said information signals, means for determining which of said information signals is the larger signal, said determining means generating a first signal which is proportional to the amplitude of the larger of said information signals, means for generating a second signal proportional to the sum of the amplitude of said information signals, and variable gain amplifying means for amplifying said sum signal in dependence on said first and second signals by a gain factor substantially equal to a constant multiplied by the ratio of said first signal to said second signal so as to compensate for tracking errors.

4,517,613

MAGNETIC RECORDING AND PLAYBACK APPARATUS

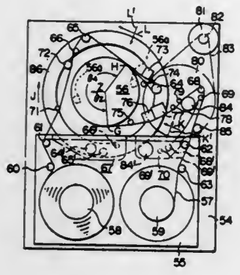
Narito Shibaike, Habikino; Seiko Minamide, Nara; Satoshi Kikuya, Katano; Hiroshi Terada, Hirakata, and Osamu Zaitsu, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 16, 1982, Ser. No. 388,939

Claims priority, application Japan, Jun. 24, 1981, 56-97876

Int. Cl.³ G11B *5/08*

U.S. Cl. 360—85 **6 Claims**



1. A magnetic recording and playback apparatus, in which a magnetic tape is extracted by means of a tape extracting pin from a tape cassette and wound around a cylinder incorporating therein rotary heads over a predetermined angle so that said rotary heads record and play back signals on said magnetic tape, said apparatus comprising a base plate for holding reel bases vertically and for mounting thereon said tape cassette in parallel therewith, and first, second and third inclined guide planes of different directions and angles of inclination with respect to said base plate, said cylinder incorporating therein said rotary heads arranged perpendicularly on said first inclined plane, said apparatus further comprising a first guide post and an eraser head arranged perpendicularly with respect to said third inclined plane, a second guide post, a sound/control head and a capstan arranged perpendicularly with respect to said second inclined plane, means for bringing and keeping a pinch roller into a posture perpendicular to said second inclined plane during travelling of a tape, and first and second inclined posts arranged in the vicinity of intersecting lines of said base plate and said third inclined plane, and of said base plate and said second inclined plane, respectively, said first inclined post being adapted to stretch a magnetic tape extracted by said tape extracting pin from said tape cassette, along said third inclined plane before said magnetic tape is wound around said cylinder by way of said first guide post and said eraser head, and said second inclined post being adapted to redirect said magnetic tape which comes from said cylinder and travels by way of said second guide post, said sound/control head and said capstan arranged on said second inclined plane, so that the magnetic tape stretches in parallel with said base plate.

4,517,614

MECHANISM FOR EXTRACTING TAPE FROM A TAPE CARRIER

Albert M. Straub, Howell; Theodore R. Mabrey, and Daniel L. Vokovich, both of Ann Arbor, all of Mich., assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 30, 1982, Ser. No. 393,591

Int. Cl.³ G11B *15/66*

U.S. Cl. 360—85 **15 Claims**

1. A mechanism for withdrawing tape from a tape carrier and to carry the tape to form a path about a portion of a transducer, said mechanism comprising:

a movable boom member;

a lever system comprising at least two levers;

a lever guide means for contacting each of said at least two levers and defining a path for said levers to follow, said lever guide means being spaced from said tape carrier;

roller means, supported by each said lever, for engaging said tape; and

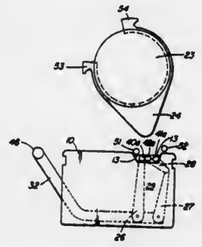
said two levers each being pivotally mounted to said boom member, means for moving said boom member so that as said boom member is moved generally away fronm said tape carrier and generally towards said lever guide means said roller means engages said tape to withdraw it from the tape carrier and said at least two levers engage said lever guide means and begin to become separated by said lever guide means to carry tape peripherally about the transducer.

6. A mechanism for withdrawing tape from a tape cartridge and wrapping said tape less than 360° around the curved portion of a cylindrical transducer means, said mechanism comprising:

a pivotally mounted boom member;

a lever system having at least two levers pivotally mounted to said boom member, each said lever carrying a roller means for engaging said tape in such a manner that as said lever system is moved generally away from said tape cartridge and generally towards said transducer means, tape can be withdrawn from said cartridge;

a lever guide means, mounted adjacent said transducer means, in a plane parallel to a plane through which said boom member and said lever system move, said guide means having a guide surface for engagement with said lever system, said guide surface extending peripherally



about said transducer means such that said lever system engages said guide surface and does not engage said transducer means;

means for moving said boom member so that said guide surface acts as a guide for said two levers and causes said levers to separate when it engages said guide surface such that at least a first lever moves along a first path defined by said lever guide means and at least a second lever moves along a second path defined by said lever guide means.

11. A mechanism for withdrawing tape from a tape cartridge, said mechanism comprising:

a lever guide means;

a boom member;

a lever system, comprising a plurality of lever members for engaging and carrying the tape to form a path about a portion of a transducer, said lever members being supported by said boom member on a first portion of said boom member;

a drive means for moving said boom member about a pivot point located a remote distance from said first portion, thereby moving said lever members generally away from said tape cartridge and generally toward said lever guide means such that, when said lever members contact said guide means, said lever members separate such that at least a first lever member moves along a first path defined by said lever guide means and at least a second lever member moves along a second path defined by said lever guide means.

4,517,615

ROTARY HEAD FOR MAGNETIC TAPE RECORD AND PLAYBACK

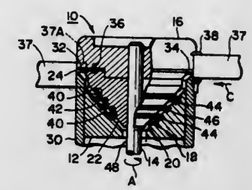
Hiromasa Hino, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 20, 1982, Ser. No. 380,270

Claims priority, application Japan, May 28, 1981, 56-78113[U]; May 28, 1981, 56-81429[U]

Int. Cl.³ G11B *5/52, 21/04*

U.S. Cl. 360—108 **19 Claims**



1. Rotary magnetic head apparatus for use in recording and playing back video signals comprising:

a rotary head drum supported by a driving shaft and having an outer surface which is generally cylindrical, said drum being rotatable when driven by the shaft;

a stationary head drum coaxially disposed on an axis aligned with said driving shaft and having an outer surface which is generally cylindrical and substantially equal in diameter to said outer surface of the rotary drum;

said rotary head drum having a first surface means opposing the stationary drum, the first surface means being generally of such a conical shape about the driving shaft and of a sufficient length longitudinally of the shaft as to produce air flow along the first surface means onto the outer surface of the rotary drum to form an air film on said outer surface in response to rotation of the driving shaft;

said stationary head drum having a second surface opposing the first surface of the rotary drum, the second surface being generally of a conical shape about the driving shaft, which shape is complementary to the first surface to form gap means between said rotary and stationary head drums for directing said air flow to the outer surfaces thereof to form an air film thereon; and

a plurality of magnetic heads supported on said rotary drum closely to the outer surfaces of the rotary and stationary drums in the gap means.

4,517,616

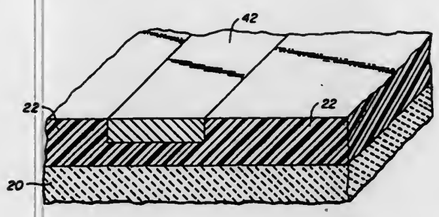
THIN FILM MAGNETIC RECORDING TRANSDUCER HAVING EMBEDDED POLE PIECE DESIGN

Peter G. Bischoff, Cupertino, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Division of Ser. No. 367,366, Apr. 12, 1982, Pat. No. 4,391,849. This application Mar. 28, 1983, Ser. No. 479,224

Int. Cl.³ G11B *5/16*

U.S. Cl. 360—126 **5 Claims**



1. In an improved thin film magnetic recording transducer comprising a thin film magnetic transducer metal deployed in a pattern adapted for magnetic read/write operations, wherein the improvement comprises that said pattern is disposed in associated depressions in the surface of a layer of non-magnetic, non-conductive dielectric material, said depressions being formed to exhibit sidewalls which are orthogonal to the dielectric surface, the magnetic transducer metal filling said depressions wherein the exposed surface of the metal is effectively coplanar with the surface of the dielectric material.

4,517,617

FLEXIBLE MAGNETIC DISK CASSETTE AND A RECORDING AND/OR REPRODUCING APPARATUS FOR THE SAME

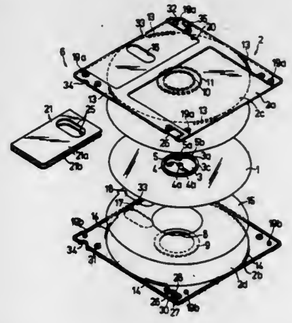
Akira Tsuji, Fujisawa; Sadayuki Ito, Yokohama, and Kazumi Fujimoto, Hino, all of Japan, assignors to Sony Coporation, Tokyo, Japan

Filed Aug. 13, 1981, Ser. No. 292,914

Claims priority, application Japan, Aug. 14, 1980, 55-115307[U]

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—133 **10 Claims**



1. A flexible magnetic disk cassette, comprising:

(a) a flexible magnetic disk;

(b) a cover containing said magnetic disk, said cover having a drive hole means for providing access to drive said flexible magnetic disk from outside said cover, a recording opening means for exposing a recording surface of said flexible magnetic disk, and a cut-out portion means provided on one side of said cover for detecting correction installation of said flexible magnetic disk cassette into a recording and/or reproducing apparatus;

(c) a shutter means slidably provided on said cover for selectively exposing said recording surface through said recording opening means and exposing said cut-out portion means when said flexible magnetic disk is ready for use; and

(d) said shutter means preventing a correct installation of said magnetic disk cassette when the shutter means covers said cut-out portion means.

4,517,618

PROTECTION CIRCUITRY FOR HIGH VOLTAGE DRIVERS

G. Haven Frank, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 6, 1983, Ser. No. 529,412

Int. Cl.³ H02H *3/24*

U.S. Cl. 361—58 **5 Claims**

1. A load protection circuit interposed between a power source and a load comprising:

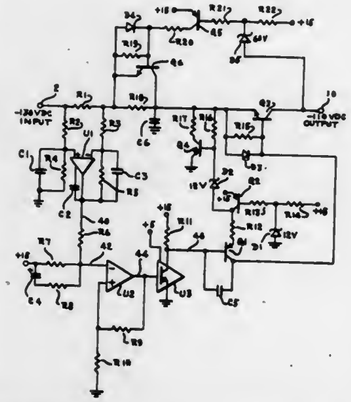
a high voltage input terminal, a high voltage output terminal and a reference terminal,

current sensing means, voltage risetime control means and

output control means serially connected between said high voltage input terminal and said high voltage output terminal,

a capacitive filter connected between the junction of said voltage risetime control means and said output control means and said reference terminal,

current comparison and limiter means coupled to said current sensing means for providing a first logic signal when the load current is within a predetermined maximum limit,



first gating means for providing a second logic signal during the simultaneous presence of said first logic signal and a first low voltage,

second gating means for providing a third logic signal during the simultaneous presence of said second logic signal and a second low voltage, and

means for applying said third logic signal to said output control means to activate said output control means whereby said power source is coupled to said load.

4,517,619

PROTECTIVE RELAY SYSTEM FOR A POWER SYSTEM

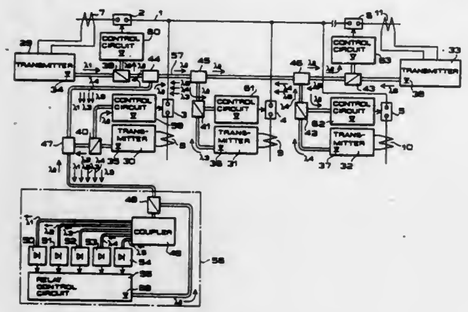
Yasuhiro Uekubo, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1982, Ser. No. 445,846

Claims priority, application Japan, Dec. 2, 1981, 56-196163

Int. Cl.³ H02H *3/36*

U.S. Cl. 361—64 **3 Claims**



1. A protective relay system which supervises a power system based upon electric information detected from each of the portions of the power system that is to be protected, and which protects said power system in case it is detected that a line fault occurs in the power system, said protective relay system comprising:

a plurality of transmission means for sending the detected electric information into a transmission path by converting it into light signals having their inherent wavelength;

a plurality of control means which receives light signals having their inherent wavelengths from said transmission path, and which actuate circuit breaker corresponding to said transmission means responsive to instruction transmitted in the form of light signals;

a protection circuit means which is connected to said transmission means and said control means via the transmission path, which receives light signals from said transmission means to obtain electric information, and which, when abnormal condition is detected in the information through a predetermined process, sends instruction in the form of a light signal having its inherent wavelength to the transmission means which is detected to be a fault phenomenon, the instruction being sent over said transmission path;

said protection circuit means comprising a first coupler which permits light signals having their inherent wavelengths to pass from said transmission path to the individual transmission means, and which sends a light signal having an inherent wavelength that serves as instruction to said transmission path;

a second coupler having a multiple of ports to branch the signals, and which branches light signals introduced via said first coupler;

a plurality of light-receiving demodulators which introduce light signals sent from the branching ports of said second coupler, and which demodulate them into electric information;

a relay control circuit means which receives information from said demodulators, and which, when the line fault is detected from the information through a predetermined process, sends instruction to the corresponding control means, said instruction being sent in the form of light signal having its inherent wavelength over said transmission path via said first coupler; and

optical fibers which connect said transmission means, said control means, and said protection circuit means, and which transmit said light signals.

4,517,620

ELECTRICAL FEED AND CONTROL CIRCUIT FOR THE PUMP PISTON OF A SPRAY GUN

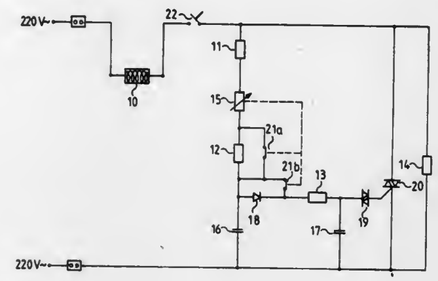
Hans-Joachim Boll, Markdorf, Fed. Rep. of Germany, assignor to J. Wagner GmbH, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,281

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139724

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—154 **11 Claims**



1. In an electrical feed and control circuit for a drive arrangement, including a coil and an oscillating armature, of a pump piston of a spray gun in which control circuit an input is provided for connection to an alternating current source, and output means is connected to the coil, a half-wave suppressor is selectively connectible to the output means by way of a two-position switch device, and a phase-angle control constituting a first phase-angle control is connectible and disconnectible by way of the switch device, the first phase-angle control comprising a timing element including a fixed resistor and a capacitor, the improvement comprising:

a second phase-angle control including an additional timing element comprising a variable resistor and the capacitor of the first phase-angle control;

said second phase-angle control connected to the switch device connected in a first switch position in a current path to the output means bypassing the half-wave suppressor and in a second switch position in a current path to the output means through the first phase-angle control and the half-wave suppressor.

4,517,621

CIRCUIT ARRANGEMENT FOR THE PRODUCTION OF A QUASI-ELECTROSTATIC FIELD

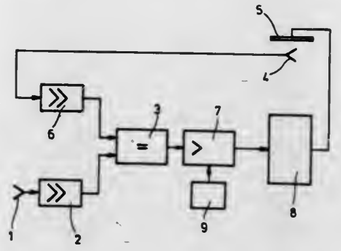
Otto Brusis, Mühlehen 13, 7744 Königsfeld; Sigurd Maiter, Bismarckring 38, 7900 Ulm, and Paul Haufe, Südring 10, 8878 Bibertal-Anhofen, all of Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 421,784

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1982, 3229821

Int. Cl.³ H01T *20/02*

U.S. Cl. 361—231 **11 Claims**



1. A circuit arrangement for the production of a quasi-electrostatic field for climatological and/or therapeutical applications which comprises a high-voltage generator circuit whose output voltage is applied to an electrode arranged inside the room to be air-conditioned, comprising in combination:

(a) an internal probe for the detection of the effective electric field within the range of action of the electrode,

(b) a comparator which compares the output signal emitted by the internal probe with a reference voltage which is representative of a desired field within the range of action of the electrode, and which voltage is derived from an external probe which is arranged outside the room to be air-conditioned and detects the natural field of the external atmosphere, and

(c) a control amplifier to which the output signal emitted by the comparator is fed and whose output signal modulates the high voltage generator circuit.

4,517,622

CAPACITIVE PRESSURE TRANSDUCER SIGNAL CONDITIONING CIRCUIT

Barry Male, Windsor Locks, Conn., assignor to United Technologies Corporation, Hartford, Conn.

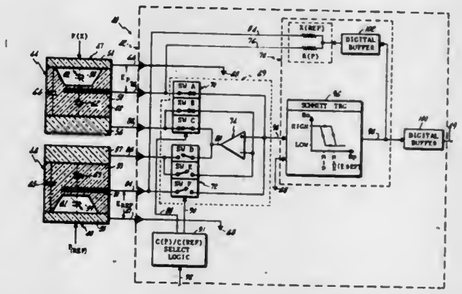
Filed Aug. 29, 1983, Ser. No. 527,530

Int. Cl.³ H01G *7/00, 9/16;* **G01L** *9/12*

U.S. Cl. 361—283 **6 Claims**

1. Apparatus, responsive to a capacitive pressure transducer's indication of pressure magnitude as the instantaneous value of a pressure responsive capacitance associated with the central electrode-to-diaphragm junction of the transducer in combination with the value of the nonpressure responsive capacitance associated with the central electrode-to-substrate junction of the transducer, for providing a signal indication of the instantaneous value of the pressure responsive capacitance, comprising:

conversion means, connected at an input and output thereof for regenerative response to the transducer's central electrode-to-diaphragm junction, for providing thereto an output bistable current signal having alternate high current and low current states in dependence on the alternately increasing and decreasing amplitude of an actual voltage integral signal provided by the pressure responsive capacitance in response to said bistable current signal, said integral signal having an amplitude rate of change dependent on the instantaneous value of said pressure



responsive capacitance, said conversion means providing as said signal indication of the instantaneous value of the pressure responsive capacitance the frequency at which said bistable signal alternates between said high and low signal states; and

signal coupling means, responsive to said conversion means bistable current signal for providing an equivalent voltage integral signal to the transducer's substrate-to-diaphragm junction, whereby said central electrode-to-substrate junction nonpressure responsive capacitance is presented with a zero voltage potential thereacross to provide a zero integral response.

4,517,623

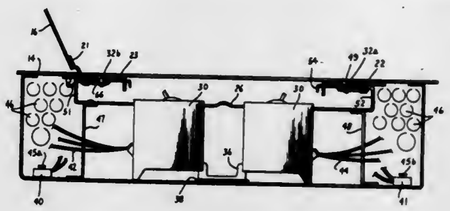
CONCEALED-FASTENER PANELBOARD FRONT AND CLAMPING LATCHES

Gregory P. Barner, Atlanta, and Drew S. Hancock, Marietta, both of Ga., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 30, 1983, Ser. No. 537,707

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—358 **12 Claims**



1. In a panelboard including a generally rectangular enclosure having a back portion and side portions terminating in flanges defining an open front of said enclosure and having bus means disposed therein for connection to a plurality of circuit breakers,

an interior panel disposed within said enclosure and defining openings through which portions of the circuit breakers may protrude;

mounting means fixedly securing said interior panel within said enclosure generally parallel to the open front thereof;

said interior panel terminating in generally C-shaped channels at opposite edges thereof, said channels extending outwardly from the central section and including means for engaging a clamp;

a front cover for the enclosure including a generally rectangular trim plate having an outer periphery extending at least to the side portions of the enclosure; an opening disposed generally in the center of said trim plate; a door fitting into said opening; rabbets disposed at opposite sides of the opening and extending toward one another past the channels of said interior panel; and clamp means rotatably attached to the rear sides of said rabbets to lie between said channels, said clamp means having arms engaging said channels for drawing said front cover against the enclosure.

4,517,624

DEVICE FOR COOLING A PLURALITY OF INTEGRATED MODULES COMBINED ON A FLEXIBLE PRINTED CIRCUITBOARD TO FORM LOGIC CARDS

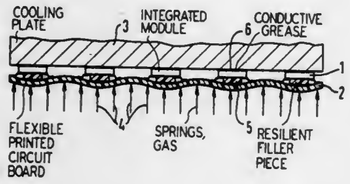
Herrmann Wessely, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,370

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233522

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—387 **7 Claims**



1. A device which cools a plurality of integrated modules, comprising:

a plurality of integrated modules each including a rear surface;

a flexible printed circuitboard supporting said plurality of integrated modules;

a common cooling plate including a highly planar surface engaging said rear surfaces;

common pressure means acting on said flexible printed circuitboard to press the circuitboard and said modules toward said common cooling plate; and

a plurality of individual pressure means each interposed between a respective module and said flexible printed circuitboard and pressing the respective module towards and into contact with said common cooling plate.

4,517,625

CIRCUIT BOARD HOUSING WITH ZERO INSERTION FORCE CONNECTOR

Attila Frink, Northridge, and Robert A. Morrison, Long Beach, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Nov. 9, 1983, Ser. No. 549,941

Int. Cl.³ H01R *9/09*

U.S. Cl. 361—399 **4 Claims**

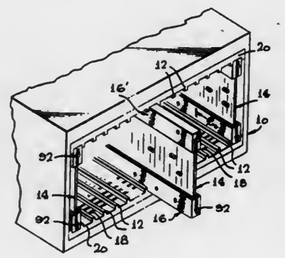
1. A circuit board housing for electrically coupling at least one circuit board to a mother board mounted within said housing, said circuit board having a plurality of first electrical terminals mounted along at least one edge portion thereof, the housing comprising:

said housing having at least one zero insertion force socket, said at least one socket having a plurality of second electrical terminals mounted therein;

an electrical connector comprising:

a circuit board support member slideably engageable with at least one said socket, said support member having clamping means mounted thereto adapted to releaseably engage said edge portion of said circuit board;

a resilient member rotatably mounted in said support member having a plurality of first electrical contacts



mounted thereon, said resilient member rotatable from a first position wherein said plurality of first electrical contacts are out of engagement with said plurality of second electrical terminals to a second position wherein said plurality of electrical contacts are in engagement therewith;

flexible conductor means electrically connecting said plurality of said first electrical terminals on said circuit board to said plurality of electrical contacts on said resilient member.

4,517,626

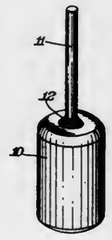
SOLID ELECTROLYTE CAPACITOR ANODE ASSEMBLY

Michael D. Allen, Alfred, and John E. Van Voorhis, Waterboro, both of Me., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 24, 1982, Ser. No. 422,808

Int. Cl.³ H01G *9/00*

U.S. Cl. 361—433 **5 Claims**



1. A low capacitance solid electrolyte capacitor anode assembly comprising an anode of a stub of valve-metal wire as a non-porous solid body portion and a substantially smaller diameter valve-metal wire as a riser portion directly attached to the center of an end surface of said body portion.

4,517,627

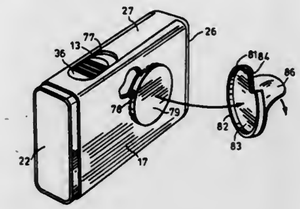
SPOT LIGHT FOR HANDBAG AND LIKE RECEPTACLES

Herbert G. Bradford, 290 Silverstone Dr., Apt. 93, Rexdale, Ontario M9V 3J4, Canada

Filed Jun. 15, 1984, Ser. No. 621,116

Int. Cl.³ A45C *14/06*

U.S. Cl. 362—156 **9 Claims**



1. A spot light for illuminating the interior of a handbag or like receptacle, comprising a housing having opaque end walls, edge walls and side walls, a single dry cell received in the housing between the end walls and the alongside one edge wall, an opening in one end wall adjacent the edge wall opposite the dry cell, a reflector located in, and forming a bulb-receiving recess in, said opening, a single light bulb secured in the reflector to direct a narrow spot of light from the opening, switch means operable from outside the housing to connect and disconnect said single dry cell and the bulb, and pivot means on one of the side walls, comprising a circular socket and a circular disc nested in the socket and magnetically attracted into frictional contact therewith, whereby the housing is pivotable arcuately about the pivot means and is supported thereby stably in a range of stable angular positions, one of the socket and disc being on said one side wall, and the other of the socket and disc having an adhesive backing for adhering it to the interior of a handbag or like receptacle.

4,517,628

PORTABLE LIGHTING DEVICE

Kevin McDermott, 196 Phillips Dr., Hampstead, Md. 21074

Filed Oct. 31, 1983, Ser. No. 547,391

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—186 **24 Claims**



1. A portable lighting device in the form of a penlight having an elongated open-ended cylindrical tube of electrically conductive material, containing therein at least one dry battery power cell, a plug assembly arranged so as to close a first end of said tube, and a lamp and color filter mechanism arranged so as to close a second end of said tube and to emit light along the longitudinal axis of said penlight, wherein the improvements comprise:

(a) a multiplicity of apertures punched through the wall of said tube in proximity to said first end for the detachable assembly therein of a pocket clip jointly with said plug assembly;

(b) means for producing bidirectional applied forces along said longitudinal axis of said penlight;

(c) means for resolving said longitudinal forces into oblique forces for jointly maintaining low contact resistances yielding reliable continuity of an electrical circuit encompassing a filament of said lamp and filter mechanism;

(d) means, responsive to manual control, for overcoming said oblique forces thereby breaking the continuity of said electrical circuit, causing said lamp filament to cease its emission of light;

(e) means, responsive to a rotational manual control about said longitudinal axis, for emitting a collimated light beam as thereby selected from among a multiplicity of different colors; and

(f) a ring, integrated with said plug assembly in a longitudinal plane through said penlight, for attachment of a lanyard.

4,517,629

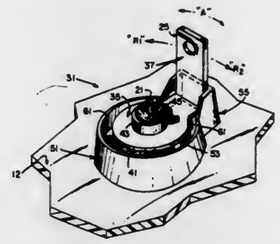
MOTOR VEHICLE HEADLIGHT WITH ADHESIVE ACCUMULATION MEANS

Kenneth E. Alexander, and Robert J. Marshall, both of Seymour, Ind., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 19, 1983, Ser. No. 459,272

Int. Cl.³ F21V *31/02*

U.S. Cl. 362—267 **5 Claims**



1. A motor vehicle headlight comprising:

a plastic reflector having a curved rear portion having at least one opening therein, and a forward open end portion;

a lens member secured to said open end portion of said reflector to provide a closure therefor;

an electrical lamp disposed within said reflector and including a glass envelope, at least two lead-in wires projecting from said envelope, and at least two support wires, each of said wires being fixedly secured to a respective one of said lead-in wires and passing through said rear portion of said plastic reflector, at least one of said wires being positioned within said opening within said rear portion;

terminal means for being electrically connected to said support wire positioned within said opening, said terminal means including a metallic eyelet located within said opening and substantially surrounding said support wire within said opening, and a metallic lug member including a base segment and an upstanding leg segment, said eyelet being secured to said base segment of said lug;

a quantity of adhesive located within said opening and surrounding said eyelet, said curved rear portion of said reflector including an upstanding portion located on an external surface of said reflector and about said opening having said eyelet, support wire, and adhesive therein, said upstanding portion defining a reservoir therein relative to said opening for accommodating excessive amounts of adhesive which may occur during assembly of said headlight, said reservoir comprising a substantially annular groove formed within said upstanding portion of

said reflector and substantially surrounding said opening within said reflector.

4,517,630

MOTOR VEHICLE HEADLIGHT WITH CONDENSING LENS AND DIAPHRAGM

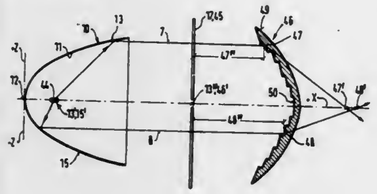
Rüdiger Dieffenbach; Werner Grünwald, both of Gerlingen; Peter Perthus, and Friedrich Prinzhausen, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 30, 1982, Ser. No. 445,430

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148432; Jul. 16, 1982, 3226580

Int. Cl.³ F21V *5/00*

U.S. Cl. 362—268 **11 Claims**



1. Headlight for a motor vehicle having a filamentary light source and a reflector, wherein;

the section of the reflector by the vertical median plane thereof is a part of an ellipse and contains a reflector axis which intersects the reflector at the reflector vertex;

sections of the reflector by planes which intersect the axis of the reflector at right angles are ellipses of which the half-axes are perpendicular to the reflector axis and one of them lies in said vertical median plane;

said filamentary light source is located at that one of the foci of said vertical median plane section ellipse which is the nearer to said reflector vertex;

a condensing lens is disposed with its axis on the reflector axis and with its focus towards the reflector coincident with the focus of said ellipse which is the farther from said reflector vertex;

a diaphragm located in the region of the reflector axis is disposed in the focal plane of said condensing lens nearer said reflector; and

the optically effective edge of said diaphragm lies in the neighborhood of said focus of said lens towards said reflector,

the section of the reflector by the horizontal median plane thereof being parabolic,

different radial zones of said condensing lens respectively having different focal lengths, diminishing in magnitude toward the lens rim, while all said zones have a common focus which is said focus coincident with said reflector focus farther from said reflector vertex,

said condensing lens being constituted as a meniscal Fresnel lens having a convex surface facing away from said reflector and a stepped concave surface facing towards said reflector.

4,517,631

INDIRECT LIGHT REFLECTOR

Jack R. Mullins, Missouri City, Tex., assignor to J. W. Lighting Inc., Houston, Tex.

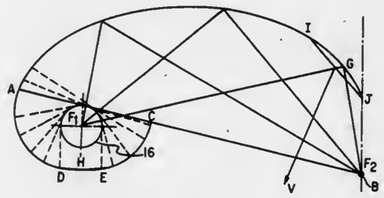
Filed May 14, 1984, Ser. No. 610,019

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—346 **17 Claims**

1. A reflector for use with a light source comprising:

first reflector means having first and second focal points, said light source located at said first focal point, a first surface thereof being opposite said first reflector, for reflecting light originating near said first focal point through said second focal point; and



second reflector means disposed opposite a second surface of said light source for reflecting light received from said second surface around said light source and on to said first reflector means for further reflection therefrom.

4,517,632

OPERATING THEATRE LAMP

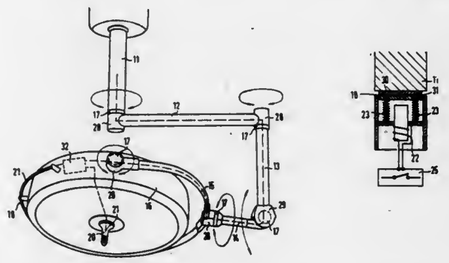
Eberhard Roos, Tuttlingen, Fed. Rep. of Germany, assignor to Delma- elektro- und medizinische Apparatebau Gesellschaft mbH, Tuttlingen, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,646

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243709

Int. Cl.³ F21V *21/28;* **B60T** *13/04;* **F16D** *65/34*

U.S. Cl. 362—389 **9 Claims**



1. An articulated operating theatre lamp of the type mounted to a support comprising:

a lamp unit having a grasping surface; and

an articulated support arm assembly means for mounting said lamp unit from the support, said mounting means including:

a plurality of support arms;

pivot joints for joining said support arms to one another;

means for normally locking said pivot joints to inhibit relative movement of said support arms joined by respective ones of said pivot joints; and

means for simultaneously electrically releasing said locking means in response to a user touching said grasping surface to allow said pivot joint means to freely pivot during a period said grasping surface is being touched by the user so said lamp unit is movable to a desired position during such period and so said lamp unit is inhibited from movement by said locking means otherwise.

4,517,633

SWITCHED MODE POWER SUPPLY WITH A PLURALITY OF REGULATED SECONDARY OUTLETS

Domenic Melcher, Acherstrasse 56, CH-8610 Uster, Switzerland

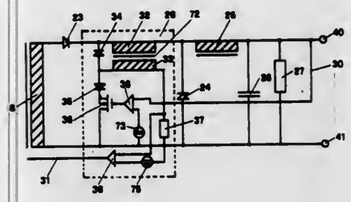
PCT No. PCT/CH82/00102, § 371 Date May 3, 1983, § 102(e) Date May 3, 1983, PCT Pub. No. WO83/00964, PCT Pub. Date Mar. 17, 1983

PCT Filed Aug. 30, 1982, Ser. No. 499,766

Claims priority, application Switzerland, Sep. 5, 1981, 5695/81

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **8 Claims**



1. Switched mode power supply with at least one regulated secondary circuit characterized in

that it is comprising a regulation circuit (**28**) in every one of the secondary circuits, which regulation circuit (**28**) is comprising each at least the following elements: a transformer (**72**), two diodes (**34,35**), a switching element (**36**), a comparator circuit (**38**) with reference source (**73**) and means for pulse-width modulation,

which is further characterised in that the primary coil (**32**) of the transformer (**72**) in the main current path is connected in series to a rectifier diode (**23**) of the secondary circuit,

that one end of the secondary coil (**33**) of the transformer (**72**) is connected to the primary coil (**32**) and the diode (**23**) via the diode (**34**),

that the one end of the diode (**35**) is also connected with the said end of the secondary coil (**33**) whereas the other end of the diode (**35**) is connected to one current port of the switching element (**36**),

that the other current port of the switching element (**36**) is connected to the same lead as the other end of the secondary coil (**33**) to which lead is connected also the output connector (**41**),

that one entrance of the comparator (**38**) is connected directly to the other output connector (**40**), the other entrance of comparator circuit (**38**) is connected to the output connector (**41**) via the reference source (**73**), whereas its outlet is connected to the signal port of the switching element (**36**).

4,517,634

POWER CONVERSION EQUIPMENT

Takami Sakai, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 15, 1982, Ser. No. 450,010

Claims priority, application Japan, Dec. 26, 1981, 56-213011

Int. Cl.³ H02J *3/36*

U.S. Cl. 363—35 **4 Claims**

1. Power conversion equipment for converting electric power which is transmitted in a power system, comprising:

means for detecting the electric power transmitted in said power system;

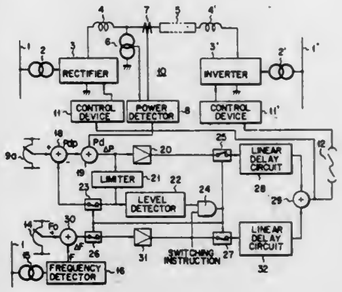
a power setter for presetting a value of electric power of said power system;

means for calculating a difference between the detected electric power and the preset value of electric power and for producing a corresponding output;

mode changeover means for changing over an operation mode of said power system between a power control mode and a frequency control mode in response to said output of said difference calculating means;

power control means for controlling the electric power of said power system when the operation mode of said power system is changed over to the power control mode;

frequency control means for controlling a frequency of said power system when the operation mode of said power system is changed over to the frequency control mode;



means for driving said mode changeover means such that said mode changeover means changes said operation from said frequency control mode to said power control mode only when the said output of said calculating means is below a predetermined value; and

said power setter being operated to adjust the present value of electric power so as to eliminate said calculated difference in said frequency control mode.

4,517,635

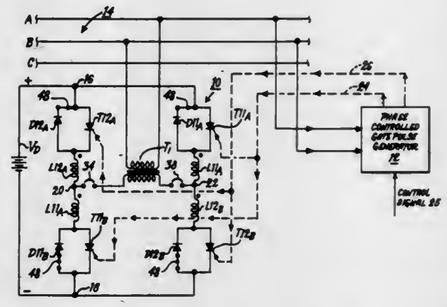
LINE-COMMUTATED CONVERTER CIRCUIT

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, King of Prussia, Pa.

Filed Sep. 24, 1982, Ser. No. 423,481

Int. Cl.³ H02M *7/757*

U.S. Cl. 363—136 **13 Claims**



1. In a line-commutated converter circuit that: (i) normally operates with a power factor exceeding 0.3 when operating near full inversion or near full rectification, (ii) has two D.C. terminals, one positive and one negative, adapted to be connected to a D.C. system, (iii) has a pair of A.C. terminals adapted to be connected to an A.C. system, and (iv) during normal operating conditions has coupled between two predetermined nodes a normalized peak value $\overline{V}$ of the A.C. system voltage in the range of 1.85 to 3.5;

(a) first, second, third, and fourth branches, each branch comprising the combination of a thyristor and a diode connected in inverse-parallel relationship and an inductor connected in series with the thyristor-diode combination; the first and third branches being connected to said posi-

tive D.C. terminal, and the second and fourth branches being connected to said negative D.C. terminal;

(b) means for connecting said first and fourth branches in series across said D.C. terminals, with a first of said predetermined nodes located between said first and fourth branches, and means for connecting said second and third branches in series across said D.C. terminals, with a second of said predetermined nodes located between said second and third branches; the diodes of said four branches being connected in a blocking direction with respect to said D.C. terminals;

(c) a transformer comprising two windings coupled together, means for connecting one of said windings between said nodes and means for connecting the other of said windings across said A.C. terminals;

(d) gating means (i) for triggering the thyristors of said first and second branches into conduction substantially simultaneously to provide a conductive path between said D.C. terminals that extends through said first and second branches via said one winding and (ii) for triggering the thyristors of said third and fourth branches into conduction substantially simultaneously to provide a conductive path between said D.C. terminals that extends through said third and fourth branches via said one winding;

(e) and means for controlling said gating means such that the thyristors of said first and second branches are triggered into conduction at a controlled phase angle with respect to the A.C. system voltage thereafter;

(f) said triggering normally being repeated each cycle of the A.C. system voltage;

(g) said means for controlling the gating means being adjustable over a range that provides for smooth adjustment through zero of the magnitude of the power flow between said A.C. and D.C. systems and for smooth reversal in the direction of said power flow between said A.C. and D.C. systems,

(h) the phase angle ϕ of the triggering of the thyristors normally being confined to the following limits between a maximum value $\phi_{(max)}$ and a minimum value $\phi_{(min)}$:

$$\phi_{(max)} = \sin^{-1}\left[\frac{2-C}{C\bar{V}}\right]$$

$$\phi_{(min)} = \frac{C\pi}{2-C} - \frac{C\bar{V}}{2-C}\cos\phi_{(min)} - \cdot \sin^{-1}\left(\frac{2-C}{C\bar{V}}\right) - \left[\left(\frac{C\bar{V}}{2-C}\right)^2 - 1\right]^{\frac{1}{2}}$$

if $2\bar{V}\cos\phi_{(min)} - \pi < 0$; and

$$\phi_{(min)} = \frac{C\pi}{2(2-C)} - \frac{C\bar{V}}{2-C}\cos\phi_{(min)} - \cos^{-1}\frac{\pi}{2\bar{V}}$$

if $2\bar{V}\cos\phi_{(min)} - \pi > 0$,

where C is the ratio of the inductance of the branches of the converter in a conductive path to the total inductive path inductance.

4,517,636

INVERTER APPARATUS

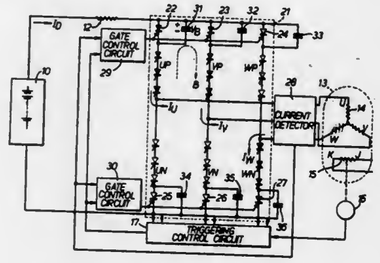
Hiroshi Uchino, Hachiouji; Kihei Nakajima, Yokohama, and Ryoichi Kurosawa, Hachiouji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 8, 1983, Ser. No. 512,004

Claims priority, application Japan, Jul. 9, 1982, 57-119522; Jul. 9, 1982, 57-119523

Int. Cl.³ H02M 7/515

U.S. Cl. 363—138 **3 Claims**



1. A D.C. to A.C. inverter apparatus responsive to a D.C. power source comprising:

an inverter including thyristor-branches, said inverter being connected across the DC power source;

a plurality of gate-turn-off thyristors respectively interposed between the DC power source and each of the thyristor-branches;

a load connected to the output terminals of said inverter;

gate control means for applying gate turn-off signals to said gate-turn-off thyristors;

means for detecting current through the output terminals of said inverter and applying control signals to said gate control means when the detected current is a predetermined value; and

means for biasing a reverse voltage to the thyristor-branches when said gate-turn-off thyristor is turned off.

4,517,637

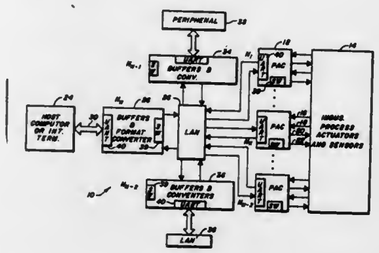
DISTRIBUTED MEASUREMENT AND CONTROL SYSTEM FOR INDUSTRIAL PROCESSES

Douglas A. Cassell, Sherborn, Mass., assignor to Inconix Corporation, Natick, Mass.

Filed Apr. 21, 1983, Ser. No. 487,041

Int. Cl.³ G06F 15/46

U.S. Cl. 364—138 **12 Claims**



1. A distributed measurement and control system for industrial processes having a plurality of industrial sensors and industrial controllers, comprising:

a host system;

a local area network coupled to said host system;

at least one programmable industrial measurement and control device coupled to said local area network;

said at least one industrial measurement and control device including;

a processor having a program ROM and a scratch pad RAM;

first means coupled to said processor for providing a plurality of analog input channels for receiving a like plurality of input signals from individual ones of said industrial sensors;

second means coupled to said analog input channels and to said processor for selectively conditioning said plurality of analog input signals;

third means coupled to said processor and to said second means for repetitively providing digital data representative of corresponding ones of said selectively conditioned analog input signals;

fourth means coupled to said processor for providing a plurality of output signal channels connectable to individual ones of said industrial controllers; and

fifth means coupled to said processor and to said third and fourth means for repetitively evaluating at least one of a plurality of predetermined measurement and control functions on said data and for actuating in accordance therewith preselected ones of said output signals, said fifth means including a plurality of RAM working registers, a pointer controlled ROM work list for defining the time sequence of functions to be evaluated, a ROM directory table for defining the starting addresses for the control and data structures for each of the functions to be evaluated, a ROM variables control block having for each starting address specified therefor by the directory a table defining RAM addresses for the data structure to be loaded into the RAM working registers for evaluation, a ROM output control block having for each starting address specified therefor by the directory a table defining the RAM addresses for the data and control structures for the RAM working registers after function evaluation, and a ROM program code table having for each starting address specified therefor by the directory a table of instructions in microcode defining individual ones of said at least one of said plurality of predetermined functions to be evaluated.

4,517,638

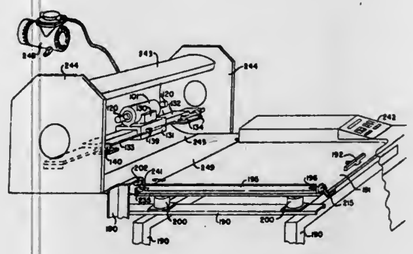
APPARATUS AND METHOD OF MICROPROCESSOR-CONTROLLING LASER SCANNING OF A MATERIAL HELD BY A TRANSPORT, THE LOADING AND UNLOADING OF THE TRANSPORT ALSO BEING MICROPROCESSOR-CONTROLLED

Zvi Provisor, Fairfax, and Henry H. T. Burford, Jr., Annandale, both of Va., assignors to Crosfield Data Systems, Inc., Springfield, Va.

Filed Jun. 16, 1982, Ser. No. 388,813

Int. Cl.³ G06F 15/46; H04N 1/06

U.S. Cl. 364—146 **32 Claims**



1. A system for controlling a scanner apparatus for (a) scanning, with an optical reading device which rotates about and translates along an axis, an image on an image-carrying element supported by a transport, (b) converting an optical signal from the optical reading device into a electrical signal which is stored in at least one memory as digital data, (c) clocking out said digital data from the memory, and (d) generating an optical signal from the digital data with an optical writer device which (i) rotates about and translates along an axis and (ii) scans an image receiving medium supported by a transport to write an image on the medium, the reading device and writing device operating independently, the control system comprising:

a first microprocessor;

a control panel having actuatable buttons and keys thereon, each button of which, when actuated, provides a corresponding control-related input to the first microprocessor and each key of which represents a data input;

means for interfacing the control panel to the first microprocessor;

wherein one button comprises a format button which, when actuated by an operator, permits the operator to selectively actuate at least one key which represents a corresponding image size on the medium, the selective key actuations being directed to the first microprocessor through the interfacing means to provide inputs to the apparatus which (a) control the clocking rate of digital data from the memory to effect vertical image size and (b) control the rate of translation of the optical writer device.

4,517,639

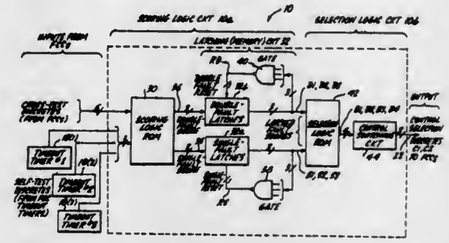
FAULT SCORING AND SELECTION CIRCUIT AND METHOD FOR REDUNDANT SYSTEM

Philip J. Ferrell, Seattle; Alan D. Stern, Bellevue, and Melvin D. McFarland, Pacific, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 13, 1982, Ser. No. 377,854

Int. Cl.³ G06F 11/16

U.S. Cl. 364—186 **25 Claims**



1. A fault scoring and selection circuit for selectively enabling at least one of a plurality of redundant control units to govern the operation of controlled equipment In which the redundant control units are each of the type having both self-testing and cross-testing capabilities respectively producing self-test and cross-test fault signals, said circuit comprising:

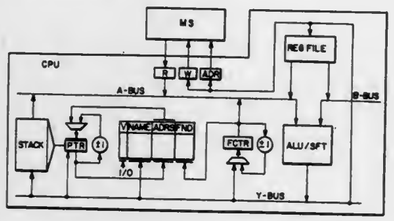
fault-scoring logic circuit means including means for receiving self-test and cross-test fault signals from each of said control units, and means assigning predetermined scoring weights, certain of which are different, to said self-test fault signals and cross-test fault signals, and means for combining these weighted fault signals to produce combined fault score signals representing the health of each of said control units; and

selection logic circuit means for receiving said fault score signals, and for converting said fault score signals into a selection output signal that selects at least one of said control units having the lowest available fault score as determined by said fault score signals.

4,517,640
STACK MACHINE WITH IMPROVED CACHE MEMORY FOR VARIABLES

Akira Hattori, Yokohama; Hiromu Hayashi, Zama; Akio Shinagawa, and Tsuyoshi Shinogi, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1982, Ser. No. 393,533
Claims priority, application Japan, Jun. 30, 1981, 56-102900; Jul. 3, 1981, 56-104017; Jul. 3, 1981, 56-104020
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **7 Claims**



1. A data processing system having a program structure and execution mode where an actual argument is bound to a formal argument of a function to be called by storing a pair of a variable name as the formal argument and a variable as the actual argument into a First-In-Last-Out stack memory as an environment list, the function called executes processings using a latest bind value from said environment list when referring to variable values, when a value of such function is obtained, said function value is returned by deleting the formal argument variable of the function from said environment list, said system comprising:

counter means for incrementing one and decrementing one for each call and return of the function, respectively;

associative buffer memory means, operatively connected to said counter means, for storing words where each word comprises the variable name, location data for the variable name, location data for the variable on the environment list of said stack memory and a count value of said counter means when variables are stored in said stack memory;

means for accessing said associative buffer memory means, responsive to a process reference to a variable for supplying the variable name as a key to said buffer memory means, for comparing said supplied variable name to the variable names stored in said buffer memory and for providing an indication of said comparison, responsive to an indication that said variable name is stored in said buffer memory means for obtaining a value for the variable name on the environment list using the location data corresponding to the variable name in the buffer memory means, responsive to an indication that said variable name is not stored in said buffer memory for obtaining a value for the variable name by searching variable names stored on said environment list and, responsive to a return from the function called for deleting the word of the buffer memory means which contains said counter value for said function.

4,517,641
LOOKAHEAD I/O DEVICE CONTROL SUBSYSTEM

Edwin J. Pinheiro, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,366
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **9 Claims**

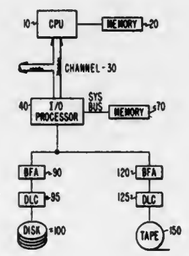
1. An I/O device control subsystem for providing a command for execution by a first I/O device in an idle mode after providing a previous command for a data transfer by a second I/O device which is still busy with said data transfer, the data transfer rate of said first I/O device being greater than the data transfer rate of said second I/O device, the improvement comprising:

means coupled to the first I/O device for determining the time required for execution of said command by said first I/O device;

means coupled to the second I/O device for providing a time indication of the time at which said second I/O device will complete said data transfer;

means for indicating current time;

means coupled to the current time indicating means and the command execution time means for combining said command execution time with said current time to provide a command execution completion time; and



means coupled to the command execution completion time means, the current time indicating means, the first I/O device, and the second I/O device data transfer completion time means for comparing said command execution completion time with said time indication of the time at which said second I/O device will complete said data transfer and enabling execution of the command by said first I/O device if said execution completion time is less than said time indication and if execution of the command does not interfere with the data transfer by the second I/O device.

4,517,642
DIGITAL COMPUTER SYSTEM HAVING UNIQUE MEANS OF REFERRING TO OPERANDS AND ABILITY TO EXECUTE A PLURALITY OF INTERNAL LANGUAGES

John K. Ahlstrom, Mountain View, Calif.; David H. Bernstein, Ashland, Mass.; Gerald F. Clancy, Saratoga, Calif.; Ronald H. Gruner; Craig J. Mundie, both of Cary, N.C.; Michael S. Richmond, Pittsboro, N.C.; Stephen I. Schleimer, Chapel Hill, N.C.; Steven J. Wallach, Saratoga, Calif., and Walter A. Wallach, Jr., Raleigh, N.C., assignors to Data General Corporation, Westborough, Mass.

Filed May 22, 1981, Ser. No. 266,521
Int. Cl.³ G06F *9/40*
U.S. Cl. 364—200 **9 Claims**

1. In a digital computer system (CS101) including:

processor means (JP114) for performing operations upon operands,

memory means (MEM 112) for storing said operands and procedures, said procedures including:

S-Language instructions for controlling said operations; and,

names referring to certain of said operands to be operated upon, and

bus means (MOD 140, JPB 142) connected between the memory means and the processor means for conducting said instructions, names and operands between said memory means and said processor means;

said processor means comprising:

means for addressing said operands, including:

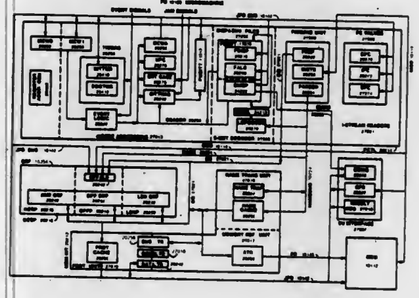
name table means (10350) for storing name table entries, each of said name table entries corresponding to one

of said names included in each one of said procedures and each of said name table entries comprising:

first data from which may be determined an address of a location in said memory means of said operand referred to by one of said names, and

second data identifying a format of said operand referred to by said one of said names; and,

translation means (NAME TRANS UNIT 27015) connected to said bus means and responsive to said name table entries for providing outputs to said memory means representing said addresses in said memory means of said operands referred to by said names,



ALU means (2034, 2074) for performing said operations,

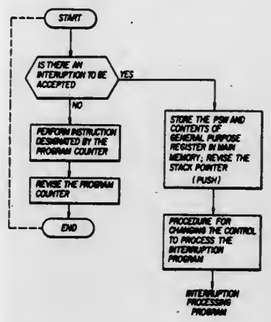
receiving means (INSTB 20262) connected to said bus means for receiving said instructions from said memory means, and

microcode control means (10240, 27003, 27013) connected between said receiving means and said ALU means for providing sequences of microinstructions for controlling said ALU means, said sequences being selected from a plurality of sequences of microinstructions, one sequence corresponding to each of said instructions received by said receiving means.

4,517,643
INTERRUPT CONTROL APPARATUS FOR A DATA PROCESSING SYSTEM

Akira Bannai, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 24, 1982, Ser. No. 361,372
Claims priority, application Japan, May 29, 1981, 56-80850
Int. Cl.³ G06F *9/12*
U.S. Cl. 364—200 **2 Claims**



1. A data processing apparatus, comprising:

a central processing unit having a program counter and a general register;

main memory means electrically connected to said CPU for storing data including a Program Status Word which includes the contents to said program counter and interruption inhibition information and wherein said main memory means stores the contents of said general register;

interruption means for controlling the storage of said data in said main memory when said CPU is processing a main program at the same time a first interruption occurs including a means for conducting a PUSH operation including the storing of the Program Status Word in said main memory;

means for processing a program associated with said first interruption;

means for saving, in an auxiliary memory, said Program Status Word, from said main memory including interruption inhibition information and the contents of said program counter at the time of said first interruption;

means for detecting an enabling second interruption including means for indicating that a second interruption has been made during the processing of said first interruption program and means for determining that the interruption inhibition information in the Program Status Word stored in said auxiliary memory indicates that said second interruption signal is enabling, while the CPU control is returning to said main program due to the execution of a return instruction after the processing of said first interruption program wherein said means for detecting outputs a detection signal when said second interruption signal has been made and when said second interruption signal has been made and is enabling;

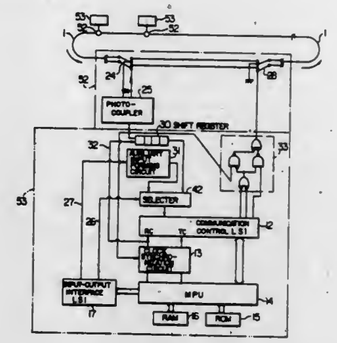
means for conducting a POP operation during the execution of a return instruction including means for restoring the Program Status Word to the CPU from said auxiliary memory; and

control means responsive to said detection signal for inhibiting the operation of said means for conducting a POP operation and for making the CPU control advance to process a program associated with said second interruption.

4,517,644
SYMMETRY TYPE LOOP COMMUNICATION SYSTEM

Nobuhiro Hamada, Hitachiota; Norihiko Sugimoto, Katsuta, and Masumi Nawa, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,547
Claims priority, application Japan, Sep. 3, 1980, 55-121041
Int. Cl.³ G06F *15/16*; H04J *3/08*
U.S. Cl. 364—200 **12 Claims**



1. A symmetric type loop communication system comprising a loop communication path, and a plurality of communication controlling stations connected in series by said loop communication path, each communication controlling station having means including a delay circuit connected to receive signals from said loop communication path and apply said signals to said communication path for performing a serial delay on said

loop communication path of a bit serial transmission signal carried on said communication path from one station to another, an auxiliary input forming circuit for generating a transmission-right signal to be applied as a bit serial transmission signal on said loop communication path, and control circuit means connected to receive signals from said loop communication path for controlling the operation of said auxiliary input forming circuit to selectively apply said transmission-right signal from said auxiliary input forming circuit to said loop communication path in the absence of receipt of a transmission-right signal from said loop communication path.

4,517,645

CONTROL DEVICE FOR LOADING AND UNLOADING MECHANISM

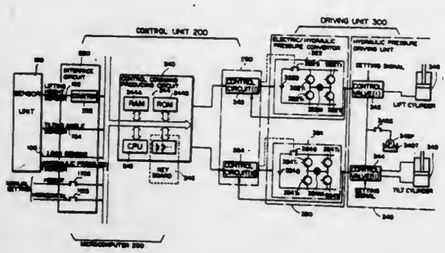
Katsumi Yuki, Toyota; Susumu Yoshida, Aichi; Mineo Ozeki, Ichinomiya; Yasuyuki Miyazaki, Aichi, and Masaru Kawamata, Numazu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho and Kabushiki Kaisha Meidensha, both of, Japan

Filed Mar. 31, 1982, Ser. No. 364,402

Claims priority, application Japan, Mar. 31, 1981, 56-47739; Mar. 31, 1981, 56-47743

Int. Cl.³ G06F *15/50;* **B66F** *9/06*

U.S. Cl. 364—424 **12 Claims**



1. In a control device for a loading and unloading mechanism adapted to a fork lift truck comprising:

(a) a sensor unit **(100)** including at least a lifting height sensor means **(102)** for measuring a lifting height of a fork movably mounted on the fork lift truck, and a load sensor means **(106)** for detecting the weight of a load supported by the fork,

(b) a control unit **(200)** comprising an interface circuit including a lifting height counter means **(222)** for counting output signals from the sensor unit, and first data setting means manually operable by an operator,

(c) a control command producing circuit **(240)** provided in the control unit **(200)**, said control command producing circuit **(240)** including a memory means **(244)** for storing data indicative of lifting height, and second data setting means **(246)** manually operable by an operator for setting data indicative of lifting height into the memory means, said control command producing circuit producing a command signal indicative of valve opening on the basis of a comparison between outputs of the sensor unit **(100)** and the data stored in the memory means,

(d) a servomotor driving circuit means **(320)** responsive to the command signal indicative of valve opening produced by the control unit to produce a drive control signal, and

(e) a hydraulic pressure driving circuit means **(340)** responsive to the driving control signal for producing a control signal for hydraulically controlling a lift cylinder **(346)**,

the improvement wherein

said control command producing circuit comprises storage control means for storing in said memory means data indicative of a predetermined allowable lifting height control range input to the memory means by said second data setting means prior to a loading and unloading operation, and

said storage control means further operable for storing in a first memory area a first lifting height data indicative of a preselected lower value (H_l), required for a loading and unloading operation and a second lifting height data indicative of a preselected higher value (H_h) required for the same operation in a memory location corresponding to a common address designated by said second data setting means,

wherein said storage control means is further operable for storing in a second memory area storage indication data for confirming storage in said first memory area of data indicative of a lifting height, said second memory area allotted to a predetermined bit or bits of a memory area outside of the first memory area in which the lifting height data are stored.

4,517,646

METHOD OF AUTOMATIC GEAR SELECTION IN A VEHICLE POWER TRANSMISSION

Karl G. Magnusson, Handen, and Hans V. Stahl, Södertälje, both of Sweden, assignors to Saab-Scania Aktiebolag, Sweden

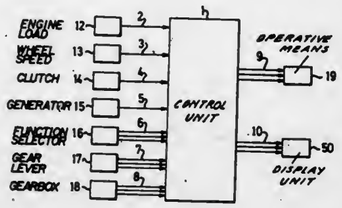
PCT No. PCT/SE81/00337, § 371 Date Jul. 27, 1982, § 102(e) Date Jul. 27, 1982, PCT Pub. No. WO82/01853, PCT Pub. Date Jun. 10, 1982

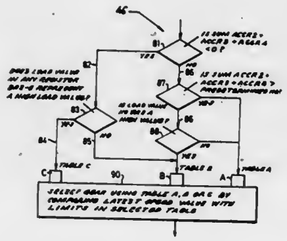
PCT Filed Nov. 19, 1981, Ser. No. 403,614

Claims priority, application Sweden, Nov. 28, 1980, 8008401

Int. Cl.³ B60K *20/16;* **G05D** *17/02;* **F16H** *5/66*

U.S. Cl. 364—424.1 **12 Claims**





1. A method for generating a gear selection signal in a vehicle having an engine, a mechanical power transmission which includes a plurality of gears, and a storage means for storing a plurality of gear selection tables, each said gear selection table including a respective upper and lower speed limit for each of said gears, said method comprising the steps of:

storing for each of a plurality of time intervals, a set of values representative of the speed of said vehicle, the acceleration of said vehicle, and the load of said engine during the respective time interval;

selecting one of said gear selection tables as a function of said stored values which relate to the engine load and acceleration of said vehicle at least 0.5 seconds before the most recently stored speed value; and

generating a gear selection signal indicative of that gear whose respective upper and lower speed limits, as defined by said selected gear selection table, encompasses the most recently sensed speed value.

7. A method for generating a gear selection signal in a vehicle having an engine, a mechanical power transmission including a plurality of gears, and a storage means for storing a plurality of gear selection tables, each said gear selection table including a respective upper and lower speed limit for each of said gears, said method comprising the steps of:

sensing, during each of a plurality of successive time intervals, a speed value of said vehicle, and a load value of said engine and storing said sensed values;

calculating for each said time interval an acceleration value of said vehicle as a function of said sensed speed value associated with that time interval and said sensed speed value associated with the prior said time interval;

selecting one of said gear selection tables as a function of said stored load and acceleration values which values are associated with at least one of said time intervals which will relate to engine load and vehicle acceleration at least 0.5 seconds before the most recent said time interval; and

generating a gear selection signal indicative of that gear whose respective upper and lower speed limits, as defined by said selected gear selection table, encompasses the most recently sensed speed value.

4,517,647

MEMORY SYSTEM OF WHEEL SPEED OF VEHICLE WITH SKID CONTROL SYSTEM

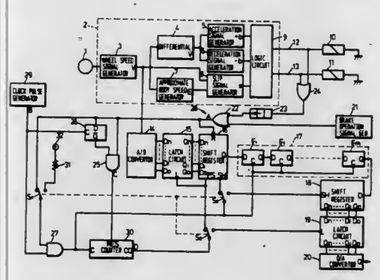
Atsumu Harada, and Tetsuro Arikawa, both of Kanagawa, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Apr. 12, 1982, Ser. No. 367,628

Claims priority, application Japan, Apr. 16, 1981, 56-57506

Int. Cl.³ B60T *8/08*

U.S. Cl. 364—426 **20 Claims**



1. A memory system of wheel speed of a vehicle with skid control system comprising:

(A) a wheel speed sensor associated with the wheel;

(B) a skid control unit measuring the skid condition of said wheel on the basis of the output signal of the wheel speed sensor and generating a control signal for controlling the brake fluid pressure to the brake of the wheel;

(C) a wheel speed signal generator connected to said wheel speed sensor for generating a wheel speed signal having an analogue or digital value proportional to the rotational speed of said wheel;

(D) a memory device for memorizing said wheel speed signal from said wheel speed signal generator;

(E) a switch device arranged between said wheel speed signal generator and said memory device for controlling the transmission of said wheel speed signal to said memory device; and

(F) a brake operation signal generator for generating a brake operation signal when said vehicle is braked, said brake operation signal and said control signal of the skid control unit being supplied to said switch device; and said switch device allowing said wheel speed signal to be transmitted to said memory device when said brake operation signal or said control signal is generated from said brake operation signal generator of said skid control unit.

4,517,648

TORQUE VARIATION DETECTING METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE

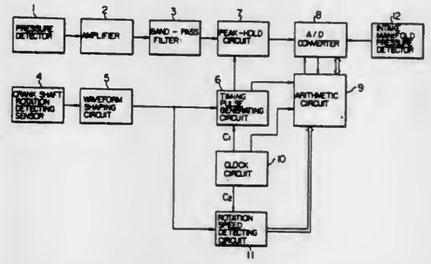
Toshikazu Ina, Aichi; Hisasi Kawai, Toyohashi; Tokio Kohama, Nishio; Hideki Obayashi, Okazaki; Daisaku Sawada, and Takashi Shigematsu, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 19, 1982, Ser. No. 399,955

Claims priority, application Japan, Jul. 20, 1981, 56-113142

Int. Cl.³ G01L *23/32;* **G01M** *15/00;* **G01P** *15/11*

U.S. Cl. 364—431.01 **10 Claims**



4. A torque variation detecting method for an internal combustion engine comprising the steps of:

detecting operating conditions of said engine;

detecting a plurality of times within a predetermined constant period, with torque variation detecting means, actual torque variations caused by a combustion variation of said engine;

determining an average value of actual torque variations for at least one of a plurality of sets of said engine operating conditions from a predetermined number of actual torque variations detected during the occurance of said at least one of said sets of engine operating conditions;

determining a deviation between said average value of actual torque variations corresponding to said at least one set of engine operating conditions and an average value of torque variations determined and stored in advance for said at least one set of operating conditions of said engine;

correcting said stored average value of torque variations for said at least one set of engine operating conditions in accordance with said deviation;

comparing the one stored average value corresponding to said detected engine operating conditions with each of the actual torque variations detectd by said torque variation detecting means within said predetermined constant period;

deciding that a reportable torque variation is present when the number of times said comparing step indicates the detected torque variation is larger than the stored average value multiplied by a predetermined constant, is larger than a predetermined reference value, and that no reportable torque variation is present when said number of times is smaller than said predetermined reference value.

10. A torque variation detecting apparatus for an internal combustion engine comprising:

detecting means for detecting the operating conditions of said engine;

torque variation detecting means for detecting a plurality of times within a predetermined constant period actual torque variation caused by a combustion variation of said engine; and

processing means for: (1) calculating an average value of actual torque variations for at least one of a plurality of sets of said operating conditions from a predetermined number of actual torque variations detected during the occurance of said at least one of said sets of engine operating conditions, (2) determining a deviation between said average value of actual torque variations corresponding to

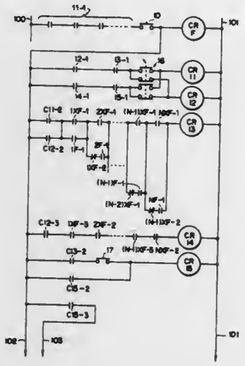
said at least one set of engine operating conditions and an average value of torque variations determined and stored in advance for said at least one set of engine operating conditions of said engine, and (3) correcting said stored average value of torque variations for said at least one set of engine operating conditions in accordance with said deviation, and (4) comparing the one stored average value corresponding to said detected engine operating condition with each of the actual torque variations detected by said torque variation detecting means within said predetermined constant period, and (5) deciding that a reportable torque variation is present when the number of times said comparing step indicates the detected torque variation is larger than the stored average value multiplied by a predetermined reference value, and that no torque is present when said number of times is smaller than said predetermined reference value.

4,517,649

AUTOMATIC DIE-INTERCHANGING CONTROL SYSTEM OF A PRESS MACHINE

Shinichi Kitagawa, Mikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,178
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—472 **8 Claims**



1. An automatic die-interchanging control system for a press machine having a used-die-demounting step including steps 1 to N for demounting a used die from the press machine, a bolster driving step for transferring a bolster carrying a new die to be mounted on the press machine, and a new-die-mounting step including steps NX to 1X respectively corresponding to the steps N to 1 of said used-die-demounting step, wherein said automatic die-interchanging control system comprises:

judging means which outputs a signal under the condition that no unfinished steps exist before a last finished step among those which have finished their operations; and

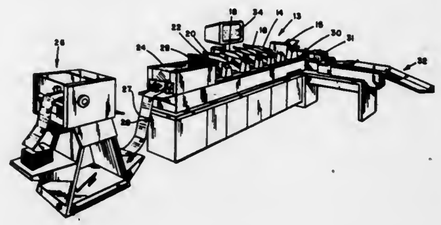
automatic die-interchanging control means for resuming the operation from a step immediately subsequent to said last finished step as an initial step in response to said signal from said judging means.

4,517,650

FEEDER INTERFACE CIRCUIT FOR UNIVERSAL MULTI-STATION DOCUMENT INSERTER

John M. Gomes, Bridgeport, and Peter N. Piotroski, New Canaan, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 1, 1982, Ser. No. 394,383
Int. Cl.³ G06F *15/20*; G06G *7/48*
U.S. Cl. 364—478 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(4 Microfiche, 209 Pages)



1. In a document inserter having a plurality of document feeder stations, a central processor for providing address and command signals to each of the feeder stations, the central processor having a supervisory program stored therein including a data table and a configuration PROM which include information on the type of feeder station and the functions to be performed thereby, a scanner means for detecting a predetermined code on a coded document, and a universal feeder interface circuit for each feeder station comprising:

address means for providing each feeder station with a unique address,

distributed processor means associated respectively with each feeder station for storing feeder programs containing instructions for the feeder for feeding documents,

means for interconnecting the distributed processor means with the central processor and the scanner,

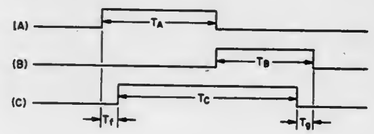
and each said feeder station thereby feeding documents in accordance with the predetermined code on said coded document when said central processor provides the unique address and command signals.

4,517,651

AUTOMATIC VENDING MACHINE

Kikuo Kawasaki, and Tomomi Sano, both of Tokyo, Japan, assignors to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Oct. 14, 1981, Ser. No. 311,466
Int. Cl.³ B67D *5/06*
U.S. Cl. 364—479 **4 Claims**



1. A vending machine for vending plural kinds of commodities, with each commodity being formed from at least three component materials, comprising:

(1) input means for selectively inputing control data representative of a kind of commodity, a desired quantity of the commodity to be vended and desired ratios for said at least three component materials forms the commodity to be vended;

(2) a memory storing numerical data;

(3) a microcomputer, including a control program, for:

(a) selecting numerical data from said memory according to said input data, and

(b) computing output feed time duration control signals, representative of corresponding feed times that each component material should be supplied at a respective constant feed rate to form a desired commodity, using said input data and said selected numerical data, and wherein the feed time duration control signal for the third component material is obtained by substracting signals representing first and second short time intervals from the sum of signals representing the feed time durations for the first and second component materials, said first and second short time intervals being relatively short compared to the time durations represented by the at least three time duration control signals;

(4) component supply means for supplying each of the three component materials at a substantially constant feed rate into a commodity container; and

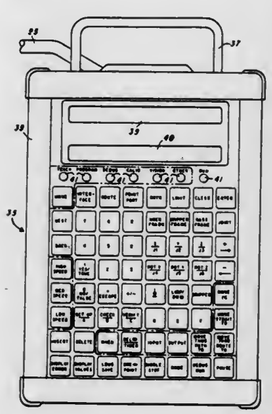
(5) control means, responsive to said output feed time duration control signals, for controlling the component supply means to cause said third component material to be dispensed during a period starting said first short time interval after the start of dispensing of said first component material and ending said second short time interval before the end of the dispensing of said second component material.

4,517,652

HAND-HELD MANIPULATOR APPLICATION MODULE

Ross L. Bennett, Round Rock; Robert B. Price, Austin; Clyde H. Springen, Austin, and Harlan C. Kilbourn, Austin, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 5, 1982, Ser. No. 355,288
Int. Cl.³ B25J *9/00*; G06F *15/46*
U.S. Cl. 364—513 **4 Claims**



1. A hand-held application module, for directing the operation of a programmable manipulator having a plurality of segments movable with respect to each other, controlled by digital computing means employing a robot programming language, including actuating means, the programmable manipulator having an end effector and motive means, responsive to the actuating means for causing desired movement of the end effector, comprising:

(a) programming mode means for enabling the entry of robot programming language statements and parameters wherein the program statements are translated into an internal code to represent the robot programming language employed;

(b) automatic teaching mode means for enabling the entry of data to define any positions of desired points for the end effector;

(c) entry means for receiving robot programming language statements and parameters, and data; and

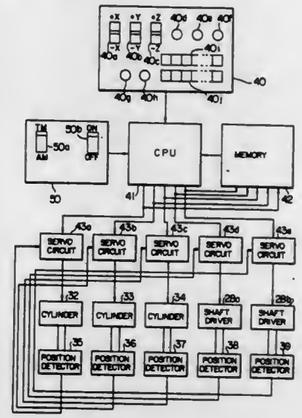
(d) interface means, for receiving program statements and parameters, and data from the entry means, for transmitting to the actuating means which is responsive to the robot programming language statements and parameters, and to the data, to activate the motive means to cause the end effector to move between desired points defined by the teaching mode means.

4,517,653

METHOD FOR CONTROLLING AN INDUSTRIAL ROBOT

Akira Tsuchihashi, Nagareyama, and Kazuyoshi Teramoto, Funabashi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 422,300
Claims priority, application Japan, Sep. 30, 1981, 56-153708
Int. Cl.³ G06F *15/46*; G05B *19/42*
U.S. Cl. 364—513 **8 Claims**



1. A method for controlling an industrial robot which sequentially works a plurality of substantially identical workpieces at working points thereof measured with respect to at least one reference point thereof, comprising the steps of:

teaching provisional working points and at least one provisional reference point by sensing a portion of a first one of the workpieces and storing position data of said provisional working points and said provisional reference point;

determining a position of an actual reference point for another of said workpieces by sensing a portion of said other workpiece by a sensor attached to a hand of said industrial robot and determining by calculation a distance and direction from said provisional reference point to said actual reference point based on the stored data; and

determining actual working points of said other workpiece based on the stored data of said provisional working points and said distance and direction to move a working hand of said industrial robot to said actual working points.

4,517,654

VIDEO PROCESSING ARCHITECTURE

Wesley F. Carmean, Reno, Nev., assignor to IGT, Reno, Nev.

Filed Aug. 9, 1982, Ser. No. 406,672
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—521 **11 Claims**
MICROFICHE APPENDIX INCLUDED
(4 Microfiche, 183 Pages)

1. An apparatus for selectably displaying a stationary plane

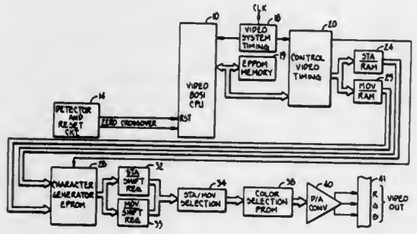
image and a movable plane image on a video display, comprising:

first means for storing image forming instructions at addressable storage locations and for supplying said image forming instructions from each addressable storage location;

a processor coupled to said first means for assembling said stationary plane image and assembling said movable plane image during a display interval, in accordance with said image forming instructions, and in response to image forming data input to said processor via a processor data bus;

a video controller coupled to said processor for generating a vertical display synchronization signal output and a horizontal display synchronization signal output;

a character generator including a plurality of addressable character blocks from which a display image output may be formed;



second means having an input coupled to said processor for storing said assembled stationary plane image and said assembled movable plane image, said second means having an output coupled to said character generator for selecting character blocks within said character generator for display according to said assembled stationary plane image and said assembled movable plane image;

a row subtractor coupled to said processor for discretely shifting said movable plane image in a vertical display axis once during each display interval;

a horizontal counter coupled to said processor for discretely shifting said movable plane image in a horizonal display axis once during each display interval; and

means coupled to said character generator for selecting, according to a processor assigned priority and on a picture element basis, between display of said stationary plane image and display of said movable plane image and for forming a composite image to be displayed.

4,517,655

MULTIPLIER CIRCUIT FOR MULTIPLYING AN INFORMATION SIGNAL BY A PERIODIC SIGNAL

Theodoor A. C. M. Claasen; Albert J. Stienstra, and Arthur H. M. van Roermund, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,737

Claims priority, application Netherlands, Oct. 14, 1981, 8104668

Int. Cl.³ H03C *1/00*

U.S. Cl. 364—703 **7 Claims**

1. A multiplier circuit for multiplying an information signal x(t) by a periodic signal y(t) having a period $1/f_o$, comprising:

a. pulse generator circuit for generating a group of N pulse signals g(k;t) on N pulse channels **25**(k) of the generator circuit wherein k=0, 1, 2, 3, . . . N−1, N being at least equal to three and wherein

a.1. each group of N pulse signals has a group pulse repetition rate $T_o 1/f_o$;

a.2. the pulses in the group of pulse signals g(k;t) occur at instants $t_o+k\ T_o/N+iT_o$, wherein t_o represents a constant and i= . . . −2, −1, 0, 1, 2, . . . ;

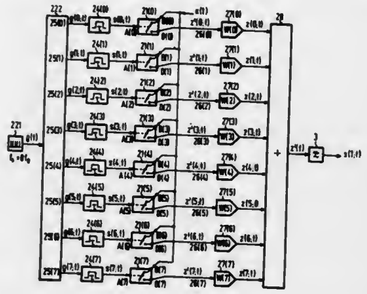
b. N switching circuits **21**(k) each having:

b.1. a control input A(k) which is coupled to the control channel **25**(k) of the pulse generator, the pulse signal g(k;t) being applied to this control channel;

b.2. an information signal input B(k) for receiving the information signal x(t);

b.3. a signal channel **26**(k) for carrying a signal output D(k),

c. N weighting networks **27**(k) each network having a constant weighting factor W(k) defined by the relation $W(k)=y(t_o+k\ T_o/N)$, each weighting network being



coupled to a one of the signal channels and generating a product signal,

d. an adder device **28** connected to each one of the signal channels of the weighting networks for adding the product signals together;

e. N pulse reshaping circuits **24**(k) for converting a pulse applied thereto into a pulse whose width τ is equal to an integral fraction times $1/f_o$, each pulse reshaping circuit being coupled to a one of the switching circuits.

4,517,656

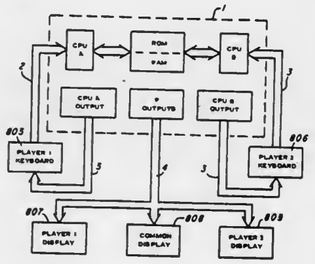
PROGRAMMABLE GAME WITH VIRTUAL CPU'S SHARING ALU AND MEMORY FOR SIMULTANEOUS EXECUTION OF INDEPENDENT GAME INPUTS

Duane Solimeno, Newington, Conn.; Peter L. Koeppen, Houston, Tex.; Gerald Rogers, Sugarland, Tex., and Sammy K. Brown, Midland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 11, 1981, Ser. No. 262,278

Int. Cl.³ G06F *15/44*

U.S. Cl. 364—900 **4 Claims**



1. A game apparatus comprising:

input means for inputting of data;

memory means for storing of the data;

processing means for processing of data and having first and second set of terminals with the first set of terminals being connected to the input means and memory means;

display means for displaying of the processed data, the display means being connected to the second set of terminals, and the processor means includes:

a control and timing means for providing two sets of program sequences that define operation of the game apparatus;

coupling means for receiving data from the memory means via the first set of terminals and includes an arithmetic means for performing operations in accordance with instructions of the two sets of program sequences on the received data;

first output storage means for receiving data from the memory means through the arithmetic means for passing the data via a first member of the second set of terminals to the display means during the execution of a first set of program sequences of the two sets of program sequences;

a second output storage means for receiving data from the input means through the arithmetic means and for passing the data to the second member of the second set of terminals during the execution of a second set of program sequences of the two sets of program sequences;

a first register means for storing data from the memory means via the arithmetic means during the execution of the first set of program sequences and for addressing the memory means with the stored data during the execution of the second set of program sequences; and

a second register means for storing data from the memory means via the arithmetic means during the execution of the second set of program sequences and for addressing the memory means with the stored data during the execution of the first set of program sequences.

4,517,657

INTEGRATED BIT PROCESSOR/WORD PROCESSOR CONTROL SYSTEM

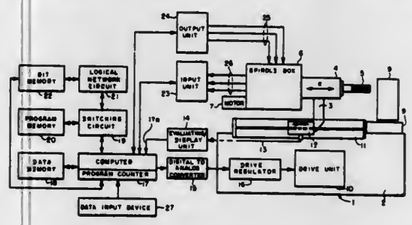
Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heldenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jul. 13, 1982, Ser. No. 397,839

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130746

Int. Cl.³ G06F *7/00*

U.S. Cl. 364—900 **9 Claims**



1. In a programmable process control system of the type comprising a multiple bit computer which comprises a program counter, a data memory coupled to the computer, and a program memory which stores a plurality of computer commands, the improvement comprising:

a program controllable logical network comprising means for providing individual bit processing of individual bit information;

a bit memory coupled to the logical network for storing said individual bit information;

a plurality of commands for the bit processing means stored in the program memory, said computer commands and said commands for the bit processing means stored in the program memory as an integrated program for the process control system; and

means for interconnecting the program memory, the computer, and the logical network to form an integrated process control system, said interconnecting means comprising:

first means, responsive to the program counter, for directing the plurality of commands for the bit processing means from the program memory to the logical network for execution by the bit processing means;

second means, responsive to the program counter, for directing the plurality of computer commands from the program memory to the computer for execution by the computer;

switching means for isolating the computer from the plurality of commands for the bit processing means; and

means for supplying to the computer a computer command for incrementing the program counter in response to each of the plurality of commands for the bit processing means from which the computer is isolated, such that the command reading time of the computer is preserved during the execution of commands by the individual bit processing means.

4,517,658

PICTURE INFORMATION FILING SYSTEM FOR PERMANENTLY STORING PORTIONS OF PREVIOUSLY PERMANENTLY STORED DATA LOGICALLY COMBINING THE PORTIONS

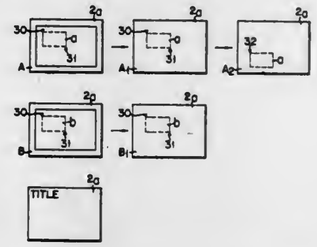
Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 203,573, Nov. 5, 1980, Pat. No. 4,408,301. This application Jul. 13, 1983, Ser. No. 513,322

Claims priority, application Japan, Nov. 6, 1979, 54-143714; Nov. 6, 1979, 54-143715; Nov. 6, 1979, 54-143717

Int. Cl.³ G06F *3/14;* **G06K** *15/20*

U.S. Cl. 364—900 **4 Claims**



1. A method for synthesizing picture information in a picture information filing system comprising a nonvolatile device for recording a number of pictures corresponding to picture information, inputting means for inputting the picture information, a picture element memory for storing the picture information, and a display section for displaying the picture information thereon, comprising the steps of:

(a) causing picture information of one page recorded in the nonvolatile device to be displayed on the display section;

(b) designating a predetermined area of the picture information displayed on the display section;

(c) extracting the picture information of only the designated predetermined area;

(d) designating the position to which the picture information of the predetermined area is to be shifted;

(e) transferring the extracted picture information to an area corresponding to the designated position and storing the transferred picture information in the picture element memory;

(f) recording the transferred picture information in the nonvolatile device;

(g) repeating the steps (a) to (e) with respect to another page of picture information; and

(h) obtaining a logic sum of the picture information recorded in the nonvolatile device in the step (f) and the picture information stored in the picture element memory and storing the logic sum in the picture element memory.

4,517,659

CONSTANT-DISTANCE STRUCTURE POLYCELLULAR VERY LARGE SCALE INTEGRATED CIRCUIT

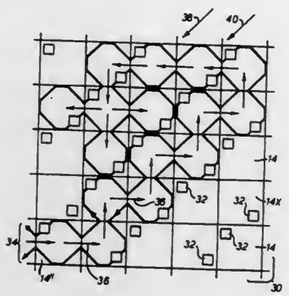
John T. Chamberlain, Macclesfield, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 8, 1982, Ser. No. 447,832

Claims priority, application United Kingdom, Dec. 8, 1981, 8137017

Int. Cl.³ G06F *13/00*; G11C *5/06*; H01L *27/10, 27/15*

U.S. Cl. 364—900 **7 Claims**



1. An integrated circuit comprising an array of a plurality of data processing cells, each of said cells comprising:

first, second, third and fourth boundaries shared with first, second, third and fourth neighboring cells respectively in unidirectionally sequentially numbered by unit increment and sequentially rotationally displaced first, second, third and fourth respective directions,

first, second, third and fourth data links associated respectively with said first, second, third and fourth boundaries, and each selectively operable in a first mode to receive data from that link next lower in number and to provide data to that link next higher in number and is selectively operable in a second mode to couple data received from said link next lower in number across said associated boundary and to receive data from across said associated boundary for coupling to said link next higher in number,

a single data processing element coupled intermediately between a first one of said links and that link next higher in number than said first one of said links,

a first coupling section coupled to transfer said data between said first data link and said second data link,

a second coupling section coupled to transfer said data between said second data link and said third data link,

a third coupling section coupled to transfer said data between said third data link and said fourth data link, and

a fourth coupling section coupled to transfer said data between said fourth data link and said first data link, where

said array comprises two types of cells;

a first type of cell wherein said data processing element is associated with said first coupling section and

a second type of cell wherein said data processing element is associated with said third coupling section, and where

said first and second types of cells are arranged alternately on said integrated circuit such that no cell of said first type can transfer data to another cell of said first type and no cell of said second type can transfer data to another cell of said second type, each cell in said array being coupled to receive a command and being operable to respond thereto to transfer data between itself and a selected neighboring cell by a communicating cell having the link adjacent to said selected neighboring cell selected to operate in said second mode to communicate with the selected neighboring cell and by the link in the selected neighboring cell adjacent to said communicating cell also being selected to operate in said second mode, whereby

the path between any one pair of sequential data processing elements in any chain grown in said array is of the same length as any other path between any other pair of sequential data processing elements in the chain.

4,517,660

FOLDABLE ELECTRONIC APPARATUS

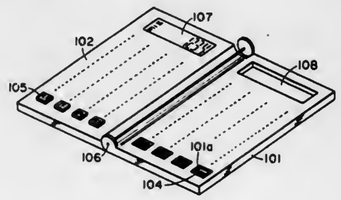
Hideo Fushimoto; Shigeru Toyomura, both of Kawasaki; Yoshiaki Nishimuro, Hachiohji; Osamu Asakura, and Masahiro Rachi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 244,258, Mar. 16, 1981, abandoned. This application May 6, 1983, Ser. No. 490,550

Claims priority, application Japan, Mar. 27, 1980, 55-39249; May 14, 1980, 55-62750

Int. Cl.³ G06C *7/02*; G06F *3/02*

U.S. Cl. 364—708 **7 Claims**



3. A foldable electronic apparatus comprising:

housing means having a first case and a second case mutually connected in a foldable manner for movement between open and folded positions;

first keyboard means comprising a plurality of keys mounted on at least one of said first case and said second case and actuatable from a top surface thereof when said housing means is in the open position for entering character data into said apparatus;

second keyboard means comprising a plurality of numerical keys and function keys provided on and actuatable from a top surface of said first case when said housing means is in the fiolded position;

display means provided on a top surface of said second case to display character data entered through said first keyboard means and numerical data entered through said second keyboard means; and

means providing a display aperture, for enabling numerical data and processed data entered through said second keyboard means to be visually displayed on a portion of said display means, provided in said first case in a position through which said portion of said display means can be viewed when said housing means is in the folded position.

5. A two-faced keyboard apparatus, comprising:

housing means having a first exposed surface, a second exposed surface opposite said first exposed surface, and predetermined thickness defined between said first and said second exposed surfaces; said housing means further being formed with hole means extending therethrough in the direction of the predetermined thickness thereof;

key top means disposed within said hole means for movement in the direction of the predetermined thickness of said housing means, to be actuated from both of said first exposed surface and said second exposed surface of said housing means; and

key signal generating means for generating a key signal in response to movement of said key top means by actuation from either of said first and said second exposed surfaces.

4,517,661

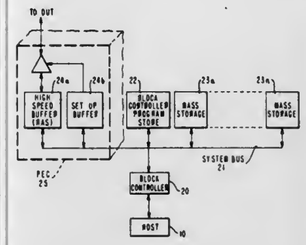
PROGRAMMABLE CHIP TESTER HAVING PLURAL PIN UNIT BUFFERS WHICH EACH STORE SUFFICIENT TEST DATA FOR INDEPENDENT OPERATIONS BY EACH PIN UNIT

Matthew C. Graf; Hans P. Muhlfeld, Jr., both of Highland, and Edward H. Valentine, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1981, Ser. No. 283,778

Int. Cl.³ G06F *11/00*; G01R *31/28*

U.S. Cl. 364—900 **9 Claims**



1. A test system for testing circuits in integrated circuit chips, through the pins of the device in which the chips are mounted, by transmitting a test program of test signals and receiving output signals from the circuits, comprising:

a host computer for controlling the test system;

a plurality of electronic blocks for testing circuit, each testing block including a system bus, a controller connected to said host computer and said system bus, means for mass storage of the test program connected to said system bus, and a plurality of pin electronic units within each testing block and connected to the system bus and a predetermined pin of a device under test, each of the pin electronic units including a buffer for storing the test program for use by said pin electronic unit, said controller responsive to the host computer for controlling the transfer of the test program between said mass storage means and the buffer of each pin electronic unit, whereby each unit contains sufficient test data to operate independently of the other pin electronic units.

4,517,662

HIGH-SPEED, COMPACT MAGNETIC BUBBLE STRETCHER

LuVerne R. Peterson, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 29, 1983, Ser. No. 508,946

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—44 **10 Claims**

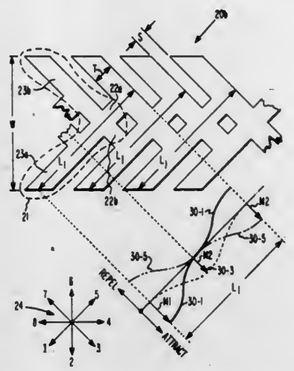
1. A magnetic bubble memory of the type that includes a magnetic film, a plurality of magnetic bubbles in said film, an insulating layer over said film, and an electromagnetic structure on said insulating layer for stretching said bubbles to aid in their detection; wherein said structure is comprised of:

a plurality of elongated permalloy elements on said insulator and arranged in spaced rows with only one of said elements per row;

each element consisting of a pattern that is X-shaped which repeats along the element in the direction of elongation;

said X in said pattern having two short legs and two long legs;

said pattern being repeated such that the short legs of one X join with the long legs of the next X; and wherein



the length of each elongated permalloy element is at least one hundred times its width and is substantially longer than the stretched bubbles that it produces.

4,517,663

METHOD OF REWRITING DATA IN NON-VOLATILE MEMORY, AND SYSTEM THEREFOR

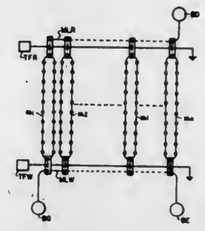
Ryoji Imazeki, Hachioji, and Michiya Inoue, Hino, both of Japan, assignors to Fujitsu Fanuc Limited, Minamitsuru, Japan

Division of Ser. No. 183,037, Sep. 2, 1980, Pat. No. 4,447,887. This application Dec. 22, 1983, Ser. No. 564,208

Claims priority, application Japan, Sep. 4, 1979, 54-113256

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—222 **13 Claims**



1. A method of rewriting data in a non-volatile memory including a data storage area, having a plurality of portions, and a save area, by storing first data in the data storage area of the non-volatile memory and rewriting the first data, the method comprising the steps of:

(a) storing the first data in the save area of the non-volatile memory;

(b) erasing the first data stored in the data storage area, generating a predetermined pattern in the area in which the first data was stored;

(c) writing second data into the data storage area;

(d) detecting an interruption in the power supply;

(e) successively retrieving data from each of the plurality of portions of the data storage area of the nonvolatile memory upon return of the power supply;

(f) testing each successive portion of the plurality of portions of the data storage area for the predetermined pattern; and

(g) writing the first data stored in the save area into the portion of the data storage area that has the predetermined pattern.

4,517,664

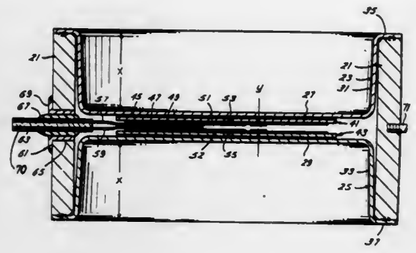
SEISMIC APPARATUS

Carl O. Berglund, Houston, Tex., assignor to Teledyne Exploration Company, Houston, Tex.

Continuation-in-part of Ser. No. 135,476, Mar. 31, 1980, Pat. No. 4,336,639. This application Nov. 12, 1981, Ser. No. 320,417

Int. Cl.³ H04R *17/00*

U.S. Cl. 367—163 **17 Claims**



16. A seismic streamer section including

a flexible tube adapted to contain liquid,

end means at each end of the tube for making mechanical and electrical connection with an adjacent tube and for closing the ends of the tube,

bulkheads in the tube disposed at intervals along the length of the tube,

mechanical tension lines extending from one end means at one end of the tube through the tube and said bulkheads to the other end means at the other end of the tube,

hydrophones in the tube disposed at intervals along the length of the tube between the bulkheads, and

an electric conductor bundle in the tube including through conductors extending from said one end means to said other end means and other conductors extending from said one end means to various ones of said components,

each hydrophone comprising a liquid tight case and piezoelectric means disposed within the case, the case including parallel flexible diaphragms

said piezoelectric means comprising first wafer shaped piezoelectric electric transducer means secured to the inner face of only one of said diaphragms and second wafer shaped piezoelectric transducer means secured to the inner face of only the other of said diaphragms, the adjacent faces of said piezoelectric transducer means being separated by less than twice the thickness of each transducer means.

4,517,665

ACOUSTICALLY TRANSPARENT HYDROPHONE PROBE

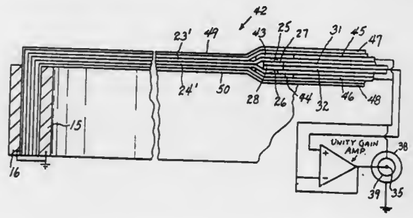
Aimé S. DeReggi, Boyds, and Gerald R. Harris, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 210,044, Nov. 24, 1980, Pat. No. 4,433,400. This application Nov. 17, 1983, Ser. No. 553,387

Int. Cl.³ H04R *17/00*

U.S. Cl. 367—163 **9 Claims**

1. A hydrophone device comprising supporting hoop means of a selected area, sheet means of biaxially oriented polymer material secured in said hoop means and held thereby in a taut condition, said polymer sheet means having a poled piezoelectric area of predetermined size, the selected area of said sheet means defined by said hoop means being larger than the size of said poled piezoelectric area, and said poled piezoelectric area being located in said sheet means in spaced relation to said hoop means such that said hoop means during use remains outside the region of the medium subjected to the acoustic energy and the point being probed by said hydrophone device, said sheet means having electrode means of deposited metal on one side of said poled piezoelectric area, and guard ring means of deposited metal on the other side of said piezoelectric area, said guard ring means being substantially coaxial with said electrode means, said sheet means having a thickness selected such that it is substantially acoustically transparent in liquid, and respective electrical leads of deposited metal on said sheet means, connected to said electrode means and guard ring means and extending toward the periphery of said sheet means, said deposited electrode means, guard ring means, and electrical leads comprising metal films having thicknesses selected such that the electrode means, guard ring means, and electrical leads do not affect the acoustical transparency of said sheet means, wherein said sheet means comprises two identical polymer membranes bonded together defining respective piezoelectric laminae and being provided with abutting deposited electrodes smaller than about 1 mm in diameter, the two membranes each having a poled piezoelectric area adjacent said abutting deposited electrodes, and said piezoelectric area being oppositely poled, whereby the piezoelectric laminae are electrically connected in parallel, wherein said electrical leads connected to said abutting deposited electrodes include respective superimposed strips of deposited metal between the two membranes, having a common center connection junction near the perimeters of the membranes, and wherein said electrical leads connected to said guard rings include strips of deposited metal on the outer surfaces of the two membranes adjacent said superimposed strips in electricaly shielding relation thereto, having a common guard connection junction near the perimeters of the membranes, and wherein said sheet means also comprises two additional polymer membranes bonded to the outer surfaces of said two identical polymer membranes and having outer metallized surfaces defining ground electrodes, a triaxial transmission line secured to said hoop means, said transmission line having an outer conductor sleeve, a guard sleeve and a center conductor, means connecting said common connection junction to said center conductor, means connecting said common guard connection junction to said guard sleeve, and means connecting said ground electrodes to said outer conductor sleeve.



4,517,666

OPTICAL HEAD

Hideo Andō, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 21, 1982, Ser. No. 390,775

Claims priority, application Japan, Jun. 22, 1981, 56-96198; Sep. 17, 1981, 56-146541; Sep. 17, 1981, 56-146544; Sep. 17, 1981, 56-146545; Oct. 22, 1981, 56-168963

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—45 **17 Claims**

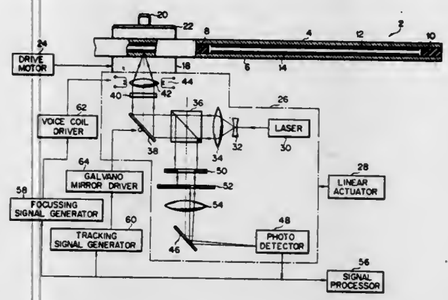
1. An optical head for focusing a light beam on a light reflecting layer on which a tracking guide is formed, comprising:

means for generating the light beam;

means for directing the generated light beam;

an objective lens between said directing means and said light reflecting layer for converging the directed light beam into a convergent light beam having a beam waist, for projecting the convergent light beam onto the light reflecting layer, and for converging a divergent light beam reflected by the light reflecting layer, a beam spot corresponding to the beam waist of the converged light beam being formed on the light reflecting layer when the objective lens is in a just in-focusing state, and a beam spot of a larger size than that of the beam waist being formed on the light reflecting layer when the objective is in defocusing state;

means for converting the reflected light beam transmitted from the objective lens into a component beam which is deflected in accordance with the distance between said objective lens and the light reflecting layer; and



a photodetector with a light receiving surface substantially located on an image forming plane on which an image of the beam spot corresponding to the beam waist is formed by said objective lens when the objective lens is in the just in-focusing state, the light receiving surface including at least first and second photosensitive regions which are arranged in a direction along which a projected pattern formed by the component beam is shifted by said converting means.

4,517,667

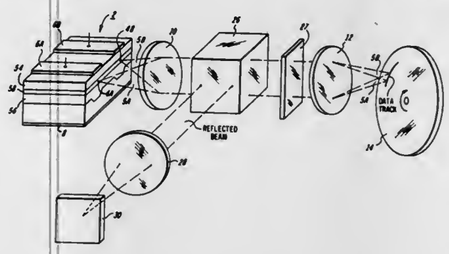
DIRECT READ AFTER WRITE OPTICAL DISK SYSTEM

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 10, 1982, Ser. No. 387,294

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—122 **4 Claims**



1. An optical disk scanning system with direct read after write capabilities comprising:

a light level sensitive recording material capable of recording data along a data track positioned at least substantially concentric with other data tracks;

first means for moving said recording material;

a pair of integrated solid state lasers;

drive means for said lasers for providing an information modulated light beam and an unmodulated light beam;

second means for transmitting said beams to only said data track; and

third means for detecting changes in a physical property of the unmodulated beam reflected from said recording material.

4,517,668

OPTICAL DISK WITH NARROW GUIDE TRACKS

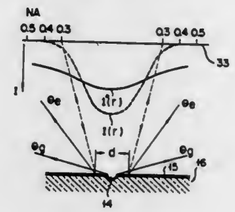
Takashi Takaoka; Masahiko Mochizuki; Mitsuo Yamashita, and Tadao Miura, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Division of Ser. No. 235,427, Feb. 17, 1981,. This application Apr. 29, 1983, Ser. No. 490,225

Claims priority, application Japan, Feb. 18, 1980, 55-18698

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—111 **7 Claims**



2. An optical disk comprising:

a substrate including optical guiding tracks having protruding or recessed reliefs formed on said substrate at a desired pitch and having a width of 0.2 to 0.41 μm; and

an optical recording layer formed over said substrate into which information can be written by irradiating a focussed laser beam modulated by said information.

4,517,669

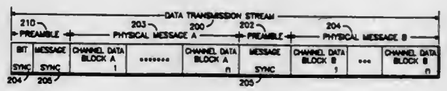
METHOD AND APPARATUS FOR CODING MESSAGES COMMUNICATED BETWEEN A PRIMARY STATION AND REMOTE STATIONS OF A DATA COMMUNICATIONS SYSTEM

Thomas A. Freeburg, Arlington Heights, and Jay Krebs, Crystal Lake, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 11, 1983, Ser. No. 512,800

Int. Cl.³ H04J *3/16*

U.S. Cl. 370—82 **12 Claims**



1. A signalling system for communicating messages via a communications medium between a primary station and a plurality of remote stations in a data communications system, said signalling system including a variable length message which is transmitted between an originating station and received by at least one destination station, which includes a bit synchronization field, a message synchronization field, and a plurality of channel data blocks being comprised of:

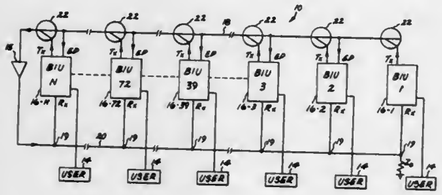
the first and second channel data blocks including an information field including control data and a check word, a parity field coded from the information field according to a predetermined code, and the bits of the fields being interleaved such that consecutive bits of a field are separated by a predetermined number of bits; and

the third and following channel data blocks including an information field including data, a parity field coded from the information field, and the bits of the fields being interleaved such that consecutive bits of a field are separated by a predetermined number of bits, and the information field of the last channel data block further including a check word coded from the data in the information field of the third and following channel data blocks.

4,517,670
PREEMPTIVE BID COMMUNICATION SYSTEM

Mehmet E. Ulug, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,716
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—85 **41 Claims**



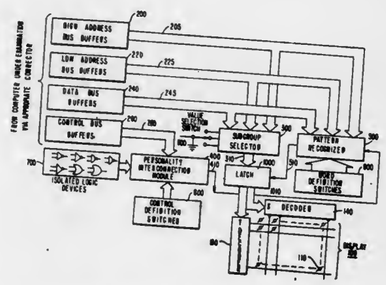
1. A bus communication system comprising:
(a) a unidirectional transmit bus and a receive bus coupled to one another such that information packets leaving said transmit bus are placed on said receive bus;
(b) a plurality of interface units (BIUs) coupled to each of said transmit and receive buses at spaced locations along said buses; said BIUs communicating with one another by transmitting information packets on said transmit bus and receiving transmitted information packets from said receive bus;
(c) each of said BIUs periodically obtaining a user information packet to be transmitted and each respective BIU operating;
(1) in a free mode wherein transmission of said user information packet is initiated substantially immediately when said each respective BIU determines both of said buses are idle, but aborted if said each respective BIU concurrently detects energy on said transmit bus from an upstream BIU;
(2) in a preemptive mode, after having aborted transmission of said user information packet, by initiating a respective communication period each time a complete information packet is received from said receive bus, transmitting energy on said transmit bus during each said respective communication period, and retransmitting the aborted packet after termination of a respective communication period during which energy is not received on said transmit bus from an upstream BIU, each said respective BIU operating in said preemptive mode from the instant transmission of said user information packet is aborted until retransmission of said aborted information packet is successfully completed, said communication period equal to at least the maximum signal propagation time along both said buses; and
(3) in a captive mode, during which transmission of a user information packet from said each respective BIU is precluded, extending from the instant said each respective BIU has successfully transmitted a user information packet until both buses have been inactive for a communication period following the receipt of a complete information packet by said each respective BIU and for a captive period immediately thereafter, said captive period equal to at least the maximum signal propagation time along both said buses.

4,517,671
APPARATUS FOR OPERATIONAL ANALYSIS OF COMPUTERS

James D. Lewis, 100 Second St., Hackensack, N.J. 07602

Filed Nov. 30, 1982, Ser. No. 445,578
Int. Cl.³ G06F *11/22*
U.S. Cl. 371—19 **8 Claims**

1. An apparatus for use in the operational analysis of a digital computer having control, address, and/or data signal buses, by displaying representations of selectable signals in response to the occurrence of selectable conditions comprising:
(a) input buffering means, connectable to such a computer, for receiving a plurality of signals from signal buses within said computer and for outputting a plurality of buffered signals;
(b) interchangeable personality definition means including digital logic means, connected to said input buffering means, for receiving buffered control bus signals and for outputting a control strobe signal, each such personality definition means adapting said apparatus for use with a particular computer;
(c) first switch means, connected to said personality definition means, for selecting a state of said buffered control bus signals which defines a condition for output of said control strobe signal;



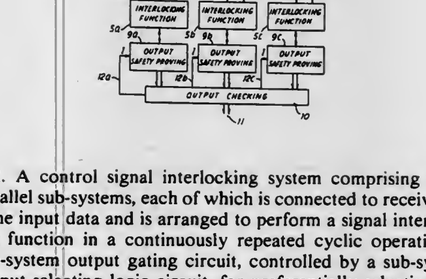
(d) second switch means, including digital logic means, connected to said input buffering means, for selecting signals to be displayed from said address and/or data signal buses;
(e) pattern recognizer means, including digital logic means, connected to said input buffering means, and said personality definition means for identifying states of address and data bus signals and outputting an enable strobe signal;
(f) means connected to said pattern recognition means for defining digital values to be identified by said pattern recognition means;
(g) storage means connected to said pattern recognizer means and said second switch means, for storing and outputting said signals selected to be displayed in response to said enable strobe and control strobe signals; and
(h) display means connected to said storage means for displaying said selected signals.

4,517,672
METHOD AND ARRANGEMENT FOR AN OPERATIONAL CHECK OF A PROGRAMMABLE LOGIC ARRAY

Hans-Joerg Pfleiderer, and Gerhard Grassl, both of Zorneding, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,229
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135368
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—27 **11 Claims**

1. A method for the function check of a programmable logic array which has output lines, ground lines, input lines, product term lines intersecting the input lines and combined therewith to define an AND plane and intersecting and combined with the output lines to define an OR plane, the product term lines and the output lines having a reference potential applied thereto, and switching transistors at selected intersections of the product term lines and the input and output lines, the switching transistors in the AND plane having a control input connected to a respective input line and a controlled segment connected between the respective term line and a ground line, the switching transistors in the OR plane having a control input connected to the respective product term line and a controlled segment connected to the respective output line and a ground line, the method comprising the steps of:
applying a first logic level to each input line in a first sequence while applying a second logic level to the other input lines;

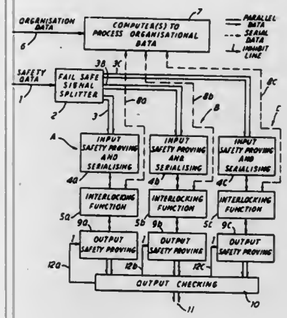


disconnecting the individual product term lines from ground potential in a second sequence while maintaining ground potential on the other product term lines; and evaluating the bit patterns appearing at the output lines.

4,517,673
COMPUTER-BASED INTERLOCKING SYSTEM

Christopher R. Brown, Bromham, Near Chippenham; John D. Corrie, and William G. J. Wilson, both of Chippenham, all of England, assignors to Westinghouse Brake & Signal Co., Wiltshire, England

Filed Sep. 28, 1982, Ser. No. 425,918
Claims priority, application United Kingdom, Oct. 10, 1981, 8130644
Int. Cl.³ G06F *11/00, 11/08*
U.S. Cl. 371—36 **6 Claims**

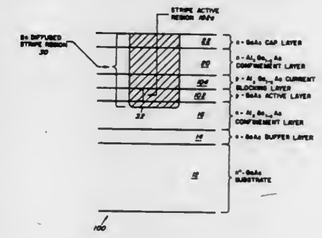


1. A control signal interlocking system comprising three parallel sub-systems, each of which is connected to receive the same input data and is arranged to perform a signal interlocking function in a continuously repeated cyclic operation, a sub-system output gating circuit, controlled by a sub-system output selecting logic circuit, for preferentially selecting and connecting a first sub-system output to provide the system output and for alternatively selecting a second sub-system output if the first sub-system is found to be in error, said sub-system output selecting logic circuit comprising a comparator in each sub-system for receiving outputs from all the sub-systems, said comparators including difference determining means for determining difference results between pairs of the sub-system outputs, memory means for storing a reference table of possible difference results, and comparison means connected to said difference determining means and said memory means for comparing the actual difference results determined by said difference determining means with the reference difference results stored by the memory means to determine, if differences exist, if the first sub-system is in error.

4,517,674
ZINC-DIFFUSED NARROW STRIPE ALGAAS/GAAS DOUBLE HETEROSTRUCTURE LASER

Yet-Zen Liu, Westlake Village; Chi-Shain Hong, Newbury Park, and Daniel Dapkus, Anaheim all of Calif.; James J. Coleman, Champaign, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1982, Ser. No. 413,596
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—45 **14 Claims**



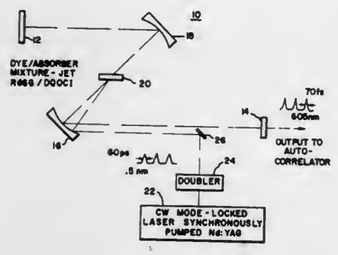
1. A stripe-geometry semiconductor laser device comprising:
a semiconductor substrate of a first conductivity type having first and second surfaces;
a first semiconductor confinement layer formed on said first surface of said substrate, said first confinement layer being of said first conductivity type;
an active semiconductor layer formed on said first confinement layer, said active layer being of a second conductivity type and having a band gap narrower than that of said first confinement layer, said active layer and said first confinement layer forming a heterojunction therebetween;
a current blocking layer of a second conductivity type formed on said active layer, said current blocking layer having a band gap wider than that of said active layer, said current blocking layer and said active layer forming a heterojunction therebetween said stripe region passing through a portion of said current blocking layer;
a second semiconductor confinement layer formed on said current blocking layer, said second confinement layer being of said first conductivity type and having a band gap wider than that of said active layer;
an elongated stripe region located in a portion of said second confinement layer and in a portion of said active layer, said stripe region longitudinally extending between two reflective surfaces located on respective ends of said device, said stripe region being doped with an impurity of said second conductivity type; and
electrode means coupled to said second surface of said substrate and to a first surface of said second confinement layer;
wherein laser oscillation takes place in said portion of said stripe region located in said active layer, the resultant laser radiation being guided by said portion of said stripe region located in said active layer.

4,517,675

DYE LASER MEDIUM FOR SUBPICOSECOND LASER PULSE GENERATION

Gerard Mourou, and Theodore Sizer, II, both of Rochester, N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,647
Int. Cl.³ H01S *3/20*
U.S. Cl. 372—53 **4 Claims**



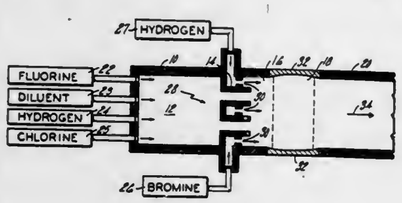
1. For use in a synchronously pumped CW dye laser to generate pulses of subpicosecond duration, a laser medium consisting essentially of a mixture of laser dye and saturable absorber where the molecular ratio of absorber to dye is 3 to 50 to compensate for dispersion in said laser medium, and said laser dye being Rhodamine 6G and said absorber is 1,3 prime-diethyl-4,2 prime-quinolyoxacarbocyanide iodide, which is known as DQOCI, or wherein said mixture consists essentially of 5×10^{4}M of Rhodamaine 6G and 3×10^{-5} of said DQOCI.

4,517,676

MULTI-SPECIES, CW COMBUSTION DRIVEN LASER EMPLOYING HYDROGEN BROMIDE

Richard A. Meinzer, Newington, and Gregory M. Dobbs, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 223,639, Jan. 9, 1981, abandoned. This application Feb. 24, 1983, Ser. No. 469,187
Int. Cl.³ H01S *3/095*
U.S. Cl. 372—89 **3 Claims**



1. A method of generating radiation in a laser system having at least two different compounds lasing simultaneously comprising the steps of:

mixing a first gas containing fluorine and a second gas containing hydrogen to form atomic fluorine and vibrationally excited hydrogen fluoride in a first reaction region;

passing said hydrogen fluoride and atomic fluorine through an expansion nozzle to a second reaction region;

mixing intimately molecular hydrogen and a gas containing bromine with said atomic fluorine and hydrogen fluoride in said second reaction region, whereby vibrationally excited hydrogen bromide is formed; and

resonating radiation emitted from said vibrationally excited hydrogen bromide and said vibrationally excited hydrogen fluoride in an optical cavity, wherein the improvement comprises:

reacting said molecular hydrogen with fluorine to form vibrationally excited hydrogen fluoride and atomic hydrogen in said second reaction region; and

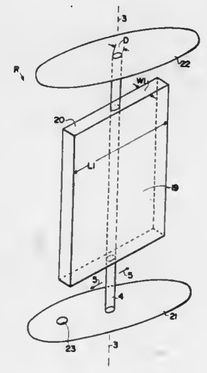
reacting said atomic hydrogen directly with molecular bromine in said second reaction region to form said vibrationally excited hydrogen bromide.

4,517,677

STABLE OPTICAL LASER RESONATOR

Konrad Altmann, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 387,189
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 3125544; Aug. 21, 1981, 3133142
Int. Cl.³ H01S *3/05*
U.S. Cl. 372—99 **16 Claims**



1. In a stable optical laser resonator having an optical axis and capable of having a plurality of excited transversal oscillation modes so that a spontaneous coupling of said plurality of transversal modes occurs resulting in a laser beam oscillating along a beam path transversely to said optical axis, and including two mirrors arranged to face each other to form a space for an active lasing medium, each of said mirrors having an effective mirror surface area of given size, the improvement comprising decoupling means (1'', 23) forming part of at least one of said two mirrors, said decoupling means having a decoupling area which is permeable or at least partially permeable to said laser beam, said decoupling area being small relative to said given size of said effective mirror surface area, said decoupling area being located in said beam path on or in said at least one mirror where the oscillating laser beam movement comes substantially to a stop, whereby a highly coherent light impulse is obtained.

4,517,678

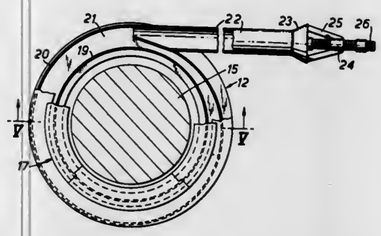
APPARATUS FOR SEALING ELECTRODES IN ELECTRIC ARC FURNACES

Kevin D. Ball, Grimsby, Canada, and Peter Davies, North Anston, England, assignors to Coated Electrodes Limited, England

Filed Nov. 22, 1982, Ser. No. 443,852
Claims priority, application United Kingdom, Nov. 20, 1981, 8135012; Jul. 30, 1982, 8222022; Aug. 11, 1982, 8223179
Int. Cl.³ H05B *7/12*
U.S. Cl. 373—95 **1 Claim**

1. Apparatus for sealing an electrode in an electric arc furnace, the apparatus comprising an annular chamber adapted to encompass the electrode and including a ring-shaped cover member constructed of an electrically non-conductive refractory material consisting essentially of alumina and silica, above an upstanding cylindrical wall member formed with at least one passageway which is inclined with respect to the radius of

the chamber and is connected to receive gas under pressure and to discharge such gas onto and around the encompassed electrode, wherein the cover member is separable from the wall member and the wall member is manufactured from an electrically non-conductive material consisting essentially of alumina and silica, the lower surface of the ring-shaped cover member being inwardly inclined to assist correct location of



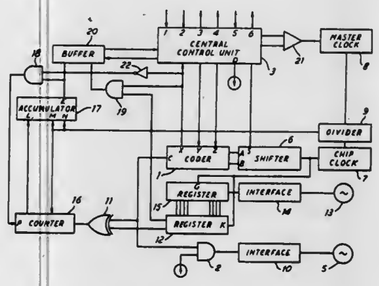
the cover member upon the cylindrical wall member and to direct the gas towards the electrode surface, and the internal diameter of the ring-shaped cover member being greater than the diameter of the electrode to define an annular spacing therebetween through which the gas discharged from said at least one passageway passes effectively to seal the space around the electrode.

4,517,679

COMMUNICATION OVER NOISY LINES

Duncan G. D. Clark, Blackwater, Nr. Camberley; Ian D. Kimber, Bracknell, and Roderick G. May, Wealdstone, all of England, assignors to EMI Limited, Hayes, England

Filed Mar. 7, 1983, Ser. No. 473,055
Claims priority, application United Kingdom, Mar. 10, 1982, 8207043
Int. Cl.³ H04K *1/04*
U.S. Cl. 375—37 **7 Claims**



1. A line network communication system including transmitter means capable of transmitting a series of coded data signals on a base band carrier signal and receiver means capable of receiving a transmitted signal and recovery therefrom said coded data signals wherein said receiver means comprises comparison means for comparing, in a search mode, successively received data signals with a series of coded reference signals at a number of different relative phases thereby to generate a corresponding number of comparison signals forming a set and means capable of changing the relative phases of the compared signals until at least one comparison signal in a set indicates a degree of correlation exceeding a threshold value,

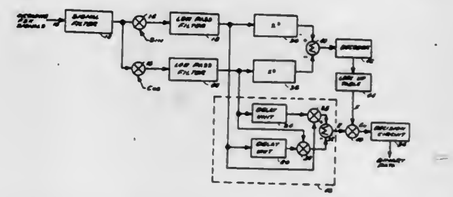
means for verifying, in a tracking mode, that having so changed the relative phases of compared signals at least one comparison in each of a plurality of different sets, generated by comparing a corresponding plurality of series of successively received data signals with said series of coded reference signals, represents a degree of correlation exceeding said threshold value and, in dependence on a successful verification in the tracking mode, means for adjusting, in a locking mode, the relative phases of the compared signals so as to maintain a degree of correlation in excess of said threshold value thereby to permit recovery of the coded data signals.

4,517,680

ERROR VECTOR NORMALIZER

William Betts, St. Petersburg, and Wesley H. Smith, Largo, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Feb. 23, 1983, Ser. No. 468,954
Int. Cl.³ H04B *1/10*
U.S. Cl. 375—75 **4 Claims**



1. In a modem in which a signal vector is generated which corresponds to a received data signal in a complex plane, a vector normalizer comprising:

means for deriving a normalizing signal indicative of the radius of said signal vector;

means for deriving a normalizing factor from said normalizing signal which depends on the inverse of said radius; and

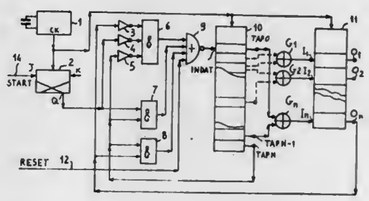
multiplying means for multiplying said signal vector with said normalizing factor to obtain a normalized vector signal.

4,517,681

DIGITAL TIMING UNIT

Calogero Mantellina, Cerro Maggiore, and Daniele Zanzottera, Busto Garolfo, both of Italy, assignors to Honeywell Information Systems Inc., Milan, Italy

Filed Mar. 14, 1983, Ser. No. 474,915
Claims priority, application Italy, Mar. 22, 1982, 20304 A/82
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—106 **3 Claims**



1. A digital timing unit comprising a shift register having a plurality of N ordered cells, the shift register having a first cell input and an output for each cell, and further having a clock input terminal for loading a logical signal level in the first cell and also shifting the logical content of a cell for each received clock pulse, said digital timing unit further including a clock pulse generator for providing at its output a sequence of clock pulses having a predetermined frequency, said clock pulses being fed to said clock input terminal, said timing unit further comprising:

a plurality of EXCLUSIVE OR circuits, each having an input pair and an output, the input pair of said EXCLU-

SIVE OR circuits being connected to a predetermined output pair of said shift register;

logic circuit means having input terminals for receiving:

(a) an external start signal having a predetermiined binary level;

(b) a first feedback signal in output from the output of a predetermined one of said cells;

(c) a second feedback signal in output from the output of a predetermined one of said EXCLUSIVE OR circuits;

said logic circuit means having an output terminal connected to said first cell input of said shift register;

said logic circuit means supplying said first cell input terminal with one of two levels of a binary output signal, switching from one level to the other said output signal on reception of said start signal, maintaining said other level at said output terminal and concurrently masking any other possible start signal, until said other level is shifted into said predetermined one of said cells, and further maintaining said other level at said output terminal, following the shifting of said other level into said predetermined one of said cells, until another start signal is received.

4,517,682

METHOD AND AN APPARATUS FOR SYNCHRONIZING RECEIVED BINARY SIGNALS

Norbert Neyer, Zürich, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

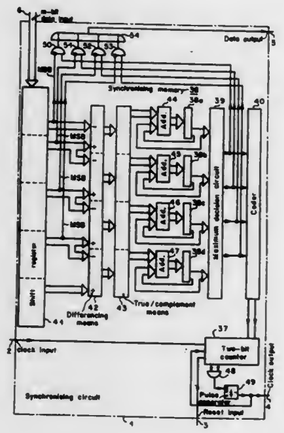
Filed Feb. 28, 1983, Ser. No. 470,523

Claims priority, application Switzerland, Jun. 9, 1982, 3549/82

Int. Cl.³ H04L *7/00*

U.S. Cl. 375—106

5 Claims



1. In an apparatus for synchronizing received binary reception signals whose bit duration is an integral multiple n of the duration of an original bit, wherein the original bit is already synchronized and has a duration which is equal to the bit duration of that received signal which has been transmitted at the highest available transmission rate of other possible transmission rates, each other possible transmission rate being said highest transmission rate divided by a selectable integral divisor, and wherein each original bit, having a serial number and an address, has a reception quality factor which is stored in time succession in respect of the individual original bits in a common quality factor memory,

in combination:

means operative for forming the quality factor differences of successive original bits,

means operable for adding the quality factor differences of those original bits which have the same serial number within a received bit,

means for determining the maximum of the summed quality factor difference of n successive original bits, and

means for continuously adapting the addresses of the original bits in such a way that the address of the original bit having the maximum summed quality factor difference is assigned a given, constant and predetermined value so that said original bit will be used as the first original bit of a received bit, for synchronization whereby the received signal is automatically synchronized also at any one of said other possible transmission rates.

4,517,683

MICROPROCESSOR CONTROLLED SYSTEM FOR DECODING SERIAL DATA INTO PARALLEL DATA FOR EXECUTION

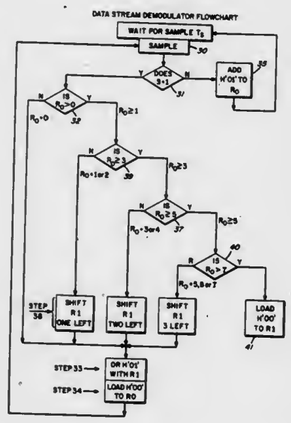
Fred W. Caspari, South Bend, Ind., assignor to Magnavox Consumer Electronics Company, Knoxville, Tenn.

Filed Dec. 31, 1981, Ser. No. 336,134

Int. Cl.³ H03K *13/24*

U.S. Cl. 375—117

12 Claims



1. An apparatus for decoding remote control data comprising:

detector means for detecting a serial data stream containing said remote control data;

a microprocessor connected to receive said serial data stream, said microprocessor including the programming steps of:

(a) determining at a sample rate at least twice the data rate whether a binary one or zero is being received by the microprocessor;

(b) counting the number of consecutive samples of zero bits between each sample of a one bit; and

(c) inserting into a register data determined by said sampling and counting a zero bit being inserted each time said number of consecutive zero bits exceeds a constant **N1**, and a one is stored each time a one bit is sampled.

4,517,684

METHOD OF AND ARRANGEMENT FOR PROVIDING NUMERICAL VALUES INDICATIVE OF RELATIONSIPS BETWEEN PULSE TRAIN PULSES

Helmut Fennel, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

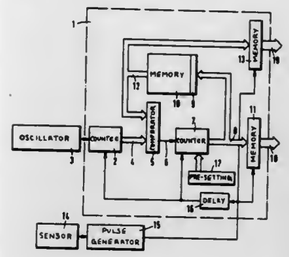
Filed Mar. 18, 1983, Ser. No. 476,646

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213800

Int. Cl.³ G04F *10/04*; H03K *13/24*

U.S. Cl. 377—19

17 Claims



1. A method of providing numerical values indicative of relationships between consecutive pulse train pulses which may be separated by different time periods, comprising the steps of:

generating a series of clock pulses at intervals of constant length considerably shorter than that of any of the time periods separating the consecutive pulse train pulses;

counting said clock pulses commencing with the occurrence of the respective pulse train pulse to obtain an actual value of the time elapsed since such occurrence;

retrieving from a first of a plurality of storage locations having consecutive addresses and storing sequential reference values indicative of the elapsed time the reference value stored thereat which is indicative of the shortest elapsed time of interest, using the address of the first storage location;

comparing said retrieved reference value with said actual value until their coincidence;

advancing on such coincidence to the next consecutive storage location by using a next updated address of such storage location to retrieve the next reference value indicative of the next longer elapsed time therefrom;

repeating said comparing step using said next reference value, and said advancing step using the previously updated address, until the occurrence of the next following pulse train pulse; and

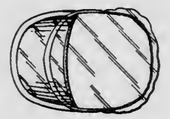
utilizing the last occurring address prior to the occurrence of such pulse train pulse for forming a numerical value indicative of the instantaneous frequency of the pulse train pulses.

278,755
ATHLETIC BODY SUIT
Anita B. Jacobson, 300 E. 74th St., New York, N.Y. 10021
Filed Jan. 5, 1983, Ser. No. 455,810
Term of patent 14 years
U.S. Cl. D2—36



278,756
HAT
Jameel R. Hasan, 2121 Howard Ave., Flint, Mich. 48502
Filed Nov. 22, 1982, Ser. No. 443,547
Term of patent 14 years
U.S. Cl. D2—244





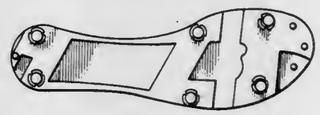
278,757
SPORT SHOE
Jonathan H. Werman, Peabody, Mass., assignor to The Keds Corporation, Cambridge, Mass.
Filed Nov. 1, 1982, Ser. No. 438,013
Term of patent 14 years
U.S. Cl. D2—309



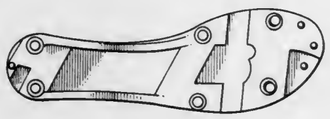
278,758
SHOE UPPER
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,950
Term of patent 14 years
U.S. Cl. D2—314



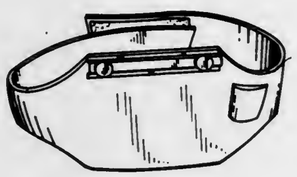
278,759
OUTSOLE FOR ATHLETIC SHOE
Edward J. Norton, Kingston, N.H.; Ronald L. Clay, West Boxford, and Zenon O. Smotrycz, Woburn, both of Mass., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.
Filed Oct. 4, 1982, Ser. No. 432,529
Term of patent 14 years
U.S. Cl. D2—320



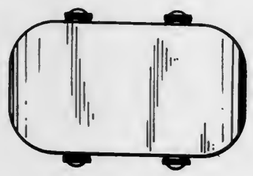
278,760
OUTSOLE FOR ATHLETIC SHOE
Edward J. Norton, Kingston, N.H.; Ronald L. Clay, West Boxford, and Zenon O. Smotrycz, Woburn, both of Mass., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.
Filed Oct. 4, 1982, Ser. No. 432,530
Term of patent 14 years
U.S. Cl. D2—320



278,761
WATERPROOF BELT CONTAINER FOR PORTABLE RADIO OR TAPE PLAYER
Kip L. Fuller, Denver, Colo., assignor to Product Masters, Inc., Denver, Colo.
Filed Mar. 31, 1983, Ser. No. 482,232
Term of patent 14 years
U.S. Cl. D2—381



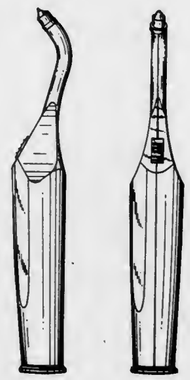
278,762
BELT BUCKLE WITH HIDDEN COMPARTMENTS
Genaro Texidor, Apt. 1F, 535 W. 135th St., New York, N.Y. 10031
Filed Oct. 12, 1982, Ser. No. 433,818
Term of patent 14 years
U.S. Cl. D2—394



278,763
EXPANDABLE BAG
James H. Allen, Covington, Ky., assignor to 'totes' incorporated, Loveland, Ohio
Division of Ser. No. 365,082, Apr. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 172,478, Jul. 25, 1980, abandoned. This application Apr. 6, 1983, Ser. No. 482,457
Term of patent 14 years
U.S. Cl. D3—71



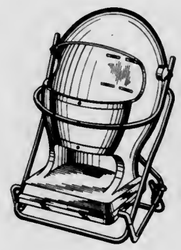
278,764
BATTERY OPERATED TOOTH BRUSH
Hans Olsen, Copenhagen, Denmark, assignor to Aktiebolaget Svensk Eldental, Falun, Sweden
Filed Jun. 30, 1982, Ser. No. 393,620
Term of patent 14 years
U.S. Cl. D4—101



278,765
TABLE
Lynn R. Crawford, Martinsville, Va., assignor to Dominion Industries, Inc., Collinsville, Va.
Filed Jan. 18, 1983, Ser. No. 458,805
Term of patent 14 years
U.S. Cl. D6—452



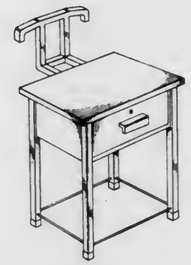
278,766
INFANT'S SAFETY SEAT
Robert E. Krume, 5056 Campo Rd., Woodland Hills, Calif. 91364
Filed Feb. 9, 1983, Ser. No. 465,248
Term of patent 14 years
U.S. Cl. D6—333



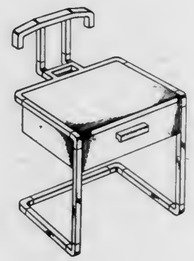
278,767
COMBINED CHAIR AND BOOKRACK
Roy D. Lundquist, Rte. 1, Luck, Wis. 54853
Filed Aug. 12, 1982, Ser. No. 407,358
Term of patent 14 years
U.S. Cl. D6—335



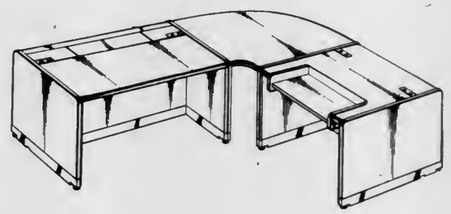
278,768
COMBINED COSTUMER AND STORAGE UNIT
Ronald W. Sharpe, 9465 Wilshire Blvd., Beverly Hills, Calif. 90212
Filed Feb. 18, 1983, Ser. No. 467,518
Term of patent 14 years
U.S. Cl. D6—414



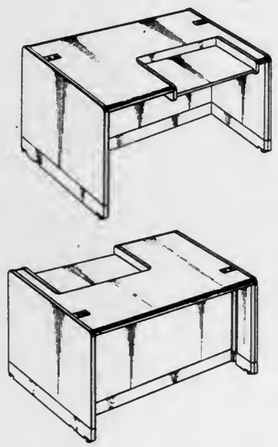
278,769
COMBINED COSTUMER AND STORAGE UNIT
Ronald W. Sharpe, 9465 Wilshire Blvd., Beverly Hills, Calif. 90212
Filed Feb. 18, 1983, Ser. No. 467,519
Term of patent 14 years
U.S. Cl. D6—414



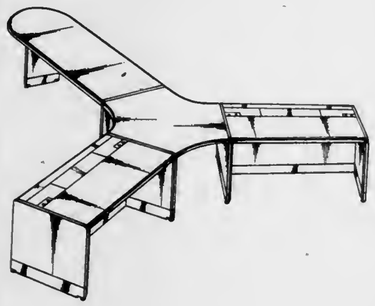
278,770
DESK
Seiji Koguma, Tokyo, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Feb. 3, 1983, Ser. No. 463,393
Term of patent 14 years
U.S. Cl. D6—423



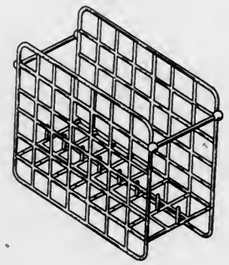
278,771
DESK
Seiji Koguma, Tokyo, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Feb. 3, 1983, Ser. No. 463,391
Term of patent 14 years
U.S. Cl. D6—426



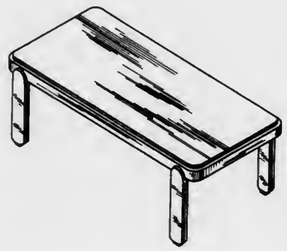
278,772
DESK
Seiji Koguma, Tokyo, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Feb. 3, 1983, Ser. No. 463,394
Term of patent 14 years
U.S. Cl. D6—426



278,773
MAGAZINE RACK
Yaffa Licari, and Vito Licari, both of Elberon, N.J., assignors to Basic Line, Inc., Cliffwood Beach, N.J.
Filed Nov. 26, 1982, Ser. No. 444,810
Term of patent 14 years
U.S. Cl. D6—462



278,774
TABLE
Robert De Fuccio, Spinnerstown, Pa., assignor to Simmons Universal Corporation, New York, N.Y.
Filed Mar. 17, 1983, Ser. No. 476,084
Term of patent 14 years
U.S. Cl. D6—484



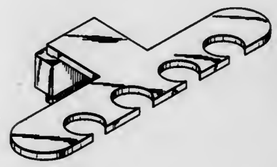
278,775
FURNITURE LEG OR SIMILAR ARTICLE
Arline Walpin, and Lionel A. Walpin, both of 9400 Brighton Way, Beverly Hills, Calif. 90110
Filed Feb. 4, 1983, Ser. No. 464,041
Term of patent 14 years
U.S. Cl. D6—495



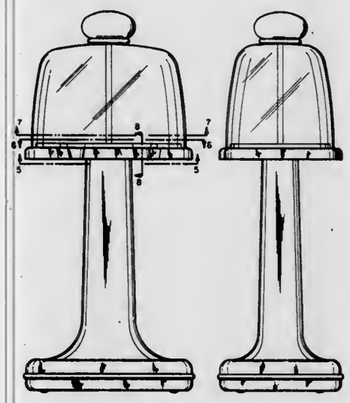
278,776
END STANDARD FOR A BENCH
James W. Kime, 95 Moonglow Dr., Birmingham, Ala. 35215
Filed Feb. 4, 1983, Ser. No. 463,804
Term of patent 14 years
U.S. Cl. D6—500



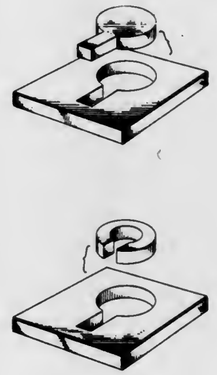
278,777
COMBINED BRACKET AND DISPOSABLE TOOTHBRUSH HOLDER
Edward J. Martin, 3388 Reedy Dr., Annandale, Va. 22003
Continuation-in-part of Ser. No. 409,267, Aug. 18, 1982, abandoned. This application Nov. 8, 1982, Ser. No. 440,245
Term of patent 14 years
U.S. Cl. D6—534



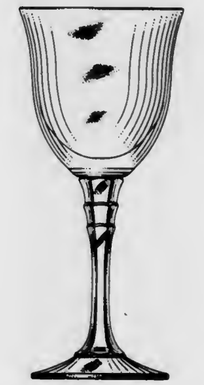
278,778
TOOTHBRUSH HOLDER
Jerry A. Brown, 3546 Newhouse Pl., Greenwood, Ind. 46142
Filed May 25, 1983, Ser. No. 498,120
Term of patent 14 years
U.S. Cl. D6—534



278,779
INVALID SEAT CUSHION
John B. Sink, 3729 Rolling Rd., High Point, N.C. 27260
Filed May 27, 1982, Ser. No. 382,784
Term of patent 14 years
U.S. Cl. D6—596



278,780
WINE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,947
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



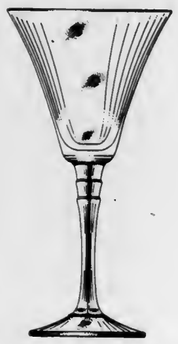


278,781
WINE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,948
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13

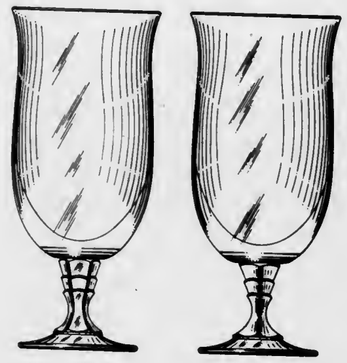


278,782
WATER GOBLET
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,950
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13

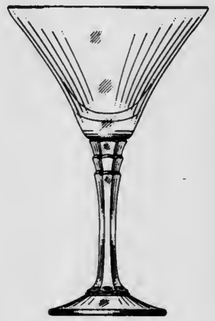




278,783
WATER GOBLET
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,984
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



278,784
CHAMPAGNE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,985
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



278,786
CORDIAL GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,988
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



278,785
CHAMPAGNE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,986
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



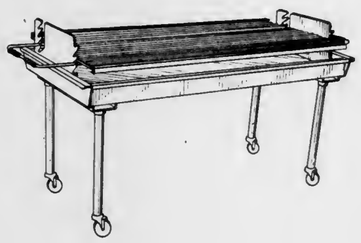
278,787
CORDIAL GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,989
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



278,788
CORDIAL GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 402,990
The portion of the term of this patent subsequent to Apr. 9, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



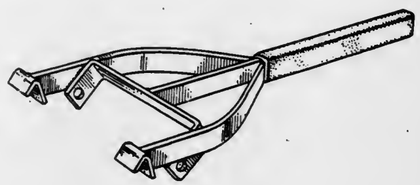
278,789
PORTABLE COOKING GRILL
Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., Aurora, Ill.
Filed May 2, 1983, Ser. No. 490,703
Term of patent 14 years
U.S. Cl. D7—334



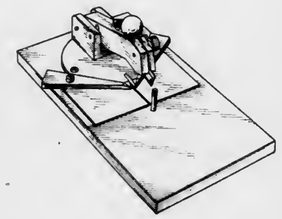
278,790
PUSH BLOCK FOR USE IN GUIDING WORK PIECES DURING CUTTING OPERATIONS
David B. Chaney, Powell, and Michael J. Duwell, Columbus, both of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Filed Sep. 2, 1982, Ser. No. 414,132
Term of patent 14 years
U.S. Cl. D8—14



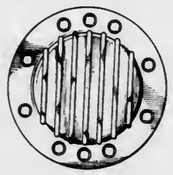
278,791
LEVERAGE TOOL SUPPORT MEMBER
Robert L. Stultz, P.O. Box 251, Magalia, Calif. 95954; James M. Angel, 1647 Young Ave., and Rodney Kopsa, 1765 Sparks Dr., both of Paradise, Calif. 95969
Filed Jul. 9, 1982, Ser. No. 396,710
Term of patent 14 years
U.S. Cl. D8—88



278,792
PICTURE FRAMING CUTTER
Richard E. Williams, 30 Walter Martin Ave., Ft. Walton Beach, Fla. 32548
Filed Jul. 14, 1982, Ser. No. 397,979
Term of patent 14 years
U.S. Cl. D8—98

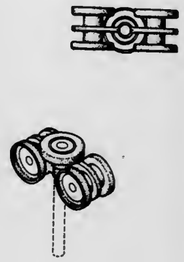


278,793
IGNITION WIRE SEPARATOR FOR ENGINES
Richard J. Smith, Middleburg Heights; Lawrence S. Kuczynski, Cleveland, and Michael D. Stasko, Parma, all of Ohio, assignors to Mr. Gasket Company, Cleveland, Ohio
Filed Sep. 24, 1982, Ser. No. 423,036
Term of patent 14 years
U.S. Cl. D8—357

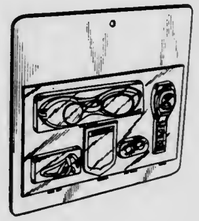




278,794
TRACK ROLLER CARRIAGE
Lance M. Vater, 9 Redounau Crescent, Wattle Park, South Australia, Australia (5066)
Filed Mar. 23, 1982, Ser. No. 360,956
Term of patent 14 years
U.S. Cl. D8—377



278,795
SWIMGEAR PACKAGE
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Sep. 1, 1982, Ser. No. 413,885
Term of patent 14 years
U.S. Cl. D9—347



278,796
PLASTIC BOTTLE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Jan. 6, 1983, Ser. No. 456,169
Term of patent 14 years
U.S. Cl. D9—349



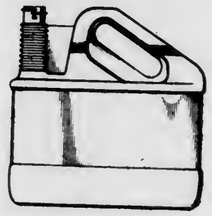
278,797
PLASTIC BOTTLE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Jan. 7, 1983, Ser. No. 456,189
Term of patent 14 years
U.S. Cl. D9—349



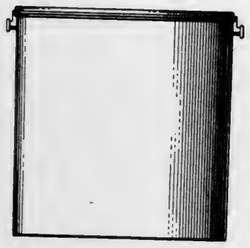
278,798
BOTTLE OR THE LIKE
Wallace E. Smith, 61 Meadow Brook Cir., Sudbury, Mass. 01776
Filed Aug. 26, 1982, Ser. No. 411,894
Term of patent 14 years
U.S. Cl. D9—352



278,799
LIQUID CONTAINER
Walter P. Maynard, Jr., 3070 Presidential Dr., Suite 234, Atlanta, Ga. 30340
Filed Sep. 28, 1982, Ser. No. 425,877
Term of patent 14 years
U.S. Cl. D9—376



278,800
PLASTIC PAINT CONTAINER
Gary D. Bowen, Glens Falls, and James L. Bowen, Fort Ann, both of N.Y., assignors to Genpak Corporation, N.Y.
Filed Mar. 22, 1982, Ser. No. 360,855
Term of patent 14 years
U.S. Cl. D9—379



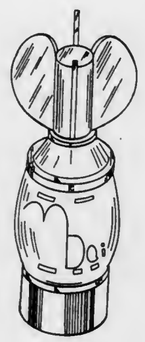
278,801
TOOTH TIMER
Leo E. Long, 745 Casita Way, Los Altos, Calif. 94022
Filed Sep. 30, 1982, Ser. No. 431,736
Term of patent 14 years
U.S. Cl. D10—40



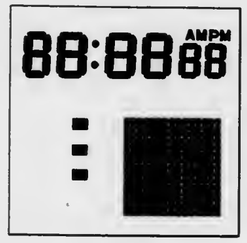
278,802
PORTABLE DISK DRIVE ALIGNMENT TESTER
Bradley D. Baker, San Jose; Richard L. Kelly, Santa Clara, and George E. Meacham, Milpitas, all of Calif., assignors to Dysan Corporation, Santa Clara, Calif.
Filed Oct. 12, 1982, Ser. No. 433,946
Term of patent 14 years
U.S. Cl. D10—46



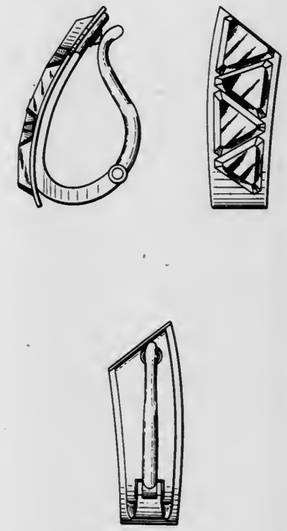
278,803
BUOY
Nick F. Leo, 27400 Garza, Saugus, Calif. 91350
Filed Dec. 16, 1982, Ser. No. 432,698
Term of patent 14 years
U.S. Cl. D10—107



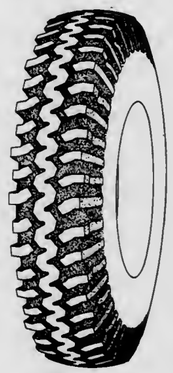
278,804
DESIGN FOR DISPLAY PANEL FOR ELECTRONIC TIMEPIECE
Kenji Tanikawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Jan. 18, 1982, Ser. No. 339,957
Claims priority, application Japan, Jul. 23, 1981, 56-32477
Term of patent 14 years
U.S. Cl. D10—125



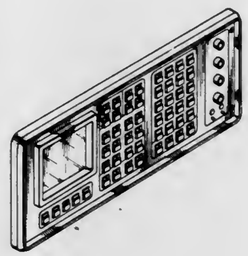
278,805
EARCLIP
Marina Bulgari, Athens, Greece, assignor to Marina B. Creation Limited, Vaduz, Liechtenstein
Filed Jun. 6, 1983, Ser. No. 501,374
Claims priority, application Italy, Dec. 6, 1982, 36195/82[U]
Term of patent 14 years
U.S. Cl. D11—40



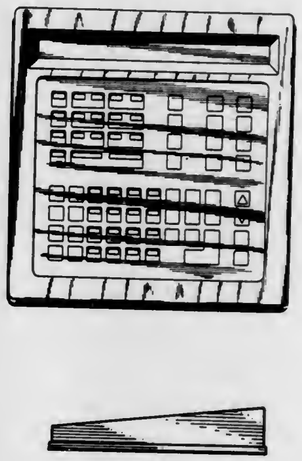
278,806
TIRE
Jay K. Lawrence, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 16, 1983, Ser. No. 495,279
Term of patent 14 years
U.S. Cl. D12—146



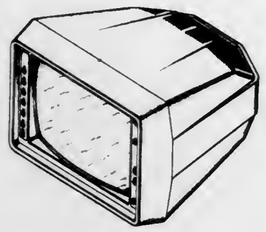
278,807
FRONT PANEL FOR ELECTRONIC INSTRUMENT OR THE LIKE
Nicholas A. Perna, El Toro, Calif., assignor to Kode, Inc., Tustin, Calif.
Filed Jul. 11, 1983, Ser. No. 512,485
Term of patent 14 years
U.S. Cl. D13—35



278,808
PENDANT CONTROL UNIT
William E. Donges, Lorain, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Oct. 7, 1983, Ser. No. 540,200
Term of patent 14 years
U.S. Cl. D13—12



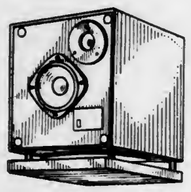
278,809
COMPUTER VIDEO DISPLAY MONITOR OR THE LIKE
William J. McLaughlin, Grass Valley, Calif., assignor to RGB Display Corporation, Grass Valley, Calif.
Filed Mar. 7, 1983, Ser. No. 472,806
Term of patent 14 years
U.S. Cl. D14—113



278,810
PHONOGRAPH
Patrick J. Murphy, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,609
Term of patent 14 years
U.S. Cl. D14—17

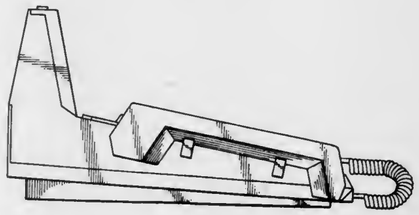


278,811
LOUD SPEAKER
Jeffrey N. White; Milo R. Kosich, both of Stow, and Norman Levenstein, Munroe Falls, all of Ohio, assignors to Audio-Technica, U.S., Stow, Ohio
Filed Nov. 5, 1982, Ser. No. 439,334
Term of patent 14 years
U.S. Cl. D14—34

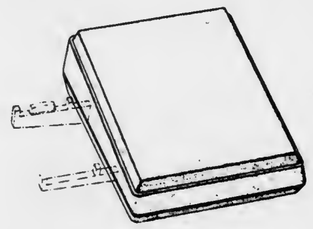


278,812
COMBINATION TELEPHONE CLOCK AND RADIO SET
David Topp, Miami, Fla., assignor to Multi-Tech Industries Corp., Miami, Fla.
Filed Apr. 19, 1984, Ser. No. 601,965
Term of patent 14 years
U.S. Cl. D14—53





278,813
HOUSING FOR A TELEPHONE STAND OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Division of Ser. No. 345,559, Feb. 4, 1982, , which is a continuation-in-part of Ser. No. 84,067, Oct. 12, 1979,. This application May 9, 1984, Ser. No. 608,579
Term of patent 14 years
U.S. Cl. D14—60

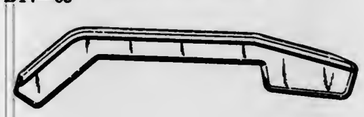


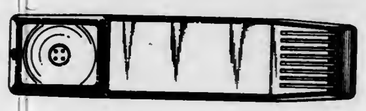


278,814
TELEPHONE STAND
Donald M. Genaro, Haworth, N.J.; Richard M. Joffe, Palisades Park, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Aug. 29, 1984, Ser. No. 645,150
Term of patent 14 years
U.S. Cl. D14—60

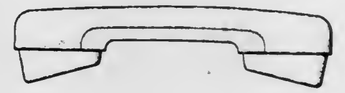


278,815
HOUSING FOR A TELEPHONE HANDSET
John K. Williams, Ipswich, England, assignor to British Telecommunications, London, England
Filed Sep. 24, 1982, Ser. No. 422,563
Claims priority, application United Kingdom, Mar. 29, 1982, 1005848
Term of patent 14 years
U.S. Cl. D14—63



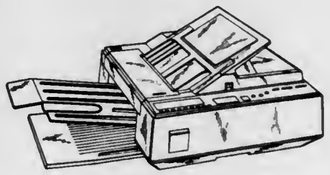


278,816
HOUSING FOR TELEPHONE HANDSET
John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Jul. 19, 1984, Ser. No. 632,186
Term of patent 14 years
U.S. Cl. D14—63





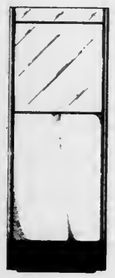
278,817
FACSIMILE TRANSCEIVER
Masaru Ohno, Chiba; Yoshiyuki Fujiyama, and Toshihiro Kumano, both of Nagano, all of Japan, assignors to Matsushita Graphic Communication System, Tokyo, Japan
Filed Jan. 3, 1983, Ser. No. 455,384
Claims priority, application Japan, Jul. 5, 1982, 57-30255
Term of patent 14 years
U.S. Cl. D14—94



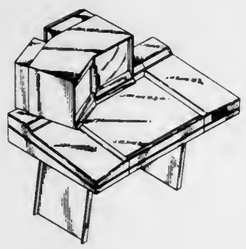
278,818
KEYBOARD FOR ELECTRONIC COMPUTERS
Nobuhisa Aoyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Mar. 2, 1983, Ser. No. 471,319
Claims priority, application Japan, Sep. 3, 1982, 57-39998
Term of patent 14 years
U.S. Cl. D14—100



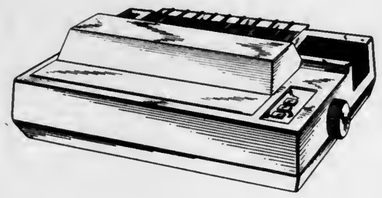
278,819
COMPUTER HOUSING
William A. Hommowun, Hanover Park, Ill.; Justin M. Maguire, Jr., Maplewood, N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 2, 1982, Ser. No. 394,823
Term of patent 14 years
U.S. Cl. D14—102



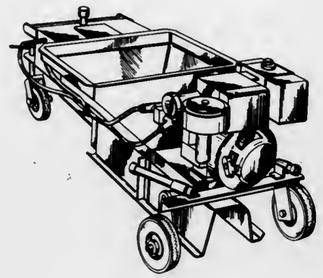
278,820
PAGE PLANNING TABLE WITH DISPLAY MONITOR
Michael B. Woodhall, Slough, England, assignor to Crosfield Electronics Limited, London, England
Filed Dec. 3, 1982, Ser. No. 446,686
Claims priority, application United Kingdom, Jun. 4, 1982, 1007106
Term of patent 14 years
U.S. Cl. D14—103



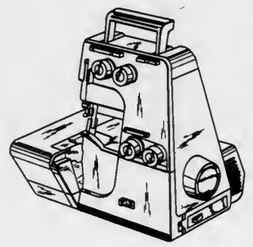
278,821
ELECTRONIC PRINTER
Naoyuki Maruyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha and Epson Corp., both of Tokyo, Japan
Filed Dec. 3, 1982, Ser. No. 446,826
Claims priority, application Japan, Jun. 4, 1982, 57-24663
Term of patent 14 years
U.S. Cl. D14—111



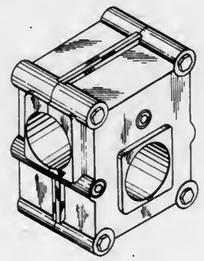
278,822
SELF-POWERED CURBING MACHINE
W. Harold Neal, 122 Dunwoody Dr., Carrollton, Ga. 30117
Filed Apr. 4, 1983, Ser. No. 481,895
Term of patent 14 years
U.S. Cl. D15—22



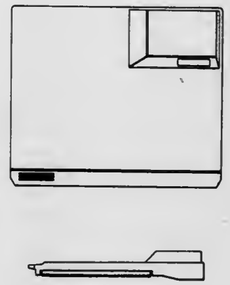
278,823
OVERLOCK STITCH SEWING MACHINE
Yoshihide Yoneda, Hirakata, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan
Filed Sep. 28, 1982, Ser. No. 426,072
Term of patent 14 years
U.S. Cl. D15—69



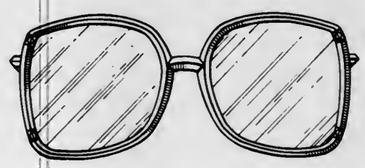
278,824
GEARBOX HOUSING
Warren G. Votaw, Denver, Colo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 5, 1982, Ser. No. 439,509
Term of patent 14 years
U.S. Cl. D15—149



278,825
DOCUMENT FEEDER FOR COPYING MACHINE
Yasuhiro Saito, Tokyo; Tetsuya Goto, and Toshio Umino, both of Kanagawa, all of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Sep. 17, 1982, Ser. No. 419,531
Claims priority, application Japan, Mar. 18, 1982, 57-011148
Term of patent 14 years
U.S. Cl. D16—32



278,826
SUNGLASSES
Jean-Pierre Lamy, 49 Rue du Rhone, 1204 Geneva, Switzerland
Filed Feb. 29, 1984, Ser. No. 584,799
Term of patent 14 years
U.S. Cl. D16—102



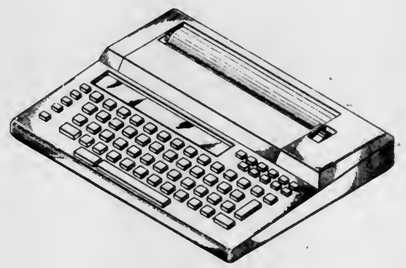
278,827
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,314
Claims priority, application Japan, Jan. 11, 1983, 58-512
Term of patent 14 years
U.S. Cl. D18—1



278,828
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,340
Claims priority, application Japan, Jan. 11, 1983, 58-505
Term of patent 14 years
U.S. Cl. D18—1



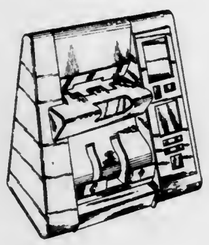
278,829
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,343
Claims priority, application Japan, Jan. 11, 1983, 58-502
Term of patent 14 years
U.S. Cl. D18—1



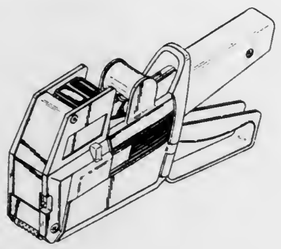
278,830
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,345
Claims priority, application Japan, Oct. 11, 1983, 58-506
Term of patent 14 years
U.S. Cl. D18—1



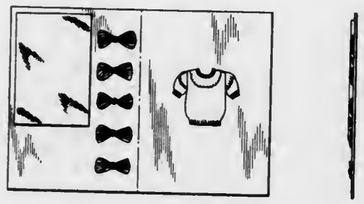
278,831
PAPER AND DOCUMENT HANDLING AND COUNTING APPARATUS
Peter Bressler, Philadelphia, Pa., and Peter Byar, Willingboro, N.J., assignors to Brandt, Inc., Watertown, Wis.
Filed Sep. 15, 1982, Ser. No. 418,562
Term of patent 14 years
U.S. Cl. D18—3



278,832
LABELER
Tokio Wada, Nagareyamashi, Japan, assignor to Kabushiki Kaisha Shinsei Industries, Tokyo, Japan
Filed Oct. 20, 1982, Ser. No. 438,366
Claims priority, application Japan, Apr. 20, 1982, 57-17061
Term of patent 14 years
U.S. Cl. D18—19



278,833
COMBINED DISPLAY AND INFORMATION CARD FOR FABRICS AND YARNS OR THE LIKE
Lucey Harley, 185 E. 83rd St., New York, N.Y. 10028
Filed Mar. 8, 1982, Ser. No. 355,519
Term of patent 14 years
U.S. Cl. D19—1



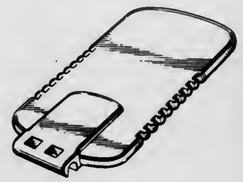
278,834
SET OF MOLECULAR MODEL CONSTRUCTION PIECES
Kazuhisa Satoh, 10-24, Megurohoncho, 1-chome, Meguro-ku, Tokyo 152, Japan
Filed Apr. 21, 1982, Ser. No. 370,198
Term of patent 14 years
U.S. Cl. D19—62



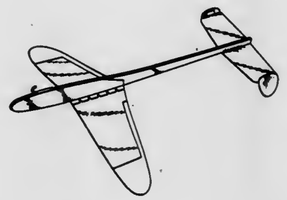
278,835
SHOPPING MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Jan. 20, 1983, Ser. No. 459,677
Term of patent 14 years
U.S. Cl. D19—91



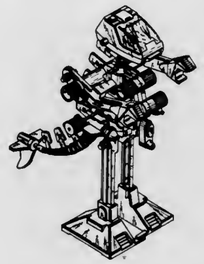
278,836
IDENTIFICATION TAG
William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.
Filed Feb. 28, 1983, Ser. No. 470,211
Term of patent 14 years
U.S. Cl. D20—22



278,837
TOY AIRPLANE
Yasuaki Ninomiya, Suite 5-101 Tamaplaza, 20 Utsukushigaoka, 1-chome, Midoriku, Yokohama, Kanagawa, Japan
Filed Nov. 15, 1982, Ser. No. 441,653
Claims priority, application Japan, May 28, 1982, 57-23520
Term of patent 14 years
U.S. Cl. D21—89



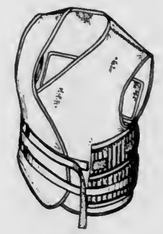
278,838
ANIMAL-LIKE FIGURE TOY
Tethuo Ohkado, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan
Filed Aug. 13, 1982, Ser. No. 407,891
Claims priority, application Japan, Aug. 25, 1981, 56-37330
Term of patent 14 years
U.S. Cl. D21—150



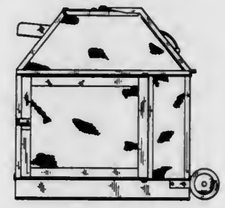
278,839
PLUSH TOY ANIMAL FIGURE
Gucki Mulally, 33 Grennwich Ave., New York, N.Y. 10014
Filed Aug. 4, 1982, Ser. No. 405,202
Term of patent 14 years
U.S. Cl. D21—159



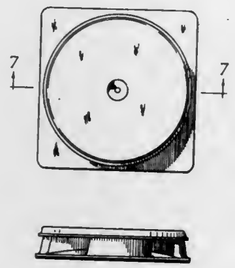
278,840
WEIGHTED VEST
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 111753
Filed Oct. 21, 1983, Ser. No. 544,075
Term of patent 14 years
U.S. Cl. D21—191



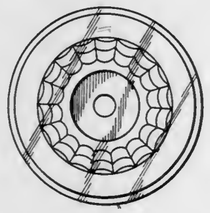
278,841
HOUSING FOR BALL PITCHING MACHINE
Paul S. Giovagnoli, Kansas City, Mo., assignor to Master Pitching Machine, Inc., Kansas City, Mo.
Filed Nov. 8, 1982, Ser. No. 439,923
Term of patent 14 years
U.S. Cl. D21—210

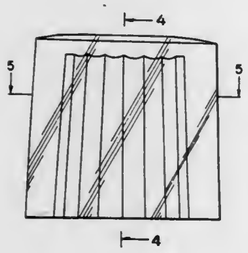


278,842
INSECT FEEDING STATION OR SIMILAR ARTICLE
Keith Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Nov. 5, 1982, Ser. No. 439,137
Term of patent 14 years
U.S. Cl. D22—19

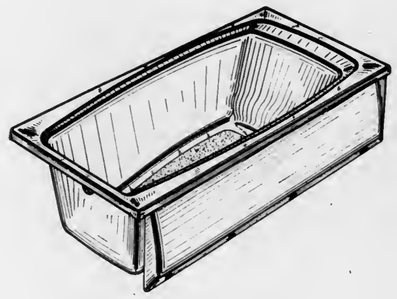


278,843
FAUCET HANDLE
James E. Niemann, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of Ser. No. 169,538, Jul. 17, 1980,. This application Mar. 11, 1982, Ser. No. 357,018
The portion of the term of this patent subsequent to Jul. 12, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—28

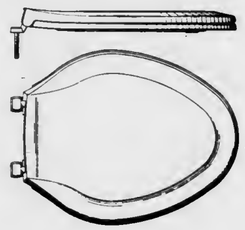




278,844
BATHTUB
Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,084
Term of patent 14 years
U.S. Cl. D23—55



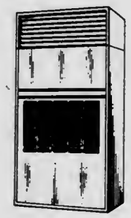
278,845
COMBINED TOILET SEAT AND COVER
David E. Harrison, and George N. Sanderson, both of Columbus, Miss., assignors to Sanderson Plumbing Products, Inc., Columbus, Miss.
Filed Jun. 14, 1982, Ser. No. 389,453
Term of patent 14 years
U.S. Cl. D23—71



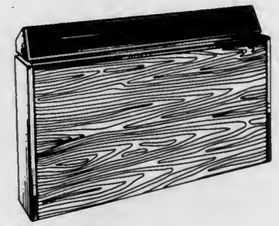
278,846
COMBINED TOILET SEAT AND COVER
David E. Harrison, and George N. Sanderson, both of Columbus, Miss., assignors to Sanderson Plumbing Products, Inc., Columbus, Miss.
Filed Jun. 14, 1982, Ser. No. 389,454
Term of patent 14 years
U.S. Cl. D23—71



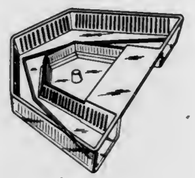
278,847
CASING FOR A PACKAGED AIR CONDITIONING UNIT
Walter W. Hoyle, Fayetteville, and David Barkley, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Sep. 29, 1982, Ser. No. 426,333
Term of patent 14 years
U.S. Cl. D23—144



278,848
FAN COIL UNIT FOR AN AIR CONDITIONING SYSTEM
Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Sep. 29, 1982, Ser. No. 427,206
Term of patent 14 years
U.S. Cl. D23—144



278,849
MOULD TRAY FOR DENTAL MODELS
Steven Hoyle, Brighouse, England, assignor to M. Gill Limited, West Yorkshire, England
Filed May 24, 1982, Ser. No. 381,651
Claims priority, application United Kingdom, Dec. 9, 1981, 1004079
Term of patent 14 years
U.S. Cl. D24—10



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Schollmeier, Charles E., 4,517,021, Cl. 127-30.000.
Yackel, Walter C., Jr.; and Hebenstreit, William E., 4,517,218, Cl. 426-656.000.

A. J. Antunes & Co.: *See—*
Miller, Dye O., 4,516,485, Cl. 99-339.000.

Abbott Laboratories: *See—*
Nakatani, Keiichi, 4,517,313, Cl. 521-51.000.
Popelka, Susan R., 4,516,856, Cl. 356-368.000.

Abe, Katsuo: *See—*
Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, 4,517,444, Cl. 219-216.000.

Abe, Takao: *See—*
Shirota, Norihisa; and Abe, Takao, 4,517,552, Cl. 340-347.0DD.

Abe, Yoshiaki; Nishimura, Yutaka; and Sugimoto, Hitoshi, to Diesel Kiki Co., Ltd. Circuit for controlling glow plug energization. 4,516,543, Cl. 123-179.00H.

Ace Pak Company Incorporated: *See—*
Nakajima, Mutsuhiko, 4,516,381, Cl. 53-375.000.
Nakajima, Mutsuhiko, 4,516,382, Cl. 53-375.000.

Ace Pest & Termite Control Co.: *See—*
Agron, Michael H.; Buch, James R.; and LaVoie, Robert E., 4,517,557, Cl. 340-540.000.

Acheson Industries, Inc.: *See—*
Stoetzer, Steven R., 4,517,118, Cl. 252-513.000.

Acomb, Byron H., to Union Carbide Corporation. Gas pressure reducing regulator and adapter. 4,516,595, Cl. 137-73.000.

Adachi, Hiromi; and Iwaya, Shoichi, to Mitsubishi Denki Kabushiki Kaisha; and TDK Electronics Co., Ltd. Lighting apparatus for a discharge lamp. 4,517,496, Cl. 315-227.00R.

Adamik, Jaroslav, to San Shoe Trading Corp. Means for displaying a picture or the like in a shoe. 4,516,337, Cl. 36-136.000.

Adrian, Renate: *See—*
Merkenich, Karl; Wasel-Nielen, Horst-Dieter; Maurer, Alexander; and Adrian, Renate, 4,517,109, Cl. 252-135.000.

Advance Transformer Co.: *See—*
Crawford, Joseph A., 4,517,498, Cl. 315-323.000.

Advanced Cardiovascular Systems, Inc.: *See—*
Samson, Wilfred J., 4,516,972, Cl. 604-282.000.

Advanced Graphic Technology: *See—*
Arnold, Raymond M., 4,517,044, Cl. 156-277.000.

Advanced Micro Devices, Inc.: *See—*.
Haskell, Jacob D., 4,516,316, Cl. 29-576.00W.

AFA Corporation, The: *See—*
Garneau, Richard P., 4,516,695, Cl. 222-153.000.

Agarwal, Pawan K.; Lundberg, Robert D.; Wagensomer, Joseph; and Jagisch, Frank C., to Exxon Research and Engineering Co. Emulsion type adhesive compositions. 4,517,250, Cl. 428-483.000.

Agarwal, Shashi B.: *See—*
Nickola, Richard A.; and Agarwal, Shashi B., 4,517,229, Cl. 427-383.900.

Agency of Industrial Science and Technology: *See—*
Suzuki, Hiroshi; Gama, Yasuo; and Miyazaki, Shoji, 4,517,110, Cl. 252-180.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Stahl, Werner; and Muller, Jurgen, 4,516,763, Cl. 271-11.000.

Agrawal, Suphal P., to Northrop Corporation. Methods of enhancing superplastic formability of aluminum alloys by alleviating cavitation. 4,516,419, Cl. 72-60.000.

Agron, Michael H.; Buch, James R.; and LaVoie, Robert E., to Ace Pest & Termite Control Co. Alarm housing for rodent control device. 4,517,557, Cl. 340-540.000.

Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., to Data General Corporation. Digital computer system having unique means of referring to operands and ability to execute a plurality of internal languages. 4,517,642, Cl. 364-200.000.

Aihara, Shigenobu; and Yamada, Akio, to NEC Corporation. Waveguide amplifier circuit. 4,517,527, Cl. 330-287.000.

Airmaster Fan Company: *See—*
Breining, Frank E., 4,517,481, Cl. 310-71.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Nishikawa, Masumi, 4,516,440, Cl. 74-493.000.
Ochiai, Chiaki, 4,516,474, Cl. 91-519.000.

Aizawa, Iwao; and Masuda, Michio, to Hitachi, Ltd. Synchronizing signal generating circuit for solid-state color video camera. 4,517,587, Cl. 358-17.000.

Akashi, Shunji: *See—*
Yoshida, Hiroshi; Akashi, Shunji; and Kuse, Kazuki, 4,516,304, Cl. 29-408.000.

Akers, David D.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.

Akiyama, Yoshinori; Nishimura, Shinichi; and Harigaya, Isamu, to Nissan Motor Company, Ltd.; and Ohi Seisakusho Company, Ltd. Slider mechanism for a vehicle seat. 4,516,811, Cl. 308-3.00R.

Aktiebolaget Bofors: *See—*
Bergfalk, Bjorn, 4,516,646, Cl. 177-211.000.

Aktiebolaget Electrolux: *See—*
Eknor, Per O. E., 4,516,696, Cl. 222-181.000.

Akzo nv: *See—*
Kik, Leendert A.; and Schuurink, Pieter H. J., 4,517,248, Cl. 428-457.000.

ALB Klein GmbH & Co. KG: *See—*
Stolpp, Siegfried, 4,516,894, Cl. 414-5.000.

Albers, Daniel C.: *See—*
Richardson, Paul; Albers, Daniel C.; and Whitley, David A., 4,516,633, Cl. 166-69.000.

Albert, Robert J., to Tubular Threading Incorporated. Semi-automatic pipe threading plant and apparatus therefor. 4,516,306, Cl. 29-564.700.

Albini & Fontanot S.p.A.: *See—*
Molinazzi, Roberto, 4,516,367, Cl. 52-182.000.

Alcon Laboratories, Inc.: *See—*
York, Billie M., Jr., 4,517,199, Cl. 514-392.000.

Alcorn, William W.: *See—*
Beaulieu, Roger D.; Alcorn, William W.; and Matychowiak, David S., 4,516,363, Cl. 52-90.000.

Alderton, Geoffrey W.; and Davidge, Peter C., to British Nuclear Fuels Limited. Centrifuges, centrifuge plants and flow control arrangements therefor. 4,516,966, Cl. 494-1.000.

Aldrich, Deborah G., to Nabisco Brands, Inc. Co-deposited two-component hard candy. 4,517,205, Cl. 426-103.000.

Aldwinckle, Herb S.: *See—*
Cummins, James N.; Aldwinckle, Herb S.; and Byers, Ross E., 4,516,353, Cl. 47-58.000.

Aleem, Mohd A.; and Krinickas, Alexander, Jr., to Sundstrand Corporation. Generator armature cooling and air gap sealing system. 4,517,479, Cl. 310-54.000.

Alexander, Kenneth E.; and Marshall, Robert J., to GTE Products Corporation. Motor vehicle headlight with adhesive accumulation means. 4,517,629, Cl. 362-267.000.

Alexander, Michael P.: *See—*
Kaltz, Milton C.; Alexander, Michael P.; and Cichoski, Richard, 4,516,803, Cl. 296-107.000.

Alfa-Laval, Inc.: *See—*
Schultz, Per-Erik; Chowdhury, Mofazzal H.; and Neff, Clayton B., 4,516,592, Cl. 134-169.00C.

Alfonso Bialetti & C., Fonderia in Conchiglia S.p.A.: *See—*
De Ponti, Luigi, 4,516,484, Cl. 99-279.000.

Algieri, Aldo A.: *See—*
Crenshaw, Ronnie R.; and Algieri, Aldo A., 4,517,366, Cl. 546-231.000.

Aliberto, Anthony C.; and Silberberg, Joseph, to General Electric Company. Blend of impact modifier, vinyl chloride polymer, and glassy amorphous polymer. 4,517,339, Cl. 525-85.000.

Allard, Edward F. Sound suppression of engine noise. 4,516,657, Cl. 181-204.000.

Allegheny Ludlum Steel Corporation: *See—*
Andersen, Poul, 4,516,736, Cl. 242-56.200.

Allen, Michael D.; and Van Voorhis, John E., to Sprague Electric Company. Solid electrolyte capacitor anode assembly. 4,517,626, Cl. 361-433.000.

Allflex International Limited: *See—*
Scott, Michael J.; Slater, Paul; and Brooshooft, Lawrence H., 4,516,577, Cl. 128-330.000.

Allibert S.A.: *See—*
Hemery, Andre, 4,517,136, Cl. 264-25.000.

Allied Corporation: *See—*
Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., 4,517,002, Cl. 71-28.000.
Carey, Desmond F., 4,516,427, Cl. 73-505.000.
Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., 4,517,106, Cl. 252-79.400.
Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H., 4,517,116, Cl. 252-500.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,003, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,005, Cl. 71-28.000.

May, Joseph R.; Petruccelli, Frank; Lang, Robert L.; and de Haan, Herman P., 4,517,231, Cl. 428-35.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,004, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,007, Cl. 71-28.000.

Allred, David D.: *See—*
Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,517,223, Cl. 427-39.000.

Allway Tools, Inc.: *See—*
Gringer, Donald; and Soled, Howard, 4,516,360, Cl. 51-384.000.
Gringer, Donald, 4,516,361, Cl. 51-392.000.

Alpert, Andrew J. Chromatographic support material. 4,517,241, Cl. 428-332.000.

Alpha-Omega Engineering, Inc.: *See—*
Smith, Stephen F., 4,517,534, Cl. 333-14.000.

Alpine Plastics Machinery Limited: *See—*
Hall, Arthur, 4,516,895, Cl. 414-43.000.

Alps Electric Co., Ltd.: *See—*
Sugawara, Fukuo, 4,517,576, Cl. 346-139.00R.
Tobita, Katsumi, 4,517,595, Cl. 358-114.000.

Alten, Kurt. Seal for the gap between the edge of a building opening and the back end of a vehicle driven up to it. 4,516,366, Cl. 52-173.0DS.

Altmann, Konrad, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Stable optical laser resonator. 4,517,677, Cl. 372-99.000.

Aluminum Company of America: *See—*
Francis, Thomas L.; and Phelps, Frankie E., 4,517,037, Cl. 156-89.000.
Laemmle, Joseph T.; and Bohaychick, John, 4,517,105, Cl. 252-56.00R.

Aluminum Metals, Inc.: *See—*
Carden, Lloyd E., 4,516,362, Cl. 52-75.000.

Amano Pharmaceutical Co., Ltd: *See—*
Yanaihara, Noboru; Sugiura, Nobuo; and Hiyama, Takashi, 4,517,180, Cl. 514-16.000.

AMAX Inc.: *See—*
Hodges, Donald R.; and Sherwood, William G., 4,517,058, Cl. 204-4.000.

Amcuem Products, Inc.: *See—*
Plante, Stuart E.; and Hess, Susan V., 4,517,025, Cl. 134-38.000.

AMECA S.r.l.: *See—*
Boccaletti, Pietro, 4,516,503, Cl. 104-3.000.

Ameco Corporation: *See—*
Chmela, Andrew, 4,517,433, Cl. 219-75.000.

American Cyanamid Company: *See—*
Chidester, Dale H., 4,517,473, Cl. 307-269.000.

American District Telegraph Co.: *See—*
Marsocci, Angelo A.; and Schuchard, Walter F., 4,517,555, Cl. 340-522.000.

American Hoechst Corporation: *See—*
Knopf, William H., 4,517,145, Cl. 264-40.200.

American Hospital Supply Corp.: *See—*
Giegel, Joseph L.; and Brotherton, Mary M., 4,517,288, Cl. 435-7.000.

American Standard Inc.: *See—*
Parrock, Joseph J., 4,516,417, Cl. 70-384.000.

AMF Incorporated: *See—*
Campbell, Sterrett P., 4,517,212, Cl. 426-496.000.

Amick, Christopher G.: *See—*
Petrich, Dennis M.; Amick, Christopher G.; and Gruenenwald, Stanley L., 4,517,512, Cl. 324-73.00R.

Amikura, Takashi: *See—*
Suzuki, Ryoichi; Matsumoto, Seiichi; Amikura, Takashi; Tsunekawa, Tokuichi; and Uchiyama, Takashi, 4,516,835, Cl. 350-336.000.

Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., to Renal Systems, Inc. Dialyzer reuse machine. 4,517,081, Cl. 210-85.000.

AMP Incorporated: *See—*
Clark, Donald G., 4,516,309, Cl. 29-564.400.
Fisher, Howard Z., 4,517,234, Cl. 428-119.000.
Pegram, Warren J., 4,517,408, Cl. 174-153.00G.
Wolfel, Lee A., 4,516,822, Cl. 339-103.00M.

Amstar Corporation: *See—*
Dixon, Thomas, 4,517,572, Cl. 343-876.000.

Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, to Delalande S.A. -N-substituted phenyl-5-methoxymethyl-2-oxazolidinones and pharmaceutical compositions containing same. 4,517,197, Cl. 514-376.000.

Anchor Continental Inc.: *See—*
Bell, John E., 4,516,976, Cl. 604-389.000.

Anderlohr, Axel: *See—*
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

Andersen, Poul, to Allegheny Ludlum Steel Corporation. Method and apparatus for slitting metal strip. 4,516,736, Cl. 242-56.200.

Anderson, Martin, to Shell Oil Company. Pesticidal benzoylurea compounds. 4,517,193, Cl. 514-471.000.

Anderson, Richard N.: *See—*
Gaillard, Adrianus J. C.; and Anderson, Richard N., 4,516,300, Cl. 29-24.500.

Andersson, Alf H. Apparatus for planting seeds in drills at predetermined intervals. 4,516,690, Cl. 221-233.000.

Ando, Hideo; Kiyama, Kentaro; and Kitano, Kyozo, to Lion Corporation. Process for removal of unreacted oil from surfactant slurry. 4,517,113, Cl. 252-353.000.

Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical head. 4,517,666, Cl. 369-45.000.

Ando Parachemie Co., Ltd.: *See—*
Tadashi, Ii; and Saichi, Egusa, 4,517,018, Cl. 75-129.000.

Andreen, John F. Internal combustion engine. 4,516,539, Cl. 123-53.00R.

Andrews, Angus P., to United States of America, Army. Monolitic band-pass filter using piezoelectric cantilevers. 4,517,486, Cl. 310-331.000.

Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., to Allied Corporation. Phosphorodiamide urease inhibitors and urease inhibited urea based fertilizer compositions. 4,517,002, Cl. 71-28.000.

Anic S.p.A.: *See—*
Mercati, Giorgio; Mariano, Armando; Pertot, Fulvio; Glionna, Antonio; and Ferri, Mario, 4,517,355, Cl. 528-287.000.

Anton Piller GmbH & Co. KG: *See—*
Sachs, Klaus, 4,517,471, Cl. 307-67.000.

Anzai, Max I.: *See—*
Lin, Frank W.; Moon, Suhdok D.; Van, Tri S.; and Anzai, Max I., 4,517,503, Cl. 318-561.000.

Anzai, Nobuo; and Ikejima, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling an A-C powered elevator. 4,516,664, Cl. 187-29.00R.

Aoki, Masanori: *See—*
Yamanaka, Koichi; Gotoh, Tetsuro; Aoki, Masanori; Kataoka, Isao; and Nishiwaki, Shunro, 4,517,091, Cl. 210-512.100.

Aoki, Takashi: *See—*
Nishikawa, Masao; Aoki, Takashi; Sakai, Shinzo; and Yoshizawa, Hiroshi, 4,516,671, Cl. 192-.076.

Aoki, Toshiyuki: *See—*
Honji, Kunihiko; and Aoki, Toshiyuki, 4,517,504, Cl. 318-568.000.

Aoki, Yoshiaki; Suzuki, Hazime; and Hirota, Tatsuya, to Sanyo Electric Co., Ltd. Clothes dryer. 4,516,335, Cl. 34-133.000.

Aoyoma, Shunichi; and Kato, Manabu, to Nissan Motor Co., Ltd. Valve operation changing system of internal combustion engine. 4,516,542, Cl. 123-90.160.

Appropriate Technology Corporation: *See—*
Gardner, Bruce C.; Ingold, Daniel L.; and May, David A., 4,516,618, Cl. 160-120.000.

APX Group, Inc.: *See—*
Hall, James R.; Harter, Donald P.; Clegg, Michael W.; and Gerber, James E., 4,516,659, Cl. 181-243.000.

Arai, Mamoru: *See—*
Manome, Taichi; Ohmine, Toshinori; Okazaki, Takao; and Arai, Mamoru, 4,517,300, Cl. 435-317.000.

Arakawa, Tetsuo; and Nagahiro, Kenichi, to Honda Giken Kogyo Kabushiki Kaisha. Intake manifold for internal combustion engines. 4,516,538, Cl. 123-52.00M.

Arao, Kozo: *See—*
Shimizu, Isamu; and Arao, Kozo, 4,517,269, Cl. 430-57.000.

ARC Rebuilders, Inc.: *See—*
Hayes, Willliam; and Dohrenwend, James W., 4,517,083, Cl. 210-131.000.

Arcair Company: *See—*
Sadauskas, Raymond L.; and Moore, Paul E., 4,517,440, Cl. 219-145.100.

Archival Color Technologies: *See—*
Berger, Charles; and Ruth, Kenneth, 4,517,267, Cl. 430-3.000.

Arfert, Horst F. W., to Reynolds Metals Company. Method and apparatus for packaging containers. 4,516,383, Cl. 53-410.000.

Arikawa, Junichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,517,451, Cl. 235-379.000.

Arikawa, Tetsuro: *See—*
Harada, Atsumu; and Arikawa, Tetsuro, 4,517,647, Cl. 364-426.000.

Armstrong World Industries, Inc.: *See—*
Ashley, John C.; and Calhoun, Bernard, 4,516,298, Cl. 26-3.000.

Arnaud, Johnny, to Hydrotreat, Inc. Method and apparatus for constructing filter element. 4,517,089, Cl. 210-488.000.

Arndt, Friedrich: *See—*
Skotsch, Carlo; Baumert, Dietrich; Krahmer, Hansjorg; and Arndt, Friedrich, 4,517,367, Cl. 546-276.000.

Arndt, Peter J.; Muller, Manfred; Schlosser, Fritz; and Wenzel, Franz, to Rohm GmbH. Method for purifying methacrylamidopropyl trimethylammonium chloride and related compounds. 4,517,380, Cl. 564-206.000.

Arneklev, Duane R.: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,517,012, Cl. 71-94.000.

Arnold, Raymond M., to Advanced Graphic Technology. Dry transfer decal and method of manufacture. 4,517,044, Cl. 156-277.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Katsumata, Tsutomu; and Yokota, Masahisa, 4,517,389, Cl. 568-804.000.

Asahi Yukizai Kogyo Co., Ltd.: *See—*
Ueda, Tomoyuki, 4,516,597, Cl. 137-314.000.

Asakura, Osamu: *See—*
Fushimoto, Hideo; Toyomura, Shigeru; Nishimuro, Yoshiaki; Asakura, Osamu; and Rachi, Masahiro, 4,517,660, Cl. 364-708.000.

ASC Incorporated: *See—*
Kaltz, Milton C.; Alexander, Michael P.; and Cichoski, Richard, 4,516,803, Cl. 296-107.000.

Aschoff, Hans-Joachim; and Cholewa, Lothar, to Vorwerk & Co. Interholding GmbH. Load monitoring circuit for electric motors. 4,517,502, Cl. 318-474.000.

Ashland Oil, Inc.: *See—*
Blegen, James R., 4,517,222, Cl. 427-30.000.

Ashley, John C.; and Calhoun, Bernard, to Armstrong World Industries, Inc. Cane singeing apparatus. 4,516,298, Cl. 26-3.000.

AT&T Bell Laboratories: *See—*
Brown, James M., 4,517,513, Cl. 324-117.00R.

AT&T Technologies, Inc.: *See—*
Gliwa, William F.; and Kalina, Robert F., 4,516,737, Cl. 242-77.000.
Kanotz, William M., 4,516,922, Cl. 425-113.000.
Kirschenman, Duane L., 4,516,318, Cl. 29-846.000.
Paek, Un-Chul, 4,516,826, Cl. 350-96.310.
Venable, Edward R., 4,516,787, Cl. 279-1.0SG.
Wyatt, Kenneth L., 4,516,739, Cl. 242-155.00M.

Ateliers de Constructions Electriques de Charleroi (ACEC): *See—*
Dacier, Jacques, 4,517,484, Cl. 310-266.000.

Atlantic Richfield Company: *See—*
Morel, Don L.; Gay, Robert R.; and Turner, Gary B., 4,517,403, Cl. 136-249.000.
Sofranko, John A., 4,517,398, Cl. 585-500.000.
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., 4,517,049, Cl. 156-622.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Bier, Axel, 4,517,469, Cl. 307-10.0LS.

Automated Industrial Systems: *See—*
Lawrence, Merlin, 4,517,436, Cl. 219-121.0LH.

Automotive Products, plc: *See—*
Nix, Richard; and Compton, David J., 4,516,748, Cl. 248-1.000.

Avery, Joseph J., to Sherburne Corporation. Snow-making nozzle. 4,516,722, Cl. 239-14.000.

Avey, Kenneth F. C., to British Matthews Limited, The. De-palletizer. 4,516,900, Cl. 414-417.000.

Awata, Masashi: *See—*
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, 4,517,296, Cl. 435-119.000.

Awater, Albert: *See—*
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.

Ayada, Haruki: *See—*
Takezawa, Susumu; Ikebe, Ken'ichi; Ayada, Haruki; Fukui, Tatsuyuki; and Okada, Munenori, 4,516,746, Cl. 244-170.000.

Ayers, Ray R., to Shell Oil Company. Float recovery system. 4,516,517, Cl. 114-51.000.

Azad, Farzin H.: *See—*
Kim, Wontaik; and Azad, Farzin H., 4,516,864, Cl. 374-130.000.

Azuma, Hiroshi: *See—*
Ishikawa, Masayuki; Azuma, Hiroshi; Sugimoto, Akiko; Takahashi, Noriko; and Takashima, Yoshimi, 4,517,189, Cl. 514-259.000.

B. F. Goodrich Company: *See—*
Ely, Duain N.; and Macarchenia, Joseph H., 4,516,745, Cl. 244-134.00A.

Baba, Takeshi; and Matsuoka, Kazuhiko, to Canon Kabushiki Kaisha. Colored image reading apparatus. 4,517,589, Cl. 358-75.000.

Babbitt, Brett A.; and Le, Tri C., to Joy Manufacturing Company. Mechanically preloaded packing assembly. 4,516,752, Cl. 251-214.000.

Babbitt, Richard W.: *See—*
Stern, Richard A.; and Babbitt, Richard W., 4,517,536, Cl. 333-254.000.

Babcock & Wilcox Company, The: *See—*
Whaley, Hubert L., 4,516,520, Cl. 116-217.000.

Babington, Robert S., to Owens-Illinois. Flow control module and method for liquid fuel burners and liquid atomizers. 4,516,928, Cl. 431-12.000.

Babler, Fridolin; and Weissmuller, Adolf, to Ciba-Geigy Corporation. Stoving lacquers containing graphite. 4,517,320, Cl. 523-215.000.

Backus, James: *See—*
Winckler, Elmer, 4,516,637, Cl. 166-377.000.

Bademian, Leon, to Isomet Corporation. Overlapping electrode structure for multi-channel acousto-optic devices. 4,516,838, Cl. 350-358.000.

Baer, Ted A., to Zoecon Corporation. Substituted amino acid process. 4,517,130, Cl. 260-465.00E.

Bailey, Denis M.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,517,191, Cl. 514-300.000.

Bailey, John C., to Union Carbide Corporation. Nonaqueous cell employing an anode having a boron-containing surface film. 4,516,317, Cl. 29-623.500.

Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Digital television receiver with analog-to-digital converter having time multiplexed gain. 4,517,586, Cl. 358-13.000.

Balcon Industries: *See—*
Ballo, James A., 4,516,489, Cl. 100-98.00R.

Baldi, Livio; and Maggis, Aldo, to SGS-ATES Componenti Elettronici S.p.A. Metallization process of a wafer back. 4,517,226, Cl. 427-90.000.

Ball, Kevin D.; and Davies, Peter, to Coated Electrodes Limited. Apparatus for sealing electrodes in electric arc furnaces. 4,517,678, Cl. 373-95.000.

Ball, Randell D. Well site document container. 4,516,719, Cl. 232-1.00D.

Ballo, James A., to Balcon Industries. Apparatus for crushing articles. 4,516,489, Cl. 100-98.00R.

Banba, Kiyotaka: *See—*
Matsunaga, Fujihisa; Nishimura, Tadahiko; Miyake, Etsuo; and Banba, Kiyotaka, 4,517,387, Cl. 568-728.000.

Bando Chemical Industries, Ltd.: *See—*
Wada, Noriaki, 4,517,332, Cl. 524-506.000.

Bandura, Vitaly, to USM Corporation. Cut-clinch mechanism for variably spaced component leads. 4,516,310, Cl. 29-566.300.

Baniel, Avraham M., to Yissum Research Development Company of the Hebrew University of Jerusalem. Method for producing permeable polymeric membranes. 4,517,142, Cl. 264-22.000.

Banks, Robert L.: *See—*
Kukes, Simon G.; and Banks, Robert L., 4,517,401, Cl. 585-645.000.

Bannai, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Interrupt control apparatus for a data processing system. 4,517,643, Cl. 364-200.000.

Banno, Taiichi: *See—*
Galle, Kevin; Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; and Manabe, Sugio, 4,517,160, Cl. 422-65.000.

Banovic, Peter: *See—*
Burton, Charles A.; and Banovic, Peter, 4,516,699, Cl. 222-591.000.

Barabas, Eugene S., to GAF Corporation. Rust removal process using removable coatings of maleic acid copolymers. 4,517,023, Cl. 134-4.000.

Baran, Michael S.; Besasie, Joseph C.; Warren, Wayne L.; and Montgomery, Allen W., to Koss Corporation. Portable stereophone. 4,517,418, Cl. 179-156.00R.

Barber, James J., to Halcon SD Group, Inc., The. Process for the electrochemical synthesis of ethylene glycol from formaldehyde. 4,517,062, Cl. 204-77.000.

Barege, Jacqueline. Dispenser for continuous, severable strips. 4,516,711, Cl. 225-20.000.

Barker, Dale E., to Procter & Gamble Company, The. Easy open/reclosable container with pouring lip and hold-open feature. 4,516,689, Cl. 220-335.000.

Barner, Gregory P.; and Hancock, Drew S., to Siemens-Allis, Inc. Concealed-fastener panelboard front and clamping latches. 4,517,623, Cl. 361-358.000.

Barnes, James M.: *See—*
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.

Barnik, Edward A.: *See—*
Heininger, Ammon N., Jr.; and Barnik, Edward A., 4,516,324, Cl. 30-377.000.

Barre, Claude, to Siemens Aktiengesellschaft. ECL Gate having emitter bias current switched by input signal. 4,517,476, Cl. 307-455.000.

Barringer, Anthony R. Remote detection of hydrocarbon seeps. 4,517,458, Cl. 250-253.000.

Barriquand: *See—*
Barriquand, Robert; Barriquand, Bernard; Durantet, Bernard; and Machabert, Bernard, 4,516,413, Cl. 68-5.00C.

Barriquand, Bernard: *See—*
Barriquand, Robert; Barriquand, Bernard; Durantet, Bernard; and Machabert, Bernard, 4,516,413, Cl. 68-5.00C.

Barriquand, Robert; Barriquand, Bernard; Durantet, Bernard; and Machabert, Bernard, to Barriquand. Machines for the liquid or gaseous treatment of textile material or other fibrous or porous materials. 4,516,413, Cl. 68-5.00C.

Bartesaghi, Angelo. Plane die-cutting machine. 4,516,457, Cl. 83-646.000.

Barth, Gerald D., to Illinois Tool Works Inc. Sheet metal screw. 4,516,893, Cl. 411-184.000.

Barth, Hans: *See—*
Humble, David R.; and Barth, Hans, 4,516,873, Cl. 403-191.000.

Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, to Warner-Lambert Company. 2-Pyrrolin-3-carbonitrile derivatives, and pharmaceutical compositions containing them and their anti-inflammatory and ulcer protective activity. 4,517,185, Cl. 514-232.000.

Barthold, Klaus: *See—*
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,517,114, Cl. 252-389.00R.

Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, to Hoesch Werke Aktiengesellschaft. Support and tensioning apparatus for tensioning a strapping band about a package. 4,516,488, Cl. 100-4.000.

BASF Aktiengesellschaft: *See—*
Becker, Rainer; Jahn, Dieter; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,517,013, Cl. 71-98.000.
Graser, Fritz; Hoffmann, Gerhard; Leyrer, Reinhold J.; Neumann, Peter; and Patsch, Manfred, 4,517,270, Cl. 430-58.000.
Janitschke, Lothar; and Hoffmann, Werner, 4,517,382, Cl. 564-267.000.
Lynch, John; Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, 4,517,277, Cl. 430-281.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,517,114, Cl. 252-389.00R.
Schlecker, Rainer; Friedrich, Ludwig; and Lenke, Dieter, 4,517,196, Cl. 514-371.000.
Schupp, Eberhard; and Kempter, Fritz E., 4,517,343, Cl. 525-488.000.

Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

BASF Wyandotte Corporation: *See—*
Korczak, Alexander; and Levis, William W., Jr., 4,517,383, Cl. 564-443.000.

Basic, John N., Sr. Incinerator with two reburn stages and, optionally, heat recovery. 4,516,510, Cl. 110-346.000.

Basil, Dan. Lift rail window structure. 4,516,355, Cl. 49-460.000.

Bauer, Alexander: *See—*
Leistner, Gerhard; Muller, Gerhard; Sell, Gunther; and Bauer, Alexander, 4,517,093, Cl. 210-629.000.

Baugh, Benton F. Torus type connector. 4,516,795, Cl. 285-315.000.

Baugh, Bill T.: *See—*
Outlaw, Ronald A.; and Baugh, Bill T., 4,516,435, Cl. 73-863.110.

Baughman, Ray H.: *See—*
Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H., 4,517,116, Cl. 252-500.000.

Baumann, Hans-Peter, to Sandoz Ltd. Polybenzoates as disperse dyeing assistants. 4,516,979, Cl. 8-583.000.

Baumert, Dietrich: *See—*
Skotsch, Carlo; Baumert, Dietrich; Krahmer, Hansjorg; and Arndt, Friedrich, 4,517,367, Cl. 546-276.000.

Baxter, Kern C. A.; and Grm, Heinz-Gert. Pressure exerting device. 4,516,568, Cl. 128-70.000.

Baxter Travenol Laboratories, Inc.: *See—*
Kersten, Jean; and Mathias, Jean M., 4,517,090, Cl. 210-493.200.

Bayer Aktiengesellschaft: *See—*
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.
Kunde, Klaus; and Stohr, Frank-Michael, 4,517,357, Cl. 534-605.000.
Luhmann, Erhard; Hoppe, Lutz; Szablikowski, Klaus; and Lampert, Friedrich-Karl, 4,517,324, Cl. 524-27.000.
Schmidt, Manfred; Rathmann, Dietrich; and Reinking, Klaus, 4,517,328, Cl. 524-370.000.
Thomas, Rudolf; Draber, Wilfried; Schmidt, Robert R.; and Eue, Ludwig, 4,517,011, Cl. 71-92.000.
Zecher, Wilfried; Merten, Rudolf; and Dunwald, Willi, 4,517,353, Cl. 528-45.000.

BBC Brown, Boveri & Company, Limited: *See—*
Furrer, Andreas, 4,517,522, Cl. 330-10.000.
Sittig, Roland, 4,517,582, Cl. 357-38.000.

Beall, Gary W., to Radecca, Inc. Process for treating organics contaminated water. 4,517,094, Cl. 210-664.000.

Bean, Donald E.: *See—*
Lee, Patrick G.; Bean, Donald E.; and Jones, Randy T., 4,517,567, Cl. 343-17.700.

Beard, Frederick H.; Moyer, Maynard M.; and Smith, Clarence, Jr., to Snyder Corporation. Pipe and bar stock transfer and machining system and apparatus. 4,516,307, Cl. 29-564.000.

Beaton, Brian M., to Lord Corporation. Actuator assembly for an industrial manipulator or the like. 4,516,476, Cl. 92-59.000.

Beatty, Gary L. Plastic sheath for fencing. 4,516,756, Cl. 256-1.000.

Beaulieu, Roger D.; Alcorn, William W.; and Matychowiak, David S., to Super-Truss Building Systems, Inc. Superinsulation roof rafter trusses and building system. 4,516,363, Cl. 52-90.000.

Becherer, Johannes; Kuhlein, Klaus; and Kussmaul, Ulrich, to Cassella Aktiengesellschaft. Process for preparing 2-chlorobenzoxazoles. 4,517,370, Cl. 548-217.000.

Bechgaard, Klaus: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.

Beck, Christian A.; and Eckert, Alton B., to Pitney Bowes Inc. Anti theft device for a printing machine print wheel assembly. 4,516,494, Cl. 101-93.260.

Becker, Rainer; Jahn, Dieter; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Cyclohexane-1,3-dione derivatives and their use for controlling undesirable plant growth. 4,517,013, Cl. 71-98.000.

Beckett, Donald E. Apparatus for formation of packaging material. 4,517,045, Cl. 156-345.000.

Becton, Dickinson and Company: *See—*
Telang, Anil, 4,516,973, Cl. 604-319.000.

Beecham Group Limited: *See—*
Broom, Nigel J. P., 4,517,124, Cl. 260-245.20R.

Beers, Melvin D.: *See—*
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,517,352, Cl. 528-18.000.

Beharry, Michael, to Hougen Manufacturing, Inc. Annular cutter. 4,516,890, Cl. 408-204.000.

Beidler, David B., to General Battery Corporation. Vent for a storage battery. 4,517,262, Cl. 429-87.000.

Belanger, Andre ; Fauteux, Denis; and Gauthier, Michel, to Hydro-Quebec. Composite and flexible anodes for lithium cells in non-aqueous medium. 4,517,265, Cl. 429-217.000.

Bell, Gilbert C.; and Stanhope, Harry W., to Celanese Corporation. Yarn package for spiralers. 4,516,394, Cl. 57-234.000.

Bell & Howell Company: *See—*
Ricciardi, Mario, 4,516,761, Cl. 270-41.000.

Bell, John E., to Anchor Continental Inc. Adhesive tape fasteners. 4,516,976, Cl. 604-389.000.

Bell, Ted A., to Pretty Products, Inc. Merchandise display rack. 4,516,682, Cl. 211-59.100.

Bellows, James C.: *See—*
Kemper, Christian T.; Osborne, Robert L.; and Bellows, James C., 4,517,468, Cl. 290-52.000.

Beloit Corporation: *See—*
Roerig, Arnold J.; and Schroeder, Robert W., 4,517,056, Cl. 162-344.000.

Benckiser-Knapsack GmbH: *See—*
Crawford, David L., 4,517,208, Cl. 426-332.000.

Bender, David L.: *See—*
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., 4,517,049, Cl. 156-622.000.

Bengtsson, Jan: *See—*
Haraldsson, Roland; Bengtsson, Jan; and Friberg, Claes, 4,517,211, Cl. 426-444.000.

Benitez, Willie B., III; and Masten, Billy R., to Texas Instruments Incorporated. Dual peak detector. 4,517,455, Cl. 235-463.000.

Benjamin, William S.: *See—*
Johnson, Robert S.; Fletcher, Paul E.; Benjamin, William S.; and Zsitvay, John I., 4,516,287, Cl. 15-119.00A.

Benko, David A., to Goodyear Tire & Rubber Company, The. Ion beam deposition or etching re rubber-metal adhesion. 4,517,066, Cl. 204-192.00C.

Bennes Marrel: *See—*
Chanal, Roger; and Cotte, Daniel, 4,516,601, Cl. 137-510.000.

Bennett, Ross L.; Price, Robert B.; Springen, Clyde H.; and Kilbourn, Harlan C., to Texas Instruments Incorporated. Hand-held manipulator application module. 4,517,652, Cl. 364-513.000.

Benoit, Richard E.: *See—*
Johnston, Harold; and Benoit, Richard E., 4,516,818, Cl. 339-36.000.

Beran, Anthony V. Clamping structure. 4,516,293, Cl. 24-16.0PB.

Bergen, Gary R., to Emhart Industries, Inc. Latch bolt operating assembly having bolt operating improvements. 4,516,798, Cl. 292-169.130.

Berger, Charles; and Ruth, Kenneth, to Archival Color Technologies. Processing machine for printing. 4,517,267, Cl. 430-3.000.

Berger, Hans S.; Mercurio, Frank; and Reiner, Norbert L., to Coleco Industries, Inc. Child's ride-on toy with reversing drive for rear wheels. 4,516,648, Cl. 180-6.660.

Bergfalk, Bjorn, to Aktiebolaget Bofors. Shear beam load cell with built-in bearing elements. 4,516,646, Cl. 177-211.000.

Berglund, Carl O., to Teledyne Exploration Company. Seismic apparatus. 4,517,664, Cl. 367-163.000.

Bergman, Rolf S.: *See—*
Otto, Lee W.; Ingold, John H.; and Bergman, Rolf S., 4,517,491, Cl. 313-579.000.

Bergwerksverband: *See—*
Romey, Ingo; and Lennartz, Rudiger, 4,517,086, Cl. 210-323.200.

Berkeley Glasslab: *See—*
Snider, Wendall L.; and Wagner, Edward A., 4,516,897, Cl. 414-180.000.

Berlex Laboratories, Inc.: *See—*
Diamond, Julius; and Wohl, Ronald A., 4,517,310, Cl. 514-394.000.

Berman, Oded; Eilam, Zohar; and Itzchak, Zeev B., to Ergoplic Ltd., An Israel Company. Speaking toy employing chordic input. 4,516,950, Cl. 446-297.000.

Bernstein, Benjamin T.; Bock, Thomas J.; Toman, George M.; and Bhatia, Chandrakant, to Union Special Corporation. Modularized Cardan sewing machine. 4,516,512, Cl. 112-165.000.

Bernstein, David H.: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.

Bernt, Erich: *See—*
Scheibe, Peter; Bernt, Erich; and Klose, Sigmar, 4,517,287, Cl. 435-4.000.

Berry, James A.; Sherman, Morton; and Stevenson, John W., to Celotex Corporation, The. Foam slabs in mine tunnel stoppings. 4,516,879, Cl. 405-132.000.

Berte , Marc; Bidard, Louis; and Lechopier, Serge, to Compagnie d'Electronique et de Piezo-Electricite. High-frequency piezoelectric resonator with reinforced electrode connection. 4,517,485, Cl. 310-320.000.

Besasie, Joseph C.: *See—*
Baran, Michael S.; Besasie, Joseph C.; Warren, Wayne L.; and Montgomery, Allen W., 4,517,418, Cl. 179-156.00R.

Bettcher Industries, Inc.: *See—*
Bettcher, Louis A.; and Decker, Richard B., 4,516,323, Cl. 30-276.000.

Bettcher, Louis A.; and Decker, Richard B., to Bettcher Industries, Inc. Rotary hand knife and parts therefor. 4,516,323, Cl. 30-276.000.

Betts, William; and Smith, Wesley H., to Paradyne Corporation. Error vector normalizer. 4,517,680, Cl. 375-75.000.

Beynet, Pierre A.; and von Aschwege, J. Thomas, to Standard Oil Company. Multiterminators for riser pipes. 4,516,881, Cl. 405-195.000.

Bhatia, Chandrakant: *See—*
Bernstein, Benjamin T.; Bock, Thomas J.; Toman, George M.; and Bhatia, Chandrakant, 4,516,512, Cl. 112-165.000.

Bhatti, Mohinder S.; Porzio, Thomas J.; and Nagy, Monte L., to Owens-Corning Fiberglas Corporation. Apparatus for forming glass fibers. 4,516,995, Cl. 65-1.000.

BHS-Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft: *See—*
Mosburger, Hans, 4,516,454, Cl. 83-499.000.

Bicker, Uwe: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,517,183, Cl. 514-183.000.

Bickerdike, Robert L.; and Hughes, Garyth, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Bulk production of alloys by deposition from the vapor phase and apparatus therefor. 4,517,027, Cl. 148-6.300.

Bidard, Louis: *See—*
Berte , Marc; Bidard, Louis; and Lechopier, Serge, 4,517,485, Cl. 310-320.000.

Bier, Axel, to Audi NSU Auto Union Aktiengesellschaft. Circuit for a current consuming device in a motor vehicle. 4,517,469, Cl. 307-10.0LS.

Bingham, Grady A., to Thermal Concepts, Inc. Earth-type heat exchanger for heat pump system. 4,516,629, Cl. 165-45.000.

Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Dambrough, Geoffrey; and Hart, Terance W., to May & Baker Limited. Prostaglandin analogues. 4,517,202, Cl. 514-530.000.

Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, to PPG Industries, Inc. Acrylated alkyd and polyester resins. 4,517,322, Cl. 523-501.000.

Birks, Colin: *See—*
Ridout, Paul S.; and Birks, Colin, 4,517,585, Cl. 357-81.000.

Bischoff, Peter G., to Memorex Corporation. Thin film magnetic recording transducer having embedded pole piece design. 4,517,616, Cl. 360-126.000.

Bishop, Ernest C.: *See—*
Murphy, Gordon D.; and Bishop, Ernest C., 4,517,206, Cl. 426-115.000.

Black, Charles E., III; and Halstead, Raymond T., to Indak Manufacturing Corp. Electrical switch having interlocked blower and air conditioner switch components for vehicles. 4,517,422, Cl. 200-50.00C.

Black & Decker Inc.: *See—*
Heininger, Ammon N., Jr.; and Barnik, Edward A., 4,516,324, Cl. 30-377.000.
Krasznai, Charles Z.; and Norwood, Richard L., 4,517,452, Cl. 219-413.000.

Blake, James A.: *See—*
Parker, John C.; and Blake, James A., 4,516,851, Cl. 356-28.000.

Blakely, Linda L.; Goodman, John C.; and Walker, David B., to Polaroid Corporation. Security control system and method for identification card cameras. 4,516,845, Cl. 354-412.000.

Blaskie, Marcus W.: *See—*
Pesa, Frederick A.; Blaskie, Marcus W.; and Fox, Joseph R., 4,517,400, Cl. 585-638.000.

Blegen, James R., to Ashland Oil, Inc. Vaporous amine catalyst spray method of applying a film to a substrate. 4,517,222, Cl. 427-30.000.

Blei, Peter: *See—*
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

Bloch, Ricardo; McCrary, Thomas J., Jr.; and Brownawell, Darrell W., to Exxon Research & Engineering Co. Ethylene copolymer viscosity index improver-dispersant additive useful in oil compositions. 4,517,104, Cl. 252-51.50A.

Block, Richard M. Universal child's toilet trainer. 4,516,279, Cl. 4-235.000.

Blue Circle Industries PLC: *See—*
Inculet, Ion I.; Norberg, Anna K. E.; and Hepher, Nicholas M., 4,517,078, Cl. 209-127.300.

Boccaletti, Pietro, to AMECA S.r.l. Machine for replacing railway switches and tracks. 4,516,503, Cl. 104-3.000.

Bock, Susan C.; and Lawn, Richard M., to Genentech, Inc. Human antithrombin III. 4,517,294, Cl. 435-70.000.

Bock, Thomas J.: *See—*
Bernstein, Benjamin T.; Bock, Thomas J.; Toman, George M.; and Bhatia, Chandrakant, 4,516,512, Cl. 112-165.000.

Bocker, Jurgen: *See—*
Klein, Klaus-Walter; Bocker, Jurgen; Glotz, Gerhard; and Gersbach, Klaus, 4,516,502, Cl. 102-523.000.

Boeckmann, Eduard F. B., to GTE Communication Systems Corp. Hookswitch bounce resistant telephone hold-mute circuit. 4,517,414, Cl. 179-81.00R.

Boehringer Mannheim GmbH: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,517,183, Cl. 514-183.000.
Scheibe, Peter; Bernt, Erich; and Klose, Sigmar, 4,517,287, Cl. 435-4.000.

Boeing Company, The: *See—*
Ferrell, Philip J.; Stern, Alan D.; and McFarland, Melvin D., 4,517,639, Cl. 364-186.000.
Hugh, Steven C., 4,517,252, Cl. 428-553.000.
Loch, David M.; and Henkes, Dale D., 4,517,059, Cl. 204-14.100.

Boerner, Dietmar: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,517,183, Cl. 514-183.000.

Boginsky, Vladimir P.: *See—*
Kostylev, Alexandr D.; Syryamin, Jury N.; Smolyanitsky, Boris N.; Boginsky, Vladimir P.; and Terskov, Alexei D., 4,516,662, Cl. 173-53.000.

Bogner, Martin: *See—*
Scheck, Georg; and Bogner, Martin, 4,516,792, Cl. 280-625.000.

Bohaychick, John: *See—*
Laemmle, Joseph T.; and Bohaychick, John, 4,517,105, Cl. 252-56.00R.

Bohg, Armin; Matthaei, Horst D.; and Hartmann, Kurt, to International Business Machines Corporation. Electromagnetic rotary actuator with rocking movement, in particular for impact printers. 4,517,538, Cl. 335-272.000.

Bohlen, Peter: *See—*
Ling, Nicholas C.; Esch, Frederick S.; Bohlen, Peter; Brazeau, Paul E., Jr.; and Guillemin, Roger C. L., 4,517,181, Cl. 514-12.000.

Boll, Hans-Joachim, to J. Wagner GmbH. Electrical feed and control circuit for the pump piston of a spray gun. 4,517,620, Cl. 361-154.000.

Boll & Kirch Filterbau GmbH: *See—*
Romey, Ingo; and Lennartz, Rudiger, 4,517,086, Cl. 210-323.200.

Bolte, Steven B.: *See—*
Gruber, Robert J.; Knapp, John F.; and Bolte, Steven B., 4,517,268, Cl. 430-39.000.

Borg-Warner Corporation: *See—*
Laster, Walter R., 4,516,964, Cl. 474-245.000.
Mott, Philip J., 4,516,963, Cl. 474-245.000.
Mott, Philip J., 4,516,965, Cl. 474-245.000.
Roberts, Richard W., 4,516,919, Cl. 418-23.000.

Borsuk, Leslie M.; and Corrales, Patrick G., to International Telephone & Telegraph Corporation. Fiber optic contact retention assembly. 4,516,829, Cl. 350-96.200.

Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, to Boehringer Mannheim GmbH. N-Substituted aziridine-2-carboxylic acid derivatives. 4,517,183, Cl. 514-183.000.

Bosker, Hans. System for denture support using a transmandibular implant. 4,516,937, Cl. 433-173.000.

Bosman, Jakob, to U.S. Philips Corporation. Air blowing device. 4,516,483, Cl. 98-40.140.

Bostrom, Karl J. Gear shifting device. 4,516,669, Cl. 192-3.580.

Bott, John A. Vehicle article carrying device. 4,516,709, Cl. 224-315.000.

Bott, John A. Article carrier for automotive vehicles. 4,516,710, Cl. 224-324.000.

Bouiller, Jean G.; Delonge, Jean-Claude L.; Rigo, Marcel L. A.; and Zietek, Didier G., to S.N.E.C.M.A. Retractable damping device for blades of a turbojet. 4,516,910, Cl. 416-190.000.

Bourgeois, Serge; Carle, Jean-Franqois; Lochon, Henri; and Trotin, Jean-Pierre, to International Business Machines Corporation. Electron gun equipment for vacuum deposition. 4,516,525, Cl. 118-688.000.

Bourgery, Guy R.: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.

Boyer, Robert; and Duval, Claude, to Commissariat a l'Energie Atomique. Device for measuring an ion current produced by an ion beam. 4,517,462, Cl. 250-286.000.

Boyette, Bobby R. Tool holder with work release mechanism. 4,516,449, Cl. 83-140.000.

Boyle, Joseph P.; and Gilbert, John B., to Exxon Research and Engineering Co. Reactivation of iridium-containing catalysts. 4,517,076, Cl. 208-140.000.

BP Chemicals Limited: *See—*
Eve, Paul L.; and Speakman, John G., 4,517,345, Cl. 526-105.000.

Braathen, Thor F. Terrain-travelling motor vehicle. 4,516,649, Cl. 180-9.100.

Brace, Neal O., to Ciba-Geigy Corporation. Perfluoroalkyl alkylene vinyl sulfoxides and sulfones. 4,517,384, Cl. 568-27.000.

Bracke, James W.; and Thacker, Kipling, to Diagnostic, Inc. Hyaluronic acid from bacterial culture. 4,517,295, Cl. 435-101.000.

Brackner, Raymond A. Apparatus and method for handling solids in liquid. 4,517,099, Cl. 210-741.000.

Bradford, Herbert G. Spot light for handbag and like receptacles. 4,517,627, Cl. 362-156.000.

Brand, Derek A.; Brand, Derek R.; and Brand, Kenneth J., to Derek and Derek. Push-down actuated toy. 4,516,952, Cl. 446-427.000.

Brand, Derek R.: *See—*
Brand, Derek A.; Brand, Derek R.; and Brand, Kenneth J., 4,516,952, Cl. 446-427.000.

Brand, Kenneth J.: *See—*
Brand, Derek A.; Brand, Derek R.; and Brand, Kenneth J., 4,516,952, Cl. 446-427.000.

Brandenstein, Manfred; Haas, Roland; Edelmann, Ludwig; and Hans, Rudiger, to SKF Kugellagerfabriken GmbH. Tension roller for drive belts. 4,516,962, Cl. 474-112.000.

Brandyberry, Dennis R.: *See—*
Palmer, Kenneth J.; Brandyberry, Dennis R.; and Rye, Grover W., 4,516,395, Cl. 57-237.000.

Braun, Oskar J.; and Hubler, Lawrence C., to Xerox Corporation. High speed duplicator with sorter/stapling apparatus and stapler positioning control. 4,516,714, Cl. 227-78.000.

Braunlich, Peter F.: *See—*
Gasiot, Jean; Braunlich, Peter F.; and Fillard, Jean-Pierre, 4,517,463, Cl. 250-327.200.

Braverman, Samuel. Process for the selective preparation of parabromophenol and its derivatives. 4,517,388, Cl. 568-779.000.

Brazeau, Paul E., Jr.: *See—*
Ling, Nicholas C.; Esch, Frederick S.; Bohlen, Peter; Brazeau, Paul E., Jr.; and Guillemin, Roger C. L., 4,517,181, Cl. 514-12.000.

Brear, Frederick, to Massey-Ferguson-Perkins Limited. Internal combustion engine. 4,516,549, Cl. 123-276.000.

Breining, Frank E., to Airmaster Fan Company. Modular switch housing for an electric motor. 4,517,481, Cl. 310-71.000.

Brejcha, Robert J.: *See—*
DeVale, Donald P.; Brejcha, Robert J.; and Van Naarden, Robert W., 4,516,781, Cl. 273-373.000.

Brems, John H.; and Vaphiadis, John L., to Lamb Technicon Corp. Cross-over track structure for wheeled pallets. 4,516,504, Cl. 104-130.000.

Brennan, Robert J.; and Meighen, Terrence, to Stewart Stamping Corporation. Modular connector for terminating EMI/RFI shielded cordage. 4,516,825, Cl. 339-143.00R.

Brennan, Thomas M.; and Hendrick, Michael E., to Pfizer Inc. Branched amides of L-aspartyl-D-amino acid dipeptides. 4,517,379, Cl. 564-193.000.

Bretl, Wayne E., to Zenith Electronics Corporation. Integrated crystal VCO. 4,517,533, Cl. 331-116.00R.

Breville Holdings Pty. Limited: *See—*
Yip, Shu W., 4,516,926, Cl. 425-464.000.

Brewer, John H.; and Cress, Hobart A., to Fluor Subsea Services, Inc. Method and apparatus for conversion of semi-submersible platform to tension leg platform for conducting offshore well operations. 4,516,882, Cl. 405-224.000.

Bridgestone Tire Co., Ltd.: *See—*
Takasu, Ryo; and Nakao, Makoto, 4,517,146, Cl. 264-40.600.
Takeshita, Masaru; Tokunaga, Toshio; and Ogawa, Yuichiro, 4,516,451, Cl. 83-171.000.

Brigham and Women's Hospital: *See—*
Milford, Edgar L.; Carpenter, Charles B.; and Paradysz, Jean M., 4,517,289, Cl. 435-7.000.

Briney, Gary C.; and Fuerniss, Stephen J., to Du Pont de Nemours, E. I., and Company. Development process for aqueous developable photopolymerizable elements. 4,517,281, Cl. 430-322.000.

Bristol-Myers Company: *See—*
Crenshaw, Ronnie R.; and Algieri, Aldo A., 4,517,366, Cl. 546-231.000.

British Matthews Limited, The: *See—*
Avey, Kenneth F. C., 4,516,900, Cl. 414-217.000.

British Nuclear Fuels Limited: *See—*
Alderton, Geoffrey W.; and Davidge, Peter C., 4,516,966, Cl. 494-1.000.

Broadbent, Eliot K., to Signetics Corporation. Method for manufacturing an electrical interconnection by selective tungsten deposition. 4,517,225, Cl. 427-89.000.

Brode, George L.: *See—*
Gardner, Hugh C.; Michno, Michael J., Jr.; and Brode, George L., 4,517,321, Cl. 523-400.000.

Brokke, Mervin E.: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,517,012, Cl. 71-94.000.

Bronoel, Guy, to T.R.E.G.I.E. Electrochemical generator operating device with a zinc negative electrode. 4,517,258, Cl. 429-21.000.

Brookes, David L.; Weatherly, John D.; and Dillicar, Colin R., to Development Finance Corporation of New Zealand. Ball identification for a table ball game. 4,516,770, Cl. 273-11.00R.

Broom, Nigel J. P., to Beecham Group Limited. Process for preparing penem derivatives. 4,517,124, Cl. 260-245.20R.

Brooshooft, Lawrence H.: *See—*
Scott, Michael J.; Slater, Paul; and Brooshooft, Lawrence H., 4,516,577, Cl. 128-330.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Goto, Hideo; Hosoe, Takeo; Oda, Toshinori; and Ohtsuka, Sosuke, 4,516,978, Cl. 8-510.000.
Kako, Mitumasa; and Ishigami, Michifumi, 4,516,508, Cl. 108-7.000.

Brotherton, Mary M.: *See—*
Giegel, Joseph L.; and Brotherton, Mary M., 4,517,288, Cl. 435-7.000.

Brown, Boveri & Cie AG: *See—*
Reiss, Harald; and Ziegenbein, Botho, 4,517,263, Cl. 429-120.000.

Brown Boveri Reaktor GmbH: *See—*
Pieper, Kurt; and Scharpenberg, Rainer, 4,517,152, Cl. 376-252.000.

Brown, Christopher R.; Corrie, John D.; and Wilson, William G. J., to Westinghouse Brake & Signal Co. Computer-based interlocking system. 4,517,673, Cl. 371-36.000.

Brown, James M., to AT&T Bell Laboratories. Magnetic differential current sensor. 4,517,513, Cl. 324-117.00R.

Brown, Sammy K.: *See—*
Solimeno, Duane; Koeppen, Peter L.; Rogers, Gerald; and Brown, Sammy K., 4,517,656, Cl. 364-900.000.

Brown & Williamson Tobacco Corporation: *See—*
Heaney, Richard; and Naslund, Erik I., 4,517,046, Cl. 156-500.000.

Brownawell, Darrell W.: *See—*
Bloch, Ricardo; McCrary, Thomas J., Jr.; and Brownawell, Darrell W., 4,517,104, Cl. 252-51.50A.

Brownell, Dean B.: *See—*
Harland, Gary D.; and Brownell, Dean B., 4,517,144, Cl. 264-28.000.

Brubaker, John R., to Eaton Corporation. SME overcurrent protective apparatus having ambient temperature compensation. 4,517,543, Cl. 337-140.000.

Brunner, Alfred, to Sulzer Brothers Limited. Means for suspending pipework. 4,516,750, Cl. 248-58.000.

Brusis, Otto; Maiter, Sigurd; and Haufe, Paul. Circuit arrangement for the production of a quasi-electrostatic field. 4,517,621, Cl. 361-231.000.

Bryant, John H.; and Schultz, Steven M., to Bryant, John H. True ground speed sensor. 4,517,566, Cl. 343-8.000.

Buch, James R.: *See—*
Agron, Michael H.; Buch, James R.; and LaVoie, Robert E., 4,517,557, Cl. 340-540.000.

Buchan, Ian A., to Smith and Nephew Associated Companies p.l.c. Medical device, its preparation and use. 4,516,571, Cl. 128-132.00R.

Bucher-Guyer AG: *See—*
Hartmann, Eduard, 4,516,490, Cl. 100-107.000.

Buck, Rainer; Kuttner, Thomas; Piwonka, Fridolin; and Wessel, Wolf, to Robert Bosch GmbH. Electronic control device for a fuel metering system of an internal combustion engine with self-ignition. 4,516,550, Cl. 123-357.000.

Buckland, Bruce E., to United States of America, Army. Adjustable earcup retention harness. 4,516,274, Cl. 2-209.000.

Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., to Euclid Spiral Paper Tube Corp. Portable apparatus for filling and closing containers. 4,516,380, Cl. 53-282.000.

Budd Company, The: *See—*
Dean, Walter C., II, 4,516,507, Cl. 105-199.00A.

Buder, Wolfgang: *See—*
Wolff, Siegfried; Grewatta, Heinz; and Buder, Wolfgang, 4,517,335, Cl. 524-552.000.

Buhne, Gerd: *See—*
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,516,488, Cl. 100-4.000.

Bujadoux, Karel, to Societe Chimique des Charbonnages S.A. Activator comprising a dialkylaluminum monofluoride for the polymerization of ethylene. 4,517,346, Cl. 526-153.000.

Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., to Redicon Corporation. Shell tooling. 4,516,420, Cl. 72-329.000.

Burd, David E. Pod lifting adaptor. 4,516,801, Cl. 294-81.500.

Burford, Henry H. T., Jr.: *See—*
Provisor, Zvi; and Burford, Henry H. T., Jr., 4,517,638, Cl. 364-146.000.

Burget, Paul; and Zortea, Michel, to Saint-Gobain Vitrage. Apparatus for producing molten glass. 4,517,000, Cl. 65-178.000.

Burke Company, The: *See—*
Turner, Frank E., 4,516,875, Cl. 404-50.000.

Burke, Timothy M.; and Noble, Scott W., to Motorola, Inc. Selective call, paging and priority signalling system. 4,517,561, Cl. 340-825.070.

Burkhart, William H. Cooking apparatus and method. 4,516,486, Cl. 99-388.000.

Burlington Industries, Inc.: *See—*
Rowland, Nelson; and Getto, Robert D., 4,516,677, Cl. 206-394.000.

Burnside, Donald L. Helicopter dolly. 4,516,744, Cl. 244-17.170.

Burr, Bruce H., to Hughes Tool Company-USA. Earth boring bit with pressure compensating rigid face seal. 4,516,641, Cl. 175-228.000.

Burroughs Corporation: *See—*
Chamberlain, John T., 4,517,659, Cl. 364-900.000.
Peterson, LuVerne R., 4,517,662, Cl. 365-44.000.

Burry, Daniel C.: *See—*
Coy, Charles H., 4,517,427, Cl. 219-10.510.

Burson, Richard L., to Dow Chemical Company, The. 2,3-Dichloro-5-iodopyridine and methods of making and using the same. 4,517,368, Cl. 546-303.000.

Burton, Charles A.; and Banovic, Peter, to Yellowstone Ltd. Automatic ladling apparatus. 4,516,699, Cl. 222-591.000.

Busacca, Giuseppe, to Consito SpA. Two-stage chlorination process for the production of solid bleaching powder with a high active chlorine content. 4,517,166, Cl. 423-474.000.

Buss, Waldeen C., to Chevron Research Company. Composition and a method for its use in dehydrocyclization of alkanes. 4,517,306, Cl. 502-74.000.

Butel, Jean. Article comprising and method for fabricating a hip prosthesis having a flexible multi-element femoral rod. 4,516,277, Cl. 3-1.913.

Butler, Helene I.: *See—*
Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Darnbrough, Geoffrey; and Hart, Terance W., 4,517,202, Cl. 514-530.000.

Buzzi, Enrico. Household lighter. 4,516,933, Cl. 431-255.000.

Byerley, John J.; and Enns, Kurt. Discrete particulate bipolar reactor. 4,517,067, Cl. 204-255.000.

Byers, Ross E.: *See—*
Cummins, James N.; Aldwinckle, Herb S.; and Byers, Ross E., 4,516,353, Cl. 47-58.000.

Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., to Owens-Illinois, Inc. Selective control of discharge position in gas discharge display/memory device. 4,517,492, Cl. 313-587.000.

Bzibziak, Raymond J.: *See—*
Hill, Ronald C.; Stein, Richard M.; Bzibziak, Raymond J.; and Goodwill, Robert, 4,516,448, Cl. 83-137.000.

C-COR Electronics, Inc.: *See—*
Preschutti, Joseph P.; and Pavlic, John C., 4,517,521, Cl. 330-2.000.

C. Reichert Optische Werke: *See—*
Kappl, Gerhard; Kranner, Helmut; and Lihl, Reinhard, 4,516,459, Cl. 83-713.000.

Cabela's Inc.: *See—*
Highby, Dennis N., 4,516,351, Cl. 43-23.000.

Cabinet Brot: *See—*
Chaudot, Gerard, 4,516,932, Cl. 431-202.000.

Calandra, Frank, Jr., to Jennmar Corporation. Method and apparatus for combining resin bonding and mechanical anchoring of a bolt in a rock formation. 4,516,885, Cl. 405-261.000.

Calcagno, Vincent J., Jr., to United States of America, Army. Electronic depth gage. 4,516,326, Cl. 33-169.00B.

Caldwell, Brian E.: *See—*
Sinha, Kamal R.; and Caldwell, Brian E., 4,517,242, Cl. 428-336.000.
Sinha, Kamal R.; and Caldwell, Brian E., 4,517,243, Cl. 428-336.000.

Calhoun, Bernard: *See—*
Ashley, John C.; and Calhoun, Bernard, 4,516,298, Cl. 26-3.000.

Calkins, Jack M.: *See—*
Nance, Weldon B.; and Calkins, Jack M., 4,517,100, Cl. 252-8.50C.

Campbell, Jules D., Jr., to Motorola, Inc. Digital to analog converter circuit. 4,517,551, Cl. 340-347.0DA.

Campbell, Sterrett P., to AMF Incorporated. Method of dispensing dough. 4,517,212, Cl. 426-496.000.

Camren, Robert: *See—*
Reisgies, Rolf W.; and Camren, Robert, 4,516,530, Cl. 119-14.080.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Duchesne, Gonzague L.; and Perrault, Guy, 4,517,035, Cl. 149-19.920.
Preston, John M.; Ward, Thomas V.; and Morrow, William H., 4,516,857, Cl. 356-418.000.

Canalizo, Carlos R., to Otis Engineering Corporation. Well pumping apparatus and method. 4,516,917, Cl. 417-390.000.

Canon Kabushiki Kaisha: *See—*
Baba, Takeshi; and Matsuoka, Kazuhiko, 4,517,589, Cl. 358-75.000.
Fushimoto, Hideo; Toyomura, Shigeru; Nishimuro, Yoshiaki; Asakura, Osamu; and Rachi, Masahiro, 4,517,660, Cl. 364-708.000.
Hirooka, Masaaki; Kubo, Keiji; and Yoshihara, Toshiyuki, 4,517,271, Cl. 430-94.000.
Inoue, Sukejiro; Hasegawa, Tetsuo; and Nishikawa, Yoshihiro, 4,517,273, Cl. 430-111.000.
Kitamura, Takashi, 4,517,579, Cl. 346-160.000.
Kobayashi, Masatsune; Haruta, Masahiro; Eida, Tsuyoshi; and Ohta, Tokuya, 4,517,244, Cl. 428-342.000.
Kuwayama, Tetsuro; Tanaka, Nobuyoshi; and Hashimoto, Seiji, 4,517,588, Cl. 358-44.000.
Shimizu, Isamu; and Arao, Kozo, 4,517,269, Cl. 430-57.000.
Suzuki, Ryoichi; Matsumoto, Seiichi; Amikura, Takashi; Tsunekawa, Tokuichi; and Uchiyama, Takashi, 4,516,835, Cl. 350-336.000.
Takimoto, Hiroyuki, 4,517,501, Cl. 318-314.000.
Tazaki, Shigemitsu, 4,517,578, Cl. 346-140.00R.
Yokomizo, Yoshikazu, 4,517,605, Cl. 358-280.000.
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Cantenot, Laurence. Devices for extracting solid materials in bulk in the finely divided state, from the bottom of a silo. 4,516,898, Cl. 414-309.000.

Captive Plastics Inc.: *See—*
Dreps, James R.; and Drozd, Edward J., 4,516,697, Cl. 222-212.000.

Car-ventomatic S.p.A.: *See—*
Moltrasio, Mario; and Perrucchini, Vincenzo, 4,516,762, Cl. 271-11.000.

Caramaschi, Vittorio; and Castelli, Pier Luigi, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Helicopter Rotor. 4,516,909, Cl. 416-134.00A.

Caray, Andre , to Valeo. Progressive engagement friction disc. 4,516,672, Cl. 192-107.00C.

Carden, Lloyd E., to Aluminum Metals, Inc. Awning stringer. 4,516,362, Cl. 52-75.000.

Carey, Desmond F., to Allied Corporation. Quartz rate sensor. 4,516,427, Cl. 73-505.000.

Carle, Jean-Franqois: *See—*
Bourgeois, Serge; Carle, Jean-Franqois; Lochon, Henri; and Trotin, Jean-Pierre, 4,516,525, Cl. 118-688.000.

Carley, John J.: *See—*
Williams, Daniel E.; Carley, John J.; and Eaton, Paul S., 4,517,410, Cl. 179-6.040.

Carlin Foods Corporation: *See—*
Levine, Lawrence W.; and Mullins, Carolyn C., 4,517,203, Cl. 426-19.000.

Carlquist, John W.: *See—*
Van Valkenburg, George; and Carlquist, John W., 4,517,598, Cl. 358-142.000.

Carlson, Timothy L.: *See—*
Ward, John W.; and Carlson, Timothy L., 4,517,073, Cl. 208-111.000.

Carmean, Wesley F., to IGT. Video processing architecture. 4,517,654, Cl. 364-521.000.

Carpenter, Charles B.: *See—*
Milford, Edgar L.; Carpenter, Charles B.; and Paradysz, Jean M., 4,517,289, Cl. 435-7.000.

Carr, Dennis D.: *See—*
Miller, Lee E.; Carr, Dennis D.; and Smith, Donald L., 4,517,264, Cl. 429-163.000.

Carre, Jean-Jacques, to Societe Anonyme D.B.A. Dual-circuit brake corrector under deceleration control. 4,516,810, Cl. 303-24.00F.

Carter, Phyllis J.: *See—*
Kemp, Gail W., 4,516,921, Cl. 418-141.000.

Cascini, Michael R., to Rockwell International Corporation. Contrast enhanced liquid crystal display. 4,516,834, Cl. 350-335.000.

Casner, Kenneth H., to Casner, Kenneth H. Method and apparatus for private branch exchange billing. 4,517,411, Cl. 179-7.00R.

Caspari, Fred W., to Magnavox Consumer Electronics Company. Microprocessor controlled system for decoding serial data into parallel data for execution. 4,517,683, Cl. 375-117.000.

Cassat, Robert, to Rhone-Poulenc Specialites Chimiques. Forming of thick-layer, hybrid electronic printed circuits. 4,517,227, Cl. 427-96.000.

Cassell, Douglas A., to Inconlx Corporation. Distributed measurement and control system for industrial processes. 4,517,637, Cl. 364-138.000.

Cassella Aktiengesellschaft: *See—*
Becherer, Johannes; Kuhlein, Klaus; and Kussmaul, Ulrich, 4,517,370, Cl. 548-217.000.

Castelli, Pier Luigi: *See—*
Caramaschi, Vittorio; and Castelli, Pier Luigi, 4,516,909, Cl. 416-134.00A.

Cate, John M. Catamaran righting accessory. 4,516,518, Cl. 114-61.000.

Caterpillar Tractor Co.: *See—*
Herr, Charles H., Jr., 4,516,444, Cl. 74-781.00R.
Satzler, Ronald L., 4,517,039, Cl. 156-149.000.
Staiert, Richard W., 4,516,956, Cl. 464-89.000.

Caton, Michael P. L.: *See—*
Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Darnbrough, Geoffrey; and Hart, Terance W., 4,517,202, Cl. 514-530.000.

Cattaneo, Leopoldo. Piston ring for endothermic motors having an improved flame damper ring. 4,516,480, Cl. 92-182.000.

Cavanaugh, James E.; Hetherington, Robert D.; and Parmley, Thomas A., to 501 Binks Manufacturing Co. Dual component pumping system. 4,516,725, Cl. 239-127.000.

Cavin, J. N.; and Frees, Kenneth A., to Hoover Universal, Inc. Roll clamp. 4,516,905, Cl. 414-620.000.

Ceaser, Anthony V. Fluoride containing compositions for removal of pollutants from waste waters and methods of utilizing same. 4,517,095, Cl. 210-665.000.

Celanese Corporation: *See—*
Bell, Gilbert C.; and Stanhope, Harry W., 4,516,394, Cl. 57-234.000.

Celotex Corporation, The: *See—*
Berry, James A.; Sherman, Morton; and Stevenson, John W., 4,516,879, Cl. 405-132.000.

Centre National de la Recherche Scientifique: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.
Richard, Bruno, 4,516,583, Cl. 128-660.000.

Centre National de la Recherche Scientifique (CNRS): *See—*
Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, 4,517,061, Cl. 204-59.00R.

Cerrato, Vincent J., to Vending Components, Inc. Keg-pump construction. 4,516,698, Cl. 222-341.000.

Chalk, Alan J.: *See—*
Naipawer, Richard E.; and Chalk, Alan J., 4,517,386, Cl. 568-483.000.

Chamberlain, John T., to Burroughs Corporation. Constant-distance structure polycellular very large scale integrated circuit. 4,517,659, Cl. 364-900.000.

Chan, John K., to Union Carbide Corporation. Process for preparation of cyanohydrins. 4,517,132, Cl. 260-465.00F.

Chanal, Roger; and Cotte, Daniel, to Bennes Marrel. Mining cylinder hydraulic slide valve. 4,516,601, Cl. 137-510.000.

Chance, Ronald R.: *See—*
Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H., 4,517,116, Cl. 252-500.000.

Chandler, Noel W. Hydraulic bedknife adjuster for reel-type mowing equipment. 4,516,388, Cl. 56-249.000.

Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, to United States of America, Army. MBE growth technique for matching superlattices grown on GaAs substrates. 4,517,047, Cl. 156-610.000.

Chang, Leroy L.: *See—*
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,517,047, Cl. 156-610.000.

Chang, Yan P. Limitless and limited heat sources power plants. 4,516,402, Cl. 60-656.000.

Chao, Chien C.; and Sherman, John D., to Union Carbide Corporation. Separation of arabinose by selective adsorption on zeolitic molecular sieves. 4,516,566, Cl. 127-46.300.

Chaplin, James E. Automatic temperature adjustment apparatus. 4,516,720, Cl. 237-8.00R.

Chapman, Nicholas J. Support assembly and method. 4,516,365, Cl. 52-170.000.

Charland, Edmund G., Jr.: *See—*
Gravina, Anthony N.; Keitel, Murray; Weiss, Harvey; Wiley, Joseph N.; and Charland, Edmund G., Jr., 4,517,161, Cl. 422-95.000.

Chaudot, Gerard, to Cabinet Brot. Safety system intended in particular to elminate entrained or condensed liquids, and to limit the heat radiation when flaring or dispersing hydrocarbon gases. 4,516,932, Cl. 431-202.000.

Chaussepied, Jacques E. C., to Societe Nationale Industrielle Aerospatiale. Pressure balancing device which is watertight as concerns rainwater or trickling water, in particular for a transporting container. 4,516,686, Cl. 220-85.00R.

Chazan, David; and Katila, Michael J., to Raychem Corporation. Laminar electrical heaters. 4,517,449, Cl. 219-549.000.
Cheffer, Harold H., to NCR Corporation. High frequency inverter. 4,517,470, Cl. 307-64.000.
Chemische Werke Huls AG: *See—*
Reese, Dirk; and Rigler, Josef K., 4,517,314, Cl. 521-59.000.
Chemische Werke Huls Aktiengesellschaft: *See—*
Obenaus, Fritz; Nierlich, Franz; Reitemeyer, Otto; and Scholz, Bernhard, 4,517,395, Cl. 585-259.000.
Cheng, Chia-Chung, to Warner-Lambert Company. 3-(Haloethyl)-4-oxopyrazolo-[5,1-d]-1,2,3,5-tetrazine-8-carboxamide composition. 4,517,182, Cl. 514-413.000.
Chester, Arthur W.; Garwood, William E.; and Schwartz, Albert B., to Mobil Oil Corporation. Process for the production of high viscosity index lubricating oils from olefins. 4,517,399, Cl. 585-533.000.
Chevron Research Company: *See—*
Buss, Waldeen C., 4,517,306, Cl. 502-74.000.
Chevrot, Claude: *See—*
Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, 4,517,061, Cl. 204-59.00R.
Chiba, Mitsuyoshi, to Kabushiki Kaisha Toshiba. Refrigeration system for refrigerant heating type air conditioning apparatus. 4,516,408, Cl. 62-238.700.
Chidester, Dale H., to American Cyanamid Company. Solid-state automatic injection control device. 4,517,473, Cl. 307-269.000.
Childers, John S.; and Pastusek, Paul E., to Reed Rock Bit Company. Drill bit having angled nozzles for improved bit and well bore cleaning. 4,516,642, Cl. 175-340.000.
Chiron Corporation: *See—*
Urdea, Mickey S.; and Warner, Brian D., 4,517,338, Cl. 525-54.110.
Chiron, Daniel M.: *See—*
Dumont, Pascal G.; and Chiron, Daniel M., 4,516,426, Cl. 73-432.00R.
Chmela, Andrew, to Ameco Corporation. Gas welding electrode for a small bore. 4,517,433, Cl. 219-75.000.
Cholewa, Lothar: *See—*
Aschoff, Hans-Joachim; and Cholewa, Lothar, 4,517,502, Cl. 318-474.000.
Chollet, Christian; and David, Jean, to Electricite de France Service National. Device for measuring the speed of the fluid in the annular space of a steam generator. 4,516,425, Cl. 73-198.000.
Choushi, Masahiro; and Yahiro, Tetsuji, to Mazda Motor Corporation. V-Type overhead-camshaft engine. 4,516,546, Cl. 123-195.00A.
Chow, Kwong-Wai; Lau, Alfred T. Y.; Chow, Ming-Ngar; and Lee, James S. W., to Lee, James S. Toy vehicle. 4,516,954, Cl. 446-461.000.
Chow, Ming-Ngar: *See—*
Chow, Kwong-Wai; Lau, Alfred T. Y.; Chow, Ming-Ngar; and Lee, James S. W., 4,516,954, Cl. 446-461.000.
Chowdhury, Mofazzal H.: *See—*
Schultz, Per-Erik; Chowdhury, Mofazzal H.; and Neff, Clayton B., 4,516,592, Cl. 134-169.00C.
Choy, Edmund M., to Westvaco Corporation. Internal sizing with black liquid. 4,517,052, Cl. 162-11.000.
Christensen, Charles R.: *See—*
Sweeney, Donald W.; Gallagher, Neal C.; and Christensen, Charles R., 4,516,743, Cl. 244-3.130.
Christine, William C.; and Trillich, Charles H., to Trinity Foundation. Pierce turn tap. 4,516,691, Cl. 222-83.500.
Chromium Corporation: *See—*
Miller, John E.; and Fortino, Dennis J., 4,516,785, Cl. 277-188.00A.
Chrysler Corporation: *See—*
Fizyta, Wojciech L.; and Kaumeheiwa, Algen K., 4,516,288, Cl. 15-250.040.
Chugai Seiyaku Kabushiki Kaisha: *See—*
Takayama, Hiroaki; Yamada, Sachiko; Nakayama, Keiko; and Suda, Tatsuo, 4,517,125, Cl. 260-397.200.
Chulada, Edmund C.; and Nelson, David A., to Ingersoll-Rand Company. Field replaceable screw conveyor inserts. 4,516,302, Cl. 29-156.80R.
Churchland, Mark T., to MacMillan Bloedel Limited. Method for pressing a composite assembly. 4,517,148, Cl. 264-112.000.
Chyz, George W.; and McGregor, David J., to General Motors Corporation. Tripot joint with spider retainer. 4,516,957, Cl. 464-111.000.
Ciba-Geigy AG: *See—*
Leppard, David G.; and Rody, Jean, 4,517,283, Cl. 430-512.000.
Ciba-Geigy Corporation: *See—*
Babler, Fridolin; and Weissmuller, Adolf, 4,517,320, Cl. 523-215.000.
Brace, Neal O., 4,517,384, Cl. 568-27.000.
Habicht, Ernst; and Zbinden, Paul, 4,517,184, Cl. 514-212.000.
Kunz, Walter; and Eckhardt, Wolfgang, 4,517,194, Cl. 514-184.000.
Ramanathan, Visvanathan, 4,517,358, Cl. 534-608.000.
Cichoski, Richard: *See—*
Kaltz, Milton C.; Alexander, Michael P.; and Cichoski, Richard, 4,516,803, Cl. 296-107.000.
Cincinnati Milacron Inc.: *See—*
Schaeffer, Andrew P., 4,516,461, Cl. 83-881.000.
Cirjak, Larry M., to Standard Oil Company, The. Photochemical reactor and method for carrying out photochemical reactions therein. 4,517,063, Cl. 204-157.10R.
Claasen, Theodoor A. C. M.; Stienstra, Albert J.; and van Roermund, Arthur H. M., to U.S. Philips Corporation. Multiplier circuit for multiplying an information signal by a periodic signal. 4,517,655, Cl. 364-703.000.
Clancy, Gerald F.: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.
Clark, Donald G., to AMP Incorporated. Apparatus for assembling an electrical connector to a cable. 4,516,309, Cl. 29-564.400.
Clark, Duncan G. D.; Kimber, Ian D.; and May, Roderick G., to EMI Limited. Communication over noisy lines. 4,517,679, Cl. 375-37.000.
Clark Equipment Company: *See—*
Sagaser, Thomas M., 4,516,439, Cl. 74-470.000.
Clarke, David G.: *See—*
Woodward, Antony I.; Clarke, David G.; and Shahaney, Sunil, 4,517,285, Cl. 430-538.000.
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., to Lever Brothers Company. Detergent bar. 4,517,107, Cl. 252-108.000.
Clegg, Michael W.: *See—*
Hall, James R.; Harter, Donald P.; Clegg, Michael W.; and Gerber, James E., 4,516,659, Cl. 181-243.000.
Cleland, Keith B. Ore separation system. 4,517,079, Cl. 209-452.000.
Clements, Porter, to Katalco Corporation. Shaped catalyst particle for use in hydroprocessing of petroleum oils. 4,517,077, Cl. 208-216.00R.
Cleveland, Roger C. Golf club. 4,516,778, Cl. 273-80.300.
Clinton, Henry H. Apparatus for testing the insulation of electric wire or cable. 4,517,510, Cl. 324-52.000.
Close, Rodney J.: *See—*
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,516,621, Cl. 164-339.000.
Coad, Brian C., to GTE Products Corporation. Method of brazing with iron-based and hard surfacing alloys. 4,516,716, Cl. 228-263.150.
Coad, Brian C., to GTE Products Corporation. Copper based brazing alloy. 4,517,157, Cl. 420-490.000.
Coal Industry (Patents) Limited: *See—*
Eagles, Brian A., 4,516,807, Cl. 299-1.000.
Coated Electrodes Limited: *See—*
Ball, Kevin D.; and Davies, Peter, 4,517,678, Cl. 373-95.000.
Coble, Gary L. Diffuser system for annealing furnace. 4,516,758, Cl. 266-263.000.
Coffee, Edward C. J.: *See—*
Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Darnbrough, Geoffrey; and Hart, Terance W., 4,517,202, Cl. 514-530.000.
Cohen, Howard; and Pakus, Edward, to Irwin Measuring Tool Inc. Illuminated device employing printed circuit board switch. 4,516,325, Cl. 33-138.000.
Coleco Industries, Inc.: *See—*
Berger, Hans S.; Mercurio, Frank; and Reiner, Norbert L., 4,516,648, Cl. 180-6.660.
Colley, Bruce H. AC-DC welding power supply. 4,517,439, Cl. 219-130.330.
Collo GmbH: *See—*
Ehlenz, Peter; and Irgel, Lutz, 4,517,308, Cl. 502-401.000.
Combustion Engineering, Inc.: *See—*
Russell, Cornelius R., 4,516,631, Cl. 165-47.000.
Commissariat a l'Energie Atomique: *See—*
Boyer, Robert; and Duval, Claude, 4,517,462, Cl. 250-286.000.
Conche, Francois; and Naujalis, Pierre, 4,516,436, Cl. 73-863.850.
Commonwealth of Australia, The: *See—*
Kuzma, Janusz, 4,516,820, Cl. 339-48.000.
Compagnie d'Electronique et de Piezo-Electricite: *See—*
Berte , Marc; Bidard, Louis; and Lechopier, Serge, 4,517,485, Cl. 310-320.000.
Compagnie General d'Electricite: *See—*
Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, 4,517,061, Cl. 204-59.00R.
Compton, David J.: *See—*
Nix, Richard; and Compton, David J., 4,516,748, Cl. 248-1.000.
Compton, Warren L. Truck cover. 4,516,802, Cl. 296-98.000.
Comtech Telecommunications Corp.: *See—*
Di Cicco, Thomas A., 4,517,526, Cl. 330-284.000.
Concast Incorporated: *See—*
Poran, Michael; Langner, Carl; and Tobiasz, Chester C., 4,516,624, Cl. 164-418.000.
Conche, Francois; and Naujalis, Pierre, to Commissariat a l'Energie Atomique. Liquid sampling bench. 4,516,436, Cl. 73-863.850.
Connelly, Dale L. Cylinder driven reciprocator. 4,516,478, Cl. 92-137.000.
Consito SpA: *See—*
Busacca, Giuseppe, 4,517,166, Cl. 423-474.000.
Continental Can Company: *See—*
Merchant, Harish D.; and Lossack, Edgar, 4,517,034, Cl. 148-439.000.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,516,617, Cl. 157-1.000.
Continental Packaging Company, Inc.: *See—*
Walter, John, 4,516,684, Cl. 215-272.000.
Control Fluidics, Inc.: *See—*
Tufts, Wesley M., 4,516,280, Cl. 4-319.000.
Cook, Melvin S., to Duval Corporation. Electrolytic cell. 4,517,064, Cl. 204-105.00R.
Cooper, Jerry W.: *See—*
Hughes, William E.; Dare, Keith E.; and Cooper, Jerry W., 4,517,404, Cl. 174-47.000.

Cooper LaserSonics, Inc.: *See—*
Wuchinich, David G., 4,516,398, Cl. 604-22.000.
CooperVision, Inc.: *See—*
Gerhard, Gregory J.; and Graham, William M., 4,516,575, Cl. 128-305.000.
Copar Corporation: *See—*
Schmidt, Robert W., 4,516,702, Cl. 222-514.000.
Cordis Corporation: *See—*
Garcia, Leonard M., 4,516,584, Cl. 128-785.000.
Cordts, Howard P.; and Karloske, Joan E., to Freeman Chemical Corporation. Aqueous liquid filled polyurethane gels and method of making the same. 4,517,326, Cl. 524-310.000.
Core, Grant M. Round hay baling machine. 4,516,389, Cl. 56-341.000.
Corke, Nicholas T.: *See—*
Read, Michael R.; and Corke, Nicholas T., 4,517,340, Cl. 525-113.000.
Cornell Research Foundation, Inc.: *See—*
Cummins, James N.; Aldwinckle, Herb S.; and Byers, Ross E., 4,516,353, Cl. 47-58.000.
Cornet, Jean, to Thomson-CSF. Optical disc humidity protected. 4,517,574, Cl. 346-135.100.
Coronado, Rodolfo A. Device for picking up and handling drafting templates, triangles and the like. 4,516,800, Cl. 294-64.100.
Corpataux, Marcel, to USIFLAMME S.A. Clip for writing pen or similar object. 4,516,869, Cl. 401-131.000.
Corrales, Patrick G.: *See—*
Borsuk, Leslie M.; and Corrales, Patrick G., 4,516,829, Cl. 350-96.200.
Corrie, John D.: *See—*
Brown, Christopher R.; Corrie, John D.; and Wilson, William G. J., 4,517,673, Cl. 371-36.000.
Cosentino, Louis C.: *See—*
Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., 4,517,081, Cl. 210-85.000.
Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
Caramaschi, Vittorio; and Castelli, Pier Luigi, 4,516,909, Cl. 416-134.00A.
Cotte, Daniel: *See—*
Chanal, Roger; and Cotte, Daniel, 4,516,601, Cl. 137-510.000.
Coue, Maurice, to Huret et ses Fils. Detecting device in particular for driving a bicycle counter. 4,517,450, Cl. 235-95.00R.
Coue , Maurice E. L., to Huret et ses Fils. Derailleur having an adjustable fork member for a crank-gear. 4,516,961, Cl. 474-80.000.
Coulter Corporation: *See—*
Pedroso, Raul I.; and Coulter, Robert S., 4,516,437, Cl. 73-864.220.
Coulter Electronics, Inc.: *See—*
Drury, F. Robert; and Graham, Marshall D., 4,516,522, Cl. 118-120.000.
Coulter, Robert S.: *See—*
Pedroso, Raul I.; and Coulter, Robert S., 4,516,437, Cl. 73-864.220.
Cournoyer, Roger J. A. Household cleaning kit. 4,516,676, Cl. 206-226.000.
Coy, Charles H., to Williams, Richard H.; DeBolt, Marion L.; and Burry, Daniel C. Frequency resonance heater. 4,517,427, Cl. 219-10.510.
Crain, N. Robert; and Richert, Carson T., to Radiant Technology Corporation. Infrared furnace with atmosphere control capability. 4,517,448, Cl. 219-388.000.
Crandall, John A. Carbon isotope analysis of hydrocarbons. 4,517,461, Cl. 250-282.000.
Crane, Patrick. Sewer pipeline cleaning apparatus. 4,516,286, Cl. 15-104.120.
Crapanzano, Joseph R. Fishing plug and lure organizer. 4,516,707, Cl. 224-202.000.
Crawford, David L., to Benckiser-Knapsack GmbH. Composition for treating fish to increase fish yield. 4,517,208, Cl. 426-332.000.
Crawford, Joseph A., to Advance Transformer Co. Sequence start lamp ballast with current spike suppression means. 4,517,498, Cl. 315-323.000.
Crawford, Tad E. Artificial camouflage leaf construction. 4,517,230, Cl. 428-17.000.
Credelle, Thomas L.: *See—*
Glock, Thomas L.; and Credelle, Thomas L., 4,517,489, Cl. 313-422.000.
Crenshaw, Ronnie R.; and Algieri, Aldo A., to Bristol-Myers Company. Intermediates for preparing 3,4-diamino-1,2,5-thiadiazoles. 4,517,366, Cl. 546-231.000.
Cress, Hobart A.: *See—*
Brewer, John H.; and Cress, Hobart A., 4,516,882, Cl. 405-224.000.
Crimmins, Arthur G., Jr., to Quill Licensing. Finger control system. 4,516,939, Cl. 434-114.000.
Croley, Thomas E., to Williamette Industries, Inc. Disposable container assembly for liquids or semi-liquids in bulk. 4,516,692, Cl. 222-105.000.
Crosfield Data Systems, Inc.: *See—*
Provisor, Zvi; and Burford, Henry H. T., Jr., 4,517,638, Cl. 364-146.000.
Cruickshank, E. J.; and Ekland, Joseph D., to Federal-Mogul Corporation. Abrasive cutting wheel and method of cutting abradable material. 4,516,560, Cl. 125-15.000.
Cruver, Michael B.: *See—*
Madison, David P.; and Cruver, Michael B., 4,516,487, Cl. 99-450.600.
Crystaloid Electronics Company: *See—*
Ferrato, Joseph P., 4,516,836, Cl. 350-336.000.
Csapo, Erich: *See—*
Prunbauer, Kurt; and Csapo, Erich, 4,516,416, Cl. 70-276.000.
Cuffiani, Illaro; Longi, Paolo; Zucchini, Umberto; and Pennini, Gianni, to Montedison S.p.A. Catalyst components for the polymerization of ethylene and of mixtures thereof with olefins and catalysts obtained therefrom. 4,517,307, Cl. 502-119.000.
Cuisi-Technic S.a.r.l.: *See—*
Mantelet, Jean, 4,517,454, Cl. 219-455.000.
Cukier, Samuel; and Kremer, Henry A. F. L., to Domtar Inc. Process for modifying coal tar materials. 4,517,072, Cl. 208-45.000.
Cummins, James N.; Aldwinckle, Herb S.; and Byers, Ross E., to Cornell Research Foundation, Inc. Method of producing vole-resistant apple trees and trees produced thereby. 4,516,353, Cl. 47-58.000.
Cunningham, Robert E., to United States of America, National Aeronautics and Space Administration. Varible force, eddy-current or magnetic damper. 4,517,505, Cl. 318-611.000.
Cupp, Carl J.: *See—*
Farrar, Frank W.; and Cupp, Carl J., 4,516,346, Cl. 42-50.000.
Curran, John J. Container divider. 4,516,717, Cl. 229-15.000.
Curro, Dominic, Jr., to Loroco Industries, Inc. Protector for the core and adjacent edges and face portions of a coil of material. 4,516,892, Cl. 410-155.000.
Cuttler, Luis, to FAOSA - Fabrica de Armazones Opticos, S.A. Separable holder for keys and the like. 4,516,418, Cl. 70-456.00R.
D. Halmi And Associates Inc.: *See—*
Halmi, Dezsoe, 4,516,434, Cl. 73-861.640.
D&K Custom Machine Design, Inc.: *See—*
Singer, Karl, 4,517,042, Cl. 156-164.000.
Dacier, Jacques, to Ateliers de Constructions Electriques de Charleroi (ACEC). Double gap electric generating machines. 4,517,484, Cl. 310-266.000.
Dahle, Gerald, to Wilhelm Dahle Buro- und Zeichengeratefabrik. Paper cutter. 4,516,452, Cl. 83-455.000.
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., to Bayer Aktiengesellschaft. Production of microcapsules having walls of polyaddition products of water-insoluble polyamines with water-soluble polyisocyanate adducts. 4,517,141, Cl. 264-4.700.
Daido Tokushuko Kabushiki Kaisha: *See—*
Inaba, Hideaki; and Sakakibara, Shuzi, 4,517,015, Cl. 75-12.000.
Daihatsu Motor Company: *See—*
Nakahara, Mitsuharu; Ishida, Tomio; Honjo, Norifumi; and Yoshida, Yoshitaka, 4,516,537, Cl. 123-48.0AA.
Daikin Kogyo Co., Ltd.: *See—*
Hisamoto, Iwao; Omure, Yukio; and Ishikawa, Sueyoshi, 4,517,108, Cl. 252-162.000.
Daimler-Benz Aktiengesellschaft: *See—*
Worner, Gunter; Kosik, Franz; and Gosele, Hartmut, 4,516,955, Cl. 464-89.000.
Dainippon Screen Manufacturing Co., Ltd.: *See—*
Maeda, Kiyoshi; and Okamoto, Masashi, 4,517,608, Cl. 358-298.000.
Daiwa Seiko Co., Ltd.: *See—*
Hirose, Haruomi; and Yamazaki, Akio, 4,516,348, Cl. 43-17.000.
Daiwa Seiko Inc.: *See—*
Hashimoto, Hiroshi, 4,516,741, Cl. 242-217.000.
D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor), to Plastics Engineering Company. Polysulfone compositions and derivatives thereof. 4,517,354, Cl. 528-172.000.
D'Alelio, Gaetano F., deceased (St. Joseph Bank and Trust Company, legal representative); and Waitkus, Phillip A., to Plastics Engineering Company. Vinylacetylene-terminated polyimide derivatives. 4,517,363, Cl. 546-66.000.
D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Vinylacetylene-terminated polyimide derivatives. 4,517,364, Cl. 546-66.000.
D'Alessio, Michael; and Matcovich, Charles, to Harsco Corporation. Safety device. 4,516,663, Cl. 187-19.000.
Dalmo Victor Operations, Bell Aerospace Textron, Div. of Textron, Inc.: *See—*
Pon, Chuck Y., 4,517,535, Cl. 333-81.00A.
Dare, Keith E.: *See—*
Hughes, William E.; Dare, Keith E.; and Cooper, Jerry W., 4,517,404, Cl. 174-47.000.
Darnbrough, Geoffrey: *See—*
Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Darnbrough, Geoffrey; and Hart, Terance W., 4,517,202, Cl. 514-530.000.
Dasurat Enterprises PTE Ltd.: *See—*
Mason, James W., 4,517,316, Cl. 521-81.000.
Data Acquisition Services: *See—*
Williams, Daniel E.; Carley, John J.; and Eaton, Paul S., 4,517,410, Cl. 179-6.040.
Data General Corporation: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.
David, Jean: *See—*
Chollet, Christian; and David, Jean, 4,516,425, Cl. 73-198.000.
Davidge, Peter C.: *See—*
Alderton, Geoffrey W.; and Davidge, Peter C., 4,516,966, Cl. 494-1.000.
Davids, Robert E., to International Game Technology. Three dimensional video screen display effect. 4,517,558, Cl. 340-700.000.

Davies, Jeffrey W.: *See—*
Markham, Peter G.; Townsend, Rodney; and Davies, Jeffrey W., 4,517,177, Cl. 424-93.000.
Davies, Peter: *See—*
Ball, Kevin D.; and Davies, Peter, 4,517,678, Cl. 373-95.000.
Davis, Duane L. Ratchet device. 4,516,442, Cl. 74-529.000.
Davis, Jeffrey J., to Immetec Inc. Universal vent device and method for ostomy appliances. 4,516,974, Cl. 604-333.000.
Davis, Stanley: *See—*
Stocco, Sam; and Davis, Stanley, 4,516,765, Cl. 271-95.000.
Davis, William F., to Motorola, Inc. High frequency operational amplifier. 4,517,524, Cl. 330-257.000.
Davison, Ernest: *See—*
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,516,847, Cl. 355-3.0TR.
Dayco Corporation: *See—*
Hughes, William E.; Dare, Keith E.; and Cooper, Jerry W., 4,517,404, Cl. 174-47.000.
De La Rue Giori S.A.: *See—*
Giori, Gualtiero, 4,516,496, Cl. 101-152.000.
De La Rue Systems Limited: *See—*
Wood, John; Tinson, Christopher M.; and Jenkins, Stuart M., 4,516,899, Cl. 414-330.000.
Dean, Walter C., II, to Budd Company, The. Mechanical stop mechanism for a tilt system in a railway car. 4,516,507, Cl. 105-199.00A.
DeBolt, Marion L.: *See—*
Coy, Charles H., 4,517,427, Cl. 219-10.510.
Decker, Richard B.: *See—*
Bettcher, Louis A.; and Decker, Richard B., 4,516,323, Cl. 30-276.000.
Degussa Aktiengeselischaft: *See—*
Eiermann, Kurt; and Kayser, Thomas, 4,516,872, Cl. 403-24.000.
Wolff, Siegfried; Grewatta, Heinz; and Buder, Wolfgang, 4,517,335, Cl. 524-552.000.
Wolff, Siegfried; and Tan, Ewe-Hong, 4,517,336, Cl. 524-571.000.
de Haan, Herman P.: *See—*
May, Joseph R.; Petruccelli, Frank; Lang, Robert L.; and de Haan, Herman P., 4,517,231, Cl. 428-35.000.
Deibl, Gottfried: *See—*
Thone, Heinrich; Hargassner, Reinhard; Deibl, Gottfried; and Holleis, Gunter, 4,516,622, Cl. 164-416.000.
Deitch, Leonard; and Knowles, Terrance, to Zenith Electronics Corporation. Optical gating scheme for display touch control. 4,517,559, Cl. 340-712.000.
Delalande S.A.: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.
De Larm, James B. Heating device. 4,516,563, Cl. 126-101.000.
Delia, Anthony, to Drackett Company, The. Child-resistant closure. 4,516,683, Cl. 215-211.000.
Delma- elektro- und medizinische Apparatebau Gesellschaft mbH: *See—*
Roos, Eberhard, 4,517,632, Cl. 362-389.000.
Delman, Ralph. Insulated plastic frame for doors, windows and the like. 4,516,356, Cl. 49-504.000.
DeLoach, John R.; Harris, Robert L.; Mayer, Richard T.; and Ihler, Garret M., to United States of America, Agriculture. Apparatus for encapsulating additives in resealed erythrocytes. 4,517,080, Cl. 210-85.000.
Delonge, Jean-Claude L.: *See—*
Bouiller, Jean G.; Delonge, Jean-Claude L.; Rigo, Marcel L. A.; and Zietek, Didier G., 4,516,910, Cl. 416-190.000.
Delphax Systems: *See—*
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,516,847, Cl. 355-3.0TR.
Delrieu, Jean-Marc: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.
Delta Engineering Ltd.: *See—*
Halmos, George T., 4,516,370, Cl. 52-245.000.
Dembowski, Peter V.; and Dobras, Quentin D., to General Electric Company. Fluorescent lamp with cathode heat switches. 4,517,493, Cl. 315-73.000.
Demizu, Michinosuke: *See—*
Okumura, Mitsuhiro; Naya, Eizo; and Demizu, Michinosuke, 4,517,033, Cl. 148-432.000.
de Niet, Edmond: *See—*
Rijckaert, Albert M. A.; and de Niet, Edmond, 4,517,612, Cl. 360-67.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Takahashi, Kohki; Kondoh, Takeo; Koga, Masao; and Nishiwaki, Kenichiro, 4,517,348, Cl. 526-273.000.
Dennis, Linda H. Cross stitch ribbon. 4,516,609, Cl. 139-383.00R.
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., to General Electric Company. Self-test subsystem for nuclear reactor protection system. 4,517,154, Cl. 376-259.000.
De Ponti, Luigi, to Alfonso Bialetti & C., Fonderia in Conchiglia S.p.A. Household appliance for preparing hot beverages. 4,516,484, Cl. 99-279.000.
DeReggi, Aime S.; and Harris, Gerald R., to United States of America, Health and Human Services. Acoustically transparent hydrophone probe. 4,517,665, Cl. 367-163.000.
Derek and Derek: *See—*
Brand, Derek A.; Brand, Derek R.; and Brand, Kenneth J., 4,516,952, Cl. 446-427.000.
Derner, Paul; Eckardt, Rudolf; and Neuendorf, Hans-Christoph, to Flachglas Aktiengesellschaft. Method of and apparatus for vacuum shaping a glass sheet. 4,516,997, Cl. 65-106.000.
Design Professionals Financial Corporation: *See—*
Howell, Edward B., 4,517,514, Cl. 324-207.000.
Dessau, Ralph M.; and Kerr, George T., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,517,075, Cl. 208-111.000.
Dessau, Ralph M., to Mobil Oil Corporation. Selective sorption of linear aliphatic compounds by zeolites. 4,517,402, Cl. 585-820.000.
Deters, Paul M. Electrical jumper assembly. 4,516,817, Cl. 339-19.000.
Dettke, Manfred; and Klein, Rudolf, to Schering Aktiengesellschaft. Method and bath for electrodepositing a violet-colored gold-copper-bismuth alloy. 4,517,060, Cl. 204-44.000.
DeVale, Donald P.; Brejcha, Robert J.; and Van Naarden, Robert W., to Industrial Design Electronic Associates, Inc. Dart game with two microcomputers. 4,516,781, Cl. 273-373.000.
Development Finance Corporation of New Zealand: *See—*
Brookes, David L.; Weatherly, John D.; and Dillicar, Colin R., 4,516,770, Cl. 273-11.00R.
Devine, James B. Apparatus for sampling paper pulp liquor. 4,517,053, Cl. 162-251.000.
DeVlieg Machine Company: *See—*
Ortlieb, Robert M., 4,516,889, Cl. 408-152.000.
DeWitt, Kenneth W.: *See—*
Thornton, Ian; DeWitt, Kenneth W.; and Robertson, Simon A., 4,517,209, Cl. 426-383.000.
DeYoung, Thomas W.: *See—*
Miranda, Hector; and DeYoung, Thomas W., 4,517,577, Cl. 346-140.00R.
Diagnostic, Inc.: *See—*
Bracke, James W.; and Thacker, Kipling, 4,517,295, Cl. 435-101.000.
Diamant, Emanuel, to Diuk Tsiyud Haliva. Apparatus and method for identification of objects. 4,517,563, Cl. 340-825.540.
Diamond, Julius; and Wohl, Ronald A., to Berlex Laboratories, Inc. N-[2-hydroxy-2-(3-hydroxyphenyl)ethyl]-1H-benzimidazole-1-butanamine and use thereof as a cardiotonic agent. 4,517,310, Cl. 514-394.000.
DiBianca, John A.: *See—*
Scarton, Henry A.; DiBianca, John A.; Lacey, James A.; and Kennedy, Warren C., 4,516,658, Cl. 181-208.000.
Di Cicco, Thomas A., to Comtech Telecommunications Corp. Digitally controlled AGC amplifier. 4,517,526, Cl. 330-284.000.
Dickie, Harold G., to Dickie Investments Incorporated. Fishing net. 4,516,347, Cl. 43-11.000.
Dickie Investments Incorporated: *See—*
Dickie, Harold G., 4,516,347, Cl. 43-11.000.
Die-Matic Corporation: *See—*
Zeitler, Louie, 4,516,883, Cl. 405-260.000.
Dieckmann, Dale J.; and Fletcher, Charles W., to Plastic Specialties and Technologies, Inc. Synergistic vinyl halide stabilizer compositions of antimony organic sulfur-containing compounds, alkaline earth carboxylates, and alkali metal carbonates. 4,517,115, Cl. 252-400.00R.
Dieffenbach, Rudiger; Grunwald, Werner; Perthus, Peter; and Prinzhausen, Friedrich, to Robert Bosch GmbH. Motor vehicle headlight with condensing lens and diaphragm. 4,517,630, Cl. 362-268.000.
Dienes Werke fur Maschinenteile GmbH & Co. KG: *See—*
Ludenbach, Karl; and Huhn, Erhard, 4,516,602, Cl. 137-512.150.
Diesel Equipment Limited: *See—*
Martin, John C.; and Martin, Paul H., 4,516,594, Cl. 137-15.000.
Diesel Kiki Co., Ltd.: *See—*
Abe, Yoshiaki; Nishimura, Yutaka; and Sugimoto, Hitoshi, 4,516,543, Cl. 123-179.00H.
Shibuya, Tsunenori, 4,516,920, Cl. 418-23.000.
Dietz, Gerald E., to Johnson Service Company. Apparatus and method for controlling a main fuel valve in a standing pilot burner system. 4,516,930, Cl. 431-26.000.
Dijkmans, Eise C.; and van de Plassche, Rudy J. Balancing compensation in differential amplifiers with a single-ended drive. 4,517,525, Cl. 330-260.000.
Dilcox, Warren L. Electronic level device. 4,516,329, Cl. 33-366.000.
Dillicar, Colin R.: *See—*
Brookes, David L.; Weatherly, John D.; and Dillicar, Colin R., 4,516,770, Cl. 273-11.00R.
Ditty, Lawrence H., to RCA Corporation. Method for removing a phosphor layer from a support surface. 4,517,224, Cl. 427-64.000.
Diuk Tsiyud Haliva: *See—*
Diamant, Emanuel, 4,517,563, Cl. 340-825.540.
Dixon, Thomas, to Amstar Corporation. System for reducing blocking in an antenna switching matrix. 4,517,572, Cl. 343-876.000.
Djokic, Slobodan: *See—*
Kobrehel, Gabrijela; and Djokic, Slobodan, 4,517,359, Cl. 536-7.400.
Dobbs, Gregory M.: *See—*
Meinzer, Richard A.; and Dobbs, Gregory M., 4,517,676, Cl. 372-89.000.
Dobras, Quentin D.: *See—*
Dembowski, Peter V.; and Dobras, Quentin D., 4,517,493, Cl. 315-73.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
Hofbauer, August; and Exinger, Erich, 4,516,552, Cl. 123-452.000.
Dr. Johannes Heidenhain GmbH: *See—*
Schwefel, Ernst, 4,517,657, Cl. 364-900.000.
Dohrenwend, James W.: *See—*
Hayes, Willliam; and Dohrenwend, James W., 4,517,083, Cl. 210-131.000.
Dollst, Klaus. Apparatus for heating and drying shoes. 4,517,443, Cl. 219-215.000.
Domtar Inc.: *See—*
Cukier, Samuel; and Kremer, Henry A. F. L., 4,517,072, Cl. 208-45.000.
Donahue, John M.; and Gagner, Michael J., to Gradall Company, The. Remote drive with powershift transmission. 4,516,655, Cl. 180-321.000.
Dondero, John D.: *See—*
Gregory, John R.; Parks, Gerald; and Dondero, John D., 4,516,273, Cl. 2-2.000.
Dorman, Linneaus C.; and Stenger, Vernon A., to Dow Chemical Company, The. Absorbents for airborne formaldehyde. 4,517,111, Cl. 252-186.250.
Dorosz, Adolph S., to USM Corporation. Pallet nibbler. 4,516,456, Cl. 83-578.000.
Doscher, Todd M. Enhanced steam drive recovery of heavy oil. 4,516,636, Cl. 166-272.000.
Dostert, Philippe L.: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.
Douty, Donald L., to United States Steel Corporation. Grouting composition cartridge. 4,516,884, Cl. 405-261.000.
Douzon, Colette A.: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.
Dove, Norman F. Slice lip control. 4,517,055, Cl. 162-344.000.
Dow Chemical Company, The: *See—*
Burson, Richard L., 4,517,368, Cl. 546-303.000.
Dorman, Linneaus C.; and Stenger, Vernon A., 4,517,111, Cl. 252-186.250.
Hefner, Robert E., Jr., 4,517,131, Cl. 260-465.00F.
Tomalia, Donald A.; and Wilson, Larry R., 4,517,122, Cl. 260-239.30R.
Dowa Co., Ltd.: *See—*
Miyahara, Kingo, 4,516,931, Cl. 431-168.000.
Dowa Mining Co., Ltd.: *See—*
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.
Dowbenko, Rostyslaw: *See—*
Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, 4,517,322, Cl. 523-501.000.
Down River International, Inc.: *See—*
Wnuk, Paul A.; Hamilton, Thomas J.; Trassare, Anthony, Jr.; and Oliver, Michael J., 4,516,891, Cl. 410-154.000.
Doyle, Stephen D.: *See—*
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,516,420, Cl. 72-329.000.
Draber, Wilfried: *See—*
Thomas, Rudolf; Draber, Wilfried; Schmidt, Robert R.; and Eue, Ludwig, 4,517,011, Cl. 71-92.000.
Drackett Company, The: *See—*
Delia, Anthony, 4,516,683, Cl. 215-211.000.
Dragavon, Edward J.: *See—*
Zwirn, Robert; Dragavon, Edward J.; and Smithgall, Brian, 4,517,599, Cl. 358-166.000.
Drake, Cyril F.; and Jones, Ronald, to ITT Industries, Inc. Composite materials comprising water-soluble glass particles. 4,517,006, Cl. 71-64.110.
Dreps, James R.; and Drozd, Edward J., to Captive Plastics Inc. Liquid product dispenser. 4,516,697, Cl. 222-212.000.
Driscoll, Michael A.; and Edwards, James H., to Millipore Corporation. Filtration devices. 4,517,085, Cl. 210-232.000.
Drockila, Kalevi, to Rauma-Repola Oy. Means for marking timber packages. 4,516,526, Cl. 118-697.000.
Drozd, Edward J.: *See—*
Dreps, James R.; and Drozd, Edward J., 4,516,697, Cl. 222-212.000.
Drury, F. Robert; and Graham, Marshall D., to Coulter Electronics, Inc. Slide preparation apparatus. 4,516,522, Cl. 118-120.000.
Drutchas, Gilbert H.; and Spencer, Phillip B., to TRW Inc. Pump assembly. 4,516,918, Cl. 418-15.000.
Du Pont-Mitsui Polychemicals Co., Ltd.: *See—*
Tada, Seiichi, 4,517,317, Cl. 521-95.000.
Duchateau, Claude M., to Societe d'Etudes et de Developpement des Aeroglisseurs Marins, Terrestres et Amphibies S.E.D.A.M. Vehicles travelling on air cushions allowing movement of the latter over all types of terrain. 4,516,651, Cl. 180-127.000.
Duchesne, Gonzague L.; and Perrault, Guy, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Method of making a castable propellant. 4,517,035, Cl. 149-19.920.
Duffy, James J., to Ford Motor Company. Power steering valve with chamfered lands. 4,516,471, Cl. 91-375.00A.
Dufner, Donald E. Crop clearing mechanism. 4,516,789, Cl. 280-160.000.
Dugan, J. Joseph. Counterweight door structure. 4,516,354, Cl. 49-387.000.
Dumont, Pascal G.; and Chiron, Daniel M., to Framatome & Cie. Inspection device for the tube plate of a heat exchanger. 4,516,426, Cl. 73-432.00R.
Dunwald, Willi: *See—*
Zecher, Wilfried; Merten, Rudolf; and Dunwald, Willi, 4,517,353, Cl. 528-45.000.
Du Pont de Nemours, E. I., and Company: *See—*
Briney, Gary C.; and Fuerniss, Stephen J., 4,517,281, Cl. 430-322.000.
Freytag, J. William; and Litchfield, William J., 4,517,303, Cl. 436-501.000.
Johnson, Daniel D.; and Fritz, Herbert L., 4,517,050, Cl. 156-643.000.
Krahler, Stanley E.; and Remington, William R., 4,517,376, Cl. 560-87.000.
Seago, James L., 4,517,291, Cl. 435-14.000.
Vasta, Joseph A., 4,517,378, Cl. 564-160.000.
DuPre, Jean: *See—*
Hann, William M.; DuPre, Jean; and Natoli, John, 4,517,098, Cl. 210-701.000.
Durantet, Bernard: *See—*
Barriquand, Robert; Barriquand, Bernard; Durantet, Bernard; and Machabert, Bernard, 4,516,413, Cl. 68-5.00C.
DuRocher, Daniel J.: *See—*
Winogrocki, Ray F.; and DuRocher, Daniel J., 4,516,824, Cl. 339-126.00R.
Duval, Claude: *See—*
Boyer, Robert; and Duval, Claude, 4,517,462, Cl. 250-286.000.
Duval Corporation: *See—*
Cook, Melvin S., 4,517,064, Cl. 204-105.00R.
Duvdevani, Ilan; Peiffer, Dennis G.; Eckert, John A.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Antimisting system for hydrocarbon fluids. 4,516,982, Cl. 44-62.000.
Dynamit Nobel AG: *See—*
Schmidt, Werner, 4,517,375, Cl. 556-463.000.
Eagle-Picher Industries, Inc.: *See—*
Miller, Lee E.; Carr, Dennis D.; and Smith, Donald L., 4,517,264, Cl. 429-163.000.
Eagles, Brian A., to Coal Industry (Patents) Limited. Fluid supply systems for rotary cutter heads for mining machines and rotary cutter heads comprising fluid supply systems. 4,516,807, Cl. 299-1.000.
Eastern Company, The: *See—*
MacPherson, David B.; Paris, Jay E.; Foley, Robert W.; Greinier, Martin W.; and Pulsifer, David N., 4,516,281, Cl. 4-319.000.
Wright, Raymond L., 4,516,886, Cl. 405-261.000.
Eastman Kodak Company: *See—*
Jadwin, Thomas A.; and Rimai, Donald S., 4,517,272, Cl. 430-110.000.
Eastridge, Victor R.; and Milani, John C. Cigarette extinguisher. 4,516,587, Cl. 131-256.000.
Eaton Corporation: *See—*
Brubaker, John R., 4,517,543, Cl. 337-140.000.
Eaton, Paul S.: *See—*
Williams, Daniel E.; Carley, John J.; and Eaton, Paul S., 4,517,410, Cl. 179-6.040.
Ebara Corporation: *See—*
Yamanaka, Koichi; Gotoh, Tetsuro; Aoki, Masanori; Kataoka, Isao; and Nishiwaki, Shunro, 4,517,091, Cl. 210-512.100.
Eckardt, Rudolf: *See—*
Derner, Paul; Eckardt, Rudolf; and Neuendorf, Hans-Christoph, 4,516,997, Cl. 65-106.000.
Ecker, Karl-Heinz: *See—*
Lewis, Edwin C.; Henschenmacher, Helmut; Ecker, Karl-Heinz; Giernalczyk, Hartmut; and Rutte, Siegfried, 4,516,477, Cl. 92-128.000.
Eckert, Alton B.: *See—*
Beck, Christian A.; and Eckert, Alton B., 4,516,494, Cl. 101-93.260.
Eckert, John A.: *See—*
Duvdevani, Ilan; Peiffer, Dennis G.; Eckert, John A.; and Lundberg, Robert D., 4,516,982, Cl. 44-62.000.
Eckhardt, Wolfgang: *See—*
Kunz, Walter; and Eckhardt, Wolfgang, 4,517,194, Cl. 514-184.000.
Edelmann, Ludwig: *See—*
Brandenstein, Manfred; Haas, Roland; Edelmann, Ludwig; and Hans, Rudiger, 4,516,962, Cl. 474-112.000.
Edison International Inc.: *See—*
Siiberg, Hemming G., 4,517,542, Cl. 337-92.000.
Edwards Alto Vuoto S.p.A.: *See—*
Rossi, Gianrico, 4,516,333, Cl. 34-92.000.
Edwards, James D.; and Malone, Charles, to Scott & Fetzer Company, The. Electrical bussing for a switch arm connector block. 4,517,426, Cl. 200-38.00A.
Edwards, James H.: *See—*
Driscoll, Michael A.; and Edwards, James H., 4,517,085, Cl. 210-232.000.
Edwards, Richard B.: *See—*
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., 4,517,107, Cl. 252-108.000.
Edwards, Samuel S. Wind energy converter utilizing vortex augmentation. 4,516,907, Cl. 415-2.00A.
Effland, Richard C.; Klein, Joseph T.; and Hamer, R. Richard L., to Hoechst-Roussel Pharmaceuticals Inc. Pyrrolo[1,2-b][1,2,5]triazepines and pharmaceutical compositions thereof. 4,517,195, Cl. 514-413.000.

Ehlenz, Peter; and Irgel, Lutz, to Collo GmbH. Method of producing a sorptive body, particularly for eliminating odors, air freshening, etc. and the resultant product. 4,517,308, Cl. 502-401.000.

Eida, Tsuyoshi: *See—*
Kobayashi, Masatsune; Haruta, Masahiro; Eida, Tsuyoshi; and Ohta, Tokuya, 4,517,244, Cl. 428-342.000.

Eiermann, Kurt; and Kayser, Thomas, to Degussa Aktiengesellschaft. Apparatus for fastening electric structural parts into the connecting head of electrical thermometers. 4,516,872, Cl. 403-24.000.

Eigenberger, Gerhart: *See—*
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

Eilam, Zohar: *See—*
Berman, Oded; Eilam, Zohar; and Itzchak, Zeev B., 4,516,950, Cl. 446-297.000.

Eirich, Hubert, Eirich; Paul and Eirich; Walter: *See—*
Spengler, Adolf; and Hasenhundl, Josef, 4,516,859, Cl. 366-77.000.

Ekland, Joseph D.: *See—*
Cruickshank, E. J.; and Ekland, Joseph D., 4,516,560, Cl. 125-15.000.

Eknor, Per O. E., to Aktiebolaget Electrolux. Automatic dispenser for a detergent. 4,516,696, Cl. 222-181.000.

Eldre Components, Inc.: *See—*
Erdle, Jack A., 4,517,406, Cl. 174-72.00B.

Electricite de France Service National: *See—*
Chollet, Christian; and David, Jean, 4,516,425, Cl. 73-198.000.

Electro-Petroleum, Inc.: *See—*
Titus, Charles H.; and Wittle, John K., 4,516,608, Cl. 138-140.000.

Electrostatic Equipment Corp.: *See—*
Hajek, Bedrich, 4,517,219, Cl. 427-8.000.

Elliott, Lee A. Finger ring holder. 4,516,708, Cl. 224-257.000.

Eltech Systems Corporation: *See—*
Harney, Marilyn J.; Vauss, Elvin M., Jr.; and Sane, Ajit Y., 4,517,069, Cl. 204-290.00F.
Hinden, Jean M.; Ernes, Lynne M.; and Visel, Patrick E., 4,517,068, Cl. 204-283.000.

Elworthy, John H.; and Mayston, Donald, to Protocol Engineering Limited. Making of printing plates. 4,517,036, Cl. 156-64.000.

Ely, Duain N.; and Macarchenia, Joseph H., to B. F. Goodrich Company. Pneumatic deicer and deicing method. 4,516,745, Cl. 244-134.00A.

Embru-Werke, Mantel & Cie.: *See—*
Langenegger, Urs; Roffler, Werner; and Rutsche, Wendolin, 4,516,509, Cl. 108-147.000.

Emhart Industries, Inc.: *See—*
Bergen, Gary R., 4,516,798, Cl. 292-169.130.

EMI Limited: *See—*
Clark, Duncan G. D.; Kimber, Ian D.; and May, Roderick G., 4,517,679, Cl. 375-37.000.

Emory University: *See—*
Warner, Isiah M.; and Ho, Chu-Ngi, 4,516,984, Cl. 55-16.000.

Encon Products, Inc.: *See—*
Simpson, Harold G., 4,516,371, Cl. 52-269.000.

Energy Development Associates, Inc.: *See—*
Whittlesey, Curtis C., 4,517,261, Cl. 429-64.000.

English, William A.; and Young, Robert R., to Westinghouse Electric Corp. Oil cooled, hermetic refrigerant compressor. 4,516,916, Cl. 417-368.000.

Engster, Henry M.: *See—*
Snetsinger, David C.; Engster, Henry M.; and Stiebler, Dwaine D., 4,516,531, Cl. 119-18.000.

Engstrom, Keith A., to Illinois Tool Works Inc. N-Key rollover keyboard. 4,517,553, Cl. 340-365.00S.

Enns, Kurt: *See—*
Byerley, John J.; and Enns, Kurt, 4,517,067, Cl. 204-255.000.

Entrop, Willem: *See—*
van der Laan, Jan G. J.; and Entrop, Willem, 4,516,860, Cl. 366-287.000.

Epsztein, Bernard; and Guyot, Lucien, to Thomson-CSF. Device for producing televised pictures with a charge transfer matrix. 4,517,603, Cl. 358-213.000.

Erdle, Jack A., to Eldre Components, Inc. Laminated bus bar containing multilayer ceramic capacitors. 4,517,406, Cl. 174-72.00B.

Erdmannsdorfer, Hans; Wagner, Manfred; Numrich, Rudi; and Weyh, Gerd, to Filterwerk Mann & Hummel GmbH. Method of removing soot from exhaust gases. 4,516,990, Cl. 55-96.000.

Ergoplic Ltd., An Israel Company: *See—*
Berman, Oded; Eilam, Zohar; and Itzchak, Zeev B., 4,516,950, Cl. 446-297.000.

Erickson, Dennis E.: *See—*
Heaps, John F.; and Erickson, Dennis E., 4,517,327, Cl. 524-315.000.

Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Method and arrangement for positioning a second pattern originating from a pattern formed on a stencil in relation to a material intended for the pattern. 4,516,495, Cl. 101-129.000.

Ernes, Lynne M.: *See—*
Hinden, Jean M.; Ernes, Lynne M.; and Visel, Patrick E., 4,517,068, Cl. 204-283.000.

Ernsthausen, Roger E.: *See—*
Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., 4,517,492, Cl. 313-587.000.

Esaki, Leo: *See—*
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,517,047, Cl. 156-610.000.

Esch, Frederick S.: *See—*
Ling, Nicholas C.; Esch, Frederick S.; Bohlen, Peter; Brazeau, Paul E., Jr.; and Guillemin, Roger C. L., 4,517,181, Cl. 514-12.000.

Eskelinen, Pekka; and Nurmio, Matti, to Valmet Oy. Method and apparatus for the drying section of a paper machine. 4,516,330, Cl. 34-23.000.

Eskijian, Luther. Inflatable platform for repetitive bouncing. 4,516,767, Cl. 272-65.000.

Essex Group, Inc.: *See—*
Winogrocki, Ray F.; and DuRocher, Daniel J., 4,516,824, Cl. 339-126.00R.

Essig, Karl, to H. Stoll GmbH & Co. Cambox for a flat knitting machine. 4,516,412, Cl. 66-78.000.

Estate of Thomas S. Krause, The: *See—*
Hudson, Steven L., 4,516,796, Cl. 285-321.000.

Euclid Spiral Paper Tube Corp.: *See—*
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., 4,516,380, Cl. 53-282.000.

Eue, Ludwig: *See—*
Thomas, Rudolf; Draber, Wilfried; Schmidt, Robert R.; and Eue, Ludwig, 4,517,011, Cl. 71-92.000.

Evans, David M.; and Weightman, Barry O., to National Research Development Corporation. Intramedullary orthopaedic devices. 4,516,569, Cl. 128-92.0BC.

Eve, Paul L.; and Speakman, John G., to BP Chemicals Limited. Polymerization process. 4,517,345, Cl. 526-105.000.

Evva-Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. Kommanditgesellschaft: *See—*
Prunbauer, Kurt; and Csapo, Erich, 4,516,416, Cl. 70-276.000.

Exinger, Erich: *See—*
Hofbauer, August; and Exinger, Erich, 4,516,552, Cl. 123-452.000.

Exxon Production Research Co.: *See—*
Salathiel, William M., 4,517,102, Cl. 252-8.55R.

Exxon Research and Engineering Co.: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Wagensomer, Joseph; and Jagisch, Frank C., 4,517,250, Cl. 428-483.000.
Bloch, Ricardo; McCrary, Thomas J., Jr.; and Brownawell, Darrell W., 4,517,104, Cl. 252-51.50A.
Boyle, Joseph P.; and Gilbert, John B., 4,517,076, Cl. 208-140.000.
Duvdevani, Ilan; Peiffer, Dennis G.; Eckert, John A.; and Lundberg, Robert D., 4,516,982, Cl. 44-62.000.
Lundberg, Robert D.; Phillips, Robert R.; and Peiffer, Dennis G., 4,517,333, Cl. 524-516.000.
Miranda, Hector; and DeYoung, Thomas W., 4,517,577, Cl. 346-140.00R.
Moss, Gerald, 4,517,162, Cl. 422-142.000.
Ratcliffe, Charles T.; and Tromp, Petrus J., 4,517,171, Cl. 423-648.00R.
Worley, Arthur C., 4,516,606, Cl. 137-625.300.
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, 4,517,371, Cl. 549-239.000.

Eyman, Ralph A., to United States of America, Army. Quick access splice for missile sections. 4,516,499, Cl. 102-293.000.

Fabre, Jean M.: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.

Fabricius, Hans-Åke; and Stahn, Roland, to Hooper Trading Co. N.V. High yield process for in vitro production of serum-free and mitogen-free interleukin-2 using a roller bottle culture system. 4,517,293, Cl. 435-68.000.

Fadis S.p.A.: *See—*
Orosei, Mario, 4,516,703, Cl. 223-39.000.

Fairchild Camera And Instrument Corporation: *See—*
Suto, Anthony J., 4,517,511, Cl. 324-52.000.

FAOSA - Fabrica de Armazones Opticos, S.A.: *See—*
Cuttler, Luis, 4,516,418, Cl. 70-456.00R.

Farley, Clayton E.: *See—*
Staab, Donald C.; and Farley, Clayton E., 4,516,808, Cl. 299-39.000.

Farmer, Homer H.: *See—*
Hoffman, David M.; Feher, John J.; and Farmer, Homer H., 4,517,103, Cl. 252-28.000.

Farmos Group Ltd.: *See—*
Kurkela, Kauko O. A.; and Karjalainen, Arto J., 4,517,198, Cl. 514-400.000.

Farrar, Frank W.; and Cupp, Carl J., to Pachmayer Gun Works, Inc. Magazine for guns. 4,516,346, Cl. 42-50.000.

Fauser, Friedrich; and Fischer, Willi, to Leybold-Heraeus GmbH. Method and apparatus for short-path distillation. 4,517,057, Cl. 202-205.000.

Fauteux, Denis: *See—*
Belanger, Andre ; Fauteux, Denis; and Gauthier, Michel, 4,517,265, Cl. 429-217.000.

Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, to Compagnie General d'Electricite; and Centre National de la Recherche Scientifique (CNRS). Process for preparing arylacetic and arylpropionic acids. 4,517,061, Cl. 204-59.00R.

FBC Limited: *See—*
Kerry, John C.; and Weighton, David M., 4,517,201, Cl. 514-521.000.
Slife, Fred W., 4,517,009, Cl. 71-90.000.

Federal-Mogul Corporation: *See—*
Cruickshank, E. J.; and Ekland, Joseph D., 4,516,560, Cl. 125-15.000.

Feeney, Paul: *See—*
Pomerantz, Julie; and Feeney, Paul, 4,516,458, Cl. 83-651.100.

Feher, John J.: *See—*
Hoffman, David M.; Feher, John J.; and Farmer, Homer H., 4,517,103, Cl. 252-28.000.

Felger, Carl B., to Gillette Company, The. Anticholinergic glucuronide compounds and antiperspirant use thereof. 4,517,176, Cl. 424-47.000.

Felix, Arthur M.; Gillessen, Dieter; Lergier, William; Meienhofer, Johannes A.; and Trzeciak, Arnold, to Hoffmann-La Roche Inc. Synthesis of thymosin α_1. 4,517,119, Cl. 260-112.50R.

Feller, Samuel. Rollable grating system. 4,516,377, Cl. 52-660.000.

Fennel, Helmut, to ITT Industries, Inc. Method of and arrangement for providing numerical values indicative of relationsips between pulse train pulses. 4,517,684, Cl. 377-19.000.

Ferguson, John W.: *See—*
Meeker, Brian L.; Ferguson, John W.; and Werner, Henry G., 4,517,236, Cl. 428-192.000.

Ferguson, Larry W.; and McFarland, Roger A., to Owens-Corning Fiberglas Corporation. Molded products. 4,517,323, Cl. 523-514.000.

Ferrato, Joseph P., to Crystaloid Electronics Company. Conductor for use in electro-optical displays. 4,516,836, Cl. 350-336.000.

Ferrell, Philip J.; Stern, Alan D.; and McFarland, Melvin D., to Boeing Company, The. Fault scoring and selection circuit and method for redundant system. 4,517,639, Cl. 364-186.000.

Ferri, Mario: *See—*
Mercati, Giorgio; Mariano, Armando; Pertot, Fulvio; Glionna, Antonio; and Ferri, Mario, 4,517,355, Cl. 528-287.000.

Ferris Manufacturing Corp.: *See—*
Sessions, Robert W., 4,516,581, Cl. 128-639.000.

Fesler, Ethel L. Portable towel accessory. 4,516,616, Cl. 150-52.00R.

Fiber-Lite Corporation: *See—*
Meeker, Brian L.; Ferguson, John W.; and Werner, Henry G., 4,517,236, Cl. 428-192.000.

Fillard, Jean-Pierre: *See—*
Gasiot, Jean; Braunlich, Peter F.; and Fillard, Jean-Pierre, 4,517,463, Cl. 250-327.200.

Filter, Reinhard; and Stonkus, Donald J. Loadbreak bushing and snuffer/contact assembly therefor. 4,516,823, Cl. 339-111.000.

Filterwerk Mann & Hummel GmbH: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; Numrich, Rudi; and Weyh, Gerd, 4,516,990, Cl. 55-96.000.

Finlayson, Claude M.: *See—*
Mardis, Wilbur S.; and Finlayson, Claude M., 4,517,112, Cl. 252-315.200.

Finn, Arnold H., to Taco Products, Incorporated. Tool handle attachment. 4,516,615, Cl. 81-20.000.

Finn, Clifford J., to Universal Foam Systems, Inc. Solvent flushing arrangement for foam dispensing gun. 4,516,694, Cl. 222-148.000.

Finney, John F. Means for and method of furnace insulation. 4,516,374, Cl. 52-404.000.

Fiorucci, Louis C.; and Gregory, Kevin M., to Olin Corporation. Purification of alkali metal nitrates. 4,517,164, Cl. 423-184.000.

Firestone Tire & Rubber Company, The: *See—*
Yang, James H. C.; and Tomaszewski, Walter, 4,516,874, Cl. 403-313.000.

Firmin, Herman P., to Knight Manufacturing Company, Inc. Artificial crawfish lure with dorsal and ventral seam. 4,516,352, Cl. 43-42.260.

Firth, Donald. Method and apparatus for conveying and metering solid material. 4,516,674, Cl. 198-617.000.

Fischer, Artur. Anchoring device. 4,516,378, Cl. 52-704.000.

Fischer, Willi: *See—*
Fauser, Friedrich; and Fischer, Willi, 4,517,057, Cl. 202-205.000.

Fisher, Howard Z., to AMP Incorporated. Heat recoverable sleeve forming wrap. 4,517,234, Cl. 428-119.000.

Fishery Products, Inc.: *See—*
Murphy, Gordon D.; and Bishop, Ernest C., 4,517,206, Cl. 426-115.000.

Fizyta, Wojciech L.; and Kaumeheiwa, Algen K., to Chrysler Corporation. Windshield washer dual spray nozzle. 4,516,288, Cl. 15-250.040.

Fjalkinge Potato Processing Machinery AB: *See—*
Haraldsson, Roland; Bengtsson, Jan; and Friberg, Claes, 4,517,211, Cl. 426-444.000.

Flachglas Aktiengesellschaft: *See—*
Derner, Paul; Eckardt, Rudolf; and Neuendorf, Hans-Christoph, 4,516,997, Cl. 65-106.000.

Fleshler, Bernard. Acoustical attenuating device and chair equipped therewith. 4,516,656, Cl. 181-175.000.

Fletcher, Charles W.: *See—*
Dieckmann, Dale J.; and Fletcher, Charles W., 4,517,115, Cl. 252-400.00R.

Fletcher, Paul E.: *See—*
Johnson, Robert S.; Fletcher, Paul E.; Benjamin, William S.; and Zsitvay, John I., 4,516,287, Cl. 15-119.00A.

Fletcher, Stephen R.: *See—*
Lotito, Vincent; and Fletcher, Stephen R., 4,516,529, Cl. 119-5.000.

Flodman Guns KB: *See—*
Flodman, Rune, 4,516,345, Cl. 42-46.000.

Flodman, Rune, to Flodman Guns KB. Cartridge ejector device for firearms. 4,516,345, Cl. 42-46.000.

Flohn, Paul H., to North American Philips Lighting Corporation. Precision rotating rod guide. 4,516,446, Cl. 82-38.00A.

Fluor Subsea Services, Inc.: *See—*
Brewer, John H.; and Cress, Hobart A., 4,516,882, Cl. 405-224.000.

FMC Corporation: *See—*
Gotal, John D.; and Scott, Junius D., 4,517,500, Cl. 318-130.000.

Fogel, Harvey P., to General Foods Corporation. Process for preparing a fruit and cereal product. 4,517,210, Cl. 426-392.000.

Foley, Robert W.: *See—*
MacPherson, David B.; Paris, Jay E.; Foley, Robert W.; Greinier, Martin W.; and Pulsifer, David N., 4,516,281, Cl. 4-319.000.

Foll, William A., Sr.: *See—*
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., 4,516,380, Cl. 53-282.000.

Forbes, Hampton E., Jr., to Westvaco Corporation. Carton with automatic lock. 4,516,718, Cl. 229-33.000.

Force, Carlton G.: *See—*
Gowan, John W., Jr.; and Force, Carlton G., 4,517,347, Cl. 526-216.000.

Ford Motor Company: *See—*
Duffy, James J., 4,516,471, Cl. 91-375.00A.

Forestier, Serge: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,517,174, Cl. 424-62.000.

Fortino, Dennis J.: *See—*
Miller, John E.; and Fortino, Dennis J., 4,516,785, Cl. 277-188.00A.

Fortuin, Harm: *See—*
Meulenbrugge, Hendrik J.; and Fortuin, Harm, 4,517,460, Cl. 250-252.100.

Fotiadis, Emanuel; Kozol, Edward J.; Leung, Tak L.; and Paul, Robert J., to International Business Machines Corporation. Floppy disk canister. 4,516,678, Cl. 206-444.000.

Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See—*
Masumoto, Hakaru; and Nakamura, Naoji, 4,517,156, Cl. 420-463.000.

Fournel, Andre : *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.

Fox, James W.; and Hill, Robert J., to G & W Electric Company. High voltage cable terminator and method of assembly. 4,517,407, Cl. 174-73.00R.

Fox, Joseph R.: *See—*
Pesa, Frederick A.; Blaskie, Marcus W.; and Fox, Joseph R., 4,517,400, Cl. 585-638.000.

Framatome & Cie: *See—*
Dumont, Pascal G.; and Chiron, Daniel M., 4,516,426, Cl. 73-432.00R.

Francis, John F., to Gillette Company, The. Safety razors. 4,516,321, Cl. 30-50.000.

Francis, Thomas L.; and Phelps, Frankie E., to Aluminum Company of America. Refractory composition comprising nitride filler and colloidal sol binder. 4,517,037, Cl. 156-89.000.

Frank, G. Haven, to United States of America, Air Force. Protection circuitry for high voltage drivers. 4,517,618, Cl. 361-58.000.

Freebery, Joseph J. Apparatus for removal of paving material. 4,516,896, Cl. 414-740.000.

Freeburg, Thomas A.; and Krebs, Jay, to Motorola, Inc. Method and apparatus for coding messages communicated between a primary station and remote stations of a data communications system. 4,517,669, Cl. 370-82.000.

Freeland, Warwick P., to W. A. Deutsher Proprietary Limited. Closure cap having integrated fastening means. 4,516,688, Cl. 220-293.000.

Freeman Chemical Corporation: *See—*
Cordts, Howard P.; and Karloske, Joan E., 4,517,326, Cl. 524-310.000.

Frees, Kenneth A.: *See—*
Cavin, J. N.; and Frees, Kenneth A., 4,516,905, Cl. 414-620.000.

Freese, Edward O.: *See—*
Hampel, Lawrence E.; and Freese, Edward O., 4,516,790, Cl. 280-502.000.

French, Michael J. Supporting a container with respect to a plate. 4,516,685, Cl. 220-23.830.

Frerichs, Udo: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,516,617, Cl. 157-1.000.

Fresenius, AG: *See—*
Herbert, Reinhold, 4,516,977, Cl. 604-415.000.

Frew, John W.; and Robbins, Kenneth W., to Sperry Corporation. High resolution and high accuracy time interval generator. 4,516,861, Cl. 368-120.000.

Freytag, J. William; and Litchfield, William J., to Du Pont de Nemours, E. I., and Company. Specific binding assays utilizing analyte-cytolysin conjugates. 4,517,303, Cl. 436-501.000.

Friberg, Claes: *See—*
Haraldsson, Roland; Bengtsson, Jan; and Friberg, Claes, 4,517,211, Cl. 426-444.000.

Frick Company: *See—*
Murphy, David A.; and Spellar, Peter C., 4,516,914, Cl. 417-282.000.

Fricke, Hans-Jurgen, to Robert Bosch GmbH. Hydrostatic piston machine. 4,516,475, Cl. 92-57.000.

Friedrich, Ludwig: *See—*
Schlecker, Rainer; Friedrich, Ludwig; and Lenke, Dieter, 4,517,196, Cl. 514-371.000.

Frink, Attila; and Morrison, Robert A., to Lockheed Corporation. Circuit board housing with zero insertion force connector. 4,517,625, Cl. 361-399.000.

Frito-Lay, Inc.: *See—*
Mottur, George P.; and Glass, Richard W., 4,517,204, Cl. 426-94.000.

Fritschi, Edgar: *See—*
Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, 4,517,185, Cl. 514-232.000.

Fritz, Herbert L.: *See—*
Johnson, Daniel D.; and Fritz, Herbert L., 4,517,050, Cl. 156-643.000.

Fuerniss, Stephen J.: *See—*
Briney, Gary C.; and Fuerniss, Stephen J., 4,517,281, Cl. 430-322.000.

Fuhring, Heinrich, to Messerschmidt-Bolkow-Blohm GmbH. Wind turbine with gale protection. 4,517,467, Cl. 290-44.000.

Fuji Electric Company, Ltd.: *See—*
Kawasaki, Kikuo; and Sano, Tomomi, 4,517,651, Cl. 364-479.000.

Fuji Photo Film Co., Ltd.: *See—*
Hino, Hiromasa, 4,516,846, Cl. 354-465.000.
Hino, Hiromasa, 4,517,615, Cl. 360-108.000.
Noguchi, Yasuhiro; and Morigaki, Masakazu, 4,517,286, Cl. 430-562.000.
Ohmura, Hiroshi, 4,516,843, Cl. 354-173.100.
Seshimoto, Osamu, 4,517,071, Cl. 204-419.000.

Fuji Xerox Co., Ltd.: *See—*
Murayama, Tomio; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,517,560, Cl. 340-790.000.
Tan, Yoichi; and Miyao, Fumio, 4,517,531, Cl. 331-14.000.

Fujimori, Noboru: *See—*
Kagawa, Nobuaki; Fujimori, Noboru; Tanaka, Shigeo; and Onodera, Kaoru, 4,517,284, Cl. 430-591.000.

Fujimoto, Kazumi: *See—*
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, 4,517,617, Cl. 360-133.000.

Fujimoto, Kazuyuki: *See—*
Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, 4,517,444, Cl. 219-216.000.

Fujimura, Mituaki: *See—*
Masumoto, Kazuhiro; Fujimura, Mituaki; and Sawazaki, Masauki, 4,517,151, Cl. 264-540.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, 4,517,299, Cl. 435-197.000.

Fujita, Daijiro; Motoo, Akihiko; and Maki, Yoshiki, to Japan Steel Works, Ltd., The. Pelletizing die for synthetic resin extruding machine. 4,516,925, Cl. 425-463.000.

Fujita, Eiji: *See—*
Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, 4,517,282, Cl. 430-399.000.

Fujita, Shigeo: *See—*
Isono, Kiyoshi; Nakamura, Goto; and Fujita, Shigeo, 4,517,178, Cl. 424-122.000.

Fujitsu Fanuc Limited: *See—*
Imazeki, Ryoji; and Inoue, Michiya, 4,517,663, Cl. 365-222.000.

Fujitsu Limited: *See—*
Hattori, Akira; Hayashi, Hiromu; Shinagawa, Akio; and Shinogi, Tsuyoshi, 4,517,640, Cl. 364-200.000.
Ikegami, Kasumi; and Okuyama, Hirofumi, 4,517,266, Cl. 430-2.000.
Inoue, Minoru, 4,517,026, Cl. 148-1.500.
Tomita, Masayoshi, 4,516,312, Cl. 29-571.000.

Fujitsu Ten Limited: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,516,652, Cl. 180-177.000.

Fujiwara, Hiroshi; Yamazaki, Hatsutaro; and Ozawa, Kazuo, to Maruzen Oil Company, Limited. Process for the production of p-vinyl phenol polymer. 4,517,349, Cl. 526-313.000.

Fujiyama, Norimasa: *See—*
Kizawa, Hidenori; Fujiyama, Norimasa; Kobayashi, Jitsuo; and Ito, Akinori, 4,517,173, Cl. 424-16.000.

Fukagawa, Yasuo: *See—*
Yoshioka, Takeo; Yamamoto, Kenichi; Fukagawa, Yasuo; Shimauchi, Yasutaka; and Ishikura, Tomoyuki, 4,517,127, Cl. 260-245.20T.

Fukasawa, Takeshi: *See—*
Kobayashi, Satoru; Masaki, Mikio; Sakuno, Hideaki; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,516,415, Cl. 70-252.000.

Fukatsu, Kunio: *See—*
Yamauchi, Masahide; and Fukatsu, Kunio, 4,516,866, Cl. 400-25.000.

Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Apparatus for regulating flow of articles in computer scale. 4,516,644, Cl. 177-25.000.

Fukui, Tatsuyuki: *See—*
Takezawa, Susumu; Ikebe, Ken'ichi; Ayada, Haruki; Fukui, Tatsuyuki; and Okada, Munenori, 4,516,746, Cl. 244-170.000.

Fuller, Larry E.: *See—*
Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., 4,517,081, Cl. 210-85.000.

Funagura, Shuichi; and Nishio, Katsufumi, to Matsushita Electric Industrial Co., Ltd. Electric food cutting machine. 4,516,733, Cl. 241-79.000.

Funakoshi, Fumio: *See—*
Morishita, Tatsuo; Funakoshi, Fumio; Nakamura, Kenichi; and Takamori, Kazuo, 4,517,564, Cl. 340-825.690.

Funamoto, Hiroyuki: *See—*
Matsuno, Kenji; and Funamoto, Hiroyuki, 4,517,256, Cl. 428-629.000.

Furrer, Andreas, to BBC Brown, Boveri & Company, Limited. Switching amplifier. 4,517,522, Cl. 330-10.000.

Fuse, Kenichiro: *See—*
Yamaguchi, Hitohisa; Fuse, Kenichiro; and Yoshida, Takeshi, 4,516,650, Cl. 180-68.300.

Fusek, Richard L., to University of Dayton. Production of high performance optical spatial filters. 4,516,833, Cl. 350-162.120.

Fushimoto, Hideo; Toyomura, Shigeru; Nishimuro, Yoshiaki; Asakura, Osamu; and Rachi, Masahiro, to Canon Kabushiki Kaisha. Foldable electronic apparatus. 4,517,660, Cl. 364-708.000.

Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,516,729, Cl. 239-453.000.

Fussner, Paul, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,516,730, Cl. 239-533.800.

G & W Electric Company: *See—*
Fox, James W.; and Hill, Robert J., 4,517,407, Cl. 174-73.00R.

Gach, Paul. Coolant supply apparatus for a grinding tool. 4,516,357, Cl. 51-98.00R.

GAF Corporation: *See—*
Barabas, Eugene S., 4,517,023, Cl. 134-4.000.

Gagner, Michael J.: *See—*
Donahue, John M.; and Gagner, Michael J., 4,516,655, Cl. 180-321.000.

Gaillard, Adrianus J. C.; and Anderson, Richard N., to Hunter Douglas International N.V. Apparatus and a method for assembling slats of a venetian blind. 4,516,300, Cl. 29-24.500.

Gaitten, Dorothy A., executrix: *See—*
Gaitten, Walden M., deceased, 4,516,613, Cl. 144-208.00E.

Gaitten, Walden M., deceased (by Gaitten, Dorothy A., executrix), to Kockums Cancar, Corp. Debarking machine with infeed rolls having helical offset log feeder blades. 4,516,613, Cl. 144-208.00E.

Gallagher, Neal C.: *See—*
Sweeney, Donald W.; Gallagher, Neal C.; and Christensen, Charles R., 4,516,743, Cl. 244-3.130.

Gallaro, Carmelo. Exercise device. 4,516,768, Cl. 272-65.000.

Galle, Kevin; Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; and Manabe, Sugio, to Olympus Optical Company Limited. Automatic analyzing apparatus. 4,517,160, Cl. 422-65.000.

Gama, Yasuo: *See—*
Suzuki, Hiroshi; Gama, Yasuo; and Miyazaki, Shoji, 4,517,110, Cl. 252-180.000.

Gambro Engstrom AB: *See—*
Gedeon, Andras, 4,516,573, Cl. 128-201.130.

Game Time, Inc.: *See—*
Sutton, Wesley D., Jr., 4,516,766, Cl. 272-52.000.

Gander, Terence W.; and Widden, Charles G. Storage apparatus. 4,516,812, Cl. 312-12.000.

Ganser, Volker: *See—*
Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, 4,517,185, Cl. 514-232.000.

Garcia, Leonard M., to Cordis Corporation. Suture collar. 4,516,584, Cl. 128-785.000.

Gardner, Bruce C.; Ingold, Daniel L.; and May, David A., to Appropriate Technology Corporation. Edge seal and rerailer for insulating shade. 4,516,618, Cl. 160-120.000.

Gardner, Donald E.: *See—*
Kaufman, Jack W.; and Gardner, Donald E., 4,516,970, Cl. 604-270.000.

Gardner, Hugh C.; Michno, Michael J., Jr.; and Brode, George L., to Union Carbide Corporation. Preimpregnated reinforcements and high strength composites therefrom. 4,517,321, Cl. 523-400.000.

Garganese, Ugo S.: *See—*
Martin, Raymond H.; Garganese, Ugo S.; and Griffin, John R., 4,517,043, Cl. 156-196.000.

Garneau, Richard P., to AFA Corporation, The. Child-resistant liquid dispenser sprayer or like apparatus. 4,516,695, Cl. 222-153.000.

Garwood, William E.: *See—*
Chester, Arthur W.; Garwood, William E.; and Schwartz, Albert B., 4,517,399, Cl. 585-533.000.

Gasiot, Jean; Braunlich, Peter F.; and Fillard, Jean-Pierre. Method and apparatus for real-time radiation imaging. 4,517,463, Cl. 250-327.200.

Gaston, Roy T. Sanitary drinking water system. 4,516,693, Cl. 222-105.000.

Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Multi-turn coils of controlled pitch for electromagnetic casting. 4,516,627, Cl. 164-467.000.

Gault, Roger B.; and Keutzer, Larry L., to VEECO/ai, Inc. Ion implantation control system. 4,517,465, Cl. 250-492.200.

Gauthier, Michel: *See—*
Belanger, Andre ; Fauteux, Denis; and Gauthier, Michel, 4,517,265, Cl. 429-217.000.

Gavlak, Andrea H.: *See—*
Strobel, Gary A.; Gavlak, Andrea H.; and Jaynes, Jesse M., 4,517,008, Cl. 71-77.000.

Gay, Robert R.: *See—*
Morel, Don L.; Gay, Robert R.; and Turner, Gary B., 4,517,403, Cl. 136-249.000.

Gazdik, Charles E.; and McBride, Donald G., to International Business Machines Corporation. Multi-layer flexible film module. 4,517,051, Cl. 156-644.000.

Gazzarrini, Vinicio, to Solis S.r.l. Method and apparatus for applying a patch to manufactured goods. 4,516,513, Cl. 112-262.200.

GCA Corporation: *See—*
Slottag, Mark J., 4,517,430, Cl. 219-10.55B.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Klimeck, Hugo; and Wilken, Gerhard, 4,516,809, Cl. 299-43.000.

Gedeon, Andras, to Gambro Engstrom AB. Device for connecting a respirator or anesthesia machine to a patient. 4,516,573, Cl. 128-201.130.

Geffroy, Christophe: *See—*
Geffroy, Robert; and Geffroy, Christophe, 4,516,481, Cl. 92-212.000.

Geffroy, Robert; and Geffroy, Christophe. Piston and piston rings set. 4,516,481, Cl. 92-212.000.

Gelbwachs, Jerry A., to United States of America, Air Force. Multiple site laser excited pollution monitoring system. 4,516,858, Cl. 356-437.000.

Genentech, Inc.: *See—*
Bock, Susan C.; and Lawn, Richard M., 4,517,294, Cl. 435-70.000.

General Battery Corporation: *See—*
Beidler, David B., 4,517,262, Cl. 429-87.000.

General Electric Company: *See—*
Aliberto, Anthony C.; and Silberberg, Joseph, 4,517,339, Cl. 525-85.000.
Dembowski, Peter V.; and Dobras, Quentin D., 4,517,493, Cl. 315-73.000.
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.
Kelley, Fred W., Jr., 4,517,635, Cl. 363-136.000.
Kim, Wontaik; and Azad, Farzin H., 4,516,864, Cl. 374-130.000.
Laskaris, Evangelos T., 4,516,404, Cl. 62-45.000.
Laskaris, Evangelos T., 4,516,405, Cl. 62-55.000.
Lockhart, Thomas P.; and Wengrovius, Jeffrey H., 4,517,337, Cl. 524-859.000.
Otto, Lee W.; Ingold, John H.; and Bergman, Rolf S., 4,517,491, Cl. 313-579.000.
Redington, Rowland W., 4,516,582, Cl. 128-653.000.
Ryang, Hong-Son, 4,517,342, Cl. 525-431.000.
Ulug, Mehmet E., 4,517,670, Cl. 370-85.000.
White, Dwain M., 4,517,341, Cl. 525-152.000.
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,517,352, Cl. 528-18.000.

General Foods Corporation: *See—*
Fogel, Harvey P., 4,517,210, Cl. 426-392.000.
Shoaf, Myron D.; and Pischke, La Monte D., 4,517,214, Cl. 426-548.000.

General Motors Corporation: *See—*
Chyz, George W.; and McGregor, David J., 4,516,957, Cl. 464-111.000.
Jackson, John S., 4,516,401, Cl. 60-602.000.
Kisner, Howard D., 4,517,070, Cl. 204-298.000.
Steele, Robert E., 4,516,828, Cl. 350-96.160.

Gentry, Frank: *See—*
Gentry, Samuel H.; and Gentry, Frank, 4,516,406, Cl. 62-183.000.

Gentry and Green Enterprises: *See—*
Gentry, Samuel H.; and Gentry, Frank, 4,516,406, Cl. 62-183.000.

Gentry, Samuel H.; and Gentry, Frank, to Gentry and Green Enterprises. Cooling system for motor vehicles. 4,516,406, Cl. 62-183.000.

Georgia Tech Research Corporation: *See—*
Tedder, Daniel W., 4,517,298, Cl. 435-160.000.

Gerber, James E.: *See—*
Hall, James R.; Harter, Donald P.; Clegg, Michael W.; and Gerber, James E., 4,516,659, Cl. 181-243.000.

Gerhard, Gregory J.; and Graham, William M., to CooperVision, Inc. Surgical scalpel. 4,516,575, Cl. 128-305.000.

Gerharz, Reinhold, to United States of America, Army. Passive retroreflective doppler shift system. 4,517,569, Cl. 343-18.00D.

Germania Dairy Automation, Inc.: *See—*
Reisgies, Rolf W.; and Camren, Robert, 4,516,530, Cl. 119-14.080.

Gersbach, Klaus: *See—*
Klein, Klaus-Walter; Bocker, Jurgen; Glotz, Gerhard; and Gersbach, Klaus, 4,516,502, Cl. 102-523.000.

Getto, Robert D.: *See—*
Rowland, Nelson; and Getto, Robert D., 4,516,677, Cl. 206-394.000.

GEZE GmbH: *See—*
Scheck, Georg; and Bogner, Martin, 4,516,792, Cl. 280-625.000.

GH Hensley Industries, Inc.: *See—*
Hemphill, Charles W., 4,516,339, Cl. 37-141.00R.

Giegel, Joseph L.; and Brotherton, Mary M., to American Hospital Supply Corp. Solid phase system for ligand assay. 4,517,288, Cl. 435-7.000.

Giernalczyk, Hartmut: *See—*
Lewis, Edwin C.; Henschenmacher, Helmut; Ecker, Karl-Heinz; Giernalczyk, Hartmut; and Rutte, Siegfried, 4,516,477, Cl. 92-128.000.

Gilbert, John B.: *See—*
Boyle, Joseph P.; and Gilbert, John B., 4,517,076, Cl. 208-140.000.

Gillessen, Dieter: *See—*
Felix, Arthur M.; Gillessen, Dieter; Lergier, William; Meienhofer, Johannes A.; and Trzeciak, Arnold, 4,517,119, Cl. 260-112.50R.

Gillette Company, The: *See—*
Felger, Carl B., 4,517,176, Cl. 424-47.000.
Francis, John F., 4,516,321, Cl. 30-50.000.

Giori, Gualtiero, to De La Rue Giori S.A. Copperplate engraving machine for printing paper currency. 4,516,496, Cl. 101-152.000.

Giral, Louis: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.

Girodin, Marius G., to Techniques Girodin. Multistage drum compressor. 4,516,913, Cl. 417-243.000.

Givaudan Corporation: *See—*
Naipawer, Richard E.; and Chalk, Alan J., 4,517,386, Cl. 568-483.000.

Glamkowski, Edward J.; Jones, Michael C., deceased; and by Jones, Herbert, administrator, to Hoechst-Roussel Pharmaceuticals Inc. 2'-Substituted-spiro[benzofuran-2(3H),1'-cycloalkanes] and their analgesic and anti-depressant compositions. 4,517,311, Cl. 514-462.000.

Glass, Richard W.: *See—*
Mottur, George P.; and Glass, Richard W., 4,517,204, Cl. 426-94.000.

Glasstech, Inc.: *See—*
McMaster, Ronald A., 4,517,001, Cl. 65-273.000.

Glenn, William E., to New York Institute of Technology. Method and apparatus for encoding and decoding video. 4,517,597, Cl. 358-141.000.

Glick, Robert E.: *See—*
Rawlings, David L.; and Glick, Robert E., 4,517,138, Cl. 264-2.100.
Rawlings, David L.; and Glick, Robert E., 4,517,139, Cl. 264-2.100.

Glionna, Antonio: *See—*
Mercati, Giorgio; Mariano, Armando; Pertot, Fulvio; Glionna, Antonio; and Ferri, Mario, 4,517,355, Cl. 528-287.000.

Gliwa, William F.; and Kalina, Robert F., to AT&T Technologies, Inc. Storage reel with peripheral core relief. 4,516,737, Cl. 242-77.000.

Glock, Thomas L.; and Credelle, Thomas L., to RCA Corporation. Modulator structure and method for flat panel display devices. 4,517,489, Cl. 313-422.000.

Glotz, Gerhard: *See—*
Klein, Klaus-Walter; Bocker, Jurgen; Glotz, Gerhard; and Gersbach, Klaus, 4,516,502, Cl. 102-523.000.

Goi, Kowichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,517,451, Cl. 235-379.000.

Goldberger Foods Inc.: *See—*
Goldberger, Robert D.; and Stower, James F., 4,516,291, Cl. 17-32.000.

Goldberger, Robert D.; and Stower, James F., to Goldberger Foods Inc. Apparatus and process for forming meat patties. 4,516,291, Cl. 17-32.000.

Goldstein, Samuel M.: *See—*
Hippely, Keith A.; and Goldstein, Samuel M., 4,516,953, Cl. 446-444.000.

Gomes, John M.; and Piotroski, Peter N., to Pitney Bowes Inc. Feeder interface circuit for universal multi-station document inserter. 4,517,650, Cl. 364-478.000.

Goodman, John C.: *See—*
Blakely, Linda L.; Goodman, John C.; and Walker, David B., 4,516,845, Cl. 354-412.000.

Goodwill, Robert: *See—*
Hill, Ronald C.; Stein, Richard M.; Bzibziak, Raymond J.; and Goodwill, Robert, 4,516,448, Cl. 83-137.000.

Goodyear Tire & Rubber Company, The: *See—*
Benko, David A., 4,517,066, Cl. 204-192.00C.
Palmer, Kenneth J.; Brandyberry, Dennis R.; and Rye, Grover W., 4,516,395, Cl. 57-237.000.
Parker, Dane K.; Kuczkowski, Joseph A.; and Kimball, Michael E., 4,517,331, Cl. 524-451.000.

Goossens, Urbanus P. M., to U.S. Philips Corporation. Electro-acoustic transducer having a diaphragm comprising a layer of polymethacrylimide foam. 4,517,416, Cl. 179-115.5PS.

Gorzinski, Manfred: *See—*
Wilk, Hans-Christoph; Wegemund, Bernd; and Gorzinski, Manfred, 4,517,334, Cl. 524-539.000.

Gosele, Hartmut: *See—*
Worner, Gunter; Kosik, Franz; and Gosele, Hartmut, 4,516,955, Cl. 464-89.000.

Gotal, John D.; and Scott, Junius D., to FMC Corporation. Controller for electromagnetic exciter using power line subharmonic. 4,517,500, Cl. 318-130.000.

Goto, Hideo; Hosoe, Takeo; Oda, Toshinori; and Ohtsuka, Sosuke, to Brother Kogyo Kabushiki Kaisha. Colored character printed on key button. 4,516,978, Cl. 8-510.000.

Goto, Tomomichi; Iwamoto, Katsuo; Kobayashi, Yoshinori; and Matoba, Isao, to Kawasaki Steel Corporation. Method of producing grain-oriented silicon steel sheets having excellent magnetic properties. 4,517,032, Cl. 148-111.000.

Gotoh, Tetsuro: *See—*
Yamanaka, Koichi; Gotoh, Tetsuro; Aoki, Masanori; Kataoka, Isao; and Nishiwaki, Shunro, 4,517,091, Cl. 210-512.100.

Gough, Robert P. Scouring of elongate material and apparatus therefor. 4,517,024, Cl. 134-15.000.

Gowan, John W., Jr.; and Force, Carlton G., to Westvaco Corporation. Method for copolymerization of styrene and acrylonitrile. 4,517,347, Cl. 526-216.000.

Gradall Company, The: *See—*
Donahue, John M.; and Gagner, Michael J., 4,516,655, Cl. 180-321.000.

Graf, Matthew C.; Muhlfeld, Hans P., Jr.; and Valentine, Edward H., to International Business Machines Corporation. Programmable chip tester having plural pin unit buffers which each store sufficient test data for independent operations by each pin unit. 4,517,661, Cl. 364-900.000.

Graham, Marshall D.: *See—*
Drury, F. Robert; and Graham, Marshall D., 4,516,522, Cl. 118-120.000.

Graham, William M.: *See—*
Gerhard, Gregory J.; and Graham, William M., 4,516,575, Cl. 128-305.000.

Grain Processing Corporation: *See—*
Harvey, Richard D., 4,517,022, Cl. 127-68.000.

Grant Hardware Company: *See—*
Sekerich, Michael, 4,516,813, Cl. 312-323.000.

Grapentin, Joachim; Mahlkow, Hartmut; and Skupsch, Jurgen, to Schering Aktiengesellschaft. Adhesive metallization of polyimide. 4,517,254, Cl. 428-626.000.

Graser, Fritz; Hoffmann, Gerhard; Leyrer, Reinhold J.; Neumann, Peter; and Patsch, Manfred, to BASF Aktiengesellschaft. Electrophotographic recording medium. 4,517,270, Cl. 430-58.000.

Grassl, Gerhard: *See—*
Pfleiderer, Hans-Joerg; and Grassl, Gerhard, 4,517,672, Cl. 371-27.000.

Gravina, Anthony N.; Keitel, Murray; Weiss, Harvey; Wiley, Joseph N.; and Charland, Edmund G., Jr., to Grumman Aerospace Corp. Combustible vapor detection system. 4,517,161, Cl. 422-95.000.

Gray, Ralph C.: *See—*
Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, 4,517,322, Cl. 523-501.000.

Gray, Randall C.; and Main, W. Eric, to Motorola, Inc. Water-in-fuel sensor circuit and method. 4,517,547, Cl. 340-59.000.

Gray, Roger P., Jr., to United States of America, Air Force. Method for tuning a phased array antenna. 4,517,570, Cl. 343-372.000.

Grayek, Rose M. Knock-down combination handbag and mat and method of making same. 4,516,668, Cl. 190-2.000.

Green, Michael J.: *See—*
Kreutner, William; Green, Michael J.; Shue, Ho-Jane; and Saksena, Anil K., 4,517,200, Cl. 514-455.000.

Greene, Carmine M., to Miles Laboratories, Inc. Ketone control test composition, method and test device. 4,517,301, Cl. 436-14.000.

Greenlaw, Alfred L. Ejector and method for controlling jet engine noise. 4,516,660, Cl. 181-296.000.

Gregory, John R.; Parks, Gerald; and Dondero, John D., to Gregory, John R. Upper body protector apparatus and method. 4,516,273, Cl. 2-2.000.

Gregory, Kevin M.: *See—*
Fiorucci, Louis C.; and Gregory, Kevin M., 4,517,164, Cl. 423-184.000.

Greinier, Martin W.: *See—*
MacPherson, David B.; Paris, Jay E.; Foley, Robert W.; Greinier, Martin W.; and Pulsifer, David N., 4,516,281, Cl. 4-319.000.

Grewatta, Heinz: *See—*
Wolff, Siegfried; Grewatta, Heinz; and Buder, Wolfgang, 4,517,335, Cl. 524-552.000.

Griffin, John R.: *See—*
Martin, Raymond H.; Garganese, Ugo S.; and Griffin, John R., 4,517,043, Cl. 156-196.000.

Griffith, Ronald C., to Pennwalt Corporation. 1,3,4,6,7-11b-Hexahydro-7-phenyl-2H-pyrazino[2,1-a]isoquinolines methods of preparation, and use as antidepressants. 4,517,187, Cl. 514-250.000.

Grill, Benjamin: *See—*
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn, 4,516,600, Cl. 137-495.000.

Grillmeier, Alfred: *See—*
Ritt, Hans-Georg; Luneberg, Hartmut; Mannl, Reinhard; and Grillmeier, Alfred, 4,516,998, Cl. 65-108.000.

Grimhall, Carl G.; and Hoel, Olav, to Tarkett AB. Method of slicing veneer. 4,516,614, Cl. 144-364.000.

Gringer, Donald; and Soled, Howard, to Allway Tools, Inc. Molded pole-type sandpapering tool having resilient paper retention means. 4,516,360, Cl. 51-384.000.

Gringer, Donald, to Allway Tools, Inc. Molded pole-type sandpapering tool. 4,516,361, Cl. 51-392.000.

Grm, Heinz-Gert: *See—*
Baxter, Kern C. A.; and Grm, Heinz-Gert, 4,516,568, Cl. 128-70.000.

Grossler, Peter: *See—*
Held, Manfred; and Grossler, Peter, 4,516,501, Cl. 102-496.000.

Gruber, Robert J.; Knapp, John F.; and Bolte, Steven B., to Xerox Corporation. Process for magnetic image character recognition. 4,517,268, Cl. 430-39.000.

Gruenenwald, Stanley L.: *See—*
Petrich, Dennis M.; Amick, Christopher G.; and Gruenenwald, Stanley L., 4,517,512, Cl. 324-73.00R.

Grumman Aerospace Corp.: *See—*
Gravina, Anthony N.; Keitel, Murray; Weiss, Harvey; Wiley, Joseph N.; and Charland, Edmund G., Jr., 4,517,161, Cl. 422-95.000.

Grundfos A/S: *See—*
Jensen, N. Due; and Nielsen, K. Frank, 4,516,915, Cl. 417-365.000.

Gruner, Ronald H.: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.

Grunwald, Werner: *See—*
Dieffenbach, Rudiger; Grunwald, Werner; Perthus, Peter; and Prinzhausen, Friedrich, 4,517,630, Cl. 362-268.000.

Grutsch, George A. Concrete formwork. 4,516,372, Cl. 52-309.120.

GTE Communication Systems Corp.: *See—*
Boeckmann, Eduard F. B., 4,517,414, Cl. 179-81.00R.
Kosten, Richard B., 4,517,419, Cl. 179-159.000.

GTE Products Corporation: *See—*
Alexander, Kenneth E.; and Marshall, Robert J., 4,517,629, Cl. 362-267.000.
Coad, Brian C., 4,516,716, Cl. 228-263.150.
Coad, Brian C., 4,517,157, Cl. 420-490.000.

Guazzo, Lucien, to Les Cables de Lyon. Junction for joining the ends of two under water optical fiber cables, and method of manufacture. 4,516,830, Cl. 350-96.220.

Guerret, Patrick G.: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.

Guerriero, Renato, to SAMIN Societe Azionaria Minero-Metallurgicia S.p.A. Alloyed-lead corrosion-resisting anode. 4,517,065, Cl. 204-119.000.

Guidice, John N.: *See—*
Tracton, Arthur A.; and Guidice, John N., 4,517,240, Cl. 428-326.000.

Guillemin, Roger C. L.: *See—*
Ling, Nicholas C.; Esch, Frederick S.; Bohlen, Peter; Brazeau, Paul E., Jr.; and Guillemin, Roger C. L., 4,517,181, Cl. 514-12.000.

Gulick, William D., to S&A Corporation. Wedge device for a pleasure boat cockpit. 4,516,519, Cl. 114-270.000.

Gunsalus, Edward K.: *See—*
Popescu, Miron; and Gunsalus, Edward K., 4,517,167, Cl. 423-245.000.

Guyot, Lucien: *See—*
Epsztein, Bernard; and Guyot, Lucien, 4,517,603, Cl. 358-213.000.

Guzowski, Raymond J., to Pyles Division. Hot melt anti-surge dispensing system. 4,516,700, Cl. 222-330.000.

H. Stoll GmbH & Co.: *See—*
Essig, Karl, 4,516,412, Cl. 66-78.000.

H. Wohlenberg KG GmbH & Co.: *See—*
Peters, Gerd, 4,516,455, Cl. 83-519.000.

Haacke, Harri; and Loch, Karl, to Mannesmann Aktiengesellschaft. Method for testing the total length of extended round material such as pipes and bars, and device to carry out the method. 4,516,429, Cl. 73-638.000.

Haacon hebetechnik GmbH: *See—*
Riedl, Reinhold, 4,516,901, Cl. 414-458.000.

Haas, Roland: *See—*
Brandenstein, Manfred; Haas, Roland; Edelmann, Ludwig; and Hans, Rudiger, 4,516,962, Cl. 474-112.000.

Habicht, Ernst; and Zbinden, Paul, to Ciba-Geigy Corporation. Benzodioxole derivatives. 4,517,184, Cl. 514-212.000.

Hagman, Harry C. Hosiery donning aid. 4,516,704, Cl. 223-111.000.

Hajek, Bedrich, to Electrostatic Equipment Corp. Electrostatic powder coating control apparatus and method. 4,517,219, Cl. 427-8.000.

Halcon SD Group, Inc., The: *See—*
Barber, James J., 4,517,062, Cl. 204-77.000.

Hale, John K.: *See—*
McLean, Kenneth W.; and Hale, John K., 4,516,392, Cl. 56-16.400.

Hall, Arthur, to Alpine Plastics Machinery Limited. Bag forming machines of the top stacking type with stack clamp. 4,516,895, Cl. 414-43.000.

Hall, Arthur B., to TP Laboratories, Inc. Bondable lingual retainer. 4,516,938, Cl. 433-215.000.

Hall, James R.; Harter, Donald P.; Clegg, Michael W.; and Gerber, James E., to APX Group, Inc. Replacement muffler and process for making same. 4,516,659, Cl. 181-243.000.

Halmi, Dezsoe, to D. Halmi And Associates Inc. Flow metering device with low energy loss. 4,516,434, Cl. 73-861.640.

Halmos, George T., to Delta Engineering Ltd. Sheet metal joint, structure utilizing the same, and method of construction. 4,516,370, Cl. 52-245.000.

Halsall, James R.; and Murray, Robert T., to Imperial Chemical Industries PLC. Color multiplexing passive sensor array. 4,517,456, Cl. 250-226.000.

Halstead, Raymond T.: *See—*
Black, Charles E., III; and Halstead, Raymond T., 4,517,422, Cl. 200-50.00C.

Hamada, Nobuhiro; Sugimoto, Norihiko; and Nawa, Masumi, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Symmetry type loop communication system. 4,517,644, Cl. 364-200.000.

Hamano, Hideo; and Koga, Yasunori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Restriction device for differential gear. 4,516,443, Cl. 74-711.000.

Hamer, R. Richard L.: *See—*
Effland, Richard C.; Klein, Joseph T.; and Hamer, R. Richard L., 4,517,195, Cl. 514-413.000.

Hamilton, Thomas J.: *See—*
Wnuk, Paul A.; Hamilton, Thomas J.; Trassare, Anthony, Jr.; and Oliver, Michael J., 4,516,891, Cl. 410-154.000.

Hammarlund, Kenneth; and Hammarlund, Wilford. Powered landscape rake. 4,516,639, Cl. 172-99.000.

Hammarlund, Wilford: *See—*
Hammarlund, Kenneth; and Hammarlund, Wilford, 4,516,639, Cl. 172-99.000.

Hampel, Lawrence E.; and Freese, Edward O., to Moline Corporation. Slide adjustment member for a vehicle towbar. 4,516,790, Cl. 280-502.000.

Hampson, Jack T., to J & P Coats, Limited. Loop hold-down device for use in conjunction with a knitting machine. 4,516,411, Cl. 66-64.000.

Hanada, Tsuneo: *See—*
Mine, Katsutoshi; Suzuki, Toshio; and Hanada, Tsuneo, 4,517,238, Cl. 428-212.000.

Hancock, Drew S.: *See—*
Barner, Gregory P.; and Hancock, Drew S., 4,517,623, Cl. 361-358.000.

Hann, William M.; DuPre, Jean; and Natoli, John, to Rohm and Haas Company. Method of dispersing inorganic materials in aqueous systems with low molecular weight acrylic acid copolymers. 4,517,098, Cl. 210-701.000.

Hans, Rudiger: *See—*
Brandenstein, Manfred; Haas, Roland; Edelmann, Ludwig; and Hans, Rudiger, 4,516,962, Cl. 474-112.000.

Hanson, Raymond: *See—*
Price, Frank C.; Tout, Nigel R.; Hanson, Raymond; and Tillyard, Malcolm, 4,517,442, Cl. 219-215.000.

Harada, Atsumu; and Arikawa, Tetsuro, to Nippon Air Brake Co., Ltd. Memory system of wheel speed of vehicle with skid control system. 4,517,647, Cl. 364-426.000.

Haraldsson, Roland; Bengtsson, Jan; and Friberg, Claes, to Fjalkinge Potato Processing Machinery AB. Method for the production of concentrated, frozen potato puree. 4,517,211, Cl. 426-444.000.

Harao, Norio: *See—*
Sugimori, Fumio; Nishino, Chikae; and Harao, Norio, 4,516,715, Cl. 228-208.000.

Harashima, Asao; Nakamura, Takashi; and Kishimoto, Keiichi, to Toray Silicone Company, Ltd. Method for manufacturing reactive injection-molded products. 4,517,150, Cl. 264-300.000.

Hargassner, Reinhard: *See—*
Thone, Heinrich; Hargassner, Reinhard; Deibl, Gottfried; and Holleis, Gunter, 4,516,622, Cl. 164-416.000.

Harigaya, Isamu: *See—*
Akiyama, Yoshinori; Nishimura, Shinichi; and Harigaya, Isamu, 4,516,811, Cl. 308-3.00R.

Harland, Gary D.; and Brownell, Dean B., to Sprague Electric Company. Method for cutting and separating green ceramic capacitor bodies. 4,517,144, Cl. 264-28.000.

Harm, William H.: *See—*
Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., 4,517,081, Cl. 210-85.000.

Harney, Marilyn J.; Vauss, Elvin M., Jr.; and Sane, Ajit Y., to Eltech Systems Corporation. Titanium and titanium hydride reticulates and method for making. 4,517,069, Cl. 204-290.00F.

Harris, Gerald R.: *See—*
DeReggi, Aime S.; and Harris, Gerald R., 4,517,665, Cl. 367-163.000.

Harris, Robert L.: *See—*
DeLoach, John R.; Harris, Robert L.; Mayer, Richard T.; and Ihler, Garret M., 4,517,080, Cl. 210-85.000.

Harrison, Lynn: *See—*
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn, 4,516,600, Cl. 137-495.000.

Harsco Corporation: *See—*
D'Alessio, Michael; and Matcovich, Charles, 4,516,663, Cl. 187-19.000.

Hart, Lynn: *See—*
Reinitz, Karl; and Hart, Lynn, 4,517,515, Cl. 324-252.000.

Hart, Terance W.: *See—*
Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Darnbrough, Geoffrey; and Hart, Terance W., 4,517,202, Cl. 514-530.000.

Hartenstein, Johannes: *See—*
Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, 4,517,185, Cl. 514-232.000.

Harter, Donald P.: *See—*
Hall, James R.; Harter, Donald P.; Clegg, Michael W.; and Gerber, James E., 4,516,659, Cl. 181-243.000.

Hartley, Doug: *See—*
Saul, Ben; and Hartley, Doug, 4,517,556, Cl. 340-528.000.

Hartmann, Eduard, to Bucher-Guyer AG. Press drainage. 4,516,490, Cl. 100-107.000.

Hartmann, Kurt: *See—*
Bohg, Armin; Matthaei, Horst D.; and Hartmann, Kurt, 4,517,538, Cl. 335-272.000.

Haruta, Masahiro: *See—*
Kobayashi, Masatsune; Haruta, Masahiro; Eida, Tsuyoshi; and Ohta, Tokuya, 4,517,244, Cl. 428-342.000.

Harvey, Richard D., to Grain Processing Corporation. Starch production from corn. 4,517,022, Cl. 127-68.000.

Hasbrouck, Anna B., legal representative: *See—*
Hasbrouck, Gene B., deceased, 4,516,619, Cl. 160-135.000.

Hasbrouck, Gene B., deceased (by Hasbrouck, Anna B., legal representative), to Hon Industries, Inc. Partition system and connectors therefor. 4,516,619, Cl. 160-135.000.

Hase, Teizo: *See—*
Suzuki, Hiroshige; and Hase, Teizo, 4,517,305, Cl. 501-89.000.

Hasegawa, Junzo: *See—*
Mimura, Nobuharu; Yoshida, Kazunori; Kawabata, Susumu; and Hasegawa, Junzo, 4,516,611, Cl. 139-452.000.

Hasegawa, Tetsuo: *See—*
Inoue, Sukejiro; Hasegawa, Tetsuo; and Nishikawa, Yoshihiro, 4,517,273, Cl. 430-111.000.

Hasenhundl, Josef: *See—*
Spengler, Adolf; and Hasenhundl, Josef, 4,516,859, Cl. 366-77.000.

Hashimoto, Hiroshi, to Daiwa Seiko Inc. Spool braking device for double-bearing fishing reel. 4,516,741, Cl. 242-217.000.

Hashimoto, Seiji: *See—*
Kuwayama, Tetsuro; Tanaka, Nobuyoshi; and Hashimoto, Seiji, 4,517,588, Cl. 358-44.000.

Haskell, Jacob D., to Advanced Micro Devices, Inc. Method of making improved twin wells for CMOS devices by controlling spatial separation. 4,516,316, Cl. 29-576.00W.

Haskins, Steve W., to Northern Telecom Limited. Integral cup and hookswitch actuator for a telephone set. 4,517,420, Cl. 179-164.000.

Hastings, John H. Valveless trumpet instrument. 4,516,464, Cl. 84-387.00R.

Hata, Akio; and Tanga, Michifumi, to Tokuyama Sekisui Kogyo Kabushiki Kaisha. Process for removing polymer scale adhering to a polymerization vessel. 4,517,350, Cl. 526-344.200.

Hattori, Akira; Hayashi, Hiromu; Shinagawa, Akio; and Shinogi, Tsuyoshi, to Fujitsu Limited. Stack machine with improved cache memory for variables. 4,517,640, Cl. 364-200.000.

Hattori, Seiziro: *See—*
Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, 4,517,299, Cl. 435-197.000.

Haufe, Paul: *See—*
Brusis, Otto; Maiter, Sigurd; and Haufe, Paul, 4,517,621, Cl. 361-231.000.

Hawk Industries, Inc.: *See—*
Molnar, Rick K., 4,516,868, Cl. 401-5.000.

Hayashi, Hiromu: *See—*
Hattori, Akira; Hayashi, Hiromu; Shinagawa, Akio; and Shinogi, Tsuyoshi, 4,517,640, Cl. 364-200.000.

Hayashi, Kazuhiko: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,516,652, Cl. 180-177.000.

Hayashi, Mitsuo: *See—*
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, 4,517,296, Cl. 435-119.000.

Hayashi, Yoshiki: *See—*
Yamauchi, Toshiaki; Hibi, Tsuneo; Sasano, Kiyomi; and Hayashi, Yoshiki, 4,516,331, Cl. 34-77.000.

Hayes, Willliam; and Dohrenwend, James W., to ARC Rebuilders, Inc. Filter device having relief valve for use in power steering system. 4,517,083, Cl. 210-131.000.

Heaney, Richard; and Naslund, Erik I., to Brown & Williamson Tobacco Corporation. Device for making grooves in cigarette filters. 4,517,046, Cl. 156-500.000.

Heaps, John F.; and Erickson, Dennis E., to Monsanto Company. Low temperature curable coating composition. 4,517,327, Cl. 524-315.000.

Heat Exchange and Transfer, Inc.: *See—*
Meyer, Howard E., 4,516,556, Cl. 123-557.000.

Heath, James E.; and Swenson, Hilmer W., to United States of America, Air Force. Sensor system. 4,517,464, Cl. 250-370.000.

Hebenstreit, William E.: *See—*
Yackel, Walter C., Jr.; and Hebenstreit, William E., 4,517,218, Cl. 426-656.000.

Heermann GmbH: *See—*
Meistring, Rolf; Siegling, Hans-Friedrich; and Pfahl, Siegfried, 4,516,831, Cl. 350-96.230.

Hefner, Robert E., Jr., to Dow Chemical Company, The. The high yield process for the cyanoalkylation or amidoalkylation or hydroxyaromatic compounds. 4,517,131, Cl. 260-465.00F.

Heidelberg, Gotz. Vehicle which can be held on a roadway with the aid of an attracting magnetic device. 4,516,505, Cl. 104-284.000.

Heider, Richard M. Insulating block and a wall thereof. 4,516,364, Cl. 52-98.000.

Heininger, Ammon N., Jr.; and Barnik, Edward A., to Black & Decker Inc. Modular housing system for a circular saw. 4,516,324, Cl. 30-377.000.

Heinrich, Wulf-Dieter; and Otte, Henning, to Robert Bosch GmbH. Wrench provided with an alternating current drive motor. 4,517,506, Cl. 318-807.000.

Heinzl, Alfred: *See—*
Weiser, Josef; Heinzl, Alfred; and Stadler, Heinz, 4,517,537, Cl. 335-187.000.

Held, Manfred; and Grossler, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Ammunition construction with selection means for controlling fragmentation size. 4,516,501, Cl. 102-496.000.

Heldenbrand, William C. Pipe testing apparatus. 4,516,431, Cl. 73-826.000.

Hellman, Gosta. Spraying device. 4,516,724, Cl. 239-119.000.

Hemery, Andre, to Allibert S.A. Preparing reinforced impervious articles. 4,517,136, Cl. 264-25.000.

Hemphill, Charles W., to GH Hensley Industries, Inc. Combination excavating bucket, shank and digging teeth. 4,516,339, Cl. 37-141.00R.

Hendrick, Michael E.: *See—*
Brennan, Thomas M.; and Hendrick, Michael E., 4,517,379, Cl. 564-193.000.

Hendrickson, Larry L.: *See—*
Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., 4,517,002, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,003, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,005, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,004, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,007, Cl. 71-28.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Wilk, Hans-Christoph; Wegemund, Bernd; and Gorzinski, Manfred, 4,517,334, Cl. 524-539.000.

Henkes, Dale D.: *See—*
Loch, David M.; and Henkes, Dale D., 4,517,059, Cl. 204-14.100.

Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., to Magnetic Peripherals Inc. Method for attaching a workpiece to a workpiece carrier. 4,517,041, Cl. 156-155.000.

Henschenmacher, Helmut: *See—*
Lewis, Edwin C.; Henschenmacher, Helmut; Ecker, Karl-Heinz; Giernalczyk, Hartmut; and Rutte, Siegfried, 4,516,477, Cl. 92-128.000.

Hepher, Nicholas M.: *See—*
Inculet, Ion I.; Norberg, Anna K. E.; and Hepher, Nicholas M., 4,517,078, Cl. 209-127.300.

Herbert, Reinhold, to Fresenius, AG. Storage bag. 4,516,977, Cl. 604-415.000.

Herchenbach, Horst: *See—*
Steinbiss, Eberhard; and Herchenbach, Horst, 4,517,020, Cl. 106-100.000.

Herr, Charles H., Jr., to Caterpillar Tractor Co. High-low braked gear drive. 4,516,444, Cl. 74-781.00R.

Herrmann, Manfred: *See—*
Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, 4,517,185, Cl. 514-232.000.

Herter, Carl J. Method for preparing a low residual alloy steel charge from scrap metal. 4,517,016, Cl. 75-28.000.

Hess, Susan V.: *See—*
Plante, Stuart E.; and Hess, Susan V., 4,517,025, Cl. 134-38.000.

Hesse, Myron C. Fine-droplets sprayer system for terrain vehicular use. 4,516,723, Cl. 239-77.000.

Hesston Corporation: *See—*
Hill, Amos G., 4,516,903, Cl. 414-491.000.

Hetherington, Robert D.: *See—*
Cavanaugh, James E.; Hetherington, Robert D.; and Parmley, Thomas A., 4,516,725, Cl. 239-127.000.

Hettiger, James: *See—*
Murphy, Wesley W., III; and Hettiger, James, 4,517,602, Cl. 358-198.000.

Hewes, Francis W., Jr. Tool for castrating animals by severing the spermatic cord by searing or cauterization. 4,516,574, Cl. 128-303.100.

Heymer, Gero: *See—*
Jodden, Klaus; Heymer, Gero; and Stephan, Hans-Werner, 4,517,163, Cl. 423-75.000.

Hibi, Tsuneo: *See—*
Yamauchi, Toshiaki; Hibi, Tsuneo; Sasano, Kiyomi; and Hayashi, Yoshiki, 4,516,331, Cl. 34-77.000.

Hicks, John E.; and Kubat, James J., to Outboard Marine Corporation. Soil aerating apparatus with hydraulic valve arrangement. 4,516,638, Cl. 172-22.000.

Hicks, Kevin J. Food processing apparatus. 4,517,447, Cl. 219-388.000.

Hidden Valley Associates, Inc.: *See—*
Phillips, Edward H., 4,516,958, Cl. 464-153.000.

Hideo, Sugimori. Resistance thermometer. 4,516,865, Cl. 374-172.000.

Hierholzer, Melvin C. Highlighting applicator. 4,516,591, Cl. 132-88.700.

Highby, Dennis N., to Cabela's Inc. Casting rod and handle assembly. 4,516,351, Cl. 43-23.000.

Higuchi, Megumu: *See—*
Morikawa, Kunihiko; Higuchi, Megumu; and Yanai, Tokiyoshi, 4,516,422, Cl. 72-377.000.

Hill, Amos G., to Hesston Corporation. Elevator position-control mechanism for rotatable forage container. 4,516,903, Cl. 414-491.000.

Hill, Elmer D.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.

Hill, Howard D.; and Zens, Albert P., to Varian Associates, Inc. NMR Probe coil form structure. 4,517,516, Cl. 324-318.000.

Hill, Robert J.: *See—*
Fox, James W.; and Hill, Robert J., 4,517,407, Cl. 174-73.00R.

Hill, Ronald C.; Stein, Richard M.; Bzibziak, Raymond J.; and Goodwill, Robert, to Houdaille Industries, Inc. Punch and ram assembly for punch press. 4,516,448, Cl. 83-137.000.

Hill, William D.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.

Himmele, Walter: *See—*
Becker, Rainer; Jahn, Dieter; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,517,013, Cl. 71-98.000.

Himukashi, Yoshinori: *See—*
Kawahito, Takashi; Himukashi, Yoshinori; and Yamada, Tetsuo, 4,517,168, Cl. 423-344.000.

Hinden, Jean M.; Ernes, Lynne M.; and Visel, Patrick E., to Eltech Systems Corporation. Electrocatalytic electrode. 4,517,068, Cl. 204-283.000.

Hino, Hiromasa, to Fuji Photo Film Co., Ltd. Recording error-prevention system. 4,516,846, Cl. 354-465.000.

Hino, Hiromasa, to Fuji Photo Film Co., Ltd. Rotary head for magnetic tape record and playback. 4,517,615, Cl. 360-108.000.

Hippely, Keith A.; and Goldstein, Samuel M., to Mattel, Inc. Toy vehicular playset. 4,516,953, Cl. 446-444.000.

Hirai, Masahide: *See—*
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.

Hirasako, Akio: *See—*
Takaoka, Shozo; and Hirasako, Akio, 4,516,332, Cl. 34-79.000.

Hiratsuka, Shigetoshi: *See—*
Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, 4,517,444, Cl. 219-216.000.

Hirobumi, Saito; Kiyoshi, Ito; Kaichi, Higuchi; and Masao, Yamamoto, to Mitsubishi Denki Kabushiki Kaisha. Expansion type life-saving raft. 4,516,944, Cl. 441-40.000.

Hiroi, Kazuo; and Kojima, Kenji, to Kabushiki Kaisha Toshiba. Method for controlling oxygen density in combustion exhaust gas. 4,516,929, Cl. 431-12.000.

Hironaga, Katsuji; and Nishiura, Tadaki, to Nihon Kagaku Kogyo Co., Ltd. Apparatus for measuring two-phase flow. 4,516,432, Cl. 73-861.040.

Hirooka, Masaaki; Kubo, Keiji; and Yoshihara, Toshiyuki, to Canon Kabushiki Kaisha. Electrophotographic CdS photosensitive member with acrylic resin binder. 4,517,271, Cl. 430-94.000.

Hirose, Haruomi; and Yamazaki, Akio, to Daiwa Seiko Co., Ltd. Trawling line information communication system. 4,516,348, Cl. 43-17.000.

Hirota, Tatsuya: *See—*
Aoki, Yoshiaki; Suzuki, Hazime; and Hirota, Tatsuya, 4,516,335, Cl. 34-133.000.

Hisamoto, Iwao; Omure, Yukio; and Ishikawa, Sueyoshi, to Daikin Kogyo Co., Ltd. Cleaning composition. 4,517,108, Cl. 252-162.000.

Hitachi Chemical Company, Ltd.: *See—*
Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, 4,517,282, Cl. 430-399.000.

Hitachi Engineering Co., Ltd.: *See—*
Hamada, Nobuhiro; Sugimoto, Norihiko; and Nawa, Masumi, 4,517,644, Cl. 364-200.000.

Hitachi, Ltd.: *See—*
Aizawa, Iwao; and Masuda, Michio, 4,517,587, Cl. 358-17.000.
Hamada, Nobuhiro; Sugimoto, Norihiko; and Nawa, Masumi, 4,517,644, Cl. 364-200.000.
Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, 4,517,444, Cl. 219-216.000.
Matsushita, Yasuo; Nakamura, Kousuke; and Ura, Mitsuru, 4,517,584, Cl. 357-80.000.
Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, 4,517,087, Cl. 210-396.000.
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, 4,516,319, Cl. 29-877.000.
Takahashi, Hideo; and Nakatani, Mitsuo, 4,517,490, Cl. 313-502.000.
Tsuchihashi, Akira; and Teramoto, Kazuyoshi, 4,517,653, Cl. 364-513.000.

Hitco: *See—*
Spain, Raymond G., 4,517,245, Cl. 428-367.000.

Hiyama, Takashi: *See—*
Yanaihara, Noboru; Sugiura, Nobuo; and Hiyama, Takashi, 4,517,180, Cl. 514-16.000.

Ho, Chu-Ngi: *See—*
Warner, Isiah M.; and Ho, Chu-Ngi, 4,516,984, Cl. 55-16.000.

Hobbs, Andrew G. P., Jr.; Lickle, Brett D.; and Hobbs, Patricia W. Portable beverage cooler. 4,516,409, Cl. 62-457.000.

Hobbs, Patricia W.: *See—*
Hobbs, Andrew G. P., Jr.; Lickle, Brett D.; and Hobbs, Patricia W., 4,516,409, Cl. 62-457.000.

Hodge, Allan M. Standardized sampling hay probe. 4,516,438, Cl. 73-864.440.

Hodges, Donald R.; and Sherwood, William G., to AMAX Inc. Method for electroforming metal slugs and reusable integrated cathode unit. 4,517,058, Cl. 204-4.000.

Hoechst Aktiengesellschaft: *See—*
Jodden, Klaus; Heymer, Gero; and Stephan, Hans-Werner, 4,517,163, Cl. 423-75.000.
Leistner, Gerhard; Muller, Gerhard; Sell, Gunther; and Bauer, Alexander, 4,517,093, Cl. 210-629.000.
Merkenich, Karl; Wasel-Nielen, Horst-Dieter; Maurer, Alexander; and Adrian, Renate, 4,517,109, Cl. 252-135.000.
Reske, Eckart; and Wolters, Ernst, 4,517,319, Cl. 523-200.000.
Stahlhofen, Paul, 4,517,275, Cl. 430-165.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Effland, Richard C.; Klein, Joseph T.; and Hamer, R. Richard L., 4,517,195, Cl. 514-413.000.
Glamkowski, Edward J.; Jones, Michael C., deceased; and Jones, Herbert, administrator, 4,517,311, Cl. 514-462.000.

Hoek, Arend; and Kieffer, Eduard P., to Shell Oil Company. Process for the preparation of middle distillates. 4,517,396, Cl. 585-415.000.

Hoel, Olav: *See—*
Grimhall, Carl G.; and Hoel, Olav, 4,516,614, Cl. 144-364.000.

Hoesch Werke Aktiengesellschaft: *See—*
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,516,488, Cl. 100-4.000.

Hofbauer, August; and Exinger, Erich, to Dr. Ing. h.c.F. Porsche AG. Air quality measuring device for a fuel injection installation. 4,516,552, Cl. 123-452.000.

Hoffman, David M.; Feher, John J.; and Farmer, Homer H., to R. T. Vanderbilt Company, Inc. Lubricating compositions containing 5,5'-dithiobis(1,3,4-thiadiazole-2-thiol). 4,517,103, Cl. 252-28.000.

Hoffman, Richard A., to Westinghouse Electric Corp. Protective coating means for articles such as gold-plated jewelry and wristwatch components. 4,517,217, Cl. 428-632.000.

Hoffmann, Gerhard: *See—*
Graser, Fritz; Hoffmann, Gerhard; Leyrer, Reinhold J.; Neumann, Peter; and Patsch, Manfred, 4,517,270, Cl. 430-58.000.

Hoffmann-La Roche Inc.: *See—*
Felix, Arthur M.; Gillessen, Dieter; Lergier, William; Meienhofer, Johannes A.; and Trzeciak, Arnold, 4,517,119, Cl. 260-112.50R.
Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,517,362, Cl. 546-7.000.

Hoffmann, Werner: *See—*
Janitschke, Lothar; and Hoffmann, Werner, 4,517,382, Cl. 564-267.000.

Hofmann, Karl: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.

Hoie, Karl H. Mixing and spraying apparatus for liquids, optionally for powder and liquid. 4,516,726, Cl. 239-317.000.

Holl, Roland, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Arrangement in printing machines having a varnishing unit for varnishing printed sheets. 4,517,221, Cl. 427-8.000.

Holleis, Gunter: *See—*
Thone, Heinrich; Hargassner, Reinhard; Deibl, Gottfried; and Holleis, Gunter, 4,516,622, Cl. 164-416.000.

Hollenbeck, Dennis W.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.

Holler, Heinz; and Weber, Wolfgang, to Voith Turbo GmbH & Co. KG. Hydraulic coupling. 4,516,399, Cl. 60-351.000.

Holmstrand, Allan L.: *See—*
Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., 4,517,041, Cl. 156-155.000.

Hon Industries, Inc.: *See—*
Hasbrouck, Gene B., deceased, 4,516,619, Cl. 160-135.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Arakawa, Tetsuo; and Nagahiro, Kenichi, 4,516,538, Cl. 123-52.00M.
Miura, Nobuo; and Ishii, Nolihisa, 4,516,554, Cl. 123-418.000.
Murayama, Masato, 4,517,417, Cl. 179-156.00R.
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,517,565, Cl. 340-995.000.
Nishikawa, Masao; Aoki, Takashi; Sakai, Shinzo; and Yoshizawa, Hiroshi, 4,516,671, Cl. 192-.076.
Shioya, Toshio; and Kimura, Katsuhiko, 4,516,555, Cl. 123-470.000.
Yamaguchi, Ken, 4,516,630, Cl. 165-47.000.

Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, to Mita Industrial Co., Ltd. Method for developing electrostatic latent images. 4,517,274, Cl. 430-122.000.

Honeywell Information Systems Inc.: *See—*
Mantellina, Calogero; and Zanzottera, Daniele, 4,517,681, Cl. 375-106.000.

Hong, Chi-Shain: *See—*
Liu, Yet-Zen; and Hong, Chi-Shain, 4,517,674, Cl. 372-45.000.

Honji, Kunihiko; and Aoki, Toshiyuki, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Apparatus for sensing and memorizing model profile and for controlling machining operation thereby. 4,517,504, Cl. 318-568.000.

Honjo, Norifumi: *See—*
Nakahara, Mitsuharu; Ishida, Tomio; Honjo, Norifumi; and Yoshida, Yoshitaka, 4,516,537, Cl. 123-48.0AA.

Honshu Chemical Ind. Co. Ltd.: *See—*
Matsunaga, Fujihisa; Nishimura, Tadahiko; Miyake, Etsuo; and Banba, Kiyotaka, 4,517,387, Cl. 568-728.000.

Hooper Trading Co. N.V.: *See—*
Fabricius, Hans-Åke; and Stahn, Roland, 4,517,293, Cl. 435-68.000.

Hoover Universal, Inc.: *See—*
Cavin, J. N.; and Frees, Kenneth A., 4,516,905, Cl. 414-620.000.

Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., to Allied Corporation. Soluble surfactant additives for ammonium fluoride/hydrofluoric acid oxide etchant solutions. 4,517,106, Cl. 252-79.400.

Hoppe, Lutz: *See—*
Luhmann, Erhard; Hoppe, Lutz; Szablikowski, Klaus; and Lampert, Friedrich-Karl, 4,517,324, Cl. 524-27.000.

Hoppner, Bernd: *See—*
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

Horbaschek, Heinz, to Siemens Aktiengesellschaft. X-Ray diagnostic installation. 4,517,594, Cl. 358-111.000.

Horikoshi, Shigeo: *See—*
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Kamanaka, Tamaki; and Taniguchi, Hiroshi, 4,517,312, Cl. 521-47.000.

Horinouchi, Atsushi, to Sanyo Electric Co., Ltd. Electronic controlled heat cooking apparatus and method of controlling thereof. 4,517,429, Cl. 219-10.55B.

Hoshi, Shoichi: *See—*
Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, 4,517,397, Cl. 585-428.000.

Hosoe, Takeo: *See—*
Goto, Hideo; Hosoe, Takeo; Oda, Toshinori; and Ohtsuka, Sosuke, 4,516,978, Cl. 8-510.000.

Hosokawa-Nauta B.V.: *See—*
van der Laan, Jan G. J.; and Entrop, Willem, 4,516,860, Cl. 366-287.000.

Houdaille Industries, Inc.: *See—*
Hill, Ronald C.; Stein, Richard M.; Bzibziak, Raymond J.; and Goodwill, Robert, 4,516,448, Cl. 83-137.000.

Hougen Manufacturing, Inc.: *See—*
Beharry, Michael, 4,516,890, Cl. 408-204.000.

House Food Industrial Company, Ltd.: *See—*
Sugisawa, Ko; Sekiguchi, Kazuya; Taguchi, Masao; Nakatani, Masayuki; and Iwata, Hitoshi, 4,516,596, Cl. 137-240.000.

Howell, Edward B., to Design Professionals Financial Corporation. Vibration transducer with dual opposed magnetic assemblies and counterbalanced mass. 4,517,514, Cl. 324-207.000.

Hradek, Jaroslav: *See—*
Valasek, Miloslav; Langer, Frantisek; Hradek, Jaroslav; and Seeman, Jindrich, 4,517,457, Cl. 250-239.000.

Hsu, Jau Y., to Nestec, S.A. Preparation of vegetable pastas. 4,517,215, Cl. 426-557.000.

Huang, I-Der: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, 4,517,371, Cl. 549-239.000.

Huber, Reinhold; and Koster, Waldemar, to Kober AG. Bridging arrangement for expansion joints in the carriageways of bridges or the like. 4,516,284, Cl. 14-16.500.

Hubler, Lawrence C.: *See—*
Braun, Oskar J.; and Hubler, Lawrence C., 4,516,714, Cl. 227-78.000.

Hucker, David J.; and Straznickas, Donald A., to Sundstrand Corporation. Permanent magnet rotor with saturable flux bridges. 4,517,483, Cl. 310-156.000.

Hudgens, Stephen J.: *See—*
Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,517,223, Cl. 427-39.000.

Hudson Oxygen Therapy Sales Company: *See—*
Rowland, Robert O., 4,516,424, Cl. 73-23.000.

Hudson, Steven L., to Estate of Thomas S. Krause, The. Fluid coupling. 4,516,796, Cl. 285-321.000.

Hugh, Steven C., to Boeing Company, The. Pre-alloyed thick film conductor for use with aluminum wire bonding and method of bonding. 4,517,252, Cl. 428-553.000.

Hughes Aircraft Company: *See—*
Mulliner, Richard R.; and Rocke, Richard D., 4,517,571, Cl. 343-771.000.
Zwirn, Robert; Dragavon, Edward J.; and Smithgall, Brian, 4,517,599, Cl. 358-166.000.

Hughes, Garyth: *See—*
Bickerdike, Robert L.; and Hughes, Garyth, 4,517,027, Cl. 148-6.300.

Hughes Tool Company-USA: *See—*
Burr, Bruce H., 4,516,641, Cl. 175-228.000.

Hughes, William E.; Dare, Keith E.; and Cooper, Jerry W., to Dayco Corporation. Multiple fluid conveying hose assembly and method of making same. 4,517,404, Cl. 174-47.000.

Huhn, Erhard: *See—*
Ludenbach, Karl; and Huhn, Erhard, 4,516,602, Cl. 137-512.150.

Hujala, Jorma; and Koponen, Martti, to Valmet OY. Web-forming section of a paper machine intended for modernization of a fourdrinier wire. 4,517,054, Cl. 162-301.000.

Hulsink, Jan H. Orthodontic device. 4,516,936, Cl. 433-6.000.

Hultgren, Karl S. H. Arrangement in combustion chambers for burning solid fuel. 4,516,562, Cl. 126-77.000.

Humble, David R.; and Barth, Hans. Sailboard boom-to-mast connector. 4,516,873, Cl. 403-191.000.

Humblot, Bernard. Electric resistance welding apparatus. 4,517,435, Cl. 219-89.000.

Hunter Douglas International N.V.: *See—*
Gaillard, Adrianus J. C.; and Anderson, Richard N., 4,516,300, Cl. 29-24.500.

Huret et ses Fils: *See—*
Coue, Maurice, 4,517,450, Cl. 235-95.00R.
Coue , Maurice E. L., 4,516,961, Cl. 474-80.000.

Hutchings, David A.: *See—*
Willard, G. Fred; and Hutchings, David A., 4,516,996, Cl. 65-3.430.

Hutchinson: *See—*
Tavin, Gerard, 4,516,421, Cl. 72-354.000.

Hutchison, Wanda S.: *See—*
Lance, Clyde E.; and Hutchison, Wanda S., 4,516,827, Cl. 350-96.150.

Hydraulic Technology Corporation: *See—*
Sheriff, Merle M., 4,516,468, Cl. 91-169.000.

Hydro-Quebec: *See—*
Belanger, Andre ; Fauteux, Denis; and Gauthier, Michel, 4,517,265, Cl. 429-217.000.

Hydrotreat, Inc.: *See—*
Arnaud, Johnny, 4,517,089, Cl. 210-488.000.

Iain, Stewart, to Maschinenfabrik Fr. Niepmann GmbH & Co. Device for the packaging of powder, granulates and lump, pasty and liquid materials to be packaged by means of a tubular film. 4,516,379, Cl. 53-138.00A.

Ideno, Shigeru: *See—*
Nakamura, Kenji; and Ideno, Shigeru, 4,517,550, Cl. 340-347.0CC.

IGT: *See—*
Carmean, Wesley F., 4,517,654, Cl. 364-521.000.

Ihler, Garret M.: *See—*
DeLoach, John R.; Harris, Robert L.; Mayer, Richard T.; and Ihler, Garret M., 4,517,080, Cl. 210-85.000.

Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture information filing system for permanently storing portions of previously permanently stored data logically combining the portions. 4,517,658, Cl. 364-900.000.

Iiyama, Kiyotaka; and Taniguchi, Keishi, to Ricoh Company, Ltd. Thermosensitive recording material. 4,517,580, Cl. 346-214.000.

Ikebe, Ken'ichi: *See—*
Takezawa, Susumu; Ikebe, Ken'ichi; Ayada, Haruki; Fukui, Tatsuyuki; and Okada, Munenori, 4,516,746, Cl. 244-170.000.

Ikeda, Tadashi: *See—*
Kanda, Yoshiro; Noguchi, Hironori; and Ikeda, Tadashi, 4,516,327, Cl. 33-169.00R.

Ikeda, Toshimitsu: *See—*
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,517,274, Cl. 430-122.000.

Ikegami, Kasumi; and Okuyama, Hirofumi, to Fujitsu Limited. Holographic recording material and process for producing holograms. 4,517,266, Cl. 430-2.000.

Ikehata, Yukio, to Seiko Instruments & Electronics Ltd. Electronic timepiece operable in continuous and stepwise modes. 4,516,863, Cl. 368-157.000.

Ikejima, Hiroyuki: *See—*
Anzai, Nobuo; and Ikejima, Hiroyuki, 4,516,664, Cl. 187-29.00R.

Illinois Tool Works Inc.: *See—*
Barth, Gerald D., 4,516,893, Cl. 411-184.000.
Engstrom, Keith A., 4,517,553, Cl. 340-365.00S.

Imai, Iwao: *See—*
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, 4,516,319, Cl. 29-877.000.

Imai, Kazuyoshi: *See—*
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; Suzaki, Takuya; and Imai, Kazuyoshi, 4,517,246, Cl. 428-407.000.

Imamizu, Shige: *See—*
Takakuwa, Shilo; Kobayashi, Isao; Takahashi, Tastuo; and Imamizu, Shige, 4,516,311, Cl. 29-568.000.

Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, to Fujisawa Pharmaceutical Co., Ltd. Acetylesterases. 4,517,299, Cl. 435-197.000.

Imanishi, Masamichi: *See—*
Taguchi, Haruyoshi; Tsujimura, Hideo; and Imanishi, Masamichi, 4,516,687, Cl. 220-94.00R.

Imazeki, Ryoji; and Inoue, Michiya, to Fujitsu Fanuc Limited. Method of rewriting data in non-volatile memory, and system therefor. 4,517,663, Cl. 365-222.000.

Imnetec Inc.: *See—*
Davis, Jeffrey J., 4,516,974, Cl. 604-333.000.

Imperial Chemical Industries PLC: *See—*
Halsall, James R.; and Murray, Robert T., 4,517,456, Cl. 250-226.000.
Milner, David J., 4,517,129, Cl. 260-465.00G.

Imperiale, Nino, to W. R. Grace & Co., Cryovac Div. Method and apparatus for opening and loading flexible containers. 4,516,384, Cl. 53-459.000.

Imura, Shinichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,517,451, Cl. 235-379.000.

Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, to Nippon Soken, Inc. Torque variation detecting method and apparatus for internal combustion engine. 4,517,648, Cl. 364-431.010.

Inaba, Hideaki; and Sakakibara, Shuzi, to Daido Tokushuko Kabushiki Kaisha. Steel refining method. 4,517,015, Cl. 75-12.000.

Inata, Hiroo: *See—*
Matsumura, Shunichi; and Inata, Hiroo, 4,517,315, Cl. 521-64.000.

Incom International Inc.: *See—*
Paynter, Alan H., 4,516,441, Cl. 74-501.00R.

Inconix Corporation: *See—*
Cassell, Douglas A., 4,517,637, Cl. 364-138.000.

Inculet, Ion I.; Norberg, Anna K. E.; and Hepher, Nicholas M., to Blue Circle Industries PLC. Method and apparatus for separating particulate materials. 4,517,078, Cl. 209-127.300.

Indak Manufacturing Corp.: *See—*
Black, Charles E., III; and Halstead, Raymond T., 4,517,422, Cl. 200-50.00C.

Industrial Design Electronic Associates, Inc.: *See—*
DeVale, Donald P.; Brejcha, Robert J.; and Van Naarden, Robert W., 4,516,781, Cl. 273-373.000.

Industrial Engraving and Manufacturing Corp.: *See—*
Townsend, Ellsworth D., 4,516,742, Cl. 242-64.000.

Ingersoll-Rand Company: *See—*
Chulada, Edmund C.; and Nelson, David A., 4,516,302, Cl. 29-156.80R.

Ingold, Daniel L.: *See—*
Gardner, Bruce C.; Ingold, Daniel L.; and May, David A., 4,516,618, Cl. 160-120.000.

Ingold, John H.: *See—*
Otto, Lee W.; Ingold, John H.; and Bergman, Rolf S., 4,517,491, Cl. 313-579.000.

Inland Steel Company: *See—*
Nickola, Richard A.; and Agarwal, Shashi B., 4,517,229, Cl. 427-383.900.

Inmont Corporation: *See—*
Panush, Sol, 4,517,249, Cl. 428-463.000.

Inomata, Koichiro; and Murata, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Temperature sensitive amorphous magnetic alloy. 4,517,017, Cl. 75-123.00B.

Inoue, Michiya: *See—*
Imazeki, Ryoji; and Inoue, Michiya, 4,517,663, Cl. 365-222.000.

Inoue, Minoru, to Fujitsu Limited. Method of backside heating a semiconductor substrate in an evacuated chamber by directed microwaves for vacuum treating and heating a semiconductor substrate. 4,517,026, Cl. 148-1.500.

Inoue, Sukejiro; Hasegawa, Tetsuo; and Nishikawa, Yoshihiro, to Canon Kabushiki Kaisha. Pressure fixable capsule toner. 4,517,273, Cl. 430-111.000.

Inro France: *See—*
Kroczynski, Patrice, 4,517,424, Cl. 200-52.00R.

International Business Machines Corporation: *See—*
Bohg, Armin; Matthaei, Horst D.; and Hartmann, Kurt, 4,517,538, Cl. 335-272.000.
Bourgeois, Serge; Carle, Jean-Franqois; Lochon, Henri; and Trotin, Jean-Pierre, 4,516,525, Cl. 118-688.000.
Fotiadis, Emanuel; Kozol, Edward J.; Leung, Tak L.; and Paul, Robert J., 4,516,678, Cl. 206-444.000.
Gazdik, Charles E.; and McBride, Donald G., 4,517,051, Cl. 156-644.000.
Graf, Matthew C.; Muhlfeld, Hans P., Jr.; and Valentine, Edward H., 4,517,661, Cl. 364-900.000.
Jain, Kantilal; and Latta, Milton R., 4,516,832, Cl. 350-96.240.
Korth, Hans E., 4,516,855, Cl. 356-367.000.
Lasher, Dana A.; and Stelzenmuller, William K., 4,517,604, Cl. 358-262.000.
Pinheiro, Edwin J., 4,517,641, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.
Sprecker, Mark A., 4,517,213, Cl. 426-538.000.

International Game Technology: *See—*
Davids, Robert E., 4,517,558, Cl. 340-700.000.

International Hydron Corporation: *See—*
Rawlings, David L., 4,516,924, Cl. 425-434.000.
Rawlings, David L.; and Glick, Robert E., 4,517,138, Cl. 264-2.100.
Rawlings, David L.; and Glick, Robert E., 4,517,139, Cl. 264-2.100.
Rawlings, David L., 4,517,140, Cl. 264-2.100.

International Telephone & Telegraph Corporation: *See—*
Borsuk, Leslie M.; and Corrales, Patrick G., 4,516,829, Cl. 350-96.200.
Nieman, Gerald R., 4,516,821, Cl. 339-75.00M.

Intevep, S.A.: *See—*
Vadasz, Amnon F., 4,516,479, Cl. 92-170.000.

Inui, Tsuneo: *See—*
Kanda, Katsumi; Okamura, Takaaki; Minamigi, Takashi; Inui, Tsuneo; and Kondo, Yoshikazu, 4,517,255, Cl. 428-626.000.

Inuzuka, Tokushige: *See—*
Kumagai, Naotake; Tatemoto, Minoru; Itoh: Yoji; and Inuzuka, Tokushige, 4,516,545, Cl. 123-192.00R.

Iowa State University Research Foundation, Inc.: *See—*
Wheelock, Thomas D., 4,516,980, Cl. 44-1.0SR.

Ireland, Hugh C., to Simplex-GE Limited. Coupling device. 4,516,814, Cl. 339-7.000.

Irgel, Lutz: *See—*
Ehlenz, Peter; and Irgel, Lutz, 4,517,308, Cl. 502-401.000.

Irnich, Werner. Interference recognition circuit in a heart pacemaker. 4,516,579, Cl. 128-419.0PG.

Irving, Graeme N.: *See—*
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., 4,517,107, Cl. 252-108.000.

Irwin Measuring Tool Inc.: *See—*
Cohen, Howard; and Pakus, Edward, 4,516,325, Cl. 33-138.000.

Ise, Masahiro; Machino, Katsuyuki; Tanaka, Hidehiko; and Matsubara, Toshiyuki, to Sharp Kabushiki Kaisha. Transmitter/receiver circuit for signal transmission over power wiring. 4,517,548, Cl. 340-310.00R.

Iseki & Co., Ltd.: *See—*
Nishihara, Tadao, 4,516,654, Cl. 180-255.000.

Ishibashi, Kodo: *See—*
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.

Ishida, Tomio: *See—*
Nakahara, Mitsuharu; Ishida, Tomio; Honjo, Norifumi; and Yoshida, Yoshitaka, 4,516,537, Cl. 123-48.0AA.

Ishigaki, Yukinobu, to Victor Company of Japan, Ltd. Circuit arrangement for reconstructing noise-affected signals. 4,517,518, Cl. 328-165.000.

Ishigami, Michifumi: *See—*
Kako, Mitumasa; and Ishigami, Michifumi, 4,516,508, Cl. 108-7.000.

Ishii, Nolihisa: *See—*
Miura, Nobuo; and Ishii, Nolihisa, 4,516,554, Cl. 123-418.000.

Ishii, Thomas K.; and Jorgensen, Jorgen A., to Northland Aluminum Products, Inc. Cavity antenna microwave powered turntable. 4,517,432, Cl. 219-10.55F.

Ishikawa, Masayuki; Azuma, Hiroshi; Sugimoto, Akiko; Takahashi, Noriko; and Takashima, Yoshimi, to Showa Denko K.K. 2,6,7,8-Substituted quinazolines, process for production thereof, and use thereof. 4,517,189, Cl. 514-259.000.

Ishikawa, Sueyoshi: *See—*
Hisamoto, Iwao; Omure, Yukio; and Ishikawa, Sueyoshi, 4,517,108, Cl. 252-162.000.

Ishikura, Tomoyuki: *See—*
Yoshioka, Takeo; Yamamoto, Kenichi; Fukagawa, Yasuo; Shimauchi, Yasutaka; and Ishikura, Tomoyuki, 4,517,127, Cl. 260-245.20T.

Iso, Tadashi; and Oya, Masayuki, to Santen Pharmaceutical Co., Ltd. Cysteine derivatives of disulfide form. 4,517,123, Cl. 260-239.30R.

Isomet Corporation: *See—*
Bademian, Leon, 4,516,838, Cl. 350-358.000.

Isono, Kiyoshi; Nakamura, Goto; and Fujita, Shigeo, to Rikagaku Kenkyusho; and Kaken Kagaku Kabushiki Kiasha. Novel antibiotic 76-11, process for the production thereof, anticoccidiosis agent and domestic animals growth accelerator comprising the same as an effective ingredient. 4,517,178, Cl. 424-122.000.

Isshiki, Tomiya; Nawata, Takanari; Kijima, Yasuhiko; Ito, Akira; and Watanabe, Takayuki, to Mitsubishi Gas Chemical Company, Inc. Process for producing vinyl acetate. 4,517,377, Cl. 560-261.000.

Ito, Akinori: *See—*
Kizawa, Hidenori; Fujiyama, Norimasa; Kobayashi, Jitsuo; and Ito, Akinori, 4,517,173, Cl. 424-16.000.

Ito, Akira: *See—*
Isshiki, Tomiya; Nawata, Takanari; Kijima, Yasuhiko; Ito, Akira; and Watanabe, Takayuki, 4,517,377, Cl. 560-261.000.

Ito, Osamu: *See—*
Umetsu, Yoshihiro; Muraishi, Masakazu; Ito, Osamu; and Kakeba, Masakatsu, 4,516,788, Cl. 280-6.00R.

Ito, Ryosuke: *See—*
Tanaka, Susumu; and Ito, Ryosuke, 4,517,528, Cl. 330-297.000.

Ito, Sadayuki: *See—*
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, 4,517,617, Cl. 360-133.000.

Itoh, Katsuoki: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.

Itoh, Masayuki: *See—*
Miyauchi, Masami; and Itoh, Masayuki, 4,517,158, Cl. 420-584.000.

Itoh: Yoji: *See—*
Kumagai, Naotake; Tatemoto, Minoru; Itoh: Yoji; and Inuzuka, Tokushige, 4,516,545, Cl. 123-192.00R.

ITT Industries, Inc.: *See—*
Drake, Cyril F.; and Jones, Ronald, 4,517,006, Cl. 71-64.110.
Fennel, Helmut, 4,517,684, Cl. 377-19.000.
Lindstedt, Guenter; and Nopper, Guido H., 4,517,529, Cl. 331-1.00A.
Thompson, George H. B., 4,517,581, Cl. 357-30.000.

Itzchak, Zeev B.: *See—*
Berman, Oded; Eilam, Zohar; and Itzchak, Zeev B., 4,516,950, Cl. 446-297.000.

Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H., to Allied Corporation. Electrically conducting compositions of doped polyphenylenes and shaped articles comprising the same. 4,517,116, Cl. 252-500.000.

Iwabuchi, Hidetoshi; and Okumura, Takeo, to Kao Corporation. Hair cosmetics. 4,517,175, Cl. 424-70.000.

Iwamoto, Katsuo: *See—*
Goto, Tomomichi; Iwamoto, Katsuo; Kobayashi, Yoshinori; and Matoba, Isao, 4,517,032, Cl. 148-111.000.

Iwao, Noriyuki: *See—*
Tsutsui, Eiji; Yoshioka, Masahiro; Murakami, Masahiro; and Iwao, Noriyuki, 4,516,849, Cl. 355-15.000.

Iwasa, Susumu; Yoshida, Isamu; and Kondo, Koichi, to Takeda Chemical Industries, Ltd. Method for enzyme immunoassay and peptide-enzyme conjugate and antibody therefor. 4,517,290, Cl. 435-7.000.

Iwata, Hitoshi: *See—*
Sugisawa, Ko; Sekiguchi, Kazuya; Taguchi, Masao; Nakatani, Masayuki; and Iwata, Hitoshi, 4,516,596, Cl. 137-240.000.

Iwaya Corporation: *See—*
Saigo, Hiroshi; and Kaneko, Hiroshi, 4,516,951, Cl. 446-338.000.

Iwaya, Shoichi: *See—*
Adachi, Hiromi; and Iwaya, Shoichi, 4,517,496, Cl. 315-227.00R.

Iyoda, Shozo: *See—*
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Shozo, 4,517,541, Cl. 337-89.000.

Izen, Ronald L.: *See—*
Topalian, Joan A.; and Izen, Ronald L., 4,516,282, Cl. 5-72.000.

J.F.S., Inc.: *See—*
Johnson, David A., 4,516,515, Cl. 114-197.000.

J & P Coats, Limited: *See—*
Hampson, Jack T., 4,516,411, Cl. 66-64.000.

J. W. Lighting Inc.: *See—*
Mullins, Jack R., 4,517,631, Cl. 362-346.000.

J. Wagner GmbH: *See—*
Boll, Hans-Joachim, 4,517,620, Cl. 361-154.000.

Jabs, Gert: *See—*
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.

Jack Prince, Inc.: *See—*
Prince, Jack A.; and Standridge, Bobby D., 4,516,731, Cl. 241-24.000.

Jackson, John S., to General Motors Corporation. Supercharged engine charge control. 4,516,401, Cl. 60-602.000.

Jackson, W. Shaun. Pannier with hook and spring mechanism. 4,516,705, Cl. 224-32.00A.

Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, to Societe Anonyme dite: L'Oreal. Hair treatment compositions based on polycationic polymers. 4,517,174, Cl. 424-62.000.

Jadwin, Thomas A.; and Rimai, Donald S., to Eastman Kodak Company. Electrostatic dry toner composition. 4,517,272, Cl. 430-110.000.

Jagisch, Frank C.: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Wagensomer, Joseph; and Jagisch, Frank C., 4,517,250, Cl. 428-483.000.

Jahel, Alfred. Collapsible display hanger for perforated display panels. 4,516,681, Cl. 211-59.100.

Jahier, Giovanni, to UNICAL S.p.A. Steel construction solid-fuel firing boiler for civil heating applications. 4,516,534, Cl. 122-15.000.

Jahn, Dieter: *See—*
Becker, Rainer; Jahn, Dieter; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,517,013, Cl. 71-98.000.

Jain, Kantilal; and Latta, Milton R., to International Business Machines Corporation. Apparatus for transformation of a collimated beam into a source of required shape and numerical aperture. 4,516,832, Cl. 350-96.240.

Janitschke, Lothar; and Hoffmann, Werner, to BASF Aktiengesellschaft. 1-Formyl-tri- and tetramethyl-cyclohex-1-en-3-one oximes. 4,517,382, Cl. 564-267.000.

Japan Pionics Co., Ltd.: *See—*
Koiso, Yasuhiko; Ohtsuka, Kenji; and Yahara, Shigeo, 4,516,564, Cl. 126-263.000.

Japan Steel Works, Ltd., The: *See—*
Fujita, Daijiro; Motoo, Akihiko; and Maki, Yoshiki, 4,516,925, Cl. 425-463.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Wada, Noriaki, 4,517,332, Cl. 524-506.000.

Jaynes, Jesse M.: *See—*
Strobel, Gary A.; Gavlak, Andrea H.; and Jaynes, Jesse M., 4,517,008, Cl. 71-77.000.

Jebbett, Norma J.: *See—*
Stott, Edward J.; Thomas, Lewis H.; and Jebbett, Norma J., 4,517,304, Cl. 436-518.000.

JENAer Glaswerk, Schott & Gen.: *See—*
Kiefer, Werner; and Stetter, Klaus, 4,516,999, Cl. 65-116.000.

Jenkins, Robert D., to Reilich, David G.; and Quinn, Jeffrey J., part interest to each. Picture frame assembly. 4,516,341, Cl. 40-152.000.

Jenkins, Stuart M.: *See—*
Wood, John; Tinson, Christopher M.; and Jenkins, Stuart M., 4,516,899, Cl. 414-330.000.

Jennie, Fred, to Weatherby, Inc. Mechanism providing positive safety with bolt locked. 4,516,466, Cl. 89-145.000.

Jennmar Corporation: *See—*
Calandra, Frank, Jr., 4,516,885, Cl. 405-261.000.

Jensen, N. Due; and Nielsen, K. Frank, to Grundfos A/S. Pumping plant. 4,516,915, Cl. 417-365.000.

Jensen, Philip W.: *See—*
Stawski, Karl-Heinz; and Jensen, Philip W., 4,516,561, Cl. 126-25.00B.

Jepsen, John C., to Shell Oil Company. Two-phase flow splitter. 4,516,986, Cl. 55-18.000.

Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, to Centre National de la Recherche Scientifique. Method of increasing the supraconductive critical temperature in quasi unidimensional organic supraconductors and new supraconductive compounds thus obtained. 4,517,121, Cl. 260-239.00R.

Jodden, Klaus; Heymer, Gero; and Stephan, Hans-Werner, to Hoechst Aktiengesellschaft. Process for making titanium dioxide concentrates. 4,517,163, Cl. 423-75.000.

Johnson, Daniel D.; and Fritz, Herbert L., to Du Pont de Nemours, E. I., and Company. Process for forming conductive through-holes through a dielectric layer. 4,517,050, Cl. 156-643.000.

Johnson, David A., to J.F.S., Inc. Boat plug reminder and method for use thereof. 4,516,515, Cl. 114-197.000.

Johnson & Johnson: *See—*
Popescu, Miron; and Gunsalus, Edward K., 4,517,167, Cl. 423-245.000.

Johnson Matthey Public Limited Company: *See—*
Russell, Michael J. H.; and Murrer, Barry A., 4,517,390, Cl. 568-881.000.

Johnson, Robert S.; Fletcher, Paul E.; Benjamin, William S.; and Zsitvay, John I., to Lighthouse for the Blind, Incorporated, The. Angled roller mop. 4,516,287, Cl. 15-119.00A.

Johnson Service Company: *See—*
Dietz, Gerald E., 4,516,930, Cl. 431-26.000.

Johnston, David B. R., to Merck & Co., Inc. 2-Amino-3,5-dicyano-6-(substituted)pyrazine antimicrobial compounds. 4,517,186, Cl. 514-255.000.

Johnston, Harold; and Benoit, Richard E., to Northern Telecom Limited. Entrance terminal for telecommunications cables. 4,516,818, Cl. 339-36.000.

Jonelis, Robert E. Apparatus and method for straightening electrostatic precipitator collector plates. 4,516,992, Cl. 55-145.000.

Jones, Herbert, administrator: *See—*
Glamkowski, Edward J.; Jones, Michael C., deceased; and Jones, Herbert, administrator, 4,517,311, Cl. 514-462.000.

Jones, J. Phillip. Fish growing system. 4,516,528, Cl. 119-3.000.

Jones, Michael C., deceased: *See—*
Glamkowski, Edward J.; Jones, Michael C., deceased; and Jones, Herbert, administrator, 4,517,311, Cl. 514-462.000.

Jones, Randy T.: *See—*
Lee, Patrick G.; Bean, Donald E.; and Jones, Randy T., 4,517,567, Cl. 343-17.700.

Jones, Ronald: *See—*
Drake, Cyril F.; and Jones, Ronald, 4,517,006, Cl. 71-64.110.

Jorgensen, Jorgen A.: *See—*
Ishii, Thomas K.; and Jorgensen, Jorgen A., 4,517,432, Cl. 219-10.55F.

Joy Manufacturing Company: *See—*
Babbitt, Brett A.; and Le, Tri C., 4,516,752, Cl. 251-214.000.

Junkosha Co., Ltd.: *See—*
Suzuki, Hirosuke; and Sato, Yoshiaki, 4,517,247, Cl. 428-421.000.

Jutand, Anny: *See—*
Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, 4,517,061, Cl. 204-59.00R.

Kabushiki Kaisha Daini Seikosha: *See—*
Yoshida, Yosuke, 4,516,862, Cl. 368-155.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Fukuda, Masao, 4,516,644, Cl. 177-25.000.
Nakagawa, Yukio, 4,516,643, Cl. 177-1.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kitagawa, Shinichi, 4,517,649, Cl. 364-472.000.
Sato, Yoshito; Yato, Tokuhiro; Maeo, Hidemi; and Tsutsumi, Yoshio, 4,516,469, Cl. 91-362.000.
Uchimura, Toshio, 4,516,755, Cl. 254-344.000.

Kabushiki Kaisha Meidensha: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,517,645, Cl. 364-424.000.

Kabushiki Kaisha Miyano Tekkosho: *See—*
Takakuwa, Shilo; Kobayashi, Isao; Takahashi, Tastuo; and Imamizu, Shige, 4,516,311, Cl. 29-568.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Honji, Kunihiko; and Aoki, Toshiyuki, 4,517,504, Cl. 318-568.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Mukaiyama, Fumiaki, 4,517,519, Cl. 329-126.000.

Kabushiki Kaisha Toshiba: *See—*
Chiba, Mitsuyoshi, 4,516,408, Cl. 62-238.700.
Hiroi, Kazuo; and Kojima, Kenji, 4,516,929, Cl. 431-12.000.

Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,517,645, Cl. 364-424.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Mimura, Nobuharu; Yoshida, Kazunori; Kawabata, Susumu; and Hasegawa, Junzo, 4,516,611, Cl. 139-452.000.

Kabushikigaisha Kyowa Chuzosho: *See—*
Tadashi, Ii; and Saichi, Egusa, 4,517,018, Cl. 75-129.000.

Kagawa, Nobuaki; Fujimori, Noboru; Tanaka, Shigeo; and Onodera, Kaoru, to Konishiroku Photo Ind. Co., Ltd. Light-sensitive silver halide photographic material. 4,517,284, Cl. 430-591.000.

Kaibel, Gerd: *See—*
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

Kaichi, Higuchi: *See—*
Hirobumi, Saito; Kiyoshi, Ito; Kaichi, Higuchi; and Masao, Yamamoto, 4,516,944, Cl. 441-40.000.

Kajaani Oy: *See—*
Kela, Heino; and Laspa, Matti, 4,516,732, Cl. 241-24.000.

Kakeba, Masakatsu: *See—*
Umetsu, Yoshihiro; Muraishi, Masakazu; Ito, Osamu; and Kakeba, Masakatsu, 4,516,788, Cl. 280-6.00R.

Kaken Kagaku Kabushiki Kiasha: *See—*
Isono, Kiyoshi; Nakamura, Goto; and Fujita, Shigeo, 4,517,178, Cl. 424-122.000.

Kakimoto, Atsushi; and Takita, Masaaki, to Matsushita Electric Industrial Co., Ltd. Recording paper clamping apparatus. 4,517,575, Cl. 346-138.000.

Kako, Mitumasa; and Ishigami, Michifumi, to Brother Kogyo Kabushiki Kaisha. Desk apparatus. 4,516,508, Cl. 108-7.000.

Kakuhashi, Takeshi; Tahara, Hiroshi; and Mori, Yoshihisa, to Nitto Electric Industrial Co., Ltd. Resistor sheet input tablet for the input of two-dimensional patterns. 4,517,546, Cl. 338-320.000.

Kakuta, Yoshiyuki: *See—*
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,516,727, Cl. 239-333.000.

Kalama Chemical, Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,517,369, Cl. 546-345.000.

Kalina, Robert F.: *See—*
Gliwa, William F.; and Kalina, Robert F., 4,516,737, Cl. 242-77.000.

Kaljee, Jan; Lalor, Leo J.; Pagani, Sergio M.; and Robinson, Frederick P. A., to Nasionale Sweisware (Eiendoms) Beperk. Welding electrode. 4,517,441, Cl. 219-146.230.

Kaltz, Milton C.; Alexander, Michael P.; and Cichoski, Richard, to ASC Incorporated. Vehicle with a convertible top. 4,516,803, Cl. 296-107.000.

Kamanaka, Tamaki: *See—*
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Kamanaka, Tamaki; and Taniguchi, Hiroshi, 4,517,312, Cl. 521-47.000.

Kamata, Tsutomu: *See—*
Masuno, Katsuyoshi; and Kamata, Tsutomu, 4,516,557, Cl. 123-619.000.

Kamei, Tsuneaki: *See—*
Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, 4,517,444, Cl. 219-216.000.

Kampe, Wolfgang: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,517,183, Cl. 514-183.000.

Kamyr, Inc.: *See—*
Richter, Ole J.; and Richter, Johan C. F. C., 4,516,887, Cl. 406-63.000.

Kanda, Katsumi; Okamura, Takaaki; Minamigi, Takashi; Inui, Tsuneo; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Method for production of metal sheet covered with polyester resin film. 4,517,255, Cl. 428-626.000.

Kanda Tushin Kogyo: *See—*
Nagasaki, Yoshio, 4,517,409, Cl. 179-81.00C.

Kanda, Yoshiro; Noguchi, Hironori; and Ikeda, Tadashi, to Mitutoyo Mfg. Co., Ltd. Touch signal probe. 4,516,327, Cl. 33-169.00R.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Mitani, Toragoro; Yasui, Hideo; and Morikawa, Hisashi, 4,517,344, Cl. 526-62.000.
Sakata, Yoshio, 4,517,539, Cl. 335-302.000.

Kaneko, Hiroshi: *See—*
Saigo, Hiroshi; and Kaneko, Hiroshi, 4,516,951, Cl. 446-338.000.

Kani, Hirofumi. Device for guiding a player in performance of a keyboard instrument. 4,516,465, Cl. 84-470.00R.

Kano, Seishi: *See—*
Sonoda, Sakae; Nagae, Yoshio; and Kano, Seishi, 4,517,029, Cl. 148-6.15Z.

Kanotz, William M., to AT&T Technologies, Inc. Hybrid apparatus for insulating conductors. 4,516,922, Cl. 425-113.000.

Kao Corporation: *See—*
Iwabuchi, Hidetoshi; and Okumura, Takeo, 4,517,175, Cl. 424-70.000.

Kapp, David C.: *See—*
Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, 4,517,322, Cl. 523-501.000.

Kappl, Gerhard; Kranner, Helmut; and Lihl, Reinhard, to C. Reichert Optische Werke. Drive-control system for a microtome, in particular an ultramicrotome. 4,516,459, Cl. 83-713.000.

Kardinal, Hans-Joachim, to Siemens Aktiengesellschaft. Pneumatic dispatch system having a plurality of forwarding tube paths and an arrangement to transfer between two tube paths. 4,516,888, Cl. 406-182.000.

Karjalainen, Arto J.: *See—*
Kurkela, Kauko O. A.; and Karjalainen, Arto J., 4,517,198, Cl. 514-400.000.

Karl Meinig, KG: *See—*
Meinig, Manfred, 4,516,797, Cl. 285-405.000.

Karloske, Joan E.: *See—*
Cordts, Howard P.; and Karloske, Joan E., 4,517,326, Cl. 524-310.000.

Karlson, Eskil L. Sterilizer. 4,517,159, Cl. 422-20.000.

Karlsson, Harry L., to Santrade Ltd. Rotary drill bit. 4,516,640, Cl. 175-227.000.

Kashihara, Tomio; Tsuruta, Toshiro; Yamaguchi, Masayoshi; Yokoi, Kiyotachi; and Suzuki, Etsuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for conveying a lead frame mounting semiconductor pellets. 4,516,673, Cl. 198-341.000.

Katalco Corporation: *See—*
Clements, Porter, 4,517,077, Cl. 208-216.00R.

Kataoka, Isao: *See—*
Yamanaka, Koichi; Gotoh, Tetsuro; Aoki, Masanori; Kataoka, Isao; and Nishiwaki, Shunro, 4,517,091, Cl. 210-512.100.

Katila, Michael J.: *See—*
Chazan, David; and Katila, Michael J., 4,517,449, Cl. 219-549.000.

Kato, Manabu: *See—*
Aoyoma, Shunichi; and Kato, Manabu, 4,516,542, Cl. 123-90.160.

Kato, Toshio: *See—*
Shimizu, Shigeo; and Kato, Toshio, 4,517,257, Cl. 428-694.000.

Katsumata, Tsutomu; and Yokota, Masahisa, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for methylating the ortho position of a phenol. 4,517,389, Cl. 568-804.000.

Kaufman, Jack W.; and Gardner, Donald E. Medical device. 4,516,970, Cl. 604-270.000.

Kaumeheiwa, Algen K.: *See—*
Fizyta, Wojciech L.; and Kaumeheiwa, Algen K., 4,516,288, Cl. 15-250.040.

Kawabata, Susumu: *See—*
Mimura, Nobuharu; Yoshida, Kazunori; Kawabata, Susumu; and Hasegawa, Junzo, 4,516,611, Cl. 139-452.000.

Kawahito, Takashi; Himukashi, Yoshinori; and Yamada, Tetsuo, to UBE Industries, Ltd. Grinding amorphous silicon nitride powder prior to heating to produce crystalline silicon nitride powder. 4,517,168, Cl. 423-344.000.

Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, to Hitachi, Ltd. Thermal printhead. 4,517,444, Cl. 219-216.000.

Kawai, Hisasi: *See—*
Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, 4,517,648, Cl. 364-431.010.

Kawakita, Takeshi: *See—*
Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, 4,517,299, Cl. 435-197.000.

Kawamata, Masaru: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,517,645, Cl. 364-424.000.

Kawano, Takashi: *See—*
Tatsumi, Hisao; and Kawano, Takashi, 4,517,445, Cl. 219-297.000.

Kawasaki, Kikuo; and Sano, Tomomi, to Fuji Electric Company, Ltd. Automatic vending machine. 4,517,651, Cl. 364-479.000.

Kawasaki Steel Corporation: *See—*
Goto, Tomomichi; Iwamoto, Katsuo; Kobayashi, Yoshinori; and Matoba, Isao, 4,517,032, Cl. 148-111.000.
Takasaki, Junsuke; Sato, Hirotake; and Yasuda, Akira, 4,517,031, Cl. 148-12.00C.

Kawashima, Ryozo, to Nihon Electric Co. Ltd. Air cleaning apparatus. 4,516,991, Cl. 55-124.000.

Kayser, Thomas: *See—*
Eiermann, Kurt; and Kayser, Thomas, 4,516,872, Cl. 403-24.000.

Kee, Richard C.; and Norris, Philip R., to Polaroid Corporation. Film cassette usable as processing chamber. 4,516,844, Cl. 354-275.000.

Keebler Company: *See—*
Thornton, Ian; DeWitt, Kenneth W.; and Robertson, Simon A., 4,517,209, Cl. 426-383.000.

Keeney, Keith; and Wehner, Dennis J., to Schroeder Brothers Corporation. Method and apparatus for controlling a rotary percussive hydraulic drill. 4,516,467, Cl. 91-31.000.

Keil, Michael: *See—*
Becker, Rainer; Jahn, Dieter; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,517,013, Cl. 71-98.000.

Keitel, Murray: *See—*
Gravina, Anthony N.; Keitel, Murray; Weiss, Harvey; Wiley, Joseph N.; and Charland, Edmund G., Jr., 4,517,161, Cl. 422-95.000.

Kela, Heino; and Laspa, Matti, to Kajaani Oy. Method and apparatus for comminuting stumps. 4,516,732, Cl. 241-24.000.

Keller, Patrick N.; and Seal, Clinton D., to United States of America, Navy. Video multiplexer. 4,517,593, Cl. 358-107.000.

Kelley, Fred W., Jr., to General Electric Company. Line-commutated converter circuit. 4,517,635, Cl. 363-136.000.

Kellogg, Michael S., to Pfizer Inc. Penicillanic acid derivative. 4,517,126, Cl. 260-245.20R.

Kemp, Allan E.: *See—*
Kemp, Gail W., 4,516,921, Cl. 418-141.000.

Kemp, Gail W., to Kemp, Vida M.; Carter, Phyllis J.; Kemp, Ruth E.; and Kemp, Allan E. End seals for a rotary machine. 4,516,921, Cl. 418-141.000.

Kemp, Ruth E.: *See—*
Kemp, Gail W., 4,516,921, Cl. 418-141.000.

Kemp, Vida M.: *See—*
Kemp, Gail W., 4,516,921, Cl. 418-141.000.

Kemper, Christian T.; Osborne, Robert L.; and Bellows, James C., to Westinghouse Electric Corp. Diagnostic system and method. 4,517,468, Cl. 290-52.000.

Kempter, Fritz E.: *See—*
Schupp, Eberhard; and Kempter, Fritz E., 4,517,343, Cl. 525-488.000.

Kennedy, Warren C.: *See—*
Scarton, Henry A.; DiBianca, John A.; Lacey, James A.; and Kennedy, Warren C., 4,516,658, Cl. 181-208.000.

Kernforschungszentrum Karlsruhe G.m.b.H.: *See—*
Szelagowski, Peter; and Motzkau, Siegfried, 4,516,521, Cl. 118-50.000.

Kerotest Manufacturing Corp.: *See—*
Owoc, James R., 4,516,754, Cl. 251-335.00B.

Kerr, George T.: *See—*
Dessau, Ralph M.; and Kerr, George T., 4,517,075, Cl. 208-111.000.

Kerry, John C.; and Weighton, David M., to FBC Limited. Synergistic compositions and methods of combating insects employing amitraz and cypermethrin. 4,517,201, Cl. 514-521.000.

Kersten, Jean; and Mathias, Jean M., to Baxter Travenol Laboratories, Inc. Low volume, large area filters for IV or blood filtration. 4,517,090, Cl. 210-493.200.

Keutzer, Larry L.: *See—*
Gault, Roger B.; and Keutzer, Larry L., 4,517,465, Cl. 250-492.200.

Key Medical, Inc.: *See—*
Saron, John R., 4,517,499, Cl. 315-362.000.

Kiefer, Werner; and Stetter, Klaus, to JENAer Glaswerk, Schott & Gen. Process for the thermal tempering of glass. 4,516,999, Cl. 65-116.000.

Kieffer, Eduard P.: *See—*
Hoek, Arend; and Kieffer, Eduard P., 4,517,396, Cl. 585-415.000.

Kieta, Harold J.: *See—*
Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., 4,517,106, Cl. 252-79.400.

Kijima, Yasuhiko: *See—*
Isshiki, Tomiya; Nawata, Takanari; Kijima, Yasuhiko; Ito, Akira; and Watanabe, Takayuki, 4,517,377, Cl. 560-261.000.

Kik, Leendert A.; and Schuurink, Pieter H. J., to Akzo nv. Process for applying a coating composition to a substrate, and the coated substrate thus obtained. 4,517,248, Cl. 428-457.000.

Kikuchi, Yoshiki: *See—*
Murayama, Tomio; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,517,560, Cl. 340-790.000.

Kikuya, Satoshi: *See—*
Shibaike, Narito; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; and Zaitsu, Osamu, 4,517,613, Cl. 360-85.000.

Kilbourn, Harlan C.: *See—*
Bennett, Ross L.; Price, Robert B.; Springen, Clyde H.; and Kilbourn, Harlan C., 4,517,652, Cl. 364-513.000.

Kim, Wontaik; and Azad, Farzin H., to General Electric Company. Non-contact sensing apparatus and method for polymer melt temperature profile determination. 4,516,864, Cl. 374-130.000.

Kimball, Michael E.: *See—*
Parker, Dane K.; Kuczkowski, Joseph A.; and Kimball, Michael E., 4,517,331, Cl. 524-451.000.

Kimber, Ian D.: *See—*
Clark, Duncan G. D.; Kimber, Ian D.; and May, Roderick G., 4,517,679, Cl. 375-37.000.

Kimura, Katsuhiko: *See—*
Shioya, Toshio; and Kimura, Katsuhiko, 4,516,555, Cl. 123-470.000.

Kimura, Kenji, to Olumpus Optical Company Limited. Video recording system. 4,517,611, Cl. 360-33.100.

King, Lionel W. Assembly system. 4,516,376, Cl. 52-648.000.

Kington, Alan D.: *See—*
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,516,621, Cl. 164-339.000.

Kinney, Daniel C., to United States of America, Air Force. Nickel-cadmium battery conditioner and tester apparatus. 4,517,517, Cl. 324-433.000.

Kinoda, Seiji: *See—*
Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, 4,517,282, Cl. 430-399.000.

Kintner, Michael H., to Medtech Plastics, Inc. Control syringe. 4,516,969, Cl. 604-187.000.

Kirchner, Georg, to Sanimed Vertrieb AG. Tourniquet strap or band for restricting blood flow, especially for taking blood samples. 4,516,576, Cl. 128-327.000.

Kirschenman, Duane L., to AT&T Technologies, Inc. Methods of processing substrates. 4,516,318, Cl. 29-846.000.

Kirtland, John A.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.

Kishi, Takao: *See—*
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,516,727, Cl. 239-333.000.

Kishimoto, Keiichi: *See—*
Harashima, Asao; Nakamura, Takashi; and Kishimoto, Keiichi, 4,517,150, Cl. 264-300.000.

Kisler, Semyon, to Polaroid Corporation. Method and apparatus for uniformly charging a moving web. 4,517,143, Cl. 264-22.000.

Kisner, Howard D., to General Motors Corporation. Magnetron sputtering cathode assembly and magnet assembly therefor. 4,517,070, Cl. 204-298.000.

Kitagawa, Shinichi, to Kabushiki Kaisha Komatsu Seisakusho. Automatic die-interchanging control system of a press machine. 4,517,649, Cl. 364-472.000.

Kitamura, Takashi, to Canon Kabushiki Kaisha. Electrostatic recording apparatus forming small non-recording regions in a recording field. 4,517,579, Cl. 346-160.000.

Kitano, Kyozo: *See—*
Ando, Hideo; Kiyama, Kentaro; and Kitano, Kyozo, 4,517,113, Cl. 252-353.000.

Kiyama, Kentaro: *See—*
Ando, Hideo; Kiyama, Kentaro; and Kitano, Kyozo, 4,517,113, Cl. 252-353.000.

Kiyokane, Jerrilyn C., to Namkung Promotions Inc. Advertising article and method of making same. 4,516,793, Cl. 283-103.000.

Kiyoshi, Ito: *See—*
Hirobumi, Saito; Kiyoshi, Ito; Kaichi, Higuchi; and Masao, Yamamoto, 4,516,944, Cl. 441-40.000.

Kizawa, Hidenori; Fujiyama, Norimasa; Kobayashi, Jitsuo; and Ito, Akinori, to Nippon Soda Co. Ltd. Mucous membrane-adhering film preparation and process for its preparation. 4,517,173, Cl. 424-16.000.

Klecka, Miro E., to Shell Oil Company. Removal of H_2S from sour gas streams with subsequent sulfur separation. 4,517,170, Cl. 423-573.00R.

Klein, Joseph T.: *See—*
Effland, Richard C.; Klein, Joseph T.; and Hamer, R. Richard L., 4,517,195, Cl. 514-413.000.

Klein, Klaus-Walter; Bocker, Jurgen; Glotz, Gerhard; and Gersbach, Klaus, to Rheinmetall GmbH. Impact projectile assembly. 4,516,502, Cl. 102-523.000.

Klein, Rudolf: *See—*
Dettke, Manfred; and Klein, Rudolf, 4,517,060, Cl. 204-44.000.

Klimeck, Hugo; and Wilken, Gerhard, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Device for interconnecting two sections of a longwall mining machine track. 4,516,809, Cl. 299-43.000.

Klinner, Wilfred E., to National Research Development Corporation. Apparatus and method of picking up and conveying cut crop. 4,516,390, Cl. 56-364.000.

Klockner-Humboldt-Deutz AG: *See—*
Steinbiss, Eberhard; and Herchenbach, Horst, 4,517,020, Cl. 106-100.000.

Klocksiem, Howard W. Fishing bobber. 4,516,349, Cl. 43-17.500.

Klose, Sigmar: *See—*
Scheibe, Peter; Bernt, Erich; and Klose, Sigmar, 4,517,287, Cl. 435-4.000.

Kloster, Kenneth D. Spring compressor. 4,516,303, Cl. 29-227.000.

Knapp, John F.: *See—*
Gruber, Robert J.; Knapp, John F.; and Bolte, Steven B., 4,517,268, Cl. 430-39.000.

Knight Manufacturing Company, Inc.: *See—*
Firmin, Herman P., 4,516,352, Cl. 43-42.260.

Knoll International, Inc.: *See—*
Unger, Goetz W., 4,516,305, Cl. 29-448.000.

Knopf, William H., to American Hoechst Corporation. Extrusion die and process for thickness control. 4,517,145, Cl. 264-40.200.

Knowles, Terrance: *See—*
Deitch, Leonard; and Knowles, Terrance, 4,517,559, Cl. 340-712.000.

Knox, David J. Apparatus for wetting apertured discs. 4,516,523, Cl. 118-500.000.

Kobayashi, Isao: *See—*
Takakuwa, Shilo; Kobayashi, Isao; Takahashi, Tastuo; and Imamizu, Shige, 4,516,311, Cl. 29-568.000.

Kobayashi, Jitsuo: *See—*
Kizawa, Hidenori; Fujiyama, Norimasa; Kobayashi, Jitsuo; and Ito, Akinori, 4,517,173, Cl. 424-16.000.

Kobayashi, Kazuo: *See—*
Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, 4,517,087, Cl. 210-396.000.

Kobayashi, Masatsune; Haruta, Masahiro; Eida, Tsuyoshi; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Recording medium and ink jet recording paper. 4,517,244, Cl. 428-342.000.

Kobayashi, Satoru; Masaki, Mikio; Sakuno, Hideaki; Shimizu, Keiichi; and Fukasawa, Takeshi, to Kokusan Kinzoku Kogyo Kabushiki Kaisha. Steering lock for automobiles. 4,516,415, Cl. 70-252.000.

Kobayashi, Yoshikata, to Tokyo Shibaura Denki Kabushiki Kaisha. Hydraulically-operated breaking device. 4,516,472, Cl. 91-392.000.

Kobayashi, Yoshinori: *See—*
Goto, Tomomichi; Iwamoto, Katsuo; Kobayashi, Yoshinori; and Matoba, Isao, 4,517,032, Cl. 148-111.000.

Kobayashi, Yukio: *See—*
Sugitani, Yuji; and Kobayashi, Yukio, 4,517,438, Cl. 219-125.120.

Kober AG: *See—*
Huber, Reinhold; and Koster, Waldemar, 4,516,284, Cl. 14-16.500.

Kobler, Ingo, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Rotary printing machine output speed matching system for sheet folder. 4,516,759, Cl. 270-12.000.

Kobrehel, Gabrijela; and Djokic, Slobodan, to Sour Pliva farmaceutska, kemijska prehrambena i kozmeticka industrija, n.sol.o, 11-Methyl-11-aza-4-0-cladinosyl-6-0-desosaminyl-15-ethyl-7,13,14-trihydroxy-3,5,7,9,12,14-hexamethyl-oxacyclopentadecane-2-one and derivatives thereof. 4,517,359, Cl. 536-7.400.

Kocher, Erich J., to Vilter Manufacturing Corporation. Apparatus for separating liquid droplets from gas. 4,516,994, Cl. 55-337.000.

Kockums Cancar, Corp.: *See—*
Gaitten, Walden M., deceased, 4,516,613, Cl. 144-208.00E.

Koeppen, Peter L.: *See—*
Solimeno, Duane; Koeppen, Peter L.; Rogers, Gerald; and Brown, Sammy K., 4,517,656, Cl. 364-900.000.

Koga, Masao: *See—*
Takahashi, Kohki; Kondoh, Takeo; Koga, Masao; and Nishiwaki, Kenichiro, 4,517,348, Cl. 526-273.000.

Koga, Yasunori: *See—*
Hamano, Hideo; and Koga, Yasunori, 4,516,443, Cl. 74-711.000.

Kohama, Tokio: *See—*
Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, 4,517,648, Cl. 364-431.010.

Koiso, Yasuhiko; Ohtsuka, Kenji; and Yahara, Shigeo, to Japan Pionics Co., Ltd. Heat generating body. 4,516,564, Cl. 126-263.000.

Koito, Miyoko: *See—*
Koito, Toshio; Koito, Tetsuo; and Koito, Miyoko, 4,516,586, Cl. 131-246.000.

Koito, Tetsuo: *See—*
Koito, Toshio; Koito, Tetsuo; and Koito, Miyoko, 4,516,586, Cl. 131-246.000.

Koito, Toshio; Koito, Tetsuo; and Koito, Miyoko, to Yugen-gaisha Koito-Seisakusho; Yugen-gaisha Koito-Seimitsu; and Yugen-gaisha Koito-Denki. Reamer for pipe. 4,516,586, Cl. 131-246.000.

Kojima, Kenji: *See—*
Hiroi, Kazuo; and Kojima, Kenji, 4,516,929, Cl. 431-12.000.

Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, to Laurel Bank Machine Co., Ltd. Note transfer mechanism in automatic money depositing and disbursing machine. 4,517,451, Cl. 235-379.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Satoru; Masaki, Mikio; Sakuno, Hideaki; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,516,415, Cl. 70-252.000.

Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., to Allied Corporation. N-acyl phosphoric triamide urease inhibitors and urease inhibited urea based fertilizer compositions. 4,517,003, Cl. 71-28.000.

Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., to Allied Corporation. Aminophenol urease inhibitors and urease inhibited urea based fertilizer compositions. 4,517,005, Cl. 71-28.000.

Kolc, Jaroslav F.: *See—*
Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., 4,517,002, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,004, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,007, Cl. 71-28.000.

Komaroff, Iwan: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.

Komoto, Nobuo: *See—*
Takematsu, Tetsuo; Nakaya, Mitihiko; Moriyasu, Koichi; and Komoto, Nobuo, 4,517,381, Cl. 564-207.000.

Kondo, Koichi: *See—*
Iwasa, Susumu; Yoshida, Isamu; and Kondo, Koichi, 4,517,290, Cl. 435-7.000.

Kondo, Kozo: *See—*
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.

Kondo, Yoshikazu: *See—*
Kanda, Katsumi; Okamura, Takaaki; Minamigi, Takashi; Inui, Tsuneo; and Kondo, Yoshikazu, 4,517,255, Cl. 428-626.000.

Kondoh, Takeo: *See—*
Takahashi, Kohki; Kondoh, Takeo; Koga, Masao; and Nishiwaki, Kenichiro, 4,517,348, Cl. 526-273.000.

Konishiroku Photo Ind. Co., Ltd.: *See—*
Kagawa, Nobuaki; Fujimori, Noboru; Tanaka, Shigeo; and Onodera, Kaoru, 4,517,284, Cl. 430-591.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Tamura, Takashi, 4,516,764, Cl. 271-34.000.

Konomi, Masao, to Pan Communications, Inc. Acceleration vibration detector. 4,516,428, Cl. 73-585.000.

Konomi, Toshio: *See—*
Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, 4,517,299, Cl. 435-197.000.

Kopfer, Rudolph J. Wet-dry compartmental syringe. 4,516,967, Cl. 604-87.000.

Koponen, Martti: *See—*
Hujala, Jorma; and Koponen, Martti, 4,517,054, Cl. 162-301.000.

Kopp, Harold W. Rebound sports training apparatus. 4,516,769, Cl. 273-1.00B.

Korczak, Alexander; and Levis, William W., Jr., to BASF Wyandotte Corporation. Alkylene oxide adducts of aniline having reduced viscosity. 4,517,383, Cl. 564-443.000.

Koriyama, Masayuki: *See—*
Onishi, Kimimasa; Takahashi, Takao; and Koriyama, Masayuki, 4,516,610, Cl. 139-435.000.

Korth, Hans E., to International Business Machines Corporation. Method and apparatus for determining the polarization state of a light wave field. 4,516,855, Cl. 356-367.000.

Kosik, Franz: *See—*
Worner, Gunter; Kosik, Franz; and Gosele, Hartmut, 4,516,955, Cl. 464-89.000.

Koskovich, Jerome E. Conveyor feed mechanism. 4,516,675, Cl. 198-654.000.

Koss Corporation: *See—*
Baran, Michael S.; Besasie, Joseph C.; Warren, Wayne L.; and Montgomery, Allen W., 4,517,418, Cl. 179-156.00R.

Kosten, Richard B., to GTE Communication Systems Corp. Cantilever spring telephone hookswitch adapted for printed wiring card mounting. 4,517,419, Cl. 179-159.000.

Koster, Waldemar: *See—*
Huber, Reinhold; and Koster, Waldemar, 4,516,284, Cl. 14-16.500.

Kostylev, Alexandr D.; Syryamin, Jury N.; Smolyanitsky, Boris N.; Boginsky, Vladimir P.; and Terskov, Alexei D. Rod-clamping means of a percussive air tool for driving into the ground and removing therefrom rod-like pieces. 4,516,662, Cl. 173-53.000.

Koyama, Hiroyasu; Tsuji, Masahiro; and Suzuki, Yoshikuni, to Nisshin Flour Milling Co., Ltd. Isocarbostyril derivative. 4,517,365, Cl. 546-142.000.

Kozol, Edward J.: *See—*
Fotiadis, Emanuel; Kozol, Edward J.; Leung, Tak L.; and Paul, Robert J., 4,516,678, Cl. 206-444.000.

Kracke, Alan G.: *See—*
Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., 4,517,041, Cl. 156-155.000.

Krahler, Stanley E.; and Remington, William R., to Du Pont de Nemours, E. I., and Company. Manufacture of chloromethyl-substituted polyfluoroalkyl esters. 4,517,376, Cl. 560-87.000.

Krahmer, Hansjorg: *See—*
Skotsch, Carlo; Baumert, Dietrich; Krahmer, Hansjorg; and Arndt, Friedrich, 4,517,367, Cl. 546-276.000.

Kranner, Helmut: *See—*
Kappl, Gerhard; Kranner, Helmut; and Lihl, Reinhard, 4,516,459, Cl. 83-713.000.

Krasznai, Charles Z.; and Norwood, Richard L., to Black & Decker Inc. Electric toaster oven broiler control. 4,517,452, Cl. 219-413.000.

Krauser, Christopher P., to Ohio Table Pad Company, The. Table pad interlock assembly. 4,517,232, Cl. 428-57.000.

Krautkramer GmbH: *See—*
Pieper, Kurt; and Scharpenberg, Rainer, 4,517,152, Cl. 376-252.000.

Krebs, Jay: *See—*
Freeburg, Thomas A.; and Krebs, Jay, 4,517,669, Cl. 370-82.000.

Krein, Reuben. Free standing, waterproof lining for truck industry. 4,516,906, Cl. 414-786.000.

Kremer, Henry A. F. L.: *See—*
Cukier, Samuel; and Kremer, Henry A. F. L., 4,517,072, Cl. 208-45.000.

Kress, Jack L., to Oscar Mayer Foods Corporation. Method for processing an avian carcass. 4,517,207, Cl. 426-315.000.

Kreutner, William; Green, Michael J.; Shue, Ho-Jane; and Saksena, Anil K., to Schering-Plough Corporation. Method for treating allergic reactions with forskolin. 4,517,200, Cl. 514-455.000.

Krinickas, Alexander, Jr.: *See—*
Aleem, Mohd A.; and Krinickas, Alexander, Jr., 4,517,479, Cl. 310-54.000.

Kroczynski, Patrice, to Inro France. Hand-secured pushbutton control device. 4,517,424, Cl. 200-52.00R.

Krude, Werner, to Uni-Cardan Aktiengesellschaft. Sealing boot for universal joint. 4,516,959, Cl. 464-175.000.

Kubat, James J.: *See—*
Hicks, John E.; and Kubat, James J., 4,516,638, Cl. 172-22.000.

Kubo, Keiji: *See—*
Hirooka, Masaaki; Kubo, Keiji; and Yoshihara, Toshiyuki, 4,517,271, Cl. 430-94.000.

Kubochi, Yoshiaki: *See—*
Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, 4,517,299, Cl. 435-197.000.

Kuczkowski, Joseph A.: *See—*
Parker, Dane K.; Kuczkowski, Joseph A.; and Kimball, Michael E., 4,517,331, Cl. 524-451.000.

Kuhlein, Klaus: *See—*
Becherer, Johannes; Kuhlein, Klaus; and Kussmaul, Ulrich, 4,517,370, Cl. 548-217.000.

Kukes, Simon G.; and Banks, Robert L., to Phillips Petroleum Co. Olefin metathesis and catalyst. 4,517,401, Cl. 585-645.000.

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,516,430, Cl. 73-727.000.

Kumagai, Naotake; Tatemoto, Minoru; Itoh: Yoji; and Inuzuka, Tokushige, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the rolling of an engine. 4,516,545, Cl. 123-192.00R.

Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Kamanaka, Tamaki; and Taniguchi, Hiroshi, to Toyo Rubber Chemical Industry Co., Ltd. Process for regenerating resin. 4,517,312, Cl. 521-47.000.

Kunde, Klaus; and Stohr, Frank-Michael, to Bayer Aktiengesellschaft. Symmetrical bis-(triazinyamino phenyl azo acetoacetanilide) dyestuffs. 4,517,357, Cl. 534-605.000.

Kunz, Walter; and Eckhardt, Wolfgang, to Ciba-Geigy Corporation. Azolylmandelic acid derivatives and use thereof for controlling microorganisms. 4,517,194, Cl. 514-184.000.

Kuo, Tsung H. Refuse incineration system. 4,516,511, Cl. 110-346.000.

Kupcikevicius, Vytautas, to Union Carbide Corporation. Apparatus for stuffing large meat articles. 4,516,387, Cl. 53-530.000.

Kureha Kaguku Kogyo Kabushiki Kaisha: *See—*
Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, 4,517,397, Cl. 585-428.000.

Kurkela, Kauko O. A.; and Karjalainen, Arto J., to Farmos Group Ltd. Diuretic imidazole derivatives. 4,517,198, Cl. 514-400.000.

Kurosawa, Ryoichi: *See—*
Uchino, Hiroshi; Nakajima, Kihei; and Kurosawa, Ryoichi, 4,517,636, Cl. 363-138.000.

Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Economical transducer apparatus for use in the medical field. 4,516,430, Cl. 73-727.000.

Kuse, Kazuki: *See—*
Yoshida, Hiroshi; Akashi, Shunji; and Kuse, Kazuki, 4,516,304, Cl. 29-408.000.

Kussmaul, Ulrich: *See—*
Becherer, Johannes; Kuhlein, Klaus; and Kussmaul, Ulrich, 4,517,370, Cl. 548-217.000.

Kuttner, Thomas: *See—*
Buck, Rainer; Kuttner, Thomas; Piwonka, Fridolin; and Wessel, Wolf, 4,516,550, Cl. 123-357.000.

Kuwayama, Tetsuro; Tanaka, Nobuyoshi; and Hashimoto, Seiji, to Canon Kabushiki Kaisha. Color solid state image pick-up device. 4,517,588, Cl. 358-44.000.

Kuzma, Janusz, to Commonwealth of Australia, The. Cochlear prosthesis package connector. 4,516,820, Cl. 339-48.000.

L. Schuler GmbH: *See—*
Schneider, Franz; and Ruhl, Rolf, 4,516,447, Cl. 83-71.000.

Labib, Mohamed E.; and Wang, Chin C., to RCA Corporation. Stabilizers for CED compositions. 4,517,117, Cl. 252-511.000.

Lacey, James A.: *See—*
Scarton, Henry A.; DiBianca, John A.; Lacey, James A.; and Kennedy, Warren C., 4,516,658, Cl. 181-208.000.

Lacour, Alain P.: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.

Laemmle, Joseph T.; and Bohaychick, John, to Aluminum Company of America. Metalworking lubricant composition containing a novel substituted malonic acid diester. 4,517,105, Cl. 252-56.00R.

Laing, Karsten; Laing, Oliver; and Ludin, Ludwig. Pressureless large-area heating system. 4,516,721, Cl. 237-69.000.

Laing, Oliver: *See—*
Laing, Karsten; Laing, Oliver; and Ludin, Ludwig, 4,516,721, Cl. 237-69.000.

Lalor, Leo J.: *See—*
Kaljee, Jan; Lalor, Leo J.; Pagani, Sergio M.; and Robinson, Frederick P. A., 4,517,441, Cl. 219-146.230.

Lamb Technicon Corp.: *See—*
Brems, John H.; and Vaphiadis, John L., 4,516,504, Cl. 104-130.000.

Lambert, Francois; and Val, Christian. Process for polymerizing thermosetting resins. 4,517,356, Cl. 528-483.000.

Lambert, Phillip E. Wheeled push rake. 4,516,393, Cl. 56-400.200.

Lambertson, William A. Rotary motion damping means. 4,516,667, Cl. 188-82.340.

Lamond, Lee T. Flexible plumbing trap. 4,516,278, Cl. 4-191.000.

Lampert, Friedrich-Karl: *See—*
Luhmann, Erhard; Hoppe, Lutz; Szablikowski, Klaus; and Lampert, Friedrich-Karl, 4,517,324, Cl. 524-27.000.

Lance, Clyde E.; and Hutchison, Wanda S., to United States of America, Army. Variable optical attenuator. 4,516,827, Cl. 350-96.150.

Lance, Joseph R., to Westinghouse Electric Corp. Air motor drive for fuel cell power plant air circulator. 4,517,259, Cl. 429-26.000.

Landheer, Dolf: *See—*
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,516,847, Cl. 355-3.0TR.

Lang, Gerard: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,517,174, Cl. 424-62.000.

Lang, Robert L.: *See—*
May, Joseph R.; Petruccelli, Frank; Lang, Robert L.; and de Haan, Herman P., 4,517,231, Cl. 428-35.000.

Langenegger, Urs; Roffler, Werner; and Rutsche, Wendolin, to Embru-Werke, Mantel & Cie. Office furniture with an adjustable tabletop in modular design for setup at the work place. 4,516,509, Cl. 108-147.000.

Langer, Frantisek: *See—*
Valasek, Miloslav; Langer, Frantisek; Hradek, Jaroslav; and Seeman, Jindrich, 4,517,457, Cl. 250-239.000.

Langlitz, Karlheinz; and Schmitz, Gunter, to Mannesmann Aktiengesellschaft. Tiltable metallurgical converter having material carrying lines. 4,516,757, Cl. 266-245.000.

Langlois, Michel: *See—*
Ancher, Jean-Francois R.; Bourgery, Guy R.; Dostert, Philippe L.; Douzon, Colette A.; Guerret, Patrick G.; Lacour, Alain P.; and Langlois, Michel, 4,517,197, Cl. 514-376.000.

Langner, Carl: *See—*
Poran, Michael; Langner, Carl; and Tobiasz, Chester C., 4,516,624, Cl. 164-418.000.

Largeteau, Pierre A., to S.A. Automobiles Citroen; and Societe Automobiles Peugeot. Grinding machine. 4,516,359, Cl. 51-349.000.

Lasher, Dana A.; and Stelzenmuller, William K., to International Business Machines Corporation. Method for reducing line width variations in bilevel video images. 4,517,604, Cl. 358-262.000.

Laskaris, Evangelos T., to General Electric Company. Foam filled insert for horizontal cryostat penetrations. 4,516,404, Cl. 62-45.000.

Laskaris, Evangelos T., to General Electric Company. Supporting tie configuration for cryostat for cold shipment of NMR magnet. 4,516,405, Cl. 62-55.000.

Laspa, Matti: *See—*
Kela, Heino; and Laspa, Matti, 4,516,732, Cl. 241-24.000.

Laster, Walter R., to Borg-Warner Corporation. Power transmission chain-belt. 4,516,964, Cl. 474-245.000.

Latta, Milton R.: *See—*
Jain, Kantilal; and Latta, Milton R., 4,516,832, Cl. 350-96.240.

Lau, Alfred T. Y.: *See—*
Chow, Kwong-Wai; Lau, Alfred T. Y.; Chow, Ming-Ngar; and Lee, James S. W., 4,516,954, Cl. 446-461.000.

Launder, Richard L. Attachment assembly for excavation teeth. 4,516,340, Cl. 37-142.00A.

Laurel Bank Machine Co., Ltd.: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,517,451, Cl. 235-379.000.

Laurence, Roger F., to Reynolds & Laurence Industries Limited. Hearing aids. 4,517,415, Cl. 179-107.0FD.

LaVoie, Robert E.: *See—*
Agron, Michael H.; Buch, James R.; and LaVoie, Robert E., 4,517,557, Cl. 340-540.000.

Lawn, Richard M.: *See—*
Bock, Susan C.; and Lawn, Richard M., 4,517,294, Cl. 435-70.000.

Lawrence, Merlin, to Automated Industrial Systems. Laser marker for articles of manufacture. 4,517,436, Cl. 219-121.0LH.

Lawson, John E.; Matier, William L.; and Roth, Herbert R., to Mead Johnson & Company. 1-Pyrimidinyloxy-3-hetaryl-alkylamino-2-propanols. 4,517,188, Cl. 514-394.000.

Le Materiel de Voirie, Sarl: *See—*
Pineau, Jean, 4,516,285, Cl. 15-84.000.
Le, Tri C.: *See—*
Babbitt, Brett A.; and Le, Tri C., 4,516,752, Cl. 251-214.000.
Lechopier, Serge: *See—*
Berte , Marc; Bidard, Louis; and Lechopier, Serge, 4,517,485, Cl. 310-320.000.
Lee, James S.: *See—*
Chow, Kwong-Wai; Lau, Alfred T. Y.; Chow, Ming-Ngar; and Lee, James S. W., 4,516,954, Cl. 446-461.000.
Lee, James S. W.: *See—*
Chow, Kwong-Wai; Lau, Alfred T. Y.; Chow, Ming-Ngar; and Lee, James S. W., 4,516,954, Cl. 446-461.000.
Lee, Patrick G.; Bean, Donald E.; and Jones, Randy T., to Sperry Corporation. Radar trigger and pretrigger generator having delay sensing and compensating circuit. 4,517,567, Cl. 343-17.700.
Leeper, Marvin A.; Turner, Richard L.; and Simpkins, Terry J., to Midmark Corporation. Multi-position examination chair. 4,516,805, Cl. 297-330.000.
Leineweber, Gunter: *See—*
Warnecke, Rolf; Ruhmer, Heinz; and Leineweber, Gunter, 4,516,470, Cl. 91-374.000.
Leistner, Gerhard; Muller, Gerhard; Sell, Gunther; and Bauer, Alexander, to Hoechst Aktiengesellschaft. Process for the biological purification of waste water. 4,517,093, Cl. 210-629.000.
Leitgeb, Wilhelm; and Schonwald, Siegfried, to Siemens Aktiengesellschaft. Compressor arrangement for a heat pump installation. 4,516,912, Cl. 417-45.000.
Leitman, Ervin. Tabulated sheet protectors. 4,516,871, Cl. 402-79.000.
Le Magourou, Yves, to Societe d'Exploitation des Procedes Marechal. Make and break electrical connector. 4,516,819, Cl. 339-46.000.
Lenke, Dieter: *See—*
Schlecker, Rainer; Friedrich, Ludwig; and Lenke, Dieter, 4,517,196, Cl. 514-371.000.
Lenker, Don H.; and Nascimento, Dennis F., to United States of America, Agriculture. Wrapping machine. 4,516,385, Cl. 53-504.000.
Lennartz, Rudiger: *See—*
Romey, Ingo; and Lennartz, Rudiger, 4,517,086, Cl. 210-323.200.
Lenox Machine Company, Inc.: *See—*
Snygg, Keijo K., 4,516,735, Cl. 242-56.00R.
Leppard, David G.; and Rody, Jean, to Ciba-Geigy AG. Color-photographic recording material. 4,517,283, Cl. 430-512.000.
Lergier, William: *See—*
Felix, Arthur M.; Gillessen, Dieter; Lergier, William; Meienhofer, Johannes A.; and Trzeciak, Arnold, 4,517,119, Cl. 260-112.50R.
Les Cables de Lyon: *See—*
Guazzo, Lucien, 4,516,830, Cl. 350-96.220.
Les Robinets Presto: *See—*
Patient, Lucien, 4,516,607, Cl. 137-637.400.
Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 5-Alkyl-1,6-naphthyridin-2(1H)-ones and cardiotonic use thereof. 4,517,190, Cl. 514-300.000.
Lesher, George Y., to Sterling Drug Inc. 6-Alkyl-5-[4-(alkylsulfinyl or alkylsulfonyl)phenyl]-2(1H)-pyridinones and their use as cardiatonics. 4,517,192, Cl. 514-345.000.
Le Trung, Do: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,517,174, Cl. 424-62.000.
Leu, Beat: *See—*
Mittelmeier, Heinz; Moser, Heinz; and Leu, Beat, 4,516,276, Cl. 3-1.910.
Leung, Tak L.: *See—*
Fotiadis, Emanuel; Kozol, Edward J.; Leung, Tak L.; and Paul, Robert J., 4,516,678, Cl. 206-444.000.
Lever Brothers Company: *See—*
Clarke, Terence A.; Edwards, Richard B.; and Irving, Graeme N., 4,517,107, Cl. 252-108.000.
Levine, Lawrence W.; and Mullins, Carolyn C., to Carlin Foods Corporation. Process for making a fried fruit filling composition-containing food product. 4,517,203, Cl. 426-19.000.
Levis, William W., Jr.: *See—*
Korczak, Alexander; and Levis, William W., Jr., 4,517,383, Cl. 564-443.000.
Levy, Paul M. Television system. 4,517,592, Cl. 358-92.000.
Lewis, Carol R., to Varian Associates, Inc. Metal-containing organic photoresists. 4,517,276, Cl. 430-192.000.
Lewis, Edwin C.; Henschenmacher, Helmut; Ecker, Karl-Heinz; Giernalczyk, Hartmut; and Rutte, Siegfried. Closure for openings in pumps. 4,516,477, Cl. 92-128.000.
Lewis, James D. Apparatus for operational analysis of computers. 4,517,671, Cl. 371-19.000.
Leybold-Heraeus GmbH: *See—*
Fauser, Friedrich; and Fischer, Willi, 4,517,057, Cl. 202-205.000.
Leyrer, Reinhold J.: *See—*
Graser, Fritz; Hoffmann, Gerhard; Leyrer, Reinhold J.; Neumann, Peter; and Patsch, Manfred, 4,517,270, Cl. 430-58.000.
LGZ Landis & Gyr Zug AG: *See—*
Neyer, Norbert, 4,517,682, Cl. 375-106.000.
Liberman, Moysey. Apparatus and method for producing article shapes from a composite material. 4,516,626, Cl. 164-461.000.
Lickle, Brett D.: *See—*
Hobbs, Andrew G. P., Jr.; Lickle, Brett D.; and Hobbs, Patricia W., 4,516,409, Cl. 62-457.000.
Lifshitz, Ifim: *See—*
Lifshitz, Igor; and Lifshitz, Ifim, 4,516,923, Cl. 425-289.000.
Lifshitz, Igor; and Lifshitz, Ifim. Food press forms. 4,516,923, Cl. 425-289.000.
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Process for producing solanone, norsolanadione and intermediates therefor. 4,517,385, Cl. 568-386.000.
Lighthouse for the Blind, Incorporated, The: *See—*
Johnson, Robert S.; Fletcher, Paul E.; Benjamin, William S.; and Zsitvay, John I., 4,516,287, Cl. 15-119.00A.
Lihl, Reinhard: *See—*
Kappl, Gerhard; Kranner, Helmut; and Lihl, Reinhard, 4,516,459, Cl. 83-713.000.
Lin, Frank W.; Moon, Suhdok D.; Van, Tri S.; and Anzai, Max I., to Mechatron Systems, Inc. Method and apparatus for normalizing the speed of an element positionable by a servomechanism. 4,517,503, Cl. 318-561.000.
Lindberg, John E., to Owen, Wickersham & Erickson. Combustion and pollution control system. 4,516,553, Cl. 123-568.000.
Linde Aktiengesellschaft: *See—*
Rebhan, Dieter, 4,516,878, Cl. 405-130.000.
Lindert, Andreas, to Parker Chemical Company. Treatment of metal with derivative of poly-alkenylphenol. 4,517,028, Cl. 148-6.14R.
Lindstedt, Guenter; and Nopper, Guido H., to ITT Industries, Inc. Digital phase/frequency control circuit. 4,517,529, Cl. 331-1.00A.
Ling, Nicholas C.; Esch, Frederick S.; Bohlen, Peter; Brazeau, Paul E., Jr.; and Guillemin, Roger C. L., to Salk Institute for Biological Studies, The. Mammalian PGRF. 4,517,181, Cl. 514-12.000.
Lion Corporation: *See—*
Ando, Hideo; Kiyama, Kentaro; and Kitano, Kyozo, 4,517,113, Cl. 252-353.000.
Litchfield, William J.: *See—*
Freytag, J. William; and Litchfield, William J., 4,517,303, Cl. 436-501.000.
Liu, Raymond C.; and Markle, David A., to Perkin-Elmer Corp., The. Method and apparatus for measuring intensity variation in a light source. 4,516,852, Cl. 356-121.000.
Liu, Yet-Zen; and Hong, Chi-Shain, to United States of America, Navy. Zinc-diffused narrow stripe AlGaAs/GaAs double heterostructure laser. 4,517,674, Cl. 372-45.000.
Loch, David M.; and Henkes, Dale D., to Boeing Company, The. Automated alternating polarity direct current pulse electrolytic processing of metals. 4,517,059, Cl. 204-14.100.
Loch, Karl: *See—*
Haacke, Harri; and Loch, Karl, 4,516,429, Cl. 73-638.000.
Lochon, Henri: *See—*
Bourgeois, Serge; Carle, Jean-Franqois; Lochon, Henri; and Trotin, Jean-Pierre, 4,516,525, Cl. 118-688.000.
Lockhart, Thomas P.; and Wengrovius, Jeffrey H., to General Electric Company. Room temperature vulcanizable organopolysiloxane compositions and method for making. 4,517,337, Cl. 524-859.000.
Lockheed Corporation: *See—*
Frink, Attila; and Morrison, Robert A., 4,517,625, Cl. 361-399.000.
Loeslein, Raymond D.: *See—*
Venable, Thomas L.; Robinson, Geoffrey C.; and Loeslein, Raymond D., 4,516,815, Cl. 339-14.00R.
Lonati, Francesco, to Lonati S.p.A. Knitwork drawing device in a double cylinder circular knitting machine. 4,516,410, Cl. 66-14.000.
Lonati S.p.A.: *See—*
Lonati, Francesco, 4,516,410, Cl. 66-14.000.
Longi, Paolo: *See—*
Cuffiani, Illaro; Longi, Paolo; Zucchini, Umberto; and Pennini, Gianni, 4,517,307, Cl. 502-119.000.
Lord Corporation: *See—*
Beaton, Brian M., 4,516,476, Cl. 92-59.000.
Loroco Industries, Inc.: *See—*
Curro, Dominic, Jr., 4,516,892, Cl. 410-155.000.
Lossack, Edgar: *See—*
Merchant, Harish D.; and Lossack, Edgar, 4,517,034, Cl. 148-439.000.
Lotito, Vincent; and Fletcher, Stephen R. Aquarium. 4,516,529, Cl. 119-5.000.
Lucas Chloride EV Systems Limited: *See—*
Ridout, Paul S.; and Birks, Colin, 4,517,585, Cl. 357-81.000.
Lucas, Gary M.: *See—*
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,517,352, Cl. 528-18.000.
Lucas Industries public limited company: *See—*
Tarplee, Michael K., 4,516,400, Cl. 60-535.000.
Williams, Derek, 4,516,547, Cl. 123-198.00A.
Ludenbach, Karl; and Huhn, Erhard, to Dienes Werke fur Maschinenteile GmbH & Co. KG. Disc valve. 4,516,602, Cl. 137-512.150.
Ludin, Ludwig: *See—*
Laing, Karsten; Laing, Oliver; and Ludin, Ludwig, 4,516,721, Cl. 237-69.000.
Ludman, Jacques E. Interferometric angular measurement system. 4,516,854, Cl. 356-363.000.
Luhmann, Erhard; Hoppe, Lutz; Szablikowski, Klaus; and Lampert, Friedrich-Karl, to Bayer Aktiengesellschaft. Viscous cellulose-containing mixture (paste) and a process for the production of aqueous coating emulsions therefrom. 4,517,324, Cl. 524-27.000.
Lund, Arnold M. Core chuck. 4,516,786, Cl. 279-2.00R.
Lundberg, Robert D.; Phillips, Robert R.; and Peiffer, Dennis G., to Exxon Research and Engineering Co. Novel viscosifiers for aqueous fluids based on polymer complexes. 4,517,333, Cl. 524-516.000.

Lundberg, Robert D.: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Wagensomer, Joseph; and Jagisch, Frank C., 4,517,250, Cl. 428-483.000.
Duvdevani, Ilan; Peiffer, Dennis G.; Eckert, John A.; and Lundberg, Robert D., 4,516,982, Cl. 44-62.000.
Luneberg, Hartmut: *See—*
Ritt, Hans-Georg; Luneberg, Hartmut; Mannl, Reinhard; and Grillmeier, Alfred, 4,516,998, Cl. 65-108.000.
Lurz, Werner, to Messerschmitt-Bolkow-Blohm GmbH. Method of and apparatus for controlling the boundary layer flow over the surface of a body. 4,516,747, Cl. 244-204.000.
Lynch, John; Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, to BASF Aktiengesellschaft. Photosensitive recording material suitable for the production of printing plates and relief plates, and the production of these plates using this recording material. 4,517,277, Cl. 430-281.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Million, Karl; and Zimmermann, Horst, 4,517,434, Cl. 219-76.120.
M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See—*
Holl, Roland, 4,517,221, Cl. 427-8.000.
Kobler, Ingo, 4,516,759, Cl. 270-12.000.
Mabrey, Theodore R.: *See—*
Straub, Albert M.; Mabrey, Theodore R.; and Vokovich, Daniel L., 4,517,614, Cl. 360-85.000.
Macarchenia, Joseph H.: *See—*
Ely, Duain N.; and Macarchenia, Joseph H., 4,516,745, Cl. 244-134.00A.
Machabert, Bernard: *See—*
Barriquand, Robert; Barriquand, Bernard; Durantet, Bernard; and Machabert, Bernard, 4,516,413, Cl. 68-5.00C.
Machino, Katsuyuki: *See—*
Ise, Masahiro; Machino, Katsuyuki; Tanaka, Hidehiko; and Matsubara, Toshiyuki, 4,517,548, Cl. 340-310.00R.
MacIntosh, John A.; and Zeigner, Willard L., to Zemco, Inc. Flow sensor. 4,516,433, Cl. 73-861.050.
MacMillan Bloedel Limited: *See—*
Churchland, Mark T., 4,517,148, Cl. 264-112.000.
MacPherson, David B.; Paris, Jay E.; Foley, Robert W.; Greinier, Martin W.; and Pulsifer, David N., to Eastern Company, The. Sewage treatment device. 4,516,281, Cl. 4-319.000.
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, to Delphax Systems. Electrostatic printing apparatus and method. 4,516,847, Cl. 355-3.0TR.
Maddox, Jim, Jr., to Texaco Inc. Method of extracting and reutilizing surfactants from emulsions with sulfonated alkyl benzenes and alcohols. 4,516,635, Cl. 166-266.000.
Madison, David P.; and Cruver, Michael B. Apparatus for folding a dough sheet to enclose a foodstuff filler. 4,516,487, Cl. 99-450.600.
Maeda, Kiyoshi; and Okamoto, Masashi, to Dainippon Screen Manufacturing Co., Ltd. Image recording device. 4,517,608, Cl. 358-298.000.
Maeo, Hidemi: *See—*
Sato, Yoshito; Yato, Tokuhiro; Maeo, Hidemi; and Tsutsumi, Yoshio, 4,516,469, Cl. 91-362.000.
Maggis, Aldo: *See—*
Baldi, Livio; and Maggis, Aldo, 4,517,226, Cl. 427-90.000.
Magnavox Consumer Electronics Company: *See—*
Caspari, Fred W., 4,517,683, Cl. 375-117.000.
Magnetic Peripherals Inc.: *See—*
Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., 4,517,041, Cl. 156-155.000.
Minuhin, Vadim B., 4,517,610, Cl. 360-24.000.
Magnusson, Karl G.; and Stahl, Hans V., to Saab-Scania Aktiebolag. Method of automatic gear selection in a vehicle power transmission. 4,517,646, Cl. 364-424.100.
Mahlkow, Hartmut: *See—*
Grapentin, Joachim; Mahlkow, Hartmut; and Skupsch, Jurgen, 4,517,254, Cl. 428-626.000.
Main, W. Eric: *See—*
Gray, Randall C.; and Main, W. Eric, 4,517,547, Cl. 340-59.000.
Maiter, Sigurd: *See—*
Brusis, Otto; Maiter, Sigurd; and Haufe, Paul, 4,517,621, Cl. 361-231.000.
Maki, Yoshiki: *See—*
Fujita, Daijiro; Motoo, Akihiko; and Maki, Yoshiki, 4,516,925, Cl. 425-463.000.
Malaval, Alain: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,517,174, Cl. 424-62.000.
Male, Barry, to United Technologies Corporation. Capacitive pressure transducer signal conditioning circuit. 4,517,622, Cl. 361-283.000.
Mallinson, Ronald I., to Mono-Flo Lister Limited. Conduit. 4,516,533, Cl. 119-72.000.
Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,516,430, Cl. 73-727.000.
Malone, Charles: *See—*
Edwards, James D.; and Malone, Charles, 4,517,426, Cl. 200-38.00A.
Malone, Edgar W., to Reynolds Industries Inc. Capacitor discharge apparatus. 4,517,497, Cl. 315-241.00R.
Malphrus, Manley L. Fishing lure. 4,516,350, Cl. 43-17.600.
Mamei, Masayuki: *See—*
Yoshino, Tadashi; and Mamei, Masayuki, 4,516,740, Cl. 242-203.000.
Manabe, Sugio: *See—*
Galle, Kevin; Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; and Manabe, Sugio, 4,517,160, Cl. 422-65.000.
Mangold, Helmut K.: *See—*
Muramatsu, Toshio; Totani, Nagao; and Mangold, Helmut K., 4,517,297, Cl. 435-128.000.
Mannesmann Aktiengesellschaft: *See—*
Haacke, Harri; and Loch, Karl, 4,516,429, Cl. 73-638.000.
Langlitz, Karlheinz; and Schmitz, Gunter, 4,516,757, Cl. 266-245.000.
Mannl, Reinhard: *See—*
Ritt, Hans-Georg; Luneberg, Hartmut; Mannl, Reinhard; and Grillmeier, Alfred, 4,516,998, Cl. 65-108.000.
Manome, Taichi; Ohmine, Toshinori; Okazaki, Takao; and Arai, Mamoru, to Sankyo Company, Limited. Plasmid pSAN 181. 4,517,300, Cl. 435-317.000.
Mantelet, Jean, to Cuisi-Technic S.a.r.l. Electric heating element, and a hot plate equipped with the heating element. 4,517,454, Cl. 219-455.000.
Mantellina, Calogero; and Zanzottera, Daniele, to Honeywell Information Systems Inc. Digital timing unit. 4,517,681, Cl. 375-106.000.
Marathon Oil Company: *See—*
Merrill, LaVaun S., Jr., 4,517,097, Cl. 210-696.000.
Mardis, Wilbur S.; and Finlayson, Claude M., to NL Industries, Inc. Modified organophilic clay complexes, their preparation and non-aqueous systems containing them. 4,517,112, Cl. 252-315.200.
Margolin, George D. Resilient deformable keyboard. 4,517,421, Cl. 200-1.00R.
Mariano, Armando: *See—*
Mercati, Giorgio; Mariano, Armando; Pertot, Fulvio; Glionna, Antonio; and Ferri, Mario, 4,517,355, Cl. 528-287.000.
Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Preparation of mixtures rich in 3,4,5,6-tetrachloro-2-trichloromethyl pyridine. 4,517,369, Cl. 546-345.000.
Marketing Displays, Inc.: *See—*
Seely, James R., 4,516,344, Cl. 40-602.000.
Markham, Peter G.; Townsend, Rodney; and Davies, Jeffrey W., to National Research Development Corporation. Method of combatting plant diseases. 4,517,177, Cl. 424-93.000.
Markle, David A.: *See—*
Liu, Raymond C.; and Markle, David A., 4,516,852, Cl. 356-121.000.
Marshall, Charles A.; and Ray, Jeremiah B. Catheter shield and method of use. 4,516,968, Cl. 604-174.000.
Marshall, Robert J.: *See—*
Alexander, Kenneth E.; and Marshall, Robert J., 4,517,629, Cl. 362-267.000.
Marsocci, Angelo A.; and Schuchard, Walter F., to American District Telegraph Co. Smoke detector with remote alarm indication. 4,517,555, Cl. 340-522.000.
Martelli, Daniele, to S.A.E.S. Getters S.p.A. Method to evenly heat an asymmetric getter device by induction. 4,516,945, Cl. 445-19.000.
Martin, Charles F. Underwater trenching apparatus. 4,516,880, Cl. 405-160.000.
Martin, Clyde J. Golf tees and ball marker assembly. 4,516,773, Cl. 273-32.00A.
Martin, Donald R., to McGraw-Edison Company. Self-flow generating gas interrupter. 4,517,425, Cl. 200-148.00A.
Martin, John C.; and Martin, Paul H., to Diesel Equipment Limited. Multi-part valve with a valve seat skeleton and cast valve body. 4,516,594, Cl. 137-15.000.
Martin, Paul H.: *See—*
Martin, John C.; and Martin, Paul H., 4,516,594, Cl. 137-15.000.
Martin, Raymond H.; Garganese, Ugo S.; and Griffin, John R. Custom denture fabrication technic. 4,517,043, Cl. 156-196.000.
Martin, Wayne A., to United States Steel Corporation. Method and apparatus for making single cranks for built-up crankshafts used in large engines. 4,516,299, Cl. 29-6.000.
Martinez, Felix J.: *See—*
Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., 4,517,081, Cl. 210-85.000.
Martinez, Louis, to McGraw-Edison Company. FM Communication system. 4,517,562, Cl. 340-825.070.
Marton, George: *See—*
Marton, Miksa; and Marton, George, 4,516,358, Cl. 51-119.000.
Marton, Miksa; and Marton, George. Clutch assembly for sanding head. 4,516,358, Cl. 51-119.000.
Maruzen Oil Company, Limited: *See—*
Fujiwara, Hiroshi; Yamazaki, Hatsutaro; and Ozawa, Kazuo, 4,517,349, Cl. 526-313.000.
Masaki, Mikio: *See—*
Kobayashi, Satoru; Masaki, Mikio; Sakuno, Hideaki; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,516,415, Cl. 70-252.000.
Masaki, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Compact conductor device. 4,517,405, Cl. 174-68.00B.
Masao, Yamamoto: *See—*
Hirobumi, Saito; Kiyoshi, Ito; Kaichi, Higuchi; and Masao, Yamamoto, 4,516,944, Cl. 441-40.000.
Maschinenfabrik Fr. Niepmann GmbH & Co.: *See—*
Iain, Stewart, 4,516,379, Cl. 53-138.00A.
Maska, Rudolf: *See—*
Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, 4,517,322, Cl. 523-501.000.

Mason, James W., to Dasurat Enterprises PTE Ltd. Porous irrigation pipe prepared from particulate elastomer and thermoplastic binder containing controlled moisture content. 4,517,316, Cl. 521-81.000.

Massey, Charles R. Shaft alignment device. 4,516,328, Cl. 33-181.00R.

Massey-Ferguson-Perkins Limited: *See*—
Brear, Frederick, 4,516,549, Cl. 123-276.000.

Masten, Billy R.: *See*—
Benitez, Willie B., III; and Masten, Billy R., 4,517,455, Cl. 235-463.000.

Masuda, Hitoshi: *See*—
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.

Masuda, Jiro: *See*—
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,516,652, Cl. 180-177.000.

Masuda, Michio: *See*—
Aizawa, Iwao; and Masuda, Michio, 4,517,587, Cl. 358-17.000.

Masumoto, Hakaru; and Nakamura, Naoji, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. Electrical resistant alloys having a small temperature dependence of electric resistance over a wide temperature range and a method of producing the same. 4,517,156, Cl. 420-463.000.

Masumoto, Kazuhiro; Fujimura, Mituaki; and Sawazaki, Masauki, to Mitsui Petrochemical Industries, Ltd.; and Yazaki Plastics Industries Co., Ltd. Method for molding hollow blow-molded articles. 4,517,151, Cl. 264-540.000.

Masumoto, Norio: *See*—
Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, 4,517,087, Cl. 210-396.000.

Masuno, Katsuyoshi; and Kamata, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Ignition apparatus for internal combustion engine. 4,516,557, Cl. 123-619.000.

Matayoshi, Yutaka: *See*—
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.

Matcovich, Charles: *See*—
D'Alessio, Michael; and Matcovich, Charles, 4,516,663, Cl. 187-19.000.

Matejka, Robert C.; and Moretz, Nellie M., to Reliance Universal, Inc. Pigmented prepress coatings for composition board. 4,517,228, Cl. 427-370.000.

Mathias, Jean M.: *See*—
Kersten, Jean; and Mathias, Jean M., 4,517,090, Cl. 210-493.200.

Matier, William L.: *See*—
Lawson, John E.; Matier, William L.; and Roth, Herbert R., 4,517,188, Cl. 514-394.000.

Matoba, Isao: *See*—
Goto, Tomomichi; Iwamoto, Katsuo; Kobayashi, Yoshinori; and Matoba, Isao, 4,517,032, Cl. 148-111.000.

Matson, Donald F., to Western AG-Sales Inc. Bumper apparatus for low bed trailer. 4,516,902, Cl. 414-480.000.

Matsubara, Toshiyuki: *See*—
Ise, Masahiro; Machino, Katsuyuki; Tanaka, Hidehiko; and Matsubara, Toshiyuki, 4,517,548, Cl. 340-310.00R.

Matsumoto, Seiichi: *See*—
Suzuki, Ryoichi; Matsumoto, Seiichi; Amikura, Takashi; Tsunekawa, Tokuichi; and Uchiyama, Takashi, 4,516,835, Cl. 350-336.000.

Matsumura, Shunichi; and Inata, Hiroo, to Teijin Limited. Production of a film-like or fibrous structure of an aromatic polyester. 4,517,315, Cl. 521-64.000.

Matsunaga, Fujihisa; Nishimura, Tadahiko; Miyake, Etsuo; and Banba, Kiyotaka, to Mitsui Petrochemical Industries, Ltd.; and Honshu Chemical Ind. Co. Ltd. Process for production of 2,2-bis(4-hydroxyphenyl) propane. 4,517,387, Cl. 568-728.000.

Matsuno, Kenji; and Funamoto, Hiroyuki, to Toyo Seikan Kaisha, Limited. Welded can bodies. 4,517,256, Cl. 428-629.000.

Matsuoka, Kazuhiko: *See*—
Baba, Takeshi; and Matsuoka, Kazuhiko, 4,517,589, Cl. 358-75.000.

Matsuoka, Shunji: *See*—
Okamoto, Kenji; Nishiwaki, Yoshikazu; Matsuoka, Shunji; and Nishiura, Yozo, 4,517,280, Cl. 430-321.000.

Matsushima, Kazufumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Menu display device. 4,517,428, Cl. 219-10.55B.

Matsushita Electric Industrial Co., Ltd.: *See*—
Funagura, Shuichi; and Nishio, Katsufumi, 4,516,733, Cl. 241-79.000.
Kakimoto, Atsushi; and Takita, Masaaki, 4,517,575, Cl. 346-138.000.
Neki, Shigeo; Shinozaki, Nozomu; and Morofuji, Takeshi, 4,516,514, Cl. 112-275.000.
Shibaike, Narito; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; and Zaitsu, Osamu, 4,517,613, Cl. 360-85.000.
Ueda, Shigeki, 4,517,431, Cl. 219-10.55B.
Yoshino, Tadashi; and Mamei, Masayuki, 4,516,740, Cl. 242-203.000.

Matsushita, Yasuo; Nakamura, Kousuke; and Ura, Mitsuru, to Hitachi, Ltd. Ceramic packaged semiconductor device. 4,517,584, Cl. 357-80.000.

Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; Suzaki, Takuya; and Imai, Kazuyoshi, to Sumitomo Chemical Company, Limited. Particulate polyolefin molding material. 4,517,246, Cl. 428-407.000.

Mattel, Inc.: *See*—
Hippely, Keith A.; and Goldstein, Samuel M., 4,516,953, Cl. 446-444.000.

Matthaei, Horst D.: *See*—
Bohg, Armin; Matthaei, Horst D.; and Hartmann, Kurt, 4,517,538, Cl. 335-272.000.

Matychowiak, David S.: *See*—
Beaulieu, Roger D.; Alcorn, William W.; and Matychowiak, David S., 4,516,363, Cl. 52-90.000.

Maurer, Alexander: *See*—
Merkenich, Karl; Wasel-Nielen, Horst-Dieter; Maurer, Alexander; and Adrian, Renate, 4,517,109, Cl. 252-135.000.

May & Baker Limited: *See*—
Bird, Clive W.; Butler, Helene I.; Caton, Michael P. L.; Coffee, Edward C. J.; Darnbrough, Geoffrey; and Hart, Terance W., 4,517,202, Cl. 514-530.000.

May, David A.: *See*—
Gardner, Bruce C.; Ingold, Daniel L.; and May, David A., 4,516,618, Cl. 160-120.000.

May, Joseph R.; Petruccelli, Frank; Lang, Robert L.; and de Haan, Herman P., to Allied Corporation. Hollow enclosed seamless polymeric article containing a baffle. 4,517,231, Cl. 428-35.000.

May, Michael G. Ignition device for improving the efficiency of and to reduce emissions of internal combustion engines. 4,516,548, Cl. 123-260.000.

May, Roderick G.: *See*—
Clark, Duncan G. D.; Kimber, Ian D.; and May, Roderick G., 4,517,679, Cl. 375-37.000.

Mayer, Richard T.: *See*—
DeLoach, John R.; Harris, Robert L.; Mayer, Richard T.; and Ihler, Garret M., 4,517,080, Cl. 210-85.000.

Mayer, Rothkopf Industries, Inc.: *See*—
Quay, Earl R., 4,516,292, Cl. 19-112.000.

Mayston, Donald: *See*—
Elworthy, John H.; and Mayston, Donald, 4,517,036, Cl. 156-64.000.

Mazda Motor Corporation: *See*—
Choushi, Masahiro; and Yahiro, Tetsuji, 4,516,546, Cl. 123-195.00A.

McBride, Donald G.: *See*—
Gazdik, Charles E.; and McBride, Donald G., 4,517,051, Cl. 156-644.000.

McClellan, Thomas R.; and Murray, Pat L., to Upjohn Company, The. Apparatus for coating particulate material. 4,516,524, Cl. 118-683.000.

McClung, Charles S.: *See*—
Rainer, Norman B.; and McClung, Charles S., 4,516,589, Cl. 131-331.000.

McClung, James A.: *See*—
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,516,420, Cl. 72-329.000.

McCoy, Donald G. Securement means. 4,516,295, Cl. 24-136.00R.

McCrary, Thomas J., Jr.: *See*—
Bloch, Ricardo; McCrary, Thomas J., Jr.; and Brownawell, Darrell W., 4,517,104, Cl. 252-51.50A.

McDermott, Kevin. Portable lighting device. 4,517,628, Cl. 362-186.000.

McDonald, Quentin H.; Montalbano, Anthony P.; and Sieczkowski, Philip, to McDonald, Quentin H. Portable infant carrier. 4,516,806, Cl. 297-457.000.

McDougal, John A. Spiral windings. 4,517,540, Cl. 336-205.000.

McFarland, Melvin D.: *See*—
Ferrell, Philip J.; Stern, Alan D.; and McFarland, Melvin D., 4,517,639, Cl. 364-186.000.

McFarland, Roger A.: *See*—
Ferguson, Larry W.; and McFarland, Roger A., 4,517,323, Cl. 523-514.000.

McGhie, Joseph A.: *See*—
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.

McGraw-Edison Company: *See*—
Martin, Donald R., 4,517,425, Cl. 200-148.00A.
Martinez, Louis, 4,517,562, Cl. 340-825.070.
Spaunhorst, Vernon R., 4,517,544, Cl. 337-164.000.

McGregor, David J.: *See*—
Chyz, George W.; and McGregor, David J., 4,516,957, Cl. 464-111.000.

McLean, Kenneth W., to Sperry Corporation. Light hay baffle for disc mower-conditioner. 4,516,391, Cl. 56-16.400.

McLean, Kenneth W.; and Hale, John K., to Sperry Corporation. Conditioning roll drive mechanism. 4,516,392, Cl. 56-16.400.

McMahon, Donald H.: *See*—
Soref, Richard A.; and McMahon, Donald H., 4,516,837, Cl. 350-347.00V.

McManus, James W.: *See*—
Winckler, Elmer, 4,516,637, Cl. 166-377.000.

McMaster, Ronald A., to Glasstech, Inc. Apparatus for bending glass sheets. 4,517,001, Cl. 65-273.000.

Mead Johnson & Company: *See*—
Lawson, John E.; Matier, William L.; and Roth, Herbert R., 4,517,188, Cl. 514-394.000.

Mechatron Systems, Inc.: *See*—
Lin, Frank W.; Moon, Suhdok D.; Van, Tri S.; and Anzai, Max I., 4,517,503, Cl. 318-561.000.

Medtech Plastics, Inc.: *See*—
Kintner, Michael H., 4,516,969, Cl. 604-187.000.

Meeker, Brian L.; Ferguson, John W.; and Werner, Henry G., to Fiber-Lite Corporation. Fibrous product. 4,517,236, Cl. 428-192.000.

Meienhofer, Johannes A.: *See*—
Felix, Arthur M.; Gillessen, Dieter; Lergier, William; Meienhofer, Johannes A.; and Trzeciak, Arnold, 4,517,119, Cl. 260-112.50R.

Meighen, Terrence: *See*—
Brennan, Robert J.; and Meighen, Terrence, 4,516,825, Cl. 339-143.00R.

Meijer, Wilhelmus, to Xerox Corporation. Low-wire sensor. 4,516,713, Cl. 227-2.000.

Meinig, Manfred, to Karl Meinig, KG. Flanged ring for tubes. 4,516,797, Cl. 285-405.000.

Meinzer, Richard A.; and Dobbs, Gregory M., to United Technologies Corporation. Multi-species, CW combustion driven laser employing hydrogen bromide. 4,517,676, Cl. 372-89.000.

Meistring, Rolf; Siegling, Hans-Friedrich; and Pfahl, Siegfried, to Heermann GmbH. Light conducting cable including a heat removable layer for preventing tension and a method of making same. 4,516,831, Cl. 350-96.230.

Melcher, Domenic. Switched mode power supply with a plurality of regulated secondary outlets. 4,517,633, Cl. 363-21.000.

Memorex Corporation: *See*—
Bischoff, Peter G., 4,517,616, Cl. 360-126.000.

Mercati, Giorgio; Mariano, Armando; Pertot, Fulvio; Glionna, Antonio; and Ferri, Mario, to Anic S.p.A. Flameproof linear polyester, a process for its preparation, and articles formed from said polyester. 4,517,355, Cl. 528-287.000.

Merchant, Harish D.; and Lossack, Edgar, to Continental Can Company. Strip cast aluminum alloy suitable for can making. 4,517,034, Cl. 148-439.000.

Merck & Co., Inc.: *See*—
Johnston, David B. R., 4,517,186, Cl. 514-255.000.
Shim, Jaewon L., 4,517,216, Cl. 426-573.000.

Mercurio, Frank: *See*—
Berger, Hans S.; Mercurio, Frank; and Reiner, Norbert L., 4,516,648, Cl. 180-6.660.

Merkenich, Karl; Wasel-Nielen, Horst-Dieter; Maurer, Alexander; and Adrian, Renate, to Hoechst Aktiengesellschaft. Process for making mixed granulates from condensed phosphates and builder salts. 4,517,109, Cl. 252-135.000.

Merrill, LaVaun S., Jr., to Marathon Oil Company. Process for diluting aqueous polymer solutions. 4,517,097, Cl. 210-696.000.

Merten, Rudolf: *See*—
Zecher, Wilfried; Merten, Rudolf; and Dunwald, Willi, 4,517,353, Cl. 528-45.000.

Merz, Johann, to Zahnradfabrik Friedrichshafen AG. Seal assembly with radially undulated sealing element. 4,516,784, Cl. 277-180.000.

Merz, Kenneth M., to TRW Inc. Thick film temperature sensitive device and method and material for making the same. 4,517,545, Cl. 338-25.000.

Messerschmidt-Bolkow-Blohm GmbH: *See*—
Fuhring, Heinrich, 4,517,467, Cl. 290-44.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Altmann, Konrad, 4,517,677, Cl. 372-99.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Held, Manfred; and Grossler, Peter, 4,516,501, Cl. 102-496.000.
Lurz, Werner, 4,516,747, Cl. 244-204.000.

Metex Corporation: *See*—
Usher, Peter P., 4,516,782, Cl. 277-1.000.

Methven, Robert W. Ballast apparatus for righting a capsized boat. 4,516,516, Cl. 114-39.000.

Meulenbrugge, Hendrik J.; and Fortuin, Harm, to U.S. Philips Corporation. Method of calibrating a gamma camera, and a gamma camera including a calibration device. 4,517,460, Cl. 250-252.100.

Meyer, Howard E., to Heat Exchange and Transfer, Inc. Fuel preheater. 4,516,556, Cl. 123-557.000.

Michno, Michael J., Jr.: *See*—
Gardner, Hugh C.; Michno, Michael J., Jr.; and Brode, George L., 4,517,321, Cl. 523-400.000.

Micro Component Technology, Inc.: *See*—
Petrich, Dennis M.; Amick, Christopher G.; and Gruenenwald, Stanley L., 4,517,512, Cl. 324-73.00R.

Midmark Corporation: *See*—
Leeper, Marvin A.; Turner, Richard L.; and Simpkins, Terry J., 4,516,805, Cl. 297-330.000.

Migliori, Albert: *See*—
Swift, Gregory W.; Migliori, Albert; and Wheatley, John C., 4,516,632, Cl. 165-167.000.

Mihara, Shin-ichi: *See*—
Nakahashi, Ken-ichi; and Mihara, Shin-ichi, 4,516,840, Cl. 350-515.000.

Milani, John C.: *See*—
Eastridge, Victor R.; and Milani, John C., 4,516,587, Cl. 131-256.000.

Miles, Frank, to Tektronix, Inc. Oscilloscope trigger circuit combining wideband trigger signal amplification and trigger coupling mode selection. 4,517,523, Cl. 330-126.000.

Miles Laboratories, Inc.: *See*—
Greene, Carmine M., 4,517,301, Cl. 436-14.000.

Milford, Edgar L.; Carpenter, Charles B.; and Paradysz, Jean M., to Brigham and Women's Hospital. Monoclonal antibodies for human tissue cross-matching. 4,517,289, Cl. 435-7.000.

Miller, Dye O., to A. J. Antunes & Co. Device for cooking food. 4,516,485, Cl. 99-339.000.

Miller, Gardner H., to Trustroke International, Inc. Golf training aid. 4,516,779, Cl. 273-186.00C.

Miller, Granville G.: *See*—
Ivory, Dawn M.; Miller, Granville G.; Chance, Ronald R.; and Baughman, Ray H., 4,517,116, Cl. 252-500.000.

Miller, John E.; and Fortino, Dennis J., to Chromium Corporation. Piston with a controlled expansion piston anti-extrusion ring. 4,516,785, Cl. 277-188.00A.

Miller, Lee E.; Carr, Dennis D.; and Smith, Donald L., to Eagle-Picher Industries, Inc. Lightweight metal-hydrogen cell with improved plate stack supporting means. 4,517,264, Cl. 429-163.000.

Miller, Robert W. Method of repairing ballistic damage. 4,517,038, Cl. 156-98.000.

Miller, Wendell R., to Quantum Systems Corporation. Filtering apparatus. 4,517,088, Cl. 210-411.000.

Million, Karl; and Zimmermann, Horst, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method and apparatus for manufacturing a tube bend metal. 4,517,434, Cl. 219-76.120.

Millipore Corporation: *See*—
Driscoll, Michael A.; and Edwards, James H., 4,517,085, Cl. 210-232.000.

Mills, David; Kington, Alan D.; and Close, Rodney J., to Rolls-Royce Limited. Mould assembly for casting metal articles. 4,516,621, Cl. 164-339.000.

Milner, David J., to Imperial Chemical Industries PLC. Process for the preparation of cyanotetrachlorobenzenes. 4,517,129, Cl. 260-465.00G.

Mimura, Nobuharu; Yoshida, Kazunori; Kawabata, Susumu; and Hasegawa, Junzo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Weft yarn storage unit for jet looms. 4,516,611, Cl. 139-452.000.

Minamida, Isao: *See*—
Numata, Mitsuo; Minamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsuru; and Miyawaki, Toshio, 4,517,361, Cl. 544-24.000.

Minamide, Seiko: *See*—
Shibaike, Narito; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; and Zaitsu, Osamu, 4,517,613, Cl. 360-85.000.

Minamigi, Takashi: *See*—
Kanda, Katsumi; Okamura, Takaaki; Minamigi, Takashi; Inui, Tsuneo; and Kondo, Yoshikazu, 4,517,255, Cl. 428-626.000.

Mine, Katsutoshi; Suzuki, Toshio; and Hanada, Tsuneo, to Toray Silicone Company, Ltd. Method of making integral molded silicone products with different phases and the molded products prepared therefrom. 4,517,238, Cl. 428-212.000.

Mineo, Masatoshi: *See*—
Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, 4,517,149, Cl. 264-210.800.

Mink, Bernardus H.; and Schoeber, Willem J. A. H., to Shell Oil Company. Process for removing fly ash particles from a gas at elevated pressure. 4,516,989, Cl. 55-68.000.

Minolta Camera Kabushiki Kaisha: *See*—
Tokumaru, Hisashi, 4,516,839, Cl. 350-426.000.

Minuhin, Vadim B., to Magnetic Peripherals Inc. Multichannel signal recovery circuit. 4,517,610, Cl. 360-24.000.

Miranda, Hector; and DeYoung, Thomas W., to Exxon Research and Engineering Co. Method of and apparatus for priming an ink jet. 4,517,577, Cl. 346-140.00R.

Mistyurik, John D., to Monarch Marking Systems, Inc. Hand-held labeler and labeling method. 4,516,498, Cl. 101-288.000.

Mita Industrial Co., Ltd.: *See*—
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,517,274, Cl. 430-122.000.
Tsutsui, Eiji; Yoshioka, Masahiro; Murakami, Masahiro; and Iwao, Noriyuki, 4,516,849, Cl. 355-15.000.

Mitani, Masao: *See*—
Kawahito, Tsuneyoshi; Abe, Katsuo; Kamei, Tsuneaki; Fujimoto, Kazuyuki; Mitani, Masao; and Hiratsuka, Shigetoshi, 4,517,444, Cl. 219-216.000.

Mitani, Toragoro; Yasui, Hideo; and Morikawa, Hisashi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for polymerization of acrylate or methacrylate. 4,517,344, Cl. 526-62.000.

Mitchell, Debra J. Formed and washable diaper. 4,516,975, Cl. 604-385.00A.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Adachi, Hiromi; and Iwaya, Shoichi, 4,517,496, Cl. 315-227.00R.
Anzai, Nobuo; and Ikejima, Hiroyuki, 4,516,664, Cl. 187-29.00R.
Hirobumi, Saito; Kiyoshi, Ito; Kaichi, Higuchi; and Masao, Yamamoto, 4,516,944, Cl. 441-40.000.
Masuno, Katsuyoshi; and Kamata, Tsutomu, 4,516,557, Cl. 123-619.000.
Mitsuda, Kenro, 4,517,260, Cl. 429-41.000.
Ogawa, Hitoshi, 4,517,466, Cl. 290-36.00R.
Okumura, Mitsuhiro; Naya, Eizo; and Demizu, Michinosuke, 4,517,033, Cl. 148-432.000.
Oohashi, Yutaka, 4,516,558, Cl. 123-634.000.
Oohashi, Yutaka, 4,516,559, Cl. 123-634.000.
Uekubo, Yasuhiro, 4,517,619, Cl. 361-64.000.
Watanabe, Eiki, 4,516,665, Cl. 187-29.00R.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Isshiki, Tomiya; Nawata, Takanari; Kijima, Yasuhiko; Ito, Akira; and Watanabe, Takayuki, 4,517,377, Cl. 560-261.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kumagai, Naotake; Tatemoto, Minoru; Itoh: Yoji; and Inuzuka, Tokushige, 4,516,545, Cl. 123-192.00R.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Watabe, Shin, 4,516,407, Cl. 62-238.600.

Mitsuda, Kenro, to Mitsubishi Denki Kabushiki Kaisha. Single component cell for phosphoric acid type fuel cell. 4,517,260, Cl. 429-41.000.

Mitsue, Naoki; and Takahashi, Hideki, to Nippon Seiko K.K. Seal assembly with radially overlapping seal means. 4,516,783, Cl. 277-50.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
Tanaka, Yoshiharu, 4,516,403, Cl. 60-667.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Masumoto, Kazuhiro; Fujimura, Mituaki; and Sawazaki, Masauki, 4,517,151, Cl. 264-540.000.
Matsunaga, Fujihisa; Nishimura, Tadahiko; Miyake, Etsuo; and Banba, Kiyotaka, 4,517,387, Cl. 568-728.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Takematsu, Tetsuo; Nakaya, Mitihiko; Moriyasu, Koichi; and Komoto, Nobuo, 4,517,381, Cl. 564-207.000.

Mittelmeier, Heinz; Moser, Heinz; and Leu, Beat, to Oscobal AG. Bone substitute and a method of production thereof. 4,516,276, Cl. 3-1.910.

Mitutoyo Mfg. Co., Ltd.: *See*—
Kanda, Yoshiro; Noguchi, Hironori; and Ikeda, Tadashi, 4,516,327, Cl. 33-169.00R.

Miura, Nobuo; and Ishii, Nolihisa, to Honda Giken Kogyo Kabushiki Kaisha. Ignition timing control system for internal combustion engine. 4,516,554, Cl. 123-418.000.

Miura, Tadao: *See*—
Takaoka, Takashi; Mochizuki, Masahiko; Yamashita, Mitsuo; and Miura, Tadao, 4,517,668, Cl. 369-111.000.

Miyagi, Ken: *See*—
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Miyahara, Kingo, to Dowa Co., Ltd. Fuel gasifying burner. 4,516,931, Cl. 431-168.000.

Miyake, Etsuo: *See*—
Matsunaga, Fujihisa; Nishimura, Tadahiko; Miyake, Etsuo; and Banba, Kiyotaka, 4,517,387, Cl. 568-728.000.

Miyao, Fumio: *See*—
Tan, Yoichi; and Miyao, Fumio, 4,517,531, Cl. 331-14.000.

Miyauchi, Masami; and Itoh, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Alloy with constant modulus of elasticity. 4,517,158, Cl. 420-584.000.

Miyawaki, Toshi: *See*—
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.

Miyawaki, Toshio: *See*—
Numata, Mitsuo; Minamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsuru; and Miyawaki, Toshio, 4,517,361, Cl. 544-24.000.

Miyazaki, Shoji: *See*—
Suzuki, Hiroshi; Gama, Yasuo; and Miyazaki, Shoji, 4,517,110, Cl. 252-180.000.

Miyazaki, Yasuyuki: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,517,645, Cl. 364-424.000.

Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, to Sekisu Kagaku Kogyo Kabushiki Kaisha. Photo-degradable styrene resin compositions. 4,517,318, Cl. 523-126.000.

Miyoshi, Toshio: *See*—
Imanaka, Hiroshi; Miyoshi, Toshio; Konomi, Toshio; Kubochi, Yoshiaki; Hattori, Seiziro; and Kawakita, Takeshi, 4,517,299, Cl. 435-197.000.

Mizutani, Yasukazu: *See*—
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Shozo, 4,517,541, Cl. 337-89.000.

Mobil Oil Corporation: *See*—
Chester, Arthur W.; Garwood, William E.; and Schwartz, Albert B., 4,517,399, Cl. 585-533.000.
Dessau, Ralph M.; and Kerr, George T., 4,517,075, Cl. 208-111.000.
Dessau, Ralph M., 4,517,402, Cl. 585-820.000.
Schmitt, Kirk D., 4,517,128, Cl. 260-458.00C.

Mochizuki, Asao: *See*—
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.

Mochizuki, Masahiko: *See*—
Takaoka, Takashi; Mochizuki, Masahiko; Yamashita, Mitsuo; and Miura, Tadao, 4,517,668, Cl. 369-111.000.

Mock, Bruno A. Control armature inserted in the flow route of a system for transferring pressure media in a gaseous and/or liquid gaseous state. 4,516,603, Cl. 137-559.000.

Molinazzi, Roberto, to Albini & Fontanot S.p.A. Modular support for stairway steps. 4,516,367, Cl. 52-182.000.

Moline Corporation: *See*—
Hampel, Lawrence E.; and Freese, Edward O., 4,516,790, Cl. 280-502.000.

Molnar, Rick K., to Hawk Industries, Inc. Mastic applicator and adjustable blade assembly. 4,516,868, Cl. 401-5.000.

Moltrasio, Mario; and Perrucchini, Vincenzo, to Car-ventomatic S.p.A. System for picking up and separating bags from a pack to be applied to automatic bag inserting apparatus. 4,516,762, Cl. 271-11.000.

Monarch Marking Systems, Inc.: *See*—
Mistyurik, John D., 4,516,498, Cl. 101-288.000.
Pou, Frederick M.; and Straub, Richard L., 4,516,497, Cl. 101-240.000.

Mono-Flo Lister Limited: *See*—
Mallinson, Ronald I., 4,516,533, Cl. 119-72.000.

Monsanto Company: *See*—
Heaps, John F.; and Erickson, Dennis E., 4,517,327, Cl. 524-315.000.
Mottus, Edward H., 4,517,329, Cl. 524-401.000.

Montalbano, Anthony P.: *See*—
McDonald, Quentin H.; Montalbano, Anthony P.; and Sieczkowski, Philip, 4,516,806, Cl. 297-457.000.

Montedison S.p.A.: *See*—
Cuffiani, Illaro; Longi, Paolo; Zucchini, Umberto; and Pennini, Gianni, 4,517,307, Cl. 502-119.000.

Montgomery, Allen W.: *See*—
Baran, Michael S.; Besasie, Joseph C.; Warren, Wayne L.; and Montgomery, Allen W., 4,517,418, Cl. 179-156.00R.

Moon, Suhdok D.: *See*—
Lin, Frank W.; Moon, Suhdok D.; Van, Tri S.; and Anzai, Max I., 4,517,503, Cl. 318-561.000.

Moore, Paul E.: *See*—
Sadauskas, Raymond L.; and Moore, Paul E., 4,517,440, Cl. 219-145.100.

More, Claude: *See*—
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.

Morel, Don L.; Gay, Robert R.; and Turner, Gary B., to Atlantic Richfield Company. Series connected solar cells and method of formation. 4,517,403, Cl. 136-249.000.

Moretz, Nellie M.: *See*—
Matejka, Robert C.; and Moretz, Nellie M., 4,517,228, Cl. 427-370.000.

Mori, Hirohumi: *See*—
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,517,318, Cl. 523-126.000.

Mori, Kazuhiko: *See*—
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.

Mori, Yoshihisa: *See*—
Kakuhashi, Takeshi; Tahara, Hiroshi; and Mori, Yoshihisa, 4,517,546, Cl. 338-320.000.

Moriarty, Michael P., to Rockwell International Corporation. Combustion method. 4,517,165, Cl. 423-244.000.

Morigaki, Masakazu: *See*—
Noguchi, Yasuhiro; and Morigaki, Masakazu, 4,517,286, Cl. 430-562.000.

Morikawa, Hisashi: *See*—
Mitani, Toragoro; Yasui, Hideo; and Morikawa, Hisashi, 4,517,344, Cl. 526-62.000.

Morikawa, Kunihiko; Higuchi, Megumu; and Yanai, Tokiyoshi, to Nissan Motor Co., Ltd. Method of manufacturing racks for variable ratio steering gears. 4,516,422, Cl. 72-377.000.

Morishita, Tatsuo; Funakoshi, Fumio; Nakamura, Kenichi; and Takamori, Kazuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Cordless remote control apparatus. 4,517,564, Cl. 340-825.690.

Moriya, Shigeru, to TDK Corporation. Charging device for an electrostatic copying machine. 4,516,848, Cl. 355-3.0CH.

Moriyasu, Koichi: *See*—
Takematsu, Tetsuo; Nakaya, Mitihiko; Moriyasu, Koichi; and Komoto, Nobuo, 4,517,381, Cl. 564-207.000.

Morofuji, Takeshi: *See*—
Neki, Shigeo; Shinozaki, Nozomu; and Morofuji, Takeshi, 4,516,514, Cl. 112-275.000.

Morrison, Robert A.: *See*—
Frink, Attila; and Morrison, Robert A., 4,517,625, Cl. 361-399.000.

Morrow, William H.: *See*—
Preston, John M.; Ward, Thomas V.; and Morrow, William H., 4,516,857, Cl. 356-418.000.

Mosburger, Hans, to BHS-Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft. Straight line cutting and/or groove machine for moving material webs, especially for corrugated paper webs. 4,516,454, Cl. 83-499.000.

Mosely, Jeannine. Blank for folding an octahedron and folded product. 4,517,251, Cl. 428-542.800.

Moser, Heinz: *See*—
Mittelmeier, Heinz; Moser, Heinz; and Leu, Beat, 4,516,276, Cl. 3-1.910.

Moser, Otto W.; and Thilo, Peer, to Siemens Aktiengesellschaft. Method and apparatus for inspecting a danger alarm system. 4,517,554, Cl. 340-514.000.

Moss, Gerald, to Exxon Research and Engineering Co. Apparatus for use in processing a substance in a fluidized bed. 4,517,162, Cl. 422-142.000.

Motoo, Akihiko: *See*—
Fujita, Daijiro; Motoo, Akihiko; and Maki, Yoshiki, 4,516,925, Cl. 425-463.000.

Motorola, Inc.: *See*—
Burke, Timothy M.; and Noble, Scott W., 4,517,561, Cl. 340-825.070.
Campbell, Jules D., Jr., 4,517,551, Cl. 340-347.0DA.
Davis, William F., 4,517,524, Cl. 330-257.000.
Freeburg, Thomas A.; and Krebs, Jay, 4,517,669, Cl. 370-82.000.
Gray, Randall C.; and Main, W. Eric, 4,517,547, Cl. 340-59.000.
Neidorff, Robert A., 4,517,532, Cl. 331-57.000.
Nordbrock, Raymond E.; and Spears, Richard L., 4,517,507, Cl. 322-28.000.
Petty, Cleon, 4,517,475, Cl. 307-272.00A.

Rose, John W., 4,517,220, Cl. 427-8.000.

Mott, Philip J., to Borg-Warner Corporation. Power transmission chain-belt. 4,516,963, Cl. 474-245.000.

Mott, Philip J., to Borg-Warner Corporation. Power transmission chain-belt. 4,516,965, Cl. 474-245.000.

Mottur, George P.; and Glass, Richard W., to Frito-Lay, Inc. Reduced calorie puffed snack food products. 4,517,204, Cl. 426-94.000.

Mottus, Edward H., to Monsanto Company. Polymeric antitumor agent. 4,517,329, Cl. 524-401.000.

Motzkau, Siegfried: *See*—
Szelagowski, Peter; and Motzkau, Siegfried, 4,516,521, Cl. 118-50.000.

Mourou, Gerard; and Sizer, Theodore, II, to University of Rochester, The. Dye laser medium for subpicosecond laser pulse generation. 4,517,675, Cl. 372-53.000.

Moyer, Maynard M.: *See*—
Beard, Frederick H.; Moyer, Maynard M.; and Smith, Clarence, Jr., 4,516,307, Cl. 29-564.000.

MU, Inc.: *See*—
Staab, Donald C.; and Farley, Clayton E., 4,516,808, Cl. 299-39.000.

Mueller, Franz-Josef: *See*—
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.

Muhlfeld, Hans P., Jr.: *See*—
Graf, Matthew C.; Muhlfeld, Hans P., Jr.; and Valentine, Edward H., 4,517,661, Cl. 364-900.000.

Mukaiyama, Fumiaki, to Kabushiki Kaisha Suwa Seikosha. FSK Demodulator employing a switched capacitor filter and period counters. 4,517,519, Cl. 329-126.000.

Mulhern, Louise J. Privacy screen module. 4,516,620, Cl. 160-351.000.

Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, to Hoffmann-La Roche Inc. Process for preparing β' form of copper 8-hydroxyquinoline. 4,517,362, Cl. 546-7.000.

Muller, Gerhard: *See*—
Leistner, Gerhard; Muller, Gerhard; Sell, Gunther; and Bauer, Alexander, 4,517,093, Cl. 210-629.000.

Muller, Hanns P.: *See*—
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.

Muller, Jurgen: *See*—
Stahl, Werner; and Muller, Jurgen, 4,516,763, Cl. 271-11.000.

Muller, Manfred: *See*—
Arndt, Peter J.; Muller, Manfred; Schlosser, Fritz; and Wenzel, Franz, 4,517,380, Cl. 564-206.000.

Muller, Rolf, to Papst Motoren GmbH & Co, KG. Tachogenerator for speed control of electric motors. 4,517,480, Cl. 310-68.00R.

Mulliner, Richard R.; and Rocke, Richard D., to Hughes Aircraft Company. Lightweight slot array antenna structure. 4,517,571, Cl. 343-771.000.

Mullins, Carolyn C.: *See*—
Levine, Lawrence W.; and Mullins, Carolyn C., 4,517,203, Cl. 426-19.000.

Mullins, Jack R., to J. W. Lighting Inc. Indirect light reflector. 4,517,631, Cl. 362-346.000.

Mundie, Craig J.: *See*—
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.

Munnecke, Douglas M.: *See*—
Williams, David; and Munnecke, Douglas M., 4,517,101, Cl. 252-8.55D.

Muraishi, Masakazu: *See*—
Umetsu, Yoshihiro; Muraishi, Masakazu; Ito, Osamu; and Kakeba, Masakatsu, 4,516,788, Cl. 280-6.00R.

Murakami, Koichi: *See*—
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Murakami, Masahiro: *See*—
Tsutsui, Eiji; Yoshioka, Masahiro; Murakami, Masahiro; and Iwao, Noriyuki, 4,516,849, Cl. 355-15.000.

Muralidhara, Ranya: *See*—
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.

Muramatsu, Toshio; Totani, Nagao; and Mangold, Helmut K., to Rohm GmbH. Method for the preparation of physiological effectors. 4,517,297, Cl. 435-128.000.

Murata, Masanori: *See*—
Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, 4,517,282, Cl. 430-399.000.

Murata, Shinichi: *See*—
Inomata, Koichiro; and Murata, Shinichi, 4,517,017, Cl. 75-123.00B.

Murayama, Masato, to Honda Giken Kogyo Kabushiki Kaisha. Communication system for a motor vehicle. 4,517,417, Cl. 179-156.00R.

Murayama, Tomio; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Printing system. 4,517,560, Cl. 340-790.000.

Murphy, David A.; and Spellar, Peter C., to Frick Company. Microprocessor control of moveable slide stop and a moveable slide valve in a helical screw rotary compressor. 4,516,914, Cl. 417-282.000.

Murphy, Gordon D.; and Bishop, Ernest C., to Fishery Products, Inc. Food package and storage unit. 4,517,206, Cl. 426-115.000.

Murphy, Wesley W., III; and Hettiger, James, to RCA Corporation. Dynamic noise filter for an audio signal in a television. 4,517,602, Cl. 358-198.000.

Murray, Pat L.: *See*—
McClellan, Thomas R.; and Murray, Pat L., 4,516,524, Cl. 118-683.000.

Murray, Robert T.: *See*—
Halsall, James R.; and Murray, Robert T., 4,517,456, Cl. 250-226.000.

Murrer, Barry A.: *See*—
Russell, Michael J. H.; and Murrer, Barry A., 4,517,390, Cl. 568-881.000.

Muto, Anthony. Plumbing repair device and method. 4,516,593, Cl. 137-15.000.

Mutoh, Naoki: *See*—
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, 4,517,296, Cl. 435-119.000.

Naarmann, Herbert: *See*—
Lynch, John; Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, 4,517,277, Cl. 430-281.000.

Nabisco Brands, Inc.: *See*—
Aldrich, Deborah G., 4,517,205, Cl. 426-103.000.

Nagae, Hiromitsu: *See*—
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, 4,516,319, Cl. 29-877.000.

Nagae, Yoshio: *See*—
Sonoda, Sakae; Nagae, Yoshio; and Kano, Seishi, 4,517,029, Cl. 148-6.15Z.

Nagahiro, Kenichi: *See*—
Arakawa, Tetsuo; and Nagahiro, Kenichi, 4,516,538, Cl. 123-52.00M.

Nagai, Tadashi: *See*—
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.

Nagasaki, Yoshio, to Kanda Tushin Kogyo. Method for checking function states in key telephone system. 4,517,409, Cl. 179-81.00C.

Nagase, Hyoshuke: *See*—
Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, 4,517,087, Cl. 210-396.000.

Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, to Hitachi, Ltd.; and Nagase, Hyoshuke. Filtration/separation apparatus. 4,517,087, Cl. 210-396.000.

Nagase, Yuji: *See*—
Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, 4,517,087, Cl. 210-396.000.

Nagashima, Masayoshi; and Yamane, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Color printing apparatus. 4,517,590, Cl. 358-75.000.

Nagashima, Masayoshi; Yamane, Hiroshi; and Yamashita, Mitsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Color printing apparatus. 4,517,591, Cl. 358-75.000.

Nagashima, Nao: *See*—
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Nagy, Monte L.: *See*—
Bhatti, Mohinder S.; Porzio, Thomas J.; and Nagy, Monte L., 4,516,995, Cl. 65-1.000.

Naipawer, Richard E.; ar Chalk, Alan J., to Givaudan Corporation. Process for the rearrangement of epoxides. 4,517,386, Cl. 568-483.000.

Nakagawa, Yukio, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus. 4,516,643, Cl. 177-1.000.

Nakahara, Mitsuharu; Ishida, Tomio; Honjo, Norifumi; and Yoshida, Yoshitaka, to Daihatsu Motor Company. Variable compression system for internal combustion engines. 4,516,537, Cl. 123-48.0AA.

Nakahashi, Ken-ichi; and Mihara, Shin-ichi, to Olympus Optical Co., Ltd. In-focus detector for a binocular stereomicroscope. 4,516,840, Cl. 350-515.000.

Nakajima, Kihei: *See*—
Uchino, Hiroshi; Nakajima, Kihei; and Kurosawa, Ryoichi, 4,517,636, Cl. 363-138.000.

Nakajima, Mikio: *See*—
Okumura, Takeshi; Nakanishi, Kiyoshi; and Nakajima, Mikio, 4,516,544, Cl. 123-188.00M.

Nakajima, Mutsuhiko, to Ace Pak Company Incorporated. Automatic carton packing machine. 4,516,381, Cl. 53-375.000.

Nakajima, Mutsuhiko, to Ace Pak Company Incorporated. Automatic carton packing machine. 4,516,382, Cl. 53-375.000.

Nakamura, Goto: *See*—
Isono, Kiyoshi; Nakamura, Goto; and Fujita, Shigeo, 4,517,178, Cl. 424-122.000.

Nakamura, Hiroyuki: *See*—
Nakaya, Shyunichi; and Nakamura, Hiroyuki, 4,516,599, Cl. 137-375.000.

Nakamura, Kazumasa: *See*—
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,516,652, Cl. 180-177.000.

Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, to Nissan Motor Company, Ltd. Variable venturi carburetor. 4,517,134, Cl. 261-39.00A.

Nakamura, Kenichi: *See—*
Morishita, Tatsuo; Funakoshi, Fumio; Nakamura, Kenichi; and Takamori, Kazuo, 4,517,564, Cl. 340-825.690.
Nakamura, Kenji; and Ideno, Shigeru, to Shimadu Corporation. Analog to digital conversion method and apparatus. 4,517,550, Cl. 340-347.0CC.
Nakamura, Kousuke: *See—*
Matsushita, Yasuo; Nakamura, Kousuke; and Ura, Mitsuru, 4,517,584, Cl. 357-80.000.
Nakamura, Naoji: *See—*
Masumoto, Hakaru; and Nakamura, Naoji, 4,517,156, Cl. 420-463.000.
Nakamura, Takashi: *See—*
Harashima, Asao; Nakamura, Takashi; and Kishimoto, Keiichi, 4,517,150, Cl. 264-300.000.
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating the current location of an automotive vehicle. 4,517,565, Cl. 340-995.000.
Nakanishi, Kiyoshi: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Nakajima, Mikio, 4,516,544, Cl. 123-188.00M.
Nakano, Eiichi: *See—*
Sando, Yoshikazu; and Nakano, Eiichi, 4,516,283, Cl. 8-149.100.
Nakao, Makoto: *See—*
Takasu, Ryo; and Nakao, Makoto, 4,517,146, Cl. 264-40.600.
Nakatani, Keiichi, to Abbott Laboratories. Method of making polyurethane foam. 4,517,313, Cl. 521-51.000.
Nakatani, Masayuki: *See—*
Sugisawa, Ko; Sekiguchi, Kazuya; Taguchi, Masao; Nakatani, Masayuki; and Iwata, Hitoshi, 4,516,596, Cl. 137-240.000.
Nakatani, Mitsuo: *See—*
Takahashi, Hideo; and Nakatani, Mitsuo, 4,517,490, Cl. 313-502.000.
Nakatsuji, Haruo: *See—*
Yasui, Toru; and Nakatsuji, Haruo, 4,517,494, Cl. 315-85.000.
Nakaya, Mitihiko: *See—*
Takematsu, Tetsuo; Nakaya, Mitihiko; Moriyasu, Koichi; and Komoto, Nobuo, 4,517,381, Cl. 564-207.000.
Nakaya, Shyunichi; and Nakamura, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Valve mechanism for low temperature applications. 4,516,599, Cl. 137-375.000.
Nakayama, Keiko: *See—*
Takayama, Hiroaki; Yamada, Sachiko; Nakayama, Keiko; and Suda, Tatsuo, 4,517,125, Cl. 260-397.200.
Nakazato, Teiji. Griddle cleaning device. 4,516,870, Cl. 401-146.000.
Namkung Promotions Inc.: *See—*
Kiyokane, Jerrilyn C., 4,516,793, Cl. 283-103.000.
Nance, Weldon B.; and Calkins, Jack M., to Witco Chemical Corporation. Lubricating wellbore fluid and method of drilling. 4,517,100, Cl. 252-8.50C.
Nankivell, David L. Hand paddle for a paddle ball game. 4,516,774, Cl. 273-67.00B.
Nascimento, Dennis F.: *See—*
Lenker, Don H.; and Nascimento, Dennis F., 4,516,385, Cl. 53-504.000.
Nasionale Sweisware (Eiendoms) Beperk: *See—*
Kaljee, Jan; Lalor, Leo J.; Pagani, Sergio M.; and Robinson, Frederick P. A., 4,517,441, Cl. 219-146.230.
Naslund, Erik I.: *See—*
Heaney, Richard; and Naslund, Erik I., 4,517,046, Cl. 156-500.000.
National Research Development Corporation: *See—*
Evans, David M.; and Weightman, Barry O., 4,516,569, Cl. 128-92.0BC.
Klinner, Wilfred E., 4,516,390, Cl. 56-364.000.
Markham, Peter G.; Townsend, Rodney; and Davies, Jeffrey W., 4,517,177, Cl. 424-93.000.
Stott, Edward J.; Thomas, Lewis H.; and Jebbett, Norma J., 4,517,304, Cl. 436-518.000.
National Starch and Chemical Corporation: *See—*
Szymanski, Chester D.; and Neigel, Dennis, 4,517,351, Cl. 527-312.000.
Tracton, Arthur A.; and Guidice, John N., 4,517,240, Cl. 428-326.000.
Natoli, John: *See—*
Hann, William M.; DuPre, Jean; and Natoli, John, 4,517,098, Cl. 210-701.000.
Nau, Alan J. Batting aid. 4,516,771, Cl. 273-26.00R.
Naujalis, Pierre: *See—*
Conche, Francois; and Naujalis, Pierre, 4,516,436, Cl. 73-863.850.
Nawa, Masumi: *See—*
Hamada, Nobuhiro; Sugimoto, Norihiko; and Nawa, Masumi, 4,517,644, Cl. 364-200.000.
Nawata, Takanari: *See—*
Isshiki, Tomiya; Nawata, Takanari; Kijima, Yasuhiko; Ito, Akira; and Watanabe, Takayuki, 4,517,377, Cl. 560-261.000.
Naya, Eizo: *See—*
Okumura, Mitsuhiro; Naya, Eizo; and Demizu, Michinosuke, 4,517,033, Cl. 148-432.000.
Naydowski, Reinhard: *See—*
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,516,488, Cl. 100-4.000.
NCR Corporation: *See—*
Cheffer, Harold H., 4,517,470, Cl. 307-64.000.
Turi, Raymond A.; and Pfeifer, Robert F., 4,516,313, Cl. 29-571.000.
NEC Corporation: *See—*
Aihara, Shigenobu; and Yamada, Akio, 4,517,527, Cl. 330-287.000.
Takezawa, Susumu; Ikebe, Ken'ichi; Ayada, Haruki; Fukui, Tatsuyuki; and Okada, Munenori, 4,516,746, Cl. 244-170.000.
Neff, Clayton B.: *See—*
Schultz, Per-Erik; Chowdhury, Mofazzal H.; and Neff, Clayton B., 4,516,592, Cl. 134-169.00C.
Nehen, Ulrich: *See—*
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.
Neidorff, Robert A., to Motorola, Inc. Programmable ring oscillator. 4,517,532, Cl. 331-57.000.
Neigel, Dennis: *See—*
Szymanski, Chester D.; and Neigel, Dennis, 4,517,351, Cl. 527-312.000.
Neki, Shigeo; Shinozaki, Nozomu; and Morofuji, Takeshi, to Matsushita Electric Industrial Co., Ltd. Circuit arrangement for controlling sewing machine speed and for positioning sewing needle. 4,516,514, Cl. 112-275.000.
Nelson, David A.: *See—*
Chulada, Edmund C.; and Nelson, David A., 4,516,302, Cl. 29-156.80R.
Nelson, Frederick J.; and Richards, Ray S., to Owens-Illinois, Inc. Waste heat recovery from regenerative furnaces. 4,516,934, Cl. 432-30.000.
Nelson, Mark L.: *See—*
Nelson, Otis L., Jr.; and Nelson, Mark L., 4,516,981, Cl. 44-53.000.
Nelson, Otis L., Jr.; and Nelson, Mark L. Residual oil sludge dispersant. 4,516,981, Cl. 44-53.000.
Nelson, Wayne I.: *See—*
Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., 4,517,081, Cl. 210-85.000.
Nerstrom, James S., to Outboard Marine Corporation. Two-cycle internal combustion engine including means for varying cylinder port timing. 4,516,540, Cl. 123-65.0PE.
Nestec, S.A.: *See—*
Hsu, Jau Y., 4,517,215, Cl. 426-557.000.
Roychoudhury, Rathindra N., 4,517,120, Cl. 426-655.000.
Neuendorf, Hans-Christoph: *See—*
Derner, Paul; Eckardt, Rudolf; and Neuendorf, Hans-Christoph, 4,516,997, Cl. 65-106.000.
Neumann, Peter: *See—*
Graser, Fritz; Hoffmann, Gerhard; Leyrer, Reinhold J.; Neumann, Peter; and Patsch, Manfred, 4,517,270, Cl. 430-58.000.
Nevamar Corporation: *See—*
Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., 4,517,235, Cl. 428-148.000.
New York Institute of Technology: *See—*
Glenn, William E., 4,517,597, Cl. 358-141.000.
Newkirk, Larry: *See—*
Newkirk, Martha; and Newkirk, Larry, 4,517,412, Cl. 179-7.10R.
Newkirk, Martha; and Newkirk, Larry. Card-actuated telecommunication network. 4,517,412, Cl. 179-7.10R.
Neyer, Norbert, to LGZ Landis & Gyr Zug AG. Method and an apparatus for synchronizing received binary signals. 4,517,682, Cl. 375-106.000.
Nicholas, Harry J. Game and key chain device. 4,516,776, Cl. 273-146.000.
Nickola, Richard A.; and Agarwal, Shashi B., to Inland Steel Company. Diffusion treated hot-dip aluminum coated steel and method of treating. 4,517,229, Cl. 427-383.900.
Niehaus, Roy G. Spare tire cover. 4,516,706, Cl. 224-42.200.
Nielsen, K. Frank: *See—*
Jensen, N. Due; and Nielsen, K. Frank, 4,516,915, Cl. 417-365.000.
Nieman, Gerald R., to International Telephone & Telegraph Corporation. Electrical connector locking mechanism. 4,516,821, Cl. 339-75.00M.
Nierlich, Franz: *See—*
Obenaus, Fritz; Nierlich, Franz; Reitemeyer, Otto; and Scholz, Bernhard, 4,517,395, Cl. 585-259.000.
Niggemann, Richard E., to Sundstrand Corporation. Deaerator usable in a system for a steam powered torpedo and deaerating method. 4,516,987, Cl. 55-52.000.
Nihon Electric Co. Ltd.: *See—*
Kawashima, Ryozo, 4,516,991, Cl. 55-124.000.
Nihon Kagaku Kogyo Co., Ltd.: *See—*
Hironaga, Katsuji; and Nishiura, Tadaki, 4,516,432, Cl. 73-861.040.
Nihon Parkerizing Co.: *See—*
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.
Nikora, Robert J. Mobile self-contained video game system with instantaneously selectable game cartridges. 4,516,777, Cl. 273-148.00B.
Nippon Air Brake Co., Ltd.: *See—*
Harada, Atsumu; and Arikawa, Tetsuro, 4,517,647, Cl. 364-426.000.
Nippon Electric Co., Ltd.: *See—*
Suzuki, Norio, 4,517,596, Cl. 358-133.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Satoh, Fusao, 4,516,463, Cl. 84-385.00R.
Nippon Kokan Kabushiki Kaisha: *See—*
Sugitani, Yuji; and Kobayashi, Yukio, 4,517,438, Cl. 219-125.120.
Nippon Paint Co., Ltd.: *See—*
Sakurai, Kiyomi, 4,517,278, Cl. 430-286.000.

Nippon Seiko K.K.: *See—*
Mitsue, Naoki; and Takahashi, Hideki, 4,516,783, Cl. 277-50.000.
Nippon Soda Co. Ltd.: *See—*
Kizawa, Hidenori; Fujiyama, Norimasa; Kobayashi, Jitsuo; and Ito, Akinori, 4,517,173, Cl. 424-16.000.
Nippon Soken, Inc.: *See—*
Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, 4,517,648, Cl. 364-431.010.
Takeuchi, Yukihisa; and Tomita, Masahiro, 4,516,993, Cl. 55-283.000.
Nippondenso Co., Ltd.: *See—*
Takeuchi, Yukihisa; and Tomita, Masahiro, 4,516,993, Cl. 55-283.000.
Nishihara, Tadao, to Iseki & Co., Ltd. Front-wheel drive device for vehicle. 4,516,654, Cl. 180-255.000.
Nishikawa, Masaji, to Olympus Optical Company, Ltd. Toner cleaning device for electrophotographic copying machine. 4,516,850, Cl. 355-15.000.
Nishikawa, Masao; Aoki, Takashi; Sakai, Shinzo; and Yoshizawa, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Control apparatus for a torque convertor clutch. 4,516,671, Cl. 192-.076.
Nishikawa, Masumi, to Aisin Seiki Kabushiki Kaisha. Locking mechanism for a telescopic steering wheel. 4,516,440, Cl. 74-493.000.
Nishikawa, Yoshihiro: *See—*
Inoue, Sukejiro; Hasegawa, Tetsuo; and Nishikawa, Yoshihiro, 4,517,273, Cl. 430-111.000.
Nishimura, Shinichi: *See—*
Akiyama, Yoshinori; Nishimura, Shinichi; and Harigaya, Isamu, 4,516,811, Cl. 308-3.00R.
Nishimura, Tadahiko: *See—*
Matsunaga, Fujihisa; Nishimura, Tadahiko; Miyake, Etsuo; and Banba, Kiyotaka, 4,517,387, Cl. 568-728.000.
Nishimura, Yutaka: *See—*
Abe, Yoshiaki; Nishimura, Yutaka; and Sugimoto, Hitoshi, 4,516,543, Cl. 123-179.00H.
Nishimuro, Yoshiaki: *See—*
Fushimoto, Hideo; Toyomura, Shigeru; Nishimuro, Yoshiaki; Asakura, Osamu; and Rachi, Masahiro, 4,517,660, Cl. 364-708.000.
Nishino, Chikae: *See—*
Sugimori, Fumio; Nishino, Chikae; and Harao, Norio, 4,516,715, Cl. 228-208.000.
Nishio, Katsufumi: *See—*
Funagura, Shuichi; and Nishio, Katsufumi, 4,516,733, Cl. 241-79.000.
Nishiura, Tadaki: *See—*
Hironaga, Katsuji; and Nishiura, Tadaki, 4,516,432, Cl. 73-861.040.
Nishiura, Yozo: *See—*
Okamoto, Kenji; Nishiwaki, Yoshikazu; Matsuoka, Shunji; and Nishiura, Yozo, 4,517,280, Cl. 430-321.000.
Nishiwaki, Kenichiro: *See—*
Takahashi, Kohki; Kondoh, Takeo; Koga, Masao; and Nishiwaki, Kenichiro, 4,517,348, Cl. 526-273.000.
Nishiwaki, Shunro: *See—*
Yamanaka, Koichi; Gotoh, Tetsuro; Aoki, Masanori; Kataoka, Isao; and Nishiwaki, Shunro, 4,517,091, Cl. 210-512.100.
Nishiwaki, Yoshikazu: *See—*
Okamoto, Kenji; Nishiwaki, Yoshikazu; Matsuoka, Shunji; and Nishiura, Yozo, 4,517,280, Cl. 430-321.000.
Nissan Motor Company, Ltd.: *See—*
Akiyama, Yoshinori; Nishimura, Shinichi; and Harigaya, Isamu, 4,516,811, Cl. 308-3.00R.
Aoyoma, Shunichi; and Kato, Manabu, 4,516,542, Cl. 123-90.160.
Morikawa, Kunihiko; Higuchi, Megumu; and Yanai, Tokiyoshi, 4,516,422, Cl. 72-377.000.
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.
Onishi, Kimimasa; Takahashi, Takao; and Koriyama, Masayuki, 4,516,610, Cl. 139-435.000.
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, 4,516,319, Cl. 29-877.000.
Umetsu, Yoshihiro; Muraishi, Masakazu; Ito, Osamu; and Kakeba, Masakatsu, 4,516,788, Cl. 280-6.00R.
Nissenbaum, Judith. Protective overshoe. 4,516,336, Cl. 36-7.10R.
Nisshin Flour Milling Co., Ltd.: *See—*
Koyama, Hiroyasu; Tsuji, Masahiro; and Suzuki, Yoshikuni, 4,517,365, Cl. 546-142.000.
Nitschko, Theodor: *See—*
Riss, Wilfried; Nitschko, Theodor; Spitaler, Engelbert; and Oberleitner, Gerhard, 4,516,791, Cl. 280-612.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Kakuhashi, Takeshi; Tahara, Hiroshi; and Mori, Yoshihisa, 4,517,546, Cl. 338-320.000.
Nix, Richard; and Compton, David J., to Automotive Products, plc. Quick connect cylinder mount stucture. 4,516,748, Cl. 248-1.000.
NL Industries, Inc.: *See—*
Mardis, Wilbur S.; and Finlayson, Claude M., 4,517,112, Cl. 252-315.200.
Noble, Scott W.: *See—*
Burke, Timothy M.; and Noble, Scott W., 4,517,561, Cl. 340-825.070.
Noda, Aiji. Method for the treatment of calcifying pancreatitis. 4,517,309, Cl. 514-376.000.
Noguchi, Hironori: *See—*
Kanda, Yoshiro; Noguchi, Hironori; and Ikeda, Tadashi, 4,516,327, Cl. 33-169.00R.
Noguchi, Yasuhiro; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Color diffusion transfer light-sensitive element with amine solvent. 4,517,286, Cl. 430-562.000.
Noonan, Denise J.: *See—*
Russell, John L., Jr.; and Noonan, Denise J., 4,516,535, Cl. 128-1.100.
Nopper, Guido H.: *See—*
Lindstedt, Guenter; and Nopper, Guido H., 4,517,529, Cl. 331-1.00A.
Norberg, Anna K. E.: *See—*
Inculet, Ion I.; Norberg, Anna K. E.; and Hepher, Nicholas M., 4,517,078, Cl. 209-127.300.
Nordbrock, Raymond E.; and Spears, Richard L., to Motorola, Inc. Multiple output alternator system. 4,517,507, Cl. 322-28.000.
Norris, Philip R.: *See—*
Kee, Richard C.; and Norris, Philip R., 4,516,844, Cl. 354-275.000.
North American Philips Consumer Electronics Corp.: *See—*
Say, Donald L., 4,517,488, Cl. 313-414.000.
Tamburrino, Richard A., 4,517,487, Cl. 313-407.000.
North American Philips Lighting Corporation: *See—*
Flohn, Paul H., 4,516,446, Cl. 82-38.00A.
Northern Engineering Industries plc: *See—*
Whinfrey, Dennis R., 4,516,728, Cl. 239-399.000.
Northern Telecom Limited: *See—*
Haskins, Steve W., 4,517,420, Cl. 179-164.000.
Johnston, Harold; and Benoit, Richard E., 4,516,818, Cl. 339-36.000.
Straub, Albert M.; Mabrey, Theodore R.; and Vokovich, Daniel L., 4,517,614, Cl. 360-85.000.
Northland Aluminum Products, Inc.: *See—*
Ishii, Thomas K.; and Jorgensen, Jorgen A., 4,517,432, Cl. 219-10.55F.
Northrop Corporation: *See—*
Agrawal, Suphal P., 4,516,419, Cl. 72-60.000.
Norwood, Richard L.: *See—*
Krasznai, Charles Z.; and Norwood, Richard L., 4,517,452, Cl. 219-413.000.
Novak, Christopher: *See—*
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,516,847, Cl. 355-3.0TR.
Novak, Thaddeus. Solar powered vehicle. 4,516,647, Cl. 180-2.200.
Novatome: *See—*
Plaziaud, Alain, 4,517,153, Cl. 376-253.000.
Nuclear Medicine, Inc.: *See—*
Russell, John L., Jr.; and Noonan, Denise J., 4,516,535, Cl. 128-1.100.
Numata, Mitsuo; Minamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsuru; and Miyawaki, Toshio, to Takeda Chemical Industries, Ltd. Cephalosporin derivatives. 4,517,361, Cl. 544-24.000.
Numrich, Rudi: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; Numrich, Rudi; and Weyh, Gerd, 4,516,990, Cl. 55-96.000.
Nunn, Timothy A.: *See—*
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,516,430, Cl. 73-727.000.
Nuovo Pignone S.p.A.: *See—*
Vinciguerra, Constantino, 4,516,908, Cl. 415-122.00R.
Nurk, Siegfried, to Sipra, Patententwicklungs-und Beteiligungsgegesellschaft gmbH. Thread-braking device for a textile machine. 4,516,738, Cl. 242-152.100.
Nurmio, Matti: *See—*
Eskelinen, Pekka; and Nurmio, Matti, 4,516,330, Cl. 34-23.000.
Obara, Hiroyuki, to Takara Co., Ltd. Reconfigurable toy assembly. 4,516,948, Cl. 446-95.000.
Obayashi, Hideki: *See—*
Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, 4,517,648, Cl. 364-431.010.
Obenaus, Fritz; Nierlich, Franz; Reitemeyer, Otto; and Scholz, Bernhard, to Chemische Werke Huls Aktiengesellschaft. Process for the selective hydrogenation of polyunsaturated hydrocarbons in hydrocarbon mixtures. 4,517,395, Cl. 585-259.000.
Oberleitner, Gerhard: *See—*
Riss, Wilfried; Nitschko, Theodor; Spitaler, Engelbert; and Oberleitner, Gerhard, 4,516,791, Cl. 280-612.000.
Occidental Chemical Corporation: *See—*
Tang, David Y., 4,517,372, Cl. 549-246.000.
Ochi, Kenji: *See—*
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; Suzaki, Takuya; and Imai, Kazuyoshi, 4,517,246, Cl. 428-407.000.
Ochiai, Chiaki, to Aisin Seiki Kabushiki Kaisha. Tandem diaphragm brake booster. 4,516,474, Cl. 91-519.000.
Oda, Toshinori: *See—*
Goto, Hideo; Hosoe, Takeo; Oda, Toshinori; and Ohtsuka, Sosuke, 4,516,978, Cl. 8-510.000.
O'Donnell, Brian C. Snow removal device. 4,516,799, Cl. 294-54.500.
Ogawa, Atsushi, to Trio Kabushiki Kaisha. Circuit for converting a staircase waveform into a smoothed analog signal. 4,517,520, Cl. 329-145.000.
Ogawa, Hiroyuki: *See—*
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; Suzaki, Takuya; and Imai, Kazuyoshi, 4,517,246, Cl. 428-407.000.

Ogawa, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Vacuum pump. 4,517,466, Cl. 290-36.00R.

Ogawa, Ken: *See—*
Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, 4,517,282, Cl. 430-399.000.

Ogawa, Yuichiro: *See—*
Takeshita, Masaru; Tokunaga, Toshio; and Ogawa, Yuichiro, 4,516,451, Cl. 83-171.000.

Ohi Seisakusho Company, Ltd.: *See—*
Akiyama, Yoshinori; Nishimura, Shinichi; and Harigaya, Isamu, 4,516,811, Cl. 308-3.00R.

Ohio Table Pad Company, The: *See—*
Krauser, Christopher P., 4,517,232, Cl. 428-57.000.

Ohkouchi, Fusakichi; and Suzuki, Kazuhiro, to Ricoh Company, Ltd. Method of and apparatus for compensating image in image reproduction system. 4,517,607, Cl. 358-284.000.

Ohmine, Toshinori: *See—*
Manome, Taichi; Ohmine, Toshinori; Okazaki, Takao; and Arai, Mamoru, 4,517,300, Cl. 435-317.000.

Ohmori, Takashi: *See—*
Murayama, Tomio; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,517,560, Cl. 340-790.000.

Ohmura, Hiroshi, to Fuji Photo Film Co., Ltd. Camera. 4,516,843, Cl. 354-173.100.

Ohnishi, Eiichi: *See—*
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.

Ohta, Tokuya: *See—*
Kobayashi, Masatsune; Haruta, Masahiro; Eida, Tsuyoshi; and Ohta, Tokuya, 4,517,244, Cl. 428-342.000.

Ohtsuka, Kenji: *See—*
Koiso, Yasuhiko; Ohtsuka, Kenji; and Yahara, Shigeo, 4,516,564, Cl. 126-263.000.

Ohtsuka, Sosuke: *See—*
Goto, Hideo; Hosoe, Takeo; Oda, Toshinori; and Ohtsuka, Sosuke, 4,516,978, Cl. 8-510.000.

Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, to Toray Industries, Inc. Process for producing polyester fiber. 4,517,149, Cl. 264-210.800.

Okada, Munenori: *See—*
Takezawa, Susumu; Ikebe, Ken'ichi; Ayada, Haruki; Fukui, Tatsuyuki; and Okada, Munenori, 4,516,746, Cl. 244-170.000.

Okamoto, Kenji; Nishiwaki, Yoshikazu; Matsuoka, Shunji; and Nishiura, Yozo, to Sumitomo Electric Industries, Ltd. Process for fabricating integrated optics. 4,517,280, Cl. 430-321.000.

Okamoto, Masashi: *See—*
Maeda, Kiyoshi; and Okamoto, Masashi, 4,517,608, Cl. 358-298.000.

Okamura, Takaaki: *See—*
Kanda, Katsumi; Okamura, Takaaki; Minamigi, Takashi; Inui, Tsuneo; and Kondo, Yoshikazu, 4,517,255, Cl. 428-626.000.

Okazaki, Takao: *See—*
Manome, Taichi; Ohmine, Toshinori; Okazaki, Takao; and Arai, Mamoru, 4,517,300, Cl. 435-317.000.

Oki Electric Industry Co., Ltd.: *See—*
Tsukakoshi, Shosaku, 4,517,549, Cl. 340-347.0AD.

Okita, Hiroshi: *See—*
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.
Okumura, Mitsuhiro; Naya, Eizo; and Demizu, Michinosuke, to Mitsubishi Denki Kabushiki Kaisha. Contact material for vacuum circuit breaker. 4,517,033, Cl. 148-432.000.

Okumura, Takeo: *See—*
Iwabuchi, Hidetoshi; and Okumura, Takeo, 4,517,175, Cl. 424-70.000.

Okumura, Takeshi; Nakanishi, Kiyoshi; and Nakajima, Mikio, to Toyota Jidosha Kabushiki Kaisha. Helically-shaped intake port of an internal-combustion engine. 4,516,544, Cl. 123-188.00M.

Okuyama, Hirofumi: *See—*
Ikegami, Kasumi; and Okuyama, Hirofumi, 4,517,266, Cl. 430-2.000.

Olesen, Jorgen E. Transparent panel for curved walls in revolving doors. 4,516,369, Cl. 52-204.000.

Olfert, Abram J. Bale discharge pressure plate. 4,516,492, Cl. 100-192.000.

Olin Corporation: *See—*
Fiorucci, Louis C.; and Gregory, Kevin M., 4,517,164, Cl. 423-184.000.
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,516,627, Cl. 164-467.000.
Yarwood, John C.; and Tyler, Derek E., 4,516,625, Cl. 164-454.000.

Oliver, Michael J.: *See—*
Wnuk, Paul A.; Hamilton, Thomas J.; Trassare, Anthony, Jr.; and Oliver, Michael J., 4,516,891, Cl. 410-154.000.

Olumpus Optical Company Limited: *See—*
Kimura, Kenji, 4,517,611, Cl. 360-33.100.

Olympus Optical Company Limited: *See—*
Galle, Kevin; Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; and Manabe, Sugio, 4,517,160, Cl. 422-65.000.
Nakahashi, Ken-ichi; and Mihara, Shin-ichi, 4,516,840, Cl. 350-515.000.
Nishikawa, Masaji, 4,516,850, Cl. 355-15.000.

Omure, Yukio: *See—*
Hisamoto, Iwao; Omure, Yukio; and Ishikawa, Sueyoshi, 4,517,108, Cl. 252-162.000.

O'Neill, Nelson L.: *See—*
Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., 4,517,235, Cl. 428-148.000.

Oneyama, Naotake; and Yoshikawa, Akihisa, to Shokestu Kinzoku Kogyo Kabushiki Kaisha. Cylinder driving system. 4,516,473, Cl. 91-462.000.

Onishi, Kimimasa; Takahashi, Takao; and Koriyama, Masayuki, to Nissan Motor Co., Ltd. Weft picking device of air jet weaving loom. 4,516,610, Cl. 139-435.000.

Ono, Terumichi: *See—*
Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, 4,517,149, Cl. 264-210.800.

Onodera, Kaoru: *See—*
Kagawa, Nobuaki; Fujimori, Noboru; Tanaka, Shigeo; and Onodera, Kaoru, 4,517,284, Cl. 430-591.000.

Oohashi, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Ignition coil device for internal combustion engine. 4,516,558, Cl. 123-634.000.

Oohashi, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Ignition coil device for internal combustion engine. 4,516,559, Cl. 123-634.000.

Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, to BASF Aktiengesellschaft. Inhibitors against corrosion caused by CO_2 and H_2S in water-in-oil emulsions. 4,517,114, Cl. 252-389.00R.

Orimo, Ryoichi: *See—*
Galle, Kevin; Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; and Manabe, Sugio, 4,517,160, Cl. 422-65.000.

Orosei, Mario, to Fadis S.p.A. Apparatus for reversing hose. 4,516,703, Cl. 223-39.000.

Ortlieb, Robert M., to DeVlieg Machine Company. Precision adjustable cutting tool. 4,516,889, Cl. 408-152.000.

Osawa, Yoshinori. Apparatus for tile-setting. 4,516,373, Cl. 52-387.000.

Osborne, Robert L.: *See—*
Kemper, Christian T.; Osborne, Robert L.; and Bellows, James C., 4,517,468, Cl. 290-52.000.

Oscar Mayer Foods Corporation: *See—*
Kress, Jack L., 4,517,207, Cl. 426-315.000.

Oscobal AG: *See—*
Mittelmeier, Heinz; Moser, Heinz; and Leu, Beat, 4,516,276, Cl. 3-1.910.

Otis Engineering Corporation: *See—*
Canalizo, Carlos R., 4,516,917, Cl. 417-390.000.
Pitts, Glen E., 4,516,634, Cl. 166-120.000.

Otsuka Chemical Co., Ltd.: *See—*
Tadashi, Ii; and Saichi, Egusa, 4,517,018, Cl. 75-129.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Yanaihara, Noboru; Sugiura, Nobuo; and Hiyama, Takashi, 4,517,180, Cl. 514-16.000.

Otte, Henning: *See—*
Heinrich, Wulf-Dieter; and Otte, Henning, 4,517,506, Cl. 318-807.000.

Otter, Brian: *See—*
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,516,847, Cl. 355-3.0TR.

Otto, Lee W.; Ingold, John H.; and Bergman, Rolf S., to General Electric Company. Incandescent lamp source utilizing an integral cylindrical transparent heat mirror. 4,517,491, Cl. 313-579.000.

Oudet, Claude, to Portescap. Electric stepper motor. 4,517,478, Cl. 310-49.00R.

Outboard Marine Corporation: *See—*
Hicks, John E.; and Kubat, James J., 4,516,638, Cl. 172-22.000.
Nerstrom, James S., 4,516,540, Cl. 123-65.0PE.

Outlaw, Ronald A.; and Baugh, Bill T., to United States of America, National Aeronautics and Space Administration. Precision manipulator heating and cooling apparatus for use in UHV systems with sample transfer capability. 4,516,435, Cl. 73-863.110.

Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., to Sovonics Solar Systems. Method of making amorphous semiconductor alloys and devices using microwave energy. 4,517,223, Cl. 427-39.000.

Owen, Wickersham & Erickson: *See—*
Lindberg, John E., 4,516,553, Cl. 123-568.000.

Owens-Corning Fiberglas Corporation: *See—*
Bhatti, Mohinder S.; Porzio, Thomas J.; and Nagy, Monte L., 4,516,995, Cl. 65-1.000.
Ferguson, Larry W.; and McFarland, Roger A., 4,517,323, Cl. 523-514.000.
Willard, G. Fred; and Hutchings, David A., 4,516,996, Cl. 65-3.430.

Owens-Illinois: *See—*
Babington, Robert S., 4,516,928, Cl. 431-12.000.

Owens-Illinois, Inc.: *See—*
Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., 4,517,492, Cl. 313-587.000.
Nelson, Frederick J.; and Richards, Ray S., 4,516,934, Cl. 432-30.000.

Owens, Joseph M.: *See—*
Zdanowski, Richard E.; and Owens, Joseph M., 4,517,330, Cl. 524-408.000.

Owoc, James R., to Kerotest Manufacturing Corp. Bent bellows sealed rotary valve. 4,516,754, Cl. 251-335.00B.

Oya, Masayuki: *See—*
Iso, Tadashi; and Oya, Masayuki, 4,517,123, Cl. 260-239.30R.

Ozaki, Keiichiro: *See—*
Sumida, Atsushi; Ozaki, Keiichiro; and Watanabe, Shizuo, 4,517,169, Cl. 423-447.400.

Ozawa, Kazuo: *See—*
Fujiwara, Hiroshi; Yamazaki, Hatsutaro; and Ozawa, Kazuo, 4,517,349, Cl. 526-313.000.

Ozeki, Mineo: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,517,645, Cl. 364-424.000.

P D Manufacturing, Inc.: *See—*
Stawski, Karl-Heinz; and Jensen, Philip W., 4,516,561, Cl. 126-25.00B.

Pachmayer Gun Works, Inc.: *See—*
Farrar, Frank W.; and Cupp, Carl J., 4,516,346, Cl. 42-50.000.

Paek, Un-Chul, to AT&T Technologies, Inc. Single mode lightguide fiber having a trapezoidal refractive index profile. 4,516,826, Cl. 350-96.310.

Pagani, Sergio M.: *See—*
Kaljee, Jan; Lalor, Leo J.; Pagani, Sergio M.; and Robinson, Frederick P. A., 4,517,441, Cl. 219-146.230.

Pagano, Michele; and Palumbo, Nicola. Framework block or brick consisting of modular elements of formed sheet steel or aluminum and comprising jointing means. 4,516,375, Cl. 52-581.000.

Pako Corporation: *See—*
Willenbring, Armer J., 4,516,386, Cl. 53-520.000.

Pakus, Edward: *See—*
Cohen, Howard; and Pakus, Edward, 4,516,325, Cl. 33-138.000.

Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., to Stauffer Chemical Company. Herbicide compositions. 4,517,012, Cl. 71-94.000.

Palmer, Kenneth J.; Brandyberry, Dennis R.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Metallic cable for reinforcing elastomeric articles. 4,516,395, Cl. 57-237.000.

Palumbo, Nicola: *See—*
Pagano, Michele; and Palumbo, Nicola, 4,516,375, Cl. 52-581.000.

Pan Communications, Inc.: *See—*
Konomi, Masao, 4,516,428, Cl. 73-585.000.

Pankratz, David P. Magnetic motor. 4,517,477, Cl. 310-23.000.

Panush, Sol, to Inmont Corporation. Super jet black coatings. 4,517,249, Cl. 428-463.000.

Papst Motoren GmbH & Co, KG: *See—*
Muller, Rolf, 4,517,480, Cl. 310-68.00R.

Paradyne Corporation: *See—*
Betts, William; and Smith, Wesley H., 4,517,680, Cl. 375-75.000.

Paradysz, Jean M.: *See—*
Milford, Edgar L.; Carpenter, Charles B.; and Paradysz, Jean M., 4,517,289, Cl. 435-7.000.

Parham, Walter J., Jr. Control and guidance apparatus for use with powered tools. 4,516,453, Cl. 83-471.300.

Paris, Jay E.: *See—*
MacPherson, David B.; Paris, Jay E.; Foley, Robert W.; Greinier, Martin W.; and Pulsifer, David N., 4,516,281, Cl. 4-319.000.

Parker Chemical Company: *See—*
Lindert, Andreas, 4,517,028, Cl. 148-6.14R.
Sonoda, Sakae; Nagae, Yoshio; and Kano, Seishi, 4,517,029, Cl. 148-6.15Z.

Parker, Dane K.; Kuczkowski, Joseph A.; and Kimball, Michael E., to Goodyear Tire & Rubber Company, The. Activating plasticizer for urethane prepolymers and complex of alkali metal salt with 4,4'-methylenedianiline. 4,517,331, Cl. 524-451.000.

Parker, John C.; and Blake, James A. Velocity measurement. 4,516,851, Cl. 356-28.000.

Parks, Gerald: *See—*
Gregory, John R.; Parks, Gerald; and Dondero, John D., 4,516,273, Cl. 2-2.000.

Parmley, Thomas A.: *See—*
Cavanaugh, James E.; Hetherington, Robert D.; and Parmley, Thomas A., 4,516,725, Cl. 239-127.000.

Parrock, Joseph J., to American Standard Inc. Changeable keylock having tumblers with shiftable pivot seats. 4,516,417, Cl. 70-384.000.

Pastusek, Paul E.: *See—*
Childers, John S.; and Pastusek, Paul E., 4,516,642, Cl. 175-340.000.

Patient, Lucien, to Les Robinets Presto. Faucet mixer. 4,516,607, Cl. 137-637.400.

Paton, H. Neil. Articulated intermodal flatcar. 4,516,506, Cl. 105-3.000.

Patsch, Manfred: *See—*
Graser, Fritz; Hoffmann, Gerhard; Leyrer, Reinhold J.; Neumann, Peter; and Patsch, Manfred, 4,517,270, Cl. 430-58.000.

Paul, Robert J.: *See—*
Fotiadis, Emanuel; Kozol, Edward J.; Leung, Tak L.; and Paul, Robert J., 4,516,678, Cl. 206-444.000.

Pavitt, William H., Jr. Telephone triggered switching system for transcriber. 4,517,413, Cl. 179-81.00R.

Pavlic, John C.: *See—*
Preschutti, Joseph P.; and Pavlic, John C., 4,517,521, Cl. 330-2.000.

Paynter, Alan H., to Incom International Inc. Flexible remote control with improved anchoring of outer ball races. 4,516,441, Cl. 74-501.00R.

Pearson, James E., to United Technologies Corporation. Laser radar adaptive tracking system. 4,516,853, Cl. 356-152.000.

Pedersen, Kristen I., to Sofec, Inc. Tower mounted mooring apparatus. 4,516,942, Cl. 441-5.000.

Pedroso, Raul I.; and Coulter, Robert S., to Coulter Corporation. Microsample handling apparatus. 4,516,437, Cl. 73-864.220.

Peelman, Harold E.: *See—*
Richter, Albert P., Jr.; and Peelman, Harold E., 4,517,459, Cl. 250-261.000.

Pegram, Warren J., to AMP Incorporated. Self-centering cable fastener. 4,517,408, Cl. 174-153.00G.

Peiffer, Dennis G.: *See—*
Duvdevani, Ilan; Peiffer, Dennis G.; Eckert, John A.; and Lundberg, Robert D., 4,516,982, Cl. 44-62.000.
Lundberg, Robert D.; Phillips, Robert R.; and Peiffer, Dennis G., 4,517,333, Cl. 524-516.000.

Peleckis, Anthony J., to Warner-Lambert Company. Dynamic razor. 4,516,320, Cl. 30-49.000.

Pennini, Gianni: *See—*
Cuffiani, Illaro; Longi, Paolo; Zucchini, Umberto; and Pennini, Gianni, 4,517,307, Cl. 502-119.000.

Pennwalt Corporation: *See—*
Griffith, Ronald C., 4,517,187, Cl. 514-250.000.
Raghunathan, Yegnasawami, 4,517,179, Cl. 514-249.000.

Pepper, William, Jr.: *See—*
Schalkowsky, Samuel; and Pepper, William, Jr., 4,517,292, Cl. 435-32.000.

PepsiCo, Inc.: *See—*
Szerenyi, Peter; and Ringleib, Colin J., 4,517,135, Cl. 261-104.000.

Perfetti, Bruno M., to United States Steel Corporation. Corrosion resistant core-plate and coatings therefor. 4,517,325, Cl. 524-188.000.

Perkin-Elmer Corp., The: *See—*
Liu, Raymond C.; and Markle, David A., 4,516,852, Cl. 356-121.000.

Pernicano, Vincent S. Transfer including substrate with deformable thermoplastic coat. 4,517,237, Cl. 428-198.000.

Perrault, Guy: *See—*
Duchesne, Gonzague L.; and Perrault, Guy, 4,517,035, Cl. 149-19.920.

Perrucchini, Vincenzo: *See—*
Moltrasio, Mario; and Perrucchini, Vincenzo, 4,516,762, Cl. 271-11.000.

Perry, John A.: *See—*
Simpson, Carolyn N.; and Perry, John A., 4,516,679, Cl. 206-459.000.

Perthus, Peter: *See—*
Dieffenbach, Rudiger; Grunwald, Werner; Perthus, Peter; and Prinzhausen, Friedrich, 4,517,630, Cl. 362-268.000.

Pertot, Fulvio: *See—*
Mercati, Giorgio; Mariano, Armando; Pertot, Fulvio; Glionna, Antonio; and Ferri, Mario, 4,517,355, Cl. 528-287.000.

Pesa, Frederick A.; Blaskie, Marcus W.; and Fox, Joseph R. Decarbonylation of N-butyraldehyde using zeolite catalysts. 4,517,400, Cl. 585-638.000.

Pesho, Stephen W.: *See—*
Buckner, Leonard; Foll, William A., Sr.; and Pesho, Stephen W., 4,516,380, Cl. 53-282.000.

Peters, Gerd, to H. Wohlenberg KG GmbH & Co. Three-knife trimmer. 4,516,455, Cl. 83-519.000.

Peterson, LuVerne R., to Burroughs Corporation. High-speed, compact magnetic bubble stretcher. 4,517,662, Cl. 365-44.000.

Petrich, Dennis M.; Amick, Christopher G.; and Gruenenwald, Stanley L., to Micro Component Technology, Inc. Integrated circuit test apparatus test head. 4,517,512, Cl. 324-73.00R.

Petruccelli, Frank: *See—*
May, Joseph R.; Petruccelli, Frank; Lang, Robert L.; and de Haan, Herman P., 4,517,231, Cl. 428-35.000.

Pettersson, Klas A. Cloth fastener. 4,516,297, Cl. 24-498.000.

Petty, Cleon, to Motorola, Inc. Master-slave flip-flop arrangement with slave section having a faster output transistion and a greater resistance to output degradation. 4,517,475, Cl. 307-272.00A.

Pfahl, Siegfried: *See—*
Meistring, Rolf; Siegling, Hans-Friedrich; and Pfahl, Siegfried, 4,516,831, Cl. 350-96.230.

Pfeifer, Robert F.: *See—*
Turi, Raymond A.; and Pfeifer, Robert F., 4,516,313, Cl. 29-571.000.

Pfizer Inc.: *See—*
Brennan, Thomas M.; and Hendrick, Michael E., 4,517,379, Cl. 564-193.000.
Kellogg, Michael S., 4,517,126, Cl. 260-245.20R.

Pfleiderer, Hans-Joerg; and Grassl, Gerhard, to Siemens Aktiengesellschaft. Method and arrangement for an operational check of a programmable logic array. 4,517,672, Cl. 371-27.000.

Pfluger, Fernando: *See—*
Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, 4,517,061, Cl. 204-59.00R.

Pfluger, Gerhard, to Robert Bosch GmbH. Vehicular-type alternator with speed-responsive fan coupling. 4,517,482, Cl. 310-78.000.

Phelps, Frankie E.: *See—*
Francis, Thomas L.; and Phelps, Frankie E., 4,517,037, Cl. 156-89.000.

Philip Morris Incorporated: *See—*
Rainer, Norman B.; and McClung, Charles S., 4,516,589, Cl. 131-331.000.
Teng, Daniel M., 4,516,590, Cl. 131-352.000.

Phillips, Edward H., to Hidden Valley Associates, Inc. Flexible shaft coupling device. 4,516,958, Cl. 464-153.000.

Phillips Petroleum Co.: *See—*
Kukes, Simon G.; and Banks, Robert L., 4,517,401, Cl. 585-645.000.

Phillips, Robert R.: *See—*
Lundberg, Robert D.; Phillips, Robert R.; and Peiffer, Dennis G., 4,517,333, Cl. 524-516.000.

Piat, Rene : *See—*
Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,517,362, Cl. 546-7.000.

Pichler, Rudolf. Adjustable stairway element. 4,516,368, Cl. 52-190.000.

Pieper, Kurt; and Scharpenberg, Rainer, to Krautkramer GmbH; and Brown Boveri Reaktor GmbH. Method of testing fuel element tubes for defects. 4,517,152, Cl. 376-252.000.

Piepmeier, Edward H. Multi-electrode plasma source. 4,517,495, Cl. 315-111.210.

Pierret, Gabriel L.: *See*—
Pierret, Luc A., deceased; Robert, Joseph, administrator; Pierret, Hubert; Pierret, Gabriel L.; Pierret, Maurice J.; and Pierret, Jean-Marie M., 4,516,734, Cl. 241-283.000.

Pierret, Hubert: *See*—
Pierret, Luc A., deceased; Robert, Joseph, administrator; Pierret, Hubert; Pierret, Gabriel L.; Pierret, Maurice J.; and Pierret, Jean-Marie M., 4,516,734, Cl. 241-283.000.

Pierret, Jean-Marie M.: *See*—
Pierret, Luc A., deceased; Robert, Joseph, administrator; Pierret, Hubert; Pierret, Gabriel L.; Pierret, Maurice J.; and Pierret, Jean-Marie M., 4,516,734, Cl. 241-283.000.

Pierret, Luc A., deceased; by Robert, Joseph, administrator; Pierret, Hubert; Pierret, Gabriel L.; Pierret, Maurice J.; and Pierret, Jean-Marie M. Method for loading automatically machines for treating bulk materials and device for working such method. 4,516,734, Cl. 241-283.000.

Pierret, Maurice J.: *See*—
Pierret, Luc A., deceased; Robert, Joseph, administrator; Pierret, Hubert; Pierret, Gabriel L.; Pierret, Maurice J.; and Pierret, Jean-Marie M., 4,516,734, Cl. 241-283.000.

Pincon, Andrew J. Activated air and ion exchange treatment of water. 4,517,084, Cl. 210-169.000.

Pineau, Jean, to Le Materiel de Voirie, Sarl. Pick-up sweeper of the type with elevating conveyor with dirt distributing device in the dirt collecting receptacle 4,516,285, Cl. 15-84.000.

Pinheiro, Edwin J., to International Business Machines Corporation. Lookahead I/O device control subsystem. 4,517,641, Cl. 364-200.000.

Pinkham, Jesse R., to R. J. Reynolds Tobacco Company. Method and apparatus for producing a multiple-blend cigarette. 4,516,585, Cl. 131-84.300.

Piotroski, Peter N.: *See*—
Gomes, John M.; and Piotroski, Peter N., 4,517,650, Cl. 364-478.000.

Pircher, Donna S.; and Pircher, Reinhold A. Discoidal amusement device. 4,516,947, Cl. 446-46.000.

Pircher, Reinhold A.: *See*—
Pircher, Donna S.; and Pircher, Reinhold A., 4,516,947, Cl. 446-46.000.

Pischke, La Monte D.: *See*—
Shoaf, Myron D.; and Pischke, La Monte D., 4,517,214, Cl. 426-548.000.

Pitney Bowes Inc.: *See*—
Beck, Christian A.; and Eckert, Alton B., 4,516,494, Cl. 101-93.260.
Gomes, John M.; and Piotroski, Peter N., 4,517,650, Cl. 364-478.000.

Pitts, Glen E., to Otis Engineering Corporation. Hydraulic running and setting tool for well packer. 4,516,634, Cl. 166-120.000.

Piwonka, Fridolin: *See*—
Buck, Rainer; Kuttner, Thomas; Piwonka, Fridolin; and Wessel, Wolf, 4,516,550, Cl. 123-357.000.

Plante, Stuart E.; and Hess, Susan V., to Amchem Products, Inc. Method for removing sealant contamination. 4,517,025, Cl. 134-38.000.

Plastic Specialties and Technologies, Inc.: *See*—
Dieckmann, Dale J.; and Fletcher, Charles W., 4,517,115, Cl. 252-400.00R.

Plastics Engineering Company: *See*—
D'Alelio, Gaetano F., deceased, 4,517,354, Cl. 528-172.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,517,363, Cl. 546-66.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,517,364, Cl. 546-66.000.

Plaziaud, Alain, to Novatome. Device for removing cooling fluid, making it possible to locate defective arrays in a nuclear reactor in operation. 4,517,153, Cl. 376-253.000.

Polanyi, Michael L. Continuous blood gas monitoring. 4,516,580, Cl. 123-632.000.

Polaroid Corporation: *See*—
Blakely, Linda L.; Goodman, John C.; and Walker, David B., 4,516,845, Cl. 354-412.000.
Kee, Richard C.; and Norris, Philip R., 4,516,844, Cl. 354-275.000.
Kisler, Semyon, 4,517,143, Cl. 264-22.000.

Pomerantz, Julie; and Feeney, Paul. Slicing device for foodstuffs. 4,516,458, Cl. 83-651.100.

Pon, Chuck Y., to Dalmo Victor Operations, Bell Aerospace Textron, Div. of Textron, Inc. High speed high power step attenuator method and apparatus. 4,517,535, Cl. 333-81.00A.

Popelka, Susan R., to Abbott Laboratories. Optical apparatus for fluorescence polarization instrument. 4,516,856, Cl. 356-368.000.

Popescu, Miron; and Gunsalus, Edward K., to Johnson & Johnson. Continuous removal of ethylene oxide from gaseous streams. 4,517,167, Cl 423-245.000.

Poran, Michael; Langner, Carl; and Tobiasz, Chester C., to Concast Incorporated. Mold assembly for continuous casting. 4,516,624, Cl. 164-418.000.

Portescap: *See*—
Oudet, Claude, 4,517,478, Cl. 310-49.00R.

Porzio, Thomas J.: *See*—
Bhatti, Mohinder S.; Porzio, Thomas J.; and Nagy, Monte L., 4,516,995, Cl. 65-1.000.

Pou, Frederick M.; and Straub, Richard L., to Monarch Marking Systems, Inc. Printer with automatic stacker. 4,516,497, Cl. 101-240.000.

PPG Industries, Inc.: *See*—
Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, 4,517,322, Cl. 523-501.000.

Prakash, Sri; and Snyder, William B., Jr., to Union Carbide Corporation. Copper base metal termination for multilayer ceramic capacitors. 4,517,155, Cl. 419-19.000.

Preschutti, Joseph P.; and Pavlic, John C., to C-COR Electronics, Inc. Feed forward circuit and a method for aligning and balancing the same. 4,517,521, Cl. 330-2.000.

Preston, John M.; Ward, Thomas V.; and Morrow, William H., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Correlation spectrometer for nerve agents. 4,516,857, Cl. 356-418.000.

Pretty Products, Inc.: *See*—
Bell, Ted A., 4,516,682, Cl. 211-59.100.

Price, Frank C.; Tout, Nigel R.; Hanson, Raymond; and Tillyard, Malcolm, to USM Corporation. Shoe part heating apparatus. 4,517,442, Cl. 219-215.000.

Price, Robert B.: *See*—
Bennett, Ross L.; Price, Robert B.; Springen, Clyde H.; and Kilbourn, Harlan C., 4,517,652, Cl. 364-513.000.

Prince, Jack A.; and Standridge, Bobby D., to Jack Prince, Inc. Deboning apparatus having auger seal on one end and support means therefor. 4,516,731, Cl. 241-24.000.

Prinzhausen, Friedrich: *See*—
Dieffenbach, Rudiger; Grunwald, Werner; Perthus, Peter; and Prinzhausen, Friedrich, 4,517,630, Cl. 362-268.000.

Procter & Gamble Company, The: *See*—
Barker, Dale E., 4,516,689, Cl. 220-335.000.
Volpenhein, Robert A., 4,517,360, Cl. 536-119.000.

Protocol Engineering Limited: *See*—
Elworthy, John H.; and Mayston, Donald, 4,517,036, Cl. 156-64.000.

Provisor, Zvi; and Burford, Henry H. T., Jr., to Crosfield Data Systems, Inc. Apparatus and method of microprocessor-controlling laser scanning of a material held by a transpor , the loading and unloading of the transport also being microprocessor-controlled. 4,517,638, Cl. 364-146.000.

Prudhomme, Malcolm J. Advanced dual-filtering apparatus. 4,517,082, Cl. 210-117.000.

Prunbauer, Kurt; and Csapo, Erich, to Evva-Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. Kommanditgesellschaft. Locking device and key. 4,516,416, Cl. 70-276.000.

Prusak, John J.: *See*—
Westerman, Harry H., Jr.; and Prusak, John J., 4,516,301, Cl. 29-27.00C.

Przybysz, John X.; and Schlegel, Earl S., deceased (by Schlegel, Barbara W., Administratrix), to Westinghouse Electric Corp. Method of making a self-protected thyristor. 4,516,315, Cl. 29-576.00B.

Pulsifer, David N.: *See*—
MacPherson, David B.; Paris, Jay E.; Foley, Robert W.; Greinier, Martin W.; and Pulsifer, David N., 4,516,281, Cl. 4-319.000.

Pyles Division: *See*—
Guzowski, Raymond J., 4,516,700, Cl. 222-330.000.

Quantum Systems Corporation: *See*—
Miller, Wendell R., 4,517,088, Cl. 210-411.000.

Quay, Earl R., to Mayer, Rothkopf Industries, Inc. Wire-covered doffer for sliver high pile fabric knitting machines. 4,516,292, Cl. 19-112.000.

Quest Corporation: *See*—
Wetzel, Donald C., 4,516,645, Cl. 177-147.000.

Quill Licensing: *See*—
Crimmins, Arthur G., Jr., 4,516,939, Cl. 434-114.000.

Quinn, Jeffrey J.: *See*—
Jenkins, Robert D., 4,516,341, Cl. 40-152.000.

R. J. Reynolds Tobacco Company: *See*—
Pinkham, Jesse R., 4,516,585, Cl. 131-84.300.

R. T. Vanderbilt Company, Inc.: *See*—
Hoffman, David M.; Feher, John J.; and Farmer, Homer H., 4,517,103, Cl. 252-28.000.

Raasch, Hans; and Wassenhoven, Heinz-Georg, to W. Schlafhorst & Co. Method and device for increasing the hairiness and the bulkiness of a thread. 4,516,397, Cl. 57-417.000.

Raasch, Hans: *See*—
Stahlecker, Fritz; and Raasch, Hans, 4,516,396, Cl. 57-407.000.

Rach, Heinz-Dieter: *See*—
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,516,617, Cl. 157-1.000.

Rachi, Masahiro: *See*—
Fushimoto, Hideo; Toyomura, Shigeru; Nishimuro, Yoshiaki; Asakura, Osamu; and Rachi, Masahiro, 4,517,660, Cl. 364-708.000.

Radecca, Inc.: *See*—
Beall, Gary W., 4,517,094, Cl. 210-664.000.

Radiant Technology Corporation: *See*—
Crain, N. Robert; and Richert, Carson T., 4,517,448, Cl. 219-388.000.

Rafaeli, Gilad. Egg-collection system. 4,516,532, Cl. 119-48.000.

Raghunathan, Yegnasawami, to Pennwalt Corporation. Rapid dissolving, uniform drug compositions and their preparation. 4,517,179, Cl. 514-249.000.

Ragland, Frank R., Jr., to RCA Corporation. Method for screening line screen slit mask color picture tubes. 4,516,841, Cl. 354-1.000.

Rahdener Maschinenfabrik August Kolbus: *See*—
Rathert, Horst, 4,516,960, Cl. 474-49.000.

Rainer, Norman B.; and McClung, Charles S., to Philip Morris Incorporated. Non-combustible carbonized cigarette filters. 4,516,589, Cl. 131-331.000.

Ralston Purina Company: *See*—
Snetsinger, David C.; Engster, Henry M.; and Stiebler, Dwaine D., 4,516,531, Cl. 119-18.000.

Ramanathan, Visvanathan, to Ciba-Geigy Corporation. Disazo bis-benzthiazolyl compounds. 4,517,358, Cl. 534-608.000.

Rao, Krishna K.: *See*—
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, 4,517,371, Cl. 549-239.000.

Ratcliffe, Charles T.; and Tromp, Petrus J., to Exxon Research and Engineering Co. Synthesis of H_2 and CH_4 from H_2S and CO. 4,517,171, Cl. 423-648.00R.

Rathert, Horst, to Rahdener Maschinenfabrik August Kolbus. Variable speed chain drive. 4,516,960, Cl. 474-49.000.

Rathmann, Dietrich: *See*—
Schmidt, Manfred; Rathmann, Dietrich; and Reinking, Klaus, 4,517,328, Cl. 524-370.000.

Rauma-Repola Oy: *See*—
Drockila, Kalevi, 4,516,526, Cl. 118-697.000.

Rawlings, David L., to International Hydron Corporation. Retaining means for device for centrifugally casting symmetrical or asymmetrical articles. 4,516,924, Cl. 425-434.000.

Rawlings, David L.; and Glick, Robert E., to International Hydron Corporation. Device and method for centrifugally casting articles. 4,517,138, Cl. 264-2.100.

Rawlings, David L.; and Glick, Robert E., to International Hydron Corporation. Device and method for centrifugally casting articles on a continuous basis. 4,517,139, Cl. 264-2.100.

Rawlings, David L., to International Hydron Corporation. Device and method for centrifugally casting articles. 4,517,140, Cl. 264-2.100.

Ray, Jeremiah B.: *See*—
Marshall, Charles A.; and Ray, Jeremiah B., 4,516,968, Cl. 604-174.000.

Raychem Corporation: *See*—
Chazan, David; and Katila, Michael J., 4,517,449, Cl. 219-549.000.
Read, Michael R.; and Corke, Nicholas T., 4,517,340, Cl. 525-113.000.

RCA Corporation: *See*—
Balaban, Alvin R.; and Steckler, Steven A., 4,517,586, Cl. 358-13.000.
Ditty, Lawrence H., 4,517,224, Cl. 427-64.000.
Glock, Thomas L.; and Credelle, Thomas L., 4,517,489, Cl. 313-422.000.
Labib, Mohamed E.; and Wang, Chin C., 4,517,117, Cl. 252-511.000.
Murphy, Wesley W., III; and Hettiger, James, 4,517,602, Cl. 358-198.000.
Ragland, Frank R., Jr., 4,516,841, Cl. 354-1.000.
Reitmeier, Glenn A., 4,517,600, Cl. 358-166.000.
Westerman, Harry H., Jr.; and Prusak, John J., 4,516,301, Cl. 29-27.00C.

Rea, Samuel N.: *See*—
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., 4,517,049, Cl. 156-622.000.

Read, Michael R.; and Corke, Nicholas T., to Raychem Corporation. Adhesive composition. 4,517,340, Cl. 525-113.000.

Rebhan, Dieter, to Linde Aktiengesellschaft. Tunnel constructing. 4,516,878, Cl. 405-130.000.

Redicon Corporation: *See*—
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,516,420, Cl. 72-329.000.

Redington, Rowland W., to General Electric Company. NMR blood flow imaging. 4,516,582, Cl. 128-653.000.

Reed Rock Bit Company: *See*—
Childers, John S.; and Pastusek, Paul E., 4,516,642, Cl. 175-340.000.

Reese, Dirk; and Rigler, Josef K., to Chemische Werke Huls AG. Fine particulate, expandable styrene polymers suitable for the production of rapidly mold-ejected cellular bodies. 4,517,314, Cl. 521-59.000.

Reich, George, to Unibody Time Saver Corporation. Vehicle frame clamping and support apparatus. 4,516,423, Cl. 72-422.000.

Reich, Karl, to Teroson GmbH. Method of preparing sulfonyl isocyanates. 4,517,133, Cl. 260-545.00R.

Reid, Norman C. Rowing outrigger. 4,516,941, Cl. 440-105.000.

Reid, Timothy H.: *See*—
Taylor, Michael N.; and Reid, Timothy H., 4,517,147, Cl. 264-83.000.

Reilich, David G.: *See*—
Jenkins, Robert D., 4,516,341, Cl. 40-152.000.

Reim, Paul. Arrangement for exchangeably framing pictures. 4,516,342, Cl. 40-156.000.

Reiner, Norbert L.: *See*—
Berger, Hans S.; Mercurio, Frank; and Reiner, Norbert L., 4,516,648, Cl. 180-6.660.

Reinitz, Karl; and Hart, Lynn, to United States of America, Navy. Magnetometer with a solid-state magnetic-field sensing means. 4,517,515, Cl. 324-252.000.

Reinking, Klaus: *See*—
Schmidt, Manfred; Rathmann, Dietrich; and Reinking, Klaus, 4,517,328, Cl. 524-370.000.

Reisgies, Rolf W.; and Camren, Robert, to Germania Dairy Automation, Inc. Milk sweep method and apparatus for automated milking systems. 4,516,530, Cl. 119-14.080.

Reiss, Harald; and Ziegenbein, Botho, to Brown, Boveri & Cie AG. High-temperature storage battery. 4,517,263, Cl. 429-120.000.

Reitemeyer, Otto: *See*—
Obenaus, Fritz; Nierlich, Franz; Reitemeyer, Otto; and Scholz, Bernhard, 4,517,395, Cl. 585-259.000.

Reitmeier, Glenn A., to RCA Corporation. Error concealment system using dropout severity information for selection of concealment method. 4,517,600, Cl. 358-166.000.

Rekuperator KG Dr.-Ing. Schack & Co.: *See*—
Winter, Karl, 4,516,985, Cl. 55-18.000.
Winter, Karl, 4,516,988, Cl. 55-59.000.

Reliance Universal, Inc.: *See*—
Matejka, Robert C.; and Moretz, Nellie M., 4,517,228, Cl. 427-370.000.

Remington, William R.: *See*—
Krahler, Stanley E.; and Remington, William R., 4,517,376, Cl. 560-87.000.

Renal Systems, Inc.: *See*—
Amiot, Bruce P.; Fuller, Larry E.; Martinez, Felix J.; Cosentino, Louis C.; Harm, William H.; and Nelson, Wayne I., 4,517,081, Cl. 210-85.000.

Renken, Terry L.: *See*—
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,517,374, Cl. 549-533.000.

Rensing, Cornelis: *See*—
Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,517,362, Cl. 546-7.000.

Rensselaer Polytechnic Institute: *See*—
Scarton, Henry A.; DiBianca, John A.; Lacey, James A.; and Kennedy, Warren C., 4,516,658, Cl. 181-208.000.

Research and Development Institute, Inc. at Montana State University: *See*—
Strobel, Gary A.; Gavlak, Andrea H.; and Jaynes, Jesse M., 4,517,008, Cl. 71-77.000.

Reske, Eckart; and Wolters, Ernst, to Hoechst Aktiengesellschaft. Toughened polyoxymethylene and shaped articles produced therefrom. 4,517,319, Cl. 523-200.000.

Reynolds Industries Inc.: *See*—
Malone, Edgar W., 4,517,497, Cl. 315-241.00R.

Reynolds & Laurence Industries Limited: *See*—
Laurence, Roger F., 4,517,415, Cl. 179-107.0FD.

Reynolds Metals Company: *See*—
Arfert, Horst F. W., 4,516,383, Cl. 53-410.000.

Rheinmetall GmbH: *See*—
Klein, Klaus-Walter; Bocker, Jurgen; Glotz, Gerhard; and Gersbach, Klaus, 4,516,502, Cl. 102-523.000.

Rhone-Poulenc Inc.: *See*—
Theissen, Robert J., 4,517,010, Cl. 71-90.000.

Rhone-Poulenc Specialites Chimiques: *See*—
Cassat, Robert, 4,517,227, Cl. 427-96.000.

Ribault, Michel: *See*—
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.

Ricciardi, Mario, to Bell & Howell Company. Motor driven continuous form folder. 4,516,761, Cl. 270-41.000.

Richard, Bruno, to Centre National de la Recherche Scientifique. Ultrasonic echogram probe and sector echographic scanning device. 4,516,583, Cl. 128-660.000.

Richards, Ray S.: *See*—
Nelson, Frederick J.; and Richards, Ray S., 4,516,934, Cl. 432-30.000.

Richardson, Paul; Albers, Daniel C.; and Whitley, David A., to Santa Fe International Corporation. Blind shaft drilling. 4,516,633, Cl. 166-69.000.

Richert, Carson T.: *See*—
Crain, N. Robert; and Richert, Carson T., 4,517,448, Cl. 219-388.000.

Richmond, Michael S.: *See*—
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.

Richter, Albert P., Jr.; and Peelman, Harold E., to Texaco Inc. Temperature stabilization system for a radiation detector in a well logging tool. 4,517,459, Cl. 250-261.000.

Richter, Johan C. F. C.: *See*—
Richter, Ole J.; and Richter, Johan C. F. C., 4,516,887, Cl. 406-63.000.

Richter, Ole J.; and Richter, Johan C. F. C., to Kamyr, Inc. Feeder deflection compensation. 4,516,887, Cl. 406-63.000.

Ricoh Company, Ltd.: *See*—
Iiyama, Kiyotaka; and Taniguchi, Keishi, 4,517,580, Cl. 346-214.000.
Ohkouchi, Fusakichi; and Suzuki, Kazuhiro, 4,517,607, Cl. 358-284.000.

Ridout, Paul S.; and Birks, Colin, to Lucas Chloride EV Systems Limited. Heat sink for semi-conductor devices having terminals projecting from a heat sink transfer face. 4,517,585, Cl. 357-81.000.

Riedl, Reinhold, to Haacon hebetechnik GmbH. Movable lifting and depositing device for portable containers, e.g., cabins, containers, shelters or the like. 4,516,901, Cl. 414-458.000.
Rigler, Josef K.: *See—*
Reese, Dirk; and Rigler, Josef K., 4,517,314, Cl. 521-59.000.
Rigo, Marcel L. A.: *See—*
Bouiller, Jean G.; Delonge, Jean-Claude L.; Rigo, Marcel L. A.; and Zietek, Didier G., 4,516,910, Cl. 416-190.000.
Rijckaert, Albert M. A.; and de Niet, Edmond, to U.S. Philips Corporation. Reproducing apparatus with controlled gain output independent of tracking errors. 4,517,612, Cl. 360-67.000.
Rikagaku Kenkyusho: *See—*
Isono, Kiyoshi; Nakamura, Goto; and Fujita, Shigeo, 4,517,178, Cl. 424-122.000.
Rimai, Donald S.: *See—*
Jadwin, Thomas A.; and Rimai, Donald S., 4,517,272, Cl. 430-110.000.
Ringleib, Colin J.: *See—*
Szerenyi, Peter; and Ringleib, Colin J., 4,517,135, Cl. 261-104.000.
Riss, Wilfried; Nitschko, Theodor; Spitaler, Engelbert; and Oberleitner, Gerhard, to TMC Corporation. Safety ski binding. 4,516,791, Cl. 280-612.000.
Ritt, Hans-Georg; Luneberg, Hartmut; Mannl, Reinhard; and Grillmeier, Alfred, to Schott-Ruhrglas GmbH. Method of making tubular vials and ampules. 4,516,998, Cl. 65-108.000.
Robbins, Kenneth W.: *See—*
Frew, John W.; and Robbins, Kenneth W., 4,516,861, Cl. 368-120.000.
Robert Bosch GmbH: *See—*
Buck, Rainer; Kuttner, Thomas; Piwonka, Fridolin; and Wessel, Wolf, 4,516,550, Cl. 123-357.000.
Dieffenbach, Rudiger; Grunwald, Werner; Perthus, Peter; and Prinzhausen, Friedrich, 4,517,630, Cl. 362-268.000.
Fricke, Hans-Jurgen, 4,516,475, Cl. 92-57.000.
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.
Fussner, Paul, 4,516,730, Cl. 239-533.800.
Heinrich, Wulf-Dieter; and Otte, Henning, 4,517,506, Cl. 318-807.000.
Pfluger, Gerhard, 4,517,482, Cl. 310-78.000.
Robert, Joseph, administrator: *See—*
Pierret, Luc A., deceased; Robert, Joseph, administrator; Pierret, Hubert; Pierret, Gabriel L.; Pierret, Maurice J.; and Pierret, Jean-Marie M., 4,516,734, Cl. 241-283.000.
Roberts, Ernest F. Propulsion unit for a water-borne vessel. 4,516,940, Cl. 440-53.000.
Roberts, Richard W., to Borg-Warner Corporation. Capacity control of rotary vane apparatus. 4,516,919, Cl. 418-23.000.
Robertson, Simon A.: *See—*
Thornton, Ian; DeWitt, Kenneth W.; and Robertson, Simon A., 4,517,209, Cl. 426-383.000.
Robinson, Frederick P. A.: *See—*
Kaljee, Jan; Lalor, Leo J.; Pagani, Sergio M.; and Robinson, Frederick P. A., 4,517,441, Cl. 219-146.230.
Robinson, Geoffrey C.: *See—*
Venable, Thomas L.; Robinson, Geoffrey C.; and Loeslein, Raymond D., 4,516,815, Cl. 339-14.00R.
Rocke, Richard D.: *See—*
Mulliner, Richard R.; and Rocke, Richard D., 4,517,571, Cl. 343-771.000.
Rockwell International Corporation: *See—*
Cascini, Michael R., 4,516,834, Cl. 350-335.000.
Moriarty, Michael P., 4,517,165, Cl. 423-244.000.
Sheill, David D., 4,516,666, Cl. 188-73.380.
Rodarte, Michael R. Aerodynamic throwing implement. 4,516,946, Cl. 446-46.000.
Rodemeyer, Gunther: *See—*
Rudolph, Gert; and Rodemeyer, Gunther, 4,516,588, Cl. 131-291.000.
Rody, Jean: *See—*
Leppard, David G.; and Rody, Jean, 4,517,283, Cl. 430-512.000.
Roe, Jonas L., to Terradyne Limited. Gimbal mounted on frame with heavy metal plate sides. 4,516,338, Cl. 37-4.000.
Roerig, Arnold J.; and Schroeder, Robert W., to Beloit Corporation. Slice lip adjustment. 4,517,056, Cl. 162-344.000.
Roffler, Werner: *See—*
Langenegger, Urs; Roffler, Werner; and Rutsche, Wendolin, 4,516,509, Cl. 108-147.000.
Roger, Guy-Roland: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.
Rogers, Gerald: *See—*
Solimeno, Duane; Koeppen, Peter L.; Rogers, Gerald; and Brown, Sammy K., 4,517,656, Cl. 364-900.000.
Rogic, Milorad M.: *See—*
Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., 4,517,002, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,003, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,005, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,004, Cl. 71-28.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,007, Cl. 71-28.000.
Rohm GmbH: *See—*
Arndt, Peter J.; Muller, Manfred; Schlosser, Fritz; and Wenzel, Franz, 4,517,380, Cl. 564-206.000.
Muramatsu, Toshio; Totani, Nagao; and Mangold, Helmut K., 4,517,297, Cl. 435-128.000.
Rohm and Haas Company: *See—*
Hann, William M.; DuPre, Jean; and Natoli, John, 4,517,098, Cl. 210-701.000.
Zdanowski, Richard E.; and Owens, Joseph M., 4,517,330, Cl. 524-408.000.
Rolls-Royce Limited: *See—*
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,516,621, Cl. 164-339.000.
Romey, Ingo; and Lennartz, Rudiger, to Bergwerksverband; and Boll & Kirch Filterbau GmbH. Tubular filter apparatus. 4,517,086, Cl. 210-323.200.
Roos, Eberhard, to Delma- elektro- und medizinische Apparatebau Gesellschaft mbH. Operating theatre lamp. 4,517,632, Cl. 362-389.000.
Rose, John W., to Motorola, Inc. Deposition and diffusion source control means and method. 4,517,220, Cl. 427-8.000.
Rose, Robert M.; and Sadoway, Donald R. Cryoelectrodeposition. 4,517,253, Cl. 428-620.000.
Rossi, Gianrico, to Edwards Alto Vuoto S.p.A. Device for controlling the position of product containers carrying plates of a lyophilization and the like apparatus. 4,516,333, Cl. 34-92.000.
Roth, Herbert R.: *See—*
Lawson, John E.; Matier, William L.; and Roth, Herbert R., 4,517,188, Cl. 514-394.000.
Rowland, Nelson; and Getto, Robert D., to Burlington Industries, Inc. Modular pallet and shipping tray. 4,516,677, Cl. 206-394.000.
Rowland, Robert O., to Hudson Oxygen Therapy Sales Company. Oxygen concentrator monitor and regulation assembly. 4,516,424, Cl. 73-23.000.
Roychoudhury, Rathindra N., to Nestec, S.A. Coffee oil treatment. 4,517,120, Cl. 426-655.000.
Rudolph, Gert; and Rodemeyer, Gunther. Process for improving the filling capacity of tobacco, in particular cut tobacco leaf. 4,516,588, Cl. 131-291.000.
Ruhl, Rolf: *See—*
Schneider, Franz; and Ruhl, Rolf, 4,516,447, Cl. 83-71.000.
Ruhmer, Heinz: *See—*
Warnecke, Rolf; Ruhmer, Heinz; and Leineweber, Gunter, 4,516,470, Cl. 91-374.000.
Ruitberg, Arthur P.; and Young, Kenneth M., to United States of America, National Aeronautics and Space Administration. High voltage power supply. 4,517,472, Cl. 307-82.000.
Russell, Cornelius R., to Combustion Engineering, Inc. Nozzle cooled by heat pipe means. 4,516,631, Cl. 165-47.000.
Russell, John L., Jr.; and Noonan, Denise J., to Nuclear Medicine, Inc. Methods for neutron-capture tumor therapy. 4,516,535, Cl. 128-1.100.
Russell, Michael J. H.; and Murrer, Barry A., to Johnson Matthey Public Limited Company. Hydrogenation of olefins and aldehydes. 4,517,390, Cl. 568-881.000.
Ruth, Kenneth: *See—*
Berger, Charles; and Ruth, Kenneth, 4,517,267, Cl. 430-3.000.
Rutsche, Wendolin: *See—*
Langenegger, Urs; Roffler, Werner; and Rutsche, Wendolin, 4,516,509, Cl. 108-147.000.
Rutte, Siegfried: *See—*
Lewis, Edwin C.; Henschenmacher, Helmut; Ecker, Karl-Heinz; Giernalczyk, Hartmut; and Rutte, Siegfried, 4,516,477, Cl. 92-128.000.
Ryang, Hong-Son, to General Electric Company. Heat curable compositions. 4,517,342, Cl. 525-431.000.
Rye, Grover W.: *See—*
Palmer, Kenneth J.; Brandyberry, Dennis R.; and Rye, Grover W., 4,516,395, Cl. 57-237.000.
S&A Corporation: *See—*
Gulick, William D., 4,516,519, Cl. 114-270.000.
S.A.E.S. Getters S.p.A.: *See—*
Martelli, Daniele, 4,516,945, Cl. 445-19.000.
S.N.E.C.M.A.: *See—*
Bouiller, Jean G.; Delonge, Jean-Claude L.; Rigo, Marcel L. A.; and Zietek, Didier G., 4,516,910, Cl. 416-190.000.
Saab-Scania Aktiebolag: *See—*
Magnusson, Karl G.; and Stahl, Hans V., 4,517,646, Cl. 364-424.100.
Sachs, Klaus, to Anton Piller GmbH & Co. KG. Rotary converter machine for direct transfer of electric energy by flux linkage between windings on a stator pack. 4,517,471, Cl. 307-67.000.
Sadauskas, Raymond L.; and Moore, Paul E., to Arcair Company. Underwater electrode with waterproof integrity. 4,517,440, Cl. 219-145.100.
Sadoway, Donald R.: *See—*
Rose, Robert M.; and Sadoway, Donald R., 4,517,253, Cl. 428-620.000.
Safeway Products Inc.: *See—*
Torning, Ralph R., 4,517,446, Cl. 219-386.000.
Sagaser, Thomas M., to Clark Equipment Company. Pump centering control. 4,516,439, Cl. 74-470.000.

Sagem: *See—*
Veragen, Rene , 4,516,567, Cl. 128-1.00D.
Saichi, Egusa: *See—*
Tadashi, Ii; and Saichi, Egusa, 4,517,018, Cl. 75-129.000.
Saigo, Hiroshi; and Kaneko, Hiroshi, to Iwaya Corporation. Movable toy animal. 4,516,951, Cl. 446-338.000.
Saiko, Alfons: *See—*
Spieldiener, Robert; Spieldiener, Reinhold; and Saiko, Alfons, 4,516,943, Cl. 441-35.000.
Saint-Gobain Vitrage: *See—*
Burget, Paul; and Zortea, Michel, 4,517,000, Cl. 65-178.000.
St. Joseph Bank and Trust Company, executor: *See—*
D'Alelio, Gaetano F., deceased, 4,517,354, Cl. 528-172.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,517,364, Cl. 546-66.000.
St. Joseph Bank and Trust Company, legal representative: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,517,363, Cl. 546-66.000.
Saito, Junya: *See—*
Yamada, Hisafumi; Saito, Junya; and Tsutsui, Ichiro, 4,517,601, Cl. 358-167.000.
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, to Yoshino Kogyosho Co., Ltd. Manually-operated sprayer. 4,516,727, Cl. 239-333.000.
Saitou, Tatuya: *See—*
Yamawaki, Takeshi; Saitou, Tatuya; and Sugimori, Sigemi, 4,516,804, Cl. 296-214.000.
Sakai, Koichi, to Toko, Inc. Variable impedance circuit. 4,517,508, Cl. 323-352.000.
Sakai, Shinzo: *See—*
Nishikawa, Masao; Aoki, Takashi; Sakai, Shinzo; and Yoshizawa, Hiroshi, 4,516,671, Cl. 192-.076.
Sakai, Takami, to Tokyo Shibaura Denki Kabushiki Kaisha. Power conversion equipment. 4,517,634, Cl. 363-35.000.
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, to Toyo Jozo Kabushiki Kaisha. Antibiotic acmimycin and its production. 4,517,296, Cl. 435-119.000.
Sakakibara, Shuzi: *See—*
Inaba, Hideaki; and Sakakibara, Shuzi, 4,517,015, Cl. 75-12.000.
Sakata, Yoshio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Megnetic device. 4,517,539, Cl. 335-302.000.
Saksena, Anil K.: *See—*
Kreutner, William; Green, Michael J.; Shue, Ho-Jane; and Saksena, Anil K., 4,517,200, Cl. 514-455.000.
Sakuno, Hideaki: *See—*
Kobayashi, Satoru; Masaki, Mikio; Sakuno, Hideaki; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,516,415, Cl. 70-252.000.
Sakurada, Masahiko: *See—*
Galle, Kevin; Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; and Manabe, Sugio, 4,517,160, Cl. 422-65.000.
Sakurai, Kiyomi, to Nippon Paint Co., Ltd. Photosensitive resin compositions useful as flexographic plates. 4,517,278, Cl. 430-286.000.
Salathiel, William M., to Exxon Production Research Co. Method of breaking an emulsion and an emulsion-emulsion breaker composition. 4,517,102, Cl. 252-8.55R.
Salk Institute for Biological Studies, The: *See—*
Ling, Nicholas C.; Esch, Frederick S.; Bohlen, Peter; Brazeau, Paul E., Jr.; and Guillemin, Roger C. L., 4,517,181, Cl. 514-12.000.
SAMIN Societe Azionaria Minero-Metallurgicia S.p.A.: *See—*
Guerriero, Renato, 4,517,065, Cl. 204-119.000.
Samson, Wilfred J., to Advanced Cardiovascular Systems, Inc. Guiding catheter and method of manufacture. 4,516,972, Cl. 604-282.000.
San Shoe Trading Corp.: *See—*
Adamik, Jaroslav, 4,516,337, Cl. 36-136.000.
Sanders, Gerhard. Arrangement for heating and/or heat retaining of containers. 4,516,935, Cl. 432-247.000.
Sanderson, Dilworth. Self locking holder for an item of jewelry. 4,516,294, Cl. 24-41.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., to Texaco Inc. Cycloalkane epoxides produced by air oxidation of cycloalkenes over oxide catalysts. 4,517,374, Cl. 549-533.000.
Sando Iron Works Co. Ltd.: *See—*
Sando, Yoshikazu; and Nakano, Eiichi, 4,516,283, Cl. 8-149.100.
Sando, Yoshikazu; and Nakano, Eiichi, to Sando Iron Works Co. Ltd. Method for continuous bleaching of cloth. 4,516,283, Cl. 8-149.100.
Sandoz Ltd.: *See—*
Baumann, Hans-Peter, 4,516,979, Cl. 8-583.000.
Sane, Ajit Y.: *See—*
Harney, Marilyn J.; Vauss, Elvin M., Jr.; and Sane, Ajit Y., 4,517,069, Cl. 204-290.00F.
Sanimed Vertrieb AG: *See—*
Kirchner, Georg, 4,516,576, Cl. 128-327.000.
Sankyo Company, Limited: *See—*
Manome, Taichi; Ohmine, Toshinori; Okazaki, Takao; and Arai, Mamoru, 4,517,300, Cl. 435-317.000.
Terahara, Akira; and Tanaka, Minoru, 4,517,373, Cl. 549-292.000.
Sano, Tomomi: *See—*
Kawasaki, Kikuo; and Sano, Tomomi, 4,517,651, Cl. 364-479.000.
Sanraku-Ocean Co., Ltd.: *See—*
Yoshioka, Takeo; Yamamoto, Kenichi; Fukagawa, Yasuo; Shimauchi, Yasutaka; and Ishikura, Tomoyuki, 4,517,127, Cl. 260-245.20T.
Sansui Electric Co., Ltd.: *See—*
Tanaka, Susumu; and Ito, Ryosuke, 4,517,528, Cl. 330-297.000.
Santa Fe International Corporation: *See—*
Richardson, Paul; Albers, Daniel C.; and Whitley, David A., 4,516,633, Cl. 166-69.000.
Santen Pharmaceutical Co., Ltd.: *See—*
Iso, Tadashi; and Oya, Masayuki, 4,517,123, Cl. 260-239.30R.
Santrade Ltd.: *See—*
Karlsson, Harry L., 4,516,640, Cl. 175-227.000.
Sanyo Electric Co., Ltd.: *See—*
Aoki, Yoshiaki; Suzuki, Hazime; and Hirota, Tatsuya, 4,516,335, Cl. 34-133.000.
Horinouchi, Atsushi, 4,517,429, Cl. 219-10.55B.
Saron, John R., to Key Medical, Inc. Flexible light. 4,517,499, Cl. 315-362.000.
Saros, Stephen, to Technicon Instruments Corporation. Continuous flow metering apparatus. 4,517,302, Cl. 436-180.000.
Sasano, Kiyomi: *See—*
Yamauchi, Toshiaki; Hibi, Tsuneo; Sasano, Kiyomi; and Hayashi, Yoshiki, 4,516,331, Cl. 34-77.000.
Sater, Bernard L. Method of making a high intensity solar cell. 4,516,314, Cl. 29-572.000.
Sato, Hirotake: *See—*
Takasaki, Junsuke; Sato, Hirotake; and Yasuda, Akira, 4,517,031, Cl. 148-12.00C.
Sato, Koji: *See—*
Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, 4,517,397, Cl. 585-428.000.
Sato, Tetsuya: *See—*
Nagase, Hyosuke; Sato, Tetsuya; Kobayashi, Kazuo; Masumoto, Norio; and Nagase, Yuji, 4,517,087, Cl. 210-396.000.
Sato, Yoshiaki: *See—*
Suzuki, Hirosuke; and Sato, Yoshiaki, 4,517,247, Cl. 428-421.000.
Sato, Yoshito; Yato, Tokuhiro; Maeo, Hidemi; and Tsutsumi, Yoshio, to Kabushiki Kaisha Komatsu Seisakusho. Electric hydraulic controll device for a construction vehicle. 4,516,469, Cl. 91-362.000.
Satoh, Fusao, to Nippon Gakki Seizo Kabushiki Kaisha. Key mechanism for wind instruments. 4,516,463, Cl. 84-385.00R.
Satoi, Shuzo: *See—*
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, 4,517,296, Cl. 435-119.000.
Satzinger, Gerhard: *See—*
Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, 4,517,185, Cl. 514-232.000.
Satzler, Ronald L., to Caterpillar Tractor Co. Method and apparatus for making braided reinforced hose. 4,517,039, Cl. 156-149.000.
Saul, Ben; and Hartley, Doug, to Sur-Gard Security Systems Ltd. Automatic bypass switch for household security system. 4,517,556, Cl. 340-528.000.
Sawada, Daisaku: *See—*
Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, 4,517,648, Cl. 364-431.010.
Sawazaki, Masauki: *See—*
Masumoto, Kazuhiro; Fujimura, Mituaki; and Sawazaki, Masauki, 4,517,151, Cl. 264-540.000.
Say, Donald L., to North American Philips Consumer Electronics Corp. In-line electron gun structure for color cathode ray tube having lensing electrodes with tapered apertures and beam spot-shaping inserts. 4,517,488, Cl. 313-414.000.
Scarton, Henry A.; DiBianca, John A.; Lacey, James A.; and Kennedy, Warren C., to Rensselaer Polytechnic Institute. Coulome friction noise and vibration damping. 4,516,658, Cl. 181-208.000.
Schacht, Roy A. Printing wheel connecting and adjusting means. 4,516,867, Cl. 400-175.000.
Schaeffer, Andrew P., to Cincinnati Milacron Inc. Knife assembly for tape laying machine. 4,516,461, Cl. 83-881.000.
Schalkowsky, Samuel; and Pepper, William, Jr., to Spiral System Instruments, Inc. Method and apparatus for testing microbial interaction with growth affecting substances. 4,517,292, Cl. 435-32.000.
Scharpenberg, Rainer: *See—*
Pieper, Kurt; and Scharpenberg, Rainer, 4,517,152, Cl. 376-252.000.
Scheck, Georg; and Bogner, Martin, to GEZE GmbH. Laterally releasable toe unit for a ski safety binding. 4,516,792, Cl. 280-625.000.
Scheibe, Peter; Bernt, Erich; and Klose, Sigmar, to Boehringer Mannheim GmbH. Method and reagent for the enzymatic determination of enzyme substrates. 4,517,287, Cl. 435-4.000.
Scheinecker, Alois, to Voest-Alpine Aktiengesellschaft. Continuous casting plant. 4,516,623, Cl. 164-416.000.
Schemenauer, Harold. Apparatus for imprinting and cutting a tape or ribbon. 4,516,493, Cl. 101-27.000.
Scher, Herbert I.: *See—*
Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., 4,517,235, Cl. 428-148.000.
Schering Aktiengesellschaft: *See—*
Dettke, Manfred; and Klein, Rudolf, 4,517,060, Cl. 204-44.000.
Grapentin, Joachim; Mahlkow, Hartmut; and Skupsch, Jurgen, 4,517,254, Cl. 428-626.000.
Skotsch, Carlo; Baumert, Dietrich; Krahmer, Hansjorg; and Arndt, Friedrich, 4,517,367, Cl. 546-276.000.
Schering-Plough Corporation: *See—*
Kreutner, William; Green, Michael J.; Shue, Ho-Jane; and Saksena, Anil K., 4,517,200, Cl. 514-455.000.
Schlecker, Rainer; Friedrich, Ludwig; and Lenke, Dieter, to BASF Aktiengesellschaft. Tricyclic thiazolyloxamic acids and their derivatives, their preparation, and therapeutic agents containing these compounds. 4,517,196, Cl. 514-371.000.

Schlegel, Barbara W., Administratrix: *See—*
Przybysz, John X.; and Schlegel, Earl S., deceased, 4,516,315, Cl. 29-576.00B.

Schlegel Corporation: *See—*
Weichman, Edward C., 4,517,233, Cl. 428-108.000.

Schlegel, Earl S., deceased: *See—*
Przybysz, John X.; and Schlegel, Earl S., deceased, 4,516,315, Cl. 29-576.00B.

Schleimer, Stephen I.: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.

Schlein, Allen P. Shearing apparatus. 4,516,322, Cl. 30-92.000.

Schlein, Allen P. Perforated closed cell padding material. 4,516,572, Cl. 128-156.000.

Schlosser, Fritz: *See—*
Arndt, Peter J.; Muller, Manfred; Schlosser, Fritz; and Wenzel, Franz, 4,517,380, Cl. 564-206.000.

Schmidt, Manfred; Rathmann, Dietrich; and Reinking, Klaus, to Bayer Aktiengesellschaft. Mixtures of substituted diphenyl ethers with aromatic polyesters and polyester carbonates having an improved processibility. 4,517,328, Cl. 524-370.000.

Schmidt, Robert R.: *See—*
Thomas, Rudolf; Draber, Wilfried; Schmidt, Robert R.; and Eue, Ludwig, 4,517,011, Cl. 71-92.000.

Schmidt, Robert W., to Copar Corporation. Dripless valve. 4,516,702, Cl. 222-514.000.

Schmidt, Werner, to Dynamit Nobel AG. Stable aqueous impregnating solutions prepared from hydrolyzed alkyltrialkoxysilanes. 4,517,375, Cl. 556-463.000.

Schmitt, Kirk D., to Mobil Oil Corporation. Two-tailed surfactants having one aromatic containing tail and their use in chemical waterflooding. 4,517,128, Cl. 260-458.00C.

Schmitz, Gunter: *See—*
Langlitz, Karlheinz; and Schmitz, Gunter, 4,516,757, Cl. 266-245.000.

Schneider, Franz; and Ruhl, Rolf, to L. Schuler GmbH. Numerically controlled groove-stamping machine. 4,516,447, Cl. 83-71.000.

Schoeber, Willem J. A. H.: *See—*
Mink, Bernardus H.; and Schoeber, Willem J. A. H., 4,516,989, Cl. 55-68.000.

Schollmeier, Charles E., to A. E. Staley Manufacturing Company. Semi-crystalline fructose. 4,517,021, Cl. 127-30.000.

Scholz, Bernhard: *See—*
Obenaus, Fritz; Nierlich, Franz; Reitemeyer, Otto; and Scholz, Bernhard, 4,517,395, Cl. 585-259.000.

Schon, Christian O. Method and apparatus for impregnating porous electrodes or the like. 4,517,137, Cl. 264-29.500.

Schonwald, Siegfried: *See—*
Leitgeb, Wilhelm; and Schonwald, Siegfried, 4,516,912, Cl. 417-45.000.

Schott-Ruhrglas GmbH: *See—*
Ritt, Hans-Georg; Luneberg, Hartmut; Mannl, Reinhard; and Grillmeier, Alfred, 4,516,998, Cl. 65-108.000.

Schreck, Ronald P.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.

Schreiber, Loren B.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.

Schreiber, William L.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.

Schroeder Brothers Corporation: *See—*
Keeney, Keith; and Wehner, Dennis J., 4,516,467, Cl. 91-31.000.

Schroeder, Robert W.: *See—*
Roerig, Arnold J.; and Schroeder, Robert W., 4,517,056, Cl. 162-344.000.

Schroeder, Warren C. Garment suspension waistband. 4,516,275, Cl. 2-308.000.

Schuchard, Walter F.: *See—*
Marsocci, Angelo A.; and Schuchard, Walter F., 4,517,555, Cl. 340-522.000.

Schultz, Per-Erik; Chowdhury, Mofazzal H.; and Neff, Clayton B., to Alfa-Laval, Inc. Milker unit washer. 4,516,592, Cl. 134-169.00C.

Schultz, Steven M.: *See—*
Bryant, John H.; and Schultz, Steven M., 4,517,566, Cl. 343-8.000.

Schulz, Gunther: *See—*
Lynch, John; Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, 4,517,277, Cl. 430-281.000.

Schulze, Arne. Tremolo and electronic control device for stringed instruments. 4,516,462, Cl. 84-1.160.

Schupp, Eberhard; and Kempter, Fritz E., to BASF Aktiengesellschaft. Cathodically electrodepositable surface coating binder. 4,517,343, Cl. 525-488.000.

Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, to BASF Aktiengesellschaft. Continuous preparation of ethanol. 4,517,391, Cl. 568-885.000.

Schuurink, Pieter H. J.: *See—*
Kik, Leendert A.; and Schuurink, Pieter H. J., 4,517,248, Cl. 428-457.000.

Schwartz, Albert B.: *See—*
Chester, Arthur W.; Garwood, William E.; and Schwartz, Albert B., 4,517,399, Cl. 585-533.000.

Schwartz, Joel, to U.S. Balloon Mfg. Co., Inc. Self sealing valve assembly. 4,516,949, Cl. 446-222.000.

Schwefel, Ernst, to Dr. Johannes Heidenhain GmbH. Integrated bit processor/word processor control system. 4,517,657, Cl. 364-900.000.

Scientific Circuitry, Inc.: *See—*
Shepter, Joseph J., 4,517,474, Cl. 307-272.00R.

Scott & Fetzer Company, The: *See—*
Edwards, James D.; and Malone, Charles, 4,517,426, Cl. 200-38.00A.

Scott, Junius D.: *See—*
Gotal, John D.; and Scott, Junius D., 4,517,500, Cl. 318-130.000.

Scott, Michael J.; Slater, Paul; and Brooshooft, Lawrence H., to Allflex International Limited. Applicator tool. 4,516,577, Cl. 128-330.000.

Seago, James L., to Du Pont de Nemours, E. I., and Company. Biological detection process using polymer-coated electrodes. 4,517,291, Cl. 435-14.000.

Seal, Clinton D.: *See—*
Keller, Patrick N.; and Seal, Clinton D., 4,517,593, Cl. 358-107.000.

Seely, James R., to Marketing Displays, Inc. Portable wind-resistant sign stand with flexible sign. 4,516,344, Cl. 40-602.000.

Seeman, Jindrich: *See—*
Valasek, Miloslav; Langer, Frantisek; Hradek, Jaroslav; and Seeman, Jindrich, 4,517,457, Cl. 250-239.000.

Seifert, Kurt: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.

Seiki Engineering & Research Co. Ltd.: *See—*
Yoshida, Yoshiichi, 4,516,927, Cl. 425-549.000.

Seiko Instruments & Electronics Ltd.: *See—*
Ikehata, Yukio, 4,516,863, Cl. 368-157.000.

Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, to Continental Gummi-Werke Aktiengesellschaft. Method of mounting a tire. 4,516,617, Cl. 157-1.000.

Sekerich, Michael, to Grant Hardware Company. Cabinet door mounting mechanism. 4,516,813, Cl. 312-323.000.

Sekiguchi, Kazuya: *See—*
Sugisawa, Ko; Sekiguchi, Kazuya; Taguchi, Masao; Nakatani, Masayuki; and Iwata, Hitoshi, 4,516,596, Cl. 137-240.000.

Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, to Dowa Mining Co., Ltd.; and Unitika, Ltd. Method of selective separation and concentration of gallium and/or indium from solutions containing low levels of them and high levels of other metal ions. 4,517,096, Cl. 210-668.000.

Sekisu Kagaku Kogyo Kabushiki Kaisha: *See—*
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,517,318, Cl. 523-126.000.

Sell, Gunther: *See—*
Leistner, Gerhard; Muller, Gerhard; Sell, Gunther; and Bauer, Alexander, 4,517,093, Cl. 210-629.000.

Senghaas, Karl A.; and Senghaas, Peter, to Southwest Bailer Pump Company. Solid state control system for oil well bailer pump. 4,516,911, Cl. 417-2.000.

Senghaas, Peter: *See—*
Senghaas, Karl A.; and Senghaas, Peter, 4,516,911, Cl. 417-2.000.

Seshimoto, Osamu, to Fuji Photo Film Co., Ltd. Ionic activity measuring device. 4,517,071, Cl. 204-419.000.

Sessions, Robert W., to Ferris Manufacturing Corp. EKG electrode. 4,516,581, Cl. 128-639.000.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
Baldi, Livio; and Maggis, Aldo, 4,517,226, Cl. 427-90.000.

Shahaney, Sunil: *See—*
Woodward, Antony I.; Clarke, David G.; and Shahaney, Sunil, 4,517,285, Cl. 430-538.000.

Sharp Kabushiki Kaisha: *See—*
Ise, Masahiro; Machino, Katsuyuki; Tanaka, Hidehiko; and Matsubara, Toshiyuki, 4,517,548, Cl. 340-310.00R.
Yasui, Toru; and Nakatsuji, Haruo, 4,517,494, Cl. 315-85.000.

Sheill, David D., to Rockwell International Corporation. Disc brake anti-rattle means. 4,516,666, Cl. 188-73.380.

Shell Oil Company: *See—*
Anderson, Martin, 4,517,193, Cl. 514-471.000.
Ayers, Ray R., 4,516,517, Cl. 114-51.000.
Hoek, Arend; and Kieffer, Eduard P., 4,517,396, Cl. 585-415.000.
Jepsen, John C., 4,516,986, Cl. 55-18.000.
Klecka, Miro E., 4,517,170, Cl. 423-573.00R.
Mink, Bernardus H.; and Schoeber, Willem J. A. H., 4,516,989, Cl. 55-68.000.

Shepter, Joseph J., to Scientific Circuitry, Inc. Logic circuit building block and systems constructed from same. 4,517,474, Cl. 307-272.00R.

Sherburne Corporation: *See—*
Avery, Joseph J., 4,516,722, Cl. 239-14.000.

Sheriff, Merle M., to Hydraulic Technology Corporation. Double acting telescopic cylinder construction. 4,516,468, Cl. 91-169.000.

Sherman, Clarence A., to ZSI, Inc. Tubing clamp and method of making the same. 4,516,296, Cl. 24-279.000.

Sherman, John D.: *See—*
Chao, Chien C.; and Sherman, John D., 4,516,566, Cl. 127-46.300.

Sherman, Morton: *See—*
Berry, James A.; Sherman, Morton; and Stevenson, John W., 4,516,879, Cl. 405-132.000.

Sherwin, Martin B.: *See—*
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,517,392, Cl. 568-948.000.
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,517,394, Cl. 568-948.000.
Wang, Shu-Shieh P.; and Sherwin, Martin B., 4,517,393, Cl. 568-948.000.

Sherwood, William G.: *See—*
Hodges, Donald R.; and Sherwood, William G., 4,517,058, Cl. 204-4.000.

Shibaike, Narito; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; and Zaitsu, Osamu, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and playback apparatus. 4,517,613, Cl. 360-85.000.

Shibata, Takehiko: *See—*
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Shibuya, Tsunenori, to Diesel Kiki Co., Ltd. Variable capacity vane compressor capable of controlling back pressure acting upon vanes. 4,516,920, Cl. 418-23.000.

Shigematsu, Takashi: *See—*
Ina, Toshikazu; Kawai, Hisasi; Kohama, Tokio; Obayashi, Hideki; Sawada, Daisaku; and Shigematsu, Takashi, 4,517,648, Cl. 364-431.010.

Shim, Jaewon L., to Merck & Co., Inc. Gellan gum/gelatin blends. 4,517,216, Cl. 426-573.000.

Shimadu Corporation: *See—*
Nakamura, Kenji; and Ideno, Shigeru, 4,517,550, Cl. 340-347.0CC.

Shimauchi, Yasutaka: *See—*
Yoshioka, Takeo; Yamamoto, Kenichi; Fukagawa, Yasuo; Shimauchi, Yasutaka; and Ishikura, Tomoyuki, 4,517,127, Cl. 260-245.20T.

Shimizu, Isamu; and Arao, Kozo, to Canon Kabushiki Kaisha. Photoconductive member. 4,517,269, Cl. 430-57.000.

Shimizu, Katsuichi: *See—*
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Shimizu, Keiichi: *See—*
Kobayashi, Satoru; Masaki, Mikio; Sakuno, Hideaki; Shimizu, Keiichi; and Fukasawa, Takeshi, 4,516,415, Cl. 70-252.000.

Shimizu, Shigeo; and Kato, Toshio, to Victor Company of Japan, Ltd. Recording media comprising vertical magnetization layers essentially consisting of quaternary Co—Ni—Zn—P alloys. 4,517,257, Cl. 428-694.000.

Shinagawa, Akio: *See—*
Hattori, Akira; Hayashi, Hiromu; Shinagawa, Akio; and Shinogi, Tsuyoshi, 4,517,640, Cl. 364-200.000.

Shinogi, Tsuyoshi: *See—*
Hattori, Akira; Hayashi, Hiromu; Shinagawa, Akio; and Shinogi, Tsuyoshi, 4,517,640, Cl. 364-200.000.

Shinozaki, Nozomu: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Morofuji, Takeshi, 4,516,514, Cl. 112-275.000.

Shioya, Toshio; and Kimura, Katsuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Fuel feeding system for an internal combustion engine. 4,516,555, Cl. 123-470.000.

Shioyama, Giichi: *See—*
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.

Shiraishi, Mitsuru: *See—*
Numata, Mitsuo; Minamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsuru; and Miyawaki, Toshio, 4,517,361, Cl. 544-24.000.

Shirogane, Yoshiji: *See—*
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.

Shirota, Norihisa; and Abe, Takao, to Sony Corporation. Method and apparatus for N-to-M encoding. 4,517,552, Cl. 340-347.0DD.

Shlichta, Paul J., to United States of America, National Aeronautics and Space Administration. Method for minimizing convection during crystal growth from solution. 4,517,048, Cl. 156-621.000.

Shoaf, Myron D.; and Pischke, La Monte D., to General Foods Corporation. Sweetening composition and method. 4,517,214, Cl. 426-548.000.

Shokestu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Oneyama, Naotake; and Yoshikawa, Akihisa, 4,516,473, Cl. 91-462.000.

Showa Denko K.K.: *See—*
Ishikawa, Masayuki; Azuma, Hiroshi; Sugimoto, Akiko; Takahashi, Noriko; and Takashima, Yoshimi, 4,517,189, Cl. 514-259.000.

Shue, Ho-Jane: *See—*
Kreutner, William; Green, Michael J.; Shue, Ho-Jane; and Saksena, Anil K., 4,517,200, Cl. 514-455.000.

Shuffield, Luther. Rectal device and method of inserting same. 4,516,578, Cl. 128-341.000.

Shuttleworth, Edwin T., to Wilson Tool Company. Slug-retaining die. 4,516,450, Cl. 83-146.000.

Sieczkowski, Philip: *See—*
McDonald, Quentin H.; Montalbano, Anthony P.; and Sieczkowski, Philip, 4,516,806, Cl. 297-457.000.

Siegling, Hans-Friedrich: *See—*
Meistring, Rolf; Siegling, Hans-Friedrich; and Pfahl, Siegfried, 4,516,831, Cl. 350-96.230.

Siemens Aktiengesellschaft: *See—*
Barre, Claude, 4,517,476, Cl. 307-455.000.
Horbaschek, Heinz, 4,517,594, Cl. 358-111.000.
Kardinal, Hans-Joachim, 4,516,888, Cl. 406-182.000.
Leitgeb, Wilhelm; and Schonwald, Siegfried, 4,516,912, Cl. 417-45.000.
Moser, Otto W.; and Thilo, Peer, 4,517,554, Cl. 340-514.000.
Pfleiderer, Hans-Joerg; and Grassl, Gerhard, 4,517,672, Cl. 371-27.000.
Weiser, Josef; Heinzl, Alfred; and Stadler, Heinz, 4,517,537, Cl. 335-187.000.
Wessely, Herrmann, 4,517,624, Cl. 361-387.000.

Siemens-Allis, Inc.: *See—*
Barner, Gregory P.; and Hancock, Drew S., 4,517,623, Cl. 361-358.000.

Signetics Corporation: *See—*
Broadbent, Eliot K., 4,517,225, Cl. 427-89.000.

Siiberg, Hemming G., to Edison International Inc. Voltage and temperature compensated time delay relay. 4,517,542, Cl. 337-92.000.

Silberberg, Joseph: *See—*
Aliberto, Anthony C.; and Silberberg, Joseph, 4,517,339, Cl. 525-85.000.

Simmons, Lovel R. Ejector wagon. 4,516,904, Cl. 414-517.000.

Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,517,369, Cl. 546-345.000.

Simpkins, Terry J.: *See—*
Leeper, Marvin A.; Turner, Richard L.; and Simpkins, Terry J., 4,516,805, Cl. 297-330.000.

Simplex-GE Limited: *See—*
Ireland, Hugh C., 4,516,814, Cl. 339-7.000.

Simpson, Carolyn N.; and Perry, John A. Tamper-proof wrap. 4,516,679, Cl. 206-459.000.

Simpson, Harold G., to Encon Products, Inc. Insulation and paneling apparatus and method. 4,516,371, Cl. 52-269.000.

Singer Company, The: *See—*
Sumerau, William R., 4,516,289, Cl. 15-410.000.

Singer, Karl, to D&K Custom Machine Design, Inc. Method and apparatus for decurling laminated stock. 4,517,042, Cl. 156-164.000.

Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,517,190, Cl. 514-300.000.

Sinha, Kamal R.; and Caldwell, Brian E., to Wheaton Industries. Protective coating for dry heat sterilizable glassware. 4,517,242, Cl. 428-336.000.

Sinha, Kamal R.; and Caldwell, Brian E., to Wheaton Industries. Glass coating composition and method. 4,517,243, Cl. 428-336.000.

Sipra, Patententwicklungs-und Beteiligungsgegesellschaft gmbH: *See—*
Nurk, Siegfried, 4,516,738, Cl. 242-152.100.

Sittig, Roland, to BBC Brown, Boveri & Company, Limited. Asymmetrical thyristor with highly doped anode base layer region for optimized blocking and forward voltages. 4,517,582, Cl. 357-38.000.

Sizer, Theodore, II: *See—*
Mourou, Gerard; and Sizer, Theodore, II, 4,517,675, Cl. 372-53.000.

SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Haas, Roland; Edelmann, Ludwig; and Hans, Rudiger, 4,516,962, Cl. 474-112.000.

Skotsch, Carlo; Baumert, Dietrich; Krahmer, Hansjorg; and Arndt, Friedrich, to Schering Aktiengesellschaft. Azolyl-pentene derivatives and biocidal compositions containing the same. 4,517,367, Cl. 546-276.000.

Skupsch, Jurgen: *See—*
Grapentin, Joachim; Mahlkow, Hartmut; and Skupsch, Jurgen, 4,517,254, Cl. 428-626.000.

Slater, Paul: *See—*
Scott, Michael J.; Slater, Paul; and Brooshooft, Lawrence H., 4,516,577, Cl. 128-330.000.

Slife, Fred W., to FBC Limited. Herbicidal mixtures. 4,517,009, Cl. 71-90.000.

Slottag, Mark J., to GCA Corporation. Microwave heating device with constant temperature control of the magnetron. 4,517,430, Cl. 219-10.55B.

Smeets, Frans H. M., to U.S. Philips Corporation. Inductive device. 4,517,509, Cl. 323-362.000.

Smith, Clarence, Jr.: *See—*
Beard, Frederick H.; Moyer, Maynard M.; and Smith, Clarence, Jr., 4,516,307, Cl. 29-564.000.

Smith, Donald L.: *See—*
Miller, Lee E.; Carr, Dennis D.; and Smith, Donald L., 4,517,264, Cl. 429-163.000.

Smith, George R. Conditioned air vestibule for refrigerated warehouse doorway. 4,516,482, Cl. 98-36.000.

Smith and Nephew Associated Companies p.l.c.: *See—*
Buchan, Ian A., 4,516,571, Cl. 128-132.00R.

Smith, Robert A.: *See—*
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,517,352, Cl. 528-18.000.

Smith, Stephen F., to Alpha-Omega Engineering, Inc. Circuit detector and noise reduction network with circuit detector. 4,517,534, Cl. 333-14.000.

Smith, Wesley H.: *See—*
Betts, William; and Smith, Wesley H., 4,517,680, Cl. 375-75.000.
Smith, William N., III. Human body activated switch. 4,517,423, Cl. 200-52.00R.
Smithgall, Brian: *See—*
Zwirn, Robert; Dragavon, Edward J.; and Smithgall, Brian, 4,517,599, Cl. 358-166.000.
Smolyanitsky, Boris N.: *See—*
Kostylev, Alexandr D.; Syryamin, Jury N.; Smolyanitsky, Boris N.; Boginsky, Vladimir P.; and Terskov, Alexei D., 4,516,662, Cl. 173-53.000.
Snetsinger, David C.; Engster, Henry M.; and Stiebler, Dwaine D., to Ralston Purina Company. Feed intake control apparatus for animals. 4,516,531, Cl. 119-18.000.
Snider, Wendall L.; and Wagner, Edward A., to Berkeley Glasslab. Cantilever paddle for use with wafer boats. 4,516,897, Cl. 414-180.000.
Snyder Corporation: *See—*
Beard, Frederick H.; Moyer, Maynard M.; and Smith, Clarence, Jr., 4,516,307, Cl. 29-564.000.
Snyder, William B., Jr.: *See—*
Prakash, Sri; and Snyder, William B., Jr., 4,517,155, Cl. 419-19.000.
Snygg, Keijo K., to Lenox Machine Company, Inc. Method and apparatus for winding webs. 4,516,735, Cl. 242-56.00R.
S.A. Automobiles Citroen: *See—*
Largeteau, Pierre A., 4,516,359, Cl. 51-349.000.
Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques, 4,516,810, Cl. 303-24.00F.
Societe Anonyme dite: L'Oreal: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,517,174, Cl. 424-62.000.
Societe Automobiles Peugeot: *See—*
Largeteau, Pierre A., 4,516,359, Cl. 51-349.000.
Societe Chimique des Charbonnages S.A.: *See—*
Bujadoux, Karel, 4,517,346, Cl. 526-153.000.
Societe d'Etudes et de Developpement des Aeroglisseurs Marins, Terrestres et Amphibies S.E.D.A.M.: *See—*
Duchateau, Claude M., 4,516,651, Cl. 180-127.000.
Societe d'Exploitation des Procedes Marechal: *See—*
Le Magourou, Yves, 4,516,819, Cl. 339-46.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Chaussepied, Jacques E. C., 4,516,686, Cl. 220-85.00R.
Sofec, Inc.: *See—*
Pedersen, Kristen I., 4,516,942, Cl. 441-5.000.
Sofranko, John A., to Atlantic Richfield Company. Hydroxylated magnesia support. 4,517,398, Cl. 585-500.000.
Soled, Howard: *See—*
Gringer, Donald; and Soled, Howard, 4,516,360, Cl. 51-384.000.
Solimeno, Duane; Koeppen, Peter L.; Rogers, Gerald; and Brown, Sammy K., to Texas Instruments Incorporated. Programmable game with virtual CPU's sharing ALU and memory for simultaneous execution of independent game inputs. 4,517,656, Cl. 364-900.000.
Solis S.r.l.: *See—*
Gazzarrini, Vinicio, 4,516,513, Cl. 112-262.200.
Sone, Masazumi; Imai, Iwao; and Nagae, Hiromitsu, to Nissan Motor Co., Ltd.; and Hitachi, Ltd. Method of making radio frequency interference suppressing ignition distributor rotor. 4,516,319, Cl. 29-877.000.
Sonoda, Sakae; Nagae, Yoshio; and Kano, Seishi, to Parker Chemical Company. Process for the cold forming of iron and steel. 4,517,029, Cl. 148-6.15Z.
Sony Coporation: *See—*
Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, 4,517,617, Cl. 360-133.000.
Sony Corporation: *See—*
Shirota, Norihisa; and Abe, Takao, 4,517,552, Cl. 340-347.0DD.
Yamada, Hisafumi; Saito, Junya; and Tsutsui, Ichiro, 4,517,601, Cl. 358-167.000.
Sorbier, Jean-Pierre: *See—*
Jerome, Denis; More, Claude; Roger, Guy-Roland; Sorbier, Jean-Pierre; Delrieu, Jean-Marc; Ribault, Michel; Fabre, Jean M.; Fournel, Andre ; Giral, Louis; and Bechgaard, Klaus, 4,517,121, Cl. 260-239.00R.
Soref, Richard A.; and McMahon, Donald H., to Sperry Corporation. Electro-optical switch for unpolarized optical signals. 4,516,837, Cl. 350-347.00V.
Sorensen, Edward C., Jr. Means for controlling row planters. 4,516,670, Cl. 192-48.800.
Sour Pliva farmaceutska, kemijska prehrambena i kozmeticka industrija, n.sol.o.: *See—*
Kobrehel, Gabrijela; and Djokic, Slobodan, 4,517,359, Cl. 536-7.400.
Southard, George L., to Vipont Laboratories, Inc. Plaque disclosing agent. 4,517,172, Cl. 424-7.100.
Southwest Bailer Pump Company: *See—*
Senghaas, Karl A.; and Senghaas, Peter, 4,516,911, Cl. 417-2.000.
Sovonics Solar Systems: *See—*
Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,517,223, Cl. 427-39.000.
Spain, Raymond G., to Hitco. Non-ionic epoxy resin emulsion finishes for carbon fibers. 4,517,245, Cl. 428-367.000.
Spaunhorst, Vernon R., to McGraw-Edison Company. Time delay electric fuse. 4,517,544, Cl. 337-164.000.
Speakman, John G.: *See—*
Eve, Paul L.; and Speakman, John G., 4,517,345, Cl. 526-105.000.
Spears, Richard L.: *See—*
Nordbrock, Raymond E.; and Spears, Richard L., 4,517,507, Cl. 322-28.000.
Spectrum Control, Inc.: *See—*
Venable, Thomas L.; Robinson, Geoffrey C.; and Loeslein, Raymond D., 4,516,815, Cl. 339-14.00R.
Spellar, Peter C.: *See—*
Murphy, David A.; and Spellar, Peter C., 4,516,914, Cl. 417-282.000.
Spencer, Dudley W. C. Sterile docking process, apparatus and system. 4,516,971, Cl. 604-280.000.
Spencer, Phillip B.: *See—*
Drutchas, Gilbert H.; and Spencer, Phillip B., 4,516,918, Cl. 418-15.000.
Spendel, Siegmund: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,516,617, Cl. 157-1.000.
Spengler, Adolf; and Hasenhundl, Josef, to Eirich, Hubert, Eirich; Paul and Eirich; Walter. Apparatus for closing a discharge opening in a rotary table. 4,516,859, Cl. 366-77.000.
Sperry Corporation: *See—*
Frew, John W.; and Robbins, Kenneth W., 4,516,861, Cl. 368-120.000.
Lee, Patrick G.; Bean, Donald E.; and Jones, Randy T., 4,517,567, Cl. 343-17.700.
McLean, Kenneth W., 4,516,391, Cl. 56-16.400.
McLean, Kenneth W.; and Hale, John K., 4,516,392, Cl. 56-16.400.
Soref, Richard A.; and McMahon, Donald H., 4,516,837, Cl. 350-347.00V.
Spieldiener, Reinhold: *See—*
Spieldiener, Robert; Spieldiener, Reinhold; and Saiko, Alfons, 4,516,943, Cl. 441-35.000.
Spieldiener, Robert; Spieldiener, Reinhold; and Saiko, Alfons. Amusement ride raft. 4,516,943, Cl. 441-35.000.
Spiral System Instruments, Inc.: *See—*
Schalkowsky, Samuel; and Pepper, William, Jr., 4,517,292, Cl. 435-32.000.
Spitaler, Engelbert: *See—*
Riss, Wilfried; Nitschko, Theodor; Spitaler, Engelbert; and Oberleitner, Gerhard, 4,516,791, Cl. 280-612.000.
Sprague Electric Company: *See—*
Allen, Michael D.; and Van Voorhis, John E., 4,517,626, Cl. 361-433.000.
Harland, Gary D.; and Brownell, Dean B., 4,517,144, Cl. 264-28.000.
Sprague, Robert A., to Xerox Corporation. Direct read after write optical disk system. 4,517,667, Cl. 369-122.000.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Flavoring with norbornyl esters. 4,517,213, Cl. 426-538.000.
Springen, Clyde H.: *See—*
Bennett, Ross L.; Price, Robert B.; Springen, Clyde H.; and Kilbourn, Harlan C., 4,517,652, Cl. 364-513.000.
Staab, Donald C.; and Farley, Clayton E., to MU, Inc. Pavement grinding apparatus. 4,516,808, Cl. 299-39.000.
Stackhouse, Kenneth B.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.
Stadler, Heinz: *See—*
Weiser, Josef; Heinzl, Alfred; and Stadler, Heinz, 4,517,537, Cl. 335-187.000.
Stafford, Lawrence R. Safety device for scaffold. 4,516,661, Cl. 182-82.000.
Stahl, Hans V.: *See—*
Magnusson, Karl G.; and Stahl, Hans V., 4,517,646, Cl. 364-424.100.
Stahl, Werner; and Muller, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for singularizing stacked X-ray films or the like. 4,516,763, Cl. 271-11.000.
Stahl, Werner. Decanter-type separating apparatus. 4,517,092, Cl. 210-512.100.
Stahlecker, Fritz; and Raasch, Hans, to Stahlecker, Fritz; and Stahlecker, Hans. Open end yarn spinning apparatus. 4,516,396, Cl. 57-407.000.
Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Raasch, Hans, 4,516,396, Cl. 57-407.000.
Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture based on O-naphthoquinone-diazides, and light-sensitive copying material prepared therefrom. 4,517,275, Cl. 430-165.000.
Stahn, Roland: *See—*
Fabricius, Hans-Åke; and Stahn, Roland, 4,517,293, Cl. 435-68.000.
Staiert, Richard W., to Caterpillar Tractor Co. Weld joint structure for an elastomeric flexible coupling. 4,516,956, Cl. 464-89.000.
Standard Oil Company: *See—*
Beynet, Pierre A.; and von Aschwege, J. Thomas, 4,516,881, Cl. 405-195.000.
Cirjak, Larry M., 4,517,063, Cl. 204-157.10R.
Standridge, Bobby D.: *See—*
Prince, Jack A.; and Standridge, Bobby D., 4,516,731, Cl. 241-24.000.
Stanhope, Harry W.: *See—*
Bell, Gilbert C.; and Stanhope, Harry W., 4,516,394, Cl. 57-234.000.
Stauffer Chemical Company: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,517,012, Cl. 71-94.000.

Stawski, Karl-Heinz; and Jensen, Philip W., to P D Manufacturing, Inc. Portable battery powered blower apparatus for fanning charcoal or other fuel. 4,516,561, Cl. 126-25.00B.
Steckler, Steven A.: *See—*
Balaban, Alvin R.; and Steckler, Steven A., 4,517,586, Cl. 358-13.000.
Steel Handlers' Manual and Steel Handloaders' Components, Inc.: *See—*
Vizecky, Donald F., 4,516,460, Cl. 83-861.000.
Steele, Robert E., to General Motors Corporation. Duplex communication on a single optical fiber. 4,516,828, Cl. 350-96.160.
Stein, Richard M.: *See—*
Hill, Ronald C.; Stein, Richard M.; Bzibziak, Raymond J.; and Goodwill, Robert, 4,516,448, Cl. 83-137.000.
Steinbiss, Eberhard; and Herchenbach, Horst, to Klockner-Humboldt-Deutz AG. Apparatus for rapid burning of thermally pretreated fine grained product and method. 4,517,020, Cl. 106-100.000.
Steiner, Wolfgang: *See—*
Schuster, Ludwig; Mueller, Franz-Josef; Anderlohr, Axel; Blei, Peter; Eigenberger, Gerhart; Hoppner, Bernd; Kaibel, Gerd; and Steiner, Wolfgang, 4,517,391, Cl. 568-885.000.
Stelzenmuller, William K.: *See—*
Lasher, Dana A.; and Stelzenmuller, William K., 4,517,604, Cl. 358-262.000.
Stenger, Vernon A.: *See—*
Dorman, Linneaus C.; and Stenger, Vernon A., 4,517,111, Cl. 252-186.250.
Stephan, Hans-Werner: *See—*
Jodden, Klaus; Heymer, Gero; and Stephan, Hans-Werner, 4,517,163, Cl. 423-75.000.
Sterling Drug Inc.: *See—*
Lesher, George Y.; and Singh, Baldev, 4,517,190, Cl. 514-300.000.
Lesher, George Y., 4,517,192, Cl. 514-345.000.
Wentland, Mark P.; and Bailey, Denis M., 4,517,191, Cl. 514-300.000.
Stern, Alan D.: *See—*
Ferrell, Philip J.; Stern, Alan D.; and McFarland, Melvin D., 4,517,639, Cl. 364-186.000.
Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Low loss dielectric waveguide joint and method of forming same. 4,517,536, Cl. 333-254.000.
Stetter, Klaus: *See—*
Kiefer, Werner; and Stetter, Klaus, 4,516,999, Cl. 65-116.000.
Stevenson, John W.: *See—*
Berry, James A.; Sherman, Morton; and Stevenson, John W., 4,516,879, Cl. 405-132.000.
Stewart Stamping Corporation: *See—*
Brennan, Robert J.; and Meighen, Terrence, 4,516,825, Cl. 339-143.00R.
Stiebler, Dwaine D.: *See—*
Snetsinger, David C.; Engster, Henry M.; and Stiebler, Dwaine D., 4,516,531, Cl. 119-18.000.
Stienstra, Albert J.: *See—*
Claasen, Theodoor A. C. M.; Stienstra, Albert J.; and van Roermund, Arthur H. M., 4,517,655, Cl. 364-703.000.
Stilling, Johann. Sign structure. 4,516,343, Cl. 40-574.000.
Stocco, Sam; and Davis, Stanley, to Thiele Engineering Company. Rotary pick and placement machine. 4,516,765, Cl. 271-95.000.
Stoetzer, Steven R., to Acheson Industries, Inc. New nickel coating composition for shielding electronic equipment and the like. 4,517,118, Cl. 252-513.000.
Stohr, Frank-Michael: *See—*
Kunde, Klaus; and Stohr, Frank-Michael, 4,517,357, Cl. 534-605.000.
Stokes, Larry W.: *See—*
Yerushalmy, Yosef; and Stokes, Larry W., 4,517,437, Cl. 219-121.0PP.
Stolpp, Siegfried, to ALB Klein GmbH & Co. KG. Load pressure feedback system having at least one control valve for controlling an apparatus. 4,516,894, Cl. 414-5.000.
Stone, Milton. Sun sensing control device. 4,516,565, Cl. 126-419.000.
Stonkus, Donald J.: *See—*
Filter, Reinhard; and Stonkus, Donald J., 4,516,823, Cl. 339-111.000.
Stork, Karl: *See—*
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,517,114, Cl. 252-389.00R.
Stork PMT B.V.: *See—*
van Mil, Martinus P. G., 4,516,290, Cl. 17-11.000.
Stott, Edward J.; Thomas, Lewis H.; and Jebbett, Norma J., to National Research Development Corporation. Production of viral antigens. 4,517,304, Cl. 436-518.000.
Stower, James F.: *See—*
Goldberger, Robert D.; and Stower, James F., 4,516,291, Cl. 17-32.000.
Stratton, William P. Baseball batting trainer. 4,516,772, Cl. 273-26.00R.
Straub, Albert M.; Mabrey, Theodore R.; and Vokovich, Daniel L., to Northern Telecom Limited. Mechanism for extracting tape from a tape carrier. 4,517,614, Cl. 360-85.000.
Straub, Richard L.: *See—*
Pou, Frederick M.; and Straub, Richard L., 4,516,497, Cl. 101-240.000.
Straznickas, Donald A.: *See—*
Hucker, David J.; and Straznickas, Donald A., 4,517,483, Cl. 310-156.000.
Strobel, Gary A.; Gavlak, Andrea H.; and Jaynes, Jesse M., to Research and Development Institute, Inc. at Montana State University. Compositions containing and methods of use of an infectivity-cured Hr plasmid-bearing microorganism. 4,517,008, Cl. 71-77.000.
Stumpf, Gunter O. Apparatus for laying web material. 4,516,760, Cl. 270-31.000.
Stupak, Adam E. Well safety valve. 4,516,598, Cl. 137-318.000.
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn. Pressure regulating valves. 4,516,600, Cl. 137-495.000.
Suarez, Benjamin D. Baseball game. 4,516,775, Cl. 273-89.000.
Suda, Tatsuo: *See—*
Takayama, Hiroaki; Yamada, Sachiko; Nakayama, Keiko; and Suda, Tatsuo, 4,517,125, Cl. 260-397.200.
Sugawara, Fukuo, to Alps Electric Co., Ltd. Multi-color pen recording device. 4,517,576, Cl. 346-139.00R.
Sugimori, Fumio; Nishino, Chikae; and Harao, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum container of radiation image multiplier tube and method of manufacturing the same. 4,516,715, Cl. 228-208.000.
Sugimori, Sigemi: *See—*
Yamawaki, Takeshi; Saitou, Tatuya; and Sugimori, Sigemi, 4,516,804, Cl. 296-214.000.
Sugimoto, Akiko: *See—*
Ishikawa, Masayuki; Azuma, Hiroshi; Sugimoto, Akiko; Takahashi, Noriko; and Takashima, Yoshimi, 4,517,189, Cl. 514-259.000.
Sugimoto, Hitoshi: *See—*
Abe, Yoshiaki; Nishimura, Yutaka; and Sugimoto, Hitoshi, 4,516,543, Cl. 123-179.00H.
Sugimoto, Norihiko: *See—*
Hamada, Nobuhiro; Sugimoto, Norihiko; and Nawa, Masumi, 4,517,644, Cl. 364-200.000.
Sugioka, Shinji, to Ushio Denki Kabushiki Kaisha. Photochemical vapor deposition apparatus. 4,516,527, Cl. 118-723.000.
Sugisawa, Ko; Sekiguchi, Kazuya; Taguchi, Masao; Nakatani, Masayuki; and Iwata, Hitoshi, to House Food Industrial Company, Ltd. System for cleaning a three-way valve. 4,516,596, Cl. 137-240.000.
Sugitani, Yuji; and Kobayashi, Yukio, to Nippon Kokan Kabushiki Kaisha. Rotary arc-welding apparatus. 4,517,438, Cl. 219-125.120.
Sugiura, Nobuo: *See—*
Yanaihara, Noboru; Sugiura, Nobuo; and Hiyama, Takashi, 4,517,180, Cl. 514-16.000.
Sullivan, William B. Mechanical stabilizer. 4,516,749, Cl. 248-56.000.
Sulzer Brothers Limited: *See—*
Brunner, Alfred, 4,516,750, Cl. 248-58.000.
Sumerau, William R., to Singer Company, The. Handle construction for floor care appliance. 4,516,289, Cl. 15-410.000.
Sumida, Atsushi; Ozaki, Keiichiro; and Watanabe, Shizuo, to Toray Industries, Inc. Method of producing carbon fibers. 4,517,169, Cl. 423-447.400.
Sumitomo Chemical Company, Limited: *See—*
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; Suzaki, Takuya; and Imai, Kazuyoshi, 4,517,246, Cl. 428-407.000.
Sumitomo Electric Industries, Ltd.: *See—*
Okamoto, Kenji; Nishiwaki, Yoshikazu; Matsuoka, Shunji; and Nishiura, Yozo, 4,517,280, Cl. 430-321.000.
Sundstrand Corporation: *See—*
Aleem, Mohd A.; and Krinickas, Alexander, Jr., 4,517,479, Cl. 310-54.000.
Hucker, David J.; and Straznickas, Donald A., 4,517,483, Cl. 310-156.000.
Niggemann, Richard E., 4,516,987, Cl. 55-52.000.
Suntory Limited: *See—*
Taguchi, Haruyoshi; Tsujimura, Hideo; and Imanishi, Masamichi, 4,516,687, Cl. 220-94.00R.
Super-Truss Building Systems, Inc.: *See—*
Beaulieu, Roger D.; Alcorn, William W.; and Matychowiak, David S., 4,516,363, Cl. 52-90.000.
Sur-Gard Security Systems Ltd.: *See—*
Saul, Ben; and Hartley, Doug, 4,517,556, Cl. 340-528.000.
Susumu Ubukata: *See—*
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Shozo, 4,517,541, Cl. 337-89.000.
Suto, Anthony J., to Fairchild Camera And Instrument Corporation. Current probe signal processing circuit employing sample and hold technique to locate circuit faults. 4,517,511, Cl. 324-52.000.
Sutton, Wesley D., Jr., to Game Time, Inc. Resilient support for playground seat. 4,516,766, Cl. 272-52.000.
Suzaki, Takuya: *See—*
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; Suzaki, Takuya; and Imai, Kazuyoshi, 4,517,246, Cl. 428-407.000.
Suzuki, Akira: *See—*
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.
Suzuki, Etsuji: *See—*
Kashihara, Tomio; Tsuruta, Toshiro; Yamaguchi, Masayoshi; Yokoi, Kiyotachi; and Suzuki, Etsuji, 4,516,673, Cl. 198-341.000.
Suzuki, Hazime: *See—*
Aoki, Yoshiaki; Suzuki, Hazime; and Hirota, Tatsuya, 4,516,335, Cl. 34-133.000.
Suzuki, Hiroshi; Gama, Yasuo; and Miyazaki, Shoji, to Agency of Industrial Science and Technology. Rust preventive agent of hydroxypolybasic acid salt type. 4,517,110, Cl. 252-180.000.
Suzuki, Hiroshige; and Hase, Teizo, to Suzuki, Hiroshige. Finely divided silicon carbide having a high content of 2H-type silicon carbide and method of producing the same. 4,517,305, Cl. 501-89.000.

Suzuki, Hirosuke; and Sato, Yoshiaki, to Junkosha Co., Ltd. Fluororesin formed body and method for producing the same. 4,517,247, Cl. 428-421.000.

Suzuki, Kazuhiro: *See—*
Ohkouchi, Fusakichi; and Suzuki, Kazuhiro, 4,517,607, Cl. 358-284.000.

Suzuki, Norio, to Nippon Electric Co., Ltd. System comprising a preliminary processing device controlled in accordance with an amount of information stored in a buffer. 4,517,596, Cl. 358-133.000.

Suzuki, Ryoichi; Matsumoto, Seiichi; Amikura, Takashi; Tsunekawa, Tokuichi; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Liquid crystal display system. 4,516,835, Cl. 350-336.000.

Suzuki, Toshio: *See—*
Mine, Katsutoshi; Suzuki, Toshio; and Hanada, Tsuneo, 4,517,238, Cl. 428-212.000.

Suzuki, Yoshikuni: *See—*
Koyama, Hiroyasu; Tsuji, Masahiro; and Suzuki, Yoshikuni, 4,517,365, Cl. 546-142.000.

Svecia Silkscreen Maskiner AB: *See—*
Ericsson, Sylve J. D., 4,516,495, Cl. 101-129.000.

Sweeney, Donald W.; Gallagher, Neal C.; and Christensen, Charles R., to United States of America, Army. Scanning beam beamrider missile guidance system. 4,516,743, Cl. 244-3.130.

Swenson, Hilmer W.: *See—*
Heath, James E.; and Swenson, Hilmer W., 4,517,464, Cl. 250-370.000.

Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., to Allied Corporation. Aryl phosphoric triamide and aryl phosphorodiamidate urease and nitrification inhibitors and urease and nitrification inhibited urea and reduced nitrogen based fertilizer compositions. 4,517,004, Cl. 71-28.000.

Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., to Allied Corporation. Phosphoroamide urease inhibitors and urease inhibited urea based fertilizer compositions. 4,517,007, Cl. 71-28.000.

Swerdloff, Michael D.: *See—*
Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., 4,517,002, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,003, Cl. 71-28.000.
Kolc, Jaroslav F.; Swerdloff, Michael D.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,517,005, Cl. 71-28.000.

Swift, Gregory W.; Migliori, Albert; and Wheatley, John C., to United States of America, Energy. Microchannel crossflow fluid heat exchanger and method for its fabrication. 4,516,632, Cl. 165-167.000.

Swiger, Roger T.: *See—*
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,517,352, Cl. 528-18.000.

Sydnor, Richard L., to United States of America, National Aeronautics and Space Administration. Maser cavity servo-tuning system. 4,517,530, Cl. 331-3.000.

Syryamin, Jury N.: *See—*
Kostylev, Alexandr D.; Syryamin, Jury N.; Smolyanitsky, Boris N.; Boginsky, Vladimir P.; and Terskov, Alexei D., 4,516,662, Cl. 173-53.000.

Szablikowski, Klaus: *See—*
Luhmann, Erhard; Hoppe, Lutz; Szablikowski, Klaus; and Lampert, Friedrich-Karl, 4,517,324, Cl. 524-27.000.

Szelagowski, Peter; and Motzkau, Siegfried, to Kernforschungszentrum Karlsruhe G.m.b.H. Apparatus for the coating of workpieces by flame spraying. 4,516,521, Cl. 118-50.000.

Szerenyi, Peter; and Ringleib, Colin J., to PepsiCo, Inc. Carbonation measuring system and process. 4,517,135, Cl. 261-104.000.

Szymanski, Chester D.; and Neigel, Dennis, to National Starch and Chemical Corporation. Process for reacting quaternary ammonium monomer in the presence of anionic polymers. 4,517,351, Cl. 527-312.000.

T.R.E.G.I.E.: *See—*
Bronoel, Guy, 4,517,258, Cl. 429-21.000.

Taban, Charles H. Pessary. 4,516,570, Cl. 128-130.000.

Tabet, Michael J. Adjustable golf ball tee. 4,516,780, Cl. 273-202.000.

Taco Products, Incorporated: *See—*
Finn, Arnold H., 4,516,615, Cl. 81-20.000.

Tada, Satomi: *See—*
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Kamanaka, Tamaki; and Taniguchi, Hiroshi, 4,517,312, Cl. 521-47.000.

Tada, Seiichi, to Du Pont-Mitsui Polychemicals Co., Ltd. Polymer composition. 4,517,317, Cl. 521-95.000.

Tadashi, Ii; and Saichi, Egusa, to Kabushikigaisha Kyowa Chuzosho; Yugengaisha Kyowa Chuzosho; Otsuka Chemical Co., Ltd.; and Ando Parachemie Co., Ltd. Cast iron alloy and method for producing same. 4,517,018, Cl. 75-129.000.

Tagami, Katsutoshi: *See—*
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,517,565, Cl. 340-995.000.

Taguchi, Haruyoshi; Tsujimura, Hideo; and Imanishi, Masamichi, to Suntory Limited. Handle for a vessel. 4,516,687, Cl. 220-94.00R.

Taguchi, Masao: *See—*
Sugisawa, Ko; Sekiguchi, Kazuya; Taguchi, Masao; Nakatani, Masayuki; and Iwata, Hitoshi, 4,516,596, Cl. 137-240.000.

Tahara, Hiroshi: *See—*
Kakuhashi, Takeshi; Tahara, Hiroshi; and Mori, Yoshihisa, 4,517,546, Cl. 338-320.000.

Takada, Masaki: *See—*
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, 4,517,296, Cl. 435-119.000.

Takahashi, Hideki: *See—*
Mitsue, Naoki; and Takahashi, Hideki, 4,516,783, Cl. 277-50.000.

Takahashi, Hideo; and Nakatani, Mitsuo, to Hitachi, Ltd. Dispersion type electroluminescent element with liquid dielectric and jelling agent. 4,517,490, Cl. 313-502.000.

Takahashi, Kohki; Kondoh, Takeo; Koga, Masao; and Nishiwaki, Kenichiro, to Denki Kagaku Kogyo Kabushiki Kaisha. Rubbery polymer composition. 4,517,348, Cl. 526-273.000.

Takahashi, Noriko: *See—*
Ishikawa, Masayuki; Azuma, Hiroshi; Sugimoto, Akiko; Takahashi, Noriko; and Takashima, Yoshimi, 4,517,189, Cl. 514-259.000.

Takahashi, Takao: *See—*
Onishi, Kimimasa; Takahashi, Takao; and Koriyama, Masayuki, 4,516,610, Cl. 139-435.000.

Takahashi, Tastuo: *See—*
Takakuwa, Shilo; Kobayashi, Isao; Takahashi, Tastuo; and Imamizu, Shige, 4,516,311, Cl. 29-568.000.

Takahashi, Tsuneo: *See—*
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,517,565, Cl. 340-995.000.

Takakuwa, Shilo; Kobayashi, Isao; Takahashi, Tastuo; and Imamizu, Shige, to Kabushiki Kaisha Miyano Tekkosho. Machining centers. 4,516,311, Cl. 29-568.000.

Takamori, Kazuo: *See—*
Morishita, Tatsuo; Funakoshi, Fumio; Nakamura, Kenichi; and Takamori, Kazuo, 4,517,564, Cl. 340-825.690.

Takaoka, Shozo; and Hirasako, Akio, to Wakayama Iron Works, Ltd. Apparatus for clarifying and circulating hot air for heat-treating textile fabrics. 4,516,332, Cl. 34-79.000.

Takaoka, Takashi; Mochizuki, Masahiko; Yamashita, Mitsuo; and Miura, Tadao, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical disk with narrow guide tracks. 4,517,668, Cl. 369-111.000.

Takara Co., Ltd.: *See—*
Obara, Hiroyuki, 4,516,948, Cl. 446-95.000.

Takasaki, Junsuke; Sato, Hirotake; and Yasuda, Akira, to Kawasaki Steel Corporation. Method of manufacturing cold rolled steel sheets for extra deep drawing with an excellent press formability. 4,517,031, Cl. 148-12.00C.

Takashima, Yoshimi: *See—*
Ishikawa, Masayuki; Azuma, Hiroshi; Sugimoto, Akiko; Takahashi, Noriko; and Takashima, Yoshimi, 4,517,189, Cl. 514-259.000.

Takasu, Ryo; and Nakao, Makoto, to Bridgestone Tire Co., Ltd. Method for controlling tire vulcanization. 4,517,146, Cl. 264-40.600.

Takayama, Hiroaki; Yamada, Sachiko; Nakayama, Keiko; and Suda, Tatsuo, to Chugai Seiyaku Kabushiki Kaisha. Novel vitamin D_3 derivatives and process for producing the same. 4,517,125, Cl. 260-397.200.

Takeda Chemical Industries, Ltd.: *See—*
Iwasa, Susumu; Yoshida, Isamu; and Kondo, Koichi, 4,517,290, Cl. 435-7.000.
Numata, Mitsuo; Minamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsuru; and Miyawaki, Toshio, 4,517,361, Cl. 544-24.000.

Takematsu, Tetsuo; Nakaya, Mitihiko; Moriyasu, Koichi; and Komoto, Nobuo, to Mitsui Toatsu Chemicals, Inc. 2-Methyl-4'-isopropyl-2-pentenoyl anilide. 4,517,381, Cl. 564-207.000.

Takeshita, Masaru; Tokunaga, Toshio; and Ogawa, Yuichiro, to Bridgestone Tire Company Limited. Apparatus for cutting an elongate rubbery strip. 4,516,451, Cl. 83-171.000.

Takeuchi, Toshio: *See—*
Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, 4,517,282, Cl. 430-399.000.

Takeuchi, Yukihisa; and Tomita, Masahiro, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Carbon particulates cleaning device. 4,516,993, Cl. 55-283.000.

Takezawa, Susumu; Ikebe, Ken'ichi; Ayada, Haruki; Fukui, Tatsuyuki; and Okada, Munenori, to NEC Corporation. Nutation damper system comprising a control member for varying a natural frequency of a pendulum. 4,516,746, Cl. 244-170.000.

Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Rotation control system. 4,517,501, Cl. 318-314.000.

Takita, Masaaki: *See—*
Kakimoto, Atsushi; and Takita, Masaaki, 4,517,575, Cl. 346-138.000.

Tamburrino, Richard A., to North American Philips Consumer Electronics Corp. Cathode ray tube internal shielding means. 4,517,487, Cl. 313-407.000.

Tamura, Takashi, to Konishiroku Photo Industry Co., Ltd. Paper feeding device. 4,516,764, Cl. 271-34.000.

Tan, Ewe-Hong: *See—*
Wolff, Siegfried; and Tan, Ewe-Hong, 4,517,336, Cl. 524-571.000.

Tan, Yoichi; and Miyao, Fumio, to Fuji Xerox Co., Ltd. Carrier wave reproducing circuit in synchronized detection system of medium speed facsimile. 4,517,531, Cl. 331-14.000.

Tanaka, Hidehiko: *See—*
Ise, Masahiro; Machino, Katsuyuki; Tanaka, Hidehiko; and Matsubara, Toshiyuki, 4,517,548, Cl. 340-310.00R.

Tanaka, Minoru: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,517,373, Cl. 549-292.000.

Tanaka, Nobuyoshi: *See—*
Kuwayama, Tetsuro; Tanaka, Nobuyoshi; and Hashimoto, Seiji, 4,517,588, Cl. 358-44.000.

Tanaka, Shigeo: *See—*
Kagawa, Nobuaki; Fujimori, Noboru; Tanaka, Shigeo; and Onodera, Kaoru, 4,517,284, Cl. 430-591.000.

Tanaka, Susumu; and Ito, Ryosuke, to Sansui Electric Co., Ltd. Amplifier circuit driven by ground isolated power supply. 4,517,528, Cl. 330-297.000.

Tanaka, Yoshiharu, to Mitsui Engineering & Shipbuilding Co., Ltd. Waste heat recovery system for an internal combustion engine. 4,516,403, Cl. 60-667.000.

Tang, David Y., to Occidental Chemical Corporation. Process for the preparation of 4-fluorophthalic anhydride. 4,517,372, Cl. 549-246.000.

Tanga, Michifumi: *See—*
Hata, Akio; and Tanga, Michifumi, 4,517,350, Cl. 526-344.200.

Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, to Fujitsu Ten Limited; and Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling the speed of an automobile. 4,516,652, Cl. 180-177.000.

Taniguchi, Hiroshi: *See—*
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Kamanaka, Tamaki; and Taniguchi, Hiroshi, 4,517,312, Cl. 521-47.000.

Taniguchi, Hirotoshi. Method for continuously treating molten metal. 4,517,019, Cl. 75-130.00R.

Taniguchi, Keishi: *See—*
Iiyama, Kiyotaka; and Taniguchi, Keishi, 4,517,580, Cl. 346-214.000.

Tanoue, Yoriko: *See—*
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,517,318, Cl. 523-126.000.

Taplin, John F. Pilot operated supply and waste control valve. 4,516,604, Cl. 137-596.150.

Taplin, John F. Four-way control valve. 4,516,605, Cl. 137-596.150.

Tarkett AB: *See—*
Grimhall, Carl G.; and Hoel, Olav, 4,516,614, Cl. 144-364.000.

Tarplee, Michael K., to Lucas Industries public limited company. Master cylinder assembly for a vehicle braking system. 4,516,400, Cl. 60-535.000.

Tatemoto, Minoru: *See—*
Kumagai, Naotake; Tatemoto, Minoru; Itoh: Yoji; and Inuzuka, Tokushige, 4,516,545, Cl. 123-192.00R.

Tatsumi, Hisao; and Kawano, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum insulated heat pot with removable electrically heated reservoir tank. 4,517,445, Cl. 219-297.000.

Tavin, Gerard, to Hutchinson. Devices for manufacturing annular frames for seals and to the corresponding frames and seals. 4,516,421, Cl. 72-354.000.

Taylor, Michael N.; and Reid, Timothy H., to Weyerhaeuser Company. Pressing process for composite wood panels. 4,517,147, Cl. 264-83.000.

Tazaki, Shigemitsu, to Canon Kabushiki Kaisha. Electronic apparatus with printer. 4,517,578, Cl. 346-140.00R.

TDK Corporation: *See—*
Moriya, Shigeru, 4,516,848, Cl. 355-3.0CH.

TDK Electronics Co., Ltd.: *See—*
Adachi, Hiromi; and Iwaya, Shoichi, 4,517,496, Cl. 315-227.00R.

Technicon Instruments Corporation: *See—*
Saros, Stephen, 4,517,302, Cl. 436-180.000.

Techniques Girodin: *See—*
Girodin, Marius G., 4,516,913, Cl. 417-243.000.

Tedder, Daniel W., to Georgia Tech Research Corporation. Process for producing fuel grade ethanol by continuous fermentation, solvent extraction and alcohol separation. 4,517,298, Cl. 435-160.000.

Teijin Limited: *See—*
Matsumura, Shunichi; and Inata, Hiroo, 4,517,315, Cl. 521-64.000.

Tektronix, Inc.: *See—*
Miles, Frank, 4,517,523, Cl. 330-126.000.

Telang, Anil, to Becton, Dickinson and Company. One-piece disposable collection bag having a rigid cover for a suction canister unit. 4,516,973, Cl. 604-319.000.

Teledyne Exploration Company: *See—*
Berglund, Carl O., 4,517,664, Cl. 367-163.000.

Teng, Daniel M., to Philip Morris Incorporated. Air-cured bright tobacco filler, blends and smoking articles. 4,516,590, Cl. 131-352.000.

Terada, Hiroshi: *See—*
Shibaike, Narito; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; and Zaitsu, Osamu, 4,517,613, Cl. 360-85.000.

Terahara, Akira; and Tanaka, Minoru, to Sankyo Company, Limited. IsoMB-530B derivatives. 4,517,373, Cl. 549-292.000.

Teramoto, Kazuyoshi: *See—*
Tsuchihashi, Akira; and Teramoto, Kazuyoshi, 4,517,653, Cl. 364-513.000.

Terauchi, Takashi; Sato, Koji; and Hoshi, Shoichi, to Kureha Kaguku Kogyo Kabushiki Kaisha. Oxidative dimerization of toluene. 4,517,397, Cl. 585-428.000.

Teroson GmbH: *See—*
Reich, Karl, 4,517,133, Cl. 260-545.00R.

Terradyne Limited: *See—*
Roe, Jonas L., 4,516,338, Cl. 37-4.000.

Terskov, Alexei D.: *See—*
Kostylev, Alexandr D.; Syryamin, Jury N.; Smolyanitsky, Boris N.; Boginsky, Vladimir P.; and Terskov, Alexei D., 4,516,662, Cl. 173-53.000.

Texaco Inc.: *See—*
Maddox, Jim, Jr., 4,516,635, Cl. 166-266.000.
Richter, Albert P., Jr.; and Peelman, Harold E., 4,517,459, Cl. 250-261.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,517,374, Cl. 549-533.000.

Texas Instruments Incorporated: *See—*
Benitez, Willie B., III; and Masten, Billy R., 4,517,455, Cl. 235-463.000.
Bennett, Ross L.; Price, Robert B.; Springen, Clyde H.; and Kilbourn, Harlan C., 4,517,652, Cl. 364-513.000.
Solimeno, Duane; Koeppen, Peter L.; Rogers, Gerald; and Brown, Sammy K., 4,517,656, Cl. 364-900.000.

Thacker, Kipling: *See—*
Bracke, James W.; and Thacker, Kipling, 4,517,295, Cl. 435-101.000.

Theissen, Robert J., to Rhone-Poulenc Inc. 2-Nitro-5(substituted-phenoxy) benzoyl derivatives as herbicides. 4,517,010, Cl. 71-90.000.

Thermal Concepts, Inc.: *See—*
Bingham, Grady A., 4,516,629, Cl. 165-45.000.

Thiel, Max: *See—*
Bosies, Elmar; Kampe, Wolfgang; Thiel, Max; Bicker, Uwe; and Boerner, Dietmar, 4,517,183, Cl. 514-183.000.

Thiele Engineering Company: *See—*
Stocco, Sam; and Davis, Stanley, 4,516,765, Cl. 271-95.000.

Thilo, Peer: *See—*
Moser, Otto W.; and Thilo, Peer, 4,517,554, Cl. 340-514.000.

Thom-McI, Inc.: *See—*
Thompson, Thomas L., 4,517,239, Cl. 428-307.300.

Thomas, Evan G.: *See—*
Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., 4,517,106, Cl. 252-79.400.

Thomas, Lewis H.: *See—*
Stott, Edward J.; Thomas, Lewis H.; and Jebbett, Norma J., 4,517,304, Cl. 436-518.000.

Thomas, Rudolf; Draber, Wilfried; Schmidt, Robert R.; and Eue, Ludwig, to Bayer Aktiengesellschaft. N-substituted halogenoacetanilides and their use as herbicides. 4,517,011, Cl. 71-92.000.

Thompson, George H. B., to ITT Industries, Inc. Photodetector. 4,517,581, Cl. 357-30.000.

Thompson, Thomas L., to Thom-McI, Inc. Fiber-cement/plywood walking surface. 4,517,239, Cl. 428-307.300.

Thomsen, Jack W. Faucet device with replaceable valve cartridge. 4,516,753, Cl. 251-346.000.

Thomson-CSF: *See—*
Cornet, Jean, 4,517,574, Cl. 346-135.100.
Epsztein, Bernard; and Guyot, Lucien, 4,517,603, Cl. 358-213.000.

Thone, Heinrich; Hargassner, Reinhard; Deibl, Gottfried; and Holleis, Gunter, to Voest-Alpine Aktiengesellschaft. Plate mould of a continuous casting plant. 4,516,622, Cl. 164-416.000.

Thornton, Ian; DeWitt, Kenneth W.; and Robertson, Simon A., to Keebler Company. Method of preparing a biscuit or cookie product. 4,517,209, Cl. 426-383.000.

Tillyard, Malcolm: *See—*
Price, Frank C.; Tout, Nigel R.; Hanson, Raymond; and Tillyard, Malcolm, 4,517,442, Cl. 219-215.000.

Tinson, Christopher M.: *See—*
Wood, John; Tinson, Christopher M.; and Jenkins, Stuart M., 4,516,899, Cl. 414-330.000.

Titus, Charles H.; and Wittle, John K., to Electro-Petroleum, Inc. Tubular member. 4,516,608, Cl. 138-140.000.

TMC Corporation: *See—*
Riss, Wilfried; Nitschko, Theodor; Spitaler, Engelbert; and Oberleitner, Gerhard, 4,516,791, Cl. 280-612.000.

Tobiasz, Chester C.: *See—*
Poran, Michael; Langner, Carl; and Tobiasz, Chester C., 4,516,624, Cl. 164-418.000.

Tobita, Katsumi, to Alps Electric Co., Ltd. Pay television channel selector. 4,517,595, Cl. 358-114.000.

Toko, Inc.: *See—*
Sakai, Koichi, 4,517,508, Cl. 323-352.000.

Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Zoom lens system. 4,516,839, Cl. 350-426.000.

Tokunaga, Toshio: *See—*
Takeshita, Masaru; Tokunaga, Toshio; and Ogawa, Yuichiro, 4,516,451, Cl. 83-171.000.

Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See—*
Hata, Akio; and Tanga, Michifumi, 4,517,350, Cl. 526-344.200.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ando, Hideo, 4,517,666, Cl. 369-45.000.
Bannai, Akira, 4,517,643, Cl. 364-200.000.
Iida, Kazuhiko, 4,517,658, Cl. 364-900.000.
Inomata, Koichiro; and Murata, Shinichi, 4,517,017, Cl. 75-123.00B.
Kashihara, Tomio; Tsuruta, Toshiro; Yamaguchi, Masayoshi; Yokoi, Kiyotachi; and Suzuki, Etsuji, 4,516,673, Cl. 198-341.000.
Kobayashi, Yoshikata, 4,516,472, Cl. 91-392.000.
Masaki, Nobuo, 4,517,405, Cl. 174-68.00B.
Matsushima, Kazufumi, 4,517,428, Cl. 219-10.55B.
Miyauchi, Masami; and Itoh, Masayuki, 4,517,158, Cl. 420-584.000.
Morishita, Tatsuo; Funakoshi, Fumio; Nakamura, Kenichi; and Takamori, Kazuo, 4,517,564, Cl. 340-825.690.
Nagashima, Masayoshi; and Yamane, Hiroshi, 4,517,590, Cl. 358-75.000.
Nagashima, Masayoshi; Yamane, Hiroshi; and Yamashita, Mitsuo, 4,517,591, Cl. 358-75.000.
Nakaya, Shyunichi; and Nakamura, Hiroyuki, 4,516,599, Cl. 137-375.000.
Sakai, Takami, 4,517,634, Cl. 363-35.000.
Sugimori, Fumio; Nishino, Chikae; and Harao, Norio, 4,516,715, Cl. 228-208.000.

Takaoka, Takashi; Mochizuki, Masahiko; Yamashita, Mitsuo; and Miura, Tadao, 4,517,668, Cl. 369-111.000.
Tatsumi, Hisao; and Kawano, Takashi, 4,517,445, Cl. 219-297.000.
Uchida, Yukimasa, 4,517,583, Cl. 357-41.000.
Uchino, Hiroshi; Nakajima, Kihei; and Kurosawa, Ryoichi, 4,517,636, Cl. 363-138.000.
Yamauchi, Masahide; and Fukatsu, Kunio, 4,516,866, Cl. 400-25.000.
Yamauchi, Toshiaki; Hibi, Tsuneo; Sasano, Kiyomi; and Hayashi, Yoshiki, 4,516,331, Cl. 34-77.000.
Yana, Masasumi, 4,517,573, Cl. 346-76.0PH.

Tomalia, Donald A.; and Wilson, Larry R., to Dow Chemical Company, The. Cyclic peptides. 4,517,122, Cl. 260-239.30R.

Toman, George M.: *See—*
Bernstein, Benjamin T.; Bock, Thomas J.; Toman, George M.; and Bhatia, Chandrakant, 4,516,512, Cl. 112-165.000.

Tomaszewski, Walter: *See—*
Yang, James H. C.; and Tomaszewski, Walter, 4,516,874, Cl. 403-313.000.

Tomisawa, Yoshiaki; Kinoda, Seiji; Fujita, Eiji; Murata, Masanori; Takeuchi, Toshio; and Ogawa, Ken, to Hitachi Chemical Company, Ltd. Process for developing or peeling alkali-type photosensitive film and apparatus used therein. 4,517,282, Cl. 430-399.000.

Tomita, Masahiro: *See—*
Takeuchi, Yukihisa; and Tomita, Masahiro, 4,516,993, Cl. 55-283.000.

Tomita, Masayoshi, to Fujitsu Limited. Method for constructing delay circuits in a master slice IC. 4,516,312, Cl. 29-571.000.

Tomoshige, Shozo: *See—*
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.

Topalian, Joan A.; and Izen, Ronald L. Support for a premature infant. 4,516,282, Cl. 5-72.000.

Toray Industries, Inc.: *See—*
Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, 4,517,149, Cl. 264-210.800.
Sumida, Atsushi; Ozaki, Keiichiro; and Watanabe, Shizuo, 4,517,169, Cl. 423-447.400.

Toray Silicone Company, Ltd.: *See—*
Harashima, Asao; Nakamura, Takashi; and Kishimoto, Keiichi, 4,517,150, Cl. 264-300.000.
Mine, Katsutoshi; Suzuki, Toshio; and Hanada, Tsuneo, 4,517,238, Cl. 428-212.000.

Torning, Ralph R., to Safeway Products Inc. Heating shelf. 4,517,446, Cl. 219-386.000.

Totani, Nagao: *See—*
Muramatsu, Toshio; Totani, Nagao; and Mangold, Helmut K., 4,517,297, Cl. 435-128.000.

Tout, Nigel R.: *See—*
Price, Frank C.; Tout, Nigel R.; Hanson, Raymond; and Tillyard, Malcolm, 4,517,442, Cl. 219-215.000.

Tovarny strojirenske techniky: *See—*
Valasek, Miloslav; Langer, Frantisek; Hradek, Jaroslav; and Seeman, Jindrich, 4,517,457, Cl. 250-239.000.

Townsend, Ellsworth D., to Industrial Engraving and Manufacturing Corp. Turret arrangement for continuous web rewinder. 4,516,742, Cl. 242-64.000.

Townsend, Rodney: *See—*
Markham, Peter G.; Townsend, Rodney; and Davies, Jeffrey W., 4,517,177, Cl. 424-93.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Sakakibara, Hideo; Awata, Masashi; Satoi, Shuzo; Mutoh, Naoki; Takada, Masaki; and Hayashi, Mitsuo, 4,517,296, Cl. 435-119.000.

Toyo Kohan Co., Ltd.: *See—*
Kanda, Katsumi; Okamura, Takaaki; Minamigi, Takashi; Inui, Tsuneo; and Kondo, Yoshikazu, 4,517,255, Cl. 428-626.000.

Toyo Rubber Chemical Industry Co., Ltd.: *See—*
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Kamanaka, Tamaki; and Taniguchi, Hiroshi, 4,517,312, Cl. 521-47.000.

Toyo Seikan Kaisha, Limited: *See—*
Matsuno, Kenji; and Funamoto, Hiroyuki, 4,517,256, Cl. 428-629.000.

Toyomura, Shigeru: *See—*
Fushimoto, Hideo; Toyomura, Shigeru; Nishimuro, Yoshiaki; Asakura, Osamu; and Rachi, Masahiro, 4,517,660, Cl. 364-708.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Nakajima, Mikio, 4,516,544, Cl. 123-188.00M.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,516,652, Cl. 180-177.000.
Urushidani, Masahiro, 4,516,551, Cl. 123-407.000.
Yamaguchi, Hitohisa; Fuse, Kenichiro; and Yoshida, Takeshi, 4,516,650, Cl. 180-68.300.
Yamawaki, Takeshi; Saitou, Tatuya; and Sugimori, Sigemi, 4,516,804, Cl. 296-214.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hamano, Hideo; and Koga, Yasunori, 4,516,443, Cl. 74-711.000.

Toyota Motor Corp.: *See—*
Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, 4,517,030, Cl. 148-6.15R.

TP Laboratories, Inc.: *See—*
Hall, Arthur B., 4,516,938, Cl. 433-215.000.

Trachte, Dietrich: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.

Tracton, Arthur A.; and Guidice, John N., to National Starch and Chemical Corporation. Process for preparing fiberboard. 4,517,240, Cl. 428-326.000.

Trajin, Jean-Paul: *See—*
Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,517,362, Cl. 546-7.000.

Trassare, Anthony, Jr.: *See—*
Wnuk, Paul A.; Hamilton, Thomas J.; Trassare, Anthony, Jr.; and Oliver, Michael J., 4,516,891, Cl. 410-154.000.

Tribble, Terry B. Dispenser for particulate material in measured quantities. 4,516,701, Cl. 222-361.000.

Trillich, Charles H.: *See—*
Christine, William C.; and Trillich, Charles H., 4,516,691, Cl. 222-83.500.

Trinity Foundation: *See—*
Christine, William C.; and Trillich, Charles H., 4,516,691, Cl. 222-83.500.

Trio Kabushiki Kaisha: *See—*
Ogawa, Atsushi, 4,517,520, Cl. 329-145.000.

Trombert, John F. Aperture wheel. 4,516,842, Cl. 354-4.000.

Tromp, Petrus J.: *See—*
Ratcliffe, Charles T.; and Tromp, Petrus J., 4,517,171, Cl. 423-648.00R.

Trotin, Jean-Pierre: *See—*
Bourgeois, Serge; Carle, Jean-Franqois; Lochon, Henri; and Trotin, Jean-Pierre, 4,516,525, Cl. 118-688.000.

Troupel, Michel: *See—*
Fauvarque, Jean-Francois; Jutand, Anny; Chevrot, Claude; Pfluger, Fernando; and Troupel, Michel, 4,517,061, Cl. 204-59.00R.

Trustroke International, Inc.: *See—*
Miller, Gardner H., 4,516,779, Cl. 273-186.00C.

TRW Inc.: *See—*
Drutchas, Gilbert H.; and Spencer, Phillip B., 4,516,918, Cl. 418-15.000.
Merz, Kenneth M., 4,517,545, Cl. 338-25.000.

Trzeciak, Arnold: *See—*
Felix, Arthur M.; Gillessen, Dieter; Lergier, William; Meienhofer, Johannes A.; and Trzeciak, Arnold, 4,517,119, Cl. 260-112.50R.

Tsuchihashi, Akira; and Teramoto, Kazuyoshi, to Hitachi, Ltd. Method for controlling an industrial robot. 4,517,653, Cl. 364-513.000.

Tsuji, Akira; Ito, Sadayuki; and Fujimoto, Kazumi, to Sony Coporation. Flexible magnetic disk cassette and a recording and/or reproducing apparatus for the same. 4,517,617, Cl. 360-133.000.

Tsuji, Masahiro: *See—*
Koyama, Hiroyasu; Tsuji, Masahiro; and Suzuki, Yoshikuni, 4,517,365, Cl. 546-142.000.

Tsujimura, Hideo: *See—*
Taguchi, Haruyoshi; Tsujimura, Hideo; and Imanishi, Masamichi, 4,516,687, Cl. 220-94.00R.

Tsukakoshi, Shosaku, to Oki Electric Industry Co., Ltd. Weighted capacitor analogue-digital converters. 4,517,549, Cl. 340-347.0AD.

Tsukata, Masaharu: *See—*
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Tsunekawa, Tokuichi: *See—*
Suzuki, Ryoichi; Matsumoto, Seiichi; Amikura, Takashi; Tsunekawa, Tokuichi; and Uchiyama, Takashi, 4,516,835, Cl. 350-336.000.

Tsuruta, Toshiro: *See—*
Kashihara, Tomio; Tsuruta, Toshiro; Yamaguchi, Masayoshi; Yokoi, Kiyotachi; and Suzuki, Etsuji, 4,516,673, Cl. 198-341.000.

Tsutsui, Eiji; Yoshioka, Masahiro; Murakami, Masahiro; and Iwao, Noriyuki, to Mita Industrial Co., Ltd. Cleaning device for an electrostatic photographic copying machine. 4,516,849, Cl. 355-15.000.

Tsutsui, Ichiro: *See—*
Yamada, Hisafumi; Saito, Junya; and Tsutsui, Ichiro, 4,517,601, Cl. 358-167.000.

Tsutsume, Shigeru: *See—*
Yoshida, Yoshiichi, 4,516,927, Cl. 425-549.000.

Tsutsumi, Shigeru. Hot tip bushing means for a synthetic resin injection molding machine. 4,517,453, Cl. 219-421.000.

Tsutsumi, Yoshio: *See—*
Sato, Yoshito; Yato, Tokuhiro; Maeo, Hidemi; and Tsutsumi, Yoshio, 4,516,469, Cl. 91-362.000.

Tubular Threading Incorporated: *See—*
Albert, Robert J., 4,516,306, Cl. 29-564.700.

Tufts, Wesley M., to Control Fluidics, Inc. Water saving toilet system. 4,516,280, Cl. 4-319.000.

Turi, Raymond A.; and Pfeifer, Robert F., to NCR Corporation. Unified CMOS/SNOS semiconductor fabrication process. 4,516,313, Cl. 29-571.000.

Turner, Frank E., to Burke Company, The. Concrete slab key joint forming strip and supporting stake therefor. 4,516,875, Cl. 404-50.000.

Turner, Gary B.: *See—*
Morel, Don L.; Gay, Robert R.; and Turner, Gary B., 4,517,403, Cl. 136-249.000.

Turner, Richard L.: *See—*
Leeper, Marvin A.; Turner, Richard L.; and Simpkins, Terry J., 4,516,805, Cl. 297-330.000.

Tyler, Derek E.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,516,627, Cl. 164-467.000.
Yarwood, John C.; and Tyler, Derek E., 4,516,625, Cl. 164-454.000.

UBE Industries, Ltd.: *See—*
Kawahito, Takashi; Himukashi, Yoshinori; and Yamada, Tetsuo, 4,517,168, Cl. 423-344.000.

Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Shozo, to Susumu Ubukata. Snap type thermally responsive switch device. 4,517,541, Cl. 337-89.000.

Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor integrated circuit including a fuse element. 4,517,583, Cl. 357-41.000.

Uchimura, Toshio, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic winch control system. 4,516,755, Cl. 254-344.000.

Uchino, Hiroshi; Nakajima, Kihei; and Kurosawa, Ryoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Inverter apparatus. 4,517,636, Cl. 363-138.000.

Uchiyama, Takashi: *See—*
Suzuki, Ryoichi; Matsumoto, Seiichi; Amikura, Takashi; Tsunekawa, Tokuichi; and Uchiyama, Takashi, 4,516,835, Cl. 350-336.000.

Ueda, Shigeki, to Matsushita Electric Industrial Co., Ltd. Safety device for a heating appliance. 4,517,431, Cl. 219-10.55B.

Ueda, Tomoyuki, to Asahi Yukizai Kogyo Co., Ltd. Anticorrosive butterfly valve. 4,516,597, Cl. 137-314.000.

Uekubo, Yasuhiro, to Mitsubishi Denki Kabushiki Kaisha. Protective relay system for a power system. 4,517,619, Cl. 361-64.000.

Ulug, Mehmet E., to General Electric Company. Preemptive bid communication system. 4,517,670, Cl. 370-85.000.

Umetsu, Yoshihiro; Muraishi, Masakazu; Ito, Osamu; and Kakeba, Masakatsu, to Nissan Motor Company, Limited. Seating position adjusting device for an automotive vehicle seat. 4,516,788, Cl. 280-6.00R.

Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., to Nevamar Corporation. Transfer coating of abrasion-resistant layers. 4,517,235, Cl. 428-148.000.

Unger, Goetz W., to Knoll International, Inc. Webbing tensioning method. 4,516,305, Cl. 29-448.000.

Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner, 4,516,959, Cl. 464-175.000.

Unibody Time Saver Corporation: *See—*
Reich, George, 4,516,423, Cl. 72-422.000.

UNICAL S.p.A.: *See—*
Jahier, Giovanni, 4,516,534, Cl. 122-15.000.

Union Carbide Corporation: *See—*
Acomb, Byron H., 4,516,595, Cl. 137-73.000.
Bailey, John C., 4,516,317, Cl. 29-623.500.
Chan, John K., 4,517,132, Cl. 260-465.00F.
Chao, Chien C.; and Sherman, John D., 4,516,566, Cl. 127-46.300.
Gardner, Hugh C.; Michno, Michael J., Jr.; and Brode, George L., 4,517,321, Cl. 523-400.000.
Kupcikevicius, Vytautas, 4,516,387, Cl. 53-530.000.
Prakash, Sri; and Snyder, William B., Jr., 4,517,155, Cl. 419-19.000.
Yerushalmy, Yosef; and Stokes, Larry W., 4,517,437, Cl. 219-121.0PP.

Union Oil Company of California: *See—*
Ward, John W.; and Carlson, Timothy L., 4,517,073, Cl. 208-111.000.
Ward, John W., 4,517,074, Cl. 208-111.000.

Union Special Corporation: *See—*
Bernstein, Benjamin T.; Bock, Thomas J.; Toman, George M.; and Bhatia, Chandrakant, 4,516,512, Cl. 112-165.000.

Uniroyal, Inc.: *See—*
Worns, John R., 4,517,279, Cl. 430-286.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Bickerdike, Robert L.; and Hughes, Garyth, 4,517,027, Cl. 148-6.300.

U.S. Balloon Mfg. Co., Inc.: *See—*
Schwartz, Joel, 4,516,949, Cl. 446-222.000.

United States of America
Agriculture: *See—*
DeLoach, John R.; Harris, Robert L.; Mayer, Richard T.; and Ihler, Garret M., 4,517,080, Cl. 210-85.000.
Lenker, Don H.; and Nascimento, Dennis F., 4,516,385, Cl. 53-504.000.

Air Force: *See—*
Frank, G. Haven, 4,517,618, Cl. 361-58.000.
Gelbwachs, Jerry A., 4,516,858, Cl. 356-437.000.
Gray, Roger P., Jr., 4,517,570, Cl. 343-372.000.
Heath, James E.; and Swenson, Hilmer W., 4,517,464, Cl. 250-370.000.
Kinney, Daniel C., 4,517,517, Cl. 324-433.000.
Willmore, Robert R., 4,517,568, Cl. 343-18.00E.

Army: *See—*
Andrews, Angus P., 4,517,486, Cl. 310-331.000.
Buckland, Bruce E., 4,516,274, Cl. 2-209.000.
Calcagno, Vincent J., Jr., 4,516,326, Cl. 33-169.00B.
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,517,047, Cl. 156-610.000.
Eyman, Ralph A., 4,516,499, Cl. 102-293.000.
Gerharz, Reinhold, 4,517,569, Cl. 343-18.00D.
Lance, Clyde E.; and Hutchison, Wanda S., 4,516,827, Cl. 350-96.150.
Stern, Richard A.; and Babbitt, Richard W., 4,517,536, Cl. 333-254.000.
Sweeney, Donald W.; Gallagher, Neal C.; and Christensen, Charles R., 4,516,743, Cl. 244-3.130.

Energy: *See—*
Swift, Gregory W.; Migliori, Albert; and Wheatley, John C., 4,516,632, Cl. 165-167.000.

Health and Human Services: *See—*
DeReggi, Aime S.; and Harris, Gerald R., 4,517,665, Cl. 367-163.000.

National Aeronautics and Space Administration: *See—*
Cunningham, Robert E., 4,517,505, Cl. 318-611.000.
Outlaw, Ronald A.; and Baugh, Bill T., 4,516,435, Cl. 73-863.110.
Ruitberg, Arthur P.; and Young, Kenneth M., 4,517,472, Cl. 307-82.000.
Shlichta, Paul J., 4,517,048, Cl. 156-621.000.
Sydnor, Richard L., 4,517,530, Cl. 331-3.000.

Navy: *See—*
Keller, Patrick N.; and Seal, Clinton D., 4,517,593, Cl. 358-107.000.
Liu, Yet-Zen; and Hong, Chi-Shain, 4,517,674, Cl. 372-45.000.
Reinitz, Karl; and Hart, Lynn, 4,517,515, Cl. 324-252.000.

U.S. Philips Corporation: *See—*
Bosman, Jakob, 4,516,483, Cl. 98-40.140.
Claasen, Theodoor A. C. M.; Stienstra, Albert J.; and van Roermund, Arthur H. M., 4,517,655, Cl. 364-703.000.
Goossens, Urbanus P. M., 4,517,416, Cl. 179-115.5PS.
Meulenbrugge, Hendrik J.; and Fortuin, Harm, 4,517,460, Cl. 250-252.100.
Rijckaert, Albert M. A.; and de Niet, Edmond, 4,517,612, Cl. 360-67.000.
Smeets, Frans H. M., 4,517,509, Cl. 323-362.000.

United States Steel Corporation: *See—*
Douty, Donald L., 4,516,884, Cl. 405-261.000.
Martin, Wayne A., 4,516,299, Cl. 29-6.000.
Perfetti, Bruno M., 4,517,325, Cl. 524-188.000.

United Technologies Corporation: *See—*
Male, Barry, 4,517,622, Cl. 361-283.000.
Meinzer, Richard A.; and Dobbs, Gregory M., 4,517,676, Cl. 372-89.000.
Pearson, James E., 4,516,853, Cl. 356-152.000.

Unitika, Ltd.: *See—*
Sekine, Kunio; Masuda, Hitoshi; Ishibashi, Kodo; Hirai, Masahide; Tomoshige, Shozo; and Kondo, Kozo, 4,517,096, Cl. 210-668.000.

Universal Foam Systems, Inc.: *See—*
Finn, Clifford J., 4,516,694, Cl. 222-148.000.

University of Dayton: *See—*
Fusek, Richard L., 4,516,833, Cl. 350-162.120.

University of Rochester, The: *See—*
Mourou, Gerard; and Sizer, Theodore, II, 4,517,675, Cl. 372-53.000.

Upjohn Company, The: *See—*
McClellan, Thomas R.; and Murray, Pat L., 4,516,524, Cl. 118-683.000.

Ura, Mitsuru: *See—*
Matsushita, Yasuo; Nakamura, Kousuke; and Ura, Mitsuru, 4,517,584, Cl. 357-80.000.

Urban, John A. Portable workshop. 4,516,308, Cl. 29-564.000.

Urdea, Mickey S.; and Warner, Brian D., to Chiron Corporation. Multiple reactor system and method for polynucleotide synthesis. 4,517,338, Cl. 525-54.110.

Urushidani, Masahiro, to Toyota Jidosha Kabushiki Kaisha. Control system for ignition timing and exhaust gas recirculation of combustion engine. 4,516,551, Cl. 123-407.000.

Usher, Peter P., to Metex Corporation. Method of producing high temperature composite seal. 4,516,782, Cl. 277-1.000.

Ushio Denki Kabushiki Kaisha: *See—*
Sugioka, Shinji, 4,516,527, Cl. 118-723.000.

USIFLAMME S.A.: *See—*
Corpataux, Marcel, 4,516,869, Cl. 401-131.000.

USM Corporation: *See—*
Bandura, Vitaly, 4,516,310, Cl. 29-566.300.
Dorosz, Adolph S., 4,516,456, Cl. 83-578.000.
Price, Frank C.; Tout, Nigel R.; Hanson, Raymond; and Tillyard, Malcolm, 4,517,442, Cl. 219-215.000.
Winter, William J., 4,516,491, Cl. 100-158.00R.

Vadasz, Amnon F., to Intevep, S.A. Pump. 4,516,479, Cl. 92-170.000.

Vadis, Marty K. Method of producing an ore pellet. 4,517,014, Cl. 75-3.000.

Val, Christian: *See—*
Lambert, Francois; and Val, Christian, 4,517,356, Cl. 528-483.000.

Valasek, Miloslav; Langer, Frantisek; Hradek, Jaroslav; and Seeman, Jindrich, to Tovarny strojirenske techniky. Device for control of lasting machine for shoe toes by gluing. 4,517,457, Cl. 250-239.000.

Valentine, Edward H.: *See—*
Graf, Matthew C.; Muhlfeld, Hans P., Jr.; and Valentine, Edward H., 4,517,661, Cl. 364-900.000.

Valeo: *See—*
Caray, Andre , 4,516,672, Cl. 192-107.00C.

Valmet Oy: *See—*
Eskelinen, Pekka; and Nurmio, Matti, 4,516,330, Cl. 34-23.000.
Hujala, Jorma; and Koponen, Martti, 4,517,054, Cl. 162-301.000.

Van, Tri S.: *See—*
Lin, Frank W.; Moon, Suhdok D.; Van, Tri S.; and Anzai, Max I., 4,517,503, Cl. 318-561.000.

VanBuskirk, Ellor J.: *See—*
Birkmeyer, William J.; Gray, Ralph C.; Dowbenko, Rostyslaw; Kapp, David C.; VanBuskirk, Ellor J.; and Maska, Rudolf, 4,517,322, Cl. 523-501.000.
van de Plassche, Rudy J.: *See—*
Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,517,525, Cl. 330-260.000.
van der Laan, Jan G. J.; and Entrop, Willem, to Hosokawa-Nauta B.V. Mixer for drill cuttings and drilling mud on a drilling location. 4,516,860, Cl. 366-287.000.
Van Der Puy, Michael: *See—*
Anello, Louis G.; Van Der Puy, Michael; Hendrickson, Larry L.; Rogic, Milorad M.; Swerdloff, Michael D.; and Kolc, Jaroslav F., 4,517,002, Cl. 71-28.000.
van Mil, Martinus P. G., to Stork PMT B.V. Apparatus for the removal of entrails of slaughtered birds. 4,516,290, Cl. 17-11.000.
Van Naarden, Robert W.: *See—*
DeVale, Donald P.; Brejcha, Robert J.; and Van Naarden, Robert W., 4,516,781, Cl. 273-373.000.
van Roermund, Arthur H. M.: *See—*
Claasen, Theodoor A. C. M.; Stienstra, Albert J.; and van Roermund, Arthur H. M., 4,517,655, Cl. 364-703.000.
Van Valkenburg, George; and Carlquist, John W., to Van Valkenburg, George. Method and apparatus for electronic publishing. 4,517,598, Cl. 358-142.000.
Van Voorhis, John E.: *See—*
Allen, Michael D.; and Van Voorhis, John E., 4,517,626, Cl. 361-433.000.
Vaphiadis, John L.: *See—*
Brems, John H.; and Vaphiadis, John L., 4,516,504, Cl. 104-130.000.
Varian Associates, Inc.: *See—*
Hill, Howard D.; and Zens, Albert P., 4,517,516, Cl. 324-318.000.
Lewis, Carol R., 4,517,276, Cl. 430-192.000.
Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Curing agent for fluorocarbon polymer coating compositions. 4,517,378, Cl. 564-160.000.
Vauss, Elvin M., Jr.: *See—*
Harney, Marilyn J.; Vauss, Elvin M., Jr.; and Sane, Ajit Y., 4,517,069, Cl. 204-290.00F.
VEECO/ai, Inc.: *See—*
Gault, Roger B.; and Keutzer, Larry L., 4,517,465, Cl. 250-492.200.
Venable, Edward R., to AT&T Technologies, Inc. Lightguide preform chuck. 4,516,787, Cl. 279-1.0SG.
Venable, Thomas L.; Robinson, Geoffrey C.; and Loeslein, Raymond D., to Spectrum Control, Inc. RF filter connector. 4,516,815, Cl. 339-14.00R.
Vending Components, Inc.: *See—*
Cerrato, Vincent J., 4,516,698, Cl. 222-341.000.
Veragen, Rene , to Sagem. Sequential pneumatic control device, supplied with electric energy. 4,516,567, Cl. 128-1.00D.
Victor Company of Japan, Ltd.: *See—*
Ishigaki, Yukinobu, 4,517,518, Cl. 328-165.000.
Shimizu, Shigeo; and Kato, Toshio, 4,517,257, Cl. 428-694.000.
Yoshihiko, Ota, 4,517,609, Cl. 360-22.000.
Vilter Manufacturing Corporation: *See—*
Kocher, Erich J., 4,516,994, Cl. 55-337.000.
Vinciguerra, Constantino, to Nuovo Pignone S.p.A. Power stage of a gas turbine. 4,516,908, Cl. 415-122.00R.
Vipont Laboratories, Inc.: *See—*
Southard, George L., 4,517,172, Cl. 424-7.100.
Visel, Patrick E.: *See—*
Hinden, Jean M.; Ernes, Lynne M.; and Visel, Patrick E., 4,517,068, Cl. 204-283.000.
Vizecky, Donald F., to Steel Handlers' Manual and Steel Handloaders' Components, Inc. Method and apparatus for slitting shotgun shell wads. 4,516,460, Cl. 83-861.000.
Voest-Alpine Aktiengesellschaft: *See—*
Scheinecker, Alois, 4,516,623, Cl. 164-416.000.
Thone, Heinrich; Hargassner, Reinhard; Deibl, Gottfried; and Holleis, Gunter, 4,516,622, Cl. 164-416.000.
Vogel, Wilhelm: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.
Vogtmann, Hans-Jorg: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Itoh, Katsuoki; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,516,729, Cl. 239-453.000.
Voith Turbo GmbH & Co. KG: *See—*
Holler, Heinz; and Weber, Wolfgang, 4,516,399, Cl. 60-351.000.
Vokovich, Daniel L.: *See—*
Straub, Albert M.; Mabrey, Theodore R.; and Vokovich, Daniel L., 4,517,614, Cl. 360-85.000.
Volkswagenwerk AG: *See—*
Warnecke, Rolf; Ruhmer, Heinz; and Leineweber, Gunter, 4,516,470, Cl. 91-374.000.
Volpenhein, Robert A., to Procter & Gamble Company, The. Synthesis of higher polyol fatty acid polyesters using carbonate catalysts. 4,517,360, Cl. 536-119.000.
von Aschwege, J. Thomas: *See—*
Beynet, Pierre A.; and von Aschwege, J. Thomas, 4,516,881, Cl. 405-195.000.
Vorwerk & Co. Interholding GmbH: *See—*
Aschoff, Hans-Joachim; and Cholewa, Lothar, 4,517,502, Cl. 318-474.000.
Vyvial, Rudolf: *See—*
Lynch, John; .Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, 4,517,277, Cl. 430-281.000.
W. A. Deutsher Proprietary Limited: *See—*
Freeland, Warwick P., 4,516,688, Cl. 220-293.000.
W. R. Grace & Co.: *See—*
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,517,392, Cl. 568-948.000.
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,517,394, Cl. 568-948.000.
Wang, Shu-Shieh P.; and Sherwin, Martin B., 4,517,393, Cl. 568-948.000.
W. R. Grace & Co., Cryovac Div.: *See—*
Imperiale, Nino, 4,516,384, Cl. 53-459.000.
W. Schlafhorst & Co.: *See—*
Raasch, Hans; and Wassenhoven, Heinz-Georg, 4,516,397, Cl. 57-417.000.
Wada, Noriaki, to Japan Synthetic Rubber Co., Ltd.; and Bando Chemical Industries, Ltd. Rubber composition containing a silicone raw rubber. 4,517,332, Cl. 524-506.000.
Wagensomer, Joseph: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Wagensomer, Joseph; and Jagisch, Frank C., 4,517,250, Cl. 428-483.000.
Wagner, Edward A.: *See—*
Snider, Wendall L.; and Wagner, Edward A., 4,516,897, Cl. 414-180.000.
Wagner, Manfred: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; Numrich, Rudi; and Weyh, Gerd, 4,516,990, Cl. 55-96.000.
Waitkus, Phillip A.: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,517,363, Cl. 546-66.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,517,364, Cl. 546-66.000.
Wakayama Iron Works, Ltd.: *See—*
Takaoka, Shozo; and Hirasako, Akio, 4,516,332, Cl. 34-79.000.
Wakefield, G. Felix; Bender, David L.; and Rea, Samuel N., to Atlantic Richfield Company. Silicon ribbon growth wheel with edge defining grooves. 4,517,049, Cl. 156-622.000.
Walker, Brooks. Vehicle mounted parking device for use on front wheel drive vehicles. 4,516,653, Cl. 180-199.000.
Walker, David B.: *See—*
Blakely, Linda L.; Goodman, John C.; and Walker, David B., 4,516,845, Cl. 354-412.000.
Wallach, Steven J.: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.
Wallach, Walter A., Jr.: *See—*
Ahlstrom, John K.; Bernstein, David H.; Clancy, Gerald F.; Gruner, Ronald H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; and Wallach, Walter A., Jr., 4,517,642, Cl. 364-200.000.
Wallbillich, Gunter: *See—*
Lynch, John; Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, 4,517,277, Cl. 430-281.000.
Walter, John, to Continental Packaging Company, Inc. Resealable closure. 4,516,684, Cl. 215-272.000.
Walter, Lee: *See—*
Ovshinsky, Stanford R.; Allred, David D.; Walter, Lee; and Hudgens, Stephen J., 4,517,223, Cl. 427-39.000.
Wang, Chin C.: *See—*
Labib, Mohamed E.; and Wang, Chin C., 4,517,117, Cl. 252-511.000.
Wang, Shu-Chieh P.; and Sherwin, Martin B., to W. R. Grace & Co. Preparation of nitro compounds by vapor phase nitration of organic alcohols. 4,517,392, Cl. 568-948.000.
Wang, Shu-Chieh P.; and Sherwin, Martin B., to W. R. Grace & Co. Preparation of nitro compounds by vapor phase nitration of carboxylic acids. 4,517,394, Cl. 568-948.000.
Wang, Shu-Shieh P.; and Sherwin, Martin B., to W. R. Grace & Co. Preparation of nitro compounds by vapor phase nitration of ketones. 4,517,393, Cl. 568-948.000.
Wanke, Wilhelm. Rotary dryer with rotary low-pressure syphon. 4,516,334, Cl. 34-124.000.
Ward, John W.; and Carlson, Timothy L., to Union Oil Company of California. Hydrocracking process and catalyst therefor. 4,517,073, Cl. 208-111.000.
Ward, John W., to Union Oil Company of California. Hydrocarbon conversion process. 4,517,074, Cl. 208-111.000.
Ward, Thomas V.: *See—*
Preston, John M.; Ward, Thomas V.; and Morrow, William H., 4,516,857, Cl. 356-418.000.
Ward, William F. Heat recovery system and method. 4,516,628, Cl. 165-36.000.
Warnecke, Rolf; Ruhmer, Heinz; and Leineweber, Gunter, to Volkswagenwerk AG. Unbalanced hydraulic amplifier valve assembly. 4,516,470, Cl. 91-374.000.
Warner, Brian D.: *See—*
Urdea, Mickey S.; and Warner, Brian D., 4,517,338, Cl. 525-54.110.
Warner, Isiah M.; and Ho, Chu-Ngi, to Emory University. Degassing process and apparatus for removal of oxygen. 4,516,984, Cl. 55-16.000.

Warner-Lambert Company: *See—*
Barth, Hubert; Fritschi, Edgar; Ganser, Volker; Hartenstein, Johannes; Herrmann, Manfred; and Satzinger, Gerhard, 4,517,185, Cl. 514-232.000.
Cheng, Chia-Chung, 4,517,182, Cl. 514-413.000.
Peleckis, Anthony J., 4,516,320, Cl. 30-49.000.
Warren, Wayne L.: *See—*
Baran, Michael S.; Besasie, Joseph C.; Warren, Wayne L.; and Montgomery, Allen W., 4,517,418, Cl. 179-156.00R.
Wasel-Nielen, Horst-Dieter: *See—*
Merkenich, Karl; Wasel-Nielen, Horst-Dieter; Maurer, Alexander; and Adrian, Renate, 4,517,109, Cl. 252-135.000.
Wassenhoven, Heinz-Georg: *See—*
Raasch, Hans; and Wassenhoven, Heinz-Georg, 4,516,397, Cl. 57-417.000.
Watabe, Shin, to Mitsubishi Jukogyo Kabushiki Kaisha. Refrigerating apparatus. 4,516,407, Cl. 62-238.600.
Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator control system. 4,516,665, Cl. 187-29.00R.
Watanabe, Shizuo: *See—*
Sumida, Atsushi; Ozaki, Keiichiro; and Watanabe, Shizuo, 4,517,169, Cl. 423-447.400.
Watanabe, Takayuki: *See—*
Isshiki, Tomiya; Nawata, Takanari; Kijima, Yasuhiko; Ito, Akira; and Watanabe, Takayuki, 4,517,377, Cl. 560-261.000.
Watts, Lewis W., Jr.: *See—*
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,517,374, Cl. 549-533.000.
Weatherby, Inc.: *See—*
Jennie, Fred, 4,516,466, Cl. 89-145.000.
Weatherly, John D.: *See—*
Brookes, David L.; Weatherly, John D.; and Dillicar, Colin R., 4,516,770, Cl. 273-11.00R.
Weber, Wolfgang: *See—*
Holler, Heinz; and Weber, Wolfgang, 4,516,399, Cl. 60-351.000.
Wegemund, Bernd: *See—*
Wilk, Hans-Christoph; Wegemund, Bernd; and Gorzinski, Manfred, 4,517,334, Cl. 524-539.000.
Wehner, Dennis J.: *See—*
Keeney, Keith; and Wehner, Dennis J., 4,516,467, Cl. 91-31.000.
Weichman, Edward C., to Schlegel Corporation. Two-wire carrier edge protector trim strip. 4,517,233, Cl. 428-108.000.
Weightman, Barry O.: *See—*
Evans, David M.; and Weightman, Barry O., 4,516,569, Cl. 128-92.0BC.
Weighton, David M.: *See—*
Kerry, John C.; and Weighton, David M., 4,517,201, Cl. 514-521.000.
Weimann, Norbert: *See—*
Dahm, Manfred; Weimann, Norbert; Nehen, Ulrich; Muller, Hanns P.; Jabs, Gert; Awater, Albert; and Barnes, James M., 4,517,141, Cl. 264-4.700.
Weiser, Josef; Heinzl, Alfred; and Stadler, Heinz, to Siemens Aktiengesellschaft. Electromagnetic miniature relay and method of manufacture. 4,517,537, Cl. 335-187.000.
Weiss, Harvey: *See—*
Gravina, Anthony N.; Keitel, Murray; Weiss, Harvey; Wiley, Joseph N.; and Charland, Edmund G., Jr., 4,517,161, Cl. 422-95.000.
Weissmuller, Adolf: *See—*
Babler, Fridolin; and Weissmuller, Adolf, 4,517,320, Cl. 523-215.000.
Wengrovius, Jeffrey H.: *See—*
Lockhart, Thomas P.; and Wengrovius, Jeffrey H., 4,517,337, Cl. 524-859.000.
Wentland, Mark P.; and Bailey, Denis M., to Sterling Drug Inc. 1-Amino-1,8-naphthyridine compounds useful as bactericides. 4,517,191, Cl. 514-300.000.
Wenzel, Franz: *See—*
Arndt, Peter J.; Muller, Manfred; Schlosser, Fritz; and Wenzel, Franz, 4,517,380, Cl. 564-206.000.
Werner, Henry G.: *See—*
Meeker, Brian L.; Ferguson, John W.; and Werner, Henry G., 4,517,236, Cl. 428-192.000.
Wessel, Wolf: *See—*
Buck, Rainer; Kuttner, Thomas; Piwonka, Fridolin; and Wessel, Wolf, 4,516,550, Cl. 123-357.000.
Wessely, Herrmann, to Siemens Aktiengesellschaft. Device for cooling a plurality of integrated modules combined on a flexible printed circuitboard to form logic cards. 4,517,624, Cl. 361-387.000.
Westbrook, Charles. Wall bracket system. 4,516,751, Cl. 248-276.000.
Westerman, Harry H., Jr.; and Prusak, John J., to RCA Corporation. Method and apparatus for removing flash from a molded recorded disc. 4,516,301, Cl. 29-27.00C.
Western AG-Sales Inc.: *See—*
Matson, Donald F., 4,516,902, Cl. 414-480.000.
Westinghouse Brake & Signal Co.: *See—*
Brown, Christopher R.; Corrie, John D.; and Wilson, William G. J., 4,517,673, Cl. 371-36.000.
Westinghouse Electric Corp.: *See—*
English, William A.; and Young, Robert R., 4,516,916, Cl. 417-368.000.
Hoffman, Richard A., 4,517,217, Cl. 428-632.000.
Kemper, Christian T.; Osborne, Robert L.; and Bellows, James C., 4,517,468, Cl. 290-52.000.
Lance, Joseph R., 4,517,259, Cl. 429-26.000.
Przybysz, John X.; and Schlegel, Earl S., deceased, 4,516,315, Cl. 29-576.00B.
Westvaco Corporation: *See—*
Choy, Edmund M., 4,517,052, Cl. 162-11.000.
Forbes, Hampton E., Jr., 4,516,718, Cl. 229-33.000.
Gowan, John W., Jr.; and Force, Carlton G., 4,517,347, Cl. 526-216.000.
Wetzel, Donald C., to Quest Corporation. Load checking arrangement for a center-loaded type load cell. 4,516,645, Cl. 177-147.000.
Weyerhaeuser Company: *See—*
Taylor, Michael N.; and Reid, Timothy H., 4,517,147, Cl. 264-83.000.
Weyh, Gerd: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; Numrich, Rudi; and Weyh, Gerd, 4,516,990, Cl. 55-96.000.
Whaley, Hubert L., to Babcock & Wilcox Company, The. Method and apparatus of thermal detection using bonded coupon. 4,516,520, Cl. 116-217.000.
Whalley, Leslie A. Cutting devices for tiles. 4,516,712, Cl. 225-96.500.
Wheatley, John C.: *See—*
Swift, Gregory W.; Migliori, Albert; and Wheatley, John C., 4,516,632, Cl. 165-167.000.
Wheaton Industries: *See—*
Sinha, Kamal R.; and Caldwell, Brian E., 4,517,242, Cl. 428-336.000.
Sinha, Kamal R.; and Caldwell, Brian E., 4,517,243, Cl. 428-336.000.
Wheelock, Thomas D., to Iowa State University Research Foundation, Inc. Process for producing low-ash, low-sulfur coal. 4,516,980, Cl. 44-1.0SR.
Whinfrey, Dennis R., to Northern Engineering Industries plc. Liquid fuel atomizer. 4,516,728, Cl. 239-399.000.
White, Dwain M., to General Electric Company. Process for preparing polyphenylene oxide-rubber graft copolymers and products obtained thereby. 4,517,341, Cl. 525-152.000.
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., to General Electric Company. One package, stable, moisture curable, polyalkoxy-terminated organopolysiloxane compositions and method for making. 4,517,352, Cl. 528-18.000.
Whitley, David A.: *See—*
Richardson, Paul; Albers, Daniel C.; and Whitley, David A., 4,516,633, Cl. 166-69.000.
Whittaker, Brian F.: *See—*
Maczuszenko, Andrzej; Davison, Ernest; Otter, Brian; Whittaker, Brian F.; Novak, Christopher; and Landheer, Dolf, 4,516,847, Cl. 355-3.0TR.
Whitted, Linda J. Method of making a decorative photo mirror. 4,517,040, Cl. 156-153.000.
Whittlesey, Curtis C., to Energy Development Associates, Inc. Hydrogen gas relief valve. 4,517,261, Cl. 429-64.000.
Wicklund, L. Harvey: *See—*
Zorb, Larry D.; and Wicklund, L. Harvey, 4,516,794, Cl. 285-30.000.
Wicks, Harry O. Precast concrete expansion joint for roads and the like. 4,516,876, Cl. 404-60.000.
Widden, Charles G.: *See—*
Gander, Terence W.; and Widden, Charles G., 4,516,812, Cl. 312-12.000.
Wiggins Teape Group Limited, The: *See—*
Woodward, Antony I.; Clarke, David G.; and Shahaney, Sunil, 4,517,285, Cl. 430-538.000.
Wiley, Edward R. Multipurpose table saw. 4,516,612, Cl. 144-1.00R.
Wiley, Joseph N.: *See—*
Gravina, Anthony N.; Keitel, Murray; Weiss, Harvey; Wiley, Joseph N.; and Charland, Edmund G., Jr., 4,517,161, Cl. 422-95.000.
Wilhelm Dahle Buro- und Zeichengeratefabrik: *See—*
Dahle, Gerald, 4,516,452, Cl. 83-455.000.
Wilk, Hans-Christoph; Wegemund, Bernd; and Gorzinski, Manfred, to Henkel Kommanditgesellschaft auf Aktien. Polyol-modified alkyd resins. 4,517,334, Cl. 524-539.000.
Wilken, Gerhard: *See—*
Klimeck, Hugo; and Wilken, Gerhard, 4,516,809, Cl. 299-43.000.
Willard, G. Fred; and Hutchings, David A., to Owens-Corning Fiberglas Corporation. Formation of molded glass fiber parts from glass fiber blankets and product. 4,516,996, Cl. 65-3.430.
Willenbring, Armer J., to Pako Corporation. Semi-automatic slide mounter with anti-reverse operating lever. 4,516,386, Cl. 53-520.000.
Williamette Industries, Inc.: *See—*
Croley, Thomas E., 4,516,692, Cl. 222-105.000.
Williams, Daniel E.; Carley, John J.; and Eaton, Paul S., to Data Acquisition Services. Automatic user selected variable telephone message record and playback system. 4,517,410, Cl. 179-6.040.
Williams, David; and Munnecke, Douglas M. Reduced biodegradability in a polymer flood process. 4,517,101, Cl. 252-8.55D.
Williams, Derek, to Lucas Industries public limited company. Fuel supply system. 4,516,547, Cl. 123-198.00A.
Williams, Gerald J. Three cycle internal combustion engine. 4,516,536, Cl. 123-39.000.
Williams, Richard H.: *See—*
Coy, Charles H., 4,517,427, Cl. 219-10.510.
Willmore, Robert R., to United States of America, Air Force. Angle set-on apparatus. 4,517,568, Cl. 343-18.00E.
Wilson, Larry R.: *See—*
Tomalia, Donald A.; and Wilson, Larry R., 4,517,122, Cl. 260-239.30R.

Wilson, Patricia A.: *See—*
Dennis, Ulric E.; Hollenbeck, Dennis W.; Kirtland, John A.; Stackhouse, Kenneth B.; Wilson, Patricia A.; Hill, William D.; Akers, David D.; and Hill, Elmer D., 4,517,154, Cl. 376-259.000.

Wilson Tool Company: *See—*
Shuttleworth, Edwin T., 4,516,450, Cl. 83-146.000.

Wilson, William G. J.: *See—*
Brown, Christopher R.; Corrie, John D.; and Wilson, William G. J., 4,517,673, Cl. 371-36.000.

Winckler, Elmer, to McManus, James W.; and Backus, James. Hoisting apparatus and method for raising oil tubing. 4,516,637, Cl. 166-377.000.

Winogrocki, Ray F.; and DuRocher, Daniel J., to Essex Group, Inc. Lamp socket assembly for mounting on printed circuit board. 4,516,824, Cl. 339-126.00R.

Winter, Karl, to Rekuperator KG Dr.-Ing. Schack & Co. Method for the absorptive purification of a gas stream of vaporous or gaseous impurities. 4,516,985, Cl. 55-18.000.

Winter, Karl, to Rekuperator KG Dr.-Ing. Schack & Co. Method and apparatus for purifying a gas stream in a sorption filter. 4,516,988, Cl. 55-59.000.

Winter, William J., to USM Corporation. Roll cross-axis mechanism. 4,516,491, Cl. 100-158.00R.

Winthrop, Michael F. In circuit modification device for dual in line packaged components. 4,516,816, Cl. 339-17.0CF.

Witco Chemical Corporation: *See—*
Nance, Weldon B.; and Calkins, Jack M., 4,517,100, Cl. 252-8.50C.

Wittle, John K.: *See—*
Titus, Charles H.; and Wittle, John K., 4,516,608, Cl. 138-140.000.

Wlodarski, Antoine. Power-driven screwing tool for pressure vessel heads. 4,516,445, Cl. 81-57.360.

Wnuk, Paul A.; Hamilton, Thomas J.; Trassare, Anthony, Jr.; and Oliver, Michael J., to Down River International, Inc. Suspended type cellular void filler. 4,516,891, Cl. 410-154.000.

Wohl, Ronald A.: *See—*
Diamond, Julius; and Wohl, Ronald A., 4,517,310, Cl. 514-394.000.

Wolfel, Lee A., to AMP Incorporated. Round cable adaptor for modular plug. 4,516,822, Cl. 339-103.00M.

Wolff, Siegfried; Grewatta, Heinz; and Buder, Wolfgang, to Degussa Aktiengesellschaft. Process for vulcanization or cross-linking halogen containing rubbers in the presence of silicon containing isothiuronium compounds. 4,517,335, Cl. 524-552.000.

Wolff, Siegfried; and Tan, Ewe-Hong, to Degussa Aktiengesellschaft. Rubber mixtures giving reversion-free vulcanizates and process of vulcanization. 4,517,336, Cl. 524-571.000.

Wolters, Ernst: *See—*
Reske, Eckart; and Wolters, Ernst, 4,517,319, Cl. 523-200.000.

Wood, John; Tinson, Christopher M.; and Jenkins, Stuart M., to De La Rue Systems Limited. Sheet feeding apparatus. 4,516,899, Cl. 414-330.000.

Woodward, Antony I.; Clarke, David G.; and Shahaney, Sunil, to Wiggins Teape Group Limited, The. Papermaking of polyolefin coated supports by controlling streaming potential. 4,517,285, Cl. 430-538.000.

Woolvin, Samuel C. Security locking device for outdoor water faucets. 4,516,414, Cl. 70-164.000.

Worley, Arthur C., to Exxon Research and Engineering Co. Variable orifice valve assembly. 4,516,606, Cl. 137-625.300.

Worner, Gunter; Kosik, Franz; and Gosele, Hartmut, to Daimler-Benz Aktiengesellschaft. Installation for damping vibrations in the drive train of a motor vehicle. 4,516,955, Cl. 464-89.000.

Worns, John R., to Uniroyal, Inc. Photosensitive elastomeric polymer composition for flexographic printing plates - processable in semi-aqueous basic solution or solvent systems. 4,517,279, Cl. 430-286.000.

Wright, Raymond L., to Eastern Company, The. Combined resin-mechanical mine roof support anchor. 4,516,886, Cl. 405-261.000.

Wuchinich, David G., to Cooper LaserSonics, Inc. Method of use of an ultrasonic surgical pre-aspirator having a orifice by-pass. 4,516,398, Cl. 604-22.000.

Wuerzer, Bruno: *See—*
Becker, Rainer; Jahn, Dieter; Keil, Michael; Himmele, Walter; and Wuerzer, Bruno, 4,517,013, Cl. 71-98.000.

Wyatt, Kenneth L., to AT&T Technologies, Inc. Magnetically controlled wire tensioning device. 4,516,739, Cl. 242-155.00M.

Xerox Corporation: *See—*
Braun, Oskar J.; and Hubler, Lawrence C., 4,516,714, Cl. 227-78.000.
Gruber, Robert J.; Knapp, John F.; and Bolte, Steven B., 4,517,268, Cl. 430-39.000.
Meijer, Wilhelmus, 4,516,713, Cl. 227-2.000.
Sprague, Robert A., 4,517,667, Cl. 369-122.000.

Yackel, Walter C., Jr.; and Hebenstreit, William E., to A. E. Staley Manufacturing Company. Preparation of imitation foods of a tender texture from proteinaceous extrudates. 4,517,218, Cl. 426-656.000.

Yahara, Shigeo: *See—*
Koiso, Yasuhiko; Ohtsuka, Kenji; and Yahara, Shigeo, 4,516,564, Cl. 126-263.000.

Yahiro, Tetsuji: *See—*
Choushi, Masahiro; and Yahiro, Tetsuji, 4,516,546, Cl. 123-195.00A.

Yamada, Akio: *See—*
Aihara, Shigenobu; and Yamada, Akio, 4,517,527, Cl. 330-287.000.

Yamada, Hisafumi; Saito, Junya; and Tsutsui, Ichiro, to Sony Corporation. Power-responsive ghost cancelling system. 4,517,601, Cl. 358-167.000.

Yamada, Sachiko: *See—*
Takayama, Hiroaki; Yamada, Sachiko; Nakayama, Keiko; and Suda, Tatsuo, 4,517,125, Cl. 260-397.200.

Yamada, Tetsuo: *See—*
Kawahito, Takashi; Himukashi, Yoshinori; and Yamada, Tetsuo, 4,517,168, Cl. 423-344.000.

Yamaguchi, Hitohisa; Fuse, Kenichiro; and Yoshida, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Vehicle body structure for preventing water suction into an air cleaner. 4,516,650, Cl. 180-68.300.

Yamaguchi, Ken, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle radiator. 4,516,630, Cl. 165-47.000.

Yamaguchi, Masayoshi: *See—*
Kashihara, Tomio; Tsuruta, Toshiro; Yamaguchi, Masayoshi; Yokoi, Kiyotachi; and Suzuki, Etsuji, 4,516,673, Cl. 198-341.000.

Yamakawa, Toshiro: *See—*
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,517,274, Cl. 430-122.000.

Yamamoto, Kenichi: *See—*
Yoshioka, Takeo; Yamamoto, Kenichi; Fukagawa, Yasuo; Shimauchi, Yasutaka; and Ishikura, Tomoyuki, 4,517,127, Cl. 260-245.20T.

Yamamoto, Tsukasa; Mochizuki, Asao; Okita, Hiroshi; Miyawaki, Toshi; Shirogane, Yoshiji; and Mori, Kazuhiko, to Toyota Motor Corp.; and Nihon Parkerizing Co. Process for activating steel surface prior to phosphating treatment aqueous activating solution therefor. 4,517,030, Cl. 148-6.15R.

Yamanaka, Koichi; Gotoh, Tetsuro; Aoki, Masanori; Kataoka, Isao; and Nishiwaki, Shunro, to Ebara Corporation. Solids-liquid separator. 4,517,091, Cl. 210-512.100.

Yamane, Hiroshi: *See—*
Nagashima, Masayoshi; and Yamane, Hiroshi, 4,517,590, Cl. 358-75.000.
Nagashima, Masayoshi; Yamane, Hiroshi; and Yamashita, Mitsuo, 4,517,591, Cl. 358-75.000.

Yamaoka, Masayoshi: *See—*
Numata, Mitsuo; Minamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsuru; and Miyawaki, Toshio, 4,517,361, Cl. 544-24.000.

Yamashita, Mitsuo: *See—*
Nagashima, Masayoshi; Yamane, Hiroshi; and Yamashita, Mitsuo, 4,517,591, Cl. 358-75.000.
Takaoka, Takashi; Mochizuki, Masahiko; Yamashita, Mitsuo; and Miura, Tadao, 4,517,668, Cl. 369-111.000.

Yamauchi, Masahide; and Fukatsu, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Printing apparatus. 4,516,866, Cl. 400-25.000.

Yamauchi, Toshiaki; Hibi, Tsuneo; Sasano, Kiyomi; and Hayashi, Yoshiki, to Tokyo Shibaura Denki Kabushiki Kaisha. Drying apparatus having recycle air path. 4,516,331, Cl. 34-77.000.

Yamawaki, Takeshi; Saitou, Tatuya; and Sugimori, Sigemi, to Toyota Jidosha Kabushiki Kaisha. Vehicle body ceiling seal construction. 4,516,804, Cl. 296-214.000.

Yamazaki, Akio: *See—*
Hirose, Haruomi; and Yamazaki, Akio, 4,516,348, Cl. 43-17.000.

Yamazaki, Hatsutaro: *See—*
Fujiwara, Hiroshi; Yamazaki, Hatsutaro; and Ozawa, Kazuo, 4,517,349, Cl. 526-313.000.

Yana, Masasumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal ink transfer printing apparatus. 4,517,573, Cl. 346-76.0PH.

Yanai, Tokiyoshi: *See—*
Morikawa, Kunihiko; Higuchi, Megumu; and Yanai, Tokiyoshi, 4,516,422, Cl. 72-377.000.

Yanaihara, Noboru; Sugiura, Nobuo; and Hiyama, Takashi, to Amano Pharmaceutical Co., Ltd; and Otsuka Pharmaceutical Co., Ltd. Peptides, process for preparing the same and psychodepressant compositions containing the same. 4,517,180, Cl. 514-16.000.

Yang, James H. C.; and Tomaszewski, Walter, to Firestone Tire & Rubber Company, The. Channel Connector. 4,516,874, Cl. 403-313.000.

Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, to Exxon Research & Engineering Co. Process for the synthesis of carboxylic anhydrides using a vanadium, phosphorus oxygen containing catalyst composition. 4,517,371, Cl. 549-239.000.

Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Electromagnetic control system for casting thin strip. 4,516,625, Cl. 164-454.000.

Yarwood, John C.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,516,627, Cl. 164-467.000.

Yasuda, Akira: *See—*
Takasaki, Junsuke; Sato, Hirotake; and Yasuda, Akira, 4,517,031, Cl. 148-12.00C.

Yasui, Hideo: *See—*
Mitani, Toragoro; Yasui, Hideo; and Morikawa, Hisashi, 4,517,344, Cl. 526-62.000.

Yasui, Toru; and Nakatsuji, Haruo, to Sharp Kabushiki Kaisha. Screening structure for a cathode ray tube display. 4,517,494, Cl. 315-85.000.

Yato, Tokuhiro: *See—*
Sato, Yoshito; Yato, Tokuhiro; Maeo, Hidemi; and Tsutsumi, Yoshio, 4,516,469, Cl. 91-362.000.

Yazaki Plastics Industries Co., Ltd.: *See—*
Masumoto, Kazuhiro; Fujimura, Mituaki; and Sawazaki, Masauki, 4,517,151, Cl. 264-540.000.

Yellowstone Ltd.: *See—*
Burton, Charles A.; and Banovic, Peter, 4,516,699, Cl. 222-591.000.

Yerushalmy, Yosef; and Stokes, Larry W., to Union Carbide Corporation. Gas shielded plasma arc torch and collet assembly. 4,517,437, Cl. 219-121.0PP.

Yip, Shu W., to Breville Holdings Pty. Limited. Extrusion dies. 4,516,926, Cl. 425-464.000.

Yissum Research Development Company of the Hebrew University of Jerusalem: *See—*
Baniel, Avraham M., 4,517,142, Cl. 264-22.000.

Yokoi, Kiyotachi: *See—*
Kashihara, Tomio; Tsuruta, Toshiro; Yamaguchi, Masayoshi; Yokoi, Kiyotachi; and Suzuki, Etsuji, 4,516,673, Cl. 198-341.000.

Yokomizo, Yoshikazu, to Canon Kabushiki Kaisha. Image signal processing apparatus. 4,517,605, Cl. 358-280.000.

Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, to Canon Kabushiki Kaisha. Apparatus for processing video signals. 4,517,606, Cl. 358-280.000.

Yokota, Masahisa: *See—*
Katsumata, Tsutomu; and Yokota, Masahisa, 4,517,389, Cl. 568-804.000.

Yokoyama, Junichi: *See—*
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.

Yonezawa, Atsushi: *See—*
Nakamura, Ken; Nagai, Tadashi; Shioyama, Giichi; Matayoshi, Yutaka; Ohnishi, Eiichi; Yokoyama, Junichi; and Yonezawa, Atsushi, 4,517,134, Cl. 261-39.00A.

York, Billie M., Jr., to Alcon Laboratories, Inc. Method for lowering intraocular pressure using phenylimino-imidazoles. 4,517,199, Cl. 514-392.000.

Yoshida, Hiroshi; Akashi, Shunji; and Kuse, Kazuki, to Yoshida Kogyo K. K. Method and apparatus for applying reinforcing pieces to slide fastener chain. 4,516,304, Cl. 29-408.000.

Yoshida, Isamu: *See—*
Iwasa, Susumu; Yoshida, Isamu; and Kondo, Koichi, 4,517,290, Cl. 435-7.000.

Yoshida, Kazunori: *See—*
Mimura, Nobuharu; Yoshida, Kazunori; Kawabata, Susumu; and Hasegawa, Junzo, 4,516,611, Cl. 139-452.000.

Yoshida Kogyo K. K.: *See—*
Yoshida, Hiroshi; Akashi, Shunji; and Kuse, Kazuki, 4,516,304, Cl. 29-408.000.

Yoshida, Susumu: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,517,645, Cl. 364-424.000.

Yoshida, Tadashi: *See—*
Yokomizo, Yoshikazu; Shibata, Takehiko; Shimizu, Katsuichi; Miyagi, Ken; Suzuki, Akira; Yoshida, Tadashi; Tsukata, Masaharu; Murakami, Koichi; and Nagashima, Nao, 4,517,606, Cl. 358-280.000.

Yoshida, Takao: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,517,385, Cl. 568-386.000.

Yoshida, Takeshi: *See—*
Yamaguchi, Hitohisa; Fuse, Kenichiro; and Yoshida, Takeshi, 4,516,650, Cl. 180-68.300.

Yoshida, Yoshiichi, to Tsutsume, Shigeru; and Seiki Engineering & Research Co. Ltd. Pointed heat-generating device for molds of injection molding machines. 4,516,927, Cl. 425-549.000.

Yoshida, Yoshitaka: *See—*
Nakahara, Mitsuharu; Ishida, Tomio; Honjo, Norifumi; and Yoshida, Yoshitaka, 4,516,537, Cl. 123-48.0AA.

Yoshida, Yosuke, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece having address designation circuits of ROM and RAM. 4,516,862, Cl. 368-155.000.

Yoshihara, Toshiyuki: *See—*
Hirooka, Masaaki; Kubo, Keiji; and Yoshihara, Toshiyuki, 4,517,271, Cl. 430-94.000.

Yoshihiko, Ota, to Victor Company of Japan, Ltd. Video signal recording apparatus. 4,517,609, Cl. 360-22.000.

Yoshikawa, Akihisa: *See—*
Oneyama, Naotake; and Yoshikawa, Akihisa, 4,516,473, Cl. 91-462.000.

Yoshino Kogyosho Co., Ltd.: *See—*
Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,516,727, Cl. 239-333.000.

Yoshino, Tadashi; and Mamei, Masayuki, to Matsushita Electric Industrial Co., Ltd. Tape driving control apparatus. 4,516,740, Cl. 242-203.000.

Yoshioka, Masahiro: *See—*
Tsutsui, Eiji; Yoshioka, Masahiro; Murakami, Masahiro; and Iwao, Noriyuki, 4,516,849, Cl. 355-15.000.

Yoshioka, Takeo; Yamamoto, Kenichi; Fukagawa, Yasuo; Shimauchi, Yasutaka; and Ishikura, Tomoyuki, to Sanraku-Ocean Co., Ltd. β-Lactam derivatives and process for production thereof. 4,517,127, Cl. 260-245.20T.

Yoshizawa, Hiroshi: *See—*
Nishikawa, Masao; Aoki, Takashi; Sakai, Shinzo; and Yoshizawa, Hiroshi, 4,516,671, Cl. 192-.076.

Young, Kenneth M.: *See—*
Ruitberg, Arthur P.; and Young, Kenneth M., 4,517,472, Cl. 307-82.000.

Young, Robert R.: *See—*
English, William A.; and Young, Robert R., 4,516,916, Cl. 417-368.000.

Yugen-gaisha Koito-Denki: *See—*
Koito, Toshio; Koito, Tetsuo; and Koito, Miyoko, 4,516,586, Cl. 131-246.000.

Yugen-gaisha Koito-Seimitsu: *See—*
Koito, Toshio; Koito, Tetsuo; and Koito, Miyoko, 4,516,586, Cl. 131-246.000.

Yugen-gaisha Koito-Seisakusho: *See—*
Koito, Toshio; Koito, Tetsuo; and Koito, Miyoko, 4,516,586, Cl. 131-246.000.

Yugengaisha Kyowa Chuzosho: *See—*
Tadashi, Ii; and Saichi, Egusa, 4,517,018, Cl. 75-129.000.

Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho; and Kabushiki Kaisha Meidensha. Control device for loading and unloading mechanism. 4,517,645, Cl. 364-424.000.

Yungclas, James A. Internal combustion engine with supercharger. 4,516,541, Cl. 123-70.00R.

Zahnradfabrik Friedrichshafen AG: *See—*
Merz, Johann, 4,516,784, Cl. 277-180.000.

Zaitsu, Osamu: *See—*
Shibaike, Narito; Minamide, Seiko; Kikuya, Satoshi; Terada, Hiroshi; and Zaitsu, Osamu, 4,517,613, Cl. 360-85.000.

Zanzottera, Daniele: *See—*
Mantellina, Calogero; and Zanzottera, Daniele, 4,517,681, Cl. 375-106.000.

Zbinden, Paul: *See—*
Habicht, Ernst; and Zbinden, Paul, 4,517,184, Cl. 514-212.000.

Zdanowski, Richard E.; and Owens, Joseph M., to Rohm and Haas Company. Floor polish composition having improved durability. 4,517,330, Cl. 524-408.000.

Zecher, Wilfried; Merten, Rudolf; and Dunwald, Willi, to Bayer Aktiengesellschaft. Process for preparation of hydantoin esters through a masked polyisocyanate-carbodiimide route. 4,517,353, Cl. 528-45.000.

Zeigner, Willard L.: *See—*
MacIntosh, John A.; and Zeigner, Willard L., 4,516,433, Cl. 73-861.050.

Zeitler, Louie, to Die-Matic Corporation. Mine roof bolt mounting assembly. 4,516,883, Cl. 405-260.000.

Zemco, Inc.: *See—*
MacIntosh, John A.; and Zeigner, Willard L., 4,516,433, Cl. 73-861.050.

Zenith Electronics Corporation: *See—*
Bretl, Wayne E., 4,517,533, Cl. 331-116.00R.
Deitch, Leonard; and Knowles, Terrance, 4,517,559, Cl. 340-712.000.

Zens, Albert P.: *See—*
Hill, Howard D.; and Zens, Albert P., 4,517,516, Cl. 324-318.000.

Ziegenbein, Botho: *See—*
Reiss, Harald; and Ziegenbein, Botho, 4,517,263, Cl. 429-120.000.

Zietek, Didier G.: *See—*
Bouiller, Jean G.; Delonge, Jean-Claude L.; Rigo, Marcel L. A.; and Zietek, Didier G., 4,516,910, Cl. 416-190.000.

Zimmermann, Horst: *See—*
Million, Karl; and Zimmermann, Horst, 4,517,434, Cl. 219-76.120.

Zoecon Corporation: *See—*
Baer, Ted A., 4,517,130, Cl. 260-465.00E.

Zorb, Larry D.; and Wicklund, L. Harvey, to Zorwick Corp. Meter pit mounted holder for a water flow control device. 4,516,794, Cl. 285-30.000.

Zortea, Michel: *See—*
Burget, Paul; and Zortea, Michel, 4,517,000, Cl. 65-178.000.

Zorwick Corp.: *See—*
Zorb, Larry D.; and Wicklund, L. Harvey, 4,516,794, Cl. 285-30.000.

ZSI, Inc.: *See—*
Sherman, Clarence A., 4,516,296, Cl. 24-279.000.

Zsitvay, John I.: *See—*
Johnson, Robert S.; Fletcher, Paul E.; Benjamin, William S.; and Zsitvay, John I., 4,516,287, Cl. 15-119.00A.

Zucchini, Umberto: *See—*
Cuffiani, Illaro; Longi, Paolo; Zucchini, Umberto; and Pennini, Gianni, 4,517,307, Cl. 502-119.000.

Zurger, Manfred: *See—*
Lynch, John; Naarmann, Herbert; Schulz, Gunther; Vyvial, Rudolf; Wallbillich, Gunter; and Zurger, Manfred, 4,517,277, Cl. 430-281.000.

Zwirn, Robert; Dragavon, Edward J.; and Smithgall, Brian, to Hughes Aircraft Company. Resolution enhancement and zoom by degradation estimates. 4,517,599, Cl. 358-166.000.

501 Binks Manufacturing Co.: *See—*
Cavanaugh, James E.; Hetherington, Robert D.; and Parmley, Thomas A., 4,516,725, Cl. 239-127.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Atlantic Richfield Company: *See—*
Moskovich, Peter P., Re. 31,882, Cl. 141-5.000.

Berecki, William A.: *See—*
Bovenkerk, Harold P.; and Berecki, William A., Re. 31,883, Cl. 51-295.000.

Bovenkerk, Harold P.; and Berecki, William A., to General Electric Company. Resinoid grinding wheels containing nickel-coated cubic boron nitride particles. Re. 31,883, Cl. 51-295.000.

General Electric Company: *See—*
Bovenkerk, Harold P.; and Berecki, William A., Re. 31,883, Cl. 51-295.000.

Hansel, William B.; and Smith, Earl W., to Hunter Environmental Services, Inc. Method for leakage measurement. Re. 31,884, Cl. 73-49.200.

Hodgson, Martin E., to T. J. Smith & Nephew Limited. Moisture-vapor-permeable pressure-sensitive adhesive materials. Re. 31,886, Cl. 428-40.000.

Hodgson, Martin E., to T. J. Smith & Nephew Limited. Moisture-vapor-permeable pressure-sensitive adhesive materials. Re. 31,887, Cl. 428-355.000.

Hunter Environmental Services, Inc.: *See—*
Hansel, William B.; and Smith, Earl W., Re. 31,884, Cl. 73-49.200.

Kimberly-Clark Corporation: *See—*
Meitner, Gary H., Re. 31,885, Cl. 252-91.000.

Lindsey, Hiram E., Jr., to MWL Tool and Supply Company. Setting tools and liner hanger assembly. Re. 31,881, Cl. 166-212.000.

Meitner, Gary H., to Kimberly-Clark Corporation. Microfiber oil and water wipe. Re. 31,885, Cl. 252-91.000.

Moskovich, Peter P., to Atlantic Richfield Company. Liquid dispensing nozzle assembly and method of using same. Re. 31,882, Cl. 141-5.000.

MWL Tool and Supply Company: *See—*
Lindsey, Hiram E., Jr., Re. 31,881, Cl. 166-212.000.

Schroeder, Russell G., II: *See—*
Ward, Joseph W.; and Schroeder, Russell G., II, Re. 31,888, Cl. 355-14.00R.

Smith, Earl W.: *See—*
Hansel, William B.; and Smith, Earl W., Re. 31,884, Cl. 73-49.200.

T. J. Smith & Nephew Limited: *See—*
Hodgson, Martin E., Re. 31,886, Cl. 428-40.000.
Hodgson, Martin E., Re. 31,887, Cl. 428-355.000.

Ward, Joseph W.; and Schroeder, Russell G., II, to Xerox Corporation. Sensor controlling in computer fanfold reproduction. Re. 31,888, Cl. 355-14.00R.

Xerox Corporation: *See—*
Ward, Joseph W.; and Schroeder, Russell G., II, Re. 31,888, Cl. 355-14.00R.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Clarke, Peter A.: *See—*
Molins, Desmond W.; Hinchcliffe, Dennis; and Clarke, Peter A., B1 4,120,391, Cl. 198-347.000.

de Coster, Paul; and Simoens, Adrien. Neoregelia plant. B1 2,003,971, 5-14-85, Cl. Plt.-88.000.

deSilva, Dodwell P.: *See—*
Vasishth, Ramesh C.; and deSilva, Dodwell P., B1 4,276,329, Cl. 427-393.000.

Envirosol Systems International, Ltd.: *See—*
Vasishth, Ramesh C.; and deSilva, Dodwell P., B1 4,276,329, Cl. 427-393.000.

Hinchcliffe, Dennis: *See—*
Molins, Desmond W.; Hinchcliffe, Dennis; and Clarke, Peter A., B1 4,120,391, Cl. 198-347.000.

Huddle, Carl F., to Tension Structures Co. Vaulted membrane shelter. B1 4,034,772, 5-14-85, Cl. 135-119.000.

Lindahl, Bengt E., to Svensk Lasthantering, Bengt Lindahl AB. Lifting loop. B1 4,232,619, 5-14-85, Cl. 112-417.000.

Molins, Desmond W.; Hinchcliffe, Dennis; and Clarke, Peter A., to Molins Limited. Conveyor systems for cigarettes and other rod-like articles. B1 4,120,391, 5-14-85, Cl. 198-347.000.

Molins Limited: *See—*
Molins, Desmond W.; Hinchcliffe, Dennis; and Clarke, Peter A., B1 4,120,391, Cl. 198-347.000.

Sherman, Guy J., to Sherman Laboratories, Inc. Soft contact lens ambient temperature disinfectant solution containing ascorbic acid or salt thereof. B1 4,367,157, 5-14-85, Cl. 252-106.000.

Sherman Laboratories, Inc.: *See—*
Sherman, Guy J., B1 4,367,157, Cl. 252-106.000.

Simoens, Adrien: *See—*
de Coster, Paul; and Simoens, Adrien, B1 2,003,971, Cl. Plt.-88.000.

Svensk Lasthantering, Bengt Lindahl AB: *See—*
Lindahl, Bengt E., B1 4,232,619, Cl. 112-417.000.

Tension Structures Co.: *See—*
Huddle, Carl F., B1 4,034,772, Cl. 135-119.000.

Vasishth, Ramesh C.; and deSilva, Dodwell P., to Envirosol Systems International, Ltd. Wood treatment process and product thereof. B1 4,276,329, 5-14-85, Cl. 427-393.000.

LIST OF DESIGN PATENTEES

Aktiebolaget Svensk Eldental: *See—*
Olsen, Hans, 278,764, Cl. D4-101.000.

Allen, James H., to 'totes' incorporated. Expandable bag. 278,763, 5-14-85, Cl. D3-71.000.

American Commercial, Incorporated: *See—*
Seibel, Ben, 278,780, Cl. D7-13.000.
Seibel, Ben, 278,781, Cl. D7-13.000.
Seibel, Ben, 278,782, Cl. D7-13.000.
Seibel, Ben, 278,783, Cl. D7-13.000.
Seibel, Ben, 278,784, Cl. D7-13.000.
Seibel, Ben, 278,785, Cl. D7-13.000.
Seibel, Ben, 278,786, Cl. D7-13.000.
Seibel, Ben, 278,787, Cl. D7-13.000.
Seibel, Ben, 278,788, Cl. D7-13.000.

American Cyanamid Company: *See—*
Woodruff, Keith, 278,842, Cl. D22-19.000.

American Standard Inc.: *See—*
Niemann, James E., 278,843, Cl. D23-28.000.
Stairs, Henry M., Jr., 278,844, Cl. D23-55.000.

Angel, James M.: *See—*
Stultz, Robert L.; Angel, James M.; and Kopsa, Rodney, 278,791, Cl. D8-88.000.

Aoyama, Nobuhisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Keyboard for electronic computers. 278,818, 5-14-85, Cl. D14-100.000.

Aqua-Leisure Industries, Inc.: *See—*
Fireman, Simon C., 278,795, Cl. D9-347.000.

AT&T Bell Laboratories: *See—*
Hommowun, William A.; Maguire, Justin M., Jr.; and Sylvester, Gordon E., 278,819, Cl. D14-102.000.

AT&T Technologies, Inc.: *See—*
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., 278,814, Cl. D14-60.000.
McGarvey, John N.; and Tilley, Alvin R., 278,816, Cl. D14-63.000.

Audio-Technica, U.S.: *See—*
White, Jeffrey N.; Kosich, Milo R.; and Levenstein, Norman, 278,811, Cl. D14-34.000.

Baker, Bradley D.; Kelly, Richard L.; and Meacham, George E., to Dysan Corporation. Portable disk drive alignment tester. 278,802, 5-14-85, Cl. D10-46.000.

Barkley, David: *See—*
Hoyle, Walter W.; and Barkley, David, 278,847, Cl. D23-144.000.

Basic Line, Inc.: *See—*
Licari, Yaffa; and Licari, Vito, 278,773, Cl. D6-462.000.

Beller, Frank W., to Belson Manufacturing Co., Inc. Portable cooking grill. 278,789, 5-14-85, Cl. D7-334.000.

Belson Manufacturing Co., Inc.: *See—*
Beller, Frank W., 278,789, Cl. D7-334.000.

Bowen, Gary D.; and Bowen, James L., to Genpak Corporation. Plastic paint container. 278,800, 5-14-85, Cl. D9-379.000.

Bowen, James L.: *See—*
Bowen, Gary D.; and Bowen, James L., 278,800, Cl. D9-379.000.

Brandt, Inc.: *See—*
Bressler, Peter; and Byar, Peter, 278,831, Cl. D18-3.000.

Bressler, Peter; and Byar, Peter, to Brandt, Inc. Paper and document handling and counting apparatus. 278,831, 5-14-85, Cl. D18-3.000.

British Telecommunications: *See—*
Williams, John K., 278,815, Cl. D14-63.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,827, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,828, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,829, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,830, Cl. D18-1.000.

Brown, Jerry A. Toothbrush holder. 278,778, 5-14-85, Cl. D6-534.000.

Bulgari, Marina, to Marina B. Creation Limited. Earclip. 278,805, 5-14-85, Cl. D11-40.000.

Byar, Peter: *See—*
Bressler, Peter; and Byar, Peter, 278,831, Cl. D18-3.000.

Carrier Corporation: *See—*
Hoyle, Walter W.; and Barkley, David, 278,847, Cl. D23-144.000.
Hoyle, Walter W., 278,848, Cl. D23-144.000.

Chaney, David B.; and Duwell, Michael J., to Shopsmith, Inc. Push block for use in guiding work pieces during cutting operations. 278,790, 5-14-85, Cl. D8-14.000.

Chaussures Mephisto S.A.: *See—*
Michaeli, Martin, 278,758, Cl. D2-314.000.

Clay, Ronald L.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 278,759, Cl. D2-320.000.
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 278,760, Cl. D2-320.000.

Coats & Clark, Inc.: *See—*
Dunn, James R., 278,835, Cl. D19-91.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E., 278,796, Cl. D9-349.000.
Fortuna, Vincent E., 278,797, Cl. D9-349.000.

Crawford, Lynn R., to Dominion Industries, Inc. Table. 278,765, 5-14-85, Cl. D6-452.000.

Crosfield Electronics Limited: *See—*
Woodhall, Michael B., 278,820, Cl. D14-103.000.

Datakey, Inc.: *See—*
Flies, William P., 278,836, Cl. D20-22.000.

De Fuccio, Robert, to Simmons Universal Corporation. Table. 278,774, 5-14-85, Cl. D6-484.000.

Dominion Industries, Inc.: *See—*
Crawford, Lynn R., 278,765, Cl. D6-452.000.

Donges, William E., to Nordson Corporation. Pendant control unit. 278,808, 5-14-85, Cl. D13-12.000.

Dunn, James R., to Coats & Clark, Inc. Shopping memo holder. 278,835, 5-14-85, Cl. D19-91.000.

Duwell, Michael J.: *See—*
Chaney, David B.; and Duwell, Michael J., 278,790, Cl. D8-14.000.

Dysan Corporation: *See—*
Baker, Bradley D.; Kelly, Richard L.; and Meacham, George E., 278,802, Cl. D10-46.000.

Emerson Electric Co.: *See—*
Votaw, Warren G., 278,824, Cl. D15-149.000.

Epson Corp.: *See—*
Maruyama, Naoyuki, 278,821, Cl. D14-111.000.

Fireman, Simon C., to Aqua-Leisure Industries, Inc. Swimgear package. 278,795, 5-14-85, Cl. D9-347.000.

Flies, William P., to Datakey, Inc. Identification tag. 278,836, 5-14-85, Cl. D20-22.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Plastic bottle. 278,796, 5-14-85, Cl. D9-349.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Plastic bottle. 278,797, 5-14-85, Cl. D9-349.000.

Fujiyama, Yoshiyuki: *See—*
Ohno, Masaru; Fujiyama, Yoshiyuki; and Kumano, Toshihiro, 278,817, Cl. D14-94.000.

Fuller, Kip L., to Product Masters, Inc. Waterproof belt container for portable radio or tape player. 278,761, 5-14-85, Cl. D2-381.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,827, 5-14-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,828, 5-14-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,829, 5-14-85, Cl. D18-1.000.

Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 278,830, 5-14-85, Cl. D18-1.000.

Genaro, Donald M.; and McGarvey, John N. Housing for a telephone stand or similar article. 278,813, 5-14-85, Cl. D14-60.000.

Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., to AT&T Technologies, Inc. Telephone stand. 278,814, 5-14-85, Cl. D14-60.000.

Genpak Corporation: *See—*
Bowen, Gary D.; and Bowen, James L., 278,800, Cl. D9-379.000.

Giovagnoli, Paul S., to Master Pitching Machine, Inc. Housing for ball pitching machine. 278,841, 5-14-85, Cl. D21-210.000.

Goodyear Tire & Rubber Company, The: *See—*
Lawrence, Jay K., 278,806, Cl. D12-146.000.

Goto, Tetsuya: *See—*
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 278,825, Cl. D16-32.000.

Harley, Lucey. Combined display and information card for fabrics and yarns or the like. 278,833, 5-14-85, Cl. D19-1.000.

Harrison, David E.; and Sanderson, George N., to Sanderson Plumbing Products, Inc. Combined toilet seat and cover. 278,845, 5-14-85, Cl. D23-71.000.

Harrison, David E.; and Sanderson, George N., to Sanderson Plumbing Products, Inc. Combined toilet seat and cover. 278,846, 5-14-85, Cl. D23-71.000.

Hasan, Jameel R. Hat. 278,756, 5-14-85, Cl. D2-244.000.

Hommowun, William A.; Maguire, Justin M., Jr.; and Sylvester, Gordon E., to AT&T Bell Laboratories. Computer housing. 278,819, 5-14-85, Cl. D14-102.000.

Hoyle, Steven, to M. Gill Limited. Mould tray for dental models. 278,849, 5-14-85, Cl. D24-10.000.

Hoyle, Walter W.; and Barkley, David, to Carrier Corporation. Casing for a packaged air conditioning unit. 278,847, 5-14-85, Cl. D23-144.000.

Hoyle, Walter W., to Carrier Corporation. Fan coil unit for an air conditioning system. 278,848, 5-14-85, Cl. D23-144.000.

Itoh, Masafumi: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,827, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,828, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,829, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,830, Cl. D18-1.000.

Jacobson, Anita B. Athletic body suit. 278,755, 5-14-85, Cl. D2-36.000.

Joffe, Richard M.: *See—*
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., 278,814, Cl. D14-60.000.

Kabushiki Kaisha Shinsei Industries: *See—*
Wada, Tokio, 278,832, Cl. D18-19.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Maruyama, Naoyuki, 278,821, Cl. D14-111.000.
Tanikawa, Kenji, 278,804, Cl. D10-125.000.

Keds Corporation, The: *See—*
Werman, Jonathan H., 278,757, Cl. D2-309.000.

Kelly, Richard L.: *See—*
Baker, Bradley D.; Kelly, Richard L.; and Meacham, George E., 278,802, Cl. D10-46.000.

Kime, James W. End standard for a bench. 278,776, 5-14-85, Cl. D6-500.000.

Kode, Inc.: *See—*
Perna, Nicholas A., 278,807, Cl. D13-35.000.

Koguma, Seiji, to Okamura Corporation. Desk. 278,770, 5-14-85, Cl. D6-423.000.

Koguma, Seiji, to Okamura Corporation. Desk. 278,771, 5-14-85, Cl. D6-426.000.

Koguma, Seiji, to Okamura Corporation. Desk. 278,772, 5-14-85, Cl. D6-426.000.

Kopsa, Rodney: *See—*
Stultz, Robert L.; Angel, James M.; and Kopsa, Rodney, 278,791, Cl. D8-88.000.

Kosich, Milo R.: *See—*
White, Jeffrey N.; Kosich, Milo R.; and Levenstein, Norman, 278,811, Cl. D14-34.000.

Krume, Robert E. Infant's safety seat. 278,766, 5-14-85, Cl. D6-333.000.

Kuczynski, Lawrence S.: *See—*
Smith, Richard J.; Kuczynski, Lawrence S.; and Stasko, Michael D., 278,793, Cl. D8-357.000.

Kumano, Toshihiro: *See—*
Ohno, Masaru; Fujiyama, Yoshiyuki; and Kumano, Toshihiro, 278,817, Cl. D14-94.000.

Lamy, Jean-Pierre. Sunglasses. 278,826, 5-14-85, Cl. D16-102.000.
Lawrence, Jay K., to Goodyear Tire & Rubber Company, The. Tire. 278,806, 5-14-85, Cl. D12-146.000.
Leo, Nick F. Buoy. 278,803, 5-14-85, Cl. D10-107.000.
Levenstein, Norman: *See—*
White, Jeffrey N.; Kosich, Milo R.; and Levenstein, Norman, 278,811, Cl. D14-34.000.
Licari, Vito: *See—*
Licari, Yaffa; and Licari, Vito, 278,773, Cl. D6-462.000.
Licari, Yaffa; and Licari, Vito, to Basic Line, Inc. Magazine rack. 278,773, 5-14-85, Cl. D6-462.000.
Long, Leo E. Tooth timer. 278,801, 5-14-85, Cl. D10-40.000.
Lundquist, Roy D. Combined chair and bookrack. 278,767, 5-14-85, Cl. D6-335.000.
M. Gill Limited: *See—*
Hoyle, Steven, 278,849, Cl. D24-10.000.
Maguire, Justin M., Jr.: *See—*
Hommowun, William A.; Maguire, Justin M., Jr.; and Sylvester, Gordon E., 278,819, Cl. D14-102.000.
Marina B. Creation Limited: *See—*
Bulgari, Marina, 278,805, Cl. D11-40.000.
Martin, Edward J. Combined bracket and disposable toothbrush holder. 278,777, 5-14-85, Cl. D6-534.000.
Maruyama, Naoyuki, to Kabushiki Kaisha Suwa Seikosha; and Epson Corp. Electronic printer. 278,821, 5-14-85, Cl. D14-111.000.
Maruzen Sewing Machine Co., Ltd.: *See—*
Yoneda, Yoshihide, 278,823, Cl. D15-69.000.
Master Pitching Machine, Inc.: *See—*
Giovagnoli, Paul S., 278,841, Cl. D21-210.000.
Matsushita Graphic Communication System: *See—*
Ohno, Masaru; Fujiyama, Yoshiyuki; and Kumano, Toshihiro, 278,817, Cl. D14-94.000.
Maynard, Walter P., Jr. Liquid container. 278,799, 5-14-85, Cl. D9-376.000.
McGarvey, John N.; and Tilley, Alvin R., to AT&T Technologies, Inc. Housing for telephone handset. 278,816, 5-14-85, Cl. D14-63.000.
McGarvey, John N.: *See—*
Genaro, Donald M.; and McGarvey, John N., 278,813, Cl. D14-60.000.
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., 278,814, Cl. D14-60.000.
McLaughlin, William J., to RGB Display Corporation. Computer video display monitor or the like. 278,809, 5-14-85, Cl. D14-113.000.
Meacham, George E.: *See—*
Baker, Bradley D.; Kelly, Richard L.; and Meacham, George E., 278,802, Cl. D10-46.000.
Michaeli, Martin, to Chaussures Mephisto S.A. Shoe upper. 278,758, 5-14-85, Cl. D2-314.000.
Mr. Gasket Company: *See—*
Smith, Richard J.; Kuczynski, Lawrence S.; and Stasko, Michael D., 278,793, Cl. D8-357.000.
Morishita, Masayuki: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,827, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,828, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,829, Cl. D18-1.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 278,830, Cl. D18-1.000.
Mulally, Gucki. Plush toy animal figure. 278,839, 5-14-85, Cl. D21-159.000.
Multi-Tech Industries Corp.: *See—*
Topp, David, 278,812, Cl. D14-53.000.
Murphy, Patrick J., to Quaker Oats Company, The. Phonograph. 278,810, 5-14-85, Cl. D14-17.000.
Neal, W. Harold. Self-powered curbing machine. 278,822, 5-14-85, Cl. D15-22.000.
New Balance Athletic Shoe, Inc.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 278,759, Cl. D2-320.000.
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 278,760, Cl. D2-320.000.
Niemann, James E., to American Standard Inc. Faucet handle. 278,843, 5-14-85, Cl. D23-28.000.
Ninomiya, Yasuaki. Toy airplane. 278,837, 5-14-85, Cl. D21-89.000.
Nordson Corporation: *See—*
Donges, William E., 278,808, Cl. D13-12.000.
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., to New Balance Athletic Shoe, Inc. Outsole for athletic shoe. 278,759, 5-14-85, Cl. D2-320.000.
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., to New Balance Athletic Shoe, Inc. Outsole for athletic shoe. 278,760, 5-14-85, Cl. D2-320.000.
Ohkado, Tethuo, to Tomy Kogyo Company, Incorporated. Animal-like figure toy. 278,838, 5-14-85, Cl. D21-150.000.
Ohno, Masaru; Fujiyama, Yoshiyuki; and Kumano, Toshihiro, to Matsushita Graphic Communication System. Facsimile Transceiver. 278,817, 5-14-85, Cl. D14-94.000.
Okamura Corporation: *See—*
Koguma, Seiji, 278,770, Cl. D6-423.000.
Koguma, Seiji, 278,771, Cl. D6-426.000.
Koguma, Seiji, 278,772, Cl. D6-426.000.
Olsen, Hans, to Aktiebolaget Svensk Eldental. Battery operated tooth brush. 278,764, 5-14-85, Cl. D4-101.000.
Perna, Nicholas A., to Kode, Inc. Front panel for electronic instrument or the like. 278,807, 5-14-85, Cl. D13-35.000.
Product Masters, Inc.: *See—*
Fuller, Kip L., 278,761, Cl. D2-381.000.
Quaker Oats Company, The: *See—*
Murphy, Patrick J., 278,810, Cl. D14-17.000.
RGB Display Corporation: *See—*
McLaughlin, William J., 278,809, Cl. D14-113.000.
Ricoh Company, Ltd.: *See—*
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 278,825, Cl. D16-32.000.
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, to Ricoh Company, Ltd. Document feeder for copying machine. 278,825, 5-14-85, Cl. D16-32.000.
Sanderson, George N.: *See—*
Harrison, David E.; and Sanderson, George N., 278,845, Cl. D23-71.000.
Harrison, David E.; and Sanderson, George N., 278,846, Cl. D23-71.000.
Sanderson Plumbing Products, Inc.: *See—*
Harrison, David E.; and Sanderson, George N., 278,845, Cl. D23-71.000.
Harrison, David E.; and Sanderson, George N., 278,846, Cl. D23-71.000.
Satoh, Kazuhisa. Set of molecular model construction pieces. 278,834, 5-14-85, Cl. D19-62.000.
Seibel, Ben, to American Commercial, Incorporated. Wine glass. 278,780, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Wine glass. 278,781, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Water goblet. 278,782, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Water goblet. 278,783, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Champagne glass. 278,784, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Champagne glass. 278,785, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Cordial glass. 278,786, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Cordial glass. 278,787, 5-14-85, Cl. D7-13.000.
Seibel, Ben, to American Commercial, Incorporated. Cordial glass. 278,788, 5-14-85, Cl. D7-13.000.
Sharpe, Ronald W. Combined costumer and storage unit. 278,768, 5-14-85, Cl. D6-414.000.
Sharpe, Ronald W. Combined costumer and storage unit. 278,769, 5-14-85, Cl. D6-414.000.
Shopsmith, Inc.: *See—*
Chaney, David B.; and Duwell, Michael J., 278,790, Cl. D8-14.000.
Simmons Universal Corporation: *See—*
De Fuccio, Robert, 278,774, Cl. D6-484.000.
Sink, John B. Invalid seat cushion. 278,779, 5-14-85, Cl. D6-596.000.
Smith, Richard J.; Kuczynski, Lawrence S.; and Stasko, Michael D., to Mr. Gasket Company. Ignition wire separator for engines. 278,793, 5-14-85, Cl. D8-357.000.
Smith, Wallace E. Bottle or the like. 278,798, 5-14-85, Cl. D9-352.000.
Smotrycz, Zenon O.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 278,759, Cl. D2-320.000.
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 278,760, Cl. D2-320.000.
Stairs, Henry M., Jr., to American Standard Inc. Bathtub. 278,844, 5-14-85, Cl. D23-55.000.
Stasko, Michael D.: *See—*
Smith, Richard J.; Kuczynski, Lawrence S.; and Stasko, Michael D., 278,793, Cl. D8-357.000.
Stultz, Robert L.; Angel, James M.; and Kopsa, Rodney. Leverage tool support member. 278,791, 5-14-85, Cl. D8-88.000.
Sylvester, Gordon E.: *See—*
Hommowun, William A.; Maguire, Justin M., Jr.; and Sylvester, Gordon E., 278,819, Cl. D14-102.000.
Tanikawa, Kenji, to Kabushiki Kaisha Suwa Seikosha. Design for display panel for electronic timepiece. 278,804, 5-14-85, Cl. D10-125.000.
Texidor, Genaro. Belt buckle with hidden compartments. 278,762, 5-14-85, Cl. D2-394.000.
Tilley, Alvin R.: *See—*
McGarvey, John N.; and Tilley, Alvin R., 278,816, Cl. D14-63.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aoyama, Nobuhisa, 278,818, Cl. D14-100.000.
Tomy Kogyo Company, Incorporated: *See—*
Ohkado, Tethuo, 278,838, Cl. D21-150.000.
Topp, David, to Multi-Tech Industries Corp. Combination telephone clock and radio set. 278,812, 5-14-85, Cl. D14-53.000.
'totes' incorporated: *See—*
Allen, James H., 278,763, Cl. D3-71.000.
Umino, Toshio: *See—*
Saito, Yasuhiro; Goto, Tetsuya; and Umino, Toshio, 278,825, Cl. D16-32.000.
Vater, Lance M. Track roller carriage. 278,794, 5-14-85, Cl. D8-377.000.
Votaw, Warren G., to Emerson Electric Co. Gearbox housing. 278,824, 5-14-85, Cl. D15-149.000.
Wada, Tokio, to Kabushiki Kaisha Shinsei Industries. Labeler. 278,832, 5-14-85, Cl. D18-19.000.

Walpin, Arline; and Walpin, Lionel A. Furniture leg or similar article. 278,775, 5-14-85, Cl. D6-495.000.
Walpin, Lionel A.: *See—*
Walpin, Arline; and Walpin, Lionel A., 278,775, Cl. D6-495.000.
Werman, Jonathan H., to Keds Corporation, The. Sport shoe. 278,757, 5-14-85, Cl. D2-309.000.
White, Jeffrey N.; Kosich, Milo R.; and Levenstein, Norman, to Audio-Technica, U.S. Loud speaker. 278,811, 5-14-85, Cl. D14-34.000.
Williams, John K., to British Telecommunications. Housing for a telephone handset. 278,815, 5-14-85, Cl. D14-63.000.
Williams, Richard E. Picture framing cutter. 278,792, 5-14-85, Cl. D8-98.000.
Winston, Edith. Weighted vest. 278,840, 5-14-85, Cl. D21-191.000.
Woodhall, Michael B., to Crosfield Electronics Limited. Page planning table with display monitor. 278,820, 5-14-85, Cl. D14-103.000.
Woodruff, Keith, to American Cyanamid Company. Insect feeding station or similar article. 278,842, 5-14-85, Cl. D22-19.000.
Yoneda, Yoshihide, to Maruzen Sewing Machine Co., Ltd. Overlock stitch sewing machine. 278,823, 5-14-85, Cl. D15-69.000.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See—*
Christensen, Jack E., 5,466, Cl. 15.000.
Feigel, John R.; and Christensen, Jack E., 5,467, Cl. 18.000.
Brooks, Lyle A., to Carlton Nursery Company, Inc. Pear tree. 5,468, 5-14-85, Cl. 36.000.
Carlton Nursery Company, Inc.: *See—*
Brooks, Lyle A., 5,468, Cl. 36.000.
Christensen, Jack E., to Armstrong Nurseries, Inc. Hybrid tea rose plant cv. Arosumo. 5,466, 5-14-85, Cl. 15.000.
Christensen, Jack E.: *See—*
Feigel, John R.; and Christensen, Jack E., 5,467, Cl. 18.000.
Feigel, John R.; and Christensen, Jack E., to Armstrong Nurseries, Inc. Rose cv. Arofeigel. 5,467, 5-14-85, Cl. 18.000.
Wates, Byron E. Privet plant. 5,469, 5-14-85, Cl. 54.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 14, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2 4,516,273
209 4,516,274
308 4,516,275

CLASS 3

1.91 4,516,276
1.913 4,516,277

CLASS 4

191 4,516,278
235 4,516,279
319 4,516,280
4,516,281

CLASS 5

72 4,516,282

CLASS 8

149.1 4,516,283
510 4,516,978
583 4,516,979

CLASS 14

16.5 4,516,284

CLASS 15

84 4,516,285
104.12 4,516,286
119 A 4,516,287
250.04 4,516,288
410 4,516,289

CLASS 17

11 4,516,290
32 4,516,291

CLASS 19

112 4,516,292

CLASS 24

16 PB 4,516,293
41 4,516,294
136 R 4,516,295
279 4,516,296
498 4,516,297

CLASS 26

3 4,516,298

CLASS 29

6 4,516,299
24.5 4,516,300
27 C 4,516,301
156.8 R 4,516,302
227 4,516,303
408 4,516,304
448 4,516,305
564 4,516,307
4,516,308
564.4 4,516,309
564.7 4,516,306
566.3 4,516,310
568 4,516,311
571 4,516,312
4,516,313
572 4,516,314
576 B 4,516,315
576 W 4,516,316
623.5 4,516,317
846 4,516,318
877 4,516,319

CLASS 30

49 4,516,320
50 4,516,321
92 4,516,322
276 4,516,323
377 4,516,324

CLASS 33

138 4,516,325
169 B 4,516,326
169 R 4,516,327
181 R 4,516,328
366 4,516,329

CLASS 34

23 4,516,330
77 4,516,331
79 4,516,332
92 4,516,333
124 4,516,334
133 4,516,335

CLASS 36

7.1 R 4,516,336
136 4,516,337

CLASS 37

4 4,516,338
141 R 4,516,339
142 A 4,516,340

CLASS 40

152 4,516,341
156 4,516,342
574 4,516,343
602 4,516,344

CLASS 42

46 4,516,345
50 4,516,346

CLASS 43

11 4,516,347
17 4,516,348
17.5 4,516,349
17.6 4,516,350
23 4,516,351
42.26 4,516,352

CLASS 44

1 SR 4,516,980
53 4,516,981
62 4,516,982

CLASS 47

58 4,516,353

CLASS 49

387 4,516,354
460 4,516,355
504 4,516,356

CLASS 51

98 R 4,516,357
119 4,516,358
295 Re.31,883
349 4,516,359
384 4,516,360
392 4,516,361

CLASS 52

75 4,516,362
90 4,516,363
98 4,516,364
170 4,516,365
173 DS 4,516,366
182 4,516,367
190 4,516,368
204 4,516,369
245 4,516,370
269 4,516,371
309.12 4,516,372
387 4,516,373
404 4,516,374
581 4,516,375
648 4,516,376
660 4,516,377
704 4,516,378

CLASS 53

138 A 4,516,379
282 4,516,380
375 4,516,381
4,516,382
410 4,516,383
459 4,516,384
504 4,516,385
520 4,516,386
530 4,516,387

CLASS 55

16 4,516,984
18 4,516,985
4,516,986
52 4,516,987
59 4,516,988
68 4,516,989
96 4,516,990
124 4,516,991
145 4,516,992
283 4,516,993
337 4,516,994

CLASS 56

16.4 4,516,391
4,516,392
249 4,516,388
341 4,516,389
364 4,516,390
400.2 4,516,393

CLASS 57

234 4,516,394
237 4,516,395
407 4,516,396
417 4,516,397

CLASS 60

351 4,516,399
535 4,516,400
602 4,516,401
656 4,516,402
667 4,516,403

CLASS 62

45 4,516,404
55 4,516,405
183 4,516,406
238.6 4,516,407
238.7 4,516,408
457 4,516,409

CLASS 65

1 4,516,995
3.43 4,516,996
106 4,516,997
108 4,516,998
116 4,516,999
178 4,517,000
273 4,517,001

CLASS 66

14 4,516,410
64 4,516,411
78 4,516,412

CLASS 68

5 C 4,516,413

CLASS 70

164 4,516,414
252 4,516,415
276 4,516,416
384 4,516,417
456 R 4,516,418

CLASS 71

28 4,517,002
4,517,003
4,517,004
4,517,005
4,517,007
64.11 4,517,006
77 4,517,008
90 4,517,009
4,517,010
92 4,517,011
94 4,517,012
98 4,517,013

CLASS 72

60 4,516,419
329 4,516,420
354 4,516,421
377 4,516,422
422 4,516,423

CLASS 73

23 4,516,424
49.2 Re.31,884
198 4,516,425
432 R 4,516,426
505 4,516,427
585 4,516,428
638 4,516,429
727 4,516,430
826 4,516,431
861.04 4,516,432
861.05 4,516,433
861.64 4,516,434
863.11 4,516,435
863.85 4,516,436
864.22 4,516,437
864.44 4,516,438

CLASS 74

470 4,516,439
493 4,516,440
501 R 4,516,441
529 4,516,442
711 4,516,443
781 R 4,516,444

CLASS 75

3 4,517,014
12 4,517,015
28 4,517,016
123 B 4,517,017
129 4,517,018
130 R 4,517,019

CLASS 81

20 4,516,615
57.36 4,516,445

CLASS 82

38 A 4,516,446

CLASS 83

71 4,516,447
137 4,516,448
140 4,516,449
146 4,516,450
171 4,516,451
455 4,516,452
471.3 4,516,453
499 4,516,454
519 4,516,455
578 4,516,456
646 4,516,457
651.1 4,516,458
713 4,516,459
861 4,516,460
881 4,516,461

CLASS 84

1.16 4,516,462
385 R 4,516,463
387 R 4,516,464
470 R 4,516,465

CLASS 89

145 4,516,466

CLASS 91

31 4,516,467
169 4,516,468
362 4,516,469
374 4,516,470
375 A 4,516,471
392 4,516,472
462 4,516,473
519 4,516,474

CLASS 92

57 4,516,475
59 4,516,476
128 4,516,477
137 4,516,478
170 4,516,479
182 4,516,480
212 4,516,481

CLASS 98

36 4,516,482
40.14 4,516,483

CLASS 99

279 4,516,484
339 4,516,485
388 4,516,486
450.6 4,516,487

CLASS Plt.

88 B1 2,003,971

CLASS 100

4 4,516,488
98 R 4,516,489
107 4,516,490
158 R 4,516,491
192 4,516,492

CLASS 101

27 4,516,493
93.26 4,516,494
129 4,516,495
152 4,516,496
240 4,516,497
288 4,516,498

CLASS 102

293 4,516,499
496 4,516,501
523 4,516,502

CLASS 104

3 4,516,503
130 4,516,504
284 4,516,505

CLASS 105

3 4,516,506
199 A 4,516,507

CLASS 106

100 4,517,020

CLASS 108

7 4,516,508
147 4,516,509

CLASS 110

346 4,516,510
4,516,511

CLASS 112

165 4,516,512
262.2 4,516,513
275 4,516,514
417 B1 4,232,619

CLASS 114

39 4,516,516
51 4,516,517
61 4,516,518
197 4,516,515
270 4,516,519

CLASS 116

217 4,516,520

CLASS 118

50 4,516,521
120 4,516,522
500 4,516,523
683 4,516,524
688 4,516,525
697 4,516,526
723 4,516,527

CLASS 119

3 4,516,528
5 4,516,529
14.08 4,516,530
18 4,516,531
48 4,516,532
72 4,516,533

CLASS 122

15 4,516,534

CLASS 123

39 4,516,536
48 AA 4,516,537
52 M 4,516,538
53 R 4,516,539
65 PE 4,516,540
70 R 4,516,541
90.16 4,516,542
179 H 4,516,543
188 M 4,516,544
192 R 4,516,545
195 A 4,516,546
198 A 4,516,547
260 4,516,548
276 4,516,549
357 4,516,550
407 4,516,551
418 4,516,554
452 4,516,552
470 4,516,555
557 4,516,556
568 4,516,553
619 4,516,557
632 4,516,580
634 4,516,558
4,516,559

CLASS 125

15 4,516,560

CLASS 126

25 B 4,516,561
77 4,516,562
101 4,516,563
263 4,516,564
419 4,516,565

CLASS 127

30 4,517,021
46.3 4,516,566
68 4,517,022

CLASS 128

1 D 4,516,567
1.1 4,516,535
70 4,516,568
92 BC 4,516,569
130 4,516,570
132 R 4,516,571
156 4,516,572
201.13 4,516,573
303.1 4,516,574
305 4,516,575
327 4,516,576
330 4,516,577
341 4,516,578
419 PG 4,516,579
639 4,516,581
653 4,516,582
660 4,516,583
785 4,516,584

CLASS 131

84.3 4,516,585
246 4,516,586
256 4,516,587
291 4,516,588
331 4,516,589
352 4,516,590

CLASS 132

88.7 4,516,591

CLASS 134

4 4,517,023
15 4,517,024
38 4,517,025
169 C 4,516,592

CLASS 135

119 B1 4,034,772

CLASS 136

249 4,517,403

CLASS 137

15 4,516,593
4,516,594
73 4,516,595
240 4,516,596
314 4,516,597
318 4,516,598
375 4,516,599
495 4,516,600
510 4,516,601
512.15 4,516,602
559 4,516,603
596.15 4,516,604
4,516,605
625.3 4,516,606
637.4 4,516,607

CLASS 138

140 4,516,608

CLASS 139

383 R 4,516,609
435 4,516,610
452 4,516,611

CLASS 141

5 Re.31,882

CLASS 144

1 R 4,516,612
208 E 4,516,613
364 4,516,614

CLASS 148

1.5 4,517,026
6.14 R 4,517,028
6.15 R 4,517,030
6.15 Z 4,517,029
6.3 4,517,027
12 C 4,517,031
111 4,517,032
432 4,517,033
439 4,517,034

CLASS 149

19.92 4,517,035

CLASS 150

52 R 4,516,616

CLASS 156

64 4,517,036
89 4,517,037
98 4,517,038
149 4,517,039
153 4,517,040
155 4,517,041
164 4,517,042
196 4,517,043
277 4,517,044
345 4,517,045
500 4,517,046
610 4,517,047
621 4,517,048
622 4,517,049
643 4,517,050
644 4,517,051

CLASS 157

1 4,516,617

CLASS 160

120 4,516,618
135 4,516,619
351 4,516,620

CLASS 162

11 4,517,052
251 4,517,053
301 4,517,054
344 4,517,055
4,517,056

CLASS 164

339 4,516,621
416 4,516,622
4,516,623
418 4,516,624
454 4,516,625
461 4,516,626
467 4,516,627

CLASS 165

36 4,516,628
45 4,516,629
47 4,516,630
4,516,631
167 4,516,632

CLASS 166

69 4,516,633
120 4,516,634
212 Re.31,881
266 4,516,635
272 4,516,636
377 4,516,637

CLASS 172

22 4,516,638
99 4,516,639

CLASS 173

53 4,516,662

CLASS 174

47 4,517,404
68 B 4,517,405
72 B 4,517,406
73 R 4,517,407
153 G 4,517,408

CLASS 175

227 4,516,640
228 4,516,641
340 4,516,642

CLASS 177

1 4,516,643
25 4,516,644
147 4,516,645
211 4,516,646

CLASS 179

6.04 4,517,410
7 R 4,517,411
7.1 R 4,517,412
81 C 4,517,409
81 R 4,517,413
4,517,414
107 FD 4,517,415
115.5 PS 4,517,416
156 R 4,517,417
4,517,418
159 4,517,419
164 4,517,420

CLASS 180

2.2 4,516,647
6.66 4,516,648
9.1 4,516,649
68.3 4,516,650
127 4,516,651
177 4,516,652
199 4,516,653
255 4,516,654
321 4,516,655

CLASS 181

175 4,516,656
204 4,516,657
208 4,516,658
243 4,516,659
296 4,516,660

CLASS 182

82 4,516,661

CLASS 187

19 4,516,663
29 R 4,516,664
4,516,665

CLASS 188

73.38 4,516,666
82.34 4,516,667

CLASS 190

2 4,516,668

CLASS 192

3.58 4,516,669
48.8 4,516,670
076 4,516,671
107 C 4,516,672

CLASS 198

341 4,516,673
347 B1 4,120,391
617 4,516,674
654 4,516,675

CLASS 200

1 R 4,517,421
38 A 4,517,426
50 C 4,517,422
52 R 4,517,423
4,517,424
148 A 4,517,425

CLASS 202

205 4,517,057

CLASS 204

4 4,517,058
14.1 4,517,059
44 4,517,060
59 R 4,517,061
77 4,517,062
105 R 4,517,064
119 4,517,065
157.1 R 4,517,063
192 C 4,517,066
255 4,517,067
283 4,517,068
290 F 4,517,069
298 4,517,070
419 4,517,071

CLASS 206

226 4,516,676
394 4,516,677
444 4,516,678
459 4,516,679

CLASS 208

45 4,517,072
111 4,517,073
4,517,074
4,517,075
140 4,517,076
216 R 4,517,077

CLASS 209

127.3 4,517,078
452 4,517,079

CLASS 210

85 4,517,080
4,517,081
117 4,517,082
131 4,517,083
169 4,517,084
232 4,517,085
323.2 4,517,086
396 4,517,087
411 4,517,088
488 4,517,089
493.2 4,517,090
512.1 4,517,091
4,517,092
629 4,517,093
664 4,517,094
665 4,517,095
668 4,517,096
696 4,517,097
701 4,517,098
741 4,517,099

CLASS 211

59.1 4,516,681
4,516,682

CLASS 215

211 4,516,683
272 4,516,684

CLASS 219

10.51 4,517,427
10.55 B 4,517,428
4,517,429
4,517,430
4,517,431
10.55 F 4,517,432
75 4,517,433
76.12 4,517,434
89 4,517,435
121 LH 4,517,436
121 PP 4,517,437
125.12 4,517,438
130.33 4,517,439
145.1 4,517,440
146.23 4,517,441
215 4,517,442
4,517,443
216 4,517,444
297 4,517,445
386 4,517,446
388 4,517,447
4,517,448
413 4,517,452
421 4,517,453
455 4,517,454
549 4,517,449

CLASS 220

23.83 4,516,685
85 R 4,516,686
94 R 4,516,687
293 4,516,688
335 4,516,689

CLASS 221

233 4,516,690

CLASS 222

83.5 4,516,691
105 4,516,692
4,516,693
148 4,516,694
153 4,516,695
181 4,516,696
212 4,516,697
330 4,516,700
341 4,516,698
361 4,516,701
514 4,516,702
591 4,516,699

CLASS 223

39 4,516,703
111 4,516,704

CLASS 224

32 A 4,516,705
42.2 4,516,706
202 4,516,707
257 4,516,708
315 4,516,709
324 4,516,710

CLASS 225

20 4,516,711
96.5 4,516,712

CLASS 227

2 4,516,713
78 4,516,714

CLASS 228

208 4,516,715
263.15 4,516,716

CLASS 229

15 4,516,717
33 4,516,718

CLASS 232

1 D 4,516,719

CLASS 235

95 R 4,517,450
379 4,517,451
463 4,517,455

CLASS 237

8 R 4,516,720
69 4,516,721

CLASS 239

14 4,516,722
77 4,516,723
119 4,516,724
127 4,516,725
317 4,516,726
333 4,516,727
399 4,516,728
453 4,516,729
533.8 4,516,730

CLASS 241

24 4,516,731
4,516,732
79 4,516,733
283 4,516,734

CLASS 242

56 R 4,516,735
56.2 4,516,736
64 4,516,742
77 4,516,737
152.1 4,516,738
155 M 4,516,739
203 4,516,740
217 4,516,741

CLASS 244

3.13 4,516,743
17.17 4,516,744
134 A 4,516,745
170 4,516,746
204 4,516,747

CLASS 248

1 4,516,748
56 4,516,749
58 4,516,750
276 4,516,751

CLASS 250

226 4,517,456
239 4,517,457
252.1 4,517,460
253 4,517,458
261 4,517,459
282 4,517,461
286 4,517,462
327.2 4,517,463
370 4,517,464
492.2 4,517,465

CLASS 251

214 4,516,752
335 B 4,516,754
346 4,516,753

CLASS 252

8.5 C 4,517,100
8.55 D 4,517,101
8.55 R 4,517,102
28 4,517,103
51.5 A 4,517,104
56 R 4,517,105
79.4 4,517,106
91 Re.31,885
106 B1 4,367,157
108 4,517,107
135 4,517,109
162 4,517,108
180 4,517,110
186.25 4,517,111
315.2 4,517,112
353 4,517,113
389 R 4,517,114
400 R 4,517,115
500 4,517,116
511 4,517,117
513 4,517,118

CLASS 254

344 4,516,755

CLASS 256

1 4,516,756

CLASS 260

112.5 R 4,517,119
239 R 4,517,121
239.3 R 4,517,122
4,517,123
245.2 R 4,517,124
4,517,126
245.2 T 4,517,127
397.2 4,517,125
458 C 4,517,128
465 E 4,517,130
465 F 4,517,131
4,517,132
465 G 4,517,129
545 R 4,517,133

CLASS 261

39 A 4,517,134
104 4,517,135

CLASS 264

2.1 4,517,138
4,517,139
4,517,140
4.7 4,517,141
22 4,517,142
4,517,143
25 4,517,136
28 4,517,144
29.5 4,517,137
40.2 4,517,145
40.6 4,517,146
83 4,517,147
112 4,517,148
210.8 4,517,149
300 4,517,150
540 4,517,151

CLASS 266

245 4,516,757
263 4,516,758

CLASS 270

12 4,516,759
31 4,516,760
41 4,516,761

CLASS 271

11 4,516,762
4,516,763
34 4,516,764
95 4,516,765

CLASS 272

52 4,516,766
65 4,516,767
4,516,768

CLASS 273

1 B 4,516,769
11 R 4,516,770
26 R 4,516,771
4,516,772
32 A 4,516,773
67 B 4,516,774
80.3 4,516,778
89 4,516,775
146 4,516,776
148 B 4,516,777
186 C 4,516,779
202 4,516,780
373 4,516,781

CLASS 277

1 4,516,782
50 4,516,783
180 4,516,784
188 A 4,516,785

CLASS 279

1 SG 4,516,787
2 R 4,516,786

CLASS 280

6 R 4,516,788
160 4,516,789
502 4,516,790
612 4,516,791
625 4,516,792

CLASS 283

103 4,516,793

CLASS 285

30 4,516,794
315 4,516,795
321 4,516,796
405 4,516,797

CLASS 290

36 R 4,517,466
44 4,517,467
52 4,517,468

CLASS 292

169.13 4,516,798

CLASS 294

54.5 4,516,799
64.1 4,516,800
81.5 4,516,801

CLASS 296

98 4,516,802
107 4,516,803
214 4,516,804

CLASS 297

330 4,516,805
457 4,516,806

CLASS 299

1 4,516,807
39 4,516,808
43 4,516,809

CLASS 303

24 F 4,516,810

CLASS 307

10 LS 4,517,469
64 4,517,470
67 4,517,471
82 4,517,472
269 4,517,473
272 A 4,517,475
272 R 4,517,474
455 4,517,476

CLASS 308

3 R 4,516,811

CLASS 310

23 4,517,477
49 R 4,517,478
54 4,517,479
68 R 4,517,480
71 4,517,481
78 4,517,482
156 4,517,483
266 4,517,484
320 4,517,485
331 4,517,486

CLASS 312

12 4,516,812
323 4,516,813

CLASS 313

407 4,517,487
414 4,517,488
422 4,517,489
502 4,517,490
579 4,517,491
587 4,517,492

CLASS 315

73 4,517,493
85 4,517,494
111.21 4,517,495
227 R 4,517,496
241 R 4,517,497
323 4,517,498
362 4,517,499

CLASS 318

130 4,517,500
314 4,517,501
474 4,517,502
561 4,517,503
568 4,517,504
611 4,517,505
807 4,517,506

CLASS 322

28 4,517,507

CLASS 323

352 4,517,508
362 4,517,509

CLASS 324

52 4,517,510
4,517,511
73 R 4,517,512
117 R 4,517,513
207 4,517,514
252 4,517,515
318 4,517,516
433 4,517,517

CLASS 328

165 4,517,518

CLASS 329

126 4,517,519
145 4,517,520

CLASS 330

2 4,517,521
10 4,517,522
126 4,517,523
257 4,517,524
260 4,517,525
284 4,517,526
287 4,517,527
297 4,517,528

CLASS 331

1 A 4,517,529
3 4,517,530
14 4,517,531
57 4,517,532
116 R 4,517,533

CLASS 333

14 4,517,534
81 A 4,517,535
254 4,517,536

CLASS 335

187 4,517,537
272 4,517,538
302 4,517,539

CLASS 336

205 4,517,540

CLASS 337

89 4,517,541
92 4,517,542
140 4,517,543
164 4,517,544

CLASS 338

25 4,517,545
320 4,517,546

CLASS 339

7 4,516,814
14 R 4,516,815
17 CF 4,516,816
19 4,516,817

36 4,516,818
46 4,516,819
48 4,516,820
75 M 4,516,821
103 M 4,516,822
111 4,516,823
126 R 4,516,824
143 R 4,516,825

CLASS 340

59 4,517,547
310 R 4,517,548
347 AD 4,517,549
347 CC 4,517,550
347 DA 4,517,551
347 DD 4,517,552
365 S 4,517,553
514 4,517,554
522 4,517,555
528 4,517,556
540 4,517,557
700 4,517,558
712 4,517,559
790 4,517,560
825.07 4,517,561
4,517,562
825.54 4,517,563
825.69 4,517,564
995 4,517,565

CLASS 343

8 4,517,566
17.7 4,517,567
18 D 4,517,569
18 E 4,517,568
372 4,517,570
771 4,517,571
876 4,517,572

CLASS 346

76 PH 4,517,573
135.1 4,517,574
138 4,517,575
139 R 4,517,576
140 R 4,517,577
4,517,578
160 4,517,579
214 4,517,580

CLASS 350

96.15 4,516,827
96.16 4,516,828
96.20 4,516,829
96.22 4,516,830
96.23 4,516,831
96.24 4,516,832
96.31 4,516,826
162.12 4,516,833
335 4,516,834
336 4,516,835
4,516,836
347 V 4,516,837
358 4,516,838
426 4,516,839
515 4,516,840

CLASS 354

1 4,516,841
4 4,516,842
173.1 4,516,843
275 4,516,844
412 4,516,845
465 4,516,846

CLASS 355

3 CH 4,516,848
3 TR 4,516,847
14 R Re.31,888
15 4,516,849
4,516,850

CLASS 356

28 4,516,851
121 4,516,852
152 4,516,853
363 4,516,854
367 4,516,855
368 4,516,856
418 4,516,857
437 4,516,858

CLASS 357

30 4,517,581
38 4,517,582
41 4,517,583
80 4,517,584
81 4,517,585

CLASS 358

13 4,517,586
17 4,517,587
44 4,517,588
75 4,517,589
4,517,590
4,517,591
92 4,517,592
107 4,517,593
111 4,517,594
36 4,517,673

CLASS 372

45 4,517,674
53 4,517,675
89 4,517,676
99 4,517,677

CLASS 373

95 4,517,678

CLASS 374

130 4,516,864
172 4,516,865

CLASS 375

37 4,517,679
75 4,517,680
106 4,517,681
4,517,682
117 4,517,683

CLASS 376

252 4,517,152
253 4,517,153
259 4,517,154

CLASS 377

19 4,517,684

CLASS 400

25 4,516,866
175 4,516,867

CLASS 401

5 4,516,868
131 4,516,869
146 4,516,870

CLASS 402

79 4,516,871

CLASS 403

24 4,516,872
191 4,516,873
313 4,516,874

CLASS 404

50 4,516,875
60 4,516,876

CLASS 405

130 4,516,878
132 4,516,879
160 4,516,880
195 4,516,881
224 4,516,882
260 4,516,883
261 4,516,884
4,516,885
4,516,886

CLASS 406

63 4,516,887
182 4,516,888

CLASS 408

152 4,516,889
204 4,516,890

CLASS 410

154 4,516,891
155 4,516,892

CLASS 411

184 4,516,893

CLASS 414

5 4,516,894
43 4,516,895
180 4,516,897
309 4,516,898
330 4,516,899
417 4,516,900
458 4,516,901
480 4,516,902
491 4,516,903
517 4,516,904
620 4,516,905
740 4,516,896
786 4,516,906

CLASS 415

2 A 4,516,907
122 R 4,516,908

CLASS 416

134 A 4,516,909
190 4,516,910

CLASS 417

2 4,516,911
45 4,516,912
243 4,516,913
282 4,516,914
365 4,516,915
368 4,516,916
390 4,516,917

CLASS 418

15 4,516,918
23 4,516,919
4,516,920
141 4,516,921

CLASS 419

19 4,517,155

CLASS 420

463 4,517,156
490 4,517,157
584 4,517,158

CLASS 422

20 4,517,159
65 4,517,160
95 4,517,161
142 4,517,162

CLASS 423

75 4,517,163
184 4,517,164
244 4,517,165
245 4,517,167
344 4,517,168
447.4 4,517,169
474 4,517,166
573 R 4,517,170
648 R 4,517,171

CLASS 424

7.1 4,517,172
16 4,517,173
47 4,517,176
62 4,517,174
70 4,517,175
93 4,517,177
122 4,517,178

CLASS 425

113 4,516,922
289 4,516,923
434 4,516,924
463 4,516,925
464 4,516,926
549 4,516,927

CLASS 426

19 4,517,203
94 4,517,204
103 4,517,205
115 4,517,206
315 4,517,207
332 4,517,208
383 4,517,209
392 4,517,210
444 4,517,211
496 4,517,212
538 4,517,213
548 4,517,214
557 4,517,215
573 4,517,216
655 4,517,120
656 4,517,218

CLASS 427

8 4,517,219
4,517,220
4,517,221
30 4,517,222
39 4,517,223
64 4,517,224
89 4,517,225
90 4,517,226
96 4,517,227
370 4,517,228
383.9 4,517,229
393 B1 4,276,329

CLASS 428

17 4,517,230
35 4,517,231
40 Re.31,886
57 4,517,232
108 4,517,233
119 4,517,234
148 4,517,235
192 4,517,236
198 4,517,237
212 4,517,238
307.3 4,517,239
326 4,517,240
332 4,517,241
336 4,517,242
4,517,243
342 4,517,244
355 Re.31,887
367 4,517,245
407 4,517,246
421 4,517,247
457 4,517,248
463 4,517,249
483 4,517,250
542.8 4,517,251
553 4,517,252
620 4,517,253
626 4,517,254
4,517,255
629 4,517,256
632 4,517,217
694 4,517,257

CLASS 429

21 4,517,258
26 4,517,259
41 4,517,260
64 4,517,261
87 4,517,262
120 4,517,263
163 4,517,264
217 4,517,265

CLASS 430

2 4,517,266
3 4,517,267
39 4,517,268
57 4,517,269
58 4,517,270
94 4,517,271
110 4,517,272
111 4,517,273
122 4,517,274
165 4,517,275
192 4,517,276
281 4,517,277
286 4,517,278
4,517,279
321 4,517,280
322 4,517,281
399 4,517,282
512 4,517,283
538 4,517,285
562 4,517,286
591 4,517,284

CLASS 431

12 4,516,928
4,516,929
26 4,516,930
168 4,516,931
202 4,516,932
255 4,516,933

CLASS 432

30 4,516,934
247 4,516,935

CLASS 433

6 4,516,936
173 4,516,937
215 4,516,938

CLASS 434

114 4,516,939

CLASS 435

4 4,517,287
7 4,517,288
4,517,289
4,517,290
14 4,517,291
32 4,517,292
68 4,517,293
70 4,517,294
101 4,517,295
119 4,517,296
128 4,517,297
160 4,517,298
197 4,517,299
317 4,517,300

CLASS 436

14 4,517,301
180 4,517,302
501 4,517,303
518 4,517,304

CLASS 440

53 4,516,940
105 4,516,941

CLASS 441

5 4,516,942
35 4,516,943
40 4,516,944

CLASS 445

19 4,516,945

CLASS 446

46 4,516,946
4,516,947
95 4,516,948
222 4,516,949
297 4,516,950
338 4,516,951
427 4,516,952
444 4,516,953
461 4,516,954

CLASS 464

89 4,516,955
4,516,956
111 4,516,957
153 4,516,958
175 4,516,959

CLASS 474

49 4,516,960
80 4,516,961
112 4,516,962
245 4,516,963
4,516,964
4,516,965

CLASS 494

1 4,516,966

CLASS 501

89 4,517,305

CLASS 502

74 4,517,306
119 4,517,307
401 4,517,308

CLASS 514

12 4,517,181
16 4,517,180
183 4,517,183
184 4,517,194
212 4,517,184
232 4,517,185
249 4,517,179
250 4,517,187
255 4,517,186
259 4,517,189
300 4,517,190
4,517,191
345 4,517,192
371 4,517,196
376 4,517,197
4,517,309
392 4,517,199
394 4,517,188
4,517,310
400 4,517,198
413 4,517,182
4,517,195
455 4,517,200
462 4,517,311
471 4,517,193
521 4,517,201
530 4,517,202

CLASS 521

47 4,517,312
51 4,517,313
59 4,517,314
64 4,517,315
81 4,517,316
95 4,517,317

CLASS 523

126 4,517,318
200 4,517,319
215 4,517,320
400 4,517,321
501 4,517,322
514 4,517,323

CLASS 524

27 4,517,324
188 4,517,325
310 4,517,326
315 4,517,327
370 4,517,328
401 4,517,329
408 4,517,330
451 4,517,331
506 4,517,332
516 4,517,333
539 4,517,334
552 4,517,335
571 4,517,336
859 4,517,337

CLASS 525

54.11 4,517,338
85 4,517,339
113 4,517,340
152 4,517,341
431 4,517,342
488 4,517,343

CLASS 526

62 4,517,344
105 4,517,345
153 4,517,346
216 4,517,347
273 4,517,348
313 4,517,349
344.2 4,517,350

CLASS 527

312 4,517,351

CLASS 528

18 4,517,352
45 4,517,353
172 4,517,354

CLASSIFICATION OF PATENTS

287	4,517,355		CLASS 546		CLASS 549		CLASS 564	779	4,517,388	638	4,517,400
483	4,517,356	7	4,517,362	239	4,517,371	160	4,517,378	804	4,517,389	645	4,517,401
	CLASS 534	66	4,517,363	246	4,517,372	193	4,517,379	881	4,517,390	820	4,517,402
605	4,517,357		4,517,364	292	4,517,373	206	4,517,380	885	4,517,391		CLASS 604
608	4,517,358	142	4,517,365	533	4,517,374	207	4,517,381	948	4,517,392	22	4,516,398
	CLASS 536	231	4,517,366		CLASS 556	267	4,517,382		4,517,393	87	4,516,967
7.4	4,517,359	276	4,517,367	463	4,517,375	443	4,517,383		4,517,394	174	4,516,968
119	4,517,360	303	4,517,368		CLASS 560		CLASS 568		CLASS 585	187	4,516,969
	CLASS 544	345	4,517,369	87	4,517,376	27	4,517,384	259	4,517,395	270	4,516,970
24	4,517,361		CLASS 548	261	4,517,377	386	4,517,385	415	4,517,396	280	4,516,971
		217	4,517,370			483	4,517,386	428	4,517,397	282	4,516,972
						728	4,517,387	500	4,517,398	319	4,516,973
								533	4,517,399	333	4,516,974
										385 A	4,516,975
										389	4,516,976
										415	4,516,977

CLASSIFICATION OF DESIGNS

D2—	36	278,755			278,772			278,787		107	278,803		103	278,820		91	278,835
	244	278,756		452	278,765			278,788		125	278,804		111	278,821	D20—	22	278,836
	309	278,757		462	278,773		334	278,789	D11—	40	278,805		113	278,809	D21—	89	278,837
	314	278,758		484	278,774	D8—	14	278,790	D12—	146	278,806	D15—	22	278,822		150	278,838
	320	278,759		495	278,775		88	278,791	D13—	12	278,808		69	278,823		159	278,839
		278,760		500	278,776		98	278,792		35	278,807		149	278,824		191	278,840
	381	278,761		534	278,777		357	278,793	D14—	17	278,810	D16—	32	278,825		210	278,841
	394	278,762			278,778		377	278,794		34	278,811		102	278,826	D22—	19	278,842
D3—	71	278,763		596	278,779	D9—	347	278,795		53	278,812	D18—	1	278,827	D23—	28	278,843
D4—	101	278,764	D7—	13	278,780		349	278,796		60	278,813			278,828		55	278,844
D6—	333	278,766			278,781			278,797			278,814			278,829		71	278,845
	335	278,767			278,782		352	278,798		63	278,815			278,830			278,846
	414	278,768			278,783		376	278,799			278,816		3	278,831		144	278,847
		278,769			278,784		379	278,800		94	278,817	D19—	19	278,832			278,848
	423	278,770			278,785	D10—	40	278,801		100	278,818		1	278,833	D24—	10	278,849
	426	278,771			278,786		46	278,802		102	278,819		62	278,834			

CLASSIFICATION OF PLANTS

P.—	15	5,466	18	5,467	36	5,468	54	5,469	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 :	4,516,633		4,516,772		4,517,421		4,517,214		4,516,444		4,517,354
01 :	4,516,613		4,516,774		4,517,439		4,517,215		4,516,485		4,517,363
	4,516,693		4,516,778		4,517,448		4,517,219		4,516,510		4,517,364
	4,516,766		4,516,786		4,517,449		4,517,379		4,516,512		4,517,427
	4,517,414		4,516,793		4,517,486		4,517,446		4,516,540		4,517,602
	4,517,419		4,516,798		4,517,497		4,517,452		4,516,581		4,517,629
02 :	4,516,637		4,516,800		4,517,503		4,517,474		4,516,684		4,517,683
04 :	4,516,364		4,516,801		4,517,514		4,517,510		4,516,702	19 :	4,516,349
	4,516,528		4,516,817		4,517,516		4,517,622		4,516,708		4,516,389
	4,516,587		4,516,829		4,517,530		4,517,650		4,516,737		4,516,541
	4,516,749		4,516,832		4,517,535		4,517,656		4,516,753		4,516,670
	4,516,821		4,516,858		4,517,557		4,517,676		4,516,761		4,516,834
	4,517,064		4,516,868		4,517,562	10 :	4,516,409		4,516,781		4,516,980
	4,517,220		4,516,875		4,517,571		4,516,718		4,516,790		4,517,022
	4,517,475		4,516,882		4,517,593		4,516,896		4,516,799		4,517,207
	4,517,477		4,516,891		4,517,599		4,516,971		4,516,856	20 :	4,516,374
	4,517,524		4,516,897		4,517,616		4,517,050		4,516,893		4,516,560
	4,517,532		4,516,907		4,517,625		4,517,291		4,516,919		4,516,903
	4,517,547		4,516,923		4,517,642		4,517,303		4,516,956		4,517,182
05 :	4,516,906		4,516,946		4,517,662		4,517,376		4,516,963	22 :	4,516,306
06 :	4,516,273		4,516,952		4,517,667		4,517,378		4,516,964		4,516,352
	4,516,286		4,516,953		4,517,674	11 :	4,516,275		4,516,965		4,516,431
	4,516,293		4,516,958		4,276,329	12 :	4,516,362		4,516,987		4,517,082
	4,516,316		4,516,967	08 :	4,516,442		4,516,388		4,516,992		4,517,100
	4,516,329		4,516,972		4,516,516		4,516,437		4,517,009		4,367,157
	4,516,337		4,516,975		4,516,574		4,516,453		4,517,021	23 :	4,516,281
	4,516,338		4,517,012		4,517,058		4,516,499		4,517,039		4,516,363
	4,516,340		4,517,038		4,517,088		4,516,504		4,517,042		4,517,517
	4,516,346		4,517,046		4,517,097		4,516,565		4,517,044		4,517,626
	4,516,365		4,517,048		4,517,172		4,516,678		4,517,084	24 :	4,516,326
	4,516,385		4,517,049		4,517,458		4,516,695		4,517,218		4,516,350
	4,516,406		4,517,073	09 :	4,516,320		4,516,744		4,517,384		4,516,482
	4,516,419		4,517,074		4,516,322		4,516,853		4,517,407		4,516,584
	4,516,424		4,517,079		4,516,441		4,516,873		4,517,422		4,516,922
	4,516,433		4,517,130		4,516,487		4,516,879		4,517,430		4,517,176
	4,516,438		4,517,154		4,516,491		4,517,040		4,517,479		4,517,235
	4,516,449		4,517,157		4,516,494		4,517,288		4,517,483		4,517,292
	4,516,462		4,517,165		4,516,519		4,517,468		4,517,498		4,517,337
	4,516,466		4,517,181		4,516,572		4,517,470		4,517,507		4,517,392
	4,516,468		4,517,216		4,516,615		4,517,499		4,517,533		4,517,393
	4,516,486		4,517,225		4,516,625		4,517,597		4,517,553		4,517,394
	4,516,523		4,517,239		4,516,631		4,517,680		4,517,559		4,517,472
	4,516,553		4,517,245		4,516,648	13 :	4,516,535		4,517,669		4,517,515
	4,516,600		4,517,267		4,516,668		4,516,701	18 :	Re.31,882		4,517,568
	4,516,636		4,517,276		4,516,683		4,516,731		4,516,301		4,517,569
	4,516,653		4,517,294		4,516,736		4,516,787		4,516,341		4,517,570
	4,516,674		4,517,306		4,516,776		4,516,984		4,516,930		4,517,572
	4,516,698		4,517,316		4,516,852		4,517,212		4,516,938		4,517,618
	4,516,716		4,517,338		4,517,034		4,517,298		4,517,077		4,517,628
	4,516,725		4,517,342		4,517,103		4,517,623		4,517,188		4,517,665
	4,516,743		4,517,403		4,517,126	17 :	4,516,308		4,517,229	25 :	4,516,274
	4,516,751		4,517,410		4,517,164		4,516,387		4,517,279		4,516,280
	4,516,767		4,517,413		4,517,205		4,516,423		4,517,301		4,516,310

4,516,456
4,516,522
4,516,580
4,516,604
4,516,605
4,516,837
4,516,842
4,516,844
4,516,845
4,516,854
4,516,861
4,517,043
4,517,085
4,517,143
4,517,251
4,517,253
4,517,289
4,517,327
4,517,555
4,517,637
26 : 4,516,288
4,516,296
4,516,307
4,516,344
4,516,357
4,516,401
4,516,471
4,516,539
4,516,647
4,516,666
4,516,700
4,516,705
4,516,709
4,516,710
4,516,748
4,516,777
4,516,796
4,516,803
4,516,824
4,516,889
4,516,890
4,516,918
4,516,957
4,516,981
4,517,028
4,517,111
4,517,118
4,517,122
4,517,210
4,517,223
4,517,237
4,517,249
4,517,261
4,517,368
4,517,383
4,517,481
4,517,523
4,517,540
4,517,566
4,517,614
4,034,772
27 : 4,516,291
4,516,386
4,516,393
4,516,460
4,516,639
4,516,675
4,516,704
4,516,765
4,516,941
4,517,014
4,517,041
4,517,052
4,517,081
4,517,295
4,517,512
4,517,610
4,517,641
28 : 4,516,904
29 : 4,516,531
4,516,867
4,516,947
4,517,264
4,517,329
4,517,544
30 : 4,516,372
4,516,794
4,517,008
31 : 4,516,351
4,516,354
4,516,638
4,516,723
32 : 4,517,558
4,517,654
33 : 4,516,302
4,517,203
34 : 4,516,427
4,516,430
4,516,446
4,516,450
4,516,606
4,516,624
4,516,627
4,516,697
4,516,707
4,516,720
4,516,782
4,516,826
4,516,969
4,516,973
4,516,982
4,517,003
4,517,004
4,517,005
4,517,007
4,517,010
4,517,023
4,517,062
4,517,075
4,517,095
4,517,104
4,517,112
4,517,116
4,517,117
4,517,119
4,517,128
4,517,171
4,517,186
4,517,195
4,517,200
4,517,206
4,517,213
4,517,231
4,517,240
4,517,242
4,517,243
4,517,250
4,517,310
4,517,311
4,517,321
4,517,333
4,517,351
4,517,371
4,517,386
4,517,399
4,517,402
4,517,412
4,517,489
4,517,513
4,517,536
4,517,542
4,517,586
4,517,600
4,517,671
35 : 4,516,518
4,516,632
4,516,779
4,517,464
36 : Re.31,888
4,516,294
4,516,325
4,516,336
4,516,353
4,516,355
4,516,360
4,516,361
4,516,398
4,516,402
4,516,404
4,516,405
4,516,448
4,516,458
4,516,464
4,516,529
4,516,563
4,516,566
4,516,582
4,516,656
4,516,658
4,516,661
4,516,663
4,516,714
4,516,768
4,516,806
4,516,813
4,516,825
4,516,864
4,516,871
4,516,876
4,516,886
4,516,924
4,516,949
4,516,970
4,517,002
4,517,047
4,517,051
4,517,083
4,517,106
4,517,135
4,517,138
4,517,139
4,517,140
4,517,161
4,517,179
4,517,187
4,517,190
4,517,191
4,517,192
4,517,268
4,517,272
4,517,302
4,517,339
4,517,341
4,517,352
4,517,366
4,517,372
4,517,406
4,517,487
4,517,488
4,517,511
4,517,526
4,517,577
4,517,592
4,517,661
4,517,670
4,517,675
37 : 4,516,298
4,516,318
4,516,394
4,516,585
4,516,629
4,516,677
4,516,822
4,517,132
4,517,228
4,517,408
4,517,604
38 : 4,516,439
4,516,789
39 : Re.31,883
4,516,279
4,516,303
4,516,313
4,516,314
4,516,317
4,516,323
4,516,356
4,516,380
4,516,395
4,516,417
4,516,420
4,516,461
4,516,493
4,516,497
4,516,498
4,516,568
4,516,593
4,516,628
4,516,645
4,516,655
4,516,659
4,516,676
4,516,682
4,516,689
4,516,692
4,516,699
4,516,706
4,516,745
4,516,758
4,516,773
4,516,775
4,516,805
4,516,828
4,516,833
4,516,836
4,516,874
4,516,883
4,516,892
4,516,934
4,516,974
4,516,995
4,516,996
4,517,001
4,517,063
4,517,066
4,517,069
4,517,115
4,517,120
4,517,222
4,517,230
4,517,232
4,517,236
4,517,323
4,517,331
4,517,360
4,517,400
4,517,404
4,517,440
4,517,491
4,517,492
4,517,493
4,517,505
40 : 4,516,371
4,516,478
4,516,719
4,516,739
4,516,881
4,517,101
4,517,401
4,517,461
41 : 4,516,515
4,516,561
4,516,598
4,516,939
4,517,208
4,517,495
42 : Re.31,884
4,516,278
4,516,299
4,516,305
4,516,315
4,516,324
4,516,391
4,516,392
4,516,476
4,516,507
4,516,556
4,516,608
4,516,619
4,516,691
4,516,754
4,516,808
4,516,815
4,516,841
4,516,884
4,516,885
4,516,914
4,516,916
4,517,016
4,517,025
4,517,037
4,517,098
4,517,105
4,517,159
4,517,167
4,517,204
4,517,217
4,517,224
4,517,234
4,517,259
4,517,262
4,517,281
4,517,322
4,517,325
4,517,330
4,517,398
4,517,436
4,517,473
4,517,521
4,517,545
4,517,635
44 : 4,516,282
4,516,434
4,516,769
4,517,500
45 : 4,516,289
4,516,292
4,516,595
4,516,609
4,516,626
4,516,667
4,516,976
4,517,145
4,517,155
4,517,233
4,517,347
4,517,437
46 : 4,516,902
47 : 4,517,420
4,517,426
4,517,534
48 : Re.31,881
4,516,328
4,516,339
4,516,414
4,516,477
4,516,517
4,516,524
4,516,578
4,516,591
4,516,634
4,516,635
4,516,641
4,516,642
4,516,752
4,516,785
4,516,795
4,516,880
4,516,905
4,516,911
4,516,917
4,516,921
4,516,942
4,516,986
4,517,070
4,517,080
4,517,089
4,517,094
4,517,102
4,517,131
4,517,144
4,517,170
4,517,199
4,517,241
4,517,374
4,517,411
4,517,423
4,517,455
4,517,459
4,517,465
4,517,551
4,517,561
4,517,631
4,517,652
4,517,664
49 : 4,516,679
4,517,385
50 : 4,516,618
4,516,722
51 : 4,516,383
4,516,435
4,516,467
4,516,520
4,516,589
4,516,590
4,516,657
4,516,756
4,516,780
4,516,816
4,516,827
4,516,838
4,516,928
4,517,567
4,517,638
53 : 4,516,287
4,516,506
4,516,575
4,516,612
4,516,616
4,516,660
4,516,968
4,517,053
4,517,059
4,517,147
4,517,252
4,517,369
4,517,639
54 : 4,516,802
55 : Re.31,885
4,516,489
4,516,530
4,516,694
4,516,742
4,516,771
4,516,994
4,517,056
4,517,326
4,517,418
4,517,425
4,517,432
4,517,433
4,517,543

DESIGN PATENTS

01 : 278,776
06 : 278,766
278,768
278,769
278,775
278,791
278,796
278,797
278,801
278,802
278,803
278,807
08 : 278,761
278,824
09 : 278,835
12 : 278,792
278,812
13 : 278,799
278,822
17 : 278,789
278,819
18 : 278,778
21 : 278,763
25 : 278,757
278,795
278,798
26 : 278,756
27 : 278,836
28 : 278,845
278,846
29 : 278,841
33 : 278,759
278,760
34 : 278,773
278,809
278,843
36 : 278,755
278,762
278,780
278,781
278,782
278,783
278,784
278,785
278,813
278,814
278,842
278,844
278,786
278,787
278,788
278,800
278,810
278,833
278,839
278,840
278,847
278,848
37 : 278,779
39 : 278,790
278,793
278,806
278,808
278,811
42 : 278,774
278,816
278,831
278,765
278,777
55 : 278,767

PLANT PATENTS

06 : 5,466
18 : 5,467
41 : 5,468
51 : 5,469

U.S. GOVERNMENT PRINTING OFFICE : O—1985

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Vol. 1054 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 21, 1985

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Acting Commissioner*

oute to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
May 21, 1985 Volume 1054 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1054 OG 18
Notice of Maintenance Fees Payable	1054 OG 18
Reissue Applications Filed	1054 OG 18
Requests for Reexaminations Filed	1054 OG 19
Errata	1054 OG 19
Application for Recordation of Trade Name	1054 OG 20
Recordations of Trade Name	1054 OG 20
Patent Certificates of Correction	1054 OG 21
Disclaimers	1054 OG 21
Dedication	1054 OG 21
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1054 OG 22
Condition of Patent Applications	1054 OG 23
Reissue Patents Granted (31,889)	989
Plant Patents Granted (5,470)	993
Patents Granted	
General and Mechanical (4,517,685)	995
Chemical (4,518,390)	1237
Electrical (4,518,815)	1355
Design Patents Granted (278,850)	1455
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 52
Classification of	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 58
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 59
Designs and Plants	PI 60
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *PCT Gazette* at No. 25/1984 page 3095 on Oct. 25, 1984 and in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

Note that the amount of the international search fee for the European Patent Office was changed effective May 7, 1985 and the amounts of the International PCT fees will change effective May 28, 1985. For information on these fee changes see the notice appearing in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for the first 10 national or regional offices)	64.00
Designation fee for 11th and subsequent designations	No charge

May 6, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 18, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,329,741 through 4,330,886

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,922,377, Re. S.N. 719,969, Filed Apr. 4, 1985, Cl. 426/645, HEAT-PROCESSED DEHYDRATED BACTERIOLOGICALLY-STABLE PORK RIND PRODUCT AND PROCESS FOR PREPARING SAME, Kenneth F. Whittle, Owner of Record: *Protein Foods (U.K.) Ltd., Staffordshire, England,* Attorney or Agent: Richard E. Fichter, Ex. Gp.: 132

4,291,391, Re. S.N. 672,854, Filed Nov. 19, 1984, Cl. 365/184, TAPER ISOLATED RANDOM ACCESS MEMORY ARRAY AND METHOD OF OPERATING, Pallab K. Chatterjee, et al., Owner of Record: *Inventors,* Attorney or Agent: Melvin Sharp, Ex. Gp.: 233

4,302,893, Re. S.N. 709,345, Filed Mar. 6, 1985, Cl. 037/066, DIGGING WHEEL FOR A SUCTION DREDGER VESSEL, Johannes van den Elshout, et al., Owner of Record: *IHC Holland N.V., Papendrecht, Netherlands,* Attorney or Agent: Robert J. Patch, Ex. Gp.: 337

4,308,707, Re. S.N. 716,065, Filed Mar. 26, 1985, Cl. 053/314, CLOSURE PRE-TIGHTENER FOR CLOSURE APPLICATING MACHINES, Wendell D. Willingham, Owner of Record: *Owens-Illinois, Inc., Toledo, Ohio,* Attorney or Agent: John R. Nelson, et al., Ex. Gp.: 327

4,355,697, Re. S.N. 704,160, Filed Dec. 24, 1984, Cl. 180/261, A VEHICULAR STEERING AND SUSPENSION SYSTEM, Nicolae V. Orlandea, et al., Owner of Record: *Deere & Co., Moline, Ill.,* Attorney or Agent: R. L. Hollister, et al., Ex. Gp.: 316

4,375,864, Re. S.N. 707,698, Filed Mar. 4, 1985, Cl. 222/081, CONTAINER FOR HOLDING AND DISPENSING FLUID, Chester Savage, Owner of Record: *Scholle Corp., Irvine, Calif.,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 311

4,377,157, Re. S.N. 714,622, Filed Mar. 21, 1985, Cl. 128/IR, INTRAVAGINAL ANCHORING DEVICE, David L. Zartman, Owner of Record: *New Mexico State University Foundation, Inc., Las Cruces, N.M.,* Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 335

4,378,162, Re. S.N. 716,719, Filed Mar. 27, 1985, Cl. 366/007, PROCESS FOR MAKING ASPHALT CONCRETE, Paul E. Bracegirdle, Owner of Record: *Inventor,* Attorney or Agent: Ronald L. Panitch, et al., Ex. Gp.: 242

4,423,140, Re. S.N. 719,840, Filed Apr. 4, 1985, Cl. 430/445, SILVER HALIDE EMULSIONS CONTAINING AROMATIC LATENT IMAGE STABILIZING COMPOUNDS, Arthur H. Herz, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: Carl O. Thomas, et al., Ex. Gp.: 156

4,452,685, Re. S.N. 719,795, Filed Apr. 3, 1985, Cl. 204/252, ELECTRODES FOR ELECTROLYTIC CELLS, Kenneth E. Woodard, Jr., et al., Owner of Record: *Olin Corp., New Haven, Conn.,* Attorney or Agent: Ralph D'Alessandro, et al., Ex. Gp.: 112

4,472,600, Re. S.N. 714,457, Filed Mar. 21, 1985, Cl. 179/7.1R, CHARGE TIME START CONTROL FOR INTERCONNECT PABX, Murray F. Kaminsky, Owner of Record: *RCA Corp., New York, N.Y.,* Attorney or Agent: Joseph S. Tripoli, et al., Ex. Gp.: 261

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,548,373, Reexam. No. 90/000,755, Requested: Apr. 10, 1985, Cl. 340/64, THEFT PREVENTING SYSTEM FOR VEHICLES, Aureo Rivera, et al., Owner of Record: *Aureo & Aureo E. Rivera, Bayamon, P.R.,* Attorney or Agent: O'Brien & Jacobson, Ex. Gp.: 260 Requester: Chapman Ind. Corp., Elk Grove Village, Ill.

3,732,647, Reexam. No. 90/000,756, Requested: Apr. 11, 1985, Cl. 51/54, POLISHER FINER MACHINE, Joe D. Smith, Owner of Record: *Coburn Manufacturing Co., Inc., Muskogee, Okla.,* Attorney or Agent: John J. Burne, Ex. Gp.: 323 Requester: Coburn Optical Industries, Inc., Washington, D.C.

3,984,329, Reexam. No. 90/000,759, Requested: Apr. 12, 1985, Cl. 210/396, DEVICE FOR EXTRACTING LIQUID FROM SLUDGE, Lothar Wenzel, et al., Owner of Record: *Firma Gebruder Bellmer, KG, Niefern, Germany,* Attorney or Agent: Joseph A. Geiger, Ex. Gp.: 136, Requester: Arus-Andritz, Inc., Arlington, Tex.

4,117,248, Reexam. No. 90/000,758, Requested: Apr. 15, 1985, Requester: 568/855, CONTINUOUS, LOW PRESSURE ETHYNYLATION PROCESS FOR THE PRODUCTION OF BUTYNEDIOL, J. Lewis Prater, et al., Owner of Record: *GAF Corp., New York, N.Y.,* Attorney or Agent: W. C. Kehm, Ex. Gp.: 126, Requester: E. I. Du Pont de Nemours & Co., Wilmington, Del.

4,181,419, Reexam. No. 90/000,757, Requested: Apr. 12, 1985, Cl. 354/286, INTERCHANGEABLE LENS FOR SLR-CAMERAS HAVING TTL LIGHT METERING, Werner Schlapp, et al., Owner of Record: *Ernst Leitz Wetzlar, Wetzlar, Germany,* Attorney or Agent: Schwartz, Jeffery, et al., Ex. Gp.: 210, Requester: Owner

4,491,088, Reexam. No. 90/000,760, Requested: Apr. 16, 1985, Cl. 119/72.5, WATERING SYSTEM FOR FOWL AND SMALL ANIMALS, Eldon Hostetler, Owner of Record: *Ziggity Systems, Inc., Middlebury, Ind.,* Attorney or Agent: David R. Melton, Ex. Gp.: 333, Requester: Val Watering Systems and/or Valorbs Jewel, Annandale, Va.

Errata

"All reference to the Reexamination Certificate for the Certificate No. B1 3,963,842 to Sivertz for 'DEPOSITION OF COPPER' appearing in the Official Gazette of Apr. 16, 1985, should be deleted since no certificate was issued."

"All reference to Patent No. 4,514,239 to H. William Voigt, et al., of N.J. for 'PRODUCTION OF FINE CRYSTALLINE TNT COMPOSITIONS' appearing in the Official Gazette of Apr. 30, 1985 should be deleted since no patent was granted."

"All reference to Patent No. 4,514,610 to Roderich Keller, et al., of Federal Republic of Germany for 'HIGH CURRENT ION SOURCE' appearing in the Official Gazette of Apr. 30, 1985 should be deleted since no patent was granted."

Errata

Trademark Application Serial No. 191,523 was inadvertently issued in the "Index of Registrants" section of the Trademark Official Gazette of Mar. 24, 1981, as follows:

TMI 8 TMOG March 24, 1981
Home Tech, Inc.,
Bethesda, Md.
Registration No. 1,148,896

Consequently, the above-identified registration number is cancelled.

The above-identified Trademark Application Serial No. 191,523 was correctly listed as issued in the "Index of Registrants" section of the Trademark Official Gazette of June 16, 1981, as follows:

TMI 4 TMOG June 16, 1981
Home Tech, Inc.,
Bethesda, Md.
Registration No. 1,157,662

Consequently, Registration No. 1,157,662 is still active.

PATRICIA M. DAVIS
Mar. 15, 1985. *Administrator for Trademarks.*

Department of the Treasury
United States Customs Service
Application for Recordation of Trade Name:
SUPREME IMPORT EXPORT CO., INC."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Application for Recordation of Trade Name
Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "SUPREME IMPORT EXPORT CO., INC." used by Supreme Import Export Co., Inc., a corporation organized under the laws of the State of New York, located at 900 Broadway, New York, N.Y. 10003.

The application states that the trade name is used in connection with the following merchandise manufactured in Hong Kong, Korea, Japan, Taiwan and the Philippines: playing cards; cigarette lighters; cellophane tape; toothbrushes; padlocks; cassette tapes; pens; batteries; sunglasses; cameras and curling irons.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.
Date: Comments must be received on or before May 13, 1985.
Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

EDWARD T. ROSSE,
Mar. 8, 1985. *Acting Director, Entry Procedures and Penalties Division.*

Department of the Treasury
United States Customs Service
(T.D. 85-42)
Recordation of Trade Name:
"GERBER PRODUCTS CO"

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Recordation
Summary: On Dec. 17, 1984, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "GERBER PRODUCTS CO." was published in the Federal Register (49 FR 49014). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than Feb. 15, 1985. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "GERBER PRODUCTS CO." is recorded as the tradename used by Gerber Products Co., a corporation organized under laws of the State of Michigan, located at 445 State St., Fremont, Mich. 49412. The trade name is used in connection with plush toys, crib toys and other merchandise intended for use by infants and small children, manufactured in Hong Kong, Taiwan, Malaysia, West Germany, Japan and Thailand.
Date: Mar. 14, 1985.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

EDWARD T. ROSSE,
Mar. 8, 1985. *Acting Director, Entry Procedures and Penalties Division.*

Department of the Treasury
U.S. Customs Service
(T.D. 85-24)
Recordation of Trade Name:
"THE UNION FORK AND HOE CO."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Recordation
Summary: On Nov. 15, 1984, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "THE UNION FORK AND HOE CO.," was published in the Federal Register (49 FR 45288-45289). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than Jan. 14, 1985. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "THE UNION FORK AND HOE CO." is recorded as the trade name used by the Union Fork and Hoe Co., a corporation organized under the laws of the State of Ohio, located at 500 Dublin Ave., Columbus, Ohio 43216. The trade name is used in connection with hand-operated farm, garden and lawn tools manufactured in the United States.
Date: Feb. 19, 1985.
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Feb. 13, 1985. *Director, Entry Procedures and Penalties Division.*

PATENT NOTICES

Certificates of Correction for the Week of May 21, 1985

Re.31,692	4,451,455	4,476,339	4,487,673
3,621,872	4,451,886	4,476,425	4,487,772
4,066,653	4,452,367	4,476,550	4,487,808
4,218,477	4,452,793	4,477,501	4,487,866
4,261,867	4,454,221	4,478,731	4,487,913
4,322,223	4,457,789	4,478,787	4,487,915
4,323,217	4,458,227	4,478,852	4,487,997
4,325,404	4,459,225	4,479,030	4,488,208
4,362,760	4,460,533	4,479,125	4,488,348
4,369,242	4,463,227	4,480,069	4,488,385
4,376,775	4,463,349	4,481,111	4,488,686
4,379,528	4,464,069	4,481,384	4,488,892
4,393,317	4,464,336	4,481,498	4,488,893
4,399,997	4,465,662	4,481,539	4,489,150
4,400,568	4,465,913	4,481,902	4,489,198
4,401,596	4,466,246	4,481,941	4,489,206
4,408,676	4,466,615	4,481,962	4,489,446
4,408,903	4,466,906	4,482,221	4,489,573
4,415,484	4,467,382	4,482,378	4,489,617
4,419,298	4,469,513	4,482,575	4,489,679
4,421,654	4,470,065	4,483,120	4,490,226
4,422,869	4,470,292	4,483,312	4,490,251
4,424,115	4,470,757	4,483,686	4,490,361
4,424,963	4,470,789	4,483,742	4,490,475
4,425,616	4,470,812	4,483,782	4,490,478
4,426,696	4,471,400	4,483,835	4,490,567
4,431,495	4,471,732	4,484,571	4,490,685
4,432,854	4,471,893	4,484,723	4,490,810
4,432,942	4,472,199	4,485,427	4,491,115
4,434,022	4,472,282	4,485,474	4,492,192
4,434,141	4,472,397	4,486,112	4,492,335
4,438,950	4,472,805	4,486,282	4,492,764
4,440,123	4,473,469	4,486,291	4,493,363
4,440,736	4,474,238	4,486,336	4,493,701
4,440,906	4,474,508	4,486,914	4,495,319
4,442,298	4,475,234	4,487,096	4,495,958
4,444,800	4,475,689	4,487,233	4,496,749
4,446,045	4,475,943	4,487,309	
4,446,132	4,475,955	4,487,323	
4,447,738	4,476,031	4,487,335	

Disclaimers

4,199,574.—*Howard J. Schaeffer,* Richmond, Va. METHODS AND COMPOSITIONS FOR TREATING VIRAL INFECTIONS AND GUANINE ACYCLIC NUCLEOSIDES. Patent dated Apr. 22, 1980. Disclaimer filed Mar. 22, 1985, by the assignee, *Burroughs Wellcome Co.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,247,962.—*Charles P. Hall,* Muir Beach, Calif. WAVELESS WATERBED MATTRESS. Patent dated Feb. 3, 1981. Disclaimer filed Oct. 12, 1984, by the assignee, *Monterey Manufacturing Co.*

Hereby enters this disclaimer to claims 10 and 11 of said patent.

4,283,989.—*Peter P. Toulios,* Oakbrook; and *Kenneth D. Hartman,* DeKalb, Ill. DOPPLER-TYPE PROJECTILE VELOCITY MEASUREMENT AND COMMUNICATION APPARATUS, AND METHOD. Patent dated Aug. 18, 1981. Disclaimer filed Mar. 25, 1981, by the assignee, *Ares, Inc.*

Hereby enters this disclaimer to all claims of said patent.

Dedication

3,885,626.—*Walter W. Gale,* Houston; *Thomas L. Ashcraft, Jr.;* and *Rhoderick K. Saunders,* Baytown, Tex. OIL RECOVERY PROCESS UTILIZING HIGHER ALKYL TOLUENE SULFONATE. Patent dated May 27, 1975. Dedication filed Feb. 28, 1985, by the assignee, *Exxon Production Research Co.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 13, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-12-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-28-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-03-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-20-81
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-1-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-20-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-05-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-25-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-21-83

Expiration of patents: The patents within the range of numbers indicated below expire during April 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,375,529 to 3,381,302, inclusive

Plant Patents ..... Numbers 2,802 to 2,810 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,889
HEAT EXCHANGER

Manfred Nonnenmann, Schwieberdingen, and Helmut Bardong, Stuttgart, both of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr, Stuttgart, Fed. Rep. of Germany

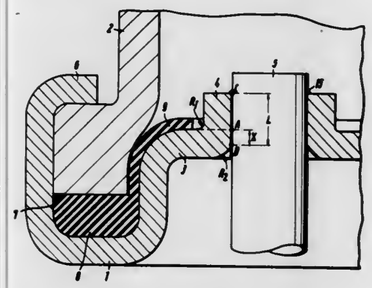
Original No. 4,305,459, dated Dec. 15, 1981, Ser. No. 114,649, Jan. 23, 1980. Continuation of Ser. No. 518,147, Oct. 25, 1974, abandoned. Application for reissue Jun. 9, 1983, Ser. No. 502,749

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1973, 2353442; May 31, 1974, 2365476

Int. Cl.³ F28F *9/16*

U.S. Cl. 165—173

12 Claims



8. A solderless heat exchanger comprising:

a header compartment having a substantially planar wall having upper and lower surfaces, wherein at least one passage is formed in said wall comprising a portion of said wall in which the entire thickness of the wall is bent to define a curved portion and an internal cylindrical portion of said wall, said curved portion merging into said internal cylindrical portion along a line of intersection extending about said passage;

a finned tube passing through said wall and being seated in said passsage by expansion of said tube such that said tube is surrounded by and contacts said internal cylindrical portion of said wall, and wherein the line of intersection of said curved portion with said internal cylindrical portion occurs at a point B lying between planar extensions, at said tube, of said upper and lower surfaces of said header compartment wall.

Re. 31,890
FREEZING MOULD BAG

Erling Vangedal-Nielsen, Kirke Vaerloesevej 67, DK-3500, Vaerlose, Denmark

Original No. 4,181,285, dated Jan. 1, 1980, Ser. No. 872,023, Jan. 24, 1978. Application for reissue Aug. 20, 1981, Ser. No. 294,804

Claims priority, application Denmark, Jan. 25, 1977, 309/77

Int. Cl.³ B28B *7/34, 7/06*

U.S. Cl. 249—61

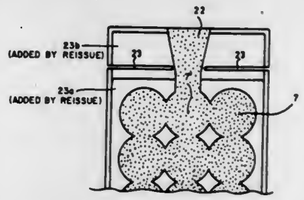
25 Claims

1. A disposable freezing mould bag for receiving and retaining therein liquid to be frozen into a plurality of objects suitable for human consumption, and for being destroyed to gain access to the frozen objects, the mould bag comprising: first and second generally rectangular opposed sheets of thin and flexible [plastics] *plastic* material defining the walls of the mould bag, said opposed sheets having top edges, bottom edges and side edges, and being flat and lying in contact with one another prior to the bag being filled with liquid; said first and second opposed sheets being heat sealed at a plurality of positions spaced over selected portions of the sheets, with the exception of defined unsealed portions for receiving the liquid to be frozen;

the unsealed portions in a lower generally rectangular portion of the bag defining a plurality of interconnected compartments of substantially the same configuration, the compartments being interconnected by channels of reduced cross-sectional area, the walls of the compartments being defined by said opposed sheets, and being in substantial contact with each other prior to filling of the bag and each being distended away from the other by the liquid to be frozen after filling of the bag, said first and second opposed sheets being of a thickness so as to be rupturable at said unsealed compartments to facilitate removal of the frozen objects from the bag; [and]

the unsealed portions in an upper generally rectangular portion of the bag defining a *central* filling channel *having side edges substantially equally spaced from a filling channel axis and from side edges of the bag and* extending from *an opening at* the top edge of the bag to at least one of said compartments so that liquid entering the opening of said filling channel flows into, distends, and fills all of the compartments; *and*

cuts formed in an area of the bag immediately above the compartments in the lower portion of the bag, the cuts extending inwardly from each of the side edges of the bag and terminating at points spaced outwardly of the side edges of the filling



channel so that first and second substantially rectangular upper portions are defined between said cuts and the top edges of said first and second opposed sheets, the upper portions being positioned on respective sides of said filling channel and extending transversely outwardly relative to the axis of the filling channel to the opposite side edges of the sheets, said upper portions extending in the direction of said filling channel axis between a first transverse plane passing through the opening of said filling channel and a second transverse plane spaced from said first transverse plane along the filling axis and passing through said cuts in the area immediately above the compartments, said outwardly extending first and second upper portions being foldable downwardly along transverse folding lines to define opposed wing means separate from the lower portion of the bag containing the compartments, said wing means being sufficient in transverse length to permit the wing means to be tied together in a knot so that the tied wing means completely close the filling channel once the bag is filled with liquid to be frozen;

said bag being flat when unfilled, adapted to receive liquid through said filling channel to all of said compartments to bulge the walls of the compartments due to the presence of the liquid, and *adapted* to form a frozen mass defined by all of said compartments and unsealed channel areas therebetween, said frozen mass in the channels between compartments being readily breakable when the compartments are ruptured to gain access to the frozen objects in the compartments.

Re. 31,891

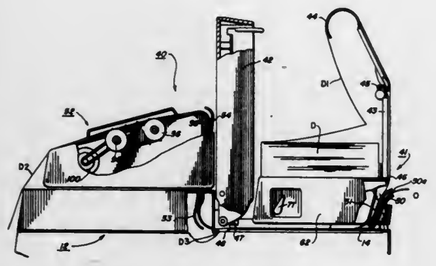
PLATEN MODULE FOR COMPUTER FANFOLD REPRODUCTION

Donald R. Tickner, Pittsford, and Robert E. Kalvitis, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Original No. 4,264,200, dated Apr. 28, 1981, Ser. No. 75,919, Sep. 17, 1979. Application for reissue Mar. 4, 1982, Ser. No. 354,684

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—75 **6 Claims**



6. In a reproduction machine having a document handling apparatus adapted to handle either individual documents, or document material in the form of a computer fanfold web consisting of a plurality of frame sections, the machine including an exposure platen on which said frame sections are positioned and a register element adjacent one side of the platen for locating an edge of each frame during copying thereof, the combination of:

a tractor assembly detachably mounted adjacent the document handling apparatus,

a tractor motor and drive thereof mounted in said tractor assembly and actuable upon the web to advance the same and effecting the location of a corresponding edge of each of the frames being reproduced adjacent the registration element,

a storage module removably mounted on the machine and having a tray positioned vertically above the platen adapted to support a quantity of the folded web thereon in readiness for the reproduction of frames therein,

a first guide means cooperable with the web for guiding the web during movement thereof from said tray, and between the same and the platen located therebelow,

a second guide means for receiving the web after the same has moved between the storage module and the platen and guiding the same to said tractor assembly and into cooperation with said tractor motor and drive for conveyance thereby.

Re. 31,892

Patent Not Issued For This Number

Re. 31,893

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hiroshi Sugita; Shizuo Saito, both of Hachioji; Ryosuke Sato, and Kiyoshi Yamashita, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Original No. 4,355,100, dated Oct. 19, 1982, Ser. No. 226,243, Jan. 19, 1981. Application for reissue Jul. 14, 1983, Ser. No. 513,799

Claims priority, application Japan, Jan. 16, 1980, 55-3163

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—544 **6 Claims**

1. A color photographic material having a light-sensitive silver halide emulsion layer coated on a support, which comprises

(1) a DIR compound which releases a diffusive development-inhibiting substance, said substance having an amino group, by a coupling reaction with an oxidation product of an aromatic primary amine developing agent (DIR compound (I)) and

(2) a DIR compound which releases a diffusive development-inhibiting substance, said substance having no amino group, by a coupling reaction with an oxidation product of an aromatic primary amine developing agent (DIR compound (II)).

Re. 31,894

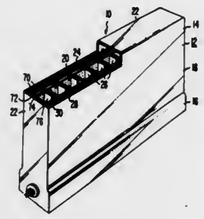
MODULAR GUIDED BEAM FLAT DISPLAY DEVICE

Kenneth D. Peters, Merritt Island, Fla., and Charles H. Anderson, Rocky Hill, N.J., assignors to RCA Corporation, New York, N.Y.

Original No. 4,145,633, dated Mar. 20, 1979, Ser. No. 796,337, May 12, 1977. Application for reissue Apr. 17, 1980, Ser. No. 141,070

Int. Cl.³ H01J *29/46*

U.S. Cl. 313—422 **14 Claims**



1. A display device comprising

an evacuated envelope having spaced, substantially parallel front and back walls and spaced, substantially parallel support walls extending between and substantially perpendicular to the front and back walls, said support walls forming a plurality of parallel channels extending along said front and back walls,

a separable metal tip compressed between the front wall and each of said support walls and extending along the support wall, [each of said tips having a thickness at the support wall substantially equal to the thickness of the support wall and tapering to a thinner thickness at the front wall.] and

means preventing movement of each of said tips in a direction transversely of the channels so as to maintain the metal tips against the support walls.

Re. 31,895

NMR SPECTROMETER WITH SUPERCONDUCTING COIL HAVING RECTANGULAR CROSS-SECTION WIRE

George D. Kneip, Jr., Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Original No. 4,213,092, dated Jul. 15, 1980, Ser. No. 879,291, Feb. 21, 1978. Application for reissue Sep. 12, 1983, Ser. No. 485,983

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—319 **15 Claims**

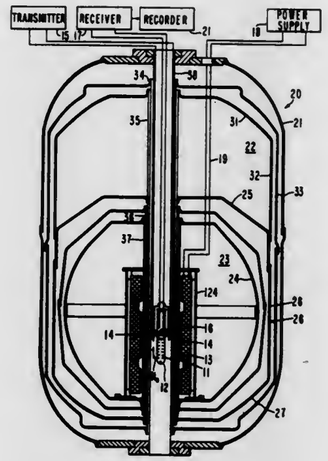
1. An NMR spectrometer for testing a sample comprising

a transmitting coil for applying an rf field to the sample,

a receiver coil coupled to the sample for deriving a signal indicative of the NMR properties of the sample,

a solenoid coil having a longitudinal axis about which the coil is wound and a central core in which said transmitting and receiver coils and said sample are positioned, said coil applying a homogeneous DC magnetic field to the sample,

said coil being formed of superconducting wire having a rectangular cross-section, said wire being formed of a non-superconducting metal having a relatively low room temperature *electrical conductivity, said* material surrounding *said* superconductor material having a small enough cross-sectional area that a magnetic field resulting from current flowing in the superconductor material has a relatively constant location relative to the cross-section of the wire, said wire being wound as a plurality of helices each of which is concentric with the coil longitudinal aixs, immediately adjacent helices having oppositely directed pitches and faces that abut substantially against each other, adjacent turns of the same helix having faces that abut against each other.



Re. 31,896

CHART RECORDERS

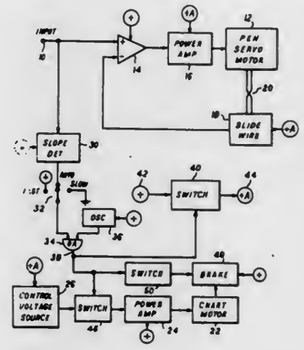
David J. Lowe, Sheffield, England, assignor to National Research Development Corp., London, England

Original No. 4,215,351, dated Jul. 29, 1980, Ser. No. 944,559, Sep. 21, 1978. Application for reissue Jan. 21, 1982, Ser. No. 400,546

Claims priority, application United Kingdom, Jun. 4, 1977, 41486

Int. Cl.³ G01D *15/24, 9/00, 15/16*

U.S. Cl. 346—136 **25 Claims**



18. A chart recorder, comprising:

an input terminal for receiving an electrical signal, a value of which is to be recorded; and

recorder circuitry connected to the input terminal, the recorder circuitry including:

first drive means for moving a length of record medium relative to a recording member; and

second drive means connected to said input terminal for relatively moving the recording member across the record medium to a position dependent on the said value of the input signal;

at leat one of said drive means including a drive motor provided with a velocity control circuit comprising a memory circuit having an input connected to said motor through a first switch and an output connected to a comparator which also receives a motor control signal, the comparator output being applied to said motor through a second switch and a power amplifier, wherein said first and second switches are closed alternately.

PLANT PATENTS

GRANTED MAY 21, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,470

MINIATURE ROSE PLANT

Cecelia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 3, 1983, Ser. No. 519,962
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by its soft shell pink blooms and vigorous growth habit, easy to propagate from cuttings, with flowers borne both singly and in sprays of 3 to 5 or more.

5,471

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 30, 1983, Ser. No. 556,265
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by currant red flowers which are very long lasting on the plant and after cutting, are initially cupped and then become flat upon opening and bloom one to a stem and in small sprays and retain their color upon aging.

5,472

RED DELICIOUS APPLE TREE—JENRED CULTIVAR

Philip J. Jenkins, deceased, late of Yakima, Wash. (by Zona G. Jenkins, legal representative), assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed May 13, 1983, Ser. No. 494,553
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—35 **1 Claim**

1. A new and distinct variety of spur-type Red Delicious apple tree substantially as illustrated and described, characterized by the ability to form attractive conic shaped fruit having conspicuous dark red stripes over a bright red ground color and a general similarity to its parent described in U.S. Plant Pat. No. 2,816, but being distinct therefrom by the ability of its fruit (a) to color approximately 15 days earlier, and (b) to color more completely each year in spite of environmental conditions which do not favor the fruit coloring of Red Delicious apples.

5,473

NECTARINE TREE, SUNECTTWELVE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Nov. 25, 1983, Ser. No. 555,190
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, broadly characterized by its general resemblance to the Fantasia Nectarine Tree (unpatented), of which it is a seedling, but from which it is distinguished as to novelty by its fruit having a substantially greater amount of overall red blush on a brighter yellow ground color, fewer cleft sutures, and a rounder shape of fruit, particularly the apex thereof.

5,474

PEACH TREE (JUNE MAID)

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Dec. 13, 1982, Ser. No. 445,445
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree as illustrated and described, which is large size, upright growth and a regular and productive bearer of firm yellow flesh, clingstone fruit with good eating and shipping quality; the fruit is further characterized by having a high degree of attractive red skin color and ripening with Gemfree Peach (U.S. Plant Pat. No. 1,409), but having more consistant production and fewer split pits.

5,475

CHRYSANTHEMUM PLANT NAMED SILVERADO

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 24, 1983, Ser. No. 526,085
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., named Silverado, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; white ray floret color; diameter across face of capitulum ranging from 50 to 65 mm. at maturity; uniform ten week flowering response; tall plant height when grown single stem; 10 to 15 cm. peduncles on open, normally terminal sprays, and slow development of male sterile green discs.

PATENTS

GRANTED MAY 21, 1985

ERRATA

For CLASS	See PATENT NO.
057–243	4,517,793
057–304	4,517,794
062–323	4,517,799
123–003	4,517,926
030–166	4,518,022
156–054	4,518,034
285–047	4,518,175
412–037	4,518,296
430–527	4,518,354
525–079	4,518,515
514–012	4,518,586
514–019	4,518,587
514–058	4,518,588
514–027	4,518,589
514–029	4,518,590
514–155	4,518,594
514–178	4,518,595
514–232	4,518,596
514–228	4,518,597
514–212	4,518,598
514–255	4,518,599
514–340	4,518,601
514–332	4,518,602
514–352	4,518,603
514–340	4,518,604
514–383	4,518,605
514–197	4,518,606
514–399	4,518,607
514–420	4,518,608
514–448	4,518,609
514–516	4,518,610
514–470	4,518,611
514–457	4,518,612
514–513	4,518,613
514–002	4,518,614
428–067	4,518,761

PATENTS

GRANTED MAY 21, 1985

GENERAL AND MECHANICAL

4,517,685
RETRO-REFLECTIVE ATTACHMENT FOR WEARING APPAREL
Gary M. Lesley, Mankato, Minn., assignor to Head Lites Corporation, Mankato, Minn.
Continuation-in-part of Ser. No. 399,826, Jul. 19, 1982, abandoned. This application Apr. 8, 1983, Ser. No. 483,192
Int. Cl.³ A41D *1/00;* A42B *1/24*
U.S. Cl. 2—170 **3 Claims**



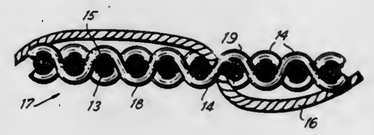
1. A band-like safety item for wear about a portion of the body, comprising:
an elastic band of absorbent material expandable between relaxed and stretched conditions, said band being of predetermined width and having inside and outside surfaces;
a flexible but substantially inelastic strip of retro-reflective material of predetermined length circumferentially secured about at least a portion of the outside surface of said band; and
said retro-reflective strip being of substantially narrower width than said band and being secured along opposite edges thereof to said band while substantially fully stretched so that said strip is ruffled when said band is not fully stretched to enhance reflectivity and thus visibility of the wearer under conditions of poor visibility.

4,517,686
POLYPEPTIDE
Erkki I. Ruoslahti, Olivenhain, and Michael D. Pierschbacher, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.
Filed Aug. 4, 1982, Ser. No. 405,239
Int. Cl.³ A61F *1/00;* A61K *37/00;* C07C *103/52;* C07G *7/00*
U.S. Cl. 3—1 **7 Claims**

1. A composition consisting essentially of a polypeptide exhibiting a cell-attachment activity having the formula: H-Ile-Gly-Gln-Gln-Ser-Thr-Val-Ser-Asp-Val-Pro-Arg-Asp-Leu-Glu-Val-Val-Ala-Ala-Thr-Pro-Thr-Ser-Leu-Leu-Ile-Ser-Trp-Asp-Ala-Pro-Ala-Val-Thr-Val-Arg-Tyr-Tyr-Arg-Ile-Thr-Tyr-Gly-Glu-Thr-Gly-Gly-Asn-Ser-Pro-Val-Gln-Glu-Phe-Thr-Val-Pro-Gly-Ser-Lys-Ser-Thr-Ala-Thr-Ile-Ser-Gly-Leu-Lys-Pro-Gly-Val-Asp-Tyr-Thr-Ile-Thr-Val-Tyr-Ala-Val-Thr-Gly-Arg-Gly-Asp-Ser-Pro-Ala-Ser-Ser-Lys-Pro-Ile-Ser-Ile-Asn-Tyr-Arg-Thr-Glu-Ile-Asp-Lys-Pro-Ser-Gln-Met-OH, in substantially pure form.

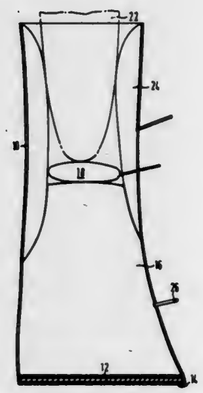
2. A prosthetic device designed to have a surface in contact with endothetial, fibroblastic cells or the like where the likelihood of immune system rejection could be lessened by enhanced attachment of the cells to the prosthetic device having a surface to which there is linked a polypeptide having the formulas: H-Ile-Gly-Gln-Gln-Ser-Thr-Val-Ser-Asp-Val-Pro-Arg-Asp-Leu-Glu-Val-Val-Ala-Ala-Thr-Pro-Thr-Ser-Leu-Leu-Ile-Ser-Trp-Asp-Ala-Pro-Ala-Val-Thr-Val-Arg-Tyr-Tyr-Arg-Ile-Thr-Tyr-Gly-Glu-Thr-Gly-Gly-Asn-Ser-Pro-Val-Gln-Glu-Phe-Thr-Val-Pro-Gly-Ser-Lys-Ser-Thr-Ala-Thr-Ile-Ser-Gly-Leu-Lys-Pro-Gly-Val-Asp-Tyr-Thr-Ile-Thr-Val-Tyr-Ala-Val-Thr-Gly-Arg-Gly-Asp-Ser-Pro-Ala-Ser-Ser-Lys-Pro-Ile-Ser-Ile-Asn-Tyr-Arg-Thr-Glu-Ile-Asp-Lys-Pro-Ser-Gln-Met-OH.

4,517,687
SYNTHETIC WOVEN DOUBLE-VELOUR GRAFT
William J. Liebig, Hohokus, N.J., and Dennis Cummings, County Claire, Ireland, assignors to Meadox Medicals, Inc., Oakland, N.J.
Filed Sep. 15, 1982, Ser. No. 418,149
Int. Cl.³ A61F *1/00, 1/24*
U.S. Cl. 3—1.4 **13 Claims**



1. A tightly-woven, low-porosity prosthesis, to which tissue can adhere, comprising:
a woven double-velour fabric material formed from a warp yarn and a fill yarn and having loops formed from loop yarns about the fill yarns, the yarns being of a yarn material to which growing tissue can adhere;
the warp yarn being one of untexturized, unshrunk yarn and texturized, shrunk yarn, said fabric having loops of said texturized yarn on both surfaces thereof for facilitating adherence of tissue to said prosthesis.

4,517,688
ARTIFICIAL LEG FOR OCCASIONAL USE
Denis R. W. May, Esher, and James N. Hiddleston, London, both of England, assignors to J. D. Hanger & Company Limited, London, England
Filed Aug. 2, 1983, Ser. No. 519,782
Claims priority, application United Kingdom, Aug. 2, 1982, 8222242
Int. Cl.³ A61F *1/68*
U.S. Cl. 3—2 **1 Claim**



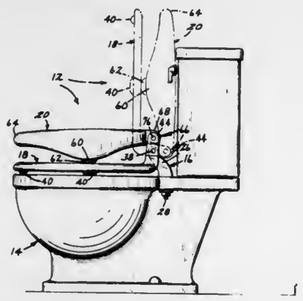
1. An inflatable lower limb for use by amputees comprising: an outer cover of relatively inextensible material defining the shape of the leg and having a pad of rigid material at its lower end defining the shape of the foot; and an inner member within and separate from said relatively inextensible outer cover and comprisng a plurality of independently inflatable compart-

ments welded together, said inner member including an inflatable shin compartment contacting the rigid pad and being of upwardly convergent profile, a separately inflatable inner spacer compartment between the upper end of said shin compartment and the patient's stump, and a further separately inflatable annular socket compartment that surrounds the patient's stump and said shin compartment and extends downwardly in overlapping relation around the upper end of said shin compartment to resist bending of the limb at the false joint at the patient's stump.

4,517,689
TOILET SEAT

John T. Smith, 230 Barry Ave. S., Minneapolis, Minn. 55391, and John R. Smith, 5401 Cambridge Ave., St. Louis Park, Minn. 55426

Filed Mar. 10, 1982, Ser. No. 356,832
Int. Cl.³ A47K *13/26, 13/12*
U.S. Cl. 4—235 **6 Claims**

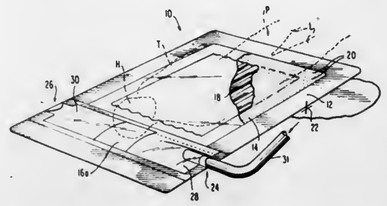


1. A toilet seat for attachment to a toilet bowl comprising:
(A) a base member having a bottom, a pair of generally parallel side portions extending upwardly from said bottom and a top face between said side portions, said base member including means for attachment to the toilet bowl, and a generally horizontally disposed aperture in each of said side portions;
(B) a first seat member having a major portion generally shaped so as to rest upon and be supported by the toilet bowl, and having a minor portion extending generally upwardly from said major portion at the peripheral edge thereof, said minor portion including a pair of spaced apart risers, each having a first generally horizontally disposed aperture and second generally horizontally disposed aperture thereabove;
(C) means disposed in each of said first apertures of said minor portion and said apertures of said side portions for pivotally fastening said first seat to said base member with said side portions located between said risers;
(D) a second seat member having a top and bottom surface and being pivotally mounted on said risers at said second apertures, said second seat member being capable of pivoting from a generally upright position to a generally horizontal position wherein at least a portion of said bottom surface rests atop said first seat member, and wherein the maximum dimension from said top to bottom surfaces of said second seat member is greater than the thickness of said first seat member, so that when said second seat member is in the horizontal position the effective height of the toilet seat is increased.

4,517,690
AIR PALLET HAVING MULTIPLE ENTRY INTEGRATED AIR INLET VALVES

Jack Wegener, Rte. #2, Box #195, Preston, Md. 21655

Filed May 21, 1984, Ser. No. 612,117
Int. Cl.³ B65G *7/06;* A61G *7/08*
U.S. Cl. 5—81 R **6 Claims**



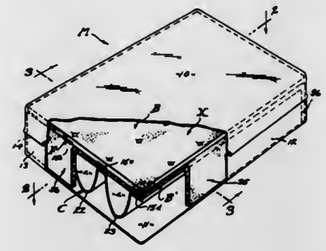
1. An air pallet for the frictionless movement of a load supported by a generally rigid planar backing member over an underlying generally planar fixed support surface, said air pallet comprising top and bottom walls defining a plenum chamber, at least said bottom wall being formed of a thin flexible sheet material, said bottom wall including a portion defined by the footprint of the load having a plurality of closely spaced small diameter pin hole type perforations opening directly into the plenum chamber, air dispersion means for insuring air flow throughout the plenum chamber when the air pallet is under load at the time of air pressurization of the plenum chamber, means for controlling pillowing of the flexible sheet material to permit jacking of the backing member and the load sufficient to allow the air pallet to accommodate surface irregularities of the load support surface and the backing member while preventing ballooning of the thin flexible sheet material, air inlet means opening to the plenum chamber for permiting low pressure air flow pressurization of the plenum chamber for jacking the load and for subsequent discharge through the perforations to create an air film between the bottom wall and the fixed support surface, the improvement wherein:
said air inlet means comprises a pair of thin flexible material strips extending internally of said top and bottom walls, being of a given length, each strip having one outer lateral edge sealed to a respective one of said top and bottom walls along said edge, and being free of said other wall at said edge at least along a portion thereof to form, at the non-sealed edge portion, an air inlet opening to the interior of said air pallet along a given periphery, and wherein the length of said strips are such that their inner ends, remote from the air inlet openings, intersectingly overlap each other, such that insertion of a wand bearing air under pressure into one of said inlet openings causes automatically, as a result of the air entry blast, the overlapped portion of one of said strips to press against a given one of said upper or lower walls to effectively and immediately close off the air inlet opening not receiving said wand, thus sealing off said non-used inlet opening prior to movement of the air into said plenum chamber, thereby facilitating air dispersion throughout the plenum chamber, jacking of the load and the creation of the thin film air bearing beneath the bottom wall sheet and the underlying generally rigid support surface.

4,517,691
MOTION DAMPING SYSTEM FOR WATER BED MATTRESSES

Raymond M. Phillips, 2566 Tuna Canyon Rd., Malibu, Calif. 90290

Filed May 1, 1981, Ser. No. 259,461
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—450 **20 Claims**

1. In combination, a flotation mattress comprised of an envelope of supple sheet material with a top body supporting panel and a bottom panel joined thereto by vertical side walls when filled with liquid, and a free floating wave motion damping unit detached from and adapted to seek a proper operating position interiorly of the mattress envelope; said floating wave motion damping unit including, a flexible frame of low density material for substantial bouyancy and having side members closely conforming to a plan configuration defined by the side walls of the mattress envelope, a pad of flexible batting carried by the frame and engageable with the top body supporting panel at

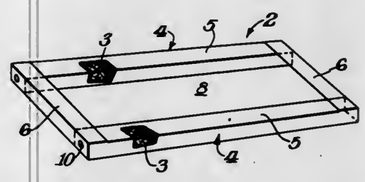


the interior of said envelope, flexible batting hanging freely from the side members of said flexible frame and juxstaposed to the side walls of the mattress envelope to reduce reflected wave motion, and curtain means of supple sheet material having a weight per volume greater than water and hanging freely from the frame in tube form with opposite ends opening closely to the side walls of the mattress for flow restriction and the entrapment of liquid therein so as to retard wave motion over the bottom of the mattress when depressed by downward displacement of the supporting panel to engage the bottom of the mattress.

4,517,692
ANTI-DECUBITUS WATERFLOATATION SYSTEM

Peter Vogel, Lausanne, Switzerland, assignor to Ardo International Marketing, Switzerland

Filed Mar. 3, 1983, Ser. No. 471,587
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—451 **3 Claims**

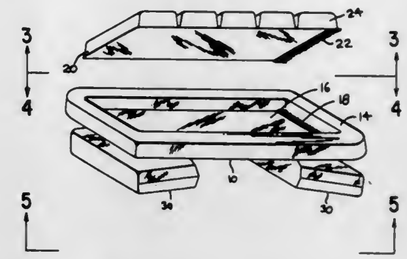


1. A one piece, integral waterproof frame and basin apparatus for anti-decubitus waterfloatation comprising longitudinal side frame members fabricated of a highly compressible plastic foam material which is heat sealed into plastic side compartments each said compartment having at least one air escape opening to permit the compression of the foam frame members for storage and shipping, thereby reducing the total volume of the frame to a fraction of its uncompressed volume, and having a plastic bottom and end members forming, together with said frame members, said watertight frame and basin apparatus.

4,517,693
BODY SUPPORT APPARATUS

Eric A. Viesturs, Southbury, Conn., assignor to Connecticut Artcraft Corporation, Naugatuck, Conn.

Filed Feb. 21, 1984, Ser. No. 581,918
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—451 **3 Claims**

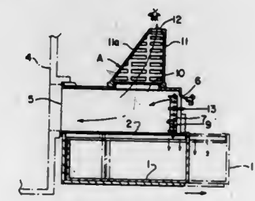


1. Body support apparatus comprising:
a flat rectangularly shaped member adapted to be on top of a rectangular mattress in a hospital bed;
a body supporting structure on the upper surface of said member, said structure including at least one hollow element rising above said upper surface and filled with a fluid selected from the class of fluids which consists of air and water; and
a separate flexible pocket disposed below the lower surface of said member adjacent one selected end thereof for removably receiving and enclosing an end of the mattress adjacent said selected end, said pocket being secured to said lower surface by a line of seal which is narrow to permit the pocket to be flexible and easy to fit, said line being elongated in the transverse direction of said member and extending over almost the entire width, each end of said line terminating in a short leg which extends longitudinally along said member away from said selected end, said line being disposed intermediate the transverse center line of said member and said selected end, said pocket extending in width along the entire width of said member and extending in length from the free ends of said legs to the selected end of said member whereby said pocket holds the member in position and prevents said member from sliding downward toward the other end of the mattress when the adjacent mattress end is raised.

4,517,694
POLLEN GATHERING DEVICE

Soon Y. Hong, 23-528-Ho, 147 Hoe Hyun-Dong 1-Ga, Chung-Ku, Seoul, Rep. of Korea

Filed Nov. 1, 1983, Ser. No. 547,499
Claims priority, application Rep. of Korea, Nov. 1, 1982, 82-8615
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—4 R **3 Claims**



1. A pollen gathering device adapted to be connected with a

beehive comprising, as three individual main components thereof which can be readily assembled together,

a chamber containing a top aperture and a side aperture, said side aperture containing a pollen gathering panel, and defining an inlet means to the chamber,

an outlet means comprising side wall portions and a top portion, said outlet means being operatively and removably associated with said top aperture, and

a pollen collecting means operatively and removably associated with a lower portion of said chamber, whereby said pollen gathering device can be readily assembled and disassembled as desired.

4,517,695

METHOD AND APPARATUS FOR BALANCING OF OUT-OF-BALANCE FORCES IN CENTRIFUGES OR COMBINED WASHING MACHINES-SPIN DRIERS

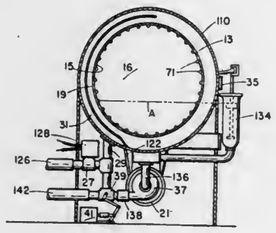
Ernst H. Hoffmann, Im Defdahl 311, 4600 Dortmund 1; Hans F. Arendt, Industriestrasse 32, 7126 Sersheim, both of Fed. Rep. of Germany; Leonhard Spiewok, Zielackerstrasse 19, CH-8304 Wallisellen, and Jakob Rettich, Kilchbergstrasse 129, CH-8038 Zürich, both of Switzerland

Filed Oct. 18, 1982, Ser. No. 435,033

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141901

Int. Cl.³ D06F *23/02, 33/02*

U.S. Cl. 8—158 **13 Claims**



1. A method for balancing of out-of balance forces in a centrifuge drier or a combined washing machine-spin drier with a drum having a substantially horizontal rotation axis comprising:

accelerating the drum of the drier to a first rotation speed at which the objects to be dried cling substantially to the drum against the force of gravity;

measuring the value of the out-of-balance force at said first rotation speed;

calculating the resulting out-of-balance force at a final rotation speed of the drum from the measured value of the out-of-balance force at the first rotation speed;

presetting a maximum out-of-balance force at the final rotation speed;

accelerating the drum to said final rotation speed if the calculated resulting out-of-balance force does not exceed a preset maximum out-of-balance force at the final rotation speed;

accelerating the drum to a second rotation speed being lower than the final rotation speed if the calculated resulting out-of-balance force exceeds the preset maximum out-of-balance force, and substantially maintaining the rotation speed in the region of said second rotation speed for a certain dwell time, which time is sufficient for a decrease of the out-of-balance force to such a degree that, at the final rotation speed, the maximum out-of-balance force is not exceeded, and after said time, accelerating the drum to the final rotation speed.

4,517,696

SYSTEM AND METHOD FOR FORMING CUSTOM-MADE SHOE INSERTS

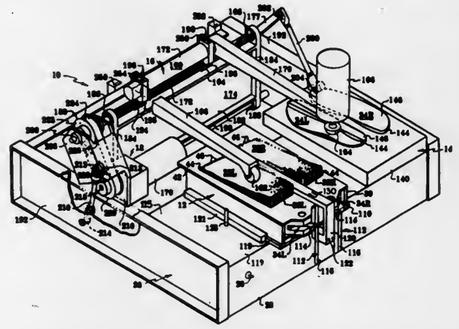
Vern R. Schartz, Boulder Creek, Calif., assignor to AMFIT, Inc., Sunnyvale, Calif.

Division of Ser. No. 286,245, Jul. 23, 1981, Pat. No. 4,449,264.

This application May 17, 1984, Ser. No. 611,109

Int. Cl.³ A43D *9/00;* **A61F** *3/00*

U.S. Cl. 12—1 R **6 Claims**



1. Apparatus for forming an impression of the contour of the undersurface of a person's foot, said apparatus comprising:

an array of pin elements movable between retracted and extended positions;

said pin elements being arranged in columns with adjoining pin elements in each column being provided with asymmetric contacting surfaces;

a plurality of separator members each disposed between adjacent columns of the pin elements; and

means for yieldingly urging the pin elements against the undersurface of the person's foot.

4,517,697

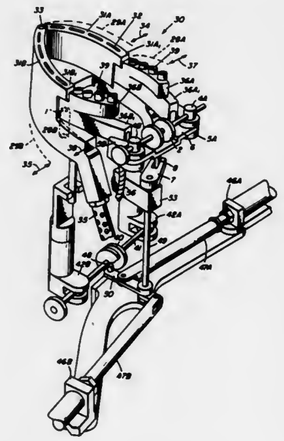
ADHESIVE APPLICATOR

Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Oct. 14, 1983, Ser. No. 541,850

Int. Cl.³ B05C *5/04, 5/02*

U.S. Cl. 12—10.5 **12 Claims**



1. In a footwear forming machine wherein a footwear upper assembly comprising a footwear upper draped about a last and an inner sole at the bottom of the last is presented to the machine for applying adhesive and wiping of the lasting margin,

an inner sole support to receive the footwear upper assembly;

means for stretching and forming the upper about the last;

means for wiping the upper margin against the inner sole; and

an adhesive applicator mechanism that comprises two extruder sections having respective toe ends and free ends operable to apply adhesive to the bottom of the inner sole respectively near each edge of the toe portion of the footwear upper assembly, the two extruder sections being pivotally adjustable at their toe ends about a single member pivot between positions wherein the free ends thereof are positioned closer to one another to accommodate small footwear sizes and wider apart to accommodate larger footwear sizes to permit application of the adhesive close to the edge of said inner sole, the upper margin being thereafter wiped against the inner sole;

said extruder sections having adhesive opening means extending from respective toe ends and said machine having said pivot member rotatively and directly connecting said toe ends to each other and to said machine for adjustable convergence or divergence of said extruder sectlons to accommodate pointed shoe widths.

4,517,698

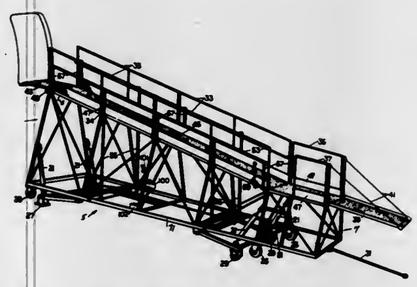
CARGO HANDLING RAMP

Thomas A. Lamp'l, and Randall W. Eby, both of 8140 SW. 58 Ave., Miami, Fla. 33143

Filed Jan. 5, 1983, Ser. No. 438,392

Int. Cl.³ E01D *15/10, 19/10*

U.S. Cl. 14—72.5 **11 Claims**



1. A cargo handling ramp comprising:

(a) a frame including an elongated walkway disposed along an upper portion thereof and said walkway including a higher end and a lower end,

(b) a plurality of legs extending substantially from said walkway downwardly and terminating at a lower frame portion,

(c) roller means secured in movably supporting relation to said frame and beneath said lower frame portion and disposed and structured to accommodate movement of said ramp,

(d) a position locking means connected to said frame and structured to secure said ramp against lateral movement over a surface on which it is mounted,

(e) incline adjusting means connected to said frame substantially adjacent said lower end of said walkway an including means for positioning said incline adjusting means into frame supporting relation relative to the surface on which said ramp is mounted, said incline adjusting means disposed and structured for selective raising and lowering of the lower end relative to the surface, whereby an inclined, angular orientation between said higher end and lower end may be varied,

(f) braking means comprising two rub rails each having an elongated configuration and disposed in substantially parallel, spaced apart relation and extending along the length of said walkway on opposite sides thereof, said rub rails movably connected to said frame and positionable relative to one another into and out of engaging relation to carriers traveling along said walkway, and

(g) said braking means further compirising means to normally position said rub rails into the constricting relation to carriers traveling along the length of the walkway between said rub rails.

4,517,699

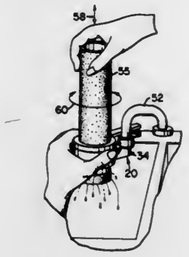
PAINT ROLLER CLEANING APPARATUS

Ronald E. Petricka, Wyoming, Minn., assignor to Deluxe Innovations, Inc., Wyoming, Minn.

Filed Apr. 19, 1984, Ser. No. 602,143

Int. Cl.³ B08B *3/00*

U.S. Cl. 15—104.04 **8 Claims**



1. A roller cleaning apparatus for cleaning a roller pad of a roller, comprising:

(a) an annular sleeve having an outer surface and an inner surface adapted to have an interference fit with the roller pad;

(b) liquid passage means within said sleeve intermediate of said inner and outer surfaces;

(c) liquid entry means interconnected to said liquid passage means, said liquid entry means including a threaded cylindrical portion adapted for threaded attachment of the cleaning apparatus to a source of water or other liquid, said threaded cylindrical portion having a substantially parallel orientation with respect to said annular sleeve;

(d) liquid outlet means on the inner surface of said annular sleeve communicating with said liquid passage means; and

(e) a plurality of spaced, axially directed scrubber elements positioned circumferentially about the inner surface of said annular sleeve along at least a portion of the longitudinal extent of the inner surface.

4,517,700

ADJUSTABLE SCRAPER TOOL

Joseph G. Pinto, Salisbury, Md., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 438,138, Nov. 1, 1982,. This application Aug. 15, 1984, Ser. No. 640,912

Int. Cl.³ B05C *17/00*

U.S. Cl. 15—105 **5 Claims**

1. An adjustable scraping and sanding tool including a housing, an adjustable handle operatively connected thereto and a pad releasably attached to the housing,

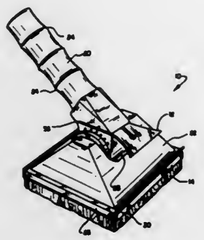
the housing having a bottom wall about the periphery of the housing, the wall sized for releasably receiving a painting or a sanding pad,

the housing having a generally prismatoidal configuration and a substantially centrally positioned undercut, the housing including a handle shaft substantially within the centrally positioned undercut but being exposed for reception of the handle,

the handle shaft including a retaining pad having a diameter greater than the diameter of the shaft, the handle shaft

further including a thumbwheel with an internally threaded opening, the handle shaft having a threaded portion along its length, spaced from the retaining pad to threadedly engage the thumbwheel, whereby the thumbwheel is rotatable on the shaft toward and away from the retaining pad in order to compressively retain the handle, the thumbwheel being substantially within the undercut but exposed therefrom,

the handle including a shaft through-hole for rotatable reception of the shaft between the retaining pad and the thumbwheel, at least one locking protrusion on one of the retaining pad and the handle and a plurality of grooves in the other for mating reception of the retaining pad and the handle,



the handle further having a receiving slot for close reception of a scraper,

a scraper closely received in the receiving slot,

the pad including a clip-on support member so that the pad may be releasably attached to the bottom walls of the housing whereby

the angle of the handle of the tool may be manually adjusted relative to the housing with one hand by rotating the thumbwheel away from the retaining pad until the protrusion no longer engages a groove, angularly moving the handle relative to the housing and then rotating the thumbwheel so that it moves toward the retaining pad thus causing the protrusion to move into one of the grooves.

4,517,701

TOOTHBRUSHES FOR CLEANING SULCULAR AREAS OF THE TEETH

Roy E. Stanford, Jr., 6829 Tennyson Dr., McLean, Va. 22101

Continuation of Ser. No. 488,627, Apr. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 283,031, Jul. 13, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,570

Int. Cl.³ A46B *9/04*

U.S. Cl. 15—106 **16 Claims**





13. A toothbrush comprising:

a stem defining a handle portion and a bristle-supporting portion, said bristle-supporting portion extending generally in a plane;

said bristle-supporting portion curving along its length in said plane to conform to a curved dental profile and comprising generally oppositely disposed bristle-supporting surfaces;

said toothbrush further comprising bristles extending from each of said oppositely disposed surfaces, at least some of the bristles extending from each of said surfaces being canted inwardly toward the inside of said curve.

4,517,702

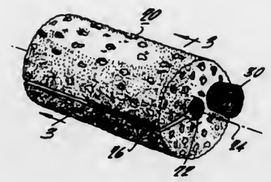
ENDOSCOPIC SCRUB DEVICE

Frank W. Jackson, Twillingate, R.D. 3, Mechanicsburg, Pa. 17055

Filed Jun. 29, 1983, Ser. No. 508,792

Int. Cl.³ B08B *9/02*

U.S. Cl. 15—114 **3 Claims**



1. A self-contained cleaning device for use in combination with endoscopic instruments having a tube portion for insertion into a body orifice, comprising: a generally cylindrical shaped sponge body having an axially aligned central bore sized to fit the tube portion of said instrument, said sponge body having a slit extending parallel to and in communication with said bore to permit said body to be fitted over said tube, said slit being narrow enough so that slight gripping pressure on said body is adequate to close said slit to cause sponge body contact with the complete circumference of said tube, said body further being sized to present a radial thickness outward from said bore at least equal to the diameter of said tube, and a brush extending outwardly from an end of said sponge body adapted to clean instrument portions.

4,517,703

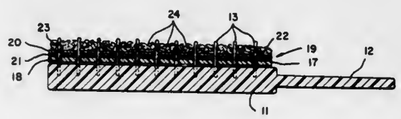
HAIR BRUSH WITH CLEANING FEATURE

Eric J. Koke, Pleasant View Dr., Apt. 28-B, Piscataway, N.J.

Filed May 24, 1984, Ser. No. 613,433

Int. Cl.³ A46B *17/06*

U.S. Cl. 15—246 **2 Claims**



2. A hair brush having a cleaning feature, comprising:

a base having a multiplicity of parallel bristles extending from a bristle-holding surface thereof, each bristle having a generally cylindrical stem and an enlarged free end;

a foraminous guide plate disposed adjacent said bristle-holding surface of said base and having holes through which corresponding ones of said bristles extend, each hole in the guide plate being larger in diameter than the stem of the corresponding bristle and smaller in diameter than the enlarged end of said corresponding bristle, so that the guide plate can slide along the bristles but cannot be removed therefrom; and

a cleaning plate having a layer comprising resilient material with bristle-receiving holes aligned in a pattern conforming to the pattern of said bristles,

each hole in said resilient layer being adapted to tightly engage the corresponding bristle,

said cleaning plate also having a relatively rigid support sheet with bristle-receiving holes coaxial with the holes in said resilient layer,

said bristle-receiving holes being larger in diameter than the enlarged ends of the bristles,

said resilient layer being secured to the support sheet,

whereby the cleaning plate can be entirely removed from the bristles for cleaning purposes, while the guide plate can be brought adjacent the free ends of the bristles to facilitate re-installation of the cleaning plate thereon.

4,517,704

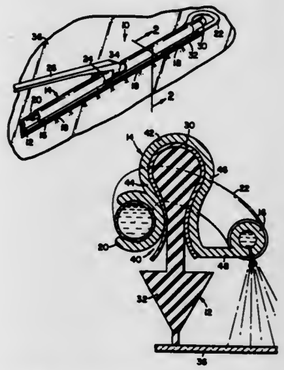
WINDSHIELD WASHER APPARATUS

Robert D. Benson, 2521 Cedar Ave., White Bear Lake, Minn. 55110

Filed Jun. 17, 1983, Ser. No. 505,193

Int. Cl.³ B60S *1/48*

U.S. Cl. 15—250.04 **13 Claims**



11. A removable windshield washer attachment apparatus for a rigid wiper blade, the wiper blade having a relatively straight rigid spline portion and a flexible wiper blade portion attached thereto for making contact with the surface of the windshield, the washer attachment comprising:

(a) an elongated elastic snap-on element having a generally U-shaped cross section, said snap-on element being resiliently deformable between a deformed state and a normal state, said snap-on element being in said deformed state when attached to the spline of the wiper blade, said snap-on element tending to return to said normal state from said deformed state, said snap-on element engaging the spline of the wiper blade to remain removably attached thereto and oscillate therewith, said elongated snap-on element being in a substantially parallel contiguous relationship to the wiper blade when releasably attached thereto; and

(b) a hollow tubular element of one piece with said elongated snap-on element extending longitudinally along one side of said elongated snap-on element, said hollow tubular element defining a plurality of apertures therein, said tubular element including a fluid access port enabling fluid communication therewith by a source of cleaning solution.

4,517,705

SUCTION DEVICE FOR CLEANING TEXTILE FLOOR COVERINGS

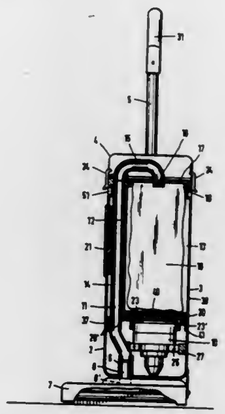
Nikolaus Hug, Romanshorn, Switzerland, assignor to Düpro AG, Romanshorn, Switzerland

Filed Jun. 2, 1983, Ser. No. 500,568

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220644

Int. Cl.³ A47L *5/30*

U.S. Cl. 15—351 **35 Claims**



1. In a suction device for cleaning textile floor coverings comprising a housing enclosing a dust chamber for receiving a dust filter bag, a cover detachably mounted on said housing in a sealed air-tight manner, a cleaning device for floor coverings having a flexibly supported suction air connector sleeve, said housing surrounding a tubular stub for receiving said suction air connector sleeve, electrical components disposed in said housing, a dust air canal connecting said tubular stub and said dust chamber, the improvement comprising:

a base member forming part of said housing wherein said base member is in fluid communication with said dust chamber and houses at least a portion of said electrical components and at least a portion of said dust air canal;

support member means for detachably and supportably connecting said base member to said cleaning device; and

said base member includes said tubular stub detachably receiving said suction air connector sleeve of said cleaning device;

whereby said cleaning device is easily removable from said base member.

4,517,706

ADJUSTABLE CABINET HINGE HAVING A BIASED CATCH

Karl Lautenschläger; Horst Lautenschläger, both of Reinheim, and Gerhard Lautenschläger, Brensbach, all of Fed. Rep. of Germany, assignors to Karl Lautenschlager KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,577

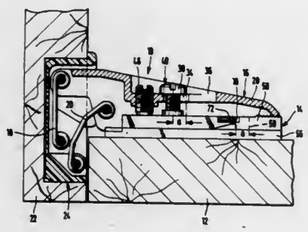
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1982, 3223937; Jan. 17, 1983, 3301279

Int. Cl.³ E05D *7/04*

U.S. Cl. 16—238 **17 Claims**

1. A cabinet hinge having a supporting-wall-related part in the form of an elongated supporting arm of substantially channel-shaped cross section; a door-related part; hinge link means pivotally coupling said two parts so as to be pivotable about a pivot axis; a mounting plate adapted to be fastened to a supporting wall surface of a cabinet and having a bottom surface for placement on said supporting wall, a top surface essentially parallel to the supporting wall when mounted thereto, and also

having at least one side surface essentially perpendicular to said top surface; said supporting arm being held releasably and adjustably in at least two coordinate directions on said mounting plate, said supporting arm having supporting-arm side walls at least partially straddling said mounting plate and also having a web joining said supporting-arm side walls, said web having a slot which is provided at a transition area remote from said hinge link with an access opening; a mounting screw having a head, and a shank which is driven into said mounting plate and is adapted to pass from said access opening into said slot; said supporting arm also being provided at a distance from said slot in said web with a tap through which may pass a headless screw for bearing against said mounting plate; a recess in at least one of said supporting-arm side walls and having an



abutment running substantially at right angles to said top surface of said mounting plate and facing toward the hinge link end of said supporting arm; a resilient catch element disposed in the area of said mounting plate opposite said recess, said catch element being biased to a position in which it protrudes beyond said at least one side surface of said mounting plate, said catch element having a movable tip pointing in a direction away from said hinge link, said abutment and said tip being in such a position that upon a longitudinal displacement of said supporting arm on said mounting plate parallel to said top surface, said abutment and tip will snap into engagement with one another when said shank of said mounting screw driven into said mounting plate arrives in said transition area from said slot to said access opening.

4,517,707

APPARATUS FOR RECOVERING MEAT OF SMALL CRUSTACEANS

Yakov I. Braginsky; Igor V. Gultsev; Viktor A. Mitrofanov; Nikolai A. Nikitushkin, and Yury F. Yaroshenko, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Exerimentalno-Konstruktorsky Institut Prodovol-Stvennogo Mashinostroenia, Moscow, U.S.S.R.

PCT No. PCT/SU82/00023, § 371 Date Mar. 1, 1983, § 102(e) Date Mar. 1, 1983, PCT Pub. No. WO83/00080, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 1, 1982, Ser. No. 474,662

Claims priority, application U.S.S.R., Jul. 8, 1981, 3312681; Jun. 18, 1982, 3448077

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—71 **7 Claims**

1. Apparatus for recovering meat of small crustaceans, comprising:

a shell breaking-up mechanism for breaking up the shells of the crustaceans, said shell breaking-up mechanism comprising:

a loading device for receiving the crustaceans,

breaking-up means downstream of said loading device for breaking up the shells of the crustaceans,

a first chamber downstream of said breaking-up means for receiving from said breaking-up means the crustaceans having broken-up shells, said first chamber having a bottom and an outlet adjacent said bottom, and

means for providing a working liquid to said first chamber;

an intermediate mechanism for separating easily rising components of said crustaceans having broken-up shells, said intermediate mechanism comprising:

an intermediate chamber downstream of said first chamber for receiving from said outlet of said first chamber said crustaceans having broken-up shells, via a conduit extending between said outlet of said first chamber and an inlet of said intermediate chamber,

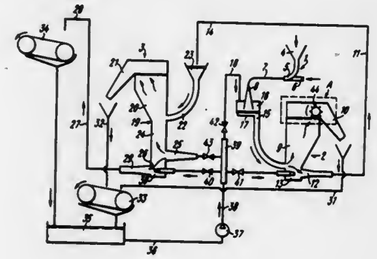
said inlet being disposed adjacent a bottom of said intermediate chamber and below said outlet of said first chamber,

a working liquid substantially filling said intermediate chamber,

said intermediate chamber having a lower outlet disposed in generally opposed relationship to said inlet,

jet means for providing a stream of a working liquid directed from a region adjacent said inlet toward said lower outlet, for transporting to said lower outlet those portions of said crustaceans which do not easily rise, and

surfaced component removing means disposed adjacent a top of said intermediate chamber for withdrawing from said intermediate chamber via an upper outlet thereof easily rising components of said crustaceans which rise



in the working liquid disposed within said intermediate chamber; and

a meat-separating mechanism for separating the meat from other portions of said crustaceans, said meat-separating mechanism comprising:

loading means downstream of said intermediate chamber for receiving from said lower outlet of said intermediate chamber those portions of said crustaceans which do not easily rise,

a conduit for transporting, from said lower outlet of said intermediate chamber to said loading means, those portions of said crustaceans which do not easily rise, said conduit having an outlet end adjacent said loading means and disposed above said loading means and above the level of liquid within said intermediate chamber,

a third chamber for receiving from said loading means those portions of said crustaceans which do not easily rise, and

meat-separating means including a working liquid operatively associated with said third chamber for separating the meat of said crustaceans from other portions of said crustaceans disposed within said third chamber.

4,517,708

CLAMP

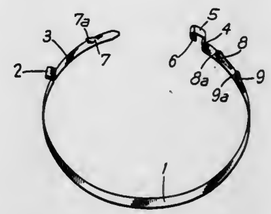
Lionel Calmettes, Ozoir la Ferriere, and Michel André, Romorantin Lanthenay, both of France, assignors to Etablissements Caillau, Billancourt, France

Continuation of Ser. No. 421,322, Sep. 22, 1982,. This application Feb. 1, 1984, Ser. No. 575,488

Claims priority, application France, Nov. 6, 1981, 81 20870

Int. Cl.³ B65D *63/00;* **F16L** *47/00*

U.S. Cl. 24—20 CW **3 Claims**



1. Re-usable clamp, comprising a wound metal strap having two ends, said strap having two radial lugs projecting externally from the strap at respective ends thereof, the first of said lugs extending into a portion which follows the periphery of the clamp to constitute a sole-plate extending at least over the distance separating the two lugs, the second lug is formed with an extension arranged substantially parallel to the periphery of the clamp and situated at a distance therefrom nearly equal to the height of one lug, said extension of the second lug being provided with a short hooked portion having a free end constituting a clamping member for fastening over the first lug in a tightened position of the clamp, said sole-plate including an extending part extending from the first lug and having at least one asperity projecting externally from an end of said extending part to cooperate with a bearing element of a recess correspondingly formed in the strap behind the second lug, wherein the asperity in said extending part is spaced from said first lug by a length greater than the length from the extension of the second lug to the bearing element of said recess behind the second lug, whereby when said clamp is in a closed but untightened position said asperity engages said bearing element of said recess and when said clamp is in said tightened position said asperity does not engage said bearing element of said recess.

4,517,709

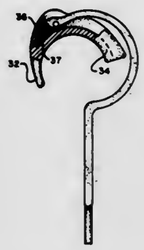
CLOTHES HANGER HOOK

Norbert Arentsen, O'Fallon, and Frances A. Rentchler, P.O. Box 15, Belleville, Ill. 62222, assignors to Frances Rentchler, Belleville, Ill.

Continuation of Ser. No. 428,887, Sep. 30, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 630,308

Int. Cl.³ A47J *51/095*

U.S. Cl. 24—232 R **8 Claims**



1. A clothes hanger hook comprising a fixed part having a shank with a round tang as an extension of one end thereof and adapted to extend through a hole in a hanger, and a crook with a free end and spring mounting means on said free end at the other end of said shank, and a movable keeper hinged to said crook, said movable keeper having a nose part with an outer end normally extending in a substantially continuous arc with said crook beyond said free end, wings extending from said nose part and straddling at least a part of said crook and a bottom wall bridging between and connecting said wings below an adjacent surface of said crook, a seat in said nose part, a spring with one end mounted on said seat and another end on said crook end spring mounting means, and means behind the crook end spring mounting means for hinging said movable keeper to said crook, said spring biasing the nose part of said movable keeper in a direction toward said shank but spaced therefrom and the bottom wall of said movable keeper into engagement with only a portion of an inner surface of said crook to limit the travel of said keeper nose toward said shank, the hinge axis of said hinging means being inboard of a hanger rod on which the hook rests, whereby the weight of the hanger and its load increases the bias of the keeper toward the closed position.

4,517,710

FASTENING CLIP FOR MOTOR VEHICLE TRIM

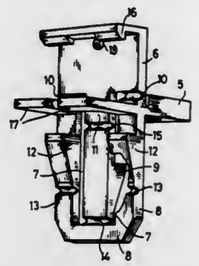
Norbert Beckmann, Cologne, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 429,584

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142061

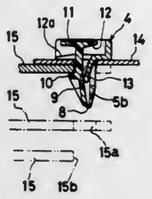
Int. Cl.³ A44B *17/00;* **F16B** *13/04*

U.S. Cl. 24—453 **4 Claims**



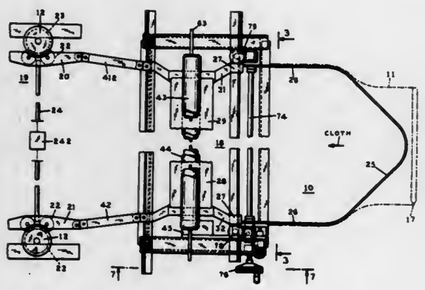
1. A fastening clip for fastening a component which has a hole through it to a surface which also has a registering hole through it, the clip comprising a rectangular body, a supporting plate and a tongue extending generally at right angles to the plate, the tongue including first and second expanding arms and first and second locking arms, the first expanding arm beng connected by an integral bending area to the second locking arm and the first locking arm being connected by an integral bending area to the second expanding arm, the first expanding arm and second locking arm being partially separated by slots from the first locking arm and the second expanding arm to permit relative movement therebetween and the end of the second locking arm remote from the supporting plate being connected by an integral bending area to the second expanding arm, the first expanding arm being extended from the rectangular body through the supporting plate and connected to the supporting plate by an integral bending area positioned between the rectangular body and the supporting plate so that the extension can be bent about the last mentioned bending area to cause the first and second locking arms and the first and second expanding arms to form between them a four-sided shape.

4,517,711
PLATE CLAMPING DEVICE
Toshie Tanaka, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Mar. 29, 1983, Ser. No. 469,190
Claims priority, application Japan, Mar. 4, 1982, 57-29560[U]
Int. Cl.³ A44B 17/00
U.S. Cl. 24—453 4 Claims



1. A device for clamping two plates closely with their surfaces placed on each other comprising: a hollow open sided head consisting of three interconnected wall portions and inner flat projections integrally connected to the lower edge of each wall portion forming a base for said head; two opposite depending side elements each provided with a one-way side catch, said elements integrally connected to each other with a cross waist; a tongue integrally connected at one end thereof to the intermediate inner flat portion of said base in the form of a cantilever and projecting slantingly in a longitudinal hollow channel defined by the opposite depending side elements; a leg extension integrally connected to said cross waist by a hinge of reduced thickness said leg provided with a front catch on its back; and a foot integrally connected to the end of the leg extension, whereby the leg is subjected to the repulsive resilient force of the tongue when the leg is folded around the hinge to fit in the longitudinal hollow channel.

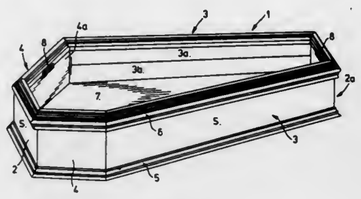
4,517,712
METHOD FOR AUTOMATICALLY DETECTING AND ORIENTING THE EDGE OF A TUBULAR KNITTED FABRIC
Edmund A. Diggle, Jr., Oradell, N.J., and Andrew P. Cecere, Valley Stream, N.Y., assignors to Samcoe Holding Corporation, New York, N.Y.
Filed Mar. 15, 1982, Ser. No. 357,972
Int. Cl.³ D06C 5/00; D06H 3/12
U.S. Cl. 26—51.4 7 Claims



1. A process for treating stripe matched tubular knitted fabric wherein the fabric has a longitudinally sewn seam, which comprises
(a) controllably advancing said fabric,
(b) lightly distending the advancing fabric to generally flat two-layer form and to a first width during a rotational orienting stage,
(c) thereafter and as part of a continuous procedure progressively increasing the distention of the advancing fabric to a second and greater predetermined width,
(d) during said rotational orienting stage, adjusting and controlling the position of said seam in relation to the edge of said flat fabric form by externally engaging the fabric across its opposed flat layers and imparting to the advancing fabric layers angularly directional rolling components of advancing movement in a direction at a controllable angle to the longitudinal axis of said advancing fabric tube, and
(e) thereafter treating the tubular fabric and delivering treated tubular fabric.

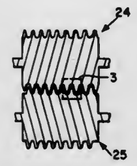
5. A process for treating tubular knitted fabric wherein the fabric has a longitudinal edge demarcation, which comprises
(a) controllably advancing said fabric,
(b) lightly distending the advancing tubular fabric to generally wide flat two-layer form and to a first predetermined width during a rotational orienting stage,
(c) thereafter and as part of a continuous procedure progressively increasing the distention of the advancing fabric to a second and greater predetermined width,
(d) during said orienting stage, engaging substantial upper and lower flat surface areas of said fabric and imparting directional rolling components of driving movement thereto, at a controllable angle to the axis of said advancing fabric for rotationally orienting said advancing fabric tube,
(e) during said orienting stage, the form of said fabric being relatively enlarged in thickness and correspondingly narrowed in width to provide a relatively flat edge area of enlarged dimension in the thickness dimension,
(f) sensing the position of the edge demarcation in the region of said flat edge area,
(g) adjusting said controllable angle in accordance with the displacement of said edge demarcation from a predetermined position, and
(h) thereafter treating said fabric in tubular form and delivering treated tubular fabric.

4,517,713
COFFIN
Sven A. Swallert, 11, rue Michel-Chauvet, 1208 Geneva, Switzerland
Filed Apr. 17, 1984, Ser. No. 601,332
Int. Cl.³ A61G 17/00
U.S. Cl. 27—4 5 Claims



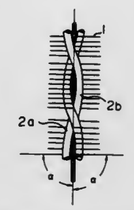
1. Coffin comprising a box having a cover, an upper frame, a lower frame, and an inside fitting, the box having hinged lateral walls permitting its folding to a storage and transportation position in which its height is a fraction of its height in service position, half of the lateral walls being formed of only one flap hinged on one of said frames whereas the other half of the lateral walls are made of two flaps hinged together along a middle line and to each of the frames respectively along directions parallel to said middle line, the walls formed by only one flap comprising locking means for the coffin in service position, the outside periphery of the coffin being covered with a supple and tight envelope covering said lateral walls.

4,517,714
NONWOVEN FABRIC BARRIER LAYER
Scott W. Sneed; Bill R. Schwam, both of Memphis, and Paul E. Gregory, Jr., Germantown, all of Tenn., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 23, 1982, Ser. No. 401,169
Int. Cl.³ D04H 3/10
U.S. Cl. 28—103 8 Claims



1. A process for making a nonwoven fabric barrier layer from at least two plies of hydrophobic microfine fiber webs, the fabric barrier layer having significantly increased liquid strike through resistance without any appreciable loss of air porosity in comparison to the original plies, comprising the steps of:
(a) simultaneously passing at least two abutting plies of hydrophobic microfine fiber webs through a sufficiently constrictive nip between two interdigitating grooved rolls to effect lateral stretching of said webs and light bonding of said webs together;
(b) passing said fabric barrier layer over a means for extending the fabric barrier layer to its fullest resultant width; and
(c) collecting the fabric barrier layer.

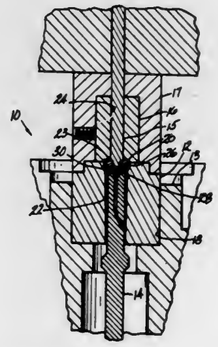
4,517,715
CHENILLE WOVEN OR KNITTED FABRIC AND PROCESS FOR PRODUCING THE SAME
Shusuke Yoshida; Tamotsu Nakajima, both of Otsu, and Miyoshi Okamoto, Takatsuki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Apr. 8, 1983, Ser. No. 483,429
Claims priority, application Japan, Apr. 13, 1982, 57-61410; Jun. 25, 1982, 57-108330; Sep. 9, 1982, 57-157112
Int. Cl.³ D03D 27/18; D02G 3/42
U.S. Cl. 28—144 9 Claims



1. An improved chenille woven or knitted fabric comprising at least a chenille yarn provided with a core portion and an effect portion held by said core portion, said effect portion comprising raised fibers formed by synthetic ultra-fine fibers having a fineness smaller than 0.9 denier, a rising angle α between an axis of a raised fiber and a longitudinal axis of said chenille yarn being not larger than 50°.

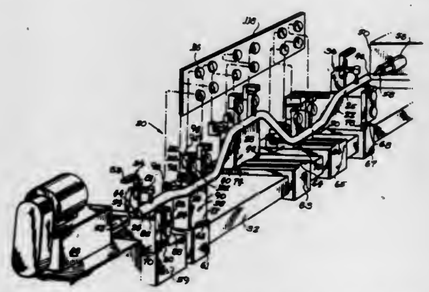
8. A process for the production of an improved chenille woven or knitted fabric utilizing at least a chenille yarn composed of synthetic fibers, comprising forming said fabric from a chenille yarn having a core portion and an effect portion held by said core portion wherein said effect portion comprises raised fine fibers forming a raised fiber portion of said chenille yarn and are composed of ultrafine fibers having a fineness smaller than 0.9 denier and a rising angle α between an axis of said raised fine fibers and a longitudinal axis of said chenille yarn of not larger than 50°, dyeing the woven or knitted fabric and subjecting said woven or knitted chenille fabric to a surface pressing treatment, in the wet condition, after said dyeing.

4,517,716
PRIMER POCKETING METHOD FOR BRASS CARTRIDGE CASES
Gerald E. Eberhart, Bethalto, and Goah T. Sauls, Cottage Hills, both of Ill., assignors to Olin Corporation, Stamford, Conn.
Filed Jan. 31, 1983, Ser. No. 462,627
Int. Cl.³ B21D 51/54; B21K 21/06
U.S. Cl. 29—1.3 4 Claims



1. A method of forming a primer pocket in a metallic cupped cartridge case blank which method comprises the steps of:
a. holding the blank with one side of the base unsupported while simultaneously
b. forcing a punch a sufficient distance partially through the base of the blank from the side opposite said one side with a pressure sufficient to cause the remaining unpunched portion of the base to separate to produce a primer pocket passing completely through said base.

4,517,717
CRANKSHAFT INSPECTION APPARATUS AND METHOD
Elvin O. Gentry, 1419 Towanda St., Bloomington, Ill. 61701
Filed Dec. 5, 1983, Ser. No. 558,422
Int. Cl.³ B21K 1/08
U.S. Cl. 29—6 14 Claims



1. Apparatus for inspecting a crankshaft including a pair of spaced journal portions for formation into journals and at least one throw for entering into a power transfer relationship with another mechanical component, said apparatus comprising:
first holding means for releasably holding one of said journal portions with respect to a first predetermined position;
second holding means for releasably holding the other of

said journal portions with respect to a second predetermined position; and

position detection means for providing indication of out-of-tolerance deviation of the position of said throw from a third predetermined position.

4,517,718

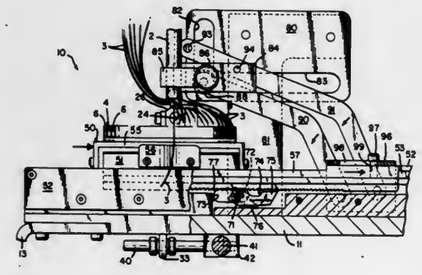
CABLE CLAMPING AND ORIENTING APPARATUS

Keith Johnson, Jr., Manheim, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 298,132, Aug. 31, 1981, abandoned. This application May 3, 1984, Ser. No. 606,541

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—33 M **9 Claims**



1. Apparatus for inserting wires into the wire-receiving portions of terminals in an electrical connector, said connector being of the type having said wire-receiving portions arranged in a row which extends from one end of the connector to the other end thereof, said machine having a stationary frame, insertion tooling in said frame which is reciprocable along a first path, a carriage in said frame which is reciprocable along a second path which extends normally of said first path, connector holding means on said carriage for holding said connector, indexing means for indexed movement of said holder on said second path through said tooling, and a cable clamp for clamping a cable containing wires which are to be connected to terminals, said apparatus being characterized in that:

said cable clamp is movable relative to said insertion tooling from an initial position to a final position, said clamp being in alignment with and spaced from said tooling in said initial position and spaced from a connector in said holding means, said clamp being proximate to said connector in said final position and displaced along said second path from said insertion tooling,

cam means and linkage for moving said clamp during indexing of said connector, said cam means comprising a cam follower carried by said clamp and interengaged with a guide cam effective to move said clamp towards said connector during insertion of the wires to the terminals between one end of said row and a midpoint thereof, and being effective to move said clamp parallel to said connector during insertion of the wires to the terminals between said midpoint and the other end of said row, said linkage comprising a first link arm between said clamp and said carriage, said link arm being pivotally connected to said clamp and pivotally connected to said carriage.

4,517,719

MAGNETIC ROLLS FOR ELECTROSTATIC RECORDING DEVICES

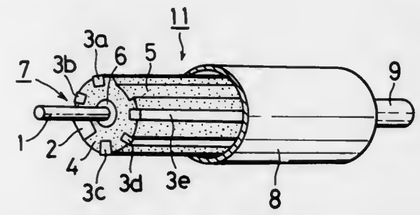
Kunio Okumura, Hachioji; Yasuo Fukuyama, Uji, and Atsuo Tanaka, Yawata, all of Japan, assignors to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan

Filed Apr. 16, 1982, Ser. No. 368,998

Claims priority, application Japan, Apr. 20, 1981, 56-59958; Mar. 12, 1982, 57-39916

Int. Cl.³ B21B *27/00*

U.S. Cl. 29—124 **5 Claims**



1. A magnetic roll for electrostatic recording devices comprising a plurality of magnets integrally set fast with a retaining member at stated portions of the periphery of a roll shaft, each of said magnets extending longitudinally along a line parallel to the roll shaft axis for forming a magnetic force generating part, wherein said retaining member comprises a retaining layer formed of a synthetic resin material having a hardness in the range of 40 to 95 on the Shore Hardness Scale and a strain absorbing groove extending longitudinally along a line parallel to the roll shaft axis at a portion outside said magnetic force generating part for preventing the roll from bending as a result of the difference in thermal strain between the magnetic force generating part of the roll and the non-magnetic part of the roll.

4,517,720

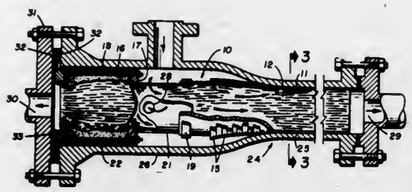
METHOD OF MOUNTING A FLUID SEPARATION MODULE IN A TUBULAR SHELL

Roger S. Otstot, and Charles J. Runkle, both of Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 332,911, Dec. 21, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,364

Int. Cl.³ B21D *53/00*

U.S. Cl. 29—157 R **6 Claims**



1. The method of mounting a fluid separation module in a tubular shell having an enlarged end portion, comprising

(a) providing a module comprised of

(1) a bundle of hollow fiber membranes,

(2) a tube sheet positioned at one end of the bundle of hollow fibers, said fibers extending through the tube sheet,

(3) a resilient sheet having the form of a slit tube, said slit tube normally having an outer diameter greater than the inner diameter of the shell, said slit tube being secured to the tube sheet in a position surrounding the bundle of fibers, and

(4) holding means in contact with the slit tube for confining said slit tube in a cylindrical configuration having an outer diameter smaller than the inner diameter of the shell, and for holding said bundle in a compressed state,

(b) inserting the module into the shell through said enlarged end portion, and

(c) releasing the slit tube from confinement by the holding means to allow said slit tube to expand into contact with the inner surface of the shell.

4,517,721

METHOD OF MAKING A TUBE IN SHEET HEAT EXCHANGER

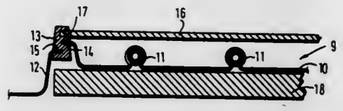
William R. Graham, Cambridge, England, assignor to TI (Group Services) Limited, Birmingham, England

Continuation of Ser. No. 396,064, Jul. 7, 1982, abandoned. This application Sep. 26, 1984, Ser. No. 654,533

Claims priority, application United Kingdom, Jul. 9, 1981, 8121189

Int. Cl.³ B21D *53/08*

U.S. Cl. 29—157.3 C **6 Claims**



1. A method of forming a heat exchanger comprising the steps of forming a sheet of material into a frame and a heat absorbing panel with a tubular element partially embedded therein, deforming the sheet about the tubular element, forming the outer portions of said sheet into a first upwardly extending section, forming said outer portion of said first upwardly extending section into an outwardly extending section and forming the outer portion of said outwardly extending section into a second upwardly extending section, severing said sheet in the central portion of said outwardly extending section to define the outer periphery of said panel and the inner periphery of a frame member, securing an insulative jointing member to the outer periphery of said panel, inverting said frame mebmer and securing the portion of the inverted frame in said insulative jointing member in spaced relationship to said panel.

4,517,722

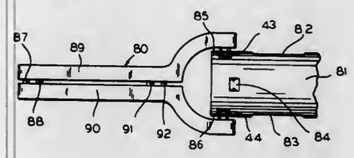
BAR STOCK FEEDING TOOL

Robert J. Cimarusti, 2537 Wood St., and Stanley A. Posinger, 2521 N. Thatcher, both of Rivergrove, Ill. 60171

Filed Oct. 18, 1983, Ser. No. 543,044

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—234 **9 Claims**



1. A tool apparatus for altering the geometric configuration of bar stock feeding equipment and particularly the bar stock feeding conduit member, for the purpose of removing, in a facilitated manner, one or more of a plurality of bar stock feed pads located therewithin said conduit, said tool apparatus comprising:

integrated handle means for consolidated and leveraged operation of said tool apparatus through one or both hands of a user;

said integrated handle means having a first end, and a second end opposite to said first end along the longitudinal axis of said integrated handle means;

pad release means positioned at the first end of said integrated handle means for cooperation with pad maintenance features of said bar stock feeding conduit, said pad maintenance features including alteration slots and prompting apertures possessed by said bar stock feeding equipment;

said pad release means including substantially U-shaped tool forking means for simultaneously encircling said bar stock feeding means so as to position said pad release means at diametrically opposed positions adjacent said pad maintenance features for alternative insertion thereinto towards the opening of said bar stock feeding means, the facilitated maintenance of said bar stock feeding conduit in its said open position and the closing of said bar stock feeding conduit means to its closed position;

said tool forking means emanating outwardly from said first side of said integrated handle means to as to continue in the direction of said first side, to describe an upper tine and a lower tine;

said pad release means further including one or more eccentrically shaped prompting elements positioned along one or more of said lower inner side of said first upper tine and the upper inner side of said second lower tine in substantial longitudinal axial alignment of said prompting elements,

each of said one or more prompting elements being positionable and shaped so as to be capable of insertion into the prompting apertures of said bar stock feeding conduit member so as to be capable of prompting deformation of said conduit member along its alteration slots upon the pivoting of said tool apparatus through said integrated handle means about an axis described through the substantially aligned longitudinal axis of each of the one or more prompting elements;

said simultaneous deformation serving to enlarge the end of said bar stock feeding conduit member to in turn enable the loosening of the positions of two or more bar stock feed pads positioned within the endmost portion of said bar stock feeding conduit member so as to permit the removal, replacement and relocking of such bar stock friction pads within said bar stock feeding conduit member.

4,517,723

DEVICE FOR INSERTING A RESILIENTLY DEFORMABLE ARTICLE INTO A POCKET

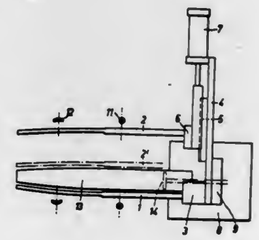
René Tschan, Reinach, Switzerland, assignor to Lonza, Ltd., Gampel, Switzerland

Continuation of Ser. No. 356,460, Mar. 9, 1982, abandoned, which is a division of Ser. No. 194,220, Oct. 6, 1980, Pat. No. 4,346,509. This application Apr. 13, 1984, Ser. No. 600,197

Claims priority, application Switzerland, Aug. 22, 1980, 6341/80

Int. Cl.³ B23P *19/02*

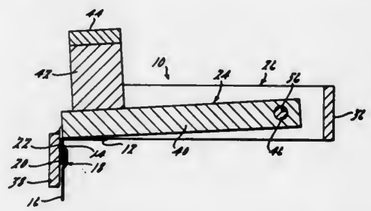
U.S. Cl. 29—235 **43 Claims**



1. A device for inserting a resiliently deformable bouyant insert article into a pocket of a life jacket vest, comprising:

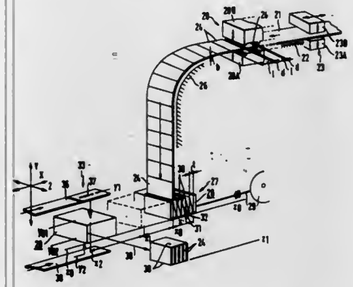
a column;
a holder supported by said column;
an elongated support having two opposed elongated edges, a first elongated support end and a second elongated support end, said first elongated support end being fixedly attached to said column, said second elongated support end being free;
said elongated support being adapted to bend along its length under a load;
an elongated first arm having a fixed first arm end which is fixedly attached to a fixed portion of said column, said elongated first arm extending generally in the same direction as, and at a predetermined distance from, said elongated support;
said elongated first arm having another arm end which is free;
said elongated first arm being adapted to bend along its length under a load;
a second elongated arm having a free second arm end and a fixed second arm end;
a carriage guide fixed to said holder, said carriage guide being adapted to guide motion of said second elongated arm along a generally linear path in a direction which is generally transverse to the direction of extent of said second elongated arm;
said second elongated arm being fixedly attached at said fixed arm end of said second arm to a movable part for movement therewith;
said movable part being slidably supported by said carriage guide;
a means for moving said movable part along said carriage guide;
said second elongated arm being adapted to bend along its length under a load;
said elongated second arm extending generally in the same direction as said elongated first arm;
said elongated second arm being movable with said movable part to a first position by said means for moving, said elongated second arm in said first position being spaced apart from said elongated first arm to receive in abutting contact between said elongated first and second arms the resiliently deformable article in an undeformed condition;
said elongated second arm being movable by said means for moving to a second position closer to said elongated first arm than in said first position;
in said second position the resiliently deformable article being foldingly deformed sufficiently to be received in a pocket; said elongated second arm, said elongated first arm, and said elongated support each being adapted to constrain expansion of the resiliently deformable article and to frictionally grip the resiliently deformable article;
said elongated second arm being movable to a third position spaced further away from said elongated first arm than in said second position, and which is spaced closer to said elongated first arm than in said first position;
the frictional grip on the resiliently deformable article by said elongated first arm, said elongated second arm, and said elongated support being sufficiently reduced in said third position relative to said second position so as to be less than a frictional force between the resiliently deformable article and a pocket;
a center line of said elongated first arm lying generally in a plane of motion defined by said elongated second arm during movement thereof from said first position to said second position;
and said elongated support lying generally within a second plane perpendicular to said plane of motion, said second plane passing between said elongated first arm and said elongated second arm;
in an unstressed condition, said elongated first arm and said elongated second arm are curved along their respective lengths such that their respective free ends are closer together than their respective fixed ends;
and in said second position said elongated first arm and said elongated second arm being stressed away from each other by resistance to deformation of said resiliently deformable article, such that said elongated first arm and said elongated second arm are both substantially straight;
in an unstressed condition, said elongated support is curved along its length toward said plane of motion of said elongated second arm;
and in said second position said elongated support being stressed away from said plane of motion by resistance to deformation of the resiliently deformable article such that said elongated support becomes substantially straight;
at least one of said elongated first arms having a first transverse cross-sectional shape which is generally circular and which occurs from the fixed arm end along said at least one of said elongated arms to a location spaced from the fixed arm end;
the remaining portion of said at least one of said elongated arms having a cross-sectional shape which is concave on one side and convex on the other side;
whereby a resiliently deformable article placed in contact with both the elongated first arm and the elongated second arm in the first elongated second arm position is deformed by movement of the elongated second arm toward the elongated first arm in the second elongated second arm position for insertion into a pocket, the resiliently deformable article being partially released by movement of the elongated second arm to a third position so that frictional resistance between a pocket and the resiliently deformable article, upon removal of the pocket, causes the pocket to retain the resiliently deformable article; and
whereby during a folding operation on the resiliently deformable article between the elongated first arm and the elongated second arm, the folded portion of the resiliently deformable article abuts the elongated support so as to be in frictional contact therewith.

4,517,724
SEAMING TOOL
Elmer M. Gee, 2381 23rd St., Wyandotte, Mich. 48192
Filed Jul. 11, 1983, Ser. No. 512,393
Int. Cl.³ B25B *27/02*
U.S. Cl. 29—275 **4 Claims**



1. A tool for seaming together sheet metal panels wherein a first panel includes a flange forming a right angle with respect to said first panel and a second panel forming a flange receiving channel, said first and second panels oriented at right angles to one another when assembled, said tool comprising,
a guide member forming a bottom surface and forming an open channel extending between a first and second end of said guide member, said guide member having a guide plate located at said first end, said guide plate oriented at a right angle with respect to said bottom surface and extending laterally away from said guide member,
an elongated driving lever having a first and second end and having an upright plate located near said first lever end and a striking head attached to said upright plate, and
pivot means pivotably supporting said driving lever at said second end of said driving lever said driving lever pivotably movable within said channel such that when said guide member bottom surface is brought into contact with said first panel and said guide plate contacts said second panel, a force applied to said striking head is transmitted to said flange through contact therewith causing said first panel flange to be forced into said second panel channel.

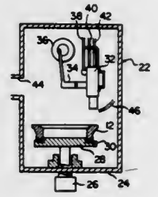
4,517,725
METHOD AND APPARATUS FOR FORMATION OF PACKS OF PUNCHED PLATES USEFUL FOR SPARK EXTINGUISHING
Reiner Augenstein, Halblech/Füssen, Fed. Rep. of Germany, assignor to Otto Bihler Maschinenfabrik GmbH & Co. KG, Halblech/Füssen, Fed. Rep. of Germany
Filed Dec. 29, 1982, Ser. No. 454,234
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1982, 3201401
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—417 **33 Claims**



1. A method for continuously forming individual packs of punched plates particularly for use in spark extinguishing comprising the steps of:
intermittently advancing elongate sheet material to a punching station;
punching from said sheet material at said punching station in a single punching operation a number of punched plates sufficient to form one of said individual packs;
continuously moving said punched plates as an uninterrupted series with mutually abutting terminal edges to a formation member with a feed velocity for forming said number of punched plates into a pack and sequentially depositing said punched plates into said formation member during a pack forming operation; and
continuously moving said formation member with a pack forming speed during said pack forming operation through a given advancing distance in a direction which is essentially perpendicular to the direction in which said punched plates are deposited into said formation member, said feed velocity and said pack forming speed being interdependently controlled such that subsequent plates of said series are arranged side face by side face in the respective pack.

4,517,726
METHOD OF PRODUCING SEAL RING
Naohiko Yokoshima, 2-3-8 Miyanosaka; Nobuyoshi Masumoto, 5-5-1208 Kuzuha-hanazono-cho, and Akira Sui, 2-2-20 Ueno, all of Hirakata-shi, Osaka-fu, Japan
Continuation-in-part of Ser. No. 140,442, Apr. 17, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,378
Int. Cl.³ B23P *17/04*
U.S. Cl. 29—527.4 **6 Claims**

1. A method of producing a seal ring for a floating seal assembly, comprising: forming a seal ring base from a low carbon steel, said seal ring base having an external tapered surface and a sealing portion formed thereon; plasma spraying a cermet material containing WC and Ni on the sealing portion of said seal ring base to form a coated layer of the cermet material thereon using a plasma gun having a tip, the cermet material to be plasma sprayed being introduced at a position outside of said tip of said gun and being semi-fused by a plasma jet before impinging on the sealing portion while carefully controlling a distance between the plasma gun and the sealing

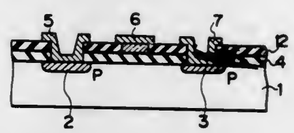


portion so that the coated layer has a porosity of 1% or less; and lapping said coated layer to obtain a finished seal ring product having a plasma sprayed and lapped coating of the cermet material on the sealing portion.

4,517,727
METHOD OF PRODUCING A POROUS BODY FOR ELECTROLYTIC CAPACITOR HAVING A LEAD WIRE
Shigeaki Shimizu; Yoshimi Kubo; Yoshio Arai; Tetsuo Suzuki, and Hitoshi Igarashi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 28, 1983, Ser. No. 509,153
Claims priority, application Japan, Jun. 28, 1982, 57-111102
Int. Cl.³ H01G *9/04, 9/05*
U.S. Cl. 29—570 **8 Claims**

1. A method for producing a porous sintered body for an Al-Ti solid electrolytic capacitor equipped with a lead wire, comprising steps of subjecting a titanium wire to a nitriding treatment, embedding said wire into a mixture of aluminum powder and titanium powder, press-molding the mixtureof said powders with said wire, an sintering the resulting press-molded article.

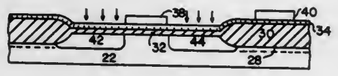
4,517,728
MANUFACTURING METHOD FOR MIS-TYPE SEMICONDUCTOR DEVICE
Morihiro Niimi, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 342,651, Jan. 25, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,399
Claims priority, application Japan, Jan. 27, 1981, 56-9627
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **19 Claims**

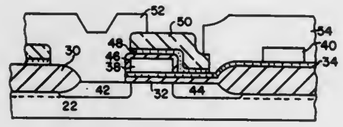


16. A manufacturing method for an MOS-type semiconductor device which comprises:
forming a first oxide layer, a polycrystalline semiconductor layer and a second oxide layer in that order on a semiconductor substrate;
selectively and partially removing said second oxide layer to form windows for source, gate and drain;
forming a nitrified layer so as to cover said second oxide layer and said windows;
removing said nitrified layer except that covering the window for the gate;
removing said polycrystalline semiconductor layer in regions corresponding to said windows for the source and the drain;

removing said second oxide layer;
removing said first oxide layer in said source and drain windows;
forming a doped source region and a doped drain region in the semiconductor substrate and adjacent to the windows for the source and the drain, respectively and converting the remaining polycrystalline semiconductor layer to an insulator except where said nitrified layer is in contact therewith; and
removing said nitrified layer corresponding to the window for gate and providing the respective drain windows with a source electrode, a gate electrode and a drain electrode.

4,517,729
METHOD FOR FABRICATING MOS DEVICE WITH SELF-ALIGNED CONTACTS
Tarsaim L. Batra, Cupertino, Calif., assignor to American Microsystems, Incorporated, Santa Clara, Calif.
Continuation-in-part of Ser. No. 287,388, Jul. 27, 1981, Pat. No. 4,466,172, which is a continuation-in-part of Ser. No. 1,840, Jan. 8, 1979, abandoned. This application Sep. 22, 1982, Ser. No. 421,543
Int. Cl.³ H01L *21/283, 21/318, 29/78, 21/225*
U.S. Cl. 29—571 **17 Claims**



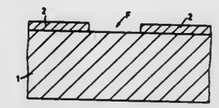


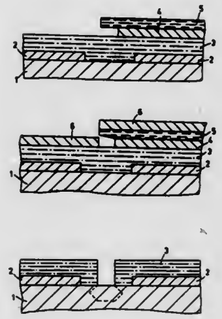
1. A method for fabricating an integrated circuit semiconductor device having a plurality of field effect transistor (FET) elements with self-registering electrical contacts on their source-drain regions and on their device interconnection lines, said method comprising the steps of:
forming a patterned layer of field oxide on a semiconductive substrate of a first conductivity type
to form active areas free from field oxide on the substrate surface for the formation of said FET elements;
forming a relatively thin gate dielectric layer within said active areas;
forming a first layer of protective material covering the top of each said integrated circuit device;
forming a layer of conductive material over the surface of said protective material;
forming a second layer of protective material over said layer of conductive material;
removing that portion of said second layer of protective material except over parts of to-be-formed interconnection lines where electrical contacts are intended;
patterning said layer of conductive material into conductive gate electrodes over said active areas and into interconnection lines over said field oxide regions;
removing said first layer of protective material except those portions of said first protective layer which lie above to-be-formed source-drain regions to which electrical contacts are to be made;
removing that portion of said gate dielectric which is exposed;
forming, within each said active area where said gate dielectric has been removed, doped silicon source-drain regions of a second conductivity type material opposite to said first conductivity type, the boundaries of said source-drain regions being determined by the edge of said field oxide and by the edges of said gate electrodes;
forming a relatively thick third layer of protective material over all exposed areas of said substrate and of said layer of conductive material;
removing the remaining exposed portion of said first protective layer, and the remaining portion of said second protective layer;
removing that portion of said gate dielectric layer which is exposed;
forming, within each said active area where said gate dielectric has been removed, doped silicon source-drain regions of a second conductivity type material opposite to said first conductivity type, the boundaries of said source-drain regions being determined by the edge of said field oxide and by the edges of said gate electrodes;
forming a fourth layer of protective material over the entire device;
forming oversized contact openings through said fourth layer of protective material over said interconnection line and over said source-drain regions where electrical contacts are to be formed;
forming a conductive line pattern on the surface of the wafer extending into said contact openings thereby forming electrical connections with said source-drain regions and with said interconnection lines within said contact openings.

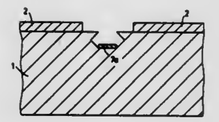
4,517,730
METHOD OF PROVIDING A SMALL-SIZED OPENING, USE OF THIS METHOD FOR THE MANUFACTURE OF FIELD EFFECT TRANSISTORS HAVING AN ALIGNED GATE IN THE SUBMICRON RANGE AND TRANSISTORS THUS OBTAINED
Didier S. Meignant, Emerainville, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 31, 1983, Ser. No. 528,353
Claims priority, application France, Sep. 1, 1982, 82 14944
Int. Cl.³ H01L *39/22*
U.S. Cl. 29—571 **9 Claims**

1. A method of providing a small-sized opening in a substrate, characterised in that the following succession of steps is carried out:
(a) depositing on the substrate a layer of a first lacquer sensitive to radiations of small wave-length, a first layer of a material opaque to these radiations and a layer of a second lacquer sensitive to radiations of larger wave-lengths;
(b) exposing an entire zone of said substrate thus coated to radiation of a larger waver-length through a mask;
(c) dissolving the exposed part of said second lacquer;
(d) attacking said first layer of opaque material not coated with said second lacquer until an under-etching is obtained below said second lacquer over a distance typically less than 1 μm;
(e) depositing a new layer of opaque material by alignment along the exposed edge of said second lacquer;
(f) dissolving remaining portions of said second lacquer;
(g) exposing said layer of first lacquer to radiation of small wave-length;

(h) dissolving said first lacquer exposed to said radiation of small wave-length;

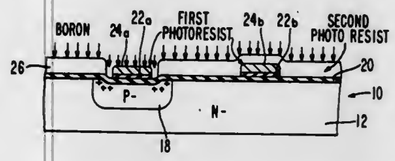






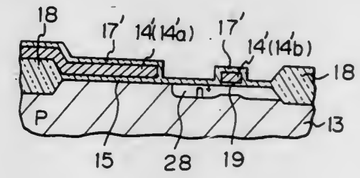
(i) etching said substrate to obtain a small-sized opening; and
(j) dissolving remaining portions of said first lacquer.

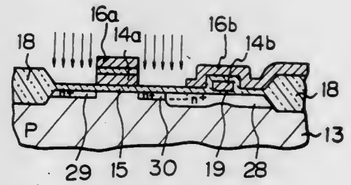
4,517,731
DOUBLE POLYSILICON PROCESS FOR FABRICATING CMOS INTEGRATED CIRCUITS
Mahboob Khan, Milpitas, and Tom Trieu, San Jose, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.
Filed Sep. 29, 1983, Ser. No. 537,188
Int. Cl.³ H01L *21/265, 21/31*
U.S. Cl. 29—571 **10 Claims**



1. In a process for fabricating complementary field effect transistors (FET) wherein a first FET is formed in a well of first conductivity type in a semiconductor substrate of opposite conductivity type, a method for enhancing the field threshold of the first FET comprising:
forming a first layer of insulating material over the well;
forming a second layer of insulating material over a selected portion of the first layer, the selected portion being disposed over the well, but spaced apart from opposing sides of the well;
forming masking material over all of the second layer, and all of the first layer except an intervening region of the first layer between the selected portion and the opposing sides of the well; and
introducing first conductivity type impurity into the intervening region.

4,517,732
METHOD FOR FABRICATING AN EEPROM
Yoshihiro Oshikawa, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Oct. 4, 1983, Ser. No. 538,884
Claims priority, application Japan, Oct. 5, 1982, 57-174776
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **6 Claims**



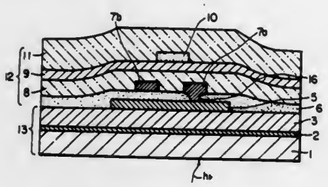


1. A method for fabricating a floating-gate tunnel injection type electrically erasable programmable read only memory, including the steps of:
forming an insulating layer on a semiconductor substrate;
forming a floating gate extending onto the insulating layer, the area under the floating gate defining a tunneling insulating layer; and then
introducing a doping impurity into first and second regions of the substrate, the second region of the substrate comprising the entire region under the tunneling insulating layer on which the floating gate is formed, the first region of the substrate neighboring the second region of the substrate, the doping impurity being introduced into the second region through the first region from above the substrate.

4,517,733
PROCESS FOR FABRICATING THIN FILM IMAGE PICK-UP ELEMENT
Toshihisa Hamano, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Division of Ser. No. 336,991, Jan. 4, 1982, Pat. No. 4,471,371. This application Feb. 22, 1984, Ser. No. 582,642
Claims priority, application Japan, Jan. 6, 1981, 56-162; Jan. 12, 1981, 56-2111
Int. Cl.³ H01L *27/14, 49/02, 21/425*
U.S. Cl. 29—572 **5 Claims**

1. A process for fabricating a thin film image pickup element comprising the steps of:
forming at least a first semiconductor layer on a transparent electrode by glow discharging in ohmic contact with said transparent electrode;

forming an opaque electrode on a portion of said at least first semiconductor layer in ohmic contact with said semiconductor layer;
covering a first insulator film with a contact hole therein on said opaque electrode by photolithography;
forming first and second upper electrodes on said first insulating film so that said first upper electrode is connected through said contact hole to said opaque electrode and said second upper electrode is formed in contact with the



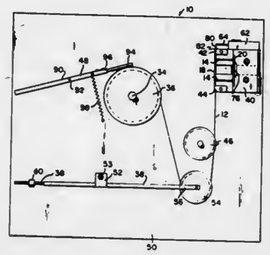
upper surface of said first insulator film adjacent but not in contact with said first upper electrode;
covering a further semiconductor layer on said first and second upper electrodes by a glow discharging process;
covering a second insulator layer on said further semiconductor layer; and
forming on a portion of said second insulator a gate electrode for controlling the conduction of a current channel from said first upper electrode to said second upper electrode.

4,517,734
METHOD OF PASSIVATING ALUMINUM INTERCONNECTS OF NON-HERMETICALLY SEALED INTEGRATED CIRCUIT SEMICONDUCTOR DEVICES
Jacob D. Rubin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 377,288, May 12, 1982, abandoned. This application Aug. 22, 1983, Ser. No. 525,266
Int. Cl.³ H01L *21/88, 21/92, 21/94, 21/56*
U.S. Cl. 29—577 C **3 Claims**

1. In a process of manufacturing a semiconductor device including the steps of forming circuit elements in the body of a semiconductor substrate, depositing an aluminum layer on said circuit elements to form an interconnect pattern for an integrated circuit die, and bonding wires to said integrated circuit die to provide electrical access to said interconnect pattern, a method of passivating said aluminum layer comprising the step of immersing said wire-bonded integrated circuit die in deionized water heated to at least approximately 95° C.

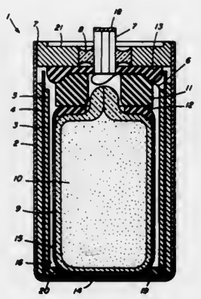
4,517,735
APPARATUS AND METHOD FOR TENSIONING RESISTIVE WIRE
Dennis W. Watkins, King County, Wash., assignor to AirSensors, Inc., Seattle, Wash.
Filed Oct. 28, 1983, Ser. No. 546,368
Int. Cl.³ H01C *17/28*
U.S. Cl. 29—621 **9 Claims**

1. An apparatus for use in the attachment of a length of resistive wire under a preselected tension to wire-supporting end portions of a pair of generally parallel, resilient posts attached to a post support member, comprising:
a spindle for rotatably supporting a spool containing a substantially continuous supply of said resistive wire from which said length of resistive wire to be attached to said resilient posts is obtained;
a brake for applying a rotational drag on said spool at least as great as said preselected tension;
a gravity-actuated tension arm for applying said tension to a portion of the continuous resistive wire extending from said spool, said arm engaging the extending portion of continuous resistive wire and being supported for pivotal motion in a substantially vertical plane, said arm having an adjustable weight for adjusting said preselected tension applied to the wire;
a retainer for releasably holding said post support member to position said pair of resilient posts in a desired location and planar orientation for attachment of said length of resistive wire, said retainer including a first wire guide for positioning of said length of resistive wire substantially transverse to said resilient posts, and further including a lockably adjustable holder for holding said support member and selective longitudinal positioning of said wire-supporting end portions relative to said length of resistive wire;



a pair of releasable wire clamps, one of said clamps being positioned to the outside of each of said posts for selectively clamping said extending portion of said continuous resistive wire;
a second wire guide for positioning of said length of resistive wire in substantially coplanar relation to said resilient posts; and
a tension gauge for measuring the tension on said extending portion of said continuous resistive wire.

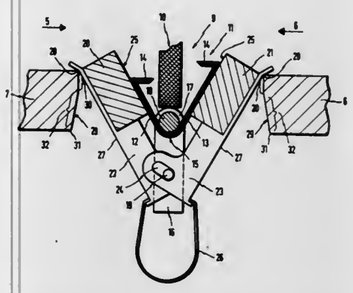
4,517,736
METHOD OF FABRICATION OF AN ELECTROCHEMICAL CELL
Franz Goebel, Sudbury, Mass., assignor to GTE Communications Products Corp., Stamford, Conn.
Filed Mar. 21, 1984, Ser. No. 591,745
Int. Cl.³ H01M *2/12*
U.S. Cl. 29—623.2 **8 Claims**



1. A method for fabricating an electrochemical cell comprising the steps of:
providing a cylindrical housing opened at one end and closed at the other end;
arranging within said housing a concentric arrangement of a porous carbon element, a porous separator and a lithium sheet, and a conductive jumper element connected to said sheet with said porous carbon element abuting said housing;

inserting a container containing a quantity of concentrated electrolyte solution composed of a solute and a first solvent into the center of said concentric arrangement;
providing a cap with a hollow feedthrough member supported by a non-conductive seal;
attaching said jumper element to said feedthrough member;
sealing said cap to the free end of said housing;
introducing a quantity of a second solvent to the interior of said housing through said feedthrough member; and
sealing said feedthrough member.

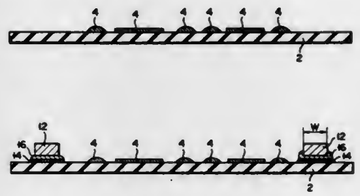
4,517,737
APPARATUS FOR SECURING CONNECTORS TO A FABRIC
Walther Sulzle, Rosenfeld, Fed. Rep. of Germany, assignor to Wilhelm Sulzle, Rosenfeld, Fed. Rep. of Germany
Filed May 20, 1983, Ser. No. 496,415
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219767
Int. Cl.³ B23P *19/00, 11/00*
U.S. Cl. 29—798 **4 Claims**



1. An apparatus for securing a V-shaped connector, having legs of unequal length and inwardly projecting tips, to a flat woven fabric which comprises: a pair of primary jaws; a secondary jaw assembly having a pair of arms pivotally connected by a pivot pin which passes through an elongated slot in each of said arms, said slots permitting said arms to be spaced apart when they are parallel to each other; and a pair of secondary jaws connected to said arms and adapted to press against the legs of said connector; each of said primary jaws having an inner face, said inner face having an upper flat region, said upper flat region being parallel to each other; and wherein said inner face has a lower region inclined outwardly; whereby said upper and lower regions cooperate with said arms to cause to draw together in a predetermined manner when said primary jaws are closed.

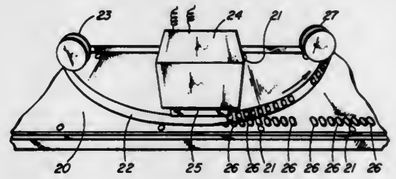
4,517,738
METHOD FOR PACKAGING ELECTRONIC PARTS
Yoshitaka Fukuoka, and Toshiaki Komine, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Apr. 14, 1983, Ser. No. 484,987
Claims priority, application Japan, Apr. 24, 1982, 57-68931
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—840 **11 Claims**

1. A method for packaging electronic parts, comprising the steps of:
forming a ring-shaped welding rib on a multilayer substrate having conductor portions so as to surround those conductor portions over which the electronic parts are to be mounted in a later step;
forming a nonmetallic mask coating on a portion of the welding rib which is subjected to laser radiation in a subsequent step and which extends along the entire circumference of the welding rib;
forming metal films by nonelectrolytic plating on the exposed portion of the welding rib and on the conductor portions;
removing the mask coating, thereby providing a portion of the welding rib which is not covered with the metal film;
mounting the electronic parts on the metal films on some of the conductor portions;
mounting a cap on the welding rib such that a peripheral portion of the cap is placed on the portion of the welding



rib which is not covered with the metal film, the cap having an outer shape substantially the same as the welding rib; and
radiating a laser beam on the contact portion between the welding rib and the peripheral portion of the cap to weld the welding rib and the peripheral portion together, thereby hermetically sealing the electronic parts within a space defined by the multi-layer substrate and the cap.

4,517,739
METHOD FOR MAKING CIRCUIT BOARDS WITH DIE STAMPED CONTACT PADS AND CONDUCTIVE INK CIRCUIT PATTERNS
George V. Lenaerts, London; Eugene W. Charchanko, Thorndale, and Andrejs Dambenieks, Carp, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Nov. 21, 1983, Ser. No. 553,499
Int. Cl.³ H05K *3/10*
U.S. Cl. 29—846 **2 Claims**



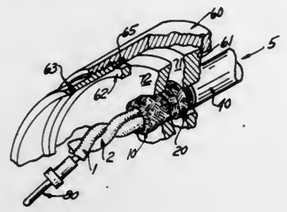
1. A method of making circuit boards, comprising:
feeding a strip of dielectric material along a support surface;
locating said strip of dielectric material by locating means in said strip;
feeding said strip of dielectric material and a strip of copper foil beneath the die of a press, and actuating said die to stamp contact pads from said foil and press the contact pads on said strip of dielectric material at predetermined positions;
removing the foil strip from the strip of dielectric material;
feeding the strip of dielectric material beneath a press having a heated pad and bonding said contact pads on to said strip of dielectric material, feeding the dielectric strip beneath a printing head and printing a circuit pattern on the dielectric material, the circuit pattern connecting with said contact pads; and
feeding the dielectric strip to a press, forming holes through said contact pads and said dielectric material, and cutting individual circuit boards from said strip.

4,517,740

METHOD FOR GROUNDING AND TERMINATING A CABLE

John W. Dyce; Edwin R. Waters, both of Sidney, and Cy E. Sherwood, Bainbridge, all of N.Y., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 383,889, Jun. 1, 1982, Pat. No. 4,447,100.
This application Dec. 12, 1983, Ser. No. 560,622
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **3 Claims**



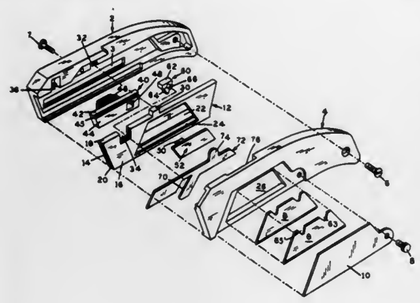
1. A method of grounding and terminating a cable of the type having at least one wire surrounded by an inner and outer metal shield, an inner jacket of dielectric material between the shields and an outer jacket of dielectric material surrounding the outer shield, the method comprising the steps of:
stripping material from the inner and outer jackets to expose a portion of the inner and outer shields;
placing a ferrule around the cable and in contact with the outer shield;
folding the inner shield back over the inner jacket and over a portion of the exposed outer shield; and
captivating said ferrule within a connector housing whereby said shields are grounded together and the ferrule provides a strain relief for an axial force applied to said cable.

4,517,741

KNIFE WITH PLURAL REPLACEABLE BLADE STORAGE AND MEANS FOR SINGLE BLADE EXTENSION

James M. Castelluzzo, 188 Avenue of the Americas, New York, N.Y. 10013

Filed May 19, 1982, Ser. No. 379,900
Int. Cl.³ B26B *21/24, 1/08*
U.S. Cl. 30—162 **4 Claims**



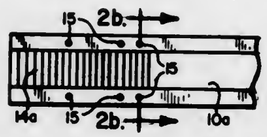
1. A utility knife having a handle, a recess in the handle for receiving a stack of knife blades, a knife blade guide in said handle parallel to said recess for receiving a knife blade from said recess, said guide having an opening in one wall thereof for guiding a received knife blade from said recess to a knife end of said handle, magnetic means for attracting at least an innermost blade of said stack of knife blades into alignment with said knife blade guide and for holding said innermost blade in such alignment, and follower means slidable in said handle parallel to said blade guide, means for sliding said follower means in said blade guide, said follower means including means for engaging and sliding said innermost blade of said stack of knife blades in said handle along said knife blade guide and for projecting the end of said innermost blade at the knife end of said handle and means for locking the blade in a projected position in said handle.

4,517,742

APPARATUS AND METHOD FOR CORRECTING ERRORS IN A LENGTH OR ANGLE MEASURING SYSTEM

Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 494,109
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1982, 3224005
Int. Cl.³ G01B *11/04*
U.S. Cl. 33—125 C **21 Claims**



1. In a length or angle measuring device comprising a planar graduation carrier, which includes a measuring graduation, and a scanning unit, which scans the measuring graduation, wherein the scanning unit and the carrier are adapted to be coupled to two objects which are movable with respect to each other, the improvement comprising:
means for applying localized longitudinal forces to the carrier independently of any externally applied forces, which localized longitudinal forces are exerted parallel to a plane defined by the carrier and are variable along the longitudinal extent of the carrier to cause localized variations in the length of the carrier substantially without deflection of the carrier transverse to said plane, in order to bring about nonlinear length variations in the graduation in accordance with a desired error correction course.

15. In a length or angle measuring device comprising a graduation carrier, which includes a measuring graduation, and a scanning unit, which scans the measuring graduation, wherein the scanning unit and the carrier are adapted to be coupled to two objects which are movable with respect to each other, the improvement comprising:
means, included in the carrier, for developing a preset longitudinal force in the carrier; and
means for varying the preset longitudinal force in the carrier along the longitudinal extent of the carrier to cause localized variations in the length of the carrier in order to bring about nonlinear length variations in the graduation in accordance with a desired error correction course.

4,517,743

GAUGE

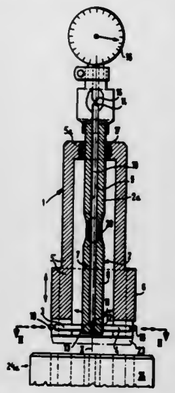
Rudolf Och, Nuremberg, Fed. Rep. of Germany, assignor to Frenco Verzahnungslehren GmbH, Nuremberg, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 452,018
Int. Cl.³ G01B *5/08, 5/12*
U.S. Cl. 33—147 M **16 Claims**

1. A gauge, particularly for inspecting and indicating the quality of gear teeth on a workpiece, comprising
a hollow elongated member having an axis and a leading end portion provided with inner and outer circumferential surfaces;
a set of gauging teeth on at least one of said surfaces and

shaped and dimensioned to mate precisely with the teeth to be inspected on a workpiece;
a test element located within the confines of said one surface and having at least one component movable into and out of testing engagement with a tooth on the workpiece;
said one surface having at least one slot extending in lengthwise as well as in radial direction of said axis; and
means mounting said test element so that said component is located in said slot with freedom of movement in at least one of said directions.

14. A gauge, particularly for inspecting and indicating the quality of gear teeth on a workpiece, comprising a hollow member having an axis and including a circumferential wall



having an outer surface, a discrete ring part surrounded by said wall, and an annular member surrounded by said ring part and having an inner surface; a set of gauging teeth provided on said inner surface and shaped and dimensioned to mate precisely with the teeth to be inspected on a workpiece; a test element located within the confines of said inner surface and having two components movable into and out of testing engagement with a tooth on the workpiece, said inner surface having two slots extending in lengthwise as well as in radial direction of said axis and being located opposite each other with reference to said axis; and means mounting said test element so that each of said components is located in a different one of said slots with freedom of movement in at least one of said directions.

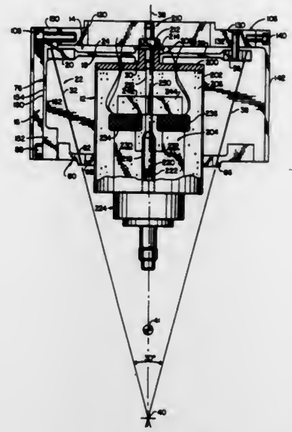
4,517,744

COMPLIANT ASSEMBLY SYSTEM WITH FORCE SENSOR MEMBERS

Emanuel J. Consales, Winchester, and Anthony Kondoleon, Tewksbury, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Feb. 21, 1984, Ser. No. 581,796
Int. Cl.³ G01B *5/25, 7/31*
U.S. Cl. 33—169 C **6 Claims**

1. A compliant assembly system comprising:
a remote center compliance device having first and second interconnected compliant sections, said first compliant section being interconnected with a support member;
a tool holder mechanism disposed within said remote center compliance device and interconnected with said second compliant section; and
a force sensor system including a plurality of sensor members adjacent to said remote center compliance device and extending from said support member to a mounting frame, each said sensor member including at least one force



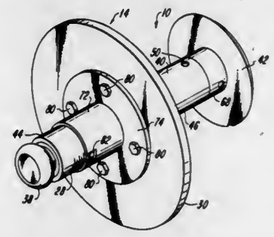
sensor for sensing the force applied through said tool holder mechanism and remote center compliance device.

4,517,745

APPARATUS FOR MEASURING THE SHOULDER OF A DRILL PIPE JOINT

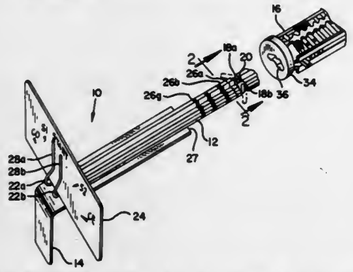
Bruce L. Hare, E. Star Rte. 3, Box 53, Bloomfield, N. Mex. 87413, assignor to Bruce L. Hare, Jr., Bloomfield, N. Mex.

Filed May 2, 1983, Ser. No. 490,785
Int. Cl.³ G01B *5/18, 5/16*
U.S. Cl. 33—169 B **6 Claims**



1. A gauge for measuring the squareness and length remaining for grinding of an outer shoulder of a box end of an internally threaded oil drill pipe shoulder of a box end of an internally threaded oil drill pipe having a bore formed therethrough, said oil drill pipe having a throat therein forming a transition area between said internal threads and said bore, comprising in combination:
an elongated generally cylindrically shaped insert received by said open throat and coaxial with an axis of said pipe including an end cap releasably connected to an elongated body of said insert at an innermost end thereof, said end cap conformable to and seated against said throat, said elongated body connected to a handle at an outermost end of said body; and
an indicator slideable along said elongated body of said insert, said indicator including a tube slideable along said body, said tube having connected thereto and extending perpendicularly therefrom, an annular flange directed outwardly from the axis abuttable against said outer shoulder.

4,517,746
METHOD AND APPARATUS FOR DECODING WAFER COMBINATION LOCKS
Thomas E. Easley, 1303 Fourth St., La Grande, Oreg. 97850
Filed May 31, 1983, Ser. No. 499,275
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—549 **6 Claims**



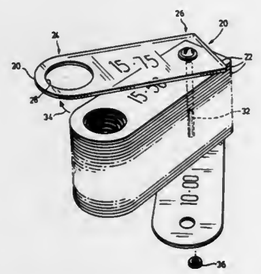
1. An elongate probe, for decoding a lock of the wafer combination type, adapted to slidably engage an elongate keyway cylinder having a plurality of wafers therein of different physical configurations and different orientations distributed along the length of said keyway at spaced positions, said probe having detecting means for detecting at each wafer position in said keyway cylinder the presence, physical configuration and orientation of each wafer therein said detecting means comprising elongate rotatable means mounted within said probe for rotation about an axis extending longitudinally of said probe for making contact with portions of said wafers.

6. A method of decoding a lock of the wafer combination type, having a plurality of wafers therein of different physical configurations and different orientations distributed along the length of an elongate keyway cylinder at spaced wafer positions, without removing the lock from its fixed surroundings comprising the steps:

(a) inserting into said keyway cylinder an elongate probe adapted to slidably engage said keyway cylinder; and

(b) detecting through said probe, at each wafer position in said keyway cylinder, the presence, physical configuration and orientation of each wafer therein by moving a portion of said probe transversely to the length thereof into contact with a portion of each of said wafers.

4,517,747
CORNEAL TEMPLATE SET
J. Donald Morin, Toronto, Canada, assignor to The Hospital For Sick Children, Toronto, Canada
Filed Jun. 22, 1983, Ser. No. 506,748
Int. Cl.³ G01B *3/34;* **A61B** *3/00*
U.S. Cl. 33—178 B **6 Claims**



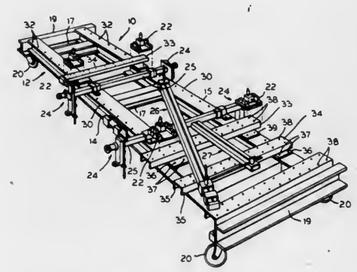
1. A device for use in corneal size measurement comprising:

a set of individual templates each in the form of a relatively thin and flexible blade of transparent, sterilizable plastic material, the blade having first and second ends and being formed with a sharply defined circular opening extending through the blade adjacent said first end thereof, the blade being rounded in elevation and smooth at said first end so as to present a substantially non-injurious surface to the cornea in use;

said blades being of substantially identical overall size and external shape and being arranged in a stack in which the blades are disposed in parallel planes with their respective second ends superimposed and coupled together by a common pivot pin which extends through the stack while allowing individual pivotal movement of each blade about said pin with respect to the other blades;

the openings in the respective blades being of graduated size in predetermined increments from one end of the stack to the other and each blade being visibly marked to indicate the size of the opening in that blade.

4,517,748
MEASURING BRIDGE FOR DETERMINING MOTOR VEHICLE DAMAGE
Ronald M. Rudolph, 3604 Ea. Garden Pl., Oak Creek, Wis. 53154, and Daniel P. Wendl, W225 S4569 Guthrie Rd., Waukesha, Wis. 53186
Filed Feb. 21, 1984, Ser. No. 581,966
Int. Cl.³ G01B *5/14, 5/25*
U.S. Cl. 33—180 AT **7 Claims**



1. A measuring bridge including a main frame defining a reference plane,

indexing means on said frame and defining coordinates in said plane,

a plurality of support assemblies,

coupling means for securing each support assembly in a discreet location relative to said reference plane and spaced a predetermined distance from each of the other support assemblies, said support assemblies each being adapted to be engaged by one of a plurality of datum points on the under side of a vehicle for supporting said vehicle in a predetermined orientation relative to said reference plane and the coordinates therein,

first and second portable gauge means releasably mountable on said frame for determining the relative position of datum points on damaged portions of said vehicle relative to a reference datum point,

said first portable gauge means including elongate bar means, first means for securing said first bar means to the indexing means of said main frame whereby said first bar means is fixed in said plane and lies in parallelism with the center line of the vehicle, a first measuring device slideably mounted on said first bar means and having an elongate measuring element mounted thereon for movement in a direction normal to the vehicle center line,

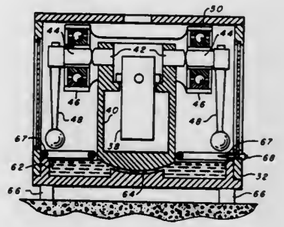
said second portable gauge means including elongate beam means, second means for releasably securing said beam means on said main frame independently of said indexing means, said beam means being rotatably mounted about said second means,

a second elongate measuring element mounted on said beam means for vertical movement in a direction normal to said reference plane for locating a first datum point below said vehicle,

a second measuring device slideably mounted on said beam means and having a third measuring element mounted thereon for movement in a direction normal to said reference plane,

said beam means being pivotal into engagement with the end of said first elongate measuring element thereby locating said third elongate element in predetermined coordinates relative to said reference plane with the elevation of the upper end of said third elongate element three dimensionally locating a second datum point below said vehicle relative to said first datum point and to said reference plane.

4,517,749
STABLE PLUMB BEAM OPTICAL PROJECTOR
Dominick P. Scotto, Plainview, N.Y., assignor to Sperry Corporation, New York, N.Y.
Filed Aug. 15, 1983, Ser. No. 523,314
Int. Cl.³ G01C *9/15*
U.S. Cl. 33—346 **13 Claims**



1. A plumbing device comprising:

a housing having an aperture through one surface thereof;

first pendulum means pivotally coupled to said housing for pendulous movement therewithin about a first axis;

second pendulum means having a preselected mass and positioned within said housing for pendulous movement therewithin about said first axis;

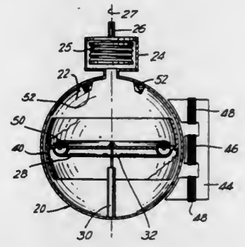
a first flexural pivot having first means for coupling to said first pendulum means and second means for coupling to said second pedulum means, said first flexural pivot operable at a torsional spring rate determined by said preselected mass; and

means linearly positioned and coupled to said second pendulum means for indicating deviations of said linear positioning from verticality.

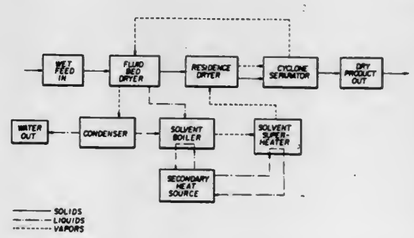
4,517,750
VERTICAL INDICATING METHOD AND DEVICE
Yishay Netzer, 20 Gilboa St., Haifa, Israel (32716)
Continuation-in-part of Ser. No. 275,602, Jun. 22, 1981, Pat. No. 4,451,991. This application Mar. 15, 1984, Ser. No. 590,069
Int. Cl.³ G01C *9/06, 9/08*
U.S. Cl. 33—396 **12 Claims**

1. A generally small, compact verticality sensor of the type having a pendulous element comprising:

a housing and a pendulous element contained therein and immersed in a liquid having a relatively low viscosity; axial means for supporting said pendulous element for rotational movement about two axes of rotation; said pendulous element including means for coupling said pendulous element to said liquid; said means for coupling being for substantially increasing the moment of inertia of said pendulous element without increasing the loading on said axial means, whereby the ratio of the effective length relative to themechanical dimensions of said pendulous element is increased and angular electrical pick-off means associated with said pendulous element for providing an electrical signal proportional to the angular tilt of said pendulous element about said two axes relative to said housing.



4,517,751
AZEOTROPIC DRYING PROCESS
Steven L. Ross, Chagrin Falls, and Otto H. Tachovsky, Solon, both of Ohio, assignors to General Signal Corporation, Stamford, Conn.
Filed Jun. 17, 1983, Ser. No. 505,409
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—10 **9 Claims**



1. A process for drying a continuous stream of moisture-laden feedstock, comprising the steps of:

introducing said feedstock stream into a fluid bed dryer in which is maintained an atmosphere of water-azeotrope forming solvent vapors and maintaining said feedstock in said fluid bed dryer for a time sufficient to allow the formation of azeotropes between the moisture of said feedstock and said solvent vapors;

passing said feedstock through a residence dryer which is provided with superheated vapors of said solvent, thereby removing any residual solvent and moisture from said feedstock stream;

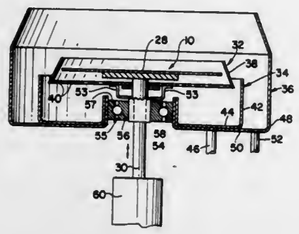
passing said feedstock stream and vapors from said residence dryer to a separator wherein said feedstock stream is separated off from said vapors; and

recovering from said separator an essentially dried and solvent free feedstock stream.

4,517,752
SPLASH RETARDER
Michael J. Devico, Madison, and Gary Hillman, Livingston, both of N.J., assignors to Machine Technology, Inc., Whippany, N.J.
Filed Jun. 27, 1983, Ser. No. 507,927
Int. Cl.³ F26B *17/24*
U.S. Cl. 34—58 **20 Claims**

1. Splash-retarding apparatus, comprising a rotatable work station upon which a workpiece may be positioned, collecting means for collecting liquid discharged from a workpiece posi-

tioned on said work station, said collecting means includes a solid circumferential wall portion surrounding said work station so as to capture liquid discharged by centrifugal force from a workpiece positioned on said work station upon rotation of said work station, and rotating means for rotating said work station such that liquid on a workpiece positioned on said

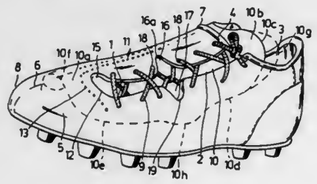


work station is discharged by centrifugal force toward said circumferential wall portion of said collecting means and for simultaneously rotating said collecting means in the same direction as said work station, whereby the splash of liquid impacting on said circumferential wall portion of said collecting means after its discharge from a workpiece on said work station is retarded.

4,517,753
SHOE

Leslie Rosenbaum, Jungfrudansen 44, Solna, Sweden (171 56), and Robert Alberts, Gummarpsvägen 27, Helsingborg, Sweden (254 84)

PCT No. PCT/SE81/00231, § 371 Date Apr. 15, 1982, § 102(e) Date Apr. 15, 1982, PCT Pub. No. WO82/00573, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 18, 1981, Ser. No. 375,033
Claims priority, application Sweden, Aug. 18, 1980, 8005898
Int. Cl.[3] A43B *5/02*
U.S. Cl. 36—128 **5 Claims**

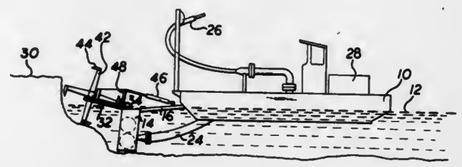


1. A shoe, particularly a sport shoe, having a side lacing, extending substantially in the longitudinal direction of the shoe on the outside thereof beside, when seen from above, a longitudinal central line of the shoe, extending from the forward central portion of the foot opening to the foremost point of the toe area, said side lacing being formed by a slit extending from the edge of the foot opening in said direction toward the toe area at the outside of the shoe over a part of the shoe's upper, and a tongue covering from below the side lacing and portions of the upper above a user's foot, in which the tongue (**10**) is fastened to the upper (**5**) with a stitching (**11**) located within an area extending substantially about said central line (**6**) at a distance from and along said slit (**2**), and extending, as seen in the longitudinal direction of the shoe, from the forward end (**12**) of said slit toward the foot opening (**3**) over a distance of least one third of the slit's length.

4,517,754
CUTTERHEAD ATTACHMENT FOR A DREDGE

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

Filed Mar. 28, 1984, Ser. No. 594,197
Int. Cl.[3] E02F *3/88*
U.S. Cl. 37—66 **12 Claims**

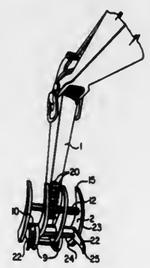


1. A dredge suction head comprising, in combination, a cutterhead housing having a front face defining the housing width, an upper portion, and a suction outlet, cutter elements rotatably mounted within said housing front face upon a first horizontally disposed shaft extending across said housing substantially throughout the width thereof, a first motor mounted upon said housing drivingly connected to said shaft supporting said cutter elements, a second horizontally disposed shaft supported forward of and above said front face and extending across the housing width and substantially parallel thereto and to said first shaft, a plurality of radially extending fingers defined on said second shaft extending therefrom, and power means rotating said second shaft in a direction whereby the direction of finger movement below said second shaft is toward said front face and cutter elements and said fingers engage and propel spoils toward said housing front face and cutter elements.

4,517,755
MULTI-TINED CLAW/RAKE ATTACHMENT

Walter Nicholson, Box 917, Port McNeill, B.C., Canada V0N 2R0

Filed Jul. 18, 1983, Ser. No. 515,017
Int. Cl.[3] E02F *3/76*
U.S. Cl. 37—117.5 **6 Claims**

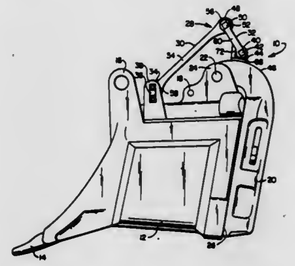


1. A tool attachment for a material clearing apparatus having a working arm comprising:
(a) a plurality of forwardly extending elongated curved tines mounted in parallel relationship to each other with substantially unobstructed spaces therebetween and arranged to extend in a direction away from the end of the work arm; a gripping means fixed to the surface of said work arm which faces toward the material clearing apparatus;
(b) support means affixed to a common end of the tines, said support means being connected to the work arm of said apparatus;
(c) means pivotally joining said support means to the end region of said work arm so as to permit said tines to be moved between an open position in which they extend in a direction away from the end of the working arm and a closed position in which the ends of the tines opposite the support means are proximate to the gripping means carried by the work arm and on the same side of the arm as the material clearing apparatus for holding material between the tines and the gripping means carried by the work arm, said tines and support means pivoting between said open and closed positions as a unit about the end of the work arm and in the same plane as the work arm; and
(d) at least one pointed elongated pushing claw protruding from the side of the tines opposite to the material holding side of the tines and curving in a direction opposite the direction in which said tines are curved.

4,517,756
SNUBBER FOR DIPPER DOOR

John R. Olds, Schererville, Ind., and Mark R. Alt, Chicago Heights, Ill., assignors to Abex Corporation, Stamford, Conn.

Filed Jul. 11, 1984, Ser. No. 629,651
Int. Cl.[3] E02F *3/46*
U.S. Cl. 37—118 R **7 Claims**

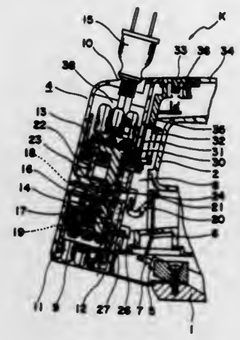


1. A snubber for use with a dipper which includes means defining an opening and a door pivotally connected to the dipper which in one position closes the opening, characterized by the snubber having an elongated member with an elastic working section and an actuator link wherein one end of the member is pivotally connected to the dipper, one end of the link is pivotally connected to the door, and the other end of the member is pivotally connected to the other end of the link, means for preventing pivotal movement of the link in one direction when the door is at a first angle with respect to the means defining the dipper opening to thereby place the elastic working section of the elongated member in tension to retard door movement when the door is moved toward the opening and is at an angle less than the first angle and wherein the elongated member cooperates with the actuator link to define a second angle of the door with respect to the means defining the dipper opening at which the door engages the elongated member and the elongated member is placed in bending to retard door movement when the door is moved away from the opening at an angle greater than the second angle and the elastic working section of the elongated member is unstressed when the door is at an angle with respect to the opening which is between the first and second angles.

4,517,757
ELECTRIC IRON WITH CORD REEL DEVICE

Shuji Asada, Neyagawa, and Tadamasa Nanbu, Kawanishi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 15, 1983, Ser. No. 485,467
Claims priority, application Japan, Apr. 16, 1982, 57-56009[U]; Apr. 16, 1982, 57-56010[U]; Jun. 25, 1982, 57-96089[U]; Feb. 8, 1983, 58-20223
Int. Cl.[3] D06F *75/28*
U.S. Cl. 38—88 **12 Claims**



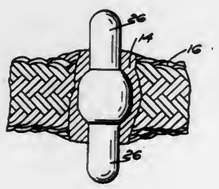
1. An electric iron provided with a cord reel device, comprising a base having a heater incorporated therein, a handle mounted on said base, and a cord electrically connected to said heater, with said cord reel device being arranged to wind said cord thereinto, said cord reel device further comprising:
cord casing means for accommodating said cord therein, said cord casing means having an outlet for said cord;
a drum means for winding said cord therearound, said drum means being provided in said cord casing means;
a spring means for urging said drum means to rotate in a winding direction of said cord;
an electrical means for electrically connecting said cord to said heater;
a locking means for preventing said drum means from rotating in the winding direction of said cord;
a winding button means for causing said drum means to rotate in the winding direction of said cord in association with said locking means, said winding button means being provided flush with or lower than a surface of said handle;
said core reel device being disposed rearward of said handle and having a transparent portion in the cord casing means, such that said cord wound around said drum means is visible from outside of said cord reel device through said transparent portion;
a plurality of fastening members;
said cord casing means having a pair of first cord casing member and a second cord casing member rotatably supporting said drum means from opposite sides thereof;
said first cord casing member and said second cord casing member being secured to each other by said plurality of fastening members;
some of said plurality of fastening members being contained completely within the cord reel device; and
at least one other of said plurality of fastening members being directed inwardly and being fixed beneath an outer surface of the first cord casing member for securing said first cord casing member and said second cord casing member to a rear face of said handle;
whereby, after the cord reel device has been secured to the rear face of the handle, the cord reel device is prevented from being disassembled through inadvertent loosening of the plurality of fastening members.

4,517,758
LIGHT BULB ATTACHED SIGN ASSEMBLY
Marion E. Thompson, 2807 N. Prospect St., Colorado Springs, Colo. 90907
Continuation-in-part of Ser. No. 030,608, Apr. 11, 1979, Pat. No. 4,227,327. This application Apr. 23, 1980, Ser. No. 142,995
Int. Cl.³ G09F *13/30*
U.S. Cl. 40—431 **17 Claims**



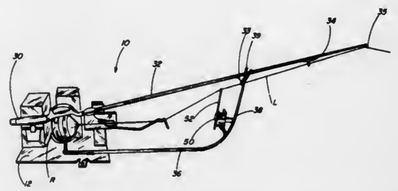
1. An assembly comprising:
a solar cell;
means for mounting said solar cell directly onto a light bulb so that said cell receives light directly from the light bulb;
a d.c. motor electrically connected to said solar cell and physically attached to said cell and extending from the opposite side thereof as said means for mounting said means for mounting said cell to the light bulb, said motor having a shaft;
a substantially planar sign member having word indicia thereon; and
means for operatively interconnecting said sign member to said motor shaft to rotate in response to motor shaft rotation, said means including a slip swivel connector.

4,517,759
STOPPER FOR BRAIDED LINE
Ronald E. Wall, Voluntown, Conn., assignor to Marine Concepts of America, Davisville, R.I.
Filed Mar. 8, 1984, Ser. No. 587,509
Int. Cl.³ A01N *73/00*
U.S. Cl. 43—7 **4 Claims**



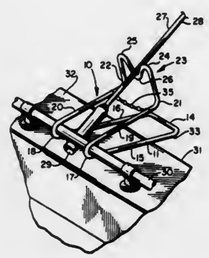
1. The method of providing a stopper in a braided line having a core and a braided cover comprising inserting a post-like stopper with a central enlarged portion through the braided cover on one side and into the core with an end protruding substantially diametral of the line on either side thereof whereby the enlargement provided in the line serves as a stopper.

4,517,760
DRIVE MECHANISM FOR FISHING REEL
Jules Randle, P.O. Box 804, Baldwin, La. 70514
Filed Oct. 28, 1983, Ser. No. 546,303
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—21 **5 Claims**



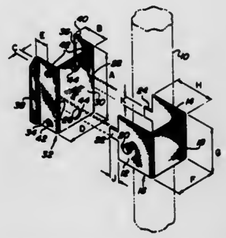
1. An automatic rod and reel support carriage apparatus for automatically rotating the reel crank to retrieve a line comprising:
a. a base frame;
b. a motor drive mounted on the frame;
c. a rotating hub having radially spaced means for engaging the reel crank;
d. reel carriage means for holding the reel in a position which engages the reel crank and the hub;
e. moving means loosely engaging the line so that the line can pass therethrough, for actuating the motor drive when the line is tensed such as when a fish pulls the line, the moving means deflecting the line away from the axis of the rod absent tension on the line.

4,517,761
BOAT RAILING MOUNTED FISHING ROD HOLDER
Joseph N. Bieggi, 2216 Parkhaven Dr., Plano, Tex. 75075
Filed Feb. 4, 1983, Ser. No. 463,715
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—21.2 **5 Claims**



1 A fishing rod holder mountable on a boat railing and a boat side top comprising: one piece of wire bend formed to shape for the fishing rod holding function desired; said one piece of wire formed with two bottom spaced generally parallel sides, and upwardly extended from said bottom sides, elbow means for capturing the rail of the boat with said elbow means in the form of duplicate elbow bends generally sized to fit a boat railing spaced from and above a boat side top with said bottom spaced parallel sides being support means extending beyond and resting on an outer edge of said boat side top when said holder is mounted on a boat railing and a boat side top for reactively supporting the holder in place without any permanent attachment to the boat; upwardly and rearwardly extending upper sides extending from the tops of said elbow bends generally overlying two bottom spaced generally parallel sides; and at the back ends of said upper sides a cross interconnect back including a "U" shaped portion for receiving and lending support to the shank of a fishing rod with the handle positioned under other structure; wherein the rearwardly extending upper sides are formed with upward bends at the back ends of the upper sides interconnected by an upstanding "M" wire formed shape as said cross interconnect back; and with said "U" shaped portion generally in the middle of said upstanding "M" wire formed shape.

4,517,762
ANIMAL TRAP HOLDER
Louis M. Venetz, 206 Susquehanna Ave., West Pittston, Pa. 18643
Filed Jul. 8, 1983, Ser. No. 511,855
Int. Cl.³ A01M *23/24*
U.S. Cl. 43—96 **8 Claims**

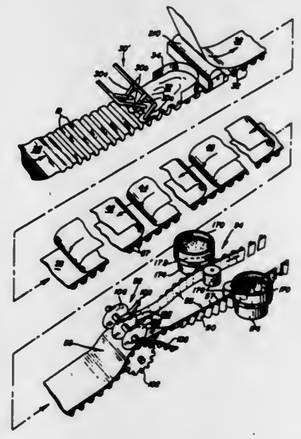


1. In combination, an animal trap holder and a trap, said trap having a pair of spring biased jaws held in spaced relationship when said trap is set and movable away from each other when said trap is sprung, said holder comprising a substantially U-shaped member having first and second leg portions made of sheet material and connected together by an integral base portion, said first and second leg portions each having an outer flat rectangular surface, the sides of said flat rectangular surface being of a distance substantially greater than the thickness of said first and second leg portions, the free ends of said first and second leg portions each having a flange portion extending outwardly therefrom and holding said jaws in contact with a substantial distance on the outer surface of said first and second leg portions when said trap is set and to release said jaws when said trap is sprung, the free ends of said first and second leg portions being manually adjustable toward and away from each other to accomodate different sizes of said trap.

4,517,763
HYBRIDIZATION PROCESS UTILIZING A COMBINATION OF CYTOPLASMIC MALE STERILITY AND HERBICIDE TOLERANCE
Wallace D. Beversdorf; Lawrence R. Erickson, and Ian Grant, all of Guelph, Canada, assignors to University of Guelph, Guelph, Canada
Filed May 11, 1983, Ser. No. 493,511
Int. Cl.³ A01B *79/00;* A01H *5/02*
U.S. Cl. 47—58 **34 Claims**

1. An improved process for forming a substantially homogeneous population of plants of a predetermined hybrid variety of a crop which is capable of undergoing both self-pollination and cross-pollination comprising:
(a) growing in a first planting area a substantially random population of (1) cytoplasmic male sterile plants which exhibit cytoplasmic herbicide tolerance, and (2) male fertile plants which are capable of pollinating said cytoplasmic male sterile plants and which lack cytoplasmic herbicide tolerance, whereby said cytoplasmic male sterile plants (1) and said male fertile plants (2) are pollinated with pollen derived from said male fertile plants and seed is formed on said cytoplasmic male sterile plants and on said male fertile plants,
(b) harvesting in bulk said seed which is formed on said plants of said first planting area,
(c) growing at least a portion of the seed from step (b) in a second planting area in the absence of segregation between the seed derived from said cytoplasmic male sterile plants which exhibit cytoplasmic herbicide tolerance and said male fertile plants which lack cytoplasmic herbicide tolerance, and
(d) contacting substantially all of the plants present in said second growing area prior to pollination with a herbicide which is effective to destroy said plants resulting from seed formed on said male fertile plants of said first planting area, whereby a substantially homogeneous population of a predetermined hybrid variety is formed which resulted from seed formed on said male sterile plants of said first planting area.

4,517,764
CHAIN OF SOIL PLUGS AND A PROCESS FOR PRODUCING A CHAIN OF SOIL PLUGS
Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics, Naperville, Ill.
Filed Feb. 22, 1982, Ser. No. 351,232
Int. Cl.³ B29D *27/04;* A01G *9/10*
U.S. Cl. 47—77 **9 Claims**



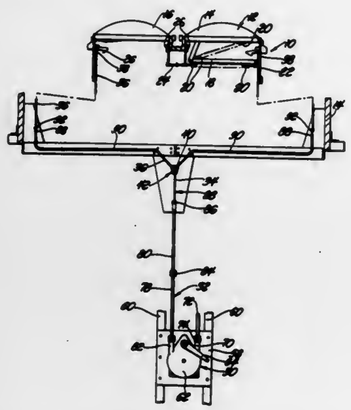
1. The product produced by the method comprising the steps of:
conforming a first continuous sheet of cover material (22) to a series of mold elements (14), said material (22) being corrugated when conformed to said mold elements (14);
adding a reaction mixture (32) of soil slurry and polymerizing agent over said first material (22), said slurry being composed of water and suspended solid particulate material and said mixture being curable to form an open-celled elastomeric hydrophilic rooting medium;
adding a second continuous sheet of cover material (38) to the top of said mixture (32);
curing said mixture (32) while applying pressure to said second cover material (38) to conform said mixture (32) within said mold elements (14), said cured mixture forming an open-celled elastomeric hydrophilic rooting medium; and
cutting said product longitudinally to form two separate chains of soil plugs.

4,517,765

REMOTELY CONTROLLABLE VENT DOOR

Basil Mucha, Fairless Hills, Pa., assignor to Teleflex Incorporated, Limerick, Pa.

Filed Sep. 27, 1982, Ser. No. 423,794
Int. Cl.³ E05F *15/20*
U.S. Cl. 49—3 **25 Claims**



1. A motion transmitting remote control assembly of the type for transmitting motion in a curved path to open from a remote location at least one vent door which is held in a closed position by latch means which engages the door, said assembly comprising:

cable means for transmitting linear motion along a curved path;

actuator means for actuating linear motion of said cable means;

guide means for guiding the path of said cable means, said cable means including a portion extending from said guide means and adapted to be operatively connected to said latch means whereby operation of said actuator means actuates linear motion of said cable means to disengage the latch means from the vent door, said cable means including a first cable extending from said actuator means and through said guide means and a second cable having two end portions and an intermediate portion therebetween, each of said end portions of said second cable being adapted to be connected to respective ones of a pair of latch means engaging a pair of adjacent vent doors in a closed position; and coupling means for coupling said first cable to said intermediate portion of said second cable, said coupling means including a passageway therethrough, said intermediate portion of said second cable being disposed within said passageway, said coupling means includes a first and second plate member secured together to clamp a portion of said first cable therebetween, at least one of said first and second plate members having a channel therein forming said passageway when said first and second plate members are secured together.

4,517,766

ADJUSTABLE FRICTION SASH HOLDER

Garry P. Haltof, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Nov. 10, 1983, Ser. No. 550,441
Int. Cl.³ E05D *13/08*
U.S. Cl. 49—417 **7 Claims**

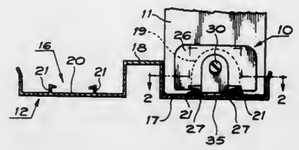
1. An adjustable friction sash holder for use with a sash running in a resin jamb liner having a track in a sash plow region of the sash run of said jamb liner, said track being formed by parallel guides that are L-shaped in cross section to project from said sash run and extend toward each other along opposite sides of said track, said holder comprising:

a. a carriage shaped to fit within said plow region of said sash;

b. said carriage having a pair of runners spaced vertically apart;

c. each of said runners having opposite lateral edges disposed for running along lateral sides of said track, said lateral edges of said runners being interlocked with said L-shaped guides to confine said runners to vertical movement along said track;

d. said carriage having a friction shoe arranged between said runners;



e. said friction shoe being movable relative to said runners to engage a sash run surface of said track between said L-shaped guides;

f. a balance spring connection arranged at an upper region of said carriage;

g. a platform arranged at a lower region of said carriage;

h. said platform being dimensioned to straddle said sash plow region at a lower corner of said sash;

i. an adjustment screw having a head holding said platform;

j. said adjustment screw being threaded into said carriage; and

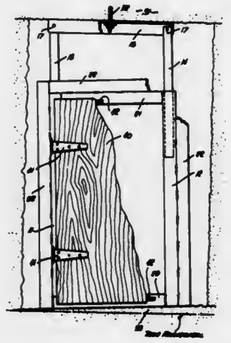
k. an end of said adjustment screw opposite said head engaging said friction shoe so that the threaded advance of said screw variably biases said friction shoe against said track to adjust the friction of said holder within said sash run.

4,517,767

MINE VENTILATION DOOR

Frederick J. Dewson, 66 Koloona Ave., Figtree, New South Wales, Australia 2525

PCT No. PCT/AU82/00031, § 371 Date Nov. 15, 1982, § 102(e) Date Nov. 15, 1982, PCT Pub. No. WO82/03245, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 17, 1982, Ser. No. 444,897
Claims priority, application Australia, Mar. 18, 1981, PE8036; Nov. 4, 1981, PF1418
Int. Cl.³ E06B *3/32*
U.S. Cl. 49—464 **9 Claims**



1. A door frame in combination with a doorway frame, said doorway frame comprising:

two upright members spaced apart from each other;

means for selectively adjusting the length of each upright member, and then for clamping said adjusted length; and

a head member extending between said upright members and pivotally connected to each; wherein

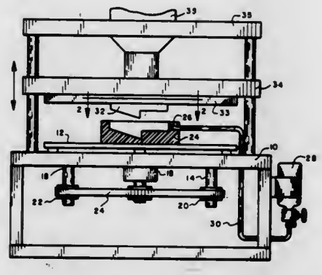
said door frame is hingedly mounted to said doorway frame, and comprises at each side an upwardly extending channel having a "U" shaped cross-section, said channels having facing longitudinal openings and being open at their upper end, said channels for receiving side edges of slats or panels extending there between and stacked in top-edge to bottom-edge relationship.

4,517,768

ORBITAL POLISHER

Marten C. Hausermann, Addison, and Elmer P. Hausermann, Bensenville, both of Ill., assignors to Hausermann Abrading Process Company, Addison, Ill.

Continuation-in-part of Ser. No. 474,150, Mar. 10, 1983, Pat. No. 4,493,165. This application Oct. 6, 1983, Ser. No. 539,488
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—58 **3 Claims**



1. Apparatus for polishing workpieces, said apparatus comprising

a base member;

a first platen disposed on and supported by said base member and free to move in any direction in the horizontal plane with respect to said base member;

means coupled to said first platen for driving said first platen in horizontal oscillatory rotary motion with respect to said base member;

a resilient, non-abrasive polishing die fixed to the upper surface of said first platen;

a second platen mounted in a superimposed relation and adapted to be driven vertically with respect to said first platen;

means for mounting a workpiece to said second platen in substantial vertical alignment with said resilient polishing die;

vertical drive means for incrementally infeeding said workpiece and said polishing die into contact with one another while said first platen is driven in horizontal oscillatory motion;

means for injecting an elastic abrasive composition into said polishing die when said workpiece is in contact therewith; and

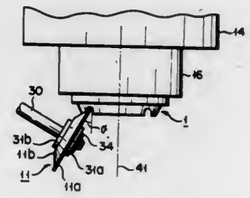
means for heating said workpiece to a preselected temperature prior to infeeding said workpiece and said polishing die into contact with one another to thereby produce a thermal gradient through said elastic abrasive composition during each infeeding increment.

4,517,769

METHOD AND APPARATUS FOR FORMING OBLIQUE GROOVE IN SEMICONDUCTOR DEVICE

Shigeru Fujimoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 11, 1982, Ser. No. 377,008
Claims priority, application Japan, May 20, 1981, 56-75893; Jan. 20, 1982, 57-7138; Jan. 25, 1982, 57-8882; Jan. 25, 1982, 57-8883
Int. Cl.³ B24B *19/00*; B24D *5/00*
U.S. Cl. 51—105 R **30 Claims**



1. A method of forming a circular oblique groove in a semiconductor device, said method comprising the steps of:

(a) rotating a semiconductor device having an at least approximately planar surface about a first axis passing through said at least approximately planar surface, said first axis being perpendicular to said at least approximately planar surface of said semiconductor device;

(b) rotating a grinding wheel

(i) having a planar forward surface disposed in a plane, said planar forward surface being circular in shape,

(ii) which comprises a first component of truncated cone shape having a first base, a second base which is larger in diameter than the first base, and a conical grinding surface which joins the first and second bases and a second component of disk shape coaxially attached to the second base of said first component without an appreciable gap therebetween, said second component being larger in diameter than the second base of said first component, said planar forward surface of said grinding wheel being the surface of said second component which is remote from said first component,

(iii) about a second axis passing through the center of said planar forward surface of said grinding wheel, said second axis being perpendicular to said planar forward surface of said grinding wheel and the plane including said planar forward surface of said grinding wheel intersecting said first axis at a first angle α which is an acute angle; and

(c) under these conditions, moving said grinding wheel into said semiconductor device so as to cut a circular oblique groove into said at least approximately planar surface of said semiconductor device while said planar forward surface faces said first axis extending from the center of said at least approximately planar surface of said semiconductor device,

whereby a circular oblique groove which is sloped toward the center of said semiconductor device is ground in said at least approximately planar surface of said semiconductor device.

4,517,770

GEMSTONE POLISHING MACHINE

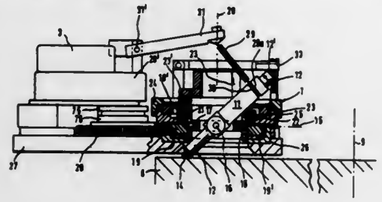
Alec Leibowitz, 16c, Mutual Pl., Beach Rd., Seapoint, Cape Town, South Africa

Continuation of Ser. No. 353,912, Mar. 2, 1982, abandoned. This application Oct. 17, 1984, Ser. No. 661,285

Claims priority, application South Africa, Aug. 10, 1981, 81/8466; United Kingdom, Aug. 11, 1981, 8124446

Int. Cl.³ B24B 9/16

U.S. Cl. 51—125.5 18 Claims



1. A gemstone polishing machine for working facets on a gemstone or the like, each facet having a grain orientation, using a moving working member which contacts the stone in a working plane, the machine comprising:

a mount for supporting the stone;

pivot means carrying the mount and restraining the mount to pivotal motion about two axes, namely a first axis which will lie in a plane substantially parallel to but spaced from the working plane, and a second axis which is at an angle to the first axis, the first and second axes substantially intersecting at a point at which they also substantially intersect a third, mount axis which is at an angle to the first and second axes and which will be substantially coincident with the axis of the stone and inclined to the working plane;

means for altering the position of the first axis in said plane parallel to the working plane by rotating the first axis about a fourth, normal axis normal to the working plane, and for locating the first axis in position; and

means for altering the position of the mount axis by rotating the mount axis substantially about the normal axis, and for locating the mount axis in position;

whereby the grain orientation can be changed by rotating the mount axis and the first axis through the same angle about the normal axis, and the facet being worked can be changed by causing relative rotation about the normal axis between the mount axis and the first axis, the pivot means causing the mount to rotate about the mount axis due to the interaction of the restraints of the first and second axis pivotal motions.

4,517,771

ELONGATED ANNULAR VIBRATORY BARREL FINISHING APPARATUS HAVING UNBALANCED WEIGHTS CONTROLLED BY AN ELECTRONIC PROCESSOR

Hisamine Kobayashi; Tomihiro Ishiguro, and Akio Murata, all of Nagoya, Japan, assignors to Shikishima Tipton Manufacturing Co., Ltd., Nagoya, Japan

Filed Dec. 6, 1982, Ser. No. 447,007

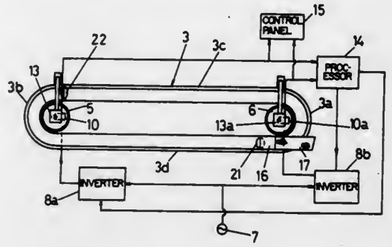
Claims priority, application Japan, Dec. 10, 1981, 56-199034; Apr. 5, 1982, 57-56327

Int. Cl.³ B24B 31/00

U.S. Cl. 51—163.2 10 Claims

1. An endless elongated annular vibratory barrel finishing apparatus for line processing of workpieces to be finished, said vibratory finishing apparatus comprising:

an endless elongated vibratory barrel having two opposed semicircular barrel outer and inner wall segments and straight barrel outer and inner wall segments extending therebetween to form the elongated barrel, said barrel having a cross-section traverse to the length thereof which is symmetrical about the center of the cross-section and having two U-shaped portions between the inner and outer walls, a plurality of springs supporting the bottom of said vibratory barrel and extending along the bottom of the barrel in a line generally parallel to the axis of the



U-shaped cross-sectional portions, a plurality of vibrating motors, disposed symmetrically on the longitudinal axis, each having unbalancing weights at both ends of their shafts, and a controlling means for electrically adjusting a rotational speed of the motors and the phase of rotation between said vibrating motors.

4,517,772

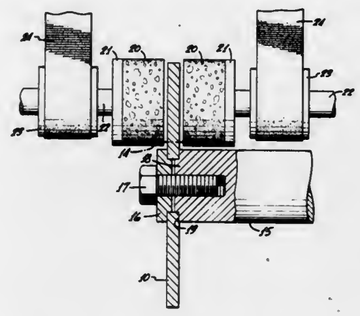
RIGID COMPUTER MEMORY DISC MANUFACTURING METHOD

Richard J. Elliott, Costa Mesa, Calif., assignor to Charlton Associates, Irvine, Calif.

Filed Dec. 12, 1983, Ser. No. 560,416

Int. Cl.³ B24B 1/00

U.S. Cl. 51—281 SF 4 Claims



1. A method of manufacturing a rigid computer memory disc where operations may be simultaneously performed on both faces of said disc comprising:

providing a disc with an outer diameter and a false inner diameter which is smaller than a desired inner diameter thereof;

clamping said disc to a spindle using only the area between said false inner diameter and said desired inner diameter thereby leaving the entire area between the outer diameter and the desired inner diameter exposed;

simultaneously performing manufacturing operations on both opposed surfaces of said disc while clamped to said spindle; and

subsequently removing said area between said false and desired inner diameters by cutting said disc along said desired inner diameter.

4,517,773

DRIVABLE WHEEL FOR THE FINISH GRINDING OR POLISHING OF THE SURFACE OF A VEHICLE BODY OR THE LIKE

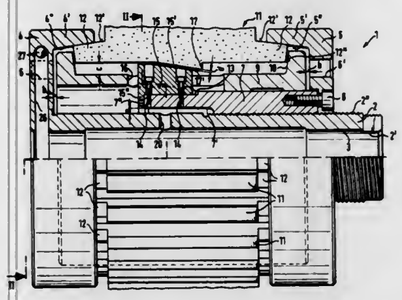
Ulrich Heiden, Munich, and Peter Atzler, Altomunster, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Fed. Rep. of Germany

Filed Nov. 15, 1982, Ser. No. 441,683

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145151

Int. Cl.³ B24B 9/02

U.S. Cl. 51—336 16 Claims



1. A drivable wheel for finish grinding or polishing the surface of a vehicle body or the like, comprising a mounting shaft with a plurality of spaced-apart flanges, one of said plurality of flanges being displaceable in an axial direction relative to another of said plurality of flanges, supporting sleeve means having a peripherally disposed plurality of axially parallel mounting slots for mounting a plurality of radially projecting grinding elements coaxially encompassing the mounting shaft and extending between the plurality of flanges, a plurality of radially projecting grinding elements positioned relative to said mounting shaft by said plurality of flanges, and at least one ejector means operatively connected to said one of said plurality of flanges for displacing the plurality of grinding elements radially outwardly when said one of said plurality of flanges is displaced axially away from said another of said plurality of flanges.

4,517,774

WET BLASTING APPARATUS

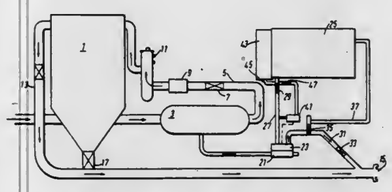
Frank Dudding, 18, Lorraine St., Hull, England HU8 8EG

Filed Aug. 9, 1982, Ser. No. 406,425

Claims priority, application United Kingdom, May 4, 1982, 8212760

Int. Cl.³ B24C 7/00

U.S. Cl. 51—436 24 Claims



1. Apparatus for abrasive blasting a surface, the apparatus comprising:

(a) means for forming a first stream of compressed air;

(b) means for forming a second stream of compressed air;

(c) means for supplying to the second stream of compressed air abrasive particles to entrain the abrasive particles in the second stream of compressed air;

(d) first pump means;

(e) means for supplying liquid to the first pump means;

(f) means for supplying the first stream of compressed air to the first pump means;

(g) second pump means;

(h) means for supplying an additive to the second pump means for pumping the additive to the liquid;

(i) means for supplying air from the first stream of compressed air supplied to the first pump means, to the second pump means to operate the second pump means; and

(j) means for supplying the first stream of compressed air entrained with liquid and additive, from the first pump means to the second stream of compressed air containing the entrained abrasive particles so as to permit compressed air, abrasive, liquid and additive to be directed through a blast nozzle.

4,517,775

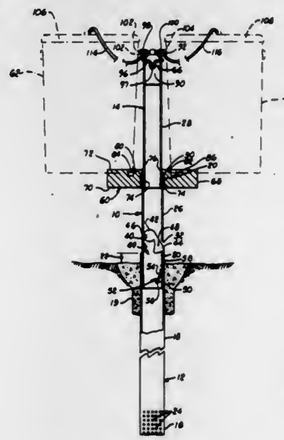
TELESCOPING SUPPORT APPARATUS FOR CONTAINERS

Thomas H. Engel, 3040 SW. 129th, Oklahoma City, Okla. 73170

Filed Jun. 10, 1983, Ser. No. 503,324

Int. Cl.³ E04H 12/00

U.S. Cl. 52—40 29 Claims



1. A telescoping support device for supporting at least one refuse container, comprising:

a ground cylinder disposable in the ground and having an upper end portion extendible a selected distance above the surface of the ground;

a support cylinder supported by the ground cylinder and slidably movable between a retracted position within the ground cylinder and an extended position substantially above the surface of the ground, the support cylinder having an upper portion and a lower portion, the upper portion having an outside diameter less than the outside diameter of the lower portion so that a support shoulder is formed at the junction of the upper and lower portions, the lower portion having a first detent slot formed therein;

first stop means supported within the lower portion of the support cylinder for selectively locking the support cylinder in the extended position, the first stop means pivotally supported in the lower portion of the support cylinder so that an end portion of the first stop means is selectively extendible through the first detent slot of the lower portion of the support cylinder and prevents movement of the support cylinder to its retracted position when the first stop means is extended through the first detent slot, the first stop means selectively removable from the first detent slot to permit the support cylinder to be retracted into the ground cylinder;

support means slidably disposed about the support cylinder

for supporting the container thereon, the support means adapted to engage the support shoulder of the support cylinder when the support cylinder is in the extended position and to engage the upper end portion of the ground cylinder when the support cylinder is in the retracted position; and

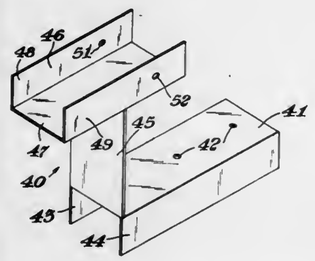
handle means secured to the upper portion of the support cylinder for selectively moving the support cylinder between the extended position and the retracted position.

4,517,776

ROOF INSULATION RETENTION

Michael Barker, Zurich, Switzerland, assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1983, Ser. No. 473,903
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—90 **16 Claims**



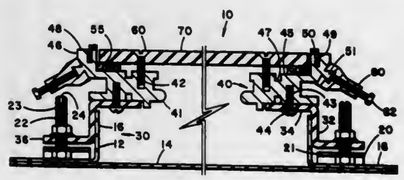
1. A counter batten-rafter connecting bracket, the bracket comprising a generally sheet-like body, the sheet-like body having a first planar arm or rafter engaging member to be nailed or otherwise secured to a roof rafter, a generally planar connecting member, having a generally planar configuration extending generally normally to the rafter engaging member, a counter batten engaging member affixed to the connecting member, the counter batten engaging member extending generally parallel to the rafter engaging member; the counter batten engaging member affixed to the connecting member, the counter batten engaging member extending generally normal to a plane containing the connecting member, the counter batten fastening member being generally remote from the rafter engaging member, the counter batten fastening member lying in a plane generally normal to the connecting member, the rafter engaging member and counter batten engaging member each has at least one flange disposed in a plane normal to the planes of the rafter engaging member, counter batten engaging member and connecting member.

4,517,777

TRENCHDUCT SIDE MEMBER EXTRUSION ADAPTED FOR MULTIPLE POSITIONING OF COVER PLATE

L. Owen Calhoun, Burlington, Canada, assignor to W. C. Pursley Limited, Mississauga, Canada

Filed Mar. 7, 1983, Ser. No. 473,101
Int. Cl.³ E04F *17/00*
U.S. Cl. 52—126.2 **8 Claims**



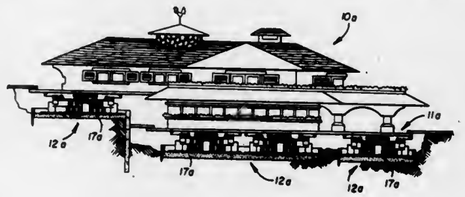
1. In a trenchduct assembly, for internally receiving electric wires and cables, the combination comprising means forming galvanized steel side walls each with an outwardly extending flange and spaced apart to define an open space for receiving electrical service therebetween, vertically adjustable galvanized steel lid-supporting means slideably engagable with said side walls whereby said lid-supporting means are operatively defined in a lateral position relative to said side walls, said lid-supporting means including steel portions forming a Z-shaped cross section, one of said steel portions comprising a vertical section complementarily associated with a respective side wall, one portion projecting laterally above the confines of the open space formed by said side walls to receive the wire cables, and one portion comprising a traverse flange disposed outside the confines of said trenchduct and extending away from said duct and including threaded openings therein, threaded means operatively secured to the outwardly extending flanges of said side walls and threadedly received by the threaded openings in said lid-supporting means to effect vertical adjustable movement of said lid-supporting means, side rail members extending parallel to the longitudinal axis of said lid-supporting means and each operatively secured to said portion projecting laterally above the confines of said open space, each side rail member including a pair of diagonally opposed longitudinal slots for receiving securement means, one slot receiving means securing said side rail member to said portion projecting laterally above said open space and the other of said slots receiving securement means for holding down a trenchduct cover plate, an upper longitudinal slot opening exterior of said trenchduct for receiving trim means therein, and a longitudinal exterior extension receiving attachment means for securing and holding together side rail members linearly aligned in end-to-end abutting relationship, and a plurality of cover plates disposed on the open end of said trenchduct at substantially floor level and secured to said side rail members.

4,517,778

EARTHQUAKE-PROOF BUILDING WITH IMPROVED FOUNDATION

Charles M. Nicolai, 401B Pine St., Mill Valley, Calif. 94941

Continuation-in-part of Ser. No. 311,671, Oct. 15, 1981, abandoned. This application Oct. 29, 1982, Ser. No. 437,681
Int. Cl.³ E04H *9/02*
U.S. Cl. 52—167 **18 Claims**



1. An earthquake-proof structure supported on a foundation adapted for mounting at ground level, said foundation comprising

a plurality of laterally spaced support modules each including

a holder disposed in vertically spaced relationship below said structure

roller means mounted vertically between said structure and said holder for supporting said structure thereon and for isolating and permitting horizontal and parallel movement of said holder relative to said structure when ground surrounding said foundation is subjected to seismic activity,

a first support plate mounted in vertically spaced relationship below said holder,

first spring means mounted vertically between said holder and said first support plate for resiliently supporting said holder and for permitting said structure and holder to tilt relative to said first support plate, and

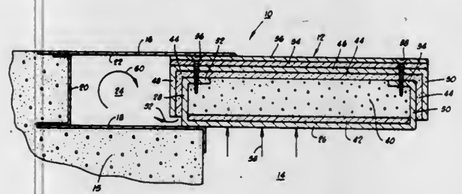
second spring means mounted below said first support plate for resiliently supporting said first support plate and for permitting said first support plate to tilt relative to ground level.

4,517,779

FIRE RESISTANT EXPANSION JOINT COVER

Charles L. Dunsworth, Midwest City, Okla., assignor to Metalines, Inc., Oklahoma City, Okla.

Filed Feb. 9, 1983, Ser. No. 465,195
Int. Cl.³ E04C *2/00*
U.S. Cl. 52—232 **24 Claims**



21. Fire-resistant expansion joint apparatus for connection between first and second movable structures, comprising:

enclosure means defining a volume having a relatively small open portion;

saturatued hygroscopic material contained within said enclosure means;

insulation means of permeable material secured to seal the enclosure means open portion; and

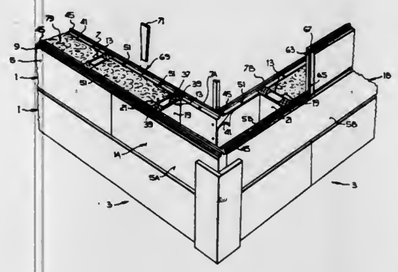
at least one base means disposed in connection to one of said movable structures to receive the enclosure means in close sliding engagement.

4,517,780

INSULATED WALL UNIT CONSTRUCTION

Gérard A. Lacombe, 199 O'Brien, Gatineau, Quebec, Canada J8P 2Y5, and Léopold Bonicalzi, 200 Cité des Jeunes, Hull, Quebec, Canada (J8Y 6M1)

Filed Mar. 8, 1983, Ser. No. 473,252
Claims priority, application Canada, Feb. 7, 1983, 421009
Int. Cl.³ E04B *1/10*
U.S. Cl. 52—233 **7 Claims**



1. A structural log-like member for use in constructing walls, said member comprising:

a relatively thin, wooden outer wall member having parallel top and bottom edges;

a relatively thin, wooden inner wall member having parallel top and bottom edges;

said outer and inner wall members being spaced from each other and parallel to each other, the top edge of each wall member having means projecting upwardly therefrom, and the bottom edge of each wall member having a groove or recess extending inwardly, at least one end of each wall member having a vertical slot therein which tapers from a deep end at the top of the wall member to a shallow end at the bottom of the wall member;

wooden spacer members located between the outer and inner wall members and spaced apart longitudinally of said wall members, each of said spacer members being substantially equal in height to the wall members and comprising two wooden spaced-apart end posts, said end posts being parallel to each other, and two side panels extending between the sides of the end posts to connect the end posts together;

means for joining the spacer members to the outer and inner wall members, said means comprising four nailing plates, each nailing plate extending across one end of one of the posts and a portion of one of the edges of one of the wall members; and

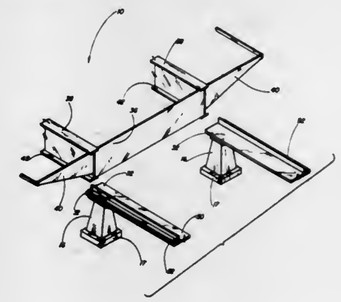
an insulation material located between the inner and outer wall members and between the posts and the side panels of each spacer member.

4,517,781

APPARATUS AND PROCESS FOR PLACEMENT OF PREFABRICATED STRUCTURES

J. T. LeBlanc, P.O. Box 17501, Baton Rouge, La. 70893

Filed Apr. 1, 1983, Ser. No. 481,343
Int. Cl.³ E02D *27/42;* **E04G** *21/00*
U.S. Cl. 52—299 **7 Claims**



1. A process for placement of a prefabricated building having a structural base, which comprises the following steps:

a. providing and securing foundation means to the ground;

b. extending and securing continuous track members as a double runaway longitudinally disposed between said foundation means;

c. providing guide means upon said tracking means for disallowing off-track movement of said building along said tracking means as said building is slid thereupon;

d. partially aligning said structural base on one end of said tracking members; and

e. sliding said building along said tracking means from said partially aligned position to a fully aligned position wherein the structural base of said building is resting fully on said tracking members.

4,517,782

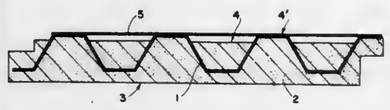
CONSTRUCTION ELEMENT

Khosrow Shamszadeh, Bethayres, Pa., assignor to Nadalaan S.A., Geneva, Switzerland

Filed Dec. 14, 1981, Ser. No. 330,517
Claims priority, application Switzerland, Dec. 12, 1980, 9178/80
Int. Cl.³ E04C *1/00*
U.S. Cl. 52—309.7 **6 Claims**

1. A flat modular construction element comprising a rigid

core formed of a ribbed sheet at least partially embedded in an insulating material which is a cellular synthetic resin foam, each face of said element being at least partly formed by said insulating material, and connecting elements extending on at



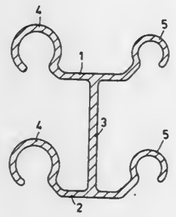
least one face of the ribbed sheet and being secured to the tops of the ribs, said connecting elements being spaced from the insulating material so as to be usable for fixing the construction element to a building structure or for securing finishing elements to said construction element.

4,517,783

ROOF OR WALL STRUCTURE

Sven Harder, Albertslund, Denmark, assignor to Aktieselskabet Jens Villadsens Fabriker, Herlev, Denmark

Filed May 21, 1982, Ser. No. 380,873
Claims priority, application Denmark, May 26, 1981, 2303/81
Int. Cl.³ E04B *5/52*
U.S. Cl. 52—481 **6 Claims**



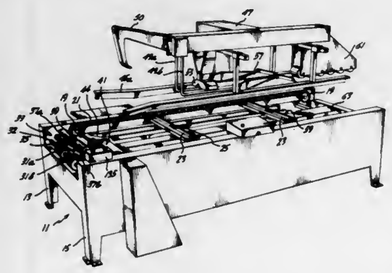
1. A roof or wall structure, comprising a plurality of elongated plates each having lateral edge portions in the form of partially open cylindrical resilient flanges, and a plurality of elongated rigid beams disposed between adjacent ones of said plates, said beams having at each lateral edge thereof two spaced apart partially open cylindrical flanges, said flanges of said plates being snap-locked together with said flanges of said beams.

4,517,784

PROGRAMMABLE CASE SEALING MACHINE

Joel M. Beckett, Eatonville, Wash., assignor to Marq Packaging Systems, Inc., Yakima, Wash.

Filed Jun. 15, 1982, Ser. No. 388,655
Int. Cl.³ B65B *57/02*
U.S. Cl. 53—75 **24 Claims**



1. A programmable case sealing machine comprising:

(A) conveyor means for moving cases to be sealed along a path of travel;

(B) case sealing means located along said path of travel for selectively sealing the top and bottom of cases moved by said conveyor means;

(C) gate means located at the infeed end of said conveyor means for controlling the receipt of cases by said conveyor means;

(D) conveyor sensing means for sensing the position of said conveyor means and, thus, the position of cases moved by said conveyor means;

(E) case infeed sensing means for sensing the presence of a case on the infeed side of said gate means;

(F) programming means for producing programming information for controlling the operation of said case sealing means; and,

(G) a central processing unit coupled to:

(1) said conveyor means for receiving said information about the position of said conveyor means;

(2) said case infeed sensing means for receiving information about the presence of a case at the infeed end of said gate means;

(3) said programming means for receiving and storing said programming information; and,

(4) said gate means and said case sealing means for:

(a) actuating said gate means to allow a case to be received by said conveyor means when said conveyor means is in a predetermined position; and,

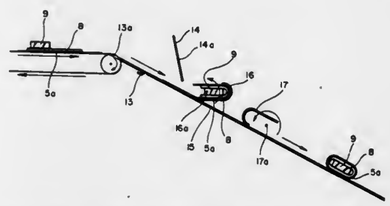
(b) controlling said case sealing means so that the top and bottom of cases moved by said conveyor means passed said case sealing means are selectively sealed in accordance with the programming information received by said center processing unit from said programming means.

4,517,785

AUTOMATIC CONFECTIONARY-AND-LIKES MANUFACTURING EQUIPMENT

Fumihiko Masuda, Tokorozawa, Japan, assignor to Shin Nihon Machine Manufacturing Co., Ltd., Saitama-ken, Japan

Filed Feb. 8, 1982, Ser. No. 346,709
Int. Cl.³ B65B *11/10, 63/04*
U.S. Cl. 53—116 **2 Claims**



1. An automatic confectionary or like manufacturing equipment comprising;

a generally horizontal, porous moving track for feeding a heat-resistant continuous film horizontally thereon from a first end to a second end;

at least one raw material laying device for depositing confectionary raw material on said continuous film, and overlyaing said moving track;

at least one contents laying device for supplying contents on deposited raw material, said contents laying device overlying said moving track and disposed contiguous to said raw material laying device, downstream in said film moving direction;

a film cutting device for cutting said continuous film after deposition of said raw material and said contents on said film, said film cutting device being disposed contiguous to said contents laying device, and being in juxtaposition to said moving porous track, downstream in said film moving direction from said contents laying device;

a position holding device for holding said continuous film and said cut film in proper position while moving on said porous moving track, said position holding device comprising a wind box underlying said porous moving track for applying suction pressure through said porous moving track against said continuous film and said cut film;

a wrapping device in juxtaposition to said porous moving track and downstream therefrom for surrounding said contents with raw material and simultaneously wrapping said raw material with said cut film, said wrapping device being disposed contiguous to said film cutting device, and downstream in the film moving direction therefrom;

said wrapping device comprising an oscillating plate pivoted at an upstream end for pivoting about a horizontal axis in the plane of said porous moving track and at the downstream end of said track between a first horizontal position in line with said porous moving track and a second position inclined downwardly from the horizontal at an inclined angle thereto;

a downwardly inclined stationary plate positioning contiguous to said oscillating plate and acting an extension thereof when said oscillating plate is pivoted from the horizontal position to a downwardly inclined position;

a rotary plate pivoted at its center, overlying said downwardly inclined plate and pivotable from a first position in line with said oscillating plate and being horizontal as an extension of said oscillating plate and said porous moving track to a position at right angles to said downwardly inclined stationary plate to partially wrap said contents;

and at least one forming plate of U-shaped configuration, means for rotatably mounting said at least one forming plate about a horizontal axis, positioned above said downwardly inclined plate and having a straight portion extending from an arcutate portion terminating in an edge contactable with the top of said downwardly inclined plate so as to receive under gravity movement said cut film and said raw material partially wrapped about said contents and for facilitating further wrapping thereof prior to gravity discharge from said U-shaped forming plate as said forming plate rotates about said horizontal pivot axis.

4,517,786

METHOD OF AND APPARATUS FOR WRAPPING ARTICLES

Jeffrey G. Barker, High Wycombe, England, assignor to Ranks Hovis McDougall p.l.c., England

Filed Oct. 6, 1982, Ser. No. 433,089
Claims priority, application United Kingdom, Oct. 8, 1981, 8130389
Int. Cl.³ B65B *9/10, 7/12, 51/00*
U.S. Cl. 53—450 **11 Claims**



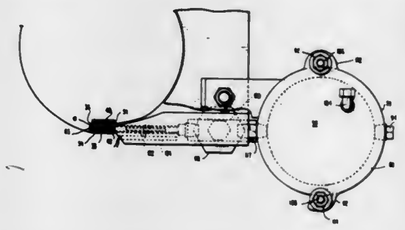
1. A method of wrapping fragile or easily collapsible articles in foil, which includes continuously passing articles in spaced succession along a track, laying foil continuously over the articles to pass along the tracks therewith, continuously passing the articles and foil beneath a folding plate which forms the foil into a tube surrounding the articles, continuously feeding the articles and tube to a twisting and severing stations, arresting the forward motion of that article and its portion of surrounding tube which has entered the twisting and severing station, rotating said arrested article and its surrounding tube portion about the main axis of the tube to form a twist in the tube between that article and the succeeding article, the continuous feed of the other of said articles downstream of said arrested article causing the gap between said arrested article and said succeeding article to diminish during said rotating step, and thereafter severing said twist with a knife; and repeating said twisting and severing of the tube between successive articles.

4,517,787

METHOD AND APPARATUS FOR SEALING BAGS

William D. Kreager, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Aug. 17, 1982, Ser. No. 408,918
Int. Cl.³ B65B *51/26, 9/10, 9/12*
U.S. Cl. 53—450 **15 Claims**



13. The method of applying adhesive to overlapping edges of package-forming sheet material to provide a seal therebetween comprising the steps of:

(a) providing an adhesive applicator having spaced adhesive dispensing openings on opposite sides thereof;

(b) moving said edges past the applicator;

(c) supplying adhesive to said applicator and to said openings for applying spaced lines of adhesive to said overlapping edges as they are moved past the applicator; and

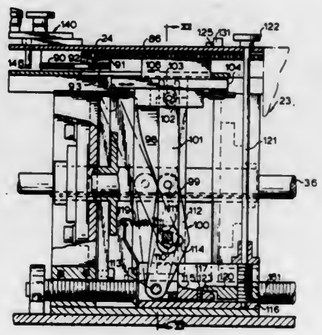
(d) moving said overlapping edges together with the lines of adhesive on one overlapping edge engaging the spaces between lines of adhesive on the other overlapping edge to provide a continuous adhesive coating.

4,517,788

MECHANISM FOR FILLING BAGS OF DIFFERENT SIZES

Richard W. Scheffers, Mount Prospect, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Sep. 30, 1982, Ser. No. 429,507
Int. Cl.³ B65B *41/18, 57/02, 43/26*
U.S. Cl. 53—459 **13 Claims**



1. An automatic packaging apparatus for vertically filling plastic bags laterally interconnected with one another in a

chain wherein each bag has closed bottom and side edges and a reclosable upper end mouth having interlocking fastener strip profiles running laterally across opposed inner facing surfaces of said mouth and wherein each bag is initially received in said apparatus with the fastener strip profiles interlocked, comprising:

a first work station for unlocking the fastener strip profile and opening the mouth of each bag for filling,

means for filling each bag,

a second work station for relocking the fastener strip profiles of each bag after filling and for separating each filled and relocked bag from the remainder of said chain,

a drive means for laterally conducting said chain through said first and second work station, said drive means alternately imparting forward and reverse stroke movements to said chain for conveying each bag of said chain from one work station to the other and separating each filled and relocked bag from the remainder of said chain, respectively, and

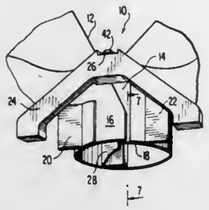
a control means for adjusting the length of forward and reverse stroke movement imparted by said drive means such that said apparatus is adapted to handle bags of various lateral dimensions.

4,517,789

SEPARATOR-FOLDER FOR FORM-AND-FILL PACKAGING MACHINES

Robin T. Ash, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Aug. 3, 1983, Ser. No. 519,848
Int. Cl.³ B65B *9/10*
U.S. Cl. 53—545 **6 Claims**



1. A separator-folder device for use in forming a web to produce a fin seal on a form-and-fill machine, the form-and-fill machine having a former for forming a flat web of packaging film into tubular shape with overlapping edges, the former including a cross-over head with separated and overlapping inner and outer lips, the separator-folder device comprising; an elongated member having at least a portion thereof U-shaped in section, means forming a low friction surface on at least a portion of the elongated member in contact with the packaging film, mounting means mounting the elongated member to the former with the legs of the U-shaped sectional portion extending parallel to and spaced from the former lips, and with the open end of the U-shaped section facing the inner former lip so that the edge of the packaging film extending from the inner former lip is folded and separated from the packaging film extending from the outer former lip.

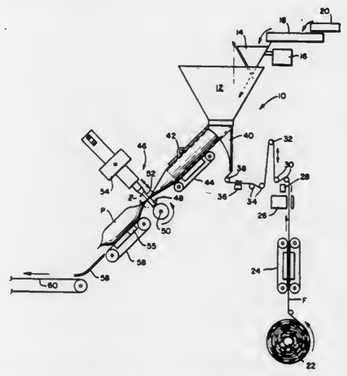
4,517,790

APPARATUS AND METHOD FOR ULTRASONIC SEALING OF PACKAGES

William D. Kreager, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Feb. 27, 1984, Ser. No. 583,970
Int. Cl.³ B29C *27/08;* **B31B** *21/14, 21/60*
U.S. Cl. 53—552 **15 Claims**

1. Apparatus for making an ultrasonic end seal on a package produced in connection with the form and fill machine, the apparatus comprising: a movable ultrasonic horn, mounting means with an adjustable arcuate movement for moving an adjustable said horn into juxtaposition with one side of the package, a movable ultrasonic anvil mounted for rotary movement, means for moving the anvil into juxtaposition with the other side of the package, means for synchronizing the movement of the ultrasonic horn and anvil so that they are simultaneously positioned on opposite sides of the package to accomplish ultrasonic sealing while the package is moving, means for supplying power to the ultrasonic horn when the horn and the anvil are on opposite sides of the package with the package therebetween, and said mounting means for the ultrasonic horn comprises a crank eccentric mounting means for driving the horn through a movable and adjustable pivot point so that by change of position of the pivot point the residence time in the area of the seal may be increased or decreased.

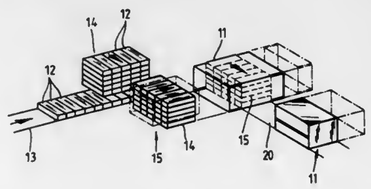


4,517,791

APPARATUS FOR GROUPING CIGARETTE CARTONS AND LOADING CONTAINERS THEREWITH

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 354,005
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110720
Int. Cl.³ B65B *5/06, 19/12*
U.S. Cl. 53—566 **6 Claims**



1. An apparatus for inserting elongate cuboid packages, such as cigarette cartons, into an open-ended container, comprising:

(a) a grouping station (23),

(b) an elongate supply conveyor (13) for transporting successive elongated cartons positioned perpendicularly thereto (12) to the grouping station,

(c) means (24) at the grouping station for stacking successive layers of cartons into multi-pack groups,

(d) a rotatable turntable (27) disposed adjacent the grouping station and laterally offset from the supply conveyor,

(e) first pusher means (26) for laterally pushing individual carton groups out of the grouping station and onto the turntable,

(f) means (20) disposed adjacent the turntable for supporting a container (10 or 11) with the plane of an open end (16) thereof facing the turntable and perpendicular to said supply conveyor, an insertion axis of the container being parallel to but laterally offset from the supply conveyor,

(g) second pusher means (29) for pushing individual carton groups off of the turntable and into a container in a direction parallel to but laterally offset from the supply conveyor,

(h) means for selectively rotating the turntable through 90° after the delivery of a carton group thereto and before the expulsion thereof by the second pusher means, whereby carton groups may be inserted into a container with the longitudinal axes of individual cartons in a group either parallel to the open end of a container without turning said turntable or perpendicular thereto with turning said turntable in dependence upon the relative dimensions of a carton group and a container,

(i) a pair of spaced, parallel, vertical retaining walls (32, 33) mounted on the turntable and rotatable together therewith, said walls being mounted perpendicular to said supply conveyor during transfer of said carton groups onto said turntable for laterally supporting carton groups on the turntable, and

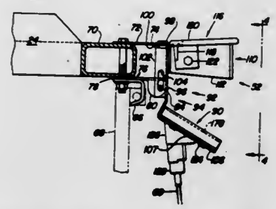
(j) means for selectively lowering a one of the retaining walls closest said open container end into a position underneath the turntable when said turntable is not rotated such that an upper edge of said one wall extends no higher than a support face of the turntable.

4,517,792

GRAIN LOSS MONITOR SENSOR MOUNTING ARRANGEMENT FOR A COMBINE

Barry K. Denning, Woodhull, and Duane H. Ziegler, Colona, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed May 7, 1982, Ser. No. 375,894
Int. Cl.³ A01F *12/44, 7/06*
U.S. Cl. 56—10.2 **7 Claims**



1. In a combine harvester having a plurality of elongated reciprocating straw walkers each walker having a discharge end, a cleaning shoe including at least one reciprocating generally horizontal foraminous member having a rear discharge edge, and a grain loss monitor system including at least one first sensor carried by a straw walker adjacent its discharge end and at least one second sensor carried by the reciprocating member adjacent its discharge edge, each sensor having a sensing surface and a mounting face approximately parallel to the sensing surface, and in which threshed crop material is received by the straw walkers and conveyed rearwardly so that a first portion of material passes over their discharge ends while some grain and other small fractions of the crop material pass downwards to the cleaning shoe which processes that portion of the material so that a second portion passes over the discharge edge of the reciprocating member and at least some of the first and second portions of crop material makes an impact on the sensing surfaces of the first and second sensors respectively, the grain loss monitor system being operable to discriminate between the impacts on the sensors of kernels of grain and other materials so as to indicate a rate of loss of grain according to the amount of grain contained in the first and second portions respectively, an improved mounting arrangement for the sensors comprising:

a socket means carried by the reciprocating member adjacent its discharge edge;

bracket means carried by the reciprocating member adjacent its discharge edge, spaced generally vertically from the socket means, and carrying a first latching element; and

a sensor mounting bracket having a generally upright wall, a sensor mounting surface for receiving the sensor mounting face extending rearwardly and downwardly from the base of the upright wall, and a tang extending forward from the upright wall, and carrying a second latching element for mating with the first latching element, spaced vertically from the tang so that the sensor mounting bracket may be attached to the reciprocating member by engaging the tang in the socket means and positioning the sensor mounting bracket so that the second latching element engages the first latching element to position the bracket and so that the sensor is disposed with its sensing surface directed rearwardly and upwardly, the upright wall also carrying a rearwardly extending support arm and a deflector plate spaced vertically upwards from the sensor and having opposite portions extending cantilever fashion in opposite directions from the support arm and approximately spanning the lateral extent of the sensor sensing surface.

4,517,793

RADIO OPAQUE FIBRE

Edmund H. Carus, Darwen, and Eric F. T. White, Alderley Edge, both of England, assignors to Vernon-Carus Limited, Darwen, England

Filed Aug. 23, 1983, Ser. No. 525,768
Int. Cl.³ D02G *3/02, 3/00*
U.S. Cl. 57—243 **14 Claims**

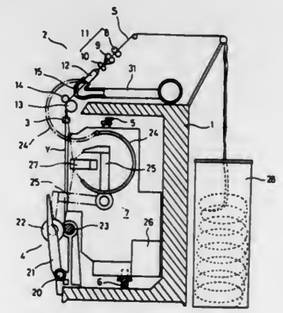
1. A radio-opaque polypropylene fibre comprising, a coupling agent and 55% to 70% by weight of barium sulphate.

4,517,794

METHOD OF GUIDING YARN END IN AIR SPINNING APPARATUS

Shoji Sakai, Kyoto; Michiaki Fujiwara, Shinomachi; Nobunori Kubota, and Koshi Noda, both of Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 28, 1981, Ser. No. 335,222
Claims priority, application Japan, Oct. 22, 1981, 56-169527
Int. Cl.³ D01H *11/00;* **D02G** *1/16*
U.S. Cl. 57—304 **14 Claims**



1. In a spinning apparatus using an air jet nozzle having a nozzle orifice from which spun yarn exits said jet nozzle, a device for uniformly retrieving a loose yarn end located at said nozzle orifice comprising:

suction means disposed remotely from said nozzle orifice for removing debris;

connection means for connecting said suction means solely to said nozzle orifice, such that said suction means will remove dust from said nozzle orifice by a continuous suction air flow through said suction means; and

retrieval means, relocatably positionable between a position

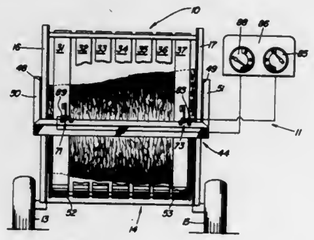
remote from said nozzle orifice and a position within said connection means adjacent said nozzle orifice, for retrieving and retaining said loose yarn end at said nozzle orifice in the presence of said continuous suction air flow, such that said retrieval means will uniformly dominate the tendency of said loose yarn end to be drawn into said suction means.

4,517,795

BALE-SHAPE GAUGE FOR BALER FOR FORMING CYLINDRICAL BALES

Gerald F. Meiers, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1979, Ser. No. 98,280
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **7 Claims**



1. In a machine for forming cylindrical bales of crop material, said machine comprising:

a mobile frame;

a plurality of loop means respectively supported on said frame for movement in a plurality of laterally spaced parallel planes;

a bale-forming chamber having a bale-winding axis extending substantially perpendicular to said planes, said chamber defined by said frame and by a span of each of said loop means; and

a tensioning and take-up mechanism for lengthening the span of each loop means defining said chamber and thereby increasing the size of said chamber transverse to the bale-winding axis responsive to the increasing diameter of the largest diameter portion of a bale being wound in said chamber wherein the improvement comprises:

a gauge including sensing means for sensing the relative diameters of a bale being formed in said chamber at two axially-spaced points on the bale periphery and continuously generating first and second signals corresponding to the relative diameters, visual indicating means responsive to said first and second signals for continuously indicating the relative diameters of said bale at said spaced points; and transmitting means coupled between said sensing means and said visual indicating means for transmitting said first and second signals to said visual indicating means.

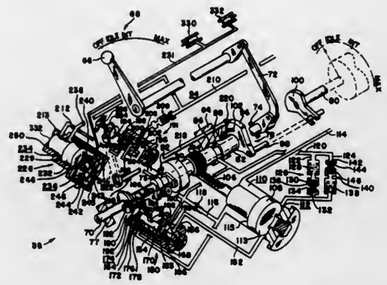
4,517,796

POWER LEVER APPARATUS FOR A TURBINE ENGINE

Howard L. McCombs, Jr., South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Jun. 3, 1983, Ser. No. 500,728
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.281 **42 Claims**

20. In a turbine engine having a compressor with a bleed valve device and a variable geometry apparatus responsive to an operational control member for regulating the flow rate of fuel supplied through a conduit to said turbine engine as a function of atmospheric pressure and the temperature of air supplied to the compressor in response to movement of a power lever by an operator to a position corresponding to a desired operation of the turbine engine, the power lever comprising: an input member that moves in direct response to an input by the operator and a follower member linked to the operational control member, said follower member being connected to the input member by a fluidic connection responsive to an operating signal representing the operating parameters of



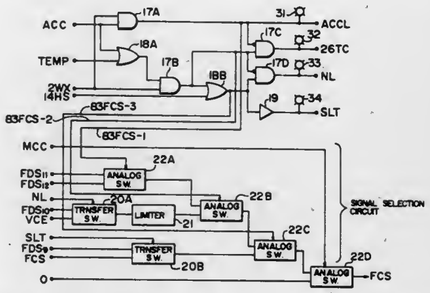
the turbine engine to limit the rate of fuel flow during acceleration and deceleration to substantially prevent stalling and the development of unacceptable operating temperatures: and means connected to said fluidic connection for overriding said operating signal to allow unrestricted input to said control member.

4,517,797

FUEL CONTROL METHOD FOR GAS TURBINE

Shigeki Adachi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,774
Claims priority, application Japan, May 25, 1981, 56-78136; Sep. 14, 1981, 56-143760; Dec. 4, 1981, 56-194544
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.281 **4 Claims**



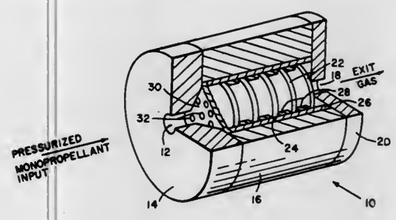
1. A fuel control method for a gas turbine wherein a plurality of control systems for fuel flow rate control are graded in accordance with a predetermined preference order, a fuel flow rate control signal of a particular control system of the highest grade in the predetermined preference order is selected when an actually measured value in the form of a feedback signal exceeds a target value in the plurality of control systems, and the fuel flow rate is controlled by the selected signal, the plurality of control systems comprising start-up, speed, acceleration and exhaust gas temperature control systems, the acceleration control system and the exhaust gas temperature control system being both of the first grade of the preference order, and controlled preferentially to the other control systems.

4,517,798

POROUS CATALYTIC METAL PLATE DEGENERATION BED IN A GAS GENERATOR

Thomas G. Roberts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 31, 1983, Ser. No. 499,581
Int. Cl.³ F02K *9/42, 9/95*
U.S. Cl. 60—39.462 **2 Claims**



1. A gas generator comprising: chamber means having an input port for receiving fluid monopropellant and an output port for providing for gaseous output; and, a plurality of porous catalytic metal plates disposed within said chamber in parallel spaced relation and normal to the axis of said input and output ports, said catalytic metal plates being formed of only a self-supporting catalyst, said catalyst being selected to cause exothermic decomposition of

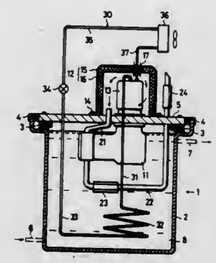
---

4,517,799

HEAT UTILIZING SYSTEM USING INTERNAL COMBUSTION ENGINE

Tadashi Hanaoka, and Hiroaki Umezu, both of Tokyo, Japan, assignors to Misawa Home Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 559,176
Claims priority, application Japan, Mar. 9, 1983, 58-39424; Mar. 9, 1983, 58-39425
Int. Cl.³ F25B *27/00*
U.S. Cl. 62—323.1 **20 Claims**



1. A heat utilizing system using an internal combustion engine, said heating system comprising:

(a) a vessel containing a heat transfer medium therein and having a top, said vessel top being provided with an opening;

(b) an internal combustion engine, at least part of said internal combustion engine being immersed in said heat transfer medium and being supported by a support member provided on said vessel opening;

(c) an exhaust pipe for conducting hot exhaust gases away from said internal combustion engine, said exhaust pipe being immersed in said heat transfer medium and attached to said internal combustion engine, said heat transfer medium thus comprising a heat sink for waste heat from said internal combustion engine and for heat taken from said exhaust gases conducted away from said engine by said exhaust pipe; and

(d) a component driven by said internal combustion engine.

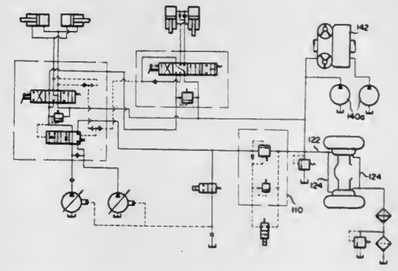
4. A heat utilizing system using an internal combustion engine as set forth in claim 1, wherein said driven component is a coolant compressor of a heat pump.

4,517,800

HYDRAULIC CONTROL SYSTEM FOR OFF-HIGHWAY SELF-PROPELLED WORK MACHINES

Tadao Karakama, Kawasaki, and Kazuo Uehara, Tokyo, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 310,424
Claims priority, application Japan, Oct. 31, 1980, 55-154835; Oct. 31, 1980, 55-154836
Int. Cl.³ B62D *5/06;* F15B *11/16, 13/06;* F16D *33/00*
U.S. Cl. 60—337 **11 Claims**



1. A hydraulic control system for an off-highway self-propelled work machine comprising:

(a) first and second sources of hydraulic fluid under pressure;

(b) fluid actuated steering cylinder means;

(c) a steering valve for controllably actuating the steering cylinder means;

(d) fluid actuated implement cylinder means;

(e) an implement valve for controllably actuating the implement cylinder means, said implement valve being connected downstream of said steering valve and receiving pressurized fluid therethrough;

(f) a demand valve for selectively delivering the pressurized fluid from the first and second sources to the steering valve and to the implement valve in order to permit the valves to actuate the steering cylinder means and the implement cylinder means, said demand valve having a drain line for bypassing pressurized fluid not delivered to the steering valve and to the implement valve;

(g) means responsive to the operation of the steering valve for causing the demand valve to deliver the pressurized fluid from the first source to the steering valve upon displacement of the steering valve to less than a predetermined degree and for causing the demand valve to deliver the pressurized fluid from both first and second sources to the steering valve upon greater displacement of the steering valve; and

(h) means responsive to the operation of the implement valve for causing the demand valve to deliver the pressurized fluid from the first source to the implement valve when the implement valve is operated to actuate the implement cylinder means in one direction, and for causing the demand valve to deliver the pressurized fluid from both first and second sources to the implement valve when the implement valve is operated to actuate the implement cylinder means in the opposite direction.

4,517,801

SUPERCHARGING PRESSURE CONTROL DEVICE FOR TURBOCHARGED INTERNAL COMBUSTION ENGINES

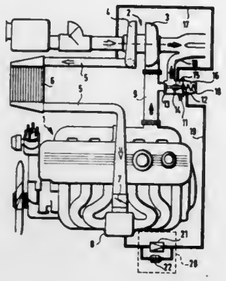
Johannes Emonts, Grossberghofen, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,680

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203805

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **2 Claims**



1. A supercharging pressure control device for a mixture-compressing internal combustion engine having an exhaust gas turbocharger operable in response to actuation of a throttle valve, comprising:

a bypass valve and a bypass conduit for the exhaust gas turbocharger, the bypass valve being disposed in the bypass conduit,

a regulating unit for the bypass valve operably responsive in opening and closing directions to intake pressure in an intake arrangement for the engine and supercharging pressure from the exhaust gas turbocharger, respectively,

a diaphragm separating the regulating unit into two chambers and being operable as a drive element in the regulating unit,

a first chamber of said regulating unit being directly responsive to supercharged air passing through a first control conduit connected to said exhaust gas turbocharger upstream of said throttle valve and

a second chamber of said regulating unit including a closing spring and being connected to the intake arrangement downstream of the throttle valve by an actuator and a second control conduit,

the actuator including a pressure limiting valve limiting pressure in the second chamber to a predetermined reference pressure.

4,517,802

TURBOCHARGER COMBUSTOR METHOD

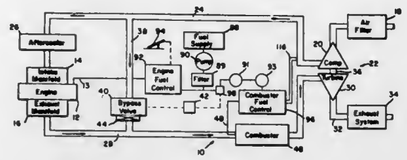
Robert J. Kobayashi, Rancho Palos Verdes; James H. Nancarrow, Torrance, both of Calif., and Jeffrey L. Alger, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 413,640, Sep. 1, 1982, Pat. No. 4,464,901, which is a continuation of Ser. No. 142,538, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 855,048, Nov. 25, 1977, abandoned. This application Jan. 20, 1984, Ser. No. 572,283

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—606 **15 Claims**

1. In an internal combustion reciprocating engine having a turbocharger driven by exhaust gases to provide compressed charge air to the engine, a method of supplementing the energy level of the exhaust gases at selected engine operating conditions comprising the steps of mounting a combustor in an exhaust conduit between the engine and the turbocharger for in-line passage of the exhaust gases; controllably supplying fuel to the combustor in response to engine operating conditions; injecting and atomizing with fuel injector means the fuel supplied to the combustor using a portion of the gases flowing through the combustor to permit combustor operation with sustained combustion of the fuel and the gases flowing through the combustor, said injecting and atomizing step including forming a cup-shaped fuel nozzle having a base at a fuel entrance end and a relatively open exit end opening into the combustor, directing a stream of fuel supplied in said fuel supplying step along the longitudinal axis of the nozzle via a fuel metering tube received through the base and extending a short distance into the nozzle interior, directing a plurality of axially and angularly inwardly directed gas jets through jet openings formed in said nozzle for intersection at the fuel



stream slightly beyond the termination of the metering tube to turbulently break up and substantially immediately pick up and atomize the fuel stream, and directing a plurality of tangential swirl gas streams through swirl openings formed radially with respect to the point of intersection of the gas jets the combined effect of the gas jets and swirl streams creating a substantially atomized gas-fuel cloud for combustion within the combustor; controllably bypassing a surplus portion of the turbocharger charge air flow around the engine to the combustor during relatively low speed engine operating conditions; and preventing bypass air flow around the engine at relatively high speed engine operating conditions, said bypassing step including mixing of the surplus portion of bypass air flow with exhaust gases upstream of the combustor.

4,517,803

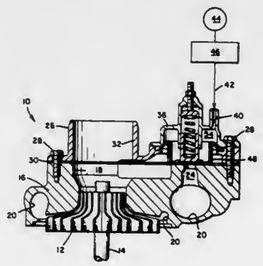
TURBOCHARGER COMPRESSOR VALVE

Terry Jamison, Hermosa Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 22, 1983, Ser. No. 487,623

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—611 **13 Claims**



13. In a turbocharger having centrifugal compressor means rotatably mounted within a compressor housing for receiving airflow through an inlet passage opening onto a planar, end face of said housing, and for discharging said airflow in a high pressure state through a discharge passage in the housing, said housing having an interconnection duct extending from said discharge passage and opening onto said end face;

an adapter housing secured to said end face of the compressor housing, said adapter housing defining an axially extending airflow inlet port aligned with and communicating with said inlet passage of the compressor housing, and

an axially extending opening aligned with said interconnection duct;

a cover housing secured to said adapter housing to close said opening therein, said cover housing having a signal port adapted to communicate an external pressure signal source to the interior of said cover housing;

a flexible diaphragm having a continuous peripheral edge sealingly clamped between said adapter and cover housings, said diaphragm disposed in overlying relationship with said interconnection duct; and

biasing means reacting between said adapter housing and said diaphragm for urging said diaphragm into a first position in sealing engagement with said end face of the compressor housing to interrupt fluid communication between said inlet and discharge passages through said interconnection duct.

4,517,804

CONDENSER VACUUM RETAINING APPARATUS FOR STEAM POWER PLANT

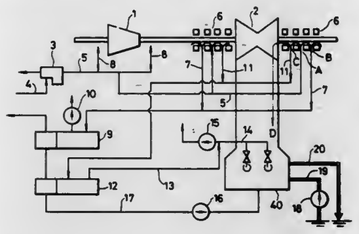
Katsumi Ura, Kitaibaraki; Taiji Inui, and Kenji Sakka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,802

Claims priority, application Japan, Sep. 17, 1982, 57-160853

Int. Cl.³ F01K *21/00*

U.S. Cl. 60—657 **14 Claims**



1. A vacuum retaining arrangement for a steam power plant including a turbine means, a condenser means associated with said turbine means, means for extracting air from said condenser means, a gland packing means for enabling a forming of a steam seal for the turbine means, and first gland condenser means communicating with the gland packing means at a position spaced outwardly from a steam inlet port means for supplying the sealing steam to said gland packing means so as to enable steam extracted from said gland packing means to be supplied to said first gland condenser means to prevent a leaking of the sealing steam into atmosphere, the vacuum retaining arrangement comprising means connected to the gland packing means at a position near the condenser means for receiving sealing stream from said gland packing means, means for connecting said means for receiving to said means for extracting air from said condenser means for extracting the sealing steam from said gland packing means, and second gland condenser means interposed between said means for receiving and said means for extracting air from said condenser means for enabling steam extracted from said gland packing means to be supplied into said second gland condenser means to prevent a leaking of the sealing steam into said condenser means associated with said turbine means.

4,517,805

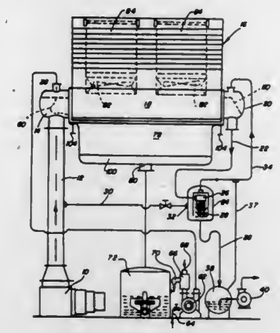
VACUUM PRODUCING CONDENSER

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Division of Ser. No. 491,594, May 4, 1983, which is a continuation-in-part of Ser. No. 324,785, Nov. 25, 1981, abandoned. This application May 18, 1984, Ser. No. 611,612

Int. Cl.³ F01K *19/10*

U.S. Cl. 60—688 **9 Claims**



1. In a vacuum producing condenser for vapors containing non-condensible gases, means defining a condenser chamber with condenser tubes therein, means for directing water onto the condenser tubes, means for collecting said water after it has been directed over said condenser tubes for recycling onto the condenser tubes, means for exhausting non-condensible gases from the condenser including intake means for receiving cooling water to facilitate operating said exhausting means, and means passing said cooling water from said exhausting means into said collecting means to replace water evaporated while passing over said condenser tubes.

4,517,806

APPARATUS FOR SEPARATING ICE FROM A SLURRY AND WASHING THE ICE

Raymond Korzonas, Chicago, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 9, 1984, Ser. No. 598,494

Int. Cl.³ B01D *9/04*

U.S. Cl. 62—123 **6 Claims**

1. Apparatus for separating ice from concentrated liquid and washing the ice, comprising:

a vessel having a bottom and vertical wall joined to the bottom;

a plurality of vertical tubular members positioned in the vessel and extending upwardly from the bottom, with said tubular members having perforations in the upper portion thereof through which concentrated liquid in the vessel can drain into the tubes;

a first conduit for feeding a slurry of ice and concentrated liquid to the vessel;

a second conduit communicating with the tubes for withdrawing concentrated liquid from the tubes;

a concentrated liquid withdrawal third conduit communicating with the vessel lower interior portion for withdrawing concentrated liquid from the vessel; and

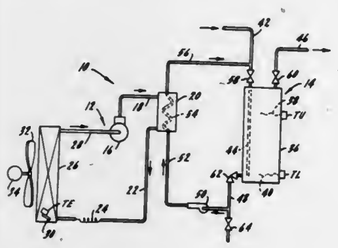
control means to maintain a predetermined concentrated liquid level, and a predetermined pressure distribution, in the vessel.

4,517,807

HEAT PUMP WATER HEATER WITH SUPPLEMENTAL HEAT SUPPLY

James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 416,435, Sep. 10, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,891
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—156 **20 Claims**



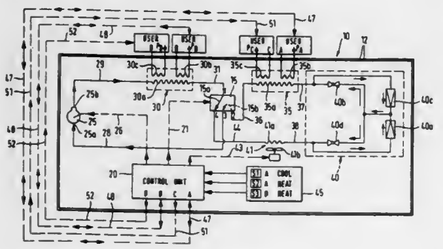
1. A heat pump water heater with supplemental heat supply comprising heat pump means for heating water, said heat pump means including an evaporator, tank means cooperatively associated with said heat pump means for storing said water, supplemental water heating means, means for sensing the temperature of water in said tank means, and means for controlling the operating cycle of said heater, said control means including means for sensing the formation of frost on said evaporator, said control means initiating said operating cycle by turning on said heat pump means in response to sensing by said tank water temperature sensing means of a water temperature below a predetermined temperature, and concluding said operating cycle in the absence of the formation of frost on said evaporator by turning off said heat pump means in response to sensing by said tank water temperature sensing means of a water temperature at a predetermined temperature, said control means continuing said operating cycle in the event said frost sensing means senses the formation of frost on said evaporator by turning off said heat pump means and turning on said supplemental heating means, maintaining said heat pump means turned off and said supplemental heating means turned on until said operating cycle is concluded, and concluding said operating cycle by turning off said supplemental heating means in response to sensing by said tank water temperature sensing means of a water temperature at a predetermined temperature.

4,517,808

HEAT PUMPING SYSTEM

Avner Movshovitz, Tel Aviv, and Amos Ityel, Ramat Aviv, both of Israel, assignors to Amcor Ltd., Tel Aviv, Israel

Filed Mar. 29, 1984, Ser. No. 594,830
Claims priority, application Israel, Sep. 5, 1983, 69662
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—160 **7 Claims**



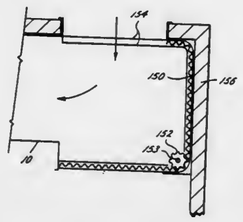
1. A heat transfer system comprising:
first, second and third controllable heat exchangers, each having a primary coil through which refrigerant is adapted to flow with said first and second heat exchangers further including at least a secondary coil in heat transfer contact with said primary coil for providing a separate path for fluid to flow therein and said third exchanger includes operable means for circulating fluid about the primary coil of the third exchanger;
a compressor having an inlet and an outlet for compressing gaseous refrigerant supplied thereto at its inlet and for providing compressed gaseous refrigerant at the outlet thereof;
a two-state flow path reversing valve having first, second, third and fourth ports, said valve providing two separate flow paths between its first and fourth ports and its second and third ports, when being in a first of its two states and further providing two separate flow paths between its first and second ports and its third and fourth ports when being in its second state;
expansion valve means for expanding liquid refrigerant supplied thereto to effectively reduce its pressure;
first means for providing a refrigerant flow path between the third port of the path reversing valve and the compressor's inlet, and between the compressor's outlet and the first port through the primary coil of said first exchanger;
second means for providing refrigerant flow path between said second and fourth ports through the primary coil of said second heat exchanger, said expansion valve means and the primary coil of said third heat exchanger connected thereby in series; and
control means including manually controllable switches for controlling said system whereby when said path reversing valve is in said first state either said first and second heat exchangers are operable as a condenser and an evaporator respectively while said third heat exchanger is inoperative or said third and second heat exchangers operate as a condenser and an evaporator respectively while said first heat exchanger is inoperative and when said valve is in its second state said first and second heat exchangers are connected in series with at least one of them being operable as a condenser while said third heat exchanger is operable as an evaporator.

4,517,809

ENERGY CONSERVATION SYSTEM FOR HEATING AND COOLING OF STRUCTURES

Wilber S. Hoyt, 406 Beverly Dr., Lafayette, La. 70503

Division of Ser. No. 207,120, Nov. 17, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 428,144
Int. Cl.³ F25B *39/04*
U.S. Cl. 62—183 **4 Claims**



1. An energy conservation system for ventilating and heating of a structure substantially enclosing a refrigeration unit having a heat exchanger remotely disposed from the refrigeration unit, comprising:
a housing enclosing at least a portion of a heat exchanger;
an intake manifold communicating with said housing for providing a path for air to flow into the housing for contact with the heat exchanger, said intake manifold having a first inlet communicating with the air exteriorly of the structure and a second inlet communicating with the air interiorly of the structure;

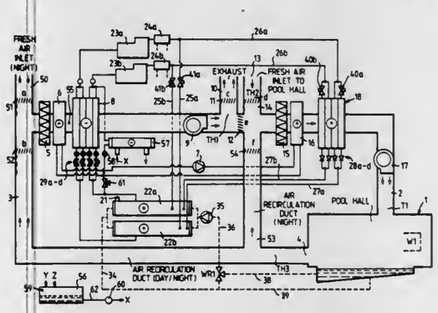
a first damper means mounted with said intake manifold for selecting at least one inlet of air of said intake manifold for flow into said housing;
an exhaust manifold communicating with said housing for providing a path for air to flow from the heat exchanger, said exhaust manifold having a first outlet communicating with the air exteriorly of the structure and a second outlet communicating with the air interiorly of the structure;
a second damper means mounted with said exhaust manifold for selecting at least one outlet of the exhaust manifold for flow of effluent air out of the exhaust manifold, said second damper means selecting said second outlet to recover heat from said heat exchanger for warming the interior air of the structure when desired;
said first and second damper means include flexible gates comprising multiple interlocking sections which slide along channels within the housing and gear means for moving the flexible gates to select between alternate air passages, said interlocking sections having indentations for engagement with the gear means;
means in said housing for flowing air from said intake manifold into heat transfer contact with the heat exchanger and on into said exhaust manifold; and
means for supplying exterior air into the structure when said first damper means is selecting flow of air from said second inlet and said second damper means is selecting said first outlet.

4,517,810

ENVIRONMENTAL CONTROL SYSTEM

Peter N. Foley, Shoeburyness, and Alan M. Turbard, Halstead, both of England, assignors to Borg-Warner Limited, Hitchin, England

Filed Dec. 16, 1983, Ser. No. 562,266
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—186 **8 Claims**



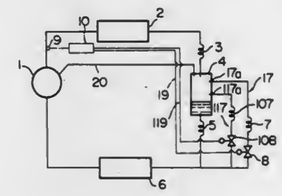
1. An environmental control system for controlling the condition of a space, including: a heat pump arrangement comprising an evaporator for recovering heat from air delivered thereto, a condensor for rejecting heat recovered by the evaporator to air to be delivered to the space; and means for delivering air from a selected source to the evaporator means to sense the temperature of said air, and control means, the means being operatively arranged so as, in one mode of operation, to deliver outside air to the evaporator and so that in the event of the evaporator entry air temperature falling to a level which could result in frosting of the evaporator, air re-circulated from the space is delivered to the evaporator to maintain the temperature above that level.

4,517,811

REFRIGERATING APPARATUS HAVING A GAS INJECTION PATH

Akira Atsumi; Kensaku Oguni; Shigeaki Kuroda, all of Shimizu; Takao Senshu, Ibaraki, and Kazuo Yoshioka, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,520
Claims priority, application Japan, Nov. 6, 1982, 58-193963
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—197 **10 Claims**



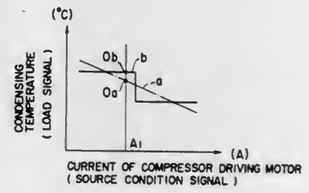
1. A refrigerating apparatus comprising:
a main refrigerant circuit including a compressor, a condenser, a first expansion device, a gas-liquid separator, a second expansion device and an evaporator which are successively connected through piping;
an injection path for interconnecting an upper part of said gas-liquid separator and a cylinder of said compressor during a compression stroke thereof;
at least one auxiliary path formed by connecting a solenoid valve closed in a normal operation and an auxiliary expansion device, said auxiliary path being provided between said gas-liquid separator and evaporator so as to be in parallel to said second expansion device, said auxiliary path being connected to said gas-liquid separator at a position higher than a connecting position of said second expansion device to said gas-liquid separator;
means for detecting a load on the refrigerating apparatus; and
means for controlling an operation of the solenoid valve in response to a detection of the load on the refrigerating apparatus whereby said solenoid valve is opened when the load on said refrigerating apparatus increases.

4,517,812

LOAD CONTROL DEVICE FOR A HEAT-PUMP TYPE AIR CONDITIONING APPARATUS

Kenji Umezu, Shizuoka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 28, 1983, Ser. No. 489,497
Claims priority, application Japan, May 4, 1982, 57-73394
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—228.5 **9 Claims**



1. A load control device for a heat-pump type air conditioning apparatus of the type comprising a compressor, a condenser, an expansion member, and an evaporator which constitute a refrigerant circulation circuit, and in which said compressor is subject to load reduction control by an unloading circuit connected to said compressor and provided with an electromagnetic valve permitting refrigerant to flow from a

compression chamber of said compressor to a suction side of said compressor, comprising:

means for detecting a load condition applied to said compressor and for generating a load condition signal representing the detected load condition;

means for detecting a condition of a power source for driving said compressor and for generating a power source signal representing the detected condition of the power source; and

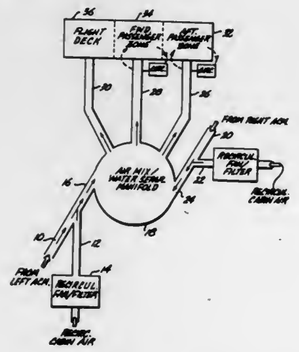
means for controlling switching of operation of the air conditioning apparatus between full-capacity operation and reduced-capacity operation in accordance with said power source signal and said load signal at least by actuating said electromagnetic valve in said unloading circuit according to said signals.

4,517,813

AIR CONDITIONING SYSTEM AND AIR MIXING/WATER SEPARATION APPARATUS THEREIN

John L. Eggebrecht, Bellevue; Harold D. Rogers, Woodinville, and Arthur S. Yorozu, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 5, 1983, Ser. No. 510,729
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—284 **4 Claims**



1. An air mixing and water separation apparatus, for mixing and separating water particles from a combined flow of fresh and recirculated air for delivery into an enclosure such as an airplane cabin, comprising:

(a) an elongate manifold having a lower end portion, an upper end portion and a midportion, the midportion extending along the longitudinal axis of the manifold and connected between the upper and lower end portions of the manifold, the interior longitudinal walls of the manifold having curved surfaces;

(b) one or more inlet ducts connected to the lower end portion for introducing the combined air flow into the manifold, the inlet ducts being substantially tangent to the interior walls of the manifold where the inlet ducts are connected to the lower portion, the tangential connection causing a swirling motion of the combined air wherein the water particles are projected by centrifugal force to impinge upon the interior longitudinal walls, the swirling motion also causing mixture of the combined air;

(c) one or more outlet ducts connected to the upper portion of the manifold for delivering the mixed air from the manifold to the enclosure;

(d) flow redirection means positioned between the inlet ducts and the outlet ducts for converting the swirling motion of the mixed air into substantially uniform flow across and perpendicular to the longitudinal axis of the manifold; and

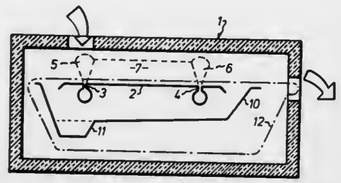
(e) scupper means affixed to the interior wall of the manifold for removing from the manifold the water particles impinged thereon.

4,517,814

APPARATUS FOR CONTINUOUS DIRECT TREATMENT OF PRODUCTS BY MEANS OF A FLUID COOLING MEDIUM

Sven O. Rothstein, Ängelholm, Sweden, assignor to Frigoscandia Contracting AB, Sweden

Filed Jan. 4, 1984, Ser. No. 568,101
Claims priority, application Sweden, Jan. 12, 1983, 8300135
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—374 **4 Claims**



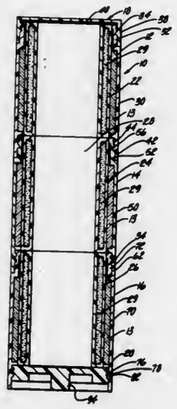
1. Apparatus for continuous direct treatment of products by means of a fluid cooling medium, said apparatus comprising a chamber having means therein for forming a liquid bed of the fluid cooling medium and having means for moving the products through the liquid bed in order to effect direct treatment of the products by the fluid cooling medium, said means for forming said liquid bed comprising a supporting surface beneath the bed, sidewall surfaces at opposite sides of the bed, and means for providing substantially vertically directed curtains of the fluid cooling medium at the ends of the bed for retaining the bed therebetween.

4,517,815

INSULATED MODULAR COOLER

Peter J. Basso, 425 Millstone Ct., Rochester, Mich. 48073

Filed Oct. 7, 1983, Ser. No. 539,937
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **12 Claims**



1. A receptacle for storing and cooling food products comprising:

a tubular body having an open-ended body chamber comprising at least one first tubular member defining an open-ended chamber,

at least one annular housing in said at least one tubular member, said housing having inner and outer wall portions spaced apart from each other to form a hollow chamber therebetween and means for closing the axial ends of said hollow chamber, each said at least one annular housing defining a cavity having open ends;

a layer of insulating material between each said first tubular member and each said annular housing,

detachable closure means for closing each open end of said tubular body, and

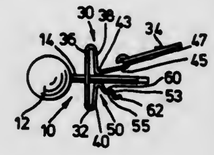
wherein said hollow chamber is filled with a freezeable refrigerant.

4,517,816

EARRING FASTENER

Herman A. Hess, 10 Eddystone Ave., Downsview, Ontario, Canada M3H 1H4

Filed Nov. 28, 1983, Ser. No. 555,300
Int. Cl.³ A44C *7/00*; A44B *9/00*
U.S. Cl. 63—12 **8 Claims**



1. A fastener for the stud of an ornament for pierced ears, the fastener having a gripping member and a latch,

(a) the gripping member comprising:

a base portion,

aperture means in the base portion through which a stud can pass,

a first resilient arm affixed to said base portion such that it can flex to move toward a stud when positioned to extend through said aperture means,

a second resilient arm affixed to said base in opposed relation to said first arm such that it can flex and move toward said first arm, whereby the arms can contact a stud on opposite sides thereof and squeeze the same,

(b) the latch being pivotally connected to said first arm and adapted to engage said second arm to draw the two arms toward each other, thus squeezing a stud positioned therebetween,

(c) the gripping member being formed from a band of resilient metal which is bent to define a substantially flat central region constituting said base portion, the aperture means being a hole substantially centrally of said flat central region, the central region having opposed ends remote from said hole, the first arm being an integral part of said band of metal and extending from one of said ends toward the hole, then undergoing a bend to extend away from the flat central region, and terminating in a hinged connected with said latch, the second arm being also an integral part of said band of metal and extending from the other of said ends toward the hole, then undergoing a bend to extend away from the flat central region while defining an indent engageable by said latch.

4,517,817

METHOD AND SETTING FOR MOUNTING ORNAMENTAL BEADS AND GEMS

Ed Levin, R.D. 1, Cambridge, N.Y. 12816

Filed Feb. 7, 1983, Ser. No. 464,404
Int. Cl.³ A44C *17/02, 17/04*
U.S. Cl. 63—26 **8 Claims**

1. A method for mounting an ornament in a setting which comprises:

(A) providing a planar sheet metal support;

(B) providing an ornament having a straight-through opening;

(C) forming an aperture in said support, while

(D) forming a single rectilinear strip extending entirely across the aperture, both ends of said strip being in one piece with said support;

(E) shearing a single end of the strip from the support adjacent one side of the aperture while leaving the opposite end of the strip unitary with said support adjacent a different side of the aperture;

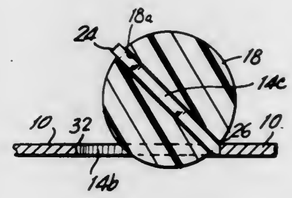
(F) flexing said strip about said opposite end from a position coplanar with the aperture;

(G) threading said strip through the straight-through opening in said ornament;

(H) bending said strip with the associated ornament back into the plane of the aperture; and

(I) frictionally wedging the sheared end of the strip against the adjacent side of the aperture from which it has been sheared.

5. Jewelry including



I. a setting on which on ornament with a straight-through opening is mountable, said setting comprising:

(A) a planar sheet metal support;

(B) an aperture formed in said support; and

(C) a rectilinear strip with two ends, said strip extending across the aperture in said support,

(i) both ends of said strip initially being in one piece with said support,

(ii) a single one of said ends being sheared from said support adjacent a side of the aperture;

(D) said strip being deformable about the non-sheared end to a position non-coplanar with the aperture in said support;

II. an ornament with a through-opening threaded onto said stop while said strip is in non-coplanar position;

III. the sheared end of said strip with the ornament thereon being deformed back to a position coplanar with the aperture and with the sheared end wedged against the side of the aperture from which it was sheared before the ornament was threaded thereon.

4,517,818

HIGH PRESSURE STEAMER FOR CONTINUOUS WET-HEAT TREATMENT OF A CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Aug. 9, 1983, Ser. No. 522,250
Claims priority, application Japan, Aug. 9, 1982, 57-138277; Aug. 9, 1982, 57-123278; Aug. 9, 1982, 57-138279; Nov. 17, 1982, 57-201391
Int. Cl.³ D06B *3/12, 23/22*
U.S. Cl. 68—5 E **3 Claims**

1. A high pressure steamer for continuous wet-heat treatment of a cloth comprising:

a steamer body,

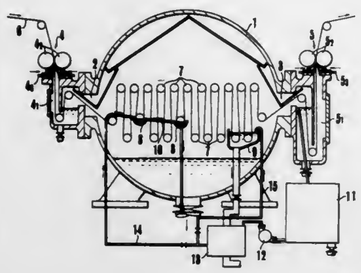
an inlet and an outlet for taking in and out a cloth continuously through the steamer body,

said cloth inlet having an inlet side seal mechanism provided with a liquid seal tank and said cloth outlet having an

outlet side seal mechanism provided with a slow cooling tank,

a plurality of liquid applying tanks and prewashing tanks for boiling the cloth passing through the steamer body,

a filter for cleansing waste water exhausted from the slow cooling tank,



a heat exchanger for heating the cleansed water with the use of high temperature waste liquor from the prewashing tanks, and

conduits for supplying the heated water to the liquid applying tanks and prewashing tanks.

4,517,819

METHOD AND APPARATUS FOR FORGING SPROCKET SEGMENTS

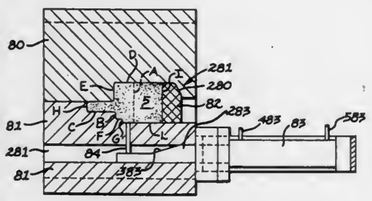
Gianni Sandroni, Sumirago, Italy, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 3, 1982, Ser. No. 446,819

Claims priority, application Italy, Oct. 9, 1981, 83647 A/81

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—353 **9 Claims**



1. A method of forging a sprocket segment (5) for a track-type vehicle undercarriage, including the steps of:

heating a metal billet (5') having a predetermined mass;

pressing said billet (5') in an open press to form a rough-shaped blank (5');

forging said blank (5') in a die (61) having predetermined dimensions and thereby forming a sprocket segment (5) having a size and shape substantially equal to the desired finished shape of the segment (5);

trimming said forged segment (5); and

applying external forces to the forged segment from at least three different directions to simultaneously coin at least two nonparallel surfaces (A,B,C) of said forged segment (5) and to thereby form said surfaces (A,B,C) to a desired finished shape and dimension.

4,517,820

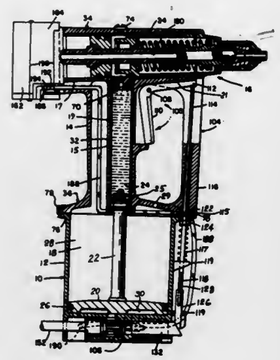
BLIND RIVET TOOL

Richard W. Oefinger, Shelton, and Richard J. Babyak, Trumbull, both of Conn., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 22, 1983, Ser. No. 506,659

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—391 **5 Claims**



1. A power operated blind rivet tool adapted to automatically pull the mandrel of a blind rivet to upset the rivet body in a workpiece comprising:

a. a one piece upper housing containing a rivet setting mechanism;

b. a one piece lower housing secured to the upper housing and having a power means to be operated by pressurized air to operate the rivet setting mechanism;

c. a control valve positioned in the bottom of the lower housing to control the supply of air to said power means;

d. said lower housing having a flange surrounding the control valve and forming a flat bottom area to the housing enabling the tool to be set on a flat surface;

e. said upper housing having a trigger area to be held by the tool operator and including a pivotal trigger having one end coacting with an upper trigger rod;

f. a lower trigger rod carried adjacent said lower housing and having an abutment coacting with the lower end of said upper trigger rod;

g. a shoe threaded into the lower end of the lower trigger rod;

h. a plunger connected to said control valve and having a sloped end coacting with the shoe so that upon pivotal movement of said trigger, the trigger rods are moved downwardly forcing said shoe down the sloped surface of the plunger causing the control valve to be opened to pressurize said power means.

4,517,821

AUTOMATIC TORQUE WRENCH TESTER

Kenneth J. Taggart, Columbia, Pa., and Kevin W. Traub, Pluckemin, N.J., assignors to K-D Tools, Inc., Lancaster, Pa.

Filed Oct. 26, 1983, Ser. No. 545,459

Int. Cl.³ G01L *25/00*

U.S. Cl. 73—1 C **18 Claims**

1. An automatic torque wrench testing machine having means for holding a torque wrench stationary relative to the frame of the machine, a torque drive shaft, and socket means interconnecting the wrench stud and the drive shaft, said machine including:

a. means for applying torque to said drive shaft;

b. means for selecting the rotational direction in which torque is applied to said drive shaft;

c. sensing means for generating electrical signals corresponding to the torque applied to said drive shaft;

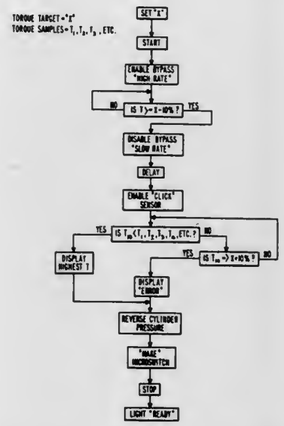
d. a microprocessor;

e. means for setting a torque target value in said microprocessor;

f. means, including a comparator in said microprocessor, for comparing said generated signals with said preselected target signal;

g. means, including said microprocessor, for sensing that the signals developed by said sensing means are within a predetermined range of said target value and means in response thereto for reducing the torque applied to said drive shaft;

h. means, including said microprocessor, for identifying the



peak value of the signal generated by said sensing means at which said torque wrench "clicks", said "click" value being identified by an immediate sharp drop in the signal generated by said sensing means;

i. means, following identification of the "click" value, for sensing a predetermined number of succeeding signals;

j. means for comparing the peaks of said succeeding signals with peaks of prior signals;

k. means for displaying the highest signal peak;

l. means for terminating the application of torque to said drive shaft in said selected direction; and

m. means for returning said drive shaft in the opposite direction to a neutral position.

4,517,822

DEVICE FOR APPLYING IMBALANCE TO A ROTOR

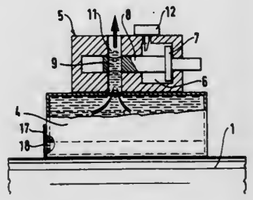
Roland Bigret, Drancy, France, assignor to Alsthom-Atlantique, Paris Cedex, France

Filed Nov. 16, 1983, Ser. No. 552,229

Claims priority, application France, Nov. 16, 1982, 82 19122

Int. Cl.³ G01M *1/00*

U.S. Cl. 73—1 B **2 Claims**



1. A device for applying imbalance to a rotor, comprising a plurality of chambers disposed symmetrically around said rotor and having an opening and adapted to contain a fluid, an opening device associated with each of said chambers and means for operating said opening devices under remote control so as to open said opening of an associated chamber so that fluid contained therein may be evacuated therefrom, each opening device comprising a pyrotechnic valve including a piston rigidly attached to an assembly and means for mounting said assembly relative to said opening for movement from a first position, wherein said assembly closes said opening of an associated chamber to a second position wherein said assembly opens said opening in response to firing of said pyrotechnic valve, and a control circuit incorporating a receiver responsive to a signal transmitted from a stationary source without a material transmission medium to fire said pyrotechnic valve.

4,517,823

TESTING DEVICE FOR FLOWMETER

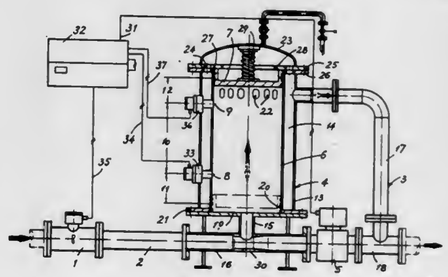
Jürgen Böhm, Mannheim-Wallstadt, Fed. Rep. of Germany, assignor to Bopp & Reuther GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,737

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 3239281

Int. Cl.³ G01F *25/00*

U.S. Cl. 73—3 **12 Claims**



1. A testing device for a flowmeter arranged in a pipe, comprising

a bypass conduit connected in two connecting points with the pipe in which the flowmeter is arranged;

a gauge container arranged in said bypass conduit and selectively connectable in series with the pipe;

means for selectively connecting said gauge container in series with the pipe and including only one shut-off valve arranged between said two connecting points;

a measuring piston displaceable under the action of a fluid which flows into said gauge container over a measuring section having a beginning and an end, said measuring piston being arranged so that when said shut-off valve is open said measuring piston automatically displaces back to its start position under the action of its own weight;

start and stop switches arranged at the beginning and at the end of the measuring section, respectively, and operative for starting and stopping of addition of electric impulses from the flowmeter during displacement of said measuring piston;

means for comparing the impulses being added with a gauge volume of said measuring section; and

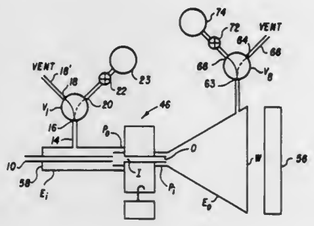
a measuring cylinder located in the interior of said gauge container, said measuring cylinder forming said measuring section and carrying said start and stop switches and said measuring piston, said gauge container and said measuring cylinder forming therebetween a pressure equalizing chamber.

4,517,824

SOLVENT DUMPING APPARATUS

Bruce D. Quimby, Landenberg, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1983, Ser. No. 510,127
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23 **12 Claims**



1. Solvent dumping apparatus for a gas chromatographic detector, comprising

an inlet enclosure having an outlet port for coupling to the inlet of a detector, said inlet enclosure having venting means and means for permitting sample gas, when present, to be introduced therein,

an outlet enclosure having an inlet port for coupling to the outlet of a detector, said outlet enclosure having venting means and means for permitting gas, when available, to be introduced therein, and wherein

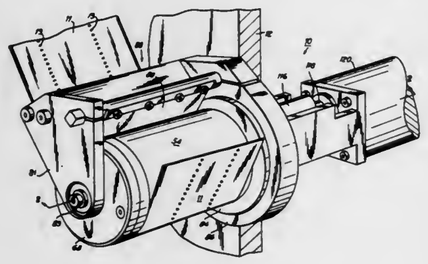
at least one of said venting means is controllable.

4,517,825

SELF-CLEANING POROSIMETER

Everett C. Grollimund, Midlothian; William H. Smick, III, and Donald L. Brookman, both of Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,070
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **19 Claims**



1. A self-cleaning porosimeter, comprising:

a housing having a surface, said surface having aperture means defined therein;

suction means for applying suction to said aperture means to exert suction on a web lying against and moving along said surface, the pressure in at least part of said suction means varying as a function of the porosity of the web surface;

transducer means for producing a signal representative of the porosity of the web responsive to said pressure in said suction means;

rigid blade means for lifting material adhering to said surface from said surface; and

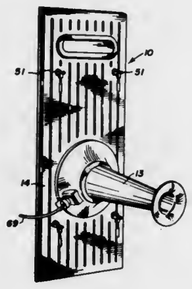
motor means for causing relative motion of said blade means and said surface for causing said blade means to clean said surface by said relative motion.

4,517,826

APPARATUS AND METHOD FOR DETERMINING THE AIR LEAKAGE CHARACTERISTICS OF A STRUCTURE

Charles Cole, and Wayne Cole, both of Winnipeg, Canada, assignors to Enercorp Management, Ltd., Winnipeg, Canada

Filed May 3, 1982, Ser. No. 373,971
Claims priority, application Canada, Jul. 17, 1981, 381943
Int. Cl.³ G01M *3/26*
U.S. Cl. 73—40 **20 Claims**



1. In a method of determining the rate of air leakage into an enclosed structure and which includes the steps of:

continuously evacuating air from said structure by an air evacuation means at a determined air outflow rate;

continuing said evacuation of air from said structure and permitting the pressure within the structure to stabilize;

measuring the pressure differential between the interior of said structure and exterior thereto after stabilization of said pressure; and,

continuing said evacuation of air from said structure and then measuring the air outflow rate produced by said pressure stabilization;

the improvement comprising;

evacuating air from said structure through a calibrated long radius nozzle having a throat of fixed dimensions spaced upstream of said evacuation means, obtaining a measurement of the air outflow rate through said throat as expressed by the nozzle pressure in a multiple tap, static pressure averaging arrangement connecting with a sealed space defined by inner and outer walls of said long radius nozzle and connected with said throat; and,

determining from the measured information the air leakage characteristics of said structure.

4,517,827

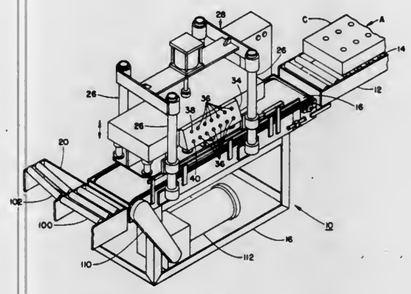
APPARATUS AND METHOD FOR TESTING FOR LEAKAGES IN HERMETICALLY-SEALED PACKAGES

Donald A. Tapscott, Cobourg, Canada, assignor to General Foods Incorporated, Don Mills, Canada

Filed Mar. 24, 1983, Ser. No. 478,435
Int. Cl.³ G01M *3/36*
U.S. Cl. 73—45.4 **23 Claims**

1. An apparatus for the continuous, non-destructive testing for leaks in hermetically-sealed flexible packages having an internal vacuum that comprises: conveyor means for sequentially indexing said packages to a predetermined position in said apparatus; resistance sensor means including probes for contacting the packages at said predetermined position; indicator means operatively connected to said resistance sensor means for producing a signal indicative of the extend of vacuum as determined by resistance in each of the packages being contacted by the probes of said resistance sensor means; and means for receiving the tested packages from said apparatus

including a discharge conveyor, and a bypass conveyor for selectively receiving said tested packages from said discharge



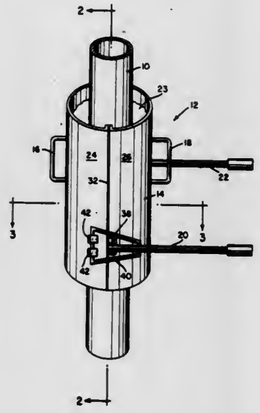
conveyor predetermined by response to said resistance sensor means indicating the presence of a leakage in said packages.

4,517,828

APPARATUS FOR LEAK TESTING OF PIPE

Darwin L. Miller, and Ronnie F. Miller, both of Houma, La., assignors to Damco Testers, Inc., Houma, La.

Filed Jun. 28, 1983, Ser. No. 508,464
Int. Cl.³ G01M *3/08*
U.S. Cl. 73—46 **13 Claims**



1. An enclosure for confining a liquid adjacent a test area in a fluid carrying conduit, said enclosure comprising:

(a) a sleeve positionable about a fluid carrying conduit in surrounding relationship with a test area, said sleeve including a pair of elongated body members hingedly connected to define a longitudinally openable sleeve;

(b) sealing means carried at the end of said sleeve and extending inwardly from said sleeve toward the conduit axis to engage the conduit in substantially liquid tight relationship therewith adjacent to the test area and to define a bottom wall of the enclosure; and

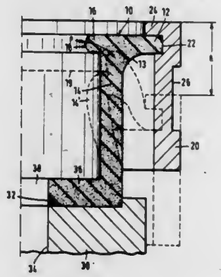
(c) retaining means carried by said sleeve to retain said enclosure around the test area to define an annular chamber for confining a liquid therewithin, said annular chamber having an annular opening at the end of said sleeve opposite the end carrying said sealing means to permit visual observation of liquid within the enclosure.

4,517,829

PNEUMATIC SEALING ARRANGEMENT

Heinz Krappitz, Reinbek; Hans-Peter Carstensen, Schenefeld, and Friedrich Weinhold, Norderstedt, all of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 469,895
Int. Cl.³ G01M *3/00*; B07C *5/00*
U.S. Cl. 73—49.8 **24 Claims**



1. An improved sealing apparatus for temporarily sealingly engaging the end of a cylindrical body so that air under pressure can be applied to the cylindrical body for testing thereof, the apparatus being of the type including a rotationally symmetrical sealing body of an elastomeric material for engaging the cylindrical body and support means for supporting and moving the sealing body into engagement with the end of the cylindrical body, the improvement wherein

said sealing body comprises

a hollow cylindrical portion having a sealing end and a fixed end; and

radially inwardly and outwardly extending flanges at said sealing end in substantially the same plane;

and said support means includes

means for holding said fixed end of said cylindrical portion;

axially movable gripping means for engaging said outwardly extending flange of said sealing body; and

means for axially moving said gripping means so that said outwardly extending flange moves toward the plane containing said fixed end to elastically deform and enlarge said inwardly extending flange to permit insertion of the end of said cylindrical body and away from said plane to return said outwardly extending flange to its original position in which the inner distal edge of said inwardly extending flange sealingly engages said cylindrical body.

4,517,830

BLOOD VISCOSITY INSTRUMENT

Damon M. Gunn, deceased, late of Washington, D.C., and Robert M. Gunn, administrator, 165 Beach Rd., Glencore, Ill. 60022

Filed Dec. 20, 1982, Ser. No. 451,529
Int. Cl.³ G01N *11/12, 11/04*
U.S. Cl. 73—57 **10 Claims**

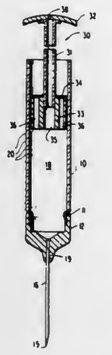
1. Blood viscosity measuring apparatus comprising in combination,

a hypodermic syringe for withdrawing a predetermined quantity of blood from a living body, said hypodermic syringe having a needle for entering a patient's body, a hypodermic plunger piston and a hollow body member for receiving said predetermined quantity of a patient's blood,

weight member in said hollow body member, said weight member having at least one elongated passageway therein adapted to permit said predetermined quantity of blood to relatively move from one known position in said hollow body member to another position through said at least one

elongated passageway at a rate determined by the viscosity of said blood,

said elongated passageway being defined by constricted passageway means formed in said hypodermic plunger piston, and check valve means for sealing said constricted passageway during the withdrawal of blood from said patient's body and permitting blood to flow through said constricted passageway during relative flow of said blood between said positions



timer means,

means for starting said timer means when said predetermined quantity of blood is at said one known position and stopping said timer means when said predetermined quantity of blood is at said another position,

display means for displaying the time of relative movement of said predetermined quantity of blood between said positions as a measure of the viscosity of said blood from said patient's body.

4,517,831

TROUBLE DETECTING APPARATUS FOR A SENSOR IN AN INTERNAL COMBUSTION ENGINE SYSTEM

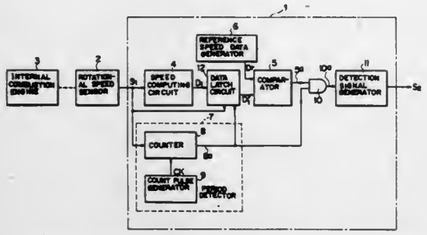
Yutaka Hirano, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

Filed Nov. 23, 1983, Ser. No. 554,606

Claims priority, application Japan, Nov. 25, 1982, 57-205558

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **10 Claims**



1. A trouble detecting apparatus for detecting trouble in a signal generator which generates an electric signal whose period changes in accordance with the rotational speed of an internal combustion engine, comprising:

a computing means responsive to said electric signal for computing the rotational speed of the internal combustion engine;

a detecting means for detecting whether or not the period of said electric signal exceeds a predetermined time;

a comparing means for comparing the result of the computation in said computing means just before the period of said electric signal exceeded said predetermined time with a reference rotational speed in response to the results from said detecting means and said computing means; and

means responsive to the result of the comparison in said comparing means for discriminating whether or not said signal generator is defective.

4,517,832

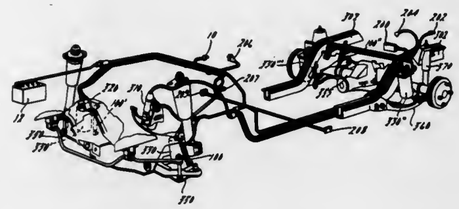
AIR SUSPENSION SYSTEM SERVICE DIAGNOSTICS

Scott B. Holland, Sterling Heights; Edward S. Greene, Allen Park; David A. Kowalski, Romulus, and Bruce D. Strachan, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 12, 1984, Ser. No. 570,101

Int. Cl.³ G01M *17/04*

U.S. Cl. 73—118 **6 Claims**



1. A method of diagnosing an air suspension system of an automotive vehicle, which includes a plurality of air pressure responsive springs connected between sprung and unsprung components of the vehicle, and an electrically controlled solenoid air valve on each air spring, at least one electrically energized height sensor mounted between sprung and unsprung components to measure the height condition of the sprung portions of the vehicle with respect to its unsprung components and output a signal indicative of said measurement, a compressor unit for responsively pumping air to each solenoid valve and a control circuit programmed for an operational mode wherein it periodically energizes each said height sensor, reads each said height sensor measurement output and responsively energizes said compressor or any of said solenoid air valves as required to maintain the sprung portion of said vehicle at a predetermined height condition, and a diagnostic mode, comprising the steps of:

switching said control circuit into its controlled diagnostic mode;

energizing said compressor for a first predetermined period of time;

opening a first electrically controllable solenoid air valve for each of at least one predetermined air spring;

reading the corresponding height sensor measurement output at the end of said first period of time;

comparing said height sensor measurement output with a predetermined measurement indicating a fully raised condition for said at least one predetermined air spring;

with said compressor in its de-energized state, opening said first electrically controllable solenoid air valve for each of said at least one predetermined air spring for a second predetermined period of time;

reading the corresponding height sensor measurement output at the end of said second predetermined period of time;

comparing said height sensor measurement with a predetermined measurement indicating a fully lowered condition for said at least one predetermined air spring;

energizing said compressor for a third predetermined period of time;

opening said first electrically controllable solenoid air valve for a third predetermined period of time;

reading said corresponding height sensor measurement output during said third predetermined period of time;

comparing said height sensor measurement with a predeter-

mined measurement corresponding to a desired height condition;

closing said valve and de-energizing said compressor when said height sensor reading is equal to said measurement corresponding to said desired height condition; and

providing a fault warning whenever any of the preceding comparing steps results in an inequality at the end of the respective first, second and third time periods.

4,517,833

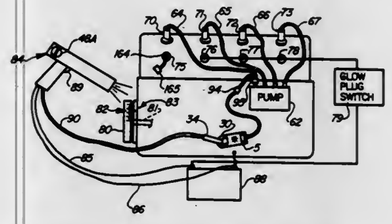
INDUCTIVE ADAPTOR/GENERATOR FOR DIESEL ENGINES

William M. Wesley, 21956 North Hickory Hill Dr., Kildeer, Ill.

Filed Mar. 18, 1983, Ser. No. 476,692

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **9 Claims**



1. An adaptor for monitoring the performance of diesel engines with instrumentation having an inductive-type pickup, comprising

a transducer device to be coupled to the engine for monitoring the performance of a selected cylinder and producing an electrical signal in response thereto;

circuit means coupled to said transducer for processing said signal to derive a further signal in response to the occurrence of at least one characteristic of said transducer signal;

field generating means coupled to said circuit means and having an exterior contour for creating a concentrated magnetic field, said contour being engageable by the inductive pickup of said instrumentation, said field generating means being operable to create a change in field strength of sufficient magnitude to excite said inductive pickup upon occurrence of said further signal.

4,517,834

TIRE PRESSURE SENSING SYSTEMS

Douglas V. Luke, Farnham Common, England, assignor to Smiths Industries Public Limited Company, London, England

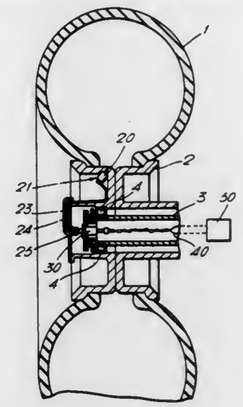
Filed Mar. 14, 1984, Ser. No. 589,444

Claims priority, application United Kingdom, Mar. 23, 1983, 8307986

Int. Cl.³ B60C *23/02;* **G01L** *7/06*

U.S. Cl. 73—146.5 **10 Claims**

1. A tire pressure sensing system comprising: a pressure sensor mounted for rotation with a tire; an optical radiation guide mounted for rotation with the tire, said sensor supplying optical output signals to said radiation guide, said radiation guide directing the optical output signals to a location substantially coaxial of said tire; optical receiver means; and means mounting said receiver means on a stationary member coaxial of said tire and aligned to receive said optical output signals from the radiation guide, said receiver means supplying signals



indicative of tire pressure to a location remote from said receiver means.

4,517,835

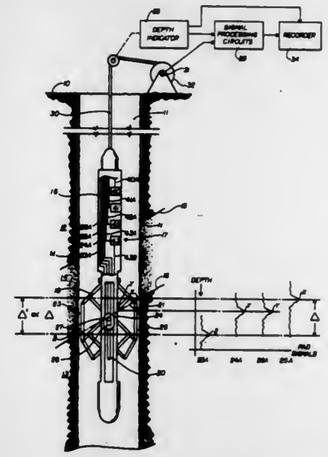
METHOD FOR DETERMINING FORMATION DIP

Mark G. Kerzner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 19, 1983, Ser. No. 533,177

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—152 **10 Claims**



1. A method for determining dips of subsurface earth formations traversed by a borehole, comprising:

deriving a plurality of indications of dip directions of said formation at each corresponding one of a plurality of depths within said borehole;

selecting from said indications a first plurality of indications;

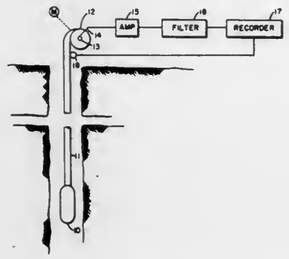
determining first differences in magnitude between each said indication of said first plurality of indications and an adjacent one of said first plurality of indications;

deriving a first value proportional to the difference between the number of indications in said plurality of indications and in said first plurality of indications;

determining a first magnitude of the sum of said first differences and said first value;

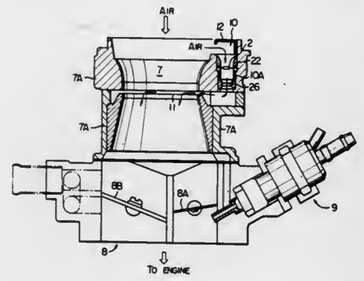
selecting from said indications a second plurality of indications;
determining second differences in magnitude between each said indication of said second plurality of indications and an adjacent one of said second plurality of indications;
deriving a second value proportional to the difference between the number of said indications in said plurality of indications and in said second plurality of indications;
determining a second magnitude of the sum of said second differences and said second value;
comparing said first and said second magnitudes of said sums; and
selecting one of said first and second plurality of indications as indicative of said formation dips in response to said comparison.

4,517,836
METHOD FOR DETERMINING OIL SATURATION IN A SUBSURFACE FORMATION
W. D. Lyle, Jr., Grapevine, and Luke S. Gournay, Rockwall, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 25, 1983, Ser. No. 545,333
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—152 **4 Claims**



1. A method for determining residual oil saturation in a subsurface formation surrounding a borehole, comprising the steps of:
a. producing a borehole gravity log over a depth interval in said borehole;
b. measuring the bulk density of the subsurface formation surrounding said borehole from said gravity log;
c. producing a resistivity log over said depth interval in said borehole;
d. measuring the bulk resistivity of the subsurface formation surrounding said borehole from said resistivity log by deriving a weighted average of the individual resistivity measurements taken from said resistivity log from a series of equally spaced points over said depth interval, and
e. combining said formation bulk density and formation bulk resistivity measurements to derive a measurement of residual oil saturation whereby the effects of porosity in both said bulk density and bulk resistivity measurements on the residual oil saturation measurement are minimized.

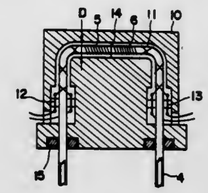
4,517,837
AIR FLOW RATE MEASURING APPARATUS
Yoshishige Oyama; Teruo Yamauchi, both of Katsuta; Mamoru Fujieda, Ibaraki; Yutaka Nishimura, Katsuta; Takao Sasayama; Shinichi Sakamoto, both of Hitachi; Hisanori Moriya, Katsuta; Takeshi Atago, Katsuta; Kanemasa Sato, Katsuta; Yoshikazu Hoshi, Ibaraki; Sadayasu Ueno, Katsuta; Tadahiko Otani, Katsuta, and Mineo Kashiwaya, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 28,889, Apr. 10, 1979, abandoned. This application Aug. 10, 1983, Ser. No. 521,901
Claims priority, application Japan, Apr. 10, 1978, 53-42547
Int. Cl.³ G01F *5/00*
U.S. Cl. 73—202 **18 Claims**



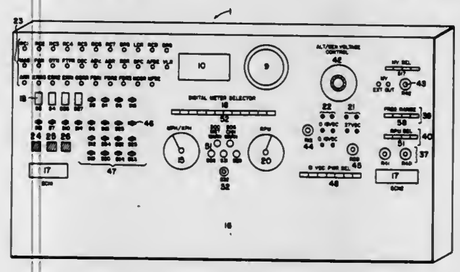
18. An air flow rate measuring apparatus for an internal combustion engine, the air flow rate measuring apparatus comprising:
a venturi means disposed upstream of a throttle valve arranged in an intake line of the internal combustion engine, a bypass means for allowing an air flow therethrough, said bypass means being spaced from said venturi means and having disposed therein an electrical flow sensor means for sensing flow rate in an air flow including a temperature-dependent resistor means for sensing a heat transfer between the resistor means and the air thereby enabling a measuring of the air flow rate, an inlet of said bypass means is disposed in a full non-restricted cross section of said venturi tube, said bypass means terminates through an opening into the region of said venturi means, a ratio of flow rate through said bypass means to a flow rate through said venturi means is set at a predetermined value,
guide means disposed in the bypass means including a first substantially curved guide portion for uniformly distributing the air flow and a second substantially straight guide portion for increasing the flow rate of air passing in the bypass means, and
a support member fixedly clamped in said second substantially straight guide portion of said bypass means for mounting the flow sensor means in the bypass means.

4,517,838
THERMAL MASS FLOW METER
Akira Wachi, and Munehisa Hayashi, both of Tokyo, Japan, assignors to Ohkura Electric Co., Ltd., Tokyo, Japan
Filed Nov. 10, 1983, Ser. No. 550,389
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **5 Claims**

1. A thermal mass flow meter, comprising a case whose heat conductivity is much larger than that of air, a fine groove with an equivalent diameter of not larger than 4 mm bored through the case, a sensor pipe disposed in said fine groove so as to carry a fluid flow to be measured therethrough, and means for supporting said sensor pipe in said groove in spaced relationship with said case, and a heating and temperature-sensing means mounted on said sensor pipe.

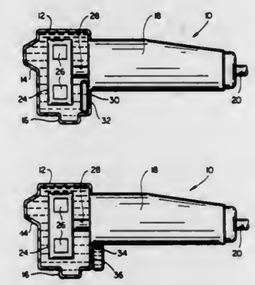


4,517,839
OFF-HIGHWAY VEHICLE SYSTEMS SIMULATOR AND CONTROL PANEL TESTING
Harry Van Dyke, Niagara Falls, Canada, assignor to Unit Rig & Equipment Co., Tulsa, Okla.
Filed Jul. 5, 1983, Ser. No. 510,759
Int. Cl.³ G01R *31/00*
U.S. Cl. 73—432 R **20 Claims**



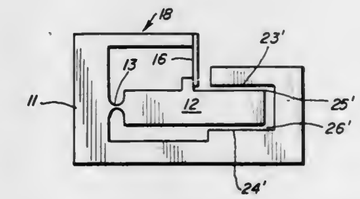
19. A method of out of vehicle testing of electronic control panels for an off-highway vehicle comprising the following steps:
removing an electronic control panel to be tested from a vehicle;
electrically coupling an electronic control panel to be tested to an apparatus that can provide electrical signal ranges to an electronic control panel which simulate the operating signals directed to an electronic control panel when in an operating vehicle;
manipulating the electrical signal ranges being directed to an electronic control panel so that the signals are at levels dictated by previously established standards;
mainpulating switching means so that the correct electrical signals are directed to the correct circuit in an electronic control panel;
measuring the output signals of an electronic control panel in response to the inputted electrical signals;
comparing the measured output signals with established output signals for correctly operating electronic control panels; and recalibrating, where necessary, specific circuits within an electronic control panel that has been tested.

4,517,840
ULTRASONIC SECTOR SCANNER HAVING FLUID REPLACEMENT CAPABILITY
Craig R. Thompson, Rancho Cordova; Ronald C. Carnes, Folsom, and Ted F. Naumann, Jr., Shingle Springs, all of Calif., assignors to General Electric Company, Milwaukee, Wis.
Continuation of Ser. No. 434,826, Oct. 18, 1982, abandoned. This application Nov. 2, 1984, Ser. No. 667,397
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—644 **3 Claims**



1. A hand-held scanner for use in ultrasonic medical diagnostic systems comprising
a housing having a sealed end portion,
a shaft rotatably mounted in said housing,
a motor mounted within said housing and coupled to rotate said shaft,
a transducer assembly coupled to said shaft and positioned in said sealed end portion,
a fluid in said sealed end portion and displacing essentially all air therefrom, and
a pliable, impermeable bladder means cooperatively arranged with said sealed end portion to automatically prevent air from entering said sealed end portion as a consequence of fluid escaping from said sealed end portion, said bladder means being positioned within said sealed end portion and vented to the outside atmosphere.

4,517,841
ACCELEROMETER WITH BEAM RESONATOR FORCE TRANSDUCER
Rex B. Peters, Woodinville; Jeffrey F. Tonn, Tacoma; Arnold Malametz, Carnation; Richard A. Hilliker, Seattle, and Victor B. Corey, Bellevue, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.
Filed Jan. 6, 1983, Ser. No. 456,254
Int. Cl.³ G01P *15/10*
U.S. Cl. 73—517 AV **17 Claims**



1. In an accelerometer having a base, a proof mass hinged to the base to respond to an acceleration and a brittle, bidirectional, beam resonator force transducer having one end connected to the proof mass and the other end connected to the base, the output of the force transducer being a measure of the

acceleration sensed by the proof mass, the improvement comprising:

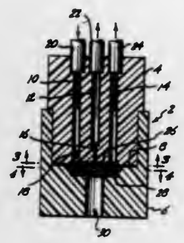
a compliant mount having a bidirectional, linear and continuous force/deflection characteristic, interposed between the other end of the force transducer and the base to extend the range of movement of the proof mass without subjecting the force transducer to an excessive force.

4,517,842

FLUID PRESSURE TRANSDUCER

James R. Twomey; Hugh W. McCutcheon, and Richard K. Harris, all of Seattle, Wash., assignors to Slope Indicator Co., Seattle, Wash.

Filed Nov. 2, 1982, Ser. No. 438,594
Int. Cl.³ G01N *33/24*
U.S. Cl. 73—701 **28 Claims**



1. A fluid pressure transducer which comprises:

a body member which contains a porous element;

a control fluid inlet means in communication with the porous element;

a thin diaphragm having first and second faces mounted in proximity to the porous element, the diaphragm associated with the body member to serve as a fluid tight barrier between the porous element and control fluid inlet means and a fluid whose pressure is to be measured so that control fluid may be transmitted through the fluid inlet means and porous element to exert a uniform pressure against the first face of the diaphragm; and

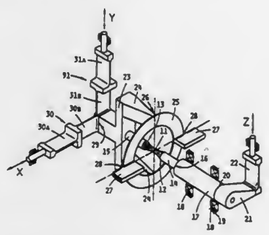
sensing means associated with the diaphragm in order to sense diaphragm movement when the control fluid pressure equals or exceeds the pressure of the fluid bearing against the second face of the diaphragm.

4,517,843

MATERIAL AND COMPONENT TESTING MACHINE

Joachim Leger, Adolf-Eiermann-Strasse 13, 6930 Eberbach, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,706
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244464
Int. Cl.³ G01N *3/22, 3/20*
U.S. Cl. 73—847 **11 Claims**



1. A material and component testing machine for providing random length bending and/or torsion loads in preferably bar-shaped testing samples, characterized by the following features:

(a) clamping means **14, 15** are provided for engaging a test sample at its opposite ends **12, 13** respectively;

(b) the one clamping means **14** is situated at the front end **16** of a shaft **17** which is resistant to bending and torsion and rotatable about its longitudinal axis and mounted in two bearings **18** attached to the machine frame **19**;

(c) a radially projecting lever arm **21** is connected to the rear end **20** of the shaft **17**, to which a power source creating a force Z is connected;

(d) the other clamping means **15** is situated in the center of a yoke **23** which is resistant to bending and torsion at a back end **29** to which power sources creating forces X,Y are connected respectively, said forces being applied at right angles to each other; and

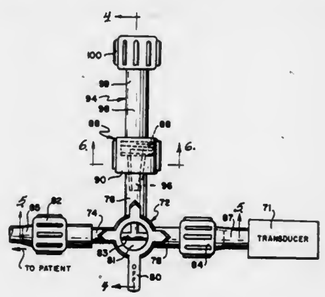
(e) the yoke **23** is supported on the machine frame through its two arms **24** via a cardan joint **24-28**.

4,517,844

FLUID DAMPING DEVICE FOR A COMPLIANT SYSTEM

Steven Powell, 341 W. Harding, Lombard, Ill. 60148

Filed Jun. 3, 1983, Ser. No. 500,940
Int. Cl.³ A61B *5/02*; G01L *19/00*
U.S. Cl. 73—707 **10 Claims**



1. In a compliant fluid flow system including flexible tubing of a fixed length, said system having a characteristic hydraulic impedance determined by the length of said tubing and including pressure sensitive means for measuring the pressure in said system, apparatus for increasing the accuracy of said pressure measurements by compensating for the resonance of said system, said apparatus comprising:

an inlet port coupled to said fluid flow system;

a plurality of elongated tubes each having a proximal end, a distal end and a predetermined length and including:

an internal structure defining a cavity therein with the volume of said cavity increasing with increasing tube length;

first sealing means located on the distal end of said tube for forming a closure therefor; and

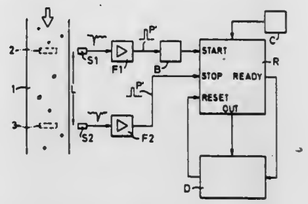
second sealing means located on the proximal end of said tube for forming a partial closure having a fixed resistance wherein when the proximal end of a designated tube is inserted in said inlet port, a compliant air cavity having a characteristic impedance determined by the volume of said cavity is formed such that the resonance of said system may be compensated for by insertion in said inlet port of the one of said plurality of elongated tubes having an impedance which matches the characteristic impedance of said fluid flow system.

4,517,845

METHOD AND APPARATUS FOR DETERMINING THE FLOW VELOCITY OF A MOLTEN, RADIATION-EMITTING MATERIAL

Anders P. Ranshelm, Helsingborg; Arne Thomsen, Astorp, and Per Holmgren, Angelholm, all of Sweden, assignors to Gullfiber AB, Billesholm, Sweden

Continuation-in-part of Ser. No. 414,337, filed as PCT SE/00372, Dec. 14, 1981, published as WO 82/02094 Jun. 24, 1982, § 102(e) date Aug. 16, 1982, abandoned. This application Jun. 2, 1983, Ser. No. 501,630 Claims priority, application Sweden, Dec. 16, 1980, 8008840; Jun. 11, 1982, 8203650
Int. Cl.³ G01F *1/70*
U.S. Cl. 73—861.05 **16 Claims**



1. A method for measuring the flow velocity of a flow, stream or jet of a molten radiation-emitting material, comprising the steps of

(a) detecting the intensity of the radiation emitted from a limited section of the material flow at two separate locations, which are spaced apart by a predetermined distance along the path of the flow, and generating corrresponding electric signals,

(b) discriminating from said signals from said two detecting locations all pulse-like amplitude variations exceeding a predetermined amplitude, said amplitude variations originating from randomly occurring, local, descrete deviation in the intensity of the radiation of the material flow caused by the presence of local inhomogeneities in the material,

(c) determining the time interval between the occurrence of such an amplitude variation in the signal from the upstream detecting location and the occurrence in the signal from the down-stream detecting location of the amplitude variation caused by the same inhomogeneity in the material which caused said amplitude variation in the signal from the upstream detecting location, and

(d) using said time interval as a measure of the time of travel of the material flow over said predetermined distance between said two detecting locations for calculating the flow velocity of the material flow.

10. An apparatus for measuring the flow velocity of a flow, stream or jet of a molten radiation emitting material comprising

(a) two radiation detectors arranged to receive radiation emitted from a limited section of the material flow at two different locations spaced apart by a predetermined distance along the flow path of the material flow and to produce an electric output signal each corresponding to the intensity of said received radiation.

(b) for each radiation detector a signal-processing circuit for discriminating from the output signal of said radiation detector only such pulse-like amplitude variations which exceed a predetermined magnitude and to produce corresponding signal pulses on its output,

(c) a time measuring circuit having a start input connected to the output of the signal-processing circuit associated with the upstream detector for receiving signal pulses therefrom, a stop input connected to the output of the signal-processing circuit associated with the downstream detector for receiving signal pulses thereform, and an output, for providing on said output successive values representing respective measured time intervals between a signal pulse received on said start input and a subsequent signal pulse received on said stop input,

(d) a gating circuit inserted between the start input of said time-measuring circuit and the output of the signal-processing circuit associated with the upstream detector for allowing through only such signal pulses on the output of said amplifier which are preceded by a predetermined period of time being selected to exceed the maximum expected time of travel of said material flow over said predetermined distance, and

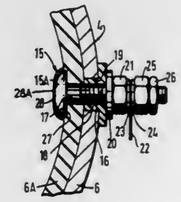
(e) a calculating unit connected to the output of said time-measuring circuit for receiving the successive values appearing on said output, each representing a said measured time interval, and for using said values as a measure of the travel time of the material flow over said predetermined distance for calculating the flow velocity of the material flow.

4,517,846

ELECTROMAGNETIC FLOWMETER

Derek N. Harrison, and Trevor C. Purling, both of Gloucestershire, United Kingdom, assignors to Flowmetering Instruments Limited, Gloucestershire, England

Filed Jun. 13, 1983, Ser. No. 503,583
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **9 Claims**



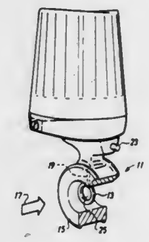
1. An electromagnetic flowmeter comprising a flow tube for conducting the fluid or slurry whose flow rate is to be monitored, magnetic field generating means for producing a magnetic field within the flow tube transverse to the axis of the tube, and a pair of electrodes mounted on opposite sides of the tube for detecting the resultant e.m.f. induced across the flowing fluid or slurry transversely to the magnetic field and for thereby providing an output signal proportional to the flow rate of the fluid or slurry, wherein at least one of the electrodes is coated with a porous electrically insulating material to decrease the level of noise component of the output signal.

4,517,847

FLOWMETER HAVING UNIFORM RESPONSE UNDER BOTH LAMINAR AND TURBULENT FLOW CONDITIONS

Richard W. Miller, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Oct. 27, 1982, Ser. No. 437,062
Int. Cl.³ G01F *1/40, 1/28*
U.S. Cl. 73—861.74 **5 Claims**



1. An improved fluid flowmeter of the type in which a fluid

stream within a conduit exerts a force on a target body centrally positioned within said conduit, said force being related to the differential pressure created by said target body and proportional to the square of the velocity of said fluid stream, and having means for corelating said force to a measurement of said velocity, wherein said improvement comprises:

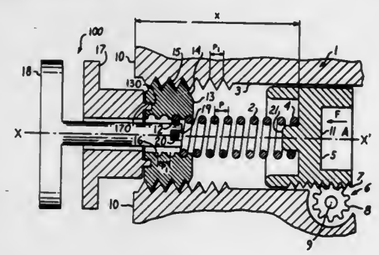
target body means, having an aperture extending completely through said target body in the direction of fluid flow, for subjecting said target body to only those portions of laminar and turbulent flow profiles which are substantially identical, whereby said flowmeter responds uniformly under both laminar and turbulent flow conditions.

4,517,848

APPARATUS FOR MEASURING FORCES

Raymond Faure, Veyre Monton, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Mar. 17, 1983, Ser. No. 476,360
Claims priority, application France, Apr. 1, 1982, 82 05847
Int. Cl.³ G01L *1/26*
U.S. Cl. 73—862.52 **9 Claims**



1. An apparatus for measuring forces, characterized by the following features:

(a) a coil spring within a body;

(b) a movable part within the body, the movable part being subjected to the action of a force to be measured and being in contact with one end of the coil spring;

(c) means to visualize the correlation between the position of the movable part within the body and the value of the force;

(d) an adjustment sleeve within the body with an external thread which can be screwed into an internal thread of the body, the adjustment sleeve being in contact with the other end of the coil spring;

(e) the adjustment sleeve has an internal thread within which the coil spring can be screwed;

(f) the external and internal threads of the adjustment sleeve have the same pitch;

(g) first means adapted to receive removable means to selectively prevent the coil spring from rotating within the body;

(h) second means adapted to receive removable means to selectively adjust the position of the adjustment sleeve within the body; and

(i) said first and second means may each be actuated directly from outside of the apparatus by said removable means without taking the apparatus apart.

4,517,849

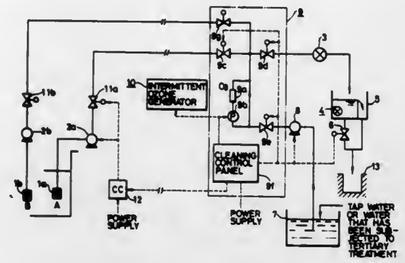
SAMPLING SYSTEM FOR WATER QUALITY SENSORS

Ichiro Nakahori; Shigeki Nakayama; Mitsuo Maeda; Shiro Yamauchi, and Junichiro Ozawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 506,259
Int. Cl.³ G01N *1/16*
U.S. Cl. 73—863.31 **1 Claim**

1. In a sample system including means for directing water samples to at least one water quality sensor for analysis, the improvement comprising:

means for supplying ozone-containing cleaning water to areas of said system which come into contact with said water samples,



said samples being taken at more than one sampling point and being sequentially directed to a plurality of said sensors, and

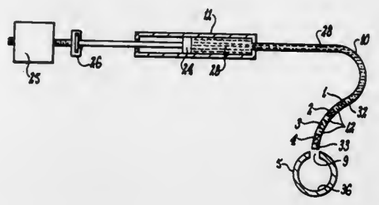
said sample system further including sampling pump means proximate each said sampling point, and cleaning pump means for directing said cleaning water through said areas.

4,517,850

SAMPLE HANDLING METHOD AND APPARATUS

Alan G. Wiseman, Glen Waverley, and John T. Huberts, Mount Waverley, both of Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 5, 1982, Ser. No. 405,445
Claims priority, application Australia, Aug. 5, 1981, PF0064
Int. Cl.³ B01L *3/02*; G01N *35/06*
U.S. Cl. 73—864.21 **11 Claims**



1. A sample handling method including the steps of filling a conduit with a rinse solution, drawing a first slug of air into an end of said conduit, drawing in sequence into said conduit end a plurality of ingredients of a sample mixture including a blank solution, a standard and a sample solution, drawing into said conduit end a further slug of air immediately following the uptake of each said ingredient so that a slug separates each two adjacent ingredients and is the last component in the series of components within said conduit, each said slug and each said ingredient displacing a respective quantity of said rinse solution from said conduit at the time of its uptake, locating said conduit end at an atomizer furnace, and discharging said ingredients in succession through said conduit end in a single operation to be deposited within said furnace.

4,517,851

SYSTEM FOR CONTROLLING SEPTUM DAMAGE

Gregory Tice, Lutherville, Md., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed May 20, 1983, Ser. No. 496,716
Int. Cl.³ G01N *35/00*
U.S. Cl. 73—864.91 **30 Claims**

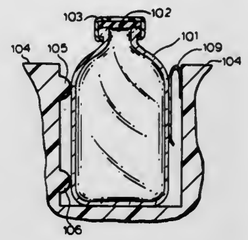
1. A system for locating a vial comprising

a. a vial carrier comprising a well,

b. a vial having a cross sectional shape which permits insertion in said vial carrier, said vial having a body portion, a finish, an opening in said finish and a penetrable septum disposed in said opening,

c. said septum being penetrated by at least one needle at periodic intervals, and

d. locating means within said vial carrier for establishing a



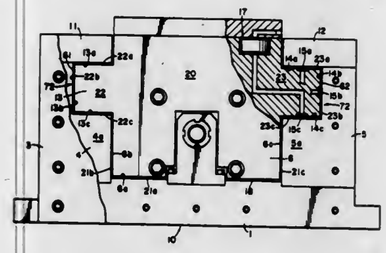
predetermined location for said vial in relation to said needle, said locating means fixing the location of the vial within the well while placed therein, said locating means including a plurality of contact points and urging means for establishing contact between said contact points and a locating surface, said urging means pressing substantially on one side of said vial, which side is substantially opposite said locating means.

4,517,852

CARRIAGE APPARATUS

Kouichi Kawakami, Zama, and Mamoru Tanaka, Yokohama, both of Japan, assignors to Nippin Seiko Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,289
Claims priority, application Japan, Jun. 4, 1980, 55-74205; Jul. 2, 1980, 55-92103[U]; Jul. 18, 1980, 55-97572
Int. Cl.³ F16H *29/20*; F16C *32/06*
U.S. Cl. 74—89.15 **6 Claims**



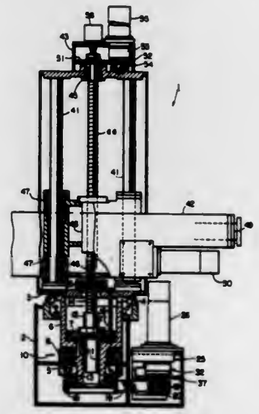
1. A carriage apparatus including a base bed generally having the shape of an upwardly opening container and provided with a first recess at the bottom thereof and second and third recesses in the opposite inner side portions, and a movable carriage generally having a shape that can be contained in said base bed and provided with a first protruded portion corresponding to said first recess at the bottom thereof and second and third protruded portions corresponding to said second and third recesses in the opposite outer side portions thereof, drive means including a feed screw for moving said carriage within said base bed, means for supplying compressed gas to the gap between said second protruded portion and said second recess and the gap between said third protruded portion and said third recess to form static pressure gas bearings, and means including a predetermined amount of liquid stored within the gap between said first protruded portion and said first recess for producing a squeeze damping effect so that self-excited vibration of said carriage by said static pressure gas bearings is restrained.

4,517,853

BALANCING DEVICE

Shigetaka Tani, and Toshio Nagahara, both of Toyama, Japan, assignors to Toyama Machine Works, Limited, Toyama, Japan

Filed Feb. 12, 1982, Ser. No. 348,613
Claims priority, application Japan, Feb. 16, 1981, 56-21232
Int. Cl.³ F16H *27/02, 29/02*
U.S. Cl. 74—89.15 **14 Claims**



1. A balancing device, comprising:

a driving electric motor;

a feed screw turned by said motor;

a balancing feed screw coupled to said feed screw; and

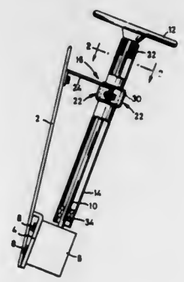
a balancing cylinder coupled through thread means to said balancing feed screw, to apply torque to said balancing feed screw to reduce the load exerted on said motor.

4,517,854

LOW-VIBRATION STEERING DEVICE

Yasuhiro Kawabata, Obu; Yoshio Kadokawa, Nagoya; Nobuyuki Mori, Nagoya, and Shinji Suzuki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of, Japan

Filed Nov. 15, 1982, Ser. No. 441,764
Claims priority, application Japan, Nov. 25, 1981, 56-174823[U]
Int. Cl.³ B62D *1/16*; F16C *27/06*
U.S. Cl. 74—492 **15 Claims**



1. A low-vibration steering device for a vehicle, comprising:

a gearbox provided on a chassis frame of the vehicle,

a steering shaft rotatably supported by said gearbox at a lower end thereof,

a steering wheel provided on an upper end of said steering shaft,

a tubular steering column enclosing said steering shaft and rotatably supporting said steering shaft by at least one annular insert interposed between an inner wall of said tubular steering column and an outer wall of said steering shaft, said tubular steering column being mechanically isolated from direct connection to said chasis frame, said gearbox and a floor of the vehicle, and

a column clamp holding said tubular steering column at a portion thereof which is longitudinally above a middle portion and near a node in a vibrational mode of said tubular steering column, said column clamp being secured to said chassis frame,

whereby said tubular steering column is supported by said chassis substantially only through said column clamp, and the natural frequency of vibration of the whole of the steering device is reduced and the vibration in the whole of the steering device is reduced.

4,517,855

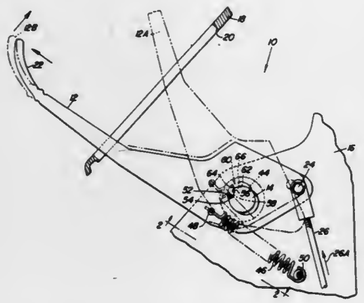
POWER TAKE-OFF LEVER ARRANGEMENT FOR A TRACTOR

Lloyd L. Lane, and Gregory S. Hosford, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 12, 1982, Ser. No. 397,636

Int. Cl.³ G05G *5/08*; F16B *3/00*

U.S. Cl. 74—528 **6 Claims**



1. An improved power take-off lever arrangement for a tractor having a support plate secured to said tractor and having a pin extending outward therefrom which engages an aperture formed in a manually operable lever, said lever being connected to a control valve for hydraulically engaging a power take-off drive, said control valve being responsive to move to a second position with corresponding movement of said lever and being spring biased to move to a first position with corresponding movement of said lever when said hydraulic pressure falls below a predetermined value, said lever further being spring biased to said first position such that an attachment mechanism formed on both said lever and said pin engages, said improvement comprising:

(a) a keyway formed in the periphery of said pin which is aligned parallel to the central axis of said pin; and

(b) a key formed on the inner circumference of said aperture which is formed in said lever, said key being aligned with and engaging said keyway when said lever is in said first position and being out of engagement with said keyway but in contact with the periphery of said pin when said lever is in said second position.

4,517,856

POWER TAKE-OFF LEVER ARRANGEMENT FOR A TRACTOR

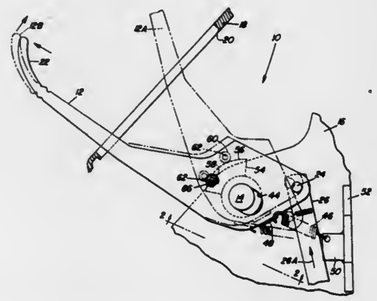
Helmut Schäfer, Ketsch; Volker Hückler, and Michael Teich, both of Mannheim, all of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Jul. 12, 1982, Ser. No. 397,637

Claims priority, application European Pat. Off., Aug. 3, 1981, 81303548.2

Int. Cl.³ G05G *5/08*; F16B *3/00*

U.S. Cl. 74—528 **9 Claims**



1. A power take-off lever arrangement for a tractor having a manually operable lever connected to a control valve for hydraulically engaging a power take-off drive, said control valve being responsive to move to an engaged position with corresponding movement of said lever and being spring biased to move to a disengaged position with corresponding movement of said lever when hydraulic pressure falls below a predetermined value, said lever arrangement comprising:

(a) a support plate secured to said tractor and having a pin extending outward therefrom, said pin engaging a slot formed in said lever;

(b) an arcuate sector secured to said pin and having a recess formed in an arcuate surface thereof;

(c) a roller attached to said lever which engages in said recess when said lever is in a disengaged position and which rides on said arcuate surface of said sector when said lever is in an engaged position; and

(d) biasing means for urging said roller into said recess when said lever is in said disengaged position and which exerts a limited force on said lever when said lever is in said engaged position, said limited force being insufficient to affect the stability of said lever in said engaged position and being insufficient to affect the movement of said lever to said disengaged position when said hydraulic pressure indirectly acting on said control valve falls below said predetermined value.

4,517,857

GEAR INTERFERENCE PREVENTING MECHANISM IN MULTI-SPINDLE HEAD ATTACHMENT

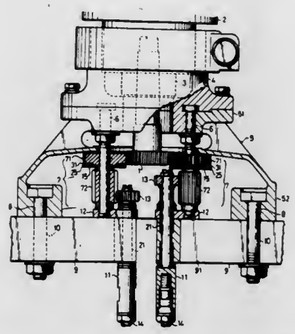
Eiji Miyakawa, Tokyo, Japan, assignor to Miyakawa Industry Co., Ltd., Japan

Filed Feb. 16, 1983, Ser. No. 466,779

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—665 GA **8 Claims**

1. A gear interference preventing mechanism in a multi-spindle head attachment comprising: a main spindle gear adapted to be rotatably driven by a drive source in a drilling machine, tapping machine or the like; a plurality of intermediate gears adjacent to one another and meshed with said main spindle gear; a plurality of adjacent spindles each having a spindle gear meshed with one of said intermediate gears, each of said spindles being rotatably attached to said multi-spindle head attachment through a spindle holder and having its end adapted to grip a drill or a tap; and at least one gear interference preventing plate located adjacent to and spaced from the teeth of said



gears and said plate being axially aligned with said gear, said plate preventing an interference between said adjacent gears.

4,517,858

DRIVE FOR SINGLE-WORM EXTRUDER

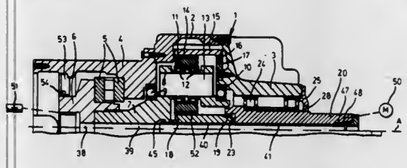
Heinrich Schäfer, Rosdorf, Fed. Rep. of Germany, assignor to Battenfeld Extrusionstechnik GmbH, Bad Oeynhausen, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,666

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1982, 3244991

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—801 **10 Claims**



1. A drive for an extruder worm centered on an axis, the drive comprising:

a substantially closed housing axially juxtaposed with the worm;

an input shaft extending along and rotatable in the housing about the axis, exposed axially at an input side of the housing, and adapted to be coupled to a drive motor;

an output shaft rotatable in the housing about the axis, exposed at an input side of the housing, and adapted to be coupled directly to the worm;

an axial-thrust bearing braced between the output shaft and the housing;

a planetary transmission centered on the axis between the input and output shafts in the housing and including:

a sun gear rotationally coupled to the input shaft,

a ring gear spaced radially outward from the sun gear,

a plurality of planet gears meshing with the sun and ring gears, and

a planet carrier carrying the planet gears and rotationally fixed to the output shaft, the shafts, sun gear, and carrier being formed at the axis with coaxial axially throughgoing passages;

a tube having an output end fixed at the passage of the planet carrier and extending along the axis with radial play through the passage of the sun gear and at least partially through the passage of the input shaft and having an input end in the input shaft;

a bearing supporting the input end of the tube in the input-shaft passage; and

a seal between the input end of the tube and the input-shaft passage.

4,517,859

SHIFT UP CLUTCH CONTROL IN A MULTIPLE CLUTCH TYPE GEAR TRANSMISSION FOR AUTOMOBILE

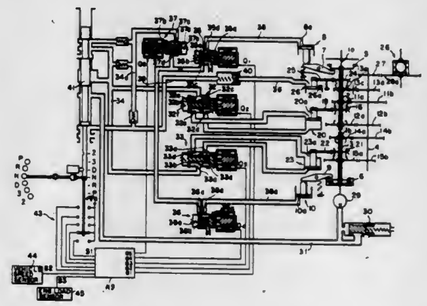
Mitsuru Nagaoka, and Mitsuo Yasuno, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 30, 1982, Ser. No. 454,564

Claims priority, application Japan, Jan. 5, 1982, 57-760; Mar. 29, 1982, 57-50667

Int. Cl.³ B60K *41/18, 41/16*; F16H *5/52*

U.S. Cl. 74—866 **12 Claims**



1. In a multiple clutch type transmission including a plurality of input shafts, a plurality of clutch devices for releasably and alternately connecting respective ones of said input shafts with an engine output shaft, each of said input shafts being associated with at least one set of transmission gears for connecting the input shaft associated therewith to an output element of the transmission, means for controlling said clutch devices so that a selected one of said input shafts is connected through a selected one of said clutch devices with the engine output shaft and through a selected set of said transmission gears with the output element, a method of controlling the clutch devices in a gear shift up operation, which comprises the steps of bringing one of the clutch devices which has not been in engagement into engagement with a first engaging speed for a first period of time while maintaining the other clutch device in engagement, then disconnecting the other clutch device which has been in engagement after a predetermined time so that there is a certain period of overlap wherein the one clutch device is in at least a substantially half-engaged condition while the other clutch device is still in engagement.

4,517,860

PICTURE LOCATING TOOL

James L. Dameron, Jr., 3820 Delashmutt Dr., Haymarket, Va. 22069

Filed Feb. 1, 1984, Ser. No. 575,749

Int. Cl.³ B25B *27/00*

U.S. Cl. 81—487 **2 Claims**

1. A picture locating tool comprising:

a substantially flat body member having a width and a selected length, said substantially flat body member having a first end and a second end with a flange member being provided at said first end and curved toward the second end and being parallel to the width dimension;

an elongated hole located adjacent to said second end of said body member at approximately the center of the width dimension;

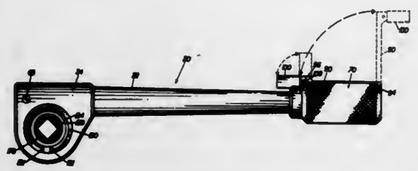
a stud of selected length protruding from an upper end of

said elongated hole which is furthest away from said second end at approximately the center of the width dimension and at an angle directed toward the first end;



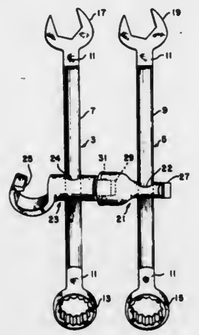
said elongated hole being an open channel extending completely through said tool below said protruding stud and being of sufficient width to permit a pencil mark to be applied to the vertical surface behind said tool thereby defining a point of attachment.

4,517,861
CONTINUOUS TRAVEL HAND WRENCH
Ivan Stemberger, 601 DuPont Plz., Miami, Fla. 33131
Filed Jul. 25, 1983, Ser. No. 516,577
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **7 Claims**



1. A wrench assembly of the type primarily designed to be hand operated and substantially continuously driven, said wrench assembly comprising:
(a) a housing having a substantially elongated configuration and a hollow interior portion extending along the length thereof, said housing further including a head portion,
(b) drive means for continuously driving said wrench assembly and including an elongated drive shaft rotatably mounted within said hollow interior portion and including a first gear element mounted at one end thereof adjacent said head portion,
(c) said drive means further comprising a second gear element movably mounted within said housing in meshing driven engagement with said first gear element, whereby rotation of said drive shaft causes rotation of said first and second gear element,
(d) activating means movably mounted on said housing for driving interconnection with said drive shaft,
(e) adaptor means movably mounted on the interior of said second gear element and including a mounting head having a plurality of key elements fixedly formed thereon in spaced relation to one another and each extending outwardly from an outer surface of said mounting head in substantially coplanar relation to one another,
(f) said second gear element comprising a plurality of keyways integrally formed therein, wherein each of said key elements is disposed and dimensioned to fit within one of said keyways,
(g) said adaptor means mounted to rotate with said second gear means upon interengagement between respective ones of said key elements and keyways,
(h) said second gear element including at least a partially concave interior surface disposable substantially in supporting and sliding engagement with an exterior surface of said adaptor means,
(i) said adaptor means extending outwardly from said head portion and positionable in a substantially floating manner and orientation including and limited to 90° relative to said head portion, and
(j) said activating means, said drive means and said adaptor means all interconnected and structured to cause substantially continuous rotation of said adaptor means upon continuous rotation of said activating means through interconnection thereof by said drive means.

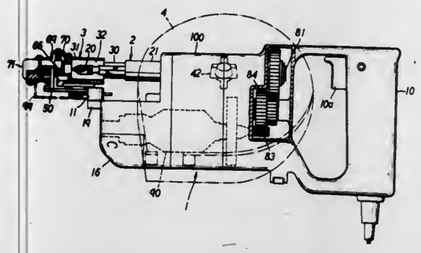
4,517,862
WHEEL ALIGNMENT TOOL
Moises R. Garcia, deceased, late of Dona Ana, N. Mex. (by Teresa A. Garcia, personal representative), assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 20, 1984, Ser. No. 572,492
Int. Cl.³ B25B *13/02*
U.S. Cl. 81—119 **6 Claims**



1. A special purpose composite hand tool adapted to facilitate fast and accurate adjustment of the front ends and steering mechanisms of motor vehicles, comprising: a pair of shanks, each with an open ended hexagonal wrench at one end and a hexagonal box wrench at the other end, each of said shanks having a slidable member attached thereto, one of said slidable members including on one end thereof a hook adapted to engage a groove of a tie rod adjusting sleeve to facilitate rotation thereof and on the other end thereof a square stud, the other slidable member comprising on one end thereof a screwdriver blade and on the other end thereof a square hole adapted to mate with said square stud.

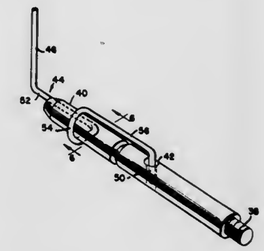
4,517,863
SUCCESSIVE SCREW FEEDER DRIVER
Shigeru Ishikawa, Tokyo, Japan, assignor to Muro Kinzoku Kogyo Co., Ltd., Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,370
Claims priority, application Japan, Dec. 27, 1982, 57-230489
Int. Cl.³ B25B *23/02*
U.S. Cl. 81—434 **16 Claims**

1. A successive screw feeder driver, comprising in combination;
a motor housing accommodating an electric motor in a front end portion thereof and forming a handle in a base end portion thereof, mounting a transmission mechanism between said electric motor and handle;
a screw chain magazine detachably fixed to said motor housing and holding an elongated screw chain having a large number of screws attached at uniform intervals to a connecting strip by means of a breakable filament;
a screw driving mechanism projected from the front end of said motor housing by a predetermined length in parallel relation with said electric motor for driving said screws;
a feeder block mounting thereof a screw feed mechanism for successively feeding screws on the screw chain from said



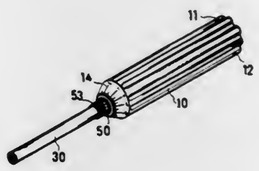
magazine one after another to a predetermined driving position in front of said screw driving mechanism, and adapted to hold the screw chain withdrawn from said magazine;
a support member for supporting said feeder block on said motor housing and normally projecting said feeder block from the front end of said motor housing by a predetermined length, said support member being retractable into said motor housing at the time of screw driving operation; and
a screw advance mechanism for advancing screws on said screw chain one after another to said predetermined driving position on said feeder block.

4,517,864
CYLINDRICAL PIN WRENCH
Peter J. Fratta, 11904 Crown Dr., Dunkirk, Md. 20754
Filed Aug. 22, 1983, Ser. No. 525,243
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—436 **11 Claims**



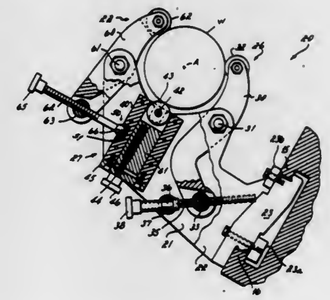
1. In combination, a longitudinally extended cylindrical pin and a wrench adapted for connective mounting to supporting, handling, maneuvering and rotating the pin, said pin having a diametrical wrench engageable hole therethrough, said wrench including a frictionally engageable and operable curvilinear pin engaging recessed portion intermediate the ends of said wrench, said wrench having an end operating handling portion, and a pin hole engaging end disposed at an angle to the axis of said wrench the wrench, when frictionally engaged to and supporting the pin, with the hole operatively interengaged by said pin hole engaging end, being operable for positionally, maneuverably and rotatably moving the pin.

4,517,865
TORQUE-ADJUSTABLE SCREWDRIVER
Yung-Lung Huang, 21-1, Kuo Chung Rd., Ta Li Hsiang, Tai-chung Hsien, Taiwan (407 R.O.C.)
Filed Jan. 6, 1984, Ser. No. 568,681
Int. Cl.³ B25B *23/14*
U.S. Cl. 81—475 **3 Claims**



1. a torque-adjustable screwdriver comprising:
A tubular handle having two screw holes at its rear end for screws to fix a block serving as a plug and having graduation at its front end as measurements of the torque of its twisting rod and an intermediate internal thread portion;
a block having two screw holes for fixing itself in the rear end of the handle and having circular toothing on its front end;
a twisting rod having a hole in its front end for holding the chisel-like end of the screwdriver and having a projecting part at its rear end which has circular toothing corresponding to that of the block;
an adjusting thimble between the tubular handle and twisting rod having a radial projecting part at its rear end and having a threaded part in front of the projecting part, which keeps in mesh with the internal thread portion of the tubular handle and which makes the twisting rod go back and forth when it is turned by hand on an exposed front part;
a spiral spring fitted over the twisting rod and between the projecting parts of the adjusting thimble and the twisting rod to exert pressure on the twisting rod.

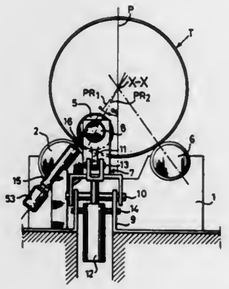
4,517,866
STEADYREST FOR SLANT BED LATHE
Johannes Bazuin, Cincinnati, Ohio, assignor to LeBlond Makino Machine Tool Co., Cincinnati, Ohio
Filed Sep. 7, 1982, Ser. No. 414,963
Int. Cl.³ B23B *25/00;* **B24B** *41/06*
U.S. Cl. 82—39 **6 Claims**



1. A workpiece steadyrest for a metal working apparatus, said steadyrest including:
a steadyrest frame;
a pivot arm;
pivot means for pivotally securing said arm to said frame;
a first workpiece supporting roller mounted on one end of

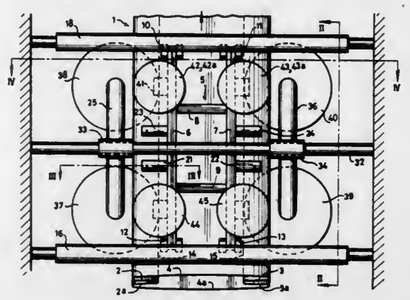
said pivot arm and movable into a workpiece supporting position;
adjustment screw means for urging said roller against a workpiece, said screw means including a rotatable screw;
means for pivotally and rotationally mounting said screw at another end of said pivot arm for relative movement of said arm end along said screw when said screw is rotated, and for pivotal motion of said screw with respect to said pivot arm;
socket means fixed on said steadyrest frame for releasably and rotationally receiving one end of said screw;
said one end of said screw being releasably disposed in said socket;
said other pivot arm end being movable along said screw upon rotation of said screw and said one end of said pivot arm pivoting about said pivot means when said screw is rotated to move said first roller to and away from said workpiece supporting position; and
said one end of said screw being removable from said socket, upon rotation of said screw, and said pivot arm being freely rotatable about said pivot means without further screw rotation when said screw is removed from said socket, to withdraw said first roller from said workpiece supporting position.

4,517,867
METHOD AND APPARATUS FOR CUTTING A CAST IRON PIPE
Claude B. Fuminier, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Pont-A-Mosson, France
Filed Nov. 29, 1983, Ser. No. 556,220
Claims priority, application France, Dec. 10, 1982, 82 20733
Int. Cl.³ B23B *3/04, 5/14;* B26B *27/00;* B26D *3/16*
U.S. Cl. 82—101 **3 Claims**



1. A cutting device for a tube (T), comprising:
a static frame (1);
two carrier rollers (2, 6) mounted on said frame for supporting horizontally such tube from below, an axis of each carrier roller lying parallel to an axis of such tube;
drive means (3) connected to at least one of said carrier rollers for rotating at least one of said carrier rollers and for rotating such tube on its axis (X—X);
a cutting tool (16);
means on said frame mounting said cutting tool and a driven one of said carrier rollers along a radial plane of such tube and
at least one pressing roller (5) for forcing such tube against said carrier rollers;
means spaced from said frame and connected to said pressing roller for moving said pressing roller radially outwardly into engagement with the interior of such tube and against the wall of such tube;
wherein said moving means comprises a chassis (7) on which said at least one pressing roller is mounted for moving said pressing roller into the interior of such tube and for withdrawing said pressing roller from such tube after completion of cutting; and said moving means places said at least one pressing roller between the two carrier rollers at a small angular distance (α) from one of the driven carrier rollers to which said cutting tool is coupled, said small angular distance being measured between a carrier radial plane (P_{R1}) passing through the axis (X—X) of such tube and through the axis of said one carrier roller and the pressing radial plane (P_{R2}) passing through the axis (X—X) of such tube and through the axis of said pressing roller, said pressing radial plane being located between the vertical axial plane (P) of such tube and the carrier radial plane.

4,517,868
METHOD OF AND DEVICE FOR MAKING PERFORATIONS IN A TUBULAR WEB OF PLASTICS FOIL
Arnoldus W. J. Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Netherlands
Filed Jun. 2, 1983, Ser. No. 500,422
Claims priority, application Netherlands, Jun. 2, 1982, 8202231
Int. Cl.³ B31B *31/14;* B26F *1/06*
U.S. Cl. 83—54 **10 Claims**

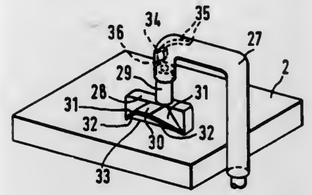


1. A method of making perforations in the inner gusset portions of a tubular web of plastics foil which is provided with side gussets having gusset halves comprising the steps of:
opening the gussets over a distance sufficient to introduce, into the interior thereof, a punching member;
inserting a punching member into the interior thereof; and
exerting a pressure from the exterior of the tubular web, so as to activate said punching member.

4,517,869
SAW TABLE FOR A COMPASS SAW
Gerhard Kuhlmann, Stuttgart, and Erwin Wolf, Wei-sach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 2, 1981, Ser. No. 298,751
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039459
Int. Cl.³ B27B *19/04, 19/06*
U.S. Cl. 83—100 **11 Claims**

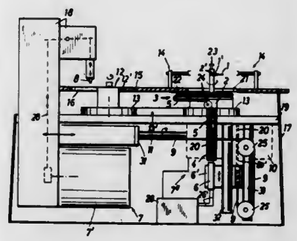
1. A saw table for a compass saw formed particularly as a hand-held power tool, the saw table comprising a table plate having an edge and extending so that a compass saw is located under said table plate and a saw blade extends upwardly beyond said table plate at a predetermined location spaced from said edge, the saw blade being inclinable between a plurality of cutting angles and engageable between a plurality of cutting depths; means forming an air guiding passage; holding means extending from said edge of said table plate to said location and above said table plate, at a distance from the latter at said location; and protecting means for protecting the saw blade, said protecting means being held by said holding means which extends from said edge to said location above said table plate, overlapping the saw blade from a space above said table plate,

being formed as an end piece of said air guiding means, and being arranged movable in direction of the saw blade, said protective means including a protective hood arranged to



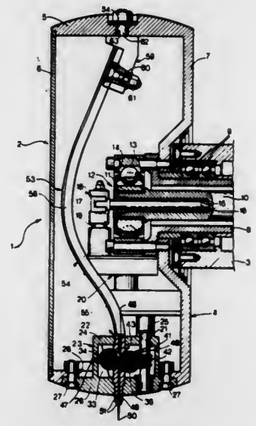
surround the saw blade and having an inner dimension corresponding to all cutting angles and depths of the saw blade with a sufficient play.

4,517,870
MACHINE FOR MANUFACTURING A TEMPLATE FOR EDGE GRINDING A SPECTACLE LENS
Hubert Kopp, Schramberg, Fed. Rep. of Germany, assignor to Breitfeld & Schliekert GmbH, Bad Vilbel, Fed. Rep. of Germany
Filed May 16, 1983, Ser. No. 495,018
Claims priority, application Fed. Rep. of Germany, May 15, 1982, 3218492
Int. Cl.³ B26D *5/00*
U.S. Cl. 83—411 R **1 Claim**



1. A machine for manufacturing a templet for edge grinding a spectacle lens according to the shape of an opening in a spectacle frame designed to hold the lens, which comprises
(a) a housing,
(b) a spectacle frame holder supported on the housing for holding the spectacle frame in a plane, and the opening having an axis extending perpendicularly to the plane,
(c) a copying sensor mounted on the housing for rotation about said axis and for rectilinear displacement in said plane, the sensor sensing the shape of the opening upon rotation thereof,
(d) a blank holder rotatable synchronously with the sensor,
(e) a sliding carriage mounted on the housing for rectilinear displacement with respect to the blank holder, the sliding carriage carrying
(1) a cutting tool for cutting the blank to provide said templet,
(f) a plunger rectilinearly displaceable with the copying sensor and synchronously controlling the rectilinear displacement of the sliding carriage and cutting tool, the plunger having an axis extending in the direction of the axis of the spectacle frame opening,
(g) a sensing element mounted in the housing coaxially with the plunger and spaced therefrom for sensing the distance between the plunger and the sensing element,
(h) mechanical motion transmitting means connecting the sensing element to the sliding carriage,
(i) a drive motor for rectilinearly displacing the sliding carriage, and
(j) an electronic processing unit connected to the drive motor and to the sensing element, the processing unit controlling the rotational speed of the drive motor so that the distance between the plunger and the sensing element remains constant.

4,517,871
CUTTING DEVICE FOR CONTINUOUS RODS OF CIGARETTE
Enzo Seragnoli, and Riccardo Mattei, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy
Filed Jan. 27, 1983, Ser. No. 461,605
Claims priority, application Italy, Feb. 2, 1982, 47702 A/82
Int. Cl.³ A24C *5/28*
U.S. Cl. 83—677 **7 Claims**



1. A device for cutting continuous rods of cigarette comprising a substantially cylindrical cutting head (2) mounted rotatably about its axis on a support body (3), a drive shaft (10) extending through the support body (3) and connected to rotate the said head (2) by means of a central coupling (12), at least one flexible blade (49) mounted in a substantially radial manner on the said head (2), and advancement means (48) operable to cooperate with the said blade (49) to cause progressive extension thereof from the said head (2), characterised by the fact that the said head (2) further includes within it a magazine (53) for the said blade (39); the said magazine (53) being constituted at least in part by a guide (54) extending across the said head (2) in a substantially diametral direction and around the said central coupling (12).

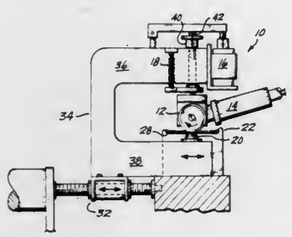
4,517,872
CONTROLLED DEPTH CUTTING METHOD AND APPARATUS
Helmut Dontscheff, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jun. 30, 1983, Ser. No. 509,662
Int. Cl.³ B65D *3/08*
U.S. Cl. 85—880 **16 Claims**

15. In a system in which tape in a tape laying machine is transported by a continuous strip of backing material and in which said machine has cutting means for making lateral cuts through the tape and support means for the tape and backing material, a method of controlling the depth of said cuts to completely sever the tape without impairing the transport of the tape, said method comprising:
fixedly mounting the support means with respect to the cutting means;

positioning the cutting means to maintain an essentially constant distance between the cutting means and a single constant support point on the support means;

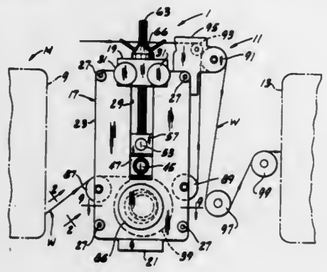
moving the tape and the backing material between the cutting means and the support means into position for the tape to be cut by the cutting means;

cutting the tape with the cutting means, and supporting the portion of the tape being cut and the backing material with said support point of the support means;



while cutting the tape and supporting said portion of the tape and the backing material, moving the cutting means and the support means simultaneously laterally across the tape and the backing material and maintaining said essentially constant distance between the cutting means and said support point, to thereby maintain an essentially constant depth of the cut and completely sever the tape without severing the backing material.

4,517,873
DIE CUTTING APPARATUS
John S. Wilson, Kirkwood, Mo., assignor to Wilson Manufacturing Company, St. Louis, Mo.
Filed Apr. 25, 1983, Ser. No. 488,583
Int. Cl.³ B26D *3/08, 1/56;* B26F *1/42*
U.S. Cl. 83—881 **20 Claims**



1. Die cutting apparatus for use in a machine for making labels and the like, said machine being of the type wherein a web comprising a layer of pressure sensitive label material on a layer of backing material is fed in a forward direction through the machine, said apparatus being adapted to cut through said layer of pressure sensitive label material as it is fed forwardly without cutting through said backing layer thereby to form individual pressure sensitive labels on the backing layer, said apparatus comprising:

a frame having a pair of side frame members at opposite sides of the frame;

an engraved die roll having a cylindric outer surface with die cutting means thereon extending generally axially with respect to the roll;

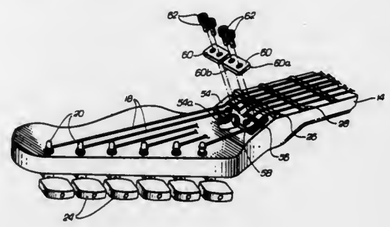
means for mounting the die roll on the frame with the roll extending between the side frame members for rotation about a generally horizontal axis lying in a first vertical plane extending generally perpendicular to the direction of web feed;

an anvil roll having a cylindric outer surface; and

means mounting the anvil roll on the frame with the roll extending between the side frame members for rotation about a generally horizontal axis lying in a second vertical plane skewed at an angle with respect to the said first vertical plane and with respect to the direction of web feed;

said die and anvil rolls being rotatable about their respective horizontal axes with their cylindric surfaces so spaced with respect to one another that when said web is fed forwardly between the rolls said axial die cutting means on the die roll is adapted for cutting completely through said layer of pressure sensitive label material but not said backing layer to form label edges extending generally transversely with respect to the web, said angle of skew being effective for making the cutting action of said axial die cutting means a progressive slicing cutting action which progresses across the web along a line which, relative to the anvil roll, extends generally axially of the anvil roll from a point on the roll on one side of a line of intersection between the anvil roll and said second vertical plane, over said line of intersection, and thence to a point on the anvil roll on the opposite side of said line of intersection.

4,517,874
STRING LOCK MECHANISM FOR MUSICAL INSTRUMENTS
C. Leo Fender, 1510 Dana Pl., Fullerton, Calif. 92635
Filed Jun. 19, 1984, Ser. No. 622,068
Int. Cl.³ G10D *3/12*
U.S. Cl. 84—314 N **5 Claims**



1. A guitar comprising:

a body;

a neck extending from the body;

a head coupled to the neck, said head and neck having substantially parallel offset planar faces coupled to one another by means of an inclined surface;

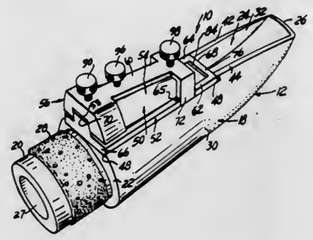
a plurality of string posts secured to the head;

a plurality of strings connected to the string posts and extending along the neck over the face thereof to the body;

a nut located at the end of the neck adjacent the head, said nut supporting the strings above the face of the neck; and

a string clamp secured to said inclined surface for preventing the strings from sliding with respect to the nut, said string clamp including a planar base plate secured to the inclined surface, at least one planar top member positioned over the base plate and at least one fastener for securing the top member to the base plate, wherein the strings pass between the base plate and top member and are clamped thereby.

4,517,875
REED MOUTHPIECE FOR MUSICAL WIND INSTRUMENT
Bruno Dossekker, Zurich, Switzerland, assignor to Sodecom SA, Switzerland
Filed Feb. 28, 1984, Ser. No. 584,537
Int. Cl.³ G10D *9/02*
U.S. Cl. 84—383 R **5 Claims**



1. A mouthpiece for musical wind instrument comprising a casing, a reed and a reed attachment assembly mounted at the top of said casing, said reed attachment assembly comprising a support member pivotably connected to a frame, said frame being fixed to said casing and said frame having a forward stirrup integrally protruding at a right angle proximate an end of said frame, said support member being provided with a plate disposed within said frame, a rearward stirrup integrally protruding at a right angle proximate an end of said plate, a relatively narrow bridge portion integrally protruding from the top of said rearward stirrup proximate the middle thereof, said bridge portion being integrally connected to said forward stirrup protruding from said frame, said attachment assembly further comprising means for adjusting the inclination of said plate of said support member relative to said frame, and means for clamping the foot of said reed to said plate of said pivotable support member such that the blade of said reed protrudes from said attachment assembly and extends over the top of said casing with the tip of said reed being disposed proximate the leading edge of said casing, wherein the distance between said tip of said reed and said leading edge of said casing is variable by said means for adjusting said support plate.

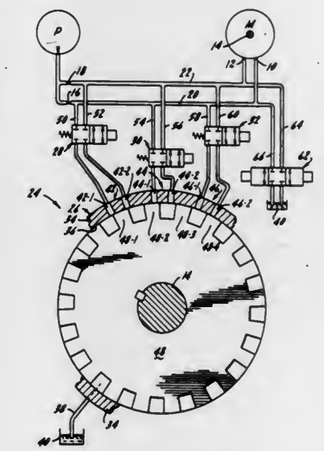
4,517,876
CYMBAL SUPPORT
Dane J. Duhon, 2601 Dusky Rose, Pasadena, Tex. 77502
Filed May 17, 1984, Ser. No. 611,073
Int. Cl.³ G10D *13/06;* G10G *5/00*
U.S. Cl. 84—422 R **10 Claims**

1. A cymbal support stand including an upright first tubular member having base means at its lower end for support of said first tubular member from a horizontal surface, a second upright tubular member slidably telescoped in said first tubular member and including an upper end projecting above the upper end of said first tubular member, a lower centrally apertured and upwardly facing cymbal mounted on the upper end of said second tubular member for universal canting relative thereto, an upstanding support rod slidably received through said second tubular member and projecting upwardly through said lower cymbal and above the upper end of said second tubular member, an upper downwardly facing cymbal mounted on the upper end of said rod above and opposing said lower cymbal, means connected between said base means and said rod yieldingly biasing said rod and said upper cymbal toward a static upper position spaced above said lower cymbal, and foot operable means operably connected between said second tubular member and said first tubular member operative to variably stationarily longitudinally position said second tubular member relative to said first tubular member, whereby the vertical spacing between the central areas of said cymbals may be variably adjusted, and foot treadle means operatively connected between said base means and said rod for selectively



and variably downwardly displacing said rod, and thus said upper cymbal, relative to said lower cymbal.

4,517,877
STEP CONTROL APPARATUS FOR A FLUID MOTOR
Philip J. Mott, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 2, 1983, Ser. No. 463,352
Int. Cl.³ F15B *9/09*
U.S. Cl. 91—48 **6 Claims**



1. Step control apparatus for a fluid motor having first and second motor ports communicating with a source of fluid under pressure, said step control apparatus comprising a control mechanism including a chamber adapted to communicate with a fluid reservoir, three pairs of control ports, each pair having first and second control ports for communicating with said chamber, a control member movable in said chamber, and means for moving said control member in response to movement of said motor, said control member including a plurality of control teeth each of which has an equilibrium position communicating both control ports of a selected pair with said chamber, another position blocking said first control port of

one of the remaining pairs, and yet another position blocking said second control port of the other of the remaining pairs, one of said teeth communicating both control ports of said selected pair with said chamber when in its equilibrium position, and two others of said teeth blocking respectively said first and second control ports of the other two remaining pairs when said one tooth is in its equilibrium position, and said step control apparatus also comprising three valve devices each of which is associated with a pair of said control ports, each valve device being actuatable to communicate said first and second motor ports respectively with said first and second control ports of its associated pair, whereby actuation of said valve devices effects movement of said motor in a stepping mode.

4,517,878

SHOCK ABSORBING DEVICE FOR HYDRAULIC CYLINDER

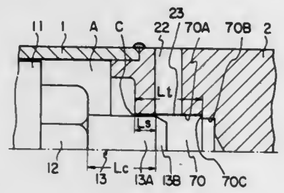
Hisayoshi Hashimoto, and Morio Tamura, both of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 410,954

Claims priority, application Japan, Oct. 20, 1981, 56-155736[U]; Dec. 16, 1981, 56-187841[U]; Mar. 10, 1982, 57-33416[U]

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—396 **6 Claims**



1. A hydraulic cylinder comprising:

a housing including a cylindrical side wall and at least one end wall;

a piston assembly including a piston slidably arranged in said housing for sliding axial movement for cooperating with the housing to define therein a working space;

a shock absorbing device for reducing the speed of movement of the piston assembly at an end of the piston stroke, said shock absorbing device including:

means for defining a shock absorbing hole formed in the end wall and extending axially of the housing,

passageway means communicating with the shock absorbing hole through a port to discharge hydraulic fluid in said working space, said port being formed in an inner peripheral surface of said shock absorbing hole at a position spaced apart from an end of said shock absorbing hole remote from said working space so that a back pressure chamber is defined by said inner peripheral surface between said port and said end of the shock absorbing hole, and

a shock absorbing member mounted on said piston assembly in substantial alignment with said shock absorbing hole and adapted to enter said shock absorbing hole at the end of the piston stroke, said shock absorbing member cooperating with said inner peripheral surface of said hole to define annular gaps of substantially equal areas directly adjacent opposite sides of said port and an orifice between said port and said end of the shock absorbing hole and throttling said port at the extreme end of the piston stroke, said inner peripheral surface of the shock absorbing hole and said shock absorbing member being configured such that the area of said orifice becomes smaller as the piston approaches an end of the stroke whereby the flow rate of the hydraulic fluid discharged from said back pressure chamber through said orifice to said port is increasingly restricted thereby improving the shock absorbing effect prior to a reaching of the end of the stroke.

4,517,879

MACHINE COMPRISING A RECIPROCATING OPERATIVE MEMBER

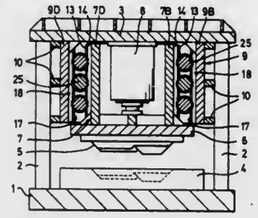
Karl Erik E. Andersson, Kvänum, Sweden, assignor to Verktygsingustri I Blidsberg Aktiebolag, Blidsberg, Sweden

Filed Aug. 29, 1983, Ser. No. 527,475

Claims priority, application Sweden, Sep. 17, 1982, 8205339

Int. Cl.³ F16J *1/02*

U.S. Cl. 92—136 **6 Claims**



1. A machine of the kind comprising an operative member which under direct actuation of driving means is reciprocatable relative to a guide member in a predetermined direction of movement for exerting forces on a workpiece in said direction,

(A) wherein said operative member has

(a) at least one first rack-like toothed surface portion extending in said direction of movement and having teeth extending at an angle to said direction, and

(b) at least one first rollway extending in said direction of movement and having a treadconstituting surface which is co-planar with a pitch plane of said first toothed surface portion;

(B) wherein said guide member has

(c) at least one second rack-like toothed surface portion extending in said direction of movement and having teeth extending at an angle to said direction, and

(d) at least one second rollway extending in said direction of movement and having a treadconstituting surface which is co-planar with a pitch plane of said second toothed surface portion;

(C) wherein said first and second toothed surface portions on said operative member and said guide member, respectively, are opposed to each other, lie in mutually spaced but parallel planes, and have teeth of the same size and pitch;

(D) wherein at least one elongate roller body being entirely separate from said driving means and having an axis of rotation extending at a right angle to said direction of movement is interposed between said operative member and said guide member, said roller body having

(e) at least one circumferentially extending series of teeth meshing with the teeth of said first and second toothed surface portions on said operative member and said guide member, respectively, and

(f) at least one cylindrical body portion which is coaxial with and has the same diameter as a pitch circle of the tooth series of said roller body, said cylindrical body portion being in rolling contact with said first and second rollways on said operative member and said guide member, respectively, for centering said roller body between said opposed first and second toothed surface portions on said two members; and

(E) wherein said roller body is free to roll relative to both said operative member and said guide member in said direction of movement, in response to said operative member being actuated, thereby to counteract any tilting tendency of said operative member in a plane which is parallel to said direction of movement and to the axis of rotation of said roller body.

4,517,880

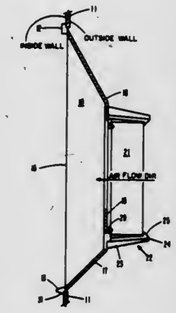
FAN MOUNTING ASSEMBLY

Arthur B. Buckner, West Valley City; Michael L. Davies, American Fork, and Lawrence W. Weber, Bountiful, all of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,493

Int. Cl.³ F24F *13/00*

U.S. Cl. 98—1 **11 Claims**



1. An electrical fan mounting assembly for a video display terminal comprising:

a rigid chassis housing in said video display terminal for mounting heat producing components,

an aperture in said rigid housing adapted to permit air flow therethrough,

a flexible moulded plastic panel assembly,

said plastic panel assembly comprising,

a box shaped panel having four sides, at least two sides being substantially parallel vertical sides connected to a front side to form a shallow open box therewith,

an aperture in said front side of said box shaped panel adapted to align with said aperture in said rigid chassis housing,

an axial flow electric fan mounted over said aperture in said front side of said box shaped panel,

tolerance springs formed in the front side of said flexible plastic closure adapted to resiliently support said axial flow electric fan thereon,

a plurality of resilient retainer fingers extended outward from said front side of said panel,

a latch on the end of each said resilient finger adapted to snap over the outside of said electric fan motor and to hold said electric fan in engagement with said tolerance springs,

a plurality of retaining ears extending rearward and outward from the top of said open box shape panel adapted to engage the rear surface of a rigid wall of said chassis housing of said video display terminal at said aperture, and

latch means on the bottom side of said open box shape panel extending rearward and outward from the bottom of said open box shape panel and adapted to engage the rear surface of said rigid wall of said chassis housing to rigidly mount said flexible moulded plastic panel on said rigid chassis housing to form a rigid fan mounting assembly therewith.

4,517,881

SWEEPING AIR STREAM APPARATUS AND METHOD

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.

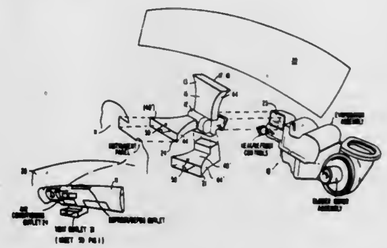
Division of Ser. No. 030,794, Apr. 17, 1979, Pat. No. 4,250,794.

This application Oct. 24, 1980, Ser. No. 200,611

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.³ B60H *1/24*

U.S. Cl. 98—208 **5 Claims**



3. A method of controlling the distributiion of heating and/or cooling air flowing into the passenger compartment of an automobile from a heating and/or air conditioning supply source and in a direction so as to not impinge upon the windshield of said automobile, comprising:

1. sweeping air from said heating and/or air conditioning supply source at a first sweep rate for an initial period of time, and,

2. subsequently sweeping the air from said heating and/or air conditioning supply source at a different second sweep rate for a further time period,

wherein one of said sweep rates is relatively high is such as to produce a relatively short wavelength such that most of the stream of air resides in the ambient air producing severe mixing of air from said source with the ambient air, and the other of said sweep rates is relatively low to produce a relatively long wavelength in order to reduce mixing of air from said source with ambient air and thereby more rapidly heat up or cool down, respectively, the passenger compartment.

4,517,882

VENTILATING DEVICE FOR A CONTAINER

Masaru Watanabe, Utsunomiya; Toshihide Sakai, Oyama, and Toshio Takase, Utsunomiya, all of Japan, assignors to Fuji Heavy Industries Ltd., Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,075

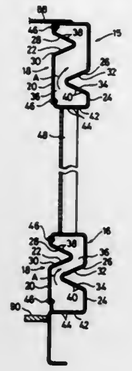
Claims priority, application Japan, Oct. 18, 1982, 57-157125[U]

Int. Cl.³ B60L *1/20*

U.S. Cl. 98—6 **7 Claims**

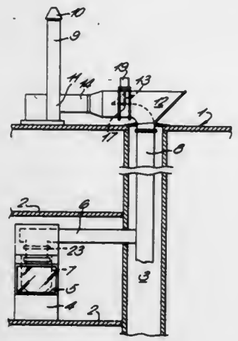
1. A ventilating device for a container, comprising a container frame consisting of tubular rail members, outer ventilation holes formed through an outer wall of said rail member so as to be exposed to the outside of said container, inner ventilation holes formed through an inner wall of said rail member so as to be exposed to the interior of said container, and a ventilation channel defined inside said rail member so as to provide communication between said inner ventilation holes and said outer ventilation holes, characterized in that said ventilating device further comprises a first groove which is formed in an inner side wall of said rail member so as to extend along a longitudinal direction of said rail member, and a second groove which is formed in an outer side wall of said rail member so as to extend substantially parallel to said first groove, a lower

wall of said first groove and an upper wall of said second groove defining a part of said ventilation channel, said inner



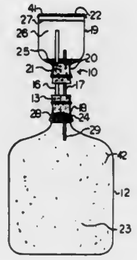
ventilation holes being formed in an upper wall of said first groove.

4,517,883
AIR EXTRACT METHOD AND APPARATUS
Alec Levchenko, Bolton, and Michael R. Booth, Timperley, both of England, assignors to Febopal Limited, Bolton, England
Filed Feb. 25, 1983, Ser. No. 469,703
Claims priority, application United Kingdom, Apr. 16, 1981, 8112155; Mar. 24, 1982, 8208602; Japan, Apr. 16, 1982, 57-63782
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115.3 **6 Claims**



1. Air extraction apparatus for extracting air from an enclosure situated solely within a room, said enclosure including an air inlet having a variable opening to provide air only from within said room, and an air outlet including a duct, a suction fan fluidly connected to said duct, and bypass means in said duct fluidly connected to said suction fan, said bypass means communicating with the environment outside said room to supply only atmospheric outside air directly to said fan, said bypass means including adjustable baffle means, said baffle means being pivotable between a first position in which it substantially closes off the suction side of the fan from the enclosure and a second position in which it substantially closes off the suction side of the fan from the outside atmosphere monitoring means for directly monitoring the extent of said variable opening, and control means responsive to said monitoring means for automatically adjusting said baffle means in a manner continuously proportional to the monitored extent of said opening, so that the volume of atmospheric bypass air increases as the volume of air entering the enclosure through said variable opening from said room decreases, and vice versa, such that a predetermined velocity of air is maintained through said variable opening and such that the velocity of air through said suction fan is maintained constant while the volume of air extracted from said enclosure is varied.

4,517,884
WINE FERMENTATION APPARATUS
Henry C. Jandrich, 369 Duke St., St. Paul, Minn. 55102
Filed Apr. 1, 1983, Ser. No. 481,401
Int. Cl.³ C12G *1/00*
U.S. Cl. 99—276 **18 Claims**



1. A wine fermentation apparatus for use with a fermentation container having a narrow and open top, said apparatus for controlling and aiding a wine fermentation process therein, said apparatus comprising:

(a) a stopper for sealingly engaging the narrowed top of the fermentation container, said stopper having two vertically extending apertures therethrough, said stopper further having a concave, upwardly extending bottom portion for funnelling the upper floating layer produced in the fermentation process,

(b) a pair of conduits of predetermined lengths for the ingress and egress of materials to and from the fermentation container, said conduits for the sealing extension through said apertures of said stopper, the bottom of said egress conduit being flush with said concave bottom portion of said stopper and the bottom of said ingress conduit extending downward from said stopper concave bottom portion, and,

(c) an upwardly extending opened container being in sealing communication with said pair of conduits, said upwardly extending container for receiving materials from the fermentation container through said egress conduit and for holding and returning a makeup fluid to the fermentation container through said ingress conduit, said ingress and egress conduits further having their respective top portions terminate intermediate the top and bottom of said upwardly extending container with said egress conduit terminating at a point higher than that of said ingress conduit, whereby, subsequent to sealingly engaging said apparatus to the top of a fermentation container having a wine fermentation process taking place therein, said apparatus with a makeup fluid therein permits the transfer of the upper floating layer to be funnelled to said concave bottom portion of said stopper through the egress conduit, and the transfer of makeup fluid through the ingress conduit, without disturbing the anaerobic fermentation process in the fermentation container.

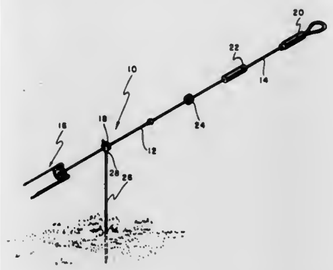
4,517,885
WIENER ROASTER
Elmer E. Thompson, Box 662, Sayer, Okla. 73662
Filed Mar. 19, 1984, Ser. No. 591,065
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—421 HV **8 Claims**

1. A wiener roaster comprising a shank means including a first section threadably attached to a second section at a threadably securing point;

a tine means integrally bound to said first section;

a bearing collar means rotatably slidably attached to said first section;

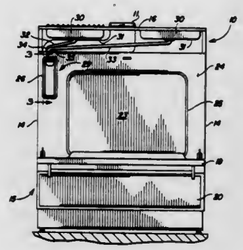
a first handle means bound to an end of said second section for gripping the wiener roaster;



a second handle means slidably rotatably positioned about said second section in an area between the threadably securing point of said first section to said second section and the first handle means; and

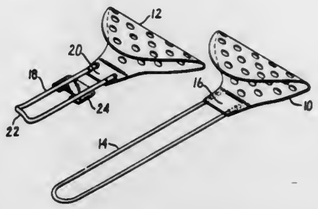
a stand means to be implanted in a ground and having a structure defining a bifurcated bearing face wherein said bearing collar means removably rotatably lodges as tine means impale wieners and is rotatably situated over a fire, or the like.

4,517,886
GREASE COLLECTION SYSTEM FOR RANGE
Michael E. Bales, New Palestine, Ind., assignor to The Maytag Company, Newton, Iowa
Filed Jun. 18, 1984, Ser. No. 621,736
Int. Cl.³ A47J *37/10*
U.S. Cl. 99—425 **12 Claims**



1. A grease collection system for a range having grilling capability, comprising: range cabinet means including a generally horizontally disposed top surface and a generally vertically disposed front panel means, said front panel means including an outer door portion and an inner panel portion which defines an oven cavity opening and a secondary opening juxtaposed to said oven cavity opening, said outer door portion being operable to a closed position for covering said oven cavity opening and said secondary opening; means associated with said top surface of said range cabinet means for grilling food products; sump means for catching grease generated during grilling; container means disposed in said secondary opening and having a front wall portion generally flush with the substantially vertical plane of said inner panel portion; and means extending from said sump means to said container means for conducting said grease therebetween.

4,517,887
TACO SHELL FRYING MOLD
J. Phillip Childress, 3712 Toll Gate Ter., Falls Church, Va. 22041
Filed Sep. 1, 1983, Ser. No. 528,521
Int. Cl.³ A47J *43/18*
U.S. Cl. 99—426 **20 Claims**

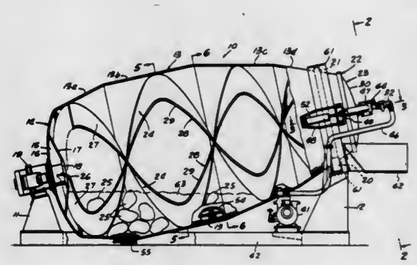


1. In a toco shell frying mold having inner and outer U-shaped pieces configured for nesting the U of the inner mold piece in the U of the outer mold piece with the bases of the mold pieces parallel whereby to sandwich a tortilla for frying into the taco shell therebetween, the improvement comprising:

a first handle projecting from the center portion of a rim formed by one of the upper sides of the U of the outer mold piece; and

connection means slidably connecting the inner mold piece to the first handle for sliding the base of the U of the inner mold piece away from and toward the base of the U of the outer mold piece along a straight line such that the bases remain parallel, whereby to open the mold pieces for receiving the tortilla therebetween and nesting the mold pieces with the tortilla sandwiched therebetween.

4,517,888
FOOD PROCESSOR
Bruce M. Gould, Fullerton, Calif., assignor to Challenge-Cook Brothers, Inc., City of Industry, Calif.
Continuation of Ser. No. 196,876, Oct. 14, 1980, abandoned.
This application May 2, 1984, Ser. No. 605,990
Int. Cl.³ A23B *4/02*; B01F *13/06*
U.S. Cl. 99—472 **51 Claims**



1. Apparatus for kneading a multiplicity of substantially integral food pieces, comprising:

(a) a rotatable drum having a sidewall, a closed end to the drum, and an open end for feeding the food pieces into the drum and discharging the food pieces from the drum, the open end being opposite the closed end;

(b) a mounting means for the drum to permit drum rotation about a longitudinal axis extending between the ends at an incline to the horizontal;

(c) means adapted for drivingly engaging the drum thereby to permit drum rotation; and

(d) spiralling flight means mounted on the inside of the sidewall of the drum and extending over substantially the length between the closed end and the open end of the drum, said spiralling flight means projecting inwardly from the sidewall for causing the integral food pieces to be

continuously forced to move longitudinally within the drum from end to end in both directions and relative to the other integral food pieces by the movement of the spiralling flight means through the multiplicity of food pieces during rotation in the direction wherein the spiralling flight means progresses from the open end toward the closed end and whereby the integral food pieces are kneaded by contact with each other during said longitudinal movement within the drum, and on rotation in the opposite direction the spiralling flight means acts on the integral food pieces to move said integral food pieces generally to the drum open end;

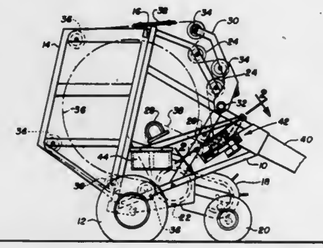
the inside of the drum and the flight means providing a structural surface without sharpened features or edges whereby the food pieces are not subject to substantial separation during movement within the drum.

4,517,889

TWINE CUTTING AND CLAMPING APPARATUS FOR A ROLL BALING MACHINE

James D. Walker, Lancaster; Kenneth R. Underhill, Strasburg, and Willis R. Campbell, Ephrata, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 16, 1984, Ser. No. 600,750
Int. Cl.³ B65B *13/18*
U.S. Cl. 100—5 **5 Claims**



1. In a roll baling machine having means for wrapping a roll bale with twine, apparatus for cutting and clamping said twine, said apparatus comprising:

an arm movable between a closed position and an open position;

a cutting member;

a resilient member;

said arm having a first edge which cooperates with said cutting member to cut said twine between said first edge of said arm and said cutting member when said arm is moved to said closed position; and

said arm having a second edge which cooperates with said resilient member to clamp said twine between said second edge of said arm and said resilient member when said arm is moved to said closed position.

4,517,890

TWINE WRAPPING APPARATUS FOR A ROLL BALING MACHINE

Willis R. Campbell, Ephrata, and James D. Walker, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

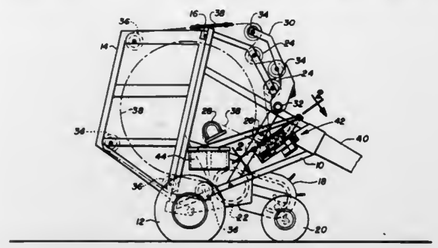
Filed Apr. 16, 1984, Ser. No. 600,872
Int. Cl.³ B65B *13/18*
U.S. Cl. 100—5 **16 Claims**

1. In a roll baling machine having a base frame with a pair of side walls arranged to define a space therebetween, an apparatus for wrapping a roll bale with twine, said apparatus comprising:

a shuttle member movable generally transversely of said base frame in the space defined between said side walls;

a twine dispensing member pivotably mounted on said base frame; and

a gear rack carried on said shuttle member in intermeshing engagement with a pinion connected to said twine dispensing member, said gear rack and said pinion cooperating to cause pivoting movement of said twine dispensing member when said shuttle member is moved generally transversely of said base frame in the space defined between said side walls.

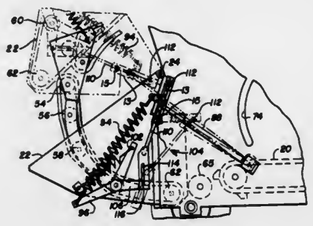


4,517,891

CONTROL LINKAGE FOR CONTINUOUS ROLL BALING MACHINE

James W. Henry, Yorkton, Canada, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 29, 1983, Ser. No. 556,230
Int. Cl.³ B30B *5/06;* **A01D** *39/00*
U.S. Cl. 100—88 **3 Claims**



1. In a roll baling machine having a lower apron, a first upper apron cooperating with said lower apron to define a front bale forming chamber, a second upper apron cooperating with said first upper apron to define a rear bale forming chamber, an arm assembly supporting part of said second upper apron, said arm assembly being rotatable from a first position when said rear bale forming chamber is empty to a second position during formation of a roll bale in said rear bale forming chamber, the improvement comprising:

control means for holding said arm assembly in said second position while a roll bale is being discharged from said rear bale forming chamber, and said control means including a link member having a lost-motion connection with said arm assembly as said arm assembly moves between said first and second positions.

4,517,892

UNIVERSAL CAN CRUSHER

Donald D. Meisner, 2420 S. M St., Oxnard, Calif. 93033

Filed Nov. 30, 1981, Ser. No. 325,723
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—292 **13 Claims**

1. A can crushing device comprising:

fixed abutment means;

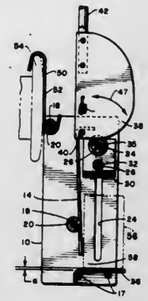
movable abutment means mounted in opposing relationship to said fixed abutment means;

said movable abutment means comprising:

movable carriage means;

planar means mounted on said carriage means for movement therewith;

said planar means being formed to have a dihedral angle;



movable means for moving said movable abutment means toward or away from said fixed abutment means;

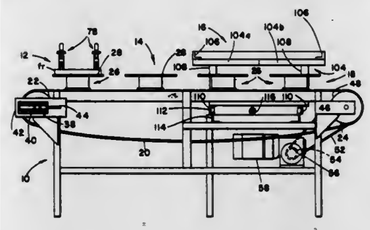
said movable means adapted to apply a variable force to said movable abutment means during its movement toward said fixed abutment means.

4,517,893

SILK SCREEN PRINTING WITH THE CURING OF POLYMERIZABLE LIQUIDS

George J. Wile, Indian Hill, and Carl P. Griesdorn, Cincinnati, both of Ohio, assignors to Planet Products Corporation, Cincinnati, Ohio

Continuation of Ser. No. 402,616, Jul. 28, 1982, abandoned. This application May 7, 1984, Ser. No. 607,979
Int. Cl.³ B41L *13/02*
U.S. Cl. 101—123 **18 Claims**



1. Apparatus for the production of silk screened textile goods comprising:

a printing station at which silk screen designs are printed on successive workpieces,

a "drying" station at which the printed designs are "dried",

a conveyor for supporting the workpieces and having a run extending from the printing station to the "drying" station,

means for incrementally advancing said conveyor with a minimum dwell period between each incremental advancement, whereby the workpieces may be positioned at the printing station and a design printed thereon while the conveyor is at rest and then advanced to the drying station for a minimum residence time thereat,

the "drying" station comprising a heater element having means for generating and directing infra-red radiation in the spectrally limited range of three to four microns wave length toward the workpieces positioned on the conveyor,

the printing station comprising means for holding a silk screen frame, said holding means being displacable from an operative position wherein the silk screen frame overlays a workpiece positioned on the conveyor for the printing of a design thereon, and an inoperative position in which the silk screen frame is spaced from the conveyer,

means responsive to displacement of the holding means to its inoperative position for actuating the incremental advancing means for the conveyer, and

means for terminating exposure of the workpieces to radiation from said heater element upon expiration of a predetermined maximum time for actuation of the means for incrementally advancing the conveyer,

the heater element being mounted above the conveyer and spaced from the workpieces thereof and being displacable from an operative position in which its radiant energy is directed towards the conveyer and an inoperative position laterally of the conveyor wherein no more than a minimal portion of such radiation is directed towards the conveyer and the workpieces positioned thereon,

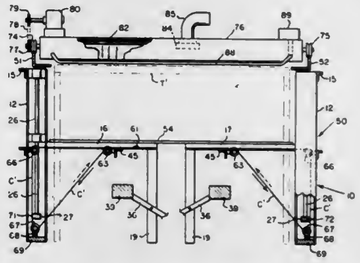
the means for terminating exposure of the workpieces to radiation including means for displacing the heater element from its operative to its inoperative position.

4,517,894

MODULAR SCREEN PRINTING APPARATUS

James R. Davis, 61 W. Jefferson Rd., Pittsford, N.Y. 14534, and John C. Hoffend, 6029 Logan Rd., Mount Morris, N.Y. 14510

Filed Jul. 21, 1983, Ser. No. 515,667
Int. Cl.³ B85C *17/06*
U.S. Cl. 101—126 **14 Claims**



1. A manually operable screen printing machine made by connecting together a plurality of modular screen printing frames, and comprising

a pair of like, modular screen printing frames having front ends and rear ends, respectively,

means for releasably securing said pair of frames together with the front ends thereof disposed is spaced, confronting relation,

a pair of like, laterally spaced screen supports mounted for vertical reciprocation on said frames adjacent the rear ends thereof,

a printing screen removably secured along the opposed side edges thereof to said supports and extending horizontally between said supports,

a counterweight mounted on each of said frames for offsetting the weights of said supports and said screen,

means for suspending each of said counterweights on its respective frame for vertical movement beneath said screen, and operatively connecting each of said counterweights to its associated screen support normally to hold the last-named support releasably in its upper limit position on its associated frame, and

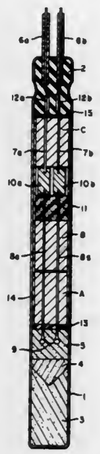
means interconnecting said supports for vertical movement manually and in unison between their upper and lower limit positions, thereby to move said horizontally disposed screen between elevated and lowered positions, respectively.

4,517,895

ELECTRIC INITIATOR RESISTANT TO ACTUATION BY RADIO FREQUENCY AND ELECTROSTATIC ENERGIES

Klaus G. Rucker, Kinnelon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 15, 1982, Ser. No. 441,755
Int. Cl.³ F42B *3/18*
U.S. Cl. 102—202.2 **11 Claims**



1. In an electric initiator having a metal shell integrally closed at one end and closed at its opposite end by a sealing plug, and containing an ignition composition and an electrical ignition assembly including, in sequence from said ignition composition, an inductance plug of a magnetic inductance composition and a resistance slug adjacent thereto, said inductance plug being slidably threaded, and said resistance slug being adherently threaded, on a first pair of separate electrical conductors, said pair of conductors being parallel to the longitudinal axis of said metal shell, in electrical contact with said resistance slug, and joined at a first one of their ends by a bridgewire contacting said ignition composition, the improvement comprising

(a) an entrance inductance plug of a magnetic inductance composition adjacent said sealing plug; and

(b) a pair of separate resistors between, and adjacent, said entrance inductance plug and said resistance slug, each of said resistors having (1), seated in the end thereof adjacent said resistance slug, the second end of one of said first pair of electrical conductors and (2), seated in the end thereof adjacent said entrance inductance plug, a first end of one of a second pair of separate electrical conductors, said second pair of conductors being parallel to the longitudinal axis of said metal shell, having said entrance inductance plug slidably threaded thereon, and each having a second end joined to a leg wire.

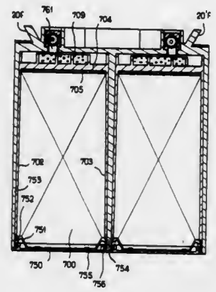
4,517,896

ELECTROMAGNETIC DECOY LAUNCHING DEVICE, IN PARTICULAR FOR AN AIRCRAFT

Alain A. Billard, Muret, and André R. Santalucia, Leguevin, both of France, assignors to Etienne LaCroix - Tous Artifices, Muret, France

Filed Jun. 1, 1982, Ser. No. 383,772
Claims priority, application France, Jun. 3, 1981, 81 10977
Int. Cl.³ F42B *13/50*; F41F *5/02*
U.S. Cl. 102—342 **9 Claims**

1. An electromagnetic decoy launching device, of the type comprising an ejection cavity with an ejection opening at one side, a decoy support member housed in the ejection cavity for ejection from the cavity in a direction extending through the ejection opening, and provided with a low pyrotechnic ejection charge and means connected with the cavity for igniting the ejecting charge on command, the decoy support member and the ejection cavity being of rectangular cross-section, the decoys being housed in the cavity crosswise to the ejection direction, and a retaining member between the decoy support member and ejection cavity with releasable V-shaped clips pointed toward the inside surface of the cavity and establishing



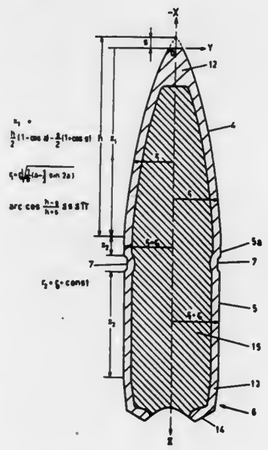
with the cavity a gripping engagement, the V-shaped clips themselves being released from engagement with the cavity by translational movement of the support member toward the ejection opening by the pyrotechnic ejection charge in order to allow a slow departure of the decoy support member, whilst also ensuring, before ejection of the decoys, resistance to vibratory stresses such as those existing on board an aircraft.

4,517,897

SMALL ARMS PROJECTILE

Beat Kneubühl, Oberdiessbach, Switzerland, assignor to Schweizerische Eidgenossenschaft, Vertreten Durch Die Eidg. Munitionsfabrik Thun Der Gruppe Für Rüstungsdienste, Thun, Switzerland

Filed Oct. 18, 1982, Ser. No. 434,911
Int. Cl.³ F42B *11/08*
U.S. Cl. 102—439 **14 Claims**



1. Small arms ammunition comprising:

a cartridge case containing a powder charge and having an open end, a closed end and a longitudinal axis;

a percussion cap substantially centered at said closed end with respect to the longitudinal axis of said cartridge case;

a rotationally symmetric jacket bullet enclosing a metallic core located at said open end;

said jacket bullet having opposed tip and rear ends, intermediate thereof an attachment section for attachment with said cartridge case and a radius r;

said jacket bullet having a shape which is aerodynamically optimized in respect of drag and other than at said rear end and said attachment section having a profile which extends from said tip end of said jacket bullet at the origin of a rectangular coordinate system, in which the x-axis represents a jacket bullet axis of symmetry and the y-axis represents a direction of said radius r of the jacket bullet, and which is substantially determined by a continuous function r(x), according to which the value of the radius r continuously increases from a predetermined value at said tip end of the jacket to a maximum value r_0 of the radius r and which has a continuous differential quotient (dr/dx) which has a finite positive value at said predetermined value of the radius r at said tip end of the jacket bullet and which decreases to a value of zero at the maximum value r_0 of the radius r;

the profile of the jacket bullet being determined, with the exception of the rear end and the attachment section for the cartridge case, by a sum function

$$r(x)=r_1(x_1)+r_2(x_2)$$

in which the range of x_1 is defined in the range from $x=0$ to $x=h$ by

$$x_1=(h/2)(1-\cos a)-(s/2)(1+\cos a),$$

h representing an imaginary length of said bullet from x_1 as determined by $a=\pi$ to an imaginary tip of said bullet and arc $\cos((h-s)/(h+s))\leqq a\leqq\pi$, while the associated values of r_1 are given by

$$r_1=r_o\sqrt{\frac{1}{\pi}\left(a-\frac{1}{2}\sin 2a\right)},$$

wherein arc $\cos((h-s)/(h+s))\leqq a\leqq\pi$ and in which the range of x_2 is defined by

$$x>h,$$

in which range $r_2=\text{constant}=r_0$;

wherein, in said sum function $r_1(x_1)=0$ when $x>h$ and $r_2(x_2)=0$ when $0\leqq x\leqq h$; and

said profile of said jacket bullet having an imaginary tip which is spaced by a distance $-s$ in the range of 0.1 to 0.5 r_0 from the origin of the rectangular coordinate system, at which said tip end of said bullet is located.

4,517,898

HIGHLY ACCURATE PROJECTILE FOR USE WITH SMALL ARMS

Dale M. Davis, Rte. 2, Box #130, and John C. Robbins, Rte. 2, Box #62, both of Freeport, Fla. 32439

Continuation-in-part of Ser. No. 103,644, Dec. 14, 1979, abandoned. This application Sep. 17, 1982, Ser. No. 419,253
Int. Cl.³ F42B *11/08*
U.S. Cl. 102—514 **5 Claims**

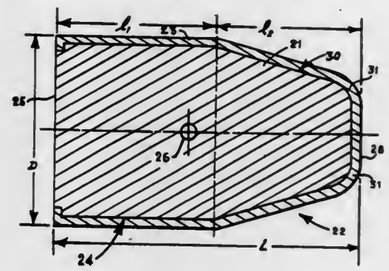
1. A highly accurate metal jacketed projectile for use with small arms, said projectile having a specific configuration comprising:

a cylindrically-shaped body portion having a predetermined length and a predetermined diameter, a forward end and a completely flat rear end;

a nose portion formed adjacent said forward end of said body portion, said nose portion being substantially in the shape of a truncated cone terminating in a completely flat front surface;

said body portion and said nose portion including a completely solid core encapsulated by a metal jacket, and said metal jacket having a completely smooth outer surface; and

said projectile having an overall predetermined length, said predetermined length of said cylindrically-shaped body portion being equal to approximately 55% of said overall predetermined length of said projectile and also equal to approximately 85% of said diameter of said body portion,



and said overall predetermined length of said projectile being equal to approximately 1.55 times said predetermined diameter of said body portion;

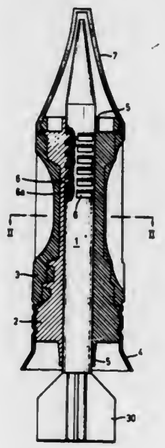
wherein said specific configuration of said projectile provides that the center of gravity of said projectile be located within said body portion and the center of pressure of said projectile be located substantially forward of said center of gravity of said projectile.

4,517,899

SABOT PROJECTILE

Peter Häberli, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 250,944, Apr. 6, 1981, abandoned, which is a division of Ser. No. 060,050, Jul. 23, 1979, Pat. No. 4,351,094. This application Sep. 20, 1982, Ser. No. 420,360
Claims priority, application Switzerland, Aug. 8, 1978, 8404/78
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—521 **14 Claims**



1. A sabot projectile comprising:

a projectile body;

a sabot composed of a number of segments formed of a metal alloy and secured at the projectile body;

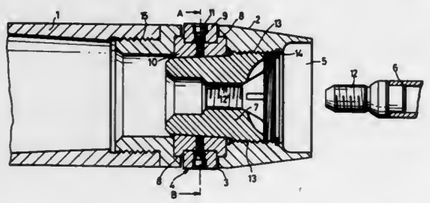
said segments circumferentially enclosing part of said pro-

jectile body with gaps formed between circumferentially adjacent ones of said segments;
a plastic jacket surrounding the sabot segments and protruding into said gaps;
said projectile body being provided with a plurality of recesses;
each said recess of said projectile body possessing lateral boundary surfaces which delimit said recess in the circumferential direction of the projectile body;
said sabot segments of said sabot comprising cam means;
said cam means completely filling the recesses at the projectile body and securing the sabot at the projectile body against rotation; and
said sabot comprising ring members which directly enclose the projectile body and bridges said gaps formed between said circumferentially adjacent segments by interconnecting the sabot segments with one another.

4,517,900
TESTING AND/OR PRACTICE PROJECTILE FOR AN ARTILLERY WEAPON

Herbert Lipp, Düsseldorf, and Horst Reckeweg, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,778
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225984
Int. Cl.³ F42B *9/20*
U.S. Cl. 102—529 **5 Claims**



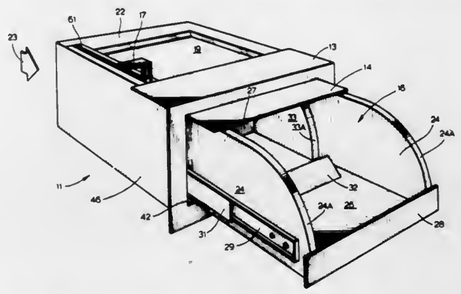
1. Testing and/or practice projectile assembly for preselected use in an artillery weapon in lieu of a preselected conventional live projectile, comprising in combination,
a casing having a rear portion and having an axial length which is less than that of the conventional projectile by a predetermined distance;
an insert member having an internal bore is operatively mounted on said casing, the length and diameter of said insert member is such that the exterior contour and total length of the projectile assembly when the insert member has been operatively mounted on said casing corresponds to that of the conventional projectile; said insert member has at least one annular recess;
a guide band segment is operatively mounted in each recess of said insert member;
a biasing cone axially mounted in the bore of said insert member;
and a pull rod adapted to be operatively coaxially connected to said biasing cone so as to selectively bias said guide band member outwardly to conform to a predetermined exterior guide band diameter and to retractably release it so as to selectively release the band segments.

4,517,901
TRANSACTION DRAWER ASSEMBLY

Larry G. Clark, 5532 Hollister Dr., Indianapolis, Ind. 46224

Filed Jun. 15, 1983, Ser. No. 504,535
Int. Cl.³ E05G *7/00*
U.S. Cl. 109—19 **17 Claims**

1. A through-a-wall transaction assembly comprising:
a housing having outer and inner ends;
a drawer having an open top and having a front end adjacent the outer end of the housing, said drawer being movably mounted in said housing for movement between a first position wherein the drawer is in the housing and a second position wherein the front of the drawer is projected beyond the outer end of the housing;
a drawer cover pivotally mounted in position over the drawer and having an access-accommodating position exposing at least a portion of the top and interior of said drawer to an area behind the outer end of the housing

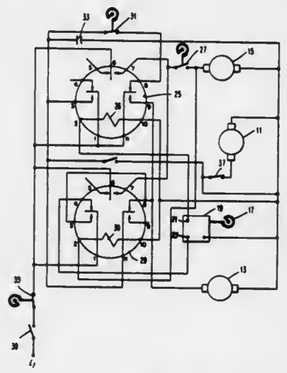


when said drawer is in said first position, and said cover being supported in an access-exclusionary position when said drawer is in said second position;
first cam means on said drawer and operable to move said cover from said access-accommodating position to said access-exclusionary position as said drawer is moved from said first position to said second position; and
said cam means including curved shoulders at the side walls of the drawer.

4,517,902
CONTROL CIRCUIT FOR A SOLID FUEL FURNACE

J. Vernon Christian, 2160 Longreen Rd., Kingsport, Tenn. 37660

Filed May 31, 1983, Ser. No. 499,468
Int. Cl.³ F23N *5/02*
U.S. Cl. 110—190 **9 Claims**

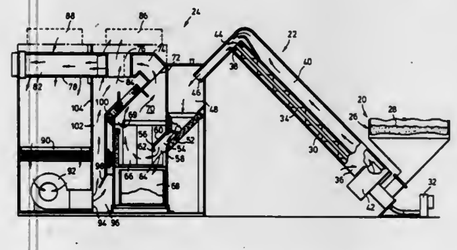


1. A control circuit for a solid fuel, warm air furnace which includes a combustion chamber, means for delivering solid fuel to the combustion chamber, means for delivering combustion air to the combustion chamber, and means for delivering air heated by heat from combustion of said fuel from said furnace to a comfort zone; the control circuit comprising first circuit means including first thermo-sensitive means operable in response to a temperature sensed by the first thermo-sensitive means below a first preselected temperature to energize the fuel delivery means and the combustion air delivery means, second circuit means including a second thermo-sensitive means and operable in response to a temperature related to furnace performance above a second preselected temperature to energize said heated air delivery means and to interrupt the first circuit means while maintaining the combustion air delivery means energized, said second thermo-sensitive means being operable to interrupt the second circuit means in response to furnace performance related temperatures below said second preselected temperature, said first circuit means being operable to re-energize the fuel delivery means and the combustion air delivery means upon interruption of said second circuit means if the temperature sensed by said first thermo-sensitive means remains below said first preselected temperature.

4,517,903
SOLID FUEL FURNACE

Iain J. Richmond; David Wong, both of Orillia; Ants Puust, Scarborough, and James A. Oldham, Bolton, all of Canada, assignors to Hunter Enterprises Orillia Limited, Orillia, Canada

Filed Jun. 1, 1983, Ser. No. 499,949
Int. Cl.³ F25B *7/00*
U.S. Cl. 110—233 **16 Claims**

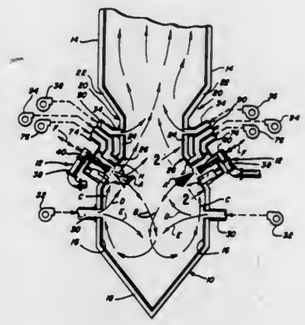


1. A solid fuel furnace for heating a recirculating heat medium and comprising:
a combustion chamber having an inlet and an outlet, fuel support means located between the inlet and the outlet for supporting a supply of particulate fuel for combustion thereof, the combustion chamber inlet being located above the support means for receiving a supply of fuel and a supply of air to be delivered to the fuel support means from fuel delivery means and air supply means respectively, the combustion chamber being defined in part by walls which converge downwardly from the inlet towards the fuel support means, said convergement walls constituting means effective to throttle said air supply as it passs through or over said fuel,
a combustion products suppension and separation chamber for separating heated combustion gases from combustion products, and for retaining said combustion products in suspension sufficiently long to permit continued combustion thereof, the combustion products suspension and separation chamber having an inlet connected to the outlet of the combustion chamber and an outlet for permitting the passage of heated combustion gases and incompletely combusted products therethrough;
heat exchange means having an inlet for receiving the heated combustion gases from the outlet of the combustion products and separation chamber, and said heat exchange means transferring heat from the combustion gases to the recirculating heat medium, the heat exchange means having an outlet for venting said combustion gases to atmosphere after transferring heat to the recirculating heat medium.

4,517,904
FURNACE, BURNER AND METHOD FOR BURNING PULVERIZED COAL

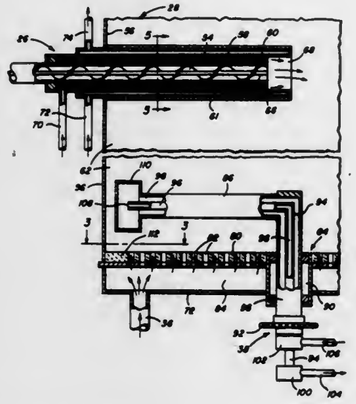
Craig A. Penterson, Sutton, and Donald S. Langille, Worcester, both of Mass., assignors to Riley Stoker Corporation, Worcester, Mass.

Filed Feb. 28, 1984, Ser. No. 584,484
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 **19 Claims**



1. A burner for pulverized coal comprising:
tubular nozzle means having an inlet for receiving a primary flowing stream of coal and air mixture and an outlet end for discharging said stream into a combustion zone of a furnace for burning;
annular, venturi-like flow control means in said nozzle means coaxially disposed adjacent said outlet end, said flow control means having a divergent flow section with a maximum diameter outlet adjacent said outlet end of said nozzle means and a convergent flow section upstream thereof for more evenly distributing said pulverized coal in the center portion of said stream;
coal spreader means mounted in coaxial alignment in said divergent flow section having an end adjacent said outlet end and a wall surface cooperating with wall surfaces of said divergent flow section to form a diverging, frusto-conical annular-shaped flow passage;
swirl vane flow divider means positioned in said passage between said coal spreader means and surfaces of said divergent flow section for dividing said homogenous mixture of coal and air in a swirling action into distinct streams of fuel rich and fuel lean zones for discharge into said combustion zone;
a tubular conduit in coaxial alignment with said tubular nozzle means having an inlet for secondary air and an outlet adjacent said outlet end of said tubular nozzle means for discharging an annular flow of secondary air into said combustion zone around said streams of said coal and air mixture discharged into said combustion zone;
a plurality of tertiary air conduits spaced radially outwardly of said tubular conduit, each having an outlet port for discharging a stream of tertiary air into said combustion zone; and
vane means in each of said tertiary air conduits movable to direct a stream of tertiary air into or away from the primary coal and air mixture discharging into said combustion zone for NO_x control and combustion performance.

4,517,905
PARTICULATE WASTE PRODUCT COMBUSTION SYSTEM
Charles E. Chastain, and Donald R. King, both of Stuttgart, Ark., assignors to PRM Energy Systems, Inc., Stuttgart, Ark.
Filed Feb. 10, 1983, Ser. No. 465,648
Int. Cl.³ F23G *5/00, 7/00*
U.S. Cl. 110—346 **15 Claims**



1. A method of incinerating particulate solids by combustion above a horizontal bed within a combustion chamber to produce a useful exhaust heat medium having a minimal fly ash content and an ash residue product, including the steps of: mechanically fluidizing the solids within a particle fluidizing zone above said bed within the combustion chamber; physically displacing the particulate solids radially outward of the fluidizing zone during the mechanical fluidization thereof while undergoing combustion; receiving the ash residue product within a collection zone on the bed radially outward of the fluidizing zone; and conducting the exhaust heat medium from the fluidizing zone through the combustion chamber, said particulate solids being introduced at a substantially uniform weight feed rate, fluidization of the solids within said fluidizing zone being enhanced by an underfire inflow of air conducted through the bed at a flow rate between 600 and 2300 cubic feet per minute.

4,517,906
METHOD AND APPARATUS FOR CONTROLLING AUXILIARY FUEL ADDITION TO A PYROLYSIS FURNACE
Frederick M. Lewis, Mountain View, Calif., and George A. Berken, Kronenwetter, Wis., assignors to Zimpro Inc., Rothschild, Wis.
Filed Aug. 30, 1983, Ser. No. 528,271
Int. Cl.³ F23G *15/00*
U.S. Cl. 110—346 **2 Claims**

1. In a method for controlling the operation of a two stage furnace to efficiently incinerate combustible material in a starved-air mode, a primary stage having means to introduce combustible material therein as well as auxiliary fuel burner(s) and combustion air flow means for introducing flows of auxiliary fuel-air mixture and combustion air, respectively, into said primary stage at substoichiometric air conditions to pyrolyze the combustible material at predetermined set point(s) and a secondary stage connected to said primary stage to receive gas and vapor products from said primary stage, said secondary stage including secondary combustion airflow means for introducing a flow of secondary combustion air and being operated at excess air conditions at a predetermined minimum temperature to combust said gas and vapor products from the primary stage, and wherein the combusted gas and vapor products are discharged as flue gas from the secondary stage, the improvement which comprises the steps of:

(a) measuring the oxygen concentration in the flue gas discharged from said secondary stage:

(b) measuring the air flow rates to each of the primary and secondary stages of said furnace, and using said measured rates and said measured oxygen concentration to compute the primary stage air rate as a percentage or fractional value of the stoichiometric air rate;

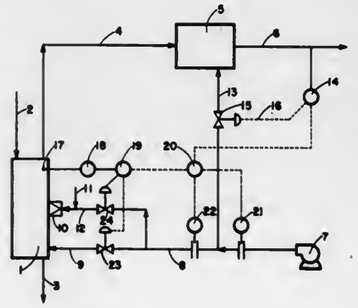
(c) establishing a predetermined set-point control value of said primary stage percent stoichiometric air to achieve the desired efficient furnace operation;

(d) comparing said computed percent stoichiometric air value from step (b) with said predetermined set-point control value of primary stage percent stoichiometric air;

(e) establishing a predetermined set-point control value of primary stage temperature;

(f) measuring said primary stage temperature and comparing said primary stage temperature with said predetermined set-point control value of primary stage temperature;

(g) controlling said flows of auxiliary fuel-air mixture to said burner(s) and air to said combustion air flow means to simultaneously maintain said primary stage temperature at its predetermined set-point control value and said primary stage percent stoichiometric air at its predetermined set-point control value, said control of primary stage comprising:

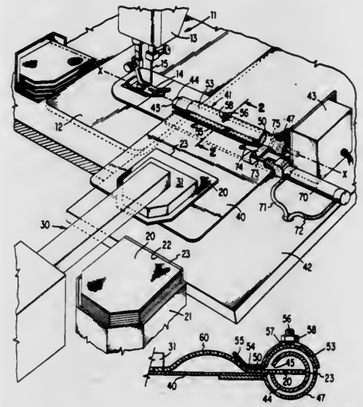


(x) correcting variations in primary stage temperature to the predetermined temperature set-point value by regulating changes in flow rate of said auxiliary fuel-air mixture at a pre-set finite minimal relay function and regulating changes in said combustion air flow rate at a pre-set finite maximum relay function, provided computed primary stage percent stoichiometric air is below said predetermined set-point control value of percent stoichiometric air in the primary stage;

(xx) regulating changes in flow rates of said fuel-air mixture and said combustion air when said computed primary stage percent stoichiometric air is at the predetermined set point value wherein as the heat required to maintain said predetermined set-point temperature increases, the relay function for regulating said fuel-air mixture is continuously modulated from said pre-set minimum value to a pre-set finite maximum value, and the relay function for regulating said combustion air rate is continuously modulated from said pre-set maximum value to a pre-set finite minimum value, the resulting said changes in flow rates acting to satisfy said heat requirement without changing said computed primary stage percent stoichiometric air; and

(xxx) correcting variations in the temperature in said primary stage to the predetermined set-point value, when said computed primary stage percent stoichiometric air exceeds the predetermined set point control value wherein said relay function for regulating said fuel-air mixture is maintained at pre-set maximum value, and said relay function for regulating said combustion air mixture is maintained at said pre-set minimum value.

4,517,907
DRIVEN WORK FOLDER
John M. Franke, Sr., Glendale, Calif., assignor to The Singer Company, Stamford, Conn.
Filed May 17, 1984, Ser. No. 611,240
Int. Cl.³ D05B *21/00, 35/02*
U.S. Cl. 112—121.15 **10 Claims**



1. An automatically operable work fabric manipulating device for folding and delivering to the stitching point of a sewing machine one edge of a fabric panel, comprising:

a mandrel rotatable about a lengthwise axis;

said mandrel being formed with a fabric accommodating slot extending parallel to the lengthwise axis thereof, and having a mouth opening at one side of said mandrel;

drive means for rotating said mandrel to form a fold in a fabric panel edge inserted in said mandrel slot, said drive means operatively connected to said mandrel adjacent one lengthwise extremity of said slot;

said slot extending continuously to the other and free extremity of said mandrel;

a sheath surrounding at least a portion of said mandrel and providing for frictional engagement of a work fabric panel interposed therebetween by the rotation of said mandrel;

and means for sustaining said mandrel axis in substantial alignment with the line of stitch formation of said sewing machine during sewing of a line of stitches by said sewing machine in said folded fabric panel edge.

4,517,908
AUTOMATIC NOTCHING DEVICE IN A SEWING MACHINE
Kwang S. Park, Incheon, D.P.R. of Korea, assignor to Daewoo Heavy Industries Ltd., Incheon, D.P.R. of Korea
Filed Jun. 12, 1984, Ser. No. 619,938
Claims priority, application D.P.R. of Korea, Sep. 9, 1983, 83-7970
Int. Cl.³ D05B *37/02*
U.S. Cl. 112—129 **1 Claim**

1. An automatic notching device in a sewing machine comprising;

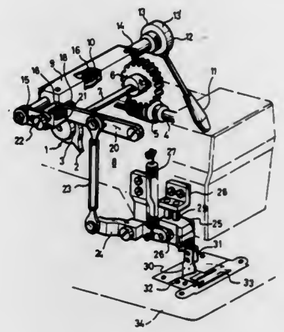
a worm fixedly mounted to a driving shaft of the sewing machine,

a rotating shaft provided at one end thereof with a worm gear engaging with said worm,

a cam mounted to the other end of said rotating shaft, said cam having a cam portion formed with a plurality of protrusions and a cylindrical boss portion,

an actuating shaft provided at one end thereof with a roller engaging with said cam,

a link provided at one end thereof with a bearing member supporting said actuating shaft, said link being pivotable about the other end thereof,



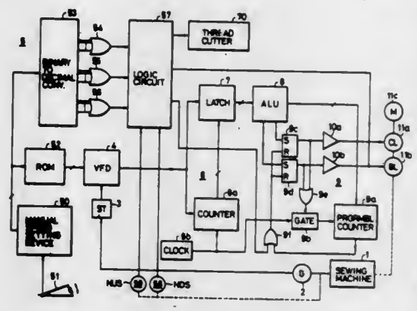
a yoke provided with a slot receiving the other end of actuating shaft, said actuating shaft being slideable in said slot,

a push rod connected at one end thereof to said yoke and having at the other end thereof a lever,

a swing arm connected at one end thereof to said link via a linkage member, and

a cutter mounted to the other end of said swing arm.

4,517,909
SEWING MACHINE HAVING A DIGITAL COMMAND CIRCUIT
Shigeo Neki, Osaka; Nozomu Shinozaki, and Takashi Dohi, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Jun. 11, 1982, Ser. No. 387,433
Claims priority, application Japan, Jun. 15, 1981, 56-91875
Int. Cl.³ D05B *69/18, 69/24*
U.S. Cl. 112—275 **13 Claims**



1. A sewing machine having a manually operated pedal, comprising:

position detection means for detecting the position of said pedal and generating therefrom a pedal position indicating digital signal;

means for organizing a plurality of said digital signals which are derived respectively from adjacent positions of said pedal and generating therefrom a command signal indicating a specified operating condition of the sewing machine; and

means for controlling said sewing machine in accordance with said command signal;

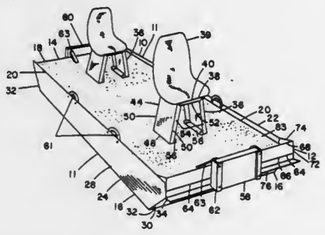
wherein said organizing means comprises means for converting the position indicating digital signals to corresponding mode command signals and memory means for storing a set of speed command digital signals each of which is read out of the memory means in response to said position indicating digital signals for controlling the speed of said sewing machine at speeds associated with said mode command signals.

4,517,910
EMBROIDERED DESIGN FOR SECUREMENT TO AN ARTICLE AND METHOD OF MAKING THE SAME
Lewis Jalowsky, Arecibo, P.R., assignor to Joy Insignia, Inc., Guttenberg, N.J.
Filed Apr. 7, 1982, Ser. No. 366,193
Int. Cl.³ D05C *3/00, 17/00*; A41D *27/08*
U.S. Cl. 112—439 **9 Claims**



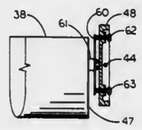
1. A method of producing an embroidered design adapted to be heat sealed to another article to simulate a design embroidered directly onto such article comprising the steps of
(a) embroidering a design with embroidering thread onto a substrate, said design including an inner loop defined by the inner periphery thereof,
(b) laminating to the underside of the substrate a low melt thermoplastic adhesive film to form a substrate and thermoplastic film lamination,
(c) tracing the inner and outer periphery of the embroidered design with a severing tool to sever all portions of the lamination including said inner loop, except only the embroidering thread and the lamination portion directly thereunder, whereby there remains only the embroidering thread with lamination thereunder to define the embroidered design proper.

4,517,911
FLOTATION DEVICE
Wayne F. Seefeld, Rte. 1, Spencer, Wis. 54479
Filed Apr. 19, 1984, Ser. No. 601,908
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—267 **13 Claims**



1. A pontoon flotation device having forward and rearward ends and comprising at least two parallel pontoons and a substantially rectangular deck panel extending lengthwise between the forward and rearward ends and supported on the pontoons, the deck panel having an upturned side flange extending the length of each side of the deck panel with a pontoon located parallel to and beneath each side of the deck panel, each pontoon including a substantially rectangular bottom panel and inner and outer upwardly extending side panels joined to opposite long edges of the bottom panel, the outer side panel extending upwardly beyond the furthest upward extension of the inner side panel to extend parallel and adjacent to a side flange of the deck panel, whereupon the deck panel and the outer side panel of the pontoon are in position to be conveniently fastened to each other.

4,517,912
HYDROFOIL CONTROL
Clyde B. Jones, 3531 Alginet Dr., Encino, Calif. 91436
Filed Aug. 16, 1982, Ser. No. 408,710
Int. Cl.³ B63B *1/18*
U.S. Cl. 114—275 **13 Claims**



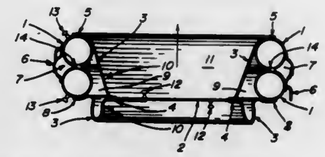
1. In a boat having a hull and propulsive means, said hull adated to be supported on a body of water by flotation and supported dynamically above said body of water by hydrofoils, said hull including apparatus for dynamic support and control of the height of said hull above said body of water, said apparatus comprising:
(a) a main hydrofoil having a chord plane, an angle of attack, a leading edge, a trailing edge and a load vector,
(b) a strut means adapted to structurally support said main hydrofoil,
(c) a hull attachment means for attaching said strut means to said hull,
(d) a foil attachment means for attaching said main hydrofoil to said strut means, said strut means projecting from said hull attachment means and placing said main hydrofoil in a submerged position within said body of water,
(e) a pivot means, associated with said strut means and said main hydrofoil, being constructed and arranged to provide freedom of motion of at least a portion of said main hydrofoil relative to said hull such that said freedom of motion results in a change in said main hydrofoil's angle of attack,
(f) a control hydrofoil associated with said main hydrofoil by connecting means, said connecting means being constructed and arranged such that when said hull is dynamically supported above said body of water, vertical displacement of the control hydrofoil relative to said hull provides regulation of at least a portion of said main hydrofoil resulting in said chord plane assuming various angles of attack such that displacement of said control hydrofoil toward the hull causes an increase in angle of attack of said main hydrofoil,
(g) the improvement comprising: said pivot means being constructed and arranged at a position aft of said control hydrofoil, at least one main hydrofoil chord length above said main hydrofoil and such that the extension of said load vector passes aft of and within one said main hydrofoil chord length of said pivot means axis when said main hydrofoil is in operating position, whereby a decreasing moment of said load vector about said pivot means axis may be attained with an increasing said angle of attack of said main hydrofoil,
(h) whereby said control hydrofoil, in cooperation with the main hydrofoil, seeks and maintains said submerged position, while controlling said height of said hull above the body of water.

4,517,913
MOORING SYSTEM WITH FRANGIBLE LINKS
Rocco D. Albertini, Concordville, and Thomas V. Grzeczkowski, Ridley Park, both of Pa., assignors to Baldt Incorporated, Chester, Pa.
Filed Feb. 3, 1984, Ser. No. 576,953
Int. Cl.³ B63B *21/50*
U.S. Cl. 114—293 **19 Claims**



1. In a semi-submersible drilling rig or the like having a plurality of chain lockers, a plurality of anchor windlass assemblies and a plurality of fairlead assemblies, a plurality of lengths of chain each having a multiplicity of interconnected links configured to move from a chain locker in cooperative relation through an associated anchor windlass assembly and an associated fairlead assembly, an anchor for each length of chain, and means connecting each anchor to the end of the associated length of chain outboard of the associated fairlead assembly so as to engage with the water bottom, the improvement which comprises
each of said lengths of chain having at least one link normally disposed within the associated chain locker inboard of the associated anchor windlass and fairlead assemblies of a different construction with respect to the remaining links of the associated length of chain,
each one link including a plurality of removably interconnected parts operable when interconnected to interengage with the adjacent links of the associated length of chain,
the parts of each one link including frangible means operable to be tensioned when said one link is moved outboard of the associated anchor windlass and fairlead assemblies and a predetermined emergency load is imposed upon the portion of said length of chain extending from said anchor to the links thereof beyond said one link,
the frangible means of each one link having precision configured cross-section calibrated to separate by material failure when said predetermined emergency load is imposed on the associated one link as aforesaid, and release the interengagement thereof with the adjacent links,
the remaining links of each length of chain including those within the portion of the length of chain between the associated one link and the associated anchor having a strength sufficient to withstand without failure loads imposed thereon greatly in excess of said predetermined emergency load.

4,517,914
INFLATABLE REVERSIBLE LIFERAFT
Vincent Geracitano, 9140, 6th Ave., Montreal, P.Q., Canada H1Z 2T8
Filed Jun. 6, 1983, Ser. No. 501,766
Claims priority, application Canada, Jun. 7, 1982, 404597
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—345 **7 Claims**

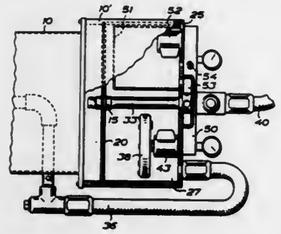


1. An inflatable reversible liferaft designed to carry several persons, having an integral reserve buoyancy compartment protected against accidental damage and having a circumferential buoyancy member, said buoyancy compartment having, when inflated, sufficient buoyancy to support the weight of the passengers while still providing a safe measure of freeboard in the event said circumferential buoyancy member should fail, said liferaft further having a passenger compartment which, when loaded, possesses inherent buoyancy by virtue of its displacement, said buoyancy member comprising a flexible inflatable, generally tubular, circumferential buoyancy chamber impermeable to air and water and having a plan shape that is circular or oval, said plurality of buoyancy chambers being of substantially identical dimensions and plan shape and being superimposed upon each other and fixedly united to each other along their respective line of juncture, a flexible, water-impermeable floor member of the same general plan shape as the area encompassed within the inner contours of said buoyancy member and being of substantially smaller dimensions than said area, two substantially annular connecting members, both of substantially identical dimensions, both fixedly and flexibly united at their respective inner circumferences to the circumference of said floor member with the first of said substantially annular connecting members being fixably and flexibly united at the outer circumference thereof to the top of said buoyancy member and with the second substantially annular connecting member being fixably and flexibly united at the outer circumference thereof to the bottom of said buoyancy member.

4,517,915
LOW-FREQUENCY SOUND GENERATOR
Mats A. Olsson, Bromma, and Roland Sandström, Skellefteå, both of Sweden, assignors to Infrasonik AB, Finspang, Sweden
Continuation of Ser. No. 298,244, Aug. 31, 1981, Pat. No. 4,359,962, which is a continuation of Ser. No. 53,560, Jun. 29, 1978, abandoned. This application Jul. 7, 1982, Ser. No. 396,074
Claims priority, application Sweden, Jul. 3, 1978, 7807473
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ G10K *10/00*
U.S. Cl. 116—137 R **5 Claims**

1. In a low-frequency sound generator having as a sound emitter an open resonator tube for generating standing gas-borne sound waves which produce a varying gas pressure in the resonator tube, and a feeder system having a movable valve slide member for controlling the supply of pressurized gas to the resonator tube, the improvement comprising a membrane forming a partition in the resonator tube that is connected with the valve slide member to form a movable unit therewith, said valve slide member being in a partly open position when the membrane is at rest in an equilibrium position, said membrane being independent of the pressure of the pressurized gas supplied to the resonator tube but operable in response to changes in the gas pressure in the resonator tube to provide positive

feedback of said pressure to the valve slide member of the feeder system only at a predetermined resonant frequency of the resonator tube, the resonance frequency of said movable



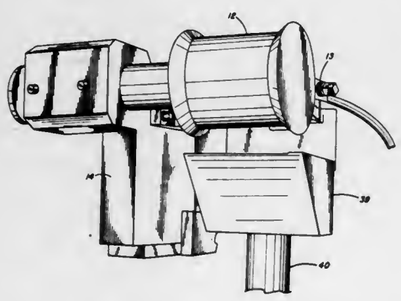
unit being higher than the frequency of the fundamental tone of the resonator tube but lower than the frequency of the first harmonic thereof.

4,517,916

APPLICATOR FOR TREATING TEXTILE FILAMENTS WITH CHEMICAL TREATMENTS

Herbert W. Barch, Natrona Heights; George T. Salego, Brackenridge, and Rudolph Blair, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,162
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—234 **9 Claims**



1. An applicator for applying chemical treatment to filaments, comprising:

a. a support means positioned in proximity to a plurality of moving continuous filaments,

b. cylindrical, rotatable applicating means with a flange at each end of the cylindrical surface, where the means is rotatably mounted in the support means in a horizontal position to contact the plurality of continuous filaments traveling by the applicating means,

c. delivery means having a longitudinal slot leading from a cavity, where the slot is between tapered opposing corners adapted to fit between the flanges on the cylindrical surface of the applicating means so that the slot has a length to accommodate the longitudinal length of the cylindrical surface of the applicating means from the inside of one flange to the inside of the other flange, and where the delivery means is movably fastened to the support means to be in fluid contact with the rotatable applicating means when the opposing tapered corners are between the flanges of the rotatable applicating means to enable fluid chemical treatment supplied to the cavity of the delivery means to flow through the slot and contact the peripheral surface of the rotating applicating means so that the fluid chemical treatment can flow and contact a sufficient longitudinal portion of the peripheral surface of the cylindrical rotatable applicating means to transfer the chemical treatment to the plurality of moving filaments contacting the rotating applicating means, where the sufficient longitudinal portion is other than where the filaments contact the cylindrical rotatable applicating means, and

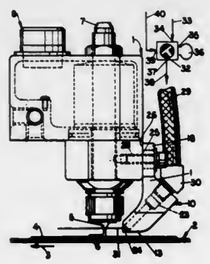
d. fluid flow control means in fluid contact with the delivery means to supply a quantity of fluid chemical treatment to the cavity of the delivery means in order that a controlled continuous quantity of fluid chemical treatment flows through the slot of the delivery means to contact a peripheral longitudinal portion of the rotatable applicating means that is rotating to carry the chemical treatment to contact the plurality of moving continuous filaments.

4,517,917

BLOW-OFF MANIFOLD FOR PREVENTING TRAILING FROM A NON-CONTACT EXTRUSION ADHESIVE APPLICATION VALVE

Richard A. Santefort, Hamilton, Ohio, assignor to Valco Cincinnati, Inc., Cincinnati, Ohio

Filed Apr. 26, 1984, Ser. No. 604,052
Int. Cl.³ B05B *15/04*
U.S. Cl. 118—302 **11 Claims**



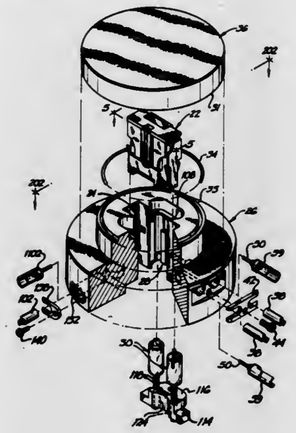
1. In a system for applying a coating to the surface of a moving workpiece of the type having conveying means for moving the workpiece along a predetermined path of travel, and applicator means for applying a coating of liquid material to a predetermined location on a major surface of the workpiece including nozzle means spaced adjacent said major surface for dispensing the liquid material in a relatively thin stream toward the workpiece surface, said applicator means including means for initiating and for terminating the dispensing of the coating material, the improvement in combination therewith comprising means for preventing trailing of the coating material on the workpiece surface following termination of the dispensing of the coating material including a pair of spaced apart blow-off orifices positioned to direct a thin jet of air on either side of the stream of coating material being dispensed from the nozzle means and generally in the direction of path of travel of the workpiece, and means for producing said air jets immediately following termination of the dispensing of the coating material, said jets being operable to momentarily entrain the stream and draw it generally in the direction of the path of travel of the workpiece.

4,517,918

CRYSTAL PLATING CHAMBER APPARATUS

Alan Kaplan, W. Caldwell, N.J., assignor to Emkay Manufacturing Co., East Hanover, N.J.

Continuation-in-part of Ser. No. 369,401, Apr. 19, 1982, Pat. No. 4,419,379, and Ser. No. 194,078, Oct. 6, 1980, Pat. No. 4,367,579, which is a continuation of Ser. No. 034,780, Apr. 30, 1979, Pat. No. 4,236,487, said Ser. No. 369,401, is a continuation of Ser. No. 193,935, Oct. 6, 1980, abandoned. This application Jul. 1, 1982, Ser. No. 394,338
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ C23C *13/12*
U.S. Cl. 118—723 **9 Claims**



1. A crystal plating device comprising:

(a) a base having a power circuit and means for an oscillating circuit therein;

(b) a chamber formed in the base;

(c) a sealed top enclosing the chamber;

(d) at least one pair of filament posts affixed to the base disposed within the chamber and in the power circuit;

(e) at least one of said filament post comprises a hollow body having an insulating sleeve thereon and threadedly received on a member affixed to the base, a slot in the body near the upper end and a spring biased pivotable lever, the filament disposed within the slot, whereby pivoting the lever will permit the selective engagement and disengagement of the filament in the slot;

(f) a filament connected across the filament posts, wherein the filament posts are positioned in the chamber adjacent the crystal to provide effective plating of the crystal;

(g) a crystal holder adapted to releasably support a crystal removably connected with the base;

(h) a crystal in the oscillating circuit and carried by the crystal holder; and

(i) said chamber adapted to be connected to a pump to vacuum pump the chamber, whereby energizing the circuits will oscillate the crystal and evaporate the filament to plate the crystal and produce the desired frequency therefore.

4,517,919

ANIMAL LITTER COMPOSITION

Lawrence Benjamin; Sheila S. Rodriguez, both of Cincinnati, and Nancy A. Meinberg, Okeana, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 1, 1983, Ser. No. 547,596
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **17 Claims**

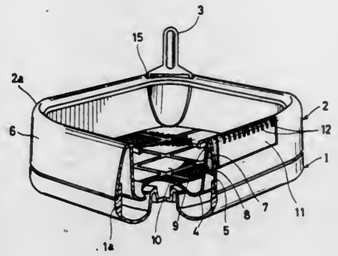
1. A solid absorbent material useful as an animal litter, having adsorbed thereto from about 1000 ppm to about 10,000 ppm undecylenic acid.

4,517,920

DOMESTIC PETS' CHAMBERPOT

Yoshikazu Yamamoto, 1-1, 3-chome, Eganosho, Habikino, Japan

Filed Jan. 3, 1984, Ser. No. 567,539
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—1 **5 Claims**



1. A chamberpot for domestic pets, comprising

a lower frame member having a lower portion and extending upwardly therefrom an erect wall; and

an upper frame member comprising

an outer wall formed along a periphery thereof and insertably fixed on said erect wall of said lower frame member,

an inner wall connected to said outer wall and forming a space therebetween for placement of a deodorizer, an aromatic or an inciting agent,

a bottom portion formed substantially normal to said inner wall and connecting the inner wall and further having a mesh netting shape, and

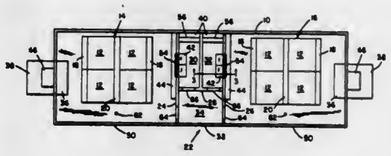
venting means disposed toward the connecting part of said inner wall and said outer wall and accessible to said space for venting said deodorizer, aromatic or inciting agent.

4,517,921

ANIMAL REARING HOUSE

James A. Haythornthwaite, Willow Lodge, Church Rd., Warton, Preston, Lancashire PR4 1BD, England

Continuation-in-part of Ser. No. 280,495, Jul. 6, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,677, Dec. 17, 1979, abandoned. This application Jun. 17, 1983, Ser. No. 505,244
Claims priority, application United Kingdom, Dec. 16, 1978, 48938/78
Int. Cl.³ A01K *1/00*
U.S. Cl. 119—16 **6 Claims**



1. An animal rearing pen particularly for weaner pigs, said pen comprising:

an elongated house including a floor, side walls, end walls and a roof,

an air intake defined by said floor located centrally, intermediate the ends of the house for air to enter into said house,

a first baffle located in the central portion, intermediate the ends of the house and located above said air intake, said

first baffle communicating with said air intake and being located in the path of travel of air entering the house through the air intake for slowing down the air entering into the house and separating the incoming air into two streams,

two preheat chambers located in said central portion, intermediate the ends of said house defining two first openings communicating with said first baffle through which said two air streams enter said two preheat chambers, said preheat chambers including a gas heater for raising the temperature of the air streams and an electric heater for raising the temperature of the air streams to a lesser extent than said gas heater,

two second openings defined by said two preheat chambers through which air flows from said preheat chamber after passing said gas heater and said electric heater,

two cage areas defined by said housing, each cage area being located between one end of the housing and one of the two preheat chambers, each of said two cage areas communicating with one of said two second openings, the volume of air in said cage area compared to the volume of air in said preheat chamber being less than 8:1,

air exhaust stacks located at opposite ends of the house for exhausting air from the cage areas to the atmosphere,

a third opening defined by each exhaust stack communicating with said cage areas for exhausting air from the cage areas to the exhaust stacks,

second baffles each extending from each end wall of the house and projecting downwardly in front of said third opening and being spaced from said third opening,

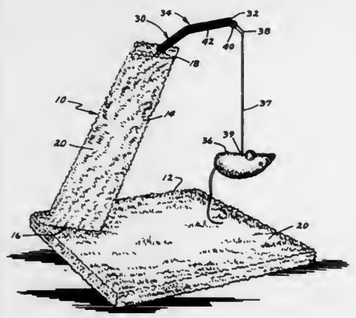
variable speed exhaust fans located in each of said exhaust stacks for pulling air from said air intake to said preheat chambers, from said preheat chambers to said cage areas and from said cage areas to said exhaust stacks in a direction along the longitudinal axis of the house,

doors located in the side of said house communicating with said cage areas, and

temperature sensing means mounted in said cage areas,

means for controlling the temperature of each air stream, the speed of said variable speed exhaust fans and the amount of heat produced by said gas heater and said electric heater being simultaneously controlled by said means for controlling the temperature of each air stream dependent on the temperature sensed by said temperature sensing means compared to a predetermined set point.

4,517,922
PET AMUSEMENT DEVICE
Jeannine H. Lind, Glen Rte., Box 220, Aitkin, Minn. 56431
Filed Sep. 24, 1982, Ser. No. 422,833
Int. Cl.³ A01K *15/00*
U.S. Cl. 119—29 **6 Claims**



1. A pet amusement device which comprises:

a generally flat, generally horizontal base:

a single post secured to the base adjacent its periphery, said post extending upwardly at an acute angle relative to the base in such a manner that an upper end of the post is positioned over and above a central portion of the base, and the base having no other posts extending upwardly therefrom;

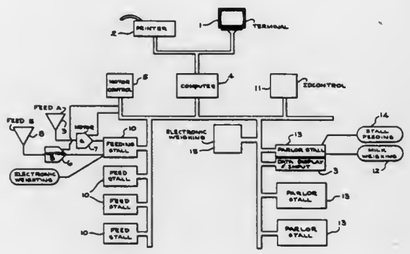
an elongated member having a resiliency greater than that of said post secured to the upper end of the post and extending when in an unstressed condition outwardly and upwardly therefrom in such a manner that a free outer end of the elongated member is positioned over and above the central portion of the base;

a pet toy constituted as a soft skinned, mouse-sized object impregnated with a scented animal lure;

a cord attached to the pet toy; and

fastening means for selectively securing the cord to the free outer end of the elongated member in such a manner that the pet toy is suspended from the elongated member generally over the central portion of the base so that to play with the pet toy a pet is induced to place its weight on the base which thereby prevents the pet amusement device from tipping over during vigorous play.

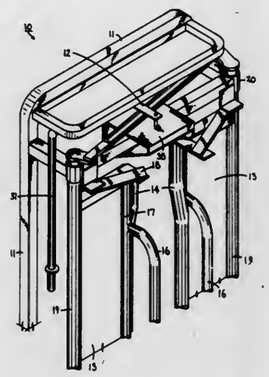
4,517,923
ANIMAL FEEDING SYSTEM
Tom Palmer, Louisville, Ky., assignor to Key Systems, Inc., Louisville, Ky.
Filed Jul. 7, 1983, Ser. No. 511,528
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51 R **13 Claims**



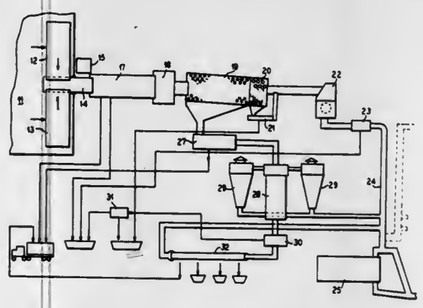
1. A system for feeding animals including means for identifying individual animals and computer control means for providing individualized amounts of a feed to animals comprising means for collecting information concerning an animal's weight, means for storing information relating to an animal's weight, means for storing a weight gain curve relating to an animals' predicted weight gain over a weight gain cycle, means for comparing the information about the weight gain curve over the weight gain cycle with information regarding the animal's actual weight gain and for determining the variance between actual weight gain and predicted weight gain according to the curve and means for feeding the animal based on said variance.

4,517,924
ANIMAL HEADGATE
Duane A. McCan, and Carl L. Smith, Jr., both of Lexington, Nebr., assignors to Valley Sales Co., Lexington, Nebr.
Filed May 31, 1984, Ser. No. 615,657
Int. Cl.³ A01K *1/062*
U.S. Cl. 119—98 **8 Claims**

1. In an animal headgate having a forward portion and a rearward portion on a stationary frame, first and second gate pivot members pivotally connected to said stationary frame, first and second gates attached to said gate pivot members, said gates being movable among receive, latch and release positions, first animal securement means attached to said gates for substantially restraining movement of an animal, and a locking means for selectively locking said gates in the latch position to restrain said animal, an improvement comprising second animal securement means operably affixed to said gates for further restraining movement of said animal wherein said second animal securement means are vertically disposed and positioned forward of said first animal securement means thereby creating a restrained and exposed area on a restrained animal between said first and second animal securement means.



4,517,925
HIGH EFFICIENCY REFUSE-DERIVED-FUEL SUPPLYING SYSTEM FOR INDUSTRIAL BOILERS
Harold B. Mackenzie, Wheaton, Ill., and Ingvar G. Anderson, Houston, Tex., assignors to New Life Foundation, Wheaton, Ill.
Filed Nov. 9, 1983, Ser. No. 549,886
Int. Cl.³ F22B *33/00*
U.S. Cl. 122—2 **22 Claims**

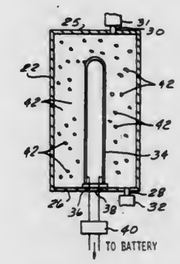


1. A uniform, high quality refuse derived fuel (RDF) supplying system for maintaining a plurality of industrial boilers operating continuously at peak efficiency, and comprising:

a plurality of RDF storage units at least equal in number to the plural number of boilers to be supplied with RDF;

means for loading RDF from a source into said storage units; and means for selectively delivering the RDF from any of said storage units to any of the boilers.

4,517,926
DEVICE FOR IMPROVING FUEL EFFICIENCY AND METHOD OF USE THEREFOR
George G. Reinhard, Warren; Ronald Kinde, Mt. Clemens, both of Mich., and Bernard S. Singer, Haifa, Israel, assignors to Optimizer, Limited, Flint, Mich.
Filed Apr. 19, 1982, Ser. No. 369,618
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—3 **10 Claims**



1. A device for increasing the fuel effiency of an internal combustion engine and having a fuel supply conduit for conducting fuel from a fuel supply to a combustion chamber comprising:

a housing having inlet and outlet ports, said housing disposed in fluid flow communication with said fuel supply conduit between said fuel supply and said combustion chamber;

a heat source for maintaining the temperature within the housing at a temperature ranging from about the ambient to about less than 100° C.

a plurality of metallized pellets disposed within the housing; and

wherein fuel entering said housing through said inlet port contacts the pellets to dissolve some metal therewithin, and further wherein the fuel enters the housing as a liquid and exits the housing as a liquid.

4,517,927
STEAM GENERATOR FOR LIQUID METAL FAST BREEDER REACTOR
James E. Gillett, Greensburg; Daniel C. Garner, Murrysville; Arthur L. Wineman, Greensburg, and Robert M. Robey, North Huntingdon, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 19, 1982, Ser. No. 379,812
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—510 **9 Claims**



1. A steam generator for a liquid metal fast breeder nuclear reactor comprising:

a J-shaped tube bundle disposed between tube sheets and

mounted in a J-shaped housing surrounding said tube bundle, the major portion of said tube bundle and said housing being vertically oriented and a smaller portion of said tube bundle and said housing being bent through at least about 90° and extending from the upper portion of said vertically oriented tube bundle major portion to provide for differential thermal expansion between said tube bundle and said shell;

a vertically oriented shroud member surrounding the substantial portion of said vertically oriented tube bundle, said vertically oriented shroud member being spaced from the inner surface of said shell, and an elbow shroud member surrounding said bent tube bundle portion and spaced from the nearest tubes of said bent tube bundle portion;

during operation of said steam generator, liquid metal is pumped into said shell through an inlet proximate the upper portion of said vertically oriented shell portion to flow downwardly through said tube bundle within said vertically oriented shroud member and about the individual tubes of said vertically oriented tube bundle and then to flow radially from the lower portion of said tube bundle and then to flow from an exit proximate the lower portion of said vertically oriented shell, and heat transfer fluid flowing upwardly through the tubes of said vertically oriented tube bundle to be heated by said liquid metal and then to exit from said bent tube bundle portion;

a plurality of tube spacer plate members horizontally disposed within said vertically oriented shroud member and operable to maintain the proper radial spacing between individual tubes, said spacer plate members spaced a small amount from the inner surface of said vertically oriented shroud member to permit a small radial deflection of said supported tubes; and

a plurality of support grid members supported within said elbow shroud for supporting the individual tubes within said bent tube bundle, and said support grid members providing lateral tube support for every other row of tubes within said bent tube bundle to permit expansion of said tubes in a vertical direction without tube buckling or binding.

4,517,928

SYSTEM FOR THE USE OF GAS AS SECONDARY FUEL IN DIESEL ENGINES

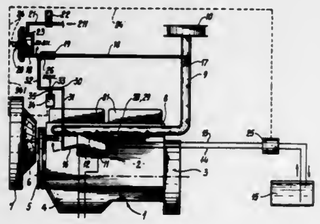
Leendert Wolters, Rhoon, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Aug. 2, 1983, Ser. No. 519,562

Claims priority, application Netherlands, Aug. 12, 1982, 8203169

Int. Cl.³ F02M *1/16, 21/00*

U.S. Cl. 123—27 GE **14 Claims**



1. A system for the use of gas as a secondary fuel in a diesel engine of the high speed automotive type, having a substantially integral injection pump and speed governor unit for supplying diesel fuel, said system comprising:

means for supplying gas in an amount to act as a secondary fuel;

means including a mixing device for introducing said gas into aspirated combustion air;

means for obtaining a control signal at least substantially proportional to the momentary rate of diesel fuel consumption by the engine;

a pressure regulator means for regulating the gas pressure of the gas supplied from the gas supplying means to said mixing device, wherein said pressure regulator means is responsive to said control signal thereby to regulate the quantity of gas supplied to said engine as a function of the momentary rate of diesel fuel consumption; and

remotely adjustable stop means acting on said governor-pump unit for limiting the maximum injectable diesel fuel quantity to less than the full load pure diesel quantity responsive to the operation of the engine in the diesel/gas mode, and for permitting full load diesel fuel quantity to be supplied responsive to pure diesel operation.

4,517,929

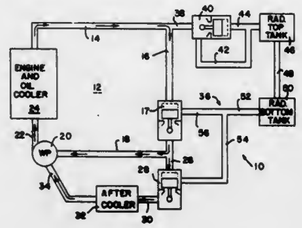
SELF-ADJUSTING COOLING SYSTEM FOR DIESEL ENGINES

Donald R. Musick, Fort Wayne, Ind., and Edward H. Howell, Moreland Hills, Ohio, assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 23, 1983, Ser. No. 535,197

Int. Cl.³ F01P *3/12*

U.S. Cl. 123—41.1 **11 Claims**



1. A method of reducing the temperature of a cooling fluid passing through an aftercooler for cooling the air supplied to an internal combustion engine having a radiator, said method comprising:

providing a large recirculating flow of a cooling fluid at an initial stage of said engine warm-up through said engine in a first circuit including a branch line going through said aftercooler;

providing a limited supply of cooling fluid through said radiator in a second circuit for mixing thereof with said first circuit fluid prior to an entry to said aftercooler in the final stage of said engine warm-up;

providing a coolest fluid flow to said aftercooler by a self-adjusting gradual shift of an interflow of said first circuit to said second circuit fluid flow until a complete shut off of said first circuit in response to an engine temperature rise;

providing said limited supply of fluid through a valve by-pass line with a predetermined sizing;

providing such shut-off by a valve located on a line connecting said radiator to a pump.

4,517,930

PISTON OF COMBUSTION ENGINE

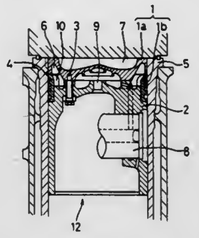
Hideaki Nakano, Akashi; Tadahiro Ozu, Kobe, and Eiichi Shirai, Amagasaki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 28, 1982, Ser. No. 425,340

Int. Cl.³ F01P *3/10*

U.S. Cl. 123—41.31 **5 Claims**

1. A piston for an internal combustion engine, said piston being adapted to reciprocate in an engine cylinder and to support one or more piston rings which slidingly engage the wall of the cylinder, said piston comprising a crown and a skirt fixed together, said crown including an upper part of relatively low heat-conductive metal and a ring carrier of relatively high heat-conductive metal, said upper part and said ring carrier being welded together, said piston having a cooling chamber formed therein to pass a coolant through said chamber, said



upper part including a relatively thin cylindrical peripheral wall portion which extends from substantially the upper surface of said crown to said ring carrier, whereby said ring carrier is separated from said upper surface by said peripheral wall portion, and the outer surfaces of said peripheral wall portion and said ring carrier are substantially aligned and are closely adjacent said wall of said cylinder.

4,517,931

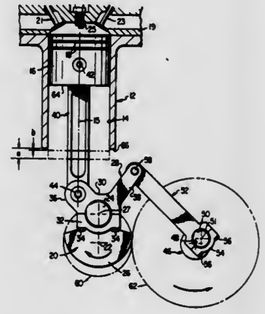
VARIABLE STROKE ENGINE

Carl D. Nelson, Rte. 1, Ennis, Tex. 75119

Filed Jun. 30, 1983, Ser. No. 510,288

Int. Cl.³ F02B *75/04*

U.S. Cl. 123—48 B **14 Claims**



1. An internal combustion engine comprising:

structure defining a cylinder;

a piston for reciprocation in said cylinder;

means for entering a combustible mixture within the cylinder and combusting said mixture to urge said piston in a first direction;

means for removing the mixture after combustion;

a first shaft mounted for rotation about a first axis;

a trunnion mounted for pivotal motion on said first shaft, the axis of pivotal motion of said trunnion being parallel to and spaced from the first axis of rotation of the first shaft;

a connecting rod pivotally connected to the piston at a first end thereof and pivotally connected to the trunnion at a second end thereof, the piston therefore being connected directly to the first shaft through the connecting rod and the trunnion;

a second shaft mounted for rotation about a second axis;

a control link rotatably connected to said second shaft at a first end of the control link for rotation about an axis parallel to and spaced from the second axis, said control link being pivotally connected at a second end thereof to the trunnion;

means for connecting the first shaft and second shaft for joint rotation with a predetermined ratio of angular velocity; and

the intake stroke of said engine being shorter than the power stroke of the engine to increase the power output of the engine.

4,517,932

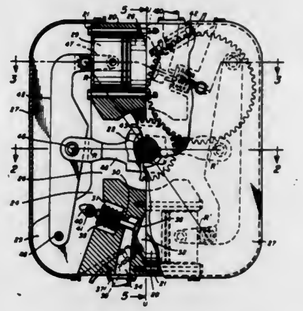
PAIRED BEAM ENGINES AND PUMPS

Martin L. Nason, P.O. Box 672, Rumford, Me. 04276

Filed Sep. 28, 1982, Ser. No. 425,285

Int. Cl.³ F02B *75/06*

U.S. Cl. 123—54 A **10 Claims**



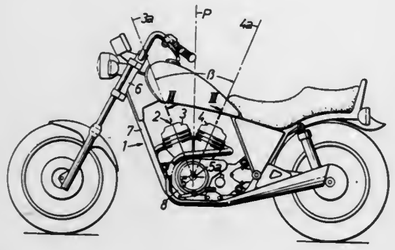
1. A paired beam expanding chamber machine such as an internal combustion engine, compressor and pump, said machine including block structure, at least one crankshaft within and rotatably supported by said block structure with its axis in a central transverse plane thereof, said block structure including at least one pair of piston-cylinder units, the cylinder of each unit having one end open and the other end closed to provide a head thereon and at least the open ends of the cylinders on opposite sides of said plane and means to effect intake and exhaust of fluids to and from each cylinder, a pair of links, each link pivotally connected to an appropriate one of said pistons, a pair of beams, said block structure having support surfaces on opposite sides of said plane to each of which one of said beams is pivotally secured, a pair of connecting rod means, one for each unit and operatively connected to said crankshaft, a pair of first pivot means, each connecting one of said beams to an appropriate one of the connecting rod means and a pair of second pivot means, each connecting one end of one of said beams to an appropriate one of said links, said pistons, links, beams and connecting rod means constituting moving paired parts of a power train with the parts of each pair so formed and positioned and an axis of said first and second pivot means so located that in any and all angular positions of said crankshaft, a plane inclusive of the axis of one of the pivot means of whichever one of said first and second pairs thereof that is selected and the crankshaft axis defines an acute angle with respect to a plane inclusive of the axis of the other pivot means of the selected pair and the axis of the crankshaft that does not exceed ±4° and a perpendicular radial distance between the axis of said one pivot means and the crankshaft axis does not differ by more than ±8% with respect to a perpendicular radial distance between the axis of said other pivot means and the crankshaft axis.

4,517,933

CRANK SHAFT OF V-TYPE INTERNAL-COMBUSTION ENGINE

Kousuke Yasutake, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,589
Claims priority, application Japan, Oct. 9, 1982, 57-177987
Int. Cl.³ F02B 75/06
U.S. Cl. 123—55 VF 4 Claims



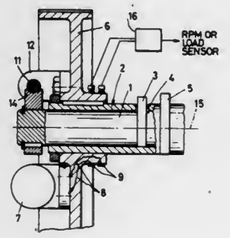
1. In a V-type internal-combustion engine including a three-web, two pin type crank shaft having a central web, and two crank pins carried between said central and each of said side webs, said crank pins having rotary phases offset from each other by an angle of α for cancelling out primary inertial force caused by the mass of reciprocating parts, the improvement wherein each said side web is respectively provided with a balancer weight having a mass of at least W/2 corresponding to half of a sum of W of half the mass of the reciprocating parts and the mass of rotating parts of one cylinder on a side opposite to a corresponding crank pin, and said central web is provided with a balancer weight having a maximum mass of W×cos α/2 on a line bisecting the angle α between said crank pins on a side opposite to said crank pins.

4,517,934

CONTROLLABLE CAMSHAFT FOR A DRIVE, PREFERABLY AN INTERNAL COMBUSTION ENGINE

Stanislav Papez, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 37,697, May 10, 1979, Pat. No. 4,332,222. This application Jul. 18, 1980, Ser. No. 170,073
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930266
Int. Cl.³ F01L 1/08, 1/34
U.S. Cl. 123—90.17 6 Claims



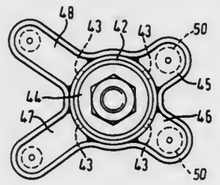
1. In a camshaft for a drive, preferably an internal combustion engine, having a hollow shaft carrying at least one cam-like part for rotation therewith, an inner shaft disposed within the hollow shaft and rotatable relative to the hollow shaft, the inner shaft having at least one cam-like part disposed outside the hollow shaft attached for rotation with the inner shaft through clearances in the hollow shaft, means for driving the camshaft including a camshaft timing gear coupled with both shafts and means responsive to a parameter characteristic of operating conditions of the drive for adjusting the rotational position of at least one of said inner shaft and said hollow shaft relative to the camshaft drive means, the improvement wherein the adjusting means comprises an electric motor means fixed on said timing gear, means for generating electrical control signals dependent upon said parameter for acting on said motor means, a threaded spindle supported on said timing gear transversely to said shafts and coupled to the output of said motor, and counter threaded means mounted on one of said inner shaft and said hollow shaft for meshing with said threaded spindle.

4,517,935

DEVICE FOR TRANSMITTING MOVEMENT

Colin T. Pomfret, 9, Duggard Pl., Barford, CV35 8DX, Nr. Warwick, Warwickshire, England

Filed Feb. 23, 1983, Ser. No. 468,914
Int. Cl.³ F01L 1/18
U.S. Cl. 123—90.4 12 Claims



1. An internal combustion engine having first and second operating members positioned substantially diagonally opposite respective inlet and exhaust valves, and a single arm for transmitting movement, from said operating members to the inlet and exhaust valves, the arm being mounted for pivotal movement about a pivotal centre lying on the intersection of diagonals between the operating members and valves, whereby movement of the first operating member will turn the arm about a first pivotal axis lying on the diagonal which extends between, the inlet valve and the second operating member to transmit movement to the exhaust valve, and movement of the second operating member will turn the arm about a second pivotal axis lying on the diagonal which extends between the exhaust valve and the first operating member to transmit movement to the inlet valve.

4,517,936

TAPPET FOR INTERNAL COMBUSTION ENGINES WITH VARIABLE PROFILE CAMSHAFTS

Antonio Burgio di Aragona, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

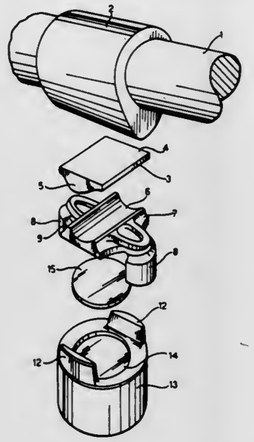
Filed Oct. 12, 1983, Ser. No. 541,180
Claims priority, application Italy, Oct. 12, 1982, 68194 A/82
Int. Cl.³ F01L 1/14
U.S. Cl. 123—90.5 1 Claim

1. A tappet for engines with variable-profile cam shafts comprising:

a substantially rectangular sliding block having a flat surface for contact with a cam and a projection of part-circular section on the surface thereof opposite to said flat surface which extends parallel to the major axis of said block;

a bearing saddle for said sliding block comprising an elongated central portion having a major axis parallel to the major axis of said block with an elongated groove in the upper surface of said central portion parallel to the major axis thereof receiving said projection of said sliding block and having two semi-cylindrical guides disposed on opposite sides of said saddle portion fo engagement with complementary seats in an engine head to prevent rotation of said saddle about a valve axis;

a cylindrical cup having an upper surface with two spaced apart tabs protruding axially therefrom to define a seat for receiving said bearing saddle for withstanding the thrust generated by the sliding of the cam on said sliding block and a cylindrical seat disposed between said tabs; and



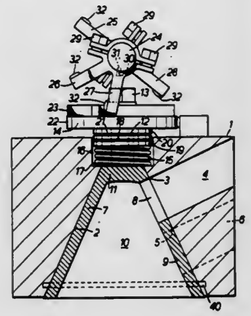
tappet adjustment means engageable in said cylindrical seat of said cup.

4,517,937

INTERNAL COMBUSTION ENGINE

Herbert Ball, Peny Graig, Saron, Llandyssul, Dyfed, Wales (SA44 5EW)

Filed Sep. 20, 1983, Ser. No. 533,966
Claims priority, application United Kingdom, Sep. 21, 1982, 8226883
Int. Cl.³ F01L 7/00
U.S. Cl. 123—190 D 11 Claims



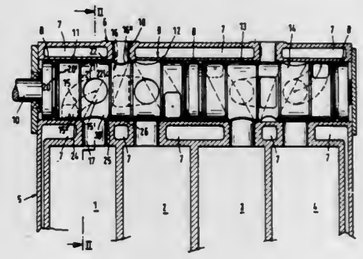
1. A four stroke internal combustion engine comprising a cylinder block in which is formed a cylinder bore, a piston arranged for reciprocation within the cylinder bore, a cylinder head mounted on the cylinder block and having a conical valve seat embodying inlet and exhaust ports, a conical valve complementary with the valve seat and embodying port hole means via which the inlet or exhaust ports are arranged to communicate with the cylinder bore consequent upon predetermined rotary movement of the valve, and valve rotating means operative to produce at appropriate times during the engine cycle, predetermined rotary movement of the valve in one direction so as to place the inlet port in communication with the cylinder bore via the port hole means or predetermined rotary movement of the valve in the opposite direction so as to place the exhaust port in communication with the cylinder bore via the port hole means, and indexing means operative temporarily to hold the valve stationary during periods of the engine cycle when high pressure is present in a combustion chamber with which the cylinder bore is placed in communication for minimizing wear of mating surfaces of the valve and the valve seat.

4,517,938

ROTARY VALVE ARRANGEMENT

Hermann Krüger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 1, 1983, Ser. No. 547,763
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241723
Int. Cl.³ F01L 7/10
U.S. Cl. 123—190 E 15 Claims



1. A rotary valve arrangement for an internal combustion engine, comprising a housing having a plurality of cylinders with corresponding passages, an intake gas passage and an exhaust gas passage, a rotary valve member mounted for rotation in the housing and having inlet and outlet passages for intake and exhaust gases with ports which, from time to time, are aligned with cylinder intake and exhaust passages in the housing, depending on the angle of rotation, and a plurality of dry-bearing sealing rings retained in corresponding grooves surrounding the valve member and axially adjacent to the ports in the valve member, wherein the dry-bearing sealing rings have an anti-friction material on the sliding surface thereof, the valve arrangement further comprising at least one heat resistant dry surface bearing seal provided between the valve member and the housing in the spaces between the dry-bearing sealing rings so as to inhibit peripheral leakage of gases therebetween.

4,517,939

DUST COLLECTING DEVICE

Katsumi Kiyooka, Warabi, Japan, assignor to Komatsu Zenoah Co., Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,552
Claims priority, application Japan, Jun. 19, 1981, 56-89470[U]; Jul. 3, 1981, 56-98600[U]; Jul. 3, 1981, 56-98601[U]; Aug. 14, 1981, 56-120047[U]
Int. Cl.³ F02B 63/02
U.S. Cl. 123—198 E 4 Claims

1. The improvement in a portable internal combustion engine, comprising:

a casing containing at least part of the engine, said casing comprising a body and a cover closably and openably connected to the body;

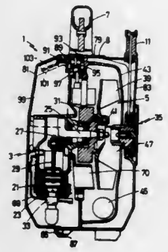
an engine fuel tank located within said casing;

said fuel tank having an inlet port for admitting fuel to the fuel tank, and a closure detachably positioned to close the inlet port;

said inlet port and said closure being concealed by said cover except when the cover is opened; and

latch means associated with said cover and responsive to the

position of said closure on the inlet port to releasably retain the cover in closed position only when the closure is blocking said inlet port,



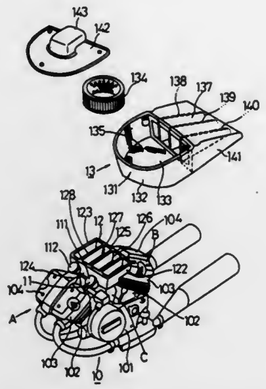
whereby the cover cannot be retained closed while the closure is detached from the inlet port.

4,517,940

INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINE

Takahiro Koyanagi, and Hiromu Sakaoka, both of Asaka, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,683
Claims priority, application Japan, Dec. 6, 1982, 57-213570
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—198 E **3 Claims**



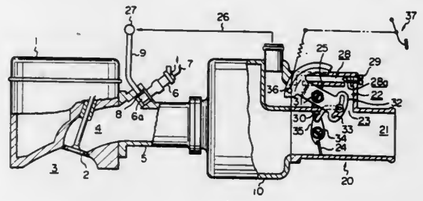
1. An intake device for an internal combustion engine having a plurality of cylinders each provided with a carburetor, each of said carburetors having an intake opening connected with a carburetor base, an air cleaner located above said cylinders, said intake device comprising said carburetor base connected on the upstream side thereof to said air cleaner and on the downstream side thereof to said intake openings, said carburetor base having vertical partition means therein for evenly dividing the space defined by said carburetor base, said partition means extending substantially in the direction parallel to an imaginary line connecting each intake opening and one of the respective carburetors, each of said intake openings being joined to one of the divided spaces of said carburetor base.

4,517,941

AIR INTRODUCTION SYSTEM OF A FUEL INJECTION TYPE ENGINE

Norihisa Nakagawa, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 8, 1983, Ser. No. 502,113
Claims priority, application Japan, Dec. 20, 1982, 57-191167[U]
Int. Cl.³ F02M *23/02*
U.S. Cl. 123—336 **12 Claims**



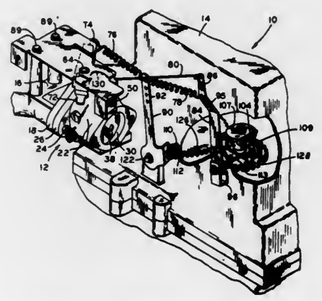
1. An air introduction system of a fuel injection type engine comprising; a means for defining a main passage for introducing air to be supplied to the engine, said main passage being divided, at the downstream side, into a set of branched passages each connected to one of the engine combustion chambers; a fuel injection provided in each of said branched passages for injecting fuel thereinto; means for supplying assist air, which is a part of said air to be introduced to the engine, to the surrounding area of a top nozzle portion of each of said fuel injectors so that the assist air acts on the fuel injected from said injector; a means for defining a second or subpassage which is connected to said main passage, said second or subpassage being divided, at the downstream side, into a set of assist air introduction conduits each connected to said assist air supplying means; a main or throttle valve disposed in said main passage at the downstream side of said connection point at which said second or subpassage is connected to said main passage; and a second or subvalve disposed in said second or subpassage upstream of said conduits.

4,517,942

OVERRIDE SPEED CONTROL

Robert J. Pirkey, New Holstein, and Stephen D. Ditter, Fond du Lac, both of Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Aug. 3, 1984, Ser. No. 637,412
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—376 **14 Claims**



1. In a carburetor for an internal combustion engine having a body and an air fuel mixture conduit:
a choke valve in said conduit adjustable between open and closed positions for controlling the flow of air;
a throttle valve in said conduit downstream from said choke valve for controlling the flow of said air fuel mixture;

governor means mounted on said engine and driven thereby and responsive to engine speed, said governor means operatively connected to said throttle valve for adjusting said throttle valve in accordance with engine speed;
a control lever operably mounted on said body for selecting the engine speed and operatively connected to said choke valve, said lever positionable through first and second operating ranges, said choke being fully opened in said first operating range and said choke being at least partially closed in said second operating range;
enabling means operatively connected to said control lever and said governor means for enabling said control lever to select the engine speed in said first operating range and for disabling said control lever from selecting the engine speed in said second operating range.

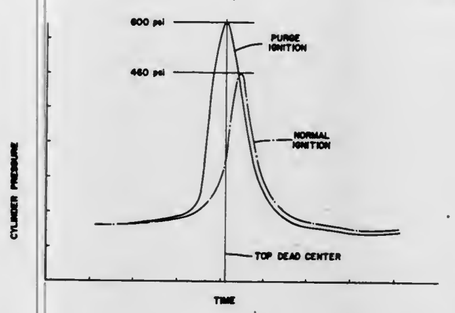
14. A method for controlling the speed of an internal combustion engine having a governor means driven by the engine, and a carburetor with an air fuel mixture passage therein, a choke valve and throttle valve disposed in said passage for controlling the flow of air fuel mixture therethrough comprising:
selecting the speed of the engine with a control lever, said control lever moveable through a range of positions and operatively connected to said throttle valve and said choke valve;
maintaining the selected engine speed under varying loading conditions of said engine through all but the last increment of movement of said control lever;
maintaining the engine speed fixed for all positions of said control lever in the last increment of movement of said operating range by disabling control of said control lever over said throttle valve while permitting adjustment of said choke valve by said control lever.

4,517,943

DYNAMIC METHODS AND APPARATUS FOR REDUCING OCTANE REQUIREMENT INCREASE

Jack A. Bert, Kensington, and R. Eric Olsen, Alameda, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 15, 1983, Ser. No. 514,229
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—415 **6 Claims**



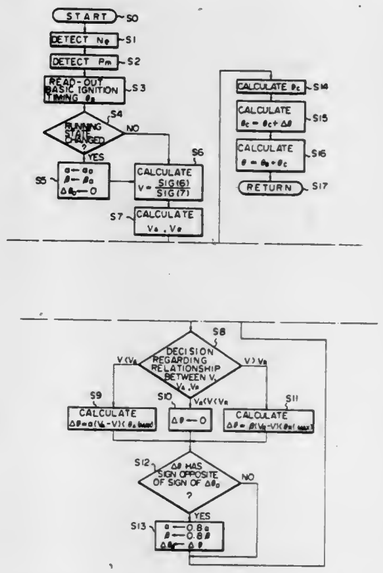
1. A method for removing combustion chamber deposits from an operating, spark-ignition, internal combustion engine during regular use, in which engine a normal spark-timing advance includes any speed, temperature or manifold vacuum dependent, spark-timing advance, comprising the steps of:
selecting conditions suitable for intermittently advancing spark timing in a cylinder within the range from about 0.1% to about 2% of combustion cycles in said cylinder; and
intermittently advancing spark timing beyond the normal spark-timing advance according to said selecting step in order to remove combustion chamber deposits.

4,517,944

IGNITION TIMING CONTROL FOR INTERNAL COMBUSTION ENGINES

Shingo Inoue, Anjo; Toshiharu Iwata, Aichi, and Yasuhito Takasu, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 8, 1982, Ser. No. 396,363
Claims priority, application Japan, Jul. 9, 1981, 56-106205
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **12 Claims**



1. A method for controlling ignition timing for an internal combustion engine, comprising the steps of:
detecting an engine running condition and generating a detection signal;
deciding whether a change of the engine running condition takes place;
determining, based on said detection signal and a correction factor, an amount of correction for correcting the ignition timing; and
correcting the ignition timing in an advancing or retarding correction direction based on said determined correction amount,
said amount of correction of the ignition timing being reduced with each change in the direction of correction of the ignition timing.

4,517,945

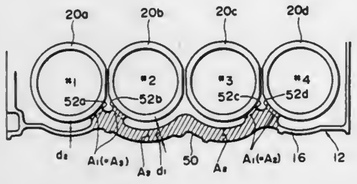
ENGINE VIBRATION TRANSMISSION STRUCTURE

Kazuhiro Ishigami, Yokohama; Shoji Furuhashi, Isezaki, and Haruo Yuzawa, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1982, Ser. No. 452,731
Claims priority, application Japan, Jan. 26, 1982, 57-9215[U]
Int. Cl.³ F02P *5/14*
U.S. Cl. 123—425 **10 Claims**

1. A structure for use in an internal combustion engine, said engine including an engine block having an engine block outer wall and a plurality of cylinder walls each defining therein a cylinder, a cooling passage defined by said engine block outer wall and said cylinder walls, and a transducer attached to an outer surface of said engine block wall for sensing vibratory forces due to internal combustion in each cylinder, said structure comprising a thickened portion of said engine block outer

wall with connection arms extending to said respective cylinder walls to provide a rigid connection between said cylinder



walls and a position at which said transducer is attached on said outer surface of said engine block outer wall.

4,517,946

FUEL INJECTION PUMP

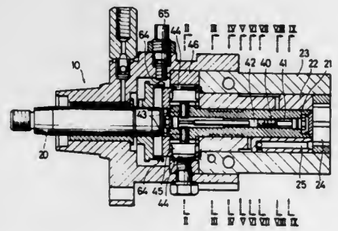
Yoshiya Takano, 2-5, Miyamae Terasu Apt., 978, Ichige, Katsuta-shi, Ibaraki-ken, and Yoshikazu Hoshi, 2650-62, Muramatsu, Toukai-mura, Naka-gun, Ibaraki-ken, both of Japan

Filed Feb. 17, 1983, Ser. No. 467,302

Claims priority, application Japan, Feb. 17, 1982, 57-22632; Mar. 29, 1982, 57-48906

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—450 **8 Claims**



1. A fuel injection pump for an internal combustion engine comprising: a rotor disposed in a housing and rotating according to running of the engine;

a pressure chamber formed in said rotor;

a first free piston slidably mounted in said pressure chamber;

first and second pump chambers defined by an inner surface of said pressure chamber and said first free piston, said first pump chamber provided with a port which is capable of communication with an interior of the engine; and said second pump chamber provided with a discharge port;

means for compressing fuel in said second pump chamber in accordance with rotation of said rotor whereby the fuel in said first chamber is compressed and delivered to said engine through said port;

first and second fuel passage means leading to said first and second pump chambers, respectively;

first and second solenoid valves, provided on said first and second passage means, for measuring amount of fuel;

first and second preparatory chambers provided downstream of said first and second solenoid valves, respectively, said preparatory chambers being capable of communication with said first and second solenoid valves and said first and second pump chambers by said first and second fuel passage means so that the measured fuel is kept in said first and second preparatory chambers during the compression of said pump chambers and transferred to said first and second pump chambers, respectively, and

wherein said first and second preparatory chambers comprises cylinders and second free pistons movably mounted in said cylinders, respectively, and are arranged in said housing such that the axes of said first and second preparatory chambers are disposed in a plane perpendicular to the axis of said rotor.

4,517,947

MULTIPLE CYLINDER ENGINE HAVING AIR-FUEL RATIO CONTROL MEANS IN ACCORDANCE WITH A SIGNAL FROM AN EXHAUST GAS SENSOR

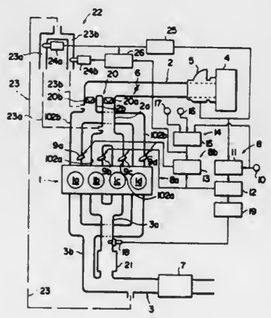
Toshio Nishikawa; Tadashi Kaneko, and Kazutoshi Othuka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 8, 1982, Ser. No. 355,451

Claims priority, application Japan, Mar. 9, 1981, 56-34385

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—489 **8 Claims**



1. A multiple cylinder internal combustion engine including a first group of cylinder means, a second group of cylinder means, an intake system comprising main intake passage means, first intake passage means branched from said main intake passage means and leading to said first group of cylinder means, second intake passage means branched from said main intake passage means and leading to said second group of cylinder means, first fuel supply means for providing a supply of fuel to said first intake passage means, second fuel supply means for providing a supply of fuel to said second intake passage means, first exhaust passage means leading from said first group of cylinder means for passage of exhaust gas therefrom, exhaust gas sensing means including an oxygen concentration detecting means disposed in said first exhaust passage means for providing an output signal in accordance with the concentration of oxygen in the exhaust gas, first air-fuel ratio control means for controlling the first fuel supply means in accordance with the output of the exhaust gas sensing means so as to provide a first intake mixture of a first predetermined air-fuel ratio, second air-fuel ratio control means for controlling the second fuel supply means in accordance with the first predetermined air-fuel ratio to provide a second intake mixture of a second air-fuel ratio which is a predetermined relationship with respect to the first air-fuel ratio, mixing preventing means provided in said intake system upstream of said first and second fuel supply means for preventing said first and second intake mixtures from being mixed with each other due to pulsations in said intake system, and second exhaust passage means extending from said second group of cylinder means and merged with the first exhaust passage means, said first exhaust passage means being provided downstream of the exhaust gas sensing means with backflow preventing means.

4,517,948

METHOD AND APPARATUS FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINES

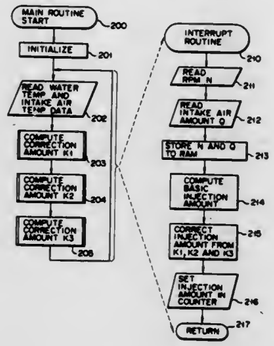
Yasumasa Kaji; Shigenori Isomura, both of Kariya; Takashi Harada, Hekinan, and Shuji Sakakibara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 21, 1983, Ser. No. 515,788

Claims priority, application Japan, Aug. 3, 1982, 57-134684

Int. Cl.³ F02M *17/00*

U.S. Cl. 123—489 **12 Claims**



1. A method for controlling an air-fuel ratio in an internal combustion engine, comprising the steps of:

setting correction data for feedback control so as to respectively correspond to operating states of the engine;

updating, upon detecting a given operating state, given correction data corresponding to the given operating state in accordance with an output signal from a combustion composition sensor;

computing an updated correction amount on the basis of all the correction data including the updated given correction data;

reflecting the updated correction amount in all the correction data so as to set correction data corresponding to a new operating state of the engine; and

reading the correction data respectively corresponding to the operating states of the engine in accordance with the new operating state so as to perform feedback control.

4,517,949

AIR FUEL RATIO CONTROL METHOD

Toshimitsu Ito, and Toshiaki Isobe, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 316,038, Oct. 28, 1981, abandoned. This application Mar. 21, 1984, Ser. No. 592,005

Claims priority, application Japan, Jan. 22, 1981, 56-8202

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—489 **9 Claims**

2. A method of learn-controlling an air-fuel ratio for an internal combustion engine, comprising the steps of:

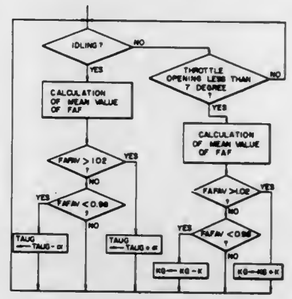
(a) calculating a basic fuel injection duration based on an engine load and a rotational speed of the engine;

(b) obtaining a factor of air-fuel ratio feedback correction for allowing a fuel injection duration to perform a proportional-plus-integral action, based on an output of an oxygen sensor for detecting an residual oxygen concentration in an exhaust gas;

(c) calculating a mean value of said factor of air-fuel ratio feedback correction;

(d) varying a correction value by learning so that said mean value takes a value within a predetermined range centered at a predetermined value corresponding to a target air-fuel ratio; and

(e) obtaining the fuel injection duration based on said basic fuel injection duration, said factor of air-fuel ratio feedback correction and said correction value, thereby, to control the air-fuel ratio.



4,517,950

METHOD AND DEVICE FOR CONTROLLING THE RECIRCULATION OF EXHAUST GAS IN A PRESSURE WAVE SUPERCHARGER FOR AN INTERNAL COMBUSTION ENGINE

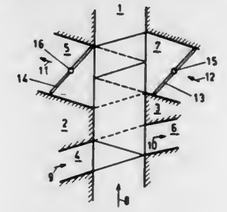
Andreas Mayer, Niederrohrdorf; Ibrahim El-Nashar, Kloten, and Fritz Spinnler, Liestal, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 3, 1983, Ser. No. 491,215

Claims priority, application Switzerland, Jun. 2, 1982, 3371/82

Int. Cl.³ F02B *33/42*

U.S. Cl. 123—559 **12 Claims**



1. Method for controlling the recirculation of exhaust gas in a pressure wave supercharger connected between an induction pipe and an exhaust pipe for an internal combustion engine, said supercharger including high pressure and low pressure exhaust gas ducts and high pressure and low pressure air ducts and, a butterfly valve provided in at least one of the ducts, comprising the steps of controlling the variation of the degree of recirculation as a function of the load condition of the internal combustion engine by altering the flow resistance in at least one of the low pressure ducts of the pressure wave supercharger.

5. Pressure wave supercharger for an internal combustion engine, comprising a device for controlling the recirculation of the exhaust gases, a rotor casing which accepts a rotor provided with cells through which gas flows axially, an air casing with an inlet flow duct for the induced air and an outlet flow duct for the compressed boost air, a gas casing with an inlet flow duct for the high pressure exhaust gases and an outlet flow duct for the exhaust gases, the inlet flow duct for the high pressure exhaust gases and the outlet flow duct for the boost pressure exhaust gases and the outlet flow duct for the boost air forming the high pressure side and the outlet flow duct for the exhaust gas and the inlet flow duct for the induced air forming the low pressure side of the pressure wave supercharger, a butterfly valve provided in at least one of the ducts of the low

pressure side and, an operating device for the control or regulation of the degree of recirculation being operatively connected with said butterfly valve.

4,517,951

INTAKE MANIFOLD APPARATUS IN MULTI-CYLINDER ENGINE

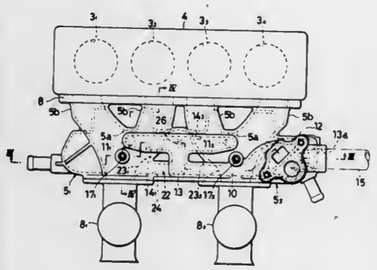
Shoichi Otaka, Oi; Yukio Kondo, Asaka; Masayuki Kumada, Tokyo; Hideyo Kawamoto, Kawagoe, and Keiji Miura, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,871

Claims priority, application Japan, Aug. 31, 1982, 57-150002; Nov. 22, 1982, 57-205131

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—572 **11 Claims**



1. In a plural cylinder internal combustion engine which includes a crankcase, a first and a second independent air-fuel gas generating means, first and second intake manifolds each including a first area to which a respective air-fuel gas generating means is mounted and a second area where divergent flow paths are provided, said divergent paths being downstream from the first area in the flow path of the air-fuel gas toward the engine, wherein the improvement comprises:

a source of control gas consisting of either engine exhaust or an auxiliary air supply at least one control gas passage for feeding said control gas from at least one source of said control gas to both said first and second intake manifolds at said second areas thereof, and a crankcase vapor passage connected from the crankcase to both said first and second intake manifolds at a location between said first and second areas thereof downstream from said first areas.

4,517,952

TWIN IGNITION PLUG CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

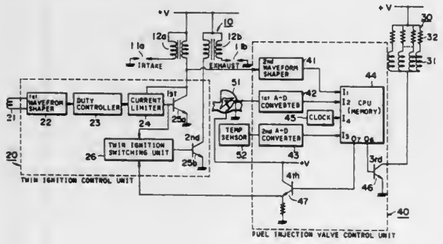
Katsumi Hosoya, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 10, 1982, Ser. No. 440,533

Claims priority, application Japan, Jan. 13, 1982, 57-2123[U]

Int. Cl.³ F02P *15/08*

U.S. Cl. 123—638 **13 Claims**



1. A twin ignition plug control system for controlling first and second ignition coils respectively supplying ignition energy to first and second ignition plugs which are respectively disposed on an intake port side and an exhaust port side of a cylinder of an engine having a crankshaft, the control system comprising:

(a) means for timing ignition energy to the first and second ignition coils in accordance with angular positions of said crankshaft and for outputting ignition signals, said timing means including a twin-ignition switch for switching between two-point ignition and one-point ignition;

(b) means for detecting an amount of air supplied to the engine and for outputting an air flow quantity signals;

(c) means for calculating a pulse period T_p of the ignition signals and for outputting an ignition timing signal pulse period signal;

(d) means for calculating a basic pulse width T_w of a fuel injection valve actuating signal based on the pulse period T_p and the amount of air supplied to the engine and for outputting a basic pulse width signal; and

(e) means for determining when engine load is heavy, said determining means being connected to said basic pulse width calculating means and operable to output a signal indicative of heavy engine load when the basic pulse width T_w exceeds a reference value T_{wo} and for thereupon switching said twin-ignition switch from two-point ignition to one-point ignition.

4,517,953

BALL THROWING MACHINE

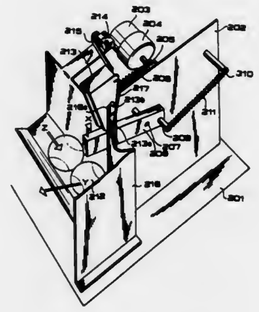
Takatoshi Osaka; Katsuo Nishimura, and Tadahiko Nakagiri, all of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 460,125

Claims priority, application Japan, May 6, 1982, 57-66097[U]; May 31, 1982, 57-80190[U]; May 31, 1982, 57-80189[U]; Oct. 1, 1982, 57-149930[U]

Int. Cl.³ F41B *7/00*

U.S. Cl. 124—17 **2 Claims**



1. A ball throwing machine comprising:

(a) a drive motor connected to a power source;

(b) a reduction machanism for reducing the rotating speed of said drive motor;

(c) a one-way clutch mechanism connected to said reduction mechanism;

(d) a shaft for transmitting the rotating force of the motor through said clutch mechanism;

(e) a ball hitting lever fixed to said shaft;

(f) a spring mechanism for imparting a pivoting force to said hitting lever;

(g) a switch for making and breaking an electric current to said motor;

(h) a safe detecting member for detecting a foreign object; and

(i) means for causing said safe detecting member to actuate said switch to break said power source upon detection of the foreign object, said safe detecting member being a lock cover which is movably positioned adjacent the rotation trace of said hitting lever.

4,517,954

REMOVABLE MOUNT FOR CUTTING MEANS

Peter T. deKok, Fulton County, and John Phildius, Gwinnett County, both of Ga., assignors to Gran-Quartz Trading, Inc., Decatur, Ga.

Filed Jan. 3, 1983, Ser. No. 455,214

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—15 **2 Claims**



1. Mounting means for removably mounting cutting elements on a cutting machine, said cutting machine having a cutting edge movable in at least one direction for cutting material, said cutting edge being movable into a kerf in the material being cut, and a plurality of cutting elements distributed along said cutting edge for performing the cutting, each cutting element of said plurality of cutting elements comprising a base member fixed to said cutting edge, a cap member selectively fixable to and removable from said base member, and a cutting segment fixed to said cap member, characterized in that said base member has a width generally equal to the width of said kerf, and said cap member has a width generally equal to the width of said kerf, said base member has a rear surface fixed to said cutting edge of said cutting machine, and a front surface longer than said rear surface so that end surfaces of said base member diverge and cause said base member to have a dovetail shape, said cap member defines an opening therethrough for receiving said base member, said opening being substantially the same size and shape as said dovetail shape, the arrangement being such that said cap member is receivable on said base member by motion transverse to said at least one direction, and further including securing means for selectively securing said cap member to said base member, said cap member defining hook members at each end of said opening, said hook members engaging said end surfaces of said base member, said hook members mechanically locking said cap member to said base member against motion of said cutting edge of said cutting machine, and securing means including a pin received between one of said hook members and the adjacent end surface for preventing transverse motion of said cap member with respect to said base member.

4,517,955

STOVE SAFETY GUARD

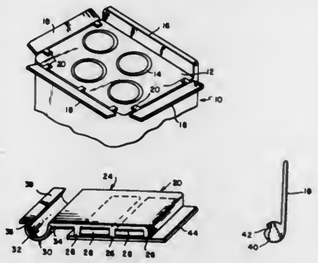
Conrad P. Ehrlich, and Sandra L. Ehrlich, both of 1243 Beacon St.; 3B, Brookline, Mass. 02146

Filed Nov. 14, 1983, Ser. No. 550,823

Int. Cl.³ F24C *15/10*

U.S. Cl. 126—211 **19 Claims**

1. A barrier system for the top of a range along one or more sides thereof comprising for each side a barrier member, support means for the barrier member, means for detachably attaching the support means to the range, hinge means supported by the support means adjacent the top and parallel to the side to which the barrier is to be mounted, complementary hinge means at one longitudinal edge of the barrier member for rotatably receiving the hinge means supported by the support means for rotation of the barrier member about an axis parallel to the side of the range from a position perpendicular to the top to a substantially horizontal position, interengageable latch means associated with respective hinge means interengageable by rotation of the barrier member to said perpendicular position to lock the barrier member in said perpendicular position, said latch means being manually disengageable to release the barrier member to permit it to be rotated to said substantially horizontal position and means at said horizontal position of the barrier member to support it in said horizontal position.



4,517,956

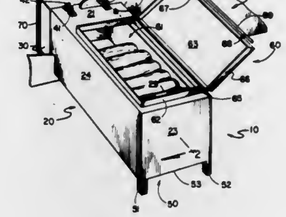
WOODBOX

Walter F. Baker, 2108 Randolph Cir., Kennesaw, Ga. 30144

Filed Sep. 6, 1983, Ser. No. 529,545

Int. Cl.³ F24B *1/08;* **A47B** *81/00*

U.S. Cl. 126—283 **6 Claims**



1. A wood box for installation into an enclosed structure having an exterior wall, comprising:

a housing including top, bottom, side and rear surfaces, said top, bottom and side surfaces partially extending through said exterior wall of the enclosed structure thereby defining a retrieval opening in said housing opening to the interior of the enclosed structure, and said top surface defining a load opening therein outside of the enclosed structure;

a vertical flange extending upwardly from said top surface and surrounding said load opening;

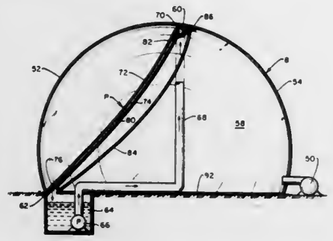
a removable cover including a continuous downwardly extending cover side wall, said cover enveloping said vertical flange when said cover is in a closed position; and

a movable drawer assembly including a drawer comprising floor, back and side walls shaped to be received within said retrieval opening, and a face plate extending laterally outwardly beyond said retrieval opening, said movable drawer assembly including means for slidably mounting said drawer for movement between a closed position in which said drawer is located below said load opening and said face plate engages said top, bottom and side surfaces of said housing, and an open position in which the drawer is accessible to the interior of said structure.

4,517,957
INFLATION SUPPORTED SOLAR COLLECTOR

Ronald L. Pelley, 4032 Montego Dr., Huntington Beach, Calif. 92649

Division of Ser. No. 346,519, Feb. 8, 1982, Pat. No. 4,422,445, which is a continuation of Ser. No. 154,808, May 30, 1980, abandoned. This application Dec. 5, 1983, Ser. No. 542,690
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **2 Claims**



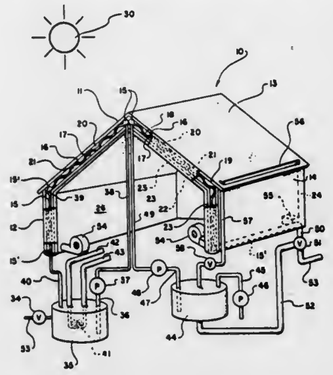
1. A solar energy collecting apparatus comprising:
a thin, flexible walled housing;
an air blower connecting to said housing, said air blower to inflate said housing forming a rigid walled structure, with said housing located on a supportive surface said housing forming a totally enclosed chamber, said rigid walled structure having an interior surface and an exterior surface, said interior surface defining the extremity of said totally enclosed chamber;
a film assembly mounted within said totally enclosed chamber, said film assembly having a front surface and a rear surface, said film assembly having a top edge and a bottom edge, said top edge being attached to said interior surface, said bottom edge being located directly adjacent said supportive surface, the portion of said front surface of said film assembly between said top edge and said bottom edge being spaced from said interior surface, a dead air insulating region lay located directly adjacent said rear surface, a narrow chamber formed within said film assembly;
a liquid inlet pipe mounted within said narrow chamber, said liquid inlet pipe located at said top edge;
a reservoir, said reservoir to contain a liquid;
means for supplying said liquid from said reservoir to said liquid inlet pipe; and
a discharge opening attached to said bottom edge connecting with said narrow chamber, said liquid to be conducted through said inlet pipe into said narrow chamber and through said discharge opening into said reservoir.

4,517,958
HEAT EXCHANGE SYSTEM

Douglas L. Worf, 109 Perth Ct., Cary, N.C. 27511

Division of Ser. No. 190,665, Sep. 25, 1980, Pat. No. 4,408,596. This application Dec. 20, 1983, Ser. No. 538,334
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **1 Claim**

1. A dual fluid flow corrugated type solar panel assembly designed for solar efficiency but which inherently provides substantial structural integrity, comprising in combination: a corrugated panel extending substantially across said solar panel assembly; said corrugated panel forming a first fluid flow compartment for receiving a first fluid medium and directing the same through said solar panel assembly; means associated with said corrugated panel and first fluid flow compartment for guiding and directing said first fluid medium over said corrugated panel and through said solar panel assembly in a first direction; means operatively associated with said first fluid flow compartment for directing fluid to and from said fluid flow compartment; a second air flow compartment formed adjacent said first fluid flow compartment, said second air flow compartment adapted to receive and transfer air therethrough; means operatively associated with said air flow compartment for transferring air to and from said second flow compartment; a boundary panel spaced from said corrugated panel and extending substantially across said solar panel assembly for forming the boundary of said second air flow compartment; means associated with said air flow compartment for directing air



therethrough in a second direction at an angle of generally ninety degrees relative to the flow of said first fluid medium passing through said first fluid flow compartment such that the air and first fluid medium flow at a generally ninety degree angle with respect to each other; and transparent means operatively associated with said solar panel assembly for allowing solar energy to be transferred thereto.

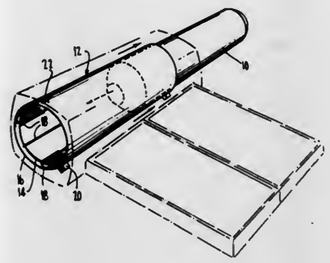
4,517,959
JACKETED SOLAR HOT WATER SYSTEM

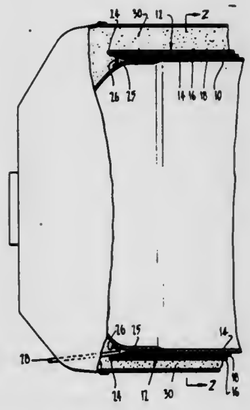
Harry J. Riley, Wembley, Australia, assignor to S. W. Hart & Co. Pty Ltd., Welshpool, Australia

Filed Sep. 29, 1982, Ser. No. 426,382
Claims priority, application Australia, Mar. 10, 1982, PF3048
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—437 **7 Claims**

1. A tank assembly for a solar hot water system comprising a solar collector for containing a working fluid, said tank assembly comprising
(a) a cylindrical tank having water inlet and outlet means for containing water to be heated;
(b) a jacket in the form of an annular sealed envelope having inner and outer major walls, said jacket at least partly enclosing said cylindrical tank and defining an enclosed space for also containing said working fluid;
(c) means arranged to form a closed fluid circuit between said collector and said enclosed space; and

(d) an annular air gap adjacent each end of said envelope between said inner wall thereof and said tank, said air gap



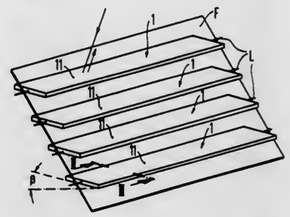


being sealed by an annular seal and being vented to atmosphere.

4,517,960
PROTECTION DEVICE AGAINST SOLAR LIGHT

Christian Bartenbach, Rinnerstrasse 39, A-6020 Innsbruck-Aldrans, Austria

PCT No. PCT/DE82/00204, § 371 Date May 20, 1983, § 102(e) Date May 20, 1983, PCT Pub. No. WO83/01122, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 20, 1982, Ser. No. 504,058
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138262; Jul. 16, 1982, 3226709
Int. Cl.³ F24J *3/02*; **G02B** *27/00*
U.S. Cl. 126—440 **5 Claims**

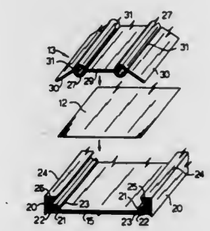


1. A solar protection device, comprising: screening means for screening out for a substantial portion of a day direct solar rays from the sun in a narrow screening zone of solar ray angular incidence while simultaneously admitting ambient daylight, said screening means comprising a plurality of slats made of light-permeable material and having a flat non-reflective base surface on a first side facing the sun and a prismatic structure on a second side facing away from the sun; said slats being arranged in side-by-side relationship in a window opening so as to be rotatable about respective parallel longitudinal axes; and the prismatic structure comprising at least one prismatic rod of triangular cross-section with two outside non-reflective planar faces, a longitudinal axis of the rod running parallel to the longitudinal axis of the slat and said two side faces enclosing between them an apical angle of 90°.

4,517,961
SOLAR WATER HEATING APPARATUS

Trevor J. Bloor, and Lawrence J. Walton, both of P.O. Box 388, Broadbeach, Queensland, Australia 4217

Filed Nov. 7, 1983, Ser. No. 549,594
Claims priority, application Australia, Nov. 9, 1982, PF6712
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **11 Claims**



1. Solar water heating apparatus including an inlet header and an outlet header communicating through at least one solar absorber assembly, said absorber assembly including an extruded base member formed of flexible plastics material, said base member having a substantially planar floor portion, means integral with said base member for supporting said floor portion above a sun exposed supporting surface whereby said base member is in minimum heat conducting contact with said support surface; an extruded ducting member formed of flexible plastics material; means integral with said ducting member for supporting said ducting member above said floor portion of said base member, said ducting member including at least one integrally formed fluid conducting passageway extending longitudinally therethrough, said passageway interconnecting said inlet and outlet headers whereby water flowing into said inlet header passed through said passageway and into said outlet header, and an elongated glazing member operatively associated with said base member and supported above said floor portion of said base member to define therewith a hollow space surrounding said ducting member.

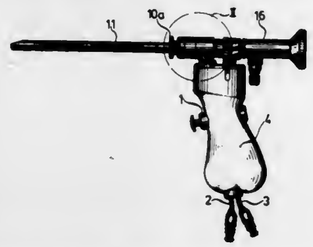
4,517,962
NASAL ENDOSCOPES

Helmut Heckele, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,808
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 8136066[U]
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **2 Claims**

1. An endoscope for endonasal surgery, having a handle with a distal and a proximal end, said handle traversed by flushing and suction passages and carrying a projecting flushing and suction shaft extending from said distal end of said handle, an optical system extending through said shaft, wherein said handle is provided with a quick disconnect cou-

pling means for interchanging from said proximal end of said handle one of a plurality of different flushing and suction shafts each having an optical system associated therewith, said flushing and suction shafts each having complimentary coupling

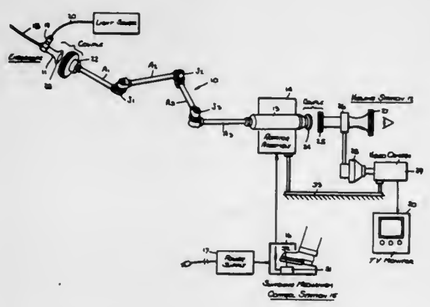


means mating with said quick disconnect coupling means, said flushing and suction shaft being in fluid-tight communication with said passages extending through said handle when said handle and said flushing and said suction shaft are connected by said coupling means.

4,517,963
IMAGE-ERECTING BARREL ROTATOR FOR ARTICULATED OPTICAL ARM

Thomas J. Michel, Miami, Fla., assignor to Harold Unger, Miami Beach, Fla.

Filed Jan. 4, 1983, Ser. No. 455,575
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **9 Claims**



1. In combination, an articulated optical arm adapted to optically link to a viewing station the eyepiece of an endoscopic telescope which views an internal region, said arm including a series of sections mechanically interhinged and optically intercoupled by joints, a rotatable image-erecting barrel and a terminal eyepiece, the last section in the series being optically coupled through said rotatable image-erecting barrel to said terminal eyepiece, said arm being adjustable by an operator so that the endoscope may be extended, retracted or otherwise adjusted with respect to the internal region whereby any aspect of the internal region may be clearly viewed at the viewing station, the image transmitted through the arm undergoing circumferential displacement about the optical axis in a direction and to a degree that depends on this adjustment, and a barrel rotator comprising:

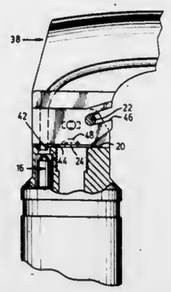
A. a primary assembly provided with a sleeve which telescopically receives and clamps onto said barrel and including a bi-directional motor operatively coupled to said sleeve to rotate the barrel either in the clockwise or counterclockwise direction, depending on the polarity of power supplied thereto; and

B. a remote control station connected to the primary assembly and including selective means to supply power to the motor in a polarity and for a period effecting turning of the barrel in a direction and to an extent causing erection of the image presented through said terminal eyepiece.

4,517,964
DUAL BLADED LARYNGOSCOPE

Michael S. Upsher, 2957 Adeline Dr., Burlingame, Calif. 94010

Continuation-in-part of Ser. No. 324,887, Nov. 25, 1981, Pat. No. 4,437,458. This application Mar. 25, 1983, Ser. No. 478,850
Claims priority, application European Pat. Off., Nov. 27, 1980, 80 107427.9
The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—11 **14 Claims**

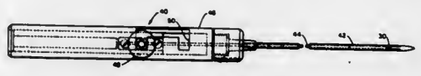


1. A laryngoscope comprising: a handle including an electrically conductive handle body, a first light source carried on said body, a power supply means contained within said body, and an uppermost blade connecting end having first and second electrical contacts respectively forming parts of separate first and second open circuits, each including said power supply means and said handle body and said second open circuit including said first light source; a first blade carrying a second light source and means for mounting the first blade to the blade connecting end of said handle in a way which causes said first blade to engage said first contact without engaging said second contact for placing said second light source in circuit with said first open circuit and for closing said first open circuit whereby said power supply means energizes said second light source carried by said first blade while said first light source remains off; and a second blade carrying a light guide and having an electrically conductive base for mounting the second blade with the blade connecting end of said handle in a way which causes said second blade to engage said second contact without engaging said first contact for closing said second open circuit through the electrically conductive mounting base of said second blade whereby said power supply means energizes said first light source carried by said handle while said light guide is placed in optical communication with said first light source.

4,517,965
TISSUE RETRACTOR

Arthur E. Ellison, Adams Rd., Williamstown, Mass. 01267

Filed Jun. 27, 1983, Ser. No. 508,251
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **5 Claims**



1. A tissue retractor for use during arthroscopic surgery on the knee joint comprising:

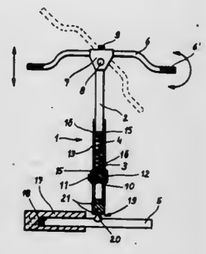
a hollow sheath;

a rod slidingly contained within said sheath; and a barb member including a slanted edge, said barb member attached to said sheath near an end of said sheath, said barb member remaining in a retracted position flush with said sheath until said rod is advanced into said sheath and engages said slanted edge thereby forcing said barb to project laterally beyond said sheath into an erect operating position, said barb member fabricated of a spring material so that it will retract flush with said sheath when said rod is retracted.

4,517,966
APPARATUS FOR STRETCHING AND STRENGTHENING THE BACK MUSCLES

Achim von Othegraven, A-2203 Putzing 68, Putzing, Austria (A-2203)

Filed Oct. 21, 1982, Ser. No. 435,543
Claims priority, application Austria, Oct. 23, 1981, 4541/81
Int. Cl.³ A63B *23/02, 21/00*
U.S. Cl. 128—75 **4 Claims**



1. A gymnastic apparatus for stretching and strengthening the back muscles, which comprises

(a) a substantially rectilinearly extending support bar having two ends,

(b) a telescopic back tensioning bar having an axis and forming a T-shape with the support bar, the back tensioning bar comprising

(1) two telescoping members extending along said axis, one of the telescoping members being a tube and the other telescoping member being a rod extending into the tube and rotatable in relation thereto about the axis of the back tensioning bar, the support bar being connected to the one telescoping member, and

(2) a compression spring biasing the other telescoping member in a direction away from the support bar,

(c) a handle bar at an end of the other telescoping member remote from the one telescoping member, the handle bar being farther spaced from the support bar when the spring is uncompressed than when it is compressed,

(d) a holder attached to the end of the other telescoping member, the holder receiving the handle bar,

(e) means for fixing the holder in a selected position, and

(f) a support sleeve rotatably mounted on each end of the support bar.

4,517,967
PENILE PROSTHESIS

Gerald W. Timm, Minneapolis; Donald L. Sandford, Lauderdale, and Timothy J. Claude, Coon Rapids, all of Minn., assignors to Dacomed Corporation, Minneapolis, Minn.

Filed Apr. 18, 1983, Ser. No. 485,647
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **9 Claims**

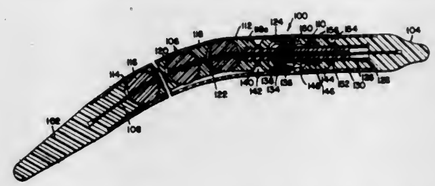
1. A penile prosthesis having first and second ends for implantation in a penis, comprising:

a. an outer elongated sheath formed from a physiologically inert and pliable material and fixedly secured proximate the first and second ends of the prosthesis;

b. an articulated column of segments having slidable joints therebetween and enclosed within said sheath;

c. tension means including an elongated tension member having first and second ends and extending longitudinally of the prosthesis, the tension member being secured proximate its first and second ends to proximate the respective first and second ends of the prosthesis; and

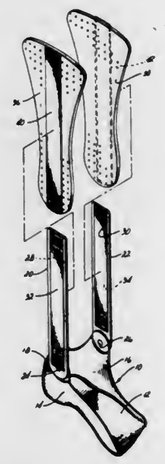
d. axially elongatable and shortenable switch means enclosed within said sheath and axially disposed intermediate of said articulated column and the first end of the prosthesis for switching the prosthesis between a flaccid state and a rigid state, said switch means cooperating with said tension member and said articulated column for increasing the tension of said tension member and compressing the articulated column when axially elongated by a user, whereby the frictional resistance of said joints of said articulated column is increased, thereby imparting rigidity to the prosthesis.



4,517,968
COMPOSITE ORTHOSIS FOR ANKLE SPRAINS AND THE LIKE

Ted J. Greene, La Canada, and George P. Irons, West Covina, both of Calif., assignors to United States Manufacturing Company, Pasadena, Calif.

Filed Apr. 13, 1983, Ser. No. 484,484
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 H **4 Claims**



1. A composite orthosis for use in immobilizing a rotational joint comprising:

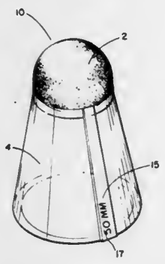
elongated semi-rigid lateral and medial support members extending along lateral and medial sides of a first limb adjacent a rotational joint;

a brace secured to a second limb on an opposite side of the joint;

means hinging the lateral and medial support members to the brace so the support members can pivot relative to the brace about an axis through the joint, front and rear open

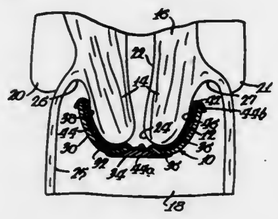
regions being left along the front and rear of the first limb between the support members;
resilient lateral and medial padding and means for attaching the padding to the inside faces of the lateral and medial support members so the resilient padding overlies the lateral and medial sides of the first limb;
non-skid surfaces on the outer faces of the lateral and medial support members; and
a self-adherent elastic bandage wrapped around the lateral and medial support members and the front and rear open regions of the first limb between the support members, the elastic bandage being wrapped in a series of overlapping loops from the vicinity of the joint along the length of the first limb and into frictional contact with the non-skid surfaces on the outer faces of the lateral and medial support members to prevent slippage of the bandage wrapped around the support members and to firmly support the lateral and medial support members against the lateral and medial sides of the first limb, while the wrapping of the elastic bandage provides the means of support along the front and rear of the first limb between the lateral and medial support members, the lateral and medial support members and the brace cooperating for immobilizing the joint against lateral and medial mobility, the pivot means and the wrapping of the elastic bandage along the front and rear of the first limb allowing rotational mobility of the limb about the joint axis, while providing resistance to twisting of one limb relative to the other.

4,517,969
PROSTHETIC GAUGE
F. Joseph Halcomb, III, Warsaw, Ind., and C. Wayne Allen, Memphis, Tenn., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Mar. 3, 1983, Ser. No. 471,967
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 E **9 Claims**



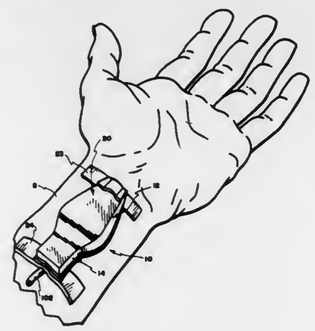
1. A prosthetic gauge used for evaluating the fit of a prosthetic device against a receiving bone or cartilage surface comprising:
a means for gripping; and
a contact portion extending from said gripping means, said contact portion having a translucent surface, and wherein said contact portion is contoured to correspond to the surface of the prosthetic device which is to mate with the receiving bone or cartilage surface being evaluated.

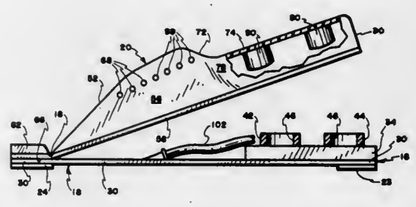
4,517,970
CONFORMING VALVED CERVICAL CAP ASSEMBLY AND IN-SITU MOLDING METHOD
Robert A. Goepp, Chicago; Uwe E. Freese, Oak Park, and Marvin P. Loeb, Chicago, all of Ill., assignors to University Patents, Inc., Westport, Conn. and Contracap, Inc., Schaumburg, Ill.
Division of Ser. No. 207,904, Nov. 18, 1980, Pat. No. 4,401,534. This application Jul. 1, 1983, Ser. No. 510,278
Int. Cl.³ A61F *5/46*
U.S. Cl. 128—131 **18 Claims**



1. A cervical cap assembly, comprising:
a flexible shell having a concave inner surface and one-way valving means operatively associated with said shell for permitting egress of uterine discharges but preventing ingress of sperm; and
a liquid impervious, non-porous elastomeric lining on said concave inner surface defining a wettable, matingly fitting and resiliently complementing contact surface permanently contoured for the exocervical surface of a cervix uteri.

4,517,971
GUARD FOR VENIPUNCTURE SITE AND CATHETER RETAINER
Robert L. Sorbonne, 2466 Michigan Ave., Salt Lake, Utah 84108
Filed Nov. 22, 1982, Ser. No. 443,271
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—133 **5 Claims**

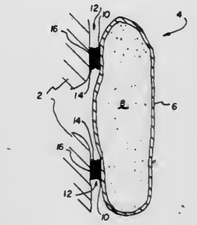




1. A venipuncture guard for a medical patient comprising:

generally flat skin-engaging base means, the base means comprising an opening accommodating placement of the base means around a venipuncture site;
lid means comprising means bridging over the venipuncture site in spaced relation thereto comprising means for successively opening and means for closing the lid means in respect to the base means to permit access to the venipuncture site and conceal the site from debris and prevent inadvertent displacement of an intravenous cannula in respect to the vein of a patient at the venipuncture site, respectively;
the guard further comprising means defining passageway means by which medical tubing spans between the venipuncture site and the exterior of the guard;
the guard further comprising vein bridge means in aligned though axially spaced relation to the venipuncture site which vein means prevents occlusion by the guard of the vein in which the venipuncture site is disposed; and
anti-displacement means, associated with the vein bridge means, which prevent inadvertent removal of an indwelling cannula from the venipuncture site.

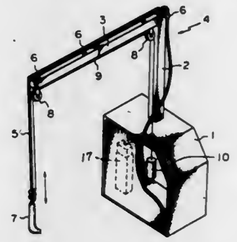
4,517,972
METHOD AND APPARATUS FOR APPLYING A THERAPEUTIC ARTICLE TO A BODY
Robert E. Finch, Jr., 326 N. Seventh St., Suite 204, Springfield, Ill. 62701
Filed Jan. 11, 1983, Ser. No. 457,249
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—156 **5 Claims**



1. Apparatus for applying a thermal treatment to the body of an animal comprising
(a) thermal treatment means for producing a temperature higher or lower than the skin temperature of said animal, and
(b) attachment means for securing said article to said body comprising an elongate strip having adhesive thereon for securing said strip to said body and a second surface for cooperating with a surface of said thermal treatment means,
(c) said surface of said thermal treatment means comprising removable attachment means for engaging said second surface to removably attach said thermal treatment means to said animal, said removable attachment means having a width substantially larger than the width of said elongate strip.

4,517,973
LASER SCALPEL
Katsuyoshi Sunago, and Shinya Takenaka, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jul. 6, 1982, Ser. No. 395,306
Claims priority, application Japan, Jul. 7, 1981, 56-100113[U]
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **12 Claims**

1. A laser scalpel using an optical fiber for an optical wave guide said optical fiber being guided from a laser main body, housing a laser source therein, to areas to be irradiated by said laser scalpel, wherein:
shore means provided on the laser main body for guiding said optical fiber, said optical fiber being provided with a hand piece on the exterior of one end thereof,
said hand piece facilitating directing of the one end of said fiber toward the areas to be irradiated, and



a supporting wire means, provided along said shore means, for permitting axial movement of itself along the lengthwise axis of said shore means, a forward end of said wire means being connected to said hand piece and a rear end of said wire means being connected to a balancing means for counter-balancing at least the weight of said hand piece.

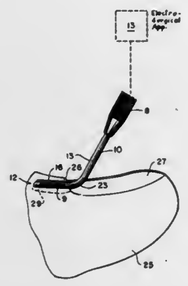
4,517,974
DISPOSABLE HAND PIECE FOR SURGICAL LASERS
Howard M. C. Tanner, Salt Lake City, Utah, assignor to HGM, Inc., Salt Lake City, Utah
Filed Oct. 28, 1982, Ser. No. 437,289
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **2 Claims**



1. A disposable hand piece for controlling and directing the application of a laser beam produced by a laser powered by an electrical power source and transmitted through an optical fiber connected to said laser and encased in a sheath, comprising:
(a) an elongated body having a leading end and a trailing end, comprising:
(i) a plastic molded top portion having a pair of opposed resiliently outwardly biased side panels at the leading end thereof;
(ii) a plastic molded bottom portion having a pair of notches formed in opposed sides thereof for receiving said side panels, said top portion being shaped to nest in said bottom portion behind the leading end thereof;
(iii) said top and bottom portions being secured together to form said body and providing:
(aa) a bore extending through said body, said optical fiber encased by said sheath being mounted in said bore;
(bb) a cavity within said body intermediate the length thereof; and
(cc) in a leading portion of said bottom portion forward of said cavity, means anchoring the leading end of said optical fiber encased by said sheath; and
(b) a pressure-sensitive switch mounted in said cavity between said panels and including electrical contacts positioned for being actuated by depressing either of said panels inwardly while holding said hand piece; and
(c) electrical leads extending from said switch through said

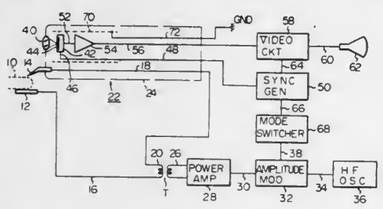
sheath encasing said optical fiber and branching from said sheath to said power source enabling said laser beam to be switched on and off by means of depressing either of said panels to actuate said switch while holding said hand piece.

4,517,975
ELECTROSURGICAL ELECTRODE FOR MATRISECTOMY
Jon C. Garito, 264 Hedge La., Hewlett Harbor, N.Y. 11577, and Alan G. Ellman, 1 Auerbach La., Lawrence, N.Y. 11516
Filed Jun. 6, 1983, Ser. No. 501,408
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.13 **8 Claims**



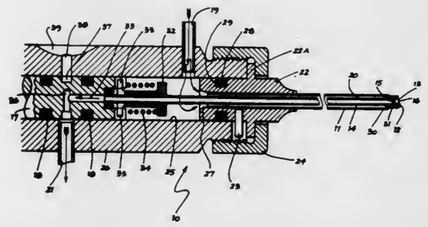
1. An electrosurgical electrode comprising an elongate one-piece metal member having at one end means for mounting same in a handpiece and at the opposite end a working tip for delivering high frequency currents to animal tissue, said working tip having a thin flat spade-shaped end, and a thin insulating resin coating extending over one flat side of the spade-shaped end leaving the opposite side bare, said coating preventing transfer of high frequency currents to the tissue while allowing such transfer from the bare flat side, said metal member being constituted of a bendable malleable metal allowing bending of the member as well as of the tip by the user to adapt same to the tissue being treated.

4,517,976
HIGH FREQUENCY SCALPEL AND ENDOSCOPE SYSTEM AND METHOD OF OPERATING SAME
Makoto Murakoshi, Asaka, and Takahiro Ota, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 27, 1982, Ser. No. 424,769
Claims priority, application Japan, Oct. 20, 1981, 56-167567
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.15 **15 Claims**



1. A high frequency scalpel system usable with a video imaging system developing a video signal comprising:
an electrode functioning as a surgical knife;
high frequency current supplying means for supplying said electrode with a high frequency current; and
synchronous generator means for producing a synchronous signal which defines horizontal blanking periods in a raster scanning-type video signal;
control means for enabling said high frequency current supplying means in response to the synchronous signal developed by said synchronous generator means so as to supply said electrode with the high frequency current primarily during a horizontal blanking period of the video signal.

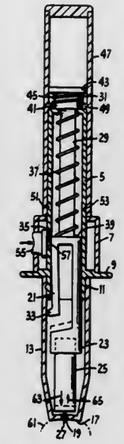
4,517,977
CO-AXIAL TUBE SURGICAL INFUSION/SUCTION CUTTER TIP
Richard B. Frost, Eastwood, Australia, assignor to Unisearch Limited, Kensington, Australia
Filed Jul. 24, 1981, Ser. No. 287,745
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **4 Claims**



1. A surgical instrument comprising a first tube having at one end an end wall disposed in a plane substantially normal to the longitudinal axis of the first tube which end wall contains an aperture; a second tube disposed substantially coaxially within the first tube and having at one end an end wall disposed in a plane substantially normal to the longitudinal axis of the second tube which end wall is resiliently urged by resilient means into close juxtaposition with the end wall of the first tube; the end wall of said second tube containing an aperture; said apertures extending only in said end walls so that the side walls of said tubes are free of any apertures; means to enable the tubes to be rotated relative to one another about their common axis, the apertures in the end walls of the tubes each lying wholly within the plane of its associated end wall and the apertures being so placed in the end walls that they are moved into register and substantially completely out of register with one another as the tubes are rotated relative to one another; annular duct means defined between the first tube and the second tube discharging at said one ends of the tubes to direct a stream of a liquid to said one ends of the tubes; and duct means to connect the interior of the second tube to a source of suction, an edge portion of each aperture being sharpened such that the edge portions together form cooperating shearing blades as the apertures are moved out of register.

4,517,978
BLOOD SAMPLING INSTRUMENT
Paul D. Levin, 1595 Soquel Dr., Santa Cruz, Calif. 95065, and John D. Harding, 228 Fern St., Santa Cruz, Calif. 95060
Filed Jan. 13, 1983, Ser. No. 442,600
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—314 **5 Claims**

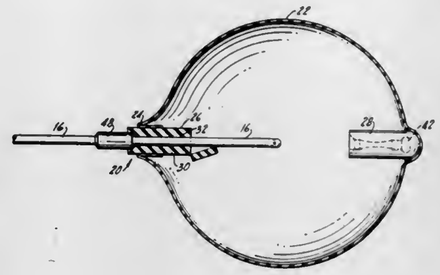
1. A blood sampling instrument designed to be hand held by an operator and being adapted to prick a finger or the like of a patient to draw a few drops of blood, said instrument having a distal end toward a patient and a proximal end toward an operator, comprising in combination:
(a) a tubular member having a hollow nosepiece at the distal end with an aperture at the terminal end thereof and a spring chamber at the proximal end,
(b) an annular collar having a shoulder at the proximal end thereof and an annular flange immediately behind said nosepiece at the distal end of said collar,
(c) a hollow sleeve surrounding said spring chamber,
(d) a plunger mounted for reciprocation within said tubular member,
(e) a shoulder within said tubular member, a main spring mounted within said spring chamber, said shoulder engaging said spring and biasing said plunger toward said nosepiece,
(f) a socket and a needle mounted therein on the distal end of said plunger,



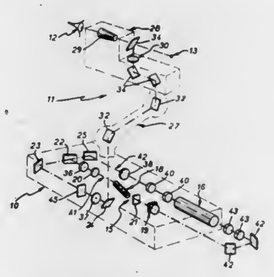
(g) an aperture on the side of said tubular member, a finger on said plunger to engage said aperture and hold said plunger when said plunger is drawn away from said nosepiece,
(h) a trigger button extending from said collar and having means to engage the finger on said plunger,
(i) plunger cocking means on said sleeve to pull said plunger away from said nosepiece and engage said finger whereby
(j) the nosepiece of said instrument can be pressed against a finger by exerting pressure on said flange while pressing said trigger to release said plunger and cause said needle to be driven out of said nosepiece.

4,517,979
DETACHABLE BALLOON CATHETER
Frank Pecenka, Miami Beach, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Jul. 14, 1983, Ser. No. 513,697
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—325 **6 Claims**

1. A detachable balloon catheter assembly for use in human vessels comprising:
a small diameter cylindrical cannula having a distal end and a proximal end having connector terminal means on the proximal end for coupling the cannula to a source of fluid pressure;
a sealing valve assembly including a body member having a cylindrical passageway extending therethrough adapted to receive the distal end of said cannula thereby to provide a fluid tight seal against the outer surface of said cannula, said sealing valve assembly also including a valve means operative to permit the passage of said cannula through said valve assembly but preventing the flow of fluid through said valve assembly when said cannula is withdrawn from said valve assembly;
an inflatable balloon including a mouth portion at one end thereof, said mouth portion of the balloon being disposed about said sealing valve assembly;
retainer means including a body portion formed of a resilient material having a cylindrical cavity extending into said body portion, said cylindrical cavity of said retainer mean normally being of a diameter smaller than the outside diameter of said cannula so as to frictionally engage the outer surface of said cannula when said cannula is inserted into said cavity of said retainer means so that a predetermind force is required to withdraw said cannula from said retainer means, and said retainer means being affixed to the inside surface of said balloon at a position diametrically opposite to the mouth of the balloon said retainer means having means for permitting pressurized fluid supplied to the distal end of said cannula, when it is positioned at the inner end of said cavity, to escape from said retainer means into said balloon and when said balloon becomes inflated the distal end of the cannula can be withdrawn from said retainer means and said valve assembly thereby to cause the balloon to become detached from the cannula.



4,517,980
OPHTHALMIC SURGICAL LASER APPARATUS
Luc Tagnon, Saint Mande, France, assignor to Essilor International Cie Generale d'Optique, Creteil, France
Filed Sep. 30, 1982, Ser. No. 429,962
Claims priority, application France, Oct. 2, 1981, 81 18612
Int. Cl.³ A61N *5/00*; A61B *17/36*
U.S. Cl. 128—395 **12 Claims**



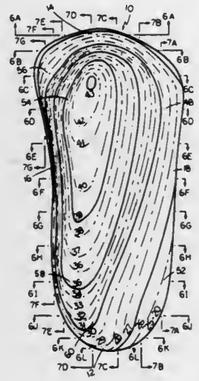
1. An ophthalmic surgical apparatus comprising a main laser genrator for emitting an operating laser beam of infrared energy and an auxiliary marker laser for emitting a marker laser beam of visible light, means for superposing the laser beams of the operating laser and the auxiliary marker laser before reaching an operating optical system, said means for superposing the laser beams of the operating laser and the auxiliary marker laser including a plurality of mirrors and a laser beam expander for expanding each of the laser beams, said laser beam expanders each having separate entrance lenses and sharing a common exit lens.

4,517,981

ORTHOTIC DEVICE

Frank J. Santopietro, 6 Calvin Rd., Jamaica Plain, Mass. 02130, and Thomas V. Santopietro, Jr., 9 Chestnut Hills Ct., Greenville, R.I. 02828

Filed Jun. 8, 1983, Ser. No. 502,208
Int. Cl.³ H61F *5/14*
U.S. Cl. 128—581 **11 Claims**



1. An improved orthotic device for supporting a human foot in a substantially correct anatomical position, said device including a forefoot portion, a rearfoot portion and opposing medial and lateral sides, said medial and lateral sides being disposed on opposing sides of a midline extending longitudinally of the device, a wedge portion, the lowest portion starting in the rearfoot portion of the device and increasing to the forefoot portion of the device and terminating in a highest point of the device at a first locus toward the forefoot portion of the device and disposed intermediate the midline of said device and said medial side and adapted to underlay and support the second metatarsal head area of said foot, and a second locus disposed toward the rearfoot portion of the device and disposed intermediate the midline of said device and said medial side, said wedge portion including first and second sloping portions meeting at a ridge, said first sloping portion extending from said ridge to said medial side and said second sloping portion extending from said ridge to said lateral side, and said ridge extending longitudinally from said first locus to said second locus, said ridge being generally in a straight path intermediate said midline and said medial side.

4,517,982

SENSING DEVICE FOR CARDIO-PULMONARY FUNCTIONS

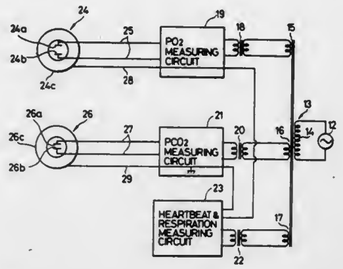
Tetsuya Shiga; Shinichi Okawa; Kenichi Yoshida, and Junichi Hiramoto, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 9, 1982, Ser. No. 406,145
Claims priority, application Japan, Aug. 10, 1981, 56-124180
Int. Cl.³ A61B *5/00, 5/04, 5/08*
U.S. Cl. 128—635 **7 Claims**

1. A sensor device for the measurement of cardio-pulmonary functions, comprising:

first means for the transcutaneous measurement of a blood gas partial pressure, said first means including sensing elements and a heat conducting member having a skin contact surface and surrounding the sensing elements of said first means; and

second means for measuring at least one of the heartbeat and respiration rate, said second means including an electri-



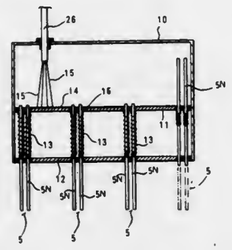
cally conducting electrode comprising said heat conducting member.

4,517,983

ELECTRODE SETS WITH RESILIENTLY MOUNTED PIN ELECTRODES

Yasuhiro Toyosu, 15-5, Minamikomatsushimacho, Komatsushima-shi, Tokushima, Japan (773), and Norio Akamatsu, 1-8, Higashiyoshinocho 2-chome, Tokushima-shi, Tokushima, Japan (770)

PCT No. PCT/JP82/00001, § 371 Date Jul. 29, 1982, § 102(e) Date Jul. 29, 1982, PCT Pub. No. WO82/02333, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 4, 1982, Ser. No. 405,955
Claims priority, application Japan, Dec. 31, 1980, 55-187524
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—639 **7 Claims**



1. An electrode for an electrocardiograph used for measuring potentials of a number of points of a body surface near the heart and producing an isopotential map thereof, said electrode comprising:

a plurality of pin contact sets each being conductive at least on its surface and each having a plurality of movably mounted parallel pin contacts for movement reciprocally in the direction of their lengths for directly contacting the human body surface; and

resilient members, one connected to each pin contact for resiliently urging the end of each pin contact in the direction of its length toward the human body surface;

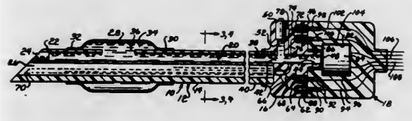
the pin contacts of each set being mounted in a small area close to one another on said electrode and being mutually electrically connected in parallel, the space between the pin contacts of each pin contact set being much smaller than the space between the adjacent small areas of the pin contact sets, whereby the potential at a position on the body surface contacted by a pin contact set can be detected as long as one pin electrode in the set is in good contact with the body, even if the other pin contacts in the set are in bad contact.

4,517,984

ESOPHAGEAL PROBE

Alfred R. Perlin, Highland Park, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 321,878, Nov. 16, 1981, , which is a continuation of Ser. No. 128,001, Mar. 7, 1980, abandoned. This application Apr. 4, 1984, Ser. No. 596,488
The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—642 **4 Claims**



1. An esophageal probe comprising:

a shaft assembly comprising an elongated shaft having a distal end, a proximal end, an opening adjacent said distal end, an inflation lumen extending through the shaft, the lumen communicating with the opening, an inflatable balloon extending around a distal portion of the shaft and defining a cavity communicating with the opening and thus the inflation lumen, means closing the lumen at the distal end of the shaft, a flexible membrane attached to and closing the lumen at the proximal end of the shaft, a fluid sound transmitting medium filling said lumen and said balloon, inflation means comprising valve means on the shaft communicating with the inflation lumen to permit passage of the fluid into the inflation lumen to fill the lumen and inflate the balloon, the sound transmitting medium being sealed within the shaft by the lumen, membrane, balloon, valve means and means closing the lumen at the distal end of the probe, a connector at the proximal end of the shaft, at least one conductive electrode on a distal portion of the shaft, and first conductor means electrically connecting the electrode with the connector at the proximal end of the shaft;

a second connector releasably attached to the first connector and having a proximal end, a distal end, an electrical sound detection device encased therein; and second electrical conductor means therein terminating at the second conductor distal end; and

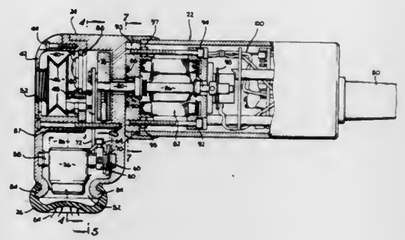
quick disconnect means for releasably attaching the second connector to the first connector and for simultaneously establishing electrical connection between the first and second conductor means, the quick disconnect means comprising mating means on the shaft proximal end and the second connector distal end, the flexible membrane on the proximal end of the shaft and the electrical sound detection device in the second connector being so located as to be in face to face contact when the first and second connectors are attached together by the quick disconnect means, whereby, in use, heart and/or lung sounds of a patient acoustically sensed by the sound transmitting medium are transmitted directly to the flexible membrane and thus directly to the sound detection device, for conversion into electrical signals which may be further transmitted and converted into intelligible information, and further whereby, after use, said shaft assembly may be discarded and substituted with another shaft assembly of similar construction for use on another or the same patient.

4,517,985

NEONATE ULTRASONIC SCANNER

Georg Teslawski, Menlo Park, and Paul D. Corl, Mountain View, both of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Continuation of Ser. No. 383,562, Jun. 1, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 598,492
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **7 Claims**



1. An ultrasonic scanner comprising:

a hand-holdable housing including an upper head assembly and a lower drive assembly;

a fluid chamber within said upper head assembly, including a membrane defining a portion of said chamber for contacting a body;

a fluid disposed within said fluid chamber;

an ultrasonic transducer within said fluid chamber mounted for pivotal movement about an axis, such that ultrasound from said transducer passes through said membrane into said body;

drive means for pivoting said transducer about said axis in an asymmetric oscillatory motion, such that the time required for said transducer to sweep in one direction is different than the time required for said transducer to pivot in the opposite direction, said drive means including:

a flywheel disposed within said fluid chamber;

a motor coupled to said flywheel, for rotating said flywheel at a substantially constant motor speed;

linkage means disposed within said fluid chamber, including a link coupled off-center to said flywheel and to said transducer, for asymmetrically oscillating said transducer about said axis.

4,517,986

FOUR FUNCTION VITAL SIGN MONITOR

Ilhan M. Bilgutay, 1063 Cephas Rd., Clearwater, Fla. 33575

Filed Mar. 5, 1984, Ser. No. 586,550
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—671 **16 Claims**

1. An apparatus of the type designed to monitor the vital signs of a person, comprising,

a cuff to exert pressure on any preselected artery of a person, means for inflating and deflating said cuff,

means for controlling the deflation rate of said cuff so as to maintain the rate at a substantially constant value during the deflation of said cuff,

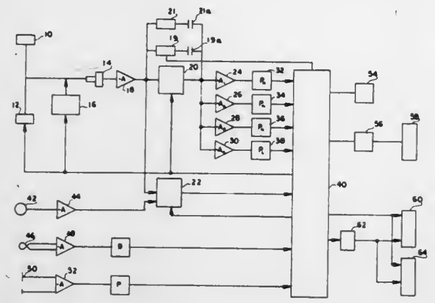
a transducer coupled to said cuff which transmits pressure signals proportional to the pressure of said cuff and pressure pulses from said artery,

an analog to digital converter responsive to pressure signals from said transducer to convert said pressure signals to digital representations,

a plurality of amplifiers coupled to said transducer and respectively responsive to pressure pulses having the smallest amplitude, the highest amplitude and amplitudes therebetween, for providing transmission indications of said pressure pulses,

a microprocessor coupled to said analog to digital converter

and said amplifiers to receive transmission indications of said pressure pulses and digital representations of the pressures at which said pressure pulse transmissions start



and end, so as to compute the systolic and diastolic pressure, and

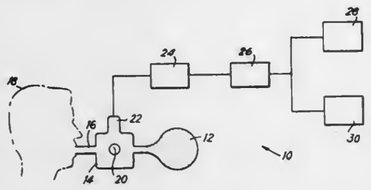
means associated with said microprocessor for displaying the systolic and diastolic pressure values.

4,517,987

METHOD FOR MEASUREMENT OF NONRADIOISOTOPIC AEROSOL RETAINED IN THE LUNGS WITH RE-BREATHING

Marvin A. Sackner, 300 W. Rivo Alto Dr., Miami Beach, Fla. 33140, and Chong S. Kim, 12040 SW. 112 Ave., Miami, Fla. 33176

Filed Apr. 2, 1982, Ser. No. 364,711
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—719 **5 Claims**



1. A method for determining a subject's airway function as affected by airway cross-sectional dimensions and/or retention of tracheobroncheal secretions, comprising:

said subject re-breathing an inert aerosol from a closed system;

determining the aerosol concentration in said closed system during each of a plurality of breaths;

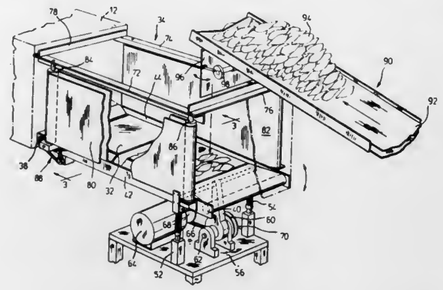
comparing said aerosol concentration determination after each of said plurality of breaths with a predetermined aerosol concentration value to identify differences therebetween, wherein identified differences indicating enhanced aerosol deposition signify airway narrowing and/or an increase in accumulated airway secretions.

4,517,988

FEEDING TOBACCO CUTTING MACHINES

Warren A. Brackman, 342 Dickson Park Crescent, Mississauga, and Stanislav M. Snaidr, 4155 Sharonton Ct., Mississauga, Ontario, both of Canada

Division of Ser. No. 381,213, May 24, 1982, Pat. No. 4,456,018, which is a continuation-in-part of Ser. No. 215,006, Dec. 10, 1980, Pat. No. 4,369,797. This application Apr. 9, 1984, Ser. No. 598,376
Int. Cl.³ A24B *3/00, 7/08, 7/12*
U.S. Cl. 131—116 **13 Claims**



1. In an apparatus for forming cut tobacco which comprises upper and lower tobacco conveyors converging towards a downstream end thereof, cutting means located adjacent said downstream end of said converging conveyors for cutting tobacco held at said downstream end and a generally horizontally-extending vibrating conveyor for conveying a layer of tobacco to the upstream end of said converging conveyors and for applying vertically-reciprocating vibrating forces thereto while conveying said tobacco layer thereon, the improvement which comprises:

confining movable side wall means located at each side of said vibrating conveyor to engage the side edges of said tobacco layer, and

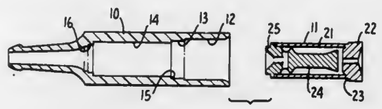
means for moving said confining side walls in the direction of movement of said tobacco layer.

4,517,989

CIGARETTE HOLDER AND FILTER CARTRIDGE

John A. Mensik, 124 Creekdale Rd., Walnut Creek, Calif. 94595

Filed May 18, 1983, Ser. No. 495,669
Int. Cl.³ A24D *3/04;* A24F *7/00, 7/02, 7/04*
U.S. Cl. 131—187 **4 Claims**



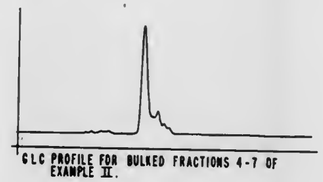
1. A cigarette holder and a filter cartridge, said holder having a first cavity at one end for axially receiving the end of a cigarette and a second cylindrical inner cavity of lesser diameter for axially receiving the filter cartridge, said filter cartridge having a housing formed with a flexible conical frustum at one end and a cylindrical sleeve, said frustum having greater circumference than said sleeve and being tapered inwardly towards the sleeve, the largest circumference of said frustum being larger than the circumference of said cylindrical inner cavity but receivable therein with a flexible binding fit due to the flexibility of said flexible conical frustum; whereby said filter cartridge may be inserted into said holder through the first cavity and said frustum lodged in said cylindrical inner cavity with a flexible binding fit.

4,517,990

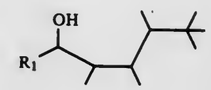
3,4,5,6,6-PENTAMETHYL HEXANOL-2 AND ALKYL HOMOLOGUES THEREOF; PROCESS FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Richard M. Boden, Ocean, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 469,061, Feb. 23, 1983, abandoned, which is a division of Ser. No. 399,066, Jul. 16, 1982, Pat. No. 4,391,999, which is a continuation-in-part of Ser. No. 354,389, Mar. 2, 1982, Pat. No. 4,405,820, which is a division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Mar. 14, 1984, Ser. No. 589,504
Int. Cl.³ A24B *3/14*
U.S. Cl. 131—276 **3 Claims**



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco composition or smoking tobacco article comprising the step of intimately admixing with said smoking tobacco composition or smoking tobacco article an aroma or taste augmenting or enhancing quantity of at least one alcohol defined according to the structure:



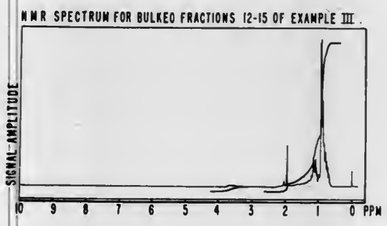
wherein R_1 is C_1–C_3 alkyl.

4,517,991

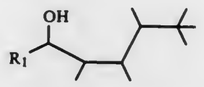
3,4,5,6,6-PENTAMETHYL HEXANOL-2 AND ALKYL HOMOLOGUES THEREOF; PROCESS FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Richard M. Boden, Ocean, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

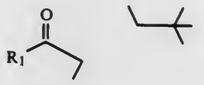
Division of Ser. No. 469,061, Feb. 23, 1983, abandoned, which is a division of Ser. No. 339,066, Jul. 16, 1982, Pat. No. 4,391,999, which is a continuation-in-part of Ser. No. 354,389, Mar. 2, 1982, Pat. No. 4,405,820, which is a division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Apr. 26, 1984, Ser. No. 604,213
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—276 **4 Claims**



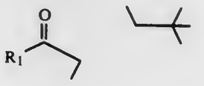
1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of smoking tobacco compositions or smoking tobacco article components comprising the step of adding to said consumable material an aroma or taste augmenting or enhancing quantity of a composition of matter including a major proportion of a compound defined according to the structure:



wherein R_1 is C_1–C_3 alkyl produced according to the process consisting essentially of the step of reacting with hydrogen in the presence of a catalyst selected from the group consisting of Raney nickel and Rhodium at least one compound defined according to the structure:



wherein in the compound having the structure:



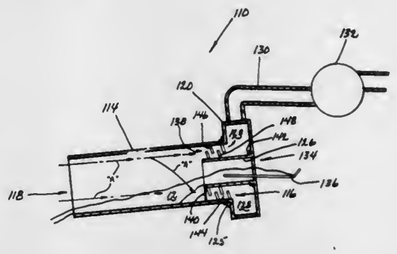
one of the dashed lines is a carbon-carbon double bond and each of the other of the dashed lines are carbon-carbon single bonds at a temperature in the range of from 100° C. up to 200° C. and at a pressure in the range of from 400 psig up to 1400 psig.

4,517,992

TOBACCO CONDITIONING APPARATUS

Kevin R. Korte, and Daniel D. Snyder, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed May 10, 1984, Ser. No. 608,842
Int. Cl.³ A24B *3/04, 9/00*
U.S. Cl. 131—304 **20 Claims**



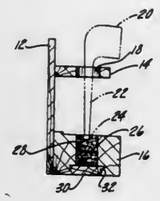
1. A tobacco conditioning apparatus for conditioning tobacco with a gas comprising:

an outer rotatably mounted, hollow cylindrical drum having a tobacco entrance at one end and a tobacco outlet at the opposite end;

an inner, hollow cylindrical drum coaxially located within the outer drum and extending through the tobacco entrance of the outer drum a predetermined distance less than the entire length of the outer drum, the inner drum interior defining the sole means for receiving tobacco into the conditioning apparatus, the inner drum being attached to the outer drum for rotation therewith;

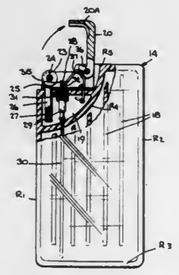
an annular treating gas flow-through passageway defined between the outer drum and the inner drum; and,
means located within the annular treating gas flow-through passageway defining a sinuous gas flow path through the passageway.

4,517,993
PIPE RACK
John D. Tobias, 233 E. Bloomfield, Royal Oak, Mich. 48073
Filed Sep. 13, 1982, Ser. No. 417,792
Int. Cl.³ A24F *9/14*
U.S. Cl. 131—329 **8 Claims**



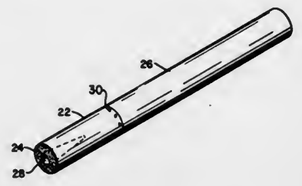
1. A pipe rack comprising:
a vertically extending member;
a generally horizontally extending bracket connected at one end to said member and having a plurality of holes therein for receiving pipe stems oriented such that their associated mouthpieces extend downwardly;
a generally horizontally extending base connected to lower portions of the member, said base having a plurality of chambers therein in vertical alignment with the holes in the bracket for receiving the mouthpieces of the pipes;
fibrous material made of loosely packed cotton filaments located within the chambers adapted to come into contact with the mouthpieces of the pipes; and
a plate slideably engaged in a track in lower portions of the base serving as a removable cover for the lower portions of the chambers.

4,517,994
FLAT CIGARETTE LIGHTER
Robert A. Endelson, New York, N.Y., assignor to Microtech Associates, New York, N.Y.
Filed Nov. 18, 1982, Ser. No. 442,724
Int. Cl.³ F23Q *2/16*; A24F *47/00*
U.S. Cl. 131—329 **2 Claims**



1. In combination with a standard soft cigarette pack wherein cigarettes are housed within an inner wrapper to form a crushable body which is enveloped and sealed within an outer wrapper having a rectangular face, said inner wrapper having a corresponding face which is spaced from the outer wrapper face by the insertion therebetween of a flat, ultra-thin cigarette lighter when the top portion of the outer wrapper is removed to provide access to the cigarettes, whereby the inserted lighter then functions as a stiffener to resist crushing of the pack without substantially altering the overall dimensions thereof, said lighter comprising:
A a shallow generally rectangular container having a card format molded of synthetic plastic material to provide a reservoir which is filled with a liquefied gas that subjects the container to high internal pressure, said container having front and rear walls defined by parallel plates which are joined together by ribs to resist the pressure produced by the liquefied gas, said container having a width approaching the width of said wrapper faces, a length that is somewhat shorter than that of the wrapper faces and a thinness which allows insertion of the container in the space between said wrapper faces without distortion of the pack; and
B a lighter assembly mounted on the upper portion of the container and having substantially the same thinness, said assembly including a normally-closed valve whose inlet is coupled to the reservoir, a nozzle communicating with the valve to emit said gas when the valve is opened, a spark generator adjacent said nozzle, said generator, when actuated, producing sparks, and a manually-operated actuator operatively coupled to said valve, whereby when the actuator is operated it acts to open said valve to cause gas to be emitted from said nozzle to be ignited by sparks from the generator.

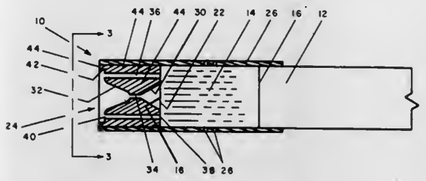
4,517,995
FILTERS FOR POLYNUCLEAR AROMATIC HYDROCARBON-CONTAINING SMOKE
Mark B. Lyles, 1700 S. Third St., Louisville, Ky. 40208
Filed Oct. 23, 1981, Ser. No. 314,424
Int. Cl.³ A24D *3/08, 3/10, 3/12, 3/14*
U.S. Cl. 131—334 **44 Claims**



36. A filter cigarette comprising a tobacco tube and a filter connected to one end of said tube, said filter comprising filtering material for removing particulate matter from tobacco smoke passing therethrough, at least one purine distributed on the surface of said filtering material for removing polynuclear aromatic hydrocarbons from smoke passing through the filter, said filter being substantially devoid of other materials which would mask a substantial part of the purine from contact with the smoke or substantially reduce its removal of polynuclear aromatic hydrocarbons from the smoke.

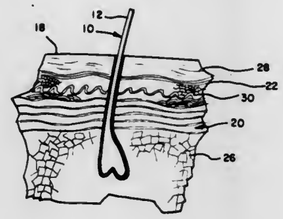
4,517,996
VENTILATED FILTER AND SMOKE DISPERSING MOUTHPIECE
Rudolph P. Vester, Jeffersonville, Ind., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Mar. 25, 1983, Ser. No. 478,758
Int. Cl.³ A24D *3/00*
U.S. Cl. 131—339 **14 Claims**

9. A cigarette comprising:
a tobacco column;
a porous filter rod of generally cylindrical configuration having a smoke inlet end and a smoke outlet end, the filter rod being coaxially located at one end of the filter rod with the inlet end of the filter rod in juxtaposition with the end of the tobacco column;
a smoke and air impermeable mouthpiece of generally cylindrical configuration having a smoke inlet and a mouth end, the mouthpiece being coaxially located with the filter rod and having its smoke inlet end in juxtaposition with the smoke outlet end of the filter rod;
means providing for the flow of ambient ventilating air into the filter rod;
means defining a generally conical converging nozzle in the mouthpiece in open flow communication with the smoke outlet end of the filter rod;
means defining a generally conical diverging nozzle in the



mouthpiece downstream, relative to the direction of smoke flow through the mouthpiece, of the converging nozzle means, the diverging nozzle means having its divergent end open to the mouth end of the mouthpiece;
means defining a smoke flow capillary from the converging nozzle means to the diverging nozzle means; and,
means defining a plurlity of smoke flow capillaries extending generally longitudinally through the mouthpiece, each of the smoke flow capillaries having an open inlet end open to the smoke outlet end of the filter rod and an open outlet end open to the mouth end of the mouthpiece.

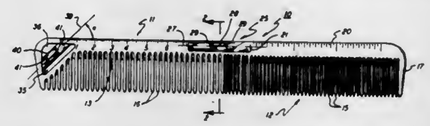
4,517,997
HAIR IMPLANT STRUCTURE
A. Patrick Forchetti, 1412 Wharton St., Philadelphia, Pa. 19146
Filed Dec. 6, 1979, Ser. No. 100,899
Int. Cl.³ A41G *3/00*
U.S. Cl. 132—5 **8 Claims**



1. In a hair implant structure for implanting below the skin surface, the combination of
an elongate, thin, filament of natural or artificial hair, said filiment having a bottom end for implanting into the skin;
an enlargement secured to the filiment at the bottom end thereof; and
an inert coating applied to the bottom end and covering at least the enlargement, said inert coating being the outermost layer in the so-coated portion of the structure.

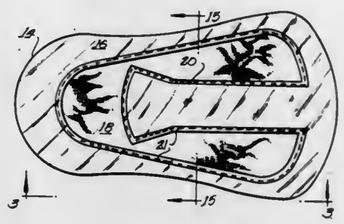
4,517,998
COMB FOR GEOMETRIC HAIR STYLING
Samuel J. Furco, 230 Plymouth Dr., Syracuse, N.Y. 13206
Filed Feb. 27, 1984, Ser. No. 584,129
Int. Cl.³ A45D *24/00*
U.S. Cl. 132—11 R **6 Claims**

1. A combination comb and guide for aiding in the cutting and trimming of hair that includes a generally linear backbone having a series of teeth perpendicularly disposed from the bottom edge of the backbone said teeth being of substantially equal length so that the tips thereof lie in a common plane that is parallel with the top edge of the backbone, an elongated bubble chamber mounted for viewing in the backbone with the axis of the chamber being parallel with the top edge of said backbone whereby the bubble is centered in the chamber when



the top edge is situated in a horizontal plane, said bubble chamber being formed of a transparent material and being recessed below the top edge of the backbone within a slotted opening that is passed downwardly through said top edge of the backbone to permit the bubble to be viewed from the top and either side of the comb.

4,517,999
HAIRPIECE AND METHOD OF MAKING SAME
Paul V. Finamore, 5525 N. Pioneer Ave., Chicago, Ill. 60656
Continuation-in-part of Ser. No. 446,242, Dec. 2, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,310
Int. Cl.³ A41G *5/00*
U.S. Cl. 132—53 **25 Claims**



1. In a hairpiece, the combination comprising a foundation including a one-piece flexible molded plastic sheet member having a shape substantially to conform to the head of a wearer and having a single hole therethrough extending across from about 20 to 60 percent of the area of the foundation for facilitating dissipation of heat and perspiration generated by the wearer, said plastic sheet member including an annular marginal portion and an integral transverse portion partially traversing said hole, reticulate sheet means joined to said flexible plastic sheet member along a margin of said hole and covering said hole, and hairs secured directly to said reticulate sheet means and said plastic sheet member, said foundation plastic sheet member and reticulate sheet means being free of overlying material save for said hairs.

4,518,000
DENTAL FLOSS APPLICATOR
Edward H. Leverette, 10014 S. Union, Chicago, Ill. 60628
Filed Apr. 27, 1983, Ser. No. 489,126
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 A **4 Claims**

1. For use in storing and holding dental floss taut to be applied between the teeth for a flossing operation and advancing the spent floss to provide a fresh supply of clean floss for a next succeeding flossing operation,
a generally hollow container of a size conveniently fitting the hand of an average individual and having a longitudinally extending interior wall separating the container into a clean floss compartment and a spent floss compartment,

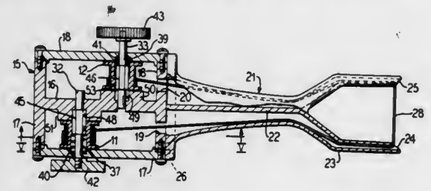
said container having one closed end wall and an opposite end wall having spaced passageways leading therethrough, a hollow arm leading from the passageways leading through the opposite end wall and having separate passaageways leading from and to said last mentioned passageways,

said hollow arm having bifurcated end, in which the furcations thereof extend generally parallel and terminate in the same plane, to accommodate clean floss to be stretched thereacross,

a pay-out reel in said clean floss compartment,

a take-up reel in said spent floss compartment operable independently or simultaneously of said pay-out reel,

whereby clean floss may be paid from said clean floss compartment and along an associated passageway in said end wall to and along an outlet passageway in said hollow arm and along a furcation thereof and across said furcations of said hollow arm and inwardly along the opposite furcation and be wound on said take-up reel and maintained



taut across said furcations by cooperation between said take-up reel and said clean floss reel,

an individual transverse shaft for each reel extending across said casing and rotatably and translationally mounted at their inner ends in said interior wall and extending outwardly of said casing out the outer side walls thereof, keying sockets for said shafts in said inner wall, keying member intermediate the ends of said shafts, movable within said sockets and having slidable and keying engagement with the interior portions of said reels, spring means biasing said shafts into engagement with said sockets to hold said shafts from rotation,

and means selectively operable from the exterior of said container to independently translationally or rotatably move either of said shafts to effect indexing of said shafts to hold said reels from rotation or independently release either or both of said keying members from said sockets to attain independent rotatable movement of either of said shafts and supply and maintain taut clean floss across the

---

4,518,001

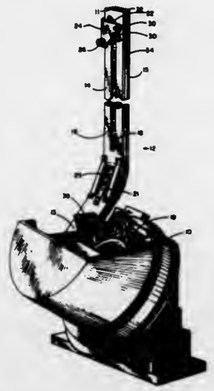
COIN HANDLING APPARATUS

Doud R. Branham, Sparks, Nev., assignor to International Game Technology, Reno, SR 3 03111985 32 05211985 ZZX None 10 1 1 Bartuska; F. J. 1 4 19

Filed Apr. 26, 1982, Ser. No. 371,548
Int. Cl.³ G07D *1/00*
U.S. Cl. 133—5 R **10 Claims**

1. In a coin handling apparatus including a hopper payout assembly and an elongated duct having front and back panels, first and second edge panels, and a channel therein for receiving a stack of coins of a given denomination in single edge-to-edge file, between an inlet and an outlet end, said inlet end of said channel communicating with a payout chute of said hopper, and a single outlet slot in the first edge panel at said outlet end, the improvement comprising:

a coin ejector assembly including an ejector member for forcibly ejecting coins through said outlet slot comprising a roller extending into said channel adjacent the outlet end thereof, and rotatable about an axis substantially normal to said front and back panels and movable between a first position closer to said second edge panel than said first edge panel and off-center relative to the width of said channel in a direction away from said outlet slot and a second position further away from said outlet slot than said first position, and biasing means for urging said ejector member in said first position



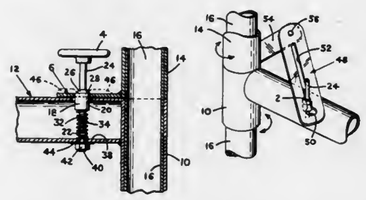
whereby said ejector member urges said coins toward said outlet slot and forcibly ejects them therethrough.

4,518,002

FOLDABLE WALKER WITH PLUNGER ACTUATED LATCH ASSEMBLY

Joseph D. Battiston, Sr., and Joseph Battiston, Jr., both of Clifton, N.J., assignors to Tubular Fabricators Ind., Inc., Passaic, N.J.

Filed Nov. 8, 1982, Ser. No. 440,051
Int. Cl.³ A61H *3/00*; F16C *11/00*
U.S. Cl. 135—67 **14 Claims**



1. A locking assembly for releasably locking two articulated pivoting members in a fixed position with respect to each other, comprising:

A. a spring biased reciprocating latch;

B. a plunger attached to said latch;

C. a catch plate adapted to releasably engage said latch;

D. said spring biased latch reciprocably mounted within a first pivoting member and comprising

a longitudinally extended locking bolt adapted for retractable protrusion from said first pivoting member, a reduced diameter guide rod extending from said locking bolt external to said first pivoting member, and a cam surface located between said locking bolt and said guide rod, and adapted to slidably engage said catch plate;

E. said catch plate mounted external to the second pivoting member and comprising a moveable strip defining a collar at one end thereof adapted to releasably retain said locking bolt, and a closed track communicating with said collar defining an access way for said latch to enter and escape from said collar, and said catch plate pivotally attached to said second pivoting member and also adapted to slide and pivot about said guide rod; and

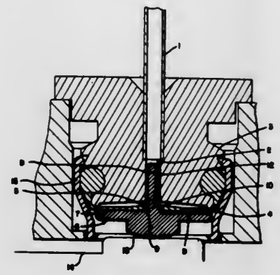
F. said plunger mounted on said guide rod on the free end thereof, to receive and transmit pressure against said locking bolt to urge said locking bolt into the retracted position, for release from said collar.

4,518,003

PRESSURE RESPONSIVE CAP FOR GAS APPLIANCES

Jean-Claude Charron, 14, Ave. du Lac, 94100 Saint-Maur, France

Filed Jan. 24, 1983, Ser. No. 460,388
Claims priority, application France, Jan. 25, 1982, 82 01060
Int. Cl.³ F23D *5/16*
U.S. Cl. 137—65 **14 Claims**



1. A pressure responsive assembly for controlling the supply of gas to a gas appliance having an air bulb adapted to be positioned in the pilot flame of said appliance, a capillary tube (1) connected at one end to said air bulb and at its other end to a channel (2) of a plug and an expansible membrane supported to the plug (3) for controlling the supply of gas to said gas appliance in response to the movement of said membrane between a first and a second position, the improvement comprising an aperture (5) being defined by a rim porting (10) in said membrane (4) and in alignment with the channel (2) of the plug (3), actuating means (6–17) having at least a portion thereof adapted to be received within said channel, said actuating means having a supporting surface being cooperatively associated with said rim portion (10) and being so constructed and arranged so as to enable external air to flow to the interior of said air bulb through the capillary tube (1) by means of said aperture (5) and through said channel (2) when said membrane (4) is in the second position and to seal the air bulb and capillary tube (1) from said external air when said membrane (4) is in the first position.

4,518,004

MULTIFUNCTION VALVE

William W. Hsu, Burbank, and Manfred A. Runkel, Valencia, both of Calif., assignors to HR Textron Inc., Valencia, Calif.

Filed Nov. 21, 1983, Ser. No. 553,601
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—116 **5 Claims**

1. In a hydraulic control circuit for providing flow of fluid under pressure between a source and return thereof to a load responsive to positioning of a control valve the improvement of a combination valve means in a unitary housing interposed between said control valve and said source/return for providing a plurality of functions normally provided by a plurality of separate valves, said valve means comprising:

(A) a housing defining a first bore therein;

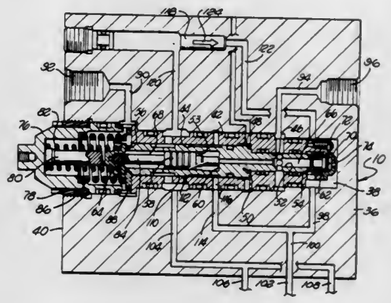
(B) a first spool valve having lands and grooves slidably disposed within said first bore and defining a second bore therein;

(C) a second spool valve reciprocally disposed within said second bore and closing said second bore at a first position;

(D) a first poppet means disposed adjacent one end of said second bore and urged thereagainst to close said second bore at a second position displaced from said first position thereby defining a first closed chamber within said first spool valve between said first poppet and said second spool valve;

(E) first passageway means for connecting said fluid pressure source to said first closed chamber;

(F) a second poppet means disposed adjacent the opposite end of said second bore and urged thereagainst to close said opposite end of said second bore thereby defining a second closed chamber within said first spool valve between said second spool valve and said second poppet, said second spool valve engaging said second poppet means;



(G) second passageway means for connecting said return to said second poppet means;

(H) third and fourth passageway means for connecting said first poppet and said second chamber to said control valve;

(I) said first and second poppets normally blocking communication of said third and fourth passageways with said first and second passageways respectively in the absence of said fluid under pressure and permitting communication therebetween upon the application of fluid under pressure to said first chamber.

4,518,005

GUIDED FLOAT ACCUMULATOR

Murry Allewitz, Houston, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Continuation-in-part of Ser. No. 373,185, Apr. 29, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 471,929
Int. Cl.³ F16L *55/04*
U.S. Cl. 137—207 **2 Claims**

1. A gas-liquid accumulator comprising,

a spherical cast metal housing having top and bottom ports,

said top port adapted to receive a gas charging and release valve,

a circular valve seat in an assembly releasably secured in the bottom port, said seat tapering downwardly and inwardly,

a resilient coating positioned on the valve seat and having a circular ring projecting upwardly,

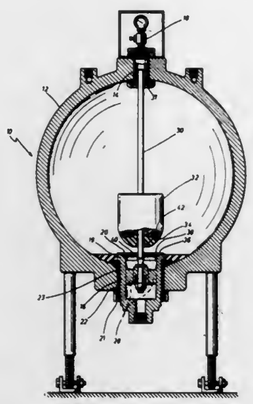
a vertical guide rod connected to the valve seat assembly and extending upwardly in the housing,

a generally cylindrical solid syntactic foam float slidably mounted on the rod, said float having a rounded valve element on the bottom for seating on the valve seat, the diameter of the float being less than the diameter of the bottom port whereby the float may be removed through the bottom port, said valve element including a resilient coating,

said float including a bevel surface on the bottom around the guide rod, and

a seal on the guide rod positioned below the float and posi-

tioned to engage the bevel surface when the valve element is seated on the valve seat for preventing gas from escaping from the accumulator between the float and the guide rod.



4,518,006

BACKFLOW-PREVENTING VALVE

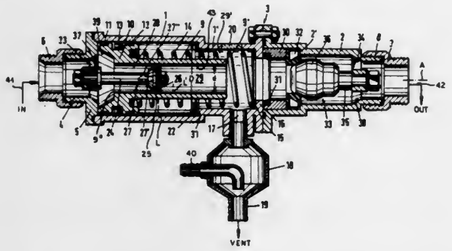
Peter Hoffmann, Bernhaupten, and Walter Evers, Ennepetal, both of Fed. Rep. of Germany, assignors to Lang Apparatebau GmbH, Siegsdorf, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,744

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 8207222[U]

Int. Cl.³ F16K *15/20*

U.S. Cl. 137—218 **7 Claims**



1. A backflow-preventing valve for connection between a normally relatively high-pressure input line and a lower-pressure output line, the valve comprising:

a valve housing forming an upstream chamber and a downstream chamber and having an inlet opening into the upstream chamber remote from the downstream chamber, a vent opening into the upstream chamber offset from the inlet, and an outlet opening into the downstream chamber, the inlet normally being connected to the high-pressure input line, the outlet normally being connected to the lower-pressure output line, and the vent being open to the outside;

means including a check valve in the downstream chamber for allowing flow from the upstream chamber into the downstream chamber and for blocking flow from the downstream chamber into the upstream chamber;

a tubular piston sealingly engaged across the upstream chamber upstream of the vent, formed with a throughgoing bore, and having a downstream end sealingly engageable in the downstream chamber, the piston being movable between an upstream position with its downstream end in the upstream chamber spaced from the downstream chamber and a downstream position with its downstream end engaged sealingly in the downstream chamber and through an intermediate position with its downstream end spaced upstream of the downstream chamber, fluid flow through the bore from the inlet to the vent only being possible in and between the upstream and intermediate positions, fluid flow between the inlet and the vent and between the outlet and the vent being blocked by the piston in its downstream position;

a spring braced between the piston and the valve housing and urging the piston into the upstream position; and

a valve body fixed in the housing and sealingly engageable in the piston bore in and between the intermediate and upstream positions of the piston to subdivide the upstream chamber into an upstream compartment into which the inlet opens and a downstream compartment into which the vent and downstream chamber open, the valve body being spaced from the piston and permitting free fluid exchange between the compartments between the downstream and intermediate positions of the piston, the valve body being formed with a small-diameter bleed passage opening at one side in the upstream compartment and at the other side in the downstream compartment.

4,518,007

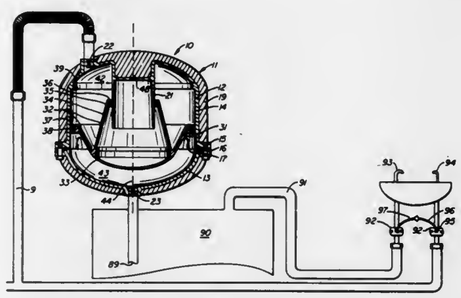
AUTOMATIC HOT WATER RECOVERY SYSTEM

Spencer K. Haws, P.O. Box 315, Mesa, Wash. 99343

Filed Aug. 17, 1983, Ser. No. 524,183

Int. Cl.³ F16K *49/00*; F24H *1/00*

U.S. Cl. 137—337 **9 Claims**



1. A differential pressure reservoir for recovering heat from a hot water system having a backflow of cold water for forcing hot water into a water heater, comprising:

a casing enclosing a cylindrical interior end having first and second water ports for inlet and outlet of water;

a piston slidingly disposed in the cylindrical interior between said first and second water ports and having first and second faces, said first face having an effective area for exposure to water pressure which is smaller than the effective area of said second face, said piston dividing said cylindrical interior into first and second chambers, whereby movement of the piston along a central axis of the cylindrical interior changes the volume of the second chamber formed by said second face of the piston with the larger effective area more than the volume of the first chamber formed by said first face with the smaller effective area; and

valve means for allowing water to flow from the first chamber to the second chamber when the piston is in a position to minimize the volume of the second chamber on the side of the piston with the larger effective area;

said reservoir for mounting in the cold water inlet conduit of said water heater.

4,518,008

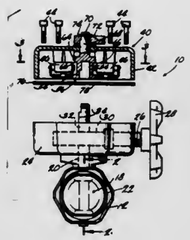
QUARTER TURN VALVE INCLUDING SUPERVISORY SWITCH ASSEMBLY

Abraham S. Fenster, Fox Point, and Lawrence W. Buechler, Franklin, both of Wis., assignors to Milwaukee Valve Company, Milwaukee, Wis.

Filed Jun. 24, 1983, Ser. No. 507,791

Int. Cl.³ F16K *37/00*

U.S. Cl. 137—552 **12 Claims**



1. A quarter-turn valve including

a body having a flow passage extending therethrough;

a valve member disposed in said flow passage and carried on a stem rotatably mounted in said body, said stem having an outer end portion extending outwardly from said body;

operating means connected to said stem for rotating said stem through a quarter turn to open and close said valve member; and

a supervisory switch assembly adapted to be connected to an electrical system for producing a warning signal in response to an unauthorized movement of said valve member or to someone tampering with said switch assembly, said switch assembly including

a housing mounted on said body and enclosing said outer end portion of said stem,

an electrical switch mounted in said housing, said switch being adapted for connection to the electrical system, being movable between one position to close an electrical circuit and another position to interrupt an electrical circuit, and having an actuation means for moving said switch from one position to the other in response to being engaged,

cam means mounted on said outer end portion of said stem for common rotation therewith and arranged to selectively engage said switch actuation means, in response to rotational movement of said stem, to cause movement of said switch from one position to the other; and

tamper means for causing movement of said switch from one position to the other in response to someone tampering with said housing.

4,518,009

DEVICE FOR FUEL TANKS FOR CARS

Wolfram Schiemann, Eugen-Nagele-Strasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,322

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225351

Int. Cl.³ B67D *5/00*

U.S. Cl. 137—571 **10 Claims**

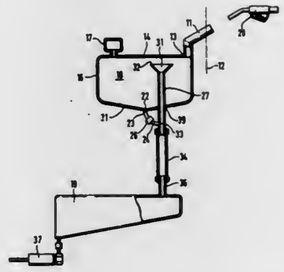
1. Device for a fuel tank for a car having a main fuel tank, comprising an inlet to said main tank, a filling tube for filling said main tank located above said inlet to said main tank, ventilation box, and a piping system leading from said filling tube to said main tank, wherein the improvement comprises:

(a) a reserve tank being located within said piping system and above said inlet to said main tank, said reserve tank having an upper wall and a wall with an opening therein, said reserve tank communicating with said filling tube for filling said main tank,

(b) a pipe protruding into said reserve tank, having at one end an upwardly open upper rim, whereby the height of said upper rim determines the volume of gasoline reserve inside said reserve tank, said pipe travelling via said opening through said wall of said reserve tank, said pipe forming at its other end said inlet to said main tank,

(c) said ventilation box being located at a point above said upper wall of said reserve tank, and

(d) means operable for releasing fuel in said reserve tank into said main tank comprising



a by-pass hose which by-passes said opening, having an upper end which leads into a wall area of said reserve tank, and a lower end which leads to a point downstream of said opening, and

a valve provided on said by-pass hose which when open allows fuel in said reserve tank to flow to said main tank, said valve having opening and closing means, which automatically re-adjust to a closed position.

4,518,010

PRESSURE CONTAINER FOR TWO HYDRAULIC CIRCUITS

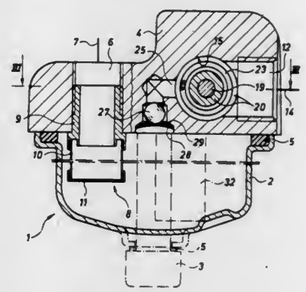
Norbert Mucheyer, Rechtenbach, and Heinz Schulte, Marktheidenfeld, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,625

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1982, 3201790

Int. Cl.³ F16K *24/00*; F16D *31/02*

U.S. Cl. 137—587 **8 Claims**



1. An after-suction pressure fluid container for two hydraulic circuits, particularly for a steering circuit and a control circuit, comprising a lower hollow housing portion and an upper cover closing said housing portion; a suction tube inserted into said housing portion and connectable to one of said hydraulic circuits; first connection means in said cover and connectable to the other of said circuits; second connection means in said cover and connectable to a pressure fluid supply container; a pressure-limiting valve connected to said second connection means and operated so that the pressure fluid con-

tainer during operation is under predetermined pressure; filter means mounted in said cover and immediately before said first connection means; said pressure-limiting valve being connected to said second connection means; and a check valve which opens into an interior of said housing portion, said pressure-limiting valve and said check valve being mounted in said cover.

4,518,011

CONTROL VALVE UNIT FOR THE CYLINDER OF A FLUID ACTUATOR

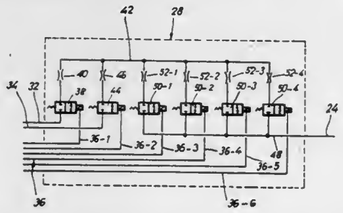
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,167

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130056

Int. Cl.³ F15B *11/04;* **F16K** *31/02*

U.S. Cl. 137—596.17 **17 Claims**



1. A valve arrangement for selectively providing fluid communication between a working chamber of a fluid actuated cylinder and a selected one of a pressurized fluid source and a fluid sink, comprising: a first valve mechanism which includes a plurality of two-way, two-position electromagnetic first valves which are connected in parallel with each other and which each include and control fluid flow through a respective throttled flow path; a second valve mechanism which includes second and third two-way, two-position electromagnetic valves which each have a first port which is in fluid communication through a distributor line with a first port of each said valve of said first valve mechanism and which each have a second port adapted to be connected to a respective one of the fluid source and fluid sink; and control circuit means for selectively actuating said valves, said control circuit means actuating only one of said valves of said second valve mechanism at any given time; wherein said valves of said first valve mechanism each have a second port adapted to be connected to a port of the fluid actuated cylinder; and wherein all of said valves are structurally identical and are parts of a single valve cartridge; whereby a piston movably supported in the working chamber of the cylinder moves at a speed which can be regulated by selectively actuating said valves of said first valve mechanism.

4,518,012

AIR DAMPER ASSEMBLY WITH MOVABLE BLADES

Robert J. O'Hara, P.O. Box 2129, Glenview, Ill. 60025

Continuation-in-part of Ser. No. 410,560, Aug. 23, 1982,. This application Aug. 12, 1983, Ser. No. 522,784

Int. Cl.³ F24F *13/16*

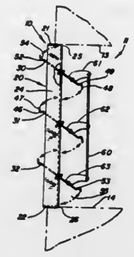
U.S. Cl. 137—601 **29 Claims**

1. An air damper assembly comprising the combination of

a frame adapted to be mounted on the walls of an air flow passageway and having flanges extending inwardly from at least one pair of opposed sides thereof, said flanges forming pairs of opposed slots,

a plurality of elongated damper blades each of which has its opposite ends extending into a pair of said opposed slots so that the blade is pivotally supported on said flanges for pivoting movement between open and closed positions, and

a pair of retaining stop means associated with each end of each blade, said retaining stop means projecting outwardly from opposite sides of the blade and on opposite sides of each of said flanges for limiting pivoting move-



ment of the blade to an open position and for retaining the blade in the respective slots in said flanges.

4,518,013

PRESSURE COMPENSATING WATER FLOW CONTROL DEVICES

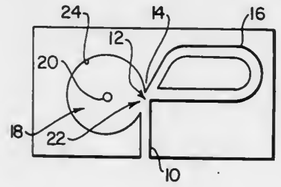
John H. Lazarus, 7 Ohlsson Way, Newlands, Cape Town, Cape Province, South Africa

Filed Nov. 29, 1982, Ser. No. 444,977

Claims priority, application South Africa, Nov. 27, 1982, 81/8267

Int. Cl.³ F15C *1/16*

U.S. Cl. 137—811 **11 Claims**



1. A pressure compensating, water flow control device comprising an inlet leading into an inlet zone, a first flow path in the form of closed loop both ends of which communicate with said inlet zone, and a second flow path leading from said inlet zone and comprising a vortex chamber, there being an outlet from the vortex chamber, the first and second flow paths being discrete so that water entering the first flow path can only reach the second flow path by flowing entirely around said closed loop and re-entering the inlet zone, first walls bounding the inlet, second walls bounding an inlet end of the closed loop and third walls bounding an outlet end of the closed loop, the first and third walls being transverse to one another so that water emerging from the loop intersects water flowing across the inlet zone from said inlet to the inlet end of the closed loop, there being a flow splitter for directing a portion of the incoming water into the first flow path and a further portion into the second flow path.

4,518,014

RELIEF VALVES FOR SANITATION SYSTEMS OR THE LIKE

James E. McAlpine, Glasgow, Scotland, assignor to McAlpine & Co., Ltd., Glasgow, Scotland

Filed Feb. 19, 1982, Ser. No. 350,545

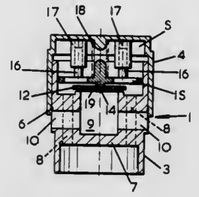
Claims priority, application United Kingdom, Feb. 21, 1981, 8105546; Apr. 22, 1981, 8112503

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—843 **9 Claims**

1. A relief valve comprising a valve body defining a valve

chamber therein, an air inlet interconnecting the valve chamber and the exterior of the valve body and defining a single continuous valve seat within the valve chamber, a freely flexible substantially air-impermeable valve element normally disposed with a sealing face thereof in resilient, conforming engagement with the valve seat to prevent inflow of air into the valve chamber through the air inlet, a rigid support member, means mounting said flexible valve element to said support



member with the face of the valve element opposite to said sealing face positioned in confronting, spaced relation to one face of said support member; and guide means including means on said support member and coacting means on said valve body for assisting the valve element into sealing engagement with the valve seat, and at least one aperture adapted to interconnect the valve chamber with a system into which the valve is fitted.

4,518,015

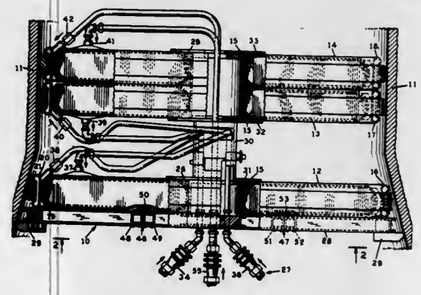
INFLATABLE PLUG

William H. Fischer, Wingdale, N.Y., assignor to The Presray Corporation, Pawling, N.Y.

Continuation of Ser. No. 351,905, Feb. 24, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,145

Int. Cl.³ F16L *55/12*

U.S. Cl. 138—93 **10 Claims**



1. An inflatable plug for interrupting fluid flow in a pipe, comprising

(a) a substantially hollow, inflatable plug body;

(b) said plug body being formed from first and second opposed walls defining a cavity-forming chamber between them;

(c) said walls being formed from a flexible, impermeable material,

(d) said plug body having a closed surface;

(e) a plurality of thread-like, flexible, generally inelastic connector elements, each secured at one end to said first wall and at the other end to said second wall and extending generally perpendicular to said walls through the cavity of the chamber formed between said walls;

(f) said ends of said connector elements being secured to said walls in a finely distributed pattern over substantially the entire surfaces of the walls;

(g) whereby said connector elements prevent the walls of the plug body, when inflated, from separating from each other a distance greater than the length of said connector elements;

(h) an inflatable annular ring seal of flexible, impermeable material being affixed to and extending circumferencially around said hollow, inflatable plug body;

(i) said ring seal, when inflated, being arranged and configured to be in a leak tight sealing contact with the interior wall of the pipe, and

(j) an inflation system connected to each of said hollow, inflatable plug body and said inflatable ring seal;

(k) said inflation system being operable to selectively, individually inflate and deflate each of said plug body and said ring seal.

4,518,016

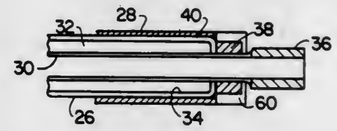
HOT MELT ADHESIVE HOSE CUFF

Robert G. Baker, Buford, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Jul. 8, 1983, Ser. No. 512,157

Int. Cl.³ B65D *59/00*

U.S. Cl. 138—96 R **3 Claims**



1. A hose cuff for a hot melt hose of the type having a rigid connector on at least one end thereof, said hose cuff comprising a cylindrical body open at both ends to receive one end of a hot melt hose, said body having an annular, external channel contained therein adjacent one of said ends and including a pair of oppositely disposed protrusions within said channel thereby dividing said channel into two semicircular sections, and a collar divided into two halves and having a rim thereon receivable within said channel of said body such that relative axial and rotational movement between said collar and said body is prevented, said collar further including means for engaging the rigid connector so as to prevent relative rotational movement between the hose and said collar and means for fastening said halves together so that said collar is fixed to said cylindrical body.

4,518,017

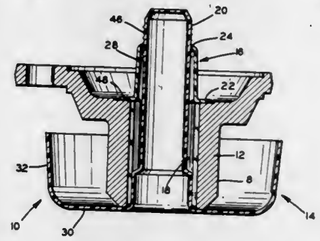
PROTECTIVE COVER ASSEMBLY

Erin D. Hennon, Lima, and Robert G. Joyner, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 16, 1983, Ser. No. 562,265

Int. Cl.³ F16L *57/00;* **B65D** *85/06*

U.S. Cl. 138—96 R **10 Claims**



1. A protective cover assembly comprising a cover having an axially extending annulus disposed for overlying an external surface of a tubular member, a radially extending annulus supporting said axially extending annulus, an elongate projection comprising an integral portion of said radially extending

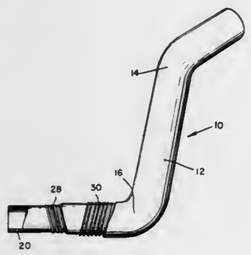
annulus and disposed for extending into the bore of said tubular member, said axially extending annulus overlying said elongate projection and adapted to cover a portion of said tubular member, said assembly further comprising a retainer for maintaining said cover in position with respect to said tubular member, said retainer comprising a support flange for engaging one end of said tubular member, and means for gripping said elongate projection comprising flexible segments on said retainer, said segments extending radially inwardly for engagement of said projection by said retainer.

4,518,018

REINFORCED FORMED HOSE

Thomas A. Kutnyak, Greenwood; George T. Dunn, and Chester L. Guiles, both of Abbeville, all of S.C., assignors to Automation Industries, Inc., Greenwich, Conn.

Continuation of Ser. No. 770,696, Feb. 22, 1977, abandoned.
This application Jun. 2, 1980, Ser. No. 155,358
Int. Cl.³ F16L *11/12*
U.S. Cl. 138—130 **6 Claims**



1. A permanently shaped, deformable reinforced hose formed with at least one curved portion, comprising:

a first, innermost layer formed along an axis by a strip of elastomer helically wound edge to edge in a non-overlapping manner to form an essentially smooth and unbroken surface;

a second, reinforcement layer formed by a plurality of spaced, parallel reinforcing strands helically wrapped around said first, innermost layer oppositely with respect to the direction of wrap of said first, innermost layer at an angle from about 20 degrees to about 30 degrees with respect to the perpendicular to the axis of said first, innermost layer; and

a third layer formed by a strip of elastomer helically wound over and around said second, reinforcement layer,

each of said layers being bonded together by heat curing into a single, monolithic structure which can be slidably removed from a mandrel without causing any substantial separation of said reinforcing strands from the adjacent layers.

4,518,019

LUBRICATOR FOR A WEFT PICKING ELEMENT IN A WEAVING MACHINE

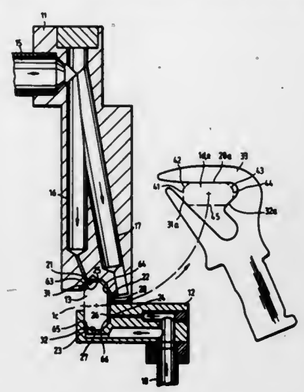
Otto Hintsch, Wallisellen, and Gerd Schmitz, Sulz-Attikon, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 16, 1983, Ser. No. 523,418
Claims priority, application European Pat. Off., Aug. 26, 1982, 82810354.9
Int. Cl.³ D03J *1/00*
U.S. Cl. 139—1 R **17 Claims**

1. A lubricator for a weaving machine comprising

means defining a guide passage outside a shed of warp yarns having a plurality of guide surfaces for receiving a weft picking element with a plurality of complementary surfaces thereon;

a plurality of lubricant supply nozzles communicating with selected ones of said guide surfaces for delivering lubricant thereto to lubricate complementary surfaces on a



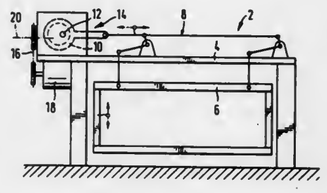
received picking element to be guided in said shed; and at least one lubricant supply duct for supplying a lubricant oil mist to said nozzles.

4,518,020

DRIVE ASSEMBLY FOR PRODUCING A NONUNIFORM OUTPUT FROM A UNIFORM INPUT

Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

Filed Oct. 24, 1983, Ser. No. 544,613
Claims priority, application Switzerland, Oct. 26, 1982, 6251/82
Int. Cl.³ D03C *13/00*; F16H *35/02*
U.S. Cl. 139—55.1 **7 Claims**



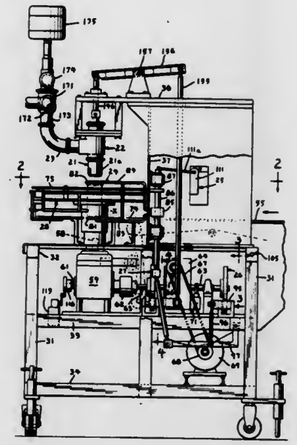
1. A drive assembly for producing a nonuniform power output from a uniform input drive, particularly for use for a shedding mechanism of a weaving machine, comprising: a drive member having a relatively uniform power input; an output shaft driven by said drive member; a pair of crankshafts offset relative to each other by 180° connected to be driven by said drive member; a pair of journals supported at two bearing positions on said output shaft and having said crankshafts supported therein; a planet wheel mounted on each of said crankshafts; a stationary sun gear arranged with said planet wheels in meshing engagement therewith; and a twin-armed rocker member connected to be driven by said crankshaft for driving said output shaft.

4,518,021

MACHINE FOR FILLING CONTAINERS

Gordon A. Copas, Rockford; Howard C. Wilke, Belvidere, and Dennis A. Dykema, Rockford, all of Ill., assignors to APV Anderson Bros. Inc., Rockford, Ill.

Filed Feb. 3, 1984, Ser. No. 576,813
Int. Cl.³ B65B *43/58*
U.S. Cl. 141—172 **7 Claims**



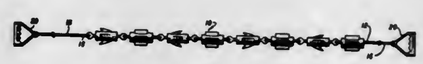
1. A machine for filling containers with a viscous product to a preselected fill level below the top of the container comprising, a downwardly extending nozzle at a filling station having a lower discharge end dimensioned to telescopically receive an upper portion of the container and a downwardly opening discharge outlet in the lower discharge end, a product supply conduit, valve means for controlling flow of product from the supply conduit to the discharge outlet, container elevator means at the filling station including a container support platform and a yoke member spaced above the platform a distance sufficiently greater than the height of the container to allow a container to be moved horizontally into and out of a fill position on the platform and below the yoke member, elevator drive means for moving the elevator means vertically from a lower elevator position in which the container support platform is spaced below the discharge end of the nozzle a distance substantially greater than the height of the container to a raised elevator position in which the container support platform is spaced below the lower discharge end of the nozzle a distance substantially less than the height of the container to raise a container on the platform into at least partial telescoping relation with the nozzle, the yoke member having a downwardly facing container engaging surface arranged to engage the upper edge of a container when the yoke member is moved downwardly, the yoke member in the lower elevator position having said container engaging surface positioned below the lower discharge end of the nozzle and the yoke member being constructed and arranged to move alongside the nozzle when moved to the raised elevator position, means operated in timed relation with movement of the container support platform to its raised elevator position for operating the valve means to an open position to deliver product to the discharge outlet, means yieldably opposing downward movement of the container support platform from its raised elevator position toward its lower elevator position to allow the container on the platform to move downwardly under the weight and pressure of the product entering the container from the discharge nozzle, means for sensing when the container support platform moves downwardly from the raised elevator position to an intermediate elevator position in which the discharge end of the nozzle is adjacent said preselected fill level in the container, means actuated by said sensing means when the container support platform moves down to said intermediate elevator position for operating said valve means to a closed position shutting-off delivery of product to the discharge outlet and for operating said elevator drive means to positively move said elevator means from said intermediate elevator position to said lower elevator position, said yoke member being constructed and arranged to engage the upper end of the container on the nozzle when the elevator is moved downwardly from said intermediate position to move the container downwardly off the nozzle, container transfer means operated in timed relation with movement of the elevator means to its lower position to advance a filled container along a generally horizontal filled container discharge path off the container support platform and to advance an empty container along a generally horizontal container infeed path onto the container support platform.

4,518,022

OSCILLATING CUTTING ELEMENT

Guillermo A. Valdes, 4350 NW. 8 Ter., Apt. 3, Miami, Fla. 33126; Benjamin G. Pacheco, 1090 W. 69 Pl., Hialeah, Fla. 33014; Fernando F. Figueredo, 524 Ridgewood Rd., Key Biscayne, Fla. 33149, and Armando Framil, 45 SW. 28 Rd., Miami, Fla. 33129

Filed Sep. 29, 1982, Ser. No. 427,837
Int. Cl.³ B27B *21/00*
U.S. Cl. 30—166 R **1 Claim**



1. A flexible cutting element fabricated from a plurality of chain links with tubular cutting units rigidly attached to each chain link, said cutting units each having a plurality of cutting teeth protruding upwardly from the body of the cutting units and disposed at intervals in a complete circle around the periphery of each cutting unit, wherein said cutting units are fabricated in two distinct forms with,

(a) a first type of cutting unit fabricated with saw type cutting teeth configuration such that:

(i) each cutting tooth contains a front cutting end protruding upwardly from the periphery of said cutting unit,

(ii) the body of said cutting tooth then slopes downward to a back end which terminates at the same level as that of the base of the cutting unit,

(iii) said front end of said cutting tooth being of a predetermined width and having a sharp cutting edge,

(iv) said front cutting end fabricated with its sharp cutting edge slanted backwards at a predetermined angle to allow for the dislodging of cut wood particles,

(b) a second knifing type cutting unit fabricated with:

(i) a plurality of sharp, knife configured edges protruding upwardly from the body of said cutting unit and spaced at predetermined intervals in a complete circle around the periphery of said cutting unit,

(ii) said knife configured edges protruding upwardly and extending in a straight line at the same predetermined height from a first front end to the back second end of said cutting unit,

(c) the sawing type and knifing type cutting units attached to the chain links of the cutting element in a way such that,

(i) each type of cutting unit is alternately attached to alternating chain links of the chain with the sawing type units attached first then a knifing type cutting unit attached second, followed again by another sawing type and knifing type cutting units thereby continuing to alternate each type of cutting unit as they are attached to the cutting element,

(ii) the sawing type cutting units further aligned in such a way that the direction of cutting of one saw type cutting unit is opposite from the direction of cutting of the next saw type cutting unit, and these are continued to alternate as they are attached to the cutting element chain

links so that when an oscillating force is imparted on the cutting element, half of the saw type cutting units will cut in one direction and the other half will cut in the opposite direction.

4,518,023

PNEUMATIC TIRE

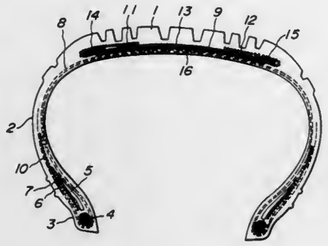
Yutaka Yamaguchi, Tokorozawa; Nobuyuki Koizumi, Higashimurayama; Masami Hirano, Kodaira; Tamio Araki, Fuchu, and Koichi Kojima, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

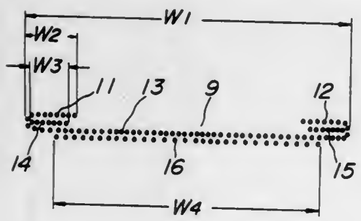
Filed Apr. 7, 1983, Ser. No. 483,034

Claims priority, application Japan, Jun. 4, 1982, 57-83218[U]

Int. Cl.³ B60C *9/20, 9/22*

U.S. Cl. 152—361 FP **4 Claims**





1. A pneumatic tire comprising; a tread, a pair of sidewalls and a pair of bead portions, a carcass consisting of at least one layer of rubber coated cord ply whose organic fiber cords are arranged in parallel with each other in substantially radial surfaces of the tire, a belt comprising a rubber coated metal cord main layer folded at least at one edge, whose metal cords are arranged in parallel with each other at relatively small angles with respect to an equatorial line of the tire for reinforcing a body of the tire, said belt further comprising at least one reinforcing layer of at least one rubber coated layer arranged inside of and in substantially intimate contact with the folded edge of said rubber coated metal cord main layer of said belt and having a width of W_3 of 10–35% of an overall width of said belt, cords of said reinforcing layer being made of a thermocontracting organic fiber and being in parallel with each other at angles of 0° or near 0° with respect to the equatorial line of the tire, and an auxiliary layer arranged radially innermost in the belt and having a width less than the overall width of said belt between the folded edges of the belt, said auxiliary layer having metal cords arranged in parallel with each other and at substantially the same angles with respect to the equatorial line but in directions different from those of the rubber coated metal cord main layer, and elongations of said cords in said main, reinforcing and auxiliary layers subjected to 5 kg tensile load are progressively larger in the order of the auxiliary, main and reinforcing layers.

4,518,024

PNEUMATIC RADIAL TIRE HAVING AN IMPROVED DURABILITY IN THE RUNNING ON BAD ROAD

Tamotsu Matsunuma, Higashimurayama, Japan, assignor to Bridgestone Tire Company Limited, Japan

Filed Feb. 7, 1984, Ser. No. 577,921

Claims priority, application Japan, Apr. 27, 1983, 58-73058

Int. Cl.³ B60C *9/20*

U.S. Cl. 152—361 DM **3 Claims**

1. A pneumatic radial tire having improved durability in the running on bad road, comprising; a carcass composed of at least one rubberized cord ply containing cords arranged substantially perpendicular to the equatorial plane of the tire, and a belt superimposed around the crown portion of the carcass and composed of at least two rubberized cord layers each containing cords inclined at a relatively small angle with respect to the equatorial plane of the tire, the cords of which being crossed with each other, wherein the outermost layer of said belt contains steel cords of a layer construction or single strand construction having good rubber penetration and a flexural rigidity lower than the cords of the remaining layer(s) and arranged at a higher end count than the cords of the remaining layer(s), said higher end count corresponding to a distance between cords of 0.2–0.8 mm.

4,518,025

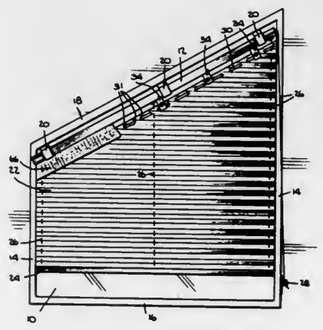
SUN BLIND CONSTRUCTION

Ren S. Judkins, Salt Lake City, Utah, assignor to Verosol USA Inc., Pittsburgh, Pa.

Filed Nov. 10, 1983, Ser. No. 550,598

Int. Cl.³ E06B *3/94*

U.S. Cl. 160—84 R **18 Claims**



1. A sun blind operable between an open and a closed position for an opening having upper and lower edges, at least one of said edges being disposed, at least in part, at other than the horizontal, comprising:

first rail means disposed adjacent said upper edge of said opening conforming to the outline of said upper edge;

second moving rail means disposed adjacent the lower edge of the opening when the sun blind is in the closed position conforming to the outline of the lower edge;

a sun blinding member disposed between said first and second rail means, said sun blinding member conforming to the outline of said edge disposed at other than the horizontal and having a plurality of spaced openings disposed substantially adjacent said edge;

means conforming to the outline of the edge disposed at other than the horizontal, said means disposed through said plurality of spaced openings for retaining said sun blinding member;

means for attaching said retaining means to said rail means disposed adjacent the edge disposed at other than the horizontal; and

means for moving said second rail means to raise and lower said sun blinding member.

4,518,026

ENERGY EFFICIENT GARAGE DOOR CONSTRUCTION AND THE LIKE

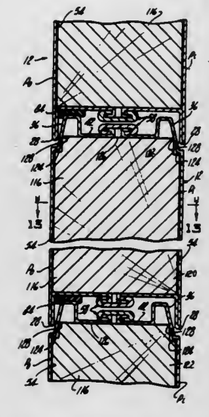
Ronald F. Otto, and John J. Kempel, both of West Branch, Mich., assignors to Garland Manufacturing Co., West Branch, Mich.

Continuation-in-part of Ser. No. 168,537, Jul. 14, 1980, Pat. No. 4,379,480. This application Mar. 28, 1983, Ser. No. 479,741

The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.

Int. Cl.³ E06B *3/12, 9/00*

U.S. Cl. 160—232 **1 Claim**



1. An energy efficient laminated building structure for a sectional-type door having a plurality of said structure and hinges movably connecting adjacent structures and permitting rocking movement therebetween, comprising:

first and second spaced, elongated metal panel members of identical cross-sectional shape, each panel member having a main surface and first and second side edges;

said first side edges of said panel members being formed to provide a recessed area and said second side edges of said panel members being formed to provide a tongue area, said tongue area being insertable in said recessed area of an adjacent structure to create a baffle effect for inhibiting the passage of air therebetween, while also providing a clearance between said tongue and recess areas sufficient to permit limited relative movement between adjacent structures;

each of said first side edges including a return bend portion adjacent said main surface, an inwardly projecting portion extending from said return bend portion and a reverse bend portion extending from said inwardly projecting portion;

each of said second side edges including an inwardly offset and inclined portion adjacent said main surface, a U-shaped portion extending from said inwardly offset and inclined portion, an inwardly projecting portion extending from said U-shaped portion and a reverse bend portion extending from said inwardly projecting portion;

a pair of wooden stile members, each disposed between and at opposite ends of said panel members and adhesively bonded thereto;

a unitary expanded core fabricated of a heat insulating media interiorly disposed between said wooden stile members and said panel members and adhesively bonded to said panel members, the reverse bend portions on the first side edges being spaced from each other, and the reverse bend portions on the second side edges being spaced from each other and together with said expanded core the said spaced reverse bend portions acting to prevent direct contact between the first and second panel members;

retainer means operatively associated with said reverse bend portions of said first and second side edges for securing said first and second panel members together along said first and second side edges; and

reinforcement means of generally C-shaped cross-section, nestingly received and secured interiorly of said panel members along said first and second side edges, for reinforcing said panel members at said hinges;

said retainer means being characterized by a plurality of alternately facing generally L-shaped deformable finger formed in said reinforcement means for confining said reverse bend portions of said first and second side edges.

4,518,027

MOLD ADAPTED TO HOUSE ELECTROMAGNETIC STIRRER COIL FOR CONTINUOUS CASTING EQUIPMENT

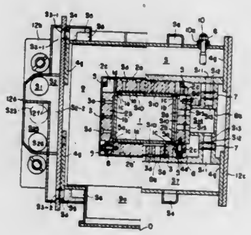
Futoshi Kamei, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 248,209, Mar. 27, 1981, abandoned. This application Feb. 6, 1984, Ser. No. 576,806

Claims priority, application Japan, Mar. 29, 1980, 55-40728

Int. Cl.³ B22D *11/04*

U.S. Cl. 164—435 **5 Claims**



1. A mold for continuous casting of a magnetic metal, said mold comprising:

(a) a thin copper mold wall in the form of a quadrangular prism formed of four planar copper plates, two opposing ones of said four planar copper plates having flange-shaped projections extending perpendicularly from the ends of said two opposing ones of said four planar copper plates in facing relationship and the other two of said four planar copper plates, which are also in opposing relationship to one another, abutting against the end surfaces of said flange-shaped projections;

(b) a backup piece in the form of four backup plates fastened together at their sides, said backup piece being formed of a non-magnetic material serving to support said thin copper mold wall, a backup portion of a first two of said four backup plates abutting and giving direct planar support to said two opposing ones of said four planar copper plates and being slightly shorter than said two opposing ones of said four planar copper plates and a second two of said four backup plates abutting and giving direct planar support to said other two of said four planar copper plates and to the outer edges of said flange-shaped projections on said two opposing ones of said four planar copper plates, said second two of said four backup plates overlapping the ends of said first two of said four backup plates in engaging relationship;

(c) passageways for a cooling medium between said thin copper mold wall and said backup piece;

(d) a clamping piece in the form of a pair of clamping frames for clamping said backup piece against said thin copper mold wall;

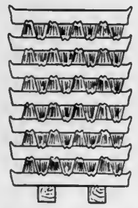
(e) an electromagnetic stirrer coil located between said backup piece and said clamping piece;
(f) fastener bolts mounted on each end of each backup plate for fastening each adjacent pair of said backup plates together, each bolt having spring means which allows for limited movement of each of said backup plates perpendicularly to each of the adjacent ones of said backup plates; and
(g) tie rods having spring means for fastening said clamping frames together so as to allow for limited movement of said clamping frames relative to each other.

4,518,028

PROCESS AND APPARATUS FOR OBTAINING STACKABLE AUTO-CLAMPING BLOCKS

Francois Bucourt, St. Jean de Maurienne, France, assignor to Aluminium Pechiney, Lyons, France

PCT No. PCT 1 FR 81/00055, § 371 Date Nov. 19, 1981, § 102(e) Date Nov. 19, 1981, PCT Pub. No. WO 81/03135, PCT Pub. Date Nov. 12, 1981
This PCT application filed Apr. 24, 1981, Ser. No 325,433
Claims priority, application France, Apr. 28, 1980, 80 10116
Int. Cl.³ B22D *11/12, 11/126*
U.S. Cl. 164—460 **7 Claims**



1. A process for forming stackable autoclamping blocks from metal blocks of constant section comprising providing a rough-cast blank of a continuous casting machine of the grooved-wheel type, said blank defining lateral faces and top and bottom faces, periodically connecting the blank solidly to an apparatus for dividing it into blocks, characterized by the steps of progressively pinching the blank on its lateral faces in order to form depressions in the lateral faces, and to develop on at least one of the top and bottom faces at least one projection rising above the plane of the one face to the height of the order of 1/10 of the height of the blank, and then cutting the blank across the depression and through the medial plane of the projection to form individual blocks, and having a portion of said projection adjacent the respective ends of the individual blocks.

4,518,029

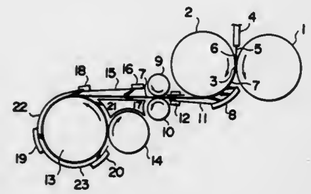
METHOD OF AND APPARATUS FOR PRODUCING THIN METALLIC SHEET BY RAPID COOLING

Kiyoshi Shibuya; Takahiro Kan, and Yo Ito, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Nov. 26, 1982, Ser. No. 444,518
Claims priority, application Japan, Dec. 4, 1981, 56-195789
Int. Cl.³ B22D *11/00, 11/06, 11/124*
U.S. Cl. 164—463 **8 Claims**

1. A double roll type method of producing a thin sheet by rapid cooling, comprising the steps of:
pouring molten metal into a kissing region between a pair of cooling rolls rotating in opposite directions;
rapidly cooling and solidifying the molten metal into a thin sheet while said molten metal passes through said kissing region;
applying a cooling gas to the thin sheet coming out of said kissing region to further cool the thin sheet and to deflect the thin sheet towards a surface of one of said cooling rolls so as to bring the thin sheet in contact with said surface of said one of said cooling rolls; and
imparting a tension to the thin sheet by a pair of pinch rolls disposed at a downstream side of a position of application of said cooling gas, whereby the thin sheet is kept in close contact with said surface of said one of said cooling rolls over a predetermined region in a circumferential direction of said surface.

3. A double roll type apparatus for producing a thin sheet by rapid cooling, comprising:
a pair of cooling rolls rotating in opposite directions forming a kissing region between said cooling rolls wherein a molten metal is poured into said kissing region and the molten metal is rapidly cooled and solidified to become a thin sheet as it passes through said kissing region;



a gas applying header disposed downstream from and in the vicinity of said kissing region to apply a cooling gas to a surface of said thin sheet so as to deflect said thin sheet towards one of said cooling rolls; and
a pair of pinch rolls disposed downstream from said gas applying header, said pinch rolls rotating in synchronism with said cooling rolls thereby to impart a tension to said thin sheet, whereby said gas applying header and said pinch rolls cooperate with each other in deflecting said thin sheet into close contact with the surface of said one of said cooling rolls over a predetermined region in the circumferential direction of said cooling roll, thereby to further cool said thin sheet rapidly.

4,518,030

MULTI-TURN COILS OF CONTROLLED PITCH FOR ELECTROMAGNETIC CASTING

Gerhart K. Gaule, Elberon, N.J.; John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

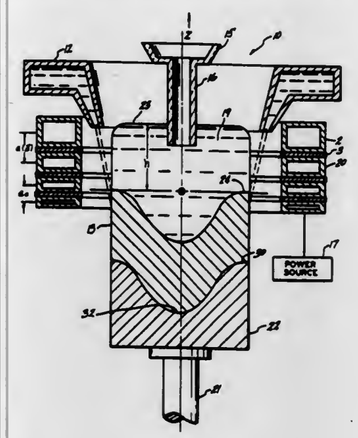
Continuation of Ser. No. 193,852, Oct. 3, 1980, abandoned, which is a continuation of Ser. No. 009,429, Feb. 5, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,631
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—503 **12 Claims**

1. In an apparatus for electromagnetically casting molten material into an ingot of desired shape comprising:
means for receiving and electromagnetically containing and forming said molten material into said ingot, the improvement wherein:
said means for receiving and electromagnetically containing and forming said molten material comprises a variable-pitch multi-turn inductor,
said inductor comprising at least three individual turns arranged in a stacked relationship with each turn being oriented parallel to each other such that the center line through the mid-point of each turn is substantially perpendicular to the longitudinal axis through the inductor in the direction of casting;
said at least three individual turns further arranged with the pitch between said turns having a value of $a_{(z)}$ defined substantially by the formula:

$$a_{(z)} = a_o\sqrt{\frac{h-z}{h}}$$

wherein

$a_{(z)}$ = the pitch or spacing between inductor turns at a height z above the solidification interface
a_o = the pitch or spacing between inductor turns at the solidification interface
h = the total molten material head
z = the height above the solidification interface;



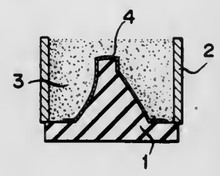
said individual turns being electrically connected in series and being spaced apart from each other by individual insulating spacers whereby an electromagnetic field is generated being substantially uniform in a transverse direction and non-uniform in a longitudinal direction.

4,518,031

METHOD FOR MAKING MOLDS

Akio Yamanishi, and Kanichi Sato, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,767
Int. Cl.³ B22C *1/22, 9/00*
U.S. Cl. 164—526 **3 Claims**



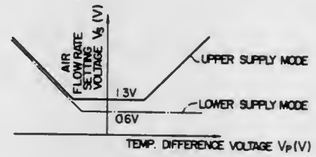
1. A method for making a mold, comprising the steps of:
forming a pattern with a material which allows microwave radiation to pass therethrough;
coating said pattern with a liquid facing agent by dipping or spraying, said liquid facing agent including a dielectric material to microwave radiation, 5–20 parts by weight of a thermosetting resin based on 100 parts by weight of refractory material powders, and refractory material powders;
covering said coated pattern with a molding material including a thermosetting resin and dielectric material to microwave radiation, the dielectric material containing therein at least one substance selected from the group consisting of iron oxide, graphite and magnetite;
exposing said molding material covered pattern to microwave radiation for a time sufficient to harden said molding material by heat generated therein; and
separating said pattern from said hardened molding material.

4,518,032

TEMPERATURE CONTROL APPARATUS FOR AUTOMOBILE AIR-CONDITIONING SYSTEMS

Ken Funasaki; Toshiki Iijima, both of Katsuta, and Tsuneo Kagohata, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,637
Claims priority, application Japan, Nov. 11, 1981, 56-179719; Feb. 24, 1982, 57-27307; Feb. 24, 1982, 57-27317
Int. Cl.³ F24F *7/00;* **B60H** *1/00, 3/00;* **B61D** *27/00*
U.S. Cl. 165—12 **15 Claims**



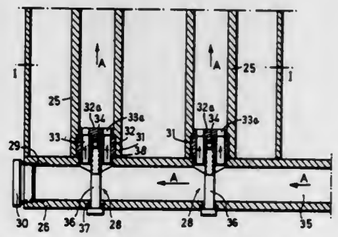
1. In an air conditioning system for automobiles including air flow rate control means for controlling the rate of air flow from a blower in accordance with the difference between a preset vehicle compartment temperature established by temperature setting means and an actual vehicle compartment temperature detected by an inside air sensor, a temperature control apparatus comprising:
first means for detecting that said air conditioning system is at a heating operation; and
second means operable in response to a signal generated from said first means during said heating operation whereby said rate of air flow is maintained at a predetermined flow rate below a maximum flow rate of blower irrespective of the difference between said preset temperature and said vehicle compartment temperature when said difference exceeds a predetermined value.

4,518,033

DEVICE FOR CONTROLLING THE TEMPERATURE OF ROOMS IN A BUILDING

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Josef Gartner & Co., Gundelfingen, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,149
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904005; Apr. 4, 1979, 2913598
Int. Cl.³ F24D *5/10*
U.S. Cl. 165—53 **16 Claims**



1. Temperature control apparatus defining a flow passage for a heat exchange fluid for use in conditioning the temperature of a building or portion thereof comprising elements including a pair of adjacent elements each defining a segment of a flow passage, the segment provided by one of said adjacent elements being substantially perpendicularly related to and having one end portion thereof in communication with the segment of said flow passage provided by the other, an insert fixed in and in bridging relation to said one end portion of said segment of said flow passage provided by said one of said adjacent elements, said insert being essentially clear of the

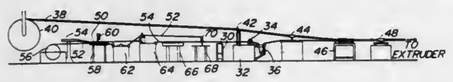
segment provided by the other of said adjacent elements and having therein a plurality of parallel apertures directed through and axially thereof for passage of fluid from one segment of said flow passage provided by one of said adjacent elements to the segment of the flow passage provided by the other thereof, and means applied to said insert and said other of said adjacent elements to provide an interconnection thereof to maintain a fixed but releasable connection of said adjacent elements and a desired relative orientation of the respective segments of said flow passage provided by said adjacent elements.

4,518,034

METHOD AND APPARATUS FOR MANUFACTURING CABLES HAVING COMPOSITE SHIELD AND ARMOR SHEATH DESIGNS

David E. Vokey, Hickory, N.C., assignor to Canada Wire and Cable Limited, Don Mills, Canada

Filed Aug. 8, 1983, Ser. No. 521,372
Claims priority, application Canada, Aug. 10, 1982, 409130
Int. Cl.³ H01B *13/22*
U.S. Cl. 156—54 **15 Claims**



1. A process for manufacturing a cable having a composite shield and armour sheath design comprising the steps of:
(a) bonding a plastic coated aluminum tape to a wider steel tape with one edge of the aluminum tape registering with one edge of the steel tape and the other edge of the aluminum tape spaced inwardly of the other edge of the steel tape to define an uncovered portion of the laminated tape;
(b) corrugating the laminated tape;
(c) forming the corrugated laminated tape around a cable core with the uncovered portion of the laminated tape overlapping the registered edges of the laminated tape so as to provide a uniform unwelded overlap; and
(d) extruding an outer jacket of polyethylene over the corrugated laminated tape.

9. An apparatus for manufacturing a cable having a composite shield and armour sheath design comprising:
(a) means for bonding a plastic coated aluminum tape to a wider steel tape with one edge of the aluminum tape registering with one edge of the steel tape and the other edge of the aluminum tape spaced inwardly of the other edge of the steel tape to define an uncovered portion of the laminated tape;
(b) means for corrugating the laminated tape;
(c) means for forming the corrugated laminated tape around a cable core so that the uncovered portion of the steel tape overlaps the registering edges of the laminated tape so as to provide a uniform unwelded overlap; and
(d) means for extruding an outer jacket of polyethylene over the corrugated laminated tape.

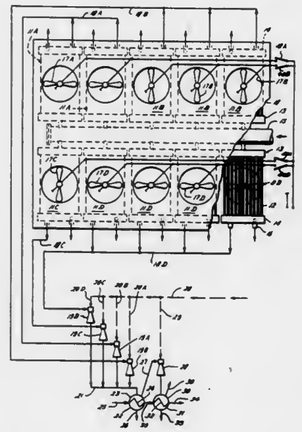
4,518,035

AIR-COOLED, VACUUM STEAM CONDENSER

Michael W. Larinoff, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Feb. 14, 1983, Ser. No. 465,815
Int. Cl.³ F28F *27/02*; F28B *3/00, 9/10*
U.S. Cl. 165—101 **2 Claims**

1. An air-cooled, vacuum steam condenser, comprising a plurality of tube bundles each having an inlet header for introducing steam into one end of the tubes, and an outlet header at the other end of the tubes of each bundle from which condensate may be removed, fans for causing air to pass over the tubes of the bundles and arranged with the bundles as first and second sets of fan cells, having respectively greater and lesser numbers of fans, means for removing non-condensible gases from the outlet headers of the bundles, including first manifold means common to the outlet headers of the first set of fan cells, second manifold means common to the outlet headers of the second set of fan cells, first and second independent non-condensible gas removal means connected, respectively, with said first and second manifold means for discharging the non-condensible gases therein to the atmosphere at a pressure which prevents backflow into the manifold means, and means for



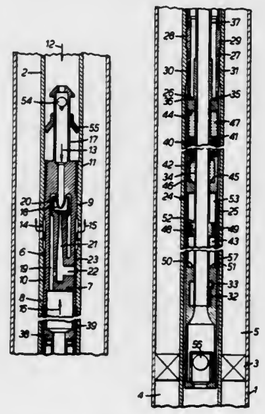
turning the fan or fans of each set on or off independently of the fan or fans of the other set, whereby the total air flow through the tubes of the bundles of said sets may be controlled by selectively turning the fans of both sets on or off, or turning the fan or fans of one set on and those of the other set off, without interfering with the non-condensible gas removal means connected with other sets.

4,518,036

DEVICE FOR CONTROLLING A SAFETY VALVE DISPOSED BELOW AN ACTIVATION PUMP IN A HYDROCARBON PRODUCTION WELL

Herve M. Lefebvre, par Chartres, and Paul M. Helderle, Verneuil-l'Etang, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Dec. 1, 1982, Ser. No. 445,779
Claims priority, application France, Dec. 2, 1981, 81 22542
Int. Cl.³ E21B *34/08, 43/12*
U.S. Cl. 166—105 **6 Claims**



1. An oil well installation including an elongate cylindrical casing (1), an elongate cylindrical production pipe (2) concentrically disposed within the casing and inwardly spaced therefrom, and annular packer means (3) sealingly disposed between

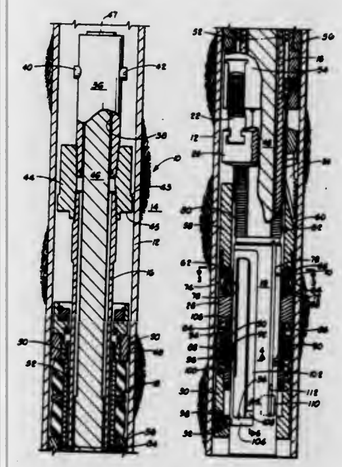
the casing and the pipe to isolate annular spaces both above (5) and below (4) the packer means, comprising:
(a) a pump (6) disposed within the pipe above the packer means, said pump being driven by pressurized liquid applied to the pipe from above to pump oil from below the pump upwardly through the annular space above the packer means,
(b) a safety valve (24) disposed within the pipe below the pump and including biasing means for normally closing said valve to seal off the pipe and thereby guard against pressure eruptions from below,
(c) a rigid, elongate, vertically movable operating member (34) slidably disposed within the valve and operable, when driven downwardly, to open the valve against the force of the biasing means,
(d) means (40, 43) for urging the operating member in an upwardly direction,
(e) piston means slidably disposed within the pipe at the level of the pump and movable downwardly in response to the application of pressurized pump driving liquid to said pipe, and
(f) rigid elongate connection means (37) secured to the piston means and depending downwardly therefrom for operatively engaging the operating member, whereby the downward movement of the piston means in response to the application of pressurized pump driving liquid to the pipe serves to drive the operating member downwardly within the safety valve to open said valve and enable pumping, and the cessation of said pressurized driving fluid enables the urging means to raise the operating member, the connection means and the piston means to thereby automatically close the safety valve.

4,518,037

RETRIEVABLE WELL TOOL

Harold C. Youngblood, Rte. 1, Box 170 - Ivanhoe, Woodville, Tex. 74979, and Kenneth L. Champeau, 8204 NW. 90th Ter., Oklahoma City, Okla. 73132

Filed Dec. 10, 1981, Ser. No. 329,181
Int. Cl.³ E21B *33/129*
U.S. Cl. 166—125 **19 Claims**



1. Apparatus for use in a well casing comprising,
a body;
slip means mounted on said body having a retracted and an expanded position;
drag means slidably mounted on said body adjacent said slip means for longitudinal and for radially inner and outer movement, said drag means being movable from a first longitudinal position to a second longitudinal position to shift said slip means into an expanded position for engagement with the well casing;
first means for maintaining said drag means in its first longitudinal position and in its radially inner position including shear bolt means; and
second means for maintaining said drag means in its first longitudinal position including lug and channel means.

4,518,038

METHOD OF EXTRACTING AND REUTILIZING SURFACTANTS FROM EMULSIONS USING SULFONATED ALKYL BENZENES AND ETHOXYLATED PHENOLS

Jim Maddox, Jr., and Vernon H. Schievelbein, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 7, 1983, Ser. No. 559,076
Int. Cl.³ E21B *43/22, 43/40*
U.S. Cl. 166—266 **21 Claims**

1. A method for extracting and concentrating enhanced oil recovery surfactants into a relatively small volume surfactant-rich middle phase from produced emulsions comprising oil, water and surfactant, which comprises:
mixing a produced emulsion with an extracting compound solution of water containing about 0.3% to about 6.0% of a first extracting compound selected from the group consisting of the alkali metal salts and ammonium salts of propyl benzene sulfonate, cumene sulfonate, ethyl benzene sulfonate, methyl ethyl benzene sulfonate, diethyl benzene sulfonate, methyl propyl benzene sulfonate, xylene sulfonate and dicyclopentadiene sulfonate;
allowing the mixture of produced emulsion and first extracting compound solution to separate into at least three phases, including a substantially surfactant-free and water-free crude oil phase, a first relatively low volume middle phase containing surfactant, oil and water, and an oil-free aqueous phase;
mixing about a 0.1% to about 3.0% volume of a second extracting compound per volume of first middle phase with said first middle phase, said second extracting compound consisting of an ethoxylated phenol with an average of about one to about fifteen ethylene oxide groups and having an alkyl side chain containing 0 to about 12 carbon atoms; and
allowing the mixture of first low volume middle phase and ethoxylated phenol to separate into at least two phases, including a substantially surfactant-free and water-free crude oil phase, a second relatively small volume surfactant-rich middle phase containing surfactant, oil and water, and usually, a third oil-free aqueous phase.

4,518,039

METHOD FOR TREATING SUBTERRANEAN FORMATIONS

John W. Graham, Rte. 5, Box 289, Alvin, Tex. 77511, and A. Richard Sinclair, 2903 Virginia, Houston, Tex. 77098

Continuation-in-part of Ser. No. 294,813, Aug. 20, 1981, abandoned. This application Oct. 27, 1982, Ser. No. 437,431
Int. Cl.³ E21B *43/04, 43/267*
U.S. Cl. 166—276 **10 Claims**

1. A method of treating a subterranean formation which comprises placing in or adjacent said formation a quantity of free-flowing, heat curable, resin coated particles comprising high strength centers, a first coupling agent chemically reacted with said centers prior to coating, a novolac resin having a second coupling agent incorporated therein coated over said centers, whereby said coupling agents provide increased resin-center bond strength, and a cross linking agent; and causing said free-flowing particles to cross-link in or adjacent said formation and form a cohesive mass.

4,518,040

METHOD OF FRACTURING A SUBTERRANEAN FORMATION

James D. Middleton, Lawton, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 29, 1983, Ser. No. 509,255
Int. Cl.³ E21B *43/26, 43/27*
U.S. Cl. 166—307 **20 Claims**

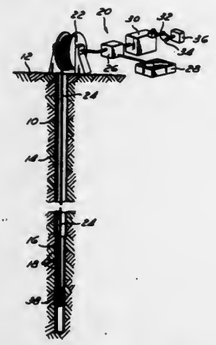
1. A method of increasing the production of fluids from a subterranean formation containing clay comprising:
(a) contacting said formation at sufficient pressure to initiate a fracture in said formation with an aqueous fluid comprising fluoride ions and allowing said fluid to leak off into the formation matrix wherein said fluoride ions are selected from the group consisting of ammonium fluoride, ammonium bifluoride, and mixtures thereof;
(b) contacting said formation at sufficient pressure to extend said fracture with a first aqueous viscous fluid comprising a gelling agent and hydrogen ions;
(c) contacting said formation at a pressure sufficient to maintain said fracture with a second viscous fluid comprising a gelling agent, hydrogen ions, and a propping agent; and,
(d) reducing the pressure on the formation to allow the aqueous fluid of step (a) to flow from the formation matrix into the fracture to form hydrofluoric acid whereby said hydrofluoric acid removes fines dispersed in the fracture face or the propping agent.

4,518,041

HYDRAULIC JET WELL CLEANING ASSEMBLY USING A NON-ROTATING TUBING STRING

Casper W. Zublin, 801 Hewlett, Bakersfield, Calif. 93309

Continuation-in-part of Ser. No. 337,371, Jan. 6, 1982, Pat. No. 4,442,899. This application Mar. 22, 1982, Ser. No. 360,492
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.³ E21B *37/00;* B08B *9/02*
U.S. Cl. 166—312 **35 Claims**



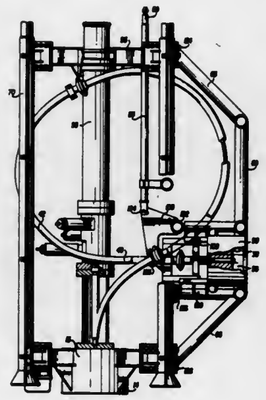
1. A system for washing pipes, comprising:
a non-rotating tubing string;
a jet carrier attached to said string such that as said carrier rotates through a given angle about the lengthwise axis of said tubing string, a portion of said tubing string will rotate through substantially the same angle, said jet carrier having a generally tubular body with a hollow center which provides a path for a fluid, said body having a central axis;
nozzles mounted to said carrier body;
means for supplying fluid under pressure to said nozzles, each of said nozzles being adapted to expel said fluid against said pipe with a force against the pipe, said force having an equal and opposite reactive force, one or more of said nozzles being mounted in said carrier body such that said reactive force is directionally offset from said carrier axis creating a twisting moment in said tubing string about said axis tending to rotate said carrier about said axis;
means for moving said carrier along the length of a pipe to be cleaned; and
means for varying said pressure to angularly displace said carrier.

4,518,042

SUBSEA WELLHEAD CONNECTION ASSEMBLY

Henry W. Miller, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,803
Int. Cl.³ E21B *43/013*
U.S. Cl. 166—347 **12 Claims**



1. A wellhead connector assembly comprising:
a support frame of tube members defining a structure for fitting onto an undersea template supported adjacent the sea bottom, said template having a plurality of positions for receiving a wellhead connector assembly, each position having an upwardly facing wellhead connection outlet means and a lateral penetration connector spaced therefrom and along one side;
a wellhead connector at the bottom of said support frame for engaging said wellhead connection outlet means;
a manifold system connector on one side of said support frame for engaging said lateral penetration connector;
a loop of pipe carried by said support frame connecting said wellhead connector to said manifold system connector;
means on said support frame mounting said manifold system connector for lateral movement toward and away from said lateral penetration connector, said means comprising:
a bell crank pivotally mounted on said support frame adjacent and pivotally linked to said manifold system connector and to a generally vertically extending actuation rod so that upward and downward movement of said actuating rod causes pivoting of said bell crank and lateral movement of the manifold system connector toward and away from said lateral penetration connector.

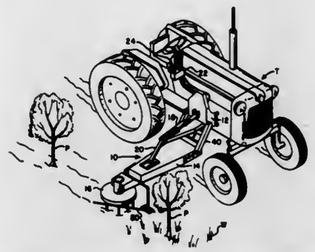
4,518,043

TOOL APPARATUS WITH CONTROL TO MOVE TOOL WHEN OBJECT APPROACHED

Jack F. Anderson, Marion, N. Dak. 58466; Clayton Melrose, Oakes, N. Dak., and Floyd Melrose, Brookings, S. Dak., assignors to Jack F. Anderson, Marion, N. Dak.

Filed Aug. 9, 1982, Ser. No. 406,318
Int. Cl.³ A01B *65/02, 13/04;* A01D *35/00*
U.S. Cl. 172—6 **23 Claims**

12. In tool apparatus having a tool, a main frame and reversible hydraulic powered motion producing means for moving the tool in one direction with respect of said main frame and in the opposite direction in response to the proximity of an object to the tool, wherein the improvement comprises:
solenoid valve means having a first position adapted to direct a flow of hydraulic fluid to drive said motion producing means in one direction, a second position adapted to direct a flow of hydraulic fluid to drive said motion producing means in the opposite direction, and a third position for not directing hydraulic fluid to drive said motion producing means in any direction;
sensing means for sensing the proximity of the object to the tool;



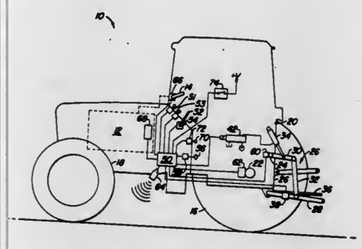
automatic switch means connected to said sensing means for directing an electric current to said solenoid valve means to move said tool in said one direction to a given distance away from said main frame whenever said tool is not within a pre-selected spacial proximity to an object, to move said tool in said opposite direction to a position less than said given distance from said main frame whenever said tool is within said pre-selected proximity to the object and approaching closer to said object, and to prevent movement in either direction whenever said tool is within said pre-selected proximity to the object and not approaching closer to the object even when said tool is less then said given distance from said main frame.

4,518,044

VEHICLE WITH CONTROL SYSTEM FOR RAISING AND LOWERING IMPLEMENT

Gordon K. Wiegardt; Thomas W. Hanks, and Carl E. Kittle, all of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 22, 1982, Ser. No. 360,748
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **56 Claims**



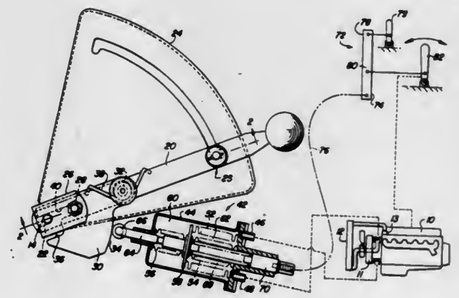
1. In a vehicle having connecting means for attaching a ground-penetrating implement thereto and actuating means for raising and lowering the implement to vary the ground penetration thereof in response to signals applied to an input thereof:
sensing means for sensing an operating parameter of a machine system comprising the vehicle, the connecting means and the implement, and for generating a parameter signal representative thereof;
set point means for deriving a parameter set point signal from the parameter signal;
difference means for generating a parameter error signal representing a difference between the parameter signal and the parameter set point signal; and
means for converting the parameter error signal to a control signal and for applying the control signal to the input of the actuating means, the actuating means being adapted to move the implement in response to the control signal.

4,518,045

VEHICLE WITH COOLANT PRESSURE RESPONSIVE HITCH CONTROL

Roger J. Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 13, 1983, Ser. No. 504,002
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **10 Claims**



9. In a vehicle having a hitch and an engine-driven coolant pump, a hitch control system for raising and lowering the hitch, comprising:
actuator means for moving in response to a coolant pressure from the coolant pump; and
control means operatively coupled to the actuator means for raising and lowering the hitch in response to movement of the actuator means, the actuator means comprising a cylinder having a piston movable therein and connected to a rod which engages the control means, the cylinder having a first chamber communicated with an outlet of the coolant pump and a second chamber communicated with an inlet of the coolant pump, the piston and rod moving to operate the control means in response to a differential pressure between the first and second chambers.

4,518,046

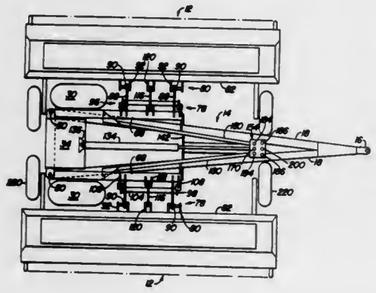
MULTIPLE IMPLEMENT HITCH AND TRANSPORT

Vernon E. Rettig, Bondurant; Marvin L. Bigbee; Ronald M. Steilen, both of Ankeny, and Glenn D. Head, Jr., Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 21, 1982, Ser. No. 390,435
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—311 **33 Claims**

1. An implement hitch for supporting two agricultural implements side-by-side in the field, the hitch comprising: a fore-and-aft extending main frame including forward connecting means adapted for connection to a towing vehicle, a fore-and-aft extending hitch member extending rearwardly from the forward connecting means; a ground wheel assembly connected to the main frame and supporting the main frame for forward movement over the ground; first and second support arms, each arm having radially inward and outward ends; means pivotally connecting the radially inward ends of the support arms to the aft end of the main frame for swinging

about upright axes between first positions wherein the outward ends extend transversely outwardly in opposite directions from the transverse frame structure and a second position wherein the arms extend forwardly from said frame structure; vertically positionable connecting structure carried by each support arm outwardly of the respective inward end, each connecting structure adapted for receiving one of the agricultural implements; power means for positioning the connecting structure, when said implements are attached, to raise and lower the implements between a lower ground-engaging position and an upper position wherein the weight of the implements is carried primarily by the ground wheel assemblies; means for pivoting the support arms between the first and second positions to



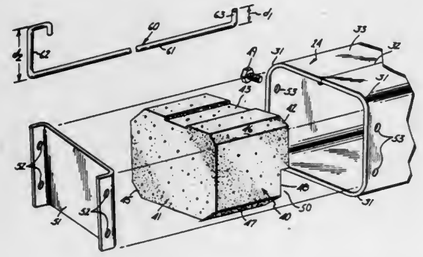
move the implements between a transversely extending field-working position and a folded position, said means including extendable and retractable cylinder means having one end fixedly connected to the main frame and an opposite end movable fore-and-aft, a pair of rigid links, each link having a forward end connected for movement fore-and-aft with the cylinder means, and a rearward end, and means connecting the rearward ends of the links to the respective arms outwardly of the inward ends of the arms for swinging the arms between the first and second positions as the cylinder means is extended and retracted; and wherein the ground wheel assembly comprises two ground-engaging wheels, one supported forwardly and transversely outwardly of each support arm pivotal connecting means.

4,518,047

TOOL BAR WITH SLIDABLY INSERTABLE BALLAST BLOCK

Richard L. Peterson, Le Sueur, and Roger J. Scheurer, Kasota, both of Minn., assignors to Hiniker Company, Mankato, Minn.

Filed Aug. 23, 1982, Ser. No. 410,653
Int. Cl.³ A01B *23/04*
U.S. Cl. 172—611 **25 Claims**



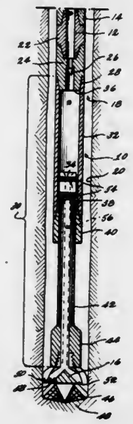
1. In an earth working implement: a tool bar having a generally rectangular inside wall defining a passage, ballast block slidably insertable into said passage of the tool bar to increase the weight of the tool bar, said block comprising a one-piece body of dense material, said body having a rectangular shape with longitudinal corners and side wall means locatable adjacent the inside wall of the tool bar whereby the body slidably fits into said passage, each of said corners having a beveled edge, said side wall means having a longitudinal groove between adjacent corners to accommodate portions of the tool bar, said body having opposite ends, one of said ends having a notch open to a corner of the body, and channel means provided by a beveled edge of one corner of the body extended from said notch in one of said ends to the opposite end thereof to accommodate a tool used to remove the body from the tool bar, and means retaining said block in said passage of the tool bar.

4,518,048

METHOD FOR IMPROVED HYDRAULIC JETTING OF DRILL BORE HOLES USING HIGH PRESSURE PULSES OF FLUID

Robert F. Varley, Metairie, La., assignor to Robert F. Varley Co., Inc., Gretna, La.

Filed Apr. 18, 1983, Ser. No. 486,220
Int. Cl.³ E21B *7/08, 7/18, 10/18*
U.S. Cl. 175—61 **4 Claims**



1. A method for drilling a well bore hole using a drill string having on its lowermost portion a drill bit having at least one fluid jetting nozzle, said method comprising:
(a) causing an object which is disintegratable by a compressional force in excess of a predetermined level to descend through a pressurized fluid in said drill string and block said at least one nozzle;
(b) increasing the level of fluid pressure acting on said object until it is crushably forced through said nozzle to cause a pulse of pressurized fluid to be thereafter jetted through said at least one nozzle; and
(c) cyclically repeating said steps (a) and (b) such that a ball is caused to seat in said at least one nozzle at substantially the same time that said fluid pressure has been reestablished by the jetting of fluid through said nozzle.

4,518,049

BOTTOM HOLE MOTOR FOR DRIVING ROCK-BREAKING TOOL

Dmitry F. Baldenko; Moisei T. Gusman, and Valery I. Semenets, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Tekhniki, Moscow, U.S.S.R.

Continuation of Ser. No. 261,211, May 1, 1981, abandoned. This application Jun. 18, 1984, Ser. No. 622,381
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **7 Claims**

1. A bottom hole drill, comprising:
a motor unit;

a spindle unit having a housing;
a shaft extending through said housing and connected at one end to said motor unit;
radial bearings located between said housing and said shaft;
a thrust-radial bearing comprising;
a plurality of races and rings secured within said housing coaxially with said shaft,



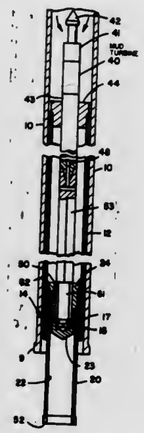
peripheral annular grooves formed on the outer surface of said shaft, and
rolling bodies provided between said races, rings, and annular grooves; and
a rock-breaking tool mounted at the other end of said shaft.

4,518,050

ROTATING DOUBLE BARREL CORE SAMPLER

Steinar Sollie, and Arild A. Andresen, both of Oslo, Norway, assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 30, 1983, Ser. No. 509,891
Int. Cl.³ E21B *25/00, 49/02*
U.S. Cl. 175—250 **5 Claims**



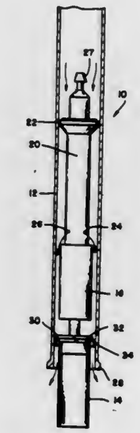
1. A wire line core sampler for use in a drill string sub comprising a cylindrical guide tube removably insertable into said sub; an outer cylindrical barrel rotatably and reciprocally mounted within said guide tube and extendable out through the lower end of said sub; a core barrel positioned within said outer cylindrical barrel; and downhole mud turbine means insertable into said drill string sub and connected to said outer cylindrical barrel and responsive to liquid pressure in the drill string for rotating said outer barrel and for extending said outer barrel and said core barrel through the lower end of said sub to take a soil sample.

4,518,051

PERCUSSION ACTUATED CORE SAMPLER

Steinar Sollie, and Arilo A. Andresen, both of Oslo, Norway, assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 30, 1983, Ser. No. 509,892
Int. Cl.³ E21B *25/00, 49/02*
U.S. Cl. 175—250 **11 Claims**



1. A wire line core sampler for use in a drill string sub comprising a drill string sub connectable to the lower end of a drill string, a core barrel insertable through said drill string into said sub and freely movable therein; hydraulic percussion means insertable through said drill string into said sub and freely movable therein operably connected to said core barrel; and downhole means responsive to drilling mud pressure for actuating said hydraulic percussion means to drive said core barrel out of the end of the drilling string sub into the material to be sampled.

4,518,052

APPARATUS FOR AUTOMATICALLY MEASURING HEIGHT

Li-Fu Chen, 4th Fl., No. 17, La. 133, Pao Pyng Rd., Yuan Ho City, Taiwan

Filed Jul. 13, 1982, Ser. No. 397,864
The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.
Int. Cl.³ G01G *19/00*
U.S. Cl. 177—245 **7 Claims**

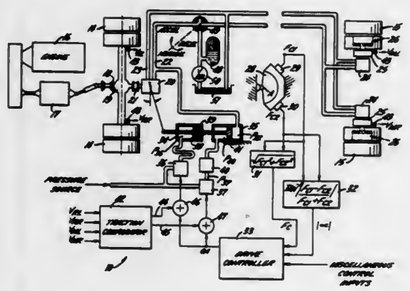
1. An apparatus for automatically measuring and displaying the height of the top of the head of a human being above a surface, comprising:
a generally vertical frame a first extremity of which is fixed to said surface;
first radiation source means, fixed to a second extremity of said frame, for directing radiation toward the top of the head of a human being standing on the surface;
sliding assembly means, slidably disposed on said vertical frame, for sliding rectilinearly along said vertical frame between said first and second extremities, said sliding assembly means including:
first radiation detecting means for detecting radiation reflected toward the frame by the top of the head of the human being; and
display means for displaying indicia of the height of the human being;
drive means, responsive to said detected radiation, for sliding said sliding assembly means along said frame toward said second extremity and for stopping said sliding assem-

bly means at a first position, said first position being determined in response to said detected radiation; and



position determining means for determining the position of said sliding assembly means along said frame and for converting said determined position into said indicia of height to be displayed by said display means.

4,518,053
ARTICULATED VEHICLE DRIVE AND CONTROL SYSTEM
Gerard Queveau, Amik Farm, 79140, Le Pin, Cerizay, France
Filed Oct. 22, 1982, Ser. No. 436,177
Int. Cl.³ B62D *47/02*
U.S. Cl. 180—14.2 **15 Claims**



1. A method of propelling an articulated vehicle having a forward section and a rear section connected at an articulation connection, the vehicle having a source of driving power, the rear section having a first set of wheels driven through a differential by the source of driving power, the differential having a variable displacement hydraulic pump mounted thereon, the forward section having a second set of wheels for steering the vehicle and a third set of wheels, each wheel in the third set of wheels being selectively drivable through a respective overrunning clutch by a respective fixed displacement hydraulic motor, the hydraulic motors being connected by hydraulic lines to the hydraulic pump, the articulation connection transmitting a connection force between the forward and rear sections, the method comprising:

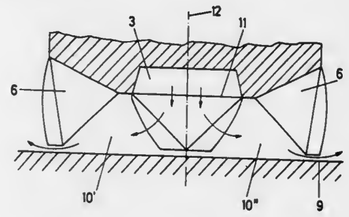
monitoring parameters with at least one transducer having an output from which values for the instantaneous angle of articulation between the sections and the magnitude of the connection force may be derived;

determining a torque control signal as a predetermined increasing function of the magnitude of the instantaneous angle of articulation and magnitude of the connection force, and

using the torque control signal to achieve a predetermined differential pressure across the hydraulic motors by adjusting the hydraulic pump displacement, whereby the torque applied to the third set of wheels is an increasing function of the magnitude of the instantaneous angle of articulation and magnitude of the connection force,

whereby independent of the speed of the vehicle, when the first set of wheels slip, tending to cause a jackknifing situation, the hydraulic pump increases its flow of hydraulic fluid to the motors, thereby increasing the speed of the hydraulic motors relative to the speed of the third set of wheels, whereupon the overrunning clutches are engaged and the third set of wheels are driven to prevent the jackknifing situation.

4,518,054
AIR CUSHION VEHICLE PROVIDED WITH A LIFT SYSTEM WITH AUTOMATIC TRANSVERSAL AIR DISTRIBUTION
D. Mariano de la Cruz Toran, La Rinconada B-6, Madrid 23, Spain
Filed Mar. 2, 1983, Ser. No. 471,526
Claims priority, application Spain, Mar. 18, 1982, 510603
Int. Cl.³ B60V *1/12*
U.S. Cl. 180—118 **12 Claims**



1. An air cushion vehicle provided with a lift system with automatic transversal air distribution, comprising:

a rigid body structure having internal channels for air distribution;

a lift system including one or more lift fans;

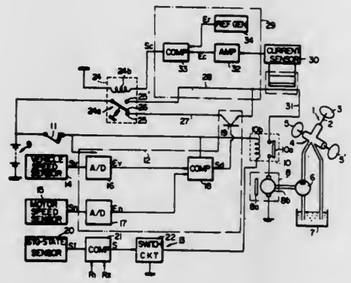
flexible skirts provided on said rigid body structure for distributing and retaining air in an air cushion chamber defined by said flexible skirts;

a propulsion system;

drive means for driving said lift fans and said propulsion system; and

flexible keel means, provided on the bottom of said rigid body structure, for dividing said air cushion chamber into at least two longitudinal supporting semichambers, directing the air in the internal channels towards said semichambers, varying the air flow to said semichambers according to a difference in pressure between the said semichambers so as to automatically direct the lift air to one of said semichambers, thereby creating a righting or stabilizing moment the value of which depends on the output pressure of the fans with minimum loss of pressure so that the lift air flowrate required is minimum for a given stability.

4,518,055
PUMP-DRIVE DEVICE OF POWER-ASSISTED STEERING SYSTEM
Eiji Yagi, Ayase; Yuji Kobari, and Sadahiro Takahashi, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 11, 1983, Ser. No. 474,425
Claims priority, application Japan, Apr. 8, 1982, 57-59417; Jun. 22, 1982, 57-93359[U]; Jun. 22, 1982, 57-93360[U]
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—142 **24 Claims**



1. A pump-drive device of a power-assisted steering system for an automotive vehicle, the steering system including a steering wheel operatively connected to a steering gear assembly and a steering pressure pump to supply fluid pressure to the steering gear assembly for reducing a manual steering effort applied to the steering wheel, comprising:

electric drive means operative to drive said steering pressure pump when electrically actuated;

first sensing means for detecting driving speed of the vehicle and producing an output signal representative of the detected vehicle speed;

second sensing means for detecting the output speed of said drive means and producing an output signal representative of the detected output speed of the drive means;

a current control circuit responsive to the respective output signals from the first and second sensing means;

a main current supply line electrically connected between a power source and said drive means through said current control circuit;

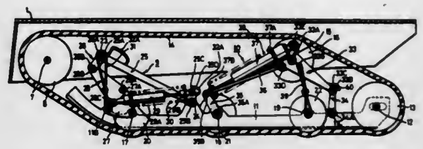
a bypass current supply line electrically bypassing said current control circuit between the power source and said drive means;

said current control circuit being operative to produce an output signal effective to vary the current to be passed through said main current supply line on the basis of the respective output signals from said first and second sensing means;

detecting means responsive to a predetermined operative condition of the steering system and operative to produce an output signal when the steering system is in the predetermined operative condition; and

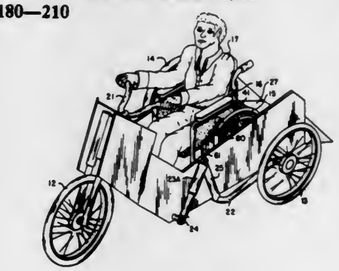
line shifting switch means intervening between said power source and each of said main and bypass current supply lines and operative to provide electrical connection between said power source and said drive means selectively through the main current supply line in the absence of the output signal from said detecting means and through said bypass current supply line in the presence of the output signal from said detecting means.

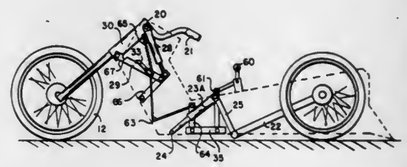
4,518,056
SNOWMOBILE
Takashi Kobayashi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Jul. 29, 1982, Ser. No. 403,064
Claims priority, application Japan, Aug. 11, 1981, 56-124799
Int. Cl.³ B62D *55/08*
U.S. Cl. 180—193 **5 Claims**



1. A suspension system for a snowmobile comprising a body frame, a slide rail, front and rear suspension means securing said slide rail to said body frame for movement relative thereto, an endless track arranged and disposed to run on a driven roller mounted on said slide rail and a drive pulley mounted on said body frame, said front and rear suspension means comprising link means connecting said side rail to said body frame, and shock absorbing means connected between portions of said link means which pivot in directions opposite to one another whereby said shock absorber is extended or compressed when said link means pivots, at least one of said shock absorber means comprising a tubular shock absorber having its opposite ends operatively supported by said side rail, said link means being operative to effect movement of each of said shock absorber means ends toward the other upon movement of said slide rail toward said body frame.

4,518,057
WHEELCHAIR TRANSPORTING WITH SELECTIVELY RAISABLE PLATFORM MEANS
Michael McCallum, 431 W. Oakdale, Chicago, Ill. 60657
Filed Jun. 8, 1983, Ser. No. 502,316
Int. Cl.³ B62K *15/00*
U.S. Cl. 180—210 **18 Claims**





1. Wheelchair carrying apparatus operable for entry and exit by the wheelchair operator without assistance and for transport with the wheelchair operator seated in the wheelchair and being transported thereby, comprising,

platform means having a front and rear for supporting a wheelchair with the operator therein,

first and second rear wheel means to the side of and separated by said platform means for rollably supporting said platform means,

platform support means for supporting said platform means and said rear wheel means while allowing relative vertical displacement between said rear wheel means and said platform means between a riding position with said platform means substantially horizontal a first predetermined height above a surface supporting said rear wheel means and an access position substantially horizontal a second predetermined height above said surface less than said first predetermined height,

steerable front wheel means for rollably supporting said platform means for movement along a steered direction,

steering control means coupled to said front wheel means accessible to a wheelchair operator seated in a wheelchair when on said platform means for controlling steering direction,

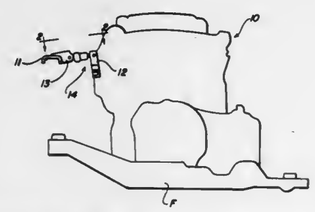
and actuating means intercoupling said platform means and said platform support means for selectively raising said lowering said platform means and thereby selectively positioning said platform means in said riding and access positions.

4,518,058

ENGINE TORGUE RESISTING STRUT AND VIBRATION DAMPER

Louis P. Fister, St. Louis; Herby O. Pearson, Chesterfield, both of Mo., and Lawrence H. Fitch, Cahokia, Ill., assignors to Moog Automotive, Inc., St. Louis, Mo.

Filed Dec. 21, 1981, Ser. No. 332,550
Int. Cl.³ B60K *5/12*
U.S. Cl. 180—300 **10 Claims**



1. In a vehicle having a frame and an engine carried in the frame in a predetermined position, the improvement of a passive engine torque resisting strut and vibration damper between the engine and the frame comprising:

(a) a housing having a closed end and means at said closed end providing a pivotal attachment for the engine and a closure mounted at the opposite end of said housing;

(b) a piston slidably received in said housing;

(c) a piston rod connected to said piston and slidably passing through said closure to the exterior of said housing;

(d) resilient attachment means on the piston rod for connection to the frame;

(e) a predetermined fixed quantity of hydraulic fluid in said housing disposed on opposite sides of said piston;

(f) resilient means in said housing in addition to said hydraulic fluid on opposite sides of said piston, said resilient means being assembled in said housing under a predetermined pre-load for normally centering said piston in said housing and yieldably resisting displacement of said piston under engine operating conditions tending to change the spacial distance between the engine and frame where the torque strut is attached, and the hydraulic fluid being transferred within said housing between opposite sides of said piston upon the displacement of said piston; and

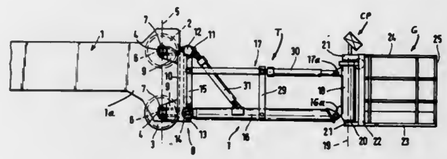
(g) hydraulic fluid transfer compensation means carried by said housing in position to communicate with said housing interior between said piston and said closed end of said housing, said compensation means accommodating the transfer of hydraulic fluid, in response to piston movement in said housing toward and away from said closed end of said housing, and including a wall having a port for fluid flow between said housing and said separate space, a compressible body in said separate space, and a protective surface between said compressible body and said port to receive the impact of the hydraulic fluid flow into said separate space.

4,518,059

ATTACHMENT FOR THE BOOMS OF CRANES OR THE LIKE

Paul Frey-Wigger, Am Zeigerwald, CH-6247 Schötz, Switzerland

Filed Jul. 7, 1983, Ser. No. 511,667
Claims priority, application Switzerland, Jul. 12, 1982, 4222/82
Int. Cl.³ B66F *11/04*
U.S. Cl. 182—2 **20 Claims**



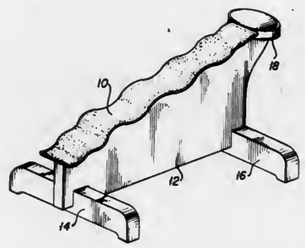
1. An attachment for the end portion of an elongated boom in a crane or an analogous machine wherein the boom is movable between a plurality of positions and/or can be caused to change its length, comprising a carrier having a first and a second end portion; means for coupling said first end portion to the end portion of the boom so that the carrier is pivotable about a first axis, which is at least substantially normal to the longitudinal direction of the boom, to and from a predetermined position of at least substantial parallelism with and adjacent to one side of the boom; a collapsible gallery; and means for connecting the gallery to said second end portion for pivotal movement about a second axis which is at least substantially parallel to said first axis so that the gallery is movable to a position in which it is adjacent to said one side of the boom.

4,518,060

SUPPORT FOR HAND AND KNEE AT WORK ON LOW LEVEL

Emil Natchev, Upplandsgatan 50, Stockholm, Sweden

Filed Mar. 28, 1983, Ser. No. 479,180
Claims priority, application Sweden, Sep. 8, 1982, 822145
Int. Cl.³ A47C *9/00*
U.S. Cl. 182—230 **3 Claims**



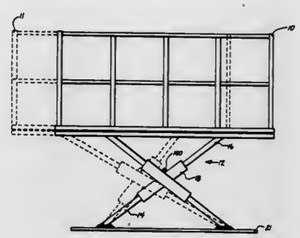
1. A support for hand and knee to be used when working at low level, comprising a vertical, substantially triangular disc (12) having a sloping upper side of wave shape, a soft liner (10) preferably from rubber cloth, which is attached to said upper side of said disc (12), and feet (14, 16) associated with the bottom side of said disc (12) and directed perpendicularily to said disc (12) for carrying said disc in a vertical position, and, at the uppermost end of said disc (12) a rest disc (18) for the hand at same level or at a higher level than the uppermost part of the soft liner (10).

4,518,061

TRANSLATING MOBILE WORK PLATFORM

Donald T. Wehmeyer, Roselle, and Ronald W. Barnhart, Elmhurst, both of Ill., assignors to Economy Engineering, Inc., Bensenville, Ill.

Filed Apr. 27, 1983, Ser. No. 489,039
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—18 **5 Claims**



2. An improved lift mechanism comprising:

(a) a base member;

(b) a support platform arranged above said base in substantially parallel orientation for movement with respect to said base;

(c) a scissors mechanism comprising a first and a second telescoping arm, each comprising:

(i) a lower member hingedly connected at one end to said base, and having its other end confined for relative translational motion,

(ii) an upper member hingedly affixed at one end to said platform and having its other end confined for relative translational motion,

(iii) an intermediate member arranged to confine said lower and said upper members for relative translational motion,

(iv) means for displacing said intermediate member with respect to said base member, and

(v) means for equalizing the motion of the lower and upper members relative to said intermediate member comprising:

a pulley member rotatively attached to the lower end of said intermediate member; and

a flexible tensile member securely attached at one end to said confined end of said lower member, passing under and in supporting relation to said pulley member, and securely attached at its other end to said confined end of said upper member.

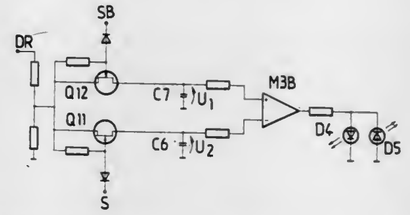
4,518,062

PROCEDURE AND MEASURING CIRCUIT FOR STOPPING AN ELEVATOR

Heimo Mäkinen, and Seppo Suur-Askola, both of Hyvinkää, Finland, assignors to Elevator GmbH, Baar, Switzerland and Kone Oy, Helsinki, Finland

PCT No. PCT/FI82/00009, § 371 Date Nov. 2, 1982, § 102(e) Date Nov. 2, 1982, PCT Pub. No. WO82/03068, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 4, 1982, Ser. No. 440,230
Claims priority, application Finland, Mar. 4, 1981, 810677
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **3 Claims**

1. Procedure for adjusting the stopping of an elevator as accurately as possible by adjustment of deceleration linearity on desired level with the aid of a deceleration instruction (DR), characterized in that the elevator is run both upward and downward; comprising sampling the elevator's deceleration instruction at the beginning and end of deceleration, comparing said samples, and adjusting the linearity of said deceleration instruction based on said sampling.

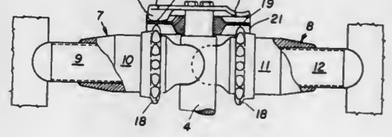


4,518,063

AUTOMATIC SLACK ADJUSTER

Sven E. Camph, Flygarevägen 9 F, S-236 00 Höllviksnäs, Sweden

Continuation of Ser. No. 388,161, Jun. 14, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,253
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—196 BA **1 Claim**



1. An automatic slack adjuster for a vehicle drum brake (5) that need not be referenced to a stationary connection on the vehicle of the type actuated by a key (6) rigidly mounted on a key shaft (4) connected to a cylinder-piston activator (1), said key acting upon a pair of brake shoes (13, 14) through force transmitting devices (7, 8) each comprising two telescopically displaceable elements (9, 10, 11, 12), one being an externally threaded rod, while the other is an internally threaded sleeve receiving said rod, each of the two sleeves of the two elements being provided with a circumferential tooth rack axially adjustable along both said telescopically displaceable elements for adjusting brakes in systems having keys of different size comprising, a spring latch (20) having a dog (24) secured to the key shaft (4), a freely journalled wheel (19) mounted on one end of said key shaft and having teeth and grooves on a first shoulder surface area of one side thereof engageable with the dog (24) of said spring latch (20) and engageable on the other side with a second shoulder surface area with said circumferential tooth racks (18, 19) on said telescopically displaceable elements (7, 8) so that any straight radial movement of the tooth racks relative to said wheel (19) would cause a torque on both sleeves in the direction causing increase of the total length of the said telescopically displaceable elements, said telescopically displaceable elements having symmetric design permitting telescopic rotation in opposite directions and slack adjusting means preventing rotation of said wheel (19) relative to the key in one direction of rotation to thereby effect a torque to cause both the telescopically displaceable elements (7, 8) to increase in length together as the key (4) and wheel (10) rotate together in a direction opposite to said one direction of rotation, and wherein the means for preventing rotation of said wheel (19) includes said resilient spring latch (20), said grooves

being of such shape as to permit the dog (**24**) to ride over one groove and enter neighboring grooves only in one direction of rotation of the shaft (**4**) when the brakes are applied and to cause a torque tending to turn the wheel (**19**) in the opposite direction of rotation of the shaft (**4**) when the brakes are released.

4,518,064

CLUTCH CONTROL MEANS

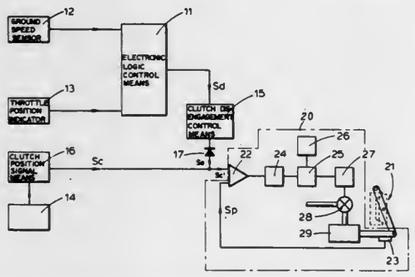
Harry M. Windsor, Harbury, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Jan. 8, 1982, Ser. No. 338,164

Claims priority, application United Kingdom, Jan. 30, 1981, 8103325

Int. Cl.³ B60K *41/22*

U.S. Cl. 192—3.58 **6 Claims**



1. A vehicle transmission clutch control including:

an electronic logic control means which is responsive to transmission operating parameters to control selection of the appropriate transmission gear ratio and which produces gear change signals to effect changes in gear ratios;

a clutch position signal means responsive to vehicle operating parameters and producing a command signal;

a clutch control means responsive to the command signal and which governs the state of engagement of the clutch;

and a clutch disengagement control means responsive to a gear change signal from the logic control means and which produces an output signal which can override the command signal and cause the clutch control means to disengage the clutch, and said output signal is caused to vary during the gear ratio change period and thereby alter the command signal and cause the state of engagement of the clutch to vary over said period.

4,518,065

AXLE DRIVE MECHANISM

Max Schuster, Passau, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,878

Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117772

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—4 A **4 Claims**

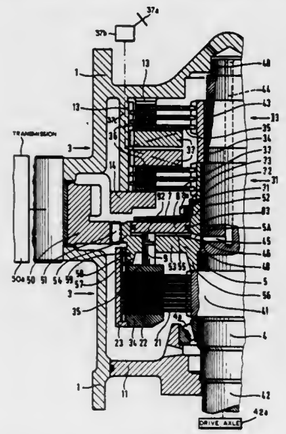
1. An axle drive mechanism for an automotive vehicle having a transmission connected to a continuously coupled axle, said drive mechanism selectively connecting another axle with said transmission, said mechanism comprising:

a drive shaft forming part of said other axle;

a drive wheel rotatably mounted on said drive shaft and operatively connected with said transmission and the selectively connected axle;

a clutch between said wheel and said shaft actuatable for rotatably coupling said wheel and said shaft to selectively engage said other axle with said wheel; and

a parking brake for said axles, said parking brake comprising a housing, said shaft being rotatable relative to said housing, first brake means between said wheel and said housing, and second brake means between said shaft and said housing, and common actuating means for both said brake means, thereby immobilizing both of said axles independently of the operation of said clutch, said housing having a pair of spaced-apart walls juxtaposed with one another and axially spaced from said clutch and said wheel, said wheel having a collar reaching axially into a spece between said walls, said first and second brake means being located between said walls and said first brake means being braced against one of said walls, said second brake



means being braced against the other of said walls, said first brake means including a first disk packet having inner disks axially shiftable but rotatably entrained on said collar of said drive wheel, and outer disks angularly fixed to said housing and axially shiftable thereon, said second brake means including a second disk packet having inner disk angularly coupled with said shaft and axially displaceable thereon, and outer disks axially displaceable on but angularly fixed to said housing, said common actuating means including a pair of plates on said housing urged apart to compress the respective disk packets.

4,518,066

SAFETY PARKING BRAKE FOR AUTOMATIC TRANSMISSIONS

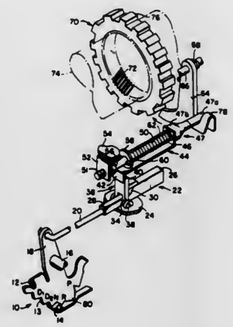
William A. Barr, Gibson Island, Md. 21056

Continuation-in-part of Ser. No. 485,514, Apr. 15, 1983, abandoned. This application Sep. 2, 1983, Ser. No. 528,863

Int. Cl.³ B60K *67/00, 41/26*

U.S. Cl. 192—4 C **7 Claims**

1. In a vehicle automatic transmission of the type having a parking gear fixed to an output shaft, a pawl movable between a first position clear of said gear and a second position wherein said pawl engages said gear for parking said vehicle, means biasing said pawl to its first position, cam means for controlling the movement of said pawl between its first and second positions, and driver operated means movable between a plurality of drive including reverse positions and a park position, said reverse and park positions being adjacent to each other, the invention comprising resilient means at all times urging said cam means towards said pawl, means responsive to the movement of said driver operated means to every position except park for exerting a force on said cam means in opposition to said resilient means to stress the same and retain said cam means clear of said pawl, and means responsive to movement of said driver operated means a predetermined minimum distance towards park position to relieve said stress on said resilient means and enable it to drive said cam means against said



pawl to move the same from its first towards its second position.

4,518,067

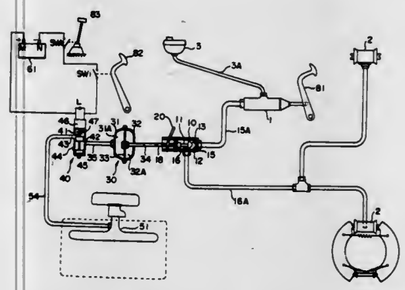
AUTOMOBILE BRAKE DEVICE

Long S. Jow, and Long J. Jow, both of Taipei, Taiwan, assignors to Transtech Industrial Corporation, Taipei, Taiwan

Filed Jan. 22, 1982, Ser. No. 341,802

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.09 **5 Claims**



1. An automobile brake device, comprising:

(a) a master braking unit operable by foot and adapted to deliver a working medium for braking an automobile having wheel brakes, a clutch pedal, a transmission shift lever and an accelerator pedal,

(b) a wheel braking unit operable by said working medium to actuate said wheel brakes;

(c) a control valve having a passage through which said working medium flows between said master braking unit and said wheel braking unit and a plunger adapted to selectively open and close said passage,

(d) a toggle lever operable by hand to move from a first position to a second position, said toggle lever being provided with a resilient member and operatively connected to said plunger so that when said toggle lever is in the first position said toggle lever is urged by said resilient member to urge said plunger to be in a closed position to close said passage, and when said toggle lever is in the second position said toggle lever is urged by said resilient member to urge said plunger to be in an open position to open said passage, said toggle lever being arranged in a third position where said plunger is in said open position and remains being urged by said toggle lever and said spring toward said closed position;

(e) an actuator having a connecting rod connected to said plunger and an acting chamber to which a working means may be applied for operating said connecting rod;

(f) a solenoid valve having a solenoid to be selectively energized by electrical power and valve means operable by said solenoid, said valve means being so connected to said actuator that said working means is applied to said acting chamber through said valve means to cause said connecting rod to move in one direction when said solenoid is energized, and said working means is released from said acting chamber to allow said connecting rod to move in the opposite direction when said solenoid is de-energized; and

(g) a first switch and a second switch connected in series with the first switch for connecting said solenoid to an electrical power source, said first switch being caused to open when said clutch pedal is depressed and to close when the clutch pedal is released; said second switch being caused to open when said transmission shift lever is in a neutral position and to close when said transmission shift lever is in a driving gear position.

4,518,068

AUTOMATIC CLUTCH CONTROL SYSTEM

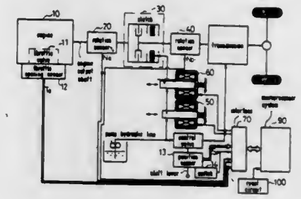
Tomio Oguma, Anjyo; Kouichiro Hirosawa, Kariya, and Tsutomu Mitsui, Chiryu, all of Japan, assignors to Aisin Seiki Kabushikikaisha, Aichi, Japan

Filed Mar. 12, 1982, Ser. No. 357,543

Claims priority, application Japan, Mar. 27, 1981, 56-45321; Mar. 27, 1981, 56-45322; Mar. 27, 1981, 56-45323; Mar. 27, 1981, 56-45324; Mar. 27, 1981, 56-45325; Mar. 27, 1981, 56-45326

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.052 **9 Claims**



1. An automatic clutch control system for a vehicle of the type having an engine for driving a drive shaft, said engine having a throttle, and said vehicle further comprising a clutch for coupling said drive shaft to a driven shaft, said system comprising:

first speed detecting means for detecting a rotational speed of said drive shaft;

second speed detecting means for detecting a rotational speed of said driven shaft;

throttle detecting means for detecting the throttle opening of said engine;

clutch engagement control means for controlling the degree of engagement of said clutch in accordance with a clutch engagement control signal; and

electronic control means coupled to said first and second speed detecting means, said throttle detecting means and said clutch control means, and including rate change detection means for determining the rate of change of said rotational speed of said drive shaft and ratio calculating means for calculating a ratio of the rotational speed of said driven shaft to the rotational speed of said drive shaft, for generating a first clutch engagement control signal repre-

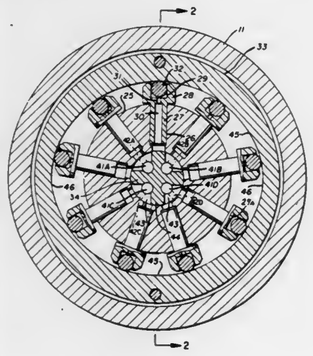
senting a small degree of engagement between said drive and driven shafts, for generating a subsequent clutch engagement control signal representing a degree of engagement upon (i) the rate of change of said drive shaft rotational speed after application of said first clutch engagement control signal, (ii) the throttle opening and (iii) elapsed time, and for thereafter generating a clutch engagement control signal representing a degree of engagement dependent upon (i) the throttle opening and (ii) the ratio of the rotational speed of said drive shaft to the rotational speed of said driven shaft.

4,518,069

ADJUSTABLE SPEED DRIVE UTILIZING RADIALLY MOVABLE HOLLOW PISTONS WHICH ACT ON A CAM SURFACE

Charles R. Elias, 19306 Scenic Harbour, Northville, Mich. 48167

Filed Nov. 1, 1982, Ser. No. 438,058
Int. Cl.³ F16D *31/02;* F04B *13/06*
U.S. Cl. 192—60 **6 Claims**



1. An improvement in an adjustable speed drive having a housing; an input rotor, an output rotor, cam surfaces on said output rotor; a plurality of bores formed in the input rotor and hollow pistons in said bores; said bores, pistons and cam surfaces arranged in radial relationship in said housing; a drive shaft on said input rotor; a driven shaft on said output rotor, said shafts having a common axis; the improvement comprising first passageways in said input rotor communicating with said bores; secondary passageways in said output rotor arranged for selective communication with said first passageways, annular chambers and communicating inlet and outlet ports in said housing, a source of fluid pressure in communication with said secondary passageways by way of said annular chambers and communicating inlet and outlet ports and valve means controlling said fluid pressure whereby said controlled fluid pressure moves said pistons radially with respect to said cam surfaces and said controlled fluid pressure selectively holds said pistons in desired position relative to said cam surfaces so as to impart controlled motion to said output rotor.

4,518,070

CLUTCH RELEASE APPARATUS FOR CHANGE SPEED TRANSMISSION

Yuzo Ooka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,280
Claims priority, application Japan, Jun. 23, 1981, 56-96023
Int. Cl.³ F16D *25/08;* F16H *5/12;* B60K *23/02*
U.S. Cl. 192—85 CA **8 Claims**

1. A change speed gear transmission, clutch and clutch actuator device for an internal combustion engine having a crankshaft and the combination of a main shaft and a line shaft, comprising:

gear means for driving said line shaft at a plurality of speed ratios from said main shaft,

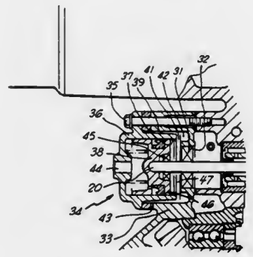
means for driving said main shaft from the crankshaft including the clutch at one end of said main shaft,

a push rod extending axially through the interior of said main shaft and operable to release said clutch,

the hydraulic actuator device at the other end of said main shaft for moving said push rod to release said clutch,

a ring member portion of said change speed gear transmission having a cavity for accepting said hydraulic actuator device, said cavity formed with a sidewall and having a bore in an end wall,

a seal ring assembly slidably receiving said push rod and positioned in said bore between said change speed gear transmission and said hydraulic actuator device,



a cylinder housing for said hydraulic actuator device sized to fit within said cavity and having an outer wall spaced from an inner wall of the cavity to provide an air space therebetween, said hydraulic actuator device having an open end of said cylinder housing spaced from the end wall of said ring member portion,

means including a vent opening for forming an air barrer between said hydraulic actuator device and said seal ring assembly, said vent opening being between said inner wall of said cavity and said outer wall of said cylinder housing whereby any leakage of hydraulic fluid exits said vent opening and does not damage said transmission and seal ring assembly,

attachment means detachably retaining said hydraulic actuator in said cavity,

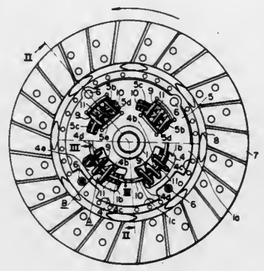
and output means for delivering power from said line shaft.

4,518,071

CLUTCH DISC HAVING DAMPER SPRINGS

Koji Nozawa, Higashikurume, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 9, 1982, Ser. No. 448,072
Claims priority, application Japan, Feb. 16, 1982, 57-23343
Int. Cl.³ F16D *3/66*
U.S. Cl. 192—106.2 **4 Claims**



1. A clutch disc comprising:

an assembly including a clutch plate having friction facings and a retaining plate joined to said clutch plate,

a spline hub having a flange which is disposed between said clutch plate and said retaining plate, said assembly and said flange of said hub being formed with a plurality of pockets circumferentially arranged around said hub, each of said pockets being formed by three openings formed, respectively, in said clutch plate, said flange, and said retaining plate, each of said openings of said assembly having an enlarged middle portion having circumferentially spaced first and second shoulders, a first elongate portion extending circumferentially from said middle portion in a normal direction in which said clutch disc normally rotates and terminating at a first end, and a second elongate portion extending circumferentially from said middle portion in a reverse direction opposite to the normal direction and terminating at a second end, the circumferential length of said first elongate portion being longer than that of said second elongate portion of each opening in said assembly, each of said openings in said flange having first and second ends circumferentially spaced at a distance equal to the circumferential distance between said first and second ends of said openings of said assembly,

damper means arranged between said assembly and said flange of said hub for transmitting torque therebetween, said damper means comprising

first damper means comprising a plurality of first damper coil springs which are arranged circumferentially around said hub and wound around an annular wire guide which is concentric with said hub and passes through all of said pockets, each of said first springs being confined between said first and second ends of said openings of said assembly in a pocket in such a manner that each of said first springs is effective over the full angular range of the relative rotational displacement between said assembly and said flange, and

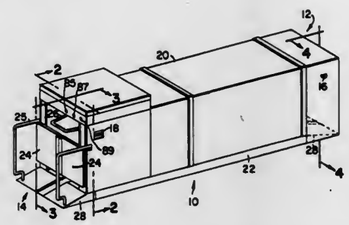
second damper means comprising a plurality of second damper coil springs having a spring constant greater than that of said first springs, each of said second springs being confined between said first and second shoulders of said openings in said assembly in one pocket in such a manner that said second springs begin to be compressed when a relative rotational displacement between said flange and said assembly exceeds a predetermined angle, each of said first springs being inserted in a respective one of said second springs with one end projecting from one end of that second spring and the other end projecting from the other end of that second spring in a neutral state where no torque is transmitted through the clutch disc.

4,518,072

CART CONVEYOR AND DISPENSER APPARATUS

James M. Muellner, 1777 Stillwater St., White Bear Lake, Minn. 55110, and Eugene R. Pastien, 8230 Longlake Rd., Moundsview, Minn. 55432

Filed Jun. 24, 1983, Ser. No. 507,810
Int. Cl.³ G07F *1/06*
U.S. Cl. 194—4 D **40 Claims**



1. A conveyor for wheeled carts, the carts being of the type having a rotating member that is rotatably connected to the cart, said conveyor comprising:

(a) a continuous member having a periphery and a peripheral longitudinal axis lying therein;

(b) rotating means for operatively engaging said continuous member and rotating it about a plurality of drive axes, said drives axes being substantially parallel to each other; and

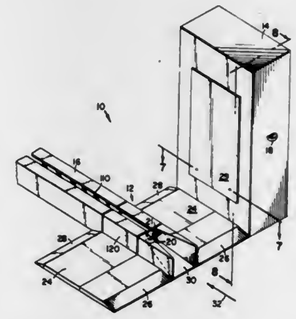
(c) means for releasably engaging the rotating member, said engaging means being operatively connected to said continuous member, wherein said conveyor is configured for propelling the cart in a direction substantially parallel to said continuous member's peripheral longitudinal axis, and wherein said continuous member periphery and said engaging means are configured to move relative to and beneath the cart's rotating member when the cart's motion is substantially impeded.

4,518,073

VEHICLE LOCK APPARATUS AND METHOD

Eugene R. Pastien, Moundsview, Minn., assignor to Smarte Carte, Inc., White Bear Lake, Minn.

Filed Jul. 8, 1983, Ser. No. 512,149
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C **22 Claims**



1. A vehicle lock apparatus operable in response to a predetermined movement of a vehicle from a vehicle starting point to a vehicle intermediate point and finally to a vehicle ending point, the vehicle including a valid key having first and second characteristics, the valid first state to a second state in response to a corresponding predetermined movement of the valid key from a key starting point to a key intermediate point and finally to a key ending point, the valid key being operatively connected to the vehicle and configured to come into operative proximity with said lock apparatus during the predetermined movement of the vehicle and the valid key, said lock apparatus comprising:

(a) first means for detecting the valid key first characteristic, said first detecting means changing from a first state to a second state and back to said first state in response to movement of the valid key as the vehicle moves from the vehicle starting point to the vehicle intermediate point;

(b) second means for detecting the valid key second characteristic, said second detecting means changing between a first state and a second enabled state in response to movement of the valid key as the vehicle moves from the vehicle intermediate point to the vehicle ending point;

(c) means for enabling said second detecting means to change from its first state to its second enabled state, said enabling means being operatively connected to said first and second detecting means, wherein said enabling means prevents said second detecting means from changing from its first state to its second enabled state when said first detecting means is in its second state; and

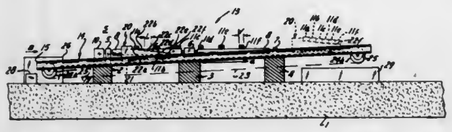
(d) anti-reversing means operatively connected to said sec-

ond detecting means for preventing a key from passing from the key ending point to the key intermediate point, wherein said lock apparatus changes from its first state to its second state in response to said second detecting means changing from its second enabled state.

4,518,074
ARRANGEMENT AND A METHOD FOR TRANSFERRING PRODUCTS IN METAL PROCESSING INSTALLATIONS

Carl Langner, Monsey, N.Y.; Michael Poran, Washington Township, Bergen County, and Geza Szarka, Glen Rock, both of N.J., assignors to Concast Incorporated, Montvale, N.J.

Filed Apr. 21, 1983, Ser. No. 487,207
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—425 **53 Claims**



1. An arrangement for transferring products in metal processing installations, particularly for use in continuous casting apparatus, comprising:

(a) support means for temporarily supporting a plurality of articles at a plurality of predetermined locations spaced by a predetermined distance, said support means having a support surface for the articles located in a predetermined plane;

(b) transport means for the articles moveable between a first location and a second location to which the articles are to be transferred;

(c) guide means for said transport means defining a predetermined path which connects said first and second locations and traverses said predetermined locations, said guide means and said transport means being designed such that said transport means removes the articles from said support means along a direction which makes an acute angle with said predetermined plane to thereby reduce sliding movement of the articles on said support means, and said guide means and said transport means being further designed such that said transport means groups the articles during travel from said first to said second location so that the articles abut or are spaced by a distance smaller than said predetermined distance upon arrival at said second location; and

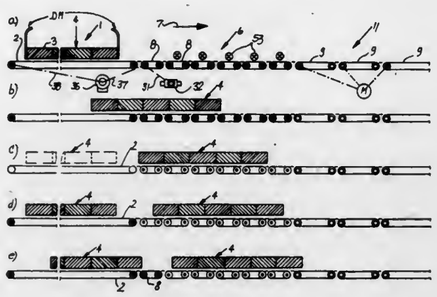
(d) drive means for moving said transport means along said predetermined path.

4,518,075
APPARATUS FOR GATHERING AND SINGULARIZING STACKS OF PAPER SHEETS OR THE LIKE

Kurt Aykut, and Klaus Reissmann, both of Hamburg, Fed. Rep. of Germany, assignors to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 374,939
Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118169
Int. Cl.³ B65G *47/31*
U.S. Cl. 198—460 **21 Claims**

1. Appparatus for manipulating groups of discrete commodities, particularly for singularizing groups of stacks of paper sheet or the like, comprising a first transporting unit arranged to receive a succession of groups consisting of at least substantially aligned neighboring commodities and to discontinuously advance such groups at a variable speed in a predetermined direction along a first portion of a predetermined path so that successive groups leaving said first unit are separated from each other by gaps, said first transporting unit comprising conveyor means for successive groups of commodities; a second transporting unit comprising a series of gathering conveyors defining a second portion of said path downstream of said first portion, as considered in said direction, first drive means for driving said conveyors at a constant first speed to thereby advance successive groups arriving from said first unit in said direction, second drive means for intermittently and individually driving at least certain of said conveyors at a higher second speed so as to eliminate the gaps between successive groups which are supplied by said first unit and to thus form a composite group of neighboring commodities, and means for

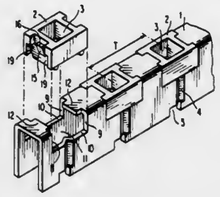


regulating the operation of said second drive means, said regulating means including means for accelerating said certain gathering conveyor to said second speed one after the other, as considered in said direction, said first transporting unit further comprising means for intermittently driving said conveyor means at speeds verying between zero speed and a speed exceeding said first speed; and a third transporting unit including singularizing conveyor means defining a third portion of said path downstream of said second portion and operative to convert said composite group into a row of spaced-apart equidistant commodities, and means for driving said singularizing conveyor means at a speed exceeding said first speed.

4,518,076
WORKPIECE PALLET TRAY WITH PLASTIC INSERT HOLDERS

Armin Feisel, Schaffhausen, and Walter Wirz, Pfaffikon, both of Switzerland, assignors to Reishauer AG, Switzerland

Filed Aug. 5, 1981, Ser. No. 290,022
Claims priority, application Switzerland, Aug. 15, 1980, 6178/80
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—648 **8 Claims**



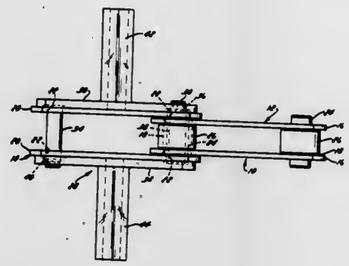
8. A pallet tray for transporting and storing workpieces, comprising; an elongated, metallic, base member (1) having upper and lower portions, a groove (7) provided in said lower portion and running in the longitudinal direction of the base member, said top portion including a plurality of openings, a plurality of plastic inserts (2) each having a holding pocket (3) configured to accommodate a particular workpiece, each said plastic insert being supported by and locked by cooperating locking means into each said opening receiving said insert, a bottom portion of each said plastic insert forming a low-fric-

tion upper boundary surface of said guide groove for engaging a guide rail.

4,518,077
POLYMERIC SNAP-THROUGH ATTACHMENT FOR A HOLLOW RIVET CHAIN

Kenneth J. Ronco, Brookfield; Robert Sommer, Mequon; Ken Nigel; Donald Grimes, both of New Berlin; James A. Zirbes, Wauwatosa, and Robert E. Stacey, Waukesha, all of Wis., assignors to Rexnord Inc., Brookfield, Wis.

Filed Aug. 23, 1982, Ser. No. 410,185
Int. Cl.³ B65G *19/24*
U.S. Cl. 198—731 **12 Claims**



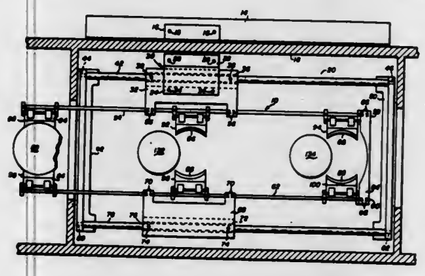
1. A polymeric snap-on attachment for a hollow rivet chain, comprising:

first and second side members adapted to lie adjacent to the sidebars of the chain, at least one of said side members including an integral extension, and at least one of said side members including an integral pin-like projection adapted to fit through one of the hollow rivets in said chain; the other of said side members having a receptacle which receives said pin-like projection with a snap fit so as to fix said first and second side members to each other and to the chain, and an inwardly directed leg located on the lower portion of each side member and being adapted to be attached to each other underneath the chain.

4,518,078
WAFER TRANSPORT SYSTEM

Charles B. Garrett, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 381,022, May 24, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 634,175
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—775 **9 Claims**



1. A wafer transport system comprising in combination:

transport means for carrying a member in translational motion;

a first magnet coupled to said transport means;

a second magnet mounted on a first plate, said first plate being connected to a fixed first guide rail by a bearing means permitting translational motion in a single plane;

a first transport rail adjacent and parallel to the first guide rail and rigidly connected to said first plate;

a second transport rail adjacent and parallel to the first transport rail and rigidly connected to the first transport rail fixing the first and second transport rails in the same plane as said first plate;

a second plate rigidly connected to the second transport rail;

a second fixed guide rail connected to said second plate by a bearing means to permit motion in a single plane;

a first, second, and third pair of wafer support arms with the first arm of a given pair pivotally mounted to the first transport rail and the second arm pivotally mounted to the second transport rail at a position directly opposite the first arm; and

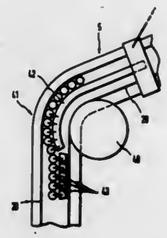
a lifting means for taking a wafer off the wafer support arms and returning a wafer to the wafer support arms;

whereby movement of the first magnet causes movement of the second magnet thereby causing the first and second transport rails to move in the same direction and distance as the first magnet thereby positioning the wafer support arms in a desired position with respect to the lifting means.

4,518,079
BEND UNIT FOR A BELT CONVEYOR

Jürgen Paelke, An der Este 13, D-2117 Tostedt, Fed. Rep. of Germany

PCT No. PCT/EP82/00178, § 371 Date May 20, 1983, § 102(e) Date May 20, 1983, PCT Pub. No. WO83/01057, PCT Pub. Date Mar. 31, 1983
PCT Filed Aug. 23, 1982, Ser. No. 506,643
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138192
Int. Cl.³ B65G *21/10*
U.S. Cl. 198—864 **6 Claims**



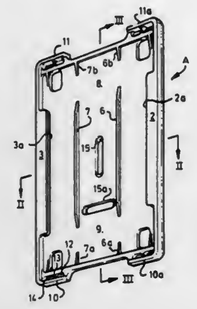
1. A bend unit for a bulk belt conveyor having a boom able to be luffed about a turning axis between upper and lower end positions of a boom luffing range, which at an outer free end thereof has an upright hanging leg joined with it, the conveyor further having in the boom and the leg a conveyor belt with carrying and return runs, of which the carrying run between the top end of the supporting leg and the free end of the boom is supported at the said bend unit by runners in the form of a curved rolling guide at the said free boom end, characterized in that the curved rolling guide made up of runners has a stiff part-circular guide and lower rocking jointed links at an upper end of said upright leg, the said jointed links keeping the runners in position and on luffing said boom into its top end position all the said links come to be supported one by one so as to take up a belt-supporting curved form as part of circle using supporting means.

4,518,080

CARD, ESPECIALLY ID-CARD INTENDED RETAINER

Kurt L. Ohlson, Harvägen 3B, 17800 Ekerö , Sweden

Filed Sep. 9, 1983, Ser. No. 530,665
Claims priority, application Sweden, Sep. 10, 1982, 8205146
Int. Cl.[3] A45C *11/18*
U.S. Cl. 206—39 6 Claims



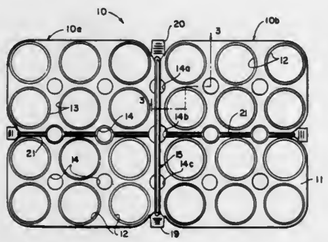
1. A retainer for a card, especially ID-card, provided with a bottom plate including opposite edges defining facing slots, said bottom plate and said opposite edges connected by bottom parts which guide opposite edge portions of the card when the card is inserted into said retainer, wherein two parallel ridges are provided on said bottom plate so as to give the card a curvature between said opposite edges; said ridges being discontinuous between opposite end portions of said plate positioned transversely to said opposite edges; said opposite end portions defining stop means for preventing movement of the card.

4,518,081

MULTI-UNIT TEAR-AWAY CONTAINER CARRIER

Pierre J. de Larosiere, 30 Duque de Palmela, 4C, 1200 Libson, Portugal

Filed Feb. 18, 1983, Ser. No. 467,965
Int. Cl.[3] B65D *75/00*
U.S. Cl. 206—158 4 Claims



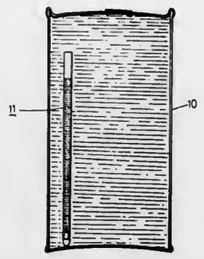
1. A multi-unit tear-away container carrier, comprising:
a substantially flat sheet having a plurality of substantially uniformly distributed flanged openings therethrough for gripping and holding in spaced relationship the upper ends of a plurality of containers;
at least one tear strip formed in the sheet, defining sections of the carrier separable from one another, each section having at least one flanged opening therethrough for holding at least one container; and
said carrier having a plurality of finger holes therein, disposed to enable any section of the carrier or the entire carrier to be lifted and carried by grasping appropriate pairs of finger holes, said tear strip extending around and forming a reinforcement to at least some of said finger holes.

4,518,082

DEVICE FOR TEMPORARILY ISOLATING AN ADDITIVE IN A BEVERAGE CONTAINER

Shem D. Ye, Yen Cheng District, Kaohsiung City, Taiwan

Filed Jan. 5, 1984, Ser. No. 568,362
Int. Cl.[3] B65D *77/04*
U.S. Cl. 206—217 2 Claims



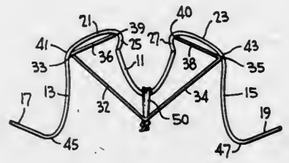
1. In a tight beverage container, a device for temporarily isolating an additive from a beverage comprising: a tube having a closed end and an open end for receiving an additive and a hole provided near said closed end; and a mass provided in said closed end so as to direct said closed end downward when said tube is suspended in the beverage container.

4,518,083

POULTRY TRUSSING DEVICE CARTRIDGE

Oscar C. Mayer, Jr., Lititz, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Nov. 21, 1983, Ser. No. 553,628
Int. Cl.[3] B65D *83/00*
U.S. Cl. 206—340 24 Claims



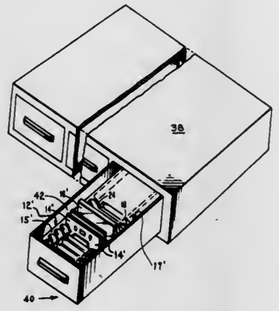
1. A cartridge for storing, in nested relationship, a plurality of poultry trussing wires of the type which comprise a length of resilient wire bent in plural longitudinal locations to define a generally V-shaped central segment of predetermined width with a pair of symmetrically disposed co-planar leg segments on opposite sides thereof, said central segment residing in a first plane which intersects at a first predetermined angle, a second plane defined by said leg segments, said cartridge comprising: an elongated member bent along first, second, and third parallel longitudinally-extending linear bends to define a first support rack having first, second, third and fourth rack sections, said first bend having a second predetermined angle and being disposed substantially centered with respect to said second and third bends between said first and second sections, said second bends being disposed between said first and third sections and having a third predetermined angle, said third bend being disposed between said second and fourth sections and having said third predetermined angle, wherein said first and second sections define a recess between said second and third bends, said recess being sufficiently large to receive the V-shaped central segment of multiple nested trussing wires positioned such that opposite leg segments of the trussing wires rest on said second and third bends, respectively.

4,518,084

STORAGE SYSTEM FOR EITHER BOXED OR UNBOXED CASSETTES

Joseph L. Berkman, Mamaroneck, N.Y., assignor to Berkman Industries, Inc., Boynton Beach, Fla.

Continuation-in-part of Ser. No. 429,200, Sep. 30, 1982, Pat. No. 4,432,453. This application Sep. 13, 1983, Ser. No. 531,779
Int. Cl.[3] B65D *85/30, 85/62*
U.S. Cl. 206—387 15 Claims



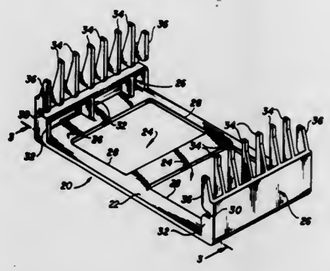
1. A storage unit or holder for magnetic tape cassettes and tape cassette boxes comprising at least one row having a plurality of tandem compartments for interchangeably receiving and storing either a boxed cassette or a pair of unboxed cassettes in the same compartment, each said compartment having opposite side walls connected by means of a bottom wall, and having twin parallel storage zones disposed transverse to said opposite side walls, each said compartment further comprising projection means separating and dividing said compartment into said twin parallel storage zones on either side of said projection means; at least one of said opposite side walls having vertical rib means disposed inwardly from said side walls for guiding and securely retaining a single boxed cassette in place in said compartment atop said projection means, and vertical end stop means for limiting transverse movement of unboxed cassettes stored securely retained between said projection means and said vertical rib means.

4,518,085

MULTI-PURPOSE TRANSPORT TRAY

William M. Chisholm, Midlothian, and Fred E. Thompson, Quinton, both of Va., assignors to AT&T Technologies, Inc., New York, N.Y.

Continuation of Ser. No. 373,191, Apr. 29, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 537,542
Int. Cl.[3] B65D *1/38, 21/00*
U.S. Cl. 206—454 4 Claims



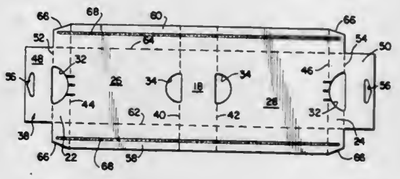
1. A multi-purpose, stackable transport tray comprising:
a base having edges, a first surface and a second surface;
two side portions having sides and extending from the first surface of the base at opposite edges of the base
a shelf running the length of each side portion projecting from the inside of each side portion toward the opposite side portion and located on the side of said side portion closest to the opposite side portion;
a plurality of first stiffening members extending from the shelf to the base and extending generally in a plane oriented substantially perpendicular to the side portions and the base;
a plurality of fin-shaped support members projecting from each side portion generally toward the other side portion and extending generally in a plane oriented substantially perpendicular to the side portions and the base, each support member spaced away from the shelf by an arbitrary amount, the shelves and said support members cooperating to define a plurality of compartments for supporting similarly-shaped articles in substantially parallel relationship;
a plurality of first ribs on the second surface of the base, extending in a direction parallel with the side portions, said ribs being positioned so as to interlock and engage the support members of an underlying tray;
a plurality of second ribs on the second surface of the base, extending perpendicular to the first ribs and so positioned to engage the support members of an underlying tray; and
the tops of the support members arranged to project adjacent the first and second ribs of a similar, overlying tray so as to prevent relative motion of the tray in either of two dimensions with respect to an overlying tray when an overlying tray is stacked on top of the tray, with or without articles within said compartments.

4,518,086

REINFORCED DISPLAY CARTON AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 16, 1984, Ser. No. 570,989
Int. Cl.[3] B65D *75/02, 65/16*
U.S. Cl. 206—485 2 Claims



1. A display carton comprising:
(a) a pair of top display panels disposed in face-to-face contact and adhered together;
(b) a pair of upper panels connected to said top display panels along first fold lines, said upper panels depending from said top display panels;
(c) first openings formed in each of said upper panels closely adjacent to said first fold lines, said first openings being adapted to receive top edges of an article contained in said carton;
(d) a pair of side panels connected to said upper panels along second fold lines, said side panels depending from said upper panels;
(e) a bottom panel foldably connected to said side panels along third fold lines, said bottom panel connecting bottom edges of said side panels;
(f) second openings formed in each of said side panels closely adjacent to said third fold lines, said second openings being adapted to receive bottom edges of an article contained in said carton; and
(g) a reinforcing flap foldably connected to each end edge of said carton, each reinforcing flap extending continuous and uninterrupted from one of said first fold lines along

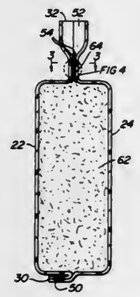
said upper panels, said side panels, and said bottom panel to the other of said first fold lines, and each of said reinforcing flaps being folded over its entirety into face-to-face contact with the inner surface of each of said upper, side and bottom panels and adhered thereto, said reinforcing flaps extending inwardly sufficiently to lie closely adjacent to and reinforce end edges of said first and second openings.

4,518,087

SEALED FLEXIBLE CONTAINER WITH NON-DESTRUCTIVE PEELABLE OPENING

Luigi Goglio, Milan, Italy, assignor to Fres-co System USA, Inc., Telford, Pa.

Filed May 20, 1983, Ser. No. 496,770
Int. Cl.³ B65D *33/16*
U.S. Cl. 206—632 **6 Claims**



1. A container comprising a flexible sheet material capable of being sealed for closing off the interior of the container from the ambient atmosphere, said sheet material being resistant to tearing, said container having an opposed pair of walls formed by said sheet material, each of said walls including an inner surface and an outer surface, said container comprising a mouth portion formed between said walls and of a predetermined length, each of said walls including a peel strip permanently adhered to the inner surface thereof and extending substantially the entire length of said mouth portion, each of said peel strips comprising a coextrusion of at least two plastic material layers permanently adhered to each other, said peel strips being disposed so that when said container is sealed portions of the same plastic material layer of each of said coextrusions are in releaseable engagement with each other to form an air-tight interfacial seal therebetween, said interfacial seal being readily openable by peeling said engaging portions of said peel strips from each other to provide a clean opening providing ready access to the interior of said container without tearing said sheet material.

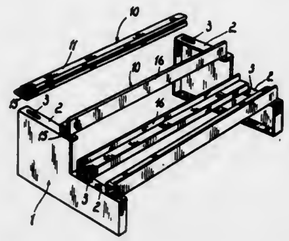
4,518,088

MODULAR ASSEMBLY-TYPE STAND STRUCTURE PARTICULARLY FOR SUPPORTING STORAGE BATTERIES

Mario Passoni, Brugherio, Italy, assignor to Passoni Paolo & Figli S.r.l., Brugherio, Italy

Filed Sep. 17, 1982, Ser. No. 419,638
Claims priority, application Italy, Feb. 5, 1982, 19484 A/82
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—13 **5 Claims**

1. A modular assembly-type stand structure particularly for supporting storage batteries, comprising:
step-like shaped supporting side plates, defining at least two shelf planes;
top edges of said side plates, whose surfaces extend substantially perpendicular to said side plates;
longitudinal stringers extending in lengthwise direction arranged for mutual engagement at said top edges;
through openings, having an elongated configuration in said top edges for widthwise adjustment of the mutual distance between a pair of said longitudinal stringers;
a slot at the lower face of said longitudinal stringers adapted to engage with said top edges for lengthwise adjustment



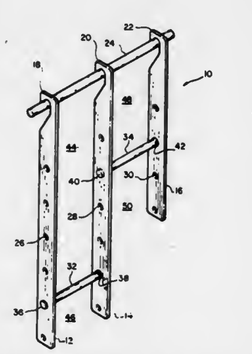
of the mutual distance between a pair of said supporting side plates; and
removable mounting means connecting said longitudinal stringers to said side plates.

4,518,089

AUXILIARY CLOSET SYSTEM

Frank P. Campbell, 13463 W. 78th Pl., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 318,046, Nov. 4, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,102
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—118 **13 Claims**



1. An auxiliary closet rod assembly adapted to be mounted on and supported solely by a main horizontally extending closet rod device fixedly supported by permanently mounted closet structure, comprising:
at least two rigid elongated hanger bar means, each having spaced opposite side surfaces and a hanger opening at an upper end thereof for pivotal engagement with the main closet rod device and for supporting said hanger bar means in vertically downwardly extending relationship to the main closet rod device and having at least one rod support opening defined by an annular surface in an intermediate portion thereof for receiving and supporting an auxiliary rod means, the hanger opening and the support opening of each hanger bar means being spaced apart equal distances so as to be vertically alignable;
at least one rigid auxiliary rod means having opposite end portions slidably mountable in and extending through said support openings in adjacent ones of said hanger bar means and extending horizontally therebetween beneath the main closet rod for hanging garments thereon;
retaining means being mountable on said opposite end portions of said rigid auxiliary rod means and operably associated with said hanger bar means circumjacent said support

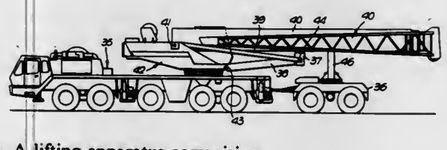
openings for limiting longitudinal movement of said auxiliary rod means relative to said hanger bar means; said retaining means comprising:
at least one cup shape member being made of one piece of resilient flexible molded plastic material and having a central opening for slidably frictionally telescopically receiving the end portion of said auxiliary rod member and an outer wall surface for slidably frictionally engaging the surface of said support opening; and
releasable locking means associated with said cup-shape member for frictionally releasably locking said cup-shape member and the end portion of said auxiliary rod member in said support opening in said hanger bar member.

4,518,090

BOOMS FOR CRANES AND THE LIKE

William R. Thomasson, County Durham, England, assignor to Coles Cranes Limited, Sunderland, England

Filed Aug. 18, 1982, Ser. No. 409,222
Claims priority, application United Kingdom, Aug. 18, 1981, 8125175
Int. Cl.³ B66C *23/36*
U.S. Cl. 212—189 **11 Claims**



1. A lifting apparatus comprising:
a platform;
a boom having head and foot ends and being pivotally mounted to the platform at its foot end at a first pivot point on the platform;
a cradle sized to slidably support the boom;
an extendible ram pivotally mounted to the platform at its one ram end at a second pivot point on the platform and to the cradle at its other ram end at a third pivot point on the cradle;
a tension link having first and second link ends and being pivotally mounted to the platform at said first link end at a fourth pivot point on the platform and to said cradle at said second link end at a fifth pivot point on the cradle, said first and fourth pivot points being generally coincident; and
a holdfast member fastened to said cradle, said cradle and holdfast member arranged and adapted to loosely surround said boom so to keep said boom from bouncing in said cradle.

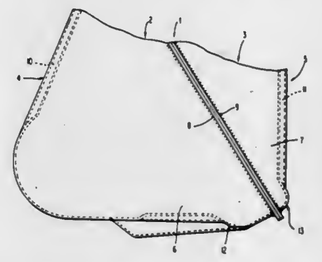
4,518,091

MOTOR VEHICLE FUEL TANK

Dieter Scheurenbrand, Ostfildern; Manfred Stotz, Aichwald; Manfred Distel, Ostfildern, and Einhard Kleinschmit, Esslingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 215,844, Dec. 12, 1980, abandoned. This application Apr. 11, 1983, Ser. No. 483,594
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949900
Int. Cl.³ B65D *6/32, 6/38*
U.S. Cl. 220—5 A **11 Claims**

1. A composite fuel tank for motor vehicles, comprising two shaped shells each having a shell bottom adjoined by shell walls, each of said two shaped shells being provided with circumferential shell rim means along which the two shells are welded together, said welded together shell rim means forming a seam extending upwardly from a bottom area to a top area of the composite fuel tank, said seam including a portion extending generally parallel to and spaced from the bottom area of the composite tank, each said shell bottom forming one of two side walls in an installed composite fuel tank, at least one shell bottom having reinforcing means extending and tapering generally toward the bottom of the fuel tank, one of the shell walls forming at least part of a bottom wall of the composite fuel tank and extending substantially transversely to the reinforcing means, channel-like outwardly extending bulge means extending generally transversely to said reinforcing means for forming a deformation zone, said bulge means being associated with ends of the reinforcing means and disposed proximate and generally parallel to the portion of the seam extending substantially parallel to the bottom area of the composite tank, wherein stresses in said tank due to fuel contained therein and transmitted to said deformation zone, will be absorbed thereby.

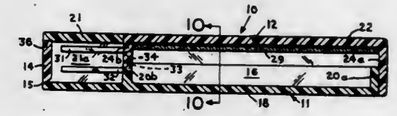


4,518,092

MOLDED CONTAINER WITH LIVING HINGES

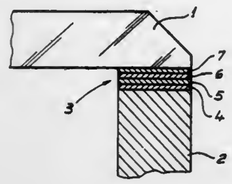
Joseph P. Contreras, Sr., Brockden Dr., Mendam, N.J. 07945

Filed Jan. 18, 1984, Ser. No. 571,787
Int. Cl.³ B65D *39/00*
U.S. Cl. 220—20.5 **7 Claims**



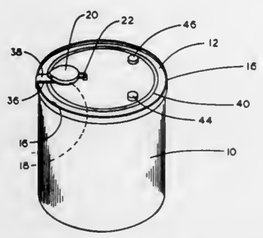
1. An integrally injection molded container formed of synthetic thermoplastic material comprising,
a. base member means defining a storage compartment, and an enclosed side compartment disposed in general alignment with the storage compartment,
b. said means defining the enclosed side compartment open at each respective opposite end thereof, and one of said open ends disposed in communication with the storage compartment,
c. a first closure member connected by a living hinge to the base member means on the section thereof defining the storage compartment movable from an open position to a closed position for sealing the storage compartment, and
d. said first closure member having a detachable latch means for holding the first closure means in the closed position,
e. a second closure means connected by a living hinge to said base member means and disposed for closing and generally sealing the open end of said enclosed side compartment remote from the end in communication with the storage compartment, and
f. said second closure member having a latch means for generally locking the second closure member in the closed position.

4,518,093
WATCH CASE
Paul Gogniat, Chemin de la Prévote 14, 2504 Bienne, and Eric Loth, Tiefenmattweg 40, 2500 Bienne, both of Switzerland
Filed May 15, 1984, Ser. No. 610,418
Claims priority, application Switzerland, May 19, 1983, 2743/83
Int. Cl.³ G04B *37/00*
U.S. Cl. 220—82 R **4 Claims**



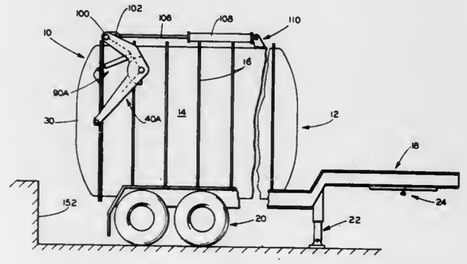
1. A watch case which comprises a metal part and a glass soldered to the metal part, said glass having a metal coating thereon over the area thereof soldered to the metal part, said coating including an outer layer of a material similar to that of the metal part.

4,518,094
REMOVABLE LID AND POUR SPOUT
Ronald W. Kodman, 467 N. Van Ave., Fresno, Calif. 93710
Filed Jul. 21, 1981, Ser. No. 285,598
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—254 **2 Claims**



1. A removable closure member for use in closing the opening of a cylindrical container, said member being comprised of a plastic pliable material, said container including a peripheral ridge with an annular tubular shaped receiving groove for receiving the closure member, said groove having an annular opening being reduced in size in relation to the size of the tubular shaped groove, said removable closure member including:
- a substantially flat discal shaped portion having an outer peripheral edge, said portion having a circumferential size approximately equal to the circumferential size of said container and adapted to be placed over said container;
- an opening in said discal shaped portion being disposed the peripheral edge of said discal shaped portion;
- a downwardly extending sealing skirt disposed around the outer peripheral edge of said discal shaped portion adapted to be inserted into the opening in said tubular receiving groove of the container;
- an inner annular lip disposed on the inner side of said downwardly extending skirt defining an annular groove between said lip and the under portion of said flat discal portion to effect sealing of said skirt in said receiving groove in said cylindrical container;
- a beveled portion on said inner side of said skirt below said lip to reduce the size of said skirt to accommodate entrance of said skirt into the reduced opening in the groove in the container; and
- means disposed in said substantially flat discal shaped portion for causing the overall diameter of said member to increase in size when stretched on a container of enlarged diameter, said means including an annular channel formed in said flat discal shaped portion and spaced inwardly from the outer peripheral edge of said discal shaped portion.

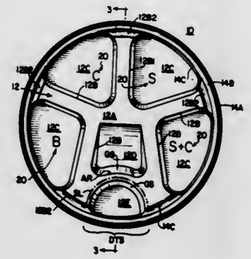
4,518,095
DOOR ASSEMBLY
Gerald H. Engwert, Toledo, Ohio, assignor to Fresh Tech, Inc., Grand Rapids, Ohio
Filed Jun. 1, 1984, Ser. No. 616,130
Int. Cl.³ B65D *43/14*
U.S. Cl. 220—260 **19 Claims**



15. A door assembly for providing access to a chamber comprising, in combination, a chamber having sidewalls, a door, a pair of crank arms, each of said crank arms having a centrally disposed pivot, a first end spaced from said pivot and a second end spaced from said pivot, said first pair of ends pivotally secured to said door along a first axis, bearing means secured to said sidewalls of said chamber for supporting said pair of crank arms at said centrally disposed pivots for motion about a second axis parallel to said first axis, said bearing means including pairs of opposed bearing plates disposed normal to said second axis means extending along a third axis parallel to said first axis for coupling said second pairs of ends, means coupled to said just recited means for moving said pair of crank arms about said second axis and a pair of links pivotally secured to said door at points along a fourth axis parallel to said first axis and extending to a fifth axis adjacent and parallel to said second axis.

4,518,096
DRINK-THROUGH CONTAINER LID WITH REMOVABLE DRINK-THROUGH SECTION
Thomas W. Winstead, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed May 12, 1983, Ser. No. 494,048
Int. Cl.³ B65D *41/46, 41/48*
U.S. Cl. 220—268 **4 Claims**

1. A flexible plastic lid means for open-mouthed containers having a peripheral bead or rim defining the open mouth thereof, comprising:
- a rim receiving peripheral bead cavity means formed in the outer periphery of said lid for engaging the peripheral bead of a said container and retaining said lid means thereon;
- central web means bounded by said bead cavity means for overlying the open mouth of a said container and having a raised area defined therein; and
- finite score line means including a score line formed in said raised area and oriented therein to subtend a given peripheral portion of said bead cavity means, the configuration of said score line means substantially defining the boundaries of a tear-away drink-through section in said lid means extending inboard of said bead cavity means;
- said score line means including gripping means defined by surfaces disposed on opposite sides of said score line and forming at least a part of said raised area and also being disposed in spaced-apart relationship with said rim and radially inwardly of said rim for applying a squeezing force transversely of said score line at a location remote from said rim, said score line means being responsive to said squeezing force so applied to fracture said score line and render said tear-away drink-through section removable from said lid means by way of predictable fracture of said score line in response to a pulling force subsequently applied to said gripping surfaces adjoining said drink-through section;
- first and second depressed cavity means defined in said raised area and mutually bounded over a portion of said finite score line means to define said gripping surfaces; and
- wherein said gripping means comprises upstanding first and second surface means defined in said first and second depressed cavity means, respectively, on opposite sides of said score line in the provision of a ridged shape to that portion of said score line means.


3
1282
10
12C
20
12B
12
S
14C
14B
14A
12BC
12A
B
S+C
AR
12D
20
12E
12F
12G
12H
12J
12K
12L
12M
12N
12P
12Q
12R
12S
12T
12U
12V
12W
12X
12Y
12Z
12AA
12AB
12AC
12AD
12AE
12AF
12AG
12AH
12AJ
12AK
12AL
12AM
12AN
12AP
12AQ
12AR
12AS
12AT
12AU
12AV
12AW
12AX
12AY
12AZ
12BA
12BB
12BC
12BD
12BE
12BF
12BG
12BH
12BJ
12BK
12BL
12BM
12BN
12BP
12BQ
12BR
12BS
12BT
12BU
12BV
12BW
12BX
12BY
12BZ
12CA
12CB
12CC
12CD
12CE
12CF
12CG
12CH
12CJ
12CK
12CL
12CM
12CN
12CP
12CQ
12CR
12CS
12CT
12CU
12CV
12CW
12CX
12CY
12CZ
12DA
12DB
12DC
12DD
12DE
12DF
12DG
12DH
12DJ
12DK
12DL
12DM
12DN
12DP
12DQ
12DR
12DS
12DT
12DU
12DV
12DW
12DX
12DY
12DZ
12EA
12EB
12EC
12ED
12EE
12EF
12EG
12EH
12EJ
12EK
12EL
12EM
12EN
12EP
12EQ
12ER
12ES
12ET
12EU
12EV
12EW
12EX
12EY
12EZ
12FA
12FB
12FC
12FD
12FE
12FF
12FG
12FH
12FJ
12FK
12FL
12FM
12FN
12FP
12FQ
12FR
12FS
12FT
12FU
12FV
12FW
12FX
12FY
12FZ
12GA
12GB
12GC
12GD
12GE
12GF
12GG
12GH
12GJ
12GK
12GL
12GM
12GN
12GP
12GQ
12GR
12GS
12GT
12GU
12GV
12GW
12GX
12GY
12GZ
12HA
12HB
12HC
12HD
12HE
12HF
12HG
12HH
12HJ
12HK
12HL
12HM
12HN
12HP
12HQ
12HR
12HS
12HT
12HU
12HV
12HW
12HX
12HY
12HZ
12JA
12JB
12JC
12JD
12JE
12JF
12JG
12JH
12JJ
12JK
12JL
12JM
12JN
12JP
12JQ
12JR
12JS
12JT
12JU
12JV
12JW
12JX
12JY
12JZ
12KA
12KB
12KC
12KD
12KE
12KF
12KG
12KH
12KJ
12KK
12KL
12KM
12KN
12KP
12KQ
12KR
12KS
12KT
12KU
12KV
12KW
12KX
12KY
12KZ
12LA
12LB
12LC
12LD
12LE
12LF
12LG
12LH
12LJ
12LK
12LL
12LM
12LN
12LP
12LQ
12LR
12LS
12LT
12LU
12LV
12LW
12LX
12LY
12LZ
12MA
12MB
12MC
12MD
12ME
12MF
12MG
12MH
12MJ
12MK
12ML
12MM
12MN
12MP
12MQ
12MR
12MS
12MT
12MU
12MV
12MW
12MX
12MY
12MZ
12NA
12NB
12NC
12ND
12NE
12NF
12NG
12NH
12NJ
12NK
12NL
12NM
12NN
12NP
12NQ
12NR
12NS
12NT
12NU
12NV
12NW
12NX
12NY
12NZ
12PA
12PB
12PC
12PD
12PE
12PF
12PG
12PH
12PJ
12PK
12PL
12PM
12PN
12PP
12PQ
12PR
12PS
12PT
12PU
12PV
12PW
12PX
12PY
12PZ
12QA
12QB
12QC
12QD
12QE
12QF
12QG
12QH
12QJ
12QK
12QL
12QM
12QN
12QP
12QQ
12QR
12QS
12QT
12QU
12QV
12QW
12QX
12QY
12QZ
12RA
12RB
12RC
12RD
12RE
12RF
12RG
12RH
12RJ
12RK
12RL
12RM
12RN
12RP
12RQ
12RR
12RS
12RT
12RU
12RV
12RW
12RX
12RY
12RZ
12SA
12SB
12SC
12SD
12SE
12SF
12SG
12SH
12SJ
12SK
12SL
12SM
12SN
12SP
12SQ
12SR
12SS
12ST
12SU
12SV
12SW
12SX
12SY
12SZ
12TA
12TB
12TC
12TD
12TE
12TF
12TG
12TH
12TJ
12TK
12TL
12TM
12TN
12TP
12TQ
12TR
12TS
12TT
12TU
12TV
12TW
12TX
12TY
12TZ
12UA
12UB
12UC
12UD
12UE
12UF
12UG
12UH
12UJ
12UK
12UL
12UM
12UN
12UP
12UQ
12UR
12US
12UT
12UU
12UV
12UW
12UX
12UY
12UZ
12VA
12VB
12VC
12VD
12VE
12VF
12VG
12VH
12VJ
12VK
12VL
12VM
12VN
12VP
12VQ
12VR
12VS
12VT
12VU
12VV
12VW
12VX
12VY
12VZ
12WA
12WB
12WC
12WD
12WE
12WF
12WG
12WH
12WJ
12WK
12WL
12WM
12WN
12WP
12WQ
12WR
12WS
12WT
12WU
12WV
12WW
12WX
12WY
12WZ
12XA
12XB
12XC
12XD
12XE
12XF
12XG
12XH
12XJ
12XK
12XL
12XM
12XN
12XP
12XQ
12XR
12XS
12XT
12XU
12XV
12XW
12XX
12XY
12XZ
12YA
12YB
12YC
12YD
12YE
12YF
12YG
12YH
12YJ
12YK
12YL
12YM
12YN
12YP
12YQ
12YR
12YS
12YT
12YU
12YV
12YW
12YX
12YY
12YZ
12ZA
12ZB
12ZC
12ZD
12ZE
12ZF
12ZG
12ZH
12ZJ
12ZK
12ZL
12ZM
12ZN
12ZP
12ZQ
12ZR
12ZS
12ZT
12ZU
12ZV
12ZW
12ZX
12ZY
12ZZ
13A
13B
13C
13D
13E
13F
13G
13H
13J
13K
13L
13M
13N
13P
13Q
13R
13S
13T
13U
13V
13W
13X
13Y
13Z
14A
14B
14C
14D
14E
14F
14G
14H
14J
14K
14L
14M
14N
14P
14Q
14R
14S
14T
14U
14V
14W
14X
14Y
14Z
15A
15B
15C
15D
15E
15F
15G
15H
15J
15K
15L
15M
15N
15P
15Q
15R
15S
15T
15U
15V
15W
15X
15Y
15Z

dropping, a motor for rotating the vending wheel, and means for activating the motor in response to the insertion of a coin;

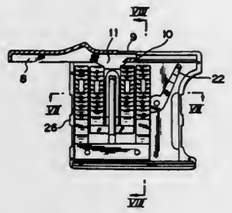
said predetermined time interval being longer than the time ordinarily required for a user to pull the handle and for all the symbol reels in the slot machine mechanism to stop.

4,518,099

PORTABLE TOOTHPICK CASE

Takao Makishima, Suita; Shigeru Inaba, Kawachinagano, and Yasuyoshi Wada, Osaka, all of Japan, assignors to Sunstar Kabushiki Kaisha, Takatsuki, Japan

Filed Sep. 7, 1983, Ser. No. 530,098
Claims priority, application Japan, Sep. 9, 1982, 57-137265[U]
Int. Cl.³ A47G *21/12*
U.S. Cl. 221—30 **4 Claims**



1. A portable toothpick case which comprises

a flat box-like body composed of a flat base member and a flat cover member and having elongate top and bottom openings lengthwisely extended on its top and bottom periphery walls, respectively;

a lid member lengthwisely slidably mounted on the top opening of the body and having a concave cross-section and a means for taking out toothpicks contained in the body;

a toothpick delivery means held on the inside wall of the base member;

a movable bottom plate mounted on the bottom opening to open and close the bottom opening; and

a fixing means for integrally fixing the base and cover members,

said means for taking out toothpicks being composed of an opening for taking out a toothpick provided on the outer surface of one lengthwise end of the lid member, a guide plate provided inside of the lid member below the opening, and a projection projected toward the inside of the body from the side wall of the lid member adjacent to the inner surface of the flat side wall of the base member;

said delivery means being composed of a stopper member, a moving member, a supporting member and a "modified V-shaped" lever provided on the inner surface of the flat side wall of the base member, said stopper member being an elastic deformable elongate strip longitudinally extended from the bottom of the base member with spacing from the inner surface of the inside wall of the base member one end of which is fixed to the bottom of the base member, said moving member being an longitudinally extended elastic deformable elongate strip similar to the stopper member, said supporting member being incorporated with the moving member and longitudinally movably supporting the moving member, and said lever being pivoted at its middle part to the inner surface of the base member and one free end thereof being engaged with the supporting member

said stopper member and said moving member having at least one nail on their surface facing to the cover member, respectively;

said lever having such a length of arm and an angle of the "modified V-shape" that the other free end is pushed down by the projection when the lid member is closed by sliding; and

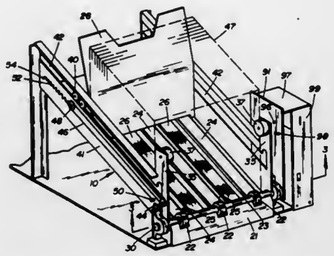
said supporting member having such a length that it comes into contact with the projection of the lid member to be pushed down when the lid member is opened by sliding.

4,518,100

NEWSPAPER DISPENSING MACHINE

George E. Martin, 14131 - 76th Ave., Surrey, British Columbia, Canada

Filed Dec. 20, 1982, Ser. No. 450,993
Int. Cl.³ B65H *3/24*
U.S. Cl. 221—225 **20 Claims**



1. A newspaper dispensing machine comprising:

(a) a frame;

(b) slide means mounted on said frame for supporting a vertically orientated stack of newspapers whose folded edges face downwardly, said slide means having a discharge end;

(c) pressure plate means mounted on said frame for biasing the vertically orientated stack of newspapers towards the discharge end of said slide means;

(d) a discharge chute located proximate the discharge end of said slide means;

(e) transporting means mounted on said frame proximate the discharge end of said slide means having lip means for engaging a folded edge of a leading newspaper in the stack of newspapers at the discharge end of said slide means;

(f) friction belt means mounted on said frame having an upper newspaper contacting surface with a high coefficient of friction with paper and reversibly movable from a retracted position spaced apart from the folded edges of the stack of newspapers to an extended position abutting the folded edges of the newspapers and slightly upwardly and rearwardly of the retracted position;

(g) moving means mounted on said frame and coupled to said friction belt means for reversibly moving the latter from the retracted position to the extended position and coupled to said transporting means such that said transporting means raises the leading newspaper above a notional plane defined by folded edges of the remaining newspapers in the stack, then said friction belt means moves from the retracted position to the extended position raising the remaining newspapers in the stack and moving them away slightly from the leading newspaper to relieve pressure on the leading newspaper and then said moving means moves the leading newspaper to and discharges it into said discharge chute.

4,518,101

METERING SYSTEM FOR CORROSIVE LIQUIDS AND METHOD THEREFOR

Philip R. Robinson, New Kensington, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

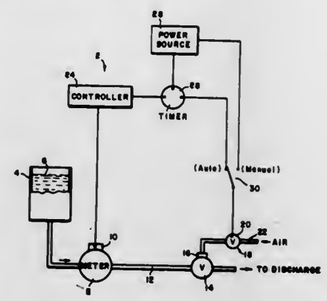
Filed Mar. 24, 1983, Ser. No. 478,575
Int. Cl.³ B67D *5/30*
U.S. Cl. 222—1 **9 Claims**

1. A metering system for automatically controlling and monitoring corrosive liquids, the system comprising:

conduit means through which the corrosive liquid flows from a reservoir to a discharge location;

valve means in said conduit means for commencing and stopping the flow of corrosive liquids through the conduit means, said valve means being corrosion resistant and having an actuator for opening and closing the valve;

means for metering the flow of corrosive liquids upstream of the valve means, said metering means being corrosion resistant, being maintained full of the corrosive liquid and having a transmitting device for transmitting an electrical signal proportional to the flow;



means for controlling the flow of corrosive liquids, said means electrically connected to said metering means and having a receiving device for receiving the electrical signal of said metering means and counting volume units of flow through the metering means, and said means capable of transmitting an electrical signal to stop flow through the valve at a predetermined volume;

means for activating the system at a preset time, said means electrically connected from a power supply to the controlling means; and

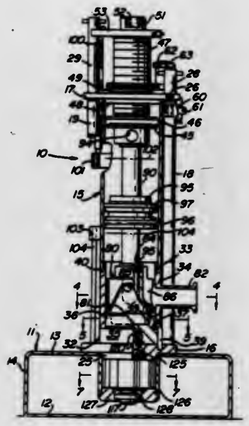
means for actuating the valve means, said actuating means being electrically connected to the timing means.

4,518,102

METERING DEVICE FOR FLUIDS

Dale Tanner, P.O. Box 54, Rte. 47, Hurffville, Sewell, N.J. 08080

Filed Feb. 17, 1983, Ser. No. 467,203
Int. Cl.³ G01F *11/44*
U.S. Cl. 222—61 **8 Claims**



1. A metering device comprising a mounting structure, a cylinder mounted by said mounting structure, and closures closing opposite ends of said cylinder, a piston in said cylinder shiftable between said end closures, a conduit in said cylinder extending in fluid communication between said enclosures, angularly spaced inlet and outlet connections opening into one end closure, a valve plug angularly shiftable in said cylinder adjacent to said one end closure, said valve plug having angularly spaced passageways communicating said connections with respective sides of said piston and upon plug shifting communicating said connections with other sides of said piston, and gasket means extending in sealing relation about said plug and on opposite sides of said passageways to seal the latter from each other, said passageways being generally coplanar, and said gasket means extending generally sinusoidally an even number of cycles about the circumference of said valve plug onto opposite sides of said passageways, to effect said sealing while balancing forces between said plug and cylinder and self centering of said plug in said cylinder.

4,518,103

METHOD AND APPARATUS FOR RELEASING ADDITIONAL INGREDIENTS IN A PRESSURIZED CONTAINER

Walter K. Lim, Aerosol Services Co., 425 S. Ninth St., City of Industry, Calif. 91746, and Arthur A. Krause, 7035 Lanewood Ave., Hollywood, Calif. 90028

Filed Sep. 9, 1981, Ser. No. 300,506
Int. Cl.³ B65D *83/00*
U.S. Cl. 222—135 **18 Claims**



1. A dispensing container comprising:

a primary container pressurized by an initial supply of propellant including a first liquified propellant and a gaseous propellant and containing a first substance to be expelled therefrom under pressure;

valve means communicating only with said primary container for dispensing the contents of said primary container; and

a secondary container within said primary container closed against said gaseous propellant and pressurized by a reserve supply of liquified propellant having a characteristic head pressure higher than said first liquified propellant, and containing a second substance to be added to said first substance, said secondary container being constructed to open and release said second substance into said primary container only upon establishment of a predetermined pressure differential between the interior of said primary container and the interior of said secondary container by discharge of said gaseous propellant from said primary container through said valve means.

4,518,104

WINE DISPENSING APPARATUS AND METHOD

Frank M. Iannelli, Spartanburg, and David H. James, Roebuck, both of S.C., assignors to Gerlach Industries, Spartanburg, S.C.

Filed Jan. 14, 1983, Ser. No. 458,163
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146.6 **2 Claims**

1. Apparatus for dispensing large numbers of wine servings at a uniform wine serving temperature during varying cycles

of time such as in restaurant operations and the like comprising:

a cabinet having an interior chamber for storing a source of wine at room temperature;

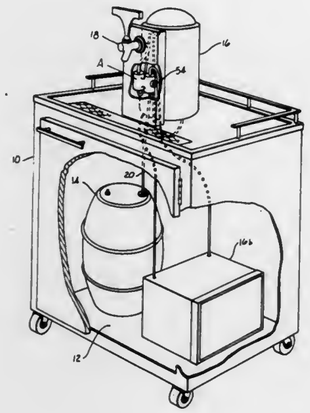
a refrigeration unit carried by said cabinet through which said wine is delivered for refrigerating and lowering the temperature of said wine;

a wine dispensing valve carried by said cabinet for dispensing wine into a serving container when said valve is open;

a first wine delivery line for conveying said wine from said source to said refrigeration unit;

a second wine delivery line for conveying wine from said refrigeration unit to said dispensing valve;

a wine mixing valve carried in said cabinet having a first passage serially connected in said first delivery line between said wine source and said refrigeration unit and a second passage serially connected in said second delivery line between said refrigeration unit and dispensing valve;



said wine mixing valve including a third valve passage connected between said first and second passages for delivering a metered amount of wine from said first passage to said second passage bypassing said refrigeration unit;

valve means carried in said third valve passage for controlling and metering the amount of wine bypassed through said third passage;

a conical entrance port provided in said third valve passage, said conical entrance port tapering outwardly and opening into said first passage for creating a venturi effect for drawing room temperature wine through said third passage in response to opening of said wine dispensing valve and flow of refrigerated wine through said second valve passage, and

said valve means including a manually operable valve stem threadably carried by said wine mixing valve having a tapered valve member corresponding to the taper of said entrance port for closing and opening said entrance port in varying amount.

4,518,105

METHOD OF AND DEVICE FOR DISPENSING VISCOUS CONCENTRATES OF VARIABLE VISCOSITY IN ACCURATELY METERED QUANTITIES OF VARIABLE VOLUME

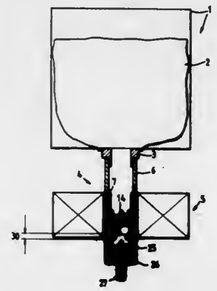
Alexander Kuckens, Reinfeld, and Horst Kohl, Bad Oldesloe, both of Fed. Rep. of Germany, assignors to DAGMA Deutsche Automaten-und Getrankemaschinen GmbH & Co., Ltd., Reinfeld, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,899

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3112024

Int. Cl.³ B65D *37/00*

U.S. Cl. 222—207 **9 Claims**



1. An improved device for dispensing a viscous concentrate of variable viscosity of the type in which a dispensing section is adapted to be connected to a container for the concentrate and to be inserted into an annular actuating means having an actuating element which axially acts on a section of flexible elastic material forming a pumping volume, to cyclically reduce and expand the volume, the pumping volume containing a non-return valve with a rigid valve body at least at an inlet side and an outlet on another opposite outlet side, wherein the improvement comprises:

the section forming the pumping volume comprises a hollow cylindrical body arranged in the dispensing section insertable into the actuating means and is small as compared to the respective quantities to be dispensed;

a radially shape-retaining hollow cylindrical member adapted, at least during the volume reducing phase, to radially outwardly support the hollow cylindrical body against deformation;

biasing means by which the hollow cylindrical body in the initial position of the maximum pumping volume is biased with a predetermined force in the sense of increasing said pumping volume; and

the hollow cylindrical body has at least one radially inwardly pointing annular fold and wherein the hollow cylindrical member radially supporting the hollow cylindrical body is formed by two rigid sleeve portions, one of which being movable as a unit with the actuating element in axial direction relative to the other one.

4,518,106

COLLAPSIBLE BAG AND DISCHARGE VALVE THEREFOR

Arthur E. LaFleur, Manistee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Filed May 21, 1984, Ser. No. 612,456

Int. Cl.³ B65D *88/26*

U.S. Cl. 222—460 **15 Claims**

1. In combination a bag having a bottom wall provided with a discharge opening located generally at the central portion thereof, a flexible tubular discharge spout extending downwardly from said opening, said discharge spout being collapsible to close said opening and extendable to open the discharge opening, support means on the bag spaced around said discharge spout, a discharge valve casing and means detachably suspending said casing from said support means in a position aligned with and spaced below said discharge opening, said spout, when extended from the collapsed condition, extending



downwardly into said valve casing and a valve member on said casing located below the lower end of the extended spout so that it is operable both to permit and to arrest flow of the contents of the bag downwardly therethrough while the spout is in said extended position.

4,518,107

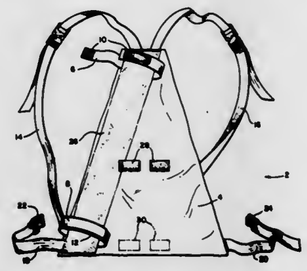
CARRIER SYSTEM FOR SKI EQUIPMENT

Jacquelyn V. Amos, Vail, Colo., assignor to Ski Pack International, Inc., Boca Raton, Fla.

Filed Jun. 22, 1983, Ser. No. 506,524

Int. Cl.³ A45F *3/04*

U.S. Cl. 224—215 **10 Claims**



1. A carrier system for elongated ski equipment designed to permit a user to carry said carrier system and any elongated ski equipment held thereto on the back between the shoulders, while leaving the arms and hands free, said system being convertible from a carrier to a waist belt and vice versa, comprising, in combination:

a flexible, substantially trapezoidal body member having a first substantially flat side, a first side edge, a second side edge, and a bottom edge, wherein at least one of said side edges is at an angle oblique to the body of a user when said carrier system is carried on a user's back between the shoulders, and an opposed second side, said first side being adapted to rest against a user's back substantially between the shoulders;

at least two spaced apart holding straps, each holding strap including, in combination, a releasable closure system wherein the two most widely spaced apart straps define a substantially straight path between them, said holding straps located and adapted to releasably hold elongated equipment on said second side of said body member, and wherein said straight path defined by said holding straps is substantially parallel to said oblique edge, and wherein there is a reinforcing strip secured to said second side of said body member along a substantial portion of said straight path defined by said most widely spaced apart holding straps;

a pair of adjustable harness straps attached to said body member so as to enable said body member to be carried on the back over both shoulders of a user; and an adjustable belt system connected to said body member and adapted to be secured around the waist of a user by releasable closure means in combination with said belt system, said belt system including a first portion and a second portion, said first belt portion extending from said first side edge of said body member, and said second belt portion extending from said second side edge of said body member;

whereby, a user is permitted to carry the carrier system and any elongated ski equipment held thereto by said holding straps on the back, between the shoulders, and, with said belt system, limit movement of said carrier system and any elongated ski equipment held thereto when said system is being used as a carrier, said belt system being further adapted, when said body member is converted to a smaller folded structure, to provide a waist belt by which said folded structure may be secured around the waist of a user, both modes leaving the arms and hands of the user free.

4,518,108

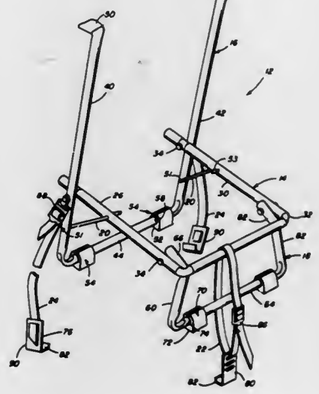
FOLDING CARRIER

Richard A. Allen, Bowles Ter., Lincoln, Mass. 01773

Filed Jan. 3, 1984, Ser. No. 567,579

Int. Cl.³ B60R *9/10*

U.S. Cl. 224—314 **12 Claims**



1. A folding carrier mountable on an automobile or the like, said carrier comprising:

(a) a frame;

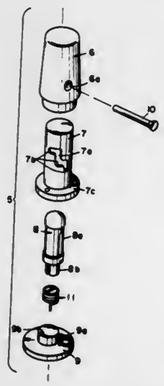
(b) a carrying member pivotally mounted to said frame said carrying member movable about a first axis between an operative extended position and a collapsed position, said carrying member and said frame being in a substantially side-by-side relationship when said carrying member is in its collapsed position, a foot of said carrying member positioned to contat the automobile when said carrying member is in its operative extended position;

(c) bracing means mounted to said frame and configured to engage and disengage said carrying member, said carrying member fixed in its extended position when said bracing means is in engagement with said carrying member; and

(d) a supporting member pivotally mounted to said frame and constrained for limited rotational movement relative thereto between an extended position and a collapsed position about a second axis, said first axis being parallel to said second axis, when said supporting member is in its extended position, a portion of said supporting member is

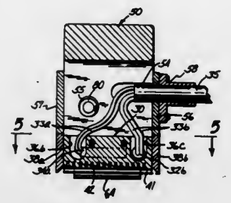
pressed against said frame and said supporting member is prevented from further movement relative to said frame, said supporting member and said frame being in a substantially perpendicular relationship to one another when said supporting member is in its extended position, said supporting member and said frame being in a substantially side-by-side relationship when said carrying member is in its collapsed position, a foot portion of said supporting member positioned to contact the automobile when said supporting member is in its operative extended position.

4,518,109
MAGAZINE DEVICE OF AIR NAILER
Tadayoshi Shiroyama, Honmachi Uenoshi, Japan, assignor to Tachikawa Pin Seisakujo Co., Ltd., Japan
Filed Jun. 27, 1983, Ser. No. 508,014
Claims priority, application Japan, Feb. 2, 1983, 58-14270[U]
Int. Cl.³ B25C *5/02, 5/06, 1/04*
U.S. Cl. 227—109 **1 Claim**



1. A magazine device of an air nailer characterized in that a magazine cover is fitted to a magazine case fixed to the body of the air nailer and capable of storing a coil nail in such a manner that said magazine cover can open and close a loading port for said coil nail; a support shaft is formed by fitting sequentially and concentrically a guide post having an outer diameter corresponding to a winding diameter of said coil nail, an adjust post inside said guide post and a tension post inside said adjust post to the center of the bottom of said magazine cover and integrally fixing a dish-like nail bracket for receiving the tips of nails of said coil nail to the lower end surface of said guide post with said guide post being at the center of said nail bracket; a guide pin is inserted through said support shaft in the radial direction with the right and left ends of said pin being fixed to said guide post; the lower end of said adjust post is fixed to the bottom of said magazine cover; guide window holes for said guide pin and receiving stages having sequentially varying heights are step-wise defined around the outer circumference of said adjust post so as to engage with said guide pin; said guide post, guided by said guide pin, can extend or contract whole being rotated outside said adjust pin; a guide for said guide pin is defined in the intermediate portion on the outer circumference of said tension post and passes through said tension post in radial direction, to extend over a predetermined length in the axial direction of said tension post and to allow the movement of said guide post guided by said guide pin in the axial direction of said support shaft; said tension post is supported by a tension spring interposed between the lower end surface of said tension post and the bottom of said magazine cover; and the upper and lower ends of said tension spring are wound and fixed to the bottom of said magazine cover and to said tension post so that said guide pin receiving the rewinding force of said tension spring always engages resiliently with said receiving stage of said guide window hole.

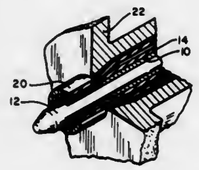
4,518,110
DEVICE FOR SOLDERING/DESOLDERING APERTURED LENDLESS PACKAGES
Carl D. Breske, Scandia, and Jeffrey M. Borning, Ham Lake, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Sep. 22, 1982, Ser. No. 421,604
Int. Cl.³ B23K *3/02*
U.S. Cl. 228—20 **5 Claims**



1. A tool for soldering and for desoldering a chip to a circuit board; said chip having an array of sockets extended through it from a bottom surface to a top surface thereof, and said circuit board including at least one array of pins mounted to said board and extended away therefrom, whereby the end of each pin remote from said circuit board extends into one of said sockets whenever said chip is positioned for soldering to said circuit board; said tool comprising:

a heater member comprised of a flat heating plate heated by at least one heating element; means defining a plurality of pin relief apertures in said plate; means for removably mounting said chip to said heater member in a secured position wherein the top surface of said chip abuts said plate and each of said sockets is aligned with one of said pin relief apertures, whereby said apertures receive any of said pins extending through their associated sockets and beyond said top surface with said chip in said secured position and so positioned for soldering; and means defining a suction chamber disposed within said heater member adjacent said plate and in fluid communication with a suction means; said pin relief apertures providing fluid communication between said suction chamber and said chip, whereby as said heating plate melts solder joints to produce melted solder, said melted solder is drawn through said pin relief apertures into said suction chamber.

4,518,111
METHOD OF FABRICATING A BI-METAL TUBE
Roy Hardwick, Louisville, Colo., assignor to Explosive Fabricators, Inc., Louisville, Colo.
Filed Oct. 17, 1983, Ser. No. 542,532
Int. Cl.³ B23K *20/08*
U.S. Cl. 228—107 **10 Claims**



1. A method of forming a composite billet from dissimilar metals, said method comprising:

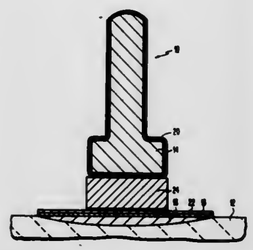
placing a first tube of a first metal within a second, larger tube in parallel spaced relation, the larger tube being made of a second metal which is dissimilar from the first metal;

explosively bonding the first and second tubes to form a composite tube;

placing the composite tube in a third tube; and

co-extruding the third tube and the composite tube to form a metallurgical bond between the third tube and the second tube.

4,518,112
PROCESS FOR CONTROLLED BRAZE JOINING OF ELECTRONIC PACKAGING ELEMENTS
William R. Miller, Wappingers Falls, and Chandrika Prasad, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1982, Ser. No. 454,920
Int. Cl.³ B23K *1/04*
U.S. Cl. 228—124 **3 Claims**



1. A method of forming a brazed bond between a flat surface of a I/O pin head and a flat surface of a metallized pad on a ceramic substrate of a semiconductor package comprising the steps of;

providing a Au metal layer on at least one of said flat pin head surface or said flat metallized pad surface,

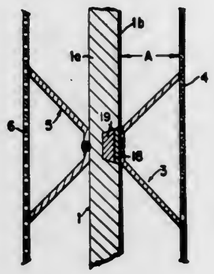
placing the mask of a low melting Au-Sn alloy with a composition of 80% Au±5% with the balance being Sn between said pin head surface and said metallized pad surface,

heating the resultant assembly to a temperature in the range of 350° to 450° C.,

simultaneously with said heating, applying a pressure in the range of 250 to 2500 dynes/cm^2 to said surfaces sufficient to squeeze the major portion of the resultant molten Au-Sn alloy from between the surfaces, and cooling the assembly,

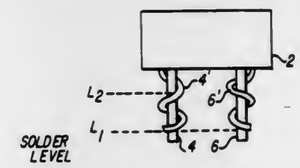
the bond between said pin head and said metallized pad formed of a relatively higher melting Au-Sn alloy resulting when the major portion of the alloy is removed allowing the major portion of the Sn in the small remaining portion of the alloy to combine with the Au layer to reduce the relative amount of Sn in the brazing bond alloy leaving a higher melting alloy.

4,518,113
ELECTROLYZER AND PROCESS
Alberto Pellegri, Luino, Italy, assignor to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy
Division of Ser. No. 423,279, Sep. 24, 1982, Pat. No. 4,425,214, which is a division of Ser. No. 266,653, May 26, 1981, Pat. No. 4,389,298, which is a continuation-in-part of Ser. No. 128,972, Mar. 10, 1980, Pat. No. 4,279,731. This application Aug. 25, 1983, Ser. No. 526,417
Claims priority, application Italy, Nov. 29, 1979, 27690 A/79
The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.
Int. Cl.³ B23K *28/02*
U.S. Cl. 228—170 **2 Claims**



1. The method for electrically connecting valve metal anode ribs and cathodically resistant metal cathode ribs through a bipolar plate comprised of a valve metal sheet on the anode side and steel plate on the cathode side of the bipolar plate, comprising inserting bimetal strips with a valve metal side and a side of a highly conductive metal resistant to hydrogen migration into grooves cut on the steel plate side opposite to the valve metal sheet, welding the valve metal sheet and the valve metal ribs to the valve metal side of the bimetal strips inserted into the grooves of the steel plate and electrically connecting the cathodically resistant metal cathode ribs to the highly conductive metal side of the bimetallic strips.

4,518,114
DIP SOLDERING APPARATUS AND METHOD
Thomas A. Walsh, Asbury, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 8, 1983, Ser. No. 520,961
Int. Cl.³ B23K *3/00, 1/08;* **H01R** *43/02*
U.S. Cl. 228—180.1 **2 Claims**



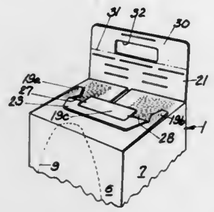
1. A method of soldering a pin to insulated wire wrapped around it in such manner that no wire is exposed, comprising

applying flux to the pin and the wire,

dipping the pin into a pool of solder to a point short of the level to which solder is ultimately desired and holding it in that position until the insulation is dislodged up to the said level, and

dipping the pin and wire wrapped around it farther into the pool of solder up to said level and withdrawing it from the pool before more insulation is dislodged.

4,518,115
INTEGRAL FLAP-CUT HANDLE FOR A CARTON
William E. Sedwick, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 276,732, Jun. 24, 1981, abandoned. This application Jan. 26, 1983, Ser. No. 461,078
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **2 Claims**



1. An integral handle for a carton of the type having opposed pairs of side walls, a bottom wall, and a top wall, said top wall comprising at least first and second overlapping flaps hingedly connected to the upper edges of one of said opposed pairs of side walls, said handle comprising first and second handle elements, said first handle element having an inverted U-shaped configuration, said first handle element being die cut from the upper portion of said first flap by a pair of spaced cuts extending inwardly from the top edge of said first flap and by an inverted U-shaped cut having a base portion spaced inwardly from said top edge of said first flap and leg portions located between and spaced from said pair of inwardly extending cuts, said inverted U-shaped cut defining a finger-receiving aperture in said first handle element, said first handle element having a length less than the width of said first flap, said first handle element having a first handle element inside surface and being pivotable out of the plane of said first flap about score line hinges formed in said first flap and folded back upon said first flap, said second handle element being of greater length than said first handle element and comprising the entire width of the upper portion of said second flap as defined by score line hinges and at least one finger-receiving aperture in parallel spaced relationship to the upper edge thereof, said second handle element having a second handle element inside surface and being pivotable about said second flap score line hinges out of the plane of said second flap, said finger-receiving apertures of said first and second handle elements being in alignment when said handle elements are secured together, said first and second flaps being folded inwardly with portions of said second flap overlapping portions of said first flap, means for securing portions of said second flap to portions of said first flap and said second handle element inside surface to said first handle element inside surface.

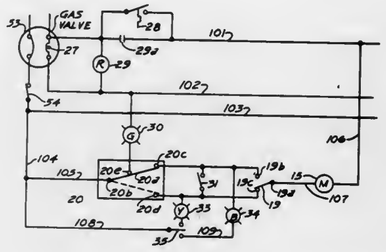
4,518,116
AUTOMATIC DAMPER OPERATOR
Willie T. Grant, 400 S. Simms St., Lakewood, Colo. 80228
Continuation-in-part of Ser. No. 397,035, Jul. 12, 1982, abandoned. This application May 14, 1984, Ser. No. 608,931
Int. Cl.³ F23N *3/00*
U.S. Cl. 236—1 B **5 Claims**

1. Automatic damper operating means being a part of damper means, said damper means having enclosure means controlling and regulating the flow of a heating/cooling medium; said medium being transported through a duct network, said duct network originating at a heating/cooling device and terminating in a plurality of rooms and zones; said operating means comprising;

(a) transmission means,

said transmission means comprising motor means and linkage means; said motor means connecting to a first linkage of said linkage means through rotatable shaft means; said first linkage having energy storing and energy releasing means; said first linkage interconnecting said motor means and said damper blades, and transferring motor rotation to said damper blades; a second linkage of said linkage means rotatably interconnecting said multiplicity of blades; said blades being pivotally mounted in said enclosure means;

(b) control means,

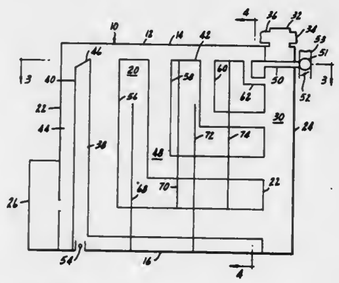


said control means having thermostatic switch means, said thermostatic switch means controllably interconnecting and energizing said motor means and a fuel control means of a heating/cooling device,

(c) indicating means,

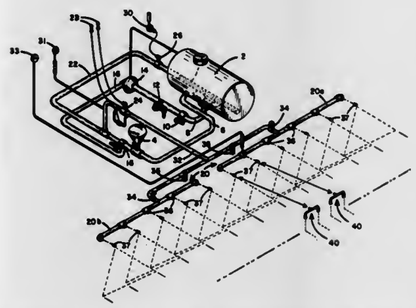
said indicating means comprising visible means or like means connecting to said thermostatic means and communicating the operational status of said heating/cooling device and the open/closed status of said damper blades.

4,518,117
FURNACE STRUCTURE
Gerald A. Ijames, 15090 Manor, Detroit, Mich. 48238
Filed Apr. 18, 1983, Ser. No. 486,190
Int. Cl.³ F24B *7/00*
U.S. Cl. 237—53 **8 Claims**



1. Furnace structure comprising a generally rectangular outer enclosure including a top, bottom, two sides, a front end and a back end, a blower at the front end of the outer enclosure, a cool air chamber adjacent the front end and top of the outer enclosure in communication with said blower for receiving cool air from the blower, a hot air chamber at the back end of the outer enclosure, a combustion gas chamber between the cool air chamber at the front end of the outer enclosure and the hot air chamber at the back end of the outer enclosure, a burner positioned in the combustion gas chamber adjacent the bottom and front thereof, four rows of heat exchange tubes extending from the cool air chamber at the top of the outer enclosure to the hot air chamber through the combustion gas chamber spaced apart from the front to the back of the combustion gas chamber wherein the first row of heat exchange tubes are two inch diameter tubes, the second row of heat exchange tubes are one and a half inch diameter tubes, the third row of heat exchange tubes are one inch diameter tubes and the fourth row of heat exchange tubes are one half inch diameter tubes whereby fuel and air burned in the burner creates combustion gas in the combustion gas chamber which moves around the heat exchange tubes in the combustion gas chamber and heats air therein passing between the cool air chamber and hot air chamber.

4,518,118
MODULAR LOW PRESSURE STRIP SPRAYING APPARATUS AND SYSTEM
Harry H. Takata, Minneapolis, Minn., assignor to Ag-Chem Equipment Co., Inc., Minneapolis, Minn.
Filed Sep. 30, 1982, Ser. No. 431,388
Int. Cl.³ B05B *1/14, 9/20;* **A01G** *25/09*
U.S. Cl. 239—163 **2 Claims**



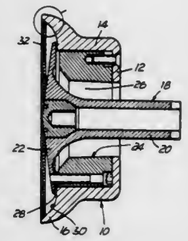
1. Apparatus for converting a transportable broadcast spray application system, wherein liquid fertilizers or the like are pumped from a storage tank and supplied at a regulated pressure within the range of 10 to 60 psi to a plurality of spaced apart primary outlet ports attached along a primary delivery manifold, over to strip application, comprising, in combination:

a plurality of self-aligning couplers attachable to each of said outlet ports, each coupler comprising (1) a female body portion threadably attachable to one of said outlet ports and having a bore extending along a flow axis and at least one pivotal locking cam and (2) a male body portion detachably mountable in said bore in engagement with said locking cam and in fluid flow communication with said primary manifold, and each of said couplers including at least one replaceable sharp-edged primary metering disc having a flow determining orifice of a predetermined fixed size formed therethrough along said flow axis;

a plurality of secondary manifolds, each attached to one of said male body portions and "T" mountable to said primary manifold and each including at least two secondary outlet ports displaced therealong in parallel relation to said primary manifold, each of said secondary outlet ports including at least one sharp-edged replaceable secondary metering disc having a flow determining orifice of a predetermined fixed size formed therethrough along said flow axis; and wherein

the aperture size of each of said primary and secondary metering discs for each secondary manifold is selected so that in combination the liquid fertilizer is strip applied at each secondary outlet port at a constant pressure regulated by said primary and secondary metering discs to be less than 10 psi.

4,518,119
SPRAYER
Kurt Vetter, Remseck, Fed. Rep. of Germany, assignor to Hermann Behr & Sohn GmbH & Co., Ingersheim, Fed. Rep. of Germany
Continuation of Ser. No. 313,090, Oct. 20, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 551,504
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040136
Int. Cl.³ B05B *3/10*
U.S. Cl. 239—223 **9 Claims**



1. In a rotatable, electrically chargeable, substantially bell-shaped sprayer for producing a paint mist from an axially fed liquid paint such as 2-component lacquers, for an apparatus for the electrostatic application of sprayed charged particles of the paint mist onto an article, the sprayer having an inner annular coaxial flowover surface for said liquid paint fed thereto vla an inlet for the liquid paint and an annular lip which projects axially forwardly on a radial and axial outermost edge portion of the inner annular coaxial flowover surface, said outermost edge portion of the inner annular coaxial flowover surface being provided with grooves for channeling the flow of the liquid paint, the grooves being uniformly distributed on the circumference of said outermost edge portion of the inner annular coaxial flowover surface and extend approximately in the direction of the flow of said liquid paint, said grooves terminating open at a spray position of said lip, the improvement wherein

said grooves form two sets of grooves, the grooves of each set extending substantially parallel to each other and intersecting said grooves of the other set of grooves at intersection regions,

said grooves have a uniform cross-section along their entire length between said intersection regions,

said grooves are substantially linear along their entire length,

said outermost edge portion of the inner annular coaxial flowover surface has a substantially radially inwardly directed elevation on said flowover surface, said elevation defining a radially inwardly facing surface coaxial to said annular coaxial flowover surface, said grooves are formed in said elevation and have a bottom of the grooves passing continuously into an adjacent portion of said flowover surface,

said grooves have a symmetrical V-shaped cross-section and divide said elevation into a plurality of substantially truncated pyramids arranged substantially parallel to each other and each of said truncated pyramids having four lateral sides with a parallelogram base, only two adjacent sides of adjacent of said pyramids respectively defining the V-shaped and uniform cross-section and linearity of the grooves along their entire length between said intersection regions, and

said grooves disposed for channelling said liquid paint into at least a first and a second coherent thread of liquid, each of said threads extending beyond said sprayer edge by a measurable distance and substantially all of said threads extending substantially the same said measurable distance beyond said sprayer edge.

4,518,120

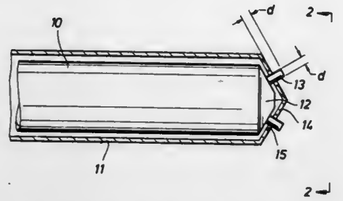
NON-FOULING OIL ATOMIZATION TIP

Gregory L. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 409,374, Aug. 18, 1982, abandoned. This application May 16, 1984, Ser. No. 610,931

Int. Cl.³ B05B *7/06*

U.S. Cl. 239—424 **3 Claims**



1. An oil atomizer suitable for use with a heavy liquid fuel comprising:

an elongated barrel for delivery of the heavy liquid fuel to an atomization zone;

spray tubes in the atomization zone arranged about the periphery of a cap terminating the elongated barrel;

a separated shroud surrounding the elongated barrel and operable at temperatures of 800° to 1600° F. to burn off coke accumulating thereon, the shroud and barrel permitting passage of fluid therebetween; and

a shroud tip terminating the shroud and enclosing the cap, the spray tubes being inserted through openings in the shroud tip a distance about 1 to 3 times the outside diameter of the spray tubes, the openings being about 1.2 to 3 times the outside diameter of the spray tubes, which permit passage of fluid around the spray tubes.

4,518,121

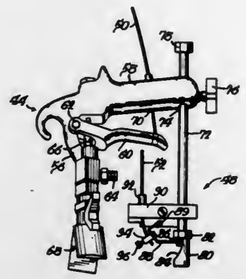
BEAD DISPENSER FOR PAINT STRIPER

David H. Smith, Redwood City, Calif., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Sep. 2, 1982, Ser. No. 414,005

Int. Cl.³ B05B *1/28, 7/02, 9/01*

U.S. Cl. 239—526 **9 Claims**



1. An improved spray gun and bead dispenser assembly for a paint striper, comprising an airless spray gun of the hand-held type having an inlet for connection with a supply of paint under pressure, a handle having a passage therethrough, a spray nozzle and a trigger for actuating said gun to emit a spray of paint from said nozzle; and a bead dispenser including a hollow tube extended through and secured in said handle passage, said tube having an inlet end for connection with a supply of reflective beads under pressure and an outlet end forwardly of said handle, valve means for controlling a flow of beads through said tube for emission from said outlet end, and a deflector means connected with said tube outlet end for deflecting beads emitted therefrom into a spray of paint from said spray gun for entrainment therein and deposit with said paint spray in a stripe on a surface.

4,518,122

HAND-OPERATED HOSE FOR ATOMIZING A LIQUID FOR THE TREATMENT OF PLANTS

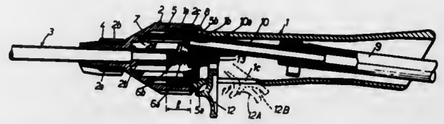
Patrick J. Ballu, Reims, France, assignor to Tecnoma, Epernay, France

Continuation of Ser. No. 406,553, Aug. 9, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 642,715

Claims priority, application France, Aug. 13, 1981, 81 15674

Int. Cl.³ B05B *9/08*

U.S. Cl. 239—530 **15 Claims**



1. A hand operated hose for atomizing a liquid, especially a liquid useful in the treatment of plants, said hose comprising a rigid tubular handle having a wall, a rear end and a front end with an outer thread, a transverse base plate separately inserted in said tubular handle near to its front end, said transverse base plate having first and second holes therein, an elongated closing member tightly and slidingly mounted through said first hole in said transverse base plate, a control trigger engaged through a longitudinal slot in the handle wall, said control trigger having an inner end connected to one end of said elongated closing member for sliding said member through said first hole, a tubular-shaped filter having a cross-sectional size substantially less than the cross-sectional inner size of the front end of said tubular handle and at least partially engaged in the front end of said tubular handle in a substantially coaxial relationship to said handle, a box-nut threadedly engaged on the outer thread of the front end of said handle, said box-nut being adapted to fix said tubular-shaped filter so that the inner end of said filter tightly engages said transverse base plate and an annular chamber is defined between respective walls of said tubular-shaped filter and of said box-nut, said second hole being located in said transverse base plate so as to open in said annular chamber, said box-nut having a first inner tubular part engaged in said tubular-shaped filter and forming a tight seat for the other end of said closing member, an atomizing head, conduit means to connect the tubular part of said box-nut to said atomizing head, and conduit means to feed the liquid to the atomized through the rear end of said hollow handle up to said second hole in the transverse base plate.

4,518,123

METHOD FOR CONTROLLING THE PULVERIZATION AND DRYNESS OF FLAMMABLE MATERIALS PASSING THROUGH A PULVERIZER, AND METHOD OF CONTROLLING THE PULVERIZING RATE OF THE PULVERIZER

Kazuo Tanaka, Kobe; Kenjiro Motonaga, Nishinomiya, and Kozo Tanaka, Miki, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation of Ser. No. 462,716, Feb. 1, 1983,. This application Jul. 23, 1984, Ser. No. 632,694

Int. Cl.³ F23K *1/00*

U.S. Cl. 241—18 **7 Claims**

1. A method for controlling a system of pulverizing and drying a flammable material, said method comprising:

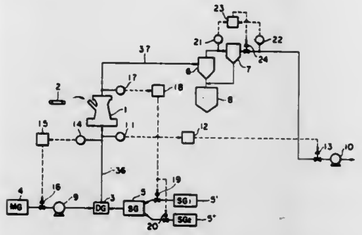
supplying said flammable material to a pulverizer operated by a pulverizer motor;

mixing a main dry gas and a temperature regulating gas to form a mixed gas;

using a push blower to feed said mixed gas into said pulverizer, so as to dry said material;

using a pull blower having a suction damper to discharge a mixture of said mixed gas and pulverized material to a separator;

performing a pressure control step of measuring the pressure of said mixed gas to one on an inlet or an outlet of said pulverizer and adjusting one of said blowers in response to said measured pressure so as to maintain the average pressure in said pulverizer substantially at atmospheric pressure;



performing a flow rate control step of measuring the flow rate of said mixed gas through said pulverizer and adjusting the forced flow rate of another of said blowers in response to said flow rate measurement so as to maintain the flow rate of said mixed gas at a constant value;

performing a temperature control step of measuring the temperature of said mixed gas at said outlet portion of said pulverizer and adjusting the mixing ration of said temperature regulating gas to said main dry gas in response to said measured temperature so as to maintain said measured temperature at a constant value.

4,518,124

CROP COMMINUTING APPARATUS HAVING VIBRATING CUTTING BLADES

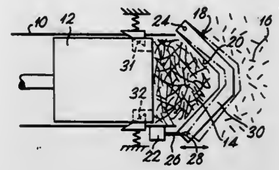
Wilfred E. Klinner, Milton Keynes, and Andrew C. Knight, Dunstable, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 501,052, Jun. 8, 1983, abandoned, which is a continuation of Ser. No. 192,036, Sep. 29, 1980, abandoned. This application Feb. 13, 1984, Ser. No. 578,983

Claims priority, application United Kingdom, Oct. 2, 1979, 7934214

Int. Cl.³ B02C *21/02*

U.S. Cl. 241—101.7 **9 Claims**



1. An apparatus for comminuting cut crop comprising an advancement duct, comminuting means providing a plurality of cutting edges extending along and at least in combination spanning, a cross-sectional dimension of the duct, and advancement means for moving a compressed column of the cut crop along the duct towards the comminuting means, each cutting edge being arranged to cut the column along a cutting plane containing that edge and lying substantially parallel to the direction of crop advancement through the duct, and drive means for vibrating the cutting edges in directions lying substantially parallel to said cross-sectional dimension of the duct with said drive means vibrating alternate ones of said cutting edges in anti-phase relative to the remaining ones of said cutting edges.

4,518,125

CRUSHERS

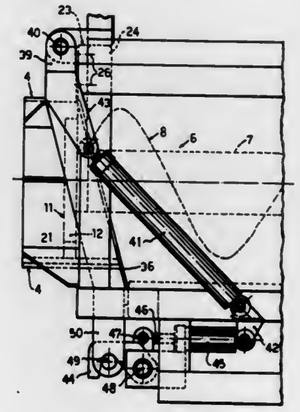
Lennart Boysen, Smedjegatan 8, S-384 00 Blomstermåla, and Ulf Ottoson, Långemåla, S-570 76 Ruda, both of Sweden

Filed Oct. 28, 1982, Ser. No. 437,255

Claims priority, application Sweden, Nov. 12, 1981, 8106727

Int. Cl.³ B02C *19/22*

U.S. Cl. 241—141 **5 Claims**



1. In an improved crusher for solid waste such as woodwaste and other wood containing waste material, said crusher being of the type comprising a container having at least one inlet opening and at least one outlet opening for the waste and a rotatable waste feeding and disintegrating screw extending between said inlet and outlet; wherein the improvement comprises a plate pivotally mounted on said container for movement between an operative and retracted position, a tube mounted on said plate in a position so that it is in axial alignment with said screw when said plate is in said operative position for defining said outlet opening, a cutting means comprising a planar cutter fixedly mounted on the end of said screw and being disposed within said tube when said plate is in said operative position, whereby said cutting means can be freed from non-crushable material by pivoting said plate from said operative position toward said retracted position.

4,518,126

TAKE-UP MECHANISM

Bryce G. Marshall, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

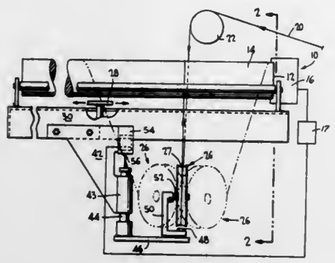
Filed Jul. 6, 1983, Ser. No. 511,417

Int. Cl.³ B65H *54/02, 54/20, 57/28, 59/38*

U.S. Cl. 242—18 R **18 Claims**

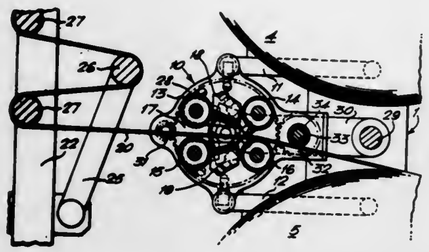
1. In a take-up mechanism for winding a strand comprising a winding mechanism for receiving a strand to be wound, a drive mechanism for driving said winding mechanism, and drive control means for controlling the winding speed of said drive mechanism, including a compensator wheel unit, the improvement wherein said compensator wheel unit includes a mounting arm, a support mounted on said mounting arm for pivotal movement about a first axis fixed relative to said mounting arm, and a compensator wheel carried by said support for rotation relative to said support and for pivoting with said support about said fixed axis, said first fixed axis being aligned

with the path of a strand to said compensator wheel, and means mounting said mounting arm for movement in accordance



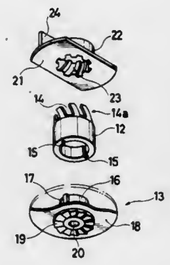
with strand loop tension on said compensator wheel to actuate said drive control means to thereby control winding speed.

4,518,127
WEB SPLICING APPARATUS
Peter Hurst, 2 Fleethall Rd., Rochford, Essex, SS4 1NF, England
Filed Mar. 15, 1983, Ser. No. 475,488
Claims priority, application United Kingdom, Mar. 31, 1982, 8209478
Int. Cl.³ B65H *19/10, 19/18*
U.S. Cl. 242—58.3 **4 Claims**



1. Web splicing apparatus for use in a reelstand having static positions for at least two reels, said apparatus comprising means for rotating a fresh reel on the reelstand, web guiding means for guiding a portion of an expiring web into a position adjacent to the periphery of the fresh reel, and web moving means for moving the expiring web into contact with the periphery of the fresh reel to cause web splicing when the speeds of the fresh reel and the expiring web have been synchronized, the web guiding means comprising a carrier, means mounting the carrier for movement between the reels, a sub-carrier rotatably mounted on the carrier, a set of guide members mounted on the sub-carrier for orbital motion about the axis of rotation of the sub-carrier, the guide members being mounted parallel to one another in a substantially rectangular configuration and being equispaced about and parallel to the said axis, the set of guide members comprising two pairs of guide members, the web moving means comprising a web moving device associated with each said pair of guide members, the guide members being moveable between a rest position in which the expiring web passes between one pair of the guide members and the other pair of the guide members, and a position in which the expiring web is constrained to follow a sinuous path about the guide members in which position one pair of the guide members presents a length of the expiring web to the fresh reel and the associated web moving device is brought into proximity to the presented length of the expiring web.

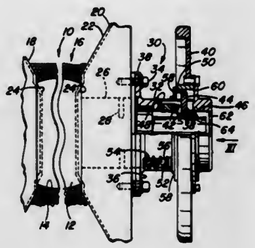
4,518,128
CORRECTION TAPE TAKE-UP SPOOL ASSEMBLY FOR TYPEWRITER
Hiroaki Watanabe, 1526-17, Shinyoshida-machi, Kohoku-ku, Yokohama-shi, Kanagawa-kin,233, Japan
Filed Sep. 9, 1983, Ser. No. 530,486
Claims priority, application Japan, Sep. 13, 1982, 57-138731
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—71.8 **8 Claims**



1. An assembly for dispensing and winding a typecorrection tape one or more times under the influence of the holding and rotation mechanism of a conventional correction typewriter, comprising a correction tape unit including a pair of similar hollow cylindrical bobbins, connected by means of a length of correction tape adapted to be dispensed from one bobbin which is a dispensing bobbin in normal dispensing position, and wound onto the other bobbin which is a take-up bobbin in inverted take-up position, each said bobbin comprising a machine fastening means for engaging a holding mechanism of a typewriter, when in normal dispensing position, and also comprising a spool fastening means for a take-up spool, when the bobbin is in inverted take-up position, to prevent relative rotation between said bobbin and said spool, and a said tape take-up spool comprising a shaft having a lower drive means adapted for engagement by a rotation mechanism of a typewriter and also comprising a companion means for engaging said spool fastening means of said take-up bobbin in inverted position, the said take-up bobbin being secured on the shaft of said spool by engagement of said spool fastening means and said companion means, to permit said take-up bobbin to be rotated with said spool and cause said correction tape to be unwound from the dispensing bobbin onto the take-up bobbin under the influence of the typewriter mechanism, said correction tape unit being designed to be removed from said holding means and from said take-up spool, when the correction tape has moved from the dispensing bobbin to the take-up bobbin, inverted, and reattached with the original dispensing bobbin secured in inverted position to the shaft of the spool and the original take-up bobbin secured in normal position in engagement with the holding mechanism of fhe typewriter to permit the correction tape to be dispensed another time.

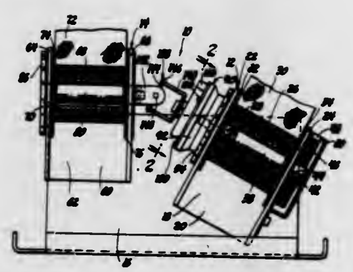
4,518,129
COILERS
Gérard G. M. Coté , La Prairie, and Bretislav P. Zuber, Montreal, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jul. 6, 1984, Ser. No. 628,625
Int. Cl.³ B65H *54/00*
U.S. Cl. 242—78 **5 Claims**

1. A coiler comprising a core with a peripheral surface to support a coil as it is being wound, and two coil side support members extending radially outwards, one at each side of the core, one of the support members forming part of a support member and detachment means assembly having an axial passage which receives a shaft extending axially of the core, the assembly comprising an axial extension of the support member, a release member and spring means, the release member extending radially outwards from and connected to the extension by a plurality of link devices spaced apart around the passage, the link devices allowing for axial movement of the release member along the extension and away from the associated support member into a locking position in which each link device is pivoted to engage an abutment on the shaft so as to



hold the assembly upon the shaft, axial movement of the release member out of the locking position serving to release the link devices from the abutment to allow detachment of the assembly, the spring means disposed to urge the release member into the locking position and thus urge the support member firmly into position against the core.

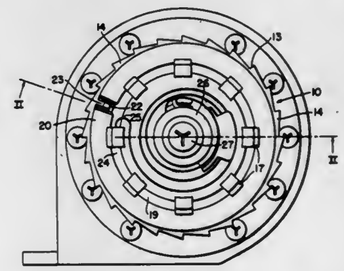
4,518,130
LAP AND SHOULDER BELT RETRACTOR
Lawrence A. Gloomis, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 22, 1984, Ser. No. 592,392
Int. Cl.³ A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107 **3 Claims**



1. A retractor for winding and storing the ends of lap and shoulder belts having their other ends joined together by a buckle element by which the belts may be disposed in restraining positions respectively about the lower torso and upper torso of a seated vehicle occupant comprising:
- a housing;
- a lap belt reel rotatably mounted on the housing and having the lap belt end attached thereto; a shoulder belt reel rotatably mounted on the housing and having the shoulder belt end attached thereto;
- a main spring acting between the housing and the lap belt reel to urge rotation of the lap belt reel in the direction to wind the lap belt taut about the occupant lower torso; and

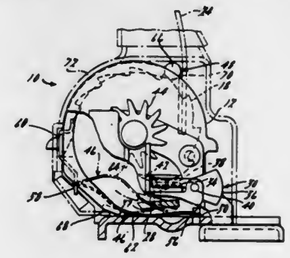
means coupling the shoulder belt reel with the lap belt reel so that the main spring urges rotation of the shoulder belt reel in the belt winding direction in unison with the lap belt reel, said coupling means also including an auxiliary spring interposed in the coupling relationship between the lap belt reel and the shoulder belt reel to enable unwinding rotation of the shoulder belt reel against the winding bias of the auxiliary spring and relative to the lap belt reel while the lap belt reel remains poised at its taut position about the stationary occupant lower torso.

4,518,131
INERTIAL ELEMENT FOR WINDING THE SAFETY BELT OF A MOTOR VEHICLE
Klaus Butenop, Herzhorn, and Klaus-Peter Singer, Hamburg, both of Fed. Rep. of Germany, assignors to Autoflug GmbH, Rellingen, Fed. Rep. of Germany
PCT No. PCT/DE82/00051, § 371 Date Nov. 15, 1982, § 102(e) Date Nov. 15, 1982, PCT Pub. No. WO82/03207, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 11, 1982, Ser. No. 441,556
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109554
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 B **18 Claims**



1. An inertial element as the control mechanism for locking members of belt reeling mechanisms having at least belt-sensitive blocking of the belt winding spindle thereof; said inertial element comprising:
- an inertial disc mounted on said belt winding spindle, said inertial disc being provided with at least two first projections;
- a ring which, as a separate component, serves to increase the mass moment of inertia; said ring surrounding, yet being spaced from, the axis of said belt winding spindle; said ring being held by said first projections;
- said inertial disc being provided with a second projection;
- said ring being provided with a gap into which said second projection extends; and
- a return spring connected between said inertial disc and said belt winding spindle for biasing said inertial disc in a predetermined direction relative to said winding spindle.

4,518,132
COMBINATION SEAT BELT RETRACTOR MECHANISM
Timothy J. Schmidt, Troy, Mich., assignor to General Safety Corporation, St. Clair Shores, Mich.
Filed Apr. 27, 1984, Ser. No. 604,592
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **10 Claims**



1. A seat belt retractor which may be operated either as, an emergency locking retractor which prevents seat belt webbing from being withdrawn when the retractor is subjected to de-

celeration above a predetermined level, or as an automatic locking retractor which acts to retract said webbing but does not permit substantial withdrawal of said webbing comprising;

a retractor frame,

a spool rotatable within said frame and having at least one toothed sprocket,

a locking bar engageable with said toothed sprocket thereby preventing withdrawal of said webbing from said spool,

an inertia sensitive actuator acting upon said locking bar to cause engagement with said toothed sprocket when a deceleration level above said predetermined load is sensed,

a leaf spring attached to said retractor frame movable between a first and a second position, in said first position, said leaf spring permitting said locking bar to operate in response to said inertia sensitive actuator whereby said retractor operates as an emergency locking retractor, said leaf spring being forced into said first position when said spool has a predetermined quantity of said webbing wrapped thereon, whereas when said leaf spring is in said second position, said locking bar is forced by said leaf spring into engagement with said toothed sprocket whereby said retractor operates as an automatic locking retractor, and

a switching lever affixed to said retractor frame, said switching lever acting upon said leaf spring forcing said spring into said second position when said webbing is withdrawn from said spool.

4,518,133

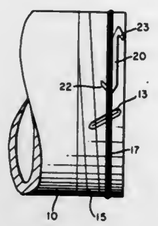
YARN PACKAGE

Broadus E. Hill, Jr., Wilmington, N.C., assignor to E. I. Du Pont de Nemours and company, Wilmington, Del.

Filed Aug. 20, 1984, Ser. No. 642,434

Int. Cl.³ B65H *55/00*

U.S. Cl. 242—165 **2 Claims**



1. In a yarn package structure including a package support having a main body of yarn, a yarn transfer tail consisting of a plurality of helical turns leading to said main body of yarn, a plurality of circumferential turns of yarn located in a circumferential stringup groove adjacent one end of the package support leading to said transfer tail, and a surface cavity on the package support intersecting the plane of said stringup groove, a means for pulling the circumferential turns of yarn over the end of the package support, comprising: a tab having a hook formed on one end, said hook being positioned between said package support and said circumferential turns of yarn and being held in place thereby, the other end of said tab being positioned above said circumferential turns to provide a finger grip.

4,518,134

MAGNETIC TAPE CASSETTE

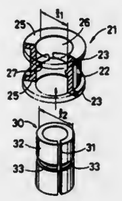
Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,640

Claims priority, application Japan, Apr. 21, 1983, 58-58683[U]

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—199 **5 Claims**



1. In a magnetic tape cassette having rotary guide rollers arranged at both ends of the front part of said cassette for guiding the running of a magnetic tape, the improvement comprising:

a cylindrically shaped shaft supporting each rotary guide roller, said shaft having a slit formed in the axial direction thereof, an outer wall, and a circumferential annular groove formed in said outer wall in a middle region thereof;

each said rotary guide roller having an inner wall and circumferential engaging protrusions, protruding from said inner wall in a middle region thereof;

said supporting shaft being inserted into said rotary guide roller to fit said engaging protrusions into said annular groove so that said rotary guide roller is pivotally mounted on said supporting shaft.

4,518,135

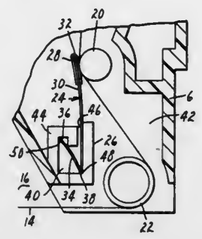
SLACK LIMITER FOR A MAGNETIC TAPE CASSETTE

Charles D. Gebeke, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 5, 1983, Ser. No. 520,606

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—199 **7 Claims**



1. In a cassette including a housing, an access opening, at least one reel and a length of tape wound upon the reel and extending across the access opening, the improvement comprising:

a slack limiter of a thin, flexible, resilient material including an elongate tab portion terminating in a contact end adapted to engage the tape and bias the tape in a direction transverse to the elongation of said tab and a mounting portion spaced from said contact end and including a fold and a compression member extending from said fold at an acute angle to said tab portion; and

means for mounting said slack limiter to said housing including walls parallel to said fold which engage said fold and the end of said compression member opposite said fold and compress said compression member into a bowed configuration so that the resiliency of said compression member forces said fold and said opposite end of said compression member against said walls.

4,518,136

DEVICE FOR COLLECTING SPOOLS

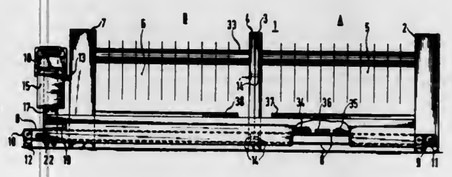
Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,802

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223593

Int. Cl.³ B65H *54/20, 67/06*

U.S. Cl. 242—35.5 A **6 Claims**



1. Device for collecting ejected wound, partially wound, or empty spools at the working stations of an automatic spool winding machine, comprising means guided along the working stations for horizontally transporting the spools; at least two laterally spaced apart mounting devices disposed in vicinity of said transporting means; at least one spool removal device mounted to one of said mounting devices and removable for mounting on another of said mounting devices, said spool removal device including a spool diverting device downstream of said transporting means for receiving the spools, a spool lifting device for lifting the spools from said diverting device, and a spool collecting container for receiving the spools from said lifting device and holding them in a fixed position; and means for transmitting motion of said transporting means to said spool lifting device for driving said spool lifting device.

4,518,137

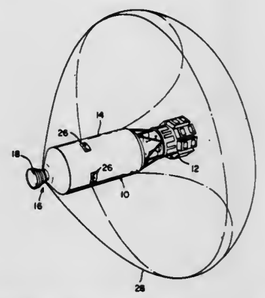
AERODYNAMIC BRAKING SYSTEM FOR A SPACE VEHICLE

Dana G. Andrews, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 1, 1979, Ser. No. 90,296

Int. Cl.³ B64G *1/58*

U.S. Cl. 244—113 **17 Claims**



1. An aerodynamic braking system for a space vehicle comprising a main rocket motor having a nozzle oriented to discharge propulsive gases from one end of the vehicle, wherein during use of the system the space vehicle will be traveling toward the earth's atmosphere nozzle end first, said aerodynamic braking system comprising:

an aerodynamic braking member carried by the space vehicle and movable prior to its use from a stowed position aboard the vehicle outwardly into an operational position in which it presents a large area braking surface extending generally laterally outwardly from the space vehicle; and

means for producing gases within said main rocket motor, for discharge outwardly through the rocket nozzle, at a rate sufficient to provide a gaseous cooling layer along the anterior surface of the aerodynamic braking surface, but without substantially reducing the drag of the braking surface, so that such braking member will remain effective and reduce the velocity of the space vehicle down to a desired level.

4,518,138

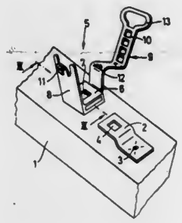
FASTENING DEVICE

Paul Stutenkemper, Pulheim; Heinz Rest, Cologne, and Herbert Kloppe, Pulheim, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 252,109, Apr. 8, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,705

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—73 **7 Claims**



1. Fastening device to hold leads, wires, carpets, panelling and the like to a structure, consisting of a mount fixed to a structure with a holding bracket set off from the surface of the structure, with which a flexible terminal clamp can be engaged, characterized in that the bracket is shaped in the form of a bent clasp having one end welded to the structure and its other end free and set off from the surface of the structure and having an aperture formed through its free end, the flexible clamp includes a sleeve-shaped base portion having an outer surface directly engageable with the leads, wires, carpets, panelling and the like, and surfaces internal thereto for receiving the clasp free end therein, and the base portion includes a latch portion adjacent to but carried entirely internally of the outer engaging surface for lockingly engaging the clasp aperture and the flexible clamp includes a flexible strap portion fixed at one end to the base portion and lockingly engageable at its free end to the base portion to clampingly engage the leads, wires, carpets, panelling and the like directly against the base portion outer surface.

4,518,139

SEAT PEDESTAL

Don L. Barfell, Elkhart, Ind., assignor to Elkhart Machine & Tool Co., Inc., Elkhart, Ind.

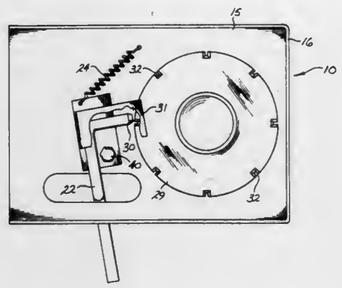
Filed Sep. 12, 1983, Ser. No. 531,018

Int. Cl.³ A47C *1/00*

U.S. Cl. 248—418 **3 Claims**

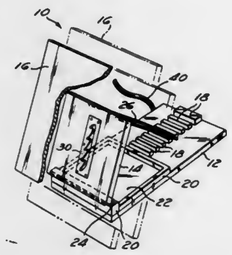
1. In a pedestal for a rotatable seat including a base, a support member extending upwardly from said base, a plate member adapted to carry said seat supported by said support member, said plate member being rotatable relative to said support member and being detachable from the support member upon lifting movement, releasable lock means for preventing rotational movement of said plate member relative to said support member, the improvement wherein said support member in-

cludes a radially extending annular flange, said lock means being shiftably connected to said plate member and including a latch part shiftable in a substantially horizontal plane between a lock position in engagement with said support member flange preventing said plate member rotational movement and a full release position detached from the support member flange, said lock means including a lip positioned under said support member flange when said latch part is in its said lock position to prevent said detachable lifting movement of the plate member



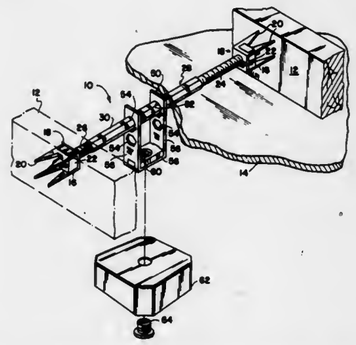
from the support member, said lock means lip being positioned out from under said support member when said latch part is in its full release position to allow said detachable lifting movement of the plate member from the support member, said latch part having a partial release position between its lock and full release positions wherein the latch part is disengaged from said support member to allow rotation of said plate member relative to said support member with said lip positioned under said support member flange.

4,518,140
DRAWING BOARD ASSEMBLY
John J. Ferranto, 1730 Diego Way, Oxnard, Calif. 93030
Filed Apr. 21, 1980, Ser. No. 142,431
Int. Cl.³ A47G *1/24;* C09D *11/00*
U.S. Cl. 248—456 **6 Claims**



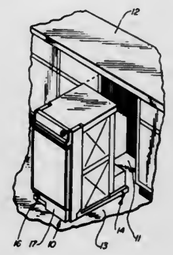
1. A drawing board assembly comprising:
a base, said base having a fore edge and an aft edge and an upper surface and a lower surface, said lower surface adapted to be located upon a planar supportive surface, said upper surface including stop means;
a backing board having a front side and a back side, said back side being hingedly connected to said upper surface at said fore edge, said front side including pivot means;
brace means connected to said back side of said backing board, said brace means to releasably engage with said stop means causing said backing board to assume an inclined position relative to said base, when said drawing board assembly is to not be in use said brace means is to be disengaged from said stop means permitting said backing board to be parallel and directly adjacent said base;
a drawing board having a front side and a back side, said front side being adapted to function as an operating surface, a pivot pin centrally mounted on said back side, said pivot pin adapted to releasably connect with said pivot means permitting pivoting of said drawing board relative to said backing board solely upon application of sufficient manual force; and
said pivot means comprising a plurality of separate pivoting points, said pivot pin being capable of connecting with any one of said pivoting points thereby adjusting the location of said drawing board in respect to said backing board, each said pivoting point being formed by a transverse slot with there being a plurality of said transverse slots located in a spaced apart manner, each said transverse slot having an open upper end and a closed lower end, said closed lower end of each said transverse slot being located nearer said base than its respective said upper end when said backing board is in said inclined position relative to said base, said upper ends being connected together by an elongated slot, a pivoting point being when said pivot pin is located directly adjacent a said closed lower end.

4,518,141
CEILING MOUNTING ASSEMBLY
Robert L. Parkin, 9 Old Field Rd., Huntington, L.I., N.Y. 11743
Filed Sep. 29, 1982, Ser. No. 426,715
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—546 **2 Claims**



1. A ceiling fixture mounting assembly insertable through a ceiling opening disposed intermediate a pair of overlying ceiling joists comprising,
an elongate support member sizeable to be accommodated between said joists and having a pair of oppositely threaded end portions extending outwardly from an unthreaded planar surfaced midportion;
a joist-engaging block member threadedly mounted on each of said extending end portions of said support member adapted for individual axial displacement thereon in response to induced rotative displacement of said midportion of said support member relative thereto;
prong means extending outwardly from each of said joist-engaging block members for penetrational embedment in said joists in response to outwardly directed axial displacement of said block members;
fixture hanger means slideably positionable along said support member for selective location relative to said ceiling opening;
means associated with at least one of said joist-engaging blocks for preventing rotative displacement thereof in response to rotative displacement of said elongate support member prior to prong means embedment in said ceiling joists;
said last mentioned means being adjustable in length and serving to locate the locus of prong embedment in said joist.

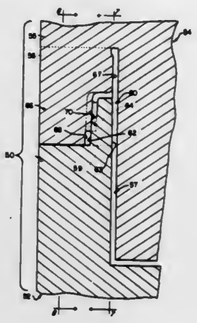
4,518,142
SUPPORT AND LEVELING SYSTEM FOR REFUSE COMPACTOR
Charles E. Sulcek, Boyle County, and Frank E. Miller, Mercer County, both of Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jul. 20, 1981, Ser. No. 285,398
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—649 **30 Claims**



1. In an appliance having a base defining a front portion, a rear portion, and a downwardly facing base surface, means for leveling and supporting the appliance on a subjacent supporting surface comprising:
support means on the rear portion of the base;
a pair of laterally spaced support elements on the front portion of the base, each support element defining an axis of pivoting extending in a front-rear direction and further defining a lower support surface having portions at different spacings from said axis and an upper arcuate support surface defined by a radius about said pivot axis; and
mounting means for mounting said support elements to said base for pivotal, non-rolling movement about said axis, with said lower support surface slidably resting on said subjacent supporting surface to define any one of a plurality of different height supports of said base front portion, said mounting means being adjustable from the front of the base by effecting selective pivoting of the support element about said front-rear pivot axis, said upper support surface engaging said downwardly facing base surface.

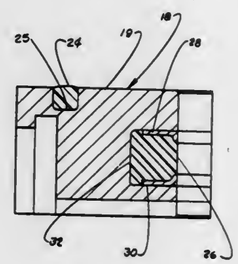
4,518,143
MOLD FOR FORMING A CONTAINER HAVING A PIVOT MEANS
Henry J. Blanchette, Leominster, Mass., assignor to Plastican, Inc., Leominster, Mass.
Division of Ser. No. 350,145, Feb. 19, 1982, abandoned. This application Apr. 3, 1984, Ser. No. 596,243
Int. Cl.³ B29C *1/00;* B29F *1/00*
U.S. Cl. 249—142 **1 Claim**

1. Apparatus for molding a container having unitary bail supporting means, said apparatus comprising an open-ended mold cavity having an inner surface defining an exterior portion of said container and a mating mold core having an exterior surface defining an interior portion of said container, wherein:
said cavity is provided with a plurality of interior keyways adjacent the open end of said mold cavity, each of said keyways being provided with a centrally disposed post having a surface contiguous with said inner surface of said cavity and a spaced apart surface bearing a centrally disposed elongate tongue extending partially along said post; and
said core is provided with an exterior flange depending from which are a like plurality of exterior keys disposed and dimensioned to mate with said keyways, said keys being spaced apart from and confronting said inner surface, each of said keys incorporating a recess dimensioned and disposed to accommodate in confronting spaced-apart relationship a one of said posts, and each of said recesses being provided with a centrally disposed elongate pad extending



partially along said recess and being dimensioned and disposed so as to in part contact said tongue along a surface substantially concentric with said inner surface.

4,518,144
RAM-TYPE BLOWOUT PREVENTER AND PACKER THEREFOR
John C. Vicic, Houston; Carl A. La Velle, Spring, and Joe P. Parris, III, Magnolia, all of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.
Filed Sep. 1, 1983, Ser. No. 528,551
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 A **13 Claims**



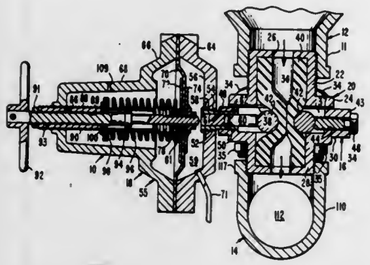
1. A ram-type blowout preventer comprising
a housing having a bore with aligned ram guideways extending through the housing from opposite sides of said bore,
a ram in each of said ram guideways,
means for moving the rams inwardly and outwardly in said guideways,
a removable ram-front packer in each of said rams including a packing having a front face, and
an upper plate embedded in the upper portion of the packing,
said upper plate having a front portion having a vertical dimension greater than the vertical dimension of its rear portion so that pressure on the packing ensures that the upper plate maintains sufficient support for said packing when closed.

4,518,145

VALVE FOR REGULATING THE PRESSURIZED FLOW OF ABRASIVES, IN PARTICULAR BLAST MEDIA

Douglas Keltz, Levittown, and Robert Heaton, Bristol, both of Pa., assignors to Empire Abrasive Equipment Corporation, Langhorne, Pa.

Filed Sep. 28, 1982, Ser. No. 425,837
Int. Cl.³ F16K *7/07*
U.S. Cl. 251—5 **25 Claims**



1. A valve for controlling flow from an outlet of a pressurized tank containing abrasive media to a remote point of discharge, comprising:

(a) a pinch tube housing of tubular formation defining a pinch tube chamber therein, said housing being formed open at both ends and having intermediate its ends transversely aligned portions having diametrically opposed side openings communicating with the chamber, said housing having one end adapted for connection to said outlet, the other end of the housing being adapted for discharge into a conduit that has a connection to a source of pressure fluid and leads to said discharge point;

(b) a pinch tube within said chamber adapted to be constricted radially so as to at times regulate the media flow and at other times stop said flow completely, said side openings opening upon opposite sides of the pinch tube, each of said opposite sides being deformable radially inwardly of the tube independently of the other side;

(c) first and second tube-constricting means within the housing disposed at opposite sides of the tube, said means being disposed within the pinch tube chamber between the side openings and the respective, opposite sides of the pinch tube in direct contact with said opposite sides of the pinch tube, each of said means being movable inside the pinch tube chamber independently of the other means in a direction transversely of the tube for constricting it radially;

(d) plunger means extending into the housing through one of said side openings and engaging one of said tube-constricting means for shifting it in said direction; and

(e) means extending through the other side opening engageable with the other tube-constricting means and operable from outside the housing for adjusting the position of said other means relative to said one means.

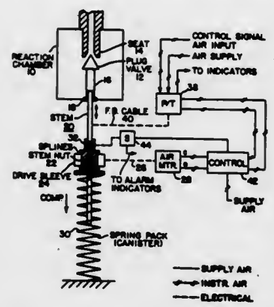
4,518,146

VALVE OPERATOR CONTROL SYSTEM

Walter J. Stinson, and Larry J. Phillips, both of Houston, Tex., assignors to General Signal Corporation, Stamford, Conn.

Filed Apr. 28, 1983, Ser. No. 489,683
Int. Cl.³ F16K *31/128*
U.S. Cl. 251—28 **6 Claims**

1. In a control system for a valve having a valve actuator, an absolute position responsive servomechanism operating said valve actuator for motivating the movable member of said valve toward and away from the seat of said valve which is subject to thermal displacement, and a compression spring coupled to said valve member and biasing said valve member against said seat upon engagement of said valve member with said seat, the improvement comprising sensor means for detecting the displacement in compression of said spring to a plurality of positions, a first of which positions corresponds to a predetermined spring load of said valve member against said seat and a second of which positions corresponds to an overcompression of said spring, and means operative independently of said position responsive servomechanism for inhibiting the motivation of said valve by said servomechanism when a displacement of said spring to said first position is detected by said sensor means and for operating said servomechanism to displace said valve member away from said second position back towards said first position when a displacement of said valve member to said second position is detected by said sensor means whereby to maintain the compression of said spring and the bias of said valve member against said seat in a preset range when said servomechanism brings said valve to its closed position, in spite of thermal displacement of said seat to prevent any overcompression of said spring.



4,518,147

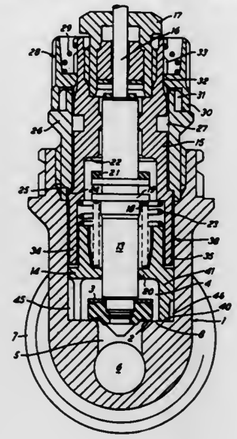
VALVE WITH PRESETTING OF THE AMOUNT OF THROUGHFLOW

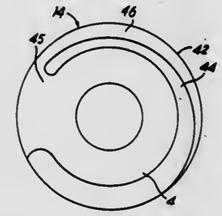
Erik E. Andresen, and Svend P. Pedersen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Dec. 30, 1983, Ser. No. 567,415
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300624
Int. Cl.³ F15B *13/02*
U.S. Cl. 251—121 **6 Claims**

1. A thermostatic valve assembly, comprising, a housing having inlet and outlet connections and a valve controlled opening having a valve seat therebetween, said housing defining a cylindrically shaped valve chamber on one side of and coaxially aligned with said opening, said valve chamber having a cylindrically shaped wall with an ingress aperture providing fluid communication between said inlet connection and said valve chamber, said housing forming a base section for said valve chamber in surrounding relation to said valve seat, a valve closure member in said valve chamber cooperable with said valve seat, an adjustable throttle member rotatably mounted in said valve chamber in surrounding relation to said valve closure member, said throttle member having a spiral wall extending spirally relative to the axis of said valve seat which forms a variable throttle passage with said valve chamber cylindrically shaped wall and which enlarges and contracts relative to said ingress aperture when said throttle member is selectively rotated in opposite directions to form an adjustable cross section throttle passage, said spiral wall having an axial end thereof in sliding and sealing engagement with said base section in surrounding relation to said valve seat, said spiral wall being circumferentially discontinous to form a circumferential opening which forms a through passage providing fluid

communication between said throttle passage and said valve controlled opening, and setting means for rotating said throttle





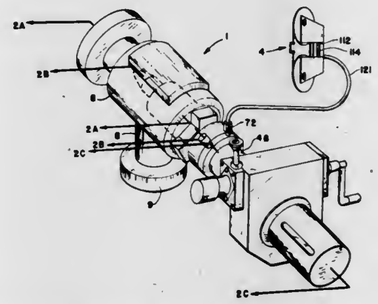
member to provide varying desired throttling conditions between said ingress aperture and said valve controlled opening.

4,518,148

HYDRAULIC CHOKE DEVICE

Wesley E. Renfro, P.O. Box 1320, Houma, La. 70360

Continuation-in-part of Ser. No. 160,972, Sep. 26, 1980. This application Oct. 29, 1982, Ser. No. 437,734
Int. Cl.³ F16K *47/04, 31/05;* F16H *1/08*
U.S. Cl. 251—122 **7 Claims**



1. A hydraulic choking device to be installed on a high pressure fluid well member to control flow of fluids from the wells which comprises:

(a) A choke housing assembly having:

(i) A choke housing body provided with a passageway having an exit opening at one end and a ball nose plug entrance opening at its opposite end, the passageway being provided with a cavity in its sidewall perpendicular to the passageway, and provided with a shoulder stud perpendicularly attached to the housing body and having a fluid entry passageway opening into the housing body passageway directly opposite the cavity, the shoulder stud being attachable to the fluid well member for the fluid entry passageway to receive the well fluids,

(ii) A wear sleeve assembly attached to the choke housing body passageway sidewall at the exit opening end and having an entry wear sleeve and a down stream wear sleeve, the entry wear sleeve having an outwardly flared opening to receive the fluids and direct them through the down stream wear sleeve which is also provided with a flared opening to receive the fluids and direct them through an opening of a ball nose plug seat;

(b) An operator assembly having:

(i) An operator housing assembly attachable to the choke housing body and having an operator rod channel alignable with the choke housing body passageway and extending through the operator housing assembly, wherein the operating housing assembly comprises an operator nose section screwed to the choke housing body and an operator body section attached to the operator nose section,

(ii) An operator rod positioned in the channel and threading attached at one end to a threaded shaft, its opposite end extending toward the wear sleeve assembly, the operator nose assembly having a packing gland through which the operator rod passes in a sealing manner, wherein the operator nose assembly is provided with a weep hole located behind a packing gland to allow removal of any fluid which seeps past the packing gland, and

(iii) A ball nose plug attached to the operator rod's opposite end and extending toward the wear sleeve assembly, the plug having a ball nose shaped to sealingly seat in the ball nose plug seat when positioned therein,

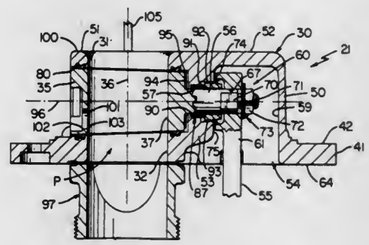
(c) A drive assembly having a drive means drivingly attached to the threaded shaft to rotate the shaft and cause the ball nose plug to advance or retract from the choke housing body passageway.

4,518,149

VALVE ASSEMBLY AND METHOD OF MAKING SAME

John F. Gardner, Loveland, Ohio, and David Hobson, Cambridge, Mass., assignors to Xomox Corporation, Cincinnati, Ohio

Filed Jan. 20, 1983, Ser. No. 459,462
Int. Cl.³ C11D *7/08*
U.S. Cl. 251—144 **28 Claims**



1. In a valve assembly for a fluid-containing tank which has a mounting saddle fixed to the bottom portion thereof, said valve assembly comprising, a housing structure having a central portion with a fluid inlet and a fluid outlet defined therein, means for mounting said housing structure against said saddle so that said housing structure and its said central portion are substantially within the confines of said tank, and bottom operable valve means carried by said housing structure and adapted to shut off fluid flow between said inlet and said outlet, the

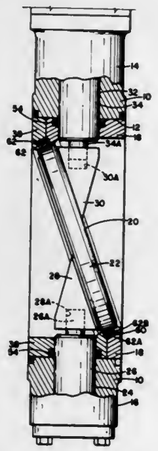
improvement wherein said inlet and said outlet are defined in said housing structure on a common rectilinear flow axis, said valve means has opening means which is adapted to be aligned between said inlet and said outlet on said rectilinear flow axis to define the open position of said valve assembly, said central portion has a top surface and has said inlet and outlet defined therein, said valve means is disposed between said inlet and outlet within the confines of said tank, said valve means has a drain opening therein which is disposed substantially perpendicular to said rectilinear flow axis, said drain opening having an outer end in flow communication with the fluid in said tank and an inner end in flow communication with said rectilinear flow axis with said valve means in said open position, said valve means once moved with its opening means aligned to define said open position enabling substantially free unobstructed flow of fluid through said valve assembly parallel to said axis and with minimum pressure drop to thereby enable the fluid in said tank above said top surface to be discharged through said valve assembly at a maximum rate of fluid transfer, and once the level of fluid in said tank is beneath said top surface of said central portion continued flow is through said drain opening to thereby allow complete drainage of any fluid in said tank.

4,518,150

VALVE WITH SPLIT RING RETAINER

Jimmy L. Greenburg, Broken Arrow, Okla., assignor to Dover Corporation, Tulsa, Okla.

Filed Sep. 6, 1983, Ser. No. 529,850
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—306 **8 Claims**



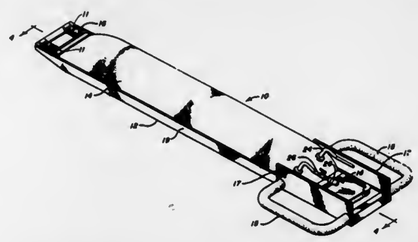
1. An improved butterfly valve comprising:
a valve body having a flow passageway therethrough and having coaxial top and bottom shaft openings intersecting the flow passageway;
a pair of seat ring retainers, each retainer being formed of a cylindrical sidewall having a flow passageway therethrough and having a planar rearward end face and a planar forward end face, the plane of the rearward face being perpendicular the axis of the flow passageway and the planar front face being at an acute angle to the plane of the rearward face, the forward face having a seat retaining groove therein, and each seat ring retainer having a shaft opening in the sidewall, the forward end faces of opposed seat rings when matingly assembled in said valve body forming a circumferential seat capturing groove therebetween, the shaft openings of the retainers when assembled being in alignment with said body shaft openings;
a toroidal seat ring received between said pair of retainers;
a disc having a circumferential sealing surface rotatably supported within said valve body and within said seat retainers; and
an upper and a lower shaft received in said body and said seat retainer shaft openings, at least one shaft extending externally of said body, the shafts engaging said disc for rotatably supporting and positioning the disc whereby in one position the circumferential sealing surface thereof engages said seat ring to close said flow passageway and in another position fluid is free to flow in the flow passageway to either side of said disc.

4,518,151

ARTICLE SEPARATOR FOR MATERIALS HANDLING

M. Reese Dill, Jr., 15 Carleton Rd., Belmont, Mass. 02178

Continuation-in-part of Ser. No. 343,460, Jan. 28, 1982, abandoned. This application Aug. 9, 1983, Ser. No. 521,609
Int. Cl.³ B66F *3/24*
U.S. Cl. 254—93 HP **7 Claims**



1. Portable apparatus for providing a desired vertical separation between materials normally stacked with a minimum vertical separation of no more than one inch, said apparatus comprising:
an elongated, inflatable bladder having a vertical dimension in a deflated condition less than said minimum vertical separation;
means for providing rigidity to said bladder in its direction of elongation for allowing manual pushing of said bladder between the materials, said providing means comprising:
a generally rigid frame at least partially surrounding said bladder, said frame having a thickness less than said minimum vertical separation, said frame being spaced from said bladder in both an inflated and a deflated condition; and
means for adjustably tensioning said bladder between portions of said frame;
means for inflating said bladder to an inflated condition, said bladder having a vertical dimension in its inflated condition at least equal to said desired vertical separation;
means for deflating said bladder to return said bladder to its deflated condition for recovery of said bladder from between the materials; and
means for manually grasping said bladder for carrying said bladder and for pushing said bladder manually into said minimum vertical separation.

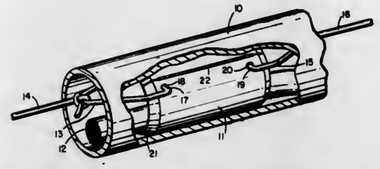
4,518,152

DEVICE FOR LOOSENING A CABLE WITHIN A CONDUIT

Harry C. Pierce, 1785 Van Buren St., San Mateo, Calif. 94403, and Helen A. B. Bailey, 1984 Evergreen, La Verne, Calif. 91750

Filed Feb. 4, 1983, Ser. No. 464,005
Int. Cl.³ H02G *1/08*
U.S. Cl. 254—134.3 R **2 Claims**

1. A device for freeing a cable adhering to the inside walls of a conduit, comprising:
a tubular sleeve having an outside diameter less the smallest cross-sectional dimension of said conduit, said sleeve having an inside diameter greater than the outside diameter of a cable to be freed from adherence to an inside wall of said conduit;
means for attaching a draw line to said sleeve for drawing said device through said conduit with said cable feeding through said sleeve inside diameter;
a nose portion at least at one end of said sleeve, said nose portion comprising internal and external circumferential chamfers at the same end of said nose portion, said internal



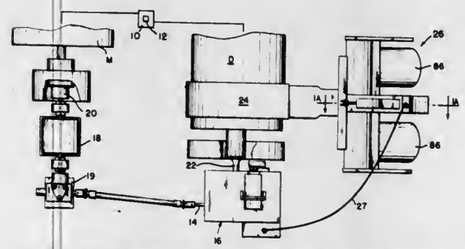
chamfer exerting a prying action against said cable as said device is drawn through said conduit, said external chamfer together with said internal chamfer acting to provide a knife edge, said nose portion being rotatably associated with an end of said sleeve but with capture means such that the longitudinal center lines of said nose portion and the remainder of the length of said sleeve remain substantially coincident without longitudinal separation therebetween, said capture means also limiting the relative rotation of said nose portion and said sleeve remainder.

4,518,153

SAFETY MECHANISM FOR HOISTING DRUMS

Harold H. West, King County; Roger A. Johnson, Snohomish County, and Charles W. Clark, Jr., King County, all of Wash., assignors to Ederer Incorporated, Seattle, Wash.

Continuation of Ser. No. 317,054, Nov. 2, 1981, abandoned. This application Jun. 27, 1984, Ser. No. 624,918
Int. Cl.³ B66D *1/48, 1/54, 5/20*
U.S. Cl. 254—274 **27 Claims**



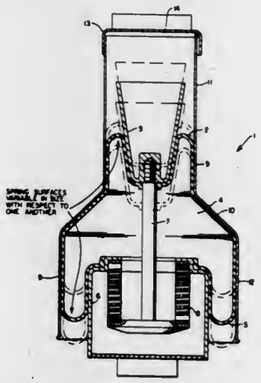
1. A safety system in a hoist having a motor with a motor shaft, a power transmission main drive, said system having an error between the relative rotations of the drum and the motor shaft, a drum, and a safety brake drivingly coupled on an operating element operatively connected to the drum, comprising:
a mechanical out-of-sync detector,
a safety brake actuator responsive to an output from the out-of-sync detector for applying said safety brake,
said detector including a monitoring secondary drive train having a first input shaft drivingly coupled to said motor, a second input shaft drivingly coupled to said drum, means for detecting a predetermined variation in relative speed or direction between said two shafts and producing a unidirectional brake-setting rotational output, and
correction means for producing a predetermined, limited, differential rotational direction and velocity between said first and second input shafts to generate a unidirectional rotational output in a predetermined direction opposite said unidirectional brake-setting rotational output greater than said relative rotation error for compensating for such relative rotation error.

4,518,154

PNEUMATIC SPRING, ESPECIALLY FOR MOTOR VEHICLES

Josef Merkle, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,578
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836662
Int. Cl.³ F16F *13/00*
U.S. Cl. 267—34 **15 Claims**



1. A pneumatic spring for motor vehicles which includes at least one closed spring volume, two spring surfaces of different sizes adapted to be subjected to pressure acting in opposite directions, the two spring surfaces each having an effective spring surface which is variable in size as a function of travel of the pneumatic spring, and a separate supporting means for supporting the respective spring surfaces so as to be coaxial with respect to one another, characterized in that means are provided for elastically linking the respective supporting means with one another so as to enable an axial distance between the respective supporting means to be variable within predetermined limits as a function of a pressure of the closed spring volume,
characterized in that a smaller of the two spring surfaces decreases over the travel distance of the pneumatic spring, two roll bellows means provided for forming the respective spring surfaces, said spring surfaces facing away from each other, each of the roll bellows means defining a partial volume of the at least one closed spring volume, the supporting means includes a pair of spring piston means having different diameters associated with the respective roll bellows means such that the effective spring surfaces of the roll bellows means facing away from each other are supported by the respective spring piston means, and in that at least the smaller of the spring piston means includes a support surface means for the roll bellows means which tapers over the travel distance of the pneumatic spring, and in that a spring force is transmitted by the spring piston means and a supporting element associated with walls of the roll bellows means.

4,518,155

FIXING DEVICE OF WORKPIECES FOR WIRE SPARK EROSION MACHINES

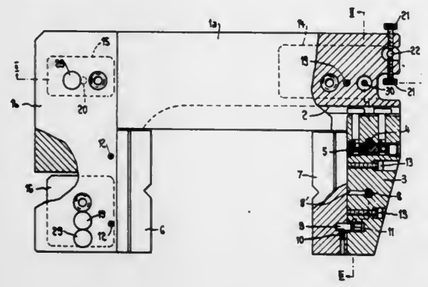
Franz Lehmann, Evilard, Switzerland, assignor to Imea SA, Reconvilier, Switzerland

Filed Jul. 13, 1982, Ser. No. 397,926

Claims priority, application Switzerland, Aug. 11, 1981, 5156/81

Int. Cl.³ B25B *1/02*

U.S. Cl. 269—60 **12 Claims**



1. A device of flat configuration for securing a workpiece on a wire spark erosion machine, which comprises:

an L-shaped base plate having a long leg and a short leg perpendicular to said long leg;

first jaw means mounted to said short leg;

slider means mounted to said long leg for sliding movement toward and away from said short leg;

second jaw means mounted to said slider means and being adapted to cooperate with said first jaw means to grip a workpiece therebetween;

fastening means for securing the device to a wire spark erosion machine, said fastening means being adjustably attached to said base plate so as to allow limited displacement of said base plate toward and away from said fastening means;

adjusting means for positioning said base plate relative to said fastening means for orienting a workpiece gripped between said first and second jaw means with respect to the direction of the working position of the wire on the machine;

said base plate being supported at three supporting points being located at the intersection of a longitudinal axis of said short leg and a longitudinal axis of said long leg, and the other two supporting points being located respectively at the extremities of said short leg and said long leg of said base plate.

4,518,156

METHOD FOR CONVEYING FOLDED SHEETS

James R. Moser, Easton, Pa., assignor to Stobb, Inc., Clinton, N.J.

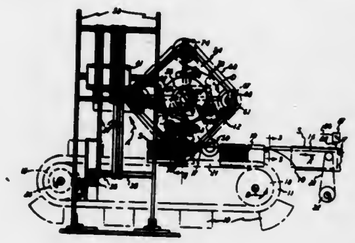
Division of Ser. No. 421,157, Sep. 22, 1982, Pat. No. 4,482,141.

This application Jun. 11, 1984, Ser. No. 619,545

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **7 Claims**

1. A method of transporting folded sheets from a raceway to a conveyor, comprising the steps of initially draping the folded sheets over a first section of the raceway which supports the sheets at a first folded angle and with the fold of the sheets being at the top of the sheets, moving the folded sheets along the raceway and transferring the folded sheets to a second section of the raceway at a folded angle less than the first folded angle, the folded sheets being supported on the raceway to have one end of the sheets along the fold free of any support, and then gripping the folded sheets at the fold where the sheets are free of support, and lifting the sheets upwardly off the



raceway and depositing the folded sheets onto a horizontally moving conveyor.

4,518,157

METHOD FOR TRIMMING A SIGNATURE HELD IN A ROTARY CLAMP

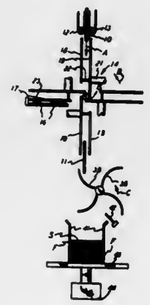
Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Division of Ser. No. 533,302, Sep. 19, 1983, Pat. No. 4,496,140.

This application Aug. 31, 1984, Ser. No. 645,867

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—58 **4 Claims**



1. A method of handling a signature, comprising the steps of moving a signature, with planar disposed sheets, into a holder and having an edge of the signature extend beyond the confines of the holder, rotating the holder with the signature about an axis extending along the plane of said sheets and past a stationary cutter which has been positioned adjacent said holder and which has a cutting edge disposed in the rotational path of movement of the extending edge of the signature, and trimming the extending edge of the signature off the signature while the signature is continuously rotated past said cutting edge.

4,518,158

GUIDE FOR USE IN A BANK NOTE HANDLING MACHINE

Kowichi Goi, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,948

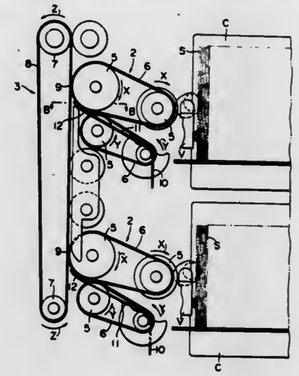
Claims priority, application Japan, Dec. 27, 1980, 55-191596[U]

Int. Cl.³ B65H *5/08*

U.S. Cl. 271—9 **3 Claims**

2. In a bank note handling machine having a delivery mechanism comprising a plurality of first paths, having first conveyor means for conveying the bank note in a first direction a second path having second conveyor means for conveying the bank note in a second direction, said second direction being different than the first direction and a plurality of guides provided at the junction of one of the first paths and second path and means for feeding a bank note from a bin into the first path, the improvement comprising:

a comb-like guide mechanism stationarily disposed relative to said first and second conveyor means while guiding bank notes therebetween for supporting the bank note from underneath and delivering the leading edge of the bank note to the second path from the first path without damaging the leading edge of the bank note as it contacts the second path by causing the bank note to smoothly curve from the first direction to the second direction, the guide mechanism having an upper portion curved upwardly and throughout the entire width of the leading edge of the bank note as it is supported thereby and a plurality of depending members integral with the curved



portion, said depending members being located closely adjacent said first conveyor means to guide the bank notes to the upper curved portion of the guide, said upper curved portion of the guide being located closely adjacent said first and second conveyor means to transfer the bank note along from said first conveyor means to said second conveyor means, a notch being provided between said depending members to allow for rollers and belts of said first path to project therethrough, said notch of said guide terminating at said upper curved portion closely adjacent the projecting rollers and belts of said first conveyor means whereby the bank note is smoothly guided along the guide and whereby the bank note is maintained in a non-corrugating dispostion along its width which is normal to the direction in which it is fed so that damage to the bank note is avoided due to the bank note striking against the second conveyor.

4,518,159

SHEET PAPER ATTRACTING SYSTEM

Toshiki Nishibori; Sumio Kita, both of Nara, and Sakuharu Takano, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1983, Ser. No. 468,958

Claims priority, application Japan, Mar. 1, 1982, 57-32633

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—103 **3 Claims**

1. A paper sheet supplying system comprising:

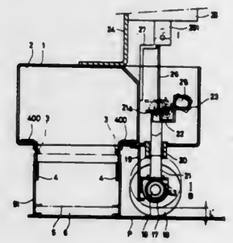
a paper sheet holder for supporting paper sheets stacked thereon;

a paper sheet attracting unit having a first major wall provided with a plurality of air intake openings, said first major wall confronting said paper sheets supported by said paper sheet holder;

suction means for creating an attracting suction force through said air intake openings;

a pressure roller for depressing said paper sheets supported by said paper sheet holder by a predetermined pressure;

a paper sheet feeding member for transferring a paper sheet attracted by said paper sheet attracting unit; and



drive means for separating said pressure roller from said paper sheets when said paper sheet feeding member transfers a paper sheet.

4,518,160

FLAT ARTICLE STACKING AND TRAY LOADING APPARATUS

Eric G. Y. Lambrechts, Antwerp; Herman K. M. Verhoeven, St. Niklaas, and Constant J. P. Claes, Deurne, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

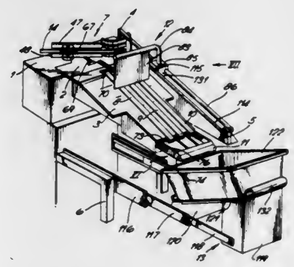
Continuation of Ser. No. 209,236, Nov. 21, 1980, abandoned.

This application May 23, 1983, Ser. No. 496,335

Claims priority, application European Pat. Off., Oct. 15, 1980, 80200974.6

Int. Cl.³ B65H *29/16, 31/06*

U.S. Cl. 271—214 **4 Claims**



1. Tray loading apparatus comprising:

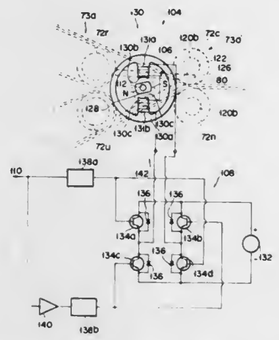
stack supporting means for a stack of flat articles, said stack supporting means including a stationary support surface and a movable support surface extending beyond the front end of said stationary support surface;

spring means for urging said movable support surface away from said stationary support surface;

a removable stacking plate member for retaining the front of said stack, said plate member being pivotally carried by a holder slidably mounted on an inclined rod mounted along said stationary support; and

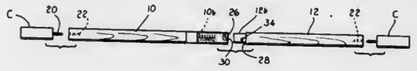
tray supporting means adjacent said movable support surface, said tray supporting means being movable toward and away from said movable support surface whereby the front wall of a tray can be brought into abutment with the front end of the stack after said stacking plate is removed so that said stack can be transferred into said tray.

4,518,161
SHEET SORTING APPARATUS
Kunihiko Nakamura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 27, 1982, Ser. No. 452,925
Claims priority, application Japan, Jan. 22, 1982, 57-7519; Apr. 8, 1982, 57-57245
Int. Cl.³ B65H *29/60*
U.S. Cl. 271—303 **13 Claims**



1. A sheet sorting apparatus comprising:
a delivery device for delivering sheets one after another;
first and second main belts separated at an angle from each other after running through a main superposed section in which said belts hold and carry the delivered sheets, and defining a triangular space therebetween adjoining said main superposed section;
first and second auxiliary belts superposed on part of said main belts to form first and second auxiliary superposed sections, respectively;
pulley means for guiding all said belts, said pulley means including a plurality of space-shape determining pulleys to determine the shape of said space;
a separator member rockably supported in said space and rocking between first and second positions through a predetermined sorting angle to guide the sheets fed from said main superposed section into said space to one of said auxiliary superposed sections corresponding to the rocking direction of said separator member, said separator member being rocked through said predetermined sorting angle when at least one projected portion of said separator member engages said space-shape determining pulleys;
means for rocking said separator member, said means for rocking comprising a rotary actuator including:
(a) a rotary shaft upon which said separator member is mounted,
(b) a rotary member mounted on said rotary shaft for rotation with said separator member, whereby said rotary member can rotate through said predetermined sorting angle,
(c) a drive section positioned for acting upon said rotary member said drive section and said rotary member including means for positively retaining said separator member in each of said first and second positions without contact between said rotary member and said drive section, said drive section including means for inducing selective rotation of said rotary member through a rotation angle in two opposite directional senses without contact between said rotary member and said drive section, said rotating angle being greater than said predetermined sorting angle, whereby rotation of said separator member is limited at two positions defined by said separator member engaging said space shape determining pulleys, and whereby said drive section continues to induce selective rotation of said rotary member at each of said two positions; and
first and second collectors receiving and holding therein the sheets delivered from said first and second auxiliary superposed sections.

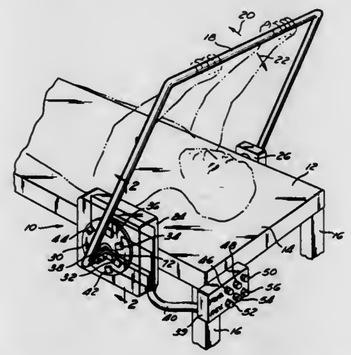
4,518,162
WEIGHTED EXERCISE BAR
William J. Oates, 101 E. C Ave., Easley, S.C. 29640
Filed Sep. 30, 1982, Ser. No. 432,016
Int. Cl.³ A63B *23/00*
U.S. Cl. 272—93 **2 Claims**



1. An exercise bar device for use in twisting exercises about the exerciser's waist comprising:
an elongated bar including a plurality of elongated sections joined by a releaseable joint between adjoining ends of adjacent sections forming a bar of a predetermined length defined by the outermost remote ends of said sections joined together;
said elongated bar being generally straight and uniform in its cross-section along its entire length;
a generally solid weighted member carried at each of said ends extending longitudinally therefrom within the periphery of said bar;
each said weight member having a cross-section corresponding to the cross-section of said bar defining weighted uniform extensions of about two and one-half pounds thereof at said ends;
said elongated bar having a sufficient length so that said weighted extensions extend past the hands of an exerciser when gripping the bar in an exercise position with the arms spread and the bar supported on the shoulders for twist exercising;
a quick release connection joining said sections together at said joint enabling said device to be broken down into sections for storage and transportation; and
said length of said elongated bar having a ratio to the total length of said weight members of approximately five to one so that an exercise bar is provided having effective accelerating torque for exercise yet may be grasped by outreached hands without reaching the weights and whose total length is not unweildly facilitating use in an interior room space and the like.

4,518,163
EXERCISER WITH ELECTRICALLY CONTROLLED RESISTANCE
Frank J. Bruder, Newport Beach, Calif., assignor to Arthur C. Bentley, Rossmore, Calif.
Continuation of Ser. No. 198,795, Oct. 20, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 423,560
Int. Cl.³ A63B *21/24*
U.S. Cl. 272—132 **6 Claims**

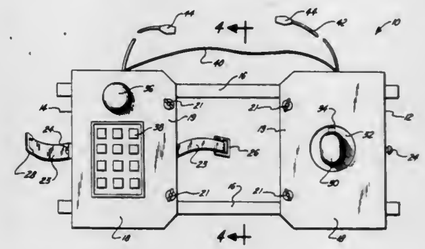
1. An exercise apparatus comprising:
a bench;
a holder bar rotatably mounted on said bench, and positioned for manipulation by the body of an operator;
a brake mechanically connected between said bench and said holder bar for providing resistance force to movement of said holder bar, said resistance force being electrically controllable in response to a braking signal;
an electrical control electrically connected to supply said braking signal to said brake, and to thereby control the braking force provided by said brake, wherein said electrical control comprises:
a power supply providing an electrical power output signal;
a rotational transducer mounted between said holder bar and said bench for sensing the angular orientation of said holder bar with respect to said bench, and for producing an electrical orientation signal indicative of said angular orientation;
force programming means electrically connected to said power supply, said rotational transducer means, and said brake, for controlling the transfer of said electrical power output signal to said brake to control said braking force, said force programming means being adjustable to independently control the magnitude of said braking force at each of a plurality of said angular orientations;
a first electrical contact mounted on said bench and positioned to be activated as said holder bar is rotated in a first direction;
a second electrical contact mounted on said bench and positioned to be activated as said holder bar is rotated in a second direction, said first and second electrical contacts defining an operating angle range in the rotation of said holder bar with respect to said bench; and



a relay electrically connected to said first electrical contact, said second electrical contact, said brake, and said plurality of resistors, for providing a first direction state in response to said first electrical contact, and a second direction state in response to said second electrical contact, and for electrically connecting a first set of said resistors to said brake in said first direction state, and electrically connecting a second set of said resistors to said brake in said second direction state;
wherein said rotational transducer comprises an electrical commutator switch assembly comprising:
a plate having a plurality of electrically conductive sector pads mounted along a circular path thereon, said sector pads defining angular ranges in the rotation of said holder bar with respect to said bench; and
a wiper rotatably mounted on said plate and having an electrically conductive wiper pad, said wiper pad making electrical sequential contact with each of said sector pads as said holder bar is rotated with respect to said bench.

4,518,164
VIDEO GAME CONTROL CONSOLE
Robert L. Hayford, Jr., 500 Mosser Dr., Lafayette, La. 70508
Filed Nov. 10, 1983, Ser. No. 550,372
Int. Cl.³ A63B *71/00*
U.S. Cl. 273—148 B **10 Claims**

1. A game control console for video game controls comprising:
(a) a support frame;
(b) first and second spaced apart control containers adjustably mounted upon the frame so that the space between the containers can be varied, so that the relative position of the first and second control containers can be adjusted



to the lap size of individual players, each container carrying one or more control components.

4,518,165
THREE DIMENSIONAL COMBINATION ASSEMBLY GAME
Shmuel S. Shmueli, 375 Queens Ct., Ridgewood, N.J. 07450
Filed May 11, 1983, Ser. No. 493,585
Int. Cl.³ A63F *9/12*
U.S. Cl. 273—156 **10 Claims**

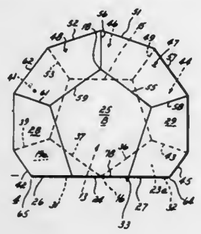


1. A Three Dimentional Combination Assembly Game comprising:
A. A cylindrical base,
B. Six pins equally spaced on a D diameter which are part of said base,
C. Segments which have radiused slots on a D diameter,
D. One or more grooves on the outside surfaces of said segments.

4,518,166
PLAYING COURT AND METHOD OF USE
Millard C. Trott, 6637 Seminole, West Chester, Ohio 45069
Filed Jan. 7, 1983, Ser. No. 456,450
Int. Cl.³ A63B *71/04*
U.S. Cl. 273—411 **6 Claims**

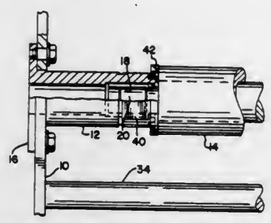
1. A playing court to be used by bouncing a ball off service walls of said court comprising
a truncated pentagonal dodecahedron said dodecahedron having:
a first service wall;
a second service wall;
a floor;
a plurality of side walls said walls and said floor connected together to form a polyhedral playing surface;
wherein said first service wall and said second service wall are parallel to each other and perpendicular to said floor;

said first service wall comprising a pentagon having a lower vertex said lower vertex contacting said floor; and



said second service wall comprising a pentagon having a bottom edge said bottom edge adjoining said floor.

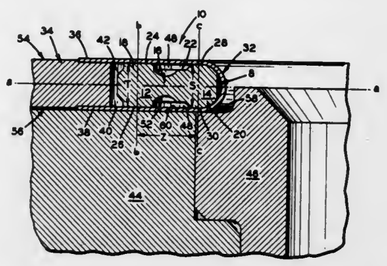
4,518,167
SEALING MEANS
Wolodymyr Dutko, Niles, Ill., assignor to A. B. Dick Company, Chicago, Ill.
Filed Jun. 8, 1983, Ser. No. 502,156
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—81 R **19 Claims**



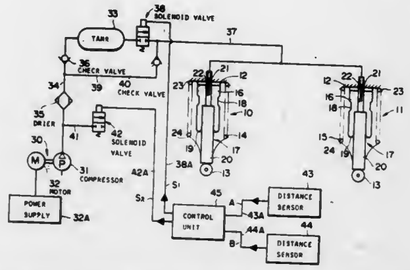
1. In an apparatus of the type handling liquid and including an assembly having a roller and associated metering means, and mounting means for rotatably supporting said roller at its ends and for supporting said metering means, the improvement in sealing means for sealing against leakage of liquid in the regions of said roller ends, said sealing means including compressible, annular seals mounted at each end of said roller, respective mating means defined by said mounting means and said seals for holding the seals against rotation relative to the mounting means, side walls defined by said metering means, and wherein said seals are compressed between said side walls and the roller ends when the metering means is supported in the apparatus, and whereby said sealing is accomplished in said regions where the respective roller ends are rotating while engaged with the respective stationary annular seals.

4,518,168
MULTI-THICKNESS FIRE RING ASSEMBLY
Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio
Filed Mar. 2, 1984, Ser. No. 585,803
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—235 B **7 Claims**

1. In a fire ring assembly comprising a unitary fire ring having a plurality of concentrically positioned body portions, each portion integrally joined to a radially adjacent body portion by a radially extending bridge, each body portion comprising a pair of axially aligned, parallel load-bearing surfaces, one of said body portions accommodating a greater compression load per unit of axial distortion than an adjacent body portion; an improvement comprising said bridge defining an axially stepped annulus having a greater thickness immediately adjacent the body portion disposed for accommodating said greater compression load.

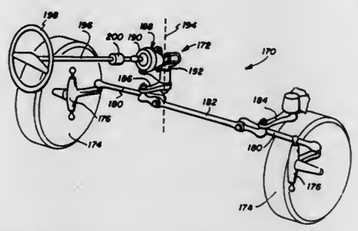


4,518,169
AUTOMATIC VEHICLE HEIGHT-ADJUSTING SYSTEM
Junsuke Kuroki; Namio Irie, and Haruto Tanaka, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 18, 1983, Ser. No. 476,519
Claims priority, application Japan, Apr. 6, 1982, 57-56097
Int. Cl.³ B60G *17/00*
U.S. Cl. 280—6 R **5 Claims**



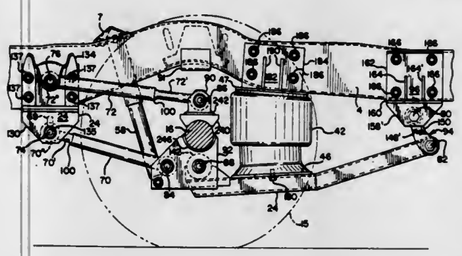
1. An automatic vehicle height-adjusting system for a vehicle including a sprung mass and an unsprung mass in contact with a road surface, the sprung mass being supported on the unsprung mass via a spring or the like, the system comprising:
(a) means for sensing a distance between the sprung mass and the road surface at a point spaced transversely from the path of a wheel on the vehicle and generating a distance signal indicative thereof;
(b) means responsive to the distance signal for determining whether or not the distance is less than a first predetermined value and for generating a first comparison signal indicative thereof;
(c) means responsive to the distance signal for determining whether or not the distance is greater than a second predetermined value and for generating a second comparison signal indicative thereof, the second predetermined value being greater than the first predetermined value;
(d) means responsive to the first and second comparison signals for increasing the height of the sprung mass with respect to the unsprung mass when the distance is less than the first predetermined value and for decreasing the height of the sprung mass with respect to the unsprung mass when the distance is greater than the second predetermined value.

4,518,170
VEHICULAR STEERING APPARATUS EMPLOYING AN ECCENTRIC ACTUATOR
Robert G. Musgrove, Arlington, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.
Division of Ser. No. 92,970, Nov. 9, 1979, Pat. No. 4,286,761, which is a continuation-in-part of Ser. No. 933,697, Aug. 15, 1978, abandoned. This application Jul. 10, 1981, Ser. No. 282,345
Int. Cl.³ B62D *5/06*
U.S. Cl. 280—96 **16 Claims**



6. A vehicle steering system comprising:
a pair of wheels mounted in mutually spaced relationship for pivotal movement, about generally vertical axes, the steering means comprising:
linkage means operatively connected to the wheels,
an actuator connected to the linkage means for effecting movement of the linkage means, and pivotal movement of the wheels, the actuator comprising:
first and second structures, one of the structures being drivingly connected to the linkage means,
an elongate beam with first and second portions having first and second longitudinal axes, respectively, said axes intersecting at the pivot axis and being mutually skewed at a predetermined skew angle,
housing means attached to the second structure for rotation about the second axis and for eccentric revolution about a circle with a centerline intersecting the pivot axis, and
means for effecting rotation of the housing means about the second axis and for effecting eccentric revolution of the second beam portion in an opposite direction such that the first beam portion pivots about the pivot axis to cause relative pivotal movement between the structures.

4,518,171
AIR SUSPENSION SYSTEM
William E. Hedenberg, 490 Buffalo Grove R., Buffalo Grove, Ill. 60090
Filed Oct. 14, 1983, Ser. No. 541,710
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—711 **20 Claims**

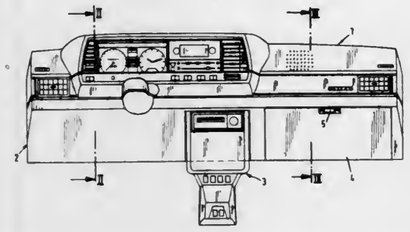


1. In a wheel supported vehicle having a frame, a generally non-rotatable rear axle means in the form of a dead axle or a housing for a live axle, and axle air suspension units, each said unit disposed to provide support for said vehicle from opposite ends of said axle means, the improvement wherein each said suspension unit comprises:
axle carrier means fixedly attached to said axle means proximate to the outer end thereof;
a torque arm hanger means attached to the frame of said vehicle generally ahead of said axle carrier means;
an upper torque arm having a first end and a second end;
a lower torque arm having a first end and a second end;
first pivoting means for pivotally attaching said first end of said upper torque arm to said torque arm hanger means, said first pivoting means being rotatable about a first pivoting axis;
second pivoting means for pivotally attaching a first end of said lower torque arm to said torque rod hanger means generally below said first end of said upper torque arm, said second pivoting means being rotatable about second pivoting axis, the pivoting axes of said first and second pivot means being disposed generally parallel to the axis of said axle means to as to allow the second or rear ends of said torque arms to move in generally parallel vertical directions;
third pivoting means rotatable about a third pivoting axis for pivotally attaching said rear end of said upper torque arm to said axle carrier means at a point generally above said axle axis;
fourth pivoting means rotatable about a fourth pivoting axis for attaching said second end of said lower torque arm to said axle carrier means at a point generally below said axle means axis, said third and fourth pivoting means having their pivoting axes generally parallel to said axle means axis, the locations of said first, second, third, and fourth pivoting means being chosen such that said torque arms are disposed rearwardly to diverge from one another to extend towards opposite sides of the axis of said axle means;
trailing arm having a forward end and a rearward end;
fifth pivoting means for pivotally attaching said forward end of said trailing arm to a point on said axle carrier means generally below said axle axis;
a link member having a first end and a second end;
sixth pivoting means for pivotally attaching said rearward end of said trailing arm to a first end of said link;
seventh pivoting means for pivotally attaching the second end of said link to a portion of said frame located to the rear of said axle means; and
air spring means including at least one air spring interposably mounted between said frame and said trailing arm in a region generally between said axle means and said sixth pivoting means so as to transmit substantially the entire load between said vehicle and said axle means, said air spring means including automatic air spring extension controlling means for maintaining said torque rods at a chosen disposition under varying vehicle loading conditions, said fifth, sixth, and seventh pivoting means having their pivoting axes generally parallel to said axle axis.

4,518,172
ENERGY-DISSIPATINGLY FLEXIBLE KNEE-RESTRAINING ELEMENT
Botho Bortz, Wolfsburg, and Erwin Wulfes, Gifhorn, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany
Filed Nov. 3, 1982, Ser. No. 438,704
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150964
Int. Cl.³ B60R *21/04*
U.S. Cl. 280—751 **5 Claims**

1. An energy-dissipating knee-restraining element for a vehicle having an instrument panel comprising a hollow profiled beam extending in the transverse direction of said vehilce, means forming a cut-out in said hollow profiled beam below the instrument panel approximately at the level of the knees of a passenger seated on the passenger side of the vehicle, rigid

frame means surrounding said cut-out, the rigid frame means surrounding the cut-out comprising an inner plate and an outer plate, defining together a rigid hollow construction at edges of



the cut-out in the hollow profiled beam, a pivoting flap means normally covering the cut-out fashioned as an energy-dissipating hollow profiled element, and a storage compartment means rigidly affixed to the pivoting flap means.

4,518,173

RING JOINT FOR SEATBELT SYSTEM

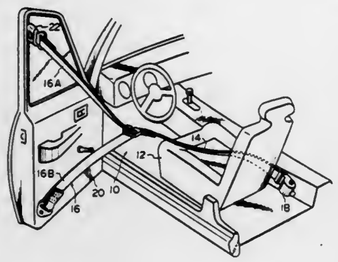
Makoto Yamada, Toyota; Tatsushi Kubota, Okazaki, and Ikuzo Kojima, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Kabushiki Kaisha Takai-Pika-Denki-Seisakusho, both of Tokyo, Japan

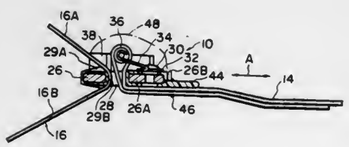
Filed Jul. 15, 1982, Ser. No. 398,566

Claims priority, application Japan, Jul. 31, 1981, 56-115219[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **12 Claims**





1. A ring joint for use in a seatbelt system for protecting an occupant in an emergency situation of a vehicle, the seatbelt system including an outer webbing connected to an inner webbing through said ring joint, said ring joint comprising:

a joint base of a plate type around which is wound the intermediate portion of the outer webbing;

a lock member supported by said joint base and engaged with the inner webbing for locking a contact portion of said outer webbing between said joint base and said lock member in an emergency situation of the vehicle; and

stoppers projecting from said joint base for restricting the movement of said lock member in the widthwise direction of the inner and outer webbings; whereby, when locking is effected between said joint base and said lock member, said webbing and said lock member are prevented from moving relative to each other, said lock member is locked against dislodging from said joint base, and the occupant is maintained in a reliably restrained state.

4,518,174

APPARATUS FOR ADJUSTING THE HEIGHT OF THE FIXING OR GUIDE FITTING FOR THE SHOULDER BELT OF A SAFETY BELT SYSTEM

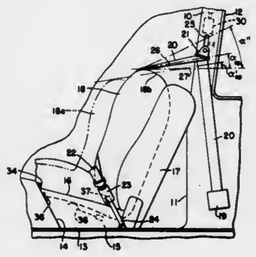
Gerhard Sedlmayr, Hamburg, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,698

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146918

Int. Cl.³ A62B *35/02*

U.S. Cl. 280—808 **24 Claims**



1. An apparatus for adjusting the height of the upper fixing or guide fitting for the shoulder strap of a safety belt system, said apparatus including means for adapting the vertical position of said fixing or guide fitting to the sitting position of the person which is to wear the safety belt; the improvement comprising:

a sensing apparatus associated with said fitting for sensing said shoulder strap in terms of at least one parameter of its operative connection to the person which is strapped, and for triggering a reaction, from said adapting means, to the situation ascertained;

said sensing apparatus having a sensing arm for sensing the direction of travel which said shoulder strap takes between said fitting and the person;

said sensing arm having a first end connected to said fitting, and a second free end which is connected to said shoulder strap;

said sensing apparatus having an angle measuring device for determining the angular position of said sensing arm relative to a reference line, and a servo element as said means for adapting the vertical position of said fitting; and

said servo element being activated to move said fitting until a given angular position of said sensing arm relative to said reference line is obtained, the angle measured by said device for determining the angular position of said sensing arm being converted into an electrical impulse which activates said servo element to move said fitting continuously adjusting shoulder belt location.

4,518,175

TUBULAR ASSEMBLY INCLUDING INSULATED CONDUITS AND COUPLERS FOR THE TRANSFER OF HIGH TEMPERATURE AND HIGH PRESSURE FLUIDS

William D. C. Richards, and Harry Straub, both of King of Prussia, Pa., assignors to General Electric Co., Philadelphia, Pa.

Filed May 7, 1982, Ser. No. 375,839

Int. Cl.³ F16L *59/14*

U.S. Cl. 285—47 **7 Claims**

1. A pipe assembly comprising:

a first conduit having an inner pipe for conveying fluids and an outer pipe surrounding the inner pipe and defining an annular cavity therebetween, said outer pipe having threaded ends and said inner pipe having its ends extending outwardly well beyond said outer pipe threaded ends;

frusto-conical members joining corresponding ends of said inner and outer pipes for sealing the cavity and supporting said pipes in spacial relationship;



a male coupling having a first threaded end sized to engage one threaded end of the outer pipe, and a second threaded end; and

a female coupling having a first threaded end sized to engage the other end of the outer pipe and a second threaded end sized to engage the second threaded end of said male coupling.

4,518,176

VEHICLE WITH ECCENTRICALLY MOUNTED WHEELS

Károly Hegedüs, Budapest, Hungary, assignor to Aranykalasz Mgtsz, Rackeve, Hungary

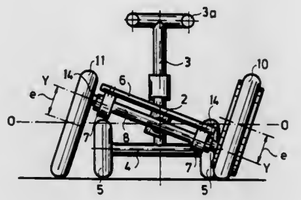
PCT No. PCT/HU81/00046, § 371 Date Aug. 16, 1982, § 102(e) Date Aug. 16, 1982, PCT Pub. No. WO82/02027, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 16, 1981, Ser. No. 413,354

Claims priority, application Hungary, Dec. 16, 1980, 2999/80

Int. Cl.³ B62M *1/18*

U.S. Cl. 280—229 **9 Claims**



1. A vehicle comprising a chassis having a forward section, and a rear section connected to said forward section said rear section having a platform mounted for tilting movement about a horizontal axis, a freely rotatable shaft suspended from said platform and having a wheel attached thereto at each end, the centers of each wheel being eccentric by a predetermined distance from the axis of said shaft in radially opposite directions, the axis of said shaft extending at an acute angle to the line connecting the center of each wheel, one of said wheels being fixed to said shaft to rotate conjointly with said shaft, said other wheel being freely rotatable about the center of said wheel.

4,518,177

HUBLESS PIPE COUPLING

Thomas A. Deakins, Star Rte., Sequatchie, Tenn. 37374

Continuation-in-part of Ser. No. 326,106, Nov. 30, 1981,. This application May 9, 1984, Ser. No. 607,730

Int. Cl.³ F16L *3/00*

U.S. Cl. 285—64 **7 Claims**

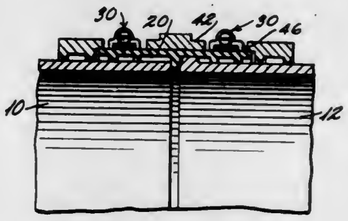
1. In a coupling for axial coupling of cast iron hubless pipes and fittings having barrels with substantially smooth circumferential surfaces near the ends thereof, said coupling comprising a compressible sleeve for receiving two of said ends to be coupled and means for constricting said sleeve about and into sealing engagement with said circumferential surfaces, the improvement comprising:

separate housing means for substantially enclosing said sleeve and increasing the resistance of said coupling to internal fluid pressure of a pipe run, said housing means comprising:

at least two portions connectable together to substantially surround and conform to said circumferential surfaces;

aperture means in at least one of said portions for providing access to said constricting means;

means for tightening said connected portions about said barrels;



means for biting into said circumferential surfaces during said tightening to limit relative axial movement between said barrels; and

means for preventing leaks, and comprising bevels on inner surfaces of said portions, said bevels running substantially an axial length of said compressible sleeve such that mounting of said portions about said sleeve and consequent pinching of said sleeve by said portions to cause leaks in said coupling is obviated by said bevels and said biting means.

4,518,178

LOCKING DEVICE

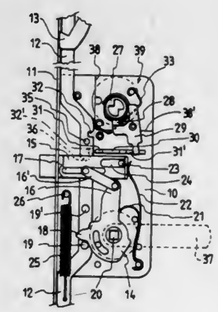
Sigurd W. Bengtsson, Gothenburg, Sweden, assignor to AB Fixfabriken, Gothenburg, Sweden

Filed Apr. 29, 1983, Ser. No. 489,776

Claims priority, application Sweden, Apr. 29, 1982, 8202702

Int. Cl.³ E05C *9/04*; E05B *9/08*

U.S. Cl. 292—8 **7 Claims**



1. A building-closure operator for being installed on the edge of the closure for holding the closure in a closed position, comprising:

(a) an espagnolette edge bar adapted to be secured to the closure's edge;

(b) a casing secured to said edge bar and receivable in a recess in the closure, said casing having an open space of predetermined dimension;

(c) at least one bolt disposed remotely from said casing, and supported for movement through said edge bar to a locking position, and to a retracted position:

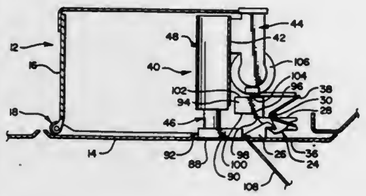
(d) an espagnolette rod operatively connected to said bolt for maneuvering it;
(e) handle-controlled operating means in said casing for reciprocating said rod; and
(f) means for latching and locking said bolt, at least the lock part thereof being an insert of said predetermined dimension and directly insertable and disposed in said space and secured to said casing.

4,518,179

TEST STOP ASSEMBLY FOR OXYGEN BOX DOOR

James A. Fenner, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01719, § 371 Date Dec. 9, 1982, § 102(e) Date Dec. 9, 1982, PCT Pub. No. WO84/02279, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 9, 1982, Ser. No. 474,653
Int. Cl.³ E05C *3/08*
U.S. Cl. 292—166 **9 Claims**



1. A test stop assembly particularly adapted to be used with an oxygen box door and an actuable latching mechanism having actuating means for the door, said assembly comprising:
a. mounting means for mounting the assembly proximate the actuating means of the latching mechanism;
b. a stem means mounted in the mounting means for reciprocating movement along an axis of travel, said stem means having three positions along said axis, namely:
1. a first normal intermediate position;
2. a second extended test position;
3. a third retracted reset position;
c. biasing means operatively engaging the stem means to urge the stem means from the second and third positions to the first intermediate position;
d. said stem means comprising an end stop means positioned at an end portion of the stem means, said stop means being shaped to fit in a mating aperture in the door when the stem means is in the first intermediate position so as to permit movement of the stem means inwardly from the door to the third retracted reset position, said stop means being arranged to be rotatable out of alignment with said aperture when the stem means is in the second extended test position, so that said stop means can be located in a door stopping position;
e. said stem means having a reset portion positioned to engage the actuating means for the latching assembly when the stem means is moved to its third reset position.

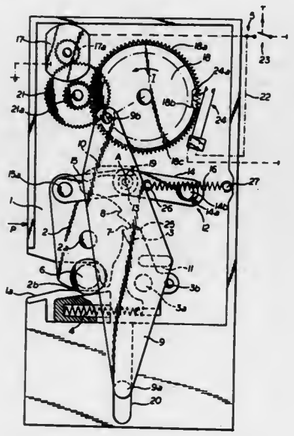
4,518,180

AUTOMOBILE POWER DOOR LATCH

Frank Kleefeldt, Heiligenhaus, and Rolf Raetz, Essen, both of Fed. Rep. of Germany, assignors to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,584
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150620; Dec. 21, 1981, 3150621
Int. Cl.³ E05C *3/06*
U.S. Cl. 292—201 **9 Claims**

1. A door-latching mechanism for a vehicle door adapted to cooperate with a pin of a doorpost, said mechanism comprising:
a housing mounted on the door;
a bolt rotatably mounted on said housing and having a fork engageable with said pin, said bolt being rotatable from a locking position wherein said pin is retained against escape from said bolt into an open position wherein said pin can escape from said bolt;
a pawl pivotally mounted on said housing and engageable with said bolt to limit displacement thereof into said open position;
a toggle linkage including a pair of articulated levers connected to said bolt and to said housing, said toggle linkage being shiftable between operative positions on opposite sides of a dead center position for rotating said bolt and having a spring connected between said linkage and said housing for biasing said linkage at least into one of said operative positions;



a slider on said housing provided with at least a pair of abutments including on abutment engageable with said toggle linkage for displacing same from one of its operative positions through said dead center position to the other operative position of said toggle linkage, and another abutment engageable with said pawl for releasing same from its bolt said spring biasing said toggle linkage against said one abutment in said one operative position; and
an electric motor driven crank connected to said slider and energizable to displace said slider and shift said one abutment to thereby displace said toggle linkage and rotate said bolt, said crank being so connected to said slider that, upon displacement of said toggle linkage into said other operative position and release of said pawl from said bolt, said spring is effective to rotate said bolt through said linkage to release said pin.

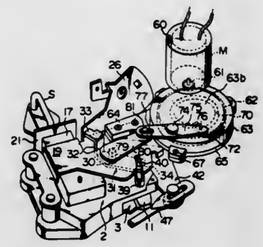
4,518,181

LOCKING DEVICE

Shinjiro Yamada, Tokyo, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1983, Ser. No. 497,711
Claims priority, application Japan, May 28, 1982, 57-90955; Dec. 14, 1982, 57-218739
Int. Cl.³ E05C *3/26*
U.S. Cl. 292—201 **11 Claims**

1. A locking device of the type comprising: latch means; a lock member movable between a locking position, in which said locking device is caused to assume a locking condition to prevent the latch means from being released, and an unlocking position, in which said locking device is caused to assume an unlocking condition allowing the latch means to be released; and a powered operating means for causing said locking member to move between said locking position and said unlocking position; said powered operating means comprising:
a rotary member coupled to driving means so as to be rotated in either direction, said rotary member having on the surface thereof a cam groove which extends around the axis of rotation of the rotary member and has a first end and a second end which are spaced apart from each other by a suitable distance in at least one of the radial and axial directions of the rotary member, said rotary member also having a connecting cam groove interconnecting said first end and second end of said cam groove;
a cam follower slidably engaged with said cam groove of the



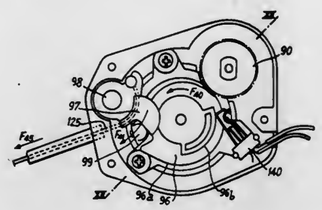
rotary member, rotation of the rotary member by the driving means causing the cam follower to be shifted by said suitable distance; and
means for operatively connecting the cam follower to said lock member in such a manner that when the cam follower is at said first end of the cam groove the lock member takes the locking position, and when the cam follower is at said second end of the cam groove the lock member takes the unlocking position;
the lock member being movable manually between the locking and unlocking positions, said connecting cam groove allowing the cam follower to move directly between said first and second ends of the cam groove when the lock member is caused to move manually between the locking and unlocking positions.

4,518,182

ELECTRIC SAFETY LOCK MORE SPECIALLY FOR MOTOR VEHICLE DOORS

Maurice Cousin, Flers; Yves Pipon; Georges Droulon, both of St.-Georges-des-Groseillers, and Jean Lebrun, La Lande/-Patry Flers, all of France, assignors to A & M Cousin Etablissements Cousin Freres S.a.r.l., Flers, France

Filed Jul. 14, 1983, Ser. No. 513,413
Claims priority, application France, Jul. 19, 1982, 82 12545; Jul. 8, 1983, 83 11436
Int. Cl.³ E05C *13/10*
U.S. Cl. 292—201 **9 Claims**



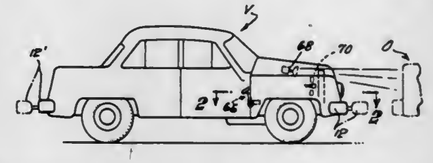
1. Electric safety locks, more specially designed for motor vehicle doors, in which each of the vehicle doors including the motor bonnet, the petrol tank cap and the luggage boot of the vehicle are equipped with a set consisting of a case (1) in which an electric micro-motor (2) is mounted, and wherein a shaft (3) of the motor drives a pinion (4) cooperating with a reducer which permanently engages with a toothed cam (15) having a protruding part (15*a*) which cooperates with a pushing finger (20) which passes through the case (1) and an anterior wall of a casing (12) so as to control rotation of a ratchet (13) having an end tooth (13*b*) which engages into teeth of a rotating bolt which is mounted in the casing (12) and comprises a cut opening (24) which receives a bar (25) which forms a lock-staple (25) and that supplying of the motor is monitored by a printed circuit which enables, by using switches (40, 41, 42, 43, 44) the door to be open or temporarily closed for protection of occupants of the vehicle.

4,518,183

EXTENDIBLE SAFETY IMPACT BAGS FOR VEHICLES

Joseph K. Lee, 10616 Bramblebush Ave., Whittier, Calif. 90604

Filed Feb. 27, 1984, Ser. No. 583,751
Int. Cl.³ B60R *19/10*
U.S. Cl. 293—118 **17 Claims**



1. The method of intercepting an object in the path of a passenger vehicle during impact between said object and passenger vehicle while said vehicle is traveling at a predetermined unsafe impact speed which comprises:
a. Providing a detection means on said moving vehicle that anticipates a possible impending impact with an object in the path of said moving vehicle or an object coming upon said vehicle from behind;
b. Inserting a forwardly or rearwardly extending mechanism within the frame of said vehicle for actuating an extension procedure of the bumpers of said vehicle prior to an impending impact of said vehicle as determind by said detection means;
c. Providing a releasable retaining apparatus for keeping said extending mechanism either from being actuated from an initial retracted condition or for keeping said retaining apparatus in an extended condition when it has been moved into that position while preparing for possible impending impact with another object;
d. Placing a dually compartmented impact shock absorbing air cusioning apparatus at either front or back, or both, of said moving vehicle between said frame of said vehicle and the bumpers of said vehicle;
e. Providing air filling and air extracting means for both compartmented air bags and for controlling the amount of air in the second outwardly placed bag when it is determined that the vehicle is either in or out of danger of possible impact; and
f. providing a retracting mechanism for returning the bumpers of the vehicle to an initial inoperative condition if no impact is detected imminent, or if no impact takes place.

4,518,184

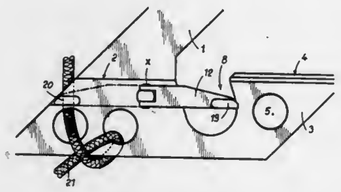
DEVICE FOR REMOTELY PASSING A CORD IN OR AROUND AN ANCHORING MEMBER

Claude Pecorini, 2/11 Rue des Bugnons, CH-1217 Meyrin, Geneva, Switzerland

Filed Nov. 18, 1982, Ser. No. 442,797
Claims priority, application Switzerland, Nov. 27, 1981, 7584/81; May 10, 1982, 2903/82
Int. Cl.³ B63B *21/04*
U.S. Cl. 294—19.1 **10 Claims**

1. Device for remotely passing a cord in or around an an-

choring member, comprising a support on the end of which a slide is fast as well as a sliding block sliding linearly in said slide; the sliding block having linear sliding surfaces on opposite sides of a notch that opens toward said support; the sliding block having a length greater than twice that of the slide by an amount equal at least to the width of said notch and comprising, at at least one of its ends, fixing means for the cord.

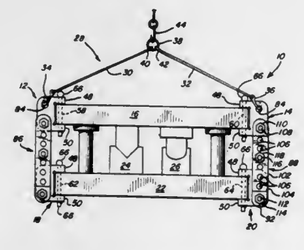


4,518,185

DIE HANDLING DEVICE

Robert J. Shiffer, Smithfield Township, Monroe County, Pa., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 19, 1983, Ser. No. 533,232
Int. Cl.³ B66C *1/16*
U.S. Cl. 294—67.1 **5 Claims**



1. A device for lifting as an assembly a die set of the type having separable upper and lower die shoes disposed in vertically spaced apart relationship comprising:
- a first pair of clamps each including means for removably engaging one end of each of said upper and lower die shoes;
- a first adjustable in length link connecting said first pair of clamps in vertically spaced apart relationship;
- a second pair of clamps each including means for removably engaging an end of each of said upper and lower die shoes opposite to said one end;
- a second adjustable in length link connecting said second pair of clamps in vertically spaced apart relationship; and
- a sling connected between an uppermost one of said first pair of clamps and an uppermost one of said second pair of clamps.

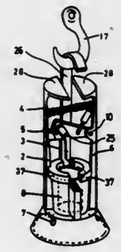
4,518,186

AUTOMATIC COUPLING DEVICE FOR LOADING PLATFORMS

Gunnar Hörnberg, Ramnäs, Sweden, assignor to Konstruktions Teknik, Upsala, Sweden

PCT No. PCT/SE82/00288, § 371 Date May 23, 1983, § 102(e) Date May 23, 1983, PCT Pub. No. WO83/01059, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 21, 1982, Ser. No. 503,133
Claims priority, application Sweden, Sep. 23, 1981, 81056293
Int. Cl.³ B66C *1/38*
U.S. Cl. 294—82.24 **6 Claims**

1. A coupling apparatus which may be automatically coupled and uncoupled relative to a loading platform for raising and lowering said platform attached to said coupling apparatus comprising:
- (a) a coupling head having a first end attached to said loading platform and a second end extending from said loading platform;
- (b) a casing open at one end and at an opposite other end, said one end being attachable to a hoisting cable;
- (c) a pair of opposing legs one end of each of which extends into said one end of said casing for pivotal attachment to said casing;
- (d) a jaw extending from each of said legs to form a pair of opposing jaws; and
- (e) means attached to said legs for automatically causing said legs to pivot about their pivotal attachment to pull said opposing legs and said opposing jaws towards each other so that said jaws are coupled to said coupling head when said casing is lowered a first time so that said head extends into said other end of said casing, and for automatically



causing said legs to pivot about their pivotal attachment to push said opposing legs and said opposing jaws away from each other so that said jaws are uncoupled from said coupling head when said casing is lowered a subsequent second time and said cable is slackened to an extent to allow said casing to be removed relative to said coupling head said causing means including a lock flap one end of which is pivotally attached to one of said legs of said pair and the other end of which extends towards a lock lug extending from the other of said legs of said pair, said other end of said lock flap engaging said lock lug when said jaws are uncoupled from said coupling head, and push rod means pivotally attached to said lock flap for causing said lock flap to pivotally disengage said lock lug allowing said jaws to be pulled together to couple said jaws to said coupling head when said push rod means engages said coupling head as said head extends into said other end of said casing as said casing is lowered said first time.

4,518,187

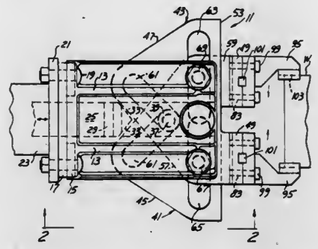
PARALLEL MOVEMENT GRIPPER HEAD

Leland F. Blatt, Grosse Pointe Shores, and David J. Crorey, Utica, both of Mich., assignors to Leland F. Blatt, Fraser, Mich.

Filed Jun. 6, 1983, Ser. No. 501,526
Int. Cl.³ B66C *1/42*; B25J *15/04*
U.S. Cl. 294—88 **12 Claims**

1. A parallel movement gripper head comprising of a body including a pair of parallel spaced side plates interconnected at their one ends;
- there being a pair of opposed guide slots upon their interiors along a longitudinal axis;
- a longitudinally reciprocal rod end spanning and slidably mounted within said slots and adapted for connection to a reciprocal piston rod of a power cylinder adapted for connection to said body;
- a pair of opposed jaw assemblies interposed between said side plates, guidably mounted upon said body and adapted for simultaneous alternate inward and outward movements in a path at right angles to said axis;

each jaw assembly including a pair of parallel spaced jaw plates nested within said body and at their one ends projecting outwardly thereof;
opposed jaw pads for each jaw assembly respectively, extending transversely of and spanning said one ends of said jaw plates and secured thereto, adapted for operatively securing engagement with a workpiece;
each jaw plate having a cam slot extending at an acute angle to said axis and a pair of aligned guide slots extending at right angles to said axis;
the cam slots of each pair of jaw plates being inclined outwardly upon opposite sides of said longitudinal axis, respectively;



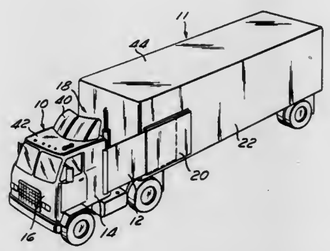
a plurality of roller means mounted upon said rod end on an axis transverse to said longitudinal axis and respectively nested within said cam slots;
and a spaced pair of a plurality of aligned roller means mounted upon and spanning said side plates adjacent their other ends on spaced axes at right angles to said longitudinal axis and respectively nested within said guide slots, whereby movement of said rod end in one direction moves said jaw pads towards each other and movement in the opposite direction moves said jaw pads away from each other.

4,518,188

AERODYNAMIC SIDE PANELS FOR A TRACTOR-TRAILER TRUCK

Hans J. Witten, 9201 Half-League Dr., Huntington Beach, Calif. 92646

Filed Jun. 14, 1982, Ser. No. 387,763
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **3 Claims**



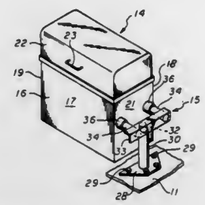
1. A device for improving airflow around a tractor-trailer truck comprising:
- a pair of side panels on opposite sides of said tractor and trailer for providing a smooth side transition surface between said tractor and trailer;
- means for mounting one end of each of said side panels to said tractor; and
- guide means mounted on each side of said trailer for restraining different portions of the length of each of said side panels to simultaneously lie in planes parallel to the sides of said trailer as said tractor-trailer truck articulates, said guide means including roller support means for vertically supporting said different portions of each of said side panels.

4,518,189

COOKING APPARATUS FOR PICKUP TRUCKS

Robert Belt, 25611 Walnut Grove, Spring, Tex. 77380

Filed Jan. 18, 1983, Ser. No. 458,837
Int. Cl.³ B60R *7/08*
U.S. Cl. 296—22 **8 Claims**



6. A cooking apparatus comprising:
- a base supporting plate for attaching said apparatus to a recreational vehicle,
- a vertically extending support member secured on said supporting plate,
- said vertically extending support member being a hollow tubular member having one end attached to said supporting plate and its other end open,
- a pivot member comprising a smaller tubular member having one end extending downward into said open end of hollow tubular support member,
- a bracket secured on the other end of said pivot member,
- said smaller tubular pivot member removably received within said open end of said hollow tubular member with sufficient clearance to permit rotary motion therebetween,
- a pair of horizontally extending parallel support members attached to said bracket,
- a box shaped cooking enclosure having a bottom, front and back side walls, end side walls, and a top lid member, and
- one of said end side walls having openings therein and tubular sleeves secured therein to slidably receive said horizontally extending parallel support members for removably supporting said cooking enclosure on said parallel support members.

4,518,190

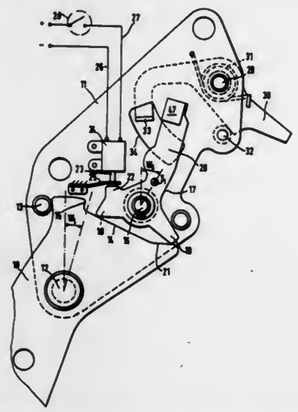
HINGE UNIT FOR A SEAT, PARTICULARLY A POWER VEHICLE SEAT

Bernd Klüting, Radevormwald, Fed. Rep. of Germany, and Vikram H. Zaveri, Springfield, Mich., assignors to Keiper Automobiltechnik GmbH & Co. KG, Remscheld, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,103
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046888
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 R **9 Claims**

1. A hinge unit for a seat, particularly a seat of a power vehicle, comprising a fixed hinge element to be associated with a seat part of a seat and including an upper region provided with a recess having an end abutment; a pivotable hinge element to be associated with a back part of the seat and pivotally connected with said fixed hinge element; a two-sided catch lever formed as an inertia lever and pivotally connected with said pivotable hinge element, said catch lever having a locking projection engageable with said abutment of said fixed hinge element, and a heavy arm with a weight urging said catch lever so that said projection assumes its free position; and retaining means deactuatable in response to actuation of a control element of the power vehicle and urging said catch lever so that

the latter assumes during power vehicle travel its locking position under the action of said retaining means, and in the event of an accident resulting in failure of said retaining means, said catch lever is also held in its locking position because it is



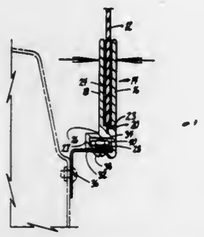
formed as an inertia lever, under the action of inertia force, said retaining means including a heatable retaining element arranged to urge said catch lever to its locking position while being heated.

4,518,191

AIR CURRENT DEFLECTOR SHIELD AND BRACKET COMBINATION

Robert D. Williams, Des Moines, and James Mastin, Corydon, both of Iowa, assignors to Deflecta-Shield Corporation, Corydon, Iowa

Filed Feb. 22, 1982, Ser. No. 351,184
Int. Cl.³ B60J *1/20*
U.S. Cl. 296—91 **4 Claims**



1. An air current deflector shield, comprising:
a shield member of a single piece of unbroken transparent material;
an elongated bracket having a shield receiving channel, and a securing strap receiving means for adjustable receipt of securing straps;
said shield receiving channel being defined by a forward wall, a bottom wall, and a rearward wall, said bottom wall having a longitudinal slit along its length to allow said forward and rearward walls to be spread open for easy insertion of said shield member, and following closing pressure on each wall to allow said forward and rearward walls to be folded inwardly to provide gripping pressure on said shield member; and
said securing strap receiving means comprising a bolt-receiving T-shaped channel associated with said bottom wall of said bracket extending along the length of said bracket, and a strap receiving slot extending along the length of said bracket below said bolt-receiving channel, the bolt-receiving T-shaped channel being defined by a top wall, two downwardly extending spaced-apart front and back walls, and inwardly extending shoulders from the bottom of said front and back walls to form a T-shape in cross-section channel extending the length of said bracket with a downwardly facing slot running therealong, and said strap receiving slot being defined by said shoulder of said front downwardly extending walls of said bolt-receiving channel, a front wall extending downwardly from said front wall of said bolt-receiving channel, and a bottom wall extending rearwardly from the bottom end of said front wall of said strap receiving slot.

4,518,192

SUN-GLARE SHIELD IN PARTICULAR FOR AN AUTOMOBILE VEHICLE

Jean C. Canadas, Remiremont, and Gilles Vigo, Rupt sur Moselle, both of France, assignors to Compagnie Industrielle de Mecanismes en abrege C.I.M., France

Filed Aug. 19, 1982, Ser. No. 409,738
Claims priority, application France, Sep. 28, 1981, 81 18233
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 H **2 Claims**



1. A sun-glare shield comprising a first hollow semi-shell of injected plastics material and a second semi-shell of a foam of plastics material assembled with each other, said first semi-shell defines a window, which window is internally bordered by framing projecting portions, a mirror is positioned by said projecting portions, at least one boss is provided on an inner side of the second semi-shell and the mirror is maintained applied against an inner side of the first semi-shell by said at least one boss, a decorative covering covers the sun-glare shield, said at least one boss carries a covering which matches the covering of the sun-glare shield and the mirror is provided with shifting means and is slidably guided by said projecting portions for retracting the mirror from said window.

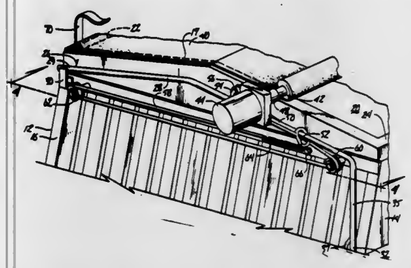
4,518,193

TOP CLOSURE FOR A RECTANGULAR BOX AND METHOD FOR USING SAME

Merle J. Heider, 203-12th St., S.W.; Dale J. Heider, 1108-8th Ave. S.W., and Leon J. Heider, R.R., all of Humboldt, Iowa 50548

Filed Jul. 12, 1984, Ser. No. 630,286
Int. Cl.³ B60J *11/00*
U.S. Cl. 296—98 **8 Claims**

1. A top closure for a rectangular box having a pair of opposite end walls and a pair of opposite side walls, said box having a top opening adjacent the upper edges of said end and side walls, said top closure comprising:
a flexible sheet member having first and second opposite edges and being sized to fit in covering relation over said top opening;
anchor means attaching said first edge of said sheet member to one of said side walls adjacent said upper edge thereof;
each of said upper edges of said end walls being provided with track means, each of said track means being elongated and extending from one said box side wall to the other of said box side walls;
an elongated shaft having opposite ends retentively engaged by said track means for movement from an open position wherein said shaft is adjacent said one box sidewall to a closed position wherein said shaft is adjacent said other box sidewall;
spring means interconnecting said box and said shaft for yieldably urging said shaft to said closed position;
said shaft being attached to said second edge of said sheet member with said sheet member being wound around said shaft when said shaft is in said open position, said shaft being capable of turning and unwinding said sheet member while moving from said open to said closed position;



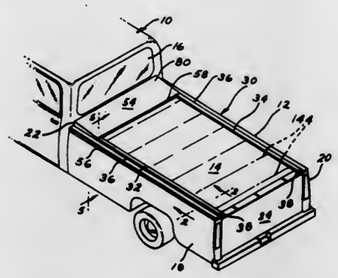
power means connected to said shaft for rotating said shaft to wind and unwind said sheet member;
securing means connected adjacent said upper edge of said other side wall for retentively engaging said shaft when shaft is in said closed position;
said securing means comprising at least one flexible flap having a first end and a second end, said first end being attached to said other sidewall so as to hold said second end in a position which is in the path of said rotating shaft as said shaft moves from said open to said closed position, whereby said second end of said flap will wind around and become attached to said shaft during continued movement of said rotating shaft to said closed position.

4,518,194

AUTOMATIC TRUCK BED COVER ASSEMBLY

Robert L. Kirkham, Rte. 6 Nat Cox Rd., Cartersville, Ga. 30120, and Garland F. Forrest, Jr., 12011 Winston Ct., Louisville, Ky. 40229

Filed Nov. 23, 1983, Ser. No. 554,504
Int. Cl.³ B60J *7/10*
U.S. Cl. 296—100 **7 Claims**



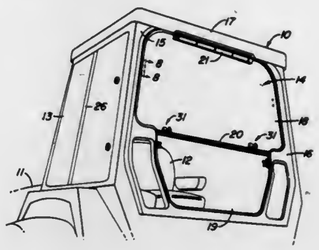
1. A cover assembly for a truck having an open-topped bed with upstanding side panels, a front end wall and a tailgate, the cover assembly comprising:
a. a track formed by a pair of parallel rails of C-channel configuration, where each rail is adapted to be mounted to the top of the side panels of the truck bed and to extend inwardly therefrom, each rail having an elongated slot extending longitudinally of the rail and being located on the side of the rail facing a similar slot on the other rail;
b. each of the parallel rails extending at their front end partially into an enlarged storage box that is adapted to fit down into the truck bed, and the box is to extend transversely thereof from one side of the bed to the other;
c. said track being furnished with a travelling rectangular frame having a pair of flexible side portions formed by a plurality of hinged slide bars that are positioned within the said parallel rails, a cross brace at the front end of the frame joining the first slide bar of the opposite side portions of the frame, and a sealing cross brace at the rear end of the frame that connects the last slide bar of each side portion of the frame and also is adapted to overlie the top portion of the tailgate so as to prevent rain from entering the truck bed in the vicinity of the tailgate;
d. said hinged slide bars in each side portion of the frame being separated by a short link and hinged thereto so that the flexible side portions of the frame may assume accordion folds when the frame is shifted forwardly within the track causing the hinged slide bars to ride off of the front end of the rails of the track and to fold neatly within the said storage box;
e. and a sheet of flexible material fitted over the said travelling rectangular frame for covering the truck bed when the frame is in rearward position, said flexible sheet being fastened to the hinged slide bars and extending through the elongated slots in the sides of the parallel rails of the track, and a transverse slot in one wall of the storage box extending between the parallel rails to allow the flexible sheet to enter and leave the box with the travelling frame;
f. and motive means within the storage box for engaging the hinged slide bars and controlling the movement and location of the travelling frame and its cover sheet.

4,518,195

WINDOW STRUCTURE FOR TRACTOR CAB

Gary W. Tindall, Hazel Green, Wis.; George P. Lysenko, Dubuque, Iowa; Richard J. Vize, Dubuque, Iowa; Edward H. Kiefer, Dubuque, Iowa, and Richard J. Smith, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 25, 1984, Ser. No. 573,550
Int. Cl.³ B60J *1/18*
U.S. Cl. 296—148 **8 Claims**



1. A window structure for closing an opening in an upright wall of a cab structure composed of upper and lower glass panels with adjoining horizontal edges and positioned in upper and lower portions of the opening, horizontal hinge means connecting the upper portion of the upper panel to the cab structure for permitting the upper panel to swing inwardly between an open position in which the upper panel is closely adjacent and in underlying relation to the roof of the cab and a closed position in said opening; structure mounted on the cab structure adjacent the lower portion of the opening and on the inner face of said upper panel having upwardly opening notches for receiving the lower edge of the lower panel; complementary latch elements on the lower panel, the cab struc-

ture and the inner face of said upper panel for retaining said lower panel in its closed position when its lower edge is seated in the notches of said structure on the cab structure, and on the inner face of said upper panel for retaining said lower panel on the inner side of said upper panel when its lower edge is seated in the notches of the structure on the inner face of said upper panel; an elongated, extendable member biased toward extension pivotally mounted at opposite ends to the cab structure and said upper panel, said line of force of said elongated member swinging to opposite sides of the axis of said hinge means as the upper panel moves towards its open and closed positions.

4,518,196

MOTOR VEHICLE WITH INTEGRALLY FORMED HYDRAULIC AND/OR AIR LINES

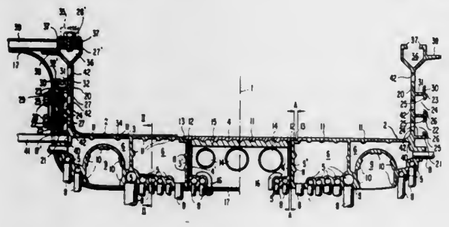
Alfred Förster, Weinstadt; Willi Geyer, Oberboingen, and Leo Kober, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 367,079

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114403

Int. Cl.³ B62D *33/00*

U.S. Cl. 296—204 **25 Claims**



1. A line network arranged in a motor vehicle for at least one of hydraulic and pneumatic media, the line network comprising at least one extruded member having a predetermined length extending from a front to a rear area of the motor vehicle, a plurality of enclosed areas formed in the at least one extruded member for defining lines for accommodating the media, said at least one extruded member including enclosed areas of larger cross section defining reservoirs for accommodating the media, said at least one extruded member including at least one channel means open on one side and extending in a longitudinal direction of the extruded member for accommodating at least one of a plurality of elongated members, at least one support means formed as one of a plate and a flange surface on the at least one extruded member for enabling a support of a component of the vehicle.

4,518,197

WATER GUIDE CHANNEL FOR MOTOR VEHICLES

Joseph Gallitzendörfer, Sindelfingen; Peter Pfeiffer, Boeblingen; Johann Tomforde, Sindelfingen; Jochen Pärisch, Herrenberg, and Gerhard Zweigart, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

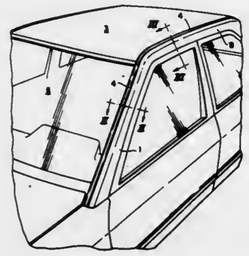
Filed Apr. 20, 1983, Ser. No. 486,945

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214876

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—213 **6 Claims**

1. A water guide channel for motor vehicles comprising a continuous profile strip running along the windscreen pillar and the roof of a motor vehicle, the profile strip having a constant cross-sectional shape over its entire length, the profile strip in the region of the windscreen pillar forming a wall part of a water guide channel open towards the center of the motor vehicle, the profile strip in a generally horizontal roof region completely covering the top of a channel formed by depressions in an external skin of the roof thereby forming the water



guide channel in the roof region by means of a free end of a leg of the profile strip and the external skin of the vehicle roof.

4,518,198

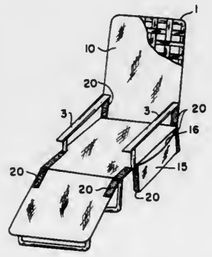
LAWN FURNITURE COVERING

Jean G. Daniels, Richmond, Va., assignor to William Jay Monahan, Richmond, Va., a part interest

Filed Aug. 21, 1981, Ser. No. 294,994

Int. Cl.³ A47C *31/10*

U.S. Cl. 297—229 **9 Claims**



1. A lawn furniture covering to be spread on lawn furniture for a person to lie on and for forming a tote container when it is not on said lawn furniture, said covering comprising:

an elongated, substantially rectangularly shaped, sheet of cloth material for covering supporting surfaces of said lawn furniture upon which said person rests, said sheet having a body-receiving side on which said person lies and a durable side which faces the outside when said covering is configured to form said tote container;

means mounted on said sheet of cloth material for attaching said covering means to said supporting surfaces of said lawn furniture with said durable side being against said supporting surfaces and said body-receiving side facing a person resting on said sheet of cloth material; and

attaching means attached to said sheet of cloth material along elongated, approximately parallel side edges thereof for coupling a portion of each of said side edges together with another portion of the same side edge whereby the ends of said elongated sheet of cloth material can be folded toward one another to form a container and the elongated side edges thereof can be coupled to themselves by said attaching means to retain said covering in said container configuration for converting said covering into said tote container, said covering further including pocket flaps flexibly attached to said side edges of said elongated, substantially rectangular, sheet of cloth material and extending outwardly therefrom when said covering is laid flat but hanging down when said covering is lying on lawn furniture, said pocket flaps each having a pocket therein for storing items within reach of one using said lawn

furniture, said pocket flaps further having attaching means mounted along side edges thereof which extend laterally to the elongated side edges of said elongated, substantially rectangular sheet of cloth material whereby the side edges of said flaps can be attached to the adjacent elongated side edges of said rectangular sheet of cloth material to thereby couple each of said portions of each of said side edges together with the respective other portion of the same side edge by means of a pocket flap and thereby retain said covering in said container configuration, said pocket flaps forming walls of said container.

4,518,199

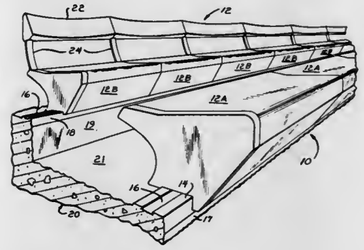
CONTOUR SEAT MODULE

Robert E. Lewis, Urbana, Ill., assignor to American Seating Company, Grand Rapids, Mich.

Filed Jan. 18, 1982, Ser. No. 339,904

Int. Cl.³ E04H *3/12*; A47C *15/00*

U.S. Cl. 297—248 **27 Claims**



1. A plurality of separate seat modules arranged in adjacent contacting relation in a linear seating arrangement above the riser of a tiered seating structure, each seat module fixedly mounted on a rigid support member and comprising: an integral molded body having an upper seating panel contoured only in a fore-to-aft direction to support a person sitting thereon, a front panel extending downward from said seating panel, a rear panel extending downward and forwardly of said upper panel, a base extending between the lower portions of said front and rear panels, each seat module further including two end portions, with each of said end portions including interlocking structure positioned on the perimeter thereof for interconnecting adjacent seat modules mounted on said rigid, support member; integral structural support wall means for increasing the load bearing capacity of said module; and mounting means assembled to said base from the top and within each seat for fixedly mounting said seat module on said rigid support member; the interior of said seats being generally hollow and said seat panel located above said base a substantial distance sufficient to provide access to said mounting means, said seats characterized in that when a plurality of said seats are assembled in side-by-side relation, top seating surfaces of adjacent seats form a substantially continuous bench-like seating surface.

4,518,200

SEAT PAD WITH ADJUSTABLE LUMBAR SUPPORT

William H. Armstrong, 2552 Hampshire, SE., Grand Rapids, Mich. 49506

Filed Sep. 28, 1982, Ser. No. 425,327

Int. Cl.³ A47C *27/08*

U.S. Cl. 297—284 **10 Claims**

1. A seat pad with an adjustable lumbar support comprising:

a seat element and a back element pivotally secured together along the juncture formed at the rear edge of the seat element and the lower edge of the back element;

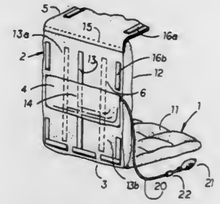
said seat and back elements each including a body having an inner surface which faces an occupant when seated on said seat pad and an outer surface which faces the support on which the seat pad is to be supported;

said body of said back element having sufficient rigidity along portions of its periphery to render said back element self-supporting in a vertical position, the intermediate portions between said peripheral portions being flexible and the outer surface being exposed to provide access thereto;

a first hooked and napped loop means secured to the said outer surface of said back element and extending between the lower and upper edges thereof;

an elongated air inflatable bladder positioned on the exposed outer surface and adjacent to the intermediate portion of said body of said back element such that the full thickness of the intermediate portion of said body is interposed between said air bladder and an occupant when said occupant is seated in said seat pad whereby inflation of said air bladder deforms the entire thickness of the intermediate portion of said body; said air bladder including a second hooked and napped loop means secured to one side thereof and cooperative with said first hooked and napped loop means for removably supporting said bladder at different selected positions on the outer surface of said back between the upper and lower edges thereof, the exposure of said outer surface providing access to said bladder for removing and adjusting said bladder to different positions on said back surface; and

said back element being sufficiently flexible in its intermediate portion so as to flex in response to pressure exerted by said inflated bladder whereby when an occupant sits in said seat pad additional support is provided to the lumbar region of said occupant's back.



4,518,201

REAR SEAT FOR USE IN A MOTOR VEHICLE

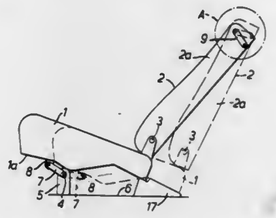
Ernst Wahlmann, and Karl-Heinz Klausing, both of Meerbeck, Fed. Rep. of Germany, assignors to P.A. Rentrop Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,209

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, 3206293

Int. Cl.³ B60N *1/06*

U.S. Cl. 297—316 **9 Claims**



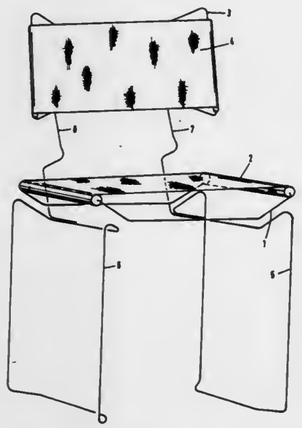
1. A rear seat for use in a motor vehicle having a front seat including a back rest, said rear seat including

a seat part having front and rear portions,

a back rest articulated to said rear portion of said seat part,

a spindle extending transversely adjacent said front portion of said seat part,
a first link having two ends, said link being pivotally mounted at one of said ends to said spindle and pivotally mounted at the other of said ends to said front portion of said seat part,
a second link having two ends, said second link being pivotally mounted at one said end to said back rest,
a journal bearing mounted to the other said end of said second link, and
a locking member movable between a locked and a released position, and mounted to the vehicle and adapted to secure said journal for rotation only when in its locked position, whereby when said locking member is in its released position said seat is able to adopt an inoperative position in which said seat part is substantially parallel to the back rest of the front seat.

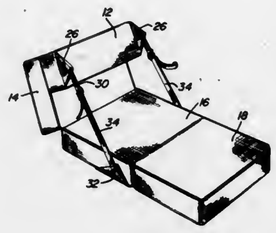
4,518,202
SEATING PIECE OF FURNITURE
Hans-Ulrich Bitsch, Schanzenstr. 1, 4000 Diisseldorf 11, Fed. Rep. of Germany
Filed Sep. 30, 1982, Ser. No. 430,043
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210525
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—452 **15 Claims**



1. A seating piece of furniture especially entirely of non-combustible material, which comprises in combination:
a frame including two frame longitudinal portions having outer edges arranged in parallel spacing to each other in a manner elastically deformable under load as well as including two transverse frame portions structurally elastically deformable and connected to said two longitudinal portions; and
flexible seat fastened to the two frame longitudinal portions of said frame retaining said transverse frame portion in an elastically deformed position thereby holding said flexible seat permanently in a stressed spring back relationship therewith.

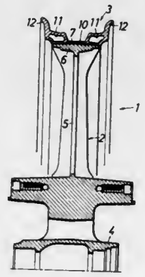
4,518,203
CONVERTIBLE CUSHION FURNITURE
Kirk E. White, P.O. Box 204, Silver Springs, Nev. 89429
Filed Dec. 2, 1983, Ser. No. 557,489
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—456 **8 Claims**

1. A convertible cushion furniture assembly, said assembly including four generally rectangular cavity defining flexible housings each including six interconnected panel portions, said housings each being filled with a loose lightweight filler material to form a generally rectangular parallelopiped cushion which is shape retentive, but somewhat deformable and capable of conforming, at least to some degree, to a body part engaged therewith, said cushions being disposed in end-to-end relation and positionable on a plane surface with either first or second corresponding face surfaces of said cushions opposing said plane surface, each pair of adjacent cushion ends being connected together for relative angular displacement about a transverse axis with the axes of relative angular displacement of adjacent cushions extending along corresponding end transverse marginal portions of said first corresponding face surfaces of said cushions, said cushions being generally the same transverse width and height, three adjacent cushions of said



four cushions being generally the same length with the fourth cushion comprising one end cushion being generally one half the length of each of the other three cushions, the longitudinal edges of the first face surface of said one end cushion including first anchor flaps extending therealong and secured thereto for angular displacement relative to said one end cushion about axes extending along said longitudinal edges, the longitudinal edges of the first face surface of a second cushion immediately adjacent the other end cushion including second anchor flaps extending therealong and secured thereto for angular displacement relative to the second cushion about axes extending along the last-mentioned longitudinal edges, and adjustable length flexible elongated tension member means releasably connected between pairs of corresponding first and second flaps.

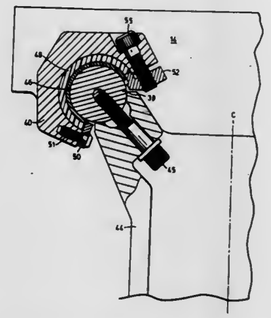
4,518,204
WHEEL FOR A VEHICLE
Minoru Takada, Hoya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 9, 1983, Ser. No. 492,599
Claims priority, application Japan, May 10, 1982, 57-76529
Int. Cl.³ B60B *23/00*; B21D *53/26*
U.S. Cl. 301—63 R **10 Claims**



1. In am improved wheel for a vehicle including an annular rim adapted to carry a tire thereon and a wheel center, said annular rim being press-fitted onto an outer peripheral part of said wheel center, the improvement wherein said annular rim is formed symmetrical with respect to a vertical center line of the

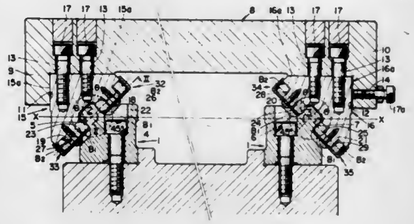
wheel and comprises a central well portion, a pair of bead seat portions located adjacent the well portion, a pair of flange portions located axially outside the bead seat portions, said bead seat portions and said flange portions having a rigidity higher than that of the central well portion, and an inner circumferential fitting surface having such an axial width that the surface extends over the well portion and at least a part of the respective bead seat portions, while said wheel center is formed symmetrical with respect to said vertical center line and comprises an outer circumferential fitting surface to be fitted with said inner circumferential fitting surface of the annular rim in an assembled state, whereby said inner circumferential fitting surface of the annular rim deforms, when it has been press-fitted onto the outer circumferential fitting surface of the wheel center with an adhesive agent interposed therebetween, to define between those fitting surfaces a space of a crescent-shaped cross-sectional configuration due to difference in strain between the central well portion and the bead seat portions and flange portions caused by difference in rigidity therebetween, said crescent-shaped space being filled with a layer of said adhesive agent having a maximum thickness of 0.05 to 0.5 mm at an axial center thereof and decreasing toward both axial side ends thereof for secure connection between the annular rim and the wheel center.

4,518,205
SLIDING BEARING
William R. Heathe, Weston, Canada, assignor to Baxter Technologies Inc., Bloomfield Hills, Mich.
Filed Nov. 14, 1983, Ser. No. 550,811
Claims priority, application Canada, Jun. 3, 1983, 429681
Int. Cl.³ F16C *29/12*
U.S. Cl. 308—3 R **20 Claims**



1. In a precision slide comprising a linear shaft defining a longitudinal axis and a slide member constrained thereby to be moved longitudinally, a bearing assembly comprising a bearing block having an axially extending cavity defining a passageway through which the shaft extends, the cavity having a wall arranged coaxially with the shaft, a resilient bearing member within the cavity, the bearing member having an internal bearing surface in cooperative sliding engagement with the shaft and an external surface spaced from the cavity wall, an elastomeric medium substantially filling the space between the external surface and the cavity wall, said elastomeric medium being urgable in a direction transverse to its thickness so as to cause an inward movement of said internal bearing surface and means for adjustably urging the elastomeric medium in said transverse direction for adjustably varying the clearance between said internal bearing surface and the shaft.

4,518,206
LINEAR SLIDE ROLLER BEARING UNIT
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan
Filed May 25, 1984, Ser. No. 614,206
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **6 Claims**



1. A linear slide roller bearing unit comprising:
a pair of right and left track shafts extending in the longitudinal direction of said linear slide roller bearing unit, each track shaft being constituted by a block member with a substantially triangular cross-section having loaded roller rolling surfaces formed on both side surface portions of a ridge orthogonally projecting from the center of an outer inclined surface portion thereof;
a movable table constituted by a long block member of substantially U-shaped cross-section disposed so as to straddle said track shafts, said movable table being provided with longitudinal recesses respectively formed in the opposing inner surfaces of skirt portions thereof;
a pair of right and left bearing bodies each constituted by a long block member of substantially triangular cross-section which is screwed to the corresponding recess in said movable table, each bearing body having a pair of guide ridges respectively projecting from both side edges of an inner inclined surface portion of said block body, each guide ridge having one side surface thereof defined as a loaded roller rolling surface confronting the corresponding loaded roller rolling surface of the associated track shaft and the other side surface defined as a non-loaded roller rolling surface;
barrel-shaped rollers adapted to be recirculated along said loaded roller rolling surfaces and non-loaded roller rolling surfaces of said bearing bodies and to come in contact with said loaded roller rolling surfaces on said track shafts when rolling along said loaded roller rolling surfaces on said bearing bodies; and
a roller retainer attached to each of said guide ridges so as to face the corresponding inner inclined surface portion of the associated bearing body and adapted to guide said rollers so that they can recirculate through the space defined between said roller retainer and inner inclined surface portion,
wherein said rollers in the state of serving as loaded rollers are brought into contact with said loaded roller rolling surfaces on said track shafts at a contact angle of about 45°, within the same plane, with respect to corresponding imaginary oblique lines each passing through the center of said ridge of the associated track shaft and intersecting the horizontal axis of said linear slide roller bearing unit at an angle of about 45°.

4,518,207
MODULE LATCHING MECHANISM
German Gavronsky, Stamford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 14, 1983, Ser. No. 541,832
Int. Cl.³ A47B *87/00*
U.S. Cl. 312—107.5 **2 Claims**

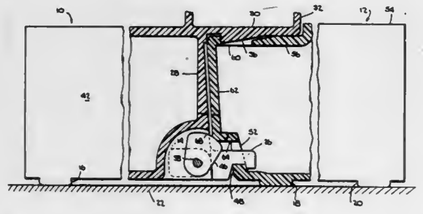
1. A latching mechanism for releasably joining and locking

together two separate modules located on a flat surface, comprising:

a first module having a pair of lower fingers projecting therefrom and a pair of angular, locking members projecting therefrom, said first module also having a shaft rotatably mounted in the lower portion of said first module and a pair of rotary front legs and a pair of stationary rear legs, said rotary front legs being fixedly secured to said shaft;

a second module having a pair of lower apertures for locking engagement with said pair of lower fingers and a pair of upper apertures for locking engagement with said pair of angular, locking members; and

said front legs operative to abut said flat surface, thereby supporting the front of the module in a raised position,



said first module having an overhanging portion extending along the front thereof that is adapted to extend above a recessed portion of the second module,

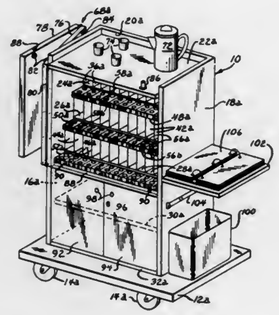
a cam fixedly secured to said shaft at an angular displacement from said front legs, said second module having a cam follower surface, wherein rotation of said shaft effects rotation of said rotary, front legs from said supporting position to thereby lower said first module from said raised position onto said second module when the lower fingers engage the lower apertures, and wherein continued rotation of said shaft effects continued rotation of said cam causing the cam to abut the cam follower surface to thereby urge and the recessed portion of said second module upwardly against the overhanging portion of said first module, causing said two modules to be rigidly locked together.

4,518,208

APPARATUS AND METHOD FOR DISPENSING MEDICINE

Herbert B. Marder, 177 Lakewood Pl., Highland Park, Ill. 60035

Filed May 12, 1983, Ser. No. 493,931
Int. Cl.³ A47B *81/00*
U.S. Cl. 312—209 **2 Claims**



1. A cart for use in supplying medications to a plurality of patients comprising a base, wheel means on said base for moving said cart about, means upstanding from said base providing a plurality of laterally accessible bins each having an entrance, said plurality of bins having a common top wall and a common bottom wall and a common rear wall, and the bins respectively being further defined by fixed upstanding side walls, each bin being relatively high and narrow, each bin being assigned to a respective patient, means adjacent each bin identifying the patient to which it is assigned, each bin containing a patient card on edge in substantially upright position and a long term supply of disparate medicines for that patient, horizontal support means adjacent each bin entrance substantially forming a continuation of said bottom wall, said support means having a plurality of upwardly opening recesses therein respectively aligned with said bins and each comprising a substantially circular aperture sized to receive a disposable cup, and a disposable cup in each of at least selected ones of said recesses of said support means for holding the medicine to be dispensed to the respective patient at a given time according to the adjacent patient card in the respective bin.

4,518,209

CONNECTOR BLOCK WITH RF SHIELD

Loren E. Negley, Carlisle, Pa., assignor to Welcon Connector Company, New Cumberland, Pa.

Filed Jun. 30, 1983, Ser. No. 509,404
Int. Cl.³ H01R *4/66, 13/648*
U.S. Cl. 339—14 R **8 Claims**

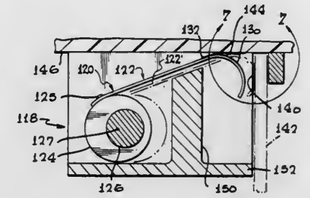
1. A shielded connector block including an insulating body having an elongate nose, a nose flange to either end of the nose, circuit board flanges on either side of the body joining the nose flanges, and a plurality of terminal recesses extending from the face of the nose through the body; terminals in the terminal recesses for making electrical connections with contacts inserted through the face of the nose and into the ends of the recesses; a unitary metal radio frequency interference ground shield including a mounting plate on the nose flanges, a barrel extending outwardly from the plate and surrounding the nose, and mounting lugs extending from the plate at opposite ends of the barrel; each lug including a flange cover extending across the adjacent nose flange, a nose flange mounting tab on the back of the nose flange and a circuit board flange mounting tab extending at right angles from the nose flange mounting tab on top of a circuit board flange; mounting holes extending through the plate, the nose flanges, circuit board flanges, the circuit board flange mounting tabs and the nose flange mounting tabs; means for connecting the shield to ground circuitry, whereby the shield may be physically secured to the body by mounting means extending through the mounting holes in the plate, nose flanges and nose flange mounting tabs and the block may be secured to a circuit board by mounting means extending through the mounting holes in the circuit board flange mounting tabs and the circuit board flanges.

4,518,210

ZERO-INSERTION-FORCE HOUSING FOR CIRCUIT BOARDS

Robert A. Morrison, Long Beach, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Aug. 10, 1983, Ser. No. 521,802
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—17 LM **34 Claims**



1. An electrical connector for a housing having a zero insertion force electrical socket, said socket having a plurality of first electrical terminals and further adapted to receive an edge portion of a printed circuit board, said circuit board having a plurality of second electrical terminals mounted thereon, in a manner such that when said circuit board is installed in said socket, said plurality of first electrical terminals is at substantially right angles to said plurality of second electrical terminals, said electrical connector comprising:

a spring member, having first and second ends positioned within said housing along said plurality of first electrical terminals, said first end terminating in a curved member having a plurality of electrical contacts in slideable engagement with said plurality of first terminals; and

a cam means, rotatably mounted within the housing, and attached to said second end of said spring member positioned so as to cause said spring member to maintain said plurality of electrical contacts in slideable engagement with said plurality of first electrical terminals and adapted, when actuated, to force said plurality of electrical contacts into engagement with said plurality of second electrical terminals on said circuit board while maintaining electrical contact with said plurality of first electrical terminals.

4,518,211

DEVICE FOR MOUNTING, INTERCONNECTING AND TERMINATING PRINTED CIRCUITS

William E. Stepan, Clarendon Hills; Wayne E. Neese, Hoffman Estates; Thomas D. Belanger, Jr., Hinsdale, and Robert F. Janninck, Elmhurst, all of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Sep. 26, 1983, Ser. No. 536,073
Int. Cl.³ H01R *23/68*
U.S. Cl. 339—17 LM **4 Claims**



1. A device for mounting, interconnecting and terminating printed circuits comprising:

a frame of insulating material including first and second major sides and first and second minor sides;

a fixed component mounting surface integrally joined to said frame between said first and second major sides and said first and second minor sides, said fixed component mounting surface including printed circuits affixed on a face thereof;

mounting means integrally joined to an inner face of said first major side and said second major side, said mounting means arranged to accept a removable component mounting surface having printed circuits fixed on a face thereof;

a first plurality of terminal means each including a terminal connector engaging portion on an outer face of said first minor side for connecting to a source of input/output signals and contact portions extending from an opposite face of said first minor side, each of said contact portions communicating with an associated printed circuit of said fixed component mounting surface;

a second plurality of terminal means each including a terminal connector engaging portion on an outer face of said first minor side for connecting to a source of input/output signals and contact portions extending from an opposite face of said first minor side, each of said contact portions communicating with an associated printed circuit of said removable component mounting surface;

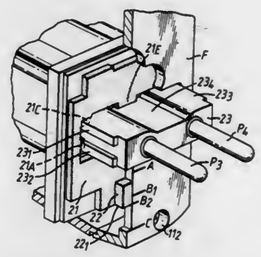
a plurality of openings extending through said second minor side, said openings arranged to accept a plurality of electrically conductive U-shaped members, each U-shaped member arranged to be accepted within one of said second minor side openings with a first leg of said U-shaped member contacting a printed circuit of said fixed component mounting surface and a second leg contacting a printed circuit of said removable component mounting surface whereby, said U-shaped members electrically connects the printed circuits of said fixed component mounting surface to the printed circuits of said removable component mounting surface and mechanically retains said removable component mounting surface to said frame.

4,518,212

MULTIPLE PIN ELECTRICAL PLUG

Clive S. Rumble, London, England, assignor to Corabelment A.G., Vaduz, Liechtenstein

Filed Aug. 12, 1982, Ser. No. 407,571
Int. Cl.³ H01R *27/00*
U.S. Cl. 339—31 R **2 Claims**



1. A multiple pin electrical plug for selectively providing electrical pins in different configurations corresponding to different electrical sockets, comprising:

a plurality of selectively extendable pins;

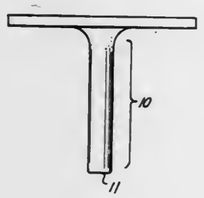
a shutter plate movable by a hand operated slider between a plurality of discrete positions for selecting one of said different configurations and permitting extension of predetermined ones of said pins, at least one pair of said pins being provided on a prismatic sliding member, said sliding member having guide rails said shutter plate having protuberances co-operating with said guide rails to permit said sliding member to be extended from or retracted into said plug when said shutter plate is in one of said discrete positions and to permit movement of said shutter plate into another discrete position, preventing retracting of said sliding member, when the latter is extended.

4,518,213

ONE PIECE HERMAPHRODITIC CONTACT FOR AN ELECTRICAL CONNECTOR AND A METHOD OF MAKING THE CONTACT

David O. Gallusser, Oneonta, N.Y., assignor to Allied Corporation, Morristown, N.J.

Filed May 31, 1983, Ser. No. 499,694
Int. Cl.³ H01R *25/00*
U.S. Cl. 339—48 **7 Claims**



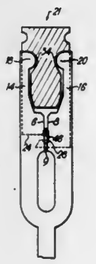
1. A one-piece contact comprising a cylindrical forward mating portion drawn and formed from a single piece of metal, said forward mating portion including at least two elongated members helically twisted about each other along a central axis to form an axially retractible spring portion with each said member terminating at a closed forward end having a planar surface perpendicular to the central axis, each of said elongated members helically overlapping as they twist about to define the mating portion.

4,518,214

DEVICE FOR THE ELECTRIC CONNECTION OF A CYLINDRICAL CONDUCTOR

Marcel Caris, 16, rue Francois Mansart, 92350 Le Plessis Robinson, France

Filed Apr. 19, 1983, Ser. No. 486,320
Claims priority, application France, Apr. 26, 1982, 82 07140
Int. Cl.³ H01R *13/629, 11/20;* **B23P** *23/00, 19/00*
U.S. Cl. 339—74 R **12 Claims**



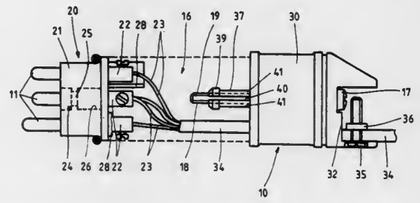
1. A device for electrically connecting a cylindrical conductor, said device comprising at least one fork having two members each having a cutting edge, the conductor to be connected being forced in and gripped between said cutting edges, each of said two members having an arm extending therefrom, the device also comprising means for inserting and extracting the conductor to be connected, said means having a shape so as to move the ends of the arms away from one another when the conductor is introduced and keep said arms apart a distance such that the distance apart of the cutting edges at the level of the conductor is slightly less than the diameter of the conductor.

4,518,215

MULTI-POLE ELECTRIC PLUG

Wolfgang Schwarzhoff, Lüdenscheid, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,804
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243729
Int. Cl.³ H01R *13/506, 13/621*
U.S. Cl. 339—92 R **8 Claims**



1. A multi-pole electric plug and socket combination, comprising

said plug having an inner and an outer housing nested in one another and held together by at least one fastening element,

said inner housing comprising contact prongs and oppositely disposed connections protruding therefrom,

said outer housing having a cavity open toward and receiving said inner housing,

said socket having receptacles for receiving said contact prongs,

said fastening element comprising a snap connector means for locking together said inner and outer housing,

said snap connector means comprising a finger means protruding in the locking direction from one of said outer housing and inner housing and having a snap head, and on one of said inner housing and said outer housing a recess allowing said finger means to pass therethrough and engaged therein in a locking manner by said snap head, and wherein said finger means has passing therethrough a screw of relatively longer length then said finger means, and on a segment located on one end thereof is a thread for fitting into a central threaded sleeve of said socket for securing said plug and socket together, wherein the outer diameter of said segment is approximately equal to the inner diameter of a passage in said finger means and said segment comprises a securing segment securing said snap head against radially yielding inwardly.

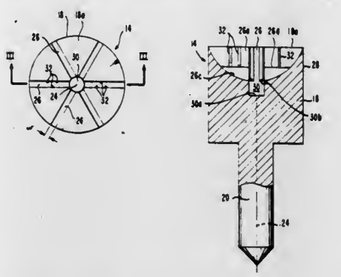
4,518,216

WIRE TERMINATION SYSTEM AND TERMINATOR THEREFOR

Edward P. Brandeau, Martinsville, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 7, 1982, Ser. No. 447,591
Int. Cl.³ H01R *9/08*
U.S. Cl. 339—97 P **21 Claims**

1. A terminal for insulated wire comprising a conductive body having a slot defining an insulation removing portion within a surface of said body and extending transversely across said body a predetermined extent, said slot having along its extent a non-uniform depth as measured from said surface, said body including a generally cylindrical portion defining a central axis and a plurality of slots extending radially from said axis and spaced thereabout, said body further including a recess extending therein along said central axis, said recess defining a bottom wall being deeper from said surface than said slots, each of said slots communicating with said recess adjacent said central axis.

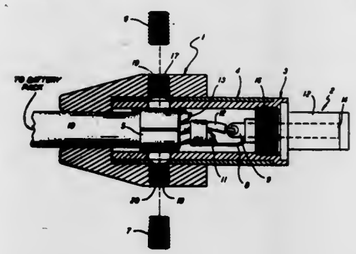


4,518,217

ELECTRICAL CONNECTOR AND RECEPTACLE

John J. Corrigan, III, Carmel Hill Rd., Washington, Conn. 06793

Filed Apr. 8, 1983, Ser. No. 482,962
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—183 **3 Claims**



1. An electrical connector comprising:

two terminal electrical plug means having a first end for engaging with an electrical receptacle and a second end adapted to receive wire connections of an electrical cable, said first end having first cylindrical electrical contact means, insulating means disposed about said first contact means and second cylindrical electrical contact means disposed about said insulating means;

additional insulating means having a longitudinal opening having first and second ends, the second end of said two terminal electrical plug means disposed in said first end of said opening;

sleeve electrical contact means disposed about said additional insulating means;

insulating housing means disposed about and covering a part of said sleeve contact means and having an opening for receiving said electrical cable aligned with the second end of the opening of said additional insulating means; and

fastening means for fastening said electrical cable securely in said housing means and for making electrical contact between a conductor of said electrical cable and said sleeve contact means, said fastening means comprising:

screw means disposed in aligned openings in said insulating housing means and said sleeve contact means and engaging in an interference fit with the sides of the opening in said sleeve contact means; and

clamping collar means disposed about said electrical cable and in electrical contact with said conductor;

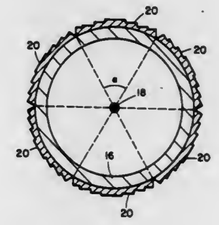
said screw means engaging said clamping collar means so as to securely hold said electrical cable in said insulating housing means and establish electrical contact between said clamping collar means and said sleeve contact means.

4,518,218

STEPPED POLYGON SCAN MIRROR

Neal Diepeveen, Fair Lawn, N.J., assignor to Magnavox Government and Industrial Electronics Co., Ft. Wayne, Ind.

Filed Sep. 26, 1983, Ser. No. 535,478
Int. Cl.³ G02B *3/02, 27/17*
U.S. Cl. 350—6.8 **15 Claims**



1. A mirror assembly for scanning incoming radiation from a scene onto one or more radiation detectors, said mirror assembly comprising:

a cylindrical mirror arrangement having n mirror faces arranged around an axis, n being an integer greater than or equal to two;

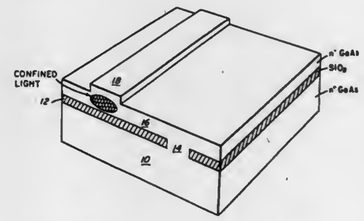
characterized in that each mirror face comprises a plurality of planar mirror segments, the mirror segments being arranged to form a stepped structure in which each mirror segment in a given mirror face is parallel to each other mirror segment in the mirror face.

4,518,219

OPTICAL GUIDED WAVE DEVICES EMPLOYING SEMICONDUCTOR-INSULATOR STRUCTURES

Frederick J. Leonberger, Lexington; Ivars Melngailis, Newton; Carl O. Bozler, Sudbury, and Robert W. McClelland, Weymouth, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 115,420, Jan. 25, 1980, Pat. No. 4,420,873.
This application Feb. 3, 1983, Ser. No. 463,568
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.12 **17 Claims**



2. A three-dimensional optical waveguide structure for guiding light comprising:

(a) a substrate;

(b) a first insulator layer formed on said substrate;

(c) light confining means comprising:

(i) a single crystal semiconductor layer formed upon said insulator layer, the index of refraction of said insulator layer being less than the index of refraction of said semiconductor layer and the thickness of said semiconductor layer being sufficient to confine light in a first

vertical direction by the boundary between the semiconductor layer and the insulator layer;

(ii) a second insulator layer over said semiconductor layer for confining light in a second vertical direction by the boundary between said second insulator layer and said semiconductor layer;

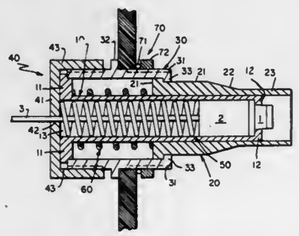
(iii) lateral light confining means comprising two side walls on said semiconductor layer extending towards but not reaching said first insulating layer to create an effective larger index of refraction within the region of said semiconductor layer within the two side walls of said three-dimensional optical waveguide to provide lateral confinement of said light.

4,518,220

FIBER OPTIC DRAWER CONNECTOR ASSEMBLY

Steven E. Swanson, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 30, 1983, Ser. No. 480,545
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **2 Claims**



1. A fiber optic drawer connector assembly, the assembly comprising:

a unitary, generally cylindrical insert having a radially outwardly extending flange portion at one end and a radially inwardly extending flange portion at the other end, said insert providing an inner cavity for accommodating a lens assembly and an associated ferrule,

a unitary, generally cylindrical shroud surrounding at least a portion of the insert and having a flange portion at one end,

a housing surrounding at least a portion of the shroud and a portion of the insert and having a cylindrical contour with an interior surface and a threaded exterior surface, a flangelike member extending radially outwardly at an intermediate point on the exterior surface of the housing, and a radially inwardly extending stopping portion at one end for abutment with the flange portion of the shroud, and

a cap characterized by an angular U-shaped cross-section and having a threaded inner surface for engagement with the threaded surface of the housing,

a first spring inserted into the cavity of the insert, and

a second spring surrounding the insert and disposed between the insert radially outwardly extending flange portion and the flange portion of the shroud, and

retaining means surrounding the outer surface of the housing for maintaining the housing in a substantially fixed relationship with a planar surface through which the housing is inserted,

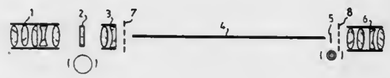
whereby a lens assembly and associated ferrule may be inserted into the shroud, the shroud into the housing so that the flange portion of the shroud tends to abut the stopping portion of the housing, the housing inserted through a complementary opening in a plane so that the housing flangelike member tends to abut a first surface of the plane, the retaining means positioned around the housing into contact with a second surface of the plane and the cap mated to the housing so that a central segment of the cap comes into contact with the radially outwardly extending flange portion of the insert whereby the first spring maintains the lens and associated ferrule in a secure position within the insert cavity.

4,518,221

IMAGE CONDUCTORS WITH A RETICULATED SCREEN

Fort Francois, 71 Ave. de Ségur, 75007 Paris, France

Filed Dec. 1, 1982, Ser. No. 446,035
Claims priority, application France, Dec. 3, 1981, 81 22624
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.26 **3 Claims**



1. A device for conducting an image of an object comprising:

a lens having an optical axis;

a screen positioned along said optical axis for receiving a projected image from said lens, said screen comprising openings or perforations of a few microns so as to provide an image formed of a plurality of light points;

a reducing lens positioned along said axis for producing a reduced image formed of a plurality of light points;

an index gradient optical fiber having an input face and an output face with the plane of said input face being substantially perpendicular to said optical axis and oriented so as to receive said reduced image and for transmitting said light points of said reduced image in a monomode way such that there is formed on said output face of said index gradient optical fiber the transmitted reduced image; and

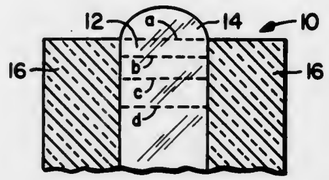
an eye-piece disposed opposite said output face of said index gradient optical fiber.

4,518,222

OPTICAL DEVICE AND METHOD

Nicholas F. Borrelli, Elmira, and Donald M. Trotter, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 8, 1983, Ser. No. 559,294
Int. Cl.³ G02B *1/00, 27/00;* B29C *27/00;* C03C *21/00*
U.S. Cl. 350—167 **13 Claims**



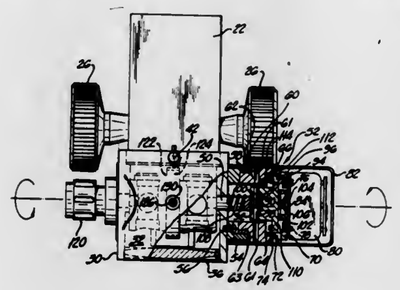
1. An optical device composed of a photonucleable, crystallizable, lithium silicate glass body having a clear glass lens array integral with and rising above at least one surface, each lens being surrounded by a crystallized glass matrix, and being characterized by a layer extending below the lens surface wherein the lithium ion content is below the glass composition norm, the content of a larger, exchangeable alkali metal ion is greater than the glass norm for that ion, and the distribution of such alkali metal ion in the lens is defined by both radial and axial concentration gradients.

4,518,223

AUTOMATIC MAGNIFICATION CHANGER FOR A SURGICAL MICROSCOPE

George F. Waters, Sturbridge, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Aug. 1, 1983, Ser. No. 519,292
Int. Cl.³ G02B *7/16*
U.S. Cl. 350—254 **14 Claims**



1. A power operated drive for a magnification changer for a microscope comprising:

a magnification changer housing defining a cavity aligned in the optical path of said microscope, said housing adapted to support said microscope with respect to said cavity;

a magnification changer shaft at least a portion of which is mounted for rotation in said cavity;

an input shaft for said drive mounted with respect to said housing;

a selectably operable power source for simultaneously driving said input shaft through a predetermined angular rotation and a predetermined axial translation;

means for coupling said input shaft and said magnification changer shaft together adapted to simultaneously rotate and translate with said input shaft to index said magnification changer shaft through a predetermined angular rotation;

cooperative means having at least one first element disposed for rotation and translation with said coupling means and a second element fixed about said coupling means for stopping said magnification changer shaft at a precise position with respect to said microscope optical path as said input shaft rotates and translates;

whereby when said input shaft translates said first element moves into interference alignment with said second element to prevent said magnification changer shaft from indexing past its prescribed position.

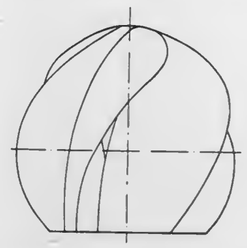
4,518,224

OMNIDIRECTIONAL REFLECTOR WITH HELICALLY TURNED SEGMENTS

Bertil Habro, 18, Roderstigen, S-181 43 Lidingö , Sweden

Filed Aug. 11, 1983, Ser. No. 522,345
Claims priority, application Sweden, Sep. 1, 1982, 8204992
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—606 **11 Claims**

1. A reflector having a central light source and adapted to provide a substantially even omnidirectional light distribution on a horizontal plane under the reflector, comprising a plurality of segments of reflective material arranged around the light source in fixed relation to each other and helically turned about the light source vertically, the segments at least substantially enclosing the light source and forming a body that is substantially symmetrical about a vertical axis of the reflector and that is open at the bottom of the reflector, the segments being disposed and oriented with respect to each other to provide successive reflective surfaces with space therebetween whereby light from the source may impinge upon the reflective surfaces and be reflected therefrom onto said horizontal plane.

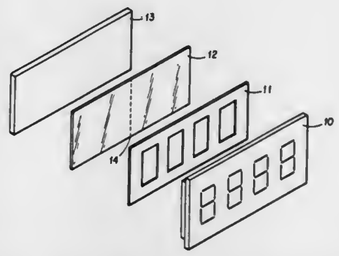


4,518,225

MULTICOLORED LIQUID CRYSTAL DISPLAYS UTILIZING PHOTOLUMINESCENT TRANSFLECTORS AND MASK

Lee R. Fredrickson; Michael R. Cascini, and Donald E. Mosier, all of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 11, 1983, Ser. No. 484,047
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—338 **6 Claims**



1. A liquid crystal display for an aircraft having a segmented display configuration in a first region having a segmented readout and having a second region comprising in combination:

a. a liquid crystal material having a dye with blue light attenuation characteristics in darkened portions thereof;

b. a photoluminescent transflector disposed in a spaced parallel relationship with said liquid crystal material;

c. a mask disposed interjacent said liquid crystal material and said transflector, forming a spacing means therein, and having a configuration conforming substantially with said second region of said display; and

d. a light source disposed on a side opposite said mask, whereby said liquid crystal material, said photoluminescent transflector, and said light source have coordinated emission characteristics.

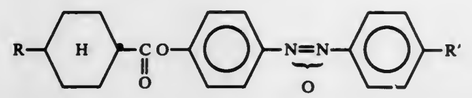
4,518,226

ESTER-AZOXY COMPOUNDS

Yoshio Shionozaki, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,985
Claims priority, application Japan, Oct. 20, 1982, 57-185150
Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *105/00*
U.S. Cl. 350—350 R **30 Claims**

1. P-(trans-4-alkylcyclohexylcarbonyloxy)-P'-alkylazoxybenzene represented by the general formula:



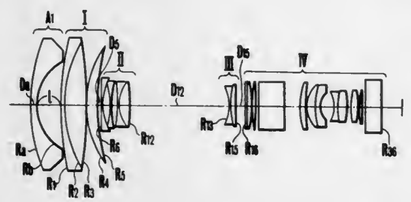
wherein R and R' are straight-chain alkyl groups having one to eight carbon atoms.

4,518,227

METHOD OF WIDENING THE ANGULAR FIELD OF A PHOTOGRAPHIC OBJECTIVE LENS

Akira Tajima, No. 267, Kamihirama Nakahara-ku, Kawasakishi, Kanagawa-ken, Japan

Continuation of Ser. No. 586,259, Jun. 12, 1975, abandoned.
This application Mar. 27, 1978, Ser. No. 890,233
Claims priority, application Japan, Jun. 18, 1974, 46-69399
Int. Cl.³ G02B *15/10, 15/18*
U.S. Cl. 350—422 **8 Claims**



5. A wide field angle lens arrangement comprising:
a lens system formed by a plurality of lenses;
(a) a first focusing lens group formed of a part of lenses of the lens system for focusing an object on a focal plane from a predetermined close distance to infinity,
(b) a macro focusing lens group formed by a part of lenses of the lens system, said macro focusing lens group alone being operable to focus an object on the focal plane at a shorter distance to the lens system than the predetermined close distance, and
(c) an attachment lens in front of the lens system and having a negative refractive power,
said attachment lens for forming a virtual image of the predetermined object at a position nearer the lens system than the predetermined close distance,
said virtual image formed being focused on the focal plane by operation of the macro focusing lens group.

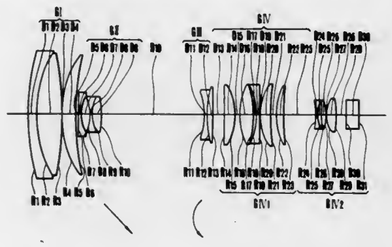
4,518,228

ZOOM LENS

Muneharu Sugiura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,670
Int. Cl.³ G02B *13/22, 15/18*
U.S. Cl. 350—427 **2 Claims**

1. A zoom lens having four lens groups from front to rear; a first lens group of positive refractive power for focusing, a second lens group of negative refractive power having an image magnification varying function, a third lens group of negative refractive power for compensating for the shift of an image plane resulting from the change of the image magnification, and a fourth lens group of positive refractive power having an image forming function;
said fourth lens group having from front to rear a first component lens group and a second component lens group;
said first lens group having five lenses from front to rear including a first lens having a strong refracting surface at the image side thereof with both the lens surfaces being convex surfaces, a second lens having a strong refracting surface at the object side with both the surfaces being convex surfaces, a third lens of negative refractive power having a strong refracting surface at the object side, a



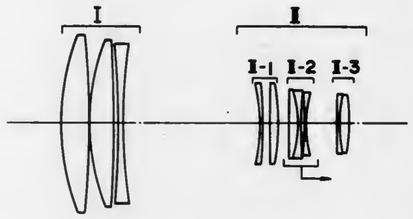
fourth lens of positive refractive power having a strong refracting surface at the object side, and a fifth lens of positive refractive power having a strong refracting surface at the object side; and said second component lens group having three lenses from front to rear including a first lens of negative refractive power having a strong refracting surface at the image side, a second lens of positive refractive power having a strong refracting surface at the image side with both the lens surfaces being convex surfaces, and a third lens of positive refractive power having a strong refracting surface at the object side with both the lens surfaces being convex surfaces.

4,518,229

TELEPHOTO LENS SYSTEM

Mitsuo Yasukuni, Sennan, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 5, 1982, Ser. No. 365,268
Claims priority, application Japan, Apr. 6, 1981, 56-52120
Int. Cl.³ G02B *9/64, 13/02*
U.S. Cl. 350—454 **20 Claims**



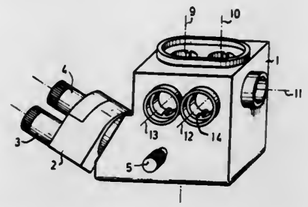
1. A telephoto lens system comprising:
a front lens group of a positive refractive power fixed on the optical axis; and
a rear lens group of a negative refractive power consisting, from the object to the image side, of a first positive subunit fixed on the optical axis, a second negative subunit movable along the optical axis and a third positive subunit fixed on the optical axis, the second negative subunit being movable toward the image side for focusing to a close object.

4,518,230

UNIVERSAL BINOCULAR TUBE FOR MICROSCOPES

Klaus Weber, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheimon am Brenz, Fed. Rep. of Germany

Filed Jan. 19, 1983, Ser. No. 459,053
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1982, 3203142
Int. Cl.³ G02B *21/18, 27/10*
U.S. Cl. 350—511 **9 Claims**



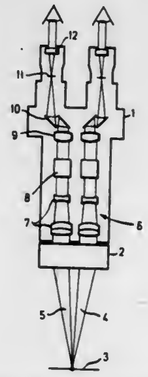
1. An optical tube structure for use with a microscope to enable a beam of light from a microscope objective to be directed, alternatively, either (a) entirely to a binocular eyepiece, or (b) entirely to an auxiliary unit which will return a reflected beam back, with provision for directing said reflected beam to said eyepiece, or (c) partly to the eyepiece and partly to a camera, said structure comprising:
a hollow body having a plurality of outer walls including a first wall, a second wall, a third wall, and a front wall;
a binocular eyepiece mounted on said front wall;
said body being mountable on a microscope in such position that a light beam from an objective of said microscope will enter said body along a first optical axis substantially perpendicular to said first wall;
a first access opening (9) in said first wall and a second optical axis extending through said first opening;
a second access opening (10) in said first wall and a third optical axis extending through said second opening;
said second optical axis and said third optical axis being parallel to each other;
a third access opening (12) in said second wall and a fourth optical axis extending through said third opening;
a fourth access opening (13) in said second wall and a fifth optical axis extending through said fourth opening;
said fourth optical axis intersecting said third optical axis, and said fifth optical axis intersecting said second optical axis;
a fifth access opening (11) in said third wall and a sixth optical axis extending through said fifth opening;
said sixth optical axis intersecting the second, third, fourth, and fifth optical axes;
adjustable turret means having a plurality of prisms including a first prism (6), a second prism (7), and a third prism (8), said turret means being adjustable to position any selected one of said prisms at an effective operating position in said first optical axis; and
a fixed reflecting surface in said body;
said first prism (6) being movable by operation of said turret means to an effective position wherein all of a light beam entering said tube structure from a microscope objective along said first optical axis will be directed by said first prism to said eyepiece;
said second prism (7) being movable by operation of said turret means to an effective position wherein all of a light beam entering said tube structure along said first optical axis will pass through said second prism and exit from said tube structure along said second optical axis to an auxiliary unit (19, 27) mounted on said first wall and light reflected back by said auxiliary unit and entering said tube structure along said third optical axis will be directed by said fixed reflecting surface to a path leading to said eyepiece;
said third prism (8) being movable by operation of said turret means to an effective position wherein a light beam entering said tube structure along said first optical axis will be split by said third prism and part of the light in said beam will be directed by said third prism to said eyepiece and part of said light will exit from said tube structure along said second optical axis to an auxiliary unit (35) mounted on said first wall.

4,518,231

STEREOMICROSCOPE

Franz Muchel, Königsbronn, and Fritz Strähle, Heubach-Lautern, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,583
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217776
Int. Cl.³ G02B *13/10, 21/02, 21/22*
U.S. Cl. 350—516 **6 Claims**



1. A stereomicroscope having two parallel conducted observation channels behind an objective assembly, said objective assembly comprising
(a) two individual objectives having respective optical axes which are inclined with respect to each other and with respect to said parallel channels,
(b) two prism assemblies to compensate for the inclination of said optical axes of said objectives with respect to said parallel channels, and
(c) a common housing containing said two objectives and said two prism assemblies, said common housing forming a replaceable and interchangeable part of said stereomicroscope,
(d) each of said two prism assemblies including at least two cemented refractive wedge prism elements, one of said prism assemblies being mounted in operative relation to each of said objectives.

4,518,232

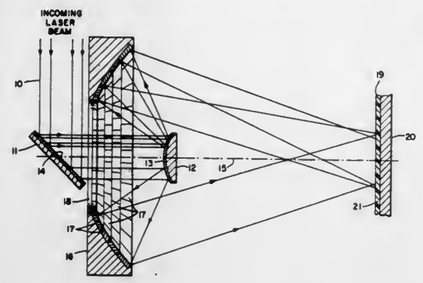
METHOD AND APPARATUS FOR OPTICAL BEAM SHAPING

Dominique M. Dagenais, Wellesley Hills, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Aug. 24, 1983, Ser. No. 525,868
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—620 **10 Claims**

1. Apparatus for optically modifying a laser beam to provide at an image plane a modified final image having predetermined shape, dimension and energy distribution comprising:
(a) paraboloid mirror means for receiving a laser beam and reflecting it, said mirror means having a first focal point disposed and substantially uniformly divergently reflecting said laser beam concentrically as if it emanated from said focal point; and
(b) a plurality of small flat mirrors for collectively receiving

substantially all of said laser beam reflected from said paraboloid mirror means, each said flat mirror having a shape substantially the same as that of said final image and reflecting a small portion of the laser beam to said image plane concentric about a center point in said image plane,



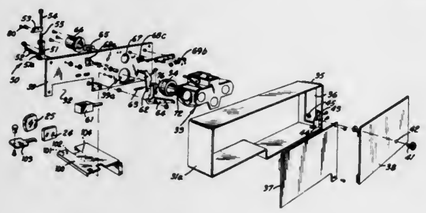
the portion of said laser beam reflected from each flat mirror having said predetermined dimensions and shape at said image plane, the portions of said laser beam reflected by said flat mirrors combining at said image plane to form said modified final image having said predetermined shape, dimensions and energy distribution.

4,518,233

AUTOMATIC LAMP CHANGER FOR MODULAR SLIDE PROJECTOR

Kenneth LiDonnici, and Angelo Dituri, both of Valley Stream, N.Y., assignors to General Audio-Visual Inc., Valley Stream, N.Y.

Continuation of Ser. No. 459,733, Jan. 20, 1983, abandoned. This application Dec. 21, 1983, Ser. No. 564,349
Int. Cl.³ G03B *21/20*
U.S. Cl. 353—87 **2 Claims**



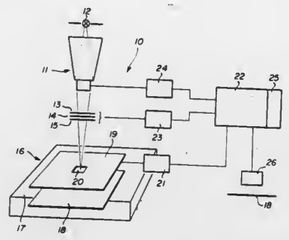
1. A lamp changer for use with a slide projector having a projection lens and a removable modular projection lamp unit insertable through an access opening, the lamp changer replacing said modular projection lamp unit during use, said lamp changer comprising:
a housing;
means for releasably connecting the housing to the projector at the access opening;
lamp holding means for holding at least two projection lamps;
means mounting the lamp holding means in the housing for pivotable movement about a first axis to successively position each lamp in the lamp holding means in direct alignment with the projection lens;
means for effecting movement of the lamp holding means when desired and for energizing the new lamp moved into alignment with the lens; and a cylindrical tunnel aligned with the lens and abutting the lamp holding means and extending through the housing to isolate air heated by an energized lamp, said tunnel stationarily connected to said housing.

4,518,234

METHOD AND APPARATUS FOR REPRODUCING AT LEAST ONE COLORED SURFACE

Jean-Claude Lamére, Villaret, 1411 Esserttines sur Yverdon, Switzerland

Filed Nov. 30, 1983, Ser. No. 556,432
Claims priority, application Switzerland, Jan. 10, 1983, 109/83
Int. Cl.³ G03B *27/00, 41/00*
U.S. Cl. 354—20 **11 Claims**



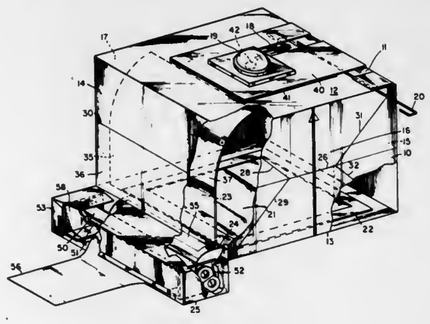
1. Method for reproducing at least one colored surface, the color of which corresponds to a reference chosen from a color chart, said colored surface being obtained by controlled synthesis of colors on a given photographic emulsion, characterized by the fact that during a first stage there is recorded, on a photographic emulsion of the same type, a sensitogram developed with developing materials of predetermined characteristics, a densitometric analysis of said developed sensitogram is made and the results thereof recorded so as to establish an analytical record of the colors comprising the sensitogram respecting the photographic emulsion and the developing materials used, and by the fact that during a second stage, the exposure conditions for the photographic emulsion are determined to reproduce the color selected from the color chart as a function of the information retained in the analytical record of the colors of the sensitogram.

4,518,235

COLLAPSIBLE DISPOSABLE CAMERA

Richard K. Reed, Pendleton; James R. Reed, Indianapolis, both of Ind., and James D. Sorg, 1709 Queensbridge Dr., Indianapolis, Ind. 46219, assignors to James D. Sorg, Indianapolis, Ind.

Filed Feb. 6, 1984, Ser. No. 577,491
Int. Cl.³ G03B *17/52*
U.S. Cl. 354—86 **16 Claims**



1. A disposable camera comprising:
a camera box having an aperture and being moveable between a collapsed position and an erected position;
a lens mounted over said aperture;
shutter means mounted to said box adjacent said aperture and operable to open and close said aperture allowing light therethrough;
photographic paper within said box;
photographic negative within said box having a light developable surface facing said aperture; and,
first guide means mounted within said box and engaged with said photographic paper operable to position said paper in a flat, uncreased condition adjacent said light developable surface and between said aperture and said surface when in said collapsed position and to move said paper away from said surface allowing an unobstructed view from said aperture to said surface when in said erected position.

means for displaying an underexposure in response to an output from the first decision circuit at a time interval after the initiation of emission flashlight from the automatic electronic flash, the time interval corresponding to the time required for full emission of flashlight from the electronic flash;
and means for displaying a proper exposure in response to outputs from the first and the second decision circuits.

4,518,236

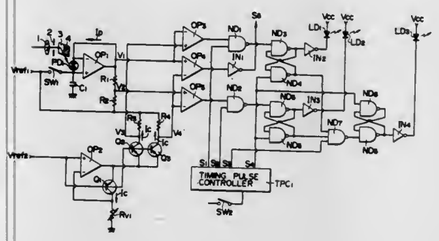
Patent Not Issued For This Number

4,518,237

INDICATOR FOR PROPER OR IMPROPER EXPOSURE BY AUTOMATIC ELECTRONIC FLASH

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,563
Claims priority, application Japan, Apr. 30, 1982, 57-72948
Int. Cl.³ G03B *15/02*
U.S. Cl. 354—127.1 **13 Claims**



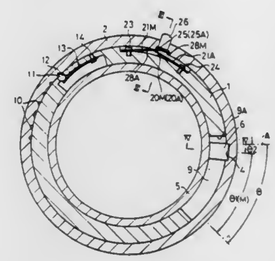
1. An indicator for proper or improper exposure provided by automatic electronic flash, comprising:
means including a first comparison means for producing an emission terminate signal when an amount of exposure provided by light reflected from an object being photographed has reached a proper exposure level which is adjusted to correspond to a preset film speed;
a first decision circuit including a second comparison means and having a first decision level which is lower than the decision level corresponding to the proper exposure level;
a second decision circuit including a third comparison means and having a second decision level higher than the decision level corresponding to the proper exposure level said proper decision level being intermediate said first and second decision levels so that the difference between the first decision level and the proper decision level is greater than 0.1 Ev;
means for displaying an overexposure in response to an output from the second decision circuit at a given time interval after the initiation of emission of flashlight from an automatic electronic flash;

4,518,238

ROTATION CONTROL MECHANISM FOR DIAPHRAGM-OPERATING RING IN INTERCHANGEABLE OBJECTIVE FOR PHOTOGRAPHIC CAMERA

Yoshihiro Hama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,723
Claims priority, application Japan, Aug. 18, 1982, 57-124728[U]
Int. Cl.³ G03B *9/02*
U.S. Cl. 354—270 **7 Claims**



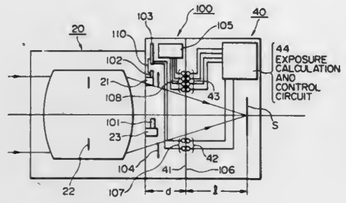
1. An interchangeable objective with a variable lens aperture for a camera comprising:
a stationary support member;
a diaphragm-operating member rotatable about an axis between first and second angular positions relative to the stationary member;
a first elongated leaf spring mounted on the stationary member to bear against the diaphragm-operating member along a first plane perpendicular to the axis;
a second elongated leaf spring mounted on the stationary member to bear against the diaphragm-operating member along a second plane perpendicular to the axis, the second plane being spaced from the first plane in the direction of the axis;
locking groove means formed in the diaphragm-operating member so as alternately to receive the first and second leaf springs in locking engagement when the diaphragm-operating member is positioned at the first and second angular positions, respectively; and
an unlocking button mounted in the diaphragm-operating member over the locking groove means to push the respective first and second leaf springs out of engagement with the locking groove means upon depression of the locking button.

4,518,239

INTERMEDIATE ADAPTER FOR CAMERA

Yasumasa Tomori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,287
Claims priority, application Japan, Jun. 2, 1983, 58-98624
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—286 **8 Claims**



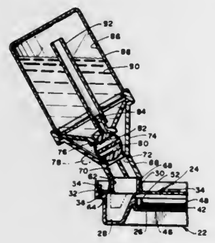
1. An intermediate adapter for a camera for coupling an interchangeable lens having a small flange focal distance to a camera body having a large flange focal distance, comprising:
an aperture device replacing a stop of said interchangeable lens and driven by an electric motor;
aperture value data transmitting means for transmitting aperture value data set by an aperture value setting member provided for said interchangeable lens to said aperture device;
aperture opening degree regulating means for regulating an aperture opening degree to a set aperture value according to said aperture value data thus transmitted in an aperture driving operation performed by said electric motor; and
video changeover means for releasing said aperture opening degree regulating means to allow said aperture device to operate in a range of a fully open state to a fully closed state.

4,518,240

PHOTOGRAPHIC PRINT MAKING AND DEVELOPING TRAY ASSEMBLY

Charles E. Taylor, Westlake Village; Stanley A. Wnukiewicz, Jr., Woodland Hills, and Anton Gattiker, Playa Del Ray, all of Calif., assignors to Phase One Products Corporation, Westlake Village, Calif.

Filed Jul. 25, 1983, Ser. No. 516,929
Int. Cl.³ G03B *3/06, 13/04*
U.S. Cl. 354—312 **12 Claims**



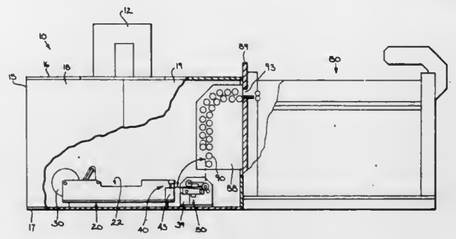
1. A photographic print making and developing tray comprising:
a tray housing formed of a bottom wall and a side wall located about the periphery of said bottom wall, said side wall enclosing an internal chamber, the uppermost edge of said sidewall forming an access opening, engaging means connected to said sidewall assembly at said access opening, said internal chamber being divided into a planar section and an elongated channel;
a cover to connect in a closed position with said engaging means in a light-tight manner, said cover being slidably movable to an open position permitting unrestricted access into said planar section;
an aperture formed within said cover, connecting means surrounding said aperture, said aperture being adapted to pass a liquid into said elongated channel with said cover in said closed position, upon said tray housing being sufficiently tipped the liquid is caused to come into contact with said planar section substantially covering such; and
a container adapted to contain the liquid, said container having a spout, a passage assembly formed within said spout, said spout to removably connect in a liquid tight manner with said connecting means to permit the liquid to flow through said passage into said elongated channel of said tray housing.

4,518,241

INSTALLATION FOR SUPPLYING PHOTOGRAPHIC EMULSION CARRIERS TO A DEVELOPING MACHINE

Heinrich Huss, Liebigstrasse 1, 6054 Rodgau 6, Fed. Rep. of Germany

PCT No. PCT/EP82/00206, § 371 Date May 18, 1983, § 102(e) Date May 18, 1983, PCT Pub. No. WO83/01126, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 18, 1982, Ser. No. 499,151
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 8127303[U]; Feb. 18, 1982, 3205739
Int. Cl.³ G03D *13/00*; G03B *27/58*
U.S. Cl. 354—319 **13 Claims**



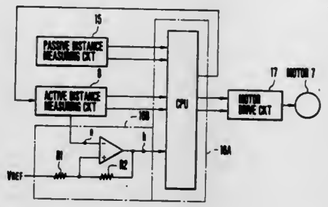
1. Apparatus for transferring photographic carrier sheets (**24**) from an exposure easel (**22**) into an elongate input slot (**87**) of a developing machine (**80**) that extends transversely to the direction of feed, comprising:
a carriage (**63**) movable along said input slot (**87**) between an initial position for receiving a carrier sheet (**24**) from said easel (**22**) and a predetermined transfer position for transferring a carrier sheet (**24**) to said input slot (**87**);
carriage drive means (**140**) for moving said carriage (**63**) between said positions; and
control means (**120**) for controlling said drive means (**140**) to selectively move said carriage (**63**) to a plurality of transfer positions in response to a preselected carrier sheet format signal.

4,518,242

AUTOMATIC FOCUS ADJUSTING DEVICE

Masamichi Toyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 650,305
Claims priority, application Japan, Sep. 13, 1983, 58-170386
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—403 **2 Claims**



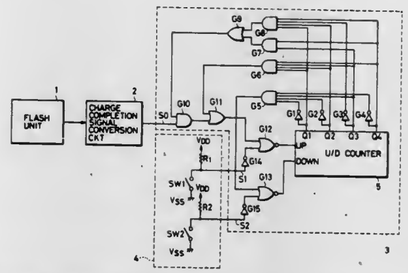
1. An automatic focus adjusting device comprising:
(a) a focusing lens;
(b) lens drive means for moving said focusing lens;
(c) first distance measuring means including light emitting means for producing a distance measuring light on an object to be photographed, and light receiving means receptive of a reflection of said distance measuring light from the object for producing a received light signal corresponding to amount of reflected light;
(d) second distance measuring means including a detector receptive of reflection of natural light or indoor light from the object for detecting and generating an output of the distance of said focusing lens from an in-focus position, or an out-of-focus amount; and
(e) selecting means for receiving said received light signal and the output of said detector and selecting operation of said first or second distance measuring means on the basis of either one of said signals.

4,518,243

SHUTTER SPEED SETTING DEVICE FOR CAMERA

Takeo Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Sep. 9, 1983, Ser. No. 530,836
Claims priority, application Japan, Sep. 10, 1982, 57-136578[U]
Int. Cl.³ G03B *7/00, 15/05*
U.S. Cl. 354—418 **5 Claims**



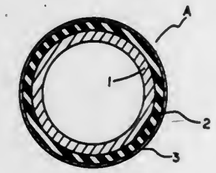
1. A shutter speed setting device for a camera comprising:
a signal generator for providing an output corresponding to the setting of a shutter speed to be set;
a shutter speed setting circuit for providing a signal corresponding with a shutter speed in response to an output from said signal generator;
a flash unit connected to said shutter speed setting circuit and controlled with a shutter speed equivalent to a flash synchronization speed;
a charge completion signal conversion circuit for converting into a predetermined signal a charge completion signal from said flash unit which represents whether or not said flash unit is ready for use;
wherein, when said flash unit is ready for use and said charge completion signal is provided and a preset shutter speed is higher than the flash synchronization speed, said shutter speed can be set to speeds lower than said preset shutter speed, including shutter speeds higher than said flash synchronization shutter speed, and when said preset shutter speed is lower than the flash synchronization speed, a new shutter speed can be set as desired, either lower than said preset shutter speed or higher than said preset shutter speed until said new shutter speed reaches the flash synchronization speed.

4,518,244

HEAT FIXER ROLL WITH AN EVAPORATED METAL SURFACE

Katsuaki Kageyama, and Ysushi Adachi, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,744
Claims priority, application Japan, Oct. 29, 1981, 56-173252
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **5 Claims**



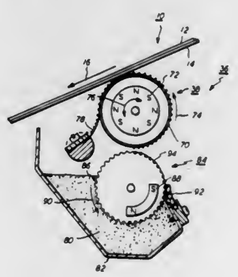
1. A heat fixer roll suitable for use in a dry type electric photocopying machine comprising a cylindrical hollow roll body whose outer surface is covered with a heat-resistant rubber layer having a thickness in the range of from 0.5 to 2 millimeters and an evaporated metal layer having a thickness in the range of 10^{-8} and 5×10^{-7} meters covers the heat-resistant rubber layer.

4,518,245

DEVELOPMENT SYSTEM USING A THIN LAYER OF MARKING PARTICLES

Jan Bares, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

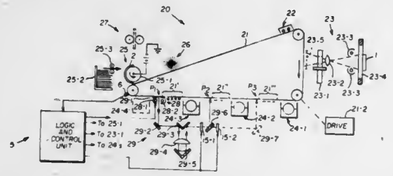
Filed Mar. 24, 1983, Ser. No. 478,425
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **32 Claims**



1. An apparatus for developing a latent image recorded on an image receiving member, including:

a housing defining a chamber for storing a supply of marking particles;
means for transporting the marking particles into contact with the latent image recorded on the image receiving member, said transporting means comprising a tubular member and an elongated magnetic member disposed interiorly of and spaced from said tubular member for attracting the marking particles to the surface of said tubular member;
means for removing marking particles from said tubular member after the marking particles contact the latent image;
means, closely spaced to said tubular member, for advancing the marking particles from the chamber of said housing to said tubular member, said advancing means comprising a metering tube having a plurality of spaced depressions in the exterior surface thereof for receiving the marking particles therein and a metering magnet disposed interiorly of and spaced from said metering tube for attracting marking particles from the chamber of said housing to said metering tube, said tubular member forming a layer of marking particles having a thickness which is a function of the ratio of the surface velocity of said metering tube to the surface velocity of said tubular member; and
means for regulating the quantity of marking particles being advanced by said metering tube to said tubular member.

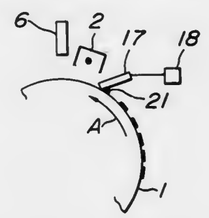
4,518,246
APPARATUS AND METHOD FOR FORMING MULTICOLOR ELECTROPHOTOGRAPHIC IMAGES
Jerome G. Spitzner, Byron, and Michael D. Stoudt, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 12, 1983, Ser. No. 493,867
Int. Cl.[3] G03G *15/01*
U.S. Cl. 355—4 **50 Claims**



1. An electrophotographic color imaging apparatus comprising a plurality of photoconductor image sectors, means for forming a plurality of different electrostatic color-separation images respectively on different image sectors, means for developing such different electrostatic images respectively with different color toner and masking means for reflecting light from the toner image on one developed photoconductor image sector, in register, to the electrostatic color-separation image on an undeveloped photoconductor image sector, whereby portions of the undeveloped sector are discharged in proportion to the toner density on their corresponding portions of the developed sector.

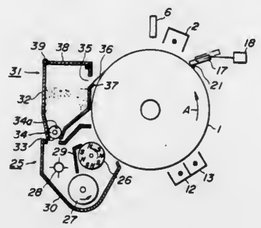
4,518,247
APPARATUS FOR FORMING IMAGE BY DEVELOPING CHARGE LATENT IMAGE WITH TONER
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Jun. 9, 1983, Ser. No. 502,702
Claims priority, application Japan, Jun. 11, 1982, 57-99346
Int. Cl.[3] G03G *15/08*
U.S. Cl. 355—15 **6 Claims**

1. An apparatus for forming an image by developing an electrostatic charge latent image with a toner comprising means including an electrostatic charge retentive member arranged rotatably;
means for forming an electrostatic charge latent image on the charge retentive member;
means for developing the charge latent image with a toner to form a toner image on the charge retentive member;
means for transferring the toner image onto a record paper;
means having a cleaning blade selectively brought into contact with the charge retentive member for collecting a



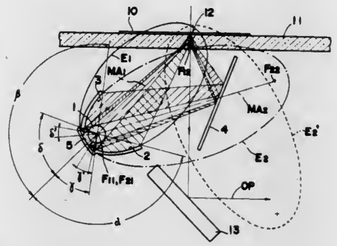
residual toner on the charge retentive member after transferring the toner image on the record paper to form a toner accumulation; and
means for separating the cleaning blade from the charge retentive member at a timing determined by a length of the record paper to allow a passage of the toner accumulation underneath the cleaning blade; whereby the toner accumulation is transported to the developing means as the charge retentive member continues to rotate and is collected by the developing means for the recovery.

4,518,248
APPARATUS FOR FORMING IMAGE BY DEVELOPING CHARGE LATENT IMAGE WITH TWO COMPONENT DRY DEVELOPING AGENT
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Jun. 9, 1983, Ser. No. 502,703
Claims priority, application Japan, Jun. 10, 1982, 57-98409
Int. Cl.[3] G03G *15/08*
U.S. Cl. 355—15 **11 Claims**



1. An apparatus for forming an image by developing an electrostatic charge latent image with a two component dry developing agent comprising
means including an electrostatic charge retentive member arranged rotatably;
means for forming an electrostatic charge latent image on the charge retentive member;
means for developing the charge latent image with a two component dry developing agent to form a toner image on the charge retentive member and having a toner hopper for storing a toner;
means for transferring the toner image onto a record paper;
means having a cleaning blade selectively brought into contact with the charge retentive member for collecting a residual toner remained on the charge retentive member after transferring the toner image onto the record paper to form a toner accumulation;
means for separating the cleaning blade from the charge retentive member to allow a passage of the toner accumulation underneath the cleaning blade; and
means for removing the toner accumulation from the charge retentive member into the toner hopper of the developing means.

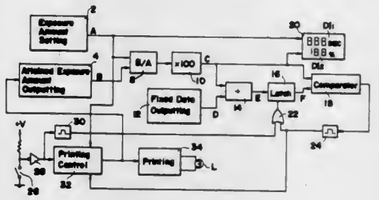
4,518,249
SLIT ILLUMINATION SYSTEM FOR COPYING MACHINE AND THE LIKE
Tomoji Murata, Toyokawa; Masamichi Hayashi, Aichi; Yasuo Goto, and Seiichi Sakurai, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 16, 1983, Ser. No. 552,243
Claims priority, application Japan, Nov. 30, 1982, 57-210368
Int. Cl.[3] G03B *27/54*
U.S. Cl. 355—67 **19 Claims**



1. A slit illumination system for use in a copying machine or the like comprising; a light source,
first elliptical mirror directing the light from the light source to an original and positioned on one side of an optical path for an image corresponding to the original and between the light source and the optical path,
a second elliptical mirror positioned on the same side of the optical path as the first mirror and farther than the first mirror with respect to the optical path and directing the light from the light source to the original through a third mirror positioned on the other side of the optical path, and
a supplemental mirror positioned behind the light source and between the first and second mirrors for illuminating the original through a light path extending directly to the original and/or a light path extending to the original through the third mirror.

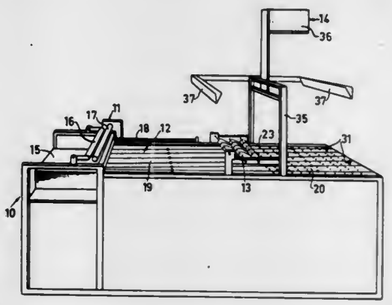
4,518,250
EXPOSURE CONTROL DEVICE FOR A PHOTOGRAPHIC ENLARGER
Yoshio Yuasa, Osaka, and Nobukazu Kawagoe, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 12, 1984, Ser. No. 570,175
Claims priority, application Japan, Jan. 12, 1983, 58-2834[U]
Int. Cl.[3] G03B *27/70*
U.S. Cl. 355—69 **15 Claims**

1. An improved exposure control device for printing photographic prints comprising:
means for setting a predetermined exposure amount to output a signal corresponding to said exposure amount;
means for activating the exposure printing;
means for measuring the accumulated exposure from the start of the printing operation and providing a current exposure signal;
means for calculating a relationship between the predetermined exposure amount signal and the current exposure signal, and
means for periodically suspending the exposure printing in response to predetermined calculated relationships



whereby a user can alter the contrast of the print prior to the continuance of the printing process.

4,518,251
APPARATUS FOR HANDLING SHEETS FOR MICROFILMING OR OTHER SIMILAR RECORDING
Ingemar Larsson, Hjortrongränd 39, S-182 45 Enebyberg, Sweden
PCT No. PCT/SE82/00267, § 371 Date Apr. 20, 1983, § 102(e) Date Apr. 20, 1983, PCT Pub. No. WO83/00748, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 20, 1982, Ser. No. 491,965
Claims priority, application Sweden, Aug. 20, 1981, 8104948
Int. Cl.[3] G03B *27/62*
U.S. Cl. 355—75 **10 Claims**

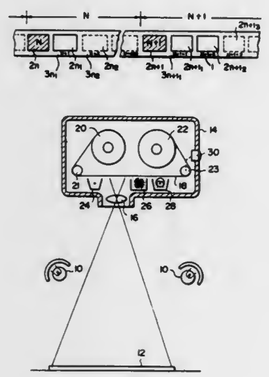


1. An apparatus for handling unperforated sheets for microfilming or other similar recording, including a conveyor path (12) fed step-by-step, a positioning portion (19) on the conveyor for positioning a sheet in a flat state on the conveyor, an exposure table (20) with a plane surface arranged in the conveying direction after said positioning portion, and a microfilm camera or other equipment for digitalation or reading arranged above the exposure table, characterized in that said exposure table (20) is provided with parallel slots (28) open through the table surface (27) facing the camera and extending in the conveying direction; that said conveyor path (12) runs below said table surface (27) and is provided with sheet drivers (22) projecting above said table surface and running in said slots (28), said sheet drivers (22) being arranged in rows extending crosswise the conveying direction and with a distance between adjacent rows at least equal to the extension of a sheet in the conveying direction; and that positioning means (23) is arranged for correct positioning of said unperforated sheets during the microfilming or other similar recording operations.

4,518,252
METHOD OF RECORDING PIECES OF IMAGE INFORMATION OF DIFFERENT KINDS IN ELECTROPHOTOGRAPHY

Shuichi Ohtsuka, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 8, 1982, Ser. No. 433,626
Claims priority, application Japan, Oct. 19, 1981, 56-166793
Int. Cl.³ G03G *13/22*
U.S. Cl. 355—133 **4 Claims**



1. A method of permanently recording and classifying pieces of image information of different kinds according to their kinds on a single recording medium of rollfilm for intermittent image information retrieval and image information supplementation comprising,

providing an electrophotographic photosensitive rollfilm of predetermined length having a plurality of sequential frames thereon, said rollfilm being activatable in a frame-by-frame manner to record image information thereon and when not activated being unaffected by information retrieval;

demarcating the full length of the electrophotographic photosensitive rollfilm into as many sections as the kinds of image information to be recorded, each said section containing a sequence of said plurality of frames; and

recording sequentially as many pieces of image information as required at one time on proper sections of said rollfilm according to their kinds, each section corresponding to one of said kinds of image information, said recording step comprising

charging at least one frame of said electrophotographic photosensitive rollfilm with electricity to activate said frame for recordation of image information, said frame belonging to a section which is allotted to the kind of image information to be recorded,

exposing the frame to the image of a pattern representing the piece of image information, to form an electrical image on said rollfilm,

developing the so-formed electrical image of the pattern with toner, to form a toner image, and

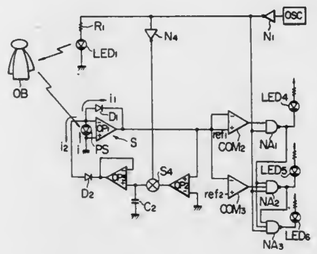
permanently fixing said toner image on said frame of said rollfilm,

whereby image information can be permanently recorded on said rollfilm and classified at the time of recordation according to the kind of image information for rapid retrieval of image information and said image information can be retrieved without affecting the ability of the rollfilm to record additional image information.

4,518,253
DISTANCE MEASUREMENT SYSTEM

Akira Takahashi, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,736
Claims priority, application Japan, Mar. 19, 1980, 55-035328
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—4 **5 Claims**



1. A camera having a range detection system for determining whether an object to be photographed with said camera is within a predetermined distance from said camera, said camera comprising means for emitting energy towards said object, means including a single sensor receiving energy reflected from said object and developing a signal proportional to the intensity of energy received thereby, means for comparing said signal with a predetermined reference signal for producing a control signal, and means responsive to said control signal for determining whether said object is either within a predetermined range of said camera or beyond said predetermined range of said camera, said emitting means being operable intermittently, and said determining means including an element responsive to said energy land adapted to generate a level of current proportional to the intensity of energy received thereby, means operable when said emitting means is not operating for establishing the background level of current proportional to the intensity of energy received by said responsive element when said emitting means is not operating, means for draining said background level of current from said responsive element when said emitting means is operating to generate a current signal proportional to the intensity of the transmitted energy reflected by said object, and comparing means for comparing said current signal with a reference signal to activate said indicator means.

4,518,254
OCEAN DEPTH SOUNDING FROM THE AIR BY LASER BEAM

Michael F. Penny, Salisbury Heights; Brian Woodcock, Banksia Park; Ralph H. Abbot, Walkerville; David M. Phillips, Tea Tree Gully, and Leendert B. Spaans, Hawthorndene, all of Australia, assignors to The Commonwealth of Australia, Canberra, Australia

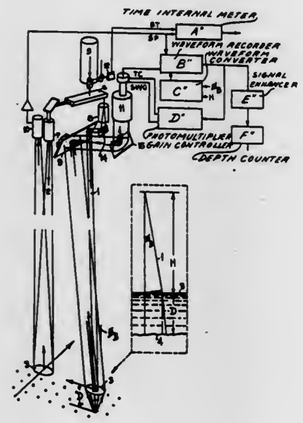
PCT No. PCT/AU81/00137, § 371 Date May 18, 1982, § 102(e) Date May 18, 1982, PCT Pub. No. WO82/01075, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 21, 1981, Ser. No. 385,398
Claims priority, application Australia, Sep. 22, 1980, PE5680/80
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **22 Claims**

1. The method of ocean depth sounding from the air by laser beam which comprises the following steps:

(a) directing two laser beams of different wavelengths downwardly from an aircraft, one a beam in the green spectrum traversed laterally across the flight path of the aircraft to detect the ocean bottom, the other a vertical stable beam in the infrared spectrum to detect the ocean surface

(b) receiving the reflected infrared surface signal and the reflected green ocean bottom signal in separate-receivers,

(c) processing the data from the red beam reflections to determine ocean surface distance and to generate a timing datum for depth measurement,



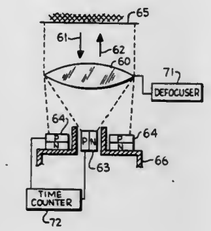
(d) adjusting the dynamic range of the green receiver, for optimum reception of the bottom return signal which decreases exponentially in amplitude with increasing depth, and

(e) processing the data from the green beam to determine the ocean depth by measuring the differential time between the two reflected signals.

4,518,255
TEMPERATURE TRACKING RANGE FINDER

Rainer Zuleeg, San Juan Capistrano, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 20, 1982, Ser. No. 410,015
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **13 Claims**



1. Apparatus to find the range to a target, comprising:

means for emitting pulsed, coherent photon energy directed toward the target, wherein the wavelength of the emitted pulse varies directly with the temperature of said emitter means comprising a Gallium Arsenide injection laser diode;

means for detecting a reflected pulse of said photon energy traveling from the target functionally separate from said emitter means, wherein the peak spectral response of said detecting means substantially matches the peak spectral emission of said emitting means with varying temperatures within an effectively narrow band of wavelengths comprising a narrow band self-filtering Gallium arsenide electroabsorption avalanche photodiode detector;

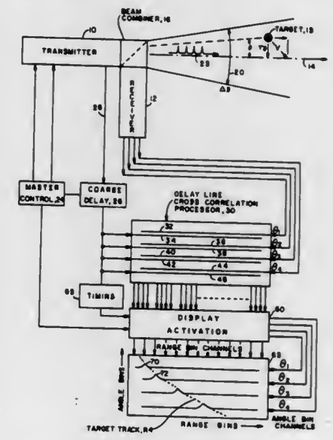
time counter means for measuring the elapsed time between the emission of the emitted pulse and the detection of the reflected pulse, and

range calculating means to convert the elapsed time measure to a distance measure response.

4,518,256
ENHANCED ACCURACY OPTICAL RADAR

Jacob Schwartz, Arlington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed May 23, 1977, Ser. No. 799,827
Int. Cl.³ G01C *3/08, 1/00*; G01P *3/36*; G01B *11/26*
U.S. Cl. 356—5 **9 Claims**



1. An optical radar comprising:

means for projecting a pulsed burst towards a target;

means for receiving the pulsed burst as reflected by a target, said receiving means including a sectored receiver for dividing up the field of view of the receiver into angular segments; and,

oppositely directed delay line cross correlation means coupled to the projecting and receiving means for providing vernier range indications of the target, said oppositely directed delay line cross correlation means including pairs of oppositely directed delay lines, each delay line pair processing signals retained from a target within a different angular segment.

4,518,257
OPTICAL INSPECTION SYSTEM AND METHOD

Charles W. Donaldson, Blanchester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 28, 1982, Ser. No. 402,681
Int. Cl.³ G01B *11/14*
U.S. Cl. 356—375 **16 Claims**

1. Apparatus for measuring a dimension of an object comprising:

(a) means for projecting a beam of light through an examination zone,

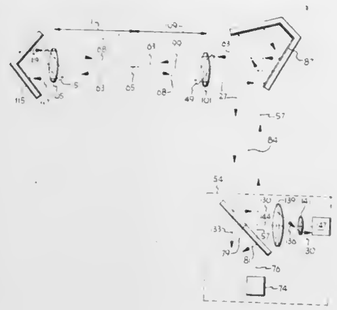
(b) means for inverting said beam of light and for returning said beam of light through said examination zone,

(c) detection means for producing a detection signal which indicates the degree of diminution of light passing through said examination zone, the diminution of the light being caused by the object's entering the examination zone,

(d) object-position means for generating a position signal from which the position of a predetermined point on said object can be derived,

(e) means coupled both to said object position means and to

said detection means for determining the distance between the point on said object and said detection point when the



degree of diminution of said light reaches a predetermined level.

4,518,258

COLOUR ANALYSER

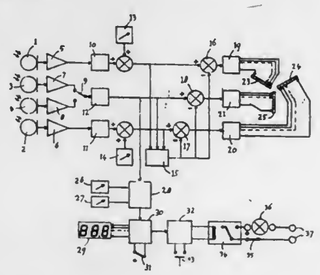
Harmen Broersma, Amsterdam, Netherlands

PCT No. PCT/NL80/00033, § 371 Date Jun. 19, 1981, § 102(e) Date Jun. 19, 1981, PCT Pub. No. WO81/01203, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 15, 1980, Ser. No. 276,365

Int. Cl.³ G01N *21/25*; G01J *1/42, 1/44*

U.S. Cl. 356—405 **1 Claim**



1. A colour analyser for measuring the relative intensities of a plurality of frequency components of light, comprising:

sensor means for simultaneously developing a plurality of signals respectively proportional to the intensities of a plurality of frequency components of light;

means operative on said proportional signals for determining which one represents the frequency component having the least intensity and for subtracting that one signal from at least each of the other ones of said proportional signals;

display means for simultaneously displaying the results of said subtractions;

additional circuitry that converts one or more signals of the analyser automatically into an indication of an exposure time needed to properly expose photosensitive materials; and

regulator means for permitting an operator to program said conversion for photosensitive materials having different reciprocity characteristics, said regulating means including means for setting the quotient of the logarithm of a measured light intensity divided by the logarithm of said exposure time to at least two different values, namely 1.0 and 1.2.

4,518,259

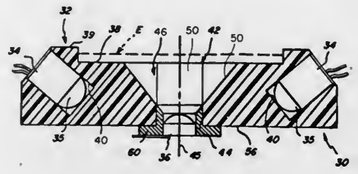
LIGHT GUIDE REFLECTOMETER

John W. Ward, Springwater, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,754

Int. Cl.³ G01N *21/47*

U.S. Cl. 356—446 **13 Claims**



1. In a reflectometer adapted for measuring non-uniform distribution of density and comprising source means for generating radiation suitable to illuminate a test element, detector means for detecting radiation reflected from such test element, and one piece molded housing means in which said source means and said detector means are mounted, said housing means including as portions integral therewith, means for predeterminedly positioning such test element and optically transmissive radiation guide means constructed to guide said radiation from said source means to be positioned test element,

the improvement wherein (i) said source means includes means for at least partially collimating said illuminating radiation,

(ii) said radiation guide means includes an internally reflective surface constructed and located to direct said beam to illuminate a selected portion of a positioned test element, and

(iii) said detector means is located with respect to said positioning means, said source means and said reflecting surface so that the test element is illuminated by a whole spot of light that is disposed approximately centered above said detector means, and said detector means receives from an illuminated test element only radiation diffusely reflected from the illuminated test element.

4,518,260

APPARATUS FOR BLENDING SOLIDS OR THE LIKE

Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 26, 1983, Ser. No. 526,845

Int. Cl.³ B01F *5/00, 15/02*

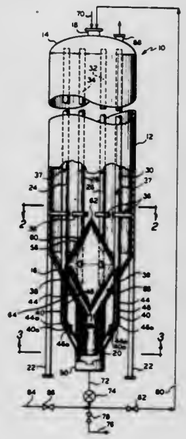
U.S. Cl. 366—134 **17 Claims**

1. Solids blending apparatus comprising:

a vessel having an upper region, a lower region, a solids inlet in said upper region thereof and solids outlet means in said lower region thereof, the lower region being defined by a downwardly converging generally frustoconically shaped bottom wall;

a plurality of conduits each positioned within said vessel so as to extend in a generally vertical direction downwardly from said upper region through said lower region and through said bottom wall, at least one of said conduits containing at least one longitudinally extending divider means for dividing said conduit into a plurality of longitudinally extending compartments, at least a portion of said compartments having at least one first opening therein in said upper region to permit solids in said upper region to enter the conduit and flow by gravity downwardly through said compartments, and each of said compartments of at least one of said conduits extending downwardly from said upper region through said lower region and through and below said bottom wall;

connecting conduit means communicating between the lower end of each of said conduits and said solids outlet means for conveying solids by gravity therethrough from each of said conduits to said solids outlet means, at least one of said connecting conduit means containing connecting divider means connected at the upper end thereof to the lower end of a corresponding longitudinally extending divider means for dividing said connecting conduit means into a plurality of extensions of said compartments communicating with and extending from the lower ends of the corresponding compartments at least a substantial distance toward said solids outlet means to permit solids flowing



downwardly through said compartments to continue to flow by gravity downwardly through said extensions of said compartments and said first connecting conduit means into said solids outlet means; and

first drain conduit means communicating between a corresponding first one of said compartments and a corresponding first opening in said bottom wall intermediate said upper region and said solids outlet means for conveying solids by gravity therethrough from a location in said lower region to said corresponding first one of said compartments.

4,518,261

EQUIPMENT FOR DISSOLVING POLYACRYLAMIDE POWDER FOR OBTAINING AN AQUEOUS SOLUTION THEREOF FOR ENHANCED OIL RECOVERY

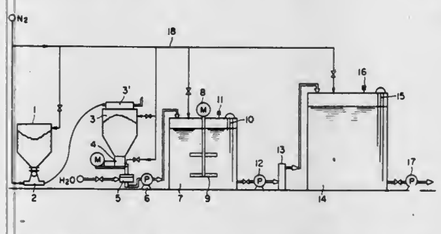
Yukihiko Sekimoto, Fujimi, and Osamu Okamoto, Tokyo, both of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,884

Claims priority, application Japan, Mar. 31, 1982, 57-52554

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—150 **1 Claim**



1. An equipment for dissolving polyacrylamide powder to obtain an aqueous solution thereof for enhanced oil recovery which comprises the following equipment units (A) through (K):

(A) a first powder storage tank for storing polyacrylamide powder under a nitrogen atmosphere;

(B) a second powder storage tank for storing polyacrylamide powder under a nitrogen atmosphere;

(C) a gas conveyor device for carrying the polyacrylamide powder from the first storage tank to the second storage tank by nitrogen gas flow;

(D) a constant powder supply device connected to receive the polyacrylamide powder supplied from the second storage tank, meter the powder, and discharge the powder, said constant powder supply device comprising a vertical cylinder for receiving the powder, a bottom plate which closes the bottom portion of the cylinder and has an opening portion to allow discharge of a small amount of the powder, a partition plate having an opening portion to allow falling of a small amount of the powder which partition plate is disposed within the cylinder parallel to the bottom plate and over the bottom plate, a driving shaft disposed coaxially in the central portion of the cylinder through the bottom plate and the partition plate, a plurality of radial division plates fixed to the driving shaft in the cylindrical space defined by the bottom plate and the partition plate and designed to rotate in sliding contact with the upper surface of the bottom plate and the lower surface of the partition plate as well as the inner surface of the cylinder, and a rotary powder agitation vane fixed to the driving shaft at the upper portion of the partition plate within the cylinder, the opening portion of the bottom plate for discharging the powder and the opening portion of the partition plate for allowing falling of the powder being disposed apart from the driving shaft, the shapes and positions of these opening portions being so designed that these opening portions do not lie one over another in the vertical direction, communication between these portions being prevented by the division plates;

(E) a powder dispersion device for dispersing in water the polyacrylamide powder discharged from the discharging opening portion of the bottom plate of the constant powder supply device, said powder dispersion device comprising a vessel, a water supply pipe connected to a side portion of the vessel for sending water under pressure into the vessel, a powder supply pipe connected to the upper portion of the vessel for supplying the powder into the vessel, a powder and water discharge pipe having a funnel-shaped inlet disposed a suitable height from the bottom portion of the vessel and being installed coaxially with the powder supply pipe, and an overflow pipe connected to the vessel for discharging water supplied in excess, the vessel and the water supply pipe being so designed that water whirls around the discharge pipe within the vessel, and means for adding additional water under pressure comprising an annular room surrounding the discharge pipe at a location downstream from the funnel-shaped inlet thereof, and another water supply pipe connected to the annular room to supply water under pressure in the tangential direction into the annular room, the discharge pipe having continuous or discontinuous spaces bored therearound so that water is introduced thereinto from the annular room;

(F) a first liquid transfer device for transferring the dispersion or solution of the polyacrylamide powder obtained from the powder dispersion device;

(G) a dissolution tank for receiving the dispersion or solution of polyacrylamide powder thus transferred by the first liquid transfer device and for completing dissolution of the polyacrylamide;

(H) a second liquid transfer device for transferring the polyacryalmide solution from the dissolution tank;

(I) a solution storage tank for storing the polyacrylamide solution thus transferred by the second liquid transfer device;

(J) a filtration device provided in the liquid supply line between the dissolution tank and the solution storage tank; and

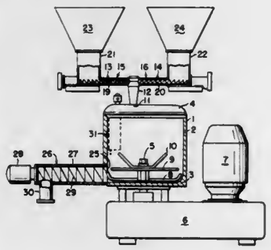
(K) a nitrogen gas supply system for maintaining the interiors of said units, wherein the polyacrylamide powder or the dispersion or solution thereof is present, filled with nitrogen gas at a pressure higher than atmospheric pressure.

4,518,262

MIXER FOR CONTINUOUSLY MIXING GRANULAR TO POWDERY MATERIALS

Hans-Joachim Bornemann, Vellmar, and Horst Zlab, Malsfeld, both of Fed. Rep. of Germany, assignors to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 343,289, Jan. 27, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,876
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 8104051[U]
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—156 **7 Claims**



1. A high speed mixer for continuously mixing granular to powdery materials, said mixer comprising:

a stationary and essentially cylindrical container having a substantially vertical central axis, a side wall which extends substantially parallel to said central axis, a cover connected to the top of said side wall, and a bottom connected to the bottom of said side wall via a transition region; said cover is provided with a feeding opening which leads to the interior of said container; said side wall, in said transition region to said bottom, is provided with a discharge opening which is in communication with the interior of said container, with the bottom of said discharge opening lying in the same plane as the bottom of said container; the discharge of said discharge opening can be controlled;

blade-like mixing tools which are arranged coaxially in said container, with said mixing tools each having an axis of rotation which is at least parallel to said central axis of said container, and hence is likewise substantially vertical; said mixing tools are rotatable at high speed;

a supply housing arranged externally of said container and in communication with said feeding opening, said supply housing extending parallel to said central axis of said container, and having a funnel-shaped lower portion;

two worm conveyors arranged laterally of and in communication with the upper portion of said supply housing for supplying material thereto, said conveyors being operatively connected to first drive means for driving them individually or in common; and

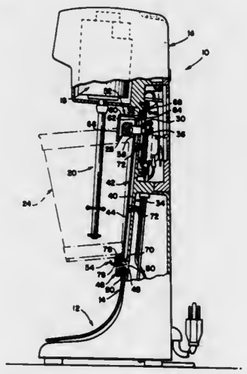
a further worm conveyor, the bottom of which lies in the same plane as the bottom of said container and the bottom of said discharge opening; said further worm conveyor is disposed externally of said container and is in communication with said discharge opening of said side wall thereof for receiving mixed material therefrom, and for effecting said control of said discharge thereof via the speed and direction of rotation of said further worm conveyor, with the latter being adapted to selectively open and close off said discharge opening; said further worm conveyor being operatively connected to second drive means for driving same; said first and second drive means being adapted to be driven at variable speeds and continuously during operation of said mixing tools in said container to effect said continuous mixing of materials.

4,518,263

SPLATTER SHIELD FOR USE WITH A DRINK MIXER

Stanley J. Brym, Torrington, and Bruno M. Valbona, Farmington, both of Conn., assignors to Dynamics Corporation of America, Greenwich, Conn.

Filed Jul. 2, 1984, Ser. No. 626,935
Int. Cl.³ B01F *7/26*
U.S. Cl. 366—206 **7 Claims**



1. A splatter shield for use with an electric drink mixer of the type having an upright hollow standard in which is housed a switch assembly for operating a motor when a container contacts a switch actuator mechanism extending through a slot in a frontwall of the standard, the splatter shield comprising:

a one-piece body means for overlying the frontwall and supporting the container in position on the drink mixer, said body means including

(1) a body mounting means which is unitary with said body means for releasably mounting said body means on the standard, said body mounting means including a standard frontwall engaging means for extending through the slot in the in the front wall of the hollow standard and into engagement with an inner surface of the frontwall, adjacent to the slot in the frontwall, to hold the body means on the standard;

(2) a container support means which is integral with said body means for supporting a container in position to contact the switch actuator mechanism; and

(3) an elongate body means slot through which the actuator mechanism extends when said body means is mounted on the drink mixer, said body means slot being larger than the switch actuator mechanism so that said body means is spaced from said switch actuator mechanism in a manner eliminating the need for any part of said switch actuator mechanism to be removed in order to move said body means onto or away from the frontwall.

4,518,264

STIRRING APPARATUS

Hidenori Nohso, Kakogawa, Japan, assignor to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 511,947
Claims priority, application Japan, Jul. 13, 1982, 57-120596; Aug. 18, 1982, 57-142163
Int. Cl.³ B01F *9/00*
U.S. Cl. 366—208 **10 Claims**

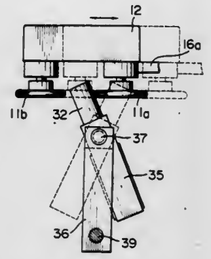
1. Apparatus for stirring material contained in a test tube having a longitudinal axis and upper and lower ends, comprising:

a holder for supporting said test tube;

means for swingably supporting said holder;

two spaced rollers rotating in opposite directions about respective roller axes; and

reciprocating means for causing relative movement between said test tube and said rollers such that said rollers alternately engage said upper end of said test tube to alternately rotate said test tube in opposite directions about said longitudinal axis.

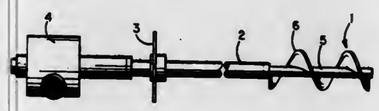


4,518,265

AGITATOR

Arne Andersson, Partille, and Peter Larsson, Stenkullen, both of Sweden, assignors to Trilack Utrustningar AB, Sweden

Filed Mar. 24, 1983, Ser. No. 478,517
Claims priority, application Sweden, Mar. 26, 1982, 8201925
Int. Cl.³ B01F *7/24*
U.S. Cl. 366—318 **3 Claims**



1. An agitator for stirring of liquids which are enclosed in vessels, said vessels having an outer dimension, an inner space, a wall having a thickness, and a hole in said wall, said inner space being accessible through said hole, said hole having a diameter which is substantially smaller than said outer dimension of a vessel, the agitator comprising a screw and a turnable shaft for the rotation of the screw, said screw having a center axis and a thread formed of a coiled body in the form of a stripe having portions located on opposite sides of said center axis, said stripe having a diameter which is larger than the diameter of said hole and a thickness which is smaller than the thickness of said wall and being coiled with a pitch which is so large compared to the thickness of the stripe and the thickness of the wall that, when the stripe is inserted into the hole with one of said portions thereof which is located on one of said sides of the center axis of the screw, the portions of said stripe on the other of said sides of the center axis and forming continuing extensions in both directions of the axis to the said one of said portions of the stripe will find room outside of the hole at both sides of the wall so that the screw together with said shaft can be screwed through the hole with the entire stripe forming the thread until the shaft is placed within the hole and the screw can be rotated within the vessel by turning the shaft.

4,518,266

SWIMMER'S LAP PACER

Dale K. Dawley, 5845 Red Apple Ridge, Columbus, Ohio 43227

Filed Jul. 27, 1983, Ser. No. 517,681
Int. Cl.³ G04B *19/24*; G04F *8/00*
U.S. Cl. 368—10 **1 Claim**

1. A swimmer's lap pacer, comprising, in combination, a waterproof case containing a split timer, an elapsed timer and a lap counter in an electrical circuit, a "U"-shaped carrying handle upon an upper side of said case for being either held in a hand or receiving a tethering cord therearound, when said pacer is suspended over a swimming pool edge; said case including a front wall, an upper part of said front wall comprising an above-water portion having displays for said split timer, elapsed timer and lap counter, a depressible kickpad on a lower, underwater portion of said front wall, and a mechanism inside said case operated by said kickpad, for activating said electrical circuit.

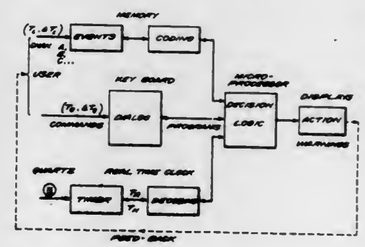


4,518,267

MOBILE EVENT-MODULE

Volker Hepp, Schröderstr. 90, D6900 Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 235,894, Feb. 19, 1981, abandoned. This application Jul. 1, 1983, Ser. No. 510,229
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009211
Int. Cl.³ G04F *8/00*; G04C *15/00*
U.S. Cl. 368—107 **18 Claims**



1. A mobile electronic device for a general correlation analysis of codified series of occurred, missed and expected events which are defined by their type, time of occurrence and/or duration, comprising:

clock means for providing clock pulses representing real time;

synchronization means for updating said clock means;

switchable means for providing timing signals representing timed occurrences, timed durations, expected occurrences and expected lapses;

codification means for marking said timing signals;

computing means including read-only memory means and register means for executing predetermined programs operating on said timing signals and being steered by a monitor program, said computing means providing resultant output signals;

instruction means for providing instruction signals to said computing means for executing specific tasks;

multiplexer and encoder means for identifying said instruction means;

random-access memory means for storing said timing signals and said instruction signals and resulting output signals of said computing means;

input-output interface means for providing input signals to and for receiving output signals from said computing means and said memory means and said clock means and said instruction means;

timer, counter and latching means in said interface means

responsive to signals from said instruction means and said computing means;

display means responsive to said interface means for displaying representations of output signals from said interface means;

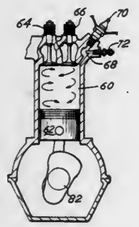
whereby a programmable interactive dialog is permitted between the device and user of the device in which the flow of events (codified time-marks) is controlled and modified, and which allows real-time and off-line correlation analysis.

4,518,268

DIESEL ENGINE DIAGNOSTIC SYSTEM

Philip E. Swis, Armada, and Anthony E. DiFonzo, Clawson, both of Mich., assignors to Sun Electric Corporation, Crystal Lake, Ill.

Filed Mar. 18, 1983, Ser. No. 476,618
Int. Cl.³ G01M *15/00*
U.S. Cl. 374—144 **20 Claims**



1. An apparatus for analyzing the operation of a diesel engine, said diesel engine defining a working cycle and having at least one internal chamber and means for passing a vapor through said internal chamber, said internal chamber including a prechamber and cylinder and said vapor having a temperature, said diesel engine further including a glow plug partially within said prechamber, said glow plug having a resistance dependent upon said temperature of said vapor within said prechamber, comprising, in combination:

passive temperature sensor means, interconnected to said diesel engine, for sensing said temperature of said vapor within said prechamber of said internal chamber and for providing a temperature signal representative of said temperature, said passive temperature sensor means including impedance sensor means for sensing said resistance of said glow plug, said temperature signal being dependent upon said resistance throughout said working cycle; and

display means, interconnected to said passive temperature sensor means, for monitoring said temperature signal throughout said working cycle and responsively providing a display based upon said temperature and representative of a brake mean effective temperature.

4,518,269

SERIAL PRINTER

Hiroyuki Akazawa, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

Division of Ser. No. 305,413, Sep. 24, 1981, Pat. No. 4,452,542. This application Sep. 30, 1982, Ser. No. 430,418
Claims priority, application Japan, Sep. 25, 1980, 55-136236
Int. Cl.³ B41J *3/10*
U.S. Cl. 400—124 **1 Claim**

1. A serial printer comprising:

a head carriage adapted to move across a recording sheet for printing characters thereon; and

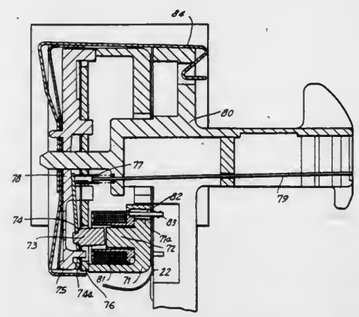
a print head for printing the characters, the print head being mounted on the head carriage, the print head further comprising:

a nose member;

a plurality of print wires slideably guided in the nose member;

a plurality of coils for selectively driving the print wires, each coil comprising a winding formed on a bobbin and each winding having end terminals;

at least two pins inserted in each bobbin, each end terminal of the associated winding being wound around a pin;



a core frame forming a portion of the magnetic circuit associated with each of said coils, there being holes formed in the core frame through which the pins extend; and

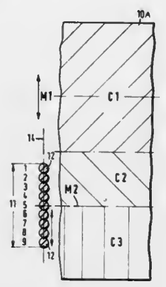
a flexible print cable for transmitting signals to the coils to actuate selected print wires for printing, the flexible cable being pressed between the core frame and the nose member and being soldered to the extended pins.

4,518,270

MULTICOLORED PRINTING

Wolfgang Hendrischk, Neu-Ulm, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,171
Int. Cl.³ B41J *35/16*
U.S. Cl. 400—240.4 **6 Claims**



1. Method of multicolor printing under utilization of a print head having at least one vertical column of print styli and cooperating with a print medium through impact printing comprising the steps of:

using a four color band ink ribbon and changing its print position so that in first and second ribbon positions the center of the column of styli is respectively centered on boundaries between the upper two bands and between the lower two bands;

printing in a plurality of passes of the print head along a print line wherein after each pass in which the print position of the ink ribbon is not changed the medium printed on is shifted in direction of the column while no such shift occurs after the shift of the ink ribbon in the direction of the column to place different bands in front of said styli,

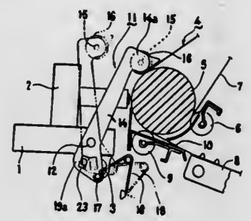
and providing an alternating sequence for the two ribbon positions in two sequential passes which is followed by paper shifting for the next pass, and repeating the sequence so that a steady state cycle includes two passes for printing with no medium shift and one pass preceded by medium shift.

4,518,271

PRINTER WITH MOVEABLE CARRIAGE ACTUATING PINCH ROLLER TO RELEASE POSITION

Yoshikatsu Hirata, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 27, 1984, Ser. No. 625,228
Claims priority, application Japan, Jul. 15, 1983, 58-129657
Int. Cl.³ B41J *13/02*
U.S. Cl. 400—636.1 **8 Claims**



1. A printer having a plurality of side frames, a platen having a printing surface rotatably supported by said side frames, and a carriage supporting a printing head and being movable along said printing surface of said platen, wherein said carriage is movable in a printing region and at the same time printing is performed by said printing head, said printing comprising

a paper holding device having a plurality of pressure rollers and being supported by said side frames so as to be rotatable between a closed position wherein said pressure rollers abut said platen and an open position wherein said abutting of said rollers against said platen is released;

an urging means for urging said paper holding device at least towards said closed position; and

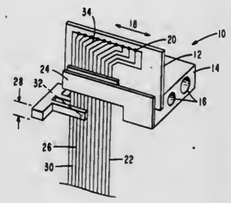
an actuating means being operated while said carriage is moved to one side out of said printing region and for moving said paper holding device from said closed position to said open position.

4,518,272

POSITION INDICATOR MEANS FOR A HIGH SPEED PRINTER OR THE LIKE

Rick A. George, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 12, 1984, Ser. No. 570,150
Int. Cl.³ B41J *29/42*
U.S. Cl. 400—705.1 **9 Claims**



1. A printer device which comprises:

an electrically operated print head which is movable relative to record media on which printing is to occur;

a scanner for sensing indicia of alignment of the print head relative to the record medium; and

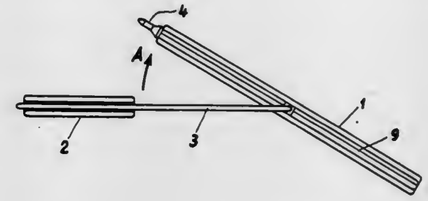
an electrical conductor connected to operate said print head, wherein said electrical conductor comprises an electrically conductive run which is supported by an electrically insulative material; and wherein said indicia are defined by optical contrast between said run and said insulative material.

4,518,273

INSTRUMENT FOR WRITING AND DRAWING WITH PIVOTABLE COVER

Pietro Larizza, Limbiate, Italy, assignor to Larizza & Scuratti s.d.f., Limbiate, Italy

Filed May 5, 1983, Ser. No. 491,824
Claims priority, application Italy, Sep. 30, 1982, 23063/82[U]
Int. Cl.³ B43K *9/00*
U.S. Cl. 401—98 **11 Claims**



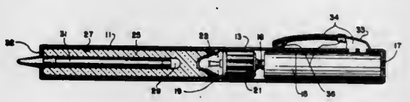
1. An instrument for writing or drawing comprising an elongated main body provided with a writing tip at one end thereof, longitudinal grooves extending for the entire length of the main body, a cover member carrying a pair of resilient members, said resilient members being pivotably connected at their ends to a fixed location on the main body, said resilient members being spaced apart so as to resiliently engage the grooves on the main body when the main body and the cover member are aligned.

4,518,274

PEN WITH BUILT-IN ILLUMINATION

Rolf Hanggi, 22442 Walnut Cir. S., Cupertino, Calif. 95014

Filed Aug. 22, 1983, Ser. No. 523,346
Int. Cl.³ B43K *29/10*
U.S. Cl. 401—195 **16 Claims**



1. A writing implement having a built-in illumination system comprising:

a tubular housing of an electrically nonconductive material having a first opening on one end and a second opening on its periphery, said tubular housing defining a compartment for receiving a battery located within said tubular housing opposite said end having said first opening;

lamp means disposed to be located within said tubular housing for providing illumination in the direction of said first opening, said lamp means having first and second electrical contacts with said first electrical contact having an electrical path to said second opening and said second electrical contact being disposed to interconnect with the positive terminal of a battery within the tubular housing;

marking means disposed to be located at least partially within said tubular housing and to extend through said first opening for providing a mark on a surface when touched to said surface;

spring-clip means constructed of an electrically conductive material including a fixed portion and a slidable portion,

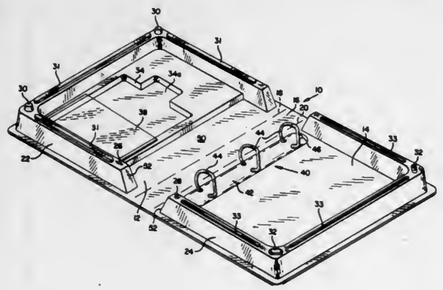
said fixed portion being fixedly attached to said tubular housing and extending into the interior of said tubular housing wherein it is disposed to make direct electrical contact with an electrically conductive portion of the case of a battery therein, said slidable portion being slidably affixed to the fixed portion on the exterior of said tubular housing and having a maximum possible displacement extending at least to said second opening in said tubular housing for providing an electrical path which is substantially exterior to said tubular housing between said second opening and said electrically conductive portion of said battery case via said spring-clip means when said slidable portion is displaced to said second opening.

4,518,275

PACKAGE AND STORAGE CONTAINER FOR DISKETTES

Cloyd D. Rauch, III, Beaverton, and Ronald W. Schneberger, Troutdale, both of Oreg., assignors to Rundel Products, Inc., Portland, Oreg.

Filed Jul. 7, 1983, Ser. No. 511,765
Int. Cl.³ B42F *13/00, 5/00;* B65D *19/04;* B42D *15/00*
U.S. Cl. 402—80 P **9 Claims**



1. A container for computer software diskettes comprising: a top cover, a bottom cover and back hingedly connected along one edge to a corresponding edge of the top cover and along the opposite edge to a corresponding edge of the bottom cover, a wall section provided on the inside of each of said top and bottom covers along the unconnected edges thereof, said wall sections extending inwardly and defining an enclosued cavity with the covers folded together, fastening means for releasably fastening the covers together in the closed position, a pocket provided on the inside of the top cover, said pocket being formed by a depression in the wall thickness of the top cover and being shaped to accommodate the diskette, and a strap spanning the depression for holding a diskette within the depression, and a binder ring unit attached along the connected edge inside the bottom cover, said binder ring unit adapted to receive instructional materials for securely storing such materials with the container closed and for easy access and reference without removal with the container open and laid flat.

4,518,276

METHOD AND APPARATUS FOR REPEATABLY ALIGNING ADJACENT MEMBER

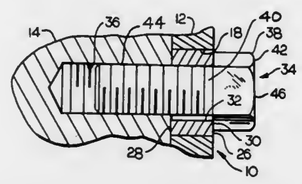
Thomas L. Mitchell, Washington; Patrick D. McMahill, Chillicothe; Gary G. Valbert, Peoria, and John C. Wellauer, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 27, 1984, Ser. No. 583,906
Int. Cl.³ F16B *17/00*
U.S. Cl. 403—13 **7 Claims**

1. A bolt-on dowel adapted to repeatably position a first member relative to a second member, said first member being releasably connected to said second member and having a through bore therein, comprising:

a cylindrical spacer having a first end, a second end and a through bore, said spacer being adapted to closely slidably fit within said bore of the first member and the first end being in abutment with the second member; and

means for securing the spacer to the second member at one of a multiplicity of positions at the initial assembly of the



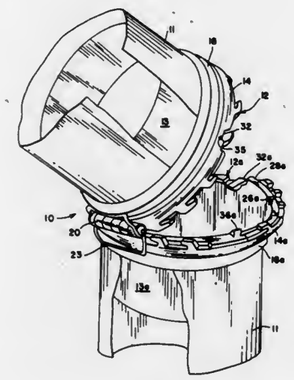
first member to the second member so that the cylindrical spacer remains in abutment with the second member when the first member is released from the second member and repositions the first member relative to the second member at subsequent assembly.

4,518,277

SELF-LOCKING MECHANICAL CENTER JOINT

Harold G. Bush, Yorktown, and Richard E. Wallsom, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 11, 1982, Ser. No. 387,646
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—102 **11 Claims**



1. A self-locking joint for securing two structural members in linear relationship along a first axis comprising:

a pair of substantially identical hinged hub members disposed in side-by-side relationship and adapted for connection to separate structural members;

means for effecting relative rotative movement of said hinged hub members about a second axis transverse to said first axis to position said hub members in face-to-face abutting relationship; and

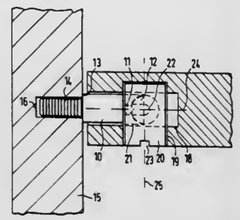
substantially identical rotatable means disposed on each said hub member and having portions thereof adapted to mesh for locking said hinged hub members in the face-to-face abutting relationship.

4,518,278

CONNECTING DEVICE FOR DETACHABLY MAINTAINING FLAT STRUCTURES PERPENDICULAR TO EACH OTHER

Gerhard Koch, Nagold, Fed. Rep. of Germany, assignor to Hafele KG, Fed. Rep. of Germany

Filed Jan. 10, 1983, Ser. No. 456,608
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204737
Int. Cl.³ B25G *3/00;* F16B *7/08*
U.S. Cl. 403—230 **10 Claims**



1. Connecting device for detachably maintaining flat panels perpendicular to each other comprising: a fastener bolt having a head (12) set apart from a shank portion by a reduced cylindrical section (11), said head and said shank portions having the same diameter and said cylindrical section having a substantially smaller diameter than said head and said shank portions, said head (12) of said fastener bolt (10) adjacent said cylindrical section being in the form of a hemispherically shaped cup, the curved side of which forms one side and the stepped transition from said shank portion to said reduced cylindrical section forms the opposite side of an attachment groove; and a cylindrical tightening bolt (20) having cylindrical tightening bore (21) sized for receipt of said fastener bolt head and perpendicular to and extending up to the axis of rotation (25) of said tightening bolt (20) and then merging into a hemispherical cup (28) sized to mate with said hemispherically shaped cup and having tightening slot (22) extending the length of the side wall of said tightening bore (21) up to said hemispherical cup (28) forming a part of said tightening bore (21); said fastener bolt fastening to the first said panel with said shank, said attachment groove and said head protruding therefrom, said tightening bolt rotatably received in a first blind bore provided in the second said panel, said fastener bolt inserted into a second blind bore provided in the second said panel, whereby the axis of rotation of said tightening bolt and the longitudinal axis of said first blind bore receiving said tightening bolt are perpendicular to the longitudinal axes of said fastener bolt and said second blind bore, and are lying in a plane extending through the longitudinal axes of both said fastener bolt and said first blind bore, said tightening bolt operatively engaging said head of said fastener bolt in such a manner that said tightening slot of said tightening bore is engaged in said attachment groove, and as said tightening bolt is rotated, said fastener bolt is pulled along its longitudinal axis into said second blind bore causing the two panels to be firmly joined, said tightening bolt being capable of being rotated up to about 180° from its initial input position.

4,518,279

BASE ELEMENT CONNECTION FOR SHEET METAL FURNITURE

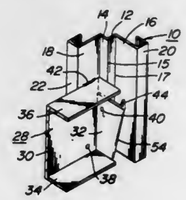
James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Sep. 27, 1983, Ser. No. 536,265
Int. Cl.³ E04H *12/06;* A47F *5/10*
U.S. Cl. 403—231 **4 Claims**

1. In an article of sheet metal furniture, such as a merchandising display stand, comprising a sheet metal upright post, and first and second sheet metal panels meeting the post at right angles to each other, an improved structure wherein:

the upright post comprises a sheet of metal formed into a horizontal cross-sectional configuration having first and second vertically elongated planar sections meeting each other at right angles along a first vertical corner line, and a third vertically elongated planar section meeting the first section along a second vertical corner line spaced from the first vertical line, the second and third sections being on opposite sides of the plane of the first section;

the first panel is rigidly attached to the upright post and comprises a first panel section meeting the second section of the post perpendicularly at a location spaced from the first corner line, and a second panel section unitary with the first panel section and extending perpendicularly from the end of the first panel section, along the second section of the post, and past the first vertical corner line so that a portion of the third section of the post and a portion of the second panel section are positioned opposite and parallel to each other, the second panel section having an edge remote from the intersection of the first and second panel sections, said edge being oblique in a vertical plane with the distance between its lower end and said intersection being less than the distance between its upper end and said intersection, said second panel section having a flange along said oblique edge, said flange being unitary with the second panel section, meeting the second panel section



along an oblique line of intersection, and extending toward the space between the second panel section and the third section of the post; and

the second panel comprises a third panel section extending parallel to the third section of the post and into the space between the third section of the post and said second panel section, said third panel section lying against the third section of the post and having an edge meeting said first panel section, a fourth panel section, unitary with the third panel section, and extending perpendicularly from said edge of the third panel section, lying against said first section of the post and extending to and meeting the second panel section, and a fifth panel section, unitary with the fourth panel section, extending perpendicularly from the fourth panel section and lying against the second panel section, the fifth panel section having an oblique edge in a vertical plane, said oblique edge conforming to the line of intersection between the second panel section and its flange;

whereby a downward force on the second panel causes the oblique edge of the fifth panel section, in cooperation with the line of intersection between the second panel section and its flange, to effect tightening of the fourth panel section against the first section of the post.

4,518,280

AQUATIC WEED BARRIER

Eldon L. Fletcher, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Division of Ser. No. 402,859, Jul. 29, 1982, Pat. No. 4,481,242.
This application Apr. 25, 1984, Ser. No. 603,907
Claims priority, application Canada, Mar. 16, 1982, 398464
Int. Cl.³ E02B *3/00*
U.S. Cl. 405—17 **10 Claims**

1. A method for substantially preventing growth of aquatic weeds comprising laying a film of synthetic thermoplastic

polymer onto the bed of a water body, said film having a plurality of incisions therein, each incision being shaped to



form at least one flap of film adjacent the incision, such film also having a light transmittance in the 200 to 650 nm wavelength range of less than 50%.

4,518,281

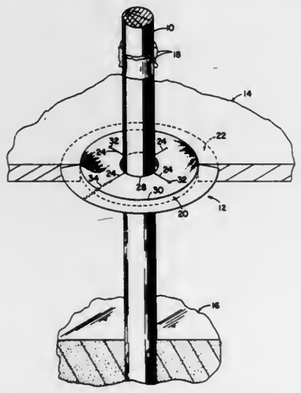
ICE SUPPRESSION MAT

Thomas J. Coe, 86 Nicholas Ave., Groton, Conn. 06340

Filed Dec. 30, 1983, Ser. No. 567,408

Int. Cl.³ E02B *15/02*; E02D *5/60*; B32B *3/02*

U.S. Cl. 405—61 **19 Claims**



15. An ice suppression mat for preventing an ice sheet from forming around and adhereing to a marine pile partially submerged in a body of water subject to natural icing conditions, said mat comprising:

a first laminate having one or more layers of a bouyant, thermal insulating material forming a first sheet having a first predetermined surface area;

a second laminate having one or more layers of a flexible, tear resistant reinforcing material forming a second sheet having a second predetermined surface area, said second sheet being intimately joined to said first sheet to form a laminated and reinforced mat;

said laminated mat defining a centrally located opening through the first and second laminates for accommodating a marine pile to be protected and permitting said mat to move axially along said protected pile as the water level rises and falls;

said second predetermined surface area being larger than said first surface area to provide a fringe of reinforcing material along the outer perimeter of said laminated mat whereby said fringe may become embedded in an ice sheet which forms around said mat such that said mat becomes an integral part of the ice sheet and moves axially along said protected marine pile as said ice sheet rises and falls, said second surface area being substantially less than the body of water surface area, and

said laminated mat has means defining a slit extending radially outward for a predetermined distance from said opening in said mat, said mat having a plurality of said radial slits to permit deformation of the edge of said opening as said mat moves over irregularities or ice formations on the surface of said pile.

4,518,282

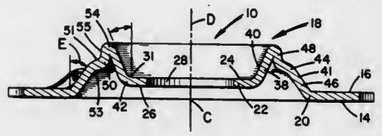
MINE ROOF BEARING PLATE WITH EMBOSSED AREA HAVING CONICAL AND CYLINDRICAL SECTIONS

Raymond J. Wilcox, Rancho Bernardo, and Earl W. Powers, Chula Vista, both of Calif., assignors to Republic Corporation, Century City, Calif.

Filed Aug. 27, 1981, Ser. No. 297,011

Int. Cl.³ E21D *21/00*

U.S. Cl. 405—259 **11 Claims**



1. A bearing plate for supporting a portion of a mine roof or similar surface, said bearing plate comprising:

roof-bearing means including a roof-bearing surface for supporting said portion of said mine roof;

bolt-head bearing means including an aperture adapted to receive a roof bolt having a bolt head;

a reinforcing wall divided into a frusto-conical portion, the base of which is connected to said roof-bearing means, and a cylindrical portion, the base of which is connected to the distal end of said frusto-conical portion, the diameter of the base of said cylindrical portion being less than the diameter of the distal end of said frusto-conical portion, said cylindrical portion being substantially perpendicular to said bolt-head bearing means; and

wall means connecting the distal end of said cylindrical portion with said bolt-head bearing means for translating a bearing force applied to said bolt-head bearing means by said bolt-head to said bearing surface for supporting said portion of said mine roof.

4,518,283

HARDENABLE SYNTHETIC RESIN COMPOSITION AND ITS USE

Ludwig Gebauer, Stuttgart; Hans-Jürgen Irmscher, Emmering; Gusztav Lang, Munich, and Peter Mauthe, Kleinberghofen, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Luxembourg

Filed Jul. 13, 1983, Ser. No. 513,152

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226602

Int. Cl.³ B65D *25/08*; C08L *67/06*

U.S. Cl. 405—260 **15 Claims**

1. A method for securing tie bars in bore holes wherein mortar composition is contacted with the tie bar and allowed to harden, the improvement which comprises said composition comprising a total of

15 to 35 weight percent of unsaturated polyester,

9 to 25 weight percent of reactive diluent,

44 to 66 weight percent of filler,

0.5 to 4 weight percent of thixotropic agent, and 1 to 6 weight percent of a hardener composed of a free radical curing catalyst,

the percentages being based in each case on the total composition.

4,518,284

MINE ROOF SUPPORTS

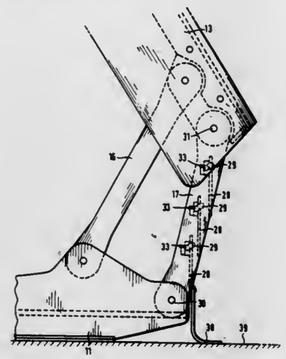
Kunibert Becker, Werl; Rüdiger Kirchbrücher, Dortmund-Brackel, and Klaus D. Pohlmann, Werne, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,614

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211595

Int. Cl.³ E21D *23/04*

U.S. Cl. 405—296 **12 Claims**



1. A mine roof support comprising a floor-engaging structure, a roof-engaging structure, hydraulic props mounted between the floor and roof-engaging structures and a goaf shield connected to the floor-engaging structure with lemniscate guides spaced apart laterally of the support; wherein the floor engaging structure takes the form of spaced-apart skids with a walking mechanism therebetween, the skids being relatively displaceable, at least to a limited extent, in both a direction transverse thereto and vertically, and, the guides are provided with connection means for releasably attaching at least one screen plate to screen off the lower region of the goaf zone from the interior of the support, said at least one screen plate also forming a distance piece defining the minimum spacing between the skids.

4,518,285

CONTROL SYSTEM FOR LONGWALL MINING ROOF SUPPORTS

Karl-Heinz Weber, Witten-Heven; Wolfgang Beckmann, Marl, and Hartmut Gebauer, Bottrop, all of Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,050

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207517

Int. Cl.³ E21D *23/12, 23/16*; F16B *13/00*

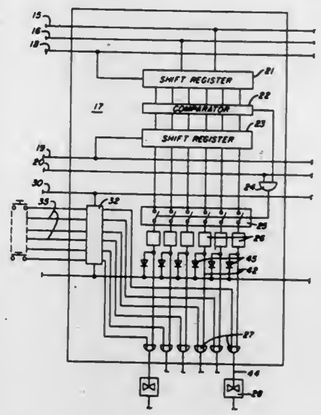
U.S. Cl. 405—302 **4 Claims**

1. In a control system for longwall mining roof supports wherein the supports are controlled by a computer in dependence on the position of a longwall mining machine at any time, the computer being connected to individual control units for the roof supports through common electrical conductors, and wherein each control unit is provided with manual control pushbuttons and associated control circuitry for controlling the roof support independently of command signals received from said computer, the improvement in said control system comprising:

a pair of electrical conductors connecting said computer to all of said control units,

means in said computer for generating on one of said conductors an automatic enable signal and for generating on the other of said conductors a manual enable signal, and

means in each of said control units responsive to said enable signals for preventing manual actuation of a roof support when automatic command signals are being transmitted



from said computer and for preventing automatic actuation of a roof support when manual control is being effected

---

4,518,286

SYSTEM FOR PUMPING SUSPENDED PARTICLES UPWARD

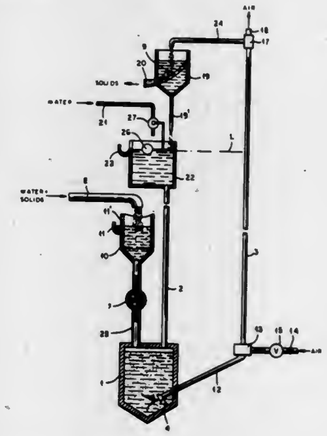
Knut Vaupel, and Peter Schulz, both of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,899

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203578

Int. Cl.³ B65G *53/30*

U.S. Cl. 406—46 **4 Claims**



1. A system for fluidically elevating solid particles from a lower level to an upper level, comprising:

a vessel closed against the atmosphere;

a first tube extending upward from the top of said vessel and containing a liquid which forms therein a hydrostatic column of given height;

a second tube with an inlet end at said vessel and with an outlet end at a level substantially above that of said vessel;

a conduit at a level substantially below that of said outlet end loadable with solid particles to be entrained by said liquid

through said second tube, said conduit being provided with gating means preventing a backflow of said liquid and maintaining the hydrostatic pressure of said column in said vessel; and

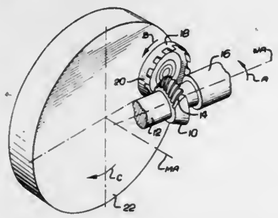
a source of gas communicating with said second tube near said inlet end for injecting bubbles into a slurry which is formed by said liquid and said particles and which enters said second tube from said vessel through said inlet end, thereby reducing the specific weight of said slurry sufficiently to let same rise to said outlet end.

4,518,287

METHOD OF FACE MILL GENERATION OF SPIRAL BEVEL GEARS WITH INTEGRAL CENTRAL STRUCTURE AND RESULTING PRODUCT

Robert B. Bossler, Jr., Hacienda Heights, Calif., assignor to Western Gear Corporation, Lynwood, Calif.

Filed Jul. 7, 1982, Ser. No. 396,026
Int. Cl.³ B23F *9/12, 17/00*
U.S. Cl. 409—26 **7 Claims**



1. A method of face mill generation of a spiral bevel gear with an integral central structure that protrudes from the toothed face of the gear comprising:

forming a gear blank integrally with said central structure;

cutting one or more individual gear tooth surfaces of a single tooth valley on said blank by causing a cutting tool to rotate and thereby repeatedly engage said blank and remove material therefrom while causing said cutting tool to orbit about a machine axis and while rotating said blank so as to simulate a gear mesh with said cutting tool;

indexing said blank relative to said cutting tool; and

cutting one or more gear tooth surfaces of another tooth valley, said tool being positioned such that the cutter distance exceeds the outer cone distance of the gear thus generated whereby the path of said cutting tool does not intrude into the space occupied by said central structure.

4,518,288

MACHINABLE WAX FOR PROTOTYPE PATTERNS

Leticia D. Cilindro, Strongsville, Ohio, assignor to Loreto Turco, Avon Lake, Ohio

Filed Jun. 24, 1982, Ser. No. 391,554
Int. Cl.³ B23Q *3/02*
U.S. Cl. 409—219 **13 Claims**

9. An assembly for machinin prototype patterns with tolerances in the range of 0.001 inches or better, the assembly comprising:

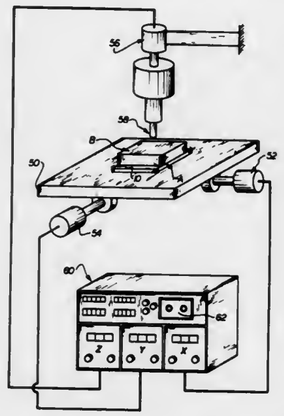
(a) holding means for stably holding a wax block during a machining operation;

(b) anchoring means for anchoring the wax block to the holding means; and,

(c) the wax block comprising a mixture of:

(i) 50–85 percent nonemulsifiable polyethylene wax having a density of 0.90–0.94 grams per cubic centimeter at 77° F.;

(ii) at least 5 percent hydrocarbon wax which lowers the melting point of the mixture and acts as a lubricant; and,



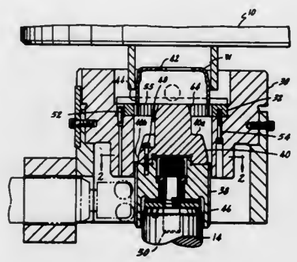
(iii) at least 5 percent synthetic resin which includes a vinyl acetate polymeric component to improve hydrocarbon wax compatibility.

4,518,289

POT BROACH

Leonard A. Gabriele, Warren, Mich., assignor to Lear Siegler, Inc., Del.

Continuation-in-part of Ser. No. 264,859, May 18, 1981, abandoned. This application Jan. 3, 1984, Ser. No. 568,212
Int. Cl.³ B23F *1/08*
U.S. Cl. 409—244 **3 Claims**



1. A pot broaching machine for cutting peripheral tooth-forming slots in the outer surface of the side wall of a cup-shaped thin-walled workpiece having a peripheral shell having a thin side wall provided with an inner and an outer cylindrical surfaces, which comprises

a stationary frame,

a vertically elongated pot broach on said frame having a multiplicity of circumferentially spaced parallel rows of longitudinally stepped cutting teeth adapted to cut slots in the outer cylindrical surface of the side wall of the workpiece, the root surfaces between at least some of the circumferentially adjacent rows of cutting teeth being guide surfaces parallel to the axis of said broach,

an internally toothed guide ring on said frame spaced axially below said broach and having guide teeth in axial alignment with the cutting teeth in said broach,

a work support of generally circular cross-section comprising a support portion having an external cylindrical surface engageable with the inner surface of the thin cylindrical side wall of the workpiece shell to center and support the workpiece on said work support,

said work support also comprising a guide portion of generally circular cross-section having at its periphery a multiplicity of radially outwardly extending guide and support teeth in alignment with the spaces between adjacent rows of broach teeth and with the spaces between adjacent guide teeth in said guide ring, each guide and support tooth having a circumferential width slightly less than the circumferential spacing between adjacent rows of broach teeth and having a guide surface at its crest located at a radial distance from the axis of said work support to engage a corresponding one of the elongated guide surfaces of said broach,

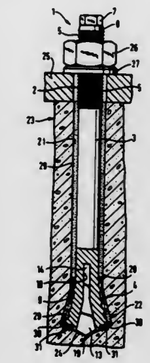
and means for moving the work support vertically to cause the upper ends of its guide and support teeth to pass through the tooth spaces of said locating ring into engagement with the end surface of the cylindrical shell of a workpiece located initially on the guide teeth of said locating ring and to push the workpiece through said broach.

4,518,290

ANCHORING BOLT

Albert Frichmann, Teningen; Danilo Sternisa, Emmendingen; Kurt Mermi, Teningen, and Herbert Kistner, Freiburg-Betzenhausen, all of Fed. Rep. of Germany, assignors to Upat GmbH & Co., Emmendingen, Fed. Rep. of Germany

PCT No. PCT/DE82/00127, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO82/04461, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 12, 1982, Ser. No. 474,594
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124244; Oct. 2, 1981, 3139174
Int. Cl.³ F16B *13/08*
U.S. Cl. 411—30 **16 Claims**



1. Anchoring bolt having a smooth shaft portion (3) interposed between and integral with a connection portion (2) and an insertion portion (4) for insertion, by drilling, into a cylindrical bore (21) and for conically undercutting the walls of said bore after insertion, said insertion portion extending to an end of the bolt and having, in accordance with the invention:

at least two diametrically opposite inserts (30) set in radially running bores (13,32) of said insertion portion of said bolt near said end of said bolt and of said insertion portion, said inserts protruding beyond the periphery of said insertion portion of said bolt;

a diametrical slot (10) extending axially into said insertion portion of said bolt from said end thereof at the end of said bolt, and

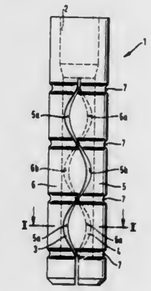
an axially displaceable elongated spreading wedge (13) having a tapered-down end inserted in said slot of said insertion portion of said bolt and having a width that does not exceed the outer diameter of said insertion portion of said bolt.

4,518,291

PLASTICS MATERIAL EXPANSION DOWEL WITH WAVE-FORM SLOTS

Gusztav Lang, Munich; Armin Hoffmann, Germering, and Heinz Bisping, Munich, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Feb. 22, 1984, Ser. No. 582,460
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308755
Int. Cl.³ F16B *7/00*
U.S. Cl. 411—60 **12 Claims**



1. Plastics material expansion dowel comprising an axially extending dowel body with a generally cylindrically shaped outside surface, said body being arranged to be inserted into a receiving hole and having a leading end and a trailing end with the leading end inserted first into the receiving hole, said dowel body having a central hole extending in the axial direction thereof from the trailing end and arranged to receive a spreading screw inserted into the trailing end to be threaded into the central hole for expanding said dowel body into engagement with the surface of the receiving hole, said dowel body having a wave-form slot therein extending in the axial direction thereof on each of two opposite sides of the central hole with said slots extending for at least a part of the axial length of said dowel body, wherein the improvement comprises that said dowel body over the axial length of said slots is divided into said dowel body halves by said slots and said central hole, and said wave-form slots in the screw-in direction of the spreading screw have alternating wave crests and wave troughs with the number of wave crests exceeding the wave troughs by one, said slots having transition regions located between adjacent wave crests and wave troughs, the outside surface of said dowel body only in the transition region of the slots from the wave crests to the wave troughs is profiled by recesses extending in the circumferential direction of said dowel body in a plane disposed perpendicularly to the axis of the dowel body.

4,518,292

METHOD AND APPARATUS FOR COMBINING RESIN BONDING AND MECHANICAL ANCHORING OF A BOLT IN A ROCK FORMATION

Frank Calandra, Jr., Johnstown, Pa., assignor to Jennmar Corporation, Pittsburgh, Pa.

Division of Ser. No. 209,134, Nov. 21, 1980, Pat. No. 4,419,805. This application Jul. 5, 1983, Ser. No. 497,113
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ E21D *20/02;* **F16B** *13/00;* **B23P** *25/00*
U.S. Cl. 411—82 **8 Claims**

1. A bolt assembly for securing a bolt in a bore hole having a bonding material therein comprising,

bonding material adapted to be positioned in an unmixed condition in a bore hole,

a bolt having a threaded end portion,

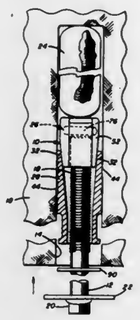
a camming plug having an internally threaded bore and an outer surface, said camming plug threadedly engaged to the threads adjacent the end of said bolt threaded end

portion, said camming plug positioned to move axially on said bolt upon rotation of said bolt in a preselected direction,

an expandable shell having a plurality of longitudinally extending fingers,

said fingers each having an inner surface and an outer surface, a portion of said inner surface abutting a portion of said camming plug outer surface and a portion of said finger outer surface adapted to engage the wall of said bore hole,

said expandable shell fingers arranged to expand outwardly to engage said outer surface of said fingers to the wall of



said bore hole by longitudinal movement of said camming plug relative to said bolt threaded end portion and said expandable shell,

means for mixing at least a portion of said bonding material in said bore hole upon rotation of said bolt in said preselected direction in said bore hole while maintaining said expansion fingers in an unexpanded condition, and

means for moving said camming plug axially on said bolt threaded end portion and relative to said expandable shell fingers upon rotation of said bolt in said same preselected direction to expand said fingers and anchor said bolt in said bore hole.

4,518,293

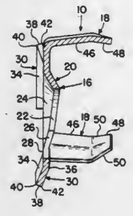
TUBE CONNECTOR

George C. Pleickhardt, Des Plaines, and E. Grant Swick, Bartlett, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 27, 1982, Ser. No. 412,345

Int. Cl.³ F16B *37/02, 37/04*

U.S. Cl. 411—107 **9 Claims**



1. A tube connector constructed from an integral sheet metal stamping comprising a body and a plurality of legs, said body having a centrally disposed securing portion for receipt of a threaded fastener and being of a substantially dished shape, said dish-shaped body having a plurality of spaced arcuate segments, each of said arcuate segments having a sharp peripheral edge for aggressively engaging the interior wall of a tube, said plurality of legs being formed in alternate arrangement with said arcuate segments and spaced therefrom by a marginal recess, each of said plurality of legs extending from said body adjacent said arcuate segments and bent at a substantially right angle in a direction opposite to the direction of said arcuate segments, the elongated portion of each of said legs being substantially longer than the width of said dish-shaped body and having sharp longitudinal edges for aggressively engaging the interior wall of a tube.

4,518,294

ROTARY FASTENER

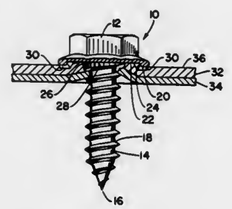
Gerald D. Barth, So. Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 18, 1982, Ser. No. 359,450

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.³ F16B *39/28*

U.S. Cl. 411—188 **7 Claims**



1. A rotary fastener for use in attaching a first panel to a second panel, said fastener comprising a head having an underside and a shank, said shank having at least one helical thread thereon and at least one helical ramp extending along said shank from said underside, said ramp having a generally axially oriented surface which varies in axial length from one end of said ramp to another, said ramp having a generally radially oriented surface of generally increasing radial dimension from one end of said ramp to another and said ramp radially extending surface having a minimum radial extent at a point where said ramp axially oriented surface is at a maximum length, said underside having a generally annular recess defined by inner and outer boundaries, said inner boundary defined by said ramp, said outer boundary defined by a sloping surface which intersects a rim at peripheral portions of said underside, said underside including a plurality of nibs, said nibs traversing said outer boundary.

4,518,295

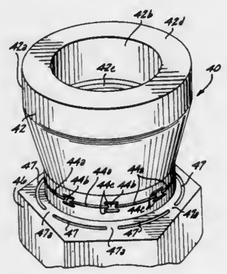
MULTI-PART FASTENING NUT, INCLUDING JAM NUT

Josip Matuschek, Newport Beach, Calif., assignor to Textron Inc., Santa Ana, Calif.

Filed Jun. 20, 1983, Ser. No. 506,050

Int. Cl.³ F16B *39/28*

U.S. Cl. 411—291 **12 Claims**



1. A nut for use with a bolt in making connection with one or more workpieces, comprising in combination,

a generally cylindrical sleeve formed with internal fastening threads,

a grip member formed with means to be gripped by a tool,

means formed with internal fastening threads and interconnecting said sleeve and said grip means whereby torque is transmitted from said tool to said sleeve through said grip member,

and control means comprising laser cuts in said interconnecting means along a plane perpendicular to the axis of said sleeve and including relief on opposite sides of said plane in close proximity to each of the shear sections between said laser cuts to enable the shear section adjacent each shear surface following shearing to be recessed into said sleeve and inner connecting means respectively, whereby oppositely disposed side surfaces of said laser cut surfaces are urged into abutting engagement by said torque.

4,518,296

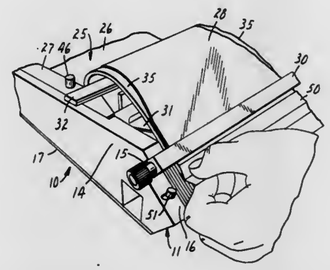
APPARATUS FOR BINDING SHEETS TOGETHER

Walter C. Pearson, St. Paul, and Dorman N. Thompson, Jr., St. Croix Beach, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 19, 1983, Ser. No. 533,507

Int. Cl.³ B42C *9/00*

U.S. Cl. 412—37 **7 Claims**



1. A binding machine for binding a stack of sheets together comprising

means defining a slot for receiving a plurality of sheets so they may be aligned edgewise,

clamping means for clamping said sheets adjacent one edge in position in said slot,

means for bringing and holding said aligned edges of said sheets over the opposite edges to a position for binding against a binding platen and for offsetting said sheets edgewise, and

tape support means for positioning a length of pressure-sensitive tape along said platen and the offset edges of said sheets thereon for binding said sheets together.

4,518,297

MOLDED PLASTIC SOCKET WITH EASY-ON HARD-OFF STUD ENGAGER

Willibald Kraus, Kaiserslautern, Fed. Rep. of Germany, assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 28, 1982, Ser. No. 437,226

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143775

Int. Cl.³ F16B *29/00;* **F16L** *3/08*

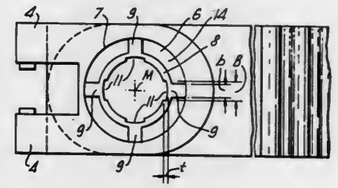
U.S. Cl. 411—437 **11 Claims**

1. A plastic fastening device for attachment on a threaded bolt comprising:

a mounting section, a wall on the mounting section, and a cylindrical aperture defined by said wall;

a thin-walled cylindrical sleeve having an inner surface and an outer surface, said sleeve axially disposed within and radially spaced from said aperture;

a plurality of radially extending ribs connecting said sleeve to said wall,



a plurality of grooves formed in said inner surface and extending in the direction of the longitudinal axis of said sleeve said grooves generally overlying said ribs and extending parallel thereto.

4,518,298

HEAD FOR INDUSTRIAL ROBOT

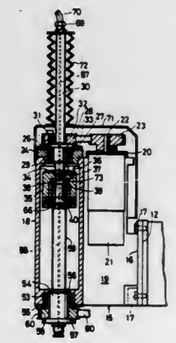
Kazuyoshi Yasukawa, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Mar. 22, 1983, Ser. No. 477,803

Claims priority, application Japan, Mar. 25, 1982, 57-42159[U]

Int. Cl.³ B25J *15/00*

U.S. Cl. 414—4 **16 Claims**



1. A head for an industrial robot comprising,

a head body (**15**) mounted on an end of an arm of said industrial robot,

a motor (**21**) for generating a rotational torque,

a nut member (**28**) rotatably supported in said head body,

a guide member (**54**) rotatably supported by said head body,

rotational coupling means for drivingly coupling said motor and said nut member to each other,

a screw rod (**30**) passing through and threadedly engaging with said nut member,

a shaft (**59**) having a non-circular shape in cross section, said shaft passing through and engaging with said guide member to rotate with said guide member but not move with said guide member longitudinally on an axis of said shaft,

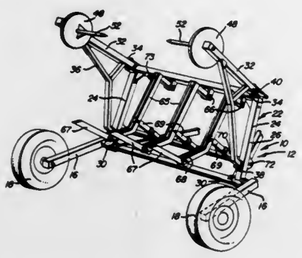
means for rotatably sealably coupling a lower end of said screw rod and an upper end of said shaft to each other,

means for preventing rotation of said screw rod,

means for rotating said guide member (**54**), and

passages (**67**, **68**) formed in said screw rod and said shaft.

4,518,299
ROUND BALE CARRIER AND UNROLLER
Clarence B. Vanderlei, R.R. 1, Springfield, S. Dak. 57062
Filed Feb. 24, 1983, Ser. No. 469,398
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.6 **11 Claims**



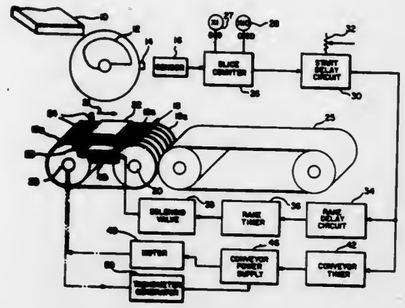
1. A load carrier including a wheeled trailer main frame defining front and rear end portions and provided with hitch structure at said front end portion, the rear end portion of said main frame including opposite side support wheels, an upstanding lift frame pivotally supported at its lower end from the rear end portion of said main frame for swinging about a horizontal transverse axis between a first rearwardly and upwardly inclined position and a second position with said upper portion swung forwardly, force means operatively connected between said lift and main frames for selectively swinging said lift frame from said first position to said second position, said load gripping means including a pair of opposite side arms pivotally supported from upper opposite side portions of said lift frame and projecting rearwardly therefrom, actuator means carried by said lift frame and operatively connected to said arms for swinging the free ends of said arms toward and away from each other for gripping and releasing a load therebetween an upstanding tine frame including a plurality of elongated upstanding arms each including a rearwardly projecting tine supported from its lower end, the upper ends of said arms being pivotally supported from the upper portion of said lift frame for limited angular displacement about a horizontal transverse axis with the lower ends of said arms being swingable toward and away from the axis of rotation of said lift frame relative to said main frame, and means operative to selectively angularly displace said tine frame relative to said lift frame.

4,518,300
TAKE-AWAY TECHNIQUE FOR SLICED BULK PRODUCTS
David P. Kent, West Chester, Pa., assignor to Control Process, Inc., West Chester, Pa.
Filed Nov. 12, 1982, Ser. No. 441,379
Int. Cl.³ B65G *47/88*
U.S. Cl. 414—46 **14 Claims**

10. A take-away system for stacks of sliced bulk product comprising:

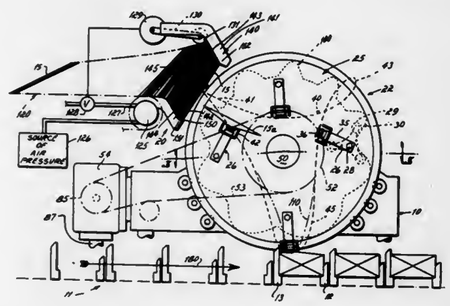
conveyor means forming a support for receiving slices of said bulk product to form a stack of said slices beneath a slicing means, means for intermittently moving said conveyor means in a predetermined direction to displace a stack in said direction;

pushing means having finger means for engaging the trailing edge of the stack and pushing it toward a discharge end of said conveyor, means associated with said pushing means for causing reciprocating movement of said finger means in relationship to the intermittent movement of said conveyor, and means for controlling the movement of said conveyor means so as to be faster than the movement of said finger means, whereby said finger means overtakes the stack which is being displaced on said conveyor and engages the trailing edge of said stack only as a result of slippage of the stack on the conveyor surface; and



means for actuating movement of said conveyor means and said pushing means after a predetermined slice count has been obtained.

4,518,301
ORBITAL FEEDER
Joseph D. Greenwell, Florence, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.
Filed Jul. 6, 1982, Ser. No. 395,288
Int. Cl.³ B65G *59/10*
U.S. Cl. 414—129 **7 Claims**



1. A magazine for carton feeding apparatus comprising,

a substantially horizontal conveyor for conveying cartons resting on their lower edges, said cartons leaning forward toward the discharge end of the magazine, a choke at the discharge end of the conveyor, said choke comprising,

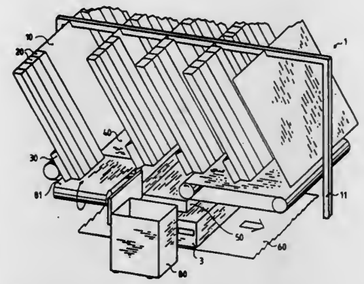
a downwardly-inclined lower guide **(142)**,

an upper guide **(141)** above said lower guide and positioned forward of said lower guide,

said lower and upper guides having parallel surfaces **(144)**, **(143)** spaced apart a distance less than the dimension of the cartons **(15)** between their folded edges, so as to cause the cartons to lie between the guides at an angle to a line perpendicular to the surfaces **(143)**, **(144)**, with the upper edges of said cartons leading against said upper surface **(143)**,

whereby as the leading cartons are advanced between said guides, said cartons, leading forward and urged by gravity to fall through said guides, have their upper edges restrained by said upper guide, thereby removing substantially all of the pressure of the upstream cartons between the guides from the leading carton at the discharge end of the guide.

4,518,302
SYSTEM AND PROCESS FOR AUTOMATIC STACKING, STORAGE AND WITHDRAWAL OF PACKAGED MERCHANDISE IN LARGE WAREHOUSES
Gunter Knapp, Hart-St. Peter, Fed. Rep. of Germany, assignor to Ing. G. Knapp Ges.mgH & Co. KG, Fed. Rep. of Germany
Filed Apr. 6, 1983, Ser. No. 482,528
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1982, 3213119
Int. Cl.³ B65G *1/02*
U.S. Cl. 414—273 **17 Claims**



1. A computer-controlled handling process for automatically stacking, storing and removing various types of packaged merchandise items from large warehouse installations, wherein the merchandise items are withdrawn in sequence from respective magazines associated with several shelves and loaded into passing transport containers, comprising the steps of: in a warehouse installation including a plurality of shelves which are subdivided into successively arranged blocks, the shelves of each block being associated with the respective product magazines, loading the various types of merchandise items into the product magazines while simultaneously removing the merchandise items from the shelves of a certain block by ejecting the merchandise items from the magazines associated with that certain block by a remote-controlled ejection device when a transport container has arrived at a block preceding that certain block, collecting and then simultaneously loading the merchandise items into the transport container when the latter arrives at the certain block and causing the transport container to continue its movement immediately after having been loaded, and wherein the speed of the transport container is adjusted to substantially correspond to the sum of the ejection, collection and loading times so that removal of the merchandise items takes place in a minimal time.

4,518,303
MOVABLE FLOOR SELF-UNLOADING TRAILER
William H. Moser, Paris, Tex., assignor to Jerel J. Barham, Paris and Lynaveta Clegg, Roanoke, both of, Tex., part interest to each
Filed Apr. 6, 1983, Ser. No. 482,423
Int. Cl.³ B60P *1/38*
U.S. Cl. 414—528 **3 Claims**

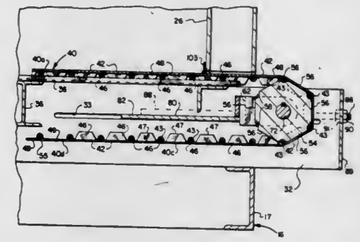
1. A self unloading vehicle bed comprising:

a frame adapted to be supported by an undercarriage;

a movable load supporting floor supported on said frame, said floor including a load support portion comprising a plurality of floor plate members extending the full transverse length of said load support portion, said floor plate members each including bearing means engageable with cooperating bearing means on said frame and hinge bearing portions for receiving elongated hinge pins for interconnecting said floor plate members with each other seriatim;

a drive shaft disposed on said frame at one end thereof and an idler shaft disposed on said frame at the opposite end thereof, said drive shaft and said idler shaft each supporting spaced apart sprockets thereon, said sprockets each having a polygonal cross section and circumferentially spaced apart recesses formed on the periphery of said sprockets for driving engagement with said hinge bearing portions of said floor plate members, respectively;

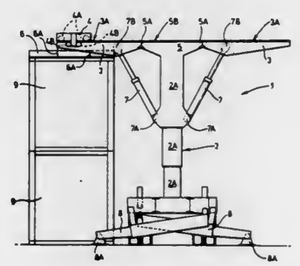
said load support portion of said floor extending at least between both of said sprockets in the normal full load bearing position of said floor to form an upper run of said floor, and said floor including a plurality of connecting plate members extending between opposite ends of said load support portion and being interconnected to said load support portion and to each other to form a lower run of said floor, said connecting plate members being of a configuration corresponding to said floor plate members and



of a transverse length substantially less than said floor plate members, said connecting plate members being interconnected by complementary hinge bearing portions drivably engageable with at least one of said drive and idler sprockets, respectively; and

means for rotating said drive shaft to traverse said upper run comprising said load support portion of said floor and said connecting plate members comprising said lower run in opposite directions over said drive and idler sprockets, respectively, for traversing said load support portion along said upper run during loading and unloading operations and to provide for access to said bearing means on said frame between said sprockets along said upper run, and to provide access to said bearing means on said floor plate members.

4,518,304
LOAD HANDLING APPARATUS
Michael I. Blatchford, Oakhill, Nr. Shepton Mallet, England, assignor to Ralph Blatchford & Company Limited, Avon, England
Filed Feb. 25, 1983, Ser. No. 469,713
Claims priority, application United Kingdom, Mar. 4, 1982, 8206338
Int. Cl.³ B60P *1/54*
U.S. Cl. 414—542 **6 Claims**



1. Load handling apparatus, including:

a road vehicle and load moving means on the vehicle for moving a load laterally of the vehicle, the load moving

means being not greater in width than the width of the vehicle,

wherein the load moving means comprises:

two spaced load moving structures each of which has a vertically extendible pedestal;

each said pedestal having an upper vertically movable member;

each said load moving structure having at least one arm which in an operative position extends substantially horizontally outwardly from the respective said pedestal;

said at least one arm supporting a device for conveying a load in a direction laterally of the vehicle;

each said arm being turnable downwardly in a substantially vertical plane so that in said inoperative position thereof, such arm is disposed alongside a respective said pedestal;

each said upper vertically movable member having a horizontally extending top member;

each said arm being so pivotally mounted at an end of a corresponding said top member, that, in an operative position, each top member and each respective outwardly extending arm constitute a trackway; and

a respective carriage running on each said trackway.

4,518,305

VEHICLE-MOUNTED APPARATUS FOR SUPPORTING BALLAST WEIGHTS AND FOR ELEVATING THE WEIGHTS

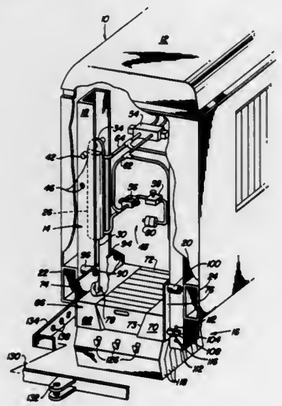
Heinz Stubrmann, Schwetzingen, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Dec. 6, 1982, Ser. No. 446,934

Claims priority, application European Pat. Off., Dec. 29, 1981, 81110815.8

Int. Cl.³ B66F *9/00*

U.S. Cl. 414—719 **10 Claims**



1. A tractor-mounted apparatus for supporting ballast weights thereon and for vertically raising and lowering said weights relative to the ground, said apparatus comprising:

(a) a pair of U-shaped channels fastened to frame members of said tractor in an upright position and which are aligned opposite to one another for receiving said ballast weights therebetween;

(b) a support frame capable of holding said ballast weights, said support frame having two pairs of spaced apart rollers which contact outer side surfaces of said U-shaped channels and which guide said support frame while moving vertically on said channels;

(c) a pair of hydraulic cylinders each secured at one end to one of said U-shaped channels and each having an outwardly extending piston rod detachably coupled at an outer end to opposite sides of said support frame;

(d) locking means for affixing said support frame to said U-shaped channels in at least one vertical position and for enabling detachment of said hydraulic cylinders from said support frame so that said outwardly extending piston rods can be attached to an implement; and

(e) control means for moving said piston rods into and out of said hydraulic cylinders thereby raising and lowering said ballast weights or attached implement with respect to the ground in a substantially vertical fashion.

8. A tractor-mounted apparatus capable of supporting ballast weights on said tractor and for alternatively raising and lowering either said ballast weights or an attached implement relative to the ground, said apparatus comprising:

(a) a pair of U-shaped channels fastened to frame members of said tractor in an upright position and which are aligned opposite to one another for receiving said ballast weights therebetween;

(b) a support frame capable of holding said ballast weights, said support frame having two pairs of spaced apart rollers which contact outer side surfaces of said U-shaped channels and which guide said support frame while moving vertically on said channels;

(c) a pair of hydraulic cylinders each secured at one end to one of said U-shaped channels and each having an outwardly extending piston rod detachably coupled at an outer end to opposite sides of said support frame; and

(d) control means for moving said piston rods into and out of said hydraulic cylinders thereby raising and lowering said ballast weights or attached implement with respect to the ground in a substantially vertical fashion, said control means including a four-way four position valve connected between a pressure source and both hydraulic cylinders, a first fluid line connecting rod chambers of said hydraulic cylinders to said four-way valve, a second fluid line connecting head chambers of said hydraulic cylinders to said four-way valve, a two-way two position valve connected to said first line, a throttle valve located downstream of said two-way valve and an accumulator located downstream of said throttle valve, said control means functioning to lower said weights relative to the ground when both said four-way and two-way valves are in a first position, to provide a hydraulic damping effect to said tractor when both said four-way and two-way valves are in a second position, to provide a hydraulic lock on said weights when said four-way valve is in a third position and said two-way valve is in a first position, and to raise said weights relative to the ground when said four-way valve is in a fourth position and said two-way valve is in a first position.

4,518,306

DEVICE IN A BUCKET-PROVIDED LOADING MACHINE PARTICULARLY A SO-CALLED WHEEL LOADER

Jan-Erik Rova, Lärkvägen 20, S-981 37 Kiruna, Sweden

PCT No. PCT/SE82/00394, § 371 Date Jul. 22, 1983, § 102(e) Date Jul. 22, 1983, PCT Pub. No. WO83/01973, PCT Pub. Date Jun. 9, 1983

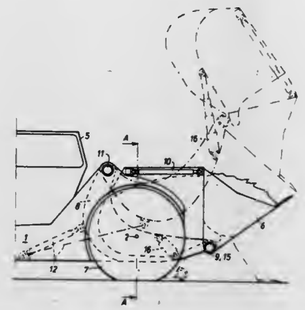
PCT Filed Nov. 23, 1982, Ser. No. 527,647

Claims priority, application Sweden, Nov. 24, 1981, 8106990

Int. Cl.³ E02F *3/64*

U.S. Cl. 414—726 **4 Claims**

1. In a bucket-equipped loading machine, particularly a so-called wheel loader, which has a loading bucket at one end of the machine, the bucket being supported for raising and lowering movements by a pair of lift arms which are journalled in the machine, the bucket furthermore being pivotally connected with the free ends of the arms and lockable in position relative thereto, the bucket at the side thereof facing the machine being at least partly open and connected with a rear bucket portion which is located between the lift arms and which extends in between the adjacent wheels of the machine, the improvement comprising said rear bucket portion being separately pivotably and lockably connected with said lift arms on an axis parallel to and coinciding with the pivot axis of the



load bucket and said lift arms being curved downwardly and forwardly and adapted to form a support during loading and transport for said rear bucket portion, said rear bucket portion resting on and having a curved shape corresponding to said support formed by said lift arms.

4,518,307

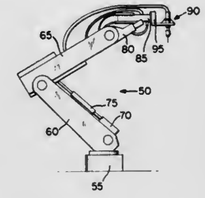
COMPLIANT ROBOT ARM ADAPTER ASSEMBLY

Joseph T. Bloch, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1982, Ser. No. 426,357

Int. Cl.³ B66C *23/00*

U.S. Cl. 414—729 **7 Claims**



1. A compliant adapter assembly useful with an articulatable robot arm requiring an accessory, said adapter assembly comprising:

means for mounting said adapter assembly to said arm, said mounting means having a plate provided with an opening;

a first ring positioned within said opening,

means for pivotably connecting said first ring to said mounting means while allowing translation of said first ring with respect to said mounting means,

a first spring means positioned between said first ring and said mounting means,

a second ring disposed within said first ring,

means for pivotably connecting said second ring to said first ring while allowing translation of said second ring with respect to said first ring,

a second spring means positioned between said first ring and said second ring,

a motor carried by said second ring, said motor having an output shaft;

means for biasing said motor towards a position which is substantially perpendicular to said plate, said biasing means comprising a plurality of orthogonally disposed springs carried between said motor and said plate, and

holding means connected to said output shaft for attaching an accessory to said adapter assembly, said holding means being capable of translation along the longitudinal axis of said output shaft.

4,518,308

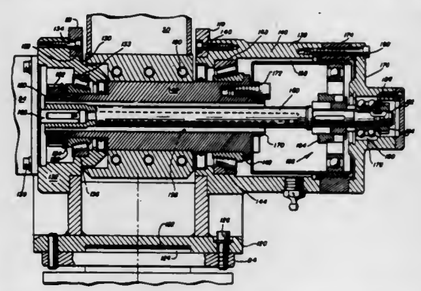
MANIPULATOR APPARATUS

Bohdan Grzybowski, Highland Park, and Mark T. Horbal, Warrenville, both of Ill., assignors to Acrobe Technology Inc., St. Petersburg, Fla.

Filed Mar. 1, 1982, Ser. No. 354,780

Int. Cl.³ B66C *23/00*

U.S. Cl. 414—735 **10 Claims**



1. Manipulator apparatus comprising a plurality of elongated members serially interconnected by motion joints and defining a manipulator arm terminating in a terminal motion actuator having mounting means adapted to receive an article handling member, a motion actuator associated with each motion joint, each of said motion actuators having a power unit responsive to control pulses and a motion reducing unit for reducing the motion output of said power unit, the power unit and the motion reducing unit of each motion actuator being spaced from each other and mounted on opposite sides of the respective motion joint, means for demountably supporting said power and motion reducing units on said respective motion joint, and a movement coupling means for coupling together the respective power and motion reducing units, each of said power units comprising a DC stepping motor and each of said motion reducing units comprising a harmonic drive device, said terminal motion actuator having a terminal power unit responsive to control pulse for actuating said mounting means.

4,518,309

HIGH SPEED PIPE HANDLING APPARATUS

Joe R. Brown, P.O. Box 19310, 5649 Tupper Lake, Houston, Tex. 77056

Continuation-in-part of Ser. No. 258,923, Apr. 30, 1981, Pat. No. 4,444,536, which is a continuation-in-part of Ser. No. 35,933, May 4, 1979, abandoned. This application Sep. 16, 1981, Ser. No. 302,708

Int. Cl.³ B66F *11/02*

U.S. Cl. 414—745 **25 Claims**

1. Apparatus for manipulating pipe members comprising:

a. gripping means selectively movable generally transversely to such pipe member between a retracted configuration, in which said gripping means may grippingly engage such pipe member, and an extended configuration in which said gripping means is free from gripping engagement with said pipe member;

b. propulsion means selectively operable in response to fluid pressure for so selectively moving said gripping means between said retracted and extended configurations, and including cylinder means for receiving such fluid pressure and piston means, circumscribed by said cylinder means and connected to said gripping means and movable therewith in response to said fluid pressure to thereby so selectively move said gripping means;

c. said piston means including piston head means cooperating with said cylinder means for providing first fluid

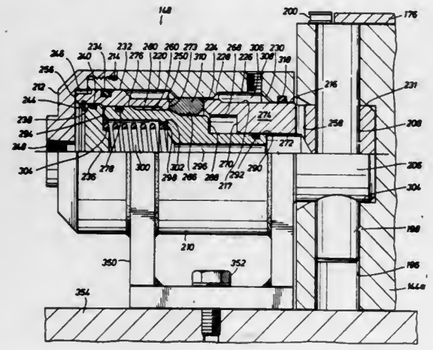
pressure chamber means, and further including internal chamber means;

d. latch means carried by said piston means, and radially movable relative thereto between an extended configuration, in which said latch means may reside at least in part in profile means within said cylinder means to releasably lock said piston means relative to said cylinder means to limit axial movement therebetween whereby said gripping means may be locked in said retracted configuration, and a retracted configuration in which said latch means is not within said profile means;

e. control means movable longitudinally within said internal chamber means between a first position, in which said control means maintains said latch means in said extended configuration of said latch means, and a second position in which said control means permits said latch means to be in said retracted configuration of said latch means;

f. biasing means for urging said control means toward said first position; and

g. second fluid pressure chamber means defined, at least in



part, by said cylinder means, said piston means and said control means;

h. wherein application of fluid pressure to said first fluid pressure chamber means may propel said piston means to move said gripping means to said retracted configuration of said gripping means whereby said biasing means may move said control means to said first position to maintain said latch means in said extended configuration of said latch means within said profile means to thereby automatically, releasably lock said gripping means in said retracted configuration of said gripping means, and wherein application of fluid pressure to said second fluid pressure chamber means may propel said control means to said second position, permitting said latch means to move to said retracted configuration of said latch means to release said gripping means from being locked in said retracted configuration of said gripping means and whereupon said application of fluid pressure to said second fluid pressure chamber means may propel said piston means to move said gripping means to said extended configuration of said gripping means.

4,518,310

APPARATUS FOR PREVENTING OVERSPEED OF A TURBINE DRIVE MEANS

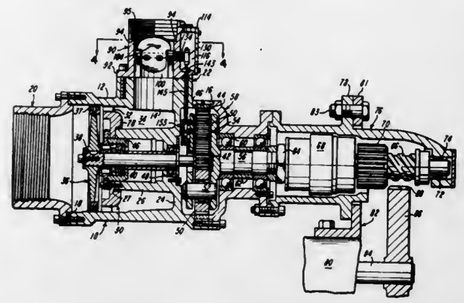
Terry L. Coons, Dayton, Ohio, assignor to Tech Development Inc., Dayton, Ohio

Filed Sep. 3, 1982, Ser. No. 414,625

Int. Cl.³ F01B *17/06*

U.S. Cl. 415—36 **7 Claims**

1. A turbine assembly including a housing, a rotor within said housing having a drive system in connection therewith and forming a part thereof, means defining a flow path for the delivery of gaseous fluid under pressure and the application thereof to power said rotor characterized by valve means, control means in connection with a component part of said drive system, said control means including an element having an orientation which is substantially radial to said component part, means constructed and arranged to normally hold said element in a relatively retracted position with reference to said part and to provide for its substantially radial movement outwardly of said component part in a substantially instantaneous



response to the speed of rotation of said rotor exceeding a predetermined limit, to condition said valve means to move across and to obstruct at least a portion of said flow path sufficiently to diminish the application of said fluid to power said rotor and produce an immediate reduction of its speed of rotation and that of its drive system and correspondingly that of said component part thereof without interrupting the application of power to said rotor.

4,518,311

CENTRIFUGAL PUMP

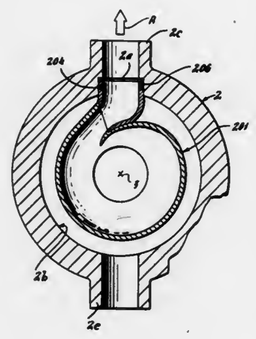
Robert Dernedde, Frankenthal; Hans-Joachim Franke, Grünstadt, and Peter Havekost, Bobenheim, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,294

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940058

Int. Cl.³ F04D *29/40*

U.S. Cl. 415—102 **28 Claims**



1. In a centrifugal pump, particularly in a high pressure pump for use in power plants or the like, the combination of a casing including an inner section having an internal passage for the flow of a fluid therethrough, and an outer section surrounding and being detachably connected to said inner section and having another passage for the flow of a fluid therethrough; rotor means in said casing; sealing means interposed between said sections and including an extension establishing fluid communication between said internal passage and said other passage, said extension being fixed to said inner section

and being radially freely movable relative to said outer section to thereby permit relatively uninhibited differential thermal expansion of said sections; and means for suspending said inner section in said outer section, said suspending means engaging said outer section radially outwardly of the axis of said rotor means, and said suspending means bein disposed outwardly of said rotor means as considered in the axial direction of the latter.

4,518,312

DUAL FOLD TAIL VANE ASSEMBLY FOR WIND ENERGY SYSTEMS

Marcellus L. Jacobs, and Paul R. Jacobs, both of Fort Myers, Fla., assignors to Jacobs Wind Electric, Plymouth, Minn.

Filed Mar. 7, 1983, Ser. No. 473,150

Int. Cl.³ F03D *7/04*

U.S. Cl. 416—13 **4 Claims**



1. An improvement in a means for protecting a wind energy plant against damage thereto caused in high winds, wherein the wind energy plant comprises:

a generator supported with the shaft projecting vertically upwards;

a hypoid gear drive means having a gear case, a substantially horizontal input shaft journaled in the gear case, an output shaft journaled in the gear case and whose axis is oriented vertically offset a predetermined distance from the input shaft axis, and a pair of hypoid gears, one of each carried by each shaft within the gear case in meshing engagement with each other for transferring power from the input to the output shaft, and said output shaft mounted concentrically on the generator shafts;

a propeller assembly fixed on the input shaft to transfer wind generated torque to the input shaft, said propeller assembly including a variable pitch speed control governor for increasing the pitch of the propellers of said propeller assembly in response to increased propeller assembly speed in a manner such that propeller assembly speed does not exceed a predetermined maximum;

a tail vane assembly having an axis running along its long dimension;

pivot means pivotally connecting said gear case to the tail vane assembly about a vertical axis, said tail vane assembly being held with its axis substantially parallel to the wind direction by wind passing through the propellers, and further including a first pivot control means connected between the gear case and the tail vane assembly for providing a first predetermined resistance against pivoting by the gear case in a first direction with respect to the tail vane assembly, said pivoting force in the first direction being generated by the windage force on the propeller assembly directed parallel to the axis of the tail vane assembly and offset with respect to the output shaft axis; wherein the improvement comprises

a second pivot control means connected between the gear case and the tail vane assembly for providing a second predetermined resistance against pivoting by the gear case opposite to the first direction with respect to the tail vane assembly, said second predetermined resistance being substantially greater than the first predetermined resistance, wherein the application during high winds of torsional drag to the output shaft of the gear drive sufficient to reduce the speed of the propeller assembly and thereby reduce feathering thereof increases wind generated propeller assembly torque on the gear drive input shaft sufficient to create reaction torque urging the gear case to pivot opposite the first direction relative to the tail vane assembly and exceed the windage-generated torque urging the gear case to pivot in the first direction relative to the tail vane assembly, and wherein said second pivot control means opposes the excess of said torque pivoting the gear case opposite to the first direction relative to the tail vane assembly.

4,518,313

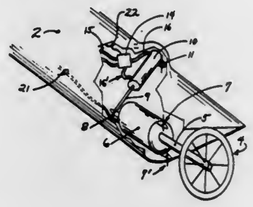
WIND BLADE VIBRATION ELIMINATOR FOR HELICOPTERS

Ronald N. Jensen, 208 Greenwell Dr., and John A. Walker, 1005 Todds La., both of Hampton, Va. 23666

Filed Feb. 25, 1982, Ser. No. 352,228

Int. Cl.³ F03D *7/02*; B64C *27/72*

U.S. Cl. 416—18 **10 Claims**



1. In combination with a helicopter airfoil, a vibration eliminator attached to said airfoil and consisting of a pivoted gyro positioned with the gyro rotating axis nominally parallel to the length of the airfoil and the gyro pivot axis generally parallel to the airfoil rotaing axis,

means to impose rotation to said gyro,

means to position said gyro relative to said airfoil, and

means to provide control signal to the means to position said gyro,

whereby the variable torque forces caused by the variable precession gyro can be transmitted to said airfoil and said means to position gyro varies said gyro axis relative to said airfoil thereby changing the rate of precession in response to said control signal, counteracting various bending forces on said airfoil caused by various velocities of said airfoil through the air.

4,518,314

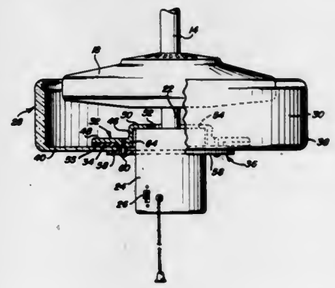
DECORATIVE FAN MOTOR COVER AND MOUNTING STRUCTURE THEREFOR

Charles R. Schultz, 6616 Central Ave. SE., Albuquerque, N. Mex. 87108

Filed Nov. 30, 1983, Ser. No. 556,592

Int. Cl.³ F04D *29/32, 29/64*

U.S. Cl. 416—93 R **5 Claims**



1. In combination win an existing ceiling fan including a

ceiling mounted depending first support portion, a fan motor housing mounted from said first support portion, a blade equipped motor rotor journalled from an upper portion of said motor housing, a second slender support portion depending below said motor housing and supporting a horizontally enlarged motor controlling switch housing therefrom, a decorative housing assembly for said motor housing, said decorative housing assembly including, outwardly projecting mounting flange means supported from an upper portion of said switch housing, said mounting flange means including a downwardly opening inverted cup-shaped housing body including a centrally apertured upper end wall and a lower end radially outwardly projecting flange, said body, including said upper end wall and mounting flange, having a radial slot formed therein of a width at least equal to the transverse dimension of said second support portion whereby the latter may be received through said slot, said body being removably laterally engaged with said second support portion and downwardly telescoped over the upper portion of said switch housing with upper end of said switch housing abutting the underside of said upper wall, a decorative cover including a bottom wall and upstanding periphal wall means projecting upwardly from and extending about the periphery of said bottom wall, said decorative cover being open at its top and said bottom wall including a central opening formed therethrough of a size to snugly receive said switch housing therethrough, said cover being upwardly displaced over the lower portion of said switch housing to a position with the open top of said cover at least partially upwardly telescoped over said fan motor housing from therebelow and with the inner periphery of said bottom wall at least closely opposing said mounting flange means, and retaining means releasably anchoring said bottom wall relative to said mounting flange means, said retaining means comprising a generally annular retaining flange assembly underlying the inner periphery of said bottom wall, and elongated shank-type fastener means peripherally spaced about and secured upwardly through said annular retaining flange assembly, passing upwardly through said central opening inwardly of the periphery thereof and anchored relative to said mounting flange means.

4,518,315

ARRANGEMENT FOR CONNECTING A CERAMIC ROTOR WHEEL, PARTICULARLY A TURBINE ROTOR WHEEL OF A TURBOMACHINE, SUCH AS A GAS TURBINE ENGINE, TO A METALLIC SHAFT

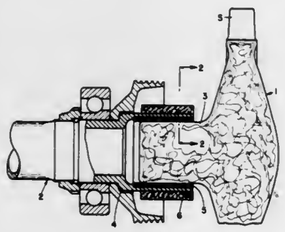
Wolfgang Krüger, Reichertshausen, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,061

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129220

Int. Cl.³ F01D *5/28, 5/30*

U.S. Cl. 416—241 B **10 Claims**



1. In an arrangement for interconnecting a ceramic rotor wheel, particularly a turbine rotor wheel of a turbomachine, such as a gas turbine engine, with a metallic shaft, said connection being formed between the shaft journal of the ceramic rotor wheel and a tubular end portion of the metallic machine shaft assembled therewith, the improvement comprising a ring constituted of a thermally insulating material being seated on the shaft journal of the ceramic rotor wheel on which there is positioned the tubular end portion of the metallic machine shaft so as to extend intermediate said tubular end portion of the machine shaft and the shaft journal of the rotor wheel; and at least one fiber ring having a coefficient of thermal expansion lower than that of the shaft journal of the ceramic rotor wheel to form a positive connection of the shaft end portion on the shaft journal, said fiber ring being press-fitted onto the end portion of the shaft and exerting a radial compressive force against the facing surfaces of said end portion of the shaft, said ring of thermally insulating material and said shaft journal to provide a rotationally symmetrical formfitted connection between the facing surfaces of said components.

4,518,316

PRESSURE SUSTAINING APPARATUS

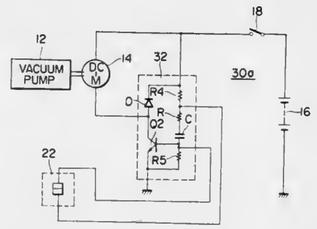
Mitsuyoshi Yokota, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,736

Claims priority, application Japan, Sep. 10, 1982, 57-138510[U]

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—12 **12 Claims**



1. A pressure sustaining apparatus comprising:
a pressure generating means for generating a pressure which is different from atmospheric pressure when energized;
a sensor for providing an output signal when the absolute value of the gauge pressure generated by said pressure generating means falls below a predetermined threshold value; and,
a control circuit for energizing said pressure generating means when the output signal from said sensor is provided, said control circuit including means for continuously energizing said pressure generating means for a predetermined length of time after the output signal from said sensor is terminated;
wherein said pressure generating means includes a DC motor connected to said control circuit;
wherein said sensor has contacts which are opened when the negative value of the gauge pressure generated by said pressure generating means exceeds said predetermined threshold value;
wherein said continuously energizing means comprise a timer circuit, consisting of a resistor and a capacitor, connected across said sensor;
further comprising a DC power source connected to said DC motor and a diode connected to the positive terminal of said DC power source;
and wherein said control circuit further includes a first transistor having its base connected to one end of said timer circuit, having its collector connected through a parallel combination of said diode and said DC motor to the positive terminal of said DC power source, and having its emitter connected to ground.

4,518,317

FLUID PUMPING SYSTEM

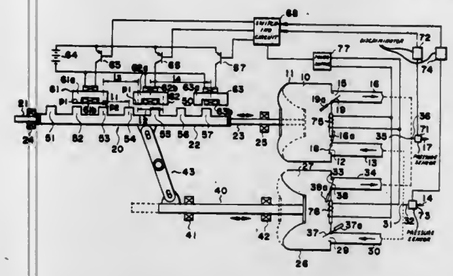
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 12, 1983, Ser. No. 523,039

Claims priority, application Japan, Aug. 12, 1982, 57-140354

Int. Cl.³ F04B *49/06, 43/04, 17/04;* **H02K** *41/02*

U.S. Cl. 417—45 **10 Claims**



1. A fluid pumping system comprising:
a fluid-reception chamber having an inlet conduit leading from a fluid source site and an output conduit leading to a fluid delivery site;
an elongate plunger means drivingly connected with said chamber and linearly reciprocable along its longitudinal axis so as to alternately expand and contract a volume of said chamber, thereby alternately drawing a fluid therein through said inlet conduit from said source site and pumping the fluid through said outlet conduit towards said delivery site; and
electromagnetically operated drive means for effecting said linear reciprocation of the plunger means at a rate of reciprocation in the range between 0.01 and 10 Hz, said electromagnetically operated drive means including:
an elongated member formed on said plunger means and comprised of magnetic material, said member being formed along one lateral surface with a plurality of equidistantly spaced magnetic teeth defining a row of such teeth,
a plurality of magnetic flux generators disposed in a row opposite said row of teeth, each of said magnetic generators comprising a U-shaped core member having a pair of pole pieces confronting said row of teeth, the spacing between the pole pieces along said row of magnetic flux generators differing from the spacing of said teeth, and respective coils on each of said cores excitable electrically to generate respective magnetic fields at said cores, and
a switching circuit connected to said coils for electrically exciting same in a predetermined sequence to displace said member in one and the opposite longitudinal direction.

4,518,318

PUMPING SETS

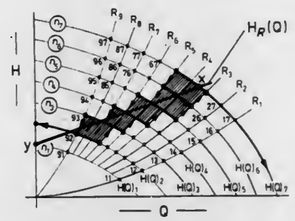
Niels D. Jensen; Kurt F. Nielsen, both of Bjerringbro, and Bent Larden, Rodkaersbro, all of Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Jul. 7, 1983, Ser. No. 511,794

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—53 **3 Claims**

1. A method of determining operational parameters in a pumping set the rotary speed of which is controlled, said pumping set comprising an electric motor and a rotary pump driven by the same, the speed of revolution n of which is regulated as a function of selected operating parameters of the set, in steps within the ambit of a characteristic range, the limits of which are determined on the one hand by two modulation graphs H(Q) for the maximum and minimum r.p.m. figures and on the other hand by the co-ordinates delivery head and delivery flow, a particular partial path being settable on each of the modulation graphs H(Q) applicable for the constant r.p.m. figures n_i in order to initiate an r.p.m. switching action upon reaching the electrical operating parameters of the set which are representative for the terminal values of the partial paths, by lowering the r.p.m. if the one terminal value is reached on one partial path with the greater delivery head and the lesser delivery flow Q, and increasing the same if the other terminal



value is reached on this partial path with the lesser delivery head H and the greater delivery flow Q, the invention which consists in that the r.p.m. switching actions are controlled in dependency on the situation of an imaginary control characteristic optionally preselected for the particular case of application of the set and plotted through partial paths of the modulation graphs and that the r.p.m. switching action is initated upon reaching the electrical parameters representative for the terminal values of the partial paths, by lowering the

---

4,518,319

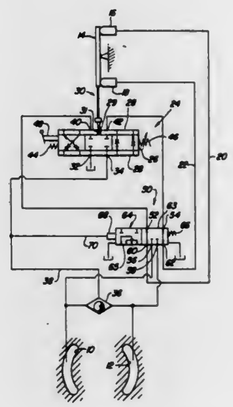
VARIABLE DISPLACEMENT PUMP SYSTEM

Curtis P. Ring, Calgary, Canada, assignor to Deere & Company, Moline, Ill.

Filed Feb. 3, 1984, Ser. No. 576,686

Int. Cl.³ F04B *1/26*

U.S. Cl. 417—217 **7 Claims**



1. A hydraulic system comprising:
a bi-directional variable displacement pump having high and low pressure workports and having first and second pressure-responsive displacement control pistons for controlling the displacement thereof;
an operator-controlled stroke control valve for generating fluid pressure stroke control signals at first and second outputs thereof;
an override valve connected in series between the stroke control valve outputs and the displacement control pistons and movable in response to pump workport pressure

from a first position wherein the first and second stroke control valve outlets are communicated to the first and second control pistons, respectively, to a second position wherein communication between the stroke control valve outputs and the first and second control pistons is blocked and wherein the pump workports are communicated to the first and second control pistons to reduce pump displacement; and

resilient means biased to urge the override valve to its first position.

4,518,320

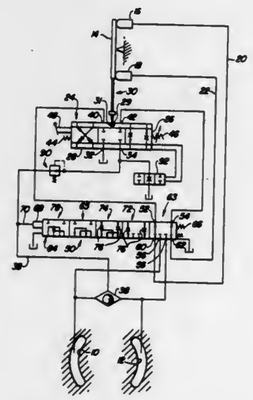
VARIABLE DISPLACEMENT PUMP SYSTEM

Bradley D. Goodell, Anoka, Minn., assignor to Deere & Company, Moline, Ill.

Filed Feb. 3, 1984, Ser. No. 576,688

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—217 **5 Claims**



1. A hydraulic system comprising:

a variable displacment pump having high and low pressure workports and pressure-responsive displacement control means for controlling the displacement thereof;

an operator-controlled stroke control valve having a pair of outlets communicated with the displacement control means, a low pressure inlet connected to a reservoir, a high pressure inlet and a valve member movable to control communication between the inlets and outlets, thereby generating fluid pressure stroke control signals at the outlets, the valve member having a neutral position wherein the outlets and inlets are blocked, the stroke control valve comprising a spring-centered, operator-actuatable spool movable within a follower sleeve, the follower sleeve sensing swashplate position via a position feedback linkage, the neutral bypass valve being formed out of an extension of the follower sleeve; and

a neutral bypass valve for communicating the high pressure inlet to the reservoir when the valve member of the stroke control valve is in its neutral position.

4,518,321

POWER REGULATION DEVICE FOR A HYDRAULIC PUMP

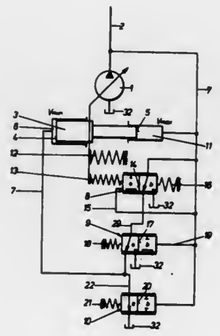
Reinhold Schniederjan, Neu-Ulm, Fed. Rep. of Germany, assignor to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,557

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232695

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—218 **6 Claims**



1. In a power regulation device for a hydraulic pump which generates a pump pressure for producing an adjustable discharge of a working fluid supplied to a load, said device comprising:

measuring spring means;

power valve means including control slider means connected to said measuring spring means;

adjustable hydraulic means including slidable piston means connected to said pump, the position of said slidable piston means controlling said discharge and said slidable piston means being biased in one direction by an adjustable fluid pressure and in an opposite direction by said measuring spring means, said measuring spring means also biasing said control slider means in a given direction, said power valve means controlling said adjustable fluid pressure acting upon said slidable piston means, and said control slider means being biased in said given direction by said pump pressure; and

pilot valve means for adjusting the regulating device towards a condition for zero pump discharge;

the improvement wherein:

said device further comprises power spring means biasing said control slider means in a direction opposite said given direction, thus opposing the bias exerted on said control slider means by said measuring spring means;

adjustment of the regulating device towards a condition for reduced pump discharge is effected by reducing said adjustable fluid pressure acting on said slidable piston means; and

said pilot valve means reduces said adjustable fluid pressure acting on said slidable piston means substantially to zero during a no-load condition of said pump.

4,518,322

ARRANGEMENT FOR REGULATING A SUPPLY FLOW AND FOR LIMITING A SUPPLY PRESSURE OF AN ADJUSTABLE PUMP

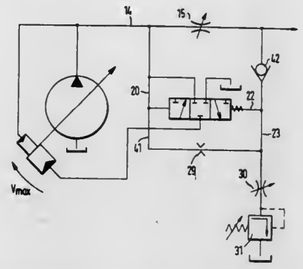
Gerhard Nonnenmacher, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,925

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906166

Int. Cl.³ F04B *1/26*

U.S. Cl. 417—222 **3 Claims**



1. An arrangement for regulating supply flow and limiting supply pressure in a supply conduit means of an adjustable pump, comprising an adjusting member coupled to said pump and having a first inlet and a second inlet for a pressure fluid; first throttling element in the supply conduit; a flow regulating valve having a common port, a first switching port connected to the supply conduit upstream of the first throttling means and a second switching port connected to a tank; a non-return valve connecting one end of the flow regulating valve to said supply conduit downstream of the first throttling means, said one end being biased by a spring to displace the valve into a first working position in which the first switching port is connected to the common port, and the other end of the flow regulating valve being connected to said supply conduit upstream of said first throttling element to displace the regulating valve into a second working position in which the common port is connected via the second switching port to the tank; the adjusting member cooperating with said pump and having one inlet connected to said supply conduit upstream of the first throttling element and a counteracting inlet connected to the common control port of the flow regulating valve; a spring biased preliminary control valve having an outlet connected to the tank, and an inlet; a second throttling element connected between said supply conduit upstream of the first throttling means and said one end of the flow regulating valve; and a third throttling element connected between said one end of the flow regulating valve and said inlet of said preliminary control valve.

4,518,323

HERMETIC REFRIGERATION COMPRESSOR

John P. Elson; Earl B. Muir, and Delmar R. Riffe, all of Sidney, Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jul. 25, 1983, Ser. No. 516,774

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—312 **25 Claims**

1. A motor compressor comprising:

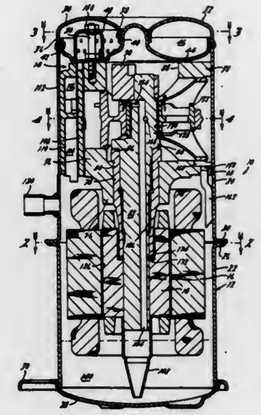
an outer shell having a lubricant sump containing a supply of lubricant in the bottom thereof;

motor means within said shell and

compressor means within said shell, said compressor means including a housing defining a substantially closed crankcase, a piston reciprocably disposed within a cylinder defined by said housing, main bearing means rotatably journalling a crankshaft in said housing, said crankshaft being driven by said motor means and drivingly connected to said piston means via piston bearing means, said crankshaft having a lower end thereof immersed in said lubricant;

axially extending oil passage means in said crankshaft for conducting lubricant from said sump to said main and piston bearing means;

vent passage means in said crankshaft opening into said crankcase and communicating with the end of said oil passage means remote from said sump; and



valved vent means extending between said substantially closed crankcase and the interior of said shell, said valved vent means being operative to vent said crankcase to said interior in response to pressure pulses within said crankcase from reciprocating movement in said piston to maintain said crankcase at a pressure substantially equal to or less than said interior, whereby the end of said oil passage remote from said sump is subjected to a pressure below that of said interior via said vent passage thereby aiding oil flow through said passage to said bearings.

4,518,324

SEALED TYPE ELECTRICALLY OPERATED COMPRESSOR

Takao Mizuno; Naoshi Uchikawa; Akira Murayama, and Takahiro Tamura, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,938

Claims priority, application Japan, Apr. 9, 1982, 57-58082

Int. Cl.³ F04B *35/04, 39/06;* F04C *18/04*

U.S. Cl. 417—366 **7 Claims**

1. An electrically operated compressor of a sealed type comprising:

a sealed container of a cylindrical shape;

a compressor section and an electric motor section contained in said sealed container;

said compressor section comprising a stationary scroll member including an end plate secured to an upper end portion of said sealed container, and a spiral wrap disposed in upright position on the end plate, an orbiting scroll member including an end plate and a wrap of essentially the same shape as the end plate and the wrap of the stationary scroll member, and a frame connected to the stationary scroll member in a manner to enclose the orbiting scroll member between the frame and the stationary scroll member;

said electric motor section being located below said compressor section and comprising a stator secured to a lower portion of said sealed container, and a rotor secured to a lower portion of a crankshaft journaled by bearing por-

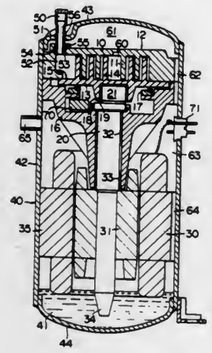
tions of said orbiting scroll member and of said frame of said compressor section;

a member for preventing said orbiting scroll member from rotation on its own axis during its orbiting movement, and being mounted between the frame and the orbiting scroll member;

an oil sump in a bottom portion of said sealed container of the cylindrical shape to allow oil feeding means formed in a lower portion of said crankshaft to be immersed in oil;

a discharge passage extending through the end plate of the stationary scroll member to discharge compressed fluid at a high pressure into an upper space in said sealed container;

a suction pipe defining a suction passage extending through



said upper space and having two end portions, one of said two end portions extending through the end plate of the stationary scroll member to open in a fluid suction space defined between the stationary scroll member and the orbiting scroll member in meshing engagement with each other and the other end portion axially extending through a wall of said sealed container of cylindrical shape to communicate with an outer equipment on the lower pressure side, said suction pipe being secured to one of the end plate and the wall of the container and connected in non-secured condition to the other of the end plate and the wall of the container; and

a gas sealing member disposed between said suction pipe and the other of the end plate of the stationary scroll member and the wall of the container.

4,518,325

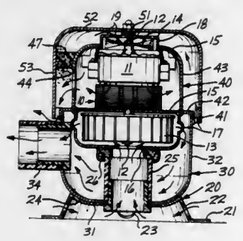
AERIFYING DEVICE FOR WHIRLPOOL BATH OR TUB

James E. Kingston, 1108 McRae Rd., Arlington, Wash. 98223

Filed Jul. 11, 1983, Ser. No. 512,863

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—368 **5 Claims**



1. For use with a by-pass vacuum motor having:

an axial drive shaft;

electrically-powered workings for rotating the drive shaft;

blower means driven by rotation of the drive shaft and carried at one end portion thereof for supplying a primary flow of air;

a blower casing separating the electrically-powered workings from the blower means, enclosing the blower means and having an air inlet for intake of air into such casing generally axially of the drive shaft at the blower means end of the drive shaft and air outlet means for discharging air from such casing generally radially of the drive shaft; and

fan means mounted outside the blower casing and driven by rotation of the drive shaft for supplying a secondary flow of air to cool the electrically-powered workings;

the improvement comprising a housing for mounting the by-pass vacuum motor with its axial drive shaft upright and its blower means at the bottom and adapting the by-pass vacuum motor for use as an aerifying device for baths or tubs, said housing comprising:

a bowl portion having an upright peripheral wall encircling the blower casing and extending downward a substantial distance below the blower casing, said bowl portion having an air inlet and an air outlet and forming a first plenum for air discharged from the blower casing; and

an air inlet conduit having one end portion sealed around the air inlet of the blower casing and the other end portion sealed around the air inlet of said housing bowl portion, said air inlet conduit extending through the first plenum formed by said bowl portion for conveying air from outside said bowl portion to the blower casing air inlet.

4,518,326

HERMETIC MOTOR COMPRESSOR FOR REFRIGERATION SYSTEMS AND THE LIKE

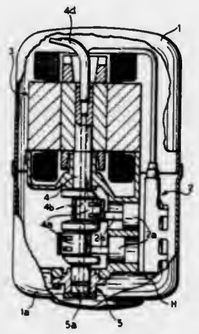
Federigo Peruzzi, and Marek Zgliczynski, both of Turin, Italy, assignors to Aspera A.p.A., Italy

Filed Sep. 7, 1982, Ser. No. 415,299

Claims priority, application Italy, Sep. 7, 1981, 68176 A/81

Int. Cl.³ F04B *39/06, 35/04*

U.S. Cl. 417—372 **1 Claim**



1. Hermetic motor compressor for refrigeration systems and the like, of the type comprising a hermetic casing in which are mounted a reciprocating compressor and a reversible electric motor having a common vertical shaft with an axial duct for conveying lubricating oil from a centrifugal pump located at the lower end of the shaft to an outlet at its upper end, wherein the outlet of the axial duct is constituted by an elbow tube which is fixed to the upper end of the shaft and has an end portion extending upwardly and radially outwardly with respect to the axis of the shaft and wherein the end portion of the elbow tube is tapered so as to have a section which decreases in area towards its free outlet end with the free outlet end of the elbow tube having a central part which is flattened in the general plane of inclination of the end portion to define two tubular parts which define respective nozzles located side-by-side in the path of rotation of the free outlet end.

4,518,327

ROTARY PERISTALTIC PUMP

Charles H. Hackman, 195 Holden St., North Fitzroy Vic. 3068, Australia

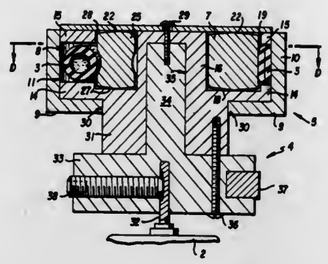
PCT No. PCT/AU82/00195, § 371 Date Jul. 25, 1983, § 102(e) Date Jul. 25, 1983, PCT Pub. No. WO83/01984, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 23, 1982, Ser. No. 522,160

Claims priority, application Australia, Nov. 25, 1981, 01688/81

Int. Cl.³ F04R *43/12*

U.S. Cl. 417—477 **20 Claims**



1. A rotary peristaltic pump adapted to be fitted with motor drive means and pump tubing for connection to a source of fluid, said pump comprising:

a rotor member adapted for operative coupling to the motor drive means and having a circular head section housing a plurality of pump tubing-compressing idler rollers in approximately equidistant radially disposed positions for idle rotation axially parallel to the axis of rotation of the rotor member in the course of rotation of said rotor member, said circular head section having an inner flange member and an outer flange member joined in spaced-apart relationship by an axial cylindrical mid-section so as to form a circumferential recess defining a race compartment of the pump tubing-compressing idler rollers, said pump tubing-compressing idler rollers positioned between said inner flange member and outer flange member for idle rotation axially parallel to the axis of rotation of the rotor member by the opposite ends of each said pump tubing-compressing idler roller engaging in recess bearings in the inner flange member and outer flange member respectively, and a minor portion of the circumferential face of each said pump tubing-compressing idler roller disposed in an axially parallel idler roller thrust-bearing groove in the circumferential face of said axial cylindrical mid-section, with the major portion of the circumferential face of each pump tubing-compressing idler roller protruding into said race compartment; and

a stator member having a base section and a wall section with inner faces which define an axial opening for accommodating the circular head section of the rotor member and having pump tubing entry and exit ports in the wall section for tangential communication with said race compartment of the rotor member;

said pump tubing being fitted to the pump by loading into the race compartment via said pump tubing entry port, then passing around the race compartment to exit therefrom via said pump tubing exit port, whereby the portion of the pump tubing in said race compartment is successively contacted by the protruding circumferential faces of the pump tubing-compressing idler rollers in the course of rotation of said rotor member so as to be compressed between said inner face of the stator member wall section and said circumferential faces of the pump tubing-compressing idler rollers for effective peristaltic pumping of fluid in said pump tubing, and the circumferential faces of the pump tubing-compressing idler rollers engaging the axially parallel roller thrust-bearing grooves in the circumferential face of the axial cylindrical mid-section so as to minimize axial flexural deformation of each pump tubing-compressing idler roller induced by compression of the pump tubing.

4,518,328

PISTON FOR PISTON PUMP

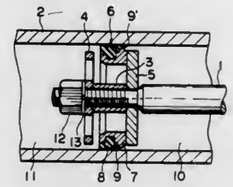
Kiyoshi Nemoto, Chiba, Japan, assignor to Kabushiki Kaisha Murayama Seisakusho, Tokyo, Japan

Continuation of Ser. No. 173,705, Jul. 30, 1980, abandoned. This application Jul. 11, 1983, Ser. No. 508,539

Claims priority, application Japan, Mar. 14, 1980, 55-32496[U]

Int. Cl.³ F04B *7/00, 21/04*

U.S. Cl. 417—511 **1 Claim**



1. A piston assembly for a piston pump comprising cylinder means, piston rod means reciprocally movable within said cylinder means, piston means dividing the interior of said cylinder means into a fluid inlet and a fluid discharge side and having fluid flow passage means defined therethrough, a stopper member affixed to said piston rod means on the fluid discharge side of said piston means and structured to engage said piston means without impeding fluid flow through said fluid flow passage means, flange means affixed to said piston rod means on the fluid inlet side of said piston means structured to block fluid flow through said fluid flow passage means upon engagement with said piston means, said piston means being movably mounted relative to said piston rod means for movement between said stopper member and said flange means, said piston means being brought into engagement with said stopper member upon movement of said piston rod means toward said fluid inlet side and into engagement with said flange means upon movement of said piston rod means toward said fluid discharge side, said piston means operating in cooperation with said flange means to pump fluid through said cylinder means when said piston rod means is moved toward said fluid discharge side, said piston means comprising a piston member, a packing fixedly fitted on the outer periphery of said piston member in fluid-tight sliding engagement with the interior of said cylinder means, and a reinforcing ring member fitted between said packing and said piston member on the fluid inlet side of said packing, and orifice means extending through said piston means for placing the interior of said packing in flow communication with said fluid discharge side during pumping operation of said piston means to apply fluid pressure thereto urging said packing against the interior of said cylinder means, said reinforcing ring member being divergent toward the fluid inlet side of said piston means thereby presenting a divergent inner periphery.

4,518,329

WEAR RESISTANT PUMP VALVE

Joe T. Weaver, 2409 Fannin, Midland, Tex. 79705

Filed Mar. 30, 1984, Ser. No. 595,553

Int. Cl.³ F04B *21/00, 21/06;* **F16K** *15/14, 17/04*

U.S. Cl. 417—566 **7 Claims**

1. A fluid pressure energized pump valve, comprising:

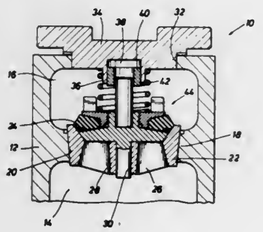
(a) a valve body;

(b) a seal retainer element being threadedly secured to said

valve body and cooperating therewith to define a circular sel receptacle;

(c) a circular elastomeric sealing element being retained within said seal receptacle by said retainer element and forming a frusto-conical sealing surface adapted to engage a frusto-conical valve seat of corresponding configuration; and

(d) an anti-extrusion member formed of non-metal material of greater hardness than the elastomeric material of said sealing element and being secured in assembly with said sealing element, said anti-extrusion member defining a frusto-conical sealing surface coextensive with said frusto-



conical sealing surface of said sealing element for sealing engagement with said frusto-conical valve seat, said anti-extrusion member being located at the downstream portion of said circular elastomeric sealing element and forming a circular yieldable marginal lip at the intersection thereof with said frusto-conical sealing surface of said circular elastomeric sealing element, said circular yieldable marginal lip of said anti-extrusion member yielding radially outwardly responsive to pressure and establishing sealing engagement with said frusto-conical valve seat, providing structural support for said elastomeric sealing element and minimizing extrusion of said elastomeric sealing element.

4,518,330

ROTARY COMPRESSOR WITH HEAT EXCHANGER

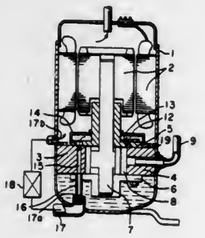
Kazutomo Asami; Fumio Wada; Koji Ishijima, and Yutaka Sato, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

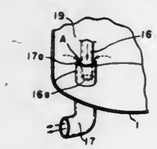
Filed Aug. 2, 1983, Ser. No. 519,760

Claims priority, application Japan, Aug. 30, 1982, 57-150319; Sep. 30, 1982, 57-148473[U]; Sep. 30, 1982, 57-148474[U]; Oct. 19, 1982, 57-157697[U]; Nov. 19, 1982, 57-175278[U]

Int. Cl.³ F04C *18/00, 29/04;* **F04B** *23/04*

U.S. Cl. 418—63 **3 Claims**





1. A rotary compressor comprising:

a sealed container defining a plenum;

a crankshaft rotatable in said sealed container about a rotary axis;

a main rotary bearing and an end rotary bearing for said crankshaft;

compression means including an eccentric piston rotated by said crankshaft, said compression means and said bearing together defining a portion of a compression chamber including high and low pressure chamber portions;

means for positioning said container so as to define a plenum bottom;

an oil sump in said plenum bottom, said sump including oil for lubricating at least one of said bearings;

means for introducing gas to be compressed into said low pressure chamber portion;

an oil feeding tube extending outside of said container and having one end in fluid communication with said plenum at a position above said sump and a second end inserted in said plenum bottom and in fluid communication with said oil in said sump;

a heat exchanger positioned in line in said oil feeding tube and outside of said container for cooling fluid passing therethrough; and

a compressed gas discharge conduit having one end in fluid communication with said high pressure chamber portion and a second end inserted in said second end of said oil feeding tube with a gap defined between said compressed gas discharge conduit second end and said oil feeding tube second end, whereby oil enters said oil feeding tube through said gap and is induced by compressed gas from said compressed gas discharge conduit to flow through said oil feeding tube to be cooled and return to said plenum.

4,518,331

PRESSURE LOADED GEAR PUMP

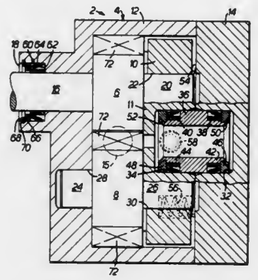
Robert S. Wood, Gosport, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Nov. 22, 1983, Ser. No. 554,235

Claims priority, application United Kingdom, Nov. 25, 1982, 8233611

Int. Cl.³ F04C *2/18, 15/00*

U.S. Cl. 418—132 **8 Claims**



1. A pressure loaded gear pump comprising a housing defining a cavity therein, a pair of intermeshing gears positioned in the cavity, at least one gear side face sealing member positioned in the cavity between the gears and the housing, and pressure loading means, for defining a pressure loaded area in the use of the pump, including a bobbin having first and second axial seals mounted thereon, wherein the bobbin is positioned within the housing such that the first seal is located in a bore defined in the housing and the second seal is located in a bore having substantially three quarters of its circumference defined by the gear face sealing member and substantially one quarter of its circumference defined by the housing.

4,518,332

OIL PUMP

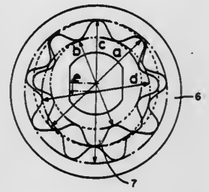
Yasuyoshi Saegusa, Hyogo, Japan, assignor to Sumimoto Electric Industries, Ltd., Osaka, Japan

Filed Oct. 22, 1982, Ser. No. 436,024

Claims priority, application Japan, Oct. 22, 1981, 56-169732

Int. Cl.³ F04C *2/10*

U.S. Cl. 418—150 **1 Claim**



1. An oil pump, comprising:

an internal combustion engine;

a drive shaft, driven by said engine; and

an inner rotor and an outer rotor surrounding said inner rotor, mounted on said drive shaft;

said inner rotor having at least eight inner rotor teeth, said outer rotor having a number of outer rotor teeth differing from the number of inner rotor teeth by one, said inner rotor having an inner rotor tooth profile formed from a trochoidal curve defined by a base circle of diameter A, a rolling circle of diameter B and an eccentricity e equal to between 0.4 and 0.5 of the rolling circle diameter B, and a track circle diameter C which is between 0.5 and 3.0 times said rolling circle diameter B;

said inner rotor being rotatable in said outer rotor in tooth meshing relation with an eccentricity equal to said eccentricity e;

said inner rotor tooth profile being bounded radially outwardly by a circle of diameter a and radially inwardly by a circle of diameter b, wherein $a=A+B-C+2e$ and $b=A+B-C-2e$;

said outer rotor having an inner surface for engaging the outer surface of said inner rotor as the inner rotor rotates eccentrically therein said inner surface having a plurality of equally spaced inwardly circularly arched portions centered at equally spaced locations on a circle of radius $R=(A+B)/2+\Delta R$ wherein $o<\Delta R\leqq 0.08$ mm, each of said plurality of circularly arched portions having radius $r=(C/2)-\Delta r$, wherein $o<\Delta r\leqq 0.08$ mm.

4,518,333

ROTARY BLADE PUMP HAVING BLADES WITH WEAR RESISTANT END SURFACES

Kimiaki Seki, Kasai, and Akio Matsumoto, Kanzaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

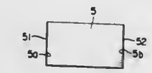
Filed Feb. 2, 1984, Ser. No. 576,407

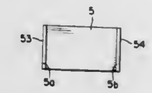
Claims priority, application Japan, Feb. 21, 1983, 58-28743

Int. Cl.³ F04C *2/00, 15/00*

U.S. Cl. 418—152 **3 Claims**

1. In a rotary pump means having a cylindrical housing having axial inner end surfaces and a cylindrical inner peripheral surface between said end surfaces, formed with air suction and discharge ports, a rotary shaft rotatably mounted within said housing such that the center line of said shaft is disposed eccentrically with respect to the center line of said cylindrical inner peripheral surface of said housing, a bracket rotatably supporting said rotary shaft in association with said housing, a rotor having radial slots therein, concentrically secured to said rotary shaft and eccentrically positioned with respect to said center line of said cylindrical inner peripheral surface of said housing, and a number of blades each radially shiftably received in respective ones of said radial slots formed in said rotor such that during pump operation the radially outward peripheral surfaces and radially extending axial end surfaces of said blades are always in respective contact with said end surfaces and said cylindrical inner peripheral surface of said housing and adapted to suck the air through said air suction port to discharge the air through said discharge port, the improvement wherein said blades are integrally formed of a solid lubricating material exposed on the side surfaces thereof and said radially outward peripheral surfaces thereof, only the axial ends, including said end surfaces, of said blades being coated with layers of synthetic resin having excellent resistance to heat and wear and a low coefficient of friction.





4,518,334

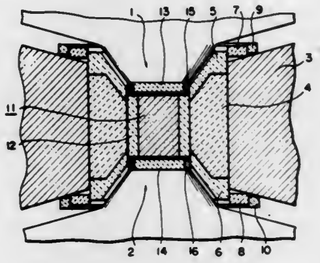
HIGH TEMPERATURE HIGH PRESSURE APPARATUS

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,362

Int. Cl.³ B30B *11/32*

U.S. Cl. 425—77 **6 Claims**



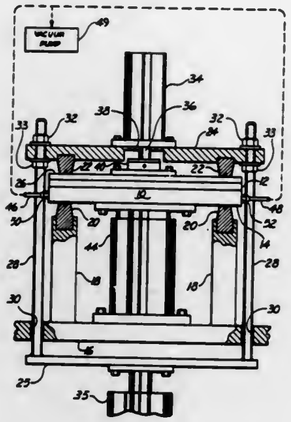
1. A high temperature high pressure apparatus which comprises: an annular die having a straight cylindrical bore and a substantially conical face in adjacency outwards with each end thereof, a pair of tapered punches which are in opposed and axial alignment with the die so that a conical face of each punch is substantially in parallel with that of the die, a pair of inner gaskets, each of which is made of fired refractory and is arranged in direct abutment on the conical face of the punch and the bore of the die, a pair of outer gaskets, which are made of material of intermediate hardness level and is arranged in adjacency outside the inner gasket, and a pair of stopper rings of readily deformable but highly tough material and arranged in adjacency outwards to the outer gaskets.

4,518,335

DILATANT MOLD AND DILATANT MOLDING APPARATUS

Vimal K. Pujari, Columbia, Md., assignor to Allied Corporation, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,906
Int. Cl.³ B29C *1/00, 1/16;* B29D *31/02*
U.S. Cl. 425—78 **22 Claims**



1. A molding apparatus for forming a powder preform having the shape of a desired part comprising a mold having a fill aperture, an internal mold cavity corresponding to the shape of the part to be formed connected to said fill aperture, and at least one exhaust port connected to said mold cavity, a pedestal for resiliently supporting said mold, vibrator means for vibrating said mold, powder feed means for transmitting powdered material to said mold cavity through said fill aperture, and means attached to said at least one exhaust port for evacuating the air from said mold cavity, the improvement characterized by:

a dilatant molding having a top half and a mating bottom half, a fill aperture, an internal mold cavity connected to said fill aperture formed between said top half and bottom half, at least one exhaust port adjacent to said mold cavity, an annular seal recess between said top half and said bottom half circumscribing said internal molding cavity and said at least one exhaust port, and a resilient seal disposed in said annular seal recess resiliently separating said top and bottom halves of the mold; the mold halves being separable by vibration

compressive mean cooperating with the pedestal for producing a force urging the top and bottom halves of said dilatant mold into physical contact compressing said resilient seal in said seal recess; and

vibrator means for vibrating said dilatant mold with a force sufficient to cyclically separate said top and bottom halves of the mold a small distance against the force of said compressive means dilating the volume of said internal mold cavity.

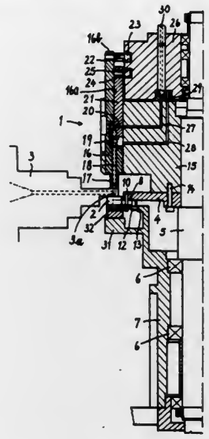
4,518,336

APPARATUS FOR FORMING PLASTIC MATERIAL GASKETS IN STOPPERS COMPRISING A CUP, SUCH AS SCREW-ON AND CROWN CAPS

Rodiero Alieri, Imola, Italy, assignor to SACMI Cooperativa Meccanici Imola Soc. Coop. a Resp. Lim., Imola, Italy

Filed Mar. 23, 1984, Ser. No. 593,069
Claims priority, application Italy, Oct. 7, 1982, 3555 A/82
Int. Cl.³ B29C *5/00;* B29D *31/00*
U.S. Cl. 425—110 **5 Claims**

1. An apparatus for forming plastic material gaskets in stoppers comprising a cup, such as screw-on caps, crown caps, and the like, characterized in that it comprises a carousel which carries a plurality of peripherally distributed cups, a means for picking up and metering amounts of a plastic material which are supported slidably on said carousel, respectively in line with said cups, and forming a spoon member facing in the direction of rotation of said carousel, said picking up and metering means being adapted to be selectively communicated to suction and blowing pneumatic means, an extruder nozzle for said plastic material which is stationary relatively to said



carousel and opens at said pick-up and metering means, there being further provided a means of sequentially driving said pick-up and metering means between a raised position whereat a metered amount of material is picked up by said spoon member and the pick-up and metering means are connected to the suction means to retain the metered amount, and a lowered position whereat said metered amount of plastic material is introduced into said metal cup and the pick-up and metering means are connected to the blowing means to eject the metered amount out of the cup.

4,518,337

HYDRAULIC PRESS

Murray C. Tribbett, Piqua, Ohio, assignor to The French Oil Mill Machinery Co., Piqua, Ohio

Filed Aug. 31, 1983, Ser. No. 528,346
Int. Cl.³ B29F *1/00;* B30B *11/02*
U.S. Cl. 425—167 **8 Claims**

1. In a hydraulic press of the type having a base, means mounted on said base for generating hydraulic pressure, a source of hydraulic fluid mounted on said base and communicating with said pressure generating means, an upper hot plate adapted to support a mold half, fluid actuated means for conveying liquid material to said upper hot plate, a platen mounted for vertical reciprocating movement relative to said upper hot plate and including a lower hot plate adapted to support a mold half, hydraulically actuated means for lifting said lower hot plate toward said upper hot plate and hydraulically actuated means for urging said lower hot plate upwardly, thereby clamping together mold halves supported on said hot plates, the improvement comprising:

a first side plate mounted on said base;

a second side plate mounted on said base, said second side plate having channel means formed in an interior thereof for conveying hydraulic fluid therethrough;

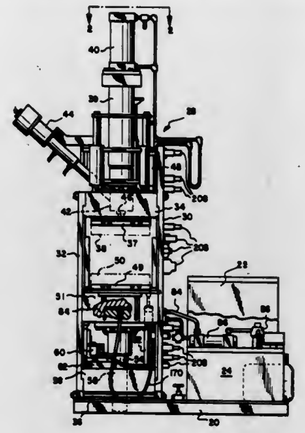
means joining said first and second side plates to form a rigid structure for supporting said upper and lower hot plates and said liquid conveying means;

conduit means communicating with said channel means and extending from said second side plate to said liquid material conveying means, said lower hot plate lifting means, and said urging means;

supply conduit means extending from said pressure generating means to said channel means;

return conduit means extending from said channel means to said source of hydraulic fluid;

valve means mounted on said second side plate and communicating with said channel means for selectively directing fluid from said channel means to said liquid material conveying



means, said lower hot plate lifting means, and said urging means; and

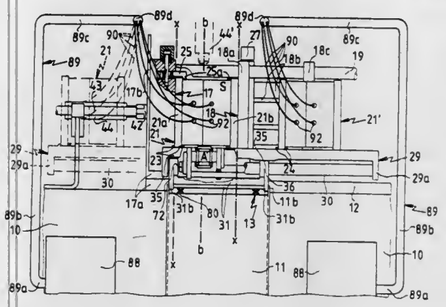
control means for actuating said valve means in a predetermined sequence to direct fluid from said supply conduit means, through said channel means and said conduit means, to selected ones of said liquid material conveying means, said lower hot plate lifting means, and said urging means, and from said selected ones through said conduit means, said channel means and said return conduit means to said source.

4,518,338

INJECTION MOLDING MACHINE WITH MOLD CHANGING AND MOLD PRECONDITIONING DEVICE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg l, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 506,026
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222828
Int. Cl.³ B29C *1/00;* B29F *1/00*
U.S. Cl. 425—183 **23 Claims**



1. In an injection molding machine which includes a plurality of interchangeable injection molding dies and is equipped with die temperature conditioning means, including means for circulating conditioning fluid and for controlling the temperature of the conditioning fluid, which machine further includes a machine base carrying a horizontally oriented die closing unit with a stationary die carrier member, a movable die carrier member, and a drive assembly producing horizontal die opening and die closing movements along the longitudinal center axis of the die closing unit, and wherein the stationary and movable die carrier members have parallel vertical die mounting faces and include means for releasably clamping to said die mounting faces the two halves of a succession of said injection molding dies which, for this purpose, have standardized oversize back plates which are engageable by said clamping means; in such a machine, a device for mechanically exchanging injection molding die assemblies in the die closing unit and for preconditioning a die assembly in an assigned waiting position, prior to insertion into said die-closing unit, while another die assembly remains in service, in its normal operating position between the die carrier members, the device comprising in combination:

a translation table arranged alongside the die closing unit, the translation table defining two die emplacements equidistant from the center axis of the die closing unit, for the support of two die assemblies in waiting position at the same level at which a die assembly is held in its operating position, the translation table being movable horizontally, so that either of the two die emplacements can be brought to coincide with a transfer position in transverse horizontal alignment with the operating position of the die assembly;

a translation drive connected to the translation table for the creation of translational movements of the translation table;

means defined by each of the two die emplacements on the translation table for guiding a die assembly for horizontal transfer movements at right angles to the center axis;

means defined by the stationary and movable die carrier members for supporting a die assembly in its operating position between said die carrier members, when not attached to the mounting faces of said members, and for guiding said die assembly for horizontal transfer movements at right angles to the center axis;

a transfer drive engageable with a die assembly in said die emplacement coincident with the transfer position, so as to entrain said die assembly in a transfer movement between the transfer position and the operating position;

two separate sets of conditioning fluid lines associated with the two die emplacements on the translation table, each set of conditioning fluid supply lines being adapted to connect a die assembly in waiting position to said temperature conditioning means; and wherein

each die emplacement has its guide means so arranged that, in the transfer position, said die emplacement cooperates with the support and guide means of the two die carrier members to define a substantially continuous straight-line transfer path for the die assembly between the transfer position and the operating position;

the lines of each set of supply lines have flexible length portions terminating in line couplings by which said lines are releasably connectable to a die assembly; and

the flexible length portions of each set of supply lines begin at a point in space which is so positioned in relation to the operating position and the waiting position defined by the associated die emplacement that the lines of each set of supply lines, when connected to a die assembly, accommodate the movements of said die assembly between its waiting position and the operating position, remaining connected for fluid circulation in both positions and during movement therebetween.

4,518,339

DOUGH-ROLLING MACHINE

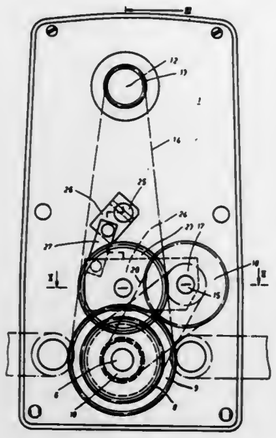
Eugen Morgenthaler, Kirchberg, Switzerland, assignor to Seewer AG, Canton of Berne, Switzerland

Filed May 1, 1980, Ser. No. 145,437

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922702

Int. Cl.³ A21C *3/02*

U.S. Cl. 425—367 **4 Claims**



1. A dough-rolling machine of the type having a frame, a stationary shaft on which a first roller is mounted, a displaceable shaft on which a second roller is mounted, and a drive motor having a drive shaft, wherein the improvement comprises:

a countershaft secured to said frame, said displaceable shaft being adapted for translatory rotation about the axis of said countershaft,

a first transmission wheel fixed on said drive shaft,

a second transmission wheel fixed on said stationary shaft,

a drive gear fixed on said displaceable shaft,

a compound transmission gear mounted loose on said stationary shaft between said second transmission wheel and said first roller and including a third transmission wheel, situated nearest said first roller and drivingly connected to said first transmission wheel, and a fourth transmission wheel situated remote from said first roller, and

a further compound transmission gear mounted loose on said countershaft and including a pinion meshing with said drive gear, a fifth transmission wheel drivingly connected to said second transmission wheel, and a sixth transmission wheel situated between said pinion and said fifth transmission wheel and drivenly connected to said fourth transmission wheel.

4,518,340

APPARATUS FOR THE MANUFACTURE OF A BLANK FOR A CONTAINER

Kjell M. Jakobsen, Skanör, and Claes T. Nilsson, Loddeköpinge, both of Sweden, assignors to PLM Aktiebolag, Malmo, Sweden

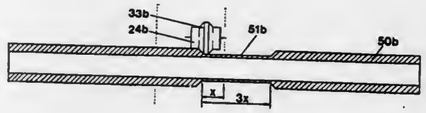
Division of Ser. No. 154,887, May 30, 1980, Pat. No. 4,378,878. This application Dec. 23, 1982, Ser. No. 452,771

Claims priority, application Sweden, Jun. 11, 1979, 7905045

Int. Cl.³ B29C *17/02, 17/07*

U.S. Cl. 425—393 **11 Claims**

1. Apparatus for producing a tubular pre-molding of a thermoplastic material from a tubular blank in which the premolding comprises a mouth part with adjacent neck section at one end, and a tubular section continuing from said neck section, said tubular section of the blank consisting mainly of orientable material, said apparatus comprising means for increasing the glass transition temperature Tg in said mouth part and neck section including means for reducing the thickness of the mouth part and adjacent neck section of said blank to orient the material by the reduction of the thickness of the material, said thickness reducing means comprising forming means for applying radial pressure to said blank, in a restricted axial region of the portion of the blank which is to form the mouth part and adjacent neck section, to initiate said reduction of thickness thereof and means for providing relative displacement between said forming means and said blank axially of said blank to extend the region of reduction of thickness of the blank in said mouth part and adjacent neck section, means for maintaining



the remainder of the blank with its original thickness to complete the form of said pre-molding, such that at least in the mouth part, said material has a lower degree of orientation in the circumferential direction of the pre-molding as compared to the axial direction, and means for controlling the orientation of the mouth part and adjacent neck section of the pre-molding by the thickness reduction to provide said increased glass transition temperature Tg in said mouth part and neck section such that it is substantially equal to the glass transition temperature of said tubular section when orientable material of said tubular section is oriented by a subsequent blowing of the pre-molding to a container.

4,518,341

PRESS FOR MANUFACTURING PLATES, ETC.

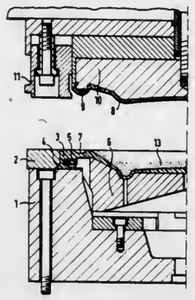
Hilmar Suffa, Kochel am See, Fed. Rep. of Germany, assignor to Dorst Maschinen-und Anlagenbau Otto Dorst und Dipl.-Ing. Walter Schlegel & Co., Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,528

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311685; Sep. 7, 1983, 3332277

Int. Cl.³ B30B *5/02;* **B28B** *3/00*

U.S. Cl. 425—405 H **9 Claims**



1. A press for manufacturing plate-like products having a countermold and a press die which can be closed against the countermold, this press die being shaped in accordance with the inner shape of the plate-like product to be pressed, the countermold having a cavity and an elastic membrane mounted at its edge for closing off the cavity which cavity corresponds to the dimensions of the finished plate, the membrane also having a shape corresponding to the base of the plate and being adapted to have porcelain in power form distributed thereover when the press die is separated from the countermold, the press die having a flexible coating, the membrane and the coating forming a plate shaping mold chamber therebetween, the coating being provided at its edge with a hollow torus bulging towards the membrane; the membrane having an annular groove aligned with and facing the torus for receiving the torus when the die press is closed against the countermold, means for pressurizing the cavity and forcing the membrane toward the die press to eliminate the groove, collapse the bulge and cause inward migration of the material of both the membrane and the coating to form a rounded upper portion of the edge of the product and locate at the lower portion of the edge of the product the wedge-shaped pinch-off of the mold cavity formed by the juncture of the coating and membrane.

4,518,342

APPARATUS FOR FORMING CENTRIFUGED POLES

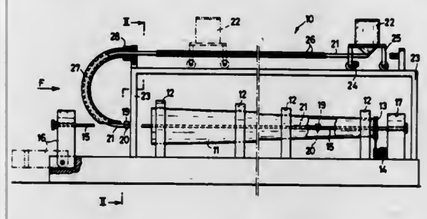
Virgilio Branca, Milan, Italy, assignor to Somiver s.r.l., Milan, Italy

Filed Apr. 10, 1984, Ser. No. 598,588

Claims priority, application Italy, Apr. 11, 1983, 20528 A/83

Int. Cl.³ B29C *5/00;* **B29D** *3/00*

U.S. Cl. 425—435 **8 Claims**



1. An apparatus for forming poles made of high-strength resin, in which, in a rotary mould, the resin is spread over a support made of felt or the like, provision being made for heating means in proximity to the mould, characterized by the fact that in the interior of said mould there are guide means for guiding a resin-delivery head which is movable to and fro and connected by a hose to a resin feed apparatus positioned outside the mould.

4,518,343

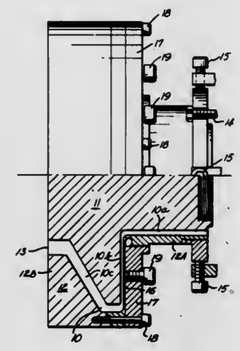
EXTRUSION DIE

Edward J. Seiffert, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 7, 1983, Ser. No. 472,643

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—466 **4 Claims**



1. In a die for the extrusion of molten polymeric material in a tubular configuration having a tubular channel therein for polymer flow extending from a polymer feed end of the die to a die orifice and having a first, inlet section extending substantially parallel to the direction of extrusion, a second section extending from the end of the first section substantially radially with respect to the direction of extrusion and at substantially a right angle to the inlet section, and a third, outlet section extending from the end of the second, radial section to the die orifice, the improvement wherein the second, radial section is defined by opposing surfaces, at least a portion of one opposing surface being deformable by an adjustment force applied to the deformable portion externally and deforming means associated with the deformable portion of the surface.

4,518,344

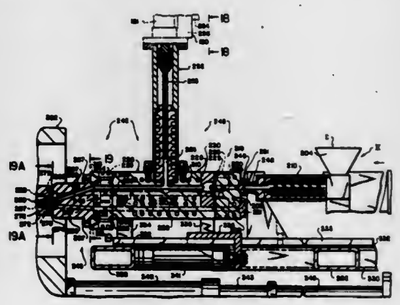
METHODS AND APPARATUS FOR MAINTAINING A PRESSURE CONTACT SEAL BETWEEN NOZZLES AND CAVITIES OF AN ON-LINE INJECTION MOLDING MACHINE

Maurice G. Latreille, Batavia, and William A. Tennant, Schaumburg, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,706

Int. Cl.³ B29C *1/00;* **B29F** *1/023;* **B29D** *9/00*

U.S. Cl. 425—570 **47 Claims**



1. A multi-coinjection nozzle injection molding apparatus for an injection molding machine, which comprises,

runner means having channels for a plurality of polymeric material streams, and having a forward end with a plurality of co-injection nozzles mounted therein each having means for receiving the plurality of streams and for substantially simultaneously co-injecting a plurality of polymeric materials therefrom,

support means for supporting the runner means,

mounting means for mounting the runner means on the support means, and adapted to allow the runner means to float axially on the center line of the apparatus while the machine is in operation.

4,518,345

DIRECT IGNITION GAS BURNER CONTROL SYSTEM

Carl J. Mueller, St. Louis County, and John S. Haefner, Jefferson County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 28, 1983, Ser. No. 470,309

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—24 **11 Claims**

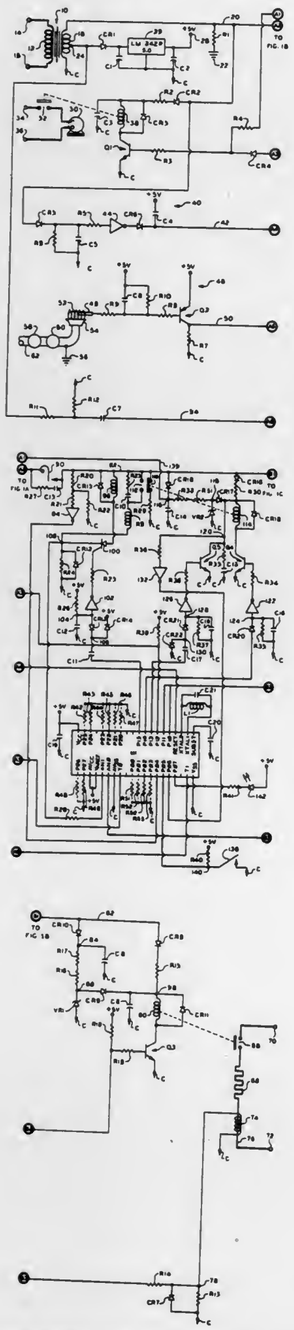
6. In a gas burner control system,

a burner;

two electrically operated valves connected fluidically in series with said burner,

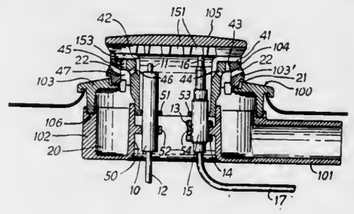
each of said valves having a controlling electrical winding;

an electrical resistance igniter for igniting said burner;
means for effecting energizing of said igniter;
means for monitoring the level of energizing of said igniter and for varying an igniter warm-up time period in response to said monitoring; and



means for effecting sequential opening of said valves and for effecting a reverse order of said sequential opening on alternate burner cycles so as to determine if none, one, or both of said electrical windings are open, shorted, or energized.

4,518,346
GAS FUEL BURNER WITH INCORPORATED IGNITION AND SAFETY DEVICES
Jacques F. Pistien, L'ile-st-Denis, France, assignor to Gaz de France, Paris, France
Filed Apr. 19, 1984, Ser. No. 601,933
Claims priority, application France, Apr. 29, 1983, 83 07170
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—266 **11 Claims**



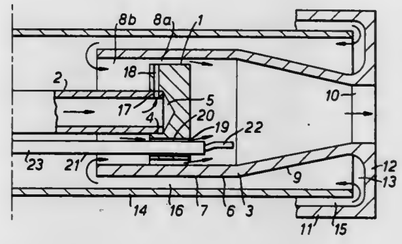
1. A burner for gas fuel with incorporated ignition and safety systems, of the type having a main flame and a pilot flame to stabilize said main flame, and comprising a burner body which defines an annular distribution chamber receiving the primary air-gas fuel mixture, main paths being provided in said burner to supply the main flame with fuel mixture from said chamber, and auxiliary paths being likewise provided in the burner body to supply the pilot flame with fuel mixture from said chamber, at least one igniting electrode, one safety element, and a protective cap mounted on the burner body, wherein the burner body defines a central shaft, co-axial to the distribution chamber, situated under the cap and opening at the lower part of the burner to allow admission of secondary air, radial grooves opening at least locally in the distribution chamber are formed in the upper part of the burner body situated under the cap, the ignition electrode and safety element being placed inside the central shaft under the protective cap, and orifices being formed through the central shaft and communicating with the distribution chamber for directing gas jets towards said ignition electrode and said safety element.

4,518,347
LIQUID FUEL COMBUSTION APPARATUS
Kazunori Sonetaka, Hirakata; Atsushi Nishino, Neyagawa, and Tadashi Suzuki, Katano, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan
Continuation of Ser. No. 188,271, Sep. 18, 1980, abandoned. This application Oct. 18, 1983, Ser. No. 542,896
Claims priority, application Japan, Sep. 19, 1979, 54-121134
Int. Cl.³ F23D *3/18*
U.S. Cl. 431—325 **25 Claims**



1. A liquid fuel combustion apparatus comprising a fuel tank, a wick partially immersed in fuel within the tank, and means defining a combustion chamber enclosing an upper section of the wick, said wick having two sections, the upper section being a burning section made of a glass fiber material which has been dealkalized so that said upper section contains at least 80% or more of silica, alumina or a mixture thereof, there being present 70% to 90% silica in said upper section, said lower section being a suck up portion having a good fuel suck-up ability whereby the fuel sucked up from the suck-up portion is vaporized at the burning section and burned in the combustion chamber.

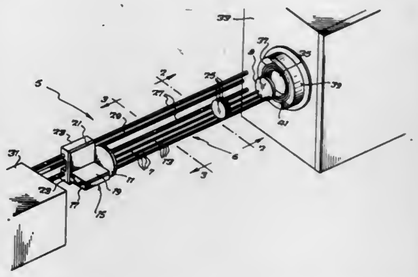
4,518,348
FUEL FIRED BURNER ASSEMBLY
Philip J. Wedge, and Robert C. Bridson, both of Solihull, England, assignors to British Gas Corporation, London, England
Filed Sep. 27, 1983, Ser. No. 536,308
Claims priority, application United Kingdom, Sep. 29, 1982, 8227847
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—265 **8 Claims**



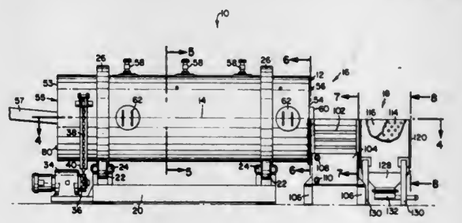
1. A fuel-fired burner assembly including a fuel nozzle, a fuel supply conduit connected to and terminating in the nozzle, means for supplying fuel to the conduit, a combustion chamber into which the nozzle extends, the nozzle comprising a nozzle body extending radially outwardly from the conduit in spaced relation to the inner wall of the combustion chamber so as to form a clearance therebetween and including means for spraying fuel supplied by said fuel supplying means directly into the clearance between the nozzle body and the chamber,
means for supplying air towards the nozzle body in the direction of the chamber so that the fuel issuing from the nozzle and the air mix in the clearance before entering the combustion chamber,
the nozzle body having an aperture connecting the air supplying means to the chamber independently of the clearance, and
a pilot burner for providing a flame within the chamber for igniting the fuel and air mixture entering the chamber from the clearance.

4,518,349
CANTILEVERED BOAT-FREE SEMICONDUCTOR WAFER HANDLING SYSTEM
Richard E. Tressler, Julian; Joseph Stach, and Roger L. Baeten, both of State College, all of Pa., assignors to Better Semiconductor Processes (BSP), State College, Pa.
Filed Dec. 1, 1983, Ser. No. 557,232
Int. Cl.³ F27D *3/00, 5/00;* F27B *9/04, 9/14*
U.S. Cl. 432—11 **24 Claims**

1. In a process of heat treating semiconductor wafers in a high temperature furnace equipped with an internal heat treating chamber and carrier means adapted to support said wafers and traverse the heat treating chamber, the improvement comprising reducing the level of undesired contaminating particles generated during the process by mounting the wafers onto a boat-free wafer carrier, said carrier comprising a plurality of semi-circular spaced cantilevered rods or tubes having a multiplicity of spaced slots for cooperatively holding individual wafers in a vertical position.



4,518,350
APPARATUS AND METHOD FOR CALCINING SAND
Edward E. Mueller, Tonka Bay, and Paul L. Jensen, Minneapolis, both of Minn., assignors to Whirl-Air-Flow Corporation, Minneapolis, Minn.
Filed Mar. 29, 1984, Ser. No. 594,557
Int. Cl.³ F27B *14/00, 9/14;* F27D *1/16*
U.S. Cl. 432—13 **20 Claims**



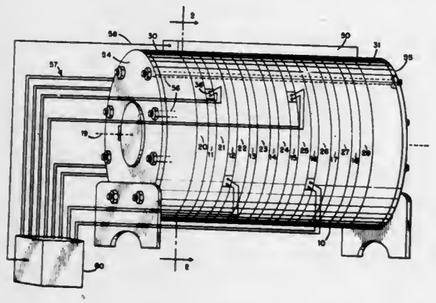
8. Apparatus for calcining sand, which comprises:
an elongate, refractory-lined drum having a longitudinal axis, a generally cylindrical side, and opposite generally circular closed ends;
means defining a material inlet in one end of said drums;
means defining a material outlet in the other end of said drum;
means for supporting said drum for at least partial rotation about its longitudinal axis;
means for effecting oscillation of said drum over a predetermined arc about its longitudinal axis;
a plurality of burners located at longitudinally spaced intervals in the side of said drum;
means defining an exhaust flue in the said other end of said drum; indexing structure located inside said drum opposite said burners for mixing the sand for maximum exposure to said burners to effect calcination, and for advancing the sand from the inlet to the outlet responsive to oscillation of said drum;
means for receiving and precooling the calcined sand discharged from the outlet of said drum; and
means for receiving the calcined, precooled sand and for classifying it into sand of a predetermined granular size for further use.

4,518,351

METHOD OF PROVIDING A DYNAMIC TEMPERATURE GRADIENT

Robert H. Mellen, Sr., P.O. Box 535, New London, N.H. 03257

Division of Ser. No. 360,327, Mar. 22, 1982, Pat. No. 4,423,516.
This application Sep. 22, 1983, Ser. No. 534,707
Int. Cl.³ F26B *9/12*; F27D *13/00*; F27B *5/00*
U.S. Cl. 432—18 **5 Claims**



1. A method of providing a dynamic temperature gradient in an enclosed space comprising:

(a) producing a net heat input radially inward at all points around an axis of enclosed space; and,

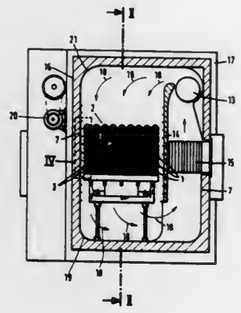
(b) controlling said net heat input in a plurality of individually controlled discrete planar layers arranged normal to said axis, whereby temperature gradients may be formed along said axis with all heat flow forming said gradients flowing axially.

4,518,352

INDUSTRIAL OVEN WITH AIR RECIRCULATION FOR HEAT TREATING PROCESSES

Horst Gillhaus, Dortmund-Loh; Fritz Hegewaldt, Herdecke; Wolfgang Faber, Waltrop, all of Fed. Rep. of Germany; Jürgen Baer, Mägenwil, and Ernst Toplak, Oberrohrdorf, both of Switzerland, assignors to Brown, Boveri & Cie. AG., Mannheim-Kaefertal, Fed. Rep. of Germany

Continuation of Ser. No. 418,552, Sep. 15, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,151
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136667
Int. Cl.³ F27D *7/04*; F27B *9/04*; F26B *19/00*
U.S. Cl. 432—199 **10 Claims**



1. Industrial oven for heat treatment of a charge having individual components to be treated, comprising:

walls, at least a portion of said walls defining a treatment chamber for receiving the charge;

means for causing air to flow through said chamber in a given air flow direction substantially parallel to at least some of said walls;

means for supporting the charge in said treatment chamber, said supporting means maintaining the charge at a distance from said at least some walls defining a space therebetween, and said supporting means maintaining a mutual spacing between the individual components of the charge permitting said air flow causing means to provide a substantially uniformly distributed given air flow velocity in said given air flow direction between the individual components of the charge; and

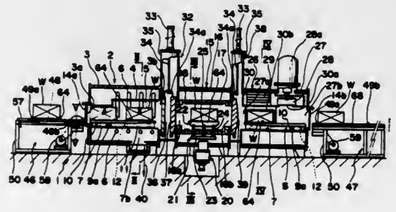
means in the form of air flow resistance obstacles extended substantially perpendicular to said given air flow direction in said space between the charge and said at least some walls for reducing the velocity of said air flow in said space substantially to said given air flow velocity and for maintaining high temperature uniformity within the charge.

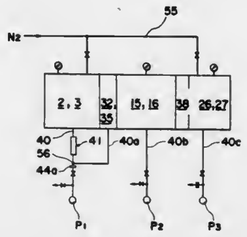
4,518,353

VACUUM SINTERING FURNACE

Takashi Banno, Sakai; Tadashi Seki, Toyonaka; Masafumi Kawaguchi, Niigata; Yukio Tanaka, Niigata; Morikatsu Iwasaki, Niigata, and Toshio Nagasawa, Niigata, all of Japan, assignors to Chugai Ro Co., Ltd., Osaka and Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jun. 26, 1984, Ser. No. 624,611
Claims priority, application Japan, Jun. 27, 1983, 58-116688
Int. Cl.³ F27B *5/04*
U.S. Cl. 432—205 **4 Claims**





1. A vacuum sintering furnace which comprises:

a first section having a first furnace body in which a workpiece charged thereinto is heated in vacuum so that lubricant contained in said workpiece is vaporized;

a second section having a second furnace body which neighbors with said first furnace body and in which said workpiece charged thereinto from said first furnace body is sintered in vacuum;

a third section having a third furnace body which neighbors with said second furnace body and in which the said workpiece charged thereinto from said second furnace body is cooled;

a first connecting hood means which connects an outlet portion of said first furnace body and an inlet portion of said second furnace body and which is provided with a first door for selectively opening and closing the outlet portion of said first furnace body and a second door for selectively opening and closing the inlet portion of said second furnace body; and

a second connecting hood means which connects an outlet portion of said second furnace body and an inlet portion of said third furnace body and which is provided with a third door for selectively opening and closing the outlet portion of said second furnace body;

said first furnace body including therein a carrier means for supporting the workpiece thereon and conveying the workpiece into said second furnace body from said first furnace body, and being connected to a vacuum pump by means of a vacuum exhaust line provided with a lubricant trapping device which is to trap the vaporized lubricant contained in an exhaust gas from said first furnace body;

said second furnace body including therein a lift means for receiving and supporting therein the workpiece conveyed from said first furnace body;

said third furnace body including therein a carrier means for conveying the workpiece on said lift means into said third furnace body and supporting said workpiece thereon.

4,518,354

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS WITH ANTISTATIC LAYER CONTAINING NONIONIC SURFACE ACTIVE AGENT

Shigeki Yokoyama; Akira Hibino; Yukio Maekawa, and Hiroshi Kawasaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

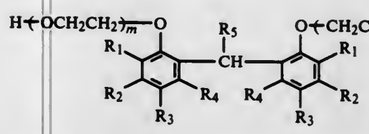
Filed May 23, 1983, Ser. No. 497,285
Claims priority, application Japan, May 21, 1982, 57-85764
The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—527 **8 Claims**

1. A silver halide photographic light-sensitive material comprising:

a support base;

a silver halide emulsion layer; and

an antistatic layer containing a nonionic surface active agent having two polyoxyethylene chains in a molecule represented by the general formula (I):



(I)

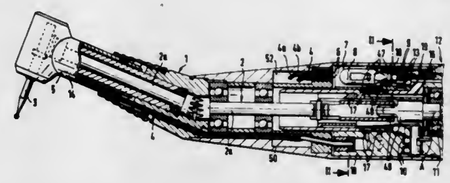
wherein R_1 and R_3 each represents a substituted or unsubstituted alkyl group, an aryl group, an alkoxy group, a halogen atom, an acyl group, an amido group, a sulfonamido group, a carbamoyl group or a sulfamoyl group, R_2 and R_4 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, an aryl group, an alkoxy group, a halogen atom, an acyl group, an amido group, a sulfonamido group, a carbamoyl group or a sulfamoyl group, R_5 represents a hydrogen atom, a methyl group or an α-furyl group, and m and n independently represents an average degree of polymerization of ethylene oxide, which is 55 to 30, wherein the compound represented by the formula (I) is present in an amount within the range of 20 to 200 mg/m² of the support base.

4,518,355

DENTAL HANDPIECE

Jürgen Hoffmeister, and Bernhard Kuhn, both of Biberach, Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,222
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215219
Int. Cl.³ A61C *1/00*
U.S. Cl. 433—29 **10 Claims**



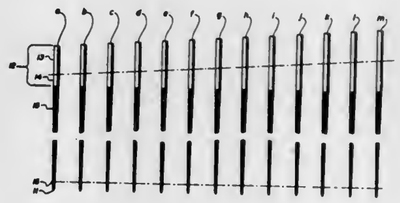
1. A dental handpiece comprising means provided at one end of the handpiece to mount a dental implement, a drive train arranged within the handpiece and extending to said one end of the handpiece to operate the dental implement when the latter is mounted on the handpiece, a light source consisting of an electrically energizable incandescent lamp arranged within said handpiece, and a light guide extending from the light source to a position adjacent to said one end of the handpiece for directing light to a treatment region adjacent to the dental implement, said light guide being arranged within the handpiece and extending alongside the drive train, an electrical supply to said incandescent lamp which extends within the handpiece from a second end of the handpiece remote from the implement-end thereof, a first contact for said electrical supply being arranged at said second end of the handpiece, and a second contact for engaging said first contact being connected to a source for said electrical supply, including a driving device, couple with said second end of the handpiece and having a drive shaft engaging with said drive train, and a second contact engaging with said first contact, the driving device and the handpiece being relatively rotatable when coupled together, and said first and second contacts being slidably interengageable.

4,518,356

UTRASONIC DENTAL FILE AND METHOD OF DETERMINING FAILURE RESISTANT LENGTHS THEREOF

Russell D. Green, Georgetown, Del., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Sep. 30, 1983, Ser. No. 537,890
Int. Cl.³ A61C *5/02*
U.S. Cl. 433—102 **3 Claims**



1. A method of determining the ideal length of an ultrasonic endodontic file to provide maximum resistance to breakage and including a standard tapered flexible working portion of predetermined length connected to one end of a shank of uniform size and shape of cross-sections from a batch of said files having a range of overall lengths and all of similar diame-

ter 1 mm from the tip end of the working portion, said method comprising the steps of:

(a) individually testing a plurality of said tapered files having a range of lengths of shanks of uniform cross-sectional shapes and sizes within water to simulate conventional endodontic conditions,

(b) observing a predetermined number of said files of different lengths successively for same known periods of time until breakage of files of certain lengths occur,

(c) determining the files of lengths which resist breakage among those in which breakage occurred, within a tolerance of ±1 mm and

(d) standardizing production of files having said length which resists breakage as determined by the foregoing steps.

4,518,357

FASTENING SYSTEM FOR MUCOUS MEMBRANE-SUPPORTED DENTURE

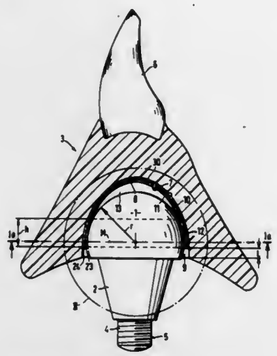
Egon Brinkmann; Mandred Putenat, both of Oldenburg, and Erhard Dörre, Plochingen, all of Fed. Rep. of Germany, assignors to Fedlmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 10, 1982, Ser. No. 440,741

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145260; Oct. 7, 1982, 3227174

Int. Cl.³ A61C *8/00*

U.S. Cl. 433—173 **14 Claims**



1. A fastening system for a removable mucous membrane-supported denture comprising:

(a) two spherically shaped heads (1) fastened on implants or natural teeth, the heads (1) having a highly polished surface and a size exceeding hemispherical;

(b) a mucous membrane-supported denture having two recesses (7) therein having walls (10) in that surface facing the mucous membrane;

(c) two retaining caps (8) having openings (9) therein composed of a smooth elastic plastic material within said recesses (7) for engaging the heads and shaped for contacting the heads only in the area of their equator; and

(d) adapting rings (12) composed of a plastic material which is more elastic than the material of the retaining caps (8) arranged between recess wall (10) and retaining caps (8) in the area of opening (9) of the retaining caps (8).

4,518,358

EDUCATIONAL TOY AND METHOD

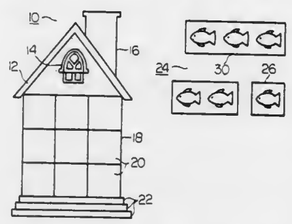
Naomi Mather, 62 Patton Dr., Princeton, N.J. 08540

Filed Aug. 2, 1982, Ser. No. 404,549

Int. Cl.³ G09B *1/04*

U.S. Cl. 434—195 **12 Claims**

1. A teaching aide comprising a plurality of indicia bearing means of unit size and at least one indicia bearing means which is a multiple of unit size together with an organizer having means for allowing, either physically or by representation, the placing of the indicia bearing means in the organizer in a prescribed manner so as to form a distinct set of patterns, each



pattern representing a specific digit or number and wherein said organizer means comprises a unit indicia bearing means size entrance into the organizer and opposite thereto an entrance for indicia bearing means of multiple unit width.

4,518,359

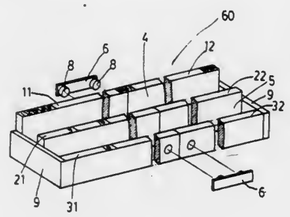
MULTI-PURPOSE INSTRUCTING BLOCK

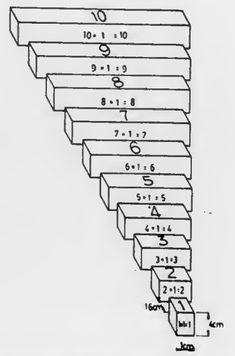
Wang Yao-Psong, No. 16, La. 153, Chien-Te St., Taichung, Taiwan

Filed Dec. 30, 1983, Ser. No. 567,176

Int. Cl.³ G09B *19/02*

U.S. Cl. 434—195 **1 Claim**





1. An educational aid for teaching mathematics, comprising:

(a) M blocks of generally equal height and width divided into N sets each containing L blocks (where M/N is an integer), each of the L blocks in the associated one of said N sets being of equal length to each other, wherein said equal length in each set corresponds to a unit length multiplied by a number (N) representing the associated Nth set, each of the L blocks in the Nth set displaying indicia representing the numeral N of each set; and

(b) a calculating frame including first and second frame sections each having three spaced boards extending generally parallel to each other and connected together with a side board, said spaced boards defining therebetween first and second grooves for receiving selected ones of said M blocks, and means for joining said first and second frame sections together so that the first and second grooves in the first frame section are continuous and in respective alignment with the first and second grooves of the second section, said joining means including a pair of connectors each formed with protuberances and respectively engageable with selected ones of said spaced boards in each first and second frame section for joining same together, said first board in said first section having a display edge divided by indicia into M/2 lattices containing respectively consecutive numbers beginning with "1", said first board in said second section also including a display edge divided by indicia into M/2 lattices respectively containing consecutive numbers starting with M/2+1, said second board of the first section being divided into M/10 lattices respectively containing numbers increasing by "5" to M/2, said second board of said second section also being divided into M/10 lattices respectively containing numbers increasing by "5" from M/2+5 to M, said third board of the first section being divided into M/20 lattices respectively containing numbers increasing by "10" to M/2, said third board of said second section also being divided into M/20 lattices respectively containing numbers increasing by "10" from M/2+10 to M, said lattices enabling a user to carry out addition, subtraction, multiplication, division and learn fractional relationships by positioning suitable ones of said M blocks into the first and second grooves to thereby deduce mathematical relationships with reference to said lattices.

4,518,360

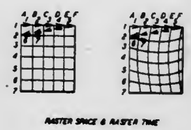
DEVICE TO COMPENSATE FOR DISTORTION IN TARGET LOCATION IN A VISUAL SYSTEM

Robert A. Fisher, Endicott, and David L. Peters, Whitney Point, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Continuation of Ser. No. 276,225, Jun. 22, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,099

Int. Cl.³ G09B *9/00*

U.S. Cl. 434—20 **21 Claims**



2. A device to compensate for distortion in target location in a visual system, comprising:

display means to present a visual target to a trainee;

computer image generator means to provide information to said display means as to the location of said visual target in accordance with a predetermined grid count and to provide a first signal in response to said grid count;

separate circuit means, responsive to the predetermined grid count to define an aiming point of said computer image generator means, to generate a second signal also in response to said grid count; said last mentioned grid count measuring the actual location of the aiming point on a distorted display as it appears visually to the user; and

comparator circuit means to generate one predetermined signal at a point in time, determined by said trainee, when there is coincidence between said first and said second signals and to generate another predetermined signal at another point in time, determined by said trainee, when there is no coincidence between said first and said second signals.

4,518,361

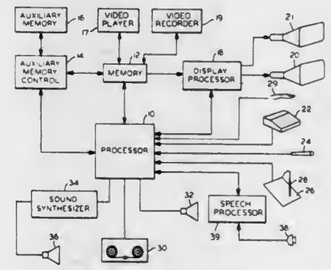
METHOD AND APPARATUS FOR EFFECTING AND EVALUATING ACTION UPON VISUAL IMAGING

Malcolm J. Conway, Main Rd., Gill, Mass. 01376

Filed Aug. 5, 1982, Ser. No. 405,601

Int. Cl.³ G09B *7/04*

U.S. Cl. 434—307 **31 Claims**



1. In a method for developing an individual's capacity to form and utilize accurate mental images of data to which the subject has been previously exposed, the steps comprising:

a. providing an electronically generated visual display of an environment simultaneously including a plurality of distinctive datum references within the displayed environment which may be acted upon by the subject;

b. providing data processing means with data storage means containing predetermined information relative to said datum references of said display including (i) a first condition of each said datum reference to be acted upon, (ii) an instruction for action on each such datum reference to be acted upon, said instruction requiring at least two dimensions of action upon the datum reference, and (iii) at least a second condition of each such datum reference to be representing the result of at least two dimensions of action upon each such datum reference acted upon and following proper execution of the instruction with respect thereto;

c. providing means for manipulation by the subject coupled to said data processing means to electronically record in said data storage means the action to change said datum references of said visual display;

d. highlighting at least one of said datum references of said display and providing an instruction to the subject requiring an action with said manipulatable means to change at least said one of the highlighted datum references of said visual display, said action requiring at least two dimensions of manipulation with said manipulation means as to each such datum reference acted upon;

e. electronically recording at least two dimensions of the actions of the subject on the hightlighted datum references in response to the instruction to change any highlighted datum references of said visual display;

f. comparing the recorded dimensions of the subject's action on the appropriate datum reference with the predetermined dimensions for change in condition of such datum reference in proper response to the given instruction; and

g. presenting to the subject the results of such comparison.

4,518,362

OPERATION CONTROL FOR ELECTRIC OUTBOARD MOTOR

Wallace R. Johnson, Mundelein, and W. Wayne Beem, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

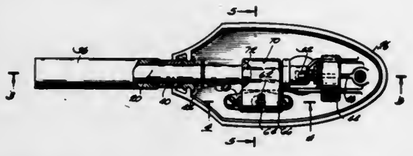
Filed Jul. 25, 1983, Ser. No. 516,571

Int. Cl.³ B60L *11/02*

U.S. Cl. 440—6 **14 Claims**

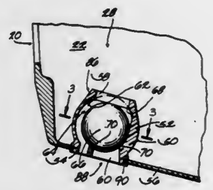
1. An electric outboard motor having a control head in which a steering tiller is mounted for limited rotational and axial movement relative to and within said control head, a first

switch located in said control head and operated by rotation of the tiller to regulate operation and speed of the motor, and a



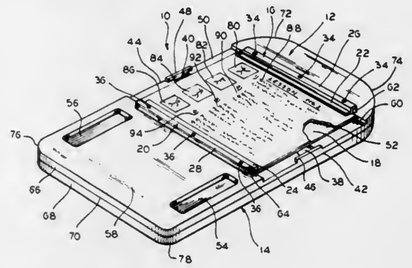
second switch located in said control head and operated by axial motion of the tiller to select forward or reverse operation of the motor.

4,518,363
VENT ASSEMBLY FOR MARINE PROPULSION DEVICES
Gerald F. Bland, Kenosha, Wis., and Donald K. Sullivan, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Continuation of Ser. No. 349,177, Feb. 16, 1982, abandoned.
This application Jan. 13, 1984, Ser. No. 570,417
Int. Cl.³ B63H *21/34*
U.S. Cl. 440—89 **2 Claims**



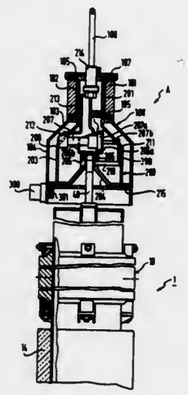
1. A marine propulsion device comprising a propulsion assembly including a lower unit having a gear case normally submerged in water and carrying a rotatably mounted propeller, an upper unit including a powerhead housing normally located above the water, defining an engine compartment, and including a lower wall having therein an aperture surrounded by a marginal wall portion, an internal combustion engine disposed inside said engine compartment and drivingly connected to said propeller, a tubular member fabricated of resilient material, extending vertically, and including an upper part with an upper port communicating with said engine compartment, a lower part having an outer surface including a circumferentially extending annular groove receiving said marginal wall portion and an inner surface defining a lower port communicating with the atmosphere, said lower part being deformable from a normal size to a collapsed smaller size affording snap-in receipt of said marginal wall portion into said annular groove and to a stretched larger size, and a passage portion intermediate said upper and lower parts and including a valve seat facing downwardly, and a bulbous part below said valve seat, and a buoyant ball valve member disposed in said bulbous part of said passage portion, having a size greater than said normal size and smaller than said stretched larger size to permit insertion of said ball valve member into said bulbous part of said passage portion, and being movable between a lower open position wherein said ball valve member is supported in spaced relation from said valve seat in response to gravitational force, whereby to afford fluid flow between said engine compartment and the atmosphere, and an upper closed position wherein said ball valve member is in sealing engagement with said valve seat in response to water entering said lower port and rising in said passage portion, whereby to prevent water flow into said engine compartment.

4,518,364
SWIMMING INSTRUCTION DEVICE
Vivian R. Jacobson, 3557 W. Hollywood Ave., Chicago, Ill. 60659
Filed Sep. 30, 1983, Ser. No. 537,804
Int. Cl.³ A63B *31/00*
U.S. Cl. 441—129 **7 Claims**



1. A swimming instruction device, comprising;
a kickboard having a top surface and a bottom surface, said kickboard being buoyant to float on water with at least a portion of said bottom surface in contact with the water and said top surface facing upwardly and away from the water, said kickboard including means for selective attachment of swimming instruction to said top surface thereof,
said means for selective attachment of swimming instructions including a plurality of guide members adapted to receive a swimming instruction card:
said guide members being disposed in spaced parallel relation on said top surface of said kickboard, said guide members each including a card retaining flange extending toward the other of said guide members.

4,518,365
DEVICE FOR NIPPLING ACTIVE ELECTRODE SECTIONS ONTO A COMBINATION ELECTRODE
Kurt Schudlich, Witten-Annen; Günter Vielstich, Witten-Heven; Josef Mühlenbeck; Josef Otto, both of Wetter; Hannsgeorg Bauer, Witten-Bommern; Dieter H. Zöllner, Schwaig b. Nürnberg, and Friedrich Rittmann, Rückersdorf b. Nürnberg, all of Fed. Rep. of Germany, assignors to ARC Technologies Systems, Ltd., Grand Cayman, Cayman Islands
Filed Apr. 13, 1982, Ser. No. 367,871
Int. Cl.³ H01J *9/18*
U.S. Cl. 445—67 **19 Claims**



1. A coupling device for nippling and denippling active consummable electrode sections of a combination electrode joined by means of screw nipples comprising:
an outer, essentially hollow cylindrical element and a second element also essentially hollow and cylindrical, arranged coaxially within said outer element;
the inner element including locking means controllable for detachably engaging a connector element affixed to a combination electrode, and an insertion means having a wall element narrowing in a direction of insertion of the connector element into the coupling device to align the connector element with the locking means; the outer element having a suspension means shockabsorbingly movable along the insertion direction; and
a drive configured to rotate the inner element in relation to the outer element around the co-axis.

4,518,366
MANIPULABLE DOLL
Carl Fultz, Jr, and Phyllis D. W. Fultz, both of 315 Summerwood Dr., Bristol, Tenn. 37620
Filed Mar. 16, 1983, Ser. No. 475,856
Int. Cl.³ A63J *19/00*; A63H *3/20*
U.S. Cl. 446—366 **8 Claims**



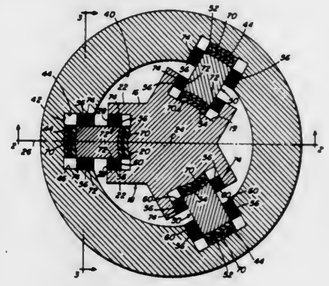
1. An improved manipulable doll for reproducing lifelike human or animal movement while being operated by a human operator, said doll comprising:
a torso member having a lower waist portion and an upper end portion, and provided with a centrally located annular recess oriented substantially perpendicular to a line joining said waist portion and said upper end portion of said torso member;
a head portion including an integrally formed neck portion, said neck portion being centrally located on and fixedly engaged to said upper end portion of said torso member;
a universally flexible connecting medium for enclosing said torso member and giving said doll lifelike appearance, said connecting medium being provided with a first opening for receiving said neck portion of said torso member and a second opening corresponding to said annular recess of said torso member, said connecting medium further comprising a pair of arm portions, each said arm portion having a free end portion, and a pair of leg portions, each said leg portion having a free end portion;
a pair of hand members, each said hand member being fixedly engaged to said free end portion of said arm portion of said connecting medium, said connecting medium functioning as sole connection between said hand members and said torso member;
a pair of foot members, each said foot member being fixedly engaged to said free end portion of each said leg portion of said connecting medium, said connecting medium functioning as sole connection between said foot members and said torso member;
a manipulator rod having a first end portion being slidably received through said second opening in said connecting medium and releasably received in said annular recess of said torso member, and a second end portion for being grasped by said operator in operating said doll; and
a support board for flexibly supporting and vibrating said doll as it is operated by said operator.

4,518,367
FIGURE INCLUDING MEANS FOR EXTRUDING PLASTIC SUBSTANCE
John V. Zaruba, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Oct. 19, 1983, Ser. No. 543,408
Int. Cl.³ A63H *3/36*
U.S. Cl. 446—373 **11 Claims**



1. An activity toy comprising:
a figure with a body supporting an upper member including a hollow skull;
extrusion openings in the skull in one or more of the eye, nose, and mouth areas;
a loading opening for inserting a plastic substance into the hollow skull;
extrusion means cooperating with the loading opening in said member for forcing the plastic substance into the hollow skull and out of the extrusion openings; and
a removable clear mask, means for attaching the mask about the skull with the interior of the mask spaced from the skull in the area of the openings and in a relatively tight fit with another portion of the member to substantially prevent the flow of the plastic substance out of the mask.

4,518,368
COUPLING
Mark F. Peretti, Braintree, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.
Filed Jun. 8, 1983, Ser. No. 502,217
Int. Cl.³ F16D *3/50, 3/52*
U.S. Cl. 464—70 **12 Claims**



1. A coupling device comprising, in combination:
a driving member mounted for rotation about a first axis;
a driven member mounted for rotation about a second axis;
a plurality of intermediate floating members circumferentially spaced around said first and second axes and coupling said driving and driven members so that said first and second axes tend to intersect at a common point when axially misaligned, each of said floating members being elongated in one direction and having (1) an elongated central axis extending radially with respect to said first and second axes through said common point and lying in a common plane with the elongated central axes of the

other ones of said floating members, (2) an outer radial end defined by a convex spherical end surface having a center of curvature coincident with said common point, and (3) an inner radial end defined by a concave spherical end surface having a center of curvature coincident with said common point;

first means for coupling the inner radial end of each of said floating members to one of said driving and driven members, said first means including bearing means disposed between each said floating member and said one member; and

second means for coupling the outer radial end of each of said floating members to the other of said driving and driven members, said second means including bearing means disposed between each said floating member and the other of said driving and driven members;

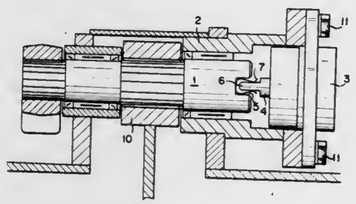
wherein said bearing means of said first and second means carries in compression torque transmitted between said driving and driven members and accommodates relative pivotal motion between said driving and driven members about said common point.

4,518,369

COUPLING ARRANGEMENT FOR ROTATING SHAFTS

Mitsuhisa Shinsen, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,828
Int. Cl.³ F16D *3/52*
U.S. Cl. 464—101 **1 Claim**



1. A coupling arrangement for rotating shafts, comprising:

a first shaft having an end face, said first shaft having formed in the end face a slit extending at right angles with the axis thereof, said slit having straight, parallel sides and a flat bottom parallel with said end face;

a second shaft disposed in alignment with said first shaft, said second shaft having an end face opposite the end face of said first shaft;

a tongue extending from the end face of said second shaft in alighment with said first and second shafts, said tongue being adapted to be inserted into the slit with enough clearance and said tongue further having tapered edges at its outermost end; and

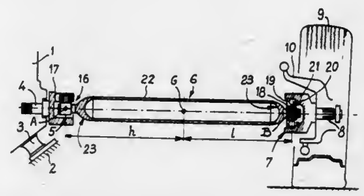
leaf spring means adapted to be inserted into the slit for coupling against rotation between said first and second shafts through said tongue, said leaf spring means having a crown and two leg portions, the crown being inserted into the slit and the two leg portions being adapted to clamp said tongue in such a manner that no relative rotary motion occurs between said first shaft and said tongue, said tongue also having two flat surfaces parallel to each other and to the axis thereof such that said two leg portions of said leaf spring means clamp the respective flat surfaces.

4,518,370

TRANSMISSION FOR A MOTOR VEHICLE

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed May 23, 1983, Ser. No. 497,011
Claims priority, application France, May 26, 1982, 82 09152
Int. Cl.³ F16D *3/22*; F16C *3/00*
U.S. Cl. 464—113 **8 Claims**



1. A motor vehicle transmission comprising:

a driving shaft;

a driven shaft;

a transmission shaft extending between said driving and driven shafts;

first and second constant-speed joints respectively connecting opposite ends of said transmission shaft to said driving shaft and to said driven shaft; and

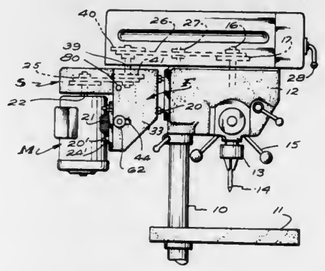
means for preventing radial vibration of said driving shaft from being transmitted to said driven shaft, said means comprising a construction of a unit comprising said transmission shaft and elements of said first and second joints connected to said transmission shaft such that said unit has a moment of inertia, about an axis perpendicular to said transmission shaft and passing through the center of gravity of said unit, substantially equal to the product of the mass of said unit, the distance from the center of articulation of said first joint to said center of gravity, and the distance from the center of articulation of said second joint to said center of gravity.

4,518,371

POWER TOOL DRIVE ATTACHMENT

David K. Hanson, 861 Glenhaven Dr., La Habra, Calif. 90631

Filed Sep. 12, 1983, Ser. No. 531,039
Int. Cl.³ F16H *7/14*
U.S. Cl. 474—114 **16 Claims**



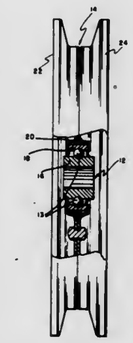
1. A belt drive attachment for motor driven machines comprising a vertical frame with top and bottom ends, spaced front and rear ends and spaced sides, a substantially flat mounting wall at the upper forward portion of the frame to engage and be fastened to a motor mounting pad on a related machine, bearing means within the frame, an elongate countershaft rotatably carried by the bearing means and having a portion projecting from the frame and a portion within the frame, a mounting plate at the lower rear portion of the frame to releasably cooperatively engage a motor mounting frame of a related motor, hinge means pivotally connect the plate to the frame for pivotal movement of said plate and a related motor relative thereto, clamp means engaged with and between the frame and the plate and releasably hold the plate in fixed pivotal position, a multi-diameter/multi-sheave input pulley wheel is drivingly engaged on the portion of the shaft within the frame, a drive belt is engaged about and between the input pulley wheel and a complimentary multi-diameter/multi-sheave pulley wheel on the drive shaft of a related motor mounted on the plate and a multi-diameter/multi-sheave output pulley wheel is drivingly engaged on the portion of the countershaft projecting from the frame and is engageable with a drive belt engaged with and extending from a multi-diameter/multi-sheave driven pulley wheel on a driven shaft on a related machine spaced from the output pulley wheel.

4,518,372

IDLER PULLEY AND METHOD OF MOUNTING A PRECISION BEARING

Donald D. Dye, P.O. Box 107, Kingman, Kans. 67068

Filed Oct. 24, 1983, Ser. No. 544,539
Int. Cl.³ F16H *55/14*
U.S. Cl. 474—94 **10 Claims**



1. A pulley device having a bearing of precise dimensional tolerance supported in a sheave of less precise tolerance comprising a pair of substantially identical disc-like elements of opposite hand flushing against each other at an inner contact point that terminates into an inner circular structure whose vertical cross-section along any point of the perimeter of the inner circular structure generally defines a Y-shape with a pair of arms flaring from a flare point that represents a groove;

a roller bearing means having an inner race and an outer race, said roller bearing means lodging within said inner circular structure such that said outer race is encased within and is in contact with outer ends of the pair of arms of said Y-shaped cross section of said inner circular structure on the outside of said outer race;

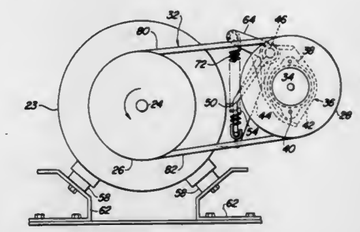
an elastic ring means under compression and supported by the outer race and lodged in said groove of said flare point in contact with inner end portions of said pair of arms and with space on each side of said ring between said arms and the outer surface of said outer race, said elastic ring means receiving a compressive load when the main body of the radial load on the pulley is transmitted along said inner contact point to the roller bearing means through said elastic ring means.

4,518,373

SELF TENSIONING BELT DRIVE

Wolfgang Roth, Zweibrucken, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Mar. 31, 1983, Ser. No. 481,094
Claims priority, application European Pat. Off., May 13, 1982, 82104160
Int. Cl.³ F16H *7/08*
U.S. Cl. 474—109 **5 Claims**



1. A belt drive for a machine having a power source and a frame comprising:

a driver sheave rotatably mounted on the frame and drivably connected to the power source;

a driven sheave rotatably carried by the frame and drivably connected to a driven element, said element having an axis of rotation and imposing a variable load on the belt drive;

a drive belt trained around the respective sheaves for transmitting power between them, said belt having a tight side and a slack side, and said tight side engaging the driven sheave so as to define a line of action for the belt spaced at a given effective radius from the center of the driven sheave; and

mounting means for mounting the driven sheave on the frame for oscillation about a pivot axis, said pivot axis being spaced from the axis of rotation of the driven element and disposed generally parallel to the axis of rotation of the driven sheave and lying between said axis and the line of action of the tight side of the belt so that the mounting means is directly mechanically responsive to the load imposed on the driven sheave by the driven element so that an increase of load biases the driven sheave away from the driver sheave so as to increase the effective tension of the belt, the pivot axis being disposed so that the biasing of the driven sheave responsive to an increase in drive load is in a direction tending to decrease the ratio of the effective radius to the distance from the pivot to the line of action.

4,518,374

POLY-V PULLEYS

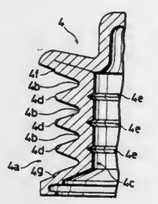
Yukio Kanemitsu, Hyogo, Japan, assignor to Kabushiki Kaisha Kanemitsu, Japan

Filed Jul. 21, 1982, Ser. No. 400,415
Claims priority, application Japan, Dec. 24, 1981, 56-212370
Int. Cl.³ F16H *55/49*
U.S. Cl. 474—170 **2 Claims**

1. A poly-V pulley formed from a sheet metal cup-shaped blank, comprising:

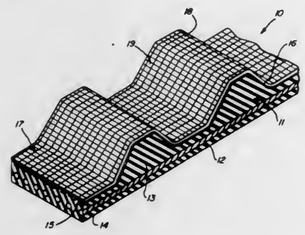
a cylindrical wall of continuous material, with inner and outer peripheral surfaces, a portion of the cylindrical wall being thicker than remaining sheet metal material from the blank, the thicker portion having a plurality of deep, parallel V-shaped annular grooves in the outer peripheral surface, alternating with parallel, annular partition walls, the alternating annular grooves and partition walls being adapted for receiving poly-V belts, the inner peripheral surface of the thickened portion having a plurality of shallow V-shaped annular grooves of triangular cross-section arranged parallel to one another and aligned between

the grooves of the outer peripheral surface, the inner peripheral surface being flat between said shallow V-shaped annular grooves; and,



annular flanges at opposite ends of the thicker portion projecting radially beyond the partition walls, the flanges having peripheral steps for secure engagement between the pulley and the poly-V belts.

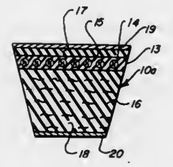
4,518,375
TOOTHED BELT
Satoshi Mashimo, Akashi; Masayuki Tanaka, and Yoshio Yamaguchi, both of Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan
Filed Jan. 25, 1983, Ser. No. 460,921
Claims priority, application Japan, Jan. 27, 1982, 57-11967
Int. Cl.³ F16G *1/28*
U.S. Cl. 474—205 **24 Claims**



1. In a drive belt having an elongate belt body provided with a longitudinally extending tension member and a drive portion defined by a plurality of longitudinally spaced projecting teeth, the improvement comprising:
a first layer of elastic yarn extending spirally longitudinally of the belt body on the surface of said teeth; and projecting
a second layer of cloth on said first layer, said cloth having an elastic warp of greater than 50% ductility extending longitudinally of the belt.

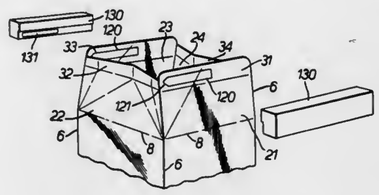
4,518,376
POWER TRANSMISSION BELT MANUFACTURE
Satoshi Mashimo, Akashi; Hazime Kakiuchi, Itami, and Masayoshi Nakajima, Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan
Continuation of Ser. No. 203,716, Nov. 3, 1980, abandoned. This application Jun. 22, 1984, Ser. No. 623,619
Claims priority, application Japan, Nov. 8, 1979, 54-145280
Int. Cl.³ F16G *5/00, 1/22;* F16H *7/00;* C08K *3/36*
U.S. Cl. 474—261 **13 Claims**

1. In a belt having a load-carrying section provided with load-carrying cords, an improved cushion having a high strength bond with said cords embedded therein, said cushion being formed of a modified rubber blend, comprising:
(a) about 100 parts by weight chloroprene rubber,
(b) about 0.1 to 5.0 phr of silane coupling agent,
(c) about 10–60 phr silica,



(d) about 0.3 phr sulphur containing cross-linking agent, and
(e) about 2–60 phr carbon black.

4,518,377
METHOD OF MAKING A CARTON
Edward A. Skinner, Welwyn Garden City, England, assignor to Elopak Limited, Hertfordshire, England
Filed May 10, 1982, Ser. No. 376,557
Claims priority, application United Kingdom, May 11, 1981, 8114277
Int. Cl.³ B31B *1/64*
U.S. Cl. 493—58 **8 Claims**

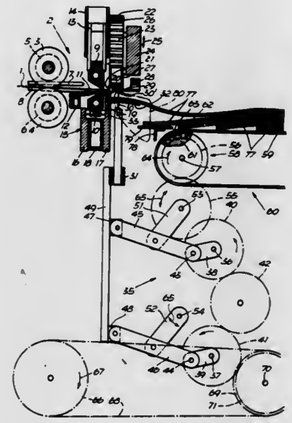


1. A method of making a carton, comprising the steps of:
providing a sheet material defining a planar first surface having first, second, third and fourth portions;
embossing said sheet material to cause said fourth portion to lie out of the plane of said surface but substantially parallel thereto to define a corresponding depression in said one surface;
folding said embossed sheet material;
bringing said first and second portions together face-to-face;
bringing said third and fourth portions together face-to-face;
adhering said first and second portions together by introducing the first, second, third and fourth portions between the jaws of a pair of jaws; and
pressing the first and second portions together by means of the jaws while the fourth portion is situated at a recess in one of the jaws so as not to bear firmly on the third portion.

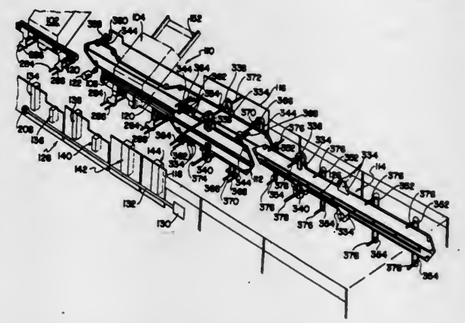
4,518,378
APPARATUS FOR THE MANUFACTURE OF PLASTIC BAGS
Ehrhart Schulze, Fellbach, and Franz Bochtler, Rudersberg, both of Fed. Rep. of Germany, assignors to Karl Heinz Stiegler, Fed. Rep. of Germany
Filed Jan. 4, 1982, Ser. No. 336,566
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100722
Int. Cl.³ B31B *1/16, 23/14*
U.S. Cl. 493—204 **6 Claims**

1. An apparatus for the manufacture of plastic bags from a web of tubular film and for stacking the resultant bags, which apparatus includes in combination means including an array of air jets for advancing cyclically a predetermined length of said

web, sealing bars mounted on opposite sides of the path of said length of said web for cooperative movement into and out of seal producing engagement with said web length transverse thereto for producing bottom seams of the bags, means for severing a completed bag from said web adjacent the seam for a succeeding bag, a stacking station in the advancing direction of said web beyond said severing means, an intermittently operable transporter for transporting stacks of bags away from said stacking station, and means for transferring a stack of said bags from said stacking station to said transporter, characterized in that said stack transferring means comprises a single array of needles mounted for movement between said stacking station and a transfer station adjacent said transporter for moving the impaled end of a stack of said bags toward said transporter simultaneously and in coordination with transporter operation, means for advancing said transporter in synchronism with said needle stacking-station-to-transfer-station movement for moving the opposite end of said stack simultaneously with said needle movement, means for interrupting said transporter advancing movement when said needles reach said transfer station, a drive mechanism operatively coupled to said array of needles, said drive mechanism including a first crank and means linking said first crank to said needles for converting a single revolution of said first crank into a closed loop movement of the tips of said needles from said stacking station to said transfer station along a path above both of said stations and then below both of said stations to return to said stacking station, and a second crank mounted for rotation in parallel synchronism with and in the same plane as said first mentioned crank, each crank having pivotally joined thereto a connecting link joined at its other end to a common support for said needles, and a separate rocker arm joining an intermediate point of each of said connecting links, respectively, to a corresponding fixed pivot point, said connecting links operating in parallel and said rocker arms acting in parallel, said drive mechanism being coordinated with the operation of said web advancing means and said sealing bars for extracting said needles from said stack after said length of web has been advanced and said sealing bars have assumed their seam producing position and created a barrier to air from said air jets reaching said transporter supported stack, said needles reaching said stacking station prior to completion of said seam production, and means for impaling on said needles at said stacking station the end of each bag adjacent the line of severance from said web in coordination with such severance.

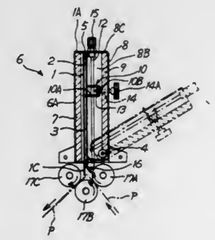


4,518,379
APPARATUS AND METHOD FOR JOINING INDIVIDUAL BLANKS
Charles W. Eldridge, Beverly, Mass., assignor to Melvin B. Herrin, Meadowbrook, Pa.
Filed Dec. 28, 1981, Ser. No. 334,585
Int. Cl.³ B31B *17/02*
U.S. Cl. 493—334 **36 Claims**



1. An apparatus for joining individual blanks together and having an operative direction, said individual blanks being conveyed through said apparatus along said operative direction, said apparatus comprising means for providing a first and second blank of self-supporting material, means for displacing at least a portion of said first blank substantially along said operative direction of said apparatus and away from at least a portion of said second blank, and means for arranging said first and second blanks such that said displaced portion of said first blank is arranged in alignment with a portion of said second blank such that said blanks can be joined together in said alignment by a bonding agent provided therebetween.

4,518,380
PAPER FOLDING DEVICE
Masaaki Shimizu, Tokyo, and Akira Aihara, Kyoto, both of Japan, assignors to Horizon Co., Ltd., Kyoto, Japan
Filed Feb. 21, 1984, Ser. No. 581,696
Claims priority, application Japan, Feb. 28, 1983, 58-33288
Int. Cl.³ B31B *1/64*
U.S. Cl. 493—420 **7 Claims**



1. A device for folding a sheet of paper, comprising:
a pair of wing members;
means for holding each of said wing members for pivotal movement between an open position and a closed position;
a gap formed between said wing members in said closed position, said gap being dimensioned so that a sheet of paper to be folded may be inserted into said gap;
a stopper disposed in the gap so as to be displaceable in the direction of movement of said sheet of paper inside said gap;
a pair of sound absorbing members each arranged behind

one of said pair of wing members for simultaneous opening and closing movement therewith; and

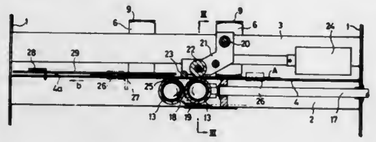
roller means arranged adjacent the entrance of said gap for feeding a sheet of paper to be folded into said gap and folding said sheet of paper at a bent portion caused outside said gap upon hitting of the forward edge of said sheet of paper on said stopper inside said gap.

4,518,381

SHEET FOLDING MACHINE

Susumu Wakatsuki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 305,318, Sep. 24, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 543,806
Claims priority, application Japan, Oct. 1, 1980, 55-135785
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—444 **7 Claims**



1. A sheet folding machine comprising:

a pair of sheet folding rollers positioned along a sheet conveying path and having their respective axes of rotation in a direction parallel to a sheet conveying direction in said sheet conveying path said sheet folding rollers having a nipping region therebetween to grasp and direct a portion of a sheet in a direction generally perpendicularly to a plane of said sheet conveying path;

a sheet stopper provided along the sheet conveying path for limiting widthwise displacement of said sheet within said plane of the sheet conveying path;

an idler roller having an axis of rotation parallel to said sheet conveying direction and positioned to depress a sheet against one of said sheet folding rollers to effectuate widthwise displacement of said sheet within said plane and in a direction perpendicular to said sheet conveying direction to abut said sheet against said sheet stopper;

means for bending a sheet into said nipping region;

means for selectively moving said idler roller and said means for bending into an operative position relative to said pair of sheet folding rollers at nipping region; and

control means for detecting the delivery of said sheet to said pair of folding rollers and operating said means for selectively moving said idler roller and said means for bending to fold said sheet by nipping action of said sheet folding rollers.

4,518,382

APPARATUS FOR COLONIC AND INTESTINAL IRRIGATION

Ingrid B. Bloxom, Jr., P.O. Box 357, Wicomoco, Va. 23184

Filed Nov. 29, 1983, Ser. No. 556,036
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—27 **6 Claims**

1. An apparatus for controlled intestinal irrigation comprising:

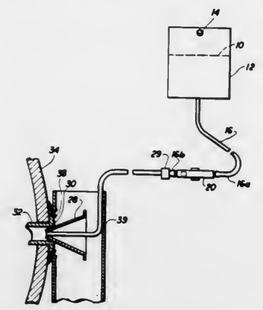
(a) a container means for supply and storage of irrigating liquid,

(b) introduction means positionable adjacent to and in fluid delivering relation with an entrance to an intestine being irrigated for introducing liquid thereto,

(c) conduit means disposed in interconnecting and fluid communicating relation between said container means and said introduction means,

(d) flow regulating means connected to said conduit means and structured and disposed to stop and control liquid flow from said container means to said introduction means, whereby flow of irrigating fluid to the intestine is selectively stopped by said flow regulating means upon an indication of peristaltic action of the intestine by a flow indicator,

(e) a flow indicator means connected to said conduit means between said container means and said introduction means and structured to accommodate liquid flow therethrough from said container means to the intestine and reversely from the intestine into said flow indicator means,



(f) said flow indicator means first structured for visual observation of at least a portion of the interior thereof and including an indicator element movably disposed therein and within liquid flow passing therethrough,

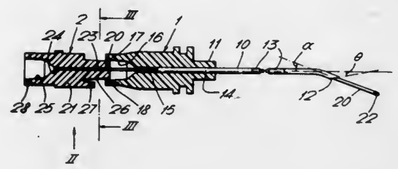
(g) said indicator element cooperatively structured and disposed relative to said flow indicator means for responsive displacement therein based on peristaltic action of the intestine during flow of liquid through said flow indicator means to the intestine.

4,518,383

INSTRUMENT AND METHOD FOR EPIDURAL AND SPINAL ANAESTHESIA

John M. Evans, Nuffield Department of Anaesthetics, The Radcliffe Infirmary, Oxford OX2 6HE, England

Filed Aug. 2, 1983, Ser. No. 519,788
Claims priority, application United Kingdom, Aug. 6, 1982, 8222799
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—51 **12 Claims**



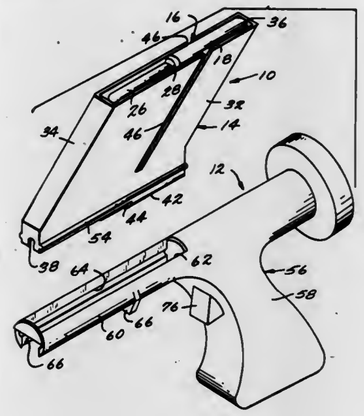
1. A medico-surgical instrument for use in epidural and spinal anaesthesia comprising: an outer hollow needle assembly having a hollow outer needle the forward end of which is bent away from the longitudinal axis of the instrument and has an inclined pointed tip, and a hub mounted at the rear of said outer needle, said hub having an engagement member provided therewith; and an inner hollow needle assembly having a hollow inner needle the forward end of which has an inclined pointed tip, and a hub mounted at the rear of said inner needle, the said hub of said inner assembly having an engagement member provided therewith that cooperates with the engagement member of the hub of said outer assembly so as to define a predetermined relative angular orientation between the inner and outer needle assemblies, the length of the inner needle being such that it projects beyond the forward end of the outer needle when said engagement members are in cooperation, and the relative angular orientation of the outer and inner needle assemblies being such that the plane of the inclined pointed tip of the inner needle is substantially at right angles with plane of the inclined pointed tip of the outer needle.

4,518,384

MULTIPLE MEDICAMENT CARTRIDGE CLIP AND MEDICAMENT DISCHARGING DEVICE THEREFOR

William R. Tarello, Bethesda; Claudio Lopez; Linda A. Gordon, both of Silver Spring; Thomas D. Whalen, Rockville, and William B. Harvey, Olney, all of Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Jun. 17, 1983, Ser. No. 505,323
Int. Cl.³ A61M *5/18*
U.S. Cl. 604—61 **41 Claims**



1. An expendable medicament cartridge containing clip for use with a portable medicament discharging device having a cartridge receiving station and a medicament discharging mechanism movable through successive cycles each of which includes a medicament discharging stroke through said cartridge receiving station when a medicament cartridge is positioned in said station, said clip comprising

a series of medicament cartridges, each of said cartridges comprising

a container,

a dosage of medicament in said container,

a hypodermic needle having a sharpened end for penetrating the muscle tissue of a patient and an opposite end through which the dosage of medicament is fed,

means for sealingly containing said needle in a sterile condition in cooperating relation with said container, and

means at one end of said container operable in response to a discharging stroke of said medicament discharging mechanism when in the cartridge receiving station thereof to cause the sharpened end of said needle to move outwardly out of sealingly contained relation and into the muscle tissue of a patient and said medicament dosage to move outwardly of said container into the opposite end of said needle and out of the sharpened end thereof into the muscle tissue of the patient,

casing means for retaining said series of cartridges in a unitary condition suitable for manual handling and connection with said medicament discharging mechanism, and

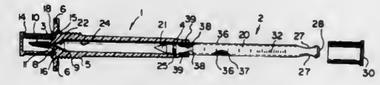
means operable when said casing means is connected with the discharging mechanism for enabling successive medicament cartridges retained in said casing means to be moved into the cartridge receiving station of the discharging mechanism.

4,518,385

DISPOSABLE SYRINGE FOR NEEDLELESS INJECTOR

Istvan Lindmayer, Pierrefonds, and Raymond M. Grunwald, Dollard des Ormeaux, both of Canada, assignors to Preci-Tech Ltd., Ville St. Laurent, Canada

Filed Jun. 13, 1983, Ser. No. 503,765
Int. Cl.³ A61M *11/00*
U.S. Cl. 604—68 **12 Claims**



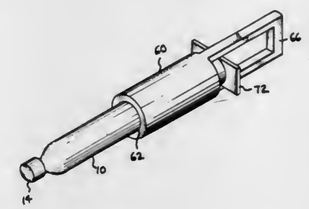
1. A disposable syringe for use in a needleless injector of the type including a casing, a piston slidably mounted in the casing for movement between a retracted position and an extended position, and drive means for driving the piston from the retracted to the extended position, the syringe comprising tubular plastic barrel means, said barrel means having an open inner end for insertion into said casing and a closed outer end for extending out of said casing; connector means for releasably retaining said barrel means in said casing; orifice means in said closed end of said barrel means for admitting medicine into said barrel means, plunger means slidably mounted in said barrel means, one end of said plunger means extending out of said open inner end of said barrel means for gripping whereby the plunger means can be moved away from said closed outer end of said barrel means to a loaded position in which medicine fills the space in said barrel means between said closed outer end and the other end of said plunger means, said one end of the plunger means being engageable by said piston, whereby the plunger means can be moved from the loaded position to a discharge position against said closed outer end of the barrel means to discharge substantially all of the medicine from said barrel means.

4,518,386

MEDICINE CONTAINER HAVING LYOPHILIZED POWDER AND DILUENT STORED IN SEPARATE SEALED CHAMBERS

John A. Tartaglia, 101 Pierpont Rd., Waterbury, Conn. 06705

Filed Aug. 31, 1983, Ser. No. 527,980
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—89 **7 Claims**



1. A medical device comprising:

a first elongated hollow cylinder having a first inner diameter, one end of the first cylinder being open, the other end of the first cylinder being provided with means for receiving a hypodermic needle and being otherwise sealed;

a second elongated hollow cylinder having a second and smaller inner diameter, the first and second cylinders being disposed end to end a long a common axis, one end of the second cylinder being open and disposed adjacent said one end of the first cylinder, the other end of the second cylinder being adapted to be detachably engaged by cylinder engaging means;

a sealing member disposed between and detachably engaging both cylinders, said member having a first cylindrical section having a diameter slightly smaller than said first

diameter with means disposed in slidable sealing engagement in said one end of the first cylinder, said member having a second cylindrical section having a diameter slightly smaller than said second cylinder with means disposed in slidable sealing engagement in said one end of the second cylinder, said first section means having a first coefficient of friction with respect to the inner wall of the first cylinder, said second section means having a second and higher coefficient of friction with respect to the inner wall of the second cylinder;

a first medicine disposed in the first cylinder; and

a second medicine disposed in the second cylinder.

4,518,387

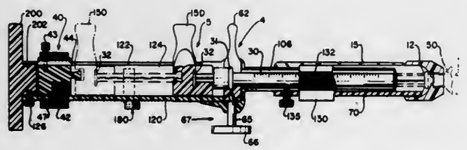
SYRINGE INJECTION APPARATUS WITH ADJUSTABLE DOSAGE INDICATOR

Frank Murphy, 285 Channelwood Cir., Apartment 506, Akron, Ohio 44307, and William F. Peterson, 2650 Eleventh St., Cuyahoga Falls, Ohio 44221

Filed Dec. 27, 1982, Ser. No. 453,601

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—187 **6 Claims**



1. A manual syringe injection apparatus, comprising:

a cylindrical tube;

a cylindrical needle guide attached to said tube by a sliding means at one end of said tube, said needle guide separating upon contact with a surface to tension such surface;

an elevator ejector attached to said tube in the center section of said tube; and

a piston assembly inserted inside of the other end of said tube, wherein a syringe is locked into said tube by said elevator ejector.

4,518,388

OSTOMY POUCH WITH REDUCED FRICTION INSERT

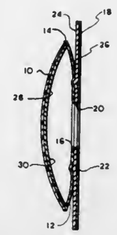
Ole R. Jensen, River Vale, N.J., assignor to E. R. Squibb & Sons, Princeton, N.J.

Filed Jun. 14, 1982, Ser. No. 388,177

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—332 **7 Claims**

1. An ostomy pouch comprising first and second pouch walls sealed along their contour, said first pouch walls having an aperture therein, an adhesive-backed label having an aperture, said label being heat-seal affixed to said one pouch wall, with said aperture therein aligned with said aperture in said one pouch wall, and an insert comprising non-heat-sealable material, said insert being situated within said pouch between the interior surfaces of said pouch walls substantially completely and permanently and affixed to the interior surface of



said second pouch walls in registration with the affixation of said label to said one pouch wall.

4,518,389

INTERDIGITATED COUPLING FOR AN OSTOMY BAG

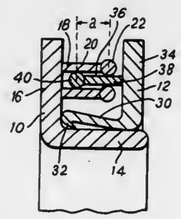
Peter L. Steer, and John V. Edwards, both of East Grinstead, England, assignors to Kingsdown Medical Consultants, Limited, London, England

Continuation of Ser. No. 374,455, May 3, 1982, abandoned. This application May 2, 1984, Ser. No. 591,727

Claims priority, application United Kingdom, Jun. 26, 1981, 8119731

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—339 **6 Claims**



1. A coupling for joining an ostomy bag to a pad of adhesive material which can be applied to the wearer of the bag comprising:

(a) two coupling elements, each of which has a substantially cylindrical, hollow portion, said coupling elements being adapted to engage one another;

(b) an annular flange which extends laterally from said substantially cylindrical, hollow portion of each of said coupling elements;

(c) an internal, inwardly extending flexible sealing skirt which is an integral part of said cylindrical, hollow portion of one of said coupling elements, said sealing skirt being configured to engage and make sealing engagement with the external surface of said cylindrical, hollow portion of said other coupling element; and

(d) a plurality of pins extending in an axial direction from each of said flanges, said pins each having a head and shank configuration adapted to engage with a similar pin on said other coupling element, whereby the combination of said sealing skirt and said pins provides an easily removable, yet easily sealable apparatus for an ostomy product.

4,518,390

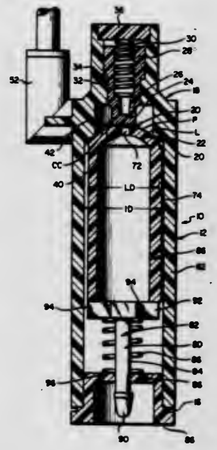
LENS TINTING FIXTURE AND SYSTEM UTILIZING SAID FIXTURE

Richard Rabenau, and Jeffery A. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala. and National Patent Development Corporation, New York, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,694

Int. Cl.³ B05C *3/00, 19/02;* **G03B** *21/46;* **B05D** *5/06*

U.S. Cl. 8—507 **30 Claims**



24. A method of tinting a contact lens by using a tube-like structure which is closed at one end by structure which includes mask means and which is open at the other end, the method comprising the steps of; orienting the tube-like structure in a first position with the open end upward; adding a fluid column to the interior of said tube structure; dropping the lens to be tinted into the fluid in the tube, and permitting the lens to sink through the fluid column, so as to cause the lens to orient and center itself relative to the tube, permitting the oriented and centered lens to come to rest on mask structure defined in the tube bottom, inserting a mandrel member into the tube and fluid to secure the lens in place between the mandrel and the mask structure, applying a dye tinting medium to unmasked portions of the secured and masked lens.

4,518,391

MONOAZO COMPOUNDS HAVING A SULFO GROUP-CONTAINING DIAZO COMPONENT RADICAL AND A 6-(2'-CHLORO-1',3',5'-TRIAZIN-6'-YLAMINO)-1-HYDROXY-3-SULFONAPHTHALENE COUPLING COMPONENT RADICAL HAVING A SUBSTITUTED AMINO GROUP IN THE 4'-POSITION

Guenther Aüerbach, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

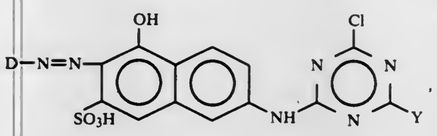
Filed Sep. 12, 1983, Ser. No. 530,941

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234505

Int. Cl.³ C09B *62/08, 29/30;* **D06P** *1/38, 3/66*

U.S. Cl. 8—549 **20 Claims**

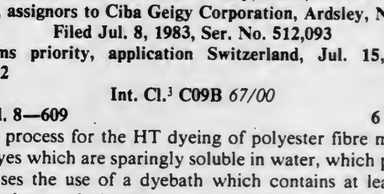
1. A compound of the formula



or a salt thereof each cation of which is independently a non-chromophoric cation,

wherein

D is

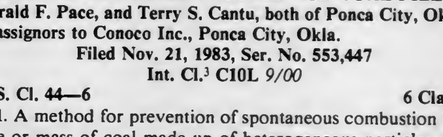


wherein

R_1 is hydrogen or sulfo, and

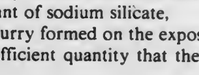
R_2 is hydrogen, halo, methyl, methoxy or acetamido, and

Y is



wherein

R_3 is hydrogen or



R_5 is C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by chloro, cyano or hydroxy, and

R_6 is halo, C_{1-4}alkyl or C_{1-4}alkoxy,

or a mixture of such compounds in free acid or salt form each cation of which is independently a non-chromophoric cation.

4,518,392

PROCESS FOR THE HT DYEING OF POLYESTER MATERIALS WITH ETHYLENE OXIDE PROPYLENE OXIDE BLOCK POLYMER

Hans Mollet, Reinach, and Paul Dussy, Basel, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jul. 8, 1983, Ser. No. 512,093

Claims priority, application Switzerland, Jul. 15, 1982, 4305/82

Int. Cl.³ C09B *67/00*

U.S. Cl. 8—609 **6 Claims**

1. A process for the HT dyeing of polyester fibre material with dyes which are sparingly soluble in water, which process comprises the use of a dyebath which contains at least one block polymer of ethylene oxide and propylene oxide having a molecular weight higher than 5000.

4,518,393

COAL BASED CEMENT COVER FOR COAL PILE

Gerald F. Pace, and Terry S. Cantu, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Nov. 21, 1983, Ser. No. 553,447

Int. Cl.³ C10L *9/00*

U.S. Cl. 44—6 **6 Claims**

1. A method for prevention of spontaneous combustion in a pile or mass of coal made up of heterogeneous particles substantially free from one another by covering said coal pile or mass, comprising

(a) forming a slurry of coal from coal fines, a carrier and an effective amount of sodium silicate,

(b) placing the slurry formed on the exposed surface of said coal pile in sufficient quantity that the slurry penetrates

the coal pile to a depth sufficient to substantially exclude atmospheric air, and

(c) allowing the slurry to dry to form a hard, sodium silicate-coal cement, wherein the total sodium present based on the coal covered is sufficiently low to avoid slagging during combustion.

2. A method as described in claim 1 wherein the carrier is water.

3. A method as described in claim 2 wherein the coal fines/-water slurry has a ratio of coal fines to water ranging from about 50-50 to about 90-10, respectively.

4,518,394

WAX-IMPREGNATED FIRE KINDLING STICKS

Philip R. Templin, Oakmont, and Elizabeth L. Fareri, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 22, 1981, Ser. No. 333,304
Int. Cl.³ C10L *11/02, 11/06*
U.S. Cl. 44—38 **3 Claims**

1. A wax-impregnated fire kindling stick comprising a bonded cellulosic substrate having a density of at least about 16.0 pounds per cubic foot and impregnated with a normally solid hydrocarbon wax selected from paraffin wax, microcrystalline wax, and mixtures thereof and having a congealing point of at least about 155° F., said fire kindling stick having a burn time of at least about 15 minutes.

4,518,395

PROCESS FOR THE STABILIZATION OF METAL-CONTAINING HYDROCARBON FUEL COMPOSITIONS

Joseph Petronella, Old Bridge Township, Middlesex County, N.J., assignor to Nuodex Inc., Piscataway, N.J.

Filed Sep. 21, 1982, Ser. No. 420,667
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—53 **10 Claims**

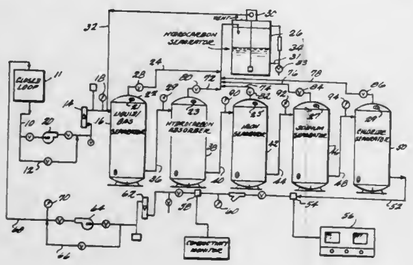
1. A diesel fuel composition stabilized against oxidative deterioration that consists essentially of diesel fuel containing from 5 ppm to 500 ppm of copper and from 1% to 25% by volume of a stabilizer selected from the group consisting of alkanols having from 1 to 10 carbon atoms, glycols having from 2 to 9 carbon atoms, and mixtures thereof.

4,518,396

METHOD OF DEHYDRATING NATURAL GAS

William E. Rawson, Huntsville, Ala., assignor to Gas Conditioning Industries, Inc., Huntsville, Ala.

Filed Mar. 1, 1983, Ser. No. 471,157
Int. Cl.³ C10K *1/16*
U.S. Cl. 48—196 R **5 Claims**



1. A method of dehydrating natural gas, comprising:

(a) exposing said natural gas to a glycol of the formula

$$H—OCH_2—CH_2)_nOH$$

wherein n is 1–5;

(b) passing said glycol from said step (a) through a first strong acid cation exchange resin in the sodium ion form, a second strong cation exchange resin in the hydrogen ion form, and an anion exchange resin; and

(c) repeating said step (a) with said glycol obtained from said step (b).

4,518,397

ARTICLES CONTAINING NON-FUSED ALUMINUM OXIDE-BASED ABRASIVE MINERAL

Melvin A. Leitheiser, Stillwater, and Harold G. Sowman, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 311,381, Oct. 14, 1981, abandoned, Division of Ser. No. 145,383, May 13, 1980, Pat. No. 4,314,827, which is a continuation-in-part of Ser. No. 53,347, Jun. 29, 1979, abandoned. This application May 17, 1983, Ser. No. 495,179
Int. Cl.³ C04B *35/34*
U.S. Cl. 51—293 **18 Claims**



1. An abrasive article containing granular abrasive mineral comprising substantially calcium ion- and alkali metal ion-free, dense, non-fused synthetic, aluminum oxide-based granular abrasive mineral, comprising a secondary phase of randomly oriented crystallites comprising modifying component in a dominant continuous alumina phase comprising alpha-alumina, said modifying component, on a volume percent of fired solids of the mineral, being selected from:

(i) at least 10% of zirconia, hafnia, a combination of zirconia and hafnia, a combination of zirconia and samaria, or a combination of zirconia, hafnia and samaria;

(ii) at least 1% of a spinel derived from alumina and at least one oxide of a metal selected from cobalt, nickel, zinc, or magnesium, or a combination of said spinel with at least one of titania, ceria, or zirconia;

(iii) 1–45% of said zirconia, hafnia, or the combination of zirconia and hafnia and at least 1% of said spinel.

4,518,398

MANUFACTURING PROCESS FOR SINTERED CERAMIC BODY FOR CUTTING TOOLS

Hiroshi Tanaka, Gomyokuroji, Yatomi-cho, Ama-gun, Aichi-ken, and Yoshihiro Yamamoto, 14-402 Iwakuradanchi, Higashishinmachi Iwakura, Aichi-ken, both of Japan

Filed Jul. 18, 1980, Ser. No. 170,164
Claims priority, application Japan, Jul. 20, 1979, 54-92906
Int. Cl.³ B24D *3/16;* **C04B** *35/10, 35/52, 35/58*
U.S. Cl. 51—309 **21 Claims**

1. A manufacturing process of a sintered ceramic body for cutting tools comprising:

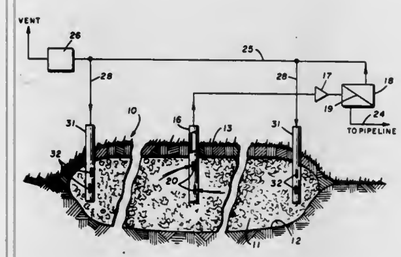
a step of preparing a mixture substantially consisting of 70–95% by volume of alumina and the balance of titanium nitride and one or more zirconium-containing components selected from the group consisting of zirconium, zirconium carbide and zirconium nitride, wherein the volumeric ratio of titanium nitride/zirconium-containing component(s) ranges between 95/5 and 50/50, inclusively, and a step of sintering the mixture under the application of pressure, and under such conditions that the resulting body has a residual porosity not exceeding 0.2% by volume and a mean alumina crystal grain size not exceeding 2μ.

4,518,399

PROCESS FOR RECOVERING GASES FROM LANDFILLS

Henry Croskell, St. Louis, and Tommy E. Graham, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 24, 1984, Ser. No. 644,090
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 **3 Claims**



1. A process for recovering methane from a landfill, comprising

(a) providing at least one central well and a plurality of peripheral wells in the landfill,

(b) withdrawing a mixture of methane and carbon dioxide from said central well,

(c) separating the carbon dioxide from said mixture to provide a carbon dioxide enriched stream, and

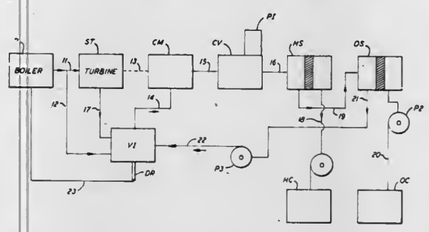
(d) applying a portion of the carbon dioxide enriched stream to said peripheral wells at a pressure of 7 kPa to 170 kPa.

4,518,400

STEAM-SIEVE METHOD AND APPARATUS

Gerald R. Newby, R.D. 2, Belden Hill, Harpursville, N.Y. 13787

Filed Jan. 6, 1984, Ser. No. 568,622
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—68 **9 Claims**



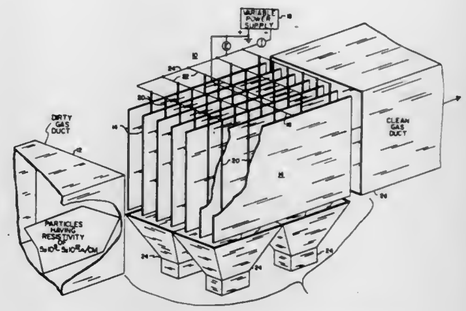
1. The method of producing hydrogen which comprises the steps of: compressing steam to provide a multi-component gas mixture; and applying the multi-component gas mixture to a first molecular sieve through which hydrogen may pass, but through which oxygen and steam will not pass.

4,518,401

ELECTROSTATIC PRECIPITATING SYSTEM

Duane H. Pontius, Birmingham, and Phillip V. Bush, Pinson, both of Ala., assignors to The United States of America as represented by the Environmental Protection Agency, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,643
Int. Cl.³ B03C *3/08*
U.S. Cl. 55—101 **3 Claims**



1. An electrostatic precipitating system comprising:

a source of gaseous field containing spaced particles, said particles having a resistivity of from 10^9 to 5×10^{12} ohm cm;

an electrostatic precipatating assembly having an inlet coupled to receive gaseous fluid from said source of gaseous fluid and an outlet, and comprising:

a plurality of parallel positioned plates having a spacing of from 9" to 20" and oriented wherein said gaseous fluid flows between said plates from said inlet to said outlet, and

a plurality of electrically conductive rods positioned in a plane equally spaced between each pair of plates, and rods having curved cross section regions facing plates of a radius of curvature not less than approximately 0.187"; and

a source of D.C. bias of from 20 to 50 kilovolts, the negative potential of which is connected to said rods, and the positive potential of which is connected to said plates of a potential providing an electrical field strength of from 0.5 to 3.5 kilovolts per cm and a current density of 0.5 to 10 nanoamperes per square cm;

whereby said gaseous field transisting from said inlet to said outlet are subjected to an electrical field between said rods and said plates, and corona discharge from said rods effects a negative charge on said particles in said gas, which said particles are then drawn to said plates and thereby removed from the gaseous fluid.

4,518,402

REUSEABLE AIR FILTER SYSTEM

Robert L. Dargel, 5430 NE. 16th Ave., Fort Lauderdale, Fla. 33334

Continuation of Ser. No. 320,161, Nov. 10, 1981, abandoned, which is a continuation of Ser. No. 114,702, Jan. 23, 1980, abandoned, which is a continuation of Ser. No. 959,007, Nov. 9, 1978, abandoned. This application Jun. 2, 1983, Ser. No. 500,319
Int. Cl.³ B03C *3/30;* **B01D** *46/52*
U.S. Cl. 55—103 **1 Claim**

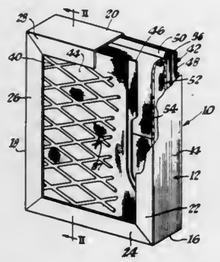
1. A filter system for filtering unwanted particles from a gas stream comprising:

at least three elements comprised of electrostatically self-charged filter material arranged in orderly adjacent successive stages for generating a self charge when gas flows through said at least three elements, said at least three elements including,

a first filter element of random spaced polypropylene positioned as the furthest said stage from where said gas stream enters said filter system;

a second filter element of random spaced polypropylene positioned as the closest stage where said gas stream enters said filter system;

a third filter element of random spaced polypropylene position between said first filter element and said second



filter element, said third filter element folded over on itself forming an air gap between adjacent surfaces for increasing filtering efficiency and, providing a means to bias said first filter element and said second filter element apart; and

a generally U-shaped, non-corrosive edge side frame secured about the perimeter of said filter elements for maintaining said filter elements in axial alignment to the gas flow therethrough.

4,518,403

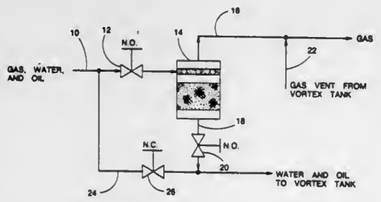
DEGASSER-DESURGER UNIT

Darryl W. Hertz, Casper, Wyo., assignor to The Standard Oil Company, Chicago, Ill.

Filed Oct. 28, 1983, Ser. No. 546,605

Int. Cl.³ F01D *19/00*

U.S. Cl. 55—194 **5 Claims**



1. A system for degassing and desurging a liquid stream, the liquid stream including water, gaseous components, and liquid hydrocarbon components, comprising:

a first conduit in communication at one end with a source of the liquid stream;

an enclosed vessel having a liquid inlet adjacent an upper portion thereof and in communication with a second end of the first conduit;

means for degassing and desurging the liquid stream consisting of a sparger device disposed within an upper portion of the enclosed vessel and in communication with the liquid inlet, the sparger device comprising a horizontal central conduit and a plurality of horizontal cross pipes connected to the central conduit, the central conduit and the cross pipes including a plurality of openings therein; and a body of packing elements retained within the enclosed vessel below the sparger device;

a second conduit connected at one end to a liquid outlet in the enclosed vessel below the bottom of the body of packing elements for removing the degassed and desurged water and liquid hydrocarbon components; and

a third conduit connected to an opening in an upper portion of the enclosed vessel above the sparger device for removing separated gaseous components.

4,518,404

APPARATUS FOR GENERATING AN AEROSOL

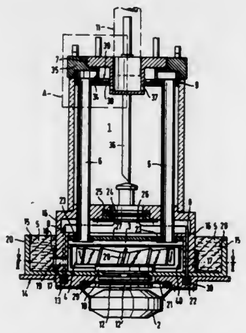
Michael Vaillant, Kleppingstr. 9-11, D-4600 Dortmund, and Günter Klarhorst, Eisgrundstr. 7, D-4800 Bielefeld, both of Fed. Rep. of Germany

Filed Aug. 1, 1983, Ser. No. 519,526

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 8222263[U]; Jun. 3, 1983, 8316307[U]

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—256 **20 Claims**



1. An apparatus for generating an aerosol, comprising:

(a) a housing for said apparatus;

(b) a motor mounted in said housing;

(c) an atomizing chamber for discharging and scattering the aerosol by means of an oscillation generator;

(d) an aerating wheel chamber separated from said atomizing chamber;

(e) an aerating wheel disposed in said aerating wheel chamber which passes drawn in air to the upper part of said atomizing chamber by means of conduits;

(f) a filter chamber disposed about the periphery of said aerating wheel chamber;

(g) a bacteria filter for filtering the air drawn in by said aerating wheel replaceably housed in said filter chamber; said atomizing chamber, said aerating wheel chamber and aerating wheel, and said filter chamber and bacteria filter being united in a modular unit releasably connected on the outer side of said housing;

(h) an air-tight and water-tight separating wall of said housing disposed between said motor and said aerating wheel;

(i) a magnetic coupling acting through said separating wall connecting said motor to said aerating wheel to drive said aerating wheel; and

(j) means for regulating the supply of drawn in air to said aerating wheel.

4,518,405

CLEAN ROOM WITH REPLACEABLE FILTER AND A SEAL CUTTING MECHANISM

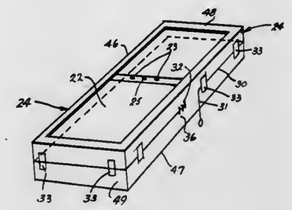
Wendell J. Lough, and Donald E. Bishop, both of Hampstead, N.H., assignors to Weber Technical Products, Division of Craig Systems Corporation, Amesbury, Mass.

Filed Dec. 19, 1983, Ser. No. 562,421

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—385 A **11 Claims**

1. In a clean room having at least one filter panel with a filter frame therearound, a supporting frame within which the at least one filter panel is positioned and a cuttable seal filling the peripheral area between the filter frame of said at least one filter panel and the support frame to prevent unfiltered air from short-circuiting therebetween, the improvement comprising an elongated, flexible cutting member having an end thereof fixedly secured to one of said filter frame and support frame on one side of said cuttable seal, said cutting member having



another end thereof exposed and free at the other side of said cuttable seal and having an intermediate length thereof positioned about the periphery of said filter frame on said one side of said cuttable seal whereby when said other end is pulled away from said filter frame said seal will be cut, permitting removal of said filter panel from said supporting frame.

4,518,406

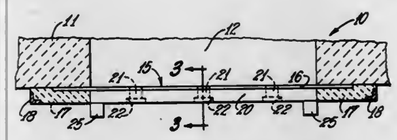
DRAIN BUSHING

Richard A. Perkins, Newark; William C. Brady, and Hellmut I. Glaser, both of Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 6, 1983, Ser. No. 558,680

Int. Cl.³ C03B *37/08*

U.S. Cl. 65—1 **2 Claims**



1. A disposable, non-precious metal drain bushing for draining molten glass from a glass melting apparatus through an outlet opening, comprising an upper flat plate of a size and configuration to cover the outlet opening of the melting apparatus, a lower vertical rib on the undersurface of said plate, a pair of electrical contact ears on the undersurface of the rib and depending therefrom, and a plurality of vertical apertures through said plate and said rib, said apertures being counterbored at their lower ends to minimize flooding of molten glass onto the undersurface of the rib.

4,518,407

OPTICAL FIBRE PREFORM MANUFACTURE

Philip W. Black, Bishop's Stortford, and John Irven, Stansted, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,380

Claims priority, application United Kingdom, Mar. 7, 1979, 7908088

Int. Cl.³ C03P *37/025;* **C03B** *37/07*

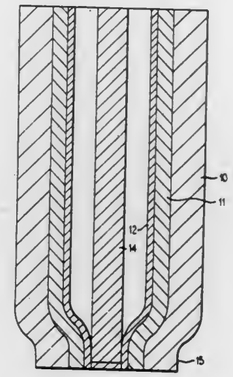
U.S. Cl. 65—3.12 **13 Claims**

1. A method of fabricating an optical fibre preform by utilizing a silica substrate tube having a first index of refraction comprising the steps of:

coating said tube with a first layer of silica including a dopant sufficient to provide a cladding layer exhibiting an index of refraction less than that of said silica tube,

coating said first layer with an inhibiting layer of substantially undoped silica to provide a barrier to prevent migration of said cladding layer dopant across said inhibiting layer,

inserting a substantially undoped silica rod coaxially into



said coated tube to provide a core of said optical fibre preform, and

fusing together said coated tube and said rod to form a solid cross-section optical fibre preform.

4,518,408

METHOD FOR PRODUCING GLASS FIBER

Mohinder S. Bhatti, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 14, 1983, Ser. No. 513,894

Int. Cl.³ C03B *37/085*

U.S. Cl. 65—6 **5 Claims**

1. In a method of making glass fibers comprising: supplying a stream of molten glass to a rotating rotor; discharging said glass through orifices in said rotor as a plurality of primary streams; and attenuating said primary streams into fibers comprising:

forming said rotor according to a method comprising:

forming a body having a circumferential wall, said body being comprised of a superalloy material,

forming orifices in said circumferential wall adapted to discharge molten glass therethrough,

subsequent to the formation of the orifices, hot isostatically pressing said body to reduce the diameter of the orifices and render the orifices more uniform sufficient to increase the uniformity of the diameters of the glass filaments produced therefrom as compared to an untreated rotor.

4,518,409

METHOD OF AND APPARATUS FOR MAKING A PARISON

Norbert Monden, Auetal, Fed. Rep. of Germany, assignor to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 526,159

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232288

Int. Cl.³ C03B *11/10*

U.S. Cl. 65—79 **12 Claims**

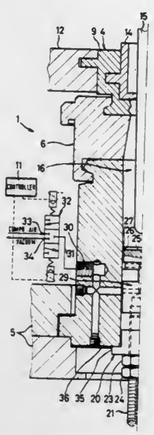
1. A method of making a parison from a gob of molten glass, the method comprising the steps of sequentially:

increasing the volume of the interior of a cup-shaped main mold body by an extra volume;

inserting the molten-glass gob through an upper opening into the volume-increased interior of the main mold body;

closing a split neck ring forming a neck mold at the opening above the main mold body on the main mold body so that the neck mold and the main mold body define a mold cavity partly formed by the interior of the main body;

inserting a plunger through the neck mold down into the gob in the mold cavity to displace the molten glass and shape the gob into a parison and decreasing to zero the



extra volume of the interior of the main mold body so that the molten glass rises in the mold cavity up above the main mold body; and

demolding the parison thus formed.

4,518,410

STORING BENDING MOLDS

Bernd Brockmueller, Hawkesbury, Canada, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 9, 1983, Ser. No. 492,854

Int. Cl.³ C03B *23/023*

U.S. Cl. 65—106 **9 Claims**



1. A method of storing molds for bending glass sheets to different patterns comprising establishing a series of vertically spaced, essentially horizontally extending conveyor means defining storage levels above the roof of a tunnel-type bending lehr having an essentially horizontally extending conveyor means for transporting glass sheet bending molds along a heating path extending through the length thereof, providing conveyor means at each of said levels including a return path at one of said levels for returning a set of molds to said heating path, providing elevator means to transfer selected molds of said molds between said return path and one or more of said other levels, transferring molds on said elevator means between said return path and one or more of said levels to store molds of one or more of said patterns at a selected one or more of said storage levels while transferring molds for one or more different patterns from a selected one or more of said storage levels to said return conveyor.

5. Apparatus for storing molds for bending glass sheets delivered along a circulating system comprising a path within a tunnel-type bending lehr extending in an essentially horizontal direction and a return path above said lehr, characterized by a series of vertically spaced, mold storage means extending lengthwise of said tunnel-type bending lehr in essentially horizontal planes at different levels to define storage levels above said lehr, platform means movable vertically between positions of alignment with said return path and selected of said storage levels and elevator means operatively connected to said platform means to move the latter vertically between a position aligned with said return path and a preselected position in alignment with any selected one of said storage levels, whereby said platform means, when empty and aligned with said return path, can be loaded with molds from said return path, can be moved to a position of alignment with any selected one of said storage levels, said molds unloaded from said loaded platform means onto said selected storage level, different molds can be loaded onto said platform means from any one of said storage levels, the loaded movable platform means can be aligned with said return path to unload said different molds onto said return path, and the process repeated until a new set of bending molds replaces the old set of bending molds from the mold circulating system comprising molds travelling along said path through said bending lehr and returning along said return path.

4,518,411

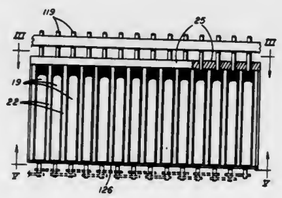
SHAPING GLASS SHEETS TO COMPLICATED SHAPES USING SPECIAL LIFT MOLD

Robert G. Frank, Murrysville; Michael T. Fecik, Pittsburgh, and George R. Claassen, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1983, Ser. No. 538,057

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—106 **13 Claims**



1. A method of shaping a sheet of heat deformable material to a shape including a sharply bent edge portion near a longitudinal edge thereof comprising:

heating said sheet to its deformation temperature; and

lifting said heat softened sheet by engaging portions of said sheet other than said longitudinal edge with transversely extending longitudinally spaced shaping members each having an upper surface that contacts said sheet in a transverse direction, while engaging said longitudinal edge with a continuous longitudinally extending elongated shaping member positioned adjacent to an end of each of said spaced shaping members and having an upper surface that fully contacts said longitudinal edge of said sheet along its entire length, wherein the contours is said spaced shaping members and said continuous elongated shaping member define the shape of said sheet.

6. An apparatus for shaping sheets of heat deformable material comprising:

a plurality of transversely extending longitudinally spaced shaping slats each having a longitudinal axis, the upper facing surface of said slats defining the transverse shape of said sheet to be shaped;

a continuous elongated end member have a longitudinal axis, the continuous upward facing surface of said end member defining the curvature of a longitudinal edge of said sheet to be shaped along its entire length;

means for mounting said member adjacent to an end portion of each of said slats with the longitudinal axis of said slats generally parallel to one another and transverse to the longitudinal axis of said end member to provide a shaping device such that said upward facing surfaces of said slats and said end member form the desired contour of said sheet to be shaped; and

means to move said shaping device into engagement with said sheet to be shaped.

4,518,412

PARISON SCREENING IN A GLASSWARE FORMING MACHINE

David Braithwaite, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

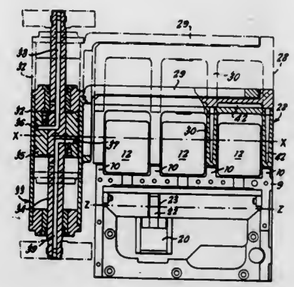
PCT No. PCT/GB82/00055, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02875, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 22, 1982, Ser. No. 433,130

Claims priority, application United Kingdom, Feb. 27, 1981, 8106183

Int. Cl.³ C03B *9/38*

U.S. Cl. 65—244 **12 Claims**



7. A glassware forming machine having three stations, namely a blank station at which a parison is formed from a gob of molten glass, an intermediate station at which the parison is allowed to reheat, and a blow station at which the parison is formed into an article of glassware, further comprising:

air screening means comprising a shroud assembly at said intermediate station, moveable beteen an open position, and a closed position in which the shroud assembly cooperates with stationary structure of the machine to substantially surround a parison and screen the parison from air drafts, said shroud assembly being provided with internal passages through which cooling water is passed during machine operation; and

moving means to move the shroud assembly between its opened and closed positions at appropriate times in the cycle of operation of the machine.

4,518,413

POLY-PHOSPHORODIAMIDE UREASE INHIBITORS AND UREASE INHIBITED UREA BASED FERTILIZER COMPOSITIONS

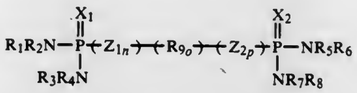
Michael D. Swerdloff, Parsippany; Jaroslav F. Kolc, Randolph; Milorad M. Rogic, Whippany, all of N.J., and Larry L. Hendrickson, Camillus, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 6, 1983, Ser. No. 501,673

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—28 **32 Claims**

1. A composition comprising an acceptable carrier a urease inhibiting effective amount of one or more polyphosphorodiamide compounds of the formula:



Wherein:

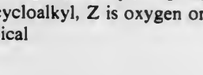
n, o and p are the same or different and are 0 or 1, with the proviso that at least one of n, o and p is 1;

X_1 and X_2 are the same or different and are oxygen or sulfur:

R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are the same or different and are hydrogen or alkyl having from 1 to about 4 carbon atoms;

R_9 is substituted or unsubstituted divalent aminophosphinyl, alkynylene, alkylene, alkenylene, cycloalkylene, cycloalkenylene, or arylene groups which groups may include one or more divalent oxygen, nitrogen, sulfur, sulfonyl, sulfinyl, or carbamyl functions, wherein permissible substituents include one or more amino, alkylamino, dialkylamino, arylamino, mercapto, alkylmercapto, S-diaminophosphinyl, N-diaminophosphinyl, O-diaminophosphinyl, N-(diaminophosphinyl)carbamyl, halogen, hydroxy, sulfonic acid, alkyl, alkoxy, nitro or cyano groups;

Z_1 and Z_2 are the same or different and are divalent oxygen, sulfur, or a divalent carbamyl or amino moiety of the formula:



Wherein: R_{10} is hydrogen or substituted or unsubstituted cycloalkyl, alkyl, diaminophosphinyl, or phenyl wherein permissible substituents include one or more halogen, nitro, cyano, trifluoromethyl, alkoxy, N-diaminophosphinyl, O-diaminophosphinyl, S-diaminophosphinyl, N-(diaminophosphinyl)carbamyl, alkylmercapto, and mercapto groups or any two R_{10} substituents together may form an alkylene chain completing a 4, 5, 6, 7, or 8 membered ring structure.

4,518,414

THIADIAZOLE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Ulrich Schirmer, Heidelberg; Peter Plath, Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

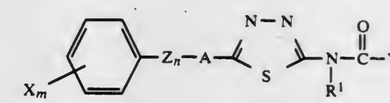
Filed Jan. 11, 1983, Ser. No. 457,186

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201861

Int. Cl.³ C07D *285/12;* A01N *43/82*

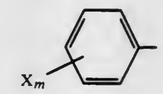
U.S. Cl. 71—90 **11 Claims**

1. A thiadiazole derivative of the formula



(I)

where R^1 is hydrogen or C_1–C_4-alkyl, A is an alkylene chain of 1 to 8 carbon atoms which is unsubstituted or substituted by C_1–C_4-alkyl, X is hydrogen, halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulfonyl, C_3–C_6-cycloalkyl, phenyl, or unsubstituted or halogen-substituted aryloxy, m is 0, 1, 2, 3 or 4, Y is C_1–C_4-alkyl, C_3–C_6-cycloalkyl or NR^2R^3, where R^2 and R^3 independently of one another are each hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl, C_1–C_4-alkoxy or C_3–C_6-cycloalkyl, Z is oxygen or sulfur and n is 1, and where the radical



may be replaced by naphthyl which is unsubstituted or substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy.

4,518,415

1-(TETRAHYDROFURYLMETHYL)AZOLES

Anthony F. Marchington, Reading; Timothy Lewis, Maidenhead; John M. Clough, Buckinghamshire; Paul A. Worthington, Maidenhead, and John Dalziel, Berkshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

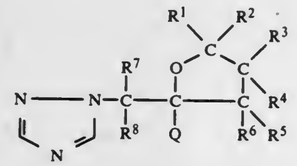
Filed Jan. 21, 1983, Ser. No. 459,966

Claims priority, application United Kingdom, Feb. 9, 1982, 8203707; Apr. 19, 1982, 8211290; May 11, 1982, 8213652; Nov. 2, 1982, 8231263

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *405/06;* **C07F** *1/00*

U.S. Cl. 71—92 **6 Claims**

1. A compound selected from the group consisting of compounds having the formula (I):



(Formula I)

and stereoisomers thereof, wherein Q is phenyl, halophenyl, C_{1-4} alkylphenyl, C_{1-4} alkoxyphenyl, halo C_{1-4} alkylphenyl, phenylphenyl or phenyl substituted with both halogen and C_{1-4} alkyl groups or phenyl substituted with both halogen and C_{1-4} alkoxy groups; and R^1 to R^6 and R^8, which may be the same or different are H or C_{1-4} alkyl and R^7 is H, C_{1-4} alkyl or phenyl; and acid addition salts and metal complexes thereof.

5. A method of regulating the growth of plants, which comprises applying to the plant, to seed of the plant, or to the locus of the plant or seed, an effective amount of a compound, as defined in claim 1.

6. A method of combating fungal diseases in a plant, which method comprises applying to the plant, to seed of the plant or to the locus of the plant or seed, an effective amount of a compound, as defined in claim 1.

4,518,416

CERTAIN TRIMETHYL SILYL-LOWER-ALKYL ESTERS OF PYRIDYLOXY-PHENOXY-LOWER ALKANOIC ACIDS, COMPOSITIONS CONTAINING SAME AND HERBICIDAL METHOD OF USE

Heinz Förster, Wuppertal; Erich Klauke, Odenthal; Uwe Priesnitz, Solingen; Hans-Jochem Riebel, Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

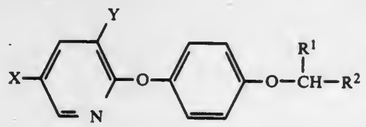
Filed May 18, 1983, Ser. No. 495,883

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221214; Jan. 4, 1983, 3300141

Int. Cl.³ C07D *213/64;* **A01N** *43/40*

U.S. Cl. 71—94 **16 Claims**

1. A substituted pyridyl-phenyl ether of the formula



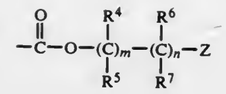
in which

X represents trifluoromethyl or chlorine,

Y represents hydrogen or chlorine,

R^1 represents hydrogen or methyl and

R^2 represents the radical of the formula



in which

R^4, R^5, R^6 and R^7 independently of one another represent hydrogen or alkyl with 1 to 4 carbon atoms,

m represents 1 or 2,

n represents 0 or 1 and

Z represents trimethylsilyl.

4,518,417

METHOD OF, AND ARRANGEMENT FOR, REDUCING OXIDE-CONTAINING FINE-PARTICLE ORES

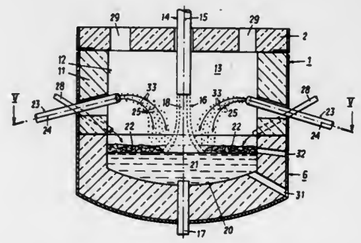
Walter Lugscheider, Linz; Alois Leutgöb, Steyr; Ernst Riegler, Enns, and Paul Müllner, Traun, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jan. 5, 1983, Ser. No. 455,812

Claims priority, application Austria, Jan. 19, 1982, 167/82

Int. Cl.³ C21C *5/52;* **C22B** *4/00*

U.S. Cl. 75—10 R **9 Claims**



1. In a method of reducing oxide-containing fine-particles ores to be carried out in a rotationally symmetric melting vessel provided with plasma-jet generating plasma burning means, side walls and charging openings, by melting and reducing the oxide-containing ore particles in the presence of at least one of solid, liquid and gaseous carbon carriers by action, the improvement comprising at least a portion of the oxide-containing ore particles to be reduced being introduced laterally through said charging openings provided in said side walls and being set in a cyclonic rotational movement to produce a rotating particle stream, and wherein the plasma jet of said plasma burner means is generated along a substantially vertical axis of said melting vessel and surrounded by said rotating particle stream.

4,518,418

ELECTRON BEAM REFINEMENT OF METALS, PARTICULARLY COPPER

Archibald W. Fletcher, Tucson, Ariz., and Charles d'A. Hunt, Occidental, Calif., assignors to Duval Corporation, Houston, Tex.

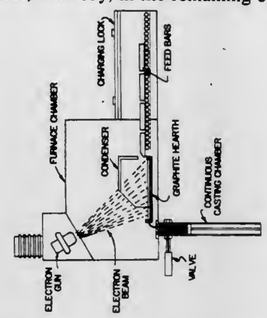
Filed Jun. 10, 1983, Ser. No. 503,376

Int. Cl.³ C22B *4/00*

U.S. Cl. 75—10 R **31 Claims**

1. A method of refining copper metal which contains at least 35 ppm in total of selenium, tellurium, sulfur, bismuth and lead impurities and at least 20 ppm of silver impurity, which impurities are capable of forming intermetallic species with copper atoms, with each other or with other impurities in the copper metal,

comprising passing the copper metal across a hearth in a vacuum effective to enable electron beam operation and irradiating the metal with an electron beam of sufficient strength and duration to heat the metal and volatilize a portion thereof, whereby, in the remaining copper metal,



the total content of selenium, tellurium, sulfur, bismuth and lead is reduced to less than about 20 ppm and the silver content is reduced to less than about 16 ppm.

4,518,419

METHOD OF CARRYING OUT METALLURGICAL OR CHEMICAL PROCESSES IN A SHAFT FURNACE, AND A LOW SHAFT FURNACE THEREFOR

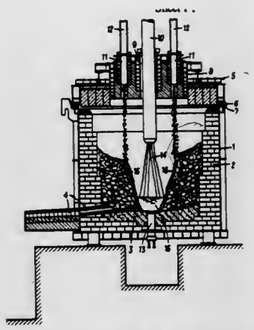
Walter Lugscheider, Linz; Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, all of Austria, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany and Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 20, 1983, Ser. No. 563,308

Claims priority, application Austria, Dec. 22, 1982, 4638/82; Oct. 28, 1983, 3833/83

Int. Cl.³ C21C *5/52*

U.S. Cl. 75—11 **17 Claims**



1. In a method of carrying out metallurgical processes, chemical processes and the like in a shaft furnace having an upper cover, an inner wall and a bottom, by supplying electric energy of a plasma burner means penetrating said upper cover, the improvement comprising

forming a plasma torch region in said shaft furnace by forming a plasma torch between an electrode penetrating said upper cover at about its center and a counter-electrode penetrating said bottom of said shaft furnace,

introducing charging stock concentrically about said plasma torch so as to form a protective wall, having an inner side, of solid charging stock components piled up on said bottom of said furnace at said inner wall of said furnace and surrounding said plasma torch region, and

processing said solid charging stock from said inner side of said protective wall which is exposed to said plasma torch region.

4,518,420

WINNING METAL FROM ORE

Michael Cox, Hitchin; Michael J. Gray, Luton, and Phillip W. Duke, Chester, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 19, 1984, Ser. No. 572,148

Claims priority, application United Kingdom, Jan. 21, 1983, 8301647

Int. Cl.³ C22B *1/10*

U.S. Cl. 75—26 **17 Claims**

1. A process of winning one or more desired metals from an ore containing also at least one undesired metal, comprising the steps of:

treating the ore with a polydentate reagent displaying a substantial stereochemical constraint on a metal, which reagent forms a volatile compound with the or each desired metal but not with the undesired metal(s);

transporting the compound in the vapor phase from the vicinity of the ore; and

decomposing the compound to literate elemental metal.

4,518,421

PROCESS FOR PRODUCING SOLID METAL PARTICLES FROM A BATH OF METAL

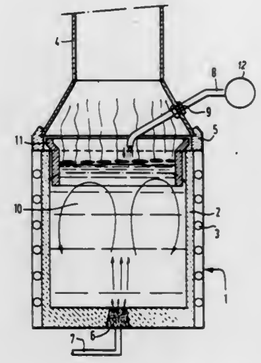
Jean Foulard, Ablon; Jean F. Rimbert, Igny; Gilles Vernet, Paris, and Albert-Gilbert Goursat, Voisins-le-Bretonneux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed May 1, 1984, Ser. No. 605,779

Claims priority, application France, May 4, 1983, 83 07415

Int. Cl.³ C21C *7/10*

U.S. Cl. 75—49 **16 Claims**



1. A process for selectively refining molten metal contained in a closed treatment container to remove an impurity from said metal, said process comprising

heating a metal to be refined in said container to a temperature sufficient to melt the metal to form a bath of the molten metal and sufficient to vaporize the impurity from an upper surface of the bath of molten metal;

bringing a cryogenic material into close contact with the upper surface of said bath of molten metal so that the cryogenic material vaporizes against said surface by calefaction to form a gaseous layer atop said surface; with the vapor of said cryogenic material contacting vapor of said impurity and condensing the same to form impurity particles entrained within said gaseous layer; and

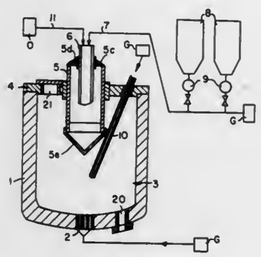
removing from said container the impurity particles entrained in the vapor of said cryogenic material.

4,518,422

PROCESS AND APPARATUS FOR REFINING STEEL IN A METALLURGICAL VESSEL

Paul Metz, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Nov. 16, 1983, Ser. No. 552,413
Claims priority, application Luxembourg, Nov. 17, 1982, 84472
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **41 Claims**



1. A process for refining steel in a metallurgical vessel having a metal melt therein, said melt having a first slag thereon, including the steps of:

delivering a combustible material to a working zone at an impact point at the surface of said melt;

delivering oxygen to said working zone at said impact point whereby a highly reactive second slag is produced therein; and

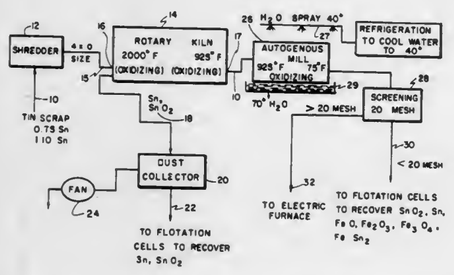
mixing said melt whereby heat is evenly distributed therethrough.

4,518,423

METHOD FOR PREPARING A LOW RESIDUAL ALLOY STEEL CHARGE FROM SCRAP METAL

Carl J. Herter, 1638 Walnut St., Allentown, Pa. 18102

Continuation-in-part of Ser. No. 529,290, Sep. 6, 1983. This application Mar. 15, 1984, Ser. No. 590,028
Int. Cl.³ C22B *25/06*
U.S. Cl. 75—64 **13 Claims**



1. A method of preparing a low residual alloy for a steel charge from a tin coated, iron based metal comprising:

(a) introducing tin scraps into a feed end of a kiln wherein said kiln includes temperature and atmospheric zones, said kiln's feed end having an oxidizing atmosphere and a beginning feed end temperature of not less than 2000 degrees F. and maintaining said kiln's feed end zone temperature at not less than about 1650 degrees F. to convert at least part of any iron-tin alloy present into its epsilon phase and, thereby, additionally producing an oxide laden dust of mixed tin, tin oxide and iron;

(b) advancing said feed through said kiln from said feed end to approximate said kiln's midsection, wherein said kiln's midsection temperature is not less than about 1400 degrees F. to further convert part of said iron-tin alloy into the zeta phase and, thereby, additionally producing an additional oxide laden dust of tin, tin oxide and iron;

(c) removing said oxide laden dust of part (a) and part (b) from said kiln;

(d) still further advancing said feed through said kiln from said midsection to said kiln's exit end wherein said kiln's exit end temperature is not less than about 900 degrees F. to further convert part of said iron-tin alloy into its eta phase and additionally producing a metallic scale formation composed of variously tin, tin oxide, iron tin alloy, iron, ferrous oxide, ferric oxide and magnetite on said feed; and,

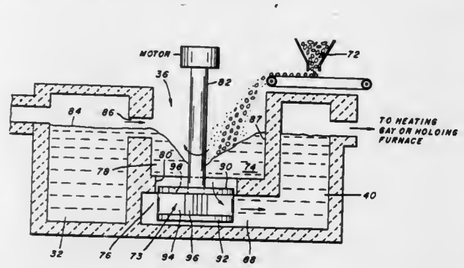
(e) separating and removing said scale from said feed to leave a low alloy scrap metal feed suitable for use as a charge in a steel making furnace.

4,518,424

METAL SCRAP RECLAMATION SYSTEM

Robert J. Ormesher, Allegheny Township, Westmoreland County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 573,115, Jan. 23, 1984, Pat. No. 4,486,228, which is a continuation of Ser. No. 475,310, Mar. 14, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,258
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.³ C22B *21/00*
U.S. Cl. 75—65 R **31 Claims**



1. A recirculating system for ingestion of metal scrap into a molten melting media comprising:

(a) a heating bay containing the molten melting media;

(b) a scrap charging bay having upper and lower portions wherein metal scrap is charged into the upper portions of the bay and ingested into said melting media, the scrap charging bay connected to said heating bay to permit molten melting media to be circulated from the heating bay through the scrap charging bay and back to the heating bay; and

(c) an impeller positioned in the scrap charging bay for purposes of ingesting said metal scrap into the molten metal media;

(i) the impeller having a top member and spaced therefrom a base member, the top member provided with an opening therein, said impeller having blades positioned between said top member and base member, the blades extending in a generally radial direction,

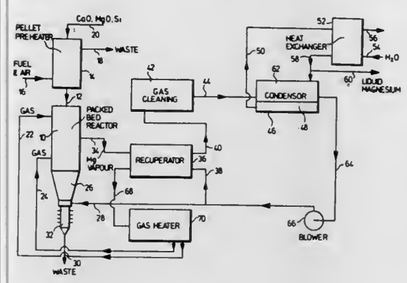
(ii) the impeller adapted to draw scrap values and melting media through the opening in said top member in a downward direction on rotation thereof and to propel said scrap values and melting media therefrom in a generally radial direction by use of said blades, the impeller positioned so as to move the scrap values and melting media from said upper portions through said impeller and out into lower portions of the charging bay.

4,518,425

PRODUCTION OF MAGNESIUM METAL

John R. Wynnyckyj, Kitchener, Canada, assignor to University of Waterloo, Waterloo, Canada

Filed Dec. 20, 1983, Ser. No. 563,555
Int. Cl.³ C22B *26/22*
U.S. Cl. 75—67 R **17 Claims**



1. A method for the production of magnesium, which comprises:

forming a solid feed of magnesium oxide, calcium oxide and silicon and preheating said feed to a temperature of about 750° C. to about 1100° C.,

forwarding said feed to a packed bed reactor having internal walls resistant to the activity of the reactants therein,

preheating an inert gas stream to a temperature sufficient to sustain the reaction temperature in said reactor,

feeding said preheated inert gas steam to said reactor in the form of a split stream such that a first portion having a temperature of about 1300° to about 1600° C. flows cocurrently with the solid feed in the reactor and a second portion having a temperature of about 1200° to about 1400° C. flows countercurrently to the solid feed in the reactor,

reacting the components of the solid feed in the packed bed reactor in accordance with the equation:

$$2CaO+2MgO+Si \rightarrow 2Mg+Ca_2SiO_4$$

at a temperature of about 1050° to about 1350° C. in the presence of the gas stream,

removing a gaseous product stream from the packed bed reactor containing about 1.0 to about 8.0% by volume of magnesium vapour in the inert gas, and

discharging by-product solids from the packed bed reactor.

4,518,426

PROCESS FOR ELECTROLYTIC RECOVERY OF TITANIUM METAL SPONGE FROM ITS ORE

Andrew H. Murphy, Naples, Fla., assignor to Metals Production Research, Inc., Media, Pa.

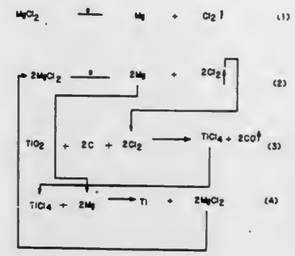
Division of Ser. No. 483,502, Apr. 11, 1983, Pat. No. 4,487,677. This application May 9, 1984, Ser. No. 608,433
Int. Cl.³ C22B *34/12*; C01G *23/02*; C25C *3/28/3/04*
U.S. Cl. 75—112 **10 Claims**

1. A process for producing titanium metal sponge in a stepwise operation within a closed cell system comprising the steps of:

A. electrolytically decomposing molten magnesium chloride into magnesium metal and chlorine gas within a closed cell to form said magnesium metal as a molten layer upon said magnesium chloride;

B. terminating said electrolytic decomposition, and subsequently;

C. directly contacting titanium tetrachloride with said layer of magnesium metal for effecting a reduction reaction therebetween within the same closed cell to form titanium metal sponge and magnesium chloride; and



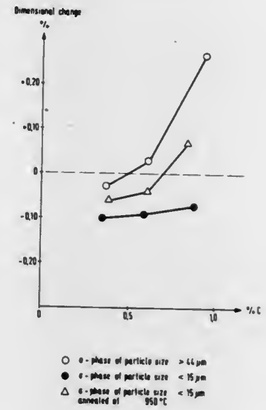
D. removing said titanium metal sponge from said closed cell.

4,518,427

IRON OR STEEL POWDER, A PROCESS FOR ITS MANUFACTURE AND PRESS-SINTERED PRODUCTS MADE THEREFROM

Jan R. Tengzelius, Viken; Carl-Axel Blände, and Lars-Erik Svensson, both of Höganäs, all of Sweden, assignors to Höganäs AB, Höganäs, Sweden

Filed Oct. 26, 1982, Ser. No. 436,798
Claims priority, application Sweden, Nov. 11, 1981, 8106711
Int. Cl.³ B22F *1/00*
U.S. Cl. 75—251 **4 Claims**



1. Chromium-containing iron or steel powder suitable for compressing and sintering to form a substantially homogeneous article having good strength and dimensional stability properties comprising a mixture of iron powder and a chromium-containing powder and containing about 0.2–15% by weight of chromium, the rest being iron with usual accessorial elements, optionally together with other conventional alloying elements of alloyed powders, characterized thereby that the chromium is present in the form of a pulverulent Fe-Cr-alloy in α-phase which contains about 40–50% by weight of Cr and has a particle size essentially lower than about 44 μm.

4,518,428
AGGLOMERATES CONTAINING OLIVINE

Frank H. Ellenbaum, Willowbrook, Ill., and Richard Ciesco, Griffith, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Continuation of Ser. No. 359,545, Mar. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 090,538, Nov. 2, 1979, abandoned, which is a division of Ser. No. 652,549, Jan. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 493,696, Aug. 1, 1974, Pat. No. 3,966,456. This application Mar. 7, 1984, Ser. No. 586,929

Int. Cl.³ C21B *5/04*

U.S. Cl. 75—257 **12 Claims**

1. An agglomerate consisting essentially of finely divided iron ore and olivine in an amount of about 0.5% to 10% and characterized by (a) a size distribution wherein 97.1% or more of the pellets are retained by a $\frac{3}{8}$" screen, (b) greater resistance to disintegration as measured by 2.64% of fines or less resulting from handling, (c) a bulk density of 132.5 lb/ft³ or less, and (d) a porosity of 25.22% or more of voids.

4,518,429
CORROSION INHIBITING PAINT COMPOSITION

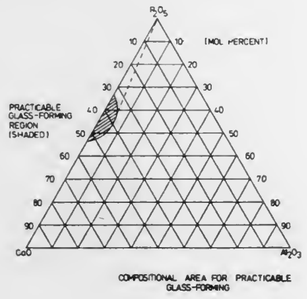
Cyril F. Drake, Harlow; Alan Maries, London, and Paul F. Bateson, Duxford, all of England, assignors to ITT Industries, Inc., New York, N.Y.

Division of Ser. No. 251,020, Apr. 3, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 516,664

Claims priority, application United Kingdom, Apr. 8, 1980, 8011297

Int. Cl.³ C09D *5/08*

U.S. Cl. 106—14.39 **8 Claims**



1. In a corrosion inhibiting paint formulation adapted to protect a metal surface to which it is applied, said formulation comprising a resin binder vehicle and a corrosion inhibiting glass powder dispersed therein; the improvement comprising, as said glass powder, a glass comprising from 32 to 54 mole % calcium oxide, from 46 to 68 mole % phosphorus pentoxide and a glass modifying oxide selected from the group consisting of alumina, magnesia, strontium oxide, barium oxide, zinc oxide, ferric oxide, an alkali metal oxide and mixtures thereof, the composition of the glass being such that it releases corrosion inhibiting ions when in contact with water.

4,518,430
DENTAL RESPTORATIVE CEMENT PASTES

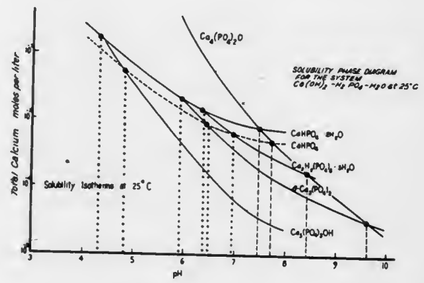
Walter E. Brown, Rockville, and Laurence C. Chow, Germantown, both of Md., assignors to American Dental Association Health Foundation, Washington, D.C.

Continuation-in-part of Ser. No. 373,157, Apr. 29, 1982,. This application Oct. 6, 1983, Ser. No. 539,740

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—35 **13 Claims**

1. A dental restorative paste comprising an aqueous mixture of $Ca_4(PO_4)O$ and at least one other calcium phosphate selected from the group consisting of $CaHPO_4.2H_2O$, $CaHPO_4$,



$Ca_8H_2(PO_4)_6.5H_2O$, α-$Ca_3(PO_4)_2$, β-$Ca_3(PO_4)_2$, and modified $Ca_3(PO_4)_2$, the paste being capable of hardening into a cement.

4,518,431
LIGHT WEIGHT INSULATING BUILDING BLOCKS AND METHOD OF MAKING SAME

Henry A. Duvier, Jr., 1912 Shamrock Dr., Brentwood, Tenn. 37027

Filed Aug. 10, 1984, Ser. No. 639,475

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—97 **19 Claims**

1. An agglomerated particulate for use in manufacturing light weight structural building blocks having high thermal resistance, comprising expanded ceramic aggregates and cement in the ratio of approximately 24 parts of ceramic aggregates to 1 part of cement by volume in an agglomeration admixed with water and cured in air for at least 24 hours, the surface of said ceramic aggregates being coated with and encased in the cement without adhesion of the ceramic particles.

4,518,432
SLAG BRIQUETTE

Dennis R. Hess, Anoka, Minn., and Arthur Antilla, Katy, Tex., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Jan. 20, 1983, Ser. No. 459,550

Int. Cl.³ C04B *7/14*

U.S. Cl. 106—117 **6 Claims**

1. A slag briquet comprising:
(a) from 1 part to about 5 parts by weight of a starch; and
(b) from about 50 parts to about 100 parts by weight slag.

4,518,433
ENTERIC COATING FOR PHARMACEUTICAL DOSAGE FORMS

Emanuel J. McGinley, Morrisville, and Domingo C. Tuason, Jr., Bensalem, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 8, 1982, Ser. No. 440,118

Int. Cl.³ C08L *1/08;* **C08G** *18/10*

U.S. Cl. 106—180 **22 Claims**

1. A process of making a polymeric powder which is readily dispersible in water to provide a composition useful for forming an enteric coating on pharmaceutical dosage forms, comprising providing a freshly prepared aqueous dispersion of a water-insoluble enteric polymer, adding to said dispersion an acetylated monoglyceride characterized by being liquid at room temperature and having a degree of acetylation of at least about 96%, said acetylated monoglyceride being added in an amount of between about 6% and about 18% based upon the weight of the dry insoluble solids contained in the dispersion, thoroughly mixing to distribute the acetylated monoglyceride throughout the dispersion, and homogenizing and spray drying to form the powder.

4,518,434
CARBON BLACK AND PROCESS FOR PREPARING SAME

Charles R. Wilder, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 29, 1983, Ser. No. 518,556

Int. Cl.³ C09C *1/48, 1/58*

U.S. Cl. 106—307 **8 Claims**

1. A process which reduces the surface area of carbon black and increases the structure, said process consisting essentially of

mixing from about 1 to about 30 parts by weight of an organic peroxide represented by the formula R—O—O—R′ wherein R and R′ comprises hydrogen and carbon and can be the same or different and each R and R′ contains from 1 to about 16 carbon atoms with each 100 parts by weight of a carbon black formed in an oil furnace process and characterized by a surface area in the range of 20–200 m^2/g, a DBP structure in the range of 20–200 cm^3/g and a pH in the range of 5–10 to form a treatment mixture; and heating the treatment mixture.

4,518,435
DISPERSING AGENT FOR SOLIDS IN POLAR ORGANIC LIQUIDS

James F. Stansfield; James Toole, and Arthur Topham, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 276,517, Jun. 23, 1981, Pat. No. 4,398,955, which is a continuation-in-part of Ser. No. 180,810, Aug. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 877,390, Feb. 13, 1978, abandoned. This application Jan. 18, 1983, Ser. No. 459,036

Claims priority, application United Kingdom, Feb. 21, 1977, 718577

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.³ C09B *47/04;* **C09D** *11/00*

U.S. Cl. 106—308 N **10 Claims**

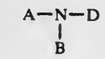
1. A dispersion of from 10% to 80% by weight, based on the total weight of the dispersion, of a particulate solid selected from organic pigments, organic disperse dyestuffs and carbon black in a polar organic liquid selected from ethers, esters, ketones, glycols, alcohols and amides, said dispersion containing from 2% to 50% by weight, based on the weight of the particulate solid, of a salt of an amine of the formula:



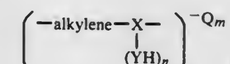
wherein each of A, B and D independently represents alkyl, -YH or

wherein
each X independently represents an oxygen or a nitrogen atom provided that,
where X is oxygen, m+n=1 and p=1, and
where X is nitrogen, m+n=2 and p is from 1 to 30;
each Q independently represents alkyl or —YH; and
each Y independently represents a poly(lower alkylene oxy) chain containing from 3 to 50 lower alkylene oxy groups, provided that
(i) at least one of A, B and D contains a poly(lower alkylene oxy) chain,
(ii) at least 50% of the lower alkylene groups in each poly(lower alkylene oxy) chain are propylene, and
(iii) not more than one of the alkylene or alkyl groups contains more than 8 carbon atoms,
with an aromatic acid having at least two benzene rings selected from an organic pigment containing one or more acid groups and an organic dyestuff containing one or more acid groups.

10. A salt of an amine of the formula:



wherein each of A, B and D independently represents alkyl, -YH or



wherein
each X independently represents an oxygen or a nitrogen atom provided that,
where X is oxygen, m+n=1 and p=1, and
where X is nitrogen, m+n=2 and p is from 1 to 30;
each Q independently represents alkyl or —YH; and
each Y independently represents a poly(lower alkylene oxy) chain containing from 3 to 50 lower alkylene oxy groups provided that,
(i) at least one of A, B and D contains a poly(lower alkylene oxy) chain,
(ii) at least 50% of the lower alkylene groups in each poly(lower alkylene oxy) chain are propylene, and
(iii) not more than one of the alkylene or alkyl groups contains more than 8 carbon atoms,
with an aromatic acid having at least two benzene rings selected from an organic pigment containing one or more acid groups and an organic dyestuff containing one or more acid groups.

4,518,436
PROCESS FOR THE PRODUCTION OF GRAFT CRYSTALS FOR USE IN SEEDING SUGAR BOILING BRINES

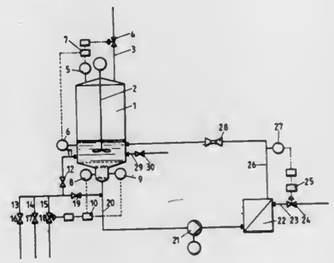
Pieter W. van der Poel, Prinsenbeek, Netherlands, assignor to CSM Suiker B.V., Amsterdam, Netherlands

Filed Sep. 13, 1983, Ser. No. 531,926

Claims priority, application European Pat. Off., Sep. 23, 1982, 82201191.2

Int. Cl.³ C13F *1/02*

U.S. Cl. 127—60 **2 Claims**



1. A process for the production of graft crystals for use in seeding sugar boiling brines which comprises

(a) adding an isopropanol suspension of milled sugar having a grain size of 5–20 micrometers to a concentrated sugar solution having a supersaturation number of 1.12–1.20 in a crystallizer, the suspension being added in a volume which is 1.8–2.2% of the total volume of the resultant mixture,

(b) homogenizing the mixture by means of a circulation pump,

(c) controlling crystallization to form graft crystals having a grain size of about 200 micrometers by lowering the pressure in the crystallizer to 60–80 centibars to cause evaporation of liquid, which evaporation lowers the temperature of the mixture to 75°–100° C., and

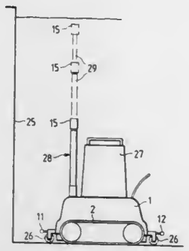
(d) adjusting the pressure and temperature to maintain a supersaturation number of 1.12–1.20.

4,518,437

METHOD AND APPARATUS FOR CLEANING A WATER TANK

Peter Sommer, Villnachern, Switzerland, assignor to Sommer, Schenk AG, Switzerland

Filed Jul. 5, 1983, Ser. No. 511,010
Claims priority, application Switzerland, Jul. 5, 1982, 4085/82
Int. Cl.³ B08B *9/08;* **E04H** *3/20*
U.S. Cl. 134—18 **7 Claims**



1. A method of controlling an underwater cleaning apparatus for cleaning the interior of a water tank, the cleaning apparatus being of the type including a housing carrying cleaning means and reversible and steerable means for propelling the housing across a tank surface, comprising the steps of:

establishing a sequence of courses defining a path of travel for the apparatus to follow repeatedly traverse the surface such that all of the surface will be traversed and cleaned in a systematic fashion,

initially setting the apparatus on a first course,

producing a signal representatative of the actual course being traveled by the cleaning apparatus by actual travel sensor means carried by said housing,

comparing the first course with the actual course signal and adjusting the steerable means to correct deviations,

detecting an obstacle in the path of the apparatus and causing reversal of its direction of travel by limit sensors carried by said housing,

after detecting the obstacle, setting the apparatus on a second course at a predetermined angle relative to the first course and holding the second course for a first predetermined period of time, and

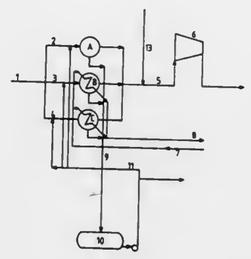
after traveling along the second course for the first predetermined time period, directing the apparatus along a third course parallel with the first course.

4,518,438

METHOD OF TRANSPORT, COOLING AND COMPRESSION OF NITROGEN OXIDE-CONTAINING GASES

Harald Storen, Olso, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Filed Aug. 3, 1983, Ser. No. 519,813
Claims priority, application Norway, Aug. 6, 1982, 822688
Int. Cl.³ B08B *9/00*
U.S. Cl. 134—22.1 **2 Claims**



1. In a method for removing and preventing the formation of salt deposits in critical sections of a process plant in which hot nitrogen oxide-containing gas is transported, cooled, dried by removal of condensate and compressed, and wherein said gas at said critical sections is maintained at a desired water vapor pressure in excess of the equilibrium water vapor pressure of the salt deposits at the temperatures existing in the critical sections, the improvement wherein said desired water vapor pressure is maintained by:

dividing said hot gas into at least two separate streams of hot gas;

solely cooling at least one said stream by injecting directly thereinto water in liquid form in an amount which by evaporation into said hot gas is sufficient to achieve said desired water vapor pressure;

cooling the remaining said streams by indirect cooling, forming condensate; and

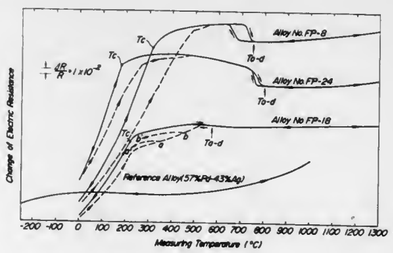
joining the thus directly and indirectly cooled said streams prior to introduction thereof into said critical sections.

4,518,439

ALLOY WITH SMALL CHANGE OF ELECTRIC RESISTANCE OVER WIDE TEMPERATURE RANGE AND METHOD OF PRODUCING THE SAME

Hakaru Masumoto, and Naoji Nakamura, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Filed Oct. 29, 1982, Ser. No. 437,613
Claims priority, application Japan, Dec. 14, 1981, 56-200065
Int. Cl.³ C22C *5/04*
U.S. Cl. 148—3 **13 Claims**



3. A method of producing an electric resistive element, comprising the steps of melting an alloy consisting essentially of 59.0–88.0 wt.% of palladium and the remainder of iron, molding the melt of said alloy into a mold, quenching the molded alloy from a temperature higher than the order-disorder transformation point thereof but lower than the melting point thereof to room temperature, applying heat-resisting insulating material onto the surface of the quenched alloy, cold working the insulated alloy into a desired form for shaping, and annealing the shaped alloy by heating in a non-oxidizing atmosphere at a temperature higher than the order-disorder transformation point thereof but lower than the melting point thereof for a duration longer than 2 seconds but shorter than 100 hours and cooling at a rate of 5° ∝ 300° C./hour, whereby said alloy has a temperature coefficient of electric resistance with an absolute value smaller than 50 ppm/°C. over a temperature range of 570° C. to 1335° C.

4,518,440

METHOD FOR PASSIVATING STAINLESS STEEL SURFACES AND PRODUCT THEREOF

William L. Phillips, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 10, 1984, Ser. No. 598,930
Int. Cl.³ C23F *7/04*
U.S. Cl. 148—6.14 R **6 Claims**

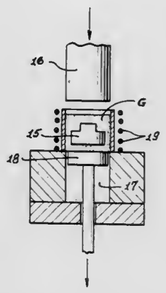
1. A method for treating the surface of a stainless steel object comprising in sequence heating said object in an oxidative atmosphere to a temperature of from about 400° F. to about 1250° F. to form a coating of magnetite on said surface, treating said surface with a dilute mineral acid solution and forming a coating of ferric oxide on said surface having a chromium to iron ratio of from about 0.5 to about 8.0.

4,518,441

METHOD OF PRODUCING METAL ALLOYS WITH HIGH MODULUS OF ELASTICITY

Robert W. Hailey, 2030-229 Beverly Plz., Long Beach, Calif. 90815

Filed Mar. 2, 1984, Ser. No. 585,400
Int. Cl.³ B22F *3/14*
U.S. Cl. 148—11.5 P **9 Claims**



1. A method for producing metal alloys with improved properties such a substantially increased moduli of elasticity, that includes

(a) mixing fine metal and non-metal powders to provide an alloy mix, with the major alloying constituent by weight selected from the group that consists essentially of iron, cobalt and nickel, and with the non-metal minor alloying constituent selected from the group that consists essentially of carbon, boron and silicon,

(b) milling said mix in a controlled atmosphere to a homogeneous condition that provides the desired breakdown, distribution and alloying characteristics of the powders, as well as desired handling and pressing characteristics,

(c) forming the mix to a preliminary powder shape, said forming including exerting pressure on the mix,

(d) and heating and transferring said powder shape to a hot refractory particle matrix and pressurizing said matrix so as to consolidate and densify the powder shape and to diffusion bond the powders to a solid body,

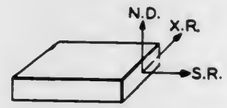
(e) whereby the body may be subjected to a subsequent heat treatment serving to develop the uniformity, the grain structure, and the properties required in the alloy body.

4,518,442

METHOD OF PRODUCING COLUMNAR CRYSTAL SUPERALLOY MATERIAL WITH CONTROLLED ORIENTATION AND PRODUCT

Herbert A. Chin, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,248
Int. Cl.³ C22F *1/10;* **C22C** *19/03*
U.S. Cl. 148—11.5 N **9 Claims**



4. A method for producing nickel superalloy sheet comprised of aligned, elongated grains whose axis of elongation corresponds essentially to the <110> direction including the steps of

a. providing a textured nickel superalloy sheet having a {110} <112> sheet texture with the <112> axis corresponding essentially to the (straight) rolling direction

b. passing the sheet through a thermal gradient, whose hot end exceeds the recrystallization temperature of the alloy in the straight rolling direction, so as to effect directional recrystallization

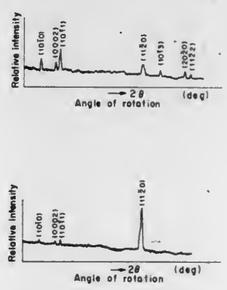
whereby the resultant sheet will contain elongated grains whose axis of elongation is a first <110> direction with a second <110> direction being parallel to the cross rolling direction and a <100> direction being normal to the sheet, said first <110> direction, said second <110> direction and said <100> direction being orthogonal.

4,518,443

ACOUSTIC DIAPHRAGM

Shinichi Yokozeki; Masami Kimura, and Tsunehiro Tsukagoshi, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,534
Claims priority, application Japan, May 25, 1982, 57-87214
Int. Cl.³ G10K *13/00*
U.S. Cl. 148—400 **1 Claim**



1. An accoustic diaphragm having a surface, and being formed of a material selected from the group consisting of beryllium, or an alloy consisting of at least 85% by weight of beryllium with the rest consisting of aluminium, copper, zinc

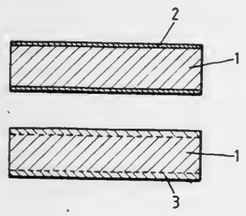
titanium and/or silver, said diaphragm having a crystal structure such that only the plane $(11\bar{2}0)$ thereof is oriented parallel to the surface of the diaphragm.

4,518,444

MATERIAL WHICH IS AT LEAST PARTIALLY MADE FROM A CONSTITUENT HAVING A ONE-WAY SHAPE MEMORY EFFECT AND PROCESS TO PRODUCE SAID MATERIAL

Joachim Albrecht, Mülligen, and Thomas Duerig, Nussbaumen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 27, 1982, Ser. No. 402,274
Claims priority, application Switzerland, Feb. 5, 1982, 706/82
Int. Cl.³ C23C *9/00*
U.S. Cl. 148—402 **15 Claims**



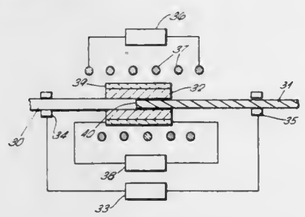
1. An article exhibiting a two-way shape memory effect, which is comprised of a one-way shape memory constituent having at least two regions, wherein said constituent is caused to exhibit a two-way shape memory effect by the presence of a second constituent which induces stresses resisting said one-way memory effect in at least one of said two regions, said second constituent being caused to be present in said article by at least one of brazing, welding, roll bonding, extrusion or hot isostatic pressing.

4,518,445

METHOD FOR MAKING ELECTRICAL CABLES

Jack R. Pedersen, Moss, and Sigmund Ege, Oslo, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,530
Claims priority, application Norway, Mar. 7, 1983, 830769
Int. Cl.³ B21F *15/06, 15/08*
U.S. Cl. 156—49 **14 Claims**



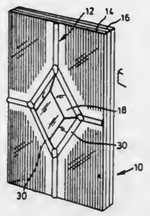
1. A method for manufacturing a continuous conductor from conductor sections comprising the steps of:
placing a jointing composition into a sleeve;
positioning conductor sections to be joined in the sleeve in end-to-end relationship such that their adjacent ends border the jointing composition;
heating the sleeve to a temperature at which the jointing composition becomes flowable and fuses the adjacent ends; and
removing the sleeve.

4,518,446

METHOD OF MAKING BEVELLED GLASS WINDOW

Frank E. Drennan, Etobicoke, Canada, assignor to Dor Seal Limited, Toronto, Canada

Continuation-in-part of Ser. No. 258,060, Apr. 28, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,099
Int. Cl.³ B44C *5/08*
U.S. Cl. 156—63 **2 Claims**



1. A method of making a glass or like window having a face wherein the face of the window is ornamentally divided into a plurality of lites by came secured thereto, the undersurface of the came being formed with an open channel for adhesive to secure the came to the face of the window, comprising the steps of:
forming splines on a jig surface in the configuration of said plurality of lites;
piecing said channeled lead came over said splines, the splines entering the channels;
said splines having a height to engage with the bottoms of the channels in the came;
joining the pieces of came at their intersections;
laminating the area of at least one of said lites on the face of said window with a sheet of decorative material having a thickness of at least $\frac{1}{8}$ of an inch whereby the area so laminated is elevated from the plane face of the window;
forming said jig surface at the marginal areas adjacent each side of said splines to duplicate in elevation the marginal areas of the lites on said face of said window;
pressing said came against the jig surface by placing a rigid board laminated with a resilient sheet over the jig surface with the resilient sheet in contact with the came, pressing the board against the jig surface to compress the resilient sheet against the came to force the bottom of the channelled came against the spline and turn the sides of the channelled came to conform the edges of the channel of the came to the elevation of the jig surface at the marginal areas to the splines;
removing said came from said splines with its underside so conformed and depositing an adhesive in the channels of the came;
aligning the configuration of the came to the configuration of the lites on the face of the window so that the came overlies the boundaries between the lites; and
pressing the window and the came together to adhesively secure the came to the window.

4,518,447

METHOD OF MAKING MULTI-SECTION DECORATIVE PANEL

Phillip D. Daniels, 4797 Lake Bluff, West Bloomfield Township, Pontiac County, Mich. 38033

Filed Jul. 11, 1980, Ser. No. 167,422
Int. Cl.³ E04B *2/00;* B32B *31/00*
U.S. Cl. 156—71 **2 Claims**

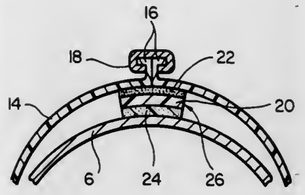
1. A method of making and installing on a wall surface or the like a multi-width panel having an overall surface decoration, comprising the steps of:
(1) extruding and decorating said panel with said overall surface decoration applied to the full panel width,
(2) slitting the panel longitudinally into partial width sections after extrusion and decoration, but without relative movement of the panel sections,
(3) applying an adhesive sheet to the non-decorated side of each of the panel sections while retaining the slit sections in position to retain the overall surface decoration, the adhesive sheet bridging the slit line between adjacent sections to thereafter retain the panel sections against misalignment,
(4) folding the taped sections in the direction of the tape, so that the adhesive sheet forms a hinge,
(5) unfolding the taped sections at the installation location, and
(6) securing said sections, while still taped and while still retained in registry, to a supporting surface to reform the overall surface decoration without any misalignment of the panels.

4,518,448

CLOSURE ASSEMBLY AND METHOD OF USING IT

Rene H. Henry, Hasselt, and Jean M. E. Nolf, Hamme-mille, both of Belgium, assignors to N. V. Raychem S.A., Belgium

Continuation of Ser. No. 308,886, Oct. 5, 1981, abandoned. This application Nov. 21, 1983, Ser. No. 554,371
Claims priority, application United Kingdom, Oct. 9, 1980, 8032538
Int. Cl.³ B32B *31/26*
U.S. Cl. 156—86 **22 Claims**



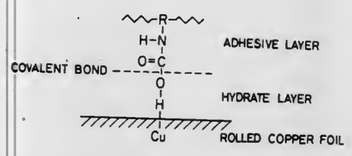
19. A method of enclosing a substrate wherein a wraparound sleeve is closed around the substrate by closure means which hold together longitudinal edge regions of the sleeve, a sealing member is located internally adjacent the sleeve to extend at least along said edge regions and the sleeve and sealing member are urged together by an urging means situated radially inwardly of the sealing member to effect a seal between said edge regions.

4,518,449

PROCESS FOR PRODUCTION OF HYDRATE SURFACED ROLLED COPPER FOIL LAMINATED PLATES

Osao Kamada, Tokyo, Japan, assignor to Hitachi Cable Limited, Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,439
Claims priority, application Japan, Oct. 27, 1983, 58-201685
Int. Cl.³ B32B *31/12*
U.S. Cl. 156—153 **8 Claims**



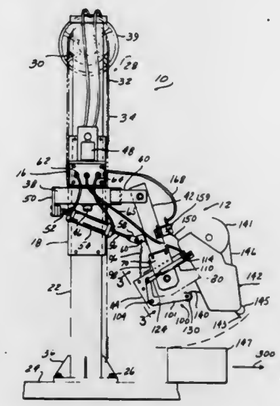
1. A process for producing a copper foil laminated plate comprising a rolled copper foil and an insulating substrate, which process comprises the steps of:
(a) cleaning the surface of the rolled copper foil;
(b) grinding or abrading the above-cleaned surface to activate it;
(c) bringing the above-treated surface into contact with water or steam to form a strong hydrate layer on the surface;
(d) coating the surface with the hydrate layer formed thereon with an adhesive capable of bonding, physically or chemically to a —OH group;
(e) precuring the above-coated adhesive; and
(f) placing the insulating substrate on the adhesive-coated side of the rolled copper foil and heat-pressing the insulating substrate and foil.

4,518,450

LABEL DISPENSING APPARATUS

Bruno D. Warmann, 15362 Fairlane Dr., Livonia, Mich. 48154

Filed Dec. 8, 1983, Ser. No. 559,213
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—566 **6 Claims**



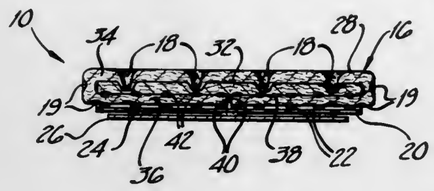
1. An automatic label dispensing apparatus for dispensing a label on an article to be marked, said apparatus comprising:
a label applicator having an ejector end at which a label is adapted to be positioned upon actuation of said applicator, said positioned label being adapted for contact with an article to be marked thereby;
first actuating means for activating said label applicator;
a first support member;
an arm member having one end pivotally carried by said support member, the other end extending therefrom;
an applicator support member pivotally carried by said other end of said arm member, said label applicator being carried by said applicator support member and movable therewith;
second actuating means for pivoting said arm member such that said ejector end of said applicator moves in a first direction along an arcuate path and into contact with said article to be marked, said support member being pivotally movable in a second direction opposite said first direction upon contact of said ejector end of said applicator with said article to be marked such that said ejector end tangentially contacts said object and deposits said label thereon;
a trigger mechanism, the actuation of which positions said label at said ejector end; said first actuating means comprising a roller mechanism pivotally carried by said applicator support member and having a grooved surface engaging said trigger mechanism and cylinder means responsive to fluid pressure to pivot said roller toward said trigger mechanism to actuate said label applicator, said cylinder means being operable to move said roller mechanism in the opposite direction to deactivate said applica-

tor, said cylinder means and pivotally mounted roller being carried by said applicator support member.

4,518,451
EMBOSSED PANTY LINER

Thomas J. Luceri, Little Ferry, and Kenneth J. Molee, Hightstown, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Sep. 2, 1982, Ser. No. 414,104
Int. Cl.³ A61F *13/16, 13/18;* **B31F** *1/20;* **B32B** *31/22*
U.S. Cl. 156—202 **4 Claims**



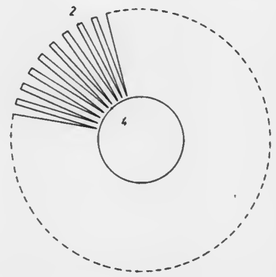
1. A method for manufacturing an embossed absorbent body for an absorbent liner for undergarments comprising:
passing an elongated sheet of absorbent material having a first and a second major surface to an assembly line;
superimposing, on a central, longitudinal portion of the first major surface of said elongated sheet, the first major surface of an absorbent insert with said sheet extending tranversely on either longitudinal side of said insert;
imposing onto the second major surface of said sheet, a pattern of depressed area, said pattern extending transversely beyond said insert and onto said side extensions of said sheet, said depressed areas being deeper in the portion of said sheet overlaid by said insert than said depressed areas in said side extensions of said sheet;
folding said side extensions of said sheet onto the second major surface of said insert to form said absorbent body.

4,518,452
METHOD FOR PRODUCING A GRINDING- OR POLISHING DISC AND A MACHINE FOR THIS PURPOSE

Keld O. Hundebol, Kanalvej 22, Ansager, Denmark (6823)

PCT No. PCT/DK81/00104, § 371 Date Jun. 30, 1982, § 102(e) Date Jun. 30, 1982, PCT Pub. No. WO82/01845, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 20, 1981, Ser. No. 395,001
Claims priority, application Denmark, Nov. 24, 1980, 4998/80
Int. Cl.³ B31F *3/00*
U.S. Cl. 156—211 **2 Claims**

1. A method for producing a grinding or polishing disc having flexible grinding members, comprising the steps of:
providing a rectangular sheet of an abrasive material;
making a plurality of parallel transverse cuts from opposite longitudinal edges in toward the longitudinal centre line of said sheet, and terminating said cuts short of said center line, to thereby form a central longitudinal area with a plurality of segments extending outwardly therefrom;
placing a string of a solid, deformable heat-activatable adhesive material along said center line at least for the entire length of said sheet;
folding said sheet around said string of adhesive about said center line;
bending said folded sheet along said center line to form a circle; and



joining the end portions of said central area together in abutting relation to form a closed ring by applying heat to said string.

4,518,453
METHOD OF PROCESSING THE OUTSIDE SURFACES OF A SKI

Karl R. Kiisler, Yakhimekhe tee, 26; Tiiya-Maya F. Sjuld, ulitsa Vyayana, 14, kv. 2; Peep G. Kristyanson, ulitsa Sjutiste tee, 34, kv. 38, all of Tallin; Gunnar B. Kholm, ulitsa Vyidu 18, kv. 10, Pyarnu; Juri K. Rokk, ulitsa Oya, 112 "b", kv. 41, Pyarnu, and Kalju M. Post, ulitsa Lekhola, 69, Pyarnu, all of U.S.S.R.

Filed Jun. 16, 1983, Ser. No. 504,810
Claims priority, application U.S.S.R., Jun. 17, 1982, 3457547
Int. Cl.³ A63C *5/00, 5/12;* **C09J** *5/02, 5/06*
U.S. Cl. 156—307.5 **7 Claims**

1. A process for manufacturing at least one outside surface of a ski, comprising the steps of:
a. treating a fibrous material selected from the group consisting of paper, a non-woven fabric made of synthetic fiber, and a non-woven fabric made of natural fiber, with a compound comprising a phenolic resin, having a dry matter content of from about 60 to about 80 mass percent, and being curable at from about 100° C. to about 120° C.;
b. heating the treated fibrous material at from about 70° C. to about 90° C. for a period of time which is long enough for the phenolic resin to undergo partial polycondensation;
c. applying the partially polycondensed phenolic resin treated fibrous material directly to at least one outside surface of a ski blank; and
d. exposing the ski blank with fibrous material applied thereto to a temperature of from about 100° C. to about 120° C. and a pressure of from about 0.5 MPa to about 2.0 MPa thereby causing complete polycondensation of said phenolic resin to occur and strong adhesion of said fibrous material to ski blank.

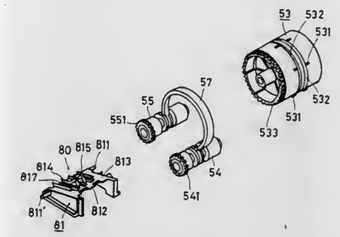
4,518,454
MANUALLY-OPERATED LABELER

Mituo Fujita, Sakatoshi, Japan, assignor to Kabushiki Kaisha Shinsei Industries, Toyko, Japan

Filed Sep. 2, 1982, Ser. No. 414,033
Claims priority, application Japan, Sep. 26, 1981, 56-153400; Nov. 9, 1981, 56-178308
Int. Cl.³ B44C *3/00;* **B32B** *1/00;* **B65H** *1/00*
U.S. Cl. 156—541 **7 Claims**

1. A manually operated labeler, comprising:
a main casing having a holding part for holding a roll of carrier strip onto which a plurality of labels are stuck consecutively;
a carrier strip turnback part which turns back the carrier strip as it is drawn from said holding part over said carrier strip turnback part to strip the labels from the carrier strip;

a feeding device having a feed drum for engaging the carrier strip and drawing it over said carrier strip turnback part;
a driving means connected to said feeding device for driving said feeding device to intermittently draw the carrier strip over said carrier strip turnback part;
a circular guide member positioned along an outer periphery of said feed drum in said main casing and spaced from said feed drum to define a carrier strip feeding clearance between said circular guide member and the outer periphery of said feed drum;
a feed-in roller on said main casing adjacent said feed drum ahead of, relative to a direction of the movement of the carrier strip, for feeding the carrier strip into said carrier strip feeding clearance in cooperation with said feed drum, and a feed-out roller on said main casing adjacent

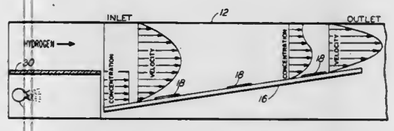


said feed drum behind, relative to the direction of movement of the carrier strip, for feeding the carrier strip from said carrier strip feeding clearance in cooperation with said feed drum; and
a pivotable frame positioned between said feed-in roller and said feed-out roller around the part of said feed drum other than that along which said circular guide member is positioned and pivotable independently of said feed-in and feed-out rollers into and out of a position in which said pivotable frame substantially covers the outer periphery of said feed drum between said feed-in and feed-out rollers, said pivotable frame having at least one stripper thereon which projects into the path of the carrier strip when said pivotable frame is in said position for separating the carrier strip from said feed drum.

4,518,455
CVD PROCESS

Kevin A. Muething, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,227
Int. Cl.³ C30B *25/14*
U.S. Cl. 156—613 **5 Claims**

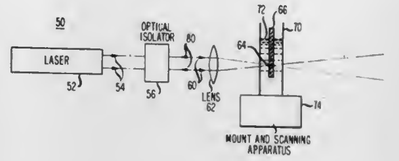


1. A method for depositing reactants on the surface of a semiconductor wafer positioned in an elongated hollow member in a chemical vapor deposition reactor, the method comprising the steps of:
heating the wafer;
directing a first gas stream containing gaseous reactant compounds in a gaseous ambient containing hydrogen along the hollow member to deposit reactants on the surface of the heated wafer; and
simultaneously directing a second gas stream comprised of the hydrogen-containing gaseous ambient along the hollow member between the gaseous reactant compounds and the inner surface of the hollow member to substantially eliminate the deposition of reactants thereon without interfering with the deposition of reactants on the wafer.

4,518,456
LIGHT INDUCED ETCHING OF INP BY AQUEOUS SOLUTIONS OF H_3PO_4

John E. Bjorkholm, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1983, Ser. No. 474,684
Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—626 **7 Claims**

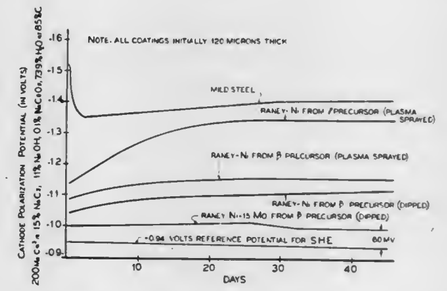


1. A method of etching a predetermined pattern into a Group III-V semiconductor crystal comprising the steps of:
placing said crystal in an aqueous solution of H_3PO_4;
while said crystal is in contact with said solution, illuminating predetermined regions of said crystal with light so that etching proceeds at said illuminated predetermined regions;
focusing said light to a spot having a spot size less than 500 Angstroms on said crystal; and
moving said spot on said crystal so that a groove is etched in said crystal.

4,518,457
RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 179,150, Aug. 18, 1980, Pat. No. 4,370,361, which is a division of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application Mar. 17, 1982, Ser. No. 358,975
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ B01J *21/04*
U.S. Cl. 156—656 **19 Claims**



1. A method of producing a monolithic, non-pyrophoric, low overvoltage electrode for use as a hydrogen evolution cathode for the electrolysis of brine in an electrolytic cell which comprises the steps of:
(a) coating with aluminum the surface of a clean, non-porous conductive metal substrate comprised of a nickel-molybdenum alloy having a weight percent molybdenum within

the range of from about 5 to about 20 and a weight percent nickel within the range of from about 80 to about 95;

(b) heat treating said coated surface by maintaining said surface at a temperature within the range of from about 660° C. to about 860° C. for a time about 1 to about 30 minutes to diffuse a portion of said aluminum into outer portions of said structure to produce an integral nickel-molybdenum-aluminum alloy larger in said outer portions predominantly of Beta phase grains but insufficient to create a predominance of Gamma phase grains in said outer portions;

(c) leaching out residual aluminum and intermetallics from the alloy layer until a porous Raney nickel-molybdenum layer is formed integral with said structure; and

(d) chemically treating said Raney nickel-molybdenum layer so that said layer is substantially non-pyrophoric.

4,518,458

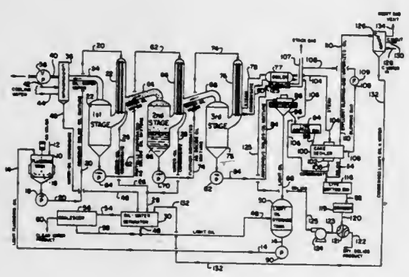
PROCESS FOR REMOVING LIGHT OIL FROM SOLIDS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Filed Sep. 17, 1982, Ser. No. 419,574

Int. Cl.³ B01D *1/14, 5/00, 12/00;* **F26B** *7/00*

U.S. Cl. 159—47.1 **18 Claims**



1. A process for the recovery of clean water and substantially dry, fluidizing oil-free solids from aqueous solids dehydrated in a light fluidizing oil medium comprising the steps of (1) admixing aqueous solids with a low viscosity, relatively volatile water-immiscible light fluidizing oil boiling within the range of from about 150° F. to about 550° F. to obtain a mixture which will remain fluid and pumpable after the removal of the water content therefrom; (2) subjecting the resultant oil-containing mixture to dehydration by heat evaporation whereby substantially all the water and part of the fluidizing oil are vaporized, yielding a mixed water and light oil vapor and a substantially anhydrous solids in oil slurry; (3) condensing said mixed water and light oil vapor; (4) separating the resultant condensate into a clean water fraction and a light oil fraction; (5) separating at least some of the relatively volatile, water-immiscible light fluidizing oil from said substantially anhydrous solids in oil slurry; (6) bringing the resultant solids carrying residual light fluidizing oil into direct contact with a hot, inert blowing gas selected from a group of consisting of gaseous products of combustion, nitrogen and carbon dioxide to thereby remove said light oil from said substantially anhydrous solids by heat evaporation; (7) condensing light oil vapor in effluent blowing gas and separating it therefrom; (8) admixing the separated light oil from step (7) with fresh aqueous solids and thereby recycling it through the process as fluidizing oil, and (9) combining the separated light oil fractions of steps (4) and (5) and admixing them with fresh aqueous solids and thereby recycling them through the process as fluidizing oil.

4,518,459

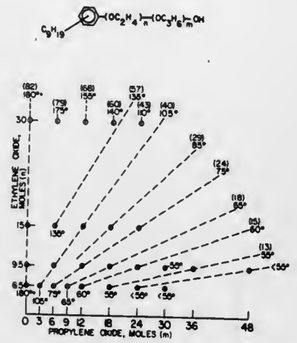
METHODS OF DEINKING SECONDARY FIBERS

Richard E. Freis, Bloomington; James E. Maloney, Eagan, and Thomas R. Oakes, May, all of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Continuation of Ser. No. 93,744, Nov. 13, 1979, abandoned. This application Jan. 17, 1983, Ser. No. 458,432

Int. Cl.³ D21C *5/02*

U.S. Cl. 162—5 **23 Claims**



1. A washing method for the production of substantially decontaminated secondary fiber from relatively contaminated secondary fiber, comprising the steps of:

(a) suspending the relatively contaminated secondary fiber in an aqueous medium in the presence of less than about 1% of the weight of said contaminated fiber of a single foam-suppressing surface active agent consisting essentially of:

$$R—(AR)—(OC_2H_4)_m—(OC_3H_6)_n—Y;$$

wherein R represents a monovalent higher aliphatic group containing from 6 to 24 carbon atoms,

Ar represents an aromatic residue,

$—(OC_2H_4)_m—$being a poly (ethylene oxide) chain,

$—(OC_3H_6)_n—$being a poly (propylene oxide) chain;

m is about 6 to about 15,

n is about 12 to about 48,

m:n is less than 1, and

Y is selected from the group consisting of hydroxyl and benzyl ether, the temperature of said aqueous medium being in the range of about 25° C. to about 85° C., whereby contaminants of the relatively contaminated secondary fiber become uniformly distributed throughout said aqueous medium; and

(b) substantially separating the resulting substantially decontaminated secondary fiber from the resulting contaminant-containing aqueous medium.

4,518,460

PRESS ROLL FOR WEB MATERIAL

Ludwig Hauser, and Wilhelm Wanke, both of Heidenheim, Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Fed. Rep. of Germany

PCT No. PCT/EP82/00007, § 371 Date Sep. 21, 1982, § 102(e) Date Sep. 21, 1982, PCT Pub. No. WO82/02567, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 21, 1982, Ser. No. 425,088

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102526

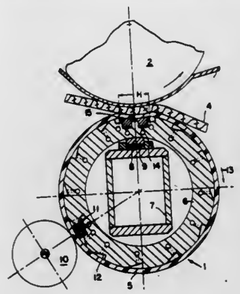
Int. Cl.³ D21F *3/02, 3/08*

U.S. Cl. 162—361 **12 Claims**

1. A press roll, for cooperating with an associated roll at a nip, to press web material between the press and associated rolls at the nip, the press roll comprising:

a relatively rigid, relatively stationary, inner shell having an outer periphery and an inner periphery, the outer periphery having a substantially circular cross section; the inner shell further having a space defined therein at the outer periphery and open toward the nip, said space not extending through the inner periphery;

a relatively more flexible, elastically deformable, outer shell supported outside the inner shell, and the outer shell including an inner side for sliding on and over the inner shell



outer periphery; the outer shell being rotatable with respect to the inner shell;

a pressure ledge located at the nip and having a length around the press roll for extending past the nip and for forming an extended nip; the pressure ledge resting against the inner side of the outer shell; the pressure ledge being movably mounted in the space in the inner shell; and

pressure means in the inner shell for urging the pressure ledge outwardly against the inner side of the outer shell.

4,518,461

SUPPORT FOR BATTERIES OF COKING FURNACES HEATED FROM THE TOP

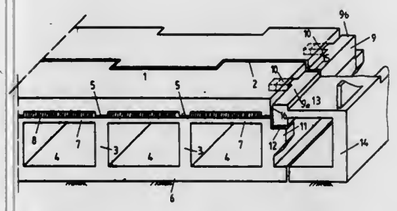
Jan Gelfand, Ratingen-Lintorf, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,142

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210372

Int. Cl.³ C10B *29/00, 45/00*

U.S. Cl. 202—270 **12 Claims**



1. In combination a battery of coking furnaces of the type being heated from the top and having regenerators, and a support for said battery comprising

a plurality of waste heat passages formed beneath the regenerators and extending in a longitudinal direction of the battery;

a foundation formed by a floor member and also by wall members of said waste heat passages, and having a plurality of consoles;

a furnace supporting plate slidingly supported on said wall members and repeatedly subdivided transversely to the longitudinal direction of the battery so as to form a plurality of plate portions; and

two longitudinal bars each located at a machine side and at a coke side of the battery and slidingly supported on said plurality of consoles of said foundation, each of said longitudinal bars engaging said plate portions of said furnace supporting plate and fixing them in their positions.

4,518,462

DISTILLATION PROCESS FOR PURIFYING METHYL METHACRYLATE

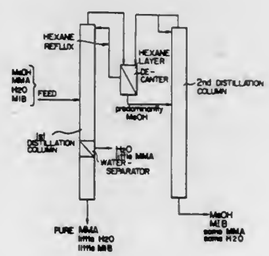
Atsushi Aoshima, Yokohama; Yoshio Suzuki, and Mikihiko Nakamura, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 272,598, Jun. 11, 1981, abandoned. This application May 25, 1983, Ser. No. 497,783

Claims priority, application Japan, Jun. 20, 1980, 55-83542; Jun. 20, 1980, 55-83543

Int. Cl.³ B01D *3/36;* **C07C** *67/54*

U.S. Cl. 203—39 **5 Claims**



1. In the process for purifying methyl methacrylate by feeding a feed mixture containing methanol, methyl methacrylate and 0.05 to 2% by weight, based on the weight of the methyl methacrylate, of methyl isobutyrate to a first distillation column, subjecting the same to distillation therein in the presence of a saturated hydrocarbon having 6 or 7 carbon atoms above the feed stage while distilling out an azeotropic mixture of said saturated hydrocarbon and the methanol, condensing the azeotropic mixture from the first distillation column, sending the resulting condensate to a decanter to separate it into a layer consisting mainly of the hydrocarbon and a layer consisting mainly of methanol, returning the layer consisting mainly of the hydrocarbon to the top of the first distillation column, feeding the layer consisting mainly of the methanol to a second distillation column, distilling the hydrocarbon dissolved in the methanol layer, together with a part of the methanol, out of the top of the second column, condensing and sending it to the above-mentioned decanter, recovering methanol from the bottom of the second distillation column, and recovering methyl methacrylate from the bottom of the first distillation column, the improvement which comprises

(1) cooling said decanter to 0°-13° C. to conduct the layer-separation,

(2) controlling the amount of the hydrocarbon resident in the upper part of the first distillation column so that a small amount of methyl methacrylate is also distilled out of the top of the first distillation column, and

(3) feeding the layer consisting mainly of methanol layer-separated in the above decanter, to the second distillation column having distillation stages above the feed stage, and returning a part of the distillate from the top of the second distillation column to the top of the second distillation column, thereby recovering methyl isobutyrate and a small amount of methyl methacrylate along with methanol from the bottom of the second distillation column, and separating methanol and methyl isobutyrate from the feed mixture to the first distillation column.

2. In the process for purifying methyl methacrylate by feeding a feed mixture containing methanol, methyl methacrylate, water and 0.05 to 2% by weight, based on the weight of the

methyl methacrylate, of methyl isobutyrate to a first distillation column, subjecting the same to distillation therein in the presence of a saturated hydrocarbon having 6 or 7 carbon atoms above the feed stage while distilling an azeotropic mixture of said saturated hydrocarbon and methanol out of the top, condensing the azeotropic mixture from the first distillation column, sending the resulting condensate to a decanter to separate it into a layer consisting mainly of the hydrocarbon and a layer consisting mainly of methanol, returning the layer consisting mainly of the hydrocarbon to the top of the first distillation column, feeding the layer consisting mainly of the methanol to a second distillation column, distilling the hydrocarbon dissolved in the methanol layer, together with a part of the methanol, out of the top of the second column, condensing and sending it to the above-mentioned decanter, recovering methanol from the bottom of the second distillation column, separating a mixture of H_2O and methyl methacrylate at the bottom of the first distillation column into a layer consisting mainly of methyl methacrylate and a layer consisting mainly of water, withdrawing said water layer to recover the methyl methacrylate, and recovering methyl methacrylate from the bottom of the first distillation column, the improvement which comprises

(1) cooling said decanter to 0°–13° C. to conduct the layer-separation,

(2) controlling the amount of the hydrocarbon resident in the upper part of the first distillation column so that a small amount of methyl methacrylate is also distilled out of the top of the first distillation column, and

(3) feeding the layer consisting mainly of methanol layer-separated in the above decanter, to the second distillation column having distillation stages above the feed stage, and returning a part of the distillate from the top of the second distillation column to the top of the second distillation column, thereby recovering methyl isobutyrate and a small amount of methyl methacrylate along with methanol from the bottom of the second distillation column, and separating methanol, water and methyl isobutyrate from the feed mixture to the first distillation column.

4,518,463

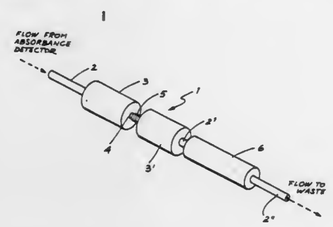
POTENTIOMETRIC METHOD

Peter W. Alexander, Maroubra, and Paul R. Haddad, Eastwood, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 249,373, Mar. 31, 1981, abandoned. This application Apr. 13, 1983, Ser. No. 484,703

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T **4 Claims**



1. A method of detecting amino acids and other organic copper-complexing agents in a fluid, said method comprising the steps of:

providing a potentiometric electrode detector comprising a flow-through copper metal tube electrode having a volume in the range of 0.2 to 2 μl and being flow-coupleable to said fluid, said detector including a tubular inlet of material inert to the fluid to be analyzed, a flow-through reference electrode located downstream of said inlet, and an inert flow-through spacer located downstream of said reference electrode, said copper metal tube electrode being located downstream of said spacer, said electrode providing a voltage response to the amino acid or other organic copper-complexing agent to be detected;

passing said fluid to be analyzed through said detector; and measuring said voltage response to thereby detect said amino acid or other organic copper-complexing agent.

4,518,464

METHOD OF DETECTING EMBRITTLEMENT OF HEAT-RESISTING STEEL

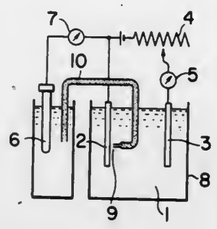
Hideaki Takahashi; Tetsuo Shoji, both of Sendai; Kiyoshi Saitoh, Yokohama; Masamitsu Muramatsu, Sagamihara, and Kazushige Kimura, Chigasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki; Hideaki Takahashi and Tetsuo Shoji, both of Sendai, all of, Japan

Filed Jul. 5, 1984, Ser. No. 627,832

Claims priority, application Japan, Jul. 6, 1983, 58/122566

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T **4 Claims**



1. A method of detecting embrittlement of a heat-resisting steel which comprises evaluating the brittleness of the heat-resisting steel on the basis of the repassivation current value obtained by the steps of:

(a) connecting the heat-resisting steel as the anode of an anode polarization curve measuring apparatus wherein an aqueous solution containing an organic acid and an alkylbenzene sulfonic acid or its salt is used as an electrolytic solution; and

(b) raising the anode potential from an active region to a passive region and thereafter lowering the anode potential to measure the repassivation current value.

4,518,465

METHOD OF MANUFACTURING PRINTED WIRING BOARDS

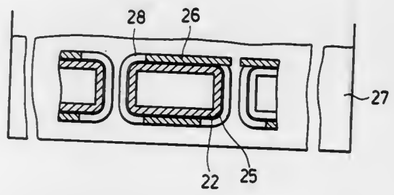
Etsuji Morimoto, and Keijiro Orito, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 648,880

Claims priority, application Japan, Sep. 17, 1983, 58-170619

Int. Cl.³ C25D *5/02, 7/04*

U.S. Cl. 204—15 **7 Claims**



1. A method of manufacturing a printed wiring board including a wet plating process which comprises immersing a base substrate with a multiplicity of through-holes having two major surfaces in a plating bath to coat metal films over the two surfaces of said base substrate and the inner walls of said through-holes therein wherein said metal films formed over the inner walls of said through-holes form via-holes for electrically connecting said metal films formed over the two surfaces of said base substrate with each other, said wet plating process comprising the steps of: (a) taking said base substrate out of said plating bath for a first predetermined period of time, to thereby cause disintegration of bubbles on the surfaces of said base substrate and the inner walls of said through-holes therein; and (b) then again immersing said base substrate into said plating bath for a second predetermined period of time to resume formation of said metal films on the surfaces of said base substrate and the inner walls of said through-holes therein.

4,518,466

WEB CONVEYING METHOD

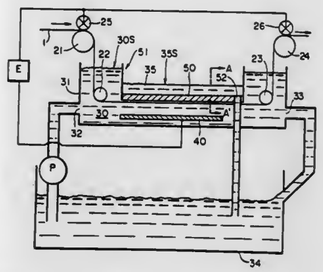
Masahiro Takahashi; Toshio Hagiwara; Tsutomu Kakei, and Kazutaka Oda, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd. and Nippon Light Metal Company Ltd., both of, Japan

Division of Ser. No. 238,909, Feb. 27, 1981, Pat. No. 4,432,854. This application Dec. 9, 1983, Ser. No. 559,998

Claims priority, application Japan, Feb. 28, 1980, 55-24773

Int. Cl.³ C25D *7/06*

U.S. Cl. 204—28 **3 Claims**



1. A method of conveying a web through a fluid bath while maintaining said web substantially planar, said method comprising the steps of:

passing said web through said bath adjacent a first side of a guide plate having first and second sides and having at least one hole therein; and

maintaining a static fluid pressure adjacent said first side of said guide plate which is higher than a static fluid pressure adjacent said second side of said guide plate, whereby said fluid flows through said hole and said fluid urges said web against said first side of said guide plate.

3. The web conveying method of claim 1 further comprising the step of providing an electrode substantially parallel to said guide plate on the side of a web opposite said guide plate; and applying an electric current flowing between said electrode and said web.

4,518,467

SELECTIVE SOLAR SURFACES

John J. Mason, Walsall; Michael T. Cunningham, Harbourne, and Jeffrey N. Crosby, Melksham, all of England, assignors to INCO Selective Surfaces Limited, Birmingham, England

Continuation-in-part of Ser. No. 382,172, May 26, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,198

Claims priority, application United Kingdom, Jun. 1, 1981, 8116642; Apr. 14, 1982, 8210803

Int. Cl.³ C23B *5/06;* C23F *7/26*

U.S. Cl. 204—37.1 **6 Claims**

1. A process for the production of a solar collector for operation at temperatures in the range 100° to 300° C. or more comprises immersing a stainless steel plate in a solution of chromic acid and sulphuric acid, with or without other constituents, at a temperature of about 65° C. or more, to give a colored heavily hydrated chromium-rich spinel oxide surface film of thickness of from about 0.02 to about 0.5 μm, said surface film comprising a tortuous network of interlinking pathways of effective length of about twice the film thickness, washing and drying the surface and subjecting it to DC electrolysis in a bath selected from the group comprising a nickel plating bath and a palladium plating bath, said electrolysis continuing from a time sufficient to deposit metal into the pores and thereby effect a color change of the oxide film but insufficient for metal to be deposited on the surface of the film.

4,518,468

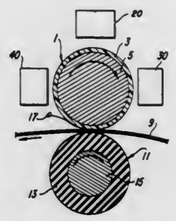
PROCESS FOR MAKING ELECTROSTATIC IMAGING SURFACE

Richard A. Fotland, Holliston, and Leo A. Beaudet, Milford, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Feb. 22, 1983, Ser. No. 468,435

Int. Cl.³ C25D *11/06*

U.S. Cl. 204—38.3 **11 Claims**



1. A method of treating a member to form a dielectric surface layer, comprising the steps of:

hardcoat anodizing the member, which is comprised of a material selected from the group consisting of aluminum and aluminum alloys, to form an oxide surface layer having a plurality of pores and a barrier layer,

heating the aluminum member to an elevated temperature in the range of 120°–180° C.,

impregnating the pores of the oxide surface layer with a material selected from the group consisting of carnauba wax, montan wax, and compounds of said waxes while the member is at a temperature above the melting point of the impregnating wax, to form a dielectric surface layer with a resistivity in excess of 10^{12} ohm-centimeters, and

removing any of the wax on the exterior of the dielectric surface layer.

4,518,469

METHOD OF MAKING NON-PRECIOUS METAL ELECTRICAL CONTACTS BY ELECTROPLATING

Sau-Lan L. NG, Lawrence Township, Mercer County; John T. Plewes, Chatham Township, Morris County, and Murray Robbins, Berkeley Heights Township, Union County, all of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

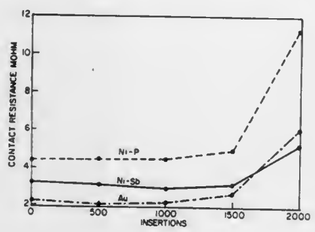
Filed Aug. 31, 1984, Ser. No. 646,665

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—44.5 **18 Claims**

1. A method of depositing an alloy of nickel and antimony on a substrate comprising from 1 to 70 weight percent anti-

mony and the balance nickel comprises electroplating said alloy from an acidic solution comprising a soluble nickel salt



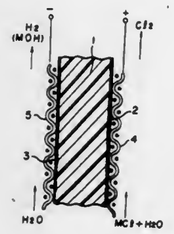
and a soluble mixed alkali metal-antimony salt of a polybasic organic acid wherein said substrate is made the cathode.

4,518,470

ION EXCHANGE MEMBRANE CELL AND ELECTROLYTIC PROCESS USING THEREOF

Yoshio Oda; Takeshi Morimoto, and Toshiya Matsubara, all of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 479,902, Mar. 29, 1983, Pat. No. 4,468,301, which is a continuation of Ser. No. 288,684, Jul. 31, 1981, abandoned. This application May 2, 1984, Ser. No. 606,197
Claims priority, application Japan, Jul. 31, 1980, 55-104284
Int. Cl.³ C25B *1/34, 9/00, 13/02, 13/08*
U.S. Cl. 204—98 **15 Claims**



1. An electrolytic cell, which comprises:
an anode and a cathode which are partitioned by an ion exchange membrane having at least one surface roughened, said surface roughening being defined by a fine concavo-convex structure wherein the average depth (height) of said structure ranges from 0.01 to 30μ with the average number of surface roughening concavo-convex structures ranging from 1 to 10^{13} per mm^2, and wherein at least one of said anode and said cathode contacts one of the roughened surfaces of said membrane.

4,518,471

TWO STEP ELECTROCHEMICAL ETCH PROCESS FOR HIGH VOLT ALUMINUM ANODE FOIL

Mulk R. Arora, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 29, 1984, Ser. No. 645,876
Int. Cl.³ C25F *3/04*
U.S. Cl. 204—129.1 **12 Claims**

1. A two step process for etching aluminum electrolytic capacitor anode foil wherein such foil has a high cubic texture, greater than 70% cubicity, comprising a first step of:
treating said foil in an electrolyte bath containing between 1.5% and 7% hydrochloric acid and 0% to 2% aluminum as a chloride under the influence of direct current at a temperature between 70° C. and 85° C.; and
passing a charge of 6 to 25 coulombs through said foil while said foil is immersed in said hydrochloric acid bath and having a current density between 0.25 and 0.60 amps/cm^2; and
in a second step, treating said foil emerging from said first



bath in an electrolyte bath consisting of from 1.5 to 7% hydrochloric acid and between 0% to 2% aluminum as aluminum chloride, under the influence of direct current having a current density of 0.10 to 0.15 amps/cm^2, with 40 to 50 etch coulombs at a temperature of 75° to 90° C.

4,518,472

DELUSTERING COATING COMPOSITION EXCELLENT IN ABRASION RESISTANCE

Kazuo Kishida; Isao Sasaki, both of Hiroshima; Kenji Kushi, and Masahiro Sugimori, both of Otake, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,895
Claims priority, application Japan, Sep. 10, 1982, 57-156832; Sep. 11, 1982, 57-157408; Sep. 13, 1982, 57-157991
Int. Cl.³ C08F *220/00, 2/48;* **C08J** *7/04;* **C09D** *3/00*
U.S. Cl. 204—159.15 **24 Claims**

1. A coating composition curable by an activation energy ray, which comprises (a) 100 parts by weight of a monomer mixture (A) comprising at least 30% by weight of a compound having at least 3 acryloyloxy and/or methacryloyloxy groups in the molecule and up to 70% by weight of a compound having 1 to 2 α,β-ethylenically unsaturated bonds in the molecule, (b) 0.01 to 6.0 parts by weight of at least one photosensitizer and (c) 0.5 to 30 parts by weight of a crosslinked polymer or copolymer obtained by emulsion copolymerization of a reactive monomer having one α,β-ethylenically unsaturated bond in the molecule and a reactive monomer having at least two α,β-ethylenically unsaturated bonds in the molecule.

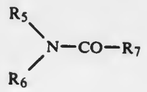
4,518,473

COMPOSITIONS AND PROCESS

Anthony F. Jacobine, Meriden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 290,689, Aug. 6, 1981, Pat. No. 4,425,208. This application Oct. 11, 1983, Ser. No. 540,225
Int. Cl.³ C08F *2/48;* **C08J** *2/28*
U.S. Cl. 204—159.18 **4 Claims**

1. In a method for the photopolymerization of ethylenically unsaturated compounds selected from the group consisting of polymerizable ethylenically unsaturated monomers, oligomers and polymers, the improvement which comprises employing as the photoinitiator a combination consisting essentially of an aromatic ketone sensitizer and from 20 to 200 parts by weight, per 100 parts by weight of said ketone sensitizer, of an N,N-disubstituted amide of the formula:



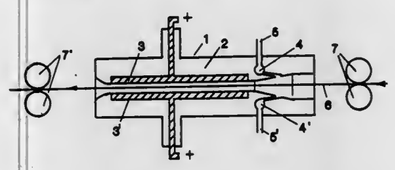
wherein R_5 and R_6 taken individually represent lower-alkyl, R_5 and R_6 taken together with the N atom to which they are attached represent the residue of a heterocyclic moiety having from 2 to 8 ring atoms and R_7 is selected from the class consisting of alkyl and aryl.

4,518,474

DEVICE FOR THE ELECTROLYTIC TREATMENT OF METAL STRIP

Maurizio Podrini, Via Castel del Rio n. 9, 00127 Roma, Italy

Filed May 7, 1984, Ser. No. 607,446
Claims priority, application Italy, May 16, 1983, 48300 A/83
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—206 **1 Claim**



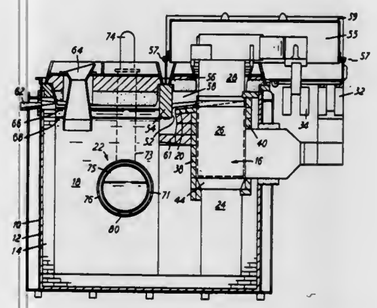
1. A device for the continuous electrolytic treatment of metal strip, in which the elementary electrolytic treatment cell consists of a hollow chamber of rectangular section, through which the strip to be treated passes, and which has insoluble electrodes on both its larger faces, the electrical circuit being closed through the metal strip to be treated, characterized in that said elementary cell is immersed in the electrolyte, the forced flow of which within the treatment chamber is ensured by an ejector, the ejector is at the end of the cell the strip to be treated enters, the ejector feeds fresh electrolyte in a direction opposite the direction of strip movement thereby drawing electrolyte at high speed from the other end of the cell through the treatment chamber, and the treatment chamber is open at both ends to the free flow of electrolyte therethrough.

4,518,475

APPARATUS FOR METAL PRODUCTION BY ELECTROLYSIS OF A MOLTEN ELECTROLYTE

Olivo G. Sivilotti, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed May 27, 1983, Ser. No. 498,848
Claims priority, application United Kingdom, Jun. 14, 1982, 8217165
Int. Cl.³ C25C *3/00, 3/04, 7/00*
U.S. Cl. 204—247 **7 Claims**



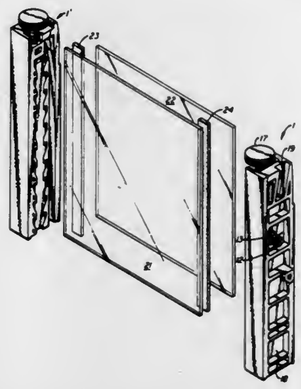
1. An electrolytic cell for the production of metal by electrolysis of a molten chloride electrolyte which is more dense than the metal, comprising
an electrolysis chamber **16** including at least one electrode assembly of an anode **28**, a cathode **26** and at least one intermediate bipolar electrode **30**, the electrodes being arranged substantially vertically with substantially vertical electrolysis regions **39** between them, and a gas collection space **58** above the assembly,
a metal collection chamber **18** in communication with the top and the bottom of the electrolysis chamber, but screened from the gas collection space,
a weir **20** to permit a controlled flow of electrolyte/metal mixture from the top of the electrolysis chamber to the metal collection chamber, said weir being positioned at one end of the or each electrode assembly and extending transversely to the electrodes, and
means **22** for maintaining the surface of the electrolyte/metal mixture in the electrolysis chamber at a substantially constant level,
the or each intermediate bipolar electrode having an anodic face which extends upwards to a height above the intended level of the electrolyte/metal mixture surface, a cathodic face which extends upwards to a height slightly below the intended level of the electrolyte/metal mixture surface, and a longitudinally-extending open-top channel **50** which slopes downwards toward the weir to convey electrolyte/metal mixture from the electrolysis region towards the weir.

4,518,476

END CLAMP FOR GEL SLAB PLATE ASSEMBLY

Timothy E. Delony, San Leandro, and Daniel Y. M. Chu, San Francisco, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Apr. 17, 1984, Ser. No. 601,148
Int. Cl.³ G01N *27/26;* **B25B** *1/20*
U.S. Cl. 204—299 R **10 Claims**



1. A device for clamping together a plurality of plates along at least a portion of one edge of each with substantially uniform pressure, which comprises:
a housing having on one side thereof an elongate recess defined by a substantially flat back wall and first and second side walls, said first side wall being flat and said second side wall containing a plurality of parallel flat segments located at intervals along the length thereof, each segment facing at an angle with respect to said first side wall;
a first elongate bar movably mounted within said recess, having a first side facing said first side wall and a second side facing said second side wall, said first side being flat and parallel to said first side wall to define therewith a groove for receiving said plates, and said second side containing a plurality of parallel flat segments located at intervals along the length thereof, each segment facing at an angle equal but opposite to that of said parallel flat segments of said second side wall;

means for restricting the movement of said first elongate bar to a direction perpendicular to said first side wall;

a second elongate bar movably mounted within said recess between said first elongate bar and said second side wall of said recess, each side surface of said second elongate bar containing a plurality of parallel flat segments at angles and intervals indentical to those of the opposing segments on said first elongate bar and said second side wall of said recess, respectively; and

means for urging said second elongate bar lengthwise to urge said parallel flat segments on each side thereof against said parallel flat segments of said first elongate bar and said parallel flat segments of said second side wall of said recess, respectively, and thereby urge said first elongate bar toward said first side wall of said recess.

9. A sandwich-type gel slab plate assembly comprising:

a pair of flat rectangular glass plates of equal width with side edges in alignment;

a pair of flat spacer bars disposed between said plates, one said bar aligned with each side edge of said plates; and

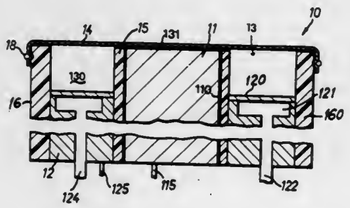
a pair of clamping devices according to claims **1**, **2**, **3**, **4**, **5**, **6**, **7** or **8**, each said device clamping inside its respective groove said glass plates along one side edge thereof over one said spacer.

4,518,477

THERMAL PROTECTION FOR ELECTROANALYTICAL CELL AND AMPEROMETRIC PROBE

Harry D. Wright, Collonge-Bellerive; John M. Hale, Meinier, and Eugen Weber, Hinwil, all of Switzerland, assignors to Orbisphere Corporation Wilmington, Collonge-Bellerive, Switzerland

Filed Feb. 3, 1982, Ser. No. 345,536
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—415 **15 Claims**



12. In a membrane-enclosed amperometric probe comprising an elongated generally cylindrical body having a frontal sensor face at one end of said body; and electrolyte space covered by said membrane and in contact with at least two electrodes; and electrical connecting means extending from said electrodes through said body to a region near the other end of said body; the improvement consisting of said body including a thermal shield arranged within a jacket and including a heat conducting tubular member which extends through said body in an axial direction from a first region near said one end of said body to a second region thereof near said other end; said tubular member having a surface in contact with a channel for passing a heat exchange fluid through said body, said channel not being in fluid communication with said electrolyte space.

4,518,478

LIQUEFACTION WITH MICROENCAPSULATED CATALYSTS

Sol W. Weller, Williamsville, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 23, 1984, Ser. No. 612,953
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **14 Claims**

1. In a catalytic solid carbonaceous material liquefaction process, a method of catalyst distribution into said solid carbonaceous material comprising:

forming a solid suspension in carbonaceous liquid of liquefaction-catalyst-containing microcapsules having thermolabile, polymeric shells and

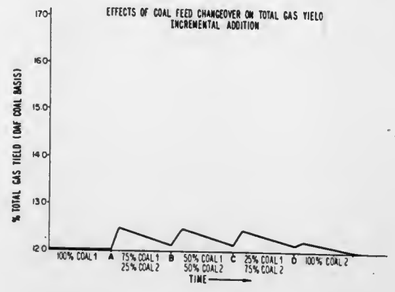
contacting said solid carbonaceous material with said suspension at a decomposition temperature sufficient to destroy the microcapsule shells and to intimately contact said liquefaction catalyst with said solid carbonaceous material.

4,518,479

TIME PHASED ALTERNATE BLENDING OF FEED COALS FOR LIQUEFACTION

Frank Schweigharett, Allentown; David S. Hoover, New Tripoli, and Diwaker Garg, Macungie, all of Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Jun. 19, 1984, Ser. No. 622,374
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **4 Claims**



1. A hydro-liquefaction process for coals wherein the feedstock changes from a first coal to a second coal through a sequence of time-phase blending in incremental additions of said second feed coal to said first feed coal and wherein process solvent derived from said first coal is incompatible with said second coal by causing an increase in the quantity of hydrocarbon gas make and hydrogen consumption during liquefaction, which process comprises: forming a slurry of finely divided feed coal and process-derived solvent, contacting said slurry with a hydrogen-rich gas, heating said slurry in the presence of said hydrogen-rich gas to react said heated slurry and to dissolve at least some of said coal, adding fresh hydrogen as required to form a liquefied coal slurry, passing said liquefied coal slurry to a separator to separate a vapor product stream and a condensed product stream, passing said condensed product stream to a distillation still and removing therefrom a residual bottoms product stream and a fraction recycled as process-derived solvent, wherein the time-phase blending change-over from said first coal to said second coal is effected by incremental sequential addition to said first coal of said second coal in an amount such that said process-derived solvent at the time of sequential addition is no less than 25% compatible with the feed coal admixture subsequent to said sequential addition of said coals to produce a decreasing level of light hydrocarbon gas production and hydrogen consumption compared with the last incremental admixture of said feed coals and after each of said incremental sequential additions operating said process for a sufficient length of time to permit said compatibility of solvent to coal to approach 100% before the next sequential incremental addition of said second feed coal composition to gradually shift away the characteristics of said process solvent derived from said first coal towards the characteristics of process solvent derived from said second coal.

4,518,480

PROCESS FOR THE EFFICIENT UTILIZATION OF SOLVENT MODIFIED OIL SHALES

Costandi A. Audeh, Princeton, and Thomas O. Mitchell, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 2, 1984, Ser. No. 626,845
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **48 Claims**

1. A combination solvent extracting and hydroprocessing process for recovering hydrocarbonaceous materials from oil shale comprising the steps of:

(a) treating said oil shale with a hydrogen donor solvent;

(b) extracting said treated oil shale with a paraffinic solvent which has the ability to solubilize some of the hydrocarbonaceous materials, and to selectively leave on said treated shale, residual asphaltenic materials or "paraffinic asphaltenes", which are insoluble in said solvent;

(c) hydroprocessing said solvent containing said solubilized hydrocarbonaceous material;

(d) extracting said treated oil shale with a solvent suitable for solubilizing said asphaltenes remaining on said treated shale;

(e) hydroprocessing said solvent containing said solubilized asphaltenes; and

(f) processing the solvent extracted oil shale to remove any remaining hydrocarbonaceous material therefrom.

4,518,481

PROCESS FOR PRODUCTION OF OXIDATION-RESISTANT HYDROCARBON OIL COMPOSITION, AND OXIDATION-RESISTANT COMPOSITION MADE THEREBY

Pierre D. Marin, Bonsecours, France, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 272,926, Jun. 12, 1981, abandoned. This application Aug. 10, 1983, Ser. No. 522,046
Claims priority, application United Kingdom, Jun. 17, 1980, 019728
Int. Cl.³ C10G *71/00, 45/44*
U.S. Cl. 208—19 **12 Claims**

1. A process for producing a hydrocarbon oil composition of igh resistance to oxidation comprising the steps of:

(a) subjecting a hydrocarbon oil basestock boiling in the lube oil temperature range and having an aniline point exceeding 60° C. to a catalytic hydrogen-refining treatment at a temperature in the range of from 300° to 360° C. and at a partial pressure of hydrogen in the range of from 20 to 50 bars to produce a refined basestock having a sulfur content not exceeding 0.10 wt. %;

(b) subjecting an aromatics-rich hydrocarbon fraction obtained by thermal or catalytic cracking of a heavy hydrocarbon feedstock, boiling in the lube oil temperature range and having an aniline point not exceeding 35° C. and a sulfur content of at least 2.0 wt. % to a catalytic hydrogen-refining treatment at a temperature in the range of from 220° to 300° C. and a partial pressure of hydrogen in the range of from 20 to 50 bars to produce a refined fraction having a sulfur content of at least 1.0 wt. %; and

(c) forming a blend comprising 85 to 99.9 wt. % of the said refined basestock and 15 to 0.1 wt. % of said refined fraction.

4,518,482

PITCH FOR DIRECT SPINNING INTO CARBON FIBERS DERIVED FROM A COAL DISTILLATE FEEDSTOCK

Ghazi Dickakian, Greenville, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1982, Ser. No. 399,702
The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.
Int. Cl.³ C10C *3/00*; D01F *9/14*
U.S. Cl. 208—22 **5 Claims**

1. A pitch suitable for carbon fiber manufacture which can be spun directly into pitch fibers, comprising approximately by weight content between 80 and 100 percent toluene insolubles and greater than 15 percent quinoline insolubles, said pitch having been derived, by heat soaking followed by vacuum stripping, from a substantially deasphaltenated fraction of a coal distillate rich in 3, 4, 5 and 6 polycondensed aromatic rings, and wherein said pitch is further characterized as being relatively free of impurities and ash.

4,518,483

AROMATIC PITCH FROM ASPHALTENE FRACTIONS

Ghazi Dickakian, Greenville, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 27, 1983, Ser. No. 508,183
Int. Cl.³ C10C *1/20, 1/18, 3/08*
U.S. Cl. 208—44 **8 Claims**

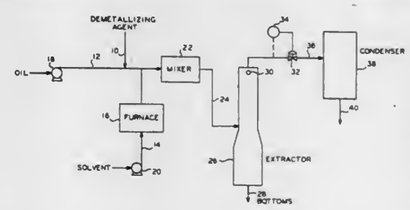
1. A method of preparing a pitch suitable for carbon fibers manufacture consisting essentially of heat-soaking a feed material consisting of a heavy aromatic asphaltene fraction of a heavy aromatic cracked feedstock, said asphaltene fraction having a number average molecular weight of at least 900 and at least 7 polycondensed aromatic rings and is obtained from a petroleum distillate, naphtha or gas oil catalytic or steam cracking residues, at a temperature of about 380°-440° C. for about 1-500 minutes, and then subsequently removing unreacted oils from the heat soaked aromatic asphaltene fraction by vacuum distillation.

4,518,484

METALS REMOVAL WITH A LIGHT HYDROCARBON AND AN ORGANOPHOSPHOROUS COMPOUND

David P. Mann; Simon G. Kukes, and Daniel M. Coombs, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 16, 1984, Ser. No. 580,997
Int. Cl.³ C10G *17/02, 21/02*
U.S. Cl. 208—87 **19 Claims**



1. A process for treating and upgrading metal containing hydrocarbon feed streams comprising the steps of:

(a) contacting said feed in an extraction zone with at least one hydrocarbon solvent containing from 2 to 10 carbon atoms per molecule under supercritical separation conditions in the presence of at least one organophosphorus chemical demetallizing agent at an agent to hydrocarbon weight ratio and conditions sufficient to decompose or react with porphyrin and asphaltene compounds of metals present and thereby assist in the removal of metal contaminants from the hydrocarbon feed, and

(b) recovering from said extraction zone an overhead stream comprising hydrocarbons substantially reduced in con-

taminating metals content and a bottoms product comprising solvent and contaminating metals.

4,518,485

HYDROTREATING/ISOMERIZATION PROCESS TO PRODUCE LOW POUR POINT DISTILLATE FUELS AND LUBRICATING OIL STOCKS

Rene B. LaPierre, Medford; Randall D. Partridge, Princeton; Nai Y. Chen, Titusville, and Stephen S. Wong, Medford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 379,422, May 18, 1982, Pat. No. 4,419,220. This application Dec. 2, 1983, Ser. No. 557,696
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ C10G *65/12*
U.S. Cl. 208—89 **19 Claims**

1. A process for dewaxing a hydrocarbon feedstock containing paraffins selected from the group of normal paraffins and slightly branched paraffins and sulfur and nitrogen compounds which comprises

(a) subjecting said feedstock to hydrotreating in a hydrotreating zone containing a conventional hydrotreating catalyst operated at a conventional hydrotreating conditions sufficient to remove at least a portion of said sulfur and nitrogen compounds;

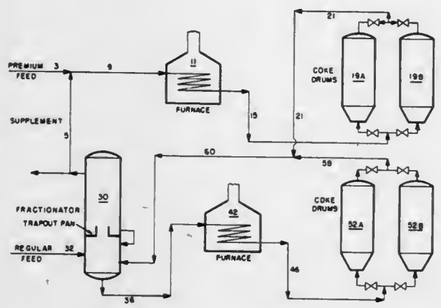
(b) subjecting said hydrotreated feedstock to catalytic dewaxing by contacting said feedstock with a catalyst comprising zeolite beta having a silica/alumina ratio of at least 30:1 and a hydrogenation/dehydrogenation component under isomerization conditions, sufficient to isomerize at least a portion of said normal paraffins and wherein a majority of normal paraffins converted are converted by isomerization.

4,518,486

CONCURRENT PRODUCTION OF TWO GRADES OF COKE USING A SINGLE FRACTIONATOR

John C. Jansma, Middleburg Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 219,651, Dec. 24, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,810
Int. Cl.³ C10G *9/14*
U.S. Cl. 208—131 **7 Claims**



1. A process for the concurrent production of both regular and premium coke using a single fractionator, the process comprising

(a) combining a recycle-free premium feed with a non-coking feed supplement to form a premium coker charge,

(b) heating and introducing the charge to a premium coke drum to form coke and overhead vapors,

(c) operating a single fractionator and withdrawing from it a regular grade coker recycle feed,

(d) heating and charging said regular grade coker feed to a regular coke drum, to form coke and overhead vapors

(e) passing the overhead vapors from both premium and regular coke drums to the fractionator.

4,518,487

PROCESS FOR IMPROVING PRODUCT YIELDS FROM DELAYED COKING

Harlan G. Graf, and Harry R. Janssen, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 519,291, Aug. 1, 1983, abandoned. This application Mar. 19, 1984, Ser. No. 590,607
Int. Cl.³ C10G *9/14*
U.S. Cl. 208—131 **9 Claims**

1. A process for improving the product yields from delayed coking of a heavy hydrocarbon oil feedstock in a coking unit comprising a coker furnace, a coking drum and a coker fractionator to produce delayed coke and cracked liquid and gaseous hydrocarbon products comprising the steps of:

(a) delayed coking said heavy hydrocarbon oil in said coking drum under conditions at which delayed coke having a volatile matter content of not more than 15 percent by weight is produced;

(b) passing overhead vapors from said coking drum to said coker fractionator;

(c) condensing the highest boiling fraction of said overhead vapors and removing said fraction from said process; and

(d) adding a diluent hydrocarbon having a lower boiling range than said highest boiling fraction to said heavy hydrocarbon oil feedstock prior to heating said heavy hydrocarbon oil feedstock to coking temperature in said coker furnace, said diluent hydrocarbon being added in an amount sufficient to effectively prevent coke deposition in said coker furnace, whereby the yield of delayed coke having a volatile matter content of less than 15 percent by weight is lower, and the liquids yield is higher, than the yields which would be obtained if said highest boiling fraction of said overhead vapors were combined with said feedstock.

4,518,488

METAL-CONTAINING ACTIVE CARBON AND METHODS FOR MAKING AND USING SAME

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 470,285, Feb. 28, 1983, Pat. No. 4,482,641. This application Jan. 19, 1984, Ser. No. 572,017
Int. Cl.³ C10G *45/08, 45/50, 47/12, 49/04*
U.S. Cl. 208—216 R **7 Claims**



1. A process for hydrotreating a fossil fuel containing asphaltenes, comprising contacting said fuel with hydrogen under hydrotreating conditions comprising a temperature of

315°–510° C., a pressure of 2.1–71 MPa, a hydrogen rate of 71–1780 m^3/m^3, and a space velocity of 0.2–5 volumes of feed per hour per volume of catalyst, and in the presence of a catalyst comprising a substantially uniform dispersion of a metal or metal oxide in a porous carbon matrix, wherein the dispersed metal and metal in the dispersed metal oxide are each a hydrogenating metal, wherein the weight ratio of the metal- or metal oxide-to-carbon matrix material is from about 1:10,000 to about 1:1, and wherein the catalyst has a cage-like structure, a BET surface area of at least 800 square meters per gram and a bulk density of at least 0.1 gram per cubic centimeter, wherein the dispersion is formed by a process comprising:

forming a uniform co-crystallite from an aromatic carboxylic or sulfonic acid, phenol, thiol, aromatic amine or salt of any thereof and from a salt or complex of a metal from Group VIB or Group VIII of the Periodic Table of Elements;

forming a uniform powdered mixture of the co-crystalline and an alkali metal hydroxide;

pyrolyzing the powdered mixture in an inert atmosphere at a temperature in the range of from about 400° C. to about 980° C. to form the carbon matrix having the metal or metal oxide substantially uniformly dispersed therein; and

separating unreacted inorganic material and inorganic reaction products, other than the dispersed metal or metal oxide from the carbon matrix to form the porous carbon matrix end product.

2. The process of claim 1 wherein the dispersed metal is a Group VIB metal, a Group VIII metal or a mixture thereof and the dispersed metal-containing material is a Group VIB metal oxide or sulfide, a Group VIII metal oxide or sulfide, or a mixture thereof.

3. The process of claim 2 wherein the Group VIII metal is cobalt or nickel.

4,518,489

OIL TREATMENT

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 304,502, Sep. 22, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,226
Int. Cl.³ C10G *17/00, 17/04, 17/08*
U.S. Cl. 208—223 **21 Claims**

1. A process for treating hydrocarbon oils in order to separate nitrogenous substances, as well as other contaminants, therefrom which comprises (1) contacting the oil in the presence of water with an acid gas which has an affinity for nitrogenous substances under conditions including temperature in the range of about 20° to about 90° C., sufficient pressure and contacting with an immiscible phase chosen from water, immiscible solvent or mixtures thereof effective to provide removal of nitrogen-containing compounds, and (2) separating said immiscible phase containing nitrogen-containing compounds from the hydrocarbon oils.

4,518,490

REMOVAL OF ARSENIC COMPOUNDS FROM PETROLIFEROUS LIQUIDS

Richard H. Fish, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1984, Ser. No. 597,627
Int. Cl.³ C10G *25/00*
U.S. Cl. 208—251 R **7 Claims**

1. Process for removing arsenic contaminants from petroliferous liquids by contacting said liquid at a temperature of about 20° C. to about 140° C., with a polystyrene-divinylbenzene polymer crosslinked with up to about 20% divinylbenzene and which polymer contains up to about 30% by weight of catechol ligands.

4,518,491

BENEFICIATION OF CLAYS BY FROTH FLOTATION

Bomi M. Bilimoria, Tennille, and Anthony A. May, Sandersville, both of Ga., assignors to Anglo-American Clays Corporation, Sandersville, Ga.

Filed Sep. 13, 1982, Ser. No. 417,663
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **12 Claims**

1. A method for removing titaniferrous discoloring contaminants from a kaolin clay, to thereby increase the brightness of said clay, said method comprising:

forming an aqueous dispersion of said clay, and blunging and conditioning said dispersion in the presence of a collector agent for said titaniferrous contaminants, said agent comprising a combination of a complex mixture of a monophosphate ester and a diphosphate ester or salt thereof, of a non-ionic surface active compound, together with oleic acid; wherein said non-ionic surface active compound is the condensation product of an alkyl alcohol having from 8 to 50 carbon atoms with at least one mole of an alkylene oxide having from 2 to 3 carbon atoms and containing a maximum of about 50% by weight alkylene oxide based on the weight of the non-ionic surface active compound; and

subjecting said blunged conditioned slurry to a froth flotation treatment to effect separation with said froth of said collected titaniferrous contaminants.

4,518,492

ORE FLOTATION WITH COMBINED COLLECTORS

Clarence R. Bresson, and Kenneth B. Kimble, both c/o French, Hughes and Doescher, P.O. Box 2443, Bartlesville, Okla. 74005

Filed Jun. 15, 1984, Ser. No. 621,337
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **28 Claims**

1. A composition comprising a mixture which contains both of the following compounds in substantial quantities

(a) S-carbalkoxy-S'-alkyl trithiocarbonate; and

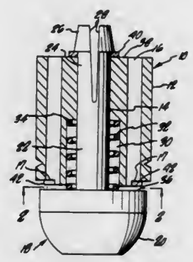
(b) n-dodecyl mercaptan.

4,518,493

NOISE ATTENUATING FILTER FOR FLUID FLOW SYSTEMS

Edwin T. Badders, 3040 Riverside Dr. Terr., Chino, Calif. 91710

Filed Jan. 11, 1984, Ser. No. 569,845
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—137 **4 Claims**



1. A noise attenuating filter for use in a fluid flow system comprising: a cylindrical body member having a fluid inlet end and a fluid outlet end and defining a central aperture extending axially therethrough, means defining an annular chamber disposed about said aperture, means defining a plurality of fluid

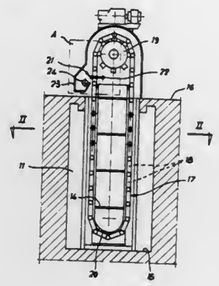
passageways extending axially through said body member externally of said chamber and terminating in a corresponding plurality of axially disposed fluid inlets in the inlet end of said body member and defining a plurality of axially disposed fluid outlets in the outlet end of said body member and defining a corresponding plurality of slots in said fluid inlet end of said body member extending radially from said fluid inlets, the cross-sectional area of each of said slots being less than the cross-sectional area of each of said fluid inlets and defining means for filtering said fluid to prevent objects larger than said slots from passing therethrough, a closing member having a stem portion and a head portion, said stem portion extending through the central aperture in said body member and said head portion extending over the fluid inlet end of said body member and being adapted to seal said fluid inlets; means carried by said body member for maintaining said stem portion of said closing member within said aperture in said body member; and means disposed within said annular chamber in said body member for biasing said head portion of said closing member from said fluid inlet end of said body member, said inlets, passageways, outlets and said closing member defining means for reducing noise by allowing fluid in said system to flow about said head portion into said fluid inlets, through said fluid passageways and out said fluid outlets and upon said head portion of said closing member being pressed into sealing engagement with said fluid inlet end of said body member, the fluid flows into said fluid passageways through said radial slots.

4,518,494

CLEANING DEVICE FOR INDUSTRIAL WATER INTAKES

Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France

Filed Apr. 7, 1983, Ser. No. 482,795
Claims priority, application France, Apr. 8, 1982, 82 06209
Int. Cl.³ B01D *33/02*
U.S. Cl. 210--158 **15 Claims**



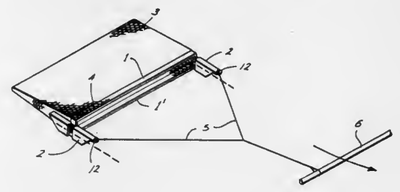
1. In an industrial water intake of the type comprising a screen for screening water containing debris adapted to be deposited on said screen in the course of operation, spray means for detaching debris from said screen arranged on one side thereof, a debris recovery channel arranged below said spray means for detaching debris from said screen and on the other side of said screen from said means for collecting debris detached from said screen and for carrying the debris away from said water intake, said debris recovery channel having a longitudinal edge relatively adjacent to said screen, wherein the improvement comprises a cylindrical rotary member disposed adjacent to and extending along the entire longitudinal edge of said debris recovery channel, at least a portion of said rotary member extending above said longitudinal edge of said debris recovery channel, means for rotating said rotary member in a direction to carry debris falling toward said longitudinal edge away from said longitudinal edge and into said debris recovery channel thereby preventing the build-up of debris on said longitudinal edge.

4,518,495

POOL SKIMMER

Henry W. Harding, 6666 Harwin, Suite 400, Houston, Tex. 77036

Continuation-in-part of Ser. No. 419,586, Sep. 17, 1982, abandoned. This application Feb. 8, 1984, Ser. No. 577,994
Int. Cl.³ E04H *3/20*
U.S. Cl. 210—169 **7 Claims**



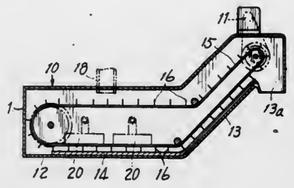
7. A pool skimmer having an open framework of framework members, the framework members having laterally extended end members, floats releasably mounted on the respective ends of said framework members, said floats having means defining vertical grooves midway the longitudinal ends thereof to receive said end members and means defining transverse ports forming horizontal passageways through said grooves to receive fastening means and means mounting an open end of a net on said framework and maintaining the net partially submerged.

4,518,496

LIQUID BRANCH FLOW GUIDE CONDUIT ASSEMBLY FOR USE IN A MAGNETIC APPARATUS FOR SEPARATING FOREIGN MATTERS FROM WASTE LIQUIDS CONTAINING THE FOREIGN MATTERS

Minoru Kanekubo, 1012-3 Sugito, Sugito-Machi, Kitakatsushika-Gun, Saitama-Ken, Japan

Filed Jan. 5, 1983, Ser. No. 455,896
Int. Cl.³ B03C *1/16*
U.S. Cl. 210—222 **1 Claim**



1. A magnetic apparatus for separating magnetic foreign matter from waste liquids containing the foreign matter, comprising:

means defining an elongated treating chamber;

an endless chain conveyor mounted in said treating chamber and extending in a closed loop therein with upper and lower runs and having a plurality of spaced flight bars extending outwardly from the conveyor;

a magnet plate along the inner surface of the bottom of said treating chamber, the lower run of said conveyor extending along said magnet plate with said flight bars frictionally engaging said magnet plate; and

at least one liquid branch flow guide assembly having an imperforate flat base positioned between said runs and spaced slightly above said lower run of said conveyor and having a raised center portion defining an unobstructed recess opening out of the undersurface of the center of said base and having a first center opening in said center portion opposite the position where the recess opens out of the base, a pipe support member on said base surrounding said center raised portion and extending up and over

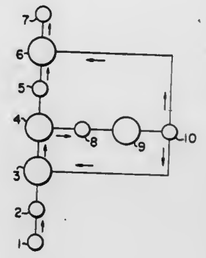
and in spaced relationship to said raised center portion and having a second center opening, a drain pipe having an upright portion extending from said first center opening through said second center opening and opening at the lower end into said first center opening into said raised portion, said pipe having an elbow portion connected to the upper end of said upright portion and a horizontal drain portion connected to said elbow portion and extending out of said treating chamber, a flow passage being defined between said flat base and said magnet plate having an inlet opening around the periphery of said flat base between said flat base and said magnet plate and an outlet to said flow passage constituted by said drain pipe, for, when liquid flows out of said drain pipe, the liquid in said treating chamber is caused to flow between said flat plate and said magnet plate to conduct the liquid over the magnet plate for allowing the magnetic attraction of the magnet plate to be exerted on the magnetic foreign matter in the liquid before the liquid reaches said recess.

4,518,497

BLOOD TREATING SYSTEM

Nobuaki Tsuda; Naoya Kominami; Kenji Inagaki, and Tamotsu Imamiya, all of Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 968,914, Dec. 13, 1978, Pat. No. 4,243,532, which is a continuation of Ser. No. 726,193, Sep. 24, 1976, abandoned. This application May 15, 1980, Ser. No. 150,070
Claims priority, application Japan, Sep. 26, 1975, 50-115662; Mar. 29, 1976, 51-33562
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—259 **6 Claims**



1. A blood treating system comprising:

a blood introducing port;

a blood-plasma separating element having an inlet connected to the blood introducing port, membrane means for separating plasma from blood which does not pass any blood corpuscle therein, a concentrated blood outlet and a plasma outlet;

means for treating plasma connected to the plasma outlet having a purified-plasma outlet;

an element interconnecting the concentrated blood outlet and the purified-plasma outlet for mixing the concentrated blood with the purified plasma;

a purified blood withdrawing port connected to said element; wherein said means for treating plasma comprises:

a plasma pump connected to the plasma outlet;

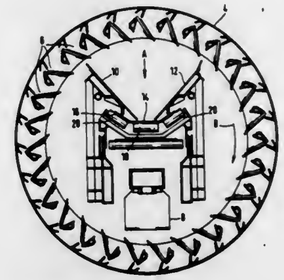
means for purifying plasma connected to the plasma pump, said means for purifying comprising a main body, purifying agent for removing unnecessary substances from the plasma filled in the main body, an inlet filter and an outlet filter capable of preventing the purifying agent from flowing out.

4,518,498

METALLURGICAL SLAG FILTERING APPARATUS WHICH EFFECTS UNIFORM CHARGING OF A CONVEYER BELT

Guido Monteyne, Lembeke, Belgium, assignor to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Feb. 10, 1984, Ser. No. 578,816
Claims priority, application Luxembourg, Feb. 10, 1983, 84644
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—297 **2 Claims**



1. Filtration apparatus including a rotary drum, said drum having foraminous walls along the outside surface thereof, said rotary drum having a plurality of internal vanes for filtering liquid and solid materials, said filtered solid material being conveyed upwardly and subsequently falling onto a conveyer belt passing longitudinally through the drum, said filtration apparatus further including:

at least a pair of deflector means, said deflector means being disposed above said conveyor belt and extending in the direction of travel of said conveyor belt;

said pair of deflector means defining a space therebetween wherein said filtered solid material is guided onto said belt;

at least part of said deflector means diverging in the direction of the movement of said conveyor belt; and

said rotary drum being divided into a plurality of sections, each of said sections having plural vanes therein, wherein said vanes of each of said sections are angularly offset relative to said vanes of adjacent sections.

4,518,499

APPARATUS FOR FRACTIONATING SOLID PARTICLES SUSPENDED IN A LIQUID

Bernard Perrin, Grenoble; Bernard Blanchin, Seyssinet, and Georges Sauret, Grenoble, all of France, assignors to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses, Grenoble, France

Division of Ser. No. 284,823, Jul. 20, 1981, Pat. No. 4,477,359. This application May 4, 1984, Ser. No. 607,140
Claims priority, application France, Jul. 25, 1980, 80 16756
Int. Cl.³ B01D *35/20*
U.S. Cl. 210—332 **8 Claims**

1. Equipment for fractionating solid particles suspended in a liquid, comprising:

a feed conduit for a liquid suspension to be treated; an extraction means for filtrate;

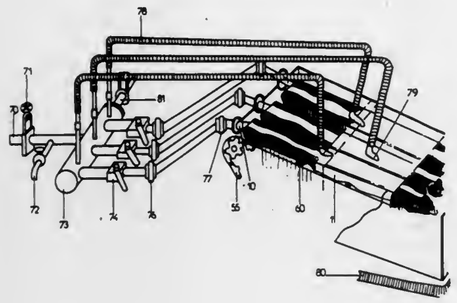
a means for recovering a solid particle concentrated fraction;

a filtering screen comprising an elastically deformable, flexible, perforated sleeve, connected at one end to said feed conduit and at an opposite end to said recovering means;

a means capable of directing the flow of suspension to be treated in a direction parallel to the longitudinal axis of said filtering screen; and

a means capable of locally and substantially deforming said sleeve by moving along the generatrix of said sleeve an

element disposed outside said sleeve, thereby creating respectively before and after said deformation high and



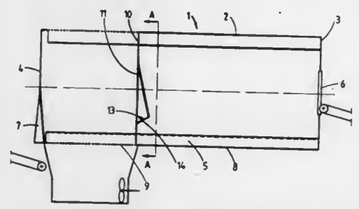
low pressure regions which travel along said sleeve for detaching said particles from said sleeve.

4,518,500

APPARATUS FOR TREATING A FIBROUS MATERIAL

Seppo Vireä, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Jan. 25, 1984, Ser. No. 573,858
Claims priority, application Finland, Feb. 1, 1983, 830340
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—380.3 **8 Claims**



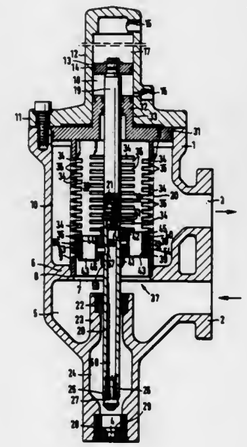
1. An apparatus for continuously fiberizing and screening coarse fibrous material to separate the coarse material therefrom which comprises a rotatable drum having an inlet at one end thereof for the material to be treated, an outlet at the opposite end thereof for discharging the separated coarse material, a mantle for the drum which is non-perforated at the inlet end and is perforated at the outlet end, at least one partition wall having an opening, said drum having a longitudinal axis, the partition wall being perpendicular to said longitudinal axis, the partition wall forming a sill over which the material is lifted, a lifting member connected to said partition wall, said lifting member having a lifting capacity, said lifting member lifting the material on the bottom of said non-perforated end for transporting the material to the perforated outlet end, through said opening, said lifting member having means for adjusting the effective capacity of said lifting member and means for locking the lifting member in a desired position.

4,518,501

FLUSH-BACK FILTER

Rüdiger Lennartz, Pulheim; Willi Rott, Bornheim, and Heinz Sindorf, Rommerskirchen, all of Fed. Rep. of Germany, assignors to Firma Boll & Kirch, Filterbau GmbH, Kerpen, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,725
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1982, 3235552
Int. Cl.³ B01D *35/16*
U.S. Cl. 210—411 **18 Claims**



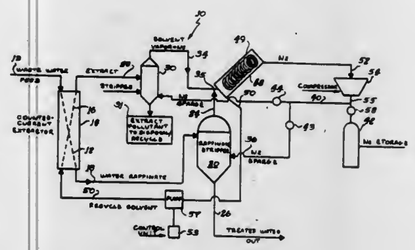
1. A flush-back filter comprising: a filter housing having an interior filter chamber fluidly communicating with a filter inlet, a filter outlet and a sludge drain, the filter outlet and the sludge drain being at a differential pressure; a cylindrical support cage in the filter chamber separating the fluid outlet from the fluid inlet and the sludge drain; filter means surrounding the exterior of the support cage for filtering liquid media penetrating the support cage from the fluid inlet to the fluid outlet; flush-back means movably disposed interior of the support cage for traversing the inner surface thereof; at least two groups of slots formed in the support cage, the slots of each group being separated by corresponding webs along the interior surface traversed by the flush-back means; the slots of one group lying in the plane of the webs of the other group; channel means formed in the exterior surface of the flush-back means fluidly communicating with the sludge drain and alternately registering with the slots and the webs of each of said groups as the flush-back means traverses the interior surface of the support cage, the arrangement being such that the channel means simultaneously register with a slot of one of the groups and a web of the other of the groups during movement of the flush-back means whereby at any one time liquid media is reversely flushed by said pressure differential from the filter outlet through just one of the slots into said channel means and into the sludge drain with individual slots of the two groups being alternately flushed during the traverse of the flush-back means thereby progressively clearing the interior surface of adhering impurities with small flush-back volumes and with low pressure drops.

4,518,502

METHOD OF EXTRACTING ORGANIC CONTAMINANTS FROM PROCESS WATERS

Eugene A. Burns, Solana Beach, and Bruce N. Colby, Carlsbad, both of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Nov. 4, 1981, Ser. No. 318,106
Int. Cl.³ B01D *11/04*
U.S. Cl. 210—634 **22 Claims**



20. A method of reducing the concentration of an organic contaminant which has a boiling point greater than about 120° C. and which represents an environmental hazard even at concentrations below about 100 ppm in process water to within environmentally acceptable limits comprising

contacting a first stream of process water with a countercurrent second stream of high-boiling, water-immiscible organic solvent to extract said contaminant from said water with said high-boiling solvent, said contaminant being at least about 5 times more soluble in said high-boiling solvent than in water, the volume of said stream of solvent being about 15% or less of the volume of said stream of process water;

contacting said high-boiling solvent-contacted water with a countercurrent third stream of low-boiling, water-immiscible solvent having a boiling point below about 70° C. and at least about 50° C. lower than the boiling point of said high-boiling solvent to extract dissolved high-boiling solvent therefrom;

sparging said low-boiling solvent from said third stream with a gas stream to vaporize said low boiling solvent from said extracted contaminant;

condensing said low-boiling solvent vapor; and

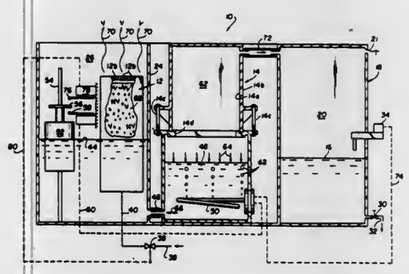
returning said condensed low-boiling solvent to said low-boiling countercurrent stream.

4,518,503

WATER PURIFICATION METHOD AND DEVICE

Saul Fermaglich, Woodcliff Lake, N.J., assignor to Intercontinental Water Corp., Norwood, N.J.

Filed Mar. 29, 1984, Ser. No. 594,926
Int. Cl.³ C02F *9/00*
U.S. Cl. 210—662 **12 Claims**



1. A method of separating by evaporation hydrocarbons from drinking water using a heated activated carbon filter comprising the steps of establishing communication through a fluid connection between an evaporator closed to atmosphere and a compartment having said activated carbon filter, flowing under pressure said drinking water through said activated carbon filter and from thence in a first direction through said fluid connection from said activated carbon filter compartment into said closed evaporator, causing by evaporation in said closed evaporator the production of steam from said drinking water which is partially channelled into a condenser for a phase change back to fluid incident to being used as purified drinking water, allowing a remaining portion of said produced steam in said closed evaporator to force the heated drinking water therein to flow in a reverse second direction through said fluid connection from said closed evaporator back into said activated carbon filter compartment for establishing physical contact with the exterior of said activated carbon filter, and causing by heat exchange between said back flowing heated drinking water and said activated carbon filter the heating of said filter, whereby said drinking water being forced under pressure through said filter is exposed to said heated activated carbon which enhances the filtering of hydrocarbons therefrom.

4,518,504

TREATMENT OF CONTAMINATED STRETFORD SOLUTION

Richard A. Wolcott, Richwood, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 300,085, Sep. 8, 1981, Pat. No. 4,385,044. This application Mar. 11, 1983, Ser. No. 474,403
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—670 **10 Claims**

1. A method for removing anthraquinone disulfonate values from an alkaline Stretford Process solution,

said method comprising contacting said Stretford Process solution with activated carbon which takes up anthraquinone disulfonate values, and

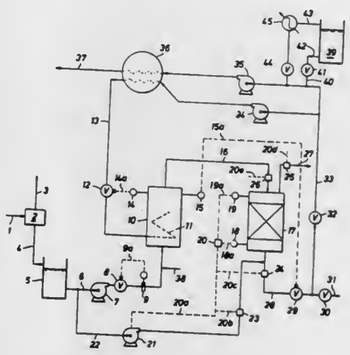
removing said Stretford Process solution from said activated carbon, leaving anthraquinone disulfonate values in said activated carbon.

4,518,505

THERMAL SOFTENING PROCESS

Git B. Lim, and A. Riza Konak, both of Calgary, Canada, assignors to Exxon Production Research Co., Houston, Tex.

Filed May 9, 1983, Ser. No. 492,841
Int. Cl.³ C02F *1/52, 1/66*
U.S. Cl. 210—712 **18 Claims**



1. In a process for heating and softening hard water contain-

ing divalent metal ion scale-forming constituents and bicarbonate ions, the steps comprising:

(a) flowing said hard water into a reaction zone;

(b) directly sparging steam into said water in said reaction zone to predominantly condense said steam in said water and heat said water to a temperature within the range of 150° C. to 250° C. whereby said bicarbonate ions are converted into carbonate and hydroxyl ions which react with the divalent metal ions, whereby a substantial portion of the divalent metal ions are precipitated as calcium carbonate and magnesium hydroxide scale;

(c) maintaining a pressure on said reaction zone which is sufficient to prevent boiling of the water at said temperature;

(d) maintaining the pH of said hard water leaving the reaction zone at a value of at least about 8.5;

(e) withdrawing heated water from said reaction zone;

(f) filtering scale from said heated water at a pressure sufficient to prevent boiling of the heated water;

(g) controlling the pressure difference and temperature difference between the reaction zone and the filtering step so that the pressure difference is no greater than 30 psi and the temperature difference is no greater than 10° C.;

(h) heating a portion of said filtered heated water to produce steam; and

(i) utilizing said steam in sparging step (b) above.

4,518,506

METHOD FOR TREATING THE UPPER LAYER OF A BODY OF WATER

Arthur A. Green, 30 Oak St., Stamford, Conn. 06905, and Robert H. Black, 63 Linwood Rd., New Rochelle, N.Y. 10804

Filed Jan. 3, 1983, Ser. No. 454,969

Int. Cl.³ C02F *1/68*

U.S. Cl. 210—747 **9 Claims**

9. A method for treating the upper layer of a body of water to effect a chemical change within said upper layer, comprising placing a composition comprising an expanded silicate aggregate which is impregnated with up to about 95% by weight of the total composition of at least one chemical water treating agent onto the surface of said body, and allowing said composition to float upon said surface releasing said water treating agent until said water treating agent has diffused into said layer of water and affected said change by chemical reaction.

4,518,507

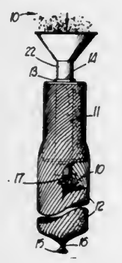
METHOD FOR CHEMICALLY SOLIDIFYING AND ENCAPSULATING HAZARDOUS WASTES IN ONE CONTINUOUS OPERATION

Jesse R. Conner, Atlanta, Ga., assignor to Chem-Technics, Inc., Atlanta, Ga.

Filed Sep. 13, 1983, Ser. No. 531,750

Int. Cl.³ C02F *1/52, 11/14*

U.S. Cl. 210—747 **7 Claims**



1. A method of treating aqueous liquid and semi-liquid wastes to render them fit for ultimate disposal in a sedentary mass in a landfill or other ultimate disposal site, comprising the steps of:

admixing with the waste a solidification agent in a location proximate an ultimate disposal site;

providing at the ultimate disposal site a mobile carrier means for receiving the admixture of waste and solidification agent and for disposing of the admixture at the disposal site;

feeding the admixture prior to the solidification thereof axially into the hollow cylindrical core of a supply of elongate pliable, continuous tubular membrane mounted on the mobile carrier means to fill the membrane;

dispensing the membrane from the core as the membrane is filled to produce a continuous length of filled membrane;

disposing the filled membrane from the mobile carrier means along a path at the disposal site;

sealing the ends of the membrane; and

allowing the admixture to set to a sedentary mass at the disposal site.

4,518,508

METHOD FOR TREATING WASTES BY SOLIDIFICATION

Jesse R. Conner, Atlanta, Ga., assignor to SolidTek Systems, Inc., Morrow, Ga.

Continuation of Ser. No. 510,152, Jun. 30, 1983, abandoned, which is a continuation of Ser. No. 339,621, Jan. 15, 1982, abandoned. This application May 3, 1984, Ser. No. 606,852

Int. Cl.³ C02F *11/14*; C04B *31/00*

U.S. Cl. 210—751 **13 Claims**

1. A method of treating a batch of aqueous liquid and semi-liquid wastes to render them fit for ultimate disposal in a sedentary mass, comprising the steps of:

premixing a solidification agent by admixing cement, a dry water absorbent clay having fine particles, said particles having high surface area, and a powdered alkali metal silicate, wherein said solidification agent has a ratio of cement to clay between about 1:19 and about 47.5:1, a ratio of cement to alkali metal silicate between about 2:1 and about 2000:1, and a ratio of alkali metal silicate to clay between about 1:3,800 and about 3:1;

treating the batch of waste by admixing the premixed solidification agent with the waste in a quantity sufficient to convert the mixture into a chemically and physically stable solid product substantially insoluble in water and which contains substantially no free-standing water; and allowing the admixture to set to a sedentary mass.

4,518,509

PARTICULATE COMPOSITIONS

Michael E. Newberry, Chesterfield, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 9, 1982, Ser. No. 366,947

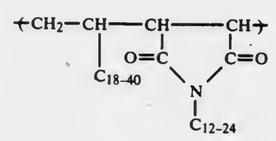
Int. Cl.³ E21B *37/06*

U.S. Cl. 252—8.3 **13 Claims**

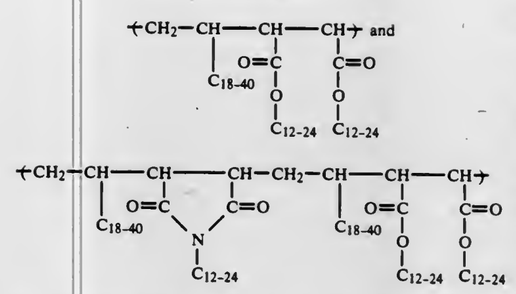
1. A composition of matter comprising solid mixture of:

(1) a linear polyethylene having a melting point of about 50° to 150° C., and a molecular weight of about 200 to 10,000, and

(2) a chemical additive selected from the group consisting of pour point depressants and paraffin inhibitors for a waxy petroleum system, said chemical additive having a lower melting point than said polyethylene, and being a copolymer wherein the recurring unit is selected from the group consisting of



-continued



said mixture capable of slowly dissolving in the petroleum system at a temperature of above about 80° C. at a rate sufficient to gradually release said chemical additive into said petroleum system over an extended period of time.

4,518,510

DRILLING MUD DISPERSANTS

Patricia A. Gleason, Westfield, and Ingrid E. Brase, Plainsboro, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 5, 1983, Ser. No. 558,131

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 C **18 Claims**

1. An improved aqueous subterranean drilling mud composition comprising a colloidal material suspended in an aqueous medium and a dispersant therefor, wherein the improvement comprises as the dispersant, the presence of 0.1 to 25 ppb. of a water soluble sulfonated vinyl toluene-maleic anhydride copolymer or salt thereof, the copolymer having a molar ratio of vinyl toluene to maleic anhydride of about 1:1 to less than about 2:1, a molecular weight of about 1,000 to 25,000 and at least about 0.7 sulfonic acid groups per vinyl toluene unit, the mud being characterized by improved high temperature and high pressure stability.

4,518,511

DELIVERY OF POLYMERIC ANTIPRECIPITANTS IN OIL WELLS EMPLOYING AN OIL SOLUBLE CARRIER SYSTEM

Ernest D. Kaufman, North Yorkshire, and Robin W. Dexter, Yorkshire, both of England, assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 31, 1980, Ser. No. 202,859

Claims priority, application United Kingdom, Nov. 21, 1979, 7940179

Int. Cl.³ E21B *37/00, 41/02*

U.S. Cl. 252—8.55 B **3 Claims**

1. A water-in-oil emulsion polymeric composition adapted for use to prevent corrosion or scaling in deep oil well-bores comprising in combination:

(a) from 1 to 60 parts by weight of water-soluble maleic acid, allyl sulfonic acid copolymer having a molecular weight ranging between about 500 and about 25,000 in the presence of sufficient water to attain a saturated solution of the above defined polymer,

(b) from 20 to 70 parts by weight of a hydrocarbon oil, and

(c) from 1 to 20 parts by weight of a mixture of surfactants one of which having a hydrophile lipophile balance (HLB) value less than 8 and the other having a HLB value greater than 10 wherein the combined HLB value of the surfactants are in the range of 5 to 12.

4,518,512

WATER-CONTAINING LUBRICANT

Hideo Kanamori, Ichihara, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,382

Claims priority, application Japan, Dec. 29, 1982, 57-229831

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 **4 Claims**

1. A water-containing lubricant comprising per 100 parts by weight of a lubricating base oil, from 0.1 to 20 parts by weight of a water-soluble corrosion inhibitor and from 1 to 1,000 parts by weight of water dispersed in the base oil by the use of a surfactant mixture, said surfactant mixture consisting essentially of

(1) from 2 to 80 parts by weight of a nonionic surfactant selected from the group consisting of an ester of fatty acid and polyhydric alcohol, or polyoxyalkylene type compound, aliphatic alcohol having from 7 to 30 carbon atoms and fatty acid having from 7 to 30 carbon atoms, having a hydrophile lipophile balance (HLB) value of less than 6,

(2) from 2 to 80 parts by weight of a nonionic surfactant which is an ester of fatty acid and polyhydric alcohol, or a polyoxyalkylene type compound, having a HLB value of from 6 to less than 11,

(3) from 2 to 80 parts by weight of a nonionic surfactant which is an ester of fatty acid and polyhydric alcohol, or polyoxyalkylene type compound, having a HLB value of from 11 to less than 20, and

(4) from 0.5 to 80 parts by weight of an ionic surfactant selected from the group consisting of metal salts of fatty acid having from 7 to 18 carbon atoms, metal salts of naphthenic acid, esters of alkyl sulfates and alkyl sulfonates, having a HLB value of not less than 15.

4,518,513

PASTY DAMPING MEDIUM METHOD FOR PREPARING AND USING SAME

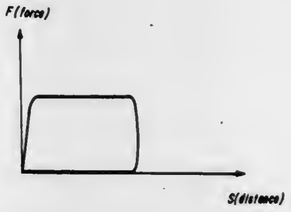
Kaspar Lochner, Munich; Helmut Schürmann, Dachau, and Erich Brand, Munich, all of Fed. Rep. of Germany, assignors to Schiedel GmbH & Co., Munich, Fed. Rep. of Germany

Division of Ser. No. 441,513, Nov. 3, 1982,. This application Mar. 2, 1984, Ser. No. 585,463

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.³ C04B *43/00*; C10M *5/04*

U.S. Cl. 252—62 **12 Claims**



1. A pasty damping medium for damping mechanical and/or acoustic vibrations, comprising, as a liquid phase, a member selected from the group consisting of polyglycols and saturated aliphatic or aromatic carboxylic acid esters stable to temperature fluctuation, and about 20 to 80% by weight based on the total weight of the damping medium of particles of a solid selected from the group consisting of aluminum oxide, aluminum silicate, aluminum phosphate, aluminum polyphosphate, cryolite, calcium phosphate, calcium fluoride, magnesium oxide, magnesium silicate; magnesium aluminum silicate, molybdenum sulfide, silicon dioxide, sillimanite, titanium dioxide, zinc sulfide and zinc pyrophosphite, at least 80% of said particles having a particle size of less than 10 μm.

4,518,514
HEAT STORAGE MATERIAL

Hideaki Kamohara, Ibaraki; Michio Yanadori, Hachioji; Seigo Miyamoto, Takahagi, and Keiichi Koike, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,271

Claims priority, application Japan, Apr. 16, 1982, 57-62406; Nov. 22, 1982, 57-203614

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—70 **11 Claims**

1. A heat storage material consisting essentially of pure or industrial grade acetic acid or a mixture of pure or industrial grade acetic acid and one or more acetates, and at least one anhydrous halide of a substance selected from the group consisting of calcium, strontium, barium, potassium and ammonium as a nucleating agent; the amount of the anhydrous halide in the heat storage material being 0.005 to 10% by weight.

4,518,515
MOULDING COMPOSITIONS OF VINYL CHLORIDE POLYMERS, GRAFT POLYMERS AND POLYMERIC PLASTICIZERS HAVING A HIGH RESISTANCE TO AGEING

Karl-Heinz Ott, Leverkusen; Christian Lindner, Cologne; Walter Uerdingen, Leverkusen; Hans-Eberhard Braese, Cologne, and Helmut Hurnik, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,633

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1982, 3229078

Int. Cl.³ C08L *27/06, 31/04, 51/04, 52/02*

U.S. Cl. 525—79 **2 Claims**

1. A thermoplastic molding composition comprising from 25 to 50 parts (A), from 25 to 50 parts (B), from 0 to 10 parts (C), from 5 to 40 parts (D) and from 3 to 30 parts (E), where all parts are by weight of the molding composition, and where:

(A) is a polymer containing at least 50%, based on the weight of (A), of vinyl chloride;

(B) is a mixture comprising 20% to 100%, based on the weight of (B), of (B) (1) and from 0% to 80%, based on the weight of (B), of (B) (2); wherein (B) (1) is a graft product comprising a monomer grafted onto a substrate in a ratio of monomer to substrate of from 1:10 to 10:1, and where the monomer is from 0% to 75%, based on the weight of the monomer, of (meth) acrylonitrile and from 100% to 25%, based on the weight of the monomer, of styrene, p-methyl styrene, alpha-methyl styrene, methyl methacrylate or combinations thereof; and the substrate is selected from a first rubber polymer comprising from 60% to 100%, based on the weight of the first rubber polymer, of a first acrylic ester where said first acrylic ester is an acrylic ester of an alcohol having from one to ten carbon atoms; from 0% to 40%, based on the weight of the first rubber polymer, of acrylonitrile, methyl methacrylate, vinyl acetate, vinyl ether or combinations thereof; and from 0% to 10%, based on the weight of the first rubber polymer, of a cross-linking bifunctonal or polyfunctional monomer or polymer; and
a second rubber polymer comprising an ethylene/propylene terpolymer rubber; and wherein (B) (2) is a copolymer consisting of from 0% to 75%, based on the weight of (B) (2), of (meth) acrylonitrile and from 100% to 25%, based on the weight of (B) (2), of styrene, alphamethyl styrene, p-methyl styrene, methyl methacrylate or combinations thereof;

(C) is a resin-like, thermoplastic copolymer of styrene and acrylonitrile or methyl methacrylate and acrylonitrile where component (C) has a Staudinger index value which is greater than or equal to 3 dl/g and which is higher than the Staudinger index value of component (B);

(D) is a copolymer selected from the group consisting of (D) (1), (D) (2), (D) (3) and any combination thereof where

(D) (1) is selected from the group consisting of ethylene/vinyl acetate copolymers containing greater than or equal to 50%, based on the weight of the ethylene/vinyl acetate copolymer, of polar components and having an average molecular weight of greater than or equal to 1500; and ethylene/acrylic ester copolymers containing greater than or equal to 50%, based on the weight of the ethylene/acrylic ester copolymer, of polar components and having an average molecular weight of greater than or equal to 1500; and

(D) (2) is an ethylene/vinyl acetate/carbon monoxide terpolymer containing greater than or equal to 20%, based on the weight of (D) (2), of polar components and having an average molecular weight of greater than or equal to 1500; and

(D) (3) is a copolymer comprising: from 10% to 99%, based on the weight of (D) (3), of an acrylic ester of an alcohol containing one to fifteen carbon atoms; from 0% to 90%, based on the weight of (D) (3), of at least one bifunctional or polyfunctional monomer containing conjugated or unconjugated double bonds; and
from 0% to 40%, based on the weight of the sum of (D) (1) and (D) (2), of acrylonitrile, vinyl acetate, methacrylic acid alkyl esters of alcohols having from one to eight carbon atoms or combinations thereof, average molecular weight of greater than or equal to 1500; and

(E) is a copolymer comprising (E) (1), (E), (2) or combinations thereof where

(E) (1) is a copolymer comprising from 60 to 95%, based on the weight of (E) (1), of a monomer containing 2 conjugated olefinic double bonds or a second acrylic ester where said second acrylic ester is an acrylic ester of an alcohol containing one to six carbon atoms or mixtures thereof; from 5 to 40%, based on the weight of (E) (1), of styrene, acrylonitrile, methacrylic acid methyl ester or combinations thereof; and
from 0 to 10%, based on the weight of (E) (1), of a cross-linked bifunctional or polyfunctional monomer or polymer containing conjugated double bonds; from 0% to 30%, based on the weight of (E) (1) of vinyl acetate, acrylic acid, methacrylic acid, vinyl ethers or combinations thereof;
where (E) (1) has a gel content of greater than or equal to 70% and where (E) (1) is different from (D) (3) in at least one parameter; and

(E) (2) is an ethylene/propylene terpolymer rubber having a gel content of greater than or equal to 70%.

4,518,516
SODIUM METASILICATE PARTICULATES AND DETERGENT COMPOSITIONS COMPRISED THEREOF

Gerard Godard, Chateau Thierry; Daniel Joubert, Trevoux, and Philippe Gagnaire, Charly/sur/Marne, all of France, assignors to Rhone-Poulenc Chimie De Base, Courbevoie, France

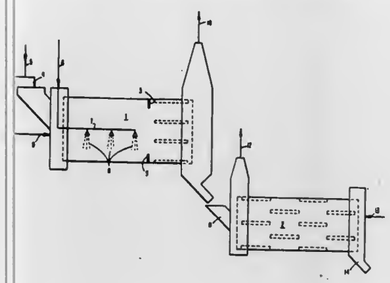
Filed Jul. 11, 1983, Ser. No. 512,888

Claims priority, application France, Jul. 9, 1982, 82 12068

Int. Cl.³ C11D *17/06*

U.S. Cl. 252—91 **25 Claims**

1. Granular particulates of sodium metasilicate, said particulates comprising a central core of essentially anhydrous sodium metasilicate and a core-enveloping sheath of sodium metasilicate pentahydrate therefor, the granular particulates comprising from 73 to 88% by weight of sodium metasilicate and from



10 to about 25% by weight of water, and having an apparent volume ranging from about 1.05 to about 1.20 g/cm³.

4,518,517
NON-ANTIMICROBIAL DEODORANT CLEANSING COMPOSITION

Edward Eigen, East Brunswick; David Z. Twersky, and Dina I. Brachman, both of Highland Park, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,817

Int. Cl.³ C11D *3/48, 9/50*

U.S. Cl. 252—107 **16 Claims**

1. A deodorant body cleansing composition comprising at least one carbohydrate selected from the group consisting of glucose, mannose and oligomers thereof as the essential deodorant agent in an amount of about 2.5–10%, effective to reduce the odor-causing bacterial population on the body, without the use of antimicrobials, in an anionic detergent-containing vehicle.

4,518,518
COLD PAINT STRIPPING COMPOSITION

Robert W. Koch, Norristown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 480,345, Mar. 30, 1983, abandoned. This application Feb. 14, 1984, Ser. No. 580,034

Int. Cl.³ B08B *3/04;* **C09D** *9/00;* **C11D** *7/50;* **C23G** *5/02*

U.S. Cl. 252—142 **29 Claims**

1. An aqueous film removing composition comprising:

(a) from about 5 to about 12.5 wt. % of at least one chloroacetic acid;

(b) from about 5 to about 15 wt. % of at least one chlorinated C_1–C_3 hydrocarbon;

(c) from about 5 to about 11 wt. % of at least one anionic sulfonate;

(d) from about 0.05 to about 2.5 wt. % of naphthenic acid;

(e) from about 0.5 to about 3.5 wt. % of at least one sorbitan C_{12}–C_{18} ester;

(f) from 0 to about 4 wt. % formic acid;

(g) from 0 to about 2 wt. % of a metal corrosion inhibitor;

(h) from 0 to about 10 wt. % of tetrahydrofuran;

(i) from 0 to about 2.5 wt. % paraffin wax; and

(j) water;

wherein the wt. % values are based on the total weight of the aqueous film removing composition.

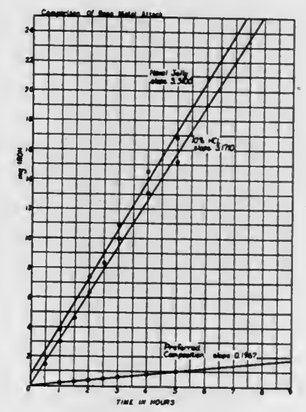
4,518,519
ACID BASED VARIABLE VISCOSITY COMPOSITIONS SUCH AS CORROSION AND GREASE REMOVERS AND POLISHES

Peter F. Lott, 5414 Holmes St., Kansas City, Mo. 64110, and Reiner E. Jargosch, 5401 Brookside Blvd., #203, Kansas City, Mo. 64112

Continuation of Ser. No. 289,188, Aug. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 254,896, Apr. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 233,945, Feb. 12, 1981, abandoned. This application Jul. 22, 1983, Ser. No. 516,663

Int. Cl.³ C11D *7/08, 7/34*

U.S. Cl. 252—148 **16 Claims**



1. A metal cleaning composition comprising a flowable, single phase system of water, from about 5 to 37% by weight of an acid selected from the group consisting of hydrochloric, sulfuric, phosphoric, nitric and mixtures thereof, and from about 0.5 to 5% by weight of polyvinylpyrrolidone, said flowable composition being characterized by the properties of penetrating and removing corrosion from metallic surfaces while inhibiting base metal attack against such metallic surfaces.

4,518,520
CLEANER HAVING IMPROVED DISSOLUTION TIME AND CLARITY AND IMPROVED OF PREPARATION

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 22, 1983, Ser. No. 487,489

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ C11D *17/00*

U.S. Cl. 252—174.23 **18 Claims**

1. An improved effervescent cleansing composition in tablet form comprising:

(a) about 20% to about 45% by weight of the final composition of a phosphate salt;

(b) an improved perborate salt mixture wherein the improvement comprises a combination of anhydrous perborate and monohydrate perborate in the amount of about 50% to about 70% by weight of the total cleansing composition, wherein the combination includes at least 20% by weight of the total cleansing composition of anhydrous perborate, said combination having a portion present in a compacted, granulated mixture with from about 0.01% to about 0.70% by weight of said combination of a polymeric fluorocarbon, said cleansing composition being capable of thoroughly cleansing stained surfaces within a soaking time of about five minutes when dissolved in aqueous solution.

4,518,521

HOMOGENEOUS, STORAGE-STABLE POLYOL COMPOSITIONS OF HIGH ETHYLENE GLYCOL CONTENT AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Rudolf Heusch, Leverkusen; Werner Rasshofer, Cologne; Wolfgang Reichmann, Hilden, and Adolf Richartz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 24, 1983, Ser. No. 497,626

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219759

Int. Cl.³ C08G *18/65, 18/66*

U.S. Cl. 252—188.31 **10 Claims**

1. A homogeneous, storage-stable, emulsifier-free polyol mixture having a high mixed OH-number and a high ethylene glycol content comprising 100 parts of a relatively high molecular weight polyalkylene oxide polyol having an OH-number of from 20 to 210, which contains at least 5%, and less than 80%, by weight of terminal ethylene oxide blocks and from 0.1 to 30 parts of a low molecular weight diol mixture having an OH-number of 1200 to 1650 in the form of a reaction product of 1 mole of ethylene glycol with 0.1 to 0.5 moles of propylene oxide.

4,518,522

BLOCKED POLYISOCYANATES WITH IMPROVED STORAGE STABILITY

Peter H. Markusch, McMurray; Robert G. Kelso, Wexford, both of Pa., and Peter D. Schmitt, Glen Dale, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 19, 1983, Ser. No. 533,081

Int. Cl.³ C08G *18/80*

U.S. Cl. 252—188.31 **15 Claims**

1. A process for improving the storage stability of a composition which contains

(a) a blocked polyisocyanate component prepared by blocking the isocyanate groups of an organic polyisocyanate with a blocking agent comprising a di-C_1–C_{12}-alkyl and/or -alkoxyalkyl malonate and

(b) is free from compounds containing at least two isocyanate-reactive hydrogens,

which comprises incorporating a stabilizing amount of a compound having monofunctional reactivity towards isocyanate groups into said composition.

4,518,523

METHOD FOR ADDING MAKE-UP FLUID BED OXIDATION CATALYSTS FOR FLUID BED OXIDATION CATALYSTS CONTAINING THE MIXED OXIDES OF VANADIUM AND PHOSPHORUS

Patricia R. Blum, Macedonia; Ernest C. Milberger, Solon, and Mark L. Nicholas, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 4, 1983, Ser. No. 472,400

Int. Cl.³ B01J *27/14*

U.S. Cl. 502—209 **10 Claims**

1. A process adding make-up fluid bed catalyst to an equilibrated fluidizable catalyst containing the mixed oxides of vanadium and phosphorus useful in oxidizing a 4-carbon atom hydrocarbon to maleic anhydride, in a fluid bed vessel including;

(a) introducing a calcined and unequilibrated fluidizable make-up catalyst comprising the mixed oxides of vanadium and phosphorus into the fluid bed vessel containing the equilibrated fluidizable catalyst;

(b) subjecting the fluidizable make-up and equilibrated catalysts to fluidization conditions to obtain a fluidized catalyst mixture;

(c) contacting the fluidized catalyst mixture with oxygen at a temperature at least 20° C. greater than the temperature required to produce about 85 percent conversion of the 4-carbon atom hydrocarbon.

4,518,524

SILVER COATING COMPOSITION FOR USE IN ELECTRONIC APPLICATIONS AND THE LIKE

Steven R. Stoetzer, Port Huron, Mich., assignor to Acheson Industries, Inc., Port Huron, Mich.

Filed Jun. 27, 1983, Ser. No. 508,286

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—514 **16 Claims**

1. A new silver-containing composition which is liquid when applied to a substrate, and forms an electrically conductive coating on the substrate, said composition being comprised of:

(a) a silver pigment material, said pigment being finely particulated and having an average particle size of about 50 microns or less,

(b) a ferro alloy pigment material which is selected from at least one of the group consisting of ferrophosphorous, ferromanganese, ferromolybdenum, ferrosilicon, ferrochrome, ferrovanadium, ferrozirconium, ferrotitanium, ferrotungsten, ferroboron and ferrocarbide,

said ferro alloy pigment material is present in amount of about 5% to about 90% by weight of the total solids,

said ferro alloy pigment havng an average particle size of less than about 70 microns,

(c) binder resin which is selected from at least one of the group consisting of thermoplastic acrylic, vinyl, urethane, alkyd, polyester, hydrocarbon, fluoroelastomer and cellulosic resins, and thermosetting acrylic, polyester, epoxy, phenolic, urethane and alkyd resins,

(d) the pigment to binder weight ratio in said composition being between about 10 to 1 and about 4 to 1, and

(e) said composition containing a weight percent total solids from about 50% to about 85% and an organic solvent carrier for the composition being used as required.

4,518,525

METHOD FOR DIVIDING BLOOD HEMOGLOBIN INTO HEME AND GLOBIN

Karin Autio; Martti Kiesvaara, and Yrjö Mälkki, all of Espoo, Finland, assignors to Valtion Teknillinen Tutkimuskeskus, Espoo, Finland

PCT No. PCT/FI83/00022, § 371 Date Nov. 3, 1983, § 102(e) Date Nov. 3, 1983, PCT Pub. No. WO83/03198, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 11, 1983, Ser. No. 552,032

Claims priority, application Finland, Mar. 12, 1982, 820862; Feb. 22, 1983, 830589

Int. Cl.³ C07C *103/52*; C07G *7/00*; A61K *35/18, 37/02*

U.S. Cl. 260—112 B **5 Claims**

1. A method for separating blood hemoglobin into heme and globin from blood cells comprising separating blood cells from blood plasma, suspending said blood cells in an acidified aqueous medium to disassociate the hemoglobin into heme and globin, adding to said suspension carboxymethylcellulose in an amount sufficient to precipate the heme so disassociated from said hemoglobin, and recovering the resulting precipated heme product.

4,518,526

PURIFICATION AND ACTIVITY ASSURANCE OF PRECIPITATED HETEROLOGOUS PROTEINS

Kenneth C. Olson, Burlingame, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 452,356, Dec. 22, 1982,. This application Jun. 1, 1984, Ser. No. 615,682

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 R **11 Claims**

1. A process for isolating and purifying a precipitated heterologous protein from host cell culture, which process comprises:

(a) treating the host cell culture with a buffered solution of ionic strength suitable to solubilize most of the host protein, but in which refractile heterologous protein is substantially insoluble and disrupting the cells, to form a supernatant and an insoluble fraction;

(b) treating the insoluble fraction from step (a) with a strongly denaturing solution to solubilize the refractile heterologous protein, and

(c) recovering renatured heterologous protein from the solution of Step (b).

4,518,527

POLYPEPTIDES RELATED TO THE PRE-ACETYLCHOLINE RECEPTOR-α OF THE ELECTRIC ORGAN OF *TORPEDO CALIFORNICA*

Shosaku Numa, Kyoto, and Noboru Yanaihara, Shizuoka, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,787

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **15 Claims**

1. a polypeptide consisting essentially of an amino acid sequence which is at least one member selected from the group consisting of:

(a) Ser-Glu-His-Glu-Thr-Arg,

(b) Gly-Ile-Lys-Ile-Arg,

(c) Arg-Leu-Pro-Ser-Asp-Asp,

(d) Asn-Asn-Ala-Asp-Gly-Asp,

(e) Glu-Ser-Asp-Arg-Pro-Asp,

(f) Lys-Asp-Tyr-Arg-Gly,

(g) Thr-Asp-Ser-Gly-Glu-Lys,

(h) Lys-Arg-Ala-Ser-Lys-Glu-Lys-Gln-Glu-Asn-Lys,

(i) Lys-Asn-Pro-Asp-Val-Lys,

(j) Lys-Ser-Asp-Glu-Glu-Ser,

(k) Asp-Tyr-Gly-Gly-Ile-Lys,

(l) Asp-Thr-Pro-Tyr-Leu-Asp,

(m) Arg-Ser-Pro-Ser-Thr-His; and

(n) at least one member selected from a pharmaceutically-acceptable acid-addition salt of amino acid sequences (a) to (m).

4,518,528

α AMINO FLUORO KETONES

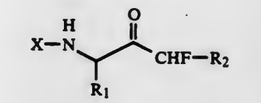
David W. Rasnick, 2508 Magnolia Trail, Sunol, Calif. 94586

Continuation-in-part of Ser. No. 496,227, May 19, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,068

Int. Cl.³ C07C *103/52*

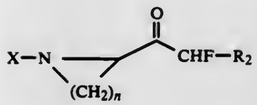
U.S. Cl. 260—112.5 R **12 Claims**

1. A composition of matter, comprising an αamino fluoro ketone compound of the structural formulae:



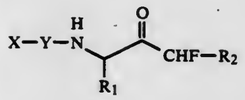
1(a)

or



1(b)

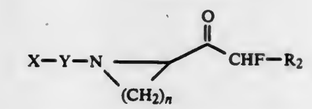
or



1(c)

or

-continued



1(d)

wherein R_1 and R_2 are independently selected from the group of hydrogen; alkyl of 1–6 carbons; substituted alkyl of 1–6 carbons; aryl; alkylaryl where the alkyl group is of 1–4 carbons; n is an integer from 1–4 inclusive; X is a peptide end-blocking group; and Y is an amino acid or peptide chain of 1–6 amino acids.

4,518,529

ANTIBIOTICS C-19393S_2

Akira Imada, Nishinomiya; Setsuo Harada, Kawanishi, and Mitsuko Asai, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

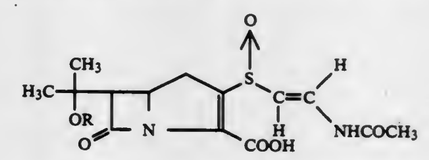
Filed Jan. 17, 1980, Ser. No. 113,132

Claims priority, application Japan, Feb. 2, 1979, 54-11560; Jun. 26, 1979, 54-81141

Int. Cl.³ C07D *487/04*; A61K *31/40*

U.S. Cl. 260—245.2 T **1 Claim**

1. An antibiotic substance represented by the formula



wherein R represents —SO_3H or a pharmaceutically acceptable salt thereof.

4,518,530

6-β-SUBSTITUTED PENICILLANIC ACIDS AS β-LACTAMASE INHIBITORS

Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 483,921, Apr. 11, 1983, , which is a continuation of Ser. No. 96,832, Nov. 23, 1979, Pat. No. 4,397,783, which is a continuation-in-part of Ser. No. 17,809, Mar. 5, 1979, abandoned. This application Feb. 27, 1984, Ser. No. 584,127

The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.

Int. Cl.³ C07D *499/00*; A61K *31/425*

U.S. Cl. 260—245.2 R **4 Claims**

1. 6-β-Bromopenicillanic acid substantially free of the 6-α-bromo epimer, or a pharmaceutically-acceptable base salt thereof.

4,518,531

ALLYLIC CHLORINATION PROCESS AND COMPOUNDS PREPARED THEREBY

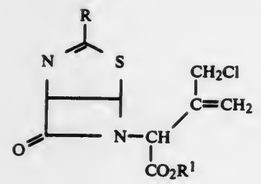
Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 130,888, Mar. 17, 1980, , which is a continuation-in-part of Ser. No. 34,825, Apr. 30, 1970, abandoned. This application Nov. 14, 1983, Ser. No. 550,854

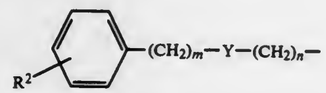
Int. Cl.³ C07D *205/08, 513/14*; C07B *9/00*

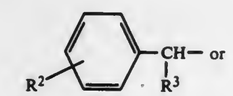
U.S. Cl. 260—245.4 **10 Claims**

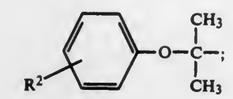
1. A compound of the formula



wherein
R is hydrogen,
methoxy,
C_1–C_2 alkoxycarbonyl,
C_1–C_8 alkyl,
C_1–C_8 alkyl monosubstituted with protected hydroxy, C_1–C_3 alkoxy or cyano,
C_2–C_8 alkenyl,
C_2–C_8 alkenyl monosubstituted with protected hydroxy, C_1–C_3 alkoxy or cyano,
C_3–C_8 cycloalkyl,
C_3–C_8 cycloalkyl substituted with protected hydroxy, C_1–C_3 alkoxy or cyano,







R^2 is hydrogen, protected hydroxy, chloro, bromo, C_1–C_3 alkyl, C_1–C_3 alkoxy, nitro or cyano;
Y is oxygen or a carbon-carbon bond;
R^3 is protected hydroxy, C_1–C_4 alkyl or protected amino;
m is 0–2;
n is 0–2;
R^1 is a carboxylic acid protecting group; provided that the 1- and 5-position C-H bonds are in the α-position.

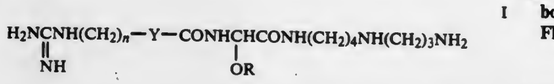
4,518,532

N-[4-(3-AMINOPROPYL)-AMINOBUTYL]-2-(ω-GUANIDINO-FATTY-ACID-AMIDO)-2-SUBSTITUTED-ETHANAMIDE AND SALT THEREOF

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Shinichi Kondo, Yokohama; Hironobu Iinuma; Daishiro Ikeda, both of Tokyo; Teruya Nakamura, Kusatsu, and Akio Fujii, Kamakura, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,372
Claims priority, application Japan, Oct. 8, 1981, 56-159503
Int. Cl.³ C07C *129/12;* **A61K** *31/155*
U.S. Cl. 260—404.5 **10 Claims**

1. An N-[4-(3-aminopropyl)aminobutyl]-2-(ω-guanidinofatty-acid-amido)-2-substituted-ethanamide represented by the general formula or a pharmaceutically acceptable salt thereof



(I)

wherein Y represents $—CH_2—CH_2—$, or $—CH=CH—$, R represents a hydrogen atom, or a methyl group, and n is an integer of from 4 to 6.

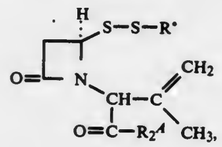
4,518,533

AZETIDINONE-4-DISULFIDES AS INTERMEDIATES FOR THIA-AZA COMPOUNDS WITH A BETA-LACTAM RING

Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 353,288, Mar. 1, 1982, , which is a division of Ser. No. 902,639, May 4, 1978, Pat. No. 4,331,676. This application Sep. 24, 1982, Ser. No. 423,350
Claims priority, application Luxembourg, May 9, 1977, 77306
Int. Cl.³ C07D *205/08, 403/12, 487/04*
U.S. Cl. 260—245.4 **2 Claims**

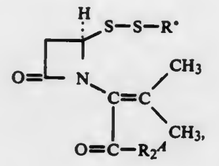
1. Compounds of the formula



(IX)

in which R° is a five-membered thiadiazacyclic, thiatriazacyclic, oxadiazacyclic, oxatriazacyclic, diazacyclic, oxazacyclic or thiazacyclic radical of aromatic character or a benzdiazacyclic, benzoxazacyclic or benzthiazacyclic radical in which the heterocyclic part is five-membered and has an aromatic character, which radical is bonded to the thio group —S— by one of its ring carbon atoms that is bonded to a ring nitrogen atom by a double bond and which radical is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen or phenyl, and R_2^A together with the carbonyl group —C(=O) represents a protected carboxyl group.

2. Compounds of the formula



(X)

in which R° is a five-membered thiadiazacyclic, thiatriazacyclic, oxadiazacyclic, oxatriazacyclic, diazacyclic, oxazacyclic or thiazacyclic radical of aromatic character or a benzdiazacyclic, benzoxazacyclic or benzthiazacyclic radical in which the heterocyclic part is five-membered and has an aromatic character, which radical is bonded to the thio group —S— by one of its ring carbon atoms that is bonded to a ring nitrogen atom by a double bond and which radical is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen or phenyl, and R_2^A together with the carbonyl grouping —C(=O) represents a protected carboxyl group.

4,518,534

LAYERED VANADIUM COMPOUNDS CONTAINING PHOSPHORUS OR ARSENIC AND PENDANT ORGANIC GROUPS

Jack W. Johnson, Clinton, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 22, 1983, Ser. No. 525,142
Int. Cl.³ C07F *9/00, 9/38, 9/70, 9/09*
U.S. Cl. 260—429 R **18 Claims**

1. A solid composition of matter comprising layered oxides

containing vanadium together with phosphorus or arsenic and a monovalent organic group, said layered compounds having one of the formulae:

$VORAO_3.nS$ or $VOROAO_3.nS$

where A is phosphorus or arsenic, S is a solvent molecule, R is an unsubstituted or alkyl-, alkoxy- or aryl-substituted alkyl or aryl group or a mixture thereof, and n is zero or a positive number, the layered compounds being characterized in that the vanadium has an average oxidation state in the range of 3.6 to 4.4 and is present in an amount such that the molar ratio of A:V ranges from, 0.8 to 1.2 throughout the oxide and the R groups are covalently bound to an A atom in the vanadium oxide layer directly through either carbon or oxygen.

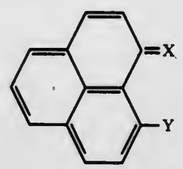
4,518,535

PREPARATION OF ELECTRICALLY CONDUCTIVE SYSTEMS FROM SUBSTITUTED PHENALENES, AND THE PRODUCTS OBTAINED

Herbert Naarmann, Wattenheim; Volker Muench, Ludwigshafen; Gernot Köhler, Ludwigshafen, and Petr Simak, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,717
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217097
Int. Cl.³ C07F *1/08, 1/10, 15/00, 15/02*
U.S. Cl. 260—438.1 **11 Claims**

1. A process for the preparation of an air-stable, electrically conductive system having a conductivity greater than $10^{-3}\Omega^{-1}cm^{-1}$, comprising reacting a metal cation of an element of sub-group VII, VIII or I of the periodic table of elements with a 1,9-substituted phenalene of the formula (I)



(I)

where x is O, NH, S, Se or Te and Y is —OH, —SH or —NH, to give a metal chelate, and reacting this metal chelate with a 1.5-fold to 10-fold molar excess of an organic electron acceptor, in an inert chlorohydrocarbon or chlorofluorohydrocarbon as the solvent, at about +40° to +100° C.

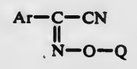
4,518,536

COMPOSITIONS, WHICH PROMOTE PLANT GROWTH AND PROTECT PLANTS, BASED ON OXIME ETHERS AND OXIME ESTERS

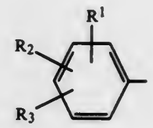
Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 129,499, Mar. 11, 1980, Pat. No. 4,466,822, which is a division of Ser. No. 881,953, Feb. 27, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 430,059
Claims priority, application Switzerland, Mar. 2, 1977, 2606/77; Feb. 8, 1978, 1348/78
The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.
Int. Cl.³ C07C *121/66*
U.S. Cl. 260—465 D **6 Claims**

1. A compound of the formula



wherein Ar represents naphthyl or



in which
R_1 represents hydrogen, halogen, lower alkyl, lower alkoxy of phenoxy in the para-position which is optionally substituted a maximum of twice by halogen, cyano, nitro or trifluoromethyl, and
each of R_2 and R_3 represents hydrogen, halogen, nitro, lower alkyl, trifluoromethyl or lower alkoxy,
and Q is lower alkanecarboxylic acid ester in which the ester moiety has from 1 to 8 carbon atoms.

4,518,537

PROCESS FOR ISOLATING PARAFFINSULFONATE FROM THE REACTION MIXTURE OBTAINED ON SULFOXIDATING PARAFFINS

Rudolf Pistorius, Hünstetten, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 3, 1984, Ser. No. 576,634
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1983, 3304017
Int. Cl.³ C07C *139/00*
U.S. Cl. 260—504 R **3 Claims**

1. A process for isolating paraffinsulfonate from the extracts which are obtained on sulfoxidating n-paraffins and from which the bulk of the paraffin has been separated by adding alcohol, which comprises neutralizing the alcoholic paraffinsulfonic acid solutions thus obtained with alkali metal hydroxides in such a way as not to drop below pH 7, and continuously concentrating in a preheated evaporator at at least 130° C., the paraffinsulfonate solution obtained on separating off the precipitated alkali metal sulfate.

4,518,538

PROCESS FOR MAKING METHYLDICHLOROPHOSPHANE

Klaus Gehrmann; Alexander Obrodnik, both of Erftstadt; Johannes Rosenthal, Cologne, and Stefan Schäfer, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengeselischaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,106
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149937
Int. Cl.³ C07F *9/52*
U.S. Cl. 260—543 P **1 Claim**

1. In a process for making methyldichlorophosphane by reacting methane with phosphorus trichloride in the presence of 2 to 7 mol percent carbon tetrachloride, based on the phosphorus trichloride used, at temperatures of 500° to 650° C. and over a period of time of 0.1 to 0.9 second, the improvement which comprises effecting the reaction under a pressure of 3 to 6 bars, the proportion of carbon tetrachloride added being reduced at increasing pressure.

4,518,539

PROCESS FOR MAKING ACETIC ANHYDRIDE

Wilhelm Vogt, Bellerstrasse 74, Hürth, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,355
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230307
Int. Cl.³ C07C *51/56*
U.S. Cl. 260—549 **3 Claims**

1. A process for making acetic anhydride which comprises reacting methyl acetate or dimethylether with a gas contaning

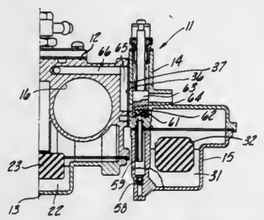
carbon monoxide and 5 to 30 volume % hydrogen under practically anhydrous conditions at temperatures of 390° to 540° K., under pressures of 1 to 300 bars in the presence of a catalyst system consisting essentially of noble metals belonging to group VIII of the Periodic System of the elements or their compounds, vanadium or niobium or their compounds, iodine or its compounds and a tertiary or quaternary organic compound selected from the group consisting of compounds of nitrogen, phosphorus, arsenic or antimony.

4,518,540

MULTI-FUEL CARBURETOR

Hidekazu Takayasu, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushika Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Jan. 25, 1983, Ser. No. 460,765
Claims priority, application Japan, Jan. 26, 1982, 57-9583
Int. Cl.³ F02M *13/06*
U.S. Cl. 261—18 B **16 Claims**



1. In a multi-fuel carburetor having a main body portion defining an induction passage, a main fuel bowl, main fuel discharge circuit means for delivering fuel from said main fuel bowl to said induction passage, a supplementary passage communicating with said induction passage and extending through said main body portion, and an auxiliary body carrying auxiliary fuel bowl means for supplying an auxiliary fuel to said induction passage, the improvement comprising said supplementary passage of said main body terminating in a face of said main body engaged by said auxiliary body for cooperation of said supplementary passage with a corresponding passage in said auxiliary body and for delivering fuel to said induction passage from said auxiliary fuel bowl means, and cold starting valve means interposed in said auxiliary body for controlling the flow of fuel from said auxiliary fuel bowl means to said supplementary passage.

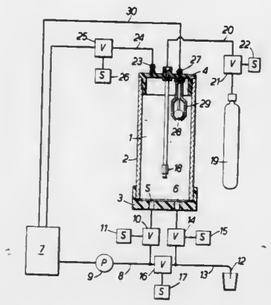
4,518,541

LIQUID AERATING APPARATUS

Derek W. Harris, Lincolnshire, England, assignor to Sodastream Limited, Peterborough, England

PCT No. PCT/GB83/00202, § 371 Date Apr. 10, 1984, § 102(e) Date Apr. 10, 1984, PCT Pub. No. WO84/00671, PCT Pub. Date Mar. 1, 1984
PCT Filed Aug. 11, 1983, Ser. No. 599,610
Claims priority, application United Kingdom, Aug. 20, 1982, 8224061
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—27 **15 Claims**

1. Apparatus for carbonating liquids, comprising a carbonating chamber (**1**), first valve means (**10,14**) for controlling admission of liquid to and discharge of carbonated liquid from the chamber, a gas jet nozzle (**18**) mounted in the chamber for injecting carbon dioxide gas into liquid contained in the chamber, means for connecting the jet nozzle to a source of pressurised gas including second valve means (**21**) for controlling the supply of gas, pressure releasing means communicating with an upper part of the chamber and including third valve means (**25**), characterised in that said first, second and third valve means are electrically actuable and controlled by electronic control means (**43**) so programmed that in response to a start signal supplied to the control means, the first valve means is actuated for the admission of liquid to the chamber to substantially fill the chamber, after closure of said first valve means the said second valve means is actuated one or more times for periods of set duration for gas to be supplied to the jet nozzle and injected into the liquid, after termination of the gas supply



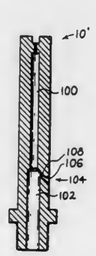
and a short delay the said third valve means is opened to release the pressure in the chamber, and following a further short delay after opening the third valve means the first valve means may be actuated for carbonated liquid to be discharged from the chamber.

4,518,542

CARBURETOR ATTACHMENT

Jerry L. Rogers, R.R. 6, Box 2515, Springfield, Mo. 65803

Continuation-in-part of Ser. No. 108,419, Dec. 31, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,639
Int. Cl.³ F02M *7/02*
U.S. Cl. 261—34 R **1 Claim**



1. In an engine carburetor having a main body in communication with said engine, a float chamber, a passage communicating said chamber and said body, an improved jet in said chamber and inserted in said passage for conveying fuel from said float chamber to said passage comprising:

a generally elongated member having upper and lower ends with a bore running therethrough and presenting an opening at said lower end thereof in communication with said passage, said member having a configuration designed to position said upper end above a normal level of fuel found in said float chamber;

said bore consisting of upper and lower communicating shafts with said lowe shaft increasing in cross-sectional area at the point of juncture and having throughout a cross-sectional area greater than said upper shaft;

means for fastening said member to said carburetor with said opening communicating with said passage;

means adjacent said upper end of said member for communicating said upper shaft with the ambient air surrounding said upper end of said member; and

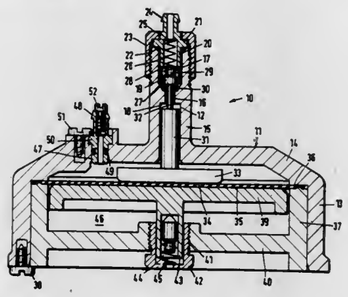
means adjacent said lower end of said member for conducting said surrounding fuel from said float chamber into said lower shaft upon actuation of said carburetor, said conducting means comprising a port inserted adjacent said lower end of said member and presenting an upwardly extending channel in communication with said surrounding fuel and said lower shaft, said port further including a recess for receiving a portion of said surrounding fuel therein to prime said channel with said fuel; whereupon actuation of said carburetor said ambient air is drawn through said communicating means and into said upper air shaft, said relatively smaller cross-sectional area of said upper air shaft delimiting the volume of said ambient air drawn therethrough and into said lower shaft in a manner to provide continuity to said conduction of fuel being drawn through said channel and into said lower shaft whereby to maintain a continuous admixture of said fuel and said air within said lower shaft prior to discharge from said opening.

4,518,543

DEVICE FOR THE DOSED DIFFUSION OF GASES IN LIQUIDS

Dieter Dorsch, Heilbronn, Fed. Rep. of Germany, assignor to Günter Grittmann, Eppingen-Muhlbach, Fed. Rep. of Germany

Continuation of Ser. No. 289,111, Jul. 31, 1981, abandoned. This application Oct. 12, 1983, Ser. No. 540,904
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—64 B **10 Claims**



1. A device for dosed diffusion of gases in liquids, particularly for application in the field of aquaria, consisting of a hollow body diffusor, a gas inlet at the upper portion of said diffusor, said inlet connected to an automatically regulating pressure-regulating valve, said valve blocked on the supply-pressure side by a valve smaller than said pressure-regulating valve operable by means of an actuating member subjected to the regulating pressure and to an adjustable prestress, said smaller valve consisting of a valve head loaded by means of a compression spring and axially movable against a sealing ring, said valve head lifted out of its leak-tight seat by means of a tappet, one end of said tappet directed to said valve head, a mushroom-shaped thrust member mounted on the opposite end of and movable with said tappet, said thrust member resting on an elastic disc-shaped diaphragm shutting off in a leak-tight manner the regulating-pressure region of said pressure-regulating valve.

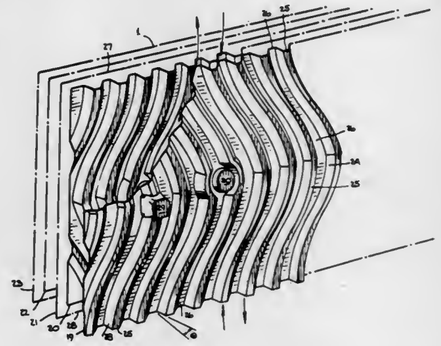
4,518,544

SERPENTINE FILM FILL PACKING FOR EVAPORATIVE HEAT AND MASS EXCHANGE

Thomas P. Carter, Laurel; Edward N. Schinner, Highland; Richard H. Harrison, Jr., Columbia, and Robert E. Cates, Arnold, all of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Jan. 20, 1983, Ser. No. 459,735
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—112 **15 Claims**

1. Surface-type heat and mass exchanger fill packing assembly having a top, bottom and side edges for use in an evaporative heat and mass transfer apparatus for producing interaction between a liquid and a gas, said assemably being composed of continuously curved or serpentine-grooved, spaced vertically aligned sheets forming passageways having valleys and ridges formed by said grooves extending in a generally continuously curved, sinusoidal or serpentine path fr©m edge to edge of said sheets, the groove width at a ridge or valley constantly varying in width from edge to edge of the sheet along the



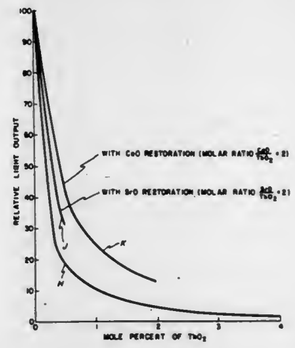
groove, and the entrance angle for liquid at the one edge and gas at the opposite edge of the fill, being the angle of the groove relative to the perpendicular, is maintained nearest to said perpendicular, and where the groove side wall angle relative to the perpendicular to the plane of said fill is constant at any position on said fill, said passageways providing space and surface for liquid and gas interaction, the sheets having the ridges of adjacent sheet grooves forming variable-angle isosceles angular relationship with one another.

4,518,545

METHOD FOR SINTERING HIGH DENSITY YTTRIA-GADOLINIA CERAMIC SCINTILLATORS

Dominic A. Cusano; Charles D. Greskovich, both of Schenectady, N.Y., and Frank A. DiBianca, Chapel Hill, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,829
Int. Cl.³ C04B *35/50*
U.S. Cl. 264—1.2 **23 Claims**



1. A method for preparing a transparent-to-translucent yttria-gadolinia polycrystalline ceramic scintillator body comprising the steps of:

preparing a multicomponent powder consisting essentially of between 5 and 50 mole percent Gd_2O_3, between about 0.02 and 12 mole percent of at least one rare earth activator oxide selected from the group consisting of Eu_2O_3, Nd_2O_3, Yb_2O_3, Dy_2O_3, Tb_2O_3, and Pr_2O_3, at least one

transparency promoter selected from the group consisting of ThO_2, ZrO_2, and Ta_2O_5, and at least one light output restorer selected from the group consisting of CaO and SrO, the remainder of said multicomponent power being Y_2O_3;

cold pressing said multicomponent powder to form a powder compact; and

sintering said powder compact in either a reducing atmosphere or vacuum to yield a transparent-to-translucent polycrystalline ceramic body.

4,518,546

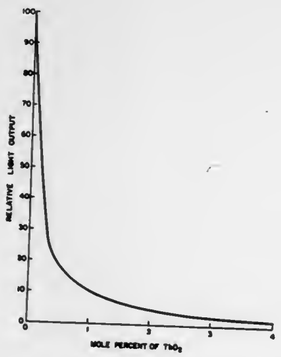
PREPARATION OF YTTRIA-GADOLINIA CERAMIC SCINTILLATORS BY SINTERING AND GAS HOT ISOSTATIC PRESSING

Charles D. Greskovich; Dominic A. Cusano, both of Schenectady, N.Y., and Frank A. DiBianca, Chapel Hill, N.C., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 389,817, Jun. 18, 1982, abandoned. This application May 8, 1984, Ser. No. 608,323

Int. Cl.³ C04B *35/50*

U.S. Cl. 264—1.2 **22 Claims**



1. A method for preparing a transparent-to-translucent polycrystalline ceramic X-ray or gamma-ray scintillator body comprising the steps of:

preparing a multicomponent powder consisting essentially of Y_2O_3, Gd_2O_3, and at least one rare earth activator oxide selected from the group consisting of Eu_2O_3, Nd_2O_3, Yb_2O_3, Dy_2O_3, Tb_2O_3, and Pr_2O_3;

pressing said multicomponent powder to form a powder compact;

sintering said powder compact to the closed porosity stage; and

gas hot isostatically pressing the sintered compact with an inert gas to yield a transparent-to-translucent polycrystalline ceramic scintillator body.

4,518,547

MICROENCAPSULATION PROCESS

George W. Cuff, Indianapolis, Ind., and James W. McGinity, Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Sep. 15, 1983, Ser. No. 532,458

Int. Cl.³ A61K *9/50, 9/58;* **B01J** *13/02*

U.S. Cl. 264—4.7 **10 Claims**

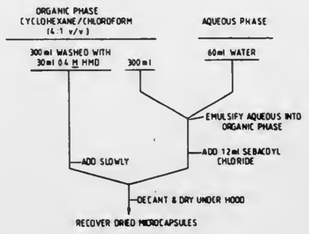
1. A process for the encapsulation of a hydrophilic core material in a membrane formed by interfacial polycondensation, the process comprising:

in a first step, dispersing in a first continuous hydrophobic phase a hydrophilic phase comprising in solution the hydrophilic material to be encapsulated and a hydrophilic solvent or water; and then

in a second stage, adding separately to the dispersion either sequentially or simultaneously, each of two complementary polycondensation monomer reactants:

the first polycondensation monomer reactant comprising a hydrophobic solvent-soluble reagent;

the second polycondensation monomer reactant comprising a hydrophilic solvent-soluble reagent dispersed in a second continuous hydrophobic phase;



allowing the polycondensation monomers to react, the reaction effective to cause interfacial polymerization of a membrane encapsulating the hydrophilic phase containing the hydrophilic core material; and

separating the encapsulated material from the continuous hydrophobic phase.

4,518,548

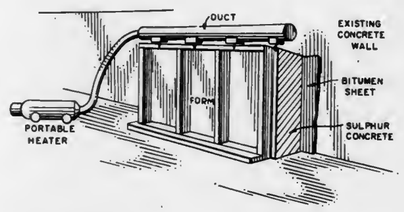
METHOD OF OVERLAYING SULPHUR CONCRETE ON HORIZONTAL AND VERTICAL SURFACES

Roger L. Yarbrough, Champaign, Ill., assignor to Sulcon, Inc., Champaign, Ill.

Filed May 2, 1983, Ser. No. 490,345

Int. Cl.³ B28B *1/54;* **C04B** *35/60*

U.S. Cl. 264—32 **9 Claims**



1. A method of placing sulphur concrete against or over an existing outer solid surface of a wall, floor, or column base, comprising:

(a) first applying to said outer surface a layer of a bituminous material to form a bitumen-containing exposed surface thereon, the bitumen in said exposed surface becoming liquified at temperatures at which molten sulphur concrete is initially placed;

(b) pouring a course of molten sulphur concrete mix against or over said bitumen-containing surface, the bitumen therein melting to form a liquid slip plane in contact with said course; and

(c) setting said layer of bituminous material and said course of sulphur concrete by temperature reduction, whereby said sulphur concrete can shrink during cooling without being restrained by said existing solid surface.

4,518,549

APPARATUS FOR AND METHOD OF COOLING THE CORE RODS OF AN INJECTION BLOW MOULDING MACHINE

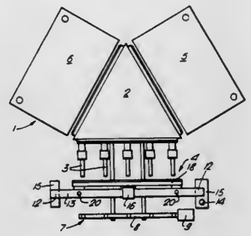
Reginald J. Hart, Chapel-En-Le-Frith, England, assignor to Roymere Limited, England

Filed Nov. 2, 1983, Ser. No. 547,793

Claims priority, application United Kingdom, Feb. 4, 1983, 8303056; Sep. 13, 1983, 8324500

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—39 **17 Claims**



1. Apparatus for cooling the core rods of an injection blow moulding machine having a stripping station at which blow moulded articles are removed from the core rods by stripper means movable between a retracted position in which blow moulded articles on the core rods can be engaged by the stripper means and an advanced position in which the blow moulded articles are removed from the core rods, the apparatus comprising nozzle means for directing cooling fluid onto the tips of the core rods, means for moving said nozzle means relative to the core rods and independently of the stripper means between an out-of-use position in which the nozzle means is out of the path of movement of the stripper means and an in-use position in which the nozzle means is interposed between the core rods and the stripper means and is adapted to direct cooling fluid onto the core rods, and means for supplying cooling fluid to said nozzle means when the nozzle means is in in-use position.

14. A method of cooling the core rods of an injection blow moulding machine having a stripping station at which blow moulded articles are removed from the core rods by stripper means movable between a retracted position in which blow moulded articles on the core rods can be engaged by the stripping means and an advanced position in which the blow moulded articles are removed from the core rods, the method comprising the steps of engaging the blow moulded articles with said stripper means, removing the blow moulded articles from the core rods by moving the stripper means to said advanced position, interposing nozzle means between the core rods and the stripper means, directing a cooling fluid onto the tips of the core rods using said nozzle means, and moving the nozzle means to an out-of-use position on completion of cooling of the core rods.

4,518,550

METHOD OF MANUFACTURING RIGID FRAME BUILDING ELEMENTS FILLED WITH HARD FOAM PLASTIC

Jorma K. Miettinen, and Eero J. Virtanen, both of Kankaanpää, Finland, assignors to Makrotalo Oy, Kankaanpää, Finland

Filed May 16, 1983, Ser. No. 494,895

Int. Cl.³ B29D *27/04;* **B30B** *1/32*

U.S. Cl. 264—46.5 **4 Claims**

1. A method of manufacturing rigid frame building elements filled with hard foam plastic wherein the building elements have wooden frames covered by plates on opposite sides forming enclosed hollow interior spaces, the method comprising the steps of:

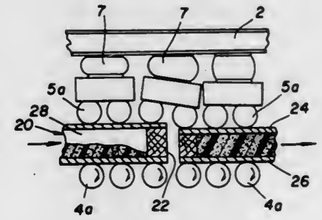
charging a quantity of delayed foaming plastic material into the enclosed hollow interior spaces of the building elements,

delivering the charged building elements into a conveying and compression gap between upper and lower roller conveyors before the foaming plastic material expands to produce pressure within the interior spaces,

driving the rollers of the lower conveyor to advance the building elements along a conveying path through the conveying and compression gap,

engaging the plates covering the building elements with a plurality of rollers of each of the respective upper and lower roller conveyors throughout advancing of the building elements along the conveying path,

said engaging with the upper and lower pluralities of rollers being at lines transverse to the conveying path and extending substantially across the width of the surfaces of the plates wherein the lines are closely spaced along the conveying path so that said engaging resists bending of the plates between the lines due to pressure of the foaming material,



maintaining said engaging step in the conveying and compression gap for a duration greater than the duration required for the expansion of the foaming plastic material and the cessation of the pressure exerted thereby,

compressing the rollers of the upper conveyor against its respective engaged plate during said maintaining and engaging steps by means of pressure members with a pressure exceeding the pressure generated by the foaming plastic material within the building elements, and

individually moving the rollers of the upper conveyor in a vertical direction during the maintaining and compressing steps so that the rollers of the upper conveyor follow dimensional changes of the building elements between the plates and maintain substantially even pressure on the plates.

4,518,551

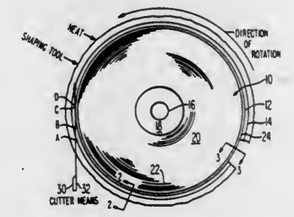
METHOD AND APPARATUS FOR TRIMMING AND FINISHING THE OUTER EDGE OF A MOLDED RECORD

Peter T. Lin, East Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 30, 1984, Ser. No. 605,242

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 **18 Claims**



1. The method for trimming flash from and finishing the outer edge of a record molded from a thermoplastic composition, said method comprising the steps of:

(a) rotating the record having flash formed on its outer edge about its center;
(b) selectively heating the flash and the outer edge of the record immediately adjacent the flash to a temperature above the glass transition temperature of the thermoplastic composition;
(c) tangentially advancing a cutter means through the heated flash and through a tangent point on the outer edge while simultaneously rotating the record at least one complete revolution to provide a trimmed outer edge;
(d) bringing an edge shaping means for imparting a predetermined configuration into contact with the trimmed outer edge;
(e) rotating the record with the trimmed outer edge in contact with said shaping means until the outer edge is shaped to the predetermined configuration; and
(f) discontinuing heating the outer edge allowing the thermoplastic composition at the outer edge to cool below its glass transition temperature,

whereby the flash is removed from the outer edge of the record and the outer edge is finished in the predetermined configuration.

11. Apparatus for trimming flash from and finishing the outer edge of a record molded from a thermoplastic composition, said apparatus comprising in combination:
(a) support means for holding and rotating a record about the record's center;
(b) cutter means for trimming flash from the record;
(c) guide means adjacent the support means for holding the cutter means and for guiding the cutter means in a path which is tangential to the outer edge of a record positioned on the support means;
(d) heating means positioned adjacent the support means including a heat source for selectively heating the flash and outer edge of a record positioned on the support means to a temperature above the glass transition temperature of the thermoplastic composition; and
(e) edge shaping means positioned adjacent the support means for engaging and shaping the trimmed outer edge of a record into a predetermined configuration.

4,518,552
METHOD OF PRODUCING ACCURATELY SIZED MATERIAL OF ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

Tadao Matsuo, Kakogawa; Fumio Matsuoka, Kobe; Nobuo Yokota, Hyogo, and Masaaki Yamamoto, Amagasaki, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Nov. 9, 1983, Ser. No. 549,828
Int. Cl.³ B27J *5/00*
U.S. Cl. 264—126 **14 Claims**

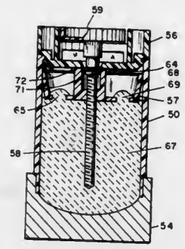


1. A method of producing an extruded sintered product of ultra high molecular weight polyethylene having low transverse dimensional deviation, comprising the steps of:
mixing an organic peroxide and a lubricant with ultra high molecular weight polyethylene powder; and
ram extruding the mixture while heating the mixture directly to a high temperature to concurrently effect cross-linking and sintering of the powder to form a cross-linked sintered product having a transverse dimension deviation of less than approximately 2 mm.

4,518,553
PROCESS FOR PRODUCING A WAX-LIKE STICK PRODUCT

Mary E. Yarossi, Hoboken, and Carey S. Trevisan, W. Orange, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 22, 1983, Ser. No. 534,534
Int. Cl.³ B29C *5/00, 27/30, 25/00*
U.S. Cl. 264—234 **9 Claims**

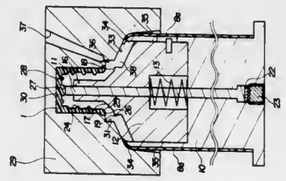


1. A process for the manufacture of a solid, wax-like stick product, which comprises the steps of attaching a pouring cap closure to the upper portion of a suitable container for said stick, said container being open at the bottom; inverting said container body and filling from the bottom thereof with a premeasured quantity of wax-like composition in a molten state; cooling said stick to partially solidify it and form a void in an upper surface of said composition; heating said stick to melt the upper surface and fill in said void; inserting into the bottom portion of said container body before said upper surface solidifies, a twist-up device, cooling said composition for sufficient time to form within said container a solid, wax-like stick and re-inverting the container.

4,518,554
METHOD AND APPARATUS FOR MOLDING A TUBULAR CONTAINER WITH A CAP

Yoshiharu Hatakeyama, Tokyo; Tatsuo Ishikawa, and Kenzo Teshima, both of Chiba, all of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,877
Claims priority, application Japan, Sep. 14, 1982, 57-158836
Int. Cl.³ B29C *5/00, 1/00;* **B29F** *1/022*
U.S. Cl. 264—262 **4 Claims**

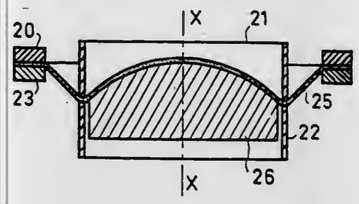


1. A method for molding a resin-made container with a cap, said method comprising:
providing a female die having a cap-receiving recess, and a male die having a fixed guide rod and a sliding die member movable along said guide rod and urged outwardly therealong;
inserting a cap having internal threads into said recess of said female die, with an open end of said cap facing outwardly of said recess;
inserting said male die into said female die and thereby centrally inserting said guide rod into said cap, clamping an outer end portion of a premolded container body provided about said male die between said dies, and defining a cavity portion between said sliding die member and the inner surface of said cap and another cavity portion between said dies; and
injecting a synthetic resin, which is compatible with said container body but which will not fuse with said cap, into said another cavity portion, and by the injection pressure forcing said sliding die member along said guide rod away from said female die, thereby enlarging said another cavity portion, and molding in said cavity portions a container neck within said cap and an integral container shoulder fused with said outer end.

4,518,555
MANUFACTURING AN ACTIVE SUSPENSION ELECTROMECHANICAL TRANSDUCER

Pierre Ravinet, and Francois Micheron, both of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 239,642, Mar. 2, 1981, Pat. No. 4,401,911.
This application Jun. 14, 1983, Ser. No. 504,159
Claims priority, application France, Mar. 4, 1980, 80 04838
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—292 **2 Claims**

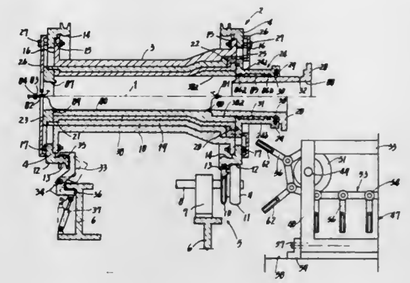


2. A process for manufacturing an electromechanical transducer having at least one active element in the form of at least one film of a polymer material shaped so as to have a spherical skullcap at its center and at the periphery of the spherical skullcap the film is shaped as a truncated cone with rectilinear generatrices along the marginal radii of the spherical skullcap, said process comprising:
clamping said polymer film between an inner set of jaws for delimitating a central area;
further clamping said polymer film between an outer set of jaws for delimitating a peripheral area surrounding said central area;
stretching said peripheral area by moving said inner set of jaws in relation to said outer set in order to form said truncated cone shape; and
shaping said central area by driving a punch towards said central area in order to form said spherical skullcap.

4,518,556
METHOD FOR MOLDING BENT PIPES MADE UP OF COMPOSITE MATERIAL

Masahiko Yamamoto, Nishinomiya; Yoshinori Nishino, Yamato Takada; Akio Komura, Osaka, and Tomio Ebisu, Taishibashi, all of Japan, assignors to Hitachi Shipbuilding & Engineering Co. Ltd., Osaka, Japan

Filed Apr. 14, 1981, Ser. No. 254,051
Claims priority, application Japan, Jul. 1, 1980, 55-093285[U]; Jul. 2, 1980, 55-093768[U]; Jul. 14, 1980, 55-096498; Aug. 19, 1980, 55-114357
Int. Cl.³ B29C *5/04*
U.S. Cl. 264—295 **17 Claims**

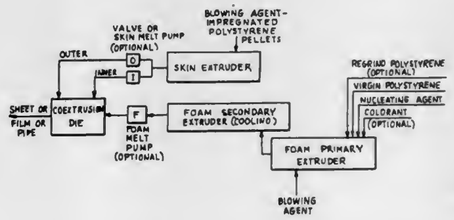


1. A method of manufacturing bent pipes made up of a composite material comprising the steps of:
rotating around a straight horizontal axis a substantially cylindrical resilient molding tool adapted to be deformed between a straight-axis profile and a bent-axis profile;
feeding pipe forming materials into said molding tool;
centrifugally molding in said molding tool a pipe made up of said pipe forming materials and at least having an inner wall, an outer wall and an uncured axially intermediate portion;
inserting in the centrifugally molded pipe a flexible bag provided on its outer periphery with absorbent layer means, and inflating said bag so as to press said absorbent layer means against the inner wall of said molded pipe and to eliminate by said absorbent layer means the air or gas bubbles produced in the inner wall of said molded pipe;
bending said molding tool so that said molded pipe is correspondingly bent therein; and
removing the resulting bent pipe from said molding tool after the bent pipe has been wholly cured.

4,518,557
PROCESS FOR SKIN FOAM

Sheldon M. Wecker, Libertyville, Ill., assignor to James River-Norwalk, Inc., So. Norwalk, Conn.

Filed May 18, 1981, Ser. No. 264,574
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.9 **11 Claims**



1. In a method of making a foamed plastic product having a relatively low density cellular core structure and a substan-

tially non-cellular outer layer or skin wherein a first or foam stream of foamable normally solid molten polymer containing blowing agent is fed to a co-extrusion die under pressure and expanded on exiting from said die to form said cellular core and a second or skin stream of said normally solid molten polymer is supplied to said co-extrusion die to form said skin, the improvement which comprises:

incorporating a volatile organic blowing agent and a nucleating agent in said first or foam stream of polymer,

incorporating a volatile organic blowing agent in said second or skin stream of polymer in an amount effective to match the viscosity of said second stream to that of said first stream and maintain stable flow of said second stream relative to said first stream,

supplying said second stream to said co-extrusion die at a temperature sufficient to produce foam formation on expansion of the polymer leaving the die, and

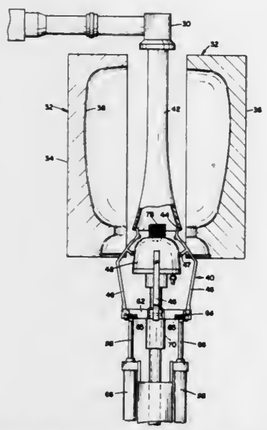
supplying said second stream to said co-extrusion die at a temperature lower than that required to producing foaming in said second stream of polymer on release of pressure in said co-extrusion die.

4,518,558

PARISON STRETCHER

Kenneth L. Anway, and Gerald W. Born, both of Mentor, Ohio, assignors to Quality Products, Inc., Eldora, Iowa

Filed Mar. 7, 1983, Ser. No. 472,580
Int. Cl.³ B29C *17/07;* **B29D** *3/00*
U.S. Cl. 264—515 **6 Claims**



1. A method for producing hollow plastic articles having a relatively wide body, a narrow neck and a relatively wide funnel shaped mouth comprising the steps of downwardly extruding plastic at at least one predetermined extrusion rate to progressively form a parison having a downwardly facing open end from a first location adjacent an extrusion head toward a second location axially spaced therefrom, said parison having a diameter smaller than the diameter of said wide mouth, providing a male mold member having an outer surface corresponding to said wide mouth at said second location, engaging portions of the open end of the parison while said open end travels toward said second location, and moving the engaged portions downwardly at a rate at least corresponding to said extrusion rate, during said travel toward said second location, radially expanding the engaged portions of said open end to guide it along said outer surface over said male mold member, enclosing said parison in a hollow mold having a first portion having a molding surface corresponding to the blow-molded portion of said hollow article, and having a second portion having a molding surface corresponding to the narrow neck and wide mouth of said hollow article and cooperating with said male mold member, admitting air to the interior of the first portion of said hollow mold to form said wide body by blow molding while forming the neck and wide mouth by compression molding by the cooperation between the second portion of the mold and the male member.

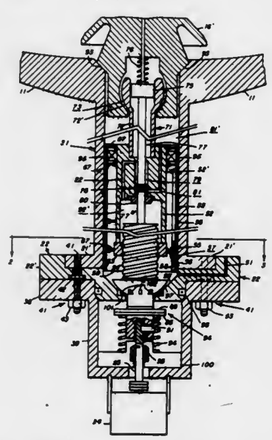
6. Apparatus for producing hollow plastic articles having a relative wide body, a narrow neck and a relatively wide funnel shaped mouth comprising: extrusion head means for extruding a tubular thermoplastic parison having a downwardly facing open end and at least one predetermined extrusion rate, said parison having a diameter smaller than the diameter of said wide mouth, segmented mold means comprising a plurality of cooperating mold members having first and second inner surface portions respectively defining the body, neck and mouth of the article to be molded, means for radially translating said segmented mold means toward said tubular parison to a position forming a continuous mold surface, means defining a male mold member beneath and in axial alignment with said extrusion head means, said male mold member having an outer surface cooperating with the second surface portions of said mold means to form the neck and mouth of said article by compression molding, stretching means having finger means for engaging portions of the open end of the parison while said parison is being extruded at a predetermined rate, means for radially expanding said finger means outwardly and for moving said finger means downwardly at a rate at least corresponding to said predetermined rate for stretching said parison over said male mold, by-cam following said male member outer surface and passage means to the interior of said mold for conducting air for blow molding said body.

4,518,559

CONTROL OF NUCLEAR REACTORS

Larry E. Fischer, Los Gatos; Bettadapur N. Sridhar, Cupertino, and Jackie E. Bean, Santa Clara, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 8, 1982, Ser. No. 396,151
Int. Cl.³ G21C *7/12*
U.S. Cl. 376—230 **4 Claims**



1. A vertically oriented control rod drive device positioned beneath a pressure vessel for selectively inserting a control rod into a nuclear reactor core in said pressure vessel, comprising: a tubular drive housing secured to the bottom of said pressure vessel and extending downward therefrom; a lower housing secured to and closing the lower end of said drive housing; a drive piston having an upper head portion and a lower, elongated, annular skirt portion reciprocably disposed in said drive housing, said drive housing including sealing means for providing a fluid seal between said drive piston and said drive housing; an upwardly extending coupling member secured to the top end of said drive piston and including coupling means for releasably coupling said drive piston to said control rod; a coupling release rod coaxially positioned in said connecting member and penetrating into said drive piston and being reciprocable between an upper position and a lower position; latching means secured to said coupling release rod for latching said coupling means to said control rod when said release rod is in its lower position and for releasing said coupling means from said control rod when said release rod is in its upper position; means for admitting a drive fluid at a pressure higher than the pressure in said pressure vessel to the under side of said drive piston for rapid fluid drive insertion of said control rod into said core; a screw drive arrangement for alternatively driving said control rod into and out of said core including a threaded spindle extending through said lower housing and into said skirt portion of said drive piston, said spindle being formed with a splined lower end, the upper end of said spindle normally abutting the lower end of said coupling release rod; a drive nut mounted on said threaded spindle including means for preventing rotation of said drive nut but allowing axial travel thereof, the bottom end of said skirt portion of said drive piston normally reposing upon said drive nut whereby the weight of said drive piston and the control rod coupled thereto is transferred to said spindle and whereby rotation of said spindle in a direction to move said drive nut upward drives said drive piston upward, and rotation of said spindle in the other direction moves said drive nut downward, said drive piston following said drive nut downward by force of gravity; a reversible drive motor for said spindle with a motor drive shaft extending coaxially toward said spindle; a splined connection connected at its lower end to said motor drive shaft for rotation thereby and having a splined upper portion engaging the splined lower end of said spindle for rotation thereof by said motor, said splined connection being effective for dividing said control rod drive into plural sections for ease of installation and removal; a spring member surrounding and engaging a part of said splined connection lower end and adapted to urge said splined connection upward whereby said spring is normally compressed by the weight of said splined connection, said drive piston and the control rod coupled together, the drive connection between said motor drive shaft and said splined connection allowing limited axial movement of said splined connection from between the compressed and decompressed positions of said spring member; a seat for said control rod in the bottom of said pressure vessel, said seat defining the most downward position of said control rod in said pressure vessel whereby further rotation of said spindle in the direction to move said drive nut downward relieves said spring of the weight of said control rod with resultant decompression of said spring and upward movement of said spindle and said coupling release rod for releasing said coupling means from said control rod.

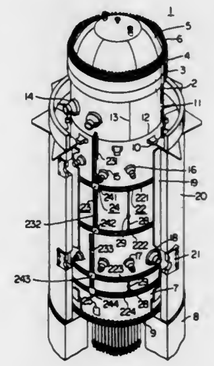
4,518,560

RAIL APPARATUS AROUND NUCLEAR REACTOR PRESSURE VESSEL AND METHOD OF INSTALLING THE SAME

Kazuo Takaku; Akisuke Naruse; Hirotsugu Fujimoto, and Hiroshi Kimura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Hitachi, both of, Japan

Filed Oct. 20, 1982, Ser. No. 435,349
Claims priority, application Japan, Oct. 21, 1981, 56-168375
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—245 **12 Claims**

1. A rail apparatus disposed around a nuclear pressure vessel for running an inspection device, comprising a plurality of circumferential rails spaced from each other, a plurality of turn tables, a first plurality of vertical rails connected to said circumferential rails through said turn tables to form a partial assembly of the rail apparatus, a second plurality of vertical rails connected to and extending upward from the uppermost circumferential rail through said turn tables, and supporting means through which said second plurality of vertical rails are attachable to a gamma shield for suspending said rail apparatus with said circumferential rails and vertical rails spaced outwardly and apart from the pressure vessel and for enabling said rail apparatus to be lifted together with said pressure vessel,



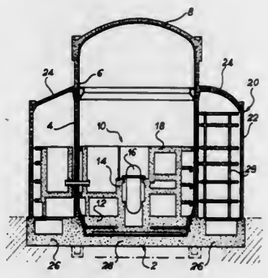
and a swing prevention device positionable between said gamma shield and said rail apparatus.

4,518,561

REACTOR BUILDING

Jean C. Hista, Versailles, France, assignor to Framatome et Cie, Courbevoie, France

Filed Feb. 5, 1982, Ser. No. 346,114
Claims priority, application France, Feb. 10, 1981, 81 02580
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—293 **6 Claims**



1. A building structure for a nuclear reactor constituted by a confinement enclosure comprising a cylindrical skirt sealed in its upper part by a dome, a ring building surrounding the confinement enclosure and which comprises a cylindrical skirt and a roof connected to the cylindrical skirt of the confinement enclosure, the latter and the ring building being erected on a common general foundation raft or floor, and internal structures positioned within the confinement enclosure, said internal structures being disengaged from said confinement enclosure, wherein the roof of the ring building is toroidal or frustum-shaped and is embedded in the cylindrical skirt of the confinement enclosure.

4,518,562

IN SITU REGENERATION OF THE EFFICIENCY OF ACTIVATED CARBON FILTERS FOR TRAPPING RADIOACTIVE IODINE

Victor R. Deitz, 3310 Winnett Rd., Chevy Chase, Md. 20815

Filed Jun. 22, 1983, Ser. No. 506,790
Int. Cl.³ G21C *19/42*
U.S. Cl. 376—313 **6 Claims**

1. A method of in situ regenerating a carbon filter of a nuclear reactor used for trapping radioactive iodine by introducing a controlled quantity of a chemical reducing agent selected

from a group consisting of hydrazine, hydrazine derivatives, hydroxylamine and hydroxylamine derivatives into the air flow from the reactor space to the carbon filter.

4,518,563

METHOD FOR MANUFACTURING A SLIDE MEMBER

Tetsuya Suganuma, Nagoya, and Koji Kazuoka, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 393,651, Jun. 30, 1982, abandoned.
This application May 17, 1984, Ser. No. 610,945
Claims priority, application Japan, Jul. 1, 1981, 56-102445
Int. Cl.³ B22F *1/00*
U.S. Cl. 419—29 **8 Claims**





1. A method of manufacturing a slide member, said method comprising the steps of:

(a) mixing an alloy powder comprising by weight from 2.5% to 7.5% Cr, from 0.1% to 3.0% Mn, from 0.2% to 0.8% P, from 1.0% to 5.0% Cu, from 0.5% to 2.0% Si, from 0.0% to 3% Mo, from 1.5% to 3.5% C, and the balance Fe having less than 2% impurities; then

(b) compressing said alloy powder at a molding product pressure of 5 to 7 tons/cm^2 to form a compressed powder mass; then

(c) sintering said compressed powder mass at a temperature of between 1020° C. and 1180° C. to produce a sintered alloy mass having a surface thereon and a plurality of internal pores therein; then

(d) subjecting said sintered alloy mass to a pressure of between 0.1 atmospheres and 0.8 atmospheres for from 1.5 to 2.5 hours, thereby facilitating the entry of a soaking gas into said pluraity of internal pores in the next step; and then

(e) exposing said sintered alloy mass to a soaking gas containing 20% to 40% by volume of steam and 60% to 80% by volume of a gas selected from the group consisting of non-oxidizing gas, an endothermic gas, or a mixture thereof for between 0.5 hours and 5 hours at a temperature of between 450° C. and 550° C. and at a pressure of between 0.1 and 0.8 atmospheres, thereby forming a film of tri-iron tetroxide on the surface of said sintered alloy mass and on the walls of said plurality of internal pores in said sintered alloy mass.

4,518,564

GALLIUM AND SILVER FREE, PALLADIUM BASED DENTAL ALLOYS FOR PORCELAIN-FUSED-TO-METAL RESTORATIONS

Arun Prasad, Cheshire, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.

Continuation-in-part of Ser. No. 538,495, Oct. 3, 1983, abandoned. This application May 30, 1984, Ser. No. 616,261
Int. Cl.³ C22C *5/04*
U.S. Cl. 420—464 **12 Claims**

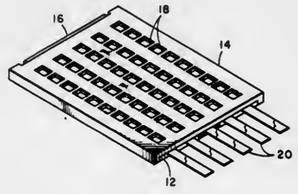
1. A dental alloy for porcelain-fused-to-metal restorations consisting essentially of, on a weight basis, about 60–90% palladium, an effective amount of ruthenium up to about 2% for the purpose of grain-refining the alloy, an effective amount of copper up to about 30% for the purpose of lowering the melting point and raising the thermal expansion, up to about 15% indium, up to about 16% tin, up to about 12% zinc, up to about 5% gold, and from about 0.05 to about 0.25% boron or calcium boride, the total of the named constituents being 100%, wherein the sum of the copper, indium, tin and zinc concentrations is greater than about 18%, the sum of the indium, tin and zinc concentrations is greater than about 10%, and the sum of the indium and zinc concentrations is greater than about 5%, such that said alloy exhibits a melting point between about 1100° C. and 1400° C. and a coefficient of thermal expansion of about 0.66 to 0.72 at 500° C.

4,518,565

REAGENT TEST DEVICE HOLDER

David L. Boger, South Bend; Jerry T. Pugh, and Jack Zuidema, both of Elkhart, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 6, 1983, Ser. No. 501,609
Int. Cl.³ G01N *21/01, 31/22;* B01L *9/00*
U.S. Cl. 422—58 **6 Claims**



1. Apparatus for simultaneously making multiple analyses of liquid fluid, which apparatus comprises in combination:

multiple, separate, dip-and-read reagent test devices, each consisting essentially of one carrier matrix pad, having reagent incorporated therein, attached to the upper surface of one end of an elongated, flexible substrate, wherein each said carrier matrix pad is raised to a height substantially above the surface of the substrate to which said matrix pad is attached; and

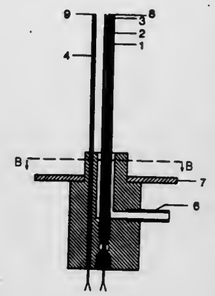
reagent test device holding means for accurately positioning and retaining said carrier matrix pads of the reagent test devices immobile during analyses, said reagent test holding means consisting essentially of a base member for retaining said reagent test devices in parallel alignment, a separate top member containing openings substantially identical in size, number and configuration to the carrier matrix pads, hinge means for interconnecting the base member and the top member wherein the openings of said top member are in registry with each carrier matrix pad of said reagent test devices such that the reagent pads project into said openings so as to immobilize and isolate each carrier matrix pad during the analysis of a liquid fluid and substantially eliminate runover from occurring between adjacent carrier matrix pads on the reagent test devices, wherein said reagent test device holding means is constructed of a rigid, cleanable material of thickness such that the openings in said top member form wells into which liquid fluid to be analyzed is placed.

4,518,566

DEVICE FOR DETERMINING THE CONCENTRATION OF AN ABSORBABLE COMPONENT IN A GASEOUS MIXTURE

Ansgar C. H. Sorensen, Anemonevej 4, Allerod, Denmark (DK-3450)

Division of Ser. No. 287,728, filed as PCT DK 80/00072, Nov. 19, 1980, published as WO 81/01615, June 11, 1980, § 102(e) date Jul. 24, 1981, Pat. No. 4,407,963.
This application May 19, 1983, Ser. No. 495,991
Claims priority, application Denmark, Nov. 30, 1979, 5100/79
Int. Cl.³ G01N *31/06*
U.S. Cl. 422—88 **3 Claims**



1. A measuring device for determining the concentration of an absorbable component in a gaseous mixture comprising a vertical hollow tube having a heat conducting wall and an open mouth at its upper end, means for passing a stream of liquid absorbent upwards through said tube at a rate such that the liquid absorbent is not sprayed out of the mouth of the tube but remains in contact with the tube so as to form above said mouth a free surface area from which the liquid absorbent overflows along the outside of the tube, means adjacent the upper end of said tube for passing a flow of a gaseous mixture past the upper end of said tube and said free surface area of absorbent and in surface contact therewith, a first temperature sensor being disposed in said tube and being fitted adjacent the mouth of the tube in a location such as to be completely covered by the liquid absorbent flowing out of the mouth of said tube, a supporting member extending up through the tube and supporting, at its top, said first temperature sensor, and a second temperature sensor being positioned adjacent to said first temperature sensor and upstream thereof so that said gaseous mixture contacts said second temperature sensor prior to contacting the upper end of said tube so as to measure the temperature of said gaseous mixture immediately before it arrives into contact with the absorbent at the upper end of the tube.

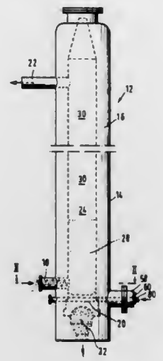
4,518,567

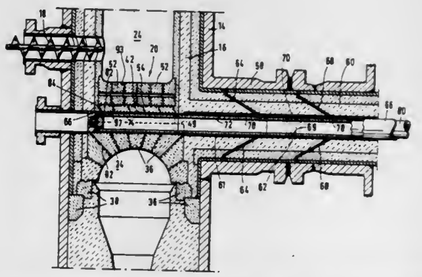
REACTOR FOR THE GASIFICATION OF SOLID CARBONACEOUS MATERIALS

Günther Velling, Borheim/Hersel; Lothar Schrader, Erftstadt-Liblar, and Hermann Schumacher, Bedburg-West, all of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 416,993
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137136
Int. Cl.³ B01J *8/24, 8/44;* F27B *15/10*
U.S. Cl. 422—143 **20 Claims**

1. Reactor comprising a reactor chamber having walls for gasification of solid carbonaceous materials in a fluidized bed under elevated pressure and high temperatures, with a feed device for a hot gasification agent, at least one bridge-shaped structure of refractory material installed in the reactor chamber, a conduit located inside the bridge-shaped structure running essentially in the longitudinal direction of the bridge-shaped structure for conveying the gasification agent, the conduit being provided with openings through which the gasification agent can pass from the conduit through the bridge-shaped structure into the reactor chamber, wherein said bridge-shaped structure contains a lower portion of the bridge-shaped structure (**20, 120**) consisting of refractory bricks (**36**) assembled to form a self-supporting arch (**34**), opposite ends of the arch (**34**) being braced on corresponding opposite inner walls of the reactor chamber (**24**), the conduit comprising a metal pipeline (**42**) within the bridge-shaped structure, the





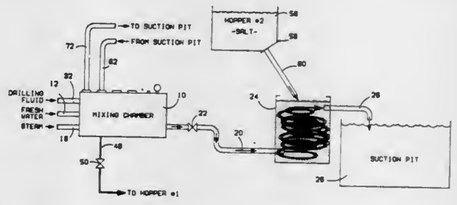
metal pipeline being lined on the inside with refractory material (**74**) which also has openings (**86**) which correspond to the openings (**88**) in the metal pipeline at least in the area of the reactor chamber (**24**), the entire outer surface of metal pipeline (**42**), except the areas adjacent the openings in the conduit, being shielded by the refractory material of the bridge-shaped structure.

4,518,568

SYSTEM TO PRODUCE A BRINE-BASED DRILLING FLUID

Bruce L. Shannon, Salt Lake City, Utah, assignor to The Standard Oil Company, Chicago, Ill.

Filed Nov. 12, 1982, Ser. No. 440,896
Int. Cl.³ E21B *21/06*
U.S. Cl. 422—261 **3 Claims**



1. A system for preparing water-based drilling fluid comprising:

(a) an enclosed mixing chamber including first piping means including inlets for conveying supplies of water, heated fluid, and drilling fluid components into the interior of the mixing chamber;
(b) barrel means for retaining a supply of salt;
(c) second piping means for conveying fluid from the interior of the mixing chamber to the interior of the barrel means and for conveying fluid from the interior of the barrel means to a suction pit; and
(d) third piping means for conveying fluid from the suction pit to the interior of the mixing chamber and for conveying fluid from the interior of the mixing chamber directly to the suction pit.

4,518,569

PROCESS FOR CLEANING THE INNER WALLS OF A REACTOR

Michel Perrot, Orsay, and Michel Jaccaud, Lyons, both of France, assignors to Pechine Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 824,720, Aug. 15, 1977, abandoned. This application Mar. 18, 1980, Ser. No. 131,095
Claims priority, application France, Sep. 2, 1976, 76 26954
Int. Cl.³ C01G *43/06*
U.S. Cl. 423—19 **4 Claims**

1. A process for cleaning the inner surfaces of the walls of a chemical reactor vessel in which a chemical reaction takes place wherein gaseous UF_6 is reacted with gaseous NO to produce $NOUF_6$, and wherein said reaction produces a parasitic phase of solid $NOUF_6$ which is deposited on said inner surfaces, comprising:

concurrently with carrying out said reaction, cooling said inner surfaces, and introducing into said reactor excess gaseous UF_6, thereby depositing on said inner surfaces a protective agent of solid UF_6 concurrently with said parasitic phase; and subsequently

heating said inner surfaces an amount sufficient to cause sublimation of said UF_6 protective agent, and thereby to cause shattering of said parasitic phase and removal of said parasitic phase from said inner surfaces.

4,518,570

PROCESS FOR SEPARATING ANTIMONY FROM COLUMBIUM SOLUTIONS

Harvey Stewart, Newtown Square, and C. Edward Mosheim, Hereford Township, Berks County, both of Pa., assignors to Cabot Corporation, Boston, Mass.

Filed Nov. 7, 1983, Ser. No. 549,285
Int. Cl.³ C01G *33/00, 30/00*
U.S. Cl. 423—63 **9 Claims**

1. A process for removing antimony in the +4 and/or +5 valence states from a methyl isobutyl ketone saturated aqueous solution of oxyfluorocolumbic acid and hydrogen fluoride, comprising:

contacting, using liquid/liquid extraction techniques, the said aqueous solution having an acidity ranging from about 3N to about 10N with a water-immiscible, organic solvent selected from the group consisting of ketones, alcohols, ethers, aldehydes, and organic phosphates to extract the antimony from the solution into the organic solvent.

4,518,571

PROCESS FOR DESILICATION OF ALUMINATE LIQUORS IN THE PRODUCTION OF ALUMINA

Nikolai A. Kaluzhsky; Viktor M. Sizyakov; Vladimir V. Andreev; Alexei I. Alexeev, all of Leningrad; Khoren A. Badaliants; Isaak A. Zatulovsky, both of Pikalevo Leningradskoi; Valentin I. Korneev, Leningrad, and Ivan M. Kostin, Pikalevo Leningradskoi, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievo Magnievoi I Elektrodnoi Promyshlennosti and Leningradsky Tekhnologichesky Institut Imeni Lensoveta, both of Leningrad, U.S.S.R.

Filed Feb. 27, 1984, Ser. No. 583,944
Int. Cl.³ C01F *7/04*
U.S. Cl. 423—119 **3 Claims**

1. A process for desilication of aluminate liquors in the production of Alumina comprising two stages of desilication:

(1) Heat-treating an aluminate liquor, obtained after digestion of a sinter, at a temperature of 150°–170° C. under a pressure of 6 to 12 atmospheres to remove the main portion of SiO_2 and Fe_2O_3 impurities in the form of an aluminosilicate mud which is separated;

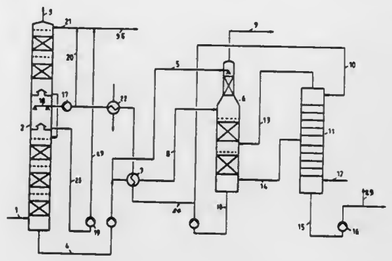
(2) Treating the aluminate liquor with a desilication agent which is a lime pulp containing oxides CaO, Al_2O_3, SiO_2, Fe_2O_3, NaO_2 in a mass ratio of CaO: $(SiO_2+Fe_2O_3)$=1,00–5,000:1 and $Na_2O:Al_2O_3$=0.25–0.60:1, said Na_2O being in the carbonate form, wherein CaO is active in an amount ensuring the content of active CaO in the aluminate liquor within the range of 5 to 10 g/l, whereby the remaining portion of SiO_2 and Fe_2O_3 impurities being removed, pass into the solid phase with the formation of calcium hydrogarnet of the formula: $3CaO(Al, Fe)_2O_3 \cdot mSiO_2 \cdot (6-2m)H_2O$, wherein m=0.01–0.5, which is separated in the form of a mud.

4,518,572

METHOD OF WASHING HYDROGEN SULFIDE FROM COKE OVEN GAS BY THE AMMONIUM SULFIDE METHOD

Horst Ritter, Essen, Fed. Rep. of Germany, assignor to Dr. C. Comp G.m.b.H., Bachum, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 302,806, Sep. 16, 1981, abandoned. This application Jan. 12, 1984, Ser. No. 570,087
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035895
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—234 **4 Claims**



1. In the ammonium sulfide method of washing hydrogen sulfide from coke oven gas including a hydrogen sulfide scrubber for which

(1) coke oven gas containing hydrogen sulfide is introduced into the bottom of the said scrubber;
(2) coke oven gas having a reduced hydrogen sulfide content is recovered from the top of the said scrubber;
(3) aqueous ammonia wash water is introduced into the top of the said scrubber; and
(4) aqueous ammonia wash liquor containing dissolved hydrogen sulfide is withdrawn as a scrubber bottom stream from the bottom of the said scrubber, the improvement comprising:

removing hydrogen sulfide from the said scrubber bottom stream to produce a deacidified stream comprising weak aqueous ammonia, cooling said deacidified stream of weak aqueous ammonia to a temperature of 20 to 30 degrees C.;

introducing the cooled deacidified stream of weak aqueous ammonia liquor at a temperature of 20 to 30 degrees C. and an ammonia content of 15 to 25 grams per liter at a high velocity through spray nozzles in the mid-region of the said scrubber to release ammonia vapor in the mid-region of said scrubber at a higher partial pressure than the partial pressure of ammonia in the region of the nozzles, and withdrawing from the said scrubber below the said nozzles a side stream of weak aqueous ammonia liquor corresponding in volume to the said cooled deacidified stream and introducing said side stream into the top of said scrubber.

4,518,573

DIFFERENTIAL FLOTATION REAGENT AND METHOD OF PREPARATION

John A. Peterson, Niagara Falls; Mohan S. Saran, Grand Island, and Joseph S. Wisnouskas, Amherst, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 471,608, Mar. 3, 1983,. This application Jul. 16, 1984, Ser. No. 631,262
Int. Cl.³ C01B *25/14;* C22B *1/00*
U.S. Cl. 423—303 **10 Claims**

1. A method for preparing a dry differential flotation reagent for molybdenum-bearing ore comprising the steps of:

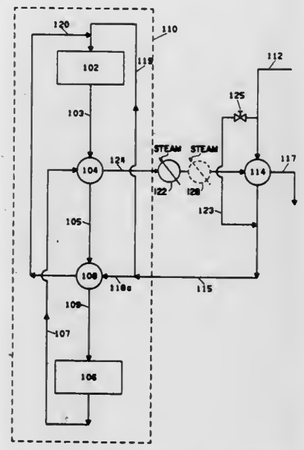
(a) reacting P_4S_{10} with an alkali mixture of NaOH and NaSH in a molar ratio of P_4S_{10} to alkali of from about 1:15 to about 1:17, said mixture containing at least about 50 mole percent of NaOH, and
(b) drying the reaction mixture.

4,518,574

CATALYTIC GAS SYNTHESIS PROCESS

Robert M. Osman, Parsippany, and Larry J. Shulik, Morristown, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 7, 1983, Ser. No. 472,998
Int. Cl.³ C01C *1/08*
U.S. Cl. 423—360 **20 Claims**



1. In a process for the production of a gaseous product by exothermic catalytic reaction of a gas feedstream, the improvement which comprises reacting said gas feedstream in a reactor comprising at least two sequentially arranged catalyst stages; gas supply means for introducing at least a portion of said gas feedstream to a first of said catalyst stages; gas removal means for removing said gaseous product from the last of said catalyst stages; and interbed reheat exchange means for heating at least a portion of said gaseous product by indirect heat exchange with a heating fluid, prior to withdrawl of said gaseous product from said reactor, said heating fluid comprising at least a portion of the gaseous effluent withdrawn from at least one other of said catalyst stages.

4,518,575

CATALYTIC FIBROUS CARBON

Randall A. Porter, and Larry E. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 343,642, Jan. 28, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 562,790
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.³ D01F *9/12*
U.S. Cl. 423—447.3 **17 Claims**

1. A process of producing microfibrous carbon comprising pyrolyzing a carbon.containing substance in the presence of a catalyst comprising:

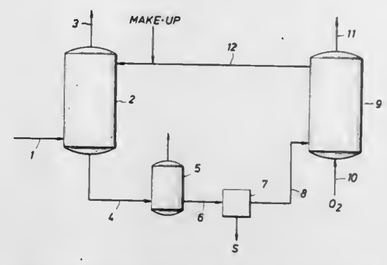
(a) an iron Group VIII metal containing substance, selected from iron, cobalt and nickel,
(b) a Group IVb metal containing substance, and
(c) a Group Va element containing substance.

4,518,576

H_2S REMOVAL FROM GAS STREAMS

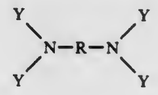
Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1983, Ser. No. 563,476
Int. Cl.³ B01D *53/34;* C01B *17/05*
U.S. Cl. 423—573 R **12 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising

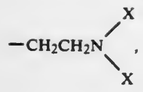
(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the reaction solution comprising an effective amount of an oxidizing polyvalent metal chelate of an acid having the formula



wherein

from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxyethyl, 2-hydroxy propyl, and



wherein

X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position; and mixtures thereof; and an amount of phosphate and thiosulfate ions effective to improve sulfur quality, said phosphate and thiosulfate ions being present in a molar ratio of from 0.5 to 3:1, and producing a sweet gas stream and an aqueous solution containing crystalline sulfur and reduced reactant;

(b) removing crystalline sulfur from the aqueous solution;

(c) regenerating the aqueous solution having reduced sulfur content in a regenerating zone and producing regenerated reactant in said solution; and

(d) returning regenerated solution from step (c) to the contacting zone.

4,518,577

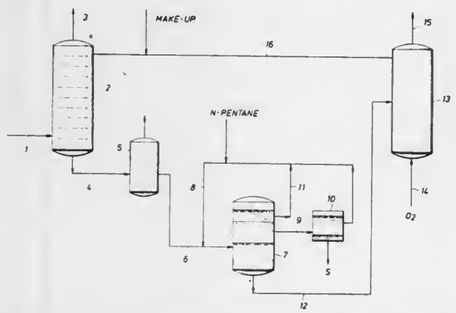
SULFUR SEPARATION PROCESS

Miro E. Klecka, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1982, Ser. No. 451,705

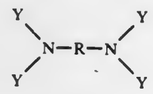
Int. Cl.³ C01B *17/05;* B01D *53/34*

U.S. Cl. 423—573 R **24 Claims**



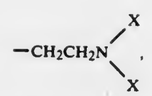
1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of a reactant comprising an oxidizing polyvalent metal chelate of an acid having the formula



from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxy ethyl, 2-hydroxy propyl, and



wherein X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position; and mixtures thereof,

and producing a sweet gas stream and an aqueous admixture containing sulfur and reduced reactant;

(b) removing aqueous admixture from the contacting zone;

(c) contacting aqueous admixture in an extraction zone with a liquid composition selected from compounds having the formula $C_nH_{2(n+1)}$, wherein n is a number from 4 through 8, and mixtures thereof, in an amount sufficient to remove at least the bulk of the sulfur from said admixture and form a separate phase containing sulfur and said composition, and forming a three phase mass comprising an upper mass containing solid sulfur and said liquid composition, and a lower phase in contact with said upper mass, said lower phase comprising aqueous admixture containing reduced reactant;

(d) separating at least a portion of the upper mass, and recovering sulfur from the portion separated;

(e) separating aqueous admixture containing reduced reactant from the lower phase, and regenerating said separated aqueous admixture in a regeneration zone to produce an aqueous admixture containing a regenerated reactant;

(f) returning aqueous admixture from the regeneration zone to the contacting zone.

4,518,578

DENTIFRICE COMPOSITION CONTAINING VISUALLY CLEAR PIGMENT-COLORED STRIPE

Harry Hayes, Warrington, and Kenneth Harvey, Wilmslow, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 494,744, May 16, 1983, Pat. No. 4,456,585. This application Jun. 14, 1984, Ser. No. 597,996

Int. Cl.³ A61K *9/16*

U.S. Cl. 424—7.1 **7 Claims**

1. A dentifrice comprising a visually clear coloured dentifrice stripe together with a dentifrice which is clear and non-coloured, clear and of different colour or opaque, said coloured dentifrice stripe being coloured without requiring water-soluble dyes and comprising a liquid vehicle having a refractive index between about 1.36 and 1.47, up to about 10% by weight of a gelling agent, about 5–50% by weight of a polishing material having a refractive index similar to that of the said liquid vehicle, such that the said dentifrice stripe is visually clear in appearance to the extent of being transparent or translucent when the said polishing material is dispersed in the said liquid vehicle and about 0.001%–1% by weight of a colour-intensive insoluble conjugated pigment dispersed homogeneously without dissolution throughout said dentifrice stripe with sufficiently fine dispersion permitting retention of clarity, said dentifrice retaining colour imparted by said pigment without substantial fading and with retention of clarity.

4,518,579

PH STABILIZED FLUORESCING OPHTHALMIC COMPOSITION CONTAINING FLUOREXON

Frank J. Holly, Lubbock, Tex., assignor to Holles Laboratories, Cohasset, Mass.

Filed Aug. 31, 1979, Ser. No. 71,738

Int. Cl.³ G01N *31/00, 33/48;* A01N *43/90*

U.S. Cl. 424—9 **10 Claims**

1. An ophthalmic solution for use in a human eye comprising an aqueous solution of fluorexon, the solution having a pH between about 5.4 and about 6.2, and sufficient eye compatible buffer to maintain said pH after said solution is instilled into the eye.

10. A method of fitting hydrogel contact lens in a human eye comprising instilling an aqueous solution of fluorexon the solution having a pH between about 5.4 and about 6.2, and sufficient eye compatible buffer to maintain said pH after said solution is instilled into the eye, and examining said eye and lens with a light of an appropriate wavelength.

4,518,580

EXPANDED CORNCOB GRITS HAVING INCREASED ABSORPTIVITY AND A METHOD FOR THE PREPARATION THEREOF

Nunzio R. Pasarela, Brooksville, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 111,563, Jan. 14, 1980, abandoned. This application Mar. 30, 1984, Ser. No. 594,946

Int. Cl.³ A01N *25/26*

U.S. Cl. 424—16 **2 Claims**

1. Expanded corncob grits characterized as having a bulk density range of from 280 g/l to 353 g/l and absorbed therein insecticidal containing liquids of from 25% to 43% by weight of the grits.

2. The product according to claim 1, wherein the liquid is soybean oil having dissolved therein 1.25% to 2.5%, by weight, tetrahydro-5,5-dimethyl-2-(1H)-pyrimidinone-{3-[4-trifluoromethyl)phenyl]-1-{2-[4-trifluoromethyl)phenyl]e-thenyl}-2-propenylidene}hydrazone, based on the weight of the oil.

4,518,581

IMPARTING LOW- OR ANTI-CARIOGENIC PROPERTY TO ORALLY-USABLE PRODUCTS

Toshio Miyake; Mikihiko Yoshida, and Kanō Takeuchi, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Sep. 28, 1982, Ser. No. 428,117

Claims priority, application Japan, Nov. 2, 1981, 56-174455; Dec. 28, 1981, 56-210161

Int. Cl.³ A23G *3/00, 3/30*

U.S. Cl. 424—48 **25 Claims**

1. In an orally-usable product containing sucrose as a sweetener, the improvement whereby a low- or anti-cariogenic property is imparted to the product, wherein said product comprises a substance selected from the group consisting of isomaltosyl mono-, di-, tri-glucoses, reduction products thereof and mixtures thereof, said substance being present in an amount effective to impart a low- or anti-cariogenic property to the product, said amount being at least 5% on the dry solid basis.

4,518,582

ACID STABLE DIBENZYL MONOSORBITOL ACETAL GELS

Thomas J. Schamper, Ramsey, N.J.; Martin M. Perl, Brooklyn, and James D. Warren, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 373,590, Apr. 30, 1982, abandoned. This application Jun. 6, 1983, Ser. No. 501,462

Int. Cl.³ A61K *7/32, 7/34, 7/38*

U.S. Cl. 424—66 **7 Claims**

1. A solid transparent, gelled antiperspirant composition comprising:

(a) 1 to 80 percent by weight of a reactive solvent;

(b) 0 to 75 percent by weight of a non-reactive solvent;

(c) 1 to 10 percent by weight of dibenzyl monosorbitol acetal;

(d) 0 to 35 percent by weight of an emollient;

(e) 5 to 25 percent by weight of an acidic antiperspirant-active metal salt;

(f) 0 to 2.5 percent by weight of a C_{12} to C_{20} fatty acid; and

(g) 0.05 to 15 percent by weight of a gel stabilizer selected from the group consisting of magnesium sulfate, zinc acetate and hexamethylenetetramine, and mixtures thereof.

4,518,583

HEMORRHOID AND ANORECTAL DISEASE TREATMENT METHOD

Damian J. Gallina, 2856 W. 33rd St., Erie, Pa. 16506

Continuation-in-part of Ser. No. 468,334, Feb. 22, 1983, abandoned. This application Aug. 15, 1984, Ser. No. 640,952 The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.³ A61K *31/17, 31/79, 31/675*

U.S. Cl. 424—80 **13 Claims**

1. A method of treating hemorrhoids and anorectal diseases by applying to hemorrhoids and anorectal tissues a composition comprising a peroxide selected from the group of urea hydrogen peroxide and benzoyl peroxide in a pharmaceutically effective amount for treatment of hemorrhoidal and anorectal tissues, and a vehicle.

4,518,584

HUMAN RECOMBINANT INTERLEUKIN-2 MUTEINS

David F. Mark, Danville; Leo S. Lin, Fremont, and Shi-Da Y. Lu, Oakland, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 486,162, Apr. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 435,154, Oct. 19, 1982,. This application Dec. 20, 1983, Ser. No. 564,224

Int. Cl.³ A61K *45/02, 37/02;* C07C *103/52;* C07G *7/00;* C12P *21/06;* C12N *15/00*

U.S. Cl. 424—85 **10 Claims**

1. Recombinant human interleukin-2 mutein. wherein the cysteine at position 125, numbered in accordance with native human interleukin-2, is deleted or replaced by a neutral amino acid and said mutein exhibits the biological activity of native, human interleukin-2.

9. A formulation comprising:

(a) a recombinant human interleukin-2 mutein, wherein the cysteine residue at position 125, numbered in accordance with native human interleukin-2, is deleted or replaced by a neutral amino acid and said mutein exhibits the biological activity of native, human interleukin-2; and

(b) a polypeptide selected from the group consisting of gamma interferon, B cell growth factor and IL-1.

4,518,585

HYDROGEN PEROXIDE DISINFECTING AND STERILIZING COMPOSITIONS

Donald F. Greene, Middletown, and Virginia L. Urban, Midland Park, both of N.J., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 902,006, May 1, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 95,947

Int. Cl.³ A01N *31/00, 31/14, 59/00*

U.S. Cl. 424—130 **12 Claims**

1. An aqueous disinfecting and sterilizing composition consisting essentially of by weight of the composition:

(a) from about 0.5 to about 50 percent of hydrogen peroxide,

(b) from about 0.1 to about 30 percent of a surfactant which is compatible with hydrogen peroxide,

(c) from about 0.1 to about 3 percent of an organic or inorganic acid,

(d) from 0 to about 1 percent of an organic triazole corrosion inhibitor,

(e) from about 0.01 to about 1 percent of an aqueous-alcoholic mixture of a tertiary amine and a fatty acid alkanolamide and

(f) the balance water;

said composition havng a pH below about 5.

4,518,586

GRF ANALOGS III

Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 532,170, Sep. 29, 1983, , which is a continuation-in-part of Ser. No. 457,862, Jan. 13, 1983,. This application Oct. 25, 1983, Ser. No. 545,094

Int. Cl.³ C07C *103/52;* **A61K** *37/02*

U.S. Cl. 514—12 **20 Claims**

1. A synthetic peptide, or a nontoxic salt thereof, having the formula: H-R_1-R_2-R_3-Ala-Ile-Phe-Thr-R_8-Ser-R_{10}-Arg-R_{12}-R_{13}-Leu-R_{15}-Gln-R_{17}-R_{18}-Ala-Arg-Lys-Leu-R_{23}-R_{24}-R_{25}-Ile-R_{27}-R_{28}-Arg-Gln-Gln-Gly-Glu-R_{34}-Asn-Gln-Glu-R_{38}-R_{39}-R_{40}-Arg-R_{42}-R_{43}-R_{44}-Y wherein R_1 is Tyr, D-Tyr, Met, Phe, D-Phe, pCl-Phe, Leu, His or D-His having either a $C^{\alpha}Me$ or $N^{\alpha}Me$ substitution or being unsubstituted; R_2 is Ala or D-Ala; R_3 is Asp or D-Asp; R_8 is Ser, Asn, D-Ser or D-Asn; R_{10} is Tyr or D-Tyr; R_{12} is Arg or Lys; R_{13} is Ile or Val; R_{15} is Gly or D-Ala; R_{17} is Leu or D-Leu; R_{18} is Tyr or Ser; R_{23} is Leu or D-Leu; R_{24} is His or Gln; R_{25} is Glu, Asp, D-Glu or D-Asp; R_{27} is Met, D-Met, Ala, Nle, Ile, Leu, Nva or Val; R_{28} is Asn or Ser; R_{34} is Arg or Ser; R_{38} is Gln or Arg; R_{39} is Arg or Gly; R_{40} is Ser or Ala; R_{42} is Phe, Ala or Val; R_{43} is Asn or Arg; R_{44} is a natural amino acid; and Y is the radical —COOR, —CRO, —CONHNHR, —CON(R)(R′) or —CH_2OR, with R and R′ being lower alkyl, fluoro lower alkyl or hydrogen; provided however that either R_{17} or R_{23} is D-Leu or R_{25} is either D-Glu or D-Asp and that any or all of the residues between R_{29} and R_{44}, inclusive, may be deleted.

4,518,587

DIPEPTIDES OF L-5-HYDROXYTRYPTOPHAN, PROCESSES FOR THEIR PREPARATION AND DRUGS IN WHICH THEY ARE PRESENT

Claude Laruelle, Villeneuve Loubet; Marcel Lepant, Vence, and Bernard Raynier, Cagnes, all of France, assignors to S.A. Panmedica, Carros, France

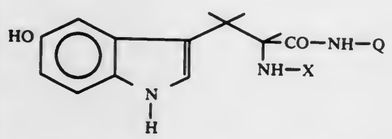
Filed May 18, 1984, Ser. No. 611,987

Claims priority, application France, May 24, 1983, 83 08493

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—19 **6 Claims**

1. Dipeptides of L-5-hydroxytryptophan of the general formula I below:



wherein X is hydrogen or a lower acyl radical and Q is a free or esterified aminoacid radical selected from the group consisting of alanine, valine, leucine, isoleucine, proline, phenylalanine, tryptophan, methionine, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, and histidine, and their pharmaceutically compatible addition salts with acids or base.

4,518,588

PROCESS FOR THE PREPARATION OF AN INCLUSION COMPLEX OF N-(1--PHENYLETHYL)-3,3-DIPHENYLPROPYLAMINE AND THE HYDROCHLORIDE THEREOF RESPECTIVELY WITH CYCLODEXTRIN

Jozsef Szejtli; Agnes Stadler nee Szoke; Maria Vikmon nee Kiraly; Dezso Korbonits; Sandor Virag; Istvan Turcsan, and Pal Kiss, all of Budapest, Hungary, assignors to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

PCT No. PCT/HU82/00024, § 371 Date Dec. 22, 1982, § 102(e) Date Dec. 22, 1982, PCT Pub. No. WO82/04052, PCT Pub. Date Nov. 25, 1982

PCT Filed May 12, 1982, Ser. No. 456,029

Claims priority, application Hungary, May 12, 1981, 1286-81

Int. Cl.³ A61K *31/73;* **C08B** *37/16*

U.S. Cl. 514—58 **19 Claims**

19. A coronary dilatative calcium antagonist method of treatment which comprises administering to a susceptible subject an effective amount of a composition consisting essentially of N-(1-phenylethyl)-3,3-diphenylpropylamine or its hydrochloride complexed with at least one cyclodextrin selected from the group which consists of α-cyclodextrin, β-cyclodextrin and γ-cyclodextrin.

4,518,589

BBM-2478 ANTIBIOTIC COMPLEX

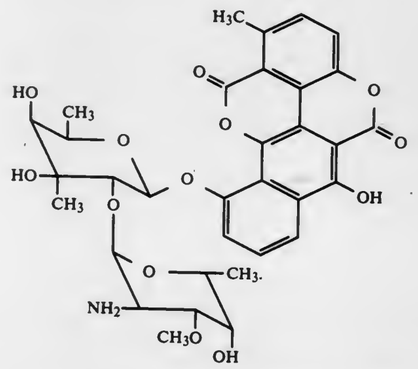
Masataka Konishi, Kawasaki; Koko Sugawara, Wakō; Takeo Miyaki, Yokohama, and Hiroshi Kawaguchi, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,453

Int. Cl.³ A61K *31/71;* **C07H** *15/24*

U.S. Cl. 514—27 **8 Claims**

1. The antibiotic BBM-2478A having the formula



3. A method for therapeutically treating an animal host affected by a bacterial infection which comprises administering to said host an effective antibacterial dose of BBM-2478A as defined in claim 1.

4,518,590

9α-AZA-9α-HOMOERYTHROMYCIN COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND THERAPEUTIC METHOD

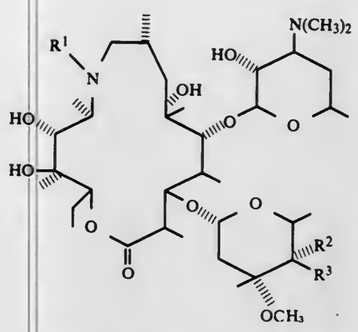
James R. Hauske, East Lyme, and Arthur A. Nagel, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 600,252, Apr. 13, 1984,. This application Jun. 4, 1984, Ser. No. 616,529

Int. Cl.³ A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—29 **23 Claims**

22. A method of treating a bacterial infection in a mammalian subject, which comprises administering thereto an antibacterially effective amount of a macrolide antibiotic compound of the formula



or a pharmaceutically-acceptable acid-addition salt thereof; wherein

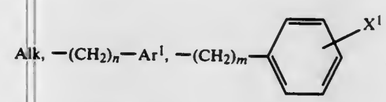
R^1 is selected from the group consisting of hydrogen and methyl; and

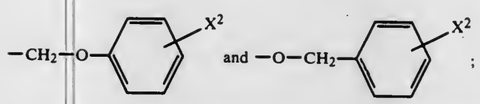
R^2 and R^3 are each selected from the group consisting of hydrogen, NH—CO—R^5 and NH—SO_2—R^6;

provided that one of R^2 and R^3 is always hydrogen, but R^2 and R^3 are not both hydrogen;

wherein:

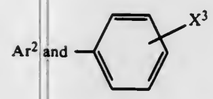
(i) R^5 is selected from the group consisting of





wherein Alk is alkyl having from 1 to 8 carbons; Ar^1 is thienyl, furyl, isoxazolyl, pyridyl, pyrazinyl or pyrimidyl; X^1 is hydrogen, fluoro, chloro, bromo, hydroxy, amino, nitro, trifluoromethyl, alkyl having 1 to 3 carbons or alkoxy having 1 to 3 carbons; X^2 is hydrogen, fluoro, chloro or bromo; n is 0 or 1; and m is 0, 1, 2 or 3; and

(ii) R^6 is selected from the group consisting of



wherein Ar^2 is thienyl or furyl and X^3 is hydrogen, chloro, bromo, or iodo.

4,518,591

HYPOGLYCEMIC AGENTS

Seiu Iida, Tsukui; Tomio Inokuchi, Sagamihara, and Hiroaki Munakata, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 114,326, Jan. 22, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,091

Claims priority, application Japan, Feb. 13, 1979, 54-15303

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195.1 **4 Claims**

1. An acylated water extract of *Anemarrhenae rhizoma* in which the acyl moiety is represented by the formula



wherein R is lower alkyl, produced by repeatedly extracting *Anemarrhenae rhizoma* first with an excess of a lower alkyl alcohol until saponin is removed and then with water to give a water extract containing polysaccharides having free hydroxyl groups as a major component thereof, subjecting the water extract to dialysis until low molecular weight components are removed, and acylating the dried water extract with a lower alkyl acid anhydride or halide until at least 8 percent of free hydroxyl groups in the dried extract are acylated.

4,518,592

PROCESS FOR PREPARING MANGIFERIN

Svetlana V. Rusakova, 3, kv. 49, poselok Polyany, Moskovskaya oblast; Vladimir I. Glyzin, ulitsa Shipilovskaya, 29, korpus 2, kv. 255, Moscow; Stepan I. Kocherga, ulitsa Botanicheskaya, 8, kv. 7, p/o Vilar, Moskovskaya oblast; Alla A. Ananieva, Birjulevskaya ulitsa, 5, korpus 2, kv. 463, Moscow, and Larisa F. Libizova, ulitsa Botanicheskaya, 8, kv. 8, p/o Vilar, Moskovskaya oblast, all of U.S.S.R.

Continuation of Ser. No. 283,396, Jul. 15, 1981, abandoned. This application May 16, 1983, Ser. No. 494,138

Claims priority, application U.S.S.R., Jul. 16, 1980, 2960018

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195.1 **1 Claim**

1. In a process for the solvent extraction of mangiferin from a plant of the genus Hedysarum, the improvement which comprises comminuting the aerial portion of a plant selected from the species *Hedysarum alpinum L.* and *Hedysarum flavescens Rgl. et. Schmalh* to provide finely divided particles, having a particle size from 2 to 5 mm., treating the said plant particles, at a plant:solvent ratio of from 1:10 to 1:20, with an acetone-water mixture having an acetone:water ratio of 1:0.5 to 2 to extract xanthone glycosides therefrom, concentrating the resulting extract by evaporation to ¼ to 1/6 of its initial volume, filtering the concentrated extract to remove precipitated insolubles, acidifying the resulting filtrate with sulphuric acid to a pH value of from 2 to 4, heating the resulting filtered extract under reflux and, after cooling to room temperature, treating the resulting extract with a non-polar organic solvent selected from the group consisting of chloroform and dichloroethane to form two layers, the upper aqueous layer containing xanthone glycosides, treating the said upper aqueous layer with butanol, to form two layers therefrom, the upper layer of which comprises a solution of xanthone glycoside in butanol, evaporating the solvent from the said upper butanol layer, separating the resulting precipitated mangiferin and recrystallizing the said mangiferin.

4,518,593

INSECTICIDE COMPOSITION FOR USE IN THE FORM OF A SHAMPOO

Pierre Juvin, Neuilly-sur-Seine, and Pierre Moreau, Limoges, both of France, assignors to S.E.R.T.O.G., France

Continuation of Ser. No. 192,800, Oct. 1, 1980, abandoned, which is a continuation of Ser. No. 853,965, Nov. 22, 1977, abandoned. This application Jan. 23, 1984, Ser. No. 572,956

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **3 Claims**

1. A non-irritating insecticide composition for use in the form of a shampoo which comprises 74–95% by volume of a wetting agent selected from the group consisting of ammonium, triethanolamine and sodium lauryl sulphate, 2 to 12% by volume of acetic acid and 0.5 to 3% by volume of at least one natural or synthetic plant extract or essence selected from the group consisting of extracts and essences of clove, lavender, peppermint, origanum, rosemary, lime, juniper, lemon, citronella, thyme, Datura Stramonium, pine, pyrethrum, pyrethrin

and Ceylon cinnamon leaves, the pH of the composition being less than 4.5.

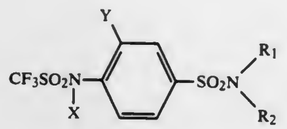
4,518,594

USE OF TRIFLUOROMETHANESULFONANILIDES

Kiyoshi Kasamatsu, Toyonaka, and Hiroyuki Konishi, Sakai, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 8, 1983, Ser. No. 530,265
Int. Cl.³ A01N *51/00*
U.S. Cl. 514—155 **6 Claims**

1. A method for exterminating insects which comprises applying an insecticidally effective amount of a compound of the formula:



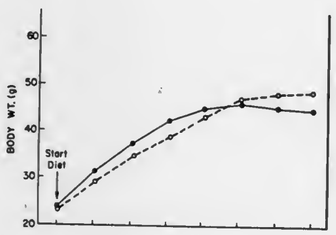
wherein X is a hydrogen atom or a lower alkanoyl, lower alkenoyl or benzoyl group, Y is a hydrogen atom, a lower alkyl group or a halogen atom and R_1 and R_2, which may be same or different, are each a hydrogen atom, a lower alkyl group, a cyclo(lower)alkyl group, a lower alkenyl group, a lower alkynyl group, a lower alkoxy group or an acyl group selected from the group consisting of a lower alkanoyl, a lower alkenoyl and a benzoyl group, provided that R_1 and R_2 are not simultaneously a hydrogen atom or an acyl group, to said insects.

4,518,595

METHOD FOR TREATING DIABETES USING DHEA COMPOUNDS

Douglas L. Coleman, Seal Harbor, Me.; Norman Applezweig, New York, N.Y.; and Edward H. Leiter, Otter Creek, Me. assignors to The Jackson Laboratory, Bar Harbor, Me.

Filed Jul. 19, 1983, Ser. No. 515,354
Int. Cl.³ A61K *31/56*
U.S. Cl. 514—178 **20 Claims**



1. A method for treating diabetes and enhancing the pancreatic beta cell function of diabetics comprising administering a DHEA compound selected from the group consisting of dehydroepiandrosterone (DHEA), DHEA sulfate, and soluble compounds of DHEA.

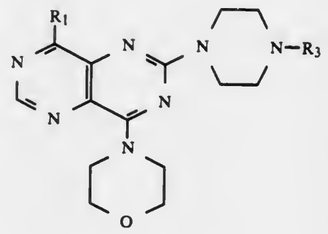
4,518,596

ANTITHROMBOTIC USE OF 2-(PERHYDRO-1,4-DIAZINO)-PYRIMIDO (5,4,D)-PYRIMIDINES

Josef Roch; Erich Müller; Berthold Narr; Josef Nickl; Walter Haarmann, and Johannes M. Weisenberger, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 350,429, Feb. 22, 1982, abandoned, which is a continuation of Ser. No. 161,010, Jun. 19, 1980, abandoned. This application Jan. 31, 1984, Ser. No. 575,333
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926804; Apr. 11, 1980, 3013930
Int. Cl.³ A61K *31/535, 31/54*
U.S. Cl. 514—232 **5 Claims**

1. The method of preventing or relieving thrombosis in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective antithrombotic amount of a compound of the formula



wherein

R_1 is methoxy; ethoxy; 2-hydroxy-ethoxy; (alkyl of 1 to 8 carbon atoms)mercapto; cyclohexylmercapto; phenethylmercapto; 1-phenylethyl-mercapto; 3-phenylpropyl-mercapto; 2-diethylaminoethyl-mercapto; 1-naphthylmethyl-mercapto, furfuryl-mercapto; 2-indanyl-mercapto; (unsubstituted or mono-substituted phenyl)mercapto, where the substituent is fluorine, chlorine, bromine, methyl, hydroxyl, methoxy or amino; (unsubstituted or mono-substituted benzyl)mercapto, where the substituent is attached to the phenyl moiety and is fluorine, chlorine, methyl, hydroxyl, methoxy, nitro or trifluoromethyl; dichlorobenzyl-mercapto; methylenedioxybenzyl-mercapto; dimethoxybenzyl-mercapto; thiomorpholino; thiomorpholino-1-oxide; (unsubstituted or mono-hydroxy-substituted alkyl of 1 to 4 carbon atoms)-amino; N,N-di(unsubstituted or mono-hydroxy-substituted alkyl of 1 to 4 carbon atoms)-amino; phenyl(alkyl of 1 to 4 carbon atoms)-amino; N-(alkyl of 1 to 4 carbon atoms)-phenyl-(alkyl of 1 to 4 carbon atoms)-amino; phenyl-amino; or N-(alkyl of 1 to 4 carbon atoms)-phenylamino; and

R_3 is hydrogen; formyl; 2-furoyl; or 2-thenoyl; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

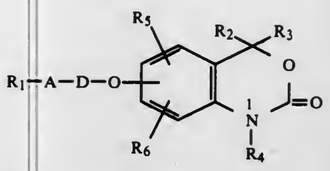
4,518,597

SUBSTITUTED BENZOXAZIN-2-ONES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Berthold Narr; Josef Nickl; Erich Müller; Josef Roch; Walter Haarmann, and Johannes-Maximilian Weisenberger, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Continuation of Ser. No. 489,216, Apr. 27, 1983, abandoned. This application Jun. 6, 1984, Ser. No. 617,797
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3217012
Int. Cl.³ A61K *31/535;* C07D *265/18*
U.S. Cl. 514—228 **13 Claims**

1. A compound of the formula



wherein

A is a sulfur atom or an SO, SO_2, R—N=S, or R—N=SO group where R is a hydrogen atom or a benzoyl or phenylsulfonyl group, optionally substituted by a methyl group, or an acetyl or propionyl group;

D is a linear or branched alkylene group having from 2 to 6 carbon atoms;

R_1 is an alkyl group having from 1 to 3 carbon atoms, optionally substituted by a phenyl group, or a phenyl group, each phenyl group being optionally substituted by an alkyl group having from 1 to 4 carbon atoms, a halogen atom, an alkoxy group having from 1 to 3 carbon atoms, a hydroxyl group, a cyclohexyl group, a phenyl group, an amino group, or an alkanoylamino group having from 1 to 3 carbon atoms; an alkyl group having from 4 to 8 carbon atoms; a cycloalkyl group having from 3 to 7 carbon atoms; a di-substituted or tri-substituted phenyl group of a mono-substituted or di-substituted hydroxyphenyl or aminophenyl group, the substituents, which may be the same or different, being selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 3 carbon atoms, and halogen atoms; a pyridyl-N-oxide group; or a 5-membered or 6-membered aromatic ring, optionally substituted by one or two alkyl groups each having from 1 to 3 carbon atoms, the aromatic ring containing from 1 to 3 nitrogen atoms or 1 nitrogen atom and 1 sulfur atom, while a phenyl group may optionally be fused onto the aromatic ring via two adjacent carbon atoms;

R_2 and R_3, which may be identical or different, are each a hydrogen atom, phenyl group, alkyl group having from 1 to 6 carbon atoms, or cycloalkyl group having from 3 to 7 carbon atoms;

R_4 is a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms;

R_5 is a hydrogen or halogen atom, a nitro group, or an alkyl group having from 1 to 3 carbon atoms; and

R_6 is a hydrogen or halogen atom or an alkyl group having from 1 to 3 carbon atoms.

11. A method for the prophylaxis or treatment of thromboembolic diseases, for the treatment of arteriosclerosis, or for the prophylaxis of metastasis in a warm-blooded animal or human in need of such treatment which comprises perorally, parenterally, or rectally administering to said animal or human an effective amount of a compound of claim **1**.

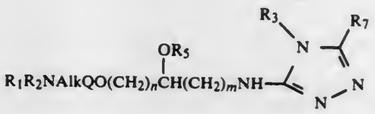
4,518,598

1,2,4-TRIAZOLE-3-AMINES, THEIR PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Roger Hayes; David E. Bays; John W. M. Mackinnon; Linda Carey, and Philip Blatcher, all of Hertfordshire, England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 401,397, Jul. 23, 1982, abandoned. This application Jan. 9, 1984, Ser. No. 569,151
Claims priority, application United Kingdom, Feb. 23, 1982, 8205596
Int. Cl.³ A61K *31/41;* C07D *249/14*
U.S. Cl. 514—212 **6 Claims**

1. A compound of formula (I)



(I)

or a physiologically acceptable salt or hydrate thereof, in which

R_1 represents hydrogen, C_{1-14} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, ar C_{1-6} alkyl, trifluoro C_{1-6} alkyl, heteroaralkyl, or C_{1-6} alkyl substituted by C_{3-8} cycloalkyl, hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino or di C_{1-6} alkylamino; and

R_2 represents hydrogen or a C_{1-4} alkyl group;

or R_1 and R_2 together with the nitrogen atom to which they are attached form piperidino, morpholino, 4-methyl piperidino, pyrrolidino, hexamethyleneimino or tetrahydropyridino;

Alk represents a straight or branched alkylene chain of 1 to 3 carbon atoms;

Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

R_5 represents hydrogen or acyl;

n and m, which may be the same or different, are each 1 or 2; and

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl, hydroxy C_{2-6} alkyl, C_{1-6} alkoxy C_{2-6} alkyl or C_{1-4} alkanoyloxy C_{2-6} alkyl;

R_7 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl, C_{1-6} alkoxy C_{1-6} alkyl, acyloxy C_{1-6} alkyl, C_{1-6} alkylthio C_{1-6} alkyl, arylthio C_{1-6} alkyl, aryloxy C_{1-6} alkyl, ar C_{1-6} alkyloxy C_{1-6} alkyl, or the group $(CH_2)_qR_6$ where q is zero, 1, 2, 3, 4, 5, or 6 and the alkylene chain $(CH_2)_q$ may be straight or branched; and

R_6 is hydroxy, C_{1-6} alkoxy, nitro, heteroaryl, tetrahydropyranyloxy, or $CH_2NHC(=X)NHR_9$ where X represents NCN, NSO_2 Methyl, NSO_2 Phenyl or $CHNO_2$ and R_9 is C_{1-6} alkyl;

or R_6 is the group $NR_{10}R_{11}$, where R_{10} is hydrogen or C_{1-6} alkyl; and R_{11} is hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, aryl, ar C_{1-6} alkyl, or heteroaralkyl, or R_{11} is the group SO_2R_{12} where R_{12} is C_{1-6} alkyl or aryl; or R_{11} is the group COR_{13} where R_{13} is hydrogen, C_{1-6} alkyl, aryl, ar C_{1-6} alkyl, C_{1-6} alkoxy, halomethyl, heteroaryl, heteroaralkyl or the group NHR_{14} where R_{14} is hydrogen, C_{1-6} alkyl, C_{3-8} cycloalkyl, aryl or ar C_{1-6} alkyl; or R_{10} and R_{11} together represent the group $=CR_{15}R_{16}$ where R_{15} represents aryl or heteroaryl and R_{16} represents hydrogen or C_{1-6} alkyl;

or R_6 is the group SO_2R_{17} in which R_{17} is hydroxy, C_{1-6} alkyl, aryl or the group $NR_{18}R_{19}$ where R_{18} and R_{19}, which may be the same or different, each represents hydrogen or C_{1-6} alkyl;

or R_6 is the group COR_{20} where R_{20} is hydrogen, hydroxy, C_{1-6} alkoxy, aryloxy, ar C_{1-6} alkyloxy, C_{1-6} alkyl, aryl, ar C_{1-6} alkyl, or the group $NR_{21}R_{22}$ where R_{21} is hydrogen or C_{1-6} alkyl optionally substituted by a hydroxy or C_{1-6} alkoxy group; and R_{22} is hydrogen, C_{1-6} alkyl (optionally substituted by a hydroxy or C_{1-6} alkoxy group), C_{3-6} alkenyl, aryl,

ar C_{1-6} alkyl or C_{3-8} cycloalkyl, or $NR_{21}R_{22}$ forms a pyrrolidino ring which may be optionally substituted by hydroxy or one or two C_{1-3} alkyl groups; or R_6 is the group $CR_{23}{=}NR_{24}$ where R_{23} is hydrogen, C_{1-6} alkyl, aryl or ar C_{1-6} alkyl and R_{24} is hydroxy, C_{1-6} alkoxy, ar C_{1-6} alkyloxy or $-NHC(=Y)NH_2$ where Y is oxygen or sulphur;

or R_3 and R_7 taken together represent $-(CH{=}CH)_2-$ or $-(CH_2)_4-$;

with the proviso that when the group R_6 contains a carbon atom through which it is linked to the alkylene group $(CH_2)_q$ then the total number of carbon atoms in the resulting chain is not greater than 6, that is, q is not greater than 5; and wherein the term aryl as a group or part of a group means phenyl or phenyl substituted with one or more C_{1-3} alkyl or alkoxy groups or halogen atoms; the term acyl or the acyl portion of an acyloxyalkyl group means an aroyl, aralkanoyl or C_{1-6} alkanoyl group; the term heteroaryl as a group or part of a group means thienyl, pyrrolyl, pyridyl, furyl or thiazolyl, the heteroaryl ring may be unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy, hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di C_{1-6} alkylamino C_{1-6} alkyl or halogen, the alkyl portion of a heteroaralkyl group is a straight or barnched C_{1-4} alkyl chain, and the heteroaryl ring is linked to the alkyl portion through a carbon atom.

6. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as claimed in claim 1 to relieve said condition.

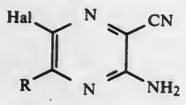
4,518,599

2-AMINO-3-CYANO-5-HALO-6-(SUBSTITUTED)PYRAZINE

David B. R. Johnston, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1982, Ser. No. 430,917
Int. Cl.³ C07D *241/16, 241/18;* A01N *43/60*
U.S. Cl. 514—255 10 Claims

1. A method of inhibiting the growth of bacteria and fungi comprising contacting said bacteria and fungi with a bactericidally and fungicidally effective amount of a compound of the formula:



(I.)

wherein:

Hal is bromine or chlorine; and

R is mono- or di-, or substituted mono- or di-, loweralkylamino, wherein the loweralkyl substituents are hydroxy or loweralkanoyloxy; thiocyano; mercapto; straight or branched chain C^{1-8}alkylthio; mono- or di-substituted loweralkylthio wherein the substituents are hydroxy, amino, loweralkanoylamino, or loweralkoxycarbonyl; phenylthio; loweralkylsulfoxy; or loweralkylsulfonyl.

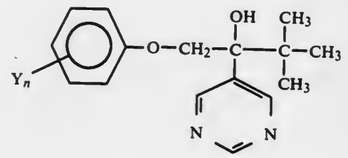
4,518,600

COMBATING FUNGI WITH 1-PHENOXY-2-PYRIMIDINYL ALKANOLS

Graham Holmwood, Wuppertal; Paul-Ernst Frohberger, Leverkusen; Wilhelm Brandes, Leichlingen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 937,650, Aug. 28, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,636
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742173
Int. Cl.³ A61K *31/505;* C07D *239/26*
U.S. Cl. 514—256 7 Claims

1. A 1-phenoxy-2-pyrimidinyl-alkanol of the formula



in which

Y is fluorine, chlorine, methyl, methoxy or benzyloxy, and n is 0, 1 or 2.

5. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

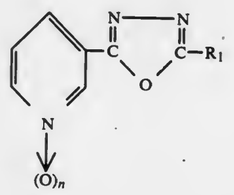
4,518,601

2-(3-PYRIDYL)-1,3,4-OXADIAZOLES AND USE THEREOF IN PEST CONTROL

Odd Kristiansen, Möhlin, and Jozef Drabek, Oberwil, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

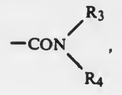
Filed Jun. 9, 1983, Ser. No. 502,859
Claims priority, application Switzerland, Jun. 16, 1982, 3724/82
Int. Cl.³ A61K *31/42;* C07D *413/04*
U.S. Cl. 514—340 10 Claims

1. A compound of the formula



in which:

R_1 is hydrogen, C_1–C_3alkyl, $-COOR_2$ or



wherein

R_2 is methyl or ethyl

R_3 and R_4, each independently of the other, are hydrogen, methyl or ethyl, and

n is 0 or 1.

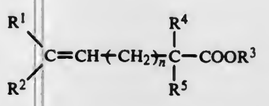
4,518,602

VINYL CARBOXYLIC ACID DERIVATIVES, THEIR PRODUCTION AND USE AS INHIBITORS OF THROMBOXANE SYNTHETASE

Shinji Terao, Toyonaka, and Kohei Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

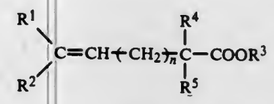
Filed Sep. 30, 1983, Ser. No. 537,862
Claims priority, application Japan, Oct. 7, 1982, 57-176918; Dec. 1, 1982, 57-211753
Int. Cl.³ A61K *31/44;* C07D *211/82, 213/55, 407/06*
U.S. Cl. 514—332 17 Claims

1. A compound of the formula:



wherein R^1 is a pyridyl group; R^2 is a phenyl, thienyl, furyl, naphthyl, benzothienyl or pyridyl group which may have as a substituent a lower alkoxy, a lower alkyl, a halogen, trifluoromethyl, a lower alkenyl or methylenedioxy; R^3 is hydrogen, benzyl or a lower alkyl; one of R^4 and R^5 is hydrogen or a lower alkyl, and the other is an aryloxy, or a lower aliphatic hydrocarbon, an alicyclic hydrocarbon having not more than 6 carbon atoms or an aromatic group which may have a substituent, or a group represented by the formula, $-S(O)_m-R^6$ (in which R^6 is phenyl or a lower alkyl group; m is an integer of 0 to 2), or R^4 and R^5 each combine with the other to represent one alkylene group; and n is an integer of 2 to 6, or a pharmaceutically acceptable salt thereof.

13. A pharmaceutical composition suitable for inhibiting activity of thromboxane A_2 synthetase in a mammal, which comprises, as an active ingredient, an effective amount of a compound of the formula:



wherein R^1 is a pyridyl group; R^2 is a phenyl, thienyl, furyl, naphthyl, benzothienyl or pyridyl group which may have as a substituent a lower alkoxy, a lower alkyl, a halogen, trifluoromethyl, a lower alkenyl or methylenediozy; R^3 is hydrogen, benzyl or a lower alkyl; one of R^4 and R^5 is hydrogen or a lower alkyl, and the other is an aryloxy, or a lower aliphatic hydrocarbon, an alicyclic hydrocarbon having not more than 6 carbon atoms or an aromatic group which may have a substituent, or a group represented by the formula, $-S(O)_m-R^6$ (in which R^6 is phenyl or a lower alkyl group; m is an integer of 0 to 2), or R^4 and R^5 each combine with the other to represent one alkylene group; and n is an integer of 2 to 6, or a pharmaceutically acceptable salt thereof, and a pharmaceutical acceptable carrier or excipient therefor.

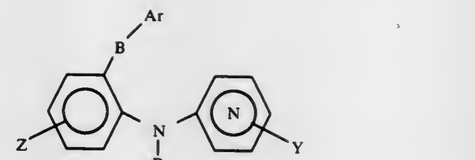
4,518,603

[2-[(NITROPYRIDINYL)AMINO]PHENYL]ARYLMETHANONES IN A PROCESS FOR PREPARING PYRIDO[1,4]BENZODIAZEPINES

Young S. Lo, Richmond, and Chandler R. Taylor, Jr., Mechanicsville, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 431,997, Sep. 30, 1982, Pat. No. 4,480,100. This application Dec. 23, 1983, Ser. No. 541,215
Int. Cl.³ A61K *27/00, 31/38, 31/40, 31/44, 31/495*
U.S. Cl. 514—352 12 Claims

1. A method of treating depression which comprises administering internally to an animal an effective amount of a compound having the formula:



wherein;

R is $-alk^1-Q$;

Q is hydrogen or $-NR^1R^2$;

$-alk^1$ is a straight or branched hydrocarbon chain containing 1–8 carbons;

B is carbonyl or thionomethyl;

R^1 and R^2 are selected from the group consisting of hydrogen and loweralkyl;

Ar is selected from the group consisting of phenyl or phenyl substituted by 1 to 3 radicals selected from halo, loweralkyl, loweralkoxy, trifluoromethyl or nitro which may be the same or different;

Y is selected from the group consisting of hydrogen or 1–2 radicals selected from loweralkyl, hydroxy or loweralkoxy and may be the same or different;

Z is selected from the group consisting of hydrogen, halogen, loweralkyl, hydroxy, loweralkoxy or nitro or the pharmaceutically acceptable acid addition salts thereof.

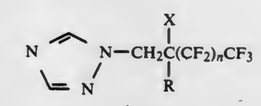
4,518,604

ANTIFUNGAL 1-ARYL-2-(1H-1,2,4-TRIAZOL-1YL)-1-PERFLUOROALKYLETHYL HALIDES

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 517,141, Jul. 25, 1983, abandoned. This application Oct. 27, 1983, Ser. No. 546,128
Int. Cl.³ A01N *43/64;* A61K *31/41;* C07D *249/08, 401/06*
U.S. Cl. 514—340 14 Claims

1. A compound of the formula



(I)

or a pharmaceutically or agriculturally acceptable acid addition salt thereof, wherein R is 5-chloro-2-pyridyl, trifluoromethylphenyl or phenyl substituted by 1 to 3 substituents each independently selected from F, Cl and Br; n is zero or an integer of from 1 to 5; and X is F, Cl or Br.

13. A method of treating a fungal infection in an animal in need of such treatment which comprises administering to said animal an antifungal amount of a compound or pharmaceutically acceptable salt thereof according to claim 1.

14. A method of treating a fungal infection in a plant or seed in need of such treatment which comprises administering to said plant or seed an antifungal amount of a compound or agriculturally acceptable salt thereof according to claim 1.

4,518,605
FUNGICIDAL AZOLE-SUBSTITUTED OXIMINO-CYANO-ACETAMIDE DERIVATIVES

Wilhelm Brandes, Leichlingen, and Werner Daum, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

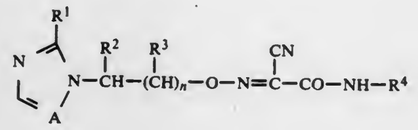
Filed Jun. 3, 1983, Ser. No. 500,732

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1982, 3222961

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/61, 249/08*

U.S. Cl. 514—383 **11 Claims**

1. An azole-substituted oximino-cyano-acetamide derivative of the formula



in which

R^1 and R^3 each independently is hydrogen or alkyl having up to 3 carbon atoms,

R^2 is hydrogen, alkyl having up to 6 carbon atoms, or halogenoalkyl having up to 2 carbon atoms and up to 5 halogen atoms,

R^4 is hydrogen or CO—NH—R^5,

R^5 is hydrogen, cycloalkyl having 3 to 7 carbon carbon atoms, or alkyl having up to 8 carbon atoms and optionally substituted by cyano, hydroxycarbonyl, aminocarbonyl, alkoxy and/or alkoxycarbonyl, each having up to 4 carbon atoms in the alkyl part,

A is N or CH, and

n is 0 or 1.

10. A method of combating fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim **1**.

4,518,606
PHARMACEUTICAL COMPOSITIONS

Edmond Saias, Moulineaux, France, assignor to Beecham Group Limited, England

Continuation of Ser. No. 204,847, Nov. 7, 1980, abandoned. This application Jul. 9, 1982, Ser. No. 396,711

Claims priority, application United Kingdom, Nov. 8, 1979, 7938767

Int. Cl.³ A61K *31/43*

U.S. Cl. 514—197 **3 Claims**

1. An antibiotic pharmaceutical composition adapted for intramuscular injection which comprises an aqueous sterile solution in the proportions of 3% benzyl alcohol, and 1 gram of amoxycillin or a salt thereof, said composition upon injection providing an enhanced blood level and a more rapid peak level of amoxycillin than the same solution without benzyl alcohol.

4,518,607
MALE ORAL CONTRACEPTIVE N-ALKYLIMIDAZOLE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

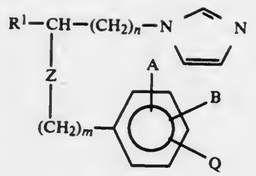
Keith A. M. Walker, Los Altos Hills, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 18, 1983, Ser. No. 514,409

Int. Cl.³ C07D *233/60;* **A61J** *31/415*

U.S. Cl. 514—399 **25 Claims**

1. A compound of the formula



(I)

and the acid addition salts thereof wherein

Z is oxygen or sulfur;

m is 0, 1, 2 or 3;

n is 1, 2 or 3;

R^1 is

(a) hydrogen;

(b) alkyl;

(c) cycloalkyl optionally substituted by one or more lower alkyl;

(d) cycloalkyl-lower-alkyl;

(e) phenyl;

(f) phenyl-lower-alkyl;

wherein the phenyl ring in (e) and (f) is optionally substituted by one or more halo, lower alkyl, lower alkoxy, lower alkylthio, cyano or trifluoromethyl;

(g) naphthyl; or

(h) naphthyl-lower-alkyl

A and B are independently hydrogen, halo, lower alkyl or lower alkoxy and either one of A or B may be nitro, amino or alkanoylamino;

Q is NR^2R^3 wherein

R^2 is hydrogen; alkyl; cycloalkyl optionally substituted by one or more lower alkyl; cycloalkyl-lower-alkyl; phenyl or phenyl-lower-alkyl wherein the phenyl ring is optionally substituted by one or two halo, lower alkyl or lower alkoxy; and R^3 is hydrogen or lower alkyl;

with the proviso that when R^1 is optionally substituted phenyl, Z is oxygen, n is 1 and m is 0, 1 or 2, Q is not amino unless A or B is alkanoylamino; and that when R^1 is optionally substituted phenyl, Z is sulfur, m is 0 and n is 1, Q is not amino.

25. A method of male oral contraception which comprises orally administering an oral contraceptively effective amount of a compound of claim **1** to a male mammal.

4,518,608
WATERSOLUBLE DERIVATIVES OF NON-STEROIDAL ANTI-INFLAMMATORY AGENTS AND A PROCESS FOR THE PRODUCTION THEREOF

Agostne Kahan, Budapest, Hungary, assignor to Medimpex Gyogyszerkuelkereskedelmi Vaallalat, Budapest, Hungary

Continuation of Ser. No. 189,008, Sep. 22, 1980, abandoned. This application Apr. 20, 1983, Ser. No. 486,861

Claims priority, application Hungary, Sep. 27, 1979, KA 1539

Int. Cl.³ A61K *31/40*

U.S. Cl. 514—420 **5 Claims**

1. A water-soluble, analgesic, anti-inflammatory, antipyretic or antiphlogistic pharmaceutical composition suitable for parenteral administration comprising an analgestic, anti-inflammatory, antipyretic or antiphlogistic effecitve amount of indomethacin and a hydrophilic compound selected from the group which consists of TRIS, BIS-TRIS, BIS-TRIS-PROPANE, TAPS, TES, TRICINE and mixtures thereof.

3. An analgesic, anti-inflammatory, antipyretic or antiphlogistic method of treatment which comprises the step of parenterally administering to an animal subject in need of analgesic, anti-inflammatory, antipyretic and antiphlogistic treatment, an analgesic, anti-inflammatory, antipyretic or antiphlogistic effective amount of the water-soluble pharmaceutical composition defined in claim **1**.

4,518,609
NAPHTENIC AND HETEROCYCLIC RETINOIC ACID ANALOGUES

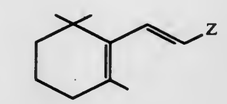
Marcia I. Dawson, Los Altos, and Rebecca L. S. Chan, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Division of Ser. No. 434,622, Oct. 15, 1982, Pat. No. 4,456,618. This application Apr. 12, 1984, Ser. No. 599,665

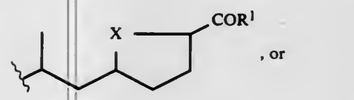
Int. Cl.³ A61K *31/38, 31/34*

U.S. Cl. 514—448 **20 Claims**

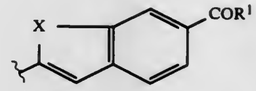
1. A compound of the formula:



where Z is



, or



and X is a chalcogen atom of atomic number 8 or 16, R^1 is hydroxyl, alkoxy, aroxy, or NR^2R^3 where R^2 is hydrogen, alkyl, or aryl and R^3 is alkyl or aryl.

4,518,610
MICROBICIDAL/MICROBISTATIC COMPOSITIONS AND USE THEREOF EMPLOYING MIXTURES OF 4,5-DICHLORO-1,2-DITHIOL-3-ONE AND ALKYLENEBISTHIOCYANATE

Osamu Umekawa, Kaizuka, and Sakae Katayama, Kobe, both of Japan, assignors to Katayama Chemical Works Co., Ltd. and Yoshitomi Pharmaceutical Industries, Ltd., both of Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,011

Claims priority, application Japan, Dec. 13, 1980, 55-176095

Int. Cl.³ A61K *31/385;* **D21D** *3/00*

U.S. Cl. 514—516 **12 Claims**

1. A bactericidal or bacteriostatic composition for industrial use comprising 4,5-dichloro-1,2-dithiol-3-one and methylenebisthiocyanate wherein the ratio of 4,5-dichloro-1,2-dithiol-3-one to methylenebisthiocyanate is of from about 1:0.3 to 1:16.

4,518,611
2-FURYLBUTYROLACTONE MODULATION OF THE IMMUNE SYSTEM IN MAMMALS

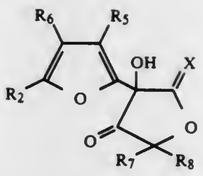
Robert W. Veltri, West Chester, Pa., assignor to National Foundation for Cancer Research, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 481,998, Apr. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 449,584, Dec. 14, 1982, abandoned. This application Sep. 29, 1983, Ser. No. 536,995

Int. Cl.³ A61K *31/34, 31/335*

U.S. Cl. 514—470 **16 Claims**

1. A method for modulating in stimulation or suppression mode the lymphocyte system of mammals comprising administering a composition comprising a modulatorily effective amount of a compound of the formula:



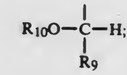
wherein:

R_2 is selected from the group consisting of hydrogen and lower alkyl;

R_5 and R_6 are selected from the group consisting of hydrogen and lower alkyl and may be the same or different;

R_8 is selected from the group consisting of hydrogen and lower alkyl;

R_7 is hydrogen, lower alkyl or



R_9 is CH_2OH

R_{10} is hydrogen;

when R_7 contains a hydroxyl group in the α or β position, R_7 may form the hemiketal ring closure at carbon 3 of the butyrolactone with protonation of the carbonyl group on the same carbon atom and X is selected from the group consisting of O, S and NH the low dosage corresponding to the stimulatory mode of modulation and the high dosages corresponding to the suppression mode of modulation and a pharmaceutically acceptable carrier therefor.

4,518,612
NAPHTHALENE AND 2-OXO-BENZOPYRAN ACIDS AND DERIVATIVES AND PHARAMACEUTICAL USE THEREOF

John R. Bantick, Loughborough; John Fuher, Alvaston; David N. Hardern, and Thomas B. Lee, both of Loughborough, all of England, assignors to Fisons plc, Ipswich, England

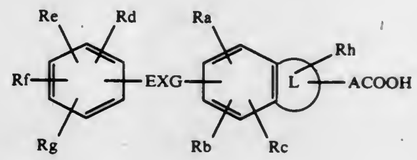
Division of Ser. No. 359,817, Mar. 19, 1982, Pat. No. 4,424,231. This application Dec. 21, 1983, Ser. No. 563,709

Claims priority, application United Kingdom, Mar. 24, 1981, 8109090; Jul. 1, 1981, 8120255

Int. Cl.³ A61K *31/19, 31/35;* **C07C** *65/11;* **C07D** *311/12*

U.S. Cl. 514—457 **11 Claims**

1. A compound of formula I,



I

in which

Ra, Rb, Rc, Rd, Re, Rf and Rg, which may be the same or different, each represent hydrogen, amino, hydroxy, alkoxy, alkenyloxy, halogen, acyl, alkenyl, alkyl, or alkoxy substituted by phenyl,

Rh is hydrogen, alkyl or —COOH,

X is a hydrocarbon chain containing from 2 to 10 carbon atoms and optionally substituted by a hydroxy group,

A has no significance or represents Y, OY, or SY and Y represents a C 1 to 4 hydrocarbon chain which is optionally substituted by alkyl C 1 to 4,

E and G, which may be the same or different, each represent

—O—, —S— or —CH_2—, provided that at least one of E and G is —O— or —S—,

L, together with the carbon atoms to which it is attached, forms a benzene or pyran-2-one ring,

Ra, Rb, Rc, Rd, Re, Rf, Rg and Rh, when they contain carbon, each containing less than 7 carbon atoms,

and pharmaceutically acceptable salts, esters and amides thereof.

10. A pharmaceutical formulation comprising an effective anti SRS-A amount of a compound according to claim **1** in admixture with a pharmaceutically acceptable adjuvant, diluent or carrier.

4,518,613

THIOALKANOYL-CARNITINES, PROCESS FOR THEIR PREPARATION AND MUCOLYTIC PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Claudio Cavazza, 35, Via Marocco, Rome, Italy (00144), and Maria O. Tinti, 81, Via Ernesto Basile, Rome, Italy (00180)

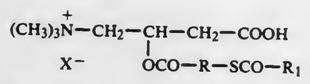
Filed Oct. 22, 1982, Ser. No. 436,190

Claims priority, application Italy, Dec. 3, 1981, 49835 A/81

Int. Cl.³ A61K *31/265;* **C07C** *153/017*

U.S. Cl. 514—513 **6 Claims**

1. A compound of the formula



wherein

R is a straight alkylene radical having from 2 to 6 carbon atoms, or is a branched alkylene radical having from 3 to 6 carbon atoms,

R_1 is a straight or branched lower alkyl radical having from 1 to 4 carbon atoms, and

X^- is a halogen anion.

5. A pharmaceutical composition possessing mucolytic and antitussive activities, comprising a therapeutically effective amount of at least one of a compound according to claim **1** as active component plus an inert diluent.

4,518,614

COSMETIC PREPARATION

Richard W. Parkinson, Orem, Utah, assignor to Redken Laboratories, Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 439,113, Nov. 4, 1982, abandoned. This application Oct. 28, 1983, Ser. No. 546,654

Int. Cl.³ A61K *47/00, 31/365*

U.S. Cl. 514—2 **6 Claims**

1. In a cosmetic skin composition comprising a creme, lotion, emulsion or liquid water base preparation wherein the improvement comprises from about 0.01% to 1% by weight gibberellic acid and from about 0.1% to 5% by weight lysine to soften the skin, improve the texture of the skin, moisturize the epidermis and diminish wrinkles in the skin.

4,518,615

NON-ADHESIVE CHEWING GUM BASE COMPOSITION

Subraman R. Cherukuri, Towaco; Ellen Marschall-Helman, Somerset, both of N.J., and Frank T. Hriscisce, Astoria, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 23, 1983, Ser. No. 525,774

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—4 **20 Claims**

1. A non-adhesive chewing gum base composition, consisting essentially of, in weight percent

(a) elastomer in the amount of about 10 to about 30%, wherein the elastomer is selected from the group consisting of synthetic gums, synthetic elastomers, natural gums, natural elastomers and mixtures thereof,

(b) elastomer solvent in the amount of about 2 to about 18%, wherein the elastomer solvent is selected from the group consisting of pentaerythritol ester of partially hydrogenated wood rosin, pentaerythritol ester of wood resin, glycerol ester of partially dimerized rosin, glycerol ester of polymerized rosin, glycerol ester of tall oil rosin, glycerol ester of wood resin and partially hydrogenated wood rosin and partially hydrogenated methyl ester of rosin; terpene resins including polyterpene and polymers of α-pinene or β-pinine and mixtures thereof,

(c) polyvinyl acetate having a medium average molecular weight of 15,000 to 30,000 in the amount of about 15 to about 45%,

(d) an emulsifier in the amount of about 2.0 to about 10%, wherein the emulsifier is selected from the group consisting of glycerol monostearate, lecithin, fatty acid monoglycerides, diglycerides, triglycerides, propylene glycol monostearate and mixtures thereof,

(e) low molecular weight polyethylene having an average molecular weight of at least 2,000 in the amount of about 0.5 to about 15%,

(f) waxes having a melting point above about 170° F. in the amount of about 0.5 to about 10%, wherein the waxes are selected from the group consisting of microcrystalline wax, natural wax, petroleum wax and mixtures thereof,

(g) plasticizer in the amount of about 10 to about 40%, wherein the plasticizer is selected from hydrogenated vegetable oils, partially hydrogenated vegetable oils, hydrogenated animal fats, partially hydrogenated animal fats, cocoa butter and mixtures thereof, and

(h) fillers in the amount of about 0 to about 5%.

4,518,616

PROCESS FOR RECOVERING THE WHEY PROTEINS, THE APPLICATION THEREOF TO CHEESE-MAKING AND THE RESULTING CHEESES

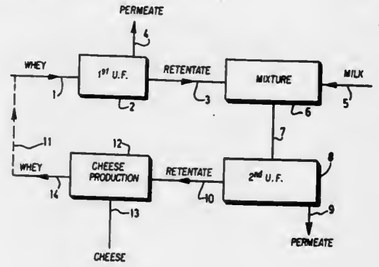
Joseph Czulak, South Yarra, Australia, assignor to Institut National de la Recherche Agronomique, Paris, France

Filed Nov. 24, 1982, Ser. No. 444,066

Claims priority, application Australia, Nov. 24, 1981, 1682/81

Int. Cl.³ A23C *19/05, 21/06, 9/142*

U.S. Cl. 426—40 **5 Claims**



1. A process for utilizing recovered whey protein in cheese making which consists essentially of the following steps:

(a) pasturizing the whey, then

(b) ultrafiltering the whey to provide a whey protein concentrate at a concentration ratio of at least 3.5, then

(c) mixing the whey protein concentrate from step (b) with full cream milk or skim milk or a mixture of the two to produce a protein enriched milk product, at a volume ratio of 2 to 5 milk to concentrate, then carrying out the following two steps (d) and (e) to produce an enriched curd:

(d) ultrafiltering the protein enriched milk product to a concentration ratio of at least 3.5 and

(e) curdling the casein contained in said protein enriched milk product with milk clotting enzyme thereby to produce curd and

(f) separating the curd as a cheese product, the amount of whey protein in the concentrate added to the milk in step (c) being such that the total whey protein is at most 45% of the weight of the total proteins in the cheese produced in step (f) and the whey protein is retained in the soluble state in the curd, the fat content of the cheese product consisting essentially of that supplied by the above-named whey concentrate and milk admixed in step (c).

4,518,617

PROCESS FOR CONTINUOUSLY MAKING AN ENDLESS WAFER LAMINATE OF UNIFORM WIDTH, CONSISTING OF INDIVIDUAL WAFER SHEET LAYERS AND INTERVENING CREAM LAYERS

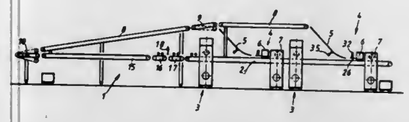
Franz Haas, Sr., Gerstlgasse 25, A-1210 Wien; Franz Haas, Jr., Kreuzgasse, A-2100 Leobendorf, and Johann Haas, Seitweg 4, A-3400 Klosterneuburg, all of Austria

PCT No. PCT/AT82/00017, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/03969, PCT Pub. Date Nov. 25, 1982

PCT Filed May 19, 1982, Ser. No. 432,931

Int. Cl.³ A21D *6/00;* **G01N** *33/02*

U.S. Cl. 426—231 **21 Claims**



1. In a process for the continuous production of an endless wafer sheet laminate of uniform width, which comprises the steps of forming a first lowermost layer of wafer sheets on a conveyor moving in a direction of conveyance, each one of the wafer sheets having a leading and a trailing edge in said direction of conveyance, said edges extending transversely to said direction, said first layer consisting of consecutive wafer sheets whose trailing and leading edges adjoin, applying a composition layer to said first layer, applying an additional wafer sheet layer to said composition layer, each one of the wafer sheets of the additional layer having a leading and a trailing edge in said direction of conveyance, said edges extending transversely to said direction, said additional layer consisting of consecutive wafer sheets whose trailing and leading edges adjoin, and alternately applying additional ones of the composition layers and of said additional wafer sheet layers until the wafer sheet laminate has been produced, wherein the improvement comprises successively supplying the wafer sheets for the first layer to the conveyor, sensing one of said edges of each one of said wafer sheets of the first layer, moving each one of the wafer sheets for each one of the additional layers to a waiting position disposed above an uncovered uppermost one of said composition layers of a previously formed portion of the wafer laminate, and dropping each one of the wafer sheets from said waiting position at a time determined by the sensing of said one edge of a respective one of the wafer sheets of the first layer whereby said dropped wafer sheet falls onto the uppermost composition layer into a predetermined position relative to the wafer sheets of the first layer.

4,518,618

FOOD COATING COMPOSITIONS FOR FOODS COOKED BY MICROWAVE

Samson T. Hsia, Fremont, and Pam Ogasawara, Oakland, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Feb. 12, 1982, Ser. No. 348,248

Int. Cl.³ A23L *1/272*

U.S. Cl. 426—262 **13 Claims**

1. A method for crisping and browning the surfaces of foods comprising

coating said foods with a food coating formulation containing flour, cornstarch, corn meal, bread crumbs, bran flour or flakes, and a combination of three salts selected from the group consisting of potassium acetate, potassium chloride, potassium bicarbonate, potassium citrate, potassium dibasic phosphate, sodium acetate, sodium chloride, sodium bicarbonate, and sodium dibasic phosphate, wherein said three salts are added in substantially equal amounts and comprise at least 5% by weight of the food coating; and

cooking said foods with microwave energy for a time period sufficient to crisp and brown said surfaces of said foods.

4,518,619

PREPARATION OF SMOKE TREATED, STUFFED FOOD CASINGS

Herman S. Chiu, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 466,534, Feb. 15, 1983, abandoned, which is a continuation of Ser. No. 249,445, Mar. 31, 1981, abandoned, which is a continuation of Ser. No. 062,358, Jul. 31, 1979, abandoned. This application Aug. 31, 1983, Ser. No. 527,984

Int. Cl.³ A22C *11/00, 13/00*

U.S. Cl. 426—265 **38 Claims**

1. A method for manufacturing food products encased in a tubular cellulosic food casing consisting of the steps of (a) treating the external surface of a tubular cellulosic food casing, selected from the group consisting of a non-fibrous dry stock casing and a fibrous dry stock casing, with a substantially tar-depleted aqueous liquid smoke composition consisting of a mixture of smoke coloring and smoke flavoring constituents, including acids, phenols, and carbonyls derived from natural wood, until said casing has incorporated therein said smoke coloring and smoke flavoring constituents in an amount of at least about 0.8 mg. per square inch of casing surface and has an exterior surface which is darker than the interior surface of the casing, (b) shirring said treated casing to provide a shirred tubular cellulosic food casing having an exterior surface which is darker than the interior surface, said shirred tubular cellulosic food casing being suitable, without other smoking procedures, for imparting smoke color and smoke flavor to food products encased and processed therein, and then (c) stuffing said treated casing with a food emulsion while said treated casing has said liquid smoke composition on the external surface thereof.

4,518,620

PROCESS FOR BREADING FOOD

Charles W. Monagle, and Janet C. Smith, both of Fort Wayne, Ind., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Aug. 26, 1983, Ser. No. 526,690

Int. Cl.³ A23L *1/176*

U.S. Cl. 426—291 **17 Claims**

1. A process for preparing breaded foods comprising applying a fat emulsion batter to a core comestible, thereafter breading the batter coated comestible, and thereafter overcoating the breaded comestible with an aqueous solution of egg white having at least about 5% egg white whereby food is oven bakeable while maintaining the characteristics of a fat fried food, said batter including from about 0.5% to about 15% based on the total weight of the emulsion of an emulsion stabilizer, and from about 30% to about 80% of a fat which is liquid at room temperature.

4,518,621

METHOD AND APPARATUS FOR FINISHING JUICES FROM FRUITS AND VEGETABLES AND THE LIKE

L. Bruce Alexander, San Marino, Calif., assignor to Brown International Corporation, Covina, Calif.

Filed Jun. 2, 1983, Ser. No. 500,553

Int. Cl.³ A23P *1/00;* **B30B** *9/26;* **B01D** *33/10*

U.S. Cl. 426—495 **27 Claims**

9. In a method for extracting fluid, finished to a relatively

high degree, from a slurry including substantial solids, the steps comprising:

mounting a cylindrical screen means for rotation in a housing,

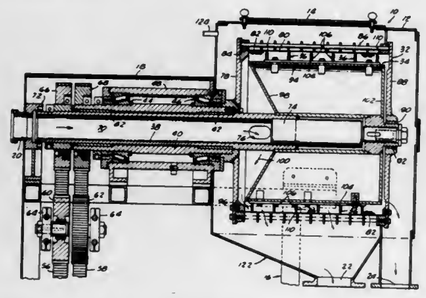
supplying slurry into one end of said cylindrical screen means,

rotating said screen means to exert centrifugal force on the slurry for urging the slurry fluid to pass through said screen means,

receiving slurry solids at the other end of said cylindrical screen means,

collecting finished fluid after it passes through said screen means,

providing a cylindrical support structure arranged coaxially within and adapted for rotation relative to said screen means, and



mounting upon said cylindrical support structure a plurality of paddle means each having wiper means formed thereon, said paddle means being secured upon said cylindrical support structure in helical alignment relative to the axis of said screen means while permitting radial movement of said paddle means in response to centrifugal force developed by rotation of said support means for maintaining said wiper means in generally continuous wiping engagement with said screen means along substantially its entire axial length whereby said paddle means serve to distribute the slurry generally uniformly on said screen means while simultaneously urging solids toward the other end of said cylindrical screen means and wiping clean said screen means to promote separation of slurry liquid from slurry solids and flow of the slurry liquid through said screen means.

12. The method of claim 9 being carried out for separating a finished juice from solid components of an initial juice.

4,518,622

DRY MIX FOR PREPARATION OF PIE AND PASTRY FILLINGS

Mildred N. Wilson, Wilton; Robert L. Danielson; Peter M. Bosco, both of Brookfield Center, all of Conn., and Wayne L. Steensen, Newark, Del., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Mar. 30, 1984, Ser. No. 595,263
Int. Cl.³ A23L *1/187, 1/195*
U.S. Cl. 426—578 **10 Claims**

1. A dry mix capable of being hydrated in an aqueous medium to form, without need for cooking, a firm gelled mass suitable for use as a pastry or pie filling and having textural and organoleptic properties similar to those possessed by a cooked, starch-based filling,

said mix comprising a substantially dry, particulate mixture of (a) a sugar component consisting essentially of sucrose; (b) a starch component; (c) a sufficient quantity of food-grade acidulant to achieve a pH in the range of from about 2.0 to about 5.0 in the hydrated filling; and (d) appropriate amounts of flavorants and/or colorants;

and wherein said mix does not contain a gelation system other than said starch component;

and wherein said starch component comprises a gellable starch in an amount sufficient to provide from about 3% to about 10% by weight thereof in said hydrated filling and sufficient to convert the admixture of said dry mix and an aqueous medium having a temperature in the range of from about 40° F. to about 70° F. to a firm gelled mass, without cooking, having the following properties measured at 50° F. and after thirty minutes, one hour and two hours, respectively: penetration depth of less than about 300 mm, less than about 260 mm and less than about 230 mm, and viscosity values of at least about 4,000 cp, at least about 26,000 cp and at least about 46,000 cp;

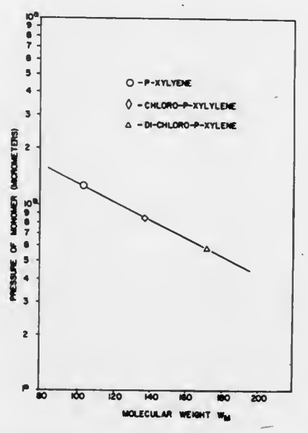
and wherein said gellable starch itself is a cold-water swellable starch which has the following properties as determined in independent tests using the standardized ingredient mixtures indicated: a pH of from about 4.0 to about 6.0; a percentage of cold-water solubles of at least about 70% by weight; and a thickening and gelation capacity capable of converting a 70° F. mixture of about 6% of said starch, about 70% water and about 24% of a sugar consisting of a high fructose corn syrup having 55% fructose and a solids content of about 77%, to a mass having a gel strength of at least about 90 grams within about fifteen (15) minutes.

4,518,623

POLYMERIC FILM COATING METHOD WITH CONTINUOUS DEPOSITION PRESSURE CONTROL

Thomas J. Riley, 905 Richmar Dr., Westlake, Ohio 44145

Division of Ser. No. 444,486, Nov. 24, 1982, Pat. No. 4,495,889.
This application Apr. 27, 1984, Ser. No. 604,968
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—8 **3 Claims**



2. In a method of coating substrates with polymer film based on p-xylylene which includes vaporizing di-p-xylylene dimer, pyrolizing the vaporized dimer to the monomeric diradicals, and depositing the film by vapor-phase polymerization of the monomer vapor, the improvement comprising the steps of continuously monitoring the pressure of the monomer vapor after pyrolization and continuously adjusting the vaporization rate of the p-xylylene into a dimer in response to the variations of actual pressure of the pyrolized monomer vapor from an optimum pressure to reduce variations between the measured and optimum pressure in order to produce a completed polymeric reaction in a minimum amount of time.

4,518,624

PROCESS OF MAKING A CORROSION-RESISTANT COATED FERROUS BODY

Dong-Sil Park, and Robert J. Zabala, both of Schenectady, N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 525,780, Aug. 24, 1983,. This application Mar. 26, 1984, Ser. No. 593,081
Int. Cl.³ C23C *11/04, 7/00*
U.S. Cl. 427—34 **7 Claims**



1. A process for producing a corrosion resistant coated ferrous metal body which is polarization free or which is free of significant polarization, said coated body being useful as a component in a sodium sulfur cell wherein said coating is in contact with said sulfur, said process comprises providing a ferrous metal body, depositing a layer of molybdenum at least about 10 microns thick on the surface of said body, heating said molybdenum-layered body to a temperature ranging from about 800° C. to 1200° C., and diffusing chromium halide vapor through said molybdenum layer and into contact with the surface of said ferrous body producing a coating diffusion bonded to said ferrous metal body, the bulk of said coating consisting essentially of an alloy of at least about 70% by weight molybdenum, up to about 5% by weight iron balance of at least about 1% by weight chromium, the outside surface of said coating or outside surface portion extending from said bulk portion consisting essentially of an alloy ranging from about 30% by weight to about 80% by weight chromium, up to about 1% by weight iron balance molybdenum, said outside surface or outside surface portion being significantly richer in chromium than said bulk portion, said outside surface or outside surface portion containing sufficient chromium to make said coated body polarization free or free of any significant polarization, and a diffusion bonding layer comprised of MoCrFe alloy extending from said bulk portion into said metal body, said diffusion bonding layer consisting essentially of at least about 10% by weight molybdenum, at least about 5% by weight chromium and at least about 10% by weight iron.

4,518,625

ARC SPRAY FABRICATION OF METAL MATRIX COMPOSITE MONOTAPE

Leonard J. Westfall, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 9, 1983, Ser. No. 560,035
Int. Cl.³ B05D *1/02;* **C23C** *7/00*
U.S. Cl. 427—37 **10 Claims**

1. A method of making a metal matrix composite monotape comprising the steps of

mounting an array of fibers on a support means in a chamber,

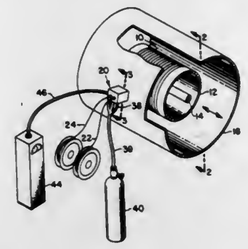
evacuating said chamber to remove gaseous contaminants therefrom,

filling said chamber with a neutral gas until the pressure within said chamber is above atmospheric,

inserting a pair of wires of the matrix metal into feed-through openings in a wall of said chamber and feeding said wires into said chamber until the extreme outermost ends thereof are in close proximity to said fiber array,

striking an arc between said outermost end portions thereby causing the same to melt, and

passing a high velocity stream of said neutral gas at a pressure between about 60 psi and about 120 psi through said arc into said chamber thereby forcing molten matrix metal from said arc in said stream to spray onto said array in said contaminant free atmosphere.

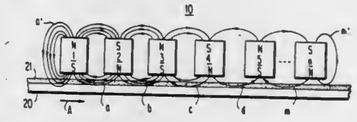


4,518,626

PROCESS FOR PREPARING MAGNETIC RECORDING MEDIUM

Mikihiko Kato; Shigeo Komine; Toshio Kawamata; Kazuhiko Morita, and Tsunehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1983, Ser. No. 566,455
Claims priority, application Japan, Dec. 29, 1982, 57-230910
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—48 **5 Claims**



1. A process for preparing a magnetic recording medium comprising a non-magnetic strip support base having coated thereon a magnetic coating layer, the process comprising the step of continuously travelling an undried magnetic layer on a support through a means for random magnetic orientation comprising at least five magnets which are installed at an interval from each other over the undried magnetic layer or under the support base, said magnets being positioned in such a manner that each adjacent pole of the magnets facing the magnetic layer or the reverse surface of the support base has a different polarity, that the strength of the magnetic field of each magnet is gradually reduced toward the travelling direction of the magnetic layer and that the direction of the line of the magnetic force between adjacent magnets is parallel to the magnetic layer and in opposite directions, whereby ferromagnetic fine particles in the magnetic layer are randomly oriented.

4,518,627

APPARATUS AND METHOD FOR DISORIENTING MAGNETIC PARTICLES IN MAGNETIC RECORDING MEDIA

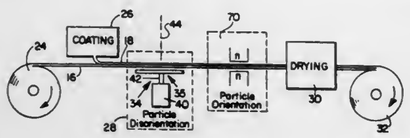
James Foley, Wellesley; Fawwaz Habbal, Cambridge, and John Leahy, Burlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 4, 1984, Ser. No. 646,770
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—48 **28 Claims**

1. Apparatus for magnetically disorienting magnetic particles in a fluid magnetic layer carried on a non-magnetic sup-

port which is being moved so that the magnetic layer advances in a plane, said apparatus comprising:

means for defining a magnetic field that projects into the plane of the magnetic layer and is disposed about an axis of rotation which is substantially perpendicular to the plane; and



means for effecting rotation of said magnetic field about said axis so that said rotating field interacts magnetically with the particles to cause disorientation of the particles in the magnetic layer.

4,518,628

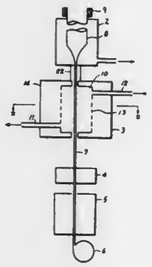
HERMETIC COATING BY HETEROGENEOUS NUCLEATION THERMOCHEMICAL DEPOSITION

Dipak R. Biswas, and Dilip K. Nath, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 382,856, May 28, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 580,280

Int. Cl.³ B05D *3/06, 5/06;* **C23C** *13/08;* **D04B** *5/00*

U.S. Cl. 427—55 **23 Claims**



1. A method of applying a hermetic coating to an exposed surface of an optical fiber, comprising the steps of

passing the fiber through a gaseous medium containing at least one reactant capable of undergoing a chemical conversion into the material of the coating when heated to a predetermined temperature; and

directing infrared radiation from all radial directions against the optical fiber to heat the same at least at its exposed surface at least to the predetermined temperature for the chemical conversion into and simultaneous deposition of the material of the coating to take place directly on the exposed surface, including omnidirectionally issuing the infrared radiation, and reflecting at least a part of the issued infrared radiation which would otherwise not reach the optical fiber onto the exposed surface of the optical fiber for such reflected infrared radiation to reach the exposed surface from radial directions angularly spaced from the direction of direct travel of the infrared radiation.

4,518,629

PROCESS FOR POSITIONING AN ELECTRICAL CONTACT HOLE BETWEEN TWO INTERCONNECTION LINES OF AN INTEGRATED CIRCUIT

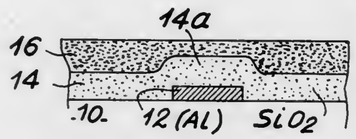
Pierre Jeuch, Seyssins, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 8, 1983, Ser. No. 559,441

Claims priority, application France, Dec. 10, 1982, 82 20721

Int. Cl.³ H01L *21/88*

U.S. Cl. 427—89 **5 Claims**



1. A process for positioning an electrical contact hole between a first interconnection line and a second interconnection line of an integrated circuit, comprising the steps of: forming the first interconnection line of the integrated circuit, and thereafter in successive stages:

(a) depositing an insulating coating on the integrated circuit;

(b) depositing on said insulating coating, a first coating of a material used for blanking or erasing a relief of the insulating coating and having a planar surface;

(c) etching the first material coating, in order to bare the relief area of the insulating coating located above the first interconnection line;

(d) defining the dimensions of the electrical contact hole to be formed by masking with the aid of a resin;

(e) etching the insulating coating in order to form the electrical contact hole;

(f) removing the mask and eliminating residual portions of the first material coating;

(g) forming the second interconnection line in successive stages:

(h) depositing a conductive coating in which the second interconnection line will be formed on the integrated circuit;

(i) depositing on said conductive coating, a second coating of material for erasing or blanking the relief of the conductive coating and having a planar surface;

(j) etching the second material coating in order to only leave material at the location of the electrical contact hole;

(k) depositing a resin coating on the integrated circuit, so as to mask the second interconnection line to be formed;

(l) etching the region of the conductive coating without resin or residual portions of the second material coating; and

(m) eliminating the residual second material coating and the resin coating.

4,518,630

METHOD FOR FORMING SILICON OXIDE FILMS

Leo Grasser, Munich, Fed. Rep. of Germany, assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 10, 1983, Ser. No. 465,530

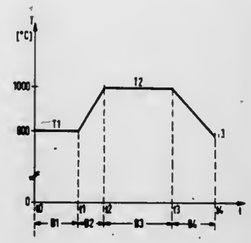
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, 3206376

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—93 **7 Claims**

1. Method for forming silicon oxide layers on silicon surfaces which comprises subjecting the silicon surface to at least two oxidation steps; (a) a first oxidation step carried out at a low oxidation temperature in the range of 700° C. to 900° C. in an atmosphere containing a mixture of oxygen and hydrochloric acid with a low hydrochloric acid concentration, (b) a second oxidation step carried out at a higher oxidation temperature of at least 100° C. above the low oxidation temperature of the first step and within the temperature range of 850° C. to 1050° C.,

and in a dry oxygen atmosphere, (c) an intermediate step between step (a) and step (b) wherein the oxidation temperature is increased from the low oxidation temperature of step (a) to the high oxidation temperature of step (b), in an atmosphere



containing a mixture of oxygen and hydrochloric acid with a low hydrochloric acid concentration, and (d) immediately after the second oxidation step (b) carrying out a cooling-down step to cool down the silicon oxide on the silicon surface.

4,518,631

THIXOTROPIC CURABLE COATING COMPOSITIONS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 14, 1983, Ser. No. 551,232

Int. Cl.³ C08L *63/04, 63/02*

U.S. Cl. 427—96 **26 Claims**

1. A curable liquid coating composition comprising a homogeneous mixture of

(A) a polyfunctional liquid or solubilized epoxide reactant selected from the group consisting of cycloaliphatic epoxide compounds, glycidyl ethers of polyhydric phenols, epoxidized novolak resins and mixtures thereof;

(B) a polyfunctional liquid or solubilized organosilicon reactant selected from the group consisting of silanes and polyorganosiloxanes, wherein each molecule of said organosilicon reactant contains at least two silicon-bonded groups selected from the group consisting of hydroxyl and alkoxy containing from 1 to 4 carbon atoms;

(C) an amount of filler sufficient to impart a viscosity of from 50 to 1000 Pa·s, measured at 25° C., to said composition; and

(D) a curing catalyst in an amount sufficient to promote curing of said composition;

wherein the degree of thixotropic character exhibited by said composition is a function of the weight ratio of said epoxide reactant to said organosilicon reactant, and exhibits a gradual variation from a maximum degree of thixotropic character at weight ratio value r_1 to a minimum degree of thixotropic character at weight ratio value r_2, the values represented by r_1 and r_2 being within the range of from 1:1 to 8:1, inclusive.

4,518,632

METALLIZED SYNTHETIC CABLE

Thomas E. Jones, Spring Valley, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1984, Ser. No. 601,751

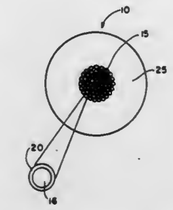
Int. Cl.³ B05D *5/12*

U.S. Cl. 427—118 **10 Claims**

1. A method of fabricating an essentially neutrally buoyant undersea data communications link having a low resistance for transmitting in a frequency range having a 100 kHz upper limit comprising:

providing a bundle of at least one hundred continuous synthetic fibers each having a diameter of between eight and ten microns, weight of between 1.75 and 2.02 gm/cm³ and a tensile strength in the range of 200,000–400,000 lbs/in² (1.4–2.8 GPa);

coating each continuous synthetic fiber with a metallized layer to a one to three micron thickness, the metallized layer having a DC resistance of approximately one ohm per foot for a 100 fiber bundle; and



covering the metallized layer coated continuous synthetic fiber bundle with a dielectric insulation.

4,518,633

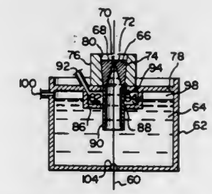
PRODUCTION OF INSULATED ELECTRICAL CONDUCTORS

Jorg-Hein Walling, Beaconsfield; Michael A. Shannon, Glenburnie, and Gerald Arbuthnot, Chateauquay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1984, Ser. No. 597,381

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—120 **18 Claims**



1. A method of providing an insulated electrical conductor by passing the conductor upwardly through a coating fluid and then upwardly through a die means, which is held in a vertical position relative to the fluid by a supporting fluid force which holds the die means horizontally spaced from a surrounding annular die support means while upwardly supporting the die means, with the support means causing or influencing the fluid force, thus allowing the die means freedom to move horizontally, the die means controlling the thickness of a surrounding layer of the fluid upon the conductor, the viscosity of the fluid being insufficient to raise the die means away from the fluid as the fluid coated conductor passes through the die, and concentricity of the fluid coated onto the conductor being ensured during any lateral movement of the conductor, by corresponding horizontal movement of the die means caused by hydrodynamic forces existing between the conductor and die surfaces.

9. Apparatus for insulating an electrical conductor including a container for holding a quantity of a coating fluid, die means having a die orifice and an annular die support means which surrounds the die means radially of the die orifice, the die support means provided to cause or influence a supporting fluid force to support the die means vertically upwards while holding the die means horizontally spaced from and within the support means.

17. A method of providing an insulated electrical conductor by passing the conductor upwardly through a coating fluid and then upwardly through a die means, the fluid comprising a fluid carrier in admixture with magnetically permeable particles, disposing the die means withi the carrier with the die means having freedom to move horizontally and including a magnet with its poles disposed in the direction of fluid flow through the die orifice, and levitating the magnet to a position

within the mixture dictated by the strength of the magnetic flux of the magnet.

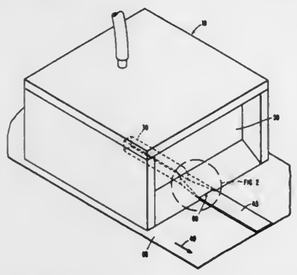
18. Apparatus for insulating an electrical conductor including a container for holding a quantity of a coating fluid comprising a mixture of a fluid carrier and magnetically permeable particles, and die means having a die orifice and a magnet with poles relatively disposed in the direction of fluid flow through the die orifice, the magnet when immersed within the mixture being levitated by the strength of the magnetic flux and the quantity and permeability of the particles to locate the die means in a specific position within the container.

4,518,634

METHOD AND APPARATUS FOR COATING MAGNETIC RECORDING MEDIA

Donald Gini, Boulder, and Dean B. Stockton, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1983, Ser. No. 493,838
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—128 **11 Claims**



1. A coating head for use in coating a stripe of thixotropic liquid onto a substrate by relative movement between the head and the substrate, comprising:

a container for holding a quantity of said liquid, said container having an opening defining a liquid-shear station whose shear force on said liquid is activated by said relative movement; and

a confined, four-wall, expanding-volume coating orifice defined by a movement-trailing wall of said container, said orifice being aligned with said opening to receive reduced-viscosity liquid from said shear station as a result of said relative movement;

one wall of said orifice being the substrate, and the remaining three walls of said orifice being defined by a notch which is formed in said trailing wall, said notch having a top wall opposite the substrate, and two side walls which join the top wall to the substrate, said top and side walls extending in a manner to cause the volume of said coating orifice to expand in the direction of said relative movement, thereby causing the viscosity of the liquid to increase in said direction while the liquid remains confined within said orifice.

4,518,635

PROCESS FOR SEALING AT LEAST ONE END OF A CELLULAR MODULE

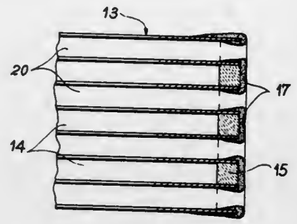
Guy Schnedecker, Paris, and Jacques Mougin, Wissous, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 17, 1983, Ser. No. 505,427
Claims priority, application France, Jun. 25, 1982, 82 11221
Int. Cl.³ B05D *7/22*
U.S. Cl. 427—232 **12 Claims**

1. A process for the selective sealing of at least one end of a cellular module having rows of parallel channels serving to carry at least two different fluids, at least a number of the channels being to be sealed while the other channels are to be left open, said process comprising the following steps:

depositing a preblocking material on said end of said cellular module, clogging all the channels,

removing the preblocking material from the channels which are to be left open, and



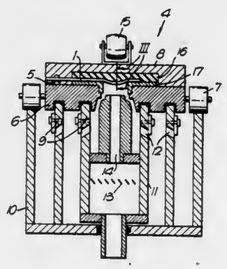
depositing a sealing material on said end of said cellular module, the preblocking material serving as a mechanical support for the sealing material during deposition of the latter to enable sealing of a channel, whereby only those channels having the preblocking material are sealed.

4,518,636

SELECTIVE PLATING

Michael A. Richards, Delapre, England, assignor to S. G. Owen Limited, Northampton, England

Filed Oct. 3, 1983, Ser. No. 538,657
Claims priority, application United Kingdom, Oct. 5, 1982, 8228378
Int. Cl.³ C25D *5/02*
U.S. Cl. 427—282 **9 Claims**



9. A method of selective plating a component, which method comprises contacting upper and lower faces of the component with upper and lower masks, respectively, said lower mask having a plating aperture to expose a part of the component to be plated, positioning the part of the component exposed by the plating aperture over a plating tank, and selective plating the exposed part of the component, the plating pressure and the hardness of the material comprising the upper mask being such that the upper mask is deformed at the plating aperture during plating so as at least partially to mask an edge of the said exposed part.

4,518,637

COATING SOLUTION METERING METHOD AND APPARATUS

Hideo Takeda, and Tsunehiko Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 19, 1983, Ser. No. 495,928
Claims priority, application Japan, May 19, 1982, 57-83237
Int. Cl.³ B05D *3/00*
U.S. Cl. 427—359 **5 Claims**

1. A method of metering a coating solution wherein a coil bar is rotatably supported on a holder comprising the steps of:

continuously supplying a solution substantially the same as said coating solution to both sides of the coil bar at parallel positions upstream and downstream in the direction of running of the web, at a predetermined flow rate, applying said solution to said coil bar to wet said coil bar and, removing surplus solution by scraping said web with said coil bar.

2. An apparatus for metering a coating solution coated on a



continuously running web comprising, a coil bar and a holder for rotatably supporting said coil bar, said holder having two solution-supplying slots with upper ends opening in parallel at both sides of the coil bar at positions upstream and downstream in the direction of running of the web, wherein slots are adapted to apply a solution which is substantially the same in composition as the coating solution is supplied from said source at a predetermined flow rate during metering.

4,518,638

METHOD FOR THE PROTECTION OF SHIPS AND OTHER OBJECTS AGAINST FOULING

Oystein Rasmussen, Hosleveien 119, NO-1340 Beekestua, Norway

Filed Jan. 20, 1984, Ser. No. 572,527
Claims priority, application Norway, Jan. 31, 1983, 830306
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—407.1 **5 Claims**

4. A method for treating the underwater surface of ships and other structures as a protection against fouling, comprising:

mixing together a solution in non-polar solvents of a contact-leaching anti-fouling composition and a solution in a polar solvent of a composition containing both anionic and cationic hydrophilic polymers so as to disperse the hydrophilic polymers in the non-polar solution, and

immediately after making such mixture, applying the mixture on the surface to be protected.

5. The method according to claim 4, in which the applying step includes applying the mixture on top of a recently applied coat of a primer or an anti-fouling paint which still contains a residual amount of non-polar solvents.

4,518,639

GAME CUP WITH GAME INFORMATION UNDER THE ROLLED LIP

Stephen J. Phillips, Don Mills, Canada, assignor to Coca-Cola Limited, Toronto, Canada

Filed Mar. 26, 1984, Ser. No. 593,466
Int. Cl.³ B32B *7/06*
U.S. Cl. 428—35 **19 Claims**

1. A beverage cup comprising:

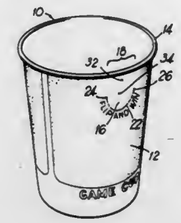
(a) a sidewall having a rolled lip,

(b) said rolled lip having a game information area at a particular location thereof and including game information located in said area and being hidden by said rolled lip;

(c) said sidewall including a snap-out section located below said area,

(d) said snap-out section being partly defined by snap-out means for allowing said section to be partly broken loose from said sidewall while leaving a side of said section still connected to said sidewall; and

(e) said section, when partly broken loose from said sidewall, being adapted to be moved around said rolled lip in said



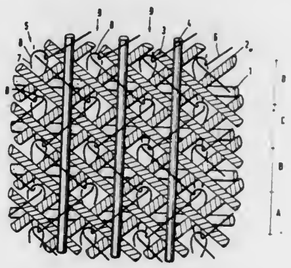
area to unroll said rolled lip in said area to reveal any game information in said area.

4,518,640

WARP KNITTED WARE WITH REINFORCING THREADS

Christian Wilkens, Heusenstamm, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,355
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304345
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—102 **17 Claims**



1. A fabric enmeshed by stitched ground ware, comprising:

a plurality of wales of warp thread stitched by rows;

a plurality of parallel, inlaid weft threads, each laid-in across said wales and between two adjacent rows of stitch loops in said warp thread, said rows of stitch loops being transverse to said warp thread; and

a first and second plurality of diagonally inlaid threads, said first plurality crossing said second plurality, each of the inlaid threads of said first and second plurality running alternatively and repetitively: (a) between two stitch loops of a corresponding adjacent pair of said wales and (b) between two stitch loops of two successive rows of stitch loops of said warp threads.

4,518,641

NON-SLIP SURFACE COATINGS

Bryan F. Shimmin, Feniscowles, and James B. Pollard, Worsley, both of England, assignors to Reed International P.L.C., London, England

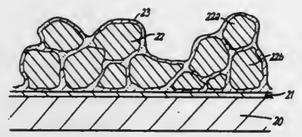
Filed Feb. 16, 1983, Ser. No. 466,775
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—150 **6 Claims**

1. A process for making a product having a non-slip surface comprising the steps of:

(a) taking a non-slip particulate material in the form of particles of rounded shape and wetting and mixing it with a

binder to create a flowable composition which is hardenable with time when applied as a film; and

(b) spraying the composition with a progressive cavity pump on to a base so that the particles of the non-slip materials



are caused to engage both with the base and with contiguous particles through the medium of a skin which hardens with time and which, on the surface of the product, closely follows the outline of the surface exposed particles of the non-slip material.

4,518,642

LOUDSPEAKER DIAPHRAGM AND METHOD FOR MAKING SAME

George C. Johnston, Clinton, N.C., and Michael A. Swieboda, Hickory Hills, Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.

Filed Apr. 15, 1983, Ser. No. 483,308
Int. Cl.³ D04H *1/04*
U.S. Cl. 428—172 12 Claims



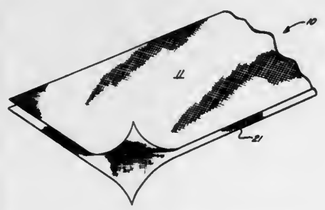
1. A loudspeaker diaphragm comprising a diaphragm element comprising a felt of a mixture of cellulose fibers and polypropylene fibers, said polypropylene fibers being fused together to form a matrix of polypropylene which extends through the felt to stiffen the diaphragm element, the ratio of dry weight of the polypropylene fibers to dry weight of the cellulose fibers being in the range of about 0.1 to about 0.5.

4,518,643

PLASTIC FILM

Michael A. Francis, Mechanicsville, Va., assignor to Ethyl Corporation, Richmond, Va.

Filed Jul. 25, 1983, Ser. No. 516,657
Int. Cl.³ B32B *1/00, 3/30*
U.S. Cl. 428—131 9 Claims



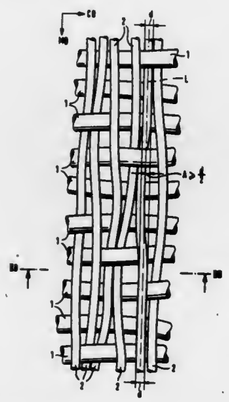
1. A thermoplastic film having a plurality of permanently embossed protuberances and depressions of predetermined geometric shapes constructed therein for controlling the coefficient of friction of sheets of the film when placed adjacent each other, each of said protuberances having a relatively flat portion therebetween and the width of each protuberance at its base being less than the length of the relatively flat portion of the film between the base of each protuberance, said protuberances being truncated geometric shapes arranged in latitudinally and longitudinally alternating rows, said film having a relatively rough or male side and a relatively smooth or female side whereby when a male surface of film is placed adjacent another male surface of the same film or a male surface of a separate sheet of film, the protuberances on said male surface of film mesh with the relatively flat portions of said another male surface of the same film or said male surface of the separate sheet of film and thereby a relatively high coefficient of friction is obtained and when a female surface of film is placed adjacent another female surface of the same film or a separate sheet of film, a relatively low coefficient of friction is obtained.

4,518,644

PAPER MACHINE SCREEN

Tauno A. Vuorio, Zurich, Switzerland, assignor to Siebtuchfabrik AG, Olten, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,359
Claims priority, application Switzerland, Dec. 15, 1977, 015417
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 19 Claims



12. A single-ply multiple shaft Atlas weave paper making machine screen, comprising:

(a) a plurality of longitudinal threads having a direction of course generally oriented with the machine direction and a plurality of cross threads having a direction of course essentially transverse thereto;

(b) said longitudinal and cross threads being selectively interwoven and forming interlacing points and thereby providing said screen;

(c) a first one of said longitudinal and cross threads is bound to an adjacent one of said longitudinal and cross threads at a first one of said interlacing points and thereby laterally shifts said first one thread from said direction of course;

(d) said first one thread is bound to another adjacent one of said longitudinal and cross threads at a second one of said interlacing points for thereby laterally shifting said first one thread to said direction of course;

(e) said first one thread is shifted at said interlacing points a distance exceeding ½ the diameter of said first one thread; and,

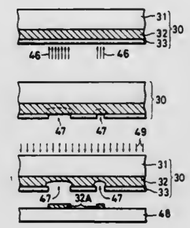
(f) said cross threads have a diameter greater than said longitudinal thread diameter.

4,518,645

TRANSFER TYPE HEAT SENSITIVE RECORDING MEDIUM

Haruhiko Moriguchi, and Toshiharu Inui, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,795
Claims priority, application Japan, Sep. 13, 1982, 57-158203
Int. Cl.³ B41M *5/26*
U.S. Cl. 428—212 2 Claims



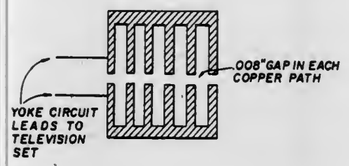
1. A transfer type heat sensitive recording medium comprising a base sheet, an ink layer on one surface of said base sheet of a colored ink which is adapted to be fluidized or sublimated at a predetermined temperature higher than room temperature, and a coating layer on said ink layer of a coating material which is adapted to be dissolved into said ink layer or sublimated when heated at a temperature higher than said predetermined temperature.

4,518,646

PRINTED CIRCUIT BOARD LAMINATE WITH ARC-RESISTANCE

Roy F. Nichols, Jr., Coshocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 177,980, Aug. 14, 1980, , which is a continuation-in-part of Ser. No. 148,607, May 12, 1980, abandoned. This application Dec. 1, 1983, Ser. No. 557,016
Int. Cl.³ H05K *1/00*
U.S. Cl. 428—248 5 Claims



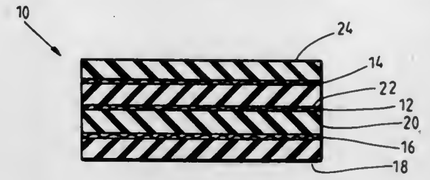
4. A high voltage arc-resistant laminate for printed circuit boards of the type having a substrate and metallic foil bonded on one or both surfaces of said substrate, said substrate including core sheets of cellulosic paper impregnated with a resin formulated from a composition including a major amount of a phenolic or epoxy resin, and a face sheet adjacent said metallic foil, said face sheet comprising glass fiber cloth impregnated with a resin formulated from a composition containing about 60 to 85 percent by weight brominated aromatic epoxy resin solids polymerized with minor amounts of a curing agent and an amine catalyst, said curing agent and catalyst each containing no aromatic groups and no heterocyclic rings containing conjugated double bonds, together with minor amounts of antimony oxide and fumed silicon dioxide.

4,518,647

AGRICULTURAL BELTING MATERIAL

Donald Morrison, Anthony, Kans., assignor to Morrison Company, Inc., Anthony, Kans.

Filed Jun. 11, 1984, Ser. No. 619,023
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—250 9 Claims



1. A multiple ply material for use in belting, comprising:

a center fabric ply formed of a first synthetic fabric;

first and second fabric plies disposed on opposite sides of said center fabric ply, said first and second outer fabric plies including strands in the warp direction which have an elongation modulus and a flex fatigue life which are greater than those of said center fabric ply, said first and second fabric plies having extruded monofilament yarns in the fill direction; and

a plurality of rubber layers, said rubber layers disposed on opposite sides of said first and second outer fabric plies.

4,518,648

SHEET MATERIAL AND PRODUCTION METHOD THEREOF

Hiroyasu Miyata, and Kazuhiko Ito, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Mar. 9, 1984, Ser. No. 588,143
Claims priority, application Japan, Mar. 10, 1983, 58-38176; Mar. 10, 1983, 58-33469[U]
Int. Cl.³ B32B *3/10, 5/20;* H01R *13/48*
U.S. Cl. 428—256 9 Claims

1. A sheet material comprising a net-shaped member having projecting portions and recessed portions, and an electrically insulating layer in which the net-shaped member is buried such that only the projecting and recessed portions thereof are exposed out of the insulating layer.

2. A method for producing a sheet material comprising the steps of preparing a paste of a high-molecular substance mixed with microcapsules thermally expansible at a low temperature, forming the paste into an insulating layer, burying a net-shaped member made of an electrically conductive material and having projecting portions and recessed portions into the insulating layer such that the entire meshes of the net-shaped member are filled with the paste, removing excess high molecular weight substance to expose the projecting and recessed portions of the net-shaped member from the surface of the insulating layer, heating the entire combination to a temperature adapted to expand the microcapsules contained in the paste, and hardening the paste for obtaining the ultimate product.

4,518,649

SOIL RELEASING TEXTILES CONTAINING FLUOROCHEMICAL SOIL RELEASE AGENTS AND METHOD FOR PRODUCING SAME

Robert C. Wang, Monmouth Junction; Arthur J. Sampson, Belle Mead, and Mark M. Persinko, Bridgewater, all of N.J., assignors to Chicopee, New Brunswick, N.J.

Filed May 11, 1984, Ser. No. 609,259
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—284 13 Claims

1. A fabric comprising at least 10% by weight of polyester fibers, said fabric being durably soil releasing on laundering, said fabric being finished with a soil release finish consisting

essentially of a cured mixture of (A) a fluorochemical soil release agent; (B) an adhesive binder; and (C) a cross-linking agent.

4,518,650

PROTECTIVE CLOTHING OF FABRIC CONTAINING A LAYER OF HIGHLY FLUORINATED ION EXCHANGE POLYMER

Walther G. Grot, Chadds Ford; Joseph T. Rivers, West Chester, both of Pa., and Raimund H. Silva, Hattingen, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,638, Jul. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 138,681, Apr. 9, 1980, abandoned. This application Aug. 7, 1981, Ser. No. 290,867

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.³ B32B *27/08, 27/00*

U.S. Cl. 428—286 **21 Claims**

1. Use in clothing to protect the wearer against hazardous substance of a composite fabric, said fabric containing as the essential component thereof a continuous film of a highly fluorinated ion exchange polymer having sulfonic acid functional groups, there being at least one fluorine atom attached to each carbon atom to which each said functional group is attached, said polymer having an equivalent weight no greater than about 2000, all the components of said composite fabric being hydrophilic.

4,518,651

MICROWAVE ABSORBER

William R. Wolfe, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1983, Ser. No. 466,939

Int. Cl.³ B65B *25/22;* **B65D** *81/34*

U.S. Cl. 428—308.8 **8 Claims**

1. A composite material for generation of heat by absorption of microwve energy comprising:
   (a) a porous, dielectric, substrate substantially transparent to microwave radiation;
   (b) an electrically conductive coating on one surface of the substrate comprising;
      (i) electrically conductive particles in
      (ii) a thermoplastic dielectric matrix, wherein, at least some of the matrix is beneath the surface of the substrate, is substantially free of electrically conductive particles, and is intermingled with the substrate; and
   (c) a protective layer of polyethylene terephthalate adhered to the electrically conductive coating.

3. A process for manufacturing a composite material generation of heat by absorption of microwave energy comprising:
   (a) providing a porous, dielectric, substrate substantially transparent to microwave radiation;
   (b) applying to the substrate a coating of a dispersion of finely-divided, electrically conductive, particles in a thermoplastic dielectric matrix;
   (c) heating the coating and the substrate to a temperature above the softening point of the matrix; and
   (d) pressing the heated coating against the substrate at a pressure of 600 to 8700 kilopascals for 0.03 to 200 seconds.

4,518,652

METHOD FOR FORMING A LIGHTWEIGHT CEMENTITIOUS STRUCTURAL PRODUCT AND PRODUCT FORMED THEREBY

Michael D. Willoughby, Palatine, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jul. 15, 1983, Ser. No. 514,349

Int. Cl.³ B32B *5/18*

U.S. Cl. 428—312.4 **16 Claims**

1. A method for the production of a lightweight structural member, which comprises preparing a settable aqueous slurry of a cementitious material, mixing an aqueous foam into said slurry, forming said slurry into the proper shape for said structural member, and setting and drying said cementitious material, said foam being prepared by passing water and a foaming agent consisting essentially of polyvinyl alcohol through a foaming apparatus.

9. A lightweight structural member produced by preparing a settable aqueous slurry of a cementitious material, mixing an aqueous foam into said slurry, forming said slurry into the proper shape for said structural member, and setting and drying said cementitious material, said foam being prepared from water and a foaming agent consisting essentially of polyvinyl alcohol.

4,518,653

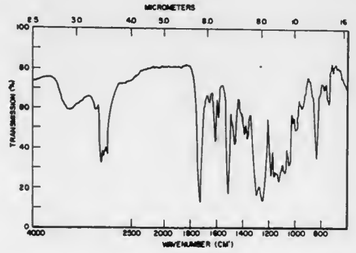
CHEMICALLY TREATED GLASS FIBERS FOR REINFORCING POLYMERIC MATERIALS AND PROCESSES

Donald E. McWilliams, Pittsburgh; Carl A. Melle, Gibsonia, and Balbhadra Das, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 23, 1983, Ser. No. 564,669

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—378 **20 Claims**



1. Glass fiber strands having a plurality of glass fibers where each glass fiber has at least a portion of its surface covered with the dried residue of an aqueous chemical treating composition, comprising:
   a. a film forming polymeric system, comprising:
      1. an aqueous soluble, emulsifiable or dispersible epoxy-containing polymer or copolymer having an epoxy equivalent weight in the range of about 180 to about 230 grams of polymer per one gram of equivalent epoxide and present in the aqueous chemical treating composition in an amount of about 50 to about 70 weight percent of the solids of the aqueous chemical treating composition.
      2. an aqueous soluble, emulsifiable or dispersible non-tacky film forming polymer which is compatible in the epoxy-containing polymer,
      3. polyvinyl pyrrolidone in an amount of not greater than 25 weight percent of the solids of the aqueous chemical treating composition,
   b. methacryloxy alkyltrialkoxy silane coupling agent,
   c. cationic glass fiber lubricant in an effective lubricating amount,
   d. water in an amount to give a total solids in the range of about 1 to about 30 weight percent, wherein the aqueous chemical treating composition is essentially free of glass fiber lubricants which are water insoluble, hydrogenated or saturated fatty acid esters of glycerol or vegetable oils.

4,518,654

ONE-SIDED CLING STRETCH WRAP

George N. Eichbauer, Fairport, and Beth A. LeBlanc, Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,664

Int. Cl.³ B32B *27/06, 27/32*

U.S. Cl. 428—331 **10 Claims**

1. A stretch wrap film having one-sided cling comprising a transparent thermoplastic A/B film structure wherein layer A, in its stretched condition, has a comparatively high cling force to layer B and layer B has at least substantially no cling force to a layer of itself and has a slide property when layer B is in contact with a layer of itself with relative motion therebetween.

4,518,655

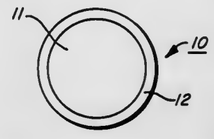
FUSING MEMBER FOR ELECTROSTATOGRAPHIC COPIERS

Arnold W. Henry, Pittsford; Jack C. Azar, and John Sagal, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1983, Ser. No. 555,103

Int. Cl.³ B21B *31/08;* **B32B** *5/16*

U.S. Cl. 428—329 **8 Claims**



1. A thermally conductive fuser member for use in an electrostatographic reproducing machine comprising a rigid base, a thin deformable layer of a composition coated thereon, said composition comprising the crosslinked product of a mixture of about 100 parts by weight of alpha omega-hydroxypolydimethylsiloxane having a number average molecular weight between about 5,000 to about 20,000, about 190 to 250 parts by weight of alumina, said alumina comprising from about 60 to about 90 percent by weight of finely divided tabular alumina having a particle size less than about 100 mesh in size and from about 10 to about 40 percent by weight of finely divided calcined alumina having a particle size less than about 1 micrometer, a crosslinking agent and a crosslinking catalyst, said crosslinking agent and catalyst being present in amounts sufficient to promote crosslinking of said siloxane.

4,518,656

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Tsutomu Okita, and Kyoichi Naruo, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 345,829, Feb. 4, 1982,. This application Oct. 3, 1983, Ser. No. 537,552

Claims priority, application Japan, Feb. 4, 1981, 56-15393

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—403 **7 Claims**

1. A process for producing a magnetic recording medium which comprises the steps of applying onto a non-magnetic base a composition comprising (1) a compound having an unsaturated bond polymerizable by electron beams, (2) at least one polymer, (3) ferromagnetic particles, and (4) an organic solvent, and curing the resulting magnetic layer by irradiation with electron beams, said polymer being selected from the group consisting of nitrocellulose and a polymer containing 0.01 to 10 wt % of $-CO_2H$ group and, being such that at least 10% thereof is adsorbed on the ferromagnetic particles in a mixture of 10 parts by weight of a 1 wt % solution of the polymer and 1 part by weight of the ferromagnetic particles.

6. A magnetic recording medium prepared by the steps of applying onto a non-magnetic base a composition comprising (1) a compound having an unsaturated bond polymerizable by electron beams, (2) at least one polymer, (3) ferromagnetic particles, and (4) an organic solvent, and then polymerizing and curing the resulting magnetic layer by irradiation with electron beams, and polymer being selected from the group consisting of nitrocellulose and a polymer containing 0.1 to 10 wt % of $-CO_2H$ group and, being such that at least 10% thereof is adsorbed on the ferromagnetic particles in a mixture of 10 parts by weight of a 1 wt % solution of the polymer and 1 part by weight of the ferromagnetic particles.

4,518,657

RECORDING MEDIUM AND RECORDING-REPRODUCTION SYSTEM PROVIDED WITH THE RECORDING MEDIUM

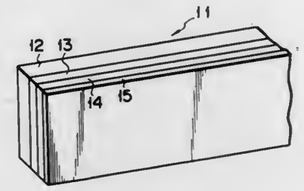
Tuneo Yanagida, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,829

Claims priority, application Japan, Oct. 17, 1980, 55-145117

Int. Cl.³ G11B *5/72, 5/66*

U.S. Cl. 428—450 **10 Claims**



1. A recording and reproduction system which comprises: a recording head constituted by main and auxiliary magnetic poles so arranged as to clamp a recording medium which is formed of a first layer comprising a first magnetic alloy material having perpendicular magnetic anisotropy, a high coersive force, a high remnant magnetic flux density and a small anisotropy dispersion angle, a second layer comprising a second magnetic amorphous alloy of a rare earth metal—3d transition metal positioned on said first layer, said second layer having a lower coersive force and higher Curie temperature than said first layer, said first and second alloys being different alloys and one of them containing one constituent element not present in said other alloy; and a protective layer prepared from a transparent nonmagnetic material on said second magnetic layer for recording data on the recording medium by a perpendicular magnetic recording method; and
   reproduction means for reading data out of the recording medium by the magneto-optics effect.

4. A recording medium comprising a first and a second contiguous magnetic alloy layers:
   said first magnetic alloy layer comprising a first magnetic alloy material having perpendicular magnetic anisotropy, a high coercive force, a high remnant magnetic flux density and a small anisotropy dispersion angle;
   said second magnetic layer comprising a second magnetic amorphous alloy of a rare earth metal—3d transition metal positioned on said first magnetic layer, said second magnetic layer having a lower coercive force and higher Curie temperature than said first magnetic layer, said first and second alloys being different alloys and one of them containing one constituent element not present in said other alloy; and
   a protective layer prepared from a transparent nonmagnetic material on said second magnetic layer.

4,518,658

WATERPROOF MEMBRANE WITH FUSE BONDED NON-WOVEN REINFORCEMENT

Jean Baravian, Croissy sur Seine, and Jacques Barbey, Beynost Miribel, both of France, assignors to Rhone-Poulenc Fibres, Lyon, France

Filed May 21, 1984, Ser. No. 612,344
Claims priority, application France, May 25, 1983, 83 08769
Int. Cl.³ B32B *11/02*
U.S. Cl. 428—291 **8 Claims**

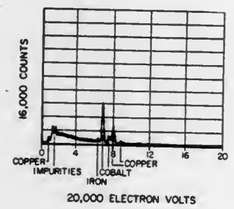
1. A waterproof membrane consisting of a bitumen-coated reinforcement, characterized in that the reinforcement is a nonwoven of heat-bonded continuous filaments containing:
from 70 to 90% of polyethylene glycol terephthalate and
from 30 to 10% of polybutylene glycol terephthalate.

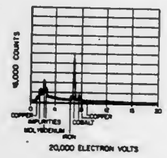
4,518,659

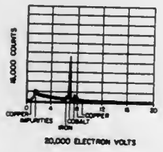
SWEEP THROUGH PROCESS FOR MAKING POLYCRYSTALLINE COMPACTS

Paul D. Gigl, and Hyun S. Cho, both of Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio

Continuation-in-part of Ser. No. 364,714, Apr. 2, 1982,. This application Sep. 23, 1983, Ser. No. 536,221
Int. Cl.³ B24D *3/10*; C01B *21/64*; B01J *3/06*
U.S. Cl. 428—539.5 **31 Claims**







1. An improved process for making a polycrystalline diamond compact comprising subjecting a mass of diamond particles, which mass is in contact with a source of catalyst for diamond recrysallization, to a high pressure/high temperature process which results in a compact characterized by diamond-to-diamond bonding and containing an interstitial metal phase comprising catalyst; wherein the improvement comprises placing in contact with the mass of diamond particles an additional metal or metal alloy selected from the group consisting of:
(a) single metals and non-catalytic alloys of such metal which: (i) have a lower melting point than the catalyst; (ii) do not interfere with the function of the catalyst; and (iii) are miscible with the catalyst; and
(b) single metals and non-catalytic alloys of metals as described in (a) above in the form of catalytic alloys with the catalyst, which catalytic alloys do not interfere with the function of the catalyst and at least initially form a catalyst-lean liquid phase during the high pressure/high temperature process.

15. An improved process for making a polycrystalline cubic boron nitride compact comprising subjecting a mass of cubic boron nitride particles, which mass is in contact with a source of sintering catalyst, to a high pressure/high temperature process which results in a compact having at least 70 volume percent cubic boron nitride content and an interstitial metal phase comprising catalyst within the resulting polycrystalline mass; wherein the improvement comprises placing in contact with the mass of cubic boron nitride particles an additional metal or metal alloy selected from the group consisting of:
(a) single metals and non-catalytic alloys of such metals which: (i) have a lower melting point than the catalyst; (ii) do not interfere with the function of the catalyst; and (iii) are miscible with the catalyst; and
(b) single metals and non-catalytic alloys of metals as described in (a) above in the form of catalytic alloys with the catalyst, which catalytic alloys do not interfere with the function of the catalyst and at least initially form a catalyst-lean liquid phase during the high pressure/high temperature process.

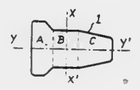
30. A polycrystalline diamond or cubic boron nitride compact containing a catalyst and an additional metal or metal alloy within the interstices between crystal grains and in which compact there is a concentration gradient of the additional metal or metal alloy.

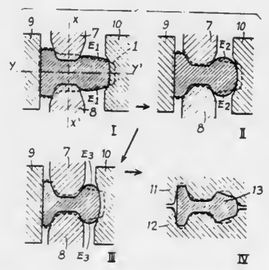
4,518,660

SHAPED BLANKS, METHODS FOR THEIR PRODUCTION AND IMPROVEMENTS TO THE UNIVERSAL ROLLING OF RAILS

André Faessel, Saint-Nicolas en Foret-Hayange; Gabriel B. Mennel, Nilvange, and Jacques M. Michaux, Joeuf, all of France, assignors to Sacilor, France

Filed Oct. 22, 1982, Ser. No. 435,967
Claims priority, application France, Nov. 4, 1981, 81 20689
Int. Cl.³ B21B *1/08, 13/08*
U.S. Cl. 428—577 **19 Claims**





1. A method of forming a primary metallic blank for a rail comprising the steps of:
(a) forming a bloom having a cross-section of generally rectangular configuration with a predetermined height and width; and,
(b) passing the bloom through only open grooves to form a primary blank having a cross-section generally symmetrical about a plane extending parallel to the longer dimension of the cross-section of the bloom, the cross-section having first, second and third sections wherein:
(i) the first section has five plane faces, two extending parallel to the plane of symmetry and defining the height of the portion; a second extending perpendicular to the plane of symmetry and interconnecting the two parallel faces; and two extending from the two parallel faces and converging toward the plane of symmetry;
(ii) the second section has two plane faces extending from the two convergent faces of the first section generally parallel to the plane of symmetry; and,
(iii) the third section has three plane faces, two extending from the two faces of the second section and converging toward the plane of symmetry and a third face extending generally perpendicular to the plane of symmetry interconnecting the two convergent faces.

8. A primary blank formed from a bloom for subsequently forming a rail, wherein the primary blank has a cross-section that is symmetrical about a plane and comprises:
(a) a first section having five plane faces, two extending parallel to the plane of symmetry and defining the height of the portion; a second extending perpendicular to the plane of symmetry and interconnecting the two parallel faces; and two extending from the two parallel faces and converging toward the plane of symmetry;
(b) a second section having two plane faces extending from the two convergent faces of the first section generally parallel to the plane of symmetry; and,
(c) a third section having three plane faces, two extending from the two faces of the second section and converging toward the plane of symmetry and a third face extending generally perpendicular to the plane of symmetry interconnecting the two convergent faces.

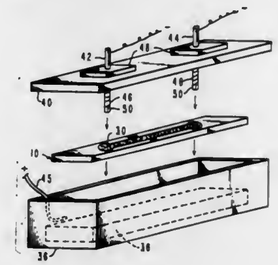
12. A method of forming a secondary metallic blank for a rail comprising the steps of:
(a) forming a bloom having a cross-section of generally rectangular configuration with a predetermined height and width;
(b) passing the bloom through only first open grooves to form a primary blank having a cross-section generally symmetrical about a plane extending parallel to the longer dimension of the cross-section of the bloom, the cross-section having first, second and third sections wherein:
(i) the first section has five plane faces, two extending parallel to the plane of symmetry and defining the height of the portion; a second extending perpendicular to the plane of symmetry and interconnecting the two parallel faces; and two extending from the two parallel faces and converging toward the plane of symmetry;
(ii) the second section has two plane faces extending from the two convergent faces of the first section generally parallel to the plane of symmetry; and,
(iii) the third section has three plane faces, two extending from the two faces of the second section and converging toward the plane of symmetry and a third face extending generally perpendicular to the plane of symmetry interconnecting the two convergent faces;
(c) passing the primary blank through a plurality of universal passes between two vertical and two horizontal rolls without intervening edging passes such that the horizontal rolls reduce the distance between the two plane faces of the second section and the two vertical rolls apply direct pressure against the perpendicular faces of the first and third sections such that metal from the second section moves internally towards the first and third sections and from the perpendicular faces of the first and third sections toward central portions of these sections, respectively, to breakdown the internal solidification structure of the metal and to cause the convergent faces of the third section to expand away from the plane of symmetry; and,
(d) subsequently passing the blank through second open grooves to form the secondary blank.

4,518,661

CONSOLIDATION OF WIRES BY CHEMICAL DEPOSITION AND PRODUCTS RESULTING THEREFROM

Ralph E. Rippere, 21420 N. 24th Dr., Phoenix, Ariz. 85027

Filed Sep. 28, 1982, Ser. No. 425,658
Int. Cl.³ B21F *27/08*
U.S. Cl. 428—598 **21 Claims**



1. An electrically conductive body comprising wire crossing wire at multiple sites of mutual contact throughout said body, with said wire interconnected at said sites by a chemical deposition of a metal to yield a rigid, open-wire lattice, and wherein said open-wire lattice is filled with solder to a point of capillary retention.

9. A method of making a conductive body comprising the steps of:
a. forming an open lattice comprising at least three non-woven layers of wire and having at least a 20% by volume void within the bounds of said lattice;
b. rigidifying said lattice by chemically depositing a metal upon said lattice to bridge sites of mutual contact of said wire within said lattice; and
c. infiltrating said lattice with liquid solder and permitting said solder to cool.

4,518,662

COPPER SOLDER CONTAINING COBALT

Peter Listemann, and Sigurd Mönch, both of Mauren, Liechtenstein, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Jun. 6, 1984, Ser. No. 617,794
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1983, 3321437
Int. Cl.³ C22C *9/06*
U.S. Cl. 428—675 **22 Claims**

1. In a copper alloy solder, the improvement which comprises that the solder contains 0.5 to 20% by weight of cobalt 0.05 to 0.5% by weight of carbon, balance copper.

16. A composite solder composition comprising at least one layer of copper and at least one layer of cobalt, wherein the composite contains 0.5–20% by weight of cobalt, 0.05–0.5% by weight of carbon, balance copper.

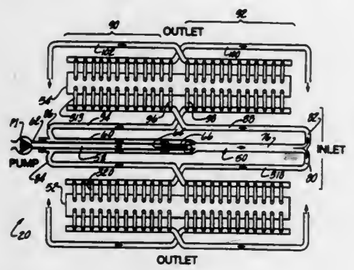
22. A method of soldering steel with hard metal which comprises effecting the soldering with a reactive solder containing a copper layer and at least one separate cobalt layer wherein the solder contains 0.05–20% by weight of cobalt, 0.05–0.5% by weight of carbon balance copper.

4,518,663

ELECTROLYTE CIRCULATION SUBSYSTEM

Satyanarayana Kodali, Troy; Bhim S. Singh, Sterling Heights; Curtis C. Whittlesey, Birmingham, and Gary L. Henriksen, Troy, all of Mich., assignors to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Jul. 1, 1983, Ser. No. 510,342
Int. Cl.³ H01M *8/02, 12/02*
U.S. Cl. 429—18 **15 Claims**



1. In an electrochemical system having a plurality of cells connected electrically in series, an electrolyte circulation subsystem, comprising:

means for pumping an electrolyte;

manifold means for conveying electrolyte to said cells, said manifold means having an outer tube formed with an outlet port at each end thereof, and an inner tube concentrically disposed within said outer tube generally along one-half of the length of said outer tube, said inner tube being in fluid communication with said pumping means at a first end thereof and in fluid communication with said outer tube at a second end thereof, said inner tube also having means associated with said second end for generally equally diverting the flow of said electrolyte through said inner tube to each of said outlet ports of said outer tube;

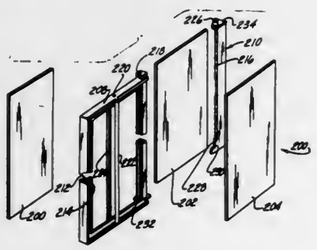
separate conduit means in fluid communication with each of said outlet ports of said outer tube for individually distributing electrolyte from said outlet tube to generally one-half of said cells.

4,518,664

COMB-TYPE BIPOLAR STACK

Curtis C. Whittlesey, Birmingham; Gary L. Henriksen, Troy, both of Mich.; Walter B. Keryluk, Greensboro, and Merle T. Wolff, Lexington, both of N.C., assignors to Energy Development Associates, Inc., Greensboro, N.C.

Filed Jul. 1, 1983, Ser. No. 510,372
Int. Cl.³ H01M *8/02*
U.S. Cl. 429—38 **18 Claims**



1. An electrode assembly, comprising:

a first electrode;

a pair of planar second electrodes disposed in substantially parallel spaced relation to one another, said second electrodes having opposing inwardly facing interior surfaces and outwardly facing exterior surfaces;

a generally rectangular one piece first frame member, defining a pair of spaced apart generally U-shaped and parallel channels, said channels extending substantially around three sides of said first frame member, each channel having an outer channel wall and having a common inner wall which defines a first masking member;

a second frame member insertably carried in said first frame member and defining a second masking member in coplanar relationship with said first masking member;

said second frame member having a nipple at one end thereof and having a clip forming projection at the opposite end thereof;

a hollow tubular feed tube insertably carried at one end thereof in said nipple and retained at the other end thereof by said clip forming projection;

electrode supporting member integrally formed on said first frame member and laterally displaced adjacent said second frame member, said electrode supporting member having an elongated channel for receiving and masking one edge of said first electrode;

said second electrodes being slidably carried in said U-shaped channels and in sandwiching relationship with said second frame member, such that said first and second masking members substantially mask a peripheral portion of said interior surfaces thereof and such that said outer channel walls substantially mask a peripheral portion of said exterior surfaces thereof;

wherein said first and second masking members mask a greater surface area than the surface area masked by said outer channel walls; and

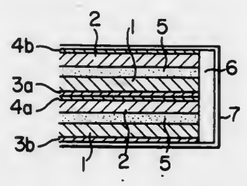
wherein said electrode supporting member defines a third masking member disposed adjacent to and substantially masking a peripheral portion of said exterior surface of one of said second electrodes.

4,518,665

SHEET-SHAPED POLYMER SECONDARY BATTERY OF LAYER BUILT TYPE

Kazunori Fujita, Ibaraki; Shigeoki Nishimura, Katsuta; Hiroyuki Sugimoto; Noboru Ebato, both of Hitachi, and Shinpei Matsuda, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Showa Denko K.K., both of Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 544,118
Claims priority, application Japan, Oct. 20, 1982, 57-182776
Int. Cl.³ H01M *4/60*
U.S. Cl. 429—153 **14 Claims**



1. A sheet-shaped polymer secondary battery of layer built type characterized by being a laminate of a plurality of sheet-shaped unit cells, each of which comprises the following elements (a) to (c):

(a) a positive electrode made of a film-shaped polymer having conjugated double bonds and provided with a thin metal layer at one side of the surface of the film-shaped polymer and capable of reversibly doping and undoping negative ions,

(b) a negative electrode meade of a film-shaped polymer having conjugated double bonds and provided with a thin metal layer at one side of the surface of the film-shaped polymer and capable of reversibly doping and undoping positive ions, and

(c) an insulating porous separator supporting a dopant-containing electrolyte and existing between the positive electrode and the negative electrode so as to be adjacent a side of each of the positive and negative electrodes not having said thin metal layer thereon, and wherein adjacent unit cells of the plurality of unit cells are laminated such that the thin metal layer at the one side of the surface of the positive electrode of one unit cell contacts the thin metal layer at the one side of the surface of the negative electrode of the adjacent unit cell.

4,518,666

ENLARGEMENT OF PHOTOPOLYMER IMAGES IN PHOTOPOLYMER MASK

John A. Quinn, Morganville, and James W. O'Neil, Howell, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,702
Int. Cl.³ G03F *9/00*
U.S. Cl. 430—7 **19 Claims**

1. Process of enlarging the image area covered by a stencil or relief image area formed in a photopolymer mask which process consists essentially of

(a) contacting the image area with a swelling agent therefor in the absence of a separate crosslinking agent to effect an equilibrated image enlargement, and

(b) removing excess swelling agent whereby the equilibrated image is fixed in its enlarged state.

11. A process according to claim 1 wherein the image formed in the photopolymer mask is one selected from the group consisting of a halftone image, engineering drawing, and a printed circuit pattern.

4,518,667

AUTOMATIC REPETITIVE REGISTRATION AND IMAGE WISE EXPOSURE OF SHEET SUBSTRATES

Robert B. Heiart, Middletown, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 11, 1982, Ser. No. 387,534
Int. Cl.³ G03F *9/00*
U.S. Cl. 430—22 **31 Claims**

1. A process of registering and imagewise exposing to actinic radiation a sequence of similar sheet substrates, each substrate containing a photosensitive layer comprising the steps of:

(1) advancing a substrate to a position in a device to undertake in either order or concurrently

(a) aligning the substrate and a photomask in a predetermined relationship to one another through a hinged relationship of the photomask and the substrate to permit substantially identical alignment of the photomask and each similar sheet substrate of the sequence;

(b) applying a liquid between the photosensitive layer and the photomask;

(2) contacting through the liquid the substrate containing the photosensitive layer and the photomask wherein liquid between the photosensitive layer and the photomask is displaced when the substrate and photomask are brought into more intimate contact by an advancing pressure line whereby during said contacting substantially no movement of the photosensitive layer relative to the photomask occurs other than a more intimate contact due to displacement of the liquid in a liquid layer and whereby at least one of a set of interfacial or viscous forces due to the liquid layer aids in holding the photosensitive layer and photomask in a fixed position relative to one another;

(3) exposing the photosensitive layer to actinic radiation through the photomask;

(4) removing the photomask from the exposed photosensitive layer;

(5) removing the substrate whereby steps 1 to 5 can be repeated; and

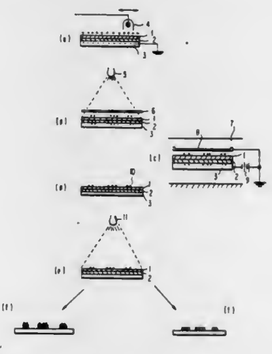
(6) repeating steps 1 to 5 for each of said similar sheet substrates whereby substantially identical imaged substrates are obtained.

4,518,668

METHOD FOR PREPARING A LITHOGRAPHIC PRINTING PLATE

Takao Nakayama, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1983, Ser. No. 478,570
Claims priority, application Japan, Mar. 24, 1982, 57-45558
Int. Cl.³ G03G *1/94, 13/28, 13/00*; C25D *11/34*
U.S. Cl. 430—49 **17 Claims**



1. In a method for preparing a lithographic printing plate using a light-sensitive material comprising an aluminum or aluminum alloy support having a hydrophilic surface provided thereon, in order, a light-sensitive layer and a photoconductive insulating layer, said method comprising the steps of:

electrophotographically forming an electrostatic latent image on the photoconductive insulating layer;

developing the electrostatic latent image with developer particles which have a charge opposite to the charge of the electrostatic latent image and which are opaque to the light to which the light-sensitive layer is sensitive in the presence of an electrode facing the photoconductive insulating layer while applying bias voltage between the electrode and the light-sensitive material so that residual charge on the non-latent areas appears zero and the developer particles are attracted to the latent image;

exposing the light-sensitive layer through the developed image; and

separating the exposed and unexposed areas of the light-sensitive layer together with the photoconductive insulating layer.

4,518,669

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Yuichi Yashiki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 547,243
Claims priority, application Japan, Nov. 6, 1982, 57-195062; Nov. 12, 1982, 57-198357; Nov. 19, 1982, 57-203955
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—57 **57 Claims**

1. An electrophotographic photosensitive member having an intermediate layer between a substrate and a photosensitive layer, characterized in that the intermediate layer comprises a titanium oxide powder having a coating comprising aluminum oxide or tin oxide on the titanium oxide powder particle and a binder.

4,518,670

RECORDING MATERIAL FOR ELECTROPHOTOGRAPHY COMPRISING AMORPHOUS SILICON CONTAINING NITROGEN

Masatoshi Matsuzaki, Fussa; Toshinori Yamazaki, and Hiroyuki Nomori, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,625
Claims priority, application Japan, Jun. 12, 1982, 57-101085
Int. Cl.³ G03G *5/082*
U.S. Cl. 430—58 **6 Claims**

1. A multilayer recording medium comprising sequentially a substrate, a charge transfer layer and a charge generating layer;

said charge transfer layer being a silicon layer containing at least 1 atomic % nitrogen and consisting essentially of nitrogen-containing amorphous hydrogenated silicon, nitrogen-containing amorphous fluorinated silicon or nitrogen-containing amorphous hydrogenated and fluorinated silicon; and

said charge generating layer consisting essentially of amorphous hydrogenated silicon, amorphous fluorinated silicon or amorphous hydrogenated and fluorinated silicon.

4,518,671

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE Se OR Se ALLOY DOPED WITH OXYGEN

Teruo Misumi, Kawasaki, and Yoichi Osato, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 416,213, Sep. 9, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,623
Claims priority, application Japan, Oct. 7, 1981, 56-159952
Int. Cl.³ G03G *5/082, 5/09, 5/14*
U.S. Cl. 430—84 **3 Claims**

1. An electrophotographic photosensitive member free from fatigue due to repeated use which consists essentially of a photoconductive layer comprising selenium or a selenium alloy and containing doped oxygen in an effective amount up to 8000 ppm or less based on selenium and being prepared by vapor depositing a member selected from the group consisting of selenium or a selenium alloy, said member having oxygen doped therein.

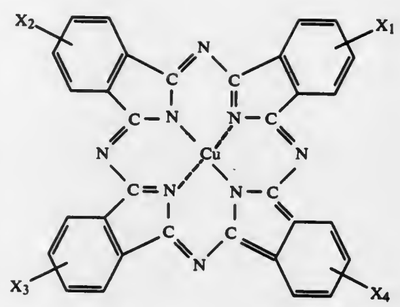
4,518,672

CYAN COLOR TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Motoo Urawa, Funabashi, and Eiichi Imai, Narashino, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

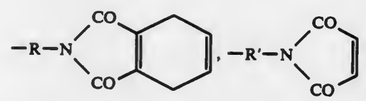
Filed May 16, 1983, Ser. No. 494,866
Claims priority, application Japan, May 21, 1982, 57-86329
Int. Cl.³ G03G *9/10*
U.S. Cl. 430—106 **9 Claims**

1. A cyan toner particle for electrostatic charge development which consists essentially of a compound represented by the general formula [I] shown below, and an electric charge controller, in which the charge polarity of said toner particle is governed by the charge polarity of said charge controller in a binder resin:



[I]

where X_1, X_2, X_3 and X_4 are



or —H, but are not simultaneously hydrogen, and R and R' are each an alkylene group having from 1 to 5 carbon atoms.

4,518,673

ELECTROPHOTOGRAPHIC DEVELOPER

Koji Noguchi, Saitama; Masumi Asanae, Kumagaya, and Fumio Kimura, Isezaki, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,647
Claims priority, application Japan, Apr. 28, 1982, 57-70523; May 12, 1982, 57-78402
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—108 **10 Claims**

1. A transferable electrophotographic developer which includes a toner comprising a resin component and a coloring agent wherein

(1) said resin component includes (A) 10 to 80% by weight of a styrene-acrylic copolymer and (B) 10 to 80% by weight of a polyester resin, and

(2) said toner has an electric resistance of $10^{13}\Omega\cdot$cm or higher and a triboelectrification quantity of 5 μC/g or less or +5 μC/g or more.

4,518,674

DEVELOPING MATERIAL FOR ELECTROPHOTOGRAPHY, PROCESS FOR PREPARATION

Shotaro Watanabe; Makoto Tomono; Goichi Yamakawa, all of Tokyo; Takeo Nishimura, Saitama, and Nobuo Takahashi, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 196,057, Oct. 10, 1982, abandoned, which is a continuation of Ser. No. 922,235, Jul. 5, 1978, abandoned. This application Mar. 26, 1984, Ser. No. 592,752
Claims priority, application Japan, Jul. 5, 1977, 52-80061
Int. Cl.³ G03G *9/10*
U.S. Cl. 430—108 **8 Claims**

1. A process for the preparation of iron powder developer carriers for electrophotography, which comprises the steps of subjecting a starting iron powder pulverized to a particle size smaller than 50μ to a primary calcination treatment at a temperature of 900° to 1200° C. in an inert gas atmosphere or reducing gas atmosphere without using a binder, to thereby form a calcination product, pulverizing and classifying said calcination product to prepare an intermediate iron powder having a particle size of 50 to 200μ, if necessary, reducing the intermediate iron powder in a reducing atmosphere and washing the intermediate iron powder with at least one member selected from the group consisting of water, a solution containing surface active agents and organic solvents, and subjecting the intermediate iron powder to an oxidizing calcination treatment at a temperature of 280° to 390° C. said process being free of the application of a coating to said powder particles.

4,518,675

STRIPPER FOR RADIOSENSITIVE RESIST

Mutsuo Kataoka, Kamakura, Japan, assignor to Toray Industries, Inc., Japan

Filed Feb. 14, 1983, Ser. No. 466,330
Claims priority, application Japan, Feb. 15, 1982, 57-21288
Int. Cl.³ G03C *11/12;* C11D *1/18;* B08B *7/00*
U.S. Cl. 430—256 **21 Claims**

1. A stripper for a radiosensitive resist formed of a fluoroalkyl alpha-haloacrylate polymer, said stripper consisting essentially of a substantially non-aqueous polar solvent of dimethyl sulfoxide, and 0.1 to 40 weight percent of at least one compound selected from the group consisting of alkali metal alkoxides and tetraalkylammonium hydroxides, said stripper further characterized as being used with a post-stripping water rinse and useful at room temperature.

4,518,676

PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING DIARYLIODOSYL SALTS

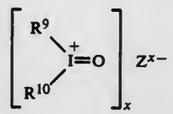
Edward Irving, Burwell, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,800
Claims priority, application United Kingdom, Sep. 18, 1982, 8226707; Jun. 10, 1983, 8315926
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—280 **15 Claims**

1. A photopolymerizable composition consisting essentially of

(a) a cationically polymerizable material, and

(b) as photoinitiator, 0.01 to 10% by weight, based on component (a), of a diaryliodosyl salt of the formula



where

R^9 and R^{10}, which may be the same or different, each represent a monovalent aromatic radical of from 4 to 25 carbon atoms,

x represents 1, 2, or 3, and

Z^{x-} denotes an x-valent anion of a protic acid.

4,518,677

PROCESS FOR MAKING PRINTING PLATES

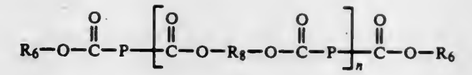
Rudolph L. Pohl, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 394,565, Jul. 2, 1982, Pat. No. 4,442,302, which is a continuation-in-part of Ser. No. 175,171, Aug. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 20,778, Mar. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,964, Jan. 4, 1978, abandoned. This application Apr. 9, 1984, Ser. No. 598,113
Int. Cl.³ G03F *7/02;* G03C *5/24*
U.S. Cl. 430—306 **3 Claims**

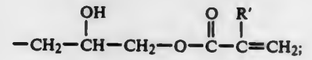
1. The process of making a printing relief which comprises:

(A) admixing the components of a photopolymer composition comprising:

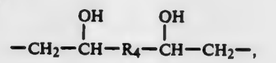
(1) a liquid terminally olefinically unsaturated linear polymer having the structure

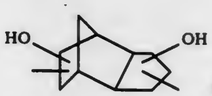


wherein P is a polymer residue having a number average molecular weight of at least about 1000, selected from the group consisting of homopolymers of butadiene, isoprene, chloroprene and isobutylene and copolymers of butadiene with styrene, butadiene with acrylonitrile, butadiene with isoprene and ethylene with 1-butene, and the corresponding saturated residues; R_6 is

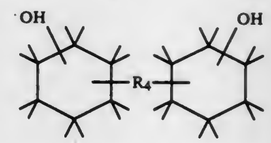


R_8 is selected from the group consisting of



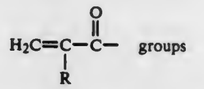


and



where each —OH group and free valence bond is on an adjoining carbon atom; R_4 is selected from the group consisting of aliphatic hydrocarbon, cycloaliphatic hydrocarbon and monocyclic aromatic hydrocarbon radicals containing up to 30 carbon atoms with 0–2 ester linkages or 0–7 ether linkages; R' is selected from the group consisting of —H and —CH_3 groups; and n = 1–5;

(2) from about 1 to about 50% by weight based on the weight of the polymer of at least one ethylenically unsaturated monomer selected from the group consisting of acrylonitrile, methacrylonitrile, styrene, methyl substituted styrene, N-vinyl-pyrrolidone, and monomers containing one or more



groups

wherein R is hydrogen or a C_1–C_3 alkyl group;

(3) from about 0.05 to about 10% by weight based on the weight of the polymer of a photoinitiator; and

(4) from about 0.01 to about 2% by weight based on the weight of the polymer of a stabilizer;

(B) spreading the photopolymer composition in a layer on a support to form a photopolymer element;

(C) exposing to actinic light selected areas of said layer on said support until substantial cross-linking takes place in the exposed areas without significant cross-linking in the unexposed areas; and

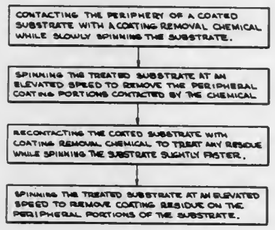
(D) removing the unexposed areas of photopolymer composition by washing the photopolymer element with an aqueous detergent solution.

4,518,678

SELECTIVE REMOVAL OF COATING MATERIAL ON A COATED SUBSTRATE

Landon K. Allen, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 16, 1983, Ser. No. 562,241
Int. Cl.³ B05D 3/12; G03C 1/76, 3/00
U.S. Cl. 430—311 **12 Claims**



1. An improved process for the production of a plurality of semiconductor devices from a single substrate wherein a substrate is coated with a photosensitive coating material, exposed to a selective light pattern, and then treated with a chemical developer to remove portions of said coating to permit further processing of selective substrate portions, the improvement comprising:

(a) exposing at least one surface of said substrate adjacent the peripheral edge thereof to a light pattern capable of rendering peripheral portions of said coating material into a more easily removable form than the remainder of said coating material; and

(b) selectively removing peripheral portions of said coating material by developing said exposed photosensitive coating material;

whereby the removal of said coating material from the peripheral edge of the substrate mitigates the inadvertent dislodgement of coating particles from the peripheral portion of said substrate during subsequent processing of said coating substrate.

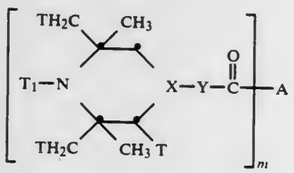
4,518,679

COLOR-PHOTOGRAPHIC RECORDING MATERIAL

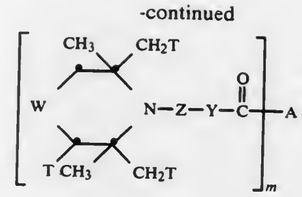
David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 2, 1983, Ser. No. 557,366
Claims priority, application Switzerland, Dec. 3, 1982, 7046/82
Int. Cl.³ G03C 7/40, 7/26
U.S. Cl. 430—372 **14 Claims**

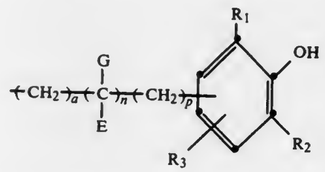
1. A colour-photographical recording material which, in at least one light-sensitive silver halide emulsion layer, one intermediate layer and/or one protective layer, contains, as a stabilizer, a light stabilizing amount of at least one polyalkylpiperidine compound, wherein the polyalkylpiperidine compound has one of the formulae I or II


(I)

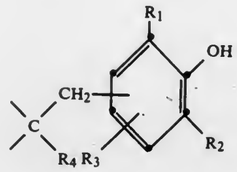
-continued


(II)

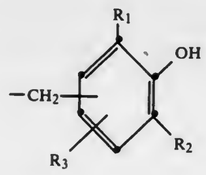
in which m is 1 or 2, if m=1, A is a group of the formula



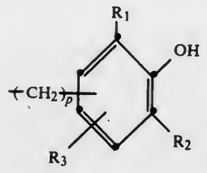
and, if m=2, A is a group of the formula



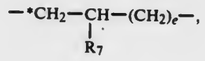
in which R_1 is hydrogen, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl, C_7–C_9-phenylalkyl, phenyl or C_7–C_{10}-alkylphenyl, R_2 is C_1–C_8-alkyl, C_5–C_8-cycloalkyl, C_7–C_9-phenylalkyl, phenyl or C_7–C_{10}-alkylphenyl, R_3 is hydrogen or methyl, R_4 is hydrogen, C_1–C_{12}-alkyl, allyl, benzyl, cyclohexyl or a group



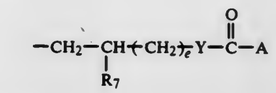
G is hydrogen or a group



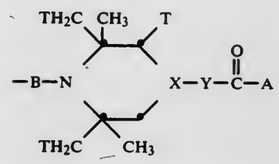
E is hydrogen, methyl, —CN, —COR_5 or —$COOR_5$, R_5 being C_1–C_8-alkyl or C_3–C_4-alkoxyalkyl, and n and p independently of one another are 0 or 1 and a is 0, 1 or 2, y is —O— or —$N(R_6)$—, R_6 being hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, C_5–C_8-cycloalkyl, phenyl, C_7–C_{14}-alkaryl, C_7–C_{14}-aralkyl or C_3–C_4 alkoxyalkyl, Z is a group



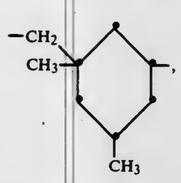
in which R_7 is hydrogen, methyl, ethyl, phenoxymethyl, phenyl or —OR_8, but is only —OR_8 if e is 1, and in which R_8 is hydrogen or —COL, L is C_1–C_4-alkyl, e is 0 or 1 and the *C is attached at the piperidine nitrogen, T is hydrogen or methyl, T_1 is hydroxyl, C_1–C_{12}-alkyl, C_3–C_6-alkenylmethyl or C_3–C_4-alkynylmethyl and C_7–C_{14}-aralkyl, glycidyl, C_1–C_4-alkyl which is substituted by halogen, cyano, —$COOR_9$ or —$CON(R_{10})(R_{11})$, a group —COR_{12}, —$COOR_9$ or —$CON(R_{10})(R_{11})$ or a group —CH_2—$CH(R_{13})$—OR_{14}, —SOR_{15}, —SO_2R_{15}, —OR_9 or —$OOCR_{12}$ in which R_9 is C_1–C_{12}-alkyl, allyl, cyclohexyl or benzyl, R_{10} is C_1–C_{12}-alkyl, allyl, cyclohexyl, benzyl, phenyl or C_7–C_{10}-alkylphenyl and R_{11} is hydrogen, C_1–C_{12}-alkyl, allyl, cyclohexyl or benzyl, or R_{10} and R_{11}, together with the N atom to which they are attached, form a 5-membered or 6-membered heterocyclic ring, R_{12} is hydrogen, C_1–C_{12}-alkyl, C_2–C_6-alkenyl, chloromethyl, C_5–C_8-cycloalkyl, C_7–C_{14}-aralkyl, phenyl, C_7–C_{10}-alkylphenyl or phenyl, phenylmethyl or phenylethyl which is substituted by one or two C_1–C_4-alkyl groups and by one hydroxyl group, R_{13} is hydrogen, C_1–C_4-alkyl, C_3–C_4-alkoxyalkyl, phenyl or phenoxymethyl, R_{14} is hydrogen, C_1–C_{12}-alkyl or a group —COR_{12} or —$CON(R_{10})(R_{11})$ and R_{15} is C_1–C_{12}-alkyl, phenyl or C_7–C_{10}-alkylphenyl, or T_1 is a group of the formula

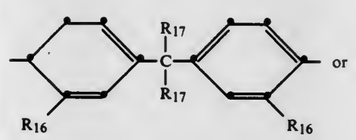


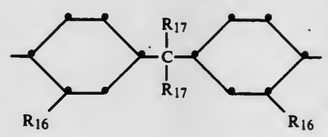
or of the formula



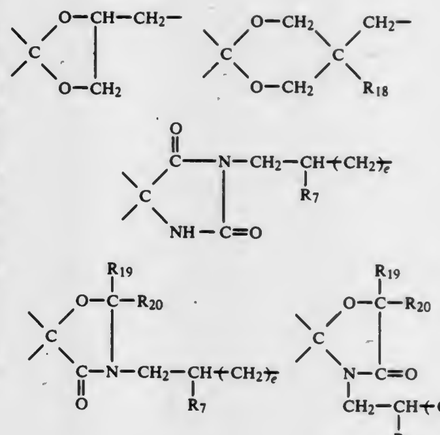
in which B is a group C_rH_{2r} in which r is an integer of from 2 to 12, or is C_4–C_8-alkenylene, C_4–C_8-alkynylene, phenylene, xylylene, bitolylene, C_5–C_{12}-cycloalkylene or a group —CONH—B_1—NECO— in which B_1 is a group C_rH_{2r}, phenylene, naphthylene, tolylene or a group of the formulae



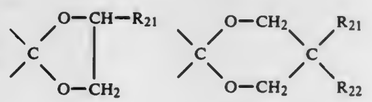


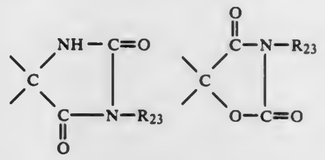


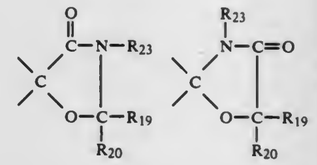
in which R_{16} is hydrogen or methyl and R_{17} is hydrogen, methyl or ethyl, X is one of the groups



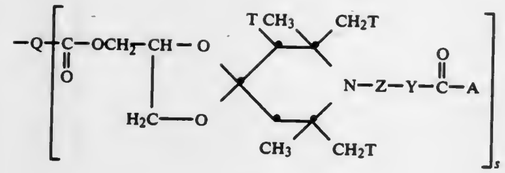
and W is one of the groups



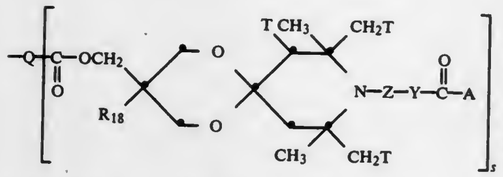




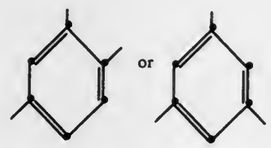
in which R_{18} is methyl or ethyl, R_{19} is hydrogen, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl or C_7–C_{14}-aralkyl, R_{20} is C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl or phenyl, or R_{19} and R_{20}, together with the C atom to which they are attached, form a C_5–C_{12} cycloalkane or alkylcycloalkane ring, R_{21} is hydrogen, C_1–C_{12}-alkyl or a group of the formula —CH_2—$OCOR_{24}$ in which R_{24} is hydrogen, C_1–C_4-alkyl, C_2–C_6-alkenyl, cyclohexyl, phenyl, benzyl or chloromethyl, or is a group —CH_2—O—SO_2R_{27} in which R_{27} is methyl, phenyl or p-tolyl, or is one of the groups



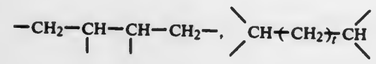
or

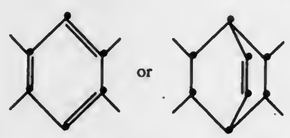


in which s is 1, 2 or 3, and, if s=1, Q is as defined above for B, if s=2, Q is a trivalent radical of the formulae

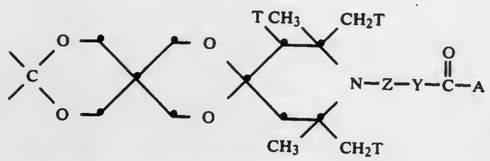


and, if s=3, Q is a tetravalent radical of the formulae





in which t is an integer of 1 to 8, and R_{21} additionally is also a group of the formula $—CH_2O—SOR_{25}$ in which R_{25} is C_1–C_4-alkyl, p-tolyl or phenyl, or is a group of the formula $—CH_2—CO—NHR_{26}$ in which R_{26} is hydrogen or C_1–C_4-alkyl, R_{22} is hydrogen or C_1–C_4-alkyl and R_{23} is hydrogen, C_1–C_{12}-alkyl, C_3–C_4-alkoxyalkyl, C_5–C_8-cycloalkyl, allyl or benzyl, and, if m is 1, W can additionally also be a group of the formula



the radicals and symbols mentioned several times always being as defined initially.

4,518,680

BLEACH-FIXING SOLUTION AND PROCESSING OF LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL BY USE THEREOF

Shigeharu Kobosbi; Masao Ishikawa; Kazuhiro Kobayashi; Toshihiko Kimura, and Moeko Higuchi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,551

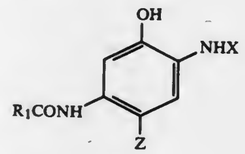
Claims priority, application Japan, Feb. 17, 1983, 58-23766; Feb. 18, 1983, 58-24863

Int. Cl.³ G03C *7/00, 5/38, 7/34*

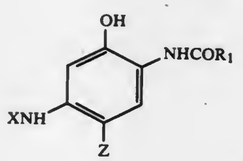
U.S. Cl. 430—393 **12 Claims**

1. A method for processing a light-sensitive silver halide color photographic material, which comprises developing an imagewise exposed light-sensitive silver halide color photographic material containing a cyan coupler and then bleach fixing with a bleach-fixing solution containing a diethylenetriamine pentaacetic acid iron III complex salt and a fixing agent and having a pH value of 4 or higher; said cyan coupler being at least one cyan coupler represented by the formula (I) or the formula (II) shown below:

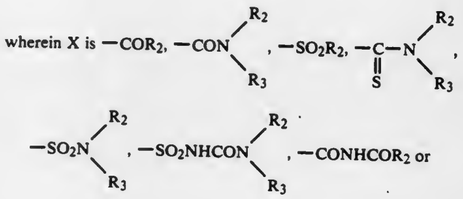
Formula (I)



Formula (II)



wherein X is $—COR_2$, $—CON(R_2)(R_3)$, $—SO_2R_2$, $—C(=S)—N(R_2)(R_3)$,



$—CONHSO_2R_2$,

R_2 represents an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group or a heterocyclic ring; R_3 represents a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group or a heterocyclic ring or R_2 and R_3 may be bonded to each other to form a 5- to 6-membered ring, R_1 is a ballast group, Z is a hydrogen atom or an eliminable group through coupling with the oxidation product of an aromatic primary amine color developing agent.

4,518,681

PROCESS FOR THE MANUFACTURE OF SYNTHETIC PAPER AND THE PRODUCT THEREOF

Oscar Johnson, Reynoldsburg, and Robert A. Luecke, Newark, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 277,318, Jun. 25, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 571,121

Int. Cl.³ G03C *1/76;* **B05D** *3/06*

U.S. Cl. 430—532 **8 Claims**

1. In a method of preparing a synthetic film having adhered thereto a photographic gel emulsion wherein the synthetic film comprises a blend comprising a styrene polymer resin, an ethylene polymer resin, and an inorganic filler, the improvement which comprises utilizing titanium dioxide as the sole inorganic filler and oxidizing at least one surface of the film so-prepared, thereby obtaining a synthetic film having the capability of enhanced adhesion to a photographic gel emulsion and adhering a layer of photographic gel emulsion to said oxidized surface of said synthetic film.

4,518,682

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hidetoshi Kobayashi; Toshiro Takahashi; Shigeo Hirano; Takeshi Hirose, and Keiichi Adachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 15, 1983, Ser. No. 532,631

Claims priority, application Japan, Sep. 16, 1982, 57-161515

The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.

Int. Cl.³ G03C *7/26*

U.S. Cl. 430—543 **11 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a support having positioned thereon:

a light-sensitive silver halide emulsion layer; and

a compound represented by the general formula (I):

A-B (I)

wherein A is a residue of a compound capable of undergoing a coupling reaction with an oxidized primary amine developer, the residue being derived by eliminating a hydrogen atom from an active position of the compound; and

B is a group capable of being released through a coupling reaction to exert a fogging effect wherein B is a residue of a thiocarbonyl selected from the group consisting of thioureas, thioamides, thiocarbamates, dithiocarbamates, rhodanines and thiohydantoins or is a residue of a compound containing a functional group or moiety selected from hydrazines, hydrazones, polyamines, enamines, acetylenes, quaternary salts and aldehydes.

4,518,683

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kazuo Kato, Hino; Fumio Hamada, Fussa, and Kenji Ito, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,114

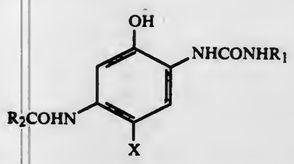
Claims priority, application Japan, Sep. 2, 1982, 57-153551

Int. Cl.³ G03C *7/26*

U.S. Cl. 430—546 **15 Claims**

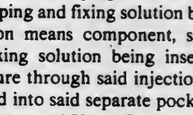
1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer and a non-light-sensitive layer adjacent to said silver halide emulsion layer, wherein said silver halide emulsion layer contains a cyan coupler having the following Formula [I] and a compound having the following Formula [II], and further said non-light-sensitive layer contains a compound having said Formula [II];

Formula [I]



wherein X is a hydrogen atom or a group which can be split off by the coupling reaction with the oxidized product of an aromatic primary amine color developing agent; R_1 is an aryl group or a heterocyclic group; and R_2 is a ballasting group necessary to cause said cyan coupler having said Formula [I] and the cyan dye formed from said cyan coupler to be nondiffusible;

Formula [II]



wherein R_3 and R_4 each is an alkyl group, an alkenyl group, or a cycloalkyl group each having from 3 to 20 carbon atoms, or an aryl group having from 6 to 20 carbon atoms.

4,518,684

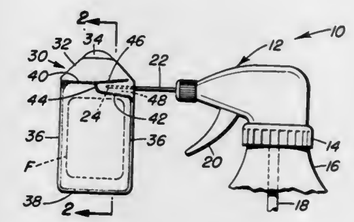
RAPID X-RAY DEVELOPING SYSTEM

Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20910

Filed May 17, 1984, Ser. No. 611,481

Int. Cl.³ G03C *5/24, 1/48*

U.S. Cl. 430—403 **10 Claims**



1. A rapid X-ray developing system, comprising:

a film package component, said film package component having a pouch-like enclosure and an adjacent separate pocket therewithin;

a seal means, said seal means being suitably affixed to the inside of said separate pocket;

an unexposed X-ray film, said unexposed X-ray film being enclosed within said pouch-like enclosure;

an injection means component, said injection means component being separate from said film package component; and

a combined developing and fixing solution, said combined developing and fixing solution being contained within said injection means component, said combined developing and fixing solution being inserted into said pouch-like enclosure through said injection means component being inserted into said separate pocket at a selected time when said unexposed X-ray film has been exposed and is ready for processing, said injection means component being withdrawn thereafter.

4,518,685

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Akihiko Ikegawa; Mitsunori Ono, and Yuji Mihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

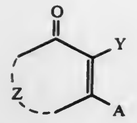
Filed Apr. 17, 1984, Ser. No. 601,402

Claims priority, application Japan, Apr. 18, 1983, 58/68007

Int. Cl.³ G03C *1/46, 1/02*

U.S. Cl. 430—505 **34 Claims**

1. A silver halide photographic light-sensitive material which comprises a support having thereon a light-sensitive silver halide emulsion layer, wherein the photographic light sensitive material therein contains a blocked photographic agent represented by the formula (I):



(I)

wherein A represents a photographic agent moiety which is bonded to a blocking moiety through a hetero atom or a group which is bonded to a blocking moiety through a hetero atom and capable of releasing a photographic agent upon a subsequent reaction after the group is released; Y represents a hydrogen atom or a substituent; and Z represents an atomic group necessary to form a carbocyclic ring or a heterocyclic ring.

4,518,686

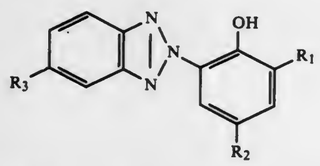
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING UV FILTER COMPOUNDS

Masao Sasaki, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,963
Claims priority, application Japan, Jun. 5, 1982, 57-96814
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—512 **7 Claims**

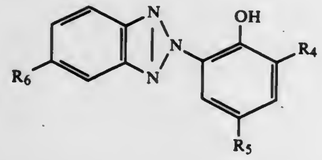
1. A color photographic light-sensitive material comprising a reflective support having thereon a plurality of silver halide emulsion layers of which the emulsion layer located farthest from said support has, on each of both the support side thereof and the uppermost side at least one nonlight-sensitive layer containing an effective amount of an ultraviolet absorbing agent, said ultraviolet absorbing agent being used in said nonlight-sensitive layer on the uppermost side of said emulsion layer being a 2-(2'-hydroxyphenyl)benzotriazole-type compound which is in the liquid form at normal room temperature, and wherein said 2-(2'-hydroxyphenyl)benzotriazole-type compound is selected from the group consisting of

Formula [I]



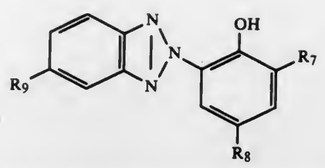
wherein R_1 and R_2 independently represent an alkyl, an aryl, an alkoxy and an aryloxy radical, R_3 represents a hydrogen atom, a halogen atom, an alkyl, an aryl, an alkoxy, an aryloxy, an alkenyl, a nitro or a hydroxy radical;

Formula (II)



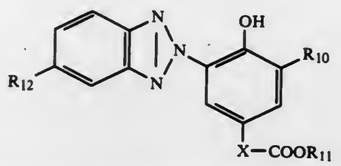
wherein R_4 represents a methyl, ethyl or propyl radical, R_5 represents a secondary alkyl having from 4 to 10 carbon atoms, R^6 represents a hydrogen atom, a halogen atom, an alkyl, or an alkoxy radical having from 1 to 8 carbon atoms;

Formula (III)



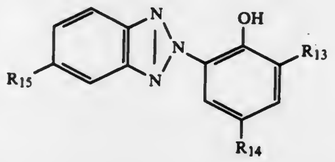
wherein R_7, R_8 and R_9 independently represent an alkyl radical having from 4 to 10 carbon atoms, provided that at least one of R_7, R_8 and R_9 represents a secondary alkyl;

Formula (IV)



wherein R_{10} represents a secondary or tertiary alkyl having from 1 to 8 carbon atoms, X represents an alkylene having from 1 to 6 carbon atoms, R_{11} represents an alkyl group having from 1 to 12 carbon atoms, R_{12} represents a hydrogen atom, a halogen atom, an alkyl or an alkoxy radical having from 1 to 8 carbon atoms; and

Formula (V)



wherein R_{13} and R_{14} independently represent a secondary alkyl having from 4 to 10 carbon atoms and R_{15} represents a hydrogen atom, a halogen atom and an alkoxy radical having from 1 to 8 carbon atoms.

4,518,687

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

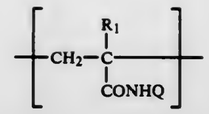
Tsumoru Hirano; Makoto Umemoto, and Mitsunori Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 7, 1983, Ser. No. 539,857
Claims priority, application Japan, Oct. 7, 1982, 57-176748
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—548 **17 Claims**

1. A silver halide color photographic light-sensitive material, comprising:

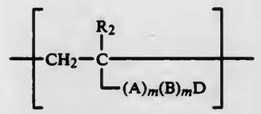
a support base having thereon;

a silver halide emulsion layer containing a cyan dye-forming oleophilic polymer coupler comprised of three repeating units including a cyan coupler repeating unit corresponding to general formula (I), an ethylene type unsaturated monomer repeating unit corresponding to general formula (II) which contains an acid component and an ethylene type unsaturated monomer repeating unit from group (III); wherein the cyan dye-forming oleophilic polymer coupler is prepared by dissolving the monomeric components thereof in an organic solvent and polymerizing the same therein and is present in the form of a dispersed product, said polymer coupler having been dissolved in an organic solvent followed by emulsion dispersion in a gelatin aqueous solution in the presence of a surfactant;



(I)

wherein R_1 represents a hydrogen atom, a lower alkyl group containing 1 to 4 carbon atoms or a chlorine atom, and Q represents a cyan coupler residue capable of forming a dye upon coupling with an oxidized aromatic primary amine developing agent;



(II)

wherein R_2 represents a hydrogen atom, a lower alkyl group containing 1 to 4 carbon atoms or a chlorine atoms, a represents —COO— or —CONH—, B represents an alkylene, aralkylene or phenylene group containing 1 to 10 atoms, and the alkylene group may be straight chain, branched chain or cyclic, D represents —COOM or —SO_3M, M represents a hydrogen atom or an alkali metal, and m represents 0 to 1; and wherein the ethylene type unsaturated monomer from group (III) is an ester of acrylic acid other than methyl acrylate, an amide of acrylic acid, an ester of α-chloroacrylic acid, an amide of α-chloroacrylic acid, an ester of α-alkacrylic acid, an amide of α-alkacrylic acid, a vinyl ester or styrene.

4,518,688

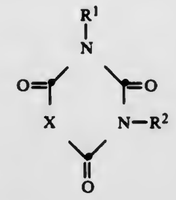
COLOR-PHOTOGRAPHIC RECORDING MATERIAL

David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

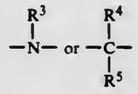
Filed Nov. 25, 1983, Ser. No. 555,633
Claims priority, application Switzerland, Nov. 26, 1982, 6894/82
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—551 **10 Claims**

1. A colour-photographic recording material which, in at least one light-sensitive silver halide emulsion layer, one intermediate layer, one image-receiving layer and/or one protective layer, contains, as a stabiliser, a light stabilising amount of at least one compound of the formula I

(I)



in which X is a group



and R^1, R^2, R^3, R^4 and R^5 are monovalent organic radicals, at least one of which contains a sterically hindered phenol group and at least one of which contains a polyalkylpiperidine group.

4,518,689

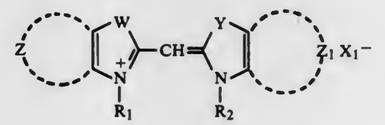
SPECTRALLY SENSITIZED INNER LATENT IMAGE TYPE SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Yasuhiro Noguchi, and Yuji Mihara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

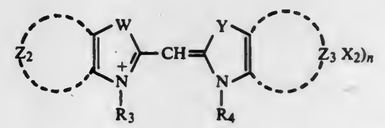
Filed Oct. 27, 1983, Ser. No. 546,125
Claims priority, application Japan, Oct. 27, 1982, 57-188594
Int. Cl.³ G03C *1/14*
U.S. Cl. 430—574 **11 Claims**

1. An inner latent image type silver halide photographic emulsion which is spectrally sensitized by adding at least one monomethine cyanine dye represented by general formula (II) to a direct positive inner latent image type silver halide photograhic emulsion and thereafter adding additionally at least one monomethine cyanine dye represented by general formula (I) to said emulsion

(I)



(II)



wherein W and Y, which may be identical or different from each other, each represents an oxygen atom, a selenium atom, a sulfur atom or



wherein R_5 represents a lower alkyl group which is unsubstituted or substituted by a halogen atom or a lower alkoxy group, or an allyl group, Z, Z_1, Z_2 and Z_3 each represents an atomic group necessary to form a benzene ring or naphthalene ring, R_1 and R_2 each represents an unsubstituted alkyl group, a haloalkyl group, an alkoxyalkyl group, an aralkyl group, an aryloxyalkyl group or an allyl group, R_3 and R_4 each represents an alkyl group substituted with a carboxyl group or a sulfo group, but at least one of R_3 and R_4 represents an alkyl group substituted with a sulfo group, X_1 represents an anion, X_2 represents a cation, and n is 0 or 1.

4,518,690

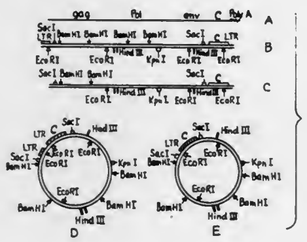
DNA PROMOTER SEQUENCE OF AVIAN TUMOR VIRUS AND USE THEREOF FOR ENHANCED GENE EXPRESSION IN *E. COLI*

Ramareddy V. Guntaka, Teaneck, N.J., assignor to Research Corporation, New York, N.Y.

Continuation of Ser. No. 145,390, Apr. 30, 1982, abandoned.
This application Sep. 27, 1982, Ser. No. 424,631
Int. Cl.³ C12P *21/04, 21/00, 21/02*; C12N *15/00, 1/20, 1/00*; C07H *15/12*
U.S. Cl. 435—71 **25 Claims**

1. A molecule of double-stranded DNA having a length of

about 35 base pairs useful as a promoter of gene expression in *E. coli*, which molecule has the base pair sequence which binds



E. coli RNA polymerase, said sequence being found in the first 150 base pairs at the 3'-end of Avian sarcoma viral DNA.

4,518,691

IN VITRO ENZYMATIC PROCESS FOR PREPARING GLUCURONIDES OF ESTER-CONTAINING ANTICHOLINERGICS

Walter C. Herlihy, Cambridge, Mass., assignor to Repligen Corporation, Cambridge, Mass.

Division of Ser. No. 398,212, Jul. 14, 1982, Pat. No. 4,471,111. This application May 4, 1984, Ser. No. 607,348

Int. Cl.³ C12P *19/44;* **C07H** *15/18*

U.S. Cl. 435—74 **14 Claims**

1. An in vitro enzymatic process for preparing the O-β-D-glucuronic acid of an ester-containing anticholinergic compound having a primary alcohol which comprises:

(a) substantially removing esterases from liver microsomes;

(b) incubating said treated liver microsomes in the presence of:

(1) a suitable buffer to maintain the pH at about 7 to about 8.5;

(2) an ester-containing anticholinergic compound having a primary alcohol; and

(3) uridine 5'-diphosphoglucuronic acid, for a sufficient time to conjugate the aglycon with glucuronic acid, and

(c) isolating the desired O-β-D-glucuronic acid of said ester-containing anticholinergic compound having a primary alcohol.

4,518,692

PRODUCTION OF L-AMINO ACIDS BY TRANSAMINATION

J. David Rozzell, Cambridge, Mass., assignor to Genetics Institute, Inc., Boston, Mass.

Filed Sep. 1, 1983, Ser. No. 528,730

Int. Cl.³ C12P *13/06, 13/04, 13/22, 13/08, 13/12*

U.S. Cl. 435—116 **17 Claims**

1. A process for producing alpha amino acids or derivatives thereof, said process comprising reacting an alpha-keto acid with L-aspartic acid in the presence of transaminase enzyme to produce (1) an alpha amino acid corresponding to said alpha-keto acid and (2) oxaloacetate; and decarboxylating said oxaloacetate.

4,518,693

IMMOBILIZED BIOCATALYSTS

Wei-Youh Kuu, Baton Rouge, La., assignor to Research Corporation, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 437,945

Int. Cl.³ C12N *11/10, 11/04;* **C12P** *7/06*

U.S. Cl. 435—178 **5 Claims**

1. A method for immobilization of microbial cells comprising:

(a) forming a solution of an agar or carrageenan hydrogel;

(b) introducing microbial cells into the hydrogel solution, said microbial cells being at temperature 40°–48° C. when agar is used, and 37°–50° C. when ccarrageenan is used;

(c) forming spherical gel beads of the microbial cell containing hydrogel solution, such beads created by contacting the hydrogel solution with a water-immiscible liquid at a temperature below that of the hydrogel solution;

(d) activating the microbial cells by incubating the spherical beads containing culture for 12–50 hours, such incubation resulting in the formation of colonies of microbial cells in the spherical beads which produce CO_2 thereby decreasing resistance of the beads to diffusion;

(e) diffusing the monomer, acrylamide (ACAM), the cross-linking agent, N,N'-methylene-bis-acrylamide (BIS), and the accelerator, β-dimethylaminopropionitrile (DMAPN) or N,N,N',N'-tetramethylenediamine (TEMED) into the beads by introducing the ACAM, BIS, and DMAPN or TEMED to the gel beads in solution;

(f) after diffusion removing the solution of ACAM, BIS and either DMAPN or TEMED;

(g) contacting the gel beads with a polymerization initiator selected from the group consisting of $K_2S_2O_8$ and $(NH_4)_2S_2O_8$ to cause polymerization;

(h) sparging the solution with nitrogen during polymerization;

(i) stirring the beads so as to increase uptake of polymerization initiator, and;

(j) washing the polymerized beads with water to remove unpolymerized molecules.

4,518,694

AQUEOUS COMPOSITIONS CONTAINING STABILIZED ENZYMES

Elias H. Shaer, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 173,779, Jul. 30, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,552

Int. Cl.³ C12N *9/96*

U.S. Cl. 435—188 **19 Claims**

1. An aqueous-based enzyme containing composition wherein the enzymes have enhanced stability against loss of activity, the composition comprising on a weight basis:

(a) from about 0 to about 55% of a surfactant selected from the group consisting of anionic and nonionic surfactants, and mixtures thereof;

(b) from about 0.006 to about 5% of an active enzyme selected from the group consisting of protease and alpha amylase enzymes, and mixtures thereof, said enzyme being provided in pure form or as incorporated within a commercial enzyme preparation comprising from about 2 to about 80% of said enzyme and from about 20 to about 98% of a carrier therefor;

(c) an enzyme stabilizer consisting essentially of on a weight basis of said composition:

(i) from about 0.5 to about 15% of a salt of a lower molecular weight organic acid selected from the group consisting of alkali metal, ammonium and alkanol ammonium salts of formic, acetic, propionic, butyric, and valeric acids, and mixtures thereof, and

(ii) from about 1.0 to about 25% of an alcohol having the formula ROH wherein R is an alkyl having one to six carbon atoms, and

(d) from about 10 to about 90% water.

4,518,695

PROCESS FOR ELUTING EGG WHITE LYSOZYME

Mineo Hasegawa, Hachioji, Japan, assignor to Kewpie Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 443,956

Claims priority, application Japan, May 29, 1982, 57-91879

Int. Cl.³ C12N *9/36*

U.S. Cl. 435—206 **11 Claims**

1. In a process for eluting egg white lysozyme by contacting a weakly acidic cation exchange resin having egg white lysozyme adsorbed thereon with an eluting agent comprising a salt solution having a pH of about 6.5 to 8.0, the improvement wherein an alkali agent is added to the mixture of the weakly acidic cation exchange resin having egg white lysozyme adsorbed thereon and the eluting agent in a quantity such that the pH of the mixture during elution is between about 6.5 and 8.0.

4,518,696

STABILIZED LIQUID BACTERIAL SUSPENSION FOR ORAL ADMINISTRATION TO ANIMALS

Sybil H. Gehrman, and Randolph S. Porubcan, both of West Allis, Wis., assignors to Chr. Hansen's Laboratory, Inc., Milwaukee, Wis.

Filed Jan. 11, 1983, Ser. No. 457,226

Int. Cl.³ C12N *1/20, 1/04;* **C12R** *1/225, 1/23*

U.S. Cl. 435—253 **4 Claims**

1. A stabilized liquid bacterial composition for administration to animals, consisting essentially of anhydrous sunflower seed oil having dispersed therein dried viable cells of animal-probiotic Lactobacilli together with a sufficient amount of fumed silica to maintain said cells in anhydrous suspension, said suspension containing from 1×10^8 to 1×10^{10} colony forming units (CFU) of said cells per cubic centimeter of the oil suspension, said cells having been prepared for addition to said oil by drying under conditions favorable to cell stability to a water activity (a_w) below 0.20.

4,518,697

ACID STABLE PROTEASE FROM MUTANTS OF GENUS ASPERGILLUS

Friedhelm Bartnik, Düsseldorf; Joachim Schindler, Hilden; Albrecht Weiss, Erkrath, and Rolf Schmid, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,415

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1981, 3149457

Int. Cl.³ C12N *1/14, 9/62;* **C12R** *1/685*

U.S. Cl. 435—254 **1 Claim**

1. A mutant form of the wild fungus strain *Aspergillus niger* var. tienhem CBS 319.81 selected from the group consisting of mutants having the following depository designations:

Aspergillus niger AP 114 - III - 69 (CBS 320.81)

Aspergillus niger AP 114 - IV - 70 (CBS 321.81)

Aspergillus niger AP 114 - IV - 74 (CBS 322.81)

Aspergillus niger AP 114 - IV - 80 (CBS 323.81).

4,518,698

PLASMID AND PRODUCTION THEREOF

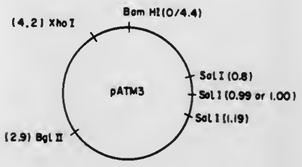
Masakazu Kikuchi, Toyono; Takaki Hayakawa, Osaka, and Makoto Kida, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 4, 1982, Ser. No. 385,053

Claims priority, application Japan, Oct. 6, 1981, 56-89942

Int. Cl.³ C12N *15/00, 1/00*

U.S. Cl. 435—317 **3 Claims**



1. An isolated plasmid pATM3, which is characterized by the following properties:

(1) Molecular weight: approximately 4.37±0.05 megadaltons,

(2) Shape: circular,

(3) Restriction endonuclease cleavage sites:
Bam HI (0/4.4), Sal I (0.8, 0.99 or 1.00, and 1.19), Bgl II (2.9) and Xho I (4.2),

(4) Sensitivity to restriction endonucleases:

Restriction endonuclease	Number of cleavage sites
Bam HI	1
Bgl II	1
Sal I	3
Sma I	>4
Xho I	1

4,518,699

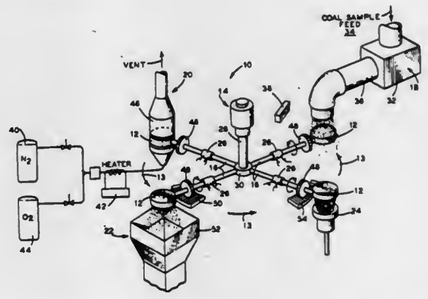
ON-LINE COAL ANALYZER

Thomas L. Bohl, Madison, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 395,427, Jul. 6, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 532,878

Int. Cl.³ G01N *33/22, 35/02*

U.S. Cl. 436—49 **4 Claims**



1. A process for the on-line analysis of coal comprising the steps of rotating a sample cup of known volume around a centrally located drive means, filling said sample cup with a sample of pulverized coal at a first station, weighing said sample, using said weight and volume of said sample to calculate the bulk density of said sample, indexing said sample cup to a second station, performing at least one analysis step on the coal sample at said second station, monitoring the weight of said sample cup during said at least one analysis step to indicate complete drying of said sample when no more weight loss is detected, indexing said sample cup to a third station, dumping the residue of the coal sample at said third station, indexing said sample cup to a fourth station, cleaning said sample cup at said fourth station, and rotating said sample cup back to said first station.

4,518,700

METHOD AND APPARATUS FOR REGULATING THE TEMPERATURE OF AN ANALYTICAL INSTRUMENT REACTOR

Donald E. Stephens, Palo Alto, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 4, 1981, Ser. No. 327,378

Int. Cl.³ G01N *31/08*

U.S. Cl. 436—52 **4 Claims**

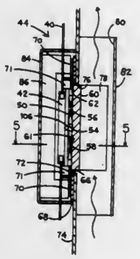
1. A reactor temperature regulator apparatus for an analytical instrument, said apparatus comprising:

a thermal mounting member;

means attached to said thermal mounting member for providing a flow path for a fluid stream;

solid state heat transfer means attached to said thermal

mounting member for heating and cooling said thermal mounting member; and



a heat sink block attached to said heat transfer means, the thermal capacitance of said heat sink block being at least seven times the thermal capacitance of said thermal mounting member.

4,518,701

REDUCTION IN NON-SPECIFIC INTERFERENCE IN HYDROPHOBIC LIGAND ASSAYS

Pyare L. Khanna, San Jose, and Floyd W. Colvin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 2, 1983, Ser. No. 500,503
Int. Cl.³ G01N *33/52*
U.S. Cl. 436—500 **8 Claims**

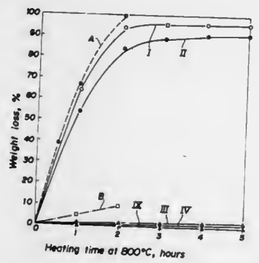
1. In a method for determining a hydrophobic analyte employing a reagent comprising said analyte and a fluorescent label conjugated to a water soluble polysaccharide carrier, wherein said reagent is subject to nonspecific interference from serum components, the improvement which comprises, contacting said reagent with a lipid modified water insoluble polysaccharide reagent separating said reagent from said polysaccharide reagent.

4,518,702

SILICON CARBIDE-BORON CARBIDE CARBONACEOUS BODY

Hisayoshi Yoshida, Ogoori; Ichitaro Ogawa; Tsuyoshi Hagio, both of Tosu; Kazuo Kobayashi, Kurume, and Takayoshi Yamamoto, Iizuka, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 571,188
Claims priority, application Japan, Jan. 19, 1983, 58-6863; May 13, 1983, 58-83817
Int. Cl.³ C04B *35/56*
U.S. Cl. 501—90 **6 Claims**



1. A carbonaceous shaped body which is a sintered body of a powdery mixture comprising a powder of a low-temperature coke and a combination of powders of boron carbide and silicon carbide, the weight proportion of the boron carbide and the silicon carbide being in the range from 2:98 to 80:20 and the volume proportion of the coke powder to the combination of the powders of boron carbide and silicon carbide being in the range from 50:50 to 95:5.

4,518,703

CRYSTALLINE SILICA CATALYSTS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 157,211, Jun. 9, 1980, Pat. No. 4,433,187, which is a division of Ser. No. 12,868, Feb. 16, 1979, Pat. No. 4,270,017. This application Dec. 6, 1982, Ser. No. 447,477
Int. Cl.³ B01J *21/06, 21/16, 27/00*
U.S. Cl. 502—63 **103 Claims**

29. A catalyst comprising a hydrogen activator comprising a member selected from the group consisting of chromium, copper, nickel and platinum, a crystalline silica polymorph having a pore volume of about 0.18 cc/gram, and an inorganic refractory oxide selected from the group consisting of alumina, silica, magnesia, beryllia and zirconia.

95. A catalyst comprising a microporous crystalline silica and a promoter containing a component selected from the group consisting of platinum, phosphorus, chromium, nickel, and copper.

96. A catalyst as defined in claim **95** wherein said catalyst further comprises an inorganic refractory oxide.

97. A catalyst as defined in claim **96** wherein said refractory oxide comprises alumina.

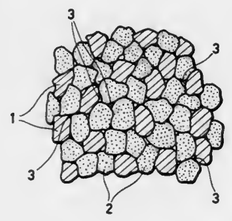
98. A catalyst as defined in claim **96** wherein said refractory oxide comprises silica.

4,518,704

ACTIVATED CARBON FORMED BODY AND METHOD OF PRODUCING THE SAME

Yoshikatsu Okabayashi; Noboru Nakamura; Takeshi Matsumoto, and Yoshimasa Osumi, all of Kokubu, Japan, assignors to Kyoto Ceramic Kabushiki Kaisha, Japan

Continuation of Ser. No. 326,577, Dec. 12, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 545,074
Claims priority, application Japan, Dec. 8, 1980, 55-173500; Dec. 8, 1980, 55-173501
Int. Cl.³ B01J *20/20, 20/28, 21/18;* B32B *3/12*
U.S. Cl. 502—80 **8 Claims**



1. A method for producing a porous, fired, activated carbon formed body having a honeycombed structure about 60 to 70% of which is open space, comprising the steps of:
(a) forming a mixture of from 70 to 30 wt. % of activated carbon granules, with from 30 to 70 wt. % of a clay carrier;
(b) extruding said mixture into a body having a honeycombed shape about 60 to 70% of which is open space;
(c) drying the thus-formed body; and
(d) firing said dried body in a non-oxidizing atmosphere at a temperature of about 1100° C. for about 1 hour to about 4 hours thereby bonding the activated carbon granules with the clay carrier.

6. The porous, fired, activated carbon body according to claim **1** wherein said body defines about 300 to 600 cells per square inch.

8. A porous, fired, activated carbon formed body manufactured by the method according to claim **1**.

4,518,705

THREE LAYER LAMINATE

Frank Solomon, Great Neck, N.Y., and Charles Grun, Matawan, N.J., assignors to Eltech Systems Corporation, Boca Raton, Fla.

Division of Ser. No. 202,577, Oct. 31, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,442
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.³ C25B *11/12*
U.S. Cl. 502—101 **10 Claims**

1. A process for forming an electrode comprising adding a dilute aqueous dispersion of polytetrafluoroethylene particles to an aqueous suspension of larger active carbon particles to discontinuously coat said active carbon particles with smaller polytetrafluoroethylene particles; shear blending said discontinuously coated particles to form an intimate mix of active carbon particles and attenuated and fibrillated polytetrafluoroethylene; comminuting said intimate mix to yield a granular mix; forming said granular mix into an active sheet; and laminating the working surface of said active sheet to a current distributor and the opposite surface thereof to a polytetrafluoroethylene-containing wetproofing layer.

4,518,706

HYDROCARBON SOLUBLE CATALYST SUPPORTS AND RESULTANT POLYMERIZATION CATALYSTS

Donald E. Gessell, Ponca City, Okla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 429,387, Sep. 30, 1982, abandoned. This application Aug. 18, 1983, Ser. No. 523,868
Int. Cl.³ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—104 **16 Claims**

3. A method for preparing an olefin polymerization catalyst comprising
(a) contacting a hydrocarbon insoluble magnesium compound of the general formula

$$R_aMg\left(-OSi(R)(R)-\right)_n(OSi(R)(R)-)_{n}R_{2-a}$$

with sufficient aluminum alkoxide and/or organic ethers to render the magnesium compound hydrocarbon soluble, wherein the aluminum alkoxides have the general formula $Al(Q)_3$, wherein each Q can be OR^1 or R^1, but at least one Q must be OR^1, and wherein the aluminum alkoxide and/or organic ethers are present at levels of from about 0.05 moles per mole of magnesium to about 2 moles per mole of magnesium, based on the weight of the magnesium compounds present, and have the general formula R^2OR^3, wherein R^2 and R^3 can optionally have mutual covalent bonds to form cyclic ethers and wherein R, R^1, R^2, and R^3, are, independently, alkyl groups containing from 1 to 20 carbon atoms, aryl, aralkyl, and alkaryl groups, each containing from 6 to 20 carbon atoms, R can also be hydrogen or alkoxy groups containing from 1 to 20 carbon atoms, a is 0 or 1 and n is greater than 0, with
(b) non-halide transition metal alkoxides having at least one general formula

$$MO_g(OR^4)_r$$

$$R^4O[M(OR)_2O]_pR^4$$

$$R^4{}_xM(OR^4)_y$$

wherein M is titanium, vanadium, chromium or zirconium, each R^4 is, independently, alkyl groups containing from 1 to 20 carbon atoms, aryl groups, alkaryl groups, and aralkyl groups each containing from 6 to 20 carbon atoms, g is 0 or 1, r is 2 to 4, and $2g+r$ is equal to the valence of M; p is at least 2; and $x+y$ is equal to the valence of M to yield a magnesium to titanium ratio of at least 1:1, then
(c) reacting the mixture of (a) and (b) with a halogenating agent to obtain a polymerization catalyst having a halogen to magnesium ratio of at least 2.0.

4,518,707

PROCESS FOR PREPARING HIGH SURFACE AREA IRON/COBALT FISCHER-TROPSCH SLURRY CATALYSTS

Stuart L. Soled, Madison, and Rocco A. Fiato, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1983, Ser. No. 561,190
Int. Cl.³ B01J *23/78, 27/22*
U.S. Cl. 502—174 **32 Claims**

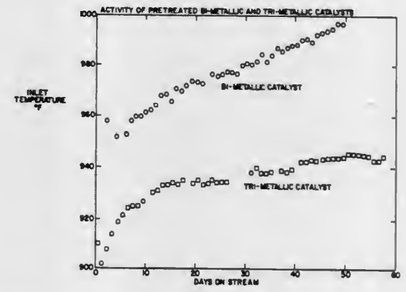
1. A composition of matter comprising an unsupported, Group IA or IIA metal salt promoted iron-cobalt spinel, or mixture thereof, said spinel exhibiting a single phase powder X-ray diffraction pattern substantially isostructural with Fe_3O_4, and possessing a BET surface area greater than 5 m^2/g and an iron-cobalt atomic ratio of 4 to 1 or above.

4,518,708

PRETREATMENT OF A FRESH IRIDIUM-CONTAINING CATALYST

Sowmithri Krishnamurthy, West Deptford; George R. Landolt, Audubon, and Hans J. Schoennagel, Lawrenceville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 385,158, Jun. 4, 1982, abandoned. This application Mar. 7, 1984, Ser. No. 586,640
Int. Cl.³ B01J *27/10, 27/08, 23/46, 27/32*
U.S. Cl. 502—230 **11 Claims**



1. In a method of preparing a fresh metal-containing reforming catalyst wherein a porous support is impregnated with an iridium compound in combination with other metals and thereafter dried, the improvement comprising increasing the dispersion of metals on said porous support prior to exposure to a reducing atmosphere by pretreating the catalyst with oxygen, dry hydrogen halide and a reducing agent in the following sequence of steps:
(1) contacting the catalyst with an oxygen-containing gas at temperatures of about 850–1000° F. with oxygen concentration of about 0.1–50 wt. % for about 0.1 to 24 hours.
(2) contacting the catalyst with dry hydrogen halide at temperatures ranging from about 700–1000° F. for about 0.5 to 24 hours utilizing at least 0.1 wt. % hydrogen halide per weight of catalyst per hour; and
(3) contacting the catalyst with a reducing agent at temperatures ranging from 400–1000° F. for a period of time ranging from 0.1 to 24 hours

whereby said dispersion of metals is such that at least 50% of the total metal is exposed as surface metal after pretreatment.

5. The process of claim 1 wherein said hydrogen halide treatment step comprises treating said catalyst with about 1.5% by weight of hydrogen chloride per weight of said catalyst per hour for about 2 hours at a temperature of from about 850–950° F.

6. The process of claim 5 wherein the hydrogen chloride is in admixture with an inert gas.

4,518,709

DUAL PARTICLE HYDROTREATING CATALYST

Regis J. Pellet, Tarrytown, N.Y., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 238,936, Feb. 27, 1981, Pat. No. 4,353,791. This application Apr. 5, 1982, Ser. No. 365,236

Int. Cl.³ B01J *23/24, 23/26, 23/28, 23/30*

U.S. Cl. 502—254 **9 Claims**

1. A hydrotreating catalyst composition comprising particles of Component A consisting essentially of at least one Group VIB metal component supported on refractory inorganic oxide and particles of Component B consisting essentially of either cobalt and/or nickel component supported on refractory inorganic oxide.

4,518,710

CATALYST FOR THE REDUCTION OF NITROGEN OXIDES IN GASEOUS MIXTURES AND METHOD OF MAKING THE CATALYST

John F. Brennan, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 25, 1984, Ser. No. 573,753

Int. Cl.³ B01J *21/06, 23/22, 23/30*

U.S. Cl. 502—309 **15 Claims**

1. A catalyst composition useful for the reduction of nitrogen oxide comprising an inorganic oxide support having tungsten and vanadium deposited thereon, said support having been treated, before or after the deposition of either of said tungsten or vanadium thereon, with a strong mineral acid, excluding sulfuric and phosphoric acids.

4,518,711

CONFORMATIONALLY CONSTRAINED CYCLIC ENKEPHALIN ANALOGS WITH DELTA RECEPTOR SPECIFICITY

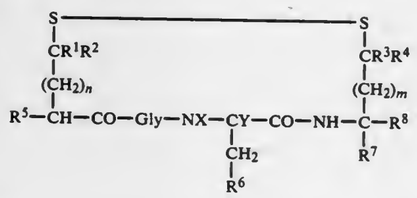
Victor J. Hruby, and Henry Mosberg, both of Tucson, Ariz., assignors to Gibson-Stephens Institute, Tucson, Ariz.

Filed May 16, 1983, Ser. No. 494,982

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—11 **26 Claims**

1. A polypeptide of the formula:



wherein

R^1 and R^2, which may be the same or different, are hydrogen, methyl, or a lower alkyl group having five or less carbon atoms;

R^3 and R^4, which may be the same or different, are hydrogen, methyl, or lower alkyl groups having five or less carbon atoms, provided, however, that R^1 and R^2, R^3 and R^4 may not all be hydrogen;

R^5 is hydrogen, L-tyrosine, D-tyrosine, or L-tyrosine or D-tyrosine substituted on the N^{α}-amino with 1 or 2 lower alkyl or alkenyl groups;

R^6 is a substituted or unsubstituted aromatic radical;

RHU 7 is hydrogen or methyl;

R^8 is carboxylate, carboxamide or amino acid residue;

X and Y are hydrogen or methyl; and

n and m, which may be the same or different, are 0 or 1.

4,518,712

PIPERAZINE DERIVATIVE AND ANALGESIC COMPOSITION CONTAINING THE SAME

Hajime Fujimura, Kyoto; Yasuzo Hiramatsu, Otsu; Tomio Yamazaki, Tokushima; Shozo Yamada, Tokushima, and Takaji Honna, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

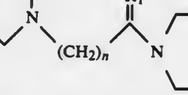
Filed Jun. 22, 1981, Ser. No. 275,690

Claims priority, application Japan, Jun. 30, 1980, 55-89782; May 8, 1981, 56-69689

Int. Cl.³ A01N *43/48*

U.S. Cl. 514—255 **20 Claims**

1. A piperazine compound having the formula (1),



(1)

wherein R_1 represents cyclopropylmethyl, isopropyl, or allyl and R_2 represents phenyl substituted by one or two halogen atoms and/or one trifluoromethyl group, or pharmaceutically acceptable salts thereof.

18. A method of producing an analgesic effect in a patient in need of such effect, said method comprising administering to said patent an effective amount of a compound of claim 1.

4,518,713

ANALGESIC SUBSTITUTED-1-AMINOALKYLAMINO-4-ARYLOXYPIPERIDINES

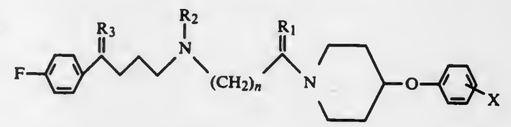
Raymond W. Kosley, Jr., Bridgewater, and Richard C. Allen, Flemington, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Apr. 13, 1984, Ser. No. 600,265

Int. Cl.³ A61K *31/445;* **C07D** *211/46*

U.S. Cl. 514—326 **114 Claims**

1. A compound of the formula



where X is hydrogen, loweralkyl, CF_3, acetyl or halogen; n is 1 or 2; R_1 is H_2 or oxygen; R_2 is H, loweralkyl or benzyl; and R_3 is oxygen or $—OCH_2CH_2O—$, or a pharmaceutically acceptable acid addition salt thereof.

114. An analgesic composition which comprises an effective pain alleviating amount of a compound of the formula

where X is hydrogen, loweralkyl, CF_3, acetyl or halogen; n is 1 or 2; R_1 is H_2 or oxygen; R_2 is H, loweralkyl or benzyl; and R_3 is oxygen or $—OCH_2CH_2O—$ or a pharmaceutically acceptable acid addition salt thereof.

4,518,714

PROCESS FOR THE SELECTIVE PRODUCTION OF OLEFINS FROM SYNTHESIS GAS

Bruce L. Gustafson, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 499,002, May 27, 1983,. This application Jul. 11, 1984, Ser. No. 629,870

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—721 **11 Claims**

1. In a process for the selective production of α-olefins by the reaction at elevated temperature and pressure of a mixture of gases comprising carbon monoxide and hydrogen, the improvement which comprises the use of a catalyst system comprising palladium, iron, and zinc, wherein the amount of palladium and iron present in the catalyst is about 0.1 to 10% by weight.

4,518,715

PROCESS FOR PRODUCING ETHYLENE GLYCOL USING A RUTHENIUM-COPPER CATALYST

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,316

Int. Cl.³ C07C *27/06*

U.S. Cl. 518—700 **14 Claims**

1. The process for making ethylene glycol and its monoalkyl derivatives which comprises the steps of contacting a mixture of CO and H_2 with a bimetallic catalyst system comprising a ruthenium-containing compound plus a copper or silver-containing compound dispersed in a low-melting quaternary phosphonium salt and heating said mixture at a temperature of at least 180° C. under a moderate pressure of greater than 35 atm with sufficient carbon monoxide and hydrogen to satisfy the above-noted stoichiometry of the desired ethylene glycol synthesis for a sufficient time to provide said ethylene glycol.

4,518,716

FOAMABLE ORGANOSILOXANE COMPOSITIONS

Chi-Long Lee, Brookfield, and James A. Rabe, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 26, 1984, Ser. No. 665,272

Int. Cl.³ C08J *9/08, 9/12, 9/14*

U.S. Cl. 521—82 **26 Claims**

1. A foamable polyorganosiloxane composition exhibiting a viscosity of from 0.5 to 500 Pa.s at 25° C. in the absence of a blowing agent, where said composition is stable during storage under substantially anhydrous conditions and superatmospheric pressure, and in the presence of atmospheric pressure and moisture yields a cured, closed cell polyorganosiloxane foam exhibiting a cell size of up to 4 mm. and a minimum cell concentration of 4 per linear centimeter, said composition comprising the product obtained by mixing in the absence of atmospheric moisture.

(A) A room temperature vulcanizable elastomeric composition comprising the moisture curable product obtained by mixing

(1) an organosiloxane polymer curable in the presence of a moisture reactive crosslinker and selected from the group consisting of polydimethylsiloxanes and graft copolymers containing at least 20 mole percent of dimethylsiloxane units, any remaining units being derived from substantially linear addition type organic polymers, and

(2) an amount of a crosslinker sufficient to cure

(1) in the presence of atmospheric moisture,

(B) A foam stabilizer in an amount sufficient to stabilize said foam during the curing process, where (B) consists essentially of a resinous, benzene-soluble organosiloxane copolymer consisting essentially of $SiO_{4/2}$ units, silicon-bonded hydroxyl groups, $(CH_3)_3SiO_{\frac{1}{2}}$ units and fluorine-containing units selected from the group consisting of $R_aR'_bSiO_{(4-a-b)/2}R''[Si(R')_bO_{(3-b)/2}]_2$ and mixtures thereof, where R is a monovalent organic radical containing at least four perfluorinated carbon atoms and is bonded to the silicon atom of said fluorine-containing units by a sequence of at least two methylene units or by an oxygen atom that is, in turn, bonded to a sequence of at least two methylene units, R' is an alkyl radical containing from 1 to 3 carbon atoms, and R" is a divalent organic radical containing at least four perfluorinated carbon atoms and is bonded to the silicon atom of said flourine-containing units by a sequence of at least two methylene units or by an oxygen atom that is in turn bonded to a sequence of at least two methylene units, a is 1 or 2, b is 0, 1 or 2 and the sum of a and b is 3 or less wtih proviso that when R and R" represent fluorine-containing units bonded to silicon via and oxygen atom the organosiloxane copolymer optionally contains repeating untis of the formula $GSiO_{3/2}$ where G represents the residue obtained by removal of the hydrogen atom from a hydroxyl group of a linear organic polymer containing an average of at least one terminal hydroxly group per molecule and selected from the group consisting of polyethers, polyoxyalkylene glycols, homopolymers of ethylenically unsaturated alcohols and copolymers of ethylenically unsaturated alcohols with ethylenically unsaturated hydrocarbons; the molar ratio of all units other than hydroxyl and $SiO_{4/2}$ units to $SiO_{4/2}$ units is from 0.7:1 to 1.1:1, inclusive, and the concentration of said fluorine-containing units and any $GSiO_{3/2}$ units is sufficient to (a) impart a surface tension of less than 2.2×10^{-4} newtons per centimeter at 25° C. to 10 percent by weight solution of (B) in a hydroxyl endblocked polydimethylsiloxane exhibiting a viscosity of 0.08 Pa.s at 25° C. and (b) require the addition of from 0 to 100 percent by weight of xylene to said 10 percent by weight solution to achieve optical clarity;

(C) a blowing agent in an amount sufficient to convert said polyorganosiloxane composition to a foam under atmospheric pressure and at a temperature of 25° C.

4,518,717

LOW DENSITY, MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John V. Long, 1756 E. Lexington Ave., El Cajon, Calif. 92021, and John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120

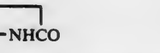
Filed Nov. 7, 1983, Ser. No. 549,618

Int. Cl.³ C08J *9/02, 9/12*

U.S. Cl. 521—109.1 **38 Claims**

1. The method of making a resilient, flame resistant modified polyimide foam product which comprises the steps of:

reacting an aromatic dianhydride with an effective amount of an oxime in a mole ratio of oxime having the general formula:



wherein "x" is an integer from 1 to 5, to dianhydride up to about 1.5:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a reactive solvent esterifying agent to exterify said imide;

adding thereto a diamine;

drying the resulting solution to produce a powdered, prepolymer;

blending with said powdered prepolymer from about 0.05 to 10 wt.%, based on prepolymer weight, of a hydrated compound which is stable up to at least about 100° C.; and

heating the dry material to a selected foaming temperature of from about 120° C. to about 320° C. for a period of from about 10 to about 60 minutes;

whereby a low density, resilient foam product having good flame resistance is produced comprising polyimide and polyimide-amide with proportions depending on the selected foaming temperature.

4,518,718

RIGID ZEOLITE CONTAINING POLYURETHANE FOAMS

Charles B. Frost, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 18, 1984, Ser. No. 611,772
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—122 16 Claims

1. A process for the preparation of a closed cell rigid polyurethane foam by mixing intimately a polyol component with an isocyanate component and curing the resulting mixture, comprising:

(a) dispersing into each component finely divided zeolite capable of sorbing molecules with effective critical diameters of up to about 10 Å, said zeolite constituting up to about 60% of the final foam weight; and

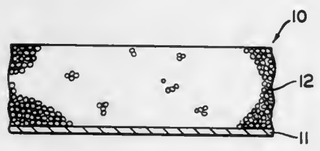
(b) adding a blowing agent to each component before combining said components.

4,518,719

METAL CATALYZED PREPARATION OF POLYOXYALKYLENE SURFACTANTS FOR PHENOLIC FOAM STABILIZATION

Richard L. Frentzel, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 585,703, Mar. 2, 1984, which is a division of Ser. No. 319,868, Nov. 9, 1981, Pat. No. 4,438,018, which is a continuation of Ser. No. 113,841, Jan. 21, 1980, abandoned. This application Sep. 10, 1984, Ser. No. 649,042
Int. Cl.[3] C08J *9/14*
U.S. Cl. 521—136 19 Claims



1. A foam material comprising the reaction product of:

A. phenol aldehyde resin forming reactants,

B. a blowing agent, and

C. a surfactant which is the product of a free radical addition polymerization of a cyclic nitrogenous vinyl monomer and an esterified unsaturated dibasic acid in the presence of (a) a polyoxyalkylene adduct having the formula

H (polyoxyalkylene chain)$_t$ R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, (b) an organic or inorganic per-compound, and (c) a metal catalyst selected from the group consisting of ferrocene, acetylferrocene, benzoylferrocene, cobaltocene, 1,1'-diacetylferrocene, 1,1'- ferrocenebis-(diphenyl-phosphine), nickelocene, hafnocene dichloride, ferrocenecarboxaldehyde, mixtures of said ferrocene compounds and other transition metal compounds containing a metal having an atomic number of 21 to 30, and a mixture of compounds selected from the group consisting of iron (II) sulfate and iron (III) sulfate, iron (II) sulfate and iron (III) chloride, maganese (II) acetylacetonate and manganese (III) acetylacetonate, cobalt (II) benzoate and cobalt (III) acetylacetonate, copper (I) acetate and cooper (II) acetylacetonate, and vanadium (III) acetylacetonate and vanadium (IV) oxide acetylacetonate, said polyoxyalkylene adduct optionally being treated either before or after said polymerization with a capping agent capable of reacting with the hydroxyl groups of said adduct to reduce the hydroxyl number of said adduct to less than 50, and the major component of said surfactant comprising the product formed from the reaction of said cyclic nitrogenous vinyl monomer and unsaturated diester onto said polyoxyalkylene adduct.

4,518,720

FLEXIBLE POLYURETHANE FOAMS MADE FROM POLYETHER POLYOLS MODIFIED WITH EPOXY RESIN-DIAMINE ADDUCTS

Michael Cuscurida; Harold G. Waddill, and Bruce W. Peterson, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,434
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—156 13 Claims

1. Flexible polyurethane foam being produced by the process comprising

reacting a modified polyether polyol together with an organic polyisocyanate in the presence of a polyurethane catalyst and a blowing agent, wherein the modified polyether polyol is produced by the process comprising adding an epoxy resin-diamine adduct to a polyether polyol during the reaction of an alkylene oxide with a polyol initiator where the mole ratio of epoxy equivalents to amine equivalents in the epoxy resin-diamine adduct is in the range of about 2/1 to about 10/1.

4,518,721

HYDROPHILIC DENTURE ADHESIVE

Dadi J. Dhabhar, Norwalk, and Nicholas F. Schmidt, Brookfield, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Continuation of Ser. No. 361,631, Mar. 26, 1982, , which is a continuation-in-part of Ser. No. 258,562, Apr. 29, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 599,751
Int. Cl.[3] C08L *1/26;* A61K *9/00;* C09K *3/00*
U.S. Cl. 523—120 19 Claims

1. A denture adhesive composition consisting essentially of a substantially anhydrous mixture of:

(a) from about 15 to about 55 percent w/w sodium carboxymethylcellulose and poly(ethylene oxide) homopolymer in a weight ratio of from about 6:1 to about 1:6, respectively; and

(b) from about 45 to about 85 percent w/w of a polyethylene glycol fraction comprising one or more polyethylene glycols each having a number average molecular weight of from 200 to 20,000 and said fraction having a viscosity of from about 44 to about 25,600 centipoises at about 60° C.

4,518,722

DIFFUSELY REFLECTING PAINTS INCLUDING POLYTETRAFLUOROETHYLENE AND METHOD OF MANUFACTURE

John B. Schutt, Silver Spring, and Michael C. Shai, Gambrills, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 26, 1984, Ser. No. 604,337
Int. Cl.[3] C08L *27/18*
U.S. Cl. 523—135 18 Claims

1. A diffuse, reflective paint composition comprising a self-polymerizing, alcohol soluble silicone-based paint binder, granule sized TFE pigment and a liquid alcohol.

4,518,723

CURABLE EPOXY RESIN COMPOSITIONS AND USE IN PREPARING FORMED, SHAPED, FILLED BODIES

Wayne D. Woodson, Danville, Ill., assignor to CL Industries, Inc., Danville, Ill.

Continuation-in-part of Ser. No. 405,420, Aug. 5, 1982, abandoned. This application Oct. 22, 1982, Ser. No. 436,031
Int. Cl.[3] C08K *3/36;* C08L *63/00*
U.S. Cl. 523—466 30 Claims

1. A curable epoxy resin composition comprising a mixture of an acid curable epoxy resin and from about 15 to 50% based on the weight of the resin of an oxidizing agent capable of reacting with sulfur dioxide to form a catalyst for curing said epoxy resin.

4,518,724

AQUEOUS COATING COMPOSITION

Teruaki Kuwajima; Katsuaki Kida, both of Osaka, and Shinichi Ishikura, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Oct. 3, 1983, Ser. No. 538,651
Claims priority, application Japan, Oct. 4, 1982, 57-174890; Dec. 8, 1982, 57-216200; Jan. 25, 1983, 58-10875; Jan. 25, 1983, 58-10876; Jan. 29, 1983, 58-13205; Jan. 29, 1983, 58-13206
Int. Cl.[3] C09D *5/02, 3/66, 3/80, 3/81*
U.S. Cl. 523—501 30 Claims

1. An aqueous coating composition comprising:

(A) at least one aqueous resin selected from the group consisting of alkyd resin, polyester resin, acryl resin, acryl-modified alkyl resin and acryl-modified polyester resin and

(B) at least one component selected from water-insoluble resinous particles obtained by the polymerization of at least one ethylenically unsaturated compound, the average grain diameter of said particles being 0.3 to 6μ, the solid weight ratio of said (A) to (B) being 99:1 to 15:85.

4,518,725

FLUIDIZING AGENTS FOR HYDRAULIC BONDING MATERIALS; HYDRAULIC BONDING MATERIALS CONTAINING SAID FLUIDIZING AGENTS; METHOD OF MAKING AND USING SAME

Jean P. Guicquero, Labarte sur Leze, France, assignor to Chryso S.A., Toulouse, France

Filed Jul. 27, 1983, Ser. No. 517,622
Claims priority, application European Pat. Off., Jul. 28, 1982, 82401401.3
Int. Cl.[3] C04B *13/28;* C08G *12/08*
U.S. Cl. 524—3 31 Claims

1. A method of synthesizing a fluidizing agent for hydraulic bonding materials in a single step which comprises reacting in aqueous solution:

(1) an aminosulfonic acid having at least one aromatic nucleus;

(2) a nitrogenous compound having at least two NH_2 functions; and

(3) formaldehyde or compounds which generate formaldehyde under reaction conditions;

at a temperature ranging from about 40° C. to about 115° C. for about one hour, so as to result in the condensation thereof, to form a condensation product capable of functioning as a fluidizing agent for hydraulic bonding materials.

4,518,726

METALLIC BASE PAINT

Yasushi Kato, and Hisao Furukawa, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 5, 1982, Ser. No. 365,937
Claims priority, application Japan, Apr. 27, 1981, 56-64780
Int. Cl.[3] C09D *3/12, 3/82;* C08L *83/06*
U.S. Cl. 524—32 11 Claims

1. An ambient temperature, moisture curable coating composition consisting essentially of a wet solution blend of (A) a silyl group containing vinyl type resin having a backbone substantially comprising a polyvinyl type polymer chain and containing at least one silicon atom attached to a hydrolyzable group at a terminal or in a side chain in its molecule; and (B) a metallic powder; and one or more of the following: (C) acrylic resin; (D) cellulosic compound; and (E) reactive silicon compound, wherein said metallic powder is suspended in said wet solution blend.

4,518,727

WATER BASED RESIN EMULSIONS

Frank J. Traver, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 229,247, Jan. 28, 1981, abandoned. This application Apr. 30, 1984, Ser. No. 604,607
Int. Cl.[3] C08L *1/00, 1/24*
U.S. Cl. 524—35 18 Claims

1. A water based silicone resin emulsion consisting essentially of:

(a) 100 parts by weight of at least one organopolysiloxane resin composition consisting essentially of zero to 50 percent by weight monofunctional units of the formula $R_3SiO_{0.5}$, zero to 60 percent by weight difunctional units of the formula R_2SiO, zero to 100 percent by weight of trifunctional units of the formula $RSiO_{1.5}$, and zero to 60 percent by weight tetrafunctional units of the formula SiO_2, wherein at least ten mole percent of the units are trifunctional units, tetrafunctional units or a mixture thereof, wherein R is a substituted or unsubstituted monovalent hydrocarbon radical and wherein said organopolysiloxane resin has an R to Si ratio of, approximately, 1.0 to 1.99 R groups for each silicon atom;

(b) 0.25 to 4.0 parts by weight of a combination of emulsifying agents per 100 parts of said organopolysiloxane resin wherein said emulsifying agent combination consists essentially of 5 to 95 percent by weight of a cellulosic emulsification agent and 5 to 95 percent by weight of an anionic surfactant, and wherein said combination of emulsifying agents is effective for dispersing said organopolysiloxane resin in a water based emulsion; and

(c) 25 to 500 parts by weight water.

4,518,728

CARBON BLACK FILLED NYLONS MODIFIED FOR IMPROVED TOUGHNESS

Robert E. Pollard, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 4, 1984, Ser. No. 596,795
Int. Cl.[3] C08K *5/16*
U.S. Cl. 524—88 16 Claims

1. A molding composition comprising: (1) a polyamide resin; (2) a maximum of 10 percent by weight and a minimum of 0.05 percent by weight of the composition of carbon black; and (3) a maximum of about 200 percent by weight and a minimum of 0.25 percent by weight of the carbon black of a copper phthalocyanine pigment.

4,518,729

SOLUTIONS OF ISOCYANATO-ISOCYANURATES IN PLASTICIZERS FOR POLYVINYL CHLORIDE, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS ADHESION-IMPROVING ADDITIVES IN COATING COMPOSITIONS BASED ON PLASTICIZED POLYVINYL CHLORIDE

Peter Breidenbach, Cologne; Helmut Hurnik, Leverkusen, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

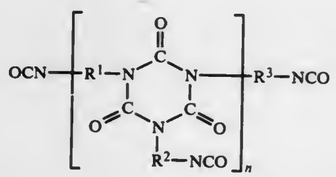
Filed Oct. 22, 1981, Ser. No. 313,842

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041732

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—101 **5 Claims**

1. A solution of isocyanato-isocyanurates in a plasticizer for polyvinyl chloride, characterized by a content of from about 1 to 50% by weight of compounds corresponding to the following idealized formula:



in which

R^1, R^2 and R^3 are the same or different and represent (i) difunctional aromatic hydrocarbon radicals of the type obtained by removing the isocyanate groups from 2,4-and/or 2,6-diisocyanato-toluene or (ii) difunctional aromatic hydrocarbon radicals of the type obtained by removing the isocyanate groups from 2,2'-, 2,4'- and/or 4,4'-diisocyanato-diphenyl methane, with the proviso that at least about 25 mole percent and at most about 83 mole percent of the radicals correspond to definition (i), and

n is an integer or a fraction (as a statistical average) of from about 1 to 10.

4,518,730

TRANSPARENT ANTIREFLECTION VARNISH FOR GLASS SUPPORTS, AND RELATED VARNISHING METHOD FOR GLASS VIDEO SCREENS

Giancarlo Gastaldo, Vestignè, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Jan. 20, 1983, Ser. No. 459,656

Claims priority, application Italy, Jan. 22, 1982, 67062 A/82

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—114 **8 Claims**

1. A transparent, antireflection varnish for a glass support comprising a plasticising acrylic resin, a diluent, a matting component, and an epoxy silane, wherein said epoxy silane is gamma-glycidoxpropyltrimethoxysilane present in an amount in the range of 15 to 20% by weight of the varnish and an amino silane catalyst is added to the varnish at the time of use to cause polymerization and hardening of the varnish, and wherein said acrylic resin is present in an amount in the range of 40 to 45% by weight of the varnish and said matting component is a polypropylene wax present in an amount in the range of 0.1 to 1% by weight of the varnish.

4,518,731

PROCESS FOR THE CRYSTALLIZATION OF HIGH POLYMERS IN THE PRESENCE OF NUCLEANT SYSTEMS BASED ON ZEO LITES

Valentino Zamboni; Corrado Brichta, and Claudio Troglia, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 22, 1983, Ser. No. 564,187

Claims priority, application Italy, Dec. 24, 1982, 24978 A/82

Int. Cl.³ C08K *5/42*

U.S. Cl. 524—166 **9 Claims**

1. An adduct obtained by the interaction of:

(a) an aryl-carboxylic or sulphonic acid, selected from those which, in the form of metal salts, characteristically exert a nucleating effect on crystalline polymers of the alpha-olefins, said acid having a melt point greater than the crystallization temperature of the polymer and being thermally stable at the maximum operating temperature in the processing of the polymeric material and

(b) a crystalline aluminum silicate of an alkaline or earth-alkaline metal of zeolitic tectosilicate, having a pore diameter comprised between 3 Å and 13 Å and a molar ratio SiO_2/Al_2O_3 comprised between 2 and 5, in a powdery form, under such conditions that will allow to obtain a chemio adsorption of acid (a) in component (b), the adduct being characterized in that acid (a) is present in quantities comprised between 1 and 25 grams per 100 g of component (b), and that it is partly bound to component (b) by chemical bonds of a polar type, said adduct being further characterized in that it is a nucleating agent for crystalline polymers and copolymers of alpha-olefins, thermoplastic polyesters and polyamides.

4,518,732

SOLID STABILIZER COMPOSITION

Jürgen Büssing, Bensheim, and Hubert Müller, Dieburg, both of Fed. Rep. of Germany, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 544,920, Oct. 24, 1983, abandoned, which is a continuation of Ser. No. 389,642, Jun. 18, 1982, abandoned, which is a continuation of Ser. No. 304,522, Sep. 21, 1981, abandoned, which is a continuation of Ser. No. 182,549, Aug. 29, 1980, abandoned, which is a continuation of Ser. No. 37,593, May 9, 1979, abandoned. This application May 18, 1984, Ser. No. 611,914

Claims priority, application Switzerland, May 19, 1978, 5463/78

Int. Cl.³ C08K *5/00;* **C08L** *91/06*

U.S. Cl. 524—178 **4 Claims**

1. A dry pourable solid composition, suitable for stabilizing a halogen-containing polymer, consisting essentially of

(a) about 16.7 to about 50% by weight of the total composition of a liquid sulfur-containing organotin stabilizer or mixtures thereof, in intimate admixture with

(b) about 83.3 to about 50% by weight of the total composition of a solid lubricant, having a melting point of 50°–120° C., selected from the group consisting of paraffin wax, montan wax, oxidized paraffin wax, oxidized polyethylene wax, oxidized and partially saponified polyethylene wax and mixtures thereof.

4,518,733

RUBBER COMPOSITIONS COMPRISING (1) POLYISOPRENE (2) COBALT SALT OF ROSIN (3) CARBON BLACK AND (4) SULPHUR

Yasuhiro Ishikawa, Yokohama; Kazuhiro Yamada, Isehara, and Masashi Kida, Chigasaki, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 440,057, Nov. 8, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 577,313

Claims priority, application Japan, Nov. 24, 1981, 56-186844

Int. Cl.³ C08K *3/04*

U.S. Cl. 524—274 **4 Claims**

1. A rubber composition for tires consisting essentially of, by weight, 100 parts of synthetic polyisoprene rubber, 0.02–0.8 parts of a cobalt salt of rosin, calculated as elemental cobalt, 60–100 parts of carbon black having iodine adsorbability of 70–130 mg/g and dibutyl phthalate adsorbability of 50–80 ml/100 g, and 4.5–10 parts of sulfur.

4,518,734

WATER BASED AEROSOL COATINGS

Bruce R. Brouillette, Sauk Village, and Martha J. Shafer, Chicago, both of Ill., assignors to Rust-Oleum Corporation, Vernon Hills, Ill.

Filed Jun. 22, 1981, Ser. No. 275,929

Int. Cl.³ C09D *5/02, 3/64;* **C08K** *5/06*

U.S. Cl. 524—378 **5 Claims**

1. A water containing aerosol coating containing the following ingredients in the percentage by weight amounts indicated:

a. water soluble resin	10.0–30.0
b. water soluble solvent	0.5–20.0
c. water	20.0–60.0
d. dimethylether	20.0–40.0.

4,518,735

HIGH TEMPERATURE STABLE ADHESIVE FOR SEMICONDUCTOR DEVICE PACKAGES, LOW-COST SEMICONDUCTOR DEVICE PACKAGE AND PROCESS

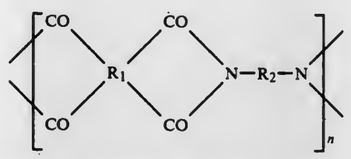
Gary B. Goodrich, and Jadish G. Belani, both of Cupertino, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 29, 1981, Ser. No. 316,310

Int. Cl.³ C08K *3/08*

U.S. Cl. 524—403 **4 Claims**

1. A composition for attaching a semiconductor die to a substrate, which comprises a crosslinkable resinous polyimide precursor which will cure to give polyamide having a recurring unit of the formula:



in which R_1 and R_2 are radicals of a tetravalent aromatic group and a divalent aromatic group, respectively, and n is a positive integer, a sufficient amount of an alkylaminotrialkoxysilane crosslinking agent to cure said resinous polyimide precursor, a sufficient amount of a finely divided conductive metal to render said composition conductive in the cured state and a polar organic solvent for said polyimide precursor and alkylaminotrialkoxysilane crosslinking agent.

4,518,736

BORON NITRIDE PAINT FOR CERAMIC HOT PRESSING

Paul F. Jahn, Wixom, Mich., assignor to Advanced Ceramic Systems, Inc., Livonia, Mich.

Filed Apr. 6, 1984, Ser. No. 597,670

Int. Cl.³ C08K *3/38, 5/05*

U.S. Cl. 524—404 **5 Claims**

1. A paint for ceramic hot pressing comprising; boron nitride powder; an acrylic paint; and a volatizable liquid, having the following composition in parts by weight:

boron nitride powder: 50–100

acrylic paint: 25–75

volatizable liquid: 100–200.

4,518,737

DIELECTRIC MATERIAL AND METHOD OF MAKING THE DIELECTRIC MATERIAL

G. Robert Traut, South Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.

Continuation of Ser. No. 213,837, Dec. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 972,995, Dec. 26, 1978,. This application Feb. 17, 1982, Ser. No. 349,466

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—413 **8 Claims**

1. A non-porous dielectric sheet material wherein the dielectric constant is substantially isotropic, said sheet material comprising a fluorinated polymer binding selected from the group consisting of polytetrafluoroethylene, fluorinated poly (ethene-co-propene), polyolefins, polyacrylates, polystyrenes and poly (vinylidene fluoride), a ceramic filler in particulate form having an average particle diameter of between about 1 to 20 micrometers and non-conductive inorganic microfibers having an average diameter less than 2 micrometers selected from the group consisting of glass, aluminum silicate, potassium titanate, quartz and zirconia, the ratio of the weight of fibers to total non-filler being in the range of 0.07 to 0.20 and the filler comprising between 10% and 75% by weight of the dielectric material.

4,518,738

POWDER FOR USE IN DRY SENSITIZATION FOR ELECTROLESS PLATING

Gunnar Sorensen, Risskov, and Leo Svendsen, Aarhus, both of Denmark, assignors to NESELCO, Copenhagen, Denmark

PCT No. PCT/DK81/00087, § 371 Date Jun. 4, 1982, § 102(e) Date Jun. 4, 1982, PCT Pub. No. WO82/01382, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 9, 1981, Ser. No. 387,887

Claims priority, application Denmark, Oct. 10, 1980, 4277/80

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—435 **3 Claims**

1. A powder for use in dry sensitization for electroless plating, comprising a plastics base material comprising a mixture of (a) a plastics material selected from the group consisting of:

ester of hydrogenated rosin,

esterified maleic resin, and

styrene-acrylic copolymer,

and (b) a plastics material selected from the group consisting of:

polybutadiene,

polymethacrylate,

polyvinyl chloride, and

polyhydroxymethacrylate,

to which has been added sensitizing particles comprising iron or tin compounds in an amount effective to achieve said sensitization.

4,518,739

Patent Not Issued For This Number

4,518,740

MOISTURE-HARDENING VARNISHES WITH AN ISOCYANATE RESIN BASE

Josef Disteldorf, Herne, and Werner Flakus, Recklinghausen, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellshcaft, Marl, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,643

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322723

Int. Cl.³ C08K *3/22*

U.S. Cl. 524—783 **8 Claims**

1. Moisture-hardening varnishes which comprise adducts of a mixture of diisocyanates, wherein said diisocyanate mixture comprise about 88 to 99% by weight of 2-methyl-1,5-diisocyanato-pentane, and about 12 to 1% by weight of 2-ethyl-1,4-diisocyanatobutane.

4,518,741

CHEMICALLY MODIFIED ASPHALTS AND GLASS FIBERS TREATED THEREWITH

William E. Uffner, Newark, and Robert N. White, Etna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 407,390, Aug. 12, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,556

Int. Cl.³ C08F *289/00;* **C08G** *83/00;* **C08H** *5/00*

U.S. Cl. 525—54.5 **5 Claims**

1. In a composition which is a reaction product of paving grade asphalt, a vinyl aromatic monomer and a rubbery polymer, the improved composition wherein said rubbery polymer is a thermoplastic rubber, generally linear block coplanar of styrene and butadiene having polystyrene end blocks and a polybutadiene midblock and wherein said improved composition has an increased elastic recovery rate, has increased viscosity stability, is less tacky and has a lower viscosity and improved glass fiber bundle impregnant qualities.

4,518,742

THERMOPLASTIC RESIN COMPOSITION HAVING TOUGHNESS AND HIGH HEAT DISTORTION RESISTANCE

Eiichi Muramatsu, Himeji; Shigemi Matsumoto, Takasago, and Fumiya Nagoshi, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1983, Ser. No. 546,596

Claims priority, application Japan, Nov. 1, 1982, 57-192198

Int. Cl.³ C08L *69/00, 51/00*

U.S. Cl. 525—67 **3 Claims**

1. A composition comprising (I) a thermoplastic resin and (II) an aromatic polycarbonate in a (I)/(II) ratio of 90/10 to 40/60 by weight, said resin (I) being prepared by polymerizing 95 to 70 parts by weight of monomers in the presence of 5 to 30 parts by weight of diene rubber by a process which comprises polymerizing 2 to 40 parts by weight of (A) a monomer mixture containing at least 70% by weight of acrylonitrile and styrene in an acrylonitrile/styrene ratio of 10/90 to 40/60 by weight in the presence of the diene rubber, adding 50 to 90 parts by weight of (B) α-methylstyrene or a monomer mixture containing at least 80% by weight of α-methylstyrene to the polymerization system, and gradually adding (C) acrylonitrile or a monomer mixture containing at least 70% by weight of acrylonitrile to the system, while carrying out the polymerization, the ratio of the total weight of α-methylstyrene contained in the monomers (B) and (C) to the total weight of acrylonitrile contained in the monomers (B) and (C) being from 90/10 to 65/35.

4,518,743

MOULDING COMPOSITIONS OF VINYL CHLORIDE POLYMERS, CERTAIN COPOLYMERS AND POLYMERIC PLASTICISERS HAVING A HIGH RESISTANCE TO AGEING

Christian Lindner, Cologne; Karl-Heinz Ott; Walter Uerdingen, both of Leverkusen; Hans-Eberhard Braese, Cologne, and Helmut Hurnik, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,634

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1982, 3229131

Int. Cl.³ C08L *27/06, 31/04, 32/20, 55/02*

U.S. Cl. 525—80 **6 Claims**

1. A thermoplastic molding composition comprising (A), (B), (C), (D) and (E) wherein:

(A) is from 25 to 50 parts, by weight of molding composition, of a vinyl chloride homo- or co-polymer;

(B) is from 25 to 50 parts, by weight of the molding composition, of an ABS-graft product comprising

from 30% to 95%, based on the weight of (B), of a monomer mixture of a styrene, methyl methacrylate, α-methyl styrene or combinations thereof, and (b) acrylonitrile, in weight ratio of (a) to (b) of from 90:10 to 60:40; and

from 70% to 5%, based on the weight of (B), of a butadiene homo- or co-polymer; and where the ABS-graft product has an average particle size of from 0.05 to 5μ;

(C) is from 0 to 10 parts, by weight of molding composition, of a resin-like, thermoplastic copolymer of acrylonitrile and styrene or methyl methacrylate where component (C) has a Staudinger index value which is greater than or equal to 3 (dl/g) and which is higher than the Staudinger index value of component (B);

(D) is from 5 to 40 parts, by weight of molding composition, of a copolymer comprising

from 10% to 99.9% based on the weight of (D), of an acrylic ester of an alcohol containing from one to fifteen carbon atoms;

from 0% to 90%, based on the weight of (D), of a bifunctional or polyfunctional monomer containing conjugated or unconjugated double bonds; and

from 0% to 40%, based on the weight of the remainder of (D), of acrylonitrile, vinyl acetate, methacrylic acid alkyl esters of alcohols having one to eight carbon atoms or mixtures thereof, where component (D) is uncrosslinked or partially cross-linked and component (D) or the uncrosslinked parts thereof have an average molecular weight of from 1000 to 2,000,000; and

(E) is from 3 to 30 parts, by weight of molding composition, of a copolymer comprising

from 60% to 95%, based on the weight of (E), of a monomer containing 2 conjugated olefinic double bonds or an acrylic ester of an alcohol containing one to six carbon atoms or mixtures thereof and;

from 5% to 40%, based on (E), of styrene, acrylonitrile, methacrylic acid methyl ester or mixtures thereof; where component (E) has a gel content of greater than or equal to 70% and component (E) is different from component (D).

4,518,744

PROCESS OF MELT SPINNING OF A BLEND OF A FIBRE-FORMING POLYMER AND AN IMMISCIBLE POLYMER AND MELT SPUN FIBRES PRODUCED BY SUCH PROCESS

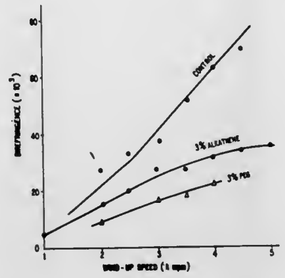
Harry Brody, Harrogate, England, assignor to Imperial Chemical Industries PLC, Hertfordshire, England

Filed Nov. 4, 1982, Ser. No. 439,295

Claims priority, application United Kingdom, Nov. 23, 1981, 8135250

Int. Cl.³ D01D *5/02*

U.S. Cl. 525—184 **5 Claims**



1. A process of melt spinning a fibre-forming polymer selected from the group consisting of polyethylene terephthalate, polyhexamethylene adipamide or polypropylene at a minimum wind up speed of 2 kilometer per minute, the improvement being that, before melt spinning, there is added to the fibre-forming polymer, between 0.1% and 10% by weight of another polymer which is immiscible in a melt of the fibre-forming polymer, such other polymer having an average particle size of between 0.5 and 3 microns in the melt with the fibre-forming polymer immediately prior to spinning and having an extensional viscosity such that molten spheres of the other polymer, in which form it exists immediately prior to melt spinning, deform into microfibrils during melt spinning there being in the process at least a 20% suppression of wind up speed compared with the process carried out with the same throughput in the absence of the added polymer, the term at least 20% suppression of wind up speed meaning that certain properties of the spun fibre are those that would be obtained from a fibre spun at at least a 20% lower wind up speed, such properties in the case of polyethylene terephthalate including birefringence and extension-to-break, in the case of polyhexamethylene adipamide including extension-to-break and in the case of polypropylene including the true stress at 50% strain.

4,518,745

METAL CHELATES OF WATER SOLUBLE COPOLYMERS

Friedrich Engelhardt, Frankfurt, and Ulrich Greiner, Schöneck, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

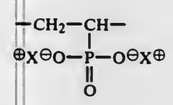
Filed Nov. 25, 1983, Ser. No. 554,950

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248019

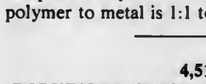
Int. Cl.³ C08F *8/44*

U.S. Cl. 525—326.6 **6 Claims**

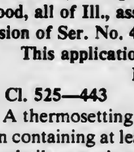
1. Metal chelates of water-soluble copolymers containing a statistical distribution of 1–86% by weight of structural units of the formula



9–80% by weight of units of the formula



5–90% by weight of units of the formula



and up to 30% by weight of one or more units of the formulae

wherein R^1 is alkyl having 1 to 4 carbon atoms;

R^2 and R^5 independently of one another are each hydrogen or methyl;

R^3 and R^4 independently of one another are each hydrogen, methyl or ethyl or together are a trimethylene or pentamethylene;

Y is a direct bond, phenylene or a moiety of the formula $-CO-NH-C(CH_3)_2-CH-$; and

$X^{\oplus}$ is a cation or $H^{\oplus}$; and

wherein the chelating metal is polyvalent metal cations of the third to eighth groups and of the second sub-group of the periodic system of the elements and the ratio of copolymer to metal is 1:1 to 100:1 in terms of equivalents.

4,518,746

POLYESTER OLIGOMER AND HIGH SOLIDS THERMOSETTING COATINGS

Kazys Sekmakas, Palatine; Raj Shah, Schaumburg; Ronald J. Lewarchik, Arlington Heights, and Kevin P. Murray, Homewood, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 491,391, May 4, 1983, Pat. No. 4,459,401. This application Mar. 15, 1984, Ser. No. 589,728

Int. Cl.³ C08L *61/28*

U.S. Cl. 525—443 **9 Claims**

1. A thermosetting organic solvent solution coating composition containing at least about 50% of total solids and comprising volatile organic solvent having dissolved therein an essentially linear polyester oligomer having hydroxyl and carboxyl terminal groups for subsequent cure and formed by adducting approximately equimolar amounts of diol carrying two primary hydroxyl groups and a dicarboxylic acid anhydride to form an hydroxy acid, esterifying the carboxyl groups of said hydroxy acid by reaction with an approximately stoichiometric proportion of diol carrying one primary hydroxyl group and one secondary hydroxyl group, the stoichiometry being based on the total hydroxyl content of the diol and the carboxyl content of the hydroxy acid, to form an hydroxyl-terminated oligomer, and then adducting said hydroxyl-ter-

minated oligomer with a polycarboxylic acid monoanhydride having a carboxyl functionality of at least 3, said monoanhydride being used in an amount of 0.01 to 0.15 equivalents of anhydride per hydroxyl equivalent in said hydroxyl-terminated oligomer, whereby the polyester oligomer so-produced is essentially linear and possesses low solution viscosity at high resin solids content, and from 3% to 50% of total resin solids of an amino-plast resin or phenoplast resin curing agent.

4,518,747

POLYCARBONATES HAVING TERMINAL GROUPS WHICH CONTAIN CONJUGATED DOUBLE BONDS

Wolfgang Stix; Ludwig Bottenbruch, both of Krefeld, Fed. Rep. of Germany, and Dieter Neuray, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1983, Ser. No. 525,381

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232391

Int. Cl.³ C08G *63/62*

U.S. Cl. 525—462 **10 Claims**

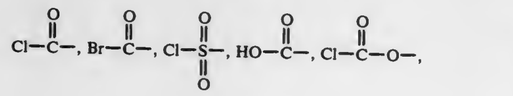
1. A process for the preparation of an aromatic polycarbonate comprising reacting

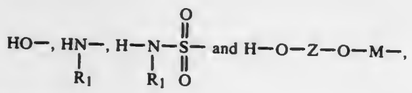
(i) at least one diphenol

(ii) at least one chain terminator conforming to the formula

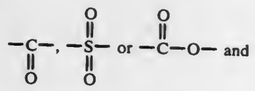
$$X—A—CH_2)_nCH=CH—CH=CH—R \quad (I)$$

wherein R is an aromatic radical or a C_1-C_8 alkyl, n is an integer of between 0 and 7, X is selected from the group consisting of

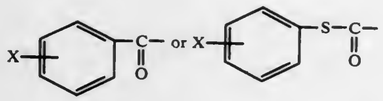




wherein R_1 is an aromatic radical or a C_1-C_6 aliphatic radical and where —O—Z—O— is a diphenolate radical and —M— is



X—A— is either X— or



in an amount of about 1 to about 20 mol % relative to the mols of said (i) and

(iii) phosgene which polycarbonate has a weight average molecular weight between about 5,000 and about 100,000.

4,518,748

CURABLE EPOXY RESIN MIXTURES

Theobald Haug, Frenkendorf, and Friedrich Stockinger, Hölstein, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,684

Claims priority, application Switzerland, Jan. 13, 1983, 174/83

Int. Cl.³ C08L *63/02*

U.S. Cl. 525—481 **16 Claims**

1. A curable mixture comprising

(a) an epoxide compound with on average more than one 1,2-epoxide group per molecule,

(b) a condensate prepared in an acid medium from a phenol, amine and aldehyde or ketone, which is obtainable by reacting (1) a substituted monohydric phenol which is unsubstituted in the p-position and in one of the two o-positions or in both o-positions, an unsubstituted dihydric mononuclear phenol or an unsubstituted or substituted dihydric or polyhydric, dinuclear or polynuclear phenol which contains at least two reactive nucleus positions for reaction with an aldehyde or ketone, (2) a substituted aromatic monoamine which contains at least one reactive nucleus position for reaction with an aldehyde or ketone, an unsubstituted aromatic mononuclear or dinuclear diamine or a substituted aromatic mononuclear or dinuclear diamine which contains at least two reactive nucleus positions for reaction with an aldehyde or ketone, and (3) an aldehyde or ketone, with one another at a pH value of not more than 6, the molar ratio of phenol to amine to aldehyde or ketone in the reaction mixture being 1:1:1.2 to 6:1:8, and 0.9 to 1.5 equivalents of active hydrogen atoms, based on the OH and NH_2 group, being present in the curable mixture per 1 epoxide equivalent.

4,518,749

EPOXY RESIN CURATIVES

Harold G. Waddill, and Heinz Schulze, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,028

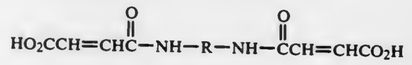
Int. Cl.³ C08G *59/42*

U.S. Cl. 525—504 **13 Claims**

1. An epoxy resin composition comprising:

(A) a vicinal polyepoxide having an average of at least 1.8 reactive 1,2-epoxy groups per molecule and

(B) a curing amount of the curing agent:



wherein C is carbon, N is nitrogen, H is hydrogen, O is oxygen and R is the radical

$$—CH(CH_3)CH_2[OCH_2CH(CH_3)]_x—$$

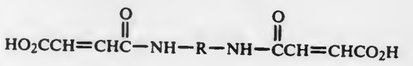
wherein x is an integer of from 2 to 35, and

(C) anhydride in a weight ratio of curing agent to anhydride of 1:5 to 5:1.

7. An epoxy resin composition comprising:

(A) a vicinal polyepoxide having an average of at least 1.8 reactive 1,2-epoxy groups per molecule and

(B) a curing amount of the curing agent:



wherein C is carbon, N is nitrogen, H is hydrogen, O is oxygen and R is the radical

$$—CH(CH_3)CH_2[OCH_2CH(CH_3)]_x—$$

wherein x is an integer of from 2 to 35, and

(C) carboxylic acid in a weight ratio of curing agent to carboxylic acid of 1:5 to 5:1.

4,518,750

FLUID BED REACTOR

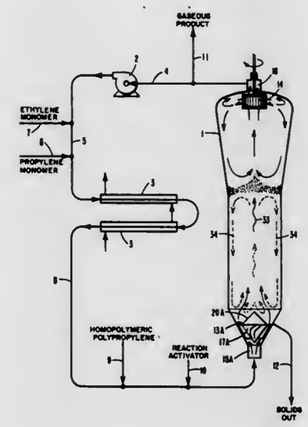
Gabriele Govoni; Canzio Corazzari; Giovanni Di Stefano, and Mauro Loconsolo, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Mar. 9, 1983, Ser. No. 473,553

Claims priority, application Italy, Mar. 10, 1982, 20062 A/82

Int. Cl.³ C08F *2/00;* **C08G** *85/00*

U.S. Cl. 526—68 **2 Claims**



1. Process for the polymerization and copolymerization of alpha-olefins in a gaseous phase, on a fluid bed conssiting of polymerized material containing a catalyst, characterized in that said process is carried out in a fluid bed reactor comprising a distributor of fluidization gases which comprises a double cone body consisting of:

(a) a lower conical element, arranged with the vertex turned downwards, provided with more than two ribs on the lateral surface, said ribs having such a profile as to form, together with the wall of the containing shell, flow channels with a decreasing cross-section in an upward direction so that the velocity of the gas will increase gradually and correspondingly, the ribs being arranged diametrically opposite to each other with an axial symmetry and with an inclination with respect to the vertical such as to impart to the inflowing gas current a tangential component, the profile and inclination of the ribs being such as to allow the passage of the solid particles entrained by the inflowing gas, and so as to hinder the falling back of the particles of the fluidized bed whenever the feeding in of the gas is interrupted; and of

(b) an upper conical element, wth its vertex turned upwards, superimposed onto the lower conical element and having the function of activating the circulation of the solid in the fluidized bed, eliminating the dead or stagnation zones, said process being further characterized in that the distributor in the fluid bed reactor in which it is carried out comprises devices for recycling of the gas, which distributor and the recycling devices allow the passage of the solid particles of the fluidized material entrained by the recylcing gas.

4,518,751

PROCESS FOR THE PRODUCTION OF POLYETHYLENE

Shigeyoshi Mizogami, and Shinichi Akimoto, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 270,858

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—114 **11 Claims**

1. A process for the production of polyethylene characterized by using a catalyst consisting of the following components (A) and (B)

(A) a solid product prepared by reacting the reaction product of (i) a compound containing titanium, magnesium and halogen, and (ii) at least one compound selected from the group consisting of tetraalkoxyzirconium, zirconium tetrahalide and tetraalkoxytitanium, with an organoaluminum halide compound of the general formula: $AlR^1{}_nX^1{}_{3-n}$ wherein R^1 is an alkyl group, X^1 is a halogen atom, and $0<n<3$ or a halogen-containing titanium compound of the general formula $Ti(OR^2)_mX^2{}_{4-m}$, wherein R^2 is an alkyl group, X^2 is a halogen atom, and $0 \leqq m < 4$; and

(B) an organoaluminum compound;

said compound (i) containing titanium, magnesium and halogen being prepared by reacting a magnesium dialkoxy compound with a silicon halide, an alcohol and a titanium halide in that sequence.

4,518,752

PROCESS FOR POLYOLEFINS PRODUCTION

Nobuyuki Kuroda, Yokohama; Toru Nakamura, Kawasaki; Yntaka Shikatani, Yokohama, and Kazuo Matsuura, Tokyo, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 329,028, Dec. 9, 1981, abandoned. This application Nov. 15, 1983, Ser. No. 551,516

Claims priority, application Japan, May 7, 1981, 56-68685

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—116 **10 Claims**

1. A process for production of polyolefins which comprises homopolymerization or copolymerization of α-olefins at a temperature of 20° to 120° C. and a pressure of atmosphere to 70 kg./cm.² in the presence of a catalyst comprising a solid catalyst component and an organoaluminum compound, said solid catalyst component being obtained by the reaction of: (a) a magnesium dihalide, (b) a compound of the formula $Me(OR)_nX_{z-n}$ where Me is, an element selected from Mg, B, P and Zn, R is a hydrocarbon residual group having 1-24 carbon atoms, X is a halogen atom, z represents the valence of Me and n is 1 to z and where the mol ratio of said magnesium dihalide (a) to said compound (b) in terms of Mg/Me is in the range of 1/0.05-1/0.5 and (c) a compound of the formula $Si(OR')_mX_{4-m}$ in an amount of 0.1-50 grams per 100 grams of said magnesium dihalide (a), where R' is a hydrocarbon residual group having 1-20 carbon atoms, X is a halogen atom, and m is 1 to 4, and (d) a titanium compound and/or a vanadium compound.

4,518,753

ANIONIC POLYMERIZATION OF CONJUGATED DIENES IN THE PRESENCE OF HINDERED TRIARYL BORON OR ALUMINUM DERIVATIVES

David H. Richards, Waltham Abbey, and Malcolm J. Stewart, Watford, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 15, 1983, Ser. No. 485,586

Claims priority, application United Kingdom, Apr. 26, 1982, 8212033

Int. Cl.³ C08F *4/52*

U.S. Cl. 526—177 **21 Claims**

1. A process for the production of a diene polymer having a relatively narrow molecular weight range by the anionic

polymerisation of a conjugated 1,3-diene in a polar solvent wherein the 1,4-content of the polymer is enhanced and is at least about 20%, comprising:

(a) contacting the 1,3-diene with an organo alkali or alkaline earth metal initiator in the presence of a sterically hindered triaryl derivative of a group III element which is boron or aluminum,

(b) allowing the 1,3-diene to polymerise in a polymerisation reaction in the polar solvent, and

(c) terminating the polymerisation reaction.

4,518,754

IMIDO COPOLYMERS

Jean L. Locatelli, Vienne, and Bernard Rollet, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

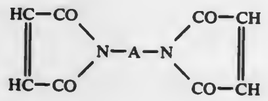
Filed May 30, 1979, Ser. No. 43,812

Claims priority, application France, May 30, 1978, 78 16013

Int. Cl.³ C08F *22/40*

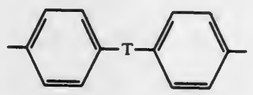
U.S. Cl. 526—262 **32 Claims**

1. An imido copolymer consisting essentially of the reaction product of copolymerization between (i) a bis-maleimide having the structural formula (I):



(I)

wherein A is phenylene or a divalent radical having the structural formula (II):



(II)

in which T is $-CH_2-$, $-C(CH_3)_2-$, $-O-$ or $-SO_2-$; and (ii) an olefinically unsaturated comonomer copolymerizable therewith, said comonomer (ii) displaying a degree of reactivity such that its resonance Q ranges from 0.01 to 0.7 and its polarity e is 0 or less and with the ratio of the number of imide functions to the number of moles of the olefinically unsaturated comonomers (ii) ranging from 0.3 to 5.

4,518,755

IMIDO COPOLYMERS

Jean L. Locatelli, Vienne, and Bernard Rollet, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

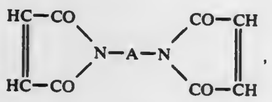
Filed May 30, 1979, Ser. No. 43,813

Claims priority, application France, May 30, 1978, 78 16012

Int. Cl.³ C08F *22/40*

U.S. Cl. 526—262 **25 Claims**

1. An imido copolymer consisting essentially of the reaction product of copolymerization between (i) a bis-maleimide having the structural formula (I):



(I)

wherein A is phenylene or a divalent radical having the structural formula (II):

(II)

in which T is $-CH_2-$, $-C(CH_3)_2-$, $-O-$, or $-SO_2-$; and (ii) a (meth)-acrylic acid amide comonomer copolymerizable therewith, with the ratio of the number of imide functions to the number of moles of (meth)acrylic acid amide (ii) ranging from 0.25 to 8.

4,518,756

BIPHENYLOXY MONO- AND DIMETHACRYLATE POLYMERIZABLE COMPOSITIONS

Haruo Yoshida; Hirotaka Tagoshi, both of Oita; Yasushi Morohashi, Saitama, and Toshiaki Tanikoshi, Gunma, all of Japan, assignors to Showa Denko Kabushiki Kaisha and Showa Highpolymer Co., Ltd., both of, Japan

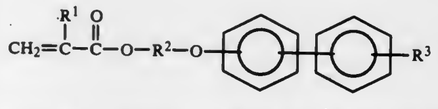
Filed Nov. 14, 1983, Ser. No. 551,763

Claims priority, application Japan, Nov. 11, 1982, 57-196739; Nov. 22, 1982, 57-203732

Int. Cl.³ C08F *12/24, 216/12*

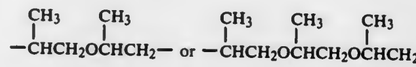
U.S. Cl. 526—313 **13 Claims**

1. A polymerizable composition capable upon polymerization of production of a polymer having a refractive index of at least 1.57 comprising (A) a mono(meth)acrylate represented by general formula (I):

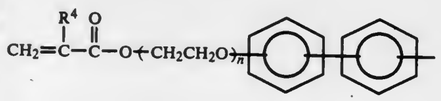


(I)

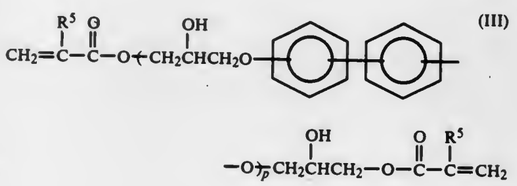
wherein R^1 represents a hydrogen atom or a methyl group, R^2 represents a divalent hydrocarbon group of 2 to 4 carbon atoms which may be substituted with a methyl group and/or a hydroxyl group, $-CH_2CH_2OCH_2CH_2-$, $-CH_2CH_2OCH_2CH_2OCH_2CH_2-$,



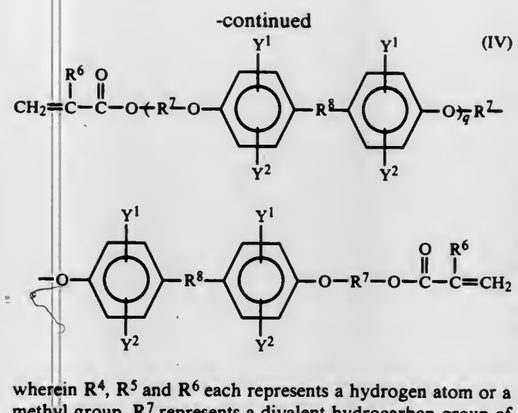
and R^3 and R^3 represents a hydrogen atom, a chlorine atom, a bromine atom, an alkyl group, an alkoxy group, an aryl group or an aryloxy group; and (B) a di(meth)acrylate represented by the general formula (II), (III) or (IV):



(II)



(III)



(IV)

wherein R^4, R^5 and R^6 each represents a hydrogen atom or a methyl group, R^7 represents a divalent hydrocarbon group of 2 to 4 carbon atoms which may be substituted with a methyl group and/or a hydroxy group, R^8 represents a divalent hydrocarbon group of 1 to 3 carbon atoms, Y^1 and Y^2 each represents a hydrogen atom, a chlorine atom or a bromine atom, n and n' each is an integer of 1 to 3, p is an integer of 1 to 4, and q is 0 or an integer of 1 to 3, provided that q is 0 when R^7 is a group having no hydroxy groups and wherein the ratio of (A) to (B) is from 3:7 to 3:1.

4,518,757

DRAG REDUCTION AGENT FOR HYDROCARBON LIQUID

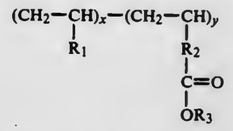
Donald N. Schulz, Annandale; Kissho Kitano, Fanwood, both of N.J.; Terry J. Burkhardt, Crosby, Tex., and Arthur W. Langer, Watchung, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 23, 1983, Ser. No. 565,100

Int. Cl.³ C08F *220/10*

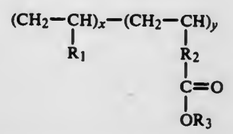
U.S. Cl. 526—329 **4 Claims**

1. A copolymer having the formula:



wherein R_1 is an alkyl group having about 5 to about 25 carbon atoms, R_2 is an alkylene group having about 1 to about 17 carbon atoms and R_3 is an alkyl group having about 1 to about 25 carbon atoms, x is about 95.0 to about 99.95 mole % and y is about 0.05 to about 5.0 mole %.

3. A method for reducing the frictional drag of a hydrocarbon solution in flow through pipes comprising adding a quantity of a copolymer to said hydrocarbon solution, said copolymer having the formula:



wherein R_1 is an alkyl group having about 5 to about 25 carbon atoms, R_2 is an alkylene group having about 1 to about 17 carbon atoms and R_3 is an alkyl group having about 1 to about 25 carbon atoms, x is about 95.0 to about 99.95 mole % and y is about 0.05 to about 5.0 mole %.

-continued

(IV)

wherein R^4, R^5 and R^6 each represents a hydrogen atom or a methyl group, R^7 represents a divalent hydrocarbon group of 2 to 4 carbon atoms which may be substituted with a methyl group and/or a hydroxy group, R^8 represents a divalent hydrocarbon group of 1 to 3 carbon atoms, Y^1 and Y^2 each represents a hydrogen atom, a chlorine atom or a bromine atom, n and n' each is an integer of 1 to 3, p is an integer of 1 to 4, and q is 0 or an integer of 1 to 3, provided that q is 0 when R^7 is a group having no hydroxy groups and wherein the ratio of (A) to (B) is from 3:7 to 3:1.

4,518,758

ORGANOPOLYSILOXANE/POLYURETHANE ELASTOMERIC BLOCK COPOLYMERS

Jacques Cavezzan, Villeurbanne, and Christian Prud'Homme, Lyons, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

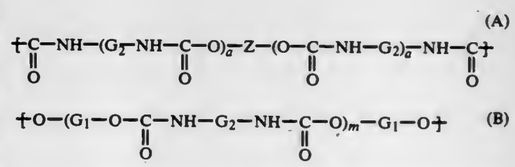
Filed Sep. 24, 1982, Ser. No. 423,259

Claims priority, application France, Sep. 30, 1981, 81 18573

Int. Cl.³ C08G *18/61, 77/26, 77/42*

U.S. Cl. 528—12 **11 Claims**

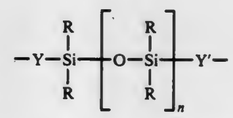
1. An organopolysiloxane/polyurethane thermoplastic elastomeric block copolymer having improved thermomechanical properties and a modulus of elasticity which is substantially constant within the temperature range from ambient temperatures to 160° C. consisting essentially of the following recurring units (A) and (B):



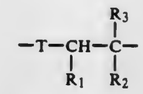
(A)

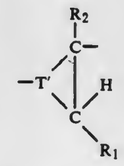
(B)

wherein Z is a divalent radical which comprises a polysiloxane block and has the formula:

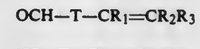


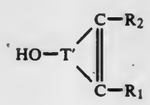
in which Y and Y' are each a divalent radical having one of the formulae:



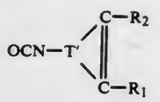


wherein T and T' comprise the divalent or trivalent residue having from 1 to 20 carbon atoms of an unsaturated isocyanate or alcohol having one of the formulae:





-continued



or an oxygen, sulfur, silicon, nitrogen, ester or amide interrupted such T or T' residue, and further wherein R_1, R_2 and R_3 are each hydrogen, alkyl or aryl, with the proviso that two of the radicals R_1 and R_2 may together form a single alkylene radical; each R is an alkyl or halogenoalkyl radical having from 1 to 5 carbon atoms and containing from 1 to 7 chlorine and/or fluorine substituents, cycloalkyl or halogenocycloalkyl radical having from 3 to 8 carbon atoms and containing from 1 to 4 chlorine and/or fluorine substituents, aryl, alkylaryl or halogenoaryl radical having from 6 to 8 carbon atoms and containing from 1 to 4 chlorine and/or fluorine substituents, or a cyanoalkyl radical having from 3 to 4 carbon atoms; n is a number of at least 10; G_1 and G_2 are each divalent hydrocarbon radicals having from 2 to 20 carbon atoms, or two such hydrocarbon radicals joined together by a direct valence bond or through an oxygen atom or alkylene or alkylidene bridge having from 1 to 4 carbon atoms; m is a number ranging from 1 to 20; and a is a number which is either zero or 1.

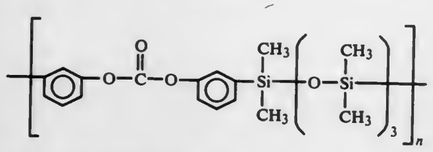
4,518,759

SYNTHESIS OF ARYLENE SILOXANYLENE POLYMERS AND COPOLYMERS

Harold Rosenberg, and Tsu-tzu Tsai, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,032
Int. Cl.³ C08G *77/60*
U.S. Cl. 528—35 **6 Claims**

1. An arylene siloxanylene polymer having a molecular weight (number average) of at least about 100,000 having repeating units of the general formula



wherein n ranges from about 300 to about 1500.

4,518,760

PROCESS FOR PRODUCING POLY(DITHIOCARBAMATE) CHELATING RESINS

Maurice R. Smith, Cleveland, and Harvey B. Cochran, Englewood, both of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 532,111, Sep. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,313, Sep. 29, 1982, abandoned. This application Jul. 13, 1984, Ser. No. 630,806
Int. Cl.³ C08G *18/38*
U.S. Cl. 528—48 **31 Claims**

1. A process for producing a poly(dithiocarbamate) resin chelating agent comprising:
(a) dissolving a polyimine in an alcohol solvent to form a polyimine solution.
(b) admixing a polyisocyanate in said polyimine solution to produce a cross-linked polyamine-polyurea precursor resin, and
(c) reacting said cross-linked polyamine-polyurea precursor resin with a mixture of NH_4OH and CS_2 to produce said poly(dithiocarbamate) resin chelating agent.

4,518,761

PROCESS FOR THE PREPARATION OF MIXED TRIMERS FROM ORGANIC ISOCYANATES, THE MIXED TRIMERS OBTAINED ACCORDING TO THE PROCESS AND THE USE THEREOF FOR THE PRODUCTION OF POLYURETHANES

Roland Richter, Leverkusen; Hanns P. Müller, Odenthal; Kuno Wagner, Leverkusen; Bernd Riberi, Cologne, and Jürg Fröhlich, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,086
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1981, 3144672
Int. Cl.³ C08G *18/70*; C07D *251/34*
U.S. Cl. 528—67 **10 Claims**

1. A process for the preparation of mixed trimers by at least partially trimerizing the isocyanate groups of two isocyanate components with different reactivities in the sense of the trimerization reaction in the presence of a trimerization catalyst which comprises
(a) adding the less reactive isocyanate component to a reaction vessel,
(b) trimerizing at least about 0.1% of the isocyanate groups of said less reactive isocyanate component in the presence of a trimerization catalyst,
(c) metering the more reactive isocyanate component into said reaction vessel and, optionally,
(d) terminating the trimerization reaction at the desired degree of trimerization by thermal decomposition of said trimerization catalyst and/or by adding a catalyst poison.

4,518,762

PROCESS FOR MAKING EPOXY NOVOLAC RESINS WITH HIGH EPOXY VALUES

Ulf A. Krueger, Coventry, and Thomas M. Meshako, West Warwick, both of R.I., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Sep. 8, 1983, Ser. No. 530,177
Int. Cl.³ C08G *59/40, 59/00*
U.S. Cl. 528—95 **9 Claims**

1. An improved process for the production of an epoxy novolac resin, having a higher than normal epoxy value, wherein a novolac is reacted at a temperature of 40°–100° C., in the absence of any catalyst specific for the formation of the chlorohydrin ether intermediate, in the presence of 2 to 25% by weight, based on the reaction mixture, of a lower alkanol or lower alkoxyalkanol cosolvent, with excess epichlorohydrin, based on the phenolic hydroxyl value, in the presence of 0.5 to 8% by weight of water, based on the reaction mixture, and with 0.9 to 1.15 equivalents of solid alkali metal hydroxide per phenolic hydroxyl group, to give the epoxy novolac, wherein the improvement comprises
having 0.5 to 8% by weight of water in the reaction mixture throughout the reaction period,
using a solid alkali metal hydroxide in the form of beads of about 1 mm diameter, which hydroxide is charged to the reaction mixture portionwise or continuously during a gradually escalating addition program, and
isolating the epoxy novolac resin.

4,518,763

COPOLYESTERS FROM ETHER-CONTAINING GLYCOLS AND ACIDS

Robert B. Barbee, and Burns Davis, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 570,146, Jan. 12, 1984, abandoned. This application May 21, 1984, Ser. No. 612,513
Int. Cl.³ C08G *63/66, 63/68*
U.S. Cl. 528—173 **11 Claims**

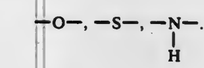
1. A polyester prepared by reacting a dicarboxylic acid component comprising at least 90 mole % of an acid of the general formula

$$HO_2CH_2CX(RX)yCH_2CO_2H$$

where y=zero or one, and at least 75 mole % of a diol of the general formula

$$HOCH_2CH_2XRXCH_2CH_2OH$$

wherein R in each of said formulas is an aromatic moiety comprising 6 to 24 carbon atoms and X in each of the above formulas is



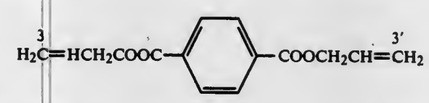
4,518,764

DIALLYL TEREPHTHALATE COPOLYMER AND COMPOSITION COMPRISING SAID COPOLYMER

Motomu Tanaka, Kobe; Masanari Osuka, Toyonaka; Takeshi Kuri, Nishinomiya, and Sadao Takakuwa, Suita, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

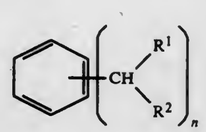
Filed Oct. 28, 1983, Ser. No. 546,533
Claims priority, application Japan, Oct. 30, 1982, 57-189981; Jan. 24, 1983, 58-10056
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—271 **9 Claims**

1. A diallyl terephthalate copolymer derived from diallyl terephthalate represented by the following formula



(1)

and an aromatic benzyl hydrocarbon having at least one hydrogen atom at the benzyl position and represented by the following formula



(2)

wherein each of R^1 and R^2 represents a member selected from the class consisting of a hydrogen atom and lower alkyl groups, and n is an integer of 1 to 3,
said copolymer having the following characteristics (a) to (f):
(a) the copolymer has such a structure wherein one monomeric unit of formula (2) is bonded to the allyl group of the monomeric unit of formula (1) at

3 3′ 3 3′
C, C or both C and C

through a carbon-carbon bond at the benzyl position,
(b) the number of the monomeric units of formula (1) at a carbon-carbon bonded molecular chain segment formed from the allyl groups of the monomeric unit of formula (1) in the copolymer is from 3 to 11,
(c) the copolymer has a degree of unsaturation, measured by the Wijs method, of from 40 to 85,
(c) the copolymer has a true specific gravity at 30° C. of from 1.20 to 1.25,
(e) the copolymer has a number average molecular weight ($\overline{M}n$) of from 4,000 to 10,000 and a weight average molecular weight ($\overline{M}w$) of from 70,000 to 200,000 measured by gel-permeation chromatography (GPC) and calculated as polystyrene, and
(f) the copolymer has a molecular weight distribution, represented by the ratio of $\overline{M}n$ to $\overline{M}w$, of from 10 to 40.

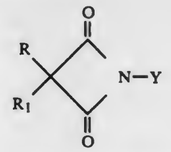
4,518,765

ANIONIC POLYMERIZATION OF LACTAM WITH AZETIDINE-2,4-DIONE PROMOTER

Steven J. Grossman, Cheshire, and Kemal Onder, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

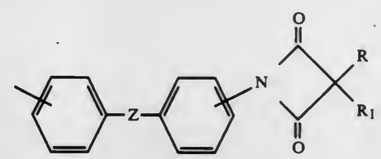
Filed Mar. 19, 1984, Ser. No. 591,310
Int. Cl.³ C08G *69/20*
U.S. Cl. 528—314 **9 Claims**

1. In a process for the preparation of a nylon polyamide by polymerizing a lactam in contact with an anionic polymerization catalyst and a promoter, the improvement wherein the promoter is a compound containing an azetidine-2,4-dione moiety having the formula



I

wherein R and R_1 when taken separately are independently selected from the group consisting of hydrogen and hydrocarbyl and R and R_1 taken together with the carbon atom to which they are joined represent cycloalkane having 4 to 8 ring carbon atoms, inclusive, and Y is selected from the group consisting of hydrocarbyl, hydrocarbyl substituted by one or more azetidine-2,4-dionyl rings, and radicals having the formula



wherein R and R_1 are as defiend above and Z is selected from the group consisting of —CO—, —O—, —SO_2—, and alkylene having 1 to 4 carbon atoms, inclusive.

4,518,766

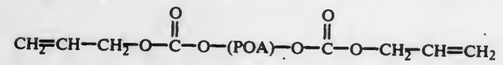
POLYOXYALKYLENEDIOL-α,ω-BISALLYL POLYCARBONATE USEFUL AS A BASE FOR SEALANTS AND PROCESS FOR ITS PREPARATION

Alberto Greco, Milan, and Guglielmo Bertolini, Pavia, both of Italy, assignors to Enichimica Secondaria, S.p.A., Palermo, Italy

Filed Feb. 3, 1984, Ser. No. 576,869
Claims priority, application Italy, Feb. 11, 1983, 19532 A/83
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—370 **22 Claims**

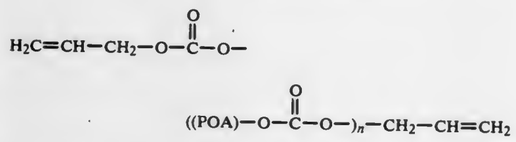
1. A process for the preparation of a polycarbonate of polyoxyalkylenediol-α,ω-bisallyl, useful as a sealant base, comprising:
(a) a first stage of reaction comprising contacting a diallyl carbonate reactant and a polyoxyalkylenediol reactant having a molecular weight of from about 400 to about 4,500, in a molar ratio of from 2.5:1 to 10:1, and a catalytic amount of a transesterification catalyst, at a temperature equal to or higher than 100° C. and under a reduced pressure which permits the removal by vaporization of the allyl alcohol by-product being formed, without removing

or substantially removing by vaporization the unreacted diallyl carbonate, with the formation of the coresponding bisallylcarbonate of said polyoxyalkylenediol having the formula:



wherein (POA) is the radical of the polyoxyalkylenediol after removal of the terminal hydrogen therefrom, and

(b) a second stage reaction in which the bisallyl carbonate product as obtained in the first stage is treated to a temperature of from 70° C. to 150° C. under a pressure equal to or lower than Torr, in contact with a catalytic amount of said transesterification catalyst, so as to cause the chain extension of the bisallylcarbonate of the polyoxyalkylenediol together with the removal of the (1) unreacted bisallyl carbonate from the first stage and (2) diallylcarbonate which is formed as a by-product in the chain-extension reaction, to obtain a polycarbonate of the polyoxyalkylenediol-α,ω-bisallyl having the formula:



wherein (POA) has the same meaning as indicated above and n is an integer, the value of which, or the mean value of which, varies from 2 to 50.

4,518,767

CURING OF POLYSULFIDE LIQUID POLYMERS WITH ZINC OXIDE AND A SOURCE OF COPPER IONS

Edward G. Millen, Princeton, N.J., assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Jan. 27, 1984, Ser. No. 574,447
Int. Cl.³ C08G *75/04*
U.S. Cl. 528—374 **4 Claims**

1. A curable liquid polysulfide polymer composition having improved toughness and tear resistance, comprising:

A. 100 parts by weight of a liquid organic polysulfide polymer having a molecular weight of from about 500 to about 10,000;

B. about 2–20 parts by weight of zinc oxide; and

C. about 2–20 parts by weight of a copper salt.

4,518,768

REMOVAL OF BENZENE FROM CARBOXY POLYMETHYLENE RESIN

Heinrich P. Scheurer, and Kenneth K. H. Ong, both of Scarborough, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 26, 1984, Ser. No. 593,328
Claims priority, application Canada, Apr. 13, 1983, 425798
Int. Cl.³ C08F *120/02*
U.S. Cl. 528—483 **15 Claims**

1. Method for removal of benzene from carboxy polymethylene resin comprising:

(1) forming a solution phase containing about 0.1% to about 50% by weight of the resin, based on the weight of the solution, by dissolving the resin containing contaminant quantities of benzene-free liquid solvent therefor,

(2) providing a benzene-free gas phase, said gas phase is air, nitrogen, an inert gas, steam or a mixture thereof,

(3) forming a fine dispersion of one of said phases in the other,

(4) maintaining the dispersion at a temperature of about 0° C. to about 100° C.,

(5) maintaining the dispersion for a period sufficient to permit substantially all the benzene in the solution phase to transfer into the gas phase, and

(6) recovering a substantially benzene-free resin phase.

4,518,769

FRACTIONATION OF POLYMERS

Stephen H. Wu, and Clarence C. Dannelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 229,032, Jan. 26, 1981, Pat. No. 4,429,113, which is a continuation of Ser. No. 45,580, Jun. 4, 1979, abandoned. This application Oct. 20, 1983, Ser. No. 543,677
Int. Cl.³ C08F *6/04*
U.S. Cl. 528—486 **4 Claims**

1. The process of obtaining a high molecular weight fraction from a polymer which comprises the steps of

(a) forming a solution of a polar polymer in a solvent which is also a solvent for a selected coacervating substance,

(b) mixing with said solution a coacervating simple acid or base having at least two proton donating or proton receiving groups which are opposite the polarity of said polar polymer in an amount sufficient to crosslink molecules of said polar polymer of a molecular weight above a selected range at the solution temperature, thereby forming coacervated high molecular weight polymer solids, said coacervating simple acid or base being selected from the group consisting of oxalic acid, malonic acid, succinic acid, adipic acid, sebacic acid, dimer acid, tartaric acid, phthalic acid, terephthalic acid, trimesic acid, trimellitic acid, 1,2,4,5-benzenetetracarboxylic acid, sulfonic acids, pyrophosphates, ethylenediamine, unsymmetrical dimethylethylenediamine, N,N,N'N'-tetraethylenediamine, trimethylenediamine, hexamethylenediamine, phenylenediamine, imidazole, pyrimidine, purine, nicotine and 2,2'-bipyridine, and

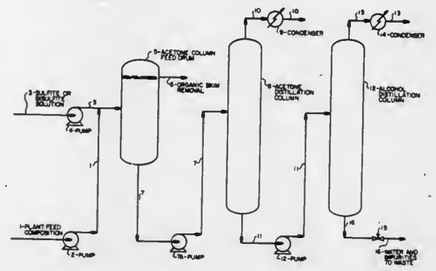
(c) separating the high molecular weight solids from the solution.

4,518,770

PROCESS FOR THE PREPARATION OF POLYHYDROXYBUTADIENES

Steven E. Kaplan, Houston, and Richard C. Frink, Baytown, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 30, 1984, Ser. No. 574,801
Int. Cl.³ C08F *2/16, 136/04*
U.S. Cl. 528—487 **9 Claims**



1. In a process for the preparation of a polyhydroxybutadiene homopolymer wherein a diene monomer is polymerized in the presence of hydrogen peroxide catalyst and an alcohol solvent, said process including the recovery in a distillation unit of said alcohol solvent from a feed stream comprising unreacted butadiene, alcohol, hydrogen peroxide, water, acetone and vinylcyclohexene after preparation and recovery of polyhydroxybutadiene product, the improvement for reducing fouling of said distillation unit which comprises injecting into the distillation unit, along with said feed stream from which the polyhydroxybutadiene has been essentially removed, an aqueous solution of an alkali metal sulfite or bisulfite.

4,518,771

PROCESS FOR THE PRODUCTION OF HEPARIN-CONTAINING PARTICULATE PRODUCTS

István Takács; György Kerey; János Illés; Péter Rudolf; Pál Gere; László Czebe, and Erzsébet Neszmélyi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT., Budapest, Hungary

Division of Ser. No. 131,824, Mar. 19, 1980, Pat. No. 4,315,923. This application Dec. 23, 1980, Ser. No. 219,853
Int. Cl.³ C08B *37/10*
U.S. Cl. 536—21 **9 Claims**

1. Process for producing a heparin-enriched raw material capable of long-term storage to recover heparin therefrom, said process comprising the steps of:

(a) storing heparin-containing animal organ material in an aqueous medium at a temperature of substantially 10° to 50° C. for a preriod of substantially 0.5 to 15 hours;

(b) thereafter heat-treating the composition of step (a) at a temperature of 75° to 100° C. to precipitate a heparin-protein complex insoluble in water from the aqueous phase in the form of a readily filterable aggregate;

(c) filtering said aggregate from the aqueous phase; and

(d) drying said aggregate to produce a friable coherent particulate product with a 90 to 95% by weight dry substance content.

4,518,772

SYNTHESIS OF HIGHER POLYOL FATTY ACID POLYESTERS USING HIGH SOAP:POLYOL RATIOS

Robert A. Volpenhein, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1983, Ser. No. 507,826
Int. Cl.³ C07H *1/00*
U.S. Cl. 536—119 **18 Claims**

1. In a solvent-free transesterification process for synthesizing higher polyol fatty acid polyesters comprising the steps of:

(1) heating a mixture of (a) a polyol selected from a group consisting of monosaccharides, disaccharides and sugar alcohols, (b) a fatty acid ester selected from the group consisting of methyl esters, 2-methoxy ethyl esters, benzyl esters, and mixtures thereof, (c) an alkali metal fatty acid soap, and (d) a basic catalyst, to a temperature of from about 110° C. to about 180° C. at a pressure of from about 0.1 mm to about 760 mm of mercury to form a homogeneous melt; and

(2) subsequently adding to the reaction product of step (1) excess fatty acid ester selected from the group consisting of methyl esters, 2-methoxy ethyl esters, benzyl esters, and mixtures thereof;

the improvement wherein the molar ratio of soap:polyol in step (1) is from about 0.6:1 to about 1:1.

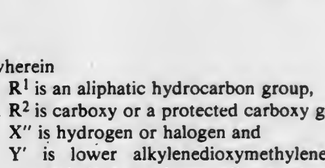
4,518,773

"3-CARBAMOYLOXY CEPHALOSPORINS"

Robert L. Cundall, Liverpool, and Derek Walker, Jamesville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 307,907, Oct. 2, 1981, Pat. No. 4,426,520, which is a division of Ser. No. 893,092, Apr. 3, 1978, Pat. No. 4,322,347. This application Aug. 19, 1983, Ser. No. 507,370
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.
Int. Cl.³ C07D *501/14*; A61K *31/545*
U.S. Cl. 544—16 **1 Claim**

1. A compound of the formula



in which R^2 is hydrogen or a conventional amino-protecting group;

R^6 is hydrogen, (lower)alkanoyl, chloroacetyl, dichloroacetyl, trichloroacetyl or p-toluenesulfonyl; provided that R^2 and R^6 may not both be hydrogen; and

R^7 is hydrogen or a conventional carboxyl-protecting group; or, when R^7 is hydrogen, a salt or ester thereof.

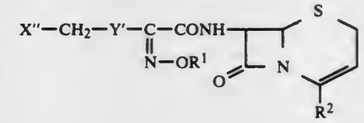
4,518,774

3-CEPHEM INTERMEDIATES

Ikuo Ueda, Toyonaka; Takao Takaya, Kawanishi; Masakazu Kobayashi, Hachitsuka; Takashi Masugi, Kitamachi; Hisashi Takasugi, Kohamanishi; Hiromu Kochi, Sakai, and Tadashi Kitaguchi, Kukuchinishimachi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 213,217, Dec. 5, 1980, Pat. No. 4,379,922, which is a division of Ser. No. 101,527, Dec. 10, 1979, Pat. No. 4,298,529, which is a continuation-in-part of Ser. No. 73,565, Sep. 7, 1979, abandoned. This application Aug. 25, 1982, Ser. No. 411,312
Claims priority, application Japan, Sep. 12, 1978, 53-112555; United Kingdom, Sep. 12, 1978, 7836564; Japan, Jan. 12, 1979, 54-3106; United Kingdom, Feb. 19, 1979, 7905791
Int. Cl.³ C07D *501/20*; A61K *31/545*
U.S. Cl. 544—22 **7 Claims**

1. A compound of the formula:



wherein

R^1 is an aliphatic hydrocarbon group,

R^2 is carboxy or a protected carboxy group,

X'' is hydrogen or halogen and

Y' is lower alkylenedioxymethylene, di(lower) alkoxymethylene, or lower alkoxycarbonylhydrazonomethylene, or its salt.

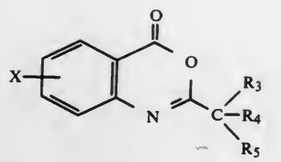
4,518,775

BENZOXAZINE-4-ONE INTERMEDIATES

André Allais, Gagny; Francois Clèmence, Paris; Roger Deraedt, Pavillons S/S Bois, and Odile Lemartret, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 262,952, May 12, 1981, Pat. No. 4,397,856. This application May 17, 1983, Ser. No. 495,475
Claims priority, application France, May 19, 1980, 80 11100
Int. Cl.³ C07D *265/22*
U.S. Cl. 544—92 **1 Claim**

1. A compound of the formula



wherein X is in the 5,6,7 or 8 position and is selected from the group consisting of CF_3O—, CF_3S— and CF_3—, R_3 is selected from the group consisting of hydrogen, halogen and alkyl of 1 to 4 carbon atoms, R_4 is selected from the group consisting of hydrogen and halogens, R_5 is a halogen with the proviso that R_3, R_4 and R_5 can not all be fluorine.

4,518,776

PROCESS FOR PRODUCING SULFONYLUREAS

Willy Meyer, Riehen; Werner Föry, Basel, and Werner Töpfl, Dornach, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

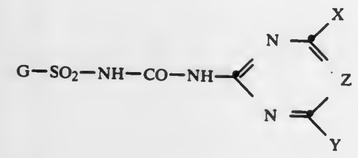
Filed Jul. 8, 1983, Ser. No. 511,830

Claims priority, application Switzerland, Jul. 19, 1982, 4396/82

Int. Cl.[3] **C07D** *251/46, 251/18, 239/69, 401/12*

U.S. Cl. 544—206 **11 Claims**

1. A process for producing a sulfonylurea of the general formula I

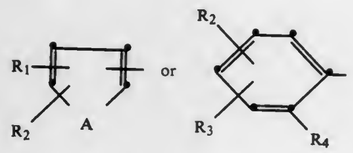


(I)

wherein

Z is an —N= or —CH= radical,

G is a radical of the formula



A

X is C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, halogen, C_1–C_4-haloalkoxy, C_1–C_4-alkylamino or di-C_1–C_4-alkylamino,

Y is C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkoxy,

A is oxygen, sulfur, —NR_5— or —C=N—, where R_5 is hydrogen, C_1–C_4-alkyl or —CO—C_1–C_4alkyl,

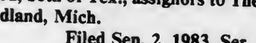
R_1 is hydrogen, C_1–C_4-alkyl, halogen, nitro, cyano, —NH_2, —$S(O)_n$—C_1–C_4-alkyl, —SO_2—C_1–C_4-alkoxy, —SO_2—di-C_1–C_4-alkylamino, —CHO, —$CONH_2$, —D—C_3–C_5-alkynyl, —CO—D—C_3–C_5-alkynyl, —D—C_1–C_4-alkyl, —D—C_3–C_5-alkenyl, —CO—C_1–C_4-alkyl, —CO—D—C_1–C_4-alkyl or —CO—D—C_3–C_5-alkenyl, n being one or two, and D being an oxygen, sulfur, —NH— or —N(C_1–C_4-alkyl)-bridge,

R_2 is hydrogen, halogen, CF_3, NO_2, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_3 is hydrogen, fluorine or chlorine, and

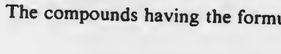
R_4 is halogen, C_1–C_4-alkyl, nitro, cyano, —NH_2, —$S(O)_n$—C_1–C_4-alkyl, —SO_2—C_1–C_4-alkoxy, —SO_2-di-C_1–C_4-alkylamino, —CHO, —$CONH_2$, —D—C_3–C_5-alkynyl, —CO—D—C_3–C_5-alkynyl, trifluoromethyl, or C_1–C_4-alkoxy substituted by cyano, halogen, C_1–C_4-alkoxy or C_1–C_4-alkylthio, or is —D—C_1–C_4-alkyl, —D—C_3–C_5-alkenyl, —CO—C_1–C_4-alkyl, 1,2-dichlorovinyloxy, —CO—D—C_1–C_4-alkyl or —CO—D—C_3–C_5-alkenyl, n being one or two, and D being an oxygen, sulfur, —NH— or —N(C_1–C_4-alkyl)-bridge,

which process comprises reacting a sulfonamide of the formula II



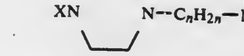
(II),

in the presence of a base, with a chloroformic acid ester of the formula III



(III),

or a sulfonyl chloride of the formula IV



(IV),

in the presence of a base, with a urethane of the formula V

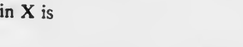
(V),

wherein G has the meaning defined under the formula I,

Q is oxygen or sulfur, and

T is C_1–C_4-alkyl, benzyl, C_1–C_4-haloalkyl, C_1–C_3-cyanoalkyl, C_2–C_5-alkenyl, or alkoxyalkyl or alkylthioalkyl having a total of at most 5 carbon atoms;

and converting the formed carbamate of the formula VI



(VI)

by reaction with an amine of the formula VII

(VII)

wherein G, Q, T, X, Y and Z have the meanings defined in the foregoing, into the sulfonylurea of the formula I.

4,518,777

METHYLENE PHOSPHONIC ACID SCALE INHIBITOR COMPOSITIONS DERIVED FROM AMINOHYDROCARCARBYLPIPERAZINE UREA ADDUCTS

Druce K. Crump, Lake Jackson, and David A. Wilson, Richwood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 2, 1983, Ser. No. 528,835

Int. Cl.[3] **C07D** *241/04, 403/12;* **C02F** *5/14*

U.S. Cl. 544—337 **19 Claims**

1. The compounds having the formula

wherein A is

X and

wherein X is

or H and wherein R is H, ammonium, an alkali or alkaline earth metal, m is 0–2, n is 2 or 3 and wherein at least one X is

---

4,518,778

POLYMER POLYOLS FROM ALKYLENE OXIDE ADDUCTS OF ALKANOLAMINES

Michael Cuscurida, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,599

Int. Cl.[3] **C07D** *241/04;* **C08G** *18/28;* **C07C** *125/06*

U.S. Cl. 544—398 **16 Claims**

1. A polymer polyol made by the reaction of an alkylene oxide adduct of a hydroxyl-containing amine, a polyether polyol of about 3000 to 8000 molecular weight and an organic polyisocyanate wherein the ratio of equivalents of alkylene oxide adduct of hydroxyl-containing amine to equivalents of polyisocyanate ranges from about 1 to 4 and wherein the combined weight of adduct and polyisocyanate is about 5 to 30 wt.% of the polyether polyol.

9. A method for the production of a polymer polyol consisting essentially of reacting an alkylene oxide adduct of a hydroxyl-containing amine, a polyether polyol of about 3000 to 8000 molecular weight and an organic polyisocyanate wherein the ratio of equivalents of alkylene oxide adduct of hydroxyl-containing amine to equivalents of polyisocyanate ranges from about 1 to 4 and wherein the combined weight of adduct and polyisocyanate is about 5 to 30 wt.% of the polyether polyol.

4,518,779

1,2,3,4-TETRAHYDRO-1-AMINOMETHYL-4-PHENYL ISOQUINOLINES

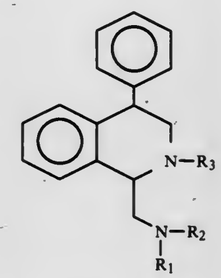
Ronald C. Griffith, Pittsford, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 27, 1982, Ser. No. 423,958

Int. Cl.[3] **C07D** *217/14;* **A61K** *31/47*

U.S. Cl. 546—144 **14 Claims**

1. The compound



wherein R_1 and R_2 are from the class of hydrogen and lower alkyl, and R_3 is from the class of hydrogen, formyl, and lower alkyl and the pharmaceutically acceptable acid addition salts thereof.

4,518,780

PROCESS FOR THE PREPARATION OF 2-(5,5-DISUBSTITUTED-4-OXO-2-IMIDAZOLIN-2-YL)NICOTINIC ACIDS AND QUINOLINE-3-CARBOXYLIC ACIDS

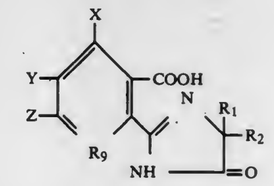
Jerry M. Barton, East Windsor; Don W. Long, and Kenneth D. Lotts, both of Trenton, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 381,818, May 25, 1982, abandoned. This application May 5, 1983, Ser. No. 489,400

Int. Cl.[3] **C07D** *401/04*

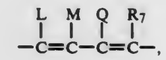
U.S. Cl. 546—167 **8 Claims**

1. A process for the preparation of a 2-(5,5-disubstituted-4-oxo-2-imidazolin-2-yl)nicotinic acid, 3-quinolinecarboxylic acid or benzoic acid of the formula:

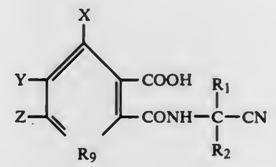


(IA)

wherein R_9 is N or CH; R_1 is C_1–C_4 alkyl; R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R_1 and R_2 are taken together along with the carbon to which they are attached, they may represent C_3–C_6 cycloalkyl optionally substituted with methyl, and when R_1 and R_2 are not the same, the optical isomers thereof; X is hydrogen, or C_1–C_4 alkyl, Y is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, trichloromethyl, difluoromethoxy, diloweralkylamino, C_1–C_4 alkylthio, nitro, phenyl or phenoxy optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; Z is hydrogen, C_1–C_4 alkyl, trifluoromethyl, trichloromethyl, phenyl or phenyl substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; and when taken together, Y and Z may form a ring in which YZ are represented by the structure: —$(CH_2)_n$—, where n is an integer from 3 to 5, provided that X is hydrogen; or YZ is



where L, M, Q and R_7 are each hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, difluoromethoxy, diloweralkylamino, C_1–C_4 alkylthio, nitro, phenyl, phenoxy or mono-substituted phenyl or phenoxy where the substituent is C_1–C_4 alkoxy or halogen; with the proviso that only one of L, M, Q or R_7, may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; comprising, reacting a compound of the structure:



wherein R_9, X, Y, Z, W, R_1 and R_2 are as described above, with from 2 to 20 molar equivalents of an aqueous or aqueous alcoholic sodium or potassium hydroxide of a concentration of 10% or greater and from 0 to 10 molar equivalents of 30 to 90% aqueous hydrogen peroxide at a temperature of from 25° to 100° C. and thereafter acidifying the thus-formed reaction mixture to a pH between 2 and 4 with a strong mineral acid to give the formula (I) acid.

4,518,781

PROCESS FOR THE PREPARATION OF 3-HYDROXYMETHYL-6-CHLOROBENZOXAZOLONE

Noël Rouy, Yérres, and Francois Dewilde, Thiais, both of France, assignors to Rhone-Poulenc Agrochimie, Lyon, France

Division of Ser. No. 242,538, Mar. 11, 1981, Pat. No. 4,435,557. This application Nov. 30, 1983, Ser. No. 556,565

Claims priority, application France, Mar. 27, 1980, 80 07262

Int. Cl.³ C07D *498/04*

U.S. Cl. 548—221 **22 Claims**

1. A process for the preparation of 3-hydroxymethyl-6-chlorobenzoxazolone which comprises reacting 6-chlorobenzoxazolone in organic solution with formaldehyde in the presence of water and dioxane, the 6-chlorobenzoxazolone having been prepared by reacting benzoxazolone with molecular chlorine in the presence of water and dioxane wherein said organic solution being 6-chlorobenzoxazolone and dioxane.

4,518,782

FUEL COMPOSITIONS CONTAINING N-ALKYL GLYCYL IMIDAZOLINE

Rodney L. Sung, Fishkill; Benjamin J. Kaufman, Wappingers Falls, and Peter Dorn, LaGrangeville, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,583

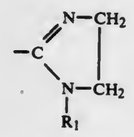
Int. Cl.³ C07D *233/06*; C10L *1/14*

U.S. Cl. 548—353 **3 Claims**

1. A friction-reducing, corrosion-inhibiting and detergent compound of the formula:

$$RNHCH_2X$$

wherein R is a hydrocarbyl group having 12 to 16 carbon atoms in the chain and X is



wherein R_1 is selected from the group consisting of hydrogen, a lower alkyl group having 1 to 5 carbon atoms and the radical $-CH_2CH_2NH_2$.

4,518,783

PROCESS FOR PRODUCING (-)-2-[1-(2,6-DICHLOROPHENOXY)-ETHYL]-1,3-DIAZACYCLOPENT-2-ENE

Jürgen Biedermann, Pulheim-Stommeln; Gerrit Prop, Pulheim, and Ille-Stephanie Doppelfeld, Bergheim-Glessen, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 367,946, Apr. 13, 1982, abandoned. This application May 27, 1983, Ser. No. 498,786

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3149009

Int. Cl.³ C07D *233/22*

U.S. Cl. 548—353 **2 Claims**

1. Process for producing (−)-2-[1-(2,6-dichlorophenoxy)-ethyl]-1,3-diazacyclopent-2-ene or a pharmaceutically acceptable acid addition salt thereof by subjecting a (−)-2-hydroxy-propionic acid-C_{1-4}-alkyl ester to reaction with excess thionyl-chloride in the presence of catalytic quantities of dimethyl-formamide, subjecting the resulting (+)-2chloropropionic acid-C_{1-4}-alkyl ester to reaction with at least equimolar amounts of 2,6-dichlorophenol in an organic solvent in the presence of a base at a temperature ranging from 60° to 150° C., subjecting the resulting (−)-2-(2,6-dichlorophenoxy)-propionic acid-C_{1-4}-alkyl ester to reaction with a large excess of ethylene diamine at room temperature, subjecting the resulting (−)-2-(2,6-dichlorophenoxy)-propionic acid-N-(2-aminoethyl)-amide to dehydration with a titanium tetrachloride/tetrahydrofurane complex in an inert solvent in the presence of 4-dimethylamino pyridine at a temperature ranging from 0° to 30° C. and, if desired, converting the resulting (−)-2-(2,6-dichlorophenoxy)-ethyl]-1,3-diazacyclopent-2-ene into a physiologically acceptable acid addition salt thereof.

4,518,784

CYCLIC COMPOUNDS

Michael J. Broadhurst, Baldock; Cedric H. Hassall, Welwyn, and Gareth J. Thomas, Luton, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

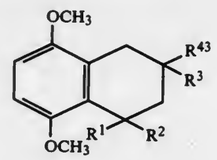
Continuation of Ser. No. 298,139, Aug. 31, 1981, abandoned, which is a continuation of Ser. No. 111,348, Jan. 11, 1980, Pat. No. 4,316,985. This application Feb. 23, 1984, Ser. No. 583,077

Claims priority, application United Kingdom, Jan. 16, 1979, 7901537; Jul. 26, 1979, 7926151

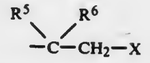
Int. Cl.³ C07D *339/06, 317/20*; C07C *69/95*

U.S. Cl. 549—39 **6 Claims**

1. The compound of the formula



wherein one of R^1 and R^2 represent a hydrogen atom and the other represents a hydroxy group, R^3 represents a hydroxy group and R^{43} represents a lower alkyl, carboxy, lower alkoxy carbonyl, benzyloxycarbonyl or a group of the formula:



in which R^5 and R^6 together form a oxo group or an ethylene ketal or ethylene thio ketal group and X represents a hydrogen atom or a hydroxy group or lower alkanoyloxy group, or

$$-(CH_2)_n-OY$$

in which n stands for 1 or 2 and Y represents a hydrogen atom or an alkyl or lower alkanoyl group.

4,518,785

MALONDIALDEHYDE TETRAALKYLACETALS AND THEIR PREPARATION

Heinz Eckhardt, Frankenthal; Klaus Halbritter, Mannheim, and Wolfgang Rohr, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

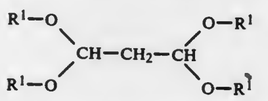
Filed Oct. 29, 1982, Ser. No. 437,683

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145709

Int. Cl.³ C07D *317/00, 317/22*

U.S. Cl. 549—453 **17 Claims**

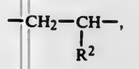
1. A process for the preparation of malondialdehyde tetraalkylacetals of the formula



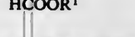
I

where the individual radicals R^1 may be identical or different

and each is alkyl, or alkoxy-substituted alkyl, and 2 adjacent R^1's may also be

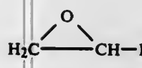


where R^2 is hydrogen or alkyl, which process comprises: reacting an alkyl formate of the formula



II

with an oxirane of the formula



III

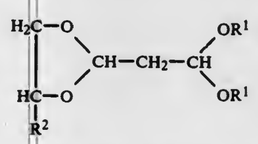
and an alkyl vinyl ether of the formula



IV

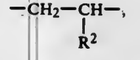
where R^1 and R^2 have the above meanings, in the presence of a catalyst selected from the group consisting of the halides of boron, antimony(V), iron(III), tin(II or IV) and zinc, using from 0.5 to 3.0 moles of starting material II per mole of starting material IV.

2. A 2(2',2'-dialkoxyethyl)-4-alkyl-(1,3)-dioxolane of the formula



Ia

where the individual radicals R^1 may be identical or different and each is alkyl or alkoxy-substituted alkyl, and the pair of R^1 radicals may also be



if R^2 is hydrogen or alkyl of more than one carbon atom,

4,518,786

N,N,N',N'-TETRAGLYCIDYL-1,3-PROPYLENE BIS(P-AMINOBENZOATE

David W. Wang, New Canaan, and Daniel R. Draney, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 1, 1983, Ser. No. 518,856

Int. Cl.³ C07D *301/00*

U.S. Cl. 549—552 **1 Claim**

1. N,N,N',N'-tetraglycidyl-1,3-propylene-bis-(p-aminobenzoate).

4,518,787

SILYLATION PROCESS

Richard C. Treadgold, Cardiff, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Mar. 15, 1984, Ser. No. 589,797

Claims priority, application United Kingdom, Mar. 3, 1983

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—442 **4 Claims**

1. A process for silylating an organic or an organosilicon compound which comprises contacting an organic or an organosilicon compound having in the molecule one or more hydroxyl groups bonded to carbon or to silicon with both (i) a compound having the general formula

$$(R_3Si)NH(CH_2)_xNH(SiR_3)$$

wherein each R represents an alkyl group having from 1 to 4 inclusive carbon atoms, the vinyl group or the phenyl group and x is an integer of from 2 to 6 inclusive and (ii) a compound having the general formula R'_3SiY, wherein each R' represents an alkyl group having from 1 to 6 inclusive carbon atoms, the vinyl group or the phenyl group and Y represents a chlorine, bromine or iodine atom.

4,518,788

AROMATIC POLYVINYL ETHERS AND HEAT CURABLE MOLDING COMPOSITIONS OBTAINED THEREFROM

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 243,302, Mar. 13, 1981, Pat. No. 4,388,450. This application Jan. 20, 1983, Ser. No. 459,442

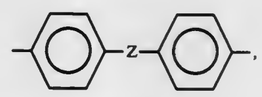
Int. Cl.³ C07C *69/76, 43/215, 43/205, 43/21*

U.S. Cl. 560—064 **10 Claims**

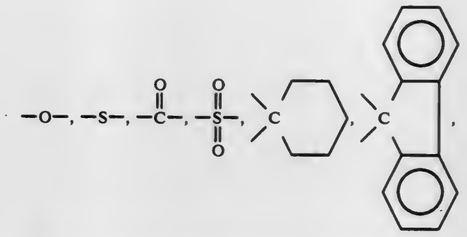
1. Aromatic polyvinylethers having the formula,

$$R^9[GR^1OC(R^2)=C(R^3)_2]_n,$$

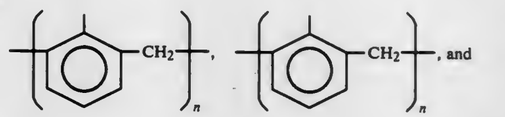
R^1 is a $C_{(1-8)}$ alkylene radical, R^2 and R^3 are the same or different monovalent radicals selected from hydrogen, halogen and $C_{(1-8)}$ alkyl radicals, R^9 is a polyvalent aromatic organic radical selected from the class consisting of phenylene, tolylene, xylylene, naphthalene, xenyl, anthrylene,



where Z is selected from



and polyvalent aromatic radicals selected from the class consisting of



and halogenated derivatives selected from the class consisting

of chlorophenylene and bromotolylene, where n is an integer equal to 2–10 inclusive.

4,518,789

PHENYL ALPHA-ACYLOXYACETAMIDE DERIVATIVES AND THEIR THERAPEUTIC USE

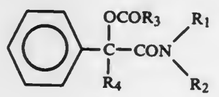
Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 1138 Sewell Ln., Rydal, Pa. 19046

Continuation-in-part of Ser. No. 393,741, Jun. 30, 1982, abandoned. This application May 17, 1983, Ser. No. 495,159

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—105 **21 Claims**

1. A therapeutic composition comprising an antipruritic or antiinflammatory effective amount of a phenyl-alpha-acyloxyacetamide compound having the formula:



wherein

R_1, R_2=H, alkyl or aralkyl group of saturated or unsaturated, straight or branched chain or cyclic form, having 1 to 25 carbon atoms,

R_3=alkyl, aralkyl or aryl group of saturated or unsaturated, straight or branched chain or cyclic form, having 1 to 25 carbon atoms;

R_4=H, alkyl, aralkyl or aryl group of saturated or unsaturated, straight or branched chain or cyclic form, having 1 to 25 carbon atoms; and

the hydrogen atom of the phenyl, R_1, R_2, R_3 or R_4 may be substituted by a nonfunctional halogen or a radical such as a lower alkyl or alkoxy having 1 to 9 carbon atoms; and

the carbon atom of R_1 or R_2 may be substituted by a nonfunctional N, S or O, in a pharmaceutically acceptable vehicle for topical application to involved body areas or internal administration.

4,518,790

15-DEOXY-16-HYDROXY-16-VINYL AND CYCLOPROPYL SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

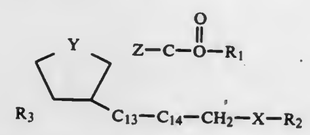
Continuation of Ser. No. 888,183, Mar. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,715, Dec. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Jul. 18, 1980, Ser. No. 466,751

The portion of the term of this patent subsequent to Dec. 3, 1994, has been disclaimed.

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—118 **24 Claims**

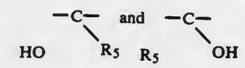
1. An optically active compound of the formula:



or a racemic mixture of that formula and the mirror image thereof wherein R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms; R_2 is selected from the group consisting of alkyl having from 2 to 7 carbon atoms optionally substituted with one or two alkyl groups each having up to 3 carbon atoms; R_3 is hydroxy, alkanoyloxy having from 2 to 6 carbon atoms, alkoxy having from 1 to 3 carbon atoms, trialkyl (C_1–C_3) silyloxy and tetrahydropyran-2-yloxy; Y is a divalent moiety of the formulae:



X is a divalent moiety selected from the group consisting of those of the formulae:



wherein R_5 is selected from the group consisting of vinyl and cyclopropyl; Z is a divalent moiety selected from the group consisting of those of the formulae: $-(CH_2)_6-$, $-(CH_2)_n-S-CH_2-$ and $-(CH_2)_n-O-CH_2-$ wherein n is an integer from 3 to 5, inclusive; with the proviso that when Z is $(CH_2)_nSCH_2$, then R_3 must be hydrogen; the moiety $-C_{13}-C_{14}-$ is trans-vinylene and the pharmacologically acceptable cationic salts thereof when R_1 is hydrogen.

4,518,791

PREPARATION OF MENTHYL PERMETHRATE

Hans P. Sehnem, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

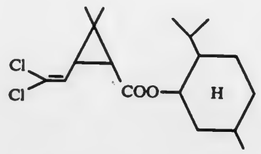
Continuation of Ser. No. 391,751, Jun. 24, 1982, abandoned. This application Apr. 3, 1984, Ser. No. 596,324

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127752

Int. Cl.³ C07C *67/02*

U.S. Cl. 560—124 **5 Claims**

1. A process for the production of menthyl permethrate of the formula



comprising reacting methyl permethrate or ethyl permethrate with menthol in the presence of about 1 to 30 mol % of an alkali metal alcoholate, relative to the methyl or ethyl permethrate, in a solvent consisting of an alcohol.

4,518,792

PROCESS FOR PREPARING N-BENZYLOXYCARBONYL-L-ASPARTIC ACID

Clay T. Chen, Edison; K. Ming Wan, East Brunswick, and Mary S. Chen, Edison, all of N.J., assignors to Hatco Chemical Corporation, Fords, N.J.

Filed Aug. 26, 1983, Ser. No. 526,579

Int. Cl.³ C07C *125/065*

U.S. Cl. 560—163 **22 Claims**

1. A method of synthesizing N-benzyloxycarbonyl-L-aspartic acid by condensing benzyl chloroformate and a dialkali metal salt of L-aspartic acid in an alkaline aqueous solution, comprising added benzyl chloroformate and an alkalai metal hydroxide solution to an alkaline aqueous mixture containing L-aspartic acid maintained at a pH of at least about 9.2 in the presence of at least one of a buffer and a surfactant and then acidifying the reaction mixture upon completion of the reaction, whereby the N-benzyloxycarbonyl-L-aspartic product is

of higher purity than product obtained at the same reaction conditions in the absence of a buffer and/or a surfactant.

4,518,793

PREPARATION OF ACETONE DICARBOXYLIC ACID DIESTERS

Shinichiro Uchiumi, and Kikuo Ataka, both of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Oct. 17, 1983, Ser. No. 542,356

Claims priority, application Japan, Oct. 26, 1982, 57-186686

Int. Cl.³ C07C *67/02, 67/36, 67/38, 69/716*

U.S. Cl. 560—175 **22 Claims**

1. A process for preparing an acetone dicarboxylic acid diester, which comprises reacting at a temperature of from −10° C. to 250° C. diketene, carbon monoxide and a nitrous acid ester in the presence of a catalyst comprising

(a) a palladium halide selected from the group consisting of palladium chloride, palladium bromide and palladium iodide, or

(b) a complex of a palladium halide selected from the group consisting of complexes of the formulae (i) $PdX_2(L\text{-}CN)_2$, wherein X is a halogen atom and L is an alkyl group having 1 to 20 carbon atoms or a phenyl group, (ii) M_2PdX_4 wherein M is an alkali metal and X is a halogen atom, or (iii) $(PdCl_2(olefin))_n$ wherein said olefin has 2 to 20 carbon atoms, and n is 1 or 2.

4,518,794

TELOMERS WHICH CAN BE CROSS-LINKED BY LIGHT

Bernard Boutevin, Montpellier; Willy-Jean Deiss, Grenoble; Marc Maliszewicz, Montpellier, and Yves Pietrasanta, Meze, all of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

PCT No. PCT/FR82/00122, § 371 Date Mar. 7, 1983, § 102(e) Date Mar. 7, 1983, PCT Pub. No. WO83/00336, PCT Pub. Date Feb. 3, 1983

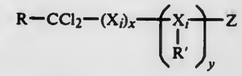
PCT Filed Jul. 20, 1982, Ser. No. 474,672

Claims priority, application France, Jul. 22, 1981, 81 14789

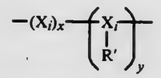
Int. Cl.³ C07C *69/533*

U.S. Cl. 560—192 **12 Claims**

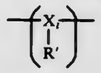
1. Telomers of the general formula



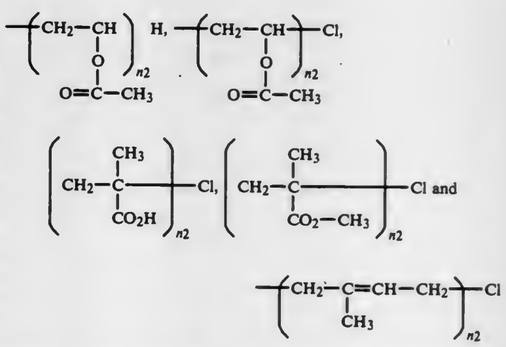
wherein the sequence of



links emanates from an identical taxogen X_i with a free function, selected from the group consisting of primary alcohol, acid and secondary alcohol functions, and where the



links correspond to the esterified form of X_i, R' being the radical of the group used for esterification, $RCCl_2-$ and $-Z$ being the parts of the telogen $RCCl_2Z$ where $-X$ is selected from the group consisting of —H, —Cl and —Br radicals, wherein X_i belongs to the group made up of sub-groups X_1, X_2, X_3, X_4 in which X_1 is selected from the group consisting of 2-hydroxy ethyl acrylate and 2-hydroxy ethyl methacrylate, X_2 is selected from the group consisting of acrylic acid and methacrylic acid, X_3 is vinyl alcohol, X_4 is allyl alcohol, $0<x\leqq500$, $1<y\leqq500$ $1<x+y\leqq1000$, wherein the group used for esterification has at least one double bond which can be cross-linked by light and is selected from the group consisting of acids and acid chlorides in the case of X_1, X_3 and X_4 and is an alcohol in the case of X_2 and wherein X_i is X_1, R is selected from the group consisting of Cl, CH_3OCO, CF_3, $-(CF_2-CFCl)_{n1}-Cl$ where $1\leqq n_1\leqq10$,



where $1\leqq n_2\leqq500$; when X_i is X_2, R is selected from the group consisting of Cl, CF_3 and $(CF_2-CFCl-)_{n3}Cl$ where $1\leqq n_3\leqq10$; when X_i is X_3, R is selected from the group consisting of Cl, $(C_2H_5O-)_2PO$,

where $1\leqq n_4<500$; and when X_i is X_4, R is selected from the group consisting of CCl_2-CO_2H, $CCl_2-CO_2CH_3$, CCl_3 and $(C_2H_5O-)_2PO$.

4,518,795

BIS(BETA-PENTABROMOPHENOXYETHYL) SUCCINATE, A FLAME RETARDANT FOR ABS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Dec. 2, 1982, Ser. No. 446,124

Int. Cl.³ C07C *67/08, 69/34*

U.S. Cl. 560—193 **2 Claims**

1. The di-ester of beta-pentabromophenoxyethanol and succinic acid.

4,518,796

METHOD FOR PREPARING CARBOXYLIC ESTERS

Atsushi Aoshima, Yokoiama; Yoshio Suzuki, Fuji; Setsuo Yamamatsu, Fuji, and Tatsuo Yamaguchi, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1980, Ser. No. 149,387

Claims priority, application Japan, May 17, 1979, 54-59631; May 17, 1979, 54-59632; May 17, 1979, 54-59634

Int. Cl.³ C07C *67/39*

U.S. Cl. 560—208 **11 Claims**

1. A method for producing a carboxylic ester comprising reacting an aldehyde with alcohol at 0° to 100° C. in the presence of oxygen and a solid catalyst comprising palladium and bismuth.

4,518,797
CYCLOPROPANECARBOXYLATE PESTICIDES AND THEIR PREPARATION

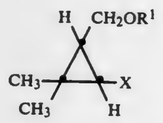
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 953,987, Oct. 23, 1978, abandoned. This application Mar. 15, 1979, Ser. No. 20,605

Int. Cl.³ C07C *43/315, 53/44, 69/14, 69/16, 47/198, 47/37*

U.S. Cl. 560—231 **9 Claims**

1. A (1R,cis) compound of the formula



wherein R^1 represents an acetyl group; an alkyl group containing from 1 to 10 carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl group containing from 2 to 4 carbon atoms optionally substituted by one or more halogen atoms or alkynyl group containing from 2 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one more halogen atoms; X is $—CH_2C-H(OCH_3)_2$, $—CH_2CHO$, $—CH{=}CHOR^2$ in which R^2 is an acyl group containing from 1 to 5 carbon atoms, —CHO, —C(O)Cl or —C(O)Br with the proviso that when R′ is acetyl then X is not $—CH_2CHO$.

4,518,798
PREPARING ESTERS AND CARBOXYLIC ACIDS FROM LOWER OLEFINS

George M. Kramer; Walter Weissman, both of Berkeley Heights, N.J.; Herbert C. Brown, West Lafayette, Ind., and Rowland Pettit, deceased, late of Austin, Tex. (by Flora H. Pettit, executrix), assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1982, Ser. No. 428,930

Int. Cl.³ C07C *51/14, 51/145, 67/347*

U.S. Cl. 560—233 **17 Claims**

1. A process for preparing esters or carboxylic acids from an olefin feed comprising between two and four carbon atoms and added alcohol, if esters are being prepared, or water, if carboxylic acids are being prepared, which process comprises the steps of:

(A) reacting said olefin feed with carbon monoxide in the presence of:

(i) a first complex of a Lewis acid with the ester or carboxylic acid, whichever is obtained as the reaction product from step (B), wherein the Lewis acid is characterized as being capable of forming a 1:1 molar complex with water which complex has an acid strength measured by a Hammett Acidity function value, H_o, of at least −8.0, and wherein the molar ratio of Lewis acid to ester or carboxylic acid is from about 1:1 to 2:1;

(ii) a second complex of said Lewis acid with a primary or secondary alcohol, if an ester is being prepared, or with water, if a carboxylic acid is being prepared, wherein the molar ratio of Lewis acid to alcohol or water is from about 1:1 to 2:1, wherein the molar ratio of said first complex to said second complex initially is about 1:1 to 20:1 and wherein the molar ratio of said ester or carboxylic acid to said alcohol or water, respectively, is at all times greater than 1:1; and

(iii) a metal carbonyl compound, wherein the metal is a Group IB transition metal in the first oxidation state and the molar ratio of the metal carbonyl compound to the Lewis acid present is from 1:10 to 1:100,000; and

(B) recovering the reaction product or mixture of products by displacement with a solution of a primary or secondary alcohol in an inert extractant if an ester is being produced or with water in an inert extractant if a carboxylic acid is being produced.

4,518,799
PROCESSES FOR THE PREPARATION OF HYDRATROPIC ACIDS

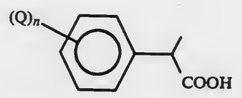
Thomas A. Hylton, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 105,061, Dec. 19, 1979, abandoned. This application Jun. 8, 1982, Ser. No. 386,466

Int. Cl.³ C07C *51/15*

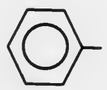
U.S. Cl. 562—423 **12 Claims**

1. A process for the preparation of a compound selected from the group consisting of



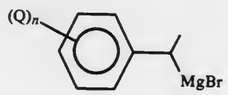
I

in which n is an integer of from 1 to 4, inclusive, and Q_1 is the same or different and is selected from the group consisting of aralkyl, cycloalkyl, alkyl substituted cycloalkyl, cycloalkenyl, aryl, alkoxy, aralkoxy, cycloalkoxy, aryloxy, alkylthio, aralkylthio, cycloalkylthio, arylthio, aryl(dialkoxy)methyl, aryl(alkylenedioxy)methyl, N-alkyl-N-arylamino, trifluoromethyl, fluorine and chlorine, dialkylamino, substituted and unsubstituted pyridyl, piperidyl, furyl, n-alkyl-morpholino, N-alkylthiamorpholino, pyrrolinyl, pyrrolidinyl, pyrrolyl, thienyl, or two Q groups taken together which form a heterocyclic ring, or Q such that together with



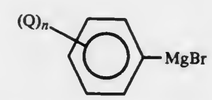
is 9H-carbazol-3-yl or substituted naphthyl, or naphthyl substituted on the 6-position by a moiety selected from the group consisting of alkyl, cycloalkyl, phenyl alkoxy, fluorine and chlorine, which comprises

Step (1) preparing a compound selected from the group consisting of



II

by reacting a compound selected from the group consisting of



III

with ethylene in the presence of an anhydrous nickel catalyst, selected from the group consisting of nickel chloride or nickel (bis)acetylacetonate, which nickel catalyst is pretreated with a reducing agent;

Step (2) carboxylating the Compound II prepared in Step 1 to obtain Compound I.

4,518,800
PROCESS FOR PREPARATION OF CRYSTALLIZED MONOHYDRATED SODIUM PHENYLPYRUVATE

Alain Schouteeten, Ezanville, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Jul. 13, 1984, Ser. No. 630,427

Claims priority, application France, Jul. 18, 1983, 83 11792

Int. Cl.³ C07C *59/84*

U.S. Cl. 562—459 **2 Claims**

1. A process for preparation of crystallized monohydrated sodium phenylpyruvate comprising: hot reacting benzaldehyde in an aqueous medium in the presence of a catalytic quantity of ethanolamine with the stoichiometric quantity of hydantoin, then treating the reactional medium hot at pH=14 through an excess of sodium hydroxide, acidifying to pH=9 with concentrated hydrochloric acid the so obtained solution and separating the formed precipitate.

4,518,801
PROCESS FOR THE HYDROLYSIS OF 5-(β-METHYLMERCAPTOETHYL)-HYDANTOIN

Rudolf Bolze, Grünaustrasse 11, 6450 Hanau 9; Friedhelm Geiger, Kurt-Schumacher-Strasse 30 a, 6455 Erlensee; Manfred Spindler, Kurfurstenstrasse 24, 6450 Hanau 1, and Herbert Tanner, Wildaustrasse 20, 6450 Hanau 9, all of Fed. Rep. of Germany

Filed Sep. 7, 1984, Ser. No. 648,136

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335218

Int. Cl.³ C07C *149/247*

U.S. Cl. 562—559 **16 Claims**

1. In a process for the hydrolysis of 5-(β-methylmercaptoethyl)-hydantoin at elevated temperature and pressure in an aqueous alkaline medium, the improvement comprising carrying out the hydrolysis in a reaction solution comtaining 0.5 to 3 equivalents of at least one alkali metal hydroxide, alkali metal carbonate, alkali metal hydrogen carbonate or a mixture thereof based on the amount of hydantoin in the presence of excess ammonia.

4,518,802
N-[4-[(3-AMINOPROPYL)AMINO]BUTYL]-2,2-DIHYDROXYETHANAMIDE

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Shinichi Kondo, Yokohama; Hironobu Iinuma; Daishiro Ikeda, both of Tokyo; Teruya Nakamura, Kusatsu, and Akio Fujii, Kamakura, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

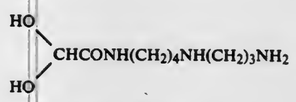
Continuation of Ser. No. 375,916, May 7, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,563

Claims priority, application Japan, May 18, 1981, 56-73510

Int. Cl.³ C07C *103/16*

U.S. Cl. 564—201 **2 Claims**

1. A compound selected from the group consisting of N-[4-[(3-aminopropyl)amino]butyl]-2,2-dihydroxyethanamide of the formula (I)



I

and an acid addition salt thereof.

4,518,803
PROCESS FOR THE PREPARATION OF P-NITROSODIPHENYLAMINE

Wadim Batorewicz, New Haven, and Edward L. Wheeler, Watertown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,100

Int. Cl.³ C07C *76/00, 85/11*

U.S. Cl. 564—410 **12 Claims**

1. A process for the preparation of p-nitrosodiphenylamine hydrochloride comprising reacting diphenylamine, C_5-C_{10} alkyl nitrite and anhydrous HCl in the presence of a C_5-C_{10} aliphatic alcohol, essentially in the absence of an inert solvent and wherein the alkyl group of the alkyl nitrite has the same number of carbon atoms as said aliphatic alcohol.

4,518,804
HALO(ALKOXY/ALKYLTHIO)-BENZENAMINES

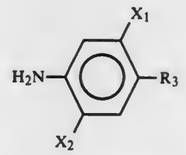
Raymond H. Rigterink, Midland, Mich., and Barat Bisabri-Ershadi, Pittsburg, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 401,492, Jul. 26, 1982,. This application Aug. 3, 1983, Ser. No. 520,032

Int. Cl.³ C07C *87/60, 149/42*

U.S. Cl. 564—442 **3 Claims**

1. A compound having the formula



wherein X_1 and X_2 are independently halogen and R_3 is a C_1–C_4 haloalkoxy or haloalkylthio group.

4,518,805
PROCESS FOR REMOVING HYDROPEROXIDES AND ALDEHYDES FROM ALLYL-ALKYL ETHER

Anthony G. Abatjoglou, and David R. Bryant, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 243,082, Mar. 12, 1981, abandoned. This application Feb. 14, 1983, Ser. No. 466,023

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—444 **4 Claims**

1. In a rhodium catalyzed hydroformylation process for producing an ether aldehyde by reacting an allyl-alkyl ether feedstock with carbon monoxide and hydrogen, said allyl-alkyl ether being selected from the group consisting of allyl tert-butyl ether, allyl 2,3-dimethylbut-2-yl ether, allyl 2-methylbut-2-yl ether, allyl 3-methylpent-3-yl ether, allyl 3-ethylhex-3-yl ether, allyl 5-propylnon-5-yl ether, allyl 1-methylcyclohexyl ether, and allyl 1-methylcyclopentyl ether, the improvement which comprises employing as the allyl-alkyl feedstock, an allyl-alkyl ether feedstock which has been treated with sodium borohydride in alkaline aqueous solution to form an organic containing layer which is separated under an inert gas blanket and washed with degassed water, so as to convert hydrogen peroxide present in said allyl-alkyl ether feedstock to decomposition products, including α,β-unsaturated aldehydes, and reduce such α,β-unsaturated aldehydes to alcohols.

4,518,806

PRODUCTION OF ARYL ALKYL ETHERS FROM METHYLBENZYL ALCOHOL USING BIS-(DITHIOBENZYL)NICKEL(II) CATALYST

Haven S. Kesling, Jr., Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 1, 1983, Ser. No. 510,023
Int. Cl.³ C07C *41/09*
U.S. Cl. 568—659 **11 Claims**

1. An improved process for the catalytic preparation of bis alpha-methylbenzyl ether from alpha-methylbenzyl alcohol in the presence of a catalyst wherein the improvement comprises contacting said alpha-methylbenzyl alcohol with a bis alpha-(dithiobenzyl)nickel(II) catalyst.

4,518,807

PROCESS FOR THE PRODUCTION OF BASIC ALKALINE EARTH METAL PHENATES

Takashi Hori; Sanae Ueda, both of Saitama, and Yoshihiro Kojima, Ibaraki, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 10, 1983, Ser. No. 521,811
Claims priority, application Japan, Aug. 16, 1982, 57-142393
Int. Cl.³ C07C *39/00, 39/04*
U.S. Cl. 568—716 **22 Claims**

1. A process for producing a basic alkaline earth metal phenate, comprising the steps of:

providing reactants comprised of a mixture of a phenol, a dihydric alcohol, and an alkaline earth metal agent selected from the group consisting of alkaline earth metal oxides and hydroxides, said dihydric alcohol being in an amount of at least 0.15 mol per mol of the alkaline earth metal agent, and said alkaline earth metal agent being in an amount of from 0.001 to 20 equivalents per equivalent of the phenol;

allowing the reactants to react and achieve addition of the metal to the phenol at a temperature of from 60° C. to 200° C.;

adding water to the reactants while they are allowed to react, the water being added in an amount of from 0.01 to 10 mols per mol of the alkaline earth metal agent; and

thereafter treating the metal addition reaction product with carbon dioxide at a temperature of from 50° C. to 230° C.

4,518,808

PREPARATION OF 2,5-DICHLOROHYDROQUINONE

Richard H. S. Wang, and Garry L. Myers, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,227
Int. Cl.³ C07C *37/62*
U.S. Cl. 568—765 **1 Claim**

1. Process for the preparation of 2,5-dichlorohydroquinone which comprises reacting hydroquinone with sulfuryl chloride in a mole ratio of about 2.0 to 2.2 mole of sulfuryl chloride per mole of unchlorinated compound at a temperature of about 60° to 100° C. in the presence of acetic acid, propionic acid or a lower alkyl ester thereof.

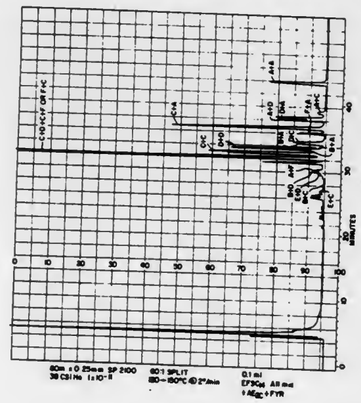
4,518,809

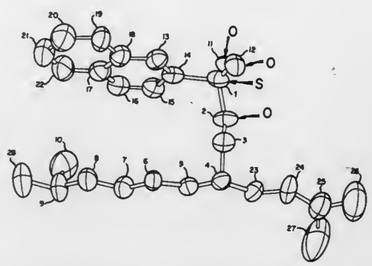
PREPARATION OF PENTYL NONANOLS

Denis Forster, St. Louis, and George F. Schaefer, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 272,587, Jun. 11, 1981, Pat. No. 4,426,542, which is a continuation-in-part of Ser. No. 256,439, Apr. 22, 1981, abandoned, which is a continuation of Ser. No. 104,517, Dec. 17, 1979, abandoned. This application Jun. 1, 1983, Ser. No. 499,967
Int. Cl.³ C07C *31/125*
U.S. Cl. 568—840 **17 Claims**

1. A mixture of C_{14} isomeric alcohols which are characterized as nine-carbon alkanol with a five-carbon alkyl group substituted on the 2-position thereof, and with additional branching in most of the isomers, with most of the additional branches being methyl groups, and further characterized as liquid at ambient temperature and having varying hydrocarbon hydrophobe moieties making the mixture suitable for formation of effective detergents therefrom, and further characterized by suitable biodegradability, alcohols further characterized in that the isomers are in proportions attainable from aldol and hydrogenation reactions of a C_7 aldehyde obtained by oxo reaction of propylene dimers.





4,518,810

PROCESS FOR PREPARATION OF GUERBET ALCOHOLS

Morio Matsuda, and Masamitsu Horio, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 473,918
Claims priority, application Japan, Mar. 18, 1982, 57-43370
Int. Cl.³ C07C *29/34*
U.S. Cl. 568—905 **4 Claims**

1. A process for preparing a branched dimerized alcohol, which comprises: heating a primary alcohol having the formula

$$RCH_2CH_2OH$$

in which R is alkyl having 1 to 24 carbon atoms, at a reaction temperature in the range of from 200° to 230° C., in the presence of from 0.25 to 5% by weight of potassium hydroxide and from 0.005 to 0.2% by weight of a co-catalyst consisting essentially of copper and nickel supported on a catalyst carrier and wherein the weight ratio of Cu/Ni is from 85/15 to 50/50, both said percentages being based on the weight of said primary alcohol, and removing water, as it is formed, from the reaction mixture, and thereby converting said primary alcohol, at a high yield and a high selectivity, to a branched dimerized alcohol having the formula

$$RCH_2CH_2CHCH_2OH.$$
$$\quad\quad\quad

ylformamide, or with triphenylphosphine and carbon tetrabromide in methylene chloride to give (S)-(+)-1-bromo-3-chloro-2-methylpropane of the formula IV



(IV)

(c) converting the compound of formula IV into (2R)-(+)-1-chloro-2,6-dimethylheptane of the formula V



(V)

with isopropyl magnesium bromide in an inert ethereal solvent in the presence of a di-alkali-metal tetrahalocuprate,

(d) converting the compound of formula V into (3R)-3,7-dimethyl-octan-1-ol of the formula VI



(VI)

by treatment with metallic magnesium in ethereal solution and subsequent introduction of gaseous formaldehyde,

(e) brominating the compound of formula VI with phosphorus tribromide, with triphenyl phosphine and bromine in dimethylformamide, or with triphenylphosphine and carbon-tetrabromide in methylene chloride to give (3R)-1-bromo-3,7-dimethyloctane of the formula VII



(VII)

(f) converting the compound of formula VII, by treatment with metallic magnesium, into the corresponding Grignard compound, and

(g) reacting the Grignard compound with (S)-(+)-1-bromo-3-chloro-2-methylpropane in an ethereal solvent in the presence of a di-alkali-metal tetrahalocuprate to give the compound of formula I.

4,518,814

ETHYLENE OLIGOMERATION

Ronald D. Knudsen, and Stephen E. Reiter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

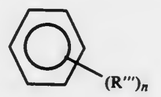
Division of Ser. No. 490,596, May 2, 1983, Pat. No. 4,482,640. This application Aug. 24, 1984, Ser. No. 644,080

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—523 **6 Claims**

1. An improved process for the oligomerization of ethylene comprising contacting said ethylene with a catalyst composition in the liquid phase present in at least one solvent selected from the groups consisting of:

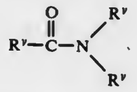
(i) an aromatic hydrocarbon of the formula



wherein R‴ represents a C_1 to C_6 alkyl radical and n is 0, 1, 2, 3, or 4;

(ii) an alcohol of the formula $(R^{iv})_3COH$ wherein R^{iv} independently represents H or a C_1 to C_{12} alkyl, cycloalkyl, aryl, alkaryl, or aralkyl radical with the proviso that at least one R^{iv} is not hydrogen;

(iii) an amide of the formula



wherein each R^v independently represents H or a C_1 to C_{10} alkyl, cycloalkyl, aryl, aralkyl, or alkaryl radical with the proviso that at least one R^v is not H;

(iv) a C_2 to C_{20} ether;

(v) a C_2 to C_{20} ester;

(vi) a C_3 to C_{20} ketone;

(vii) a C_2 to C_{20} nitrile; and

(viii) a C_6 to C_{20} chlorinated aromatic, the catalyst consisting essentially of:

(a) at least one nickel compound selected from the group consisting of:

bis(1,5-cyclooctadiene)nickel(O);

bis(tricyclohexylphosphine)nickel(O);

nickel tetracarbonyl;

(cyclododecatriene)nickel; and

bis(ethylene)(dicyclohexylphosphine)nickel;

(b) a phosphine compound of the formula PR_3 wherein R independently represents H or a C_1 to C_{20} hydrocarbyl radical with the proviso that any alkenyl substitution be at least 3 carbon atoms removed from the phosphorus atom and at least one R is not H; and

(c) an acid selected from the group consisting of (i) a fluorinated carboxcyclic acid of the formula R'COOH wherein R' represents a C_1 to C_{10} hydrocarbyl radical having at least 1 fluorine (F) atom, (ii) a dicarboxcyclic acid of the formula $(R'')_2—X—(COOH)_2$ wherein R'' independently represents H or a C_1 to C_{20} hydrocarbyl or fluorinated hydrocarbyl radical and X is a tetravalent C atom or the tetra-substituted benzene radical C_6H_2; (iii) 2-ketobutyric acid and (iv) glycine, such that the molar ratio of (b) to (a) is about 0.01–4.0 to 1 and the molar ratio of (c) to (a) is about 0.01–10.0 to 1 at a temperature of from about 0° C. to about 200° C.

4,518,815

PHOTOELECTRIC CONVERSION DEVICE

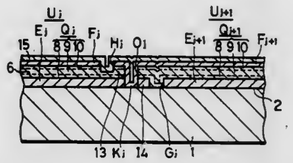
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1983, Ser. No. 555,317

Claims priority, application Japan, Nov. 24, 1982, 57-206806; Nov. 24, 1982, 57-206809; Feb. 22, 1983, 58-28211; Apr. 29, 1983, 58-75713; Oct. 31, 1983, 58-204443

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—244 **11 Claims**



1. A photoelectric conversion device comprising:

a substrate having an insulating surface; and

a plurality n (n being an integer larger than one) of semiconductor elements U_1 to U_n sequentially formed thereon side by side and connected in series one after another;

wherein the semiconductor element U_i (i=1, 2, . . . n) has a first electrode E_i formed on the substrate, a non-single-crystal semiconductor laminate member Q_i formed on the first electode E_i and having formed therein at least one semiconductor junction, and a second electrode F_i formed on the non-single-crystal semiconductor laminate member Q_i in opposing relation to the first electrode E_i;

wherein the second electrode F_{j+1} (j=1, 2, . . . (n−1)) of the semiconductor element U_{j+1} is coupled with the first electrode E_j of the semicondutor element U_j through a coupling portion K_j formed by an extension of the second electrode F_{j+1};

wherein the first electroes E_j and E_{j+1} are separated by a first groove G_j;

wherein the second electrode F_{j+1} extends on the non-single-crystal semiconductor laminate member Q_i in opposing relation to the first electrode E_i;

wherein the second electrodes F_j and F_{j+1} are separated by an isolating portion H_j in the non-single-crystal semiconductor laminate member Q_i;

wherein a second groove O_j is cut in the non-single-crystal semiconductor laminate member Q_i between the second electrode F_{j+1} and the first electrode E_j to extend into the latter; and

wherein the coupling portion K_j extends into the second groove O_j to be coupled with the side of the first electrode E_j exposed to the second groove O_j.

4,518,816

LIGHTNING CONDUCTOR WITH PIEZOELECTRIC DEVICE FOR INITIATING THE CORONA EFFECT

Andre Robert, Le Mesnil Saint Denis, France, assignor to Commissariat a l'Energie Atomique, Paris, France

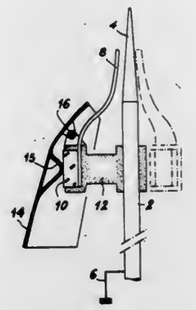
Filed Mar. 23, 1984, Ser. No. 592,702

Claims priority, application France, Mar. 25, 1983, 83 04947

Int. Cl.³ H02G *13/00;* **H01T** *1/20, 19/00*

U.S. Cl. 174—3 **4 Claims**

1. A lightning conductor with a device for initiating the corona effect incorporating a metal rod terminated by a tip and connected to the ground by an electric conductor, wherein it also comprises at least one electrode, whereof one end is in the vicinity of the rod tip, at least one piezoelectric crystal electrically connected to at least one electrode, and a means for exerting a mechanical pressure on said piezoelectric crystal.



4,518,817

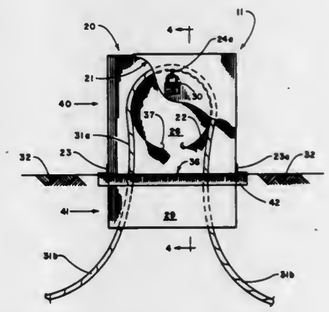
BURIED CONDUCTOR CABLE ENERGY DISTRIBUTION SYSTEM WITH CONDUCTOR LOOP ENCLOSURE

James R. Kirby, 406 Lewes Cir., Columbia, S.C. 29210, and Donald F. Looney, P.O. Box 685, Irmo, S.C. 29063

Filed Feb. 22, 1983, Ser. No. 468,366

Int. Cl.³ H02G *9/10*

U.S. Cl. 174—38 **25 Claims**



1. A conductor loop enclosure for enclosing a loop of an underground flexible energy conductor buried beneath the ground-plane, which loop extends above the ground-plane at a selected location, comprising:

(a) an enclosing structure for insertion about a conductor loop having an open front above-ground-plane portion and an open bottom below-ground-plane portion for extending a predetermined distance below said ground-plane;

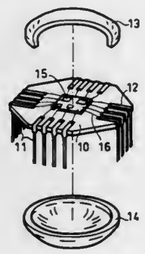
(b) movable cover means to close off said open front of said enclosing structure;

(c) hoop means within said enclosing structure having a depth substantially equal to the inside depth of said enclosing structure on which a loop is to be placed in a freely movable mode for its support and on which hoop means a loop will be completely captured within said enclosing structure when said cover means is in place thereby holding said enclosing structure fixed in place by the combined anchoring effect of a conductor loop of a buried conductor; and,

(d) feet means attached to said enclosing structure at the junction of the above-ground-plane portion and the below-ground-plane portion of said enclosing structure

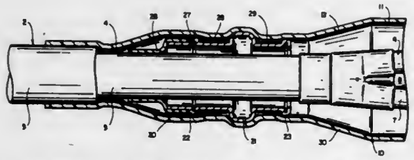
arranged so as to both correctly locate said enclosing structure with respect to said ground-plane and to provide a greater area to distribute the load of the combined weight of a loop and said enclosing structure over said ground-plane than that provided by an enclosing structure without said feet means.

4,518,818
ENCAPSULATING CASE ABLE TO RESIST HIGH EXTERNAL PRESSURES
Jacques Le Ny, and Christian Val, both of Paris, France, assignors to Thomson-CSF, Paris, France
Continuation of Ser. No. 274,205, Jun. 16, 1981, abandoned. This application Jan. 4, 1984, Ser. No. 557,256
Claims priority, application France, Jun. 19, 1980, 80 13596
Int. Cl.³ H05K *5/06*
U.S. Cl. 174—52 FP **7 Claims**



1. An encapsulating case which is able to resist high external pressures for a hybrid circuit made on a planar substrate formed from a ceramic material, wherein it is firstly constituted by two identical half-shells made from an electrically insulating, rigid material and having a convex shape with no sharp angles and having an internal concavity of dimensions adapted to the circuit to be protected, said half-shells being arranged symmetrically on the two faces of the substrate of the hybrid circuit, thus creating within the case an unpressurized area with a zero deformation and secondly by electrical connection means between the hybrid circuit and external connecting pins outside of the case, the electrical connection means including flat, thin conductors deposited on at least one face of the substrate which have thicknesses in the micron range to be thinner than the thickness pf sealing joints so that the electrical connection means will traverse the encapsulating case in the thickness of the sealing joint to be in the plane of the sealing joint of one half-shell on the substrate.

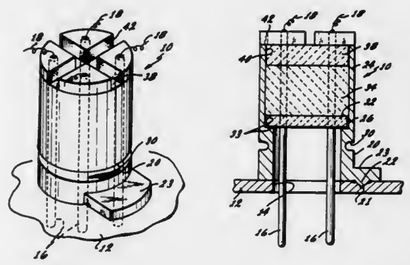
4,518,819
CLAMP ASSEMBLY FOR POWER CABLES
Peter L. Larsson, Mountain View, and Robin J. T. Clabburn, Menlo Park, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Continuation of Ser. No. 288,427, Jul. 30, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 532,081
Int. Cl.³ H02G *15/08, 1/14*
U.S. Cl. 174—78 **22 Claims**



1. An assembly for connecting the metal armor, screen or shielding of a power cable to a metal bridging element which spans a joint between the power cable and at least one other power cable, the power cable comprising a core, a sheath surrounding said core, metal armor, screen or shielding surrounding the sheath and an outer insulating layer; said assembly comprising:
(a) a hollow metal cylinder having two end portions and a center portion, said cylinder having an internal diameter greater than the diameter of said cable, said center portion having an outer diameter greater than the outer diameter of said end portions, and said cylinder being of a length insufficient to span the joint;
(b) means for sealing one end portion of said cylinder to the sheath surrounding the core of said cable;
(c) a first clamping means for securing the metal armor, screen or shielding to one of said end portions of said cylinder; and
(d) a second clamping means for securing one end of said metal bridging element to the other of said end portions of said cylinder.

10. A method for connecting the metal armor, screen or shielding of a power cable to a metal bridging element which spans a joint between the power cable and at least one other power cable, the power cable comprising a sheath surrounding said core, metal armor, screen or shielding surrounding the sheath and an outer insulating layer; said method comprising:
(a) positioning over the end of said cable, a metal cylinder having two end portions and a center portion, said cylinder having an internal diameter greater than the said diameter of said cable, said center portion having an outer diameter greater than the outer diameter of said end portions, and said cylinder being of a length insufficient to span the joint;
(b) sealing said cylinder to the sheath surrounding the core of said cable;
(c) clamping said metal armor, screen or shielding to one of said end portions of said cylinder; and
(d) clamping one end of said metal bridging element to the other of said end portions of said cylinder; the metal armor screen or shielding and said metal bridging elements being positioned such that they do not cover the center portion of said cylinder.

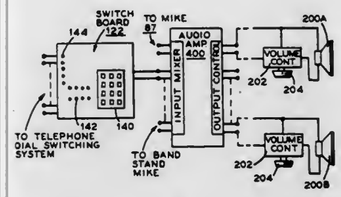
4,518,820
TERMINAL ASSEMBLY FOR HEART PACEMAKERS
James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470
Filed Nov. 4, 1982, Ser. No. 439,048
Int. Cl.³ H01B *17/26*
U.S. Cl. 174—152 GM **24 Claims**



14. In combination,
a lid,
a hollow ferrule attached to the lid and having a heat sink and being adjustable in position upon the introduction of heat to the ferrule to attach the ferrule to the lid,
a terminal pin extending through the ferrule and the lid in spaced relationship to the ferrule and the lid,
first insulating means disposed in the ferrule for providing for an adjustment in the position of the ferrule without the introduction of heat to the ferrule, and

second insulating means disposed in the ferrule and hermetically sealed to the first insulating means, the terminal pin and the ferrule.

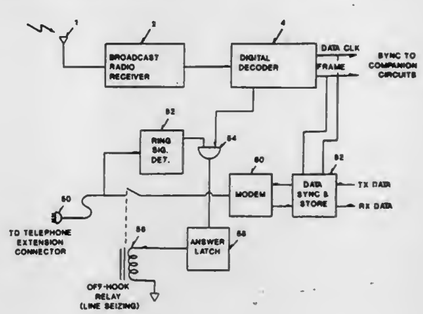
4,518,821
RESTAURANT TELEPHONE ENTERTAINMENT SYSTEM
Seymour C. Yuter, 407 Cedar Dr. West, Briarcliff Manor, N.Y. 10510
Continuation of Ser. No. 173,037, Jul. 28, 1980, abandoned, which is a continuation of Ser. No. 013,568, Feb. 21, 1979, abandoned. This application Feb. 18, 1983, Ser. No. 467,495
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—2 R **8 Claims**



1. A restaurant telephone entertainment system for a restaurant having a plurality of at least four tables comprising:
(A) a plurality of at least four telephones, with each of said telephones associated with one of said plurality of tables;
(B) a plurality of at least four speakers, with each of said speakers associated with one of said plurality of telephones;
(C) audio amplifier means having its output coupled to each of said plurality of speakers for feeding amplified input signals to each of said plurality of speakers; and
(D) telephone switching means having its input responsive to telephone conversation audio signals generated between two of said telephones and its output coupled to the input of said audio amplifier means;
(E) said audio amplifier means having means for amplifying and feeding said telephone conversation audio signals to at least two speakers other than the two speakers associated with the two telephones generating said telephone conversation audio signals.

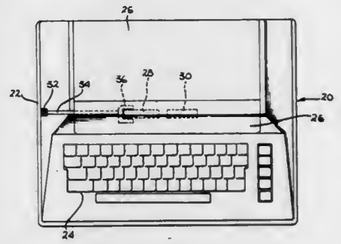
4,518,822
METHOD AND APPARATUS FOR AUTOMATICALLY ESTABLISHING TELEPHONE COMMUNICATION LINKS
Louis Martinez, Carson, Calif., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Division of Ser. No. 250,779, Apr. 3, 1981, Pat. No. 4,415,771. This application Mar. 8, 1983, Ser. No. 472,869
Int. Cl.³ H04H *11/08*
U.S. Cl. 179—2 E **14 Claims**

1. Apparatus for establishing a telephone communications link between a calling location and a remote location comprising
a central transmitter station including first transmitter modulation means for modulating a signal to be transmitted with programming, using a first modulation technique, for transmission of the programming to manually controllable first receivers having first receiver demodulation means responsive to signals modulated with said first modulation technique for the reception and demodulation of said modulated signal to allow selective perception of the programming by members of the public,
second modulation means coupled to said central transmitter station for modulation of the signal to be transmitted with a request to answer signal utilizing a second modulation technique to which said first receiver demodulation means are not primarily responsive,
at least one second receiver, each of said second receivers having second receiver demodulation means responsive to signals modulated with said second modulation technique for the reception and demodulation of the transmitted signal to provide the request to answer signal at the respective remote location,



phone control means coupled to each of said second receivers for receiving said request to answer signal and for providing a phone control signal in response thereto, and
phone answering means coupled to each of said phone control means and a phone line and being responsive to said phone control signal and a ring signal on the phone line to automatically terminate the ring signal and hold the phone line upon receipt of a call.

4,518,823
MODEM CARTRIDGE AND CONNECTION FOR PROGRAM CARTRIDGE TYPE COMPUTERS
Bayard F. Kessler, Woodland Hills, Calif., assignor to Novation, Inc., Chatsworth, Calif.
Filed Oct. 6, 1983, Ser. No. 539,648
Int. Cl.³ H04L *5/00*
U.S. Cl. 179—2 DP **12 Claims**



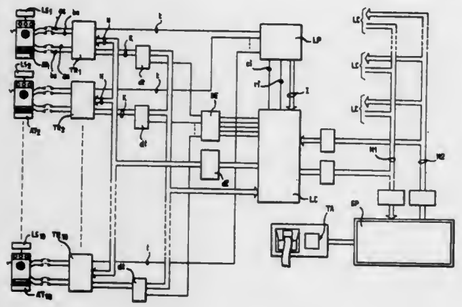
12. Modem apparatus for program cartridge type computers having at least one cartridge receptacle for receiving and electrically connecting to program cartridges, each of a predetermined mechanical and electrical connection configuration, comprising a modem cartridge containing a modem, and having said predetermined electrical connection configuration and a mechanical configuration so as to be receivable in said cartridge receptacle to electrically connect said modem and said computer, said modem cartridge further having a modular connector cooperatively disposed on said modem cartridge so as to be connectable with a phone line when said modem cartridge is inserted into said cartridge receptacle.

4,518,824

PUBLIC TELEPHONE METHOD AND APPARATUS WHEREIN THE USER'S PERSONAL TELEPHONE NUMBER AND A PERSONAL DIALING CODE ARE USED TO EFFECT DEBITING CHARGES

Massimo Mondardini, Turin, Italy, assignor to Urmet Sud S.P.A., Rome, Italy

Filed Jun. 7, 1982, Ser. No. 386,159
Claims priority, application Italy, Jun. 9, 1981, 67787 A/81
Int. Cl.³ G06K *5/00*; H04M *17/02*
U.S. Cl. 179—6.3 CC **8 Claims**



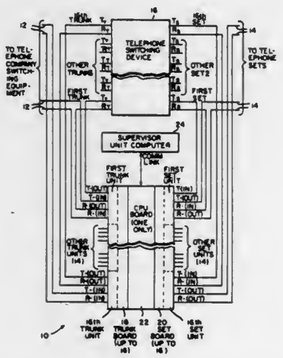
1. A public telephone method comprising the steps of validation of an identification card by a reader associated to a public telephone set, in which said card has been inserted by a user, reading information data from the identification card by said reader, reception of signals of a dialling operation of a personal code performed by the user on a selection device of said public telephone set, transmitting by said public telephone set the information data read and said dialled personal code to a centralized logic system, ascertaining the functional mating between said information data and said personal code by the centralized logic system and enabling said public telephone set for the making of a call by the user, and debiting through said centralized logic system said call to a selected telephone number counter.

4,518,825

TELEPHONE INTERCONNECT DETECTION SYSTEM

Jesse R. Brinkerhoff, and Richard S. Brinkerhoff, both of King County, Wash., assignors to Telecalc, Inc., Bellevue, Wash.

Filed Oct. 11, 1983, Ser. No. 540,991
Int. Cl.³ H04M *3/36, 15/34*
U.S. Cl. 179—11 **20 Claims**



1. A system for selectively determining, during operation, interconnect of a plurality of first telephone lines with a plurality of second telephone lines interconnected by a switching device, one of said plurality of first or second lines being telephone system trunk lines and the other being telephone set lines, and said switching device being a pbx or the like, said system comprising:

means for selecting in sequential order ones of said first lines according to a predetermined logic, and generating operation signals;

a pulse generator for generating a sensing pulse within the audio bandwidth of said switching device;

means for selectively applying one of said sensing pulses to one of said selected first lines in response to said operation signals for transmission of said one sensing pulse through said switching device;

a selectively operable first filter connected to said first lines, said first filter being operable in response to said operation signals to attenuate said sensing pulse for inhibiting outbound transmission of said sensing pulse over said first lines;

a detector connected to said second lines for detecting the presence of said sensing pulse on any one or more of said second lines, and identifying said one or more second lines; and

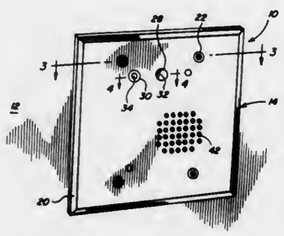
a selectively operable second filter connected to said second lines, said second filter being operable in response to said operation signals to attenuate said sensing pulse for inhibiting outbound transmission of said sensing pulse over said second lines.

4,518,826

VANDAL-PROOF COMMUNICATION SYSTEM

Eddie T. Caudill; Richard T. Caudill, and Lyle N. Conley, all of Albuquerque, N. Mex., assignors to Mountain Systems, Inc., Albuquerque, N. Mex.

Filed Dec. 22, 1982, Ser. No. 452,094
Int. Cl.³ H04M *1/04*
U.S. Cl. 179—37 **7 Claims**



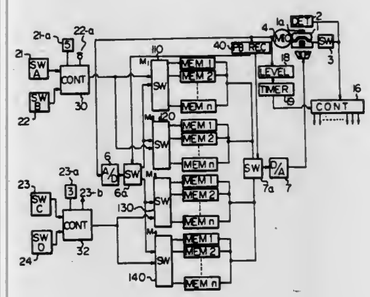
1. In a mounting assembly for an intercom station having separate and spaced switch, lamp and transducer devices associated therewith, the mounting assembly including a common protective plate supporting all of said devices on a wall, said plate having an exposed surface through which sound transmitting openings extend in operative alignment with the transducer device, the improvement residing in means for rendering the station vandal-resistant, comprising means for embedding the switch and lamp devices in the protective plate, said transducer device having a driver unit and an exponential horn, said horn having a small input end connected to the driver unit and a large output end, and means mounting the horn rearwardly on the plate with the output end thereof in alignment with the sound transmitting openings for spacing the input end of the horn in lateral, non-overlapping relation to said openings.

4,518,827

TELEPHONE ANSWERING AND MESSAGE RECORDING SYSTEM

Iwao Sagara, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,910
Claims priority, application Japan, Oct. 5, 1981, 56-157602
Int. Cl.³ H04M *3/50, 11/10*
U.S. Cl. 179—81 R **6 Claims**



1. A telephone answering and message recording apparatus coupled with a subscriber telephone set and suitable for installation with individual subscriber telephone sets of a telephone system, comprising:

a microphone (**4**) and a speaker (**5**);

an analog-digital converter (**6**) for converting an input analog speech to a digital signal, the input of said converter (**6**) being coupled with said microphone (**4**) or a telephone line;

a plurality of groups (M_1, M_2, M_3, M_4,) of semiconductor memories, each group having a plurality of memory cells for recording and reproducing predetermined local speech and speech of a remote caller;

a group selection switch (**6***a*) coupled with the output of said analog-digital converter (**6**) to select one of the groups;

a cell selection switch (**110, 120, 130, 140**) coupled with the output of said group selection switch (**6***a*) to select one of the memory cells in each selected group;

an output switch (**7***a*) coupled with the outputs of the memories of each of the groups to select one of the groups;

a PB receiver (**40**) coupled with the output of said microphone (**4**) for detecting a PB code to control said group selection switch (**6***a*), said output switch (**7***a*), and said cell selection switch (**110, 120, 130, 140**) according to the detected PB code;

a digital-analog converter (**7**) coupled with the output of said output switch (**7***a*), and the output of said digital-analog converter (**7**) being coupled with said speaker (**5**);

a call detector (**2**) to detect reception of a telephone call to initiate the operation of the present apparatus;

a plurality of manual switches (**21, 22, 23, 24**) for handling each group (M_1, M_2, M_3, M_4) of memories,

means (**16**) for controlling the operation of the apparatus according to a predetermined sequence; and

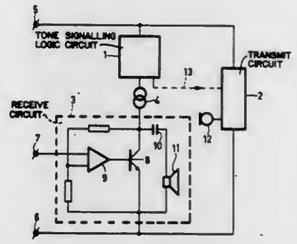
a level detector (**18**) coupled with said microphone (**4**) to detect that the speech level is lower than a predetermined level, and a timer (**19**) to determine that the duration that the speech level is lower than the predetermined level continues longer than a predetermined duration, in order to detect the finish of speech of a remote caller and to implement the beginning of local speech recording in one of said semiconductor memories.

4,518,828

TRANSMISSION CIRCUIT FOR AN ELECTRONIC TELEPHONE SET

Josephus J. A. Geboers, and Daniël J. G. Janssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,717
Claims priority, application Netherlands, Feb. 19, 1982, 8200666
Int. Cl.³ H04M *1/60*
U.S. Cl. 179—81 R **3 Claims**



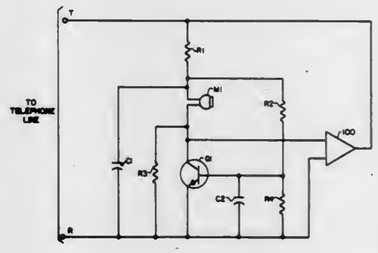
1. A transmission circuit for an electronic telephone set comprising a receive circuit, a transmit circuit, and a logic circuit for generating tone signals; said logic circuit being in series arrangement with said transmit circuit for such tone signals and forming a series arrangement with said receive circuit for direct current; and for direct current said transmit circuit being connected in parallel with said direct current series arrangement of said logic circuit and said receive circuit.

4,518,829

TWO TERMINAL MICROPHONE ACTIVE LOAD GAIN REGULATION CIRCUIT

Eduard F. B. Boeckmann, Huntsville, Ala., assignor to GTE Communications Systems Corporation, Northlake, Ill.

Filed Apr. 2, 1984, Ser. No. 596,179
Int. Cl.³ H04M *1/60*
U.S. Cl. 179—81 B **8 Claims**



1. A gain regulation circuit employing an active load for an electret microphone included in a subscriber telephone instrument connected to a telephone line extending to a central switching point and including a power source thereat connected to said telephone line, said regulation circuit comprising:

an active load circuit connected in series with said electret microphone across said telephone line;

bias means for said active load circuit connected across said telephone line and including a circuit connection to said active load circuit;

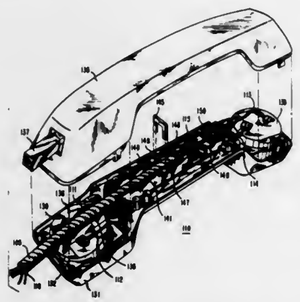
an amplifier means including an input connected to the junction between said electret microphone and said active load circuit, and an output connected to said telephone line.

4,518,830

ARMORED TELEPHONE CORD WITH A LONGITUDINAL STRENGTH MEMBER

Leonard H. Drexler, Carmel; Richard M. Flynn, Indianapolis, both of Ind.; George R. Fox, Holmdel; Herbert C. Illium, Jr., Ocean, both of N.J., and Robert J. O'Connor, Greenfield, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1982, Ser. No. 392,002
Int. Cl.³ H04M *1/15, 1/03;* **H04R** *1/06*
U.S. Cl. 179—103 **16 Claims**



12. A telephone handset cord comprising a flexible armored sheath having disposed in its interior and extending throughout its length both a plurality of conductors and a strength member for providing tensile strength between a telephone handset and a telephone housing, the strength member being secured at one end inside the telephone handset and at the other end inside the telephone housing, and wherein the telephone handset comprises a transmitter portion, a receiver portion, and a tapered yoke portion interposed between the transmitter and the receiver portions, and means for securing the strength member in the handset, the strength member comprising a flexible cable having a first diameter with a cylindrically shaped end termination, the end termination being axially aligned with the cable and having a second larger diameter, a catch surface being provided by the larger diameter of the end termination forming a shoulder at the common attachment point of the end termination and the flexible cable, and the strength member being longer in length and extending beyond the end section of the sheath in the handset, the securing means further comprising a wedge-shaped member located in the receiver portion of the handset, the wedge-shaped member having axially aligned slots of a first and a second diameter, the first diameter slot defining a passageway for the cable and the second diameter slot receiving the end termination and providing a stop surface therefor, the yoke portion including a chamber which provides a passageway for the strength member and expands at the common point between the yoke portion and the receiver portion, the wedge-shaped member being secured in the handset by having its tapered edge project into the expanded chamber in the yoke portion of the handset, the interaction between the stop surface of the wedge-shaped member and the catch surface of the cylindrically shaped member providing the longitudinal tensile strength in the securing of the cord to the handset.

4,518,831

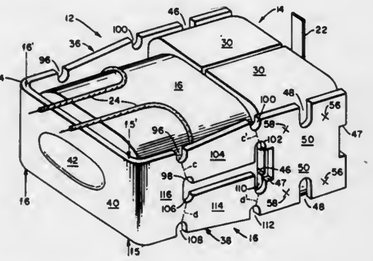
TRANSDUCER WITH TRANSLATIONALLY ADJUSTABLE ARMATURE

W. Kent Stanley, and George C. Tibbetts, both of Camden, Me., assignors to Tibbetts Industries, Inc., Camden, Me.

Filed Nov. 4, 1983, Ser. No. 548,838
Int. Cl.³ H04R *11/00*
U.S. Cl. 179—119 A **14 Claims**

1. An electromechanical transducer having in combination, polarizing flux means comprising at least one permanent magnet and a pair of spaced, facing pole surfaces defining a gap, and

armature means comprising a flux conductive armature leg extending into the gap, and an adjustable support arm fixed to the armature leg remote from the gap and extending to a substantially fixed support relative to the pole



surfaces, the support arm comprising a pair of plastically deformable struts that extend along a substantial portion of the support arm and that are mutually spaced in a direction generally perpendicular to the pole surfaces, the spacing being less at one end of the pair of struts than at the other end.

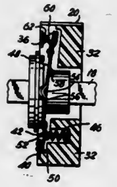
4,518,832

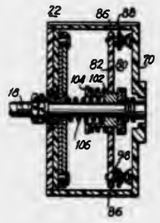
ROTARY AND/OR PUSH-PULL WIPING SWITCH

Leo F. Geremia, Wallingford, Conn., assignor to Haydon Switch & Instrument, Inc., Waterbury, Conn.

Filed Aug. 24, 1983, Ser. No. 526,032
Int. Cl.³ H01H *1/18, 9/00, 13/00, 21/80*
U.S. Cl. 200—4 **15 Claims**







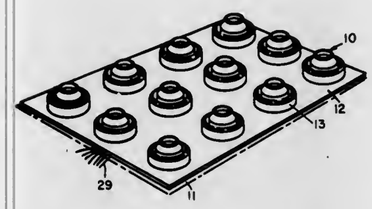
13. In a switch assembly of the combined rotary and push-pull type in which there are a plurality of stacked switch sections, including at least one rotary switch section and at least one push-pull switch section, and which are actuated by a common central shaft passing through said sections and being rotatable and displaceable axially, at least to a limited extent, to change the state of said rotary and push-pull switching sections, respectively; in which said at least one rotary section includes at least one pair of terminals, a rotary cam rotatable with said shaft, a substantially rigid cam follower contact arm biassed against said rotary cam and movable, with rotation of said cam between open and closed positions, said contact arm having one end electrically connected with one of said pair of terminals and another end, said other end having a movable contact member disposed thereon to contact a fixed contact member electrically connected to the other of said pair of terminals when said contact arm is in its closed position; and in which said at least one push-pull switch section includes at least one pair of terminals and an insulating carrier member disposed to move axially with said shaft between open and closed positions, and a pair of movable contact members mounted on said carrier to contact corresponding fixed contact members electrically coupled to said terminals when said carrier member is in its closed position; the improvement wherein said other end of said cam follower contact arm includes a flexible resilient conductive leaf, with the contact member of said contact arm being mounted on said leaf; and wherein said carrier member of said push-pull switch section includes a flexible resilient conductive leaf mounting each of the movable contacts associate said carrier member that whenever said shaft is rotated and/or the respective one of displaced to bring axially said cam follower contact arm and said carrier member to the closed position thereof, bending of the associated leaf member causes the respective movable contact member to close with its mating fixed contact member with a wiping action.

4,518,833

CONDUCTIVE ELASTOMERIC INK COMPOSITION

Richard L. Watkins, Westminster, Colo., assignor to Gates Data Products, Inc., Colorado Springs, Colo.

Filed Jul. 21, 1983, Ser. No. 515,823
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—5 A **17 Claims**



1. A switch device comprising at least one contact and movable contactor for engagement therewith, at least the contact or contactor comprising a dry electrically conductive elastomeric ink composition which comprises an elastomeric cured silicone binder and finely divided nickel particles interspersed therein in an amount from about 25 to about 90 percent by weight based on the weight of the composition, the nickel particles having a size in the range from about 0.05 to about 32 microns.

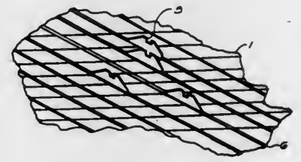
16. A switch device comprising a contact member and an elastomeric switch control device having a movable contactor thereon for engagement with the contact member, at least the contactor comprising a dry electrically conductive elastomeric ink composition which comprises an elastomeric cured silicone binder and conductive particles interspersed therein comprising particulate graphite on which is coated on the surface thereof finely divided nickel particles having a size in the range from about 0.05 to about 5 microns, the nickel coated graphite particles being interspersed in the silicone binder in an amount from about 25 to about 90 percent by weight based on the weight of the ink composition.

4,518,834

MATRIX SLIDE SWITCH

Peter C. Paranicas, Westbury, N.Y., assignor to LVC Industries, Inc., Freeport, N.Y.

Filed Sep. 7, 1983, Ser. No. 529,949
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—16 D **7 Claims**



1. A matrix switch assembly comprising:

(a) a first insulating board having a plurality of parallel longitudinal slots extending in a first direction and a first surface with a first plurality of conductive strips disposed along and partially split by said slots:

(b) a second insulating board secured to said first board and having a second surface facing said first surface with a second plurality of conductive strips extending in a second direction, each said second conductive strip having a plurality of rectangular indexing holes, each hole being defined by at least two conductive edges spaced at a predetermined distance and oriented in said first direction; and

(c) a plurality of switching means slidably disposed in said longitudinal slots, each switching means having a curved portion disposed between said first board and second board, said curved portion being larger than the distance between said edges so that when one of said switching means is positioned for contacting one of said second strips, electric contact is made between two points of said portion and the respective edges of the corresponding rectangular hole, at least one part of said portion being disposed below said edges, each switching means further having a conductive element in contact with said portion for contacting the corresponding first conductive strip.

4,518,835

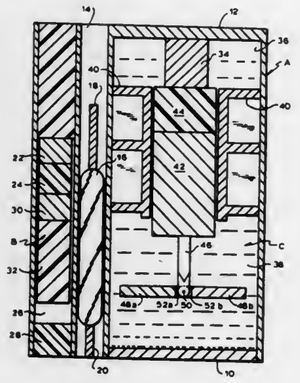
FORCE RESPONSIVE SWITCH

Francis Grossar, Heers, Belgium, assignor to General Instrument Corp., Clifton, N.J.

Filed Aug. 23, 1983, Ser. No. 525,172
Claims priority, application Belgium, Sep. 1, 1982, 0/208929
Int. Cl.³ H01H *35/02*
U.S. Cl. 200—61.45 M **22 Claims**

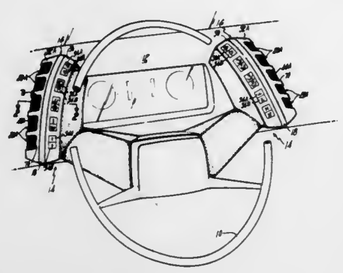
1. A force responsive switch comprising magnetically operated means switchable between first and second states and first and second magnetic means for controlling the state of said switchable means, said first magnetic control means reacting relatively rapidly to the application of a force above a given magnitude and being adapted to change the state of said switchable means from a first state to a second state, said second magnetic control means reacting relatively slowly to the application of force above said given magnitude and being

adapted to change the state of said switchable means from said second state to said first stage a predetermined time interval



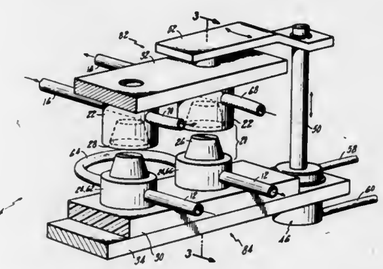
after the application of the force above said given magnitude has terminated.

4,518,836
CONTROL POD AND SWITCH ASSEMBLY
George A. Wooldridge, Warren, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Apr. 14, 1984, Ser. No. 601,190
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—61.54 **17 Claims**



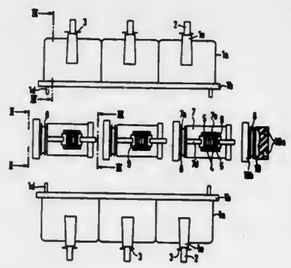
1. A control pod for use in vehicles comprising, in combination:
- a hollow pod housing including a control-input portion, said housing being adapted for cantilevered mounting in the vehicle such that said control-input portion thereof is positioned for easy access by one hand of an operator;
- at least one pair of functionally-related switches mounted interiorly of said housing, each said switch being responsive to a respective mechanical input stimulus to effect switch actuation;
- at least one pair of manually-operated switch actuators, said pair of actuators being mounted in said housing and being configured and positioned such that a respective said actuator is associated with a respective said switch and includes a respective tactile region and a switch-contacting portion; and
- each said pair of actuator tactile input regions being located at the control-input portion of said housing and positioned for readily accessible, manually-complemental operation by one hand of an operator.

4,518,837
ELECTRICAL SWITCH FOR INDUCTION HEATING SYSTEM
Thomas R. Wagner, New Hartford, N.Y., assignor to United Technologies Corporation, Hartford, Conn.
Filed Jul. 12, 1983, Ser. No. 512,933
Int. Cl.³ H01H *35/24, 9/52*
U.S. Cl. 200—81 R **11 Claims**



1. A switch for controlling the flow of electrical current comprised of
- a first part having mounted thereon a contact having a conical shaped male section;
- a second part movable with respect to the first part, having mounted thereon a contact having a conical shaped female section adapted to intimately receive the male contact section, the parts shaped so that movement of the second part toward the first part enables conical mating of the female contact with the male contact to form a contact set which allows the flow of electrical current therethrough;
- both said contacts having channels which provide for coolant flow through the set along a path different from that of the electric current flow, said coolant flow path being maintained during times when said parts of the switch are moved apart; and
- means for clamping which when actuated force the first part against the second part and which when released permit separation of the parts and subsequent free relative movement of the parts in any direction.

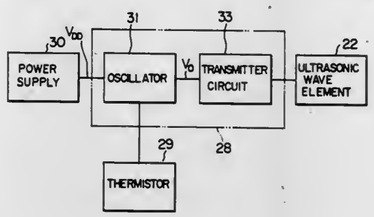
4,518,838
MULTIPOLE HIGH VOLTAGE CIRCUIT BREAKER
Peter Werner, Oberursel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 19, 1983, Ser. No. 533,734
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304272
Int. Cl.³ H01H *19/04*
U.S. Cl. 200—303 **13 Claims**



1. A multipole high voltage circuit breaker comprising:
at least two flanged housing shells for joining together along respective peripheral flanges for forming a housing and

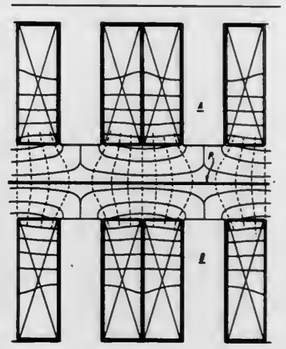
defining a plurality of compartments corresponding to respective poles of the circuit breaker;
- a plurality of tubular bodies housed in respective ones of said compartments and joined to one another for joint rotation as a switch actuator shaft;
- an external drive element on each of said tubular bodies, each tubular body further having a circular bearing groove in the vicinity of said external drive element;
- an internal drive element arranged at an end of each of said tubular bodies which is distal from said external drive element, said internal drive element being engageable with an external drive element of an adjacent tubular body for transmitting drive therebetween;
- a plurality of end walls and intermediate walls formed of semiannular discs for cooperating with said flanged housing shells to form boundary walls for each pole of the circuit breaker, said end walls and intermediate walls being engaged by said bearing grooves of said tubular bodies for mounting said switch actuator shaft in said housing;
- a plurality of internal contacts fixedly mounted in said housing; and
- a plurality of switch elements arranged on said switch actuator shaft, said switch elements being movable between engaged and disengaged positions with respect to said fixed internal contacts upon rotation of said switch actuator shaft, each switch element having a pair of jaws which are spaced apart to receive a respective internal contact therebetween.

4,518,839
HIGH FREQUENCY HEATING APPARATUS WITH WIRELESS TEMPERATURE PROBE
Shunichi Taguchi; Shuji Ohkawa; Mitsuru Watanabe, all of Yokohama, and Itsuo Kikuchi, Ibaraki, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan
Filed Mar. 2, 1983, Ser. No. 471,433
Claims priority, application Japan, Mar. 3, 1982, 57-33242; Jul. 7, 1982, 57-118003; Sep. 7, 1982, 57-155704; Sep. 7, 1982, 57-155705
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **22 Claims**



1. A high frequency heating apparatus with a wireless temperature probe, comprising:
- a. a heating chamber for containing an object to be heated;
- b. high frequency power supply means for supplying high frequency power into said heating chamber thereby to heat said object housed in said heating chamber;
- c. a power supply circuit section for receiving the high frequency power supplied into said heating chamber from said high frequency power supply means at an appropriate position in said heating chamber and rectifying said high frequency power thereby to provide a DC power supply, a temperature-measuring section including a thermistor for sensing the temperature of the inside of said object to be heated, an oscillator circuit section for oscillating at a frequency determined by a time-constant capacitor and the resistance value of said thermistor of said temperature-measuring section, an ultrasonic wave transmitter section driven by said oscillator circuit section for transmitting an ultrasonic wave, and casing means for protecting said power supply circuit section, said temperature measuring section, said oscillator circuit section and said ultrasonic wave transmitter section from the strong electric field of high frequency in said heating chamber, said power supply circuit including a rectifying diode and strip lines, said strip lines including a main line for conducting the high frequency in said high frequency heating chamber, shorting lines for forming an electric wave shorting plane at the position of said rectifying diode, and a DC feedback line for passing the rectified DC power, the main line being about $\lambda g/2$ long, the shorting lines and the DC feedback line being $\lambda g/4$ long where λg is the wavelength of the high frequency on the strip lines;
- d. an ultrasonic wave receiving section mounted on the wall of said heating chamber and protected from the strong electric field of high frequency in said heating chamber for receiving the ultrasonic wave transmitted from said ultrasonic wave transmitter section contained in said casing means;
- e. signal processing means for deciding the temperature of said object on the basis of the ultrasonic wave signal received at said ultrasonic wave receiving section; and
- f. control means for controlling the operation of said high frequency power supply means on the basis of the signal from said signal processing means.

4,518,840
METHOD AND APPARATUS FOR MINIMIZING THE POWER INDUCED IN A FLAT CONDUCTING PRODUCT MAINTAINED IN POSITION ELECTROMAGNETICALLY WITHOUT CONTACT
Jean-Claude Bronner, Rueil-Malmaison, France, assignor to CEM Compagnie Electro-Mecanique, Paris, France
Filed Feb. 8, 1983, Ser. No. 464,952
Claims priority, application France, Feb. 18, 1982, 80 02679
Int. Cl.³ H05B *5/00, 6/64*
U.S. Cl. 219—10.67 **12 Claims**



1. A method for minimizing the power induced in a flat, conducting product exposed to electromagnetic forces to maintain the product in position without contact comprising subjecting certain zones of the product to two alternating, essentially equivalent, opposing magnetic fluxes acting perpendicularly to surfaces of the product on opposite sides thereof so that, in each of said zones, with the product in a position of equilibrium, the component of magnetic flux of the resultant field perpendicular to each zone is minimal and the component parallel to each zone is at a maximum, due to the mutual deflection of the two fluxes.

2. Apparatus for minimizing the power induced in a thin conducting product, exposed to electromagnetic forces to maintain it in position without contact comprising, for each zone in which electromagnetic forces are induced, at least one pair of inductors, each with several poles, the polar surfaces of

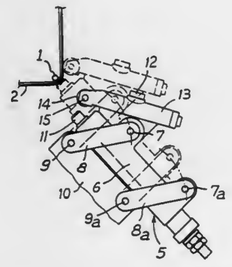
which are essentially parallel to a surface of the product in each zone, the two inductors of the pair being placed in an essentially symmetrical manner with respect to a location in the zone corresponding to the desired equilibrium position of the product, with the poles facing each other in pairs on either side of the product being maintained at any instant at the same polarity and with the magnetic fluxes passing through them of essentially the same magnitude so that, with said thin product being located in said zone corresponding to said equilibrium position, said magnetic fluxes mutually deflect in said zone to minimize the power induced in said thin product.

4,518,841

DEVICE FOR PRODUCING REINFORCEMENTS FOR USE IN REINFORCED CONCRETE

Bertrand L. de Bentzmann, Bragueze, Roumagne, France

Filed Jun. 14, 1983, Ser. No. 504,145
Claims priority, application France, Jun. 23, 1982, 82 11001
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—56 **6 Claims**



1. A device for producing reinforcements for use in reinforced concrete wherein the reinforcement is defined by laterally spaced parallel longitudinal elements joined by transverse wire elements formed about and welded to each of said longitudinal elements; said device comprising means for forming a transverse element about a plurality of spaced parallel longitudinal elements and simultaneously welding the transverse element to each longitudinal element as it is formed thereabout, said means comprising a plurality of support members, one positionable adjacent each longitudinal element, means mounting each support member for extension and retraction, each support member mounting shaping means operable, upon extension of the support member, to engage and shape a transverse element about a longitudinal element, each support member additionally mounting welding means operable, upon extension of the support member, to weld the shaped transverse element to the longitudinal element at the time of the shaping thereof.

4,518,842

METHOD OF CONTROLLING WIRE-CUT ELECTRIC DISCHARGE CONTOUR MACHINES ERRORS

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

Filed Dec. 22, 1982, Ser. No. 452,141
Claims priority, application Japan, Dec. 30, 1981, 56-210769
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **4 Claims**

2. A method of controlling a wire-cut electric discharge machine for applying a voltage between a wire electrode and a workpiece to generate electric discharge therebetween to cut the workpiece to a desired slot contour such as an arc or a corner while the workpiece is moved with respect to the wire electrode, said method comprising the steps of:

measuring an amount of flexing of the wire electrode which is caused during rectilinear cutting of the workpiece using a discharge power;

determining an allowable amount of flexing of the wire electrode based upon a tolerable value for the amount of bluntness of the contour of the workpiece;

correcting the discharge power based on the measured amount of flexing and the allowable amount of flexing of the wire electrode;



increasing a tension to which the wire electrode is subjected; and

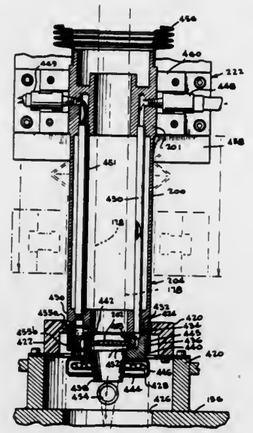
lowering a speed of relative movement between the workpiece and the wire electrode in accordance with the increased tension to compensate for a change in the width of the slot which is caused by the increased tension.

4,518,843

LASER LENS AND LIGHT ASSEMBLY

Ronald F. Antol, North Huntingdon Township, Westmoreland County; Ralph W. Kalkbrenner, Irwin, and Richard M. Kobuck, Delmont, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,205
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC **17 Claims**



1. Apparatus for laser machining a work piece by precisely directing and focusing a laser beam onto the work piece, said laser machining apparatus comprising:

(a) a laser lens for focusing the laser beam onto the work piece;

(b) a cylindrical base for defining a path along which the laser beam passes to the work piece;

(c) a mounting member for receiving said laser lens adapted to be removably attached to said cylindrical base to permit cleaning of debris thrown off from the work piece during machining;

(d) means for securing said laser lens to said mounting member; and

(e) locking means for releasably attaching said mounting member to said cylindrical base and for resiliently biasing said mounting member and therefor also its secured said laser lens so that said laser lens is precisely positioned at a certain position with respect to said cylindrical base.

4,518,844

SHORT-CIRCUIT MIG WELDING

James C. Needham, Saffron Walden, England, assignor to The Welding Institute, Cambridge, England

Filed Mar. 7, 1984, Ser. No. 587,310
Claims priority, application United Kingdom, Mar. 10, 1983, 8306578
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—137 PS **22 Claims**

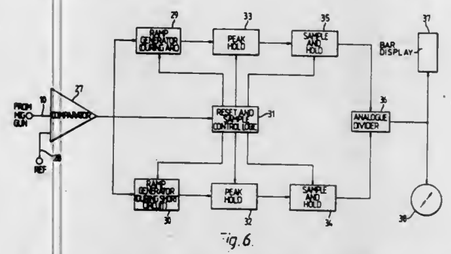


Fig. 6.

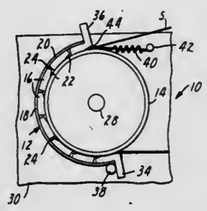
1. In a method of short-circuit MIG welding in which electrode wire and a workpiece in a welding circuit are moved relatively to one another and in which periods of arcing and short-circuiting successively occur between the electrode wire and the workpiece the improvement comprising monitoring the ratio of the mean of the arc duration to the mean of the short-circuit duration.

4,518,845

DEVICE FOR PROCESSING THERMALLY DEVELOPABLE FILMS AND PAPERS

John A. Svendsen, May Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1982, Ser. No. 438,752
Int. Cl.³ H05B *1/00*; G03D *15/02*
U.S. Cl. 219—216 **8 Claims**



1. Device for thermally developing papers and films which are developable by heat comprising:

(a) a heat conductive member defining a partially-cylindrical heating zone through which said papers and films may be moved to effect development, said heat conductive member comprising a plurality of independently moveable, elongated, bar-shaped heat conductive elements arranged in an arcuate array about said zone so that spaces exist between said elements,

(b) pressure applying means for pressing said papers and films against said heat conductive member,

(c) means for preventing rotational movement of said heat conductive member,

(d) means for heating said heat conductive elements, and

(e) means for resiliantly biasing said heating means and said elements toward and into contact with said papers and films which are moved through said zone,

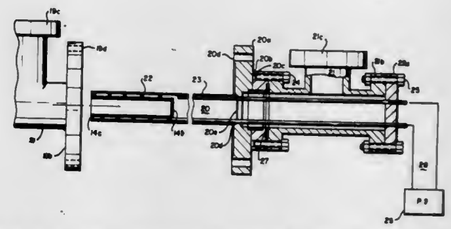
whereby said papers and films are heated for development, and moisture vapor released from said papers and films may pass through said spaces to restrict uneven development within said zone.

4,518,846

HEATER ASSEMBLY FOR MOLECULAR BEAM EPITAXY FURNACE

John L. Freeouf, and Thomas N. Jackson, both of Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,106
Int. Cl.³ C23C *13/12*
U.S. Cl. 219—271 **4 Claims**



1. In a molecular beam epitaxy furnace, a heater for heating the interior of an effusion cell comprising:

an outer cylindrical sleeve having one end connected to receive a vacuum and an opposite end;

an inner sleeve coaxial with said outer cylindrical sleeve, having one end sealed with said outer cylindrical sleeve opposite end, and extending along a portion of said cylindrical sleeve to a closed opposite end, said inner sleeve, and outer cylindrical sleeve providing an interior vacuum chamber; and,

a heating element disposed between said cylindrical sleeve and inner sleeve for heating said interior vacuum chamber and a crucible located in said inner sleeve, whereby semiconductor constituent materials in said crucible are evaporated in an environment free from contaminants produced by said heating element.

4,518,847

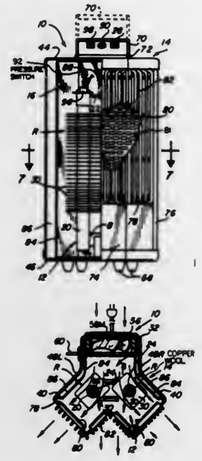
ELECTRICALLY-POWERED PORTABLE SPACE HEATER

Paul V. Horst, Sr., Boulder, and Charles D. Hoyt, Northglenn, both of Colo., assignors to Crockett & Kelly, Inc., Broomfield, Colo.

Filed Nov. 2, 1982, Ser. No. 438,593
Int. Cl.³ H05B *1/02*; F24H *3/08*; F24D *13/04*
U.S. Cl. 219—365 **6 Claims**

1. A space heater which comprises: top and bottom walls, a rear wall and angled sidewalls cooperating with one another in assembled relation to define an open front housing having a generally Y-shaped transverse section with a stem-forming portion at the rear and a pair of divergent branch portions opening toward the front thereof; a horizontally-disposed boiler extending transversely of the housing in the bottom thereof at the juncture between the stem and branched portions; a heat transfer fluid in said boiler containing a vaporizable component ; heating means for heating the heat transfer fluid and boiling the vaporizable component thereof; a pair of vertically-disposed spaced heat exchangers mounted, respectively, in the branch portions of the housing and connected to receive hot vapor from the boiler; and a blower located in the stem-forming portion of the housing positioned and adapted to receive ambient air from the environment through an air inlet in said stem portion and direct the same forwardly between the heat exchangers in heat exchange relation thereto, said heat exchangers cooperating with one another and the angled sidewalls of the housing to split off parts of the forwardly-directed

airstream and direct the same out sideways through the branch portions, and said diverted parts of the airstream combining



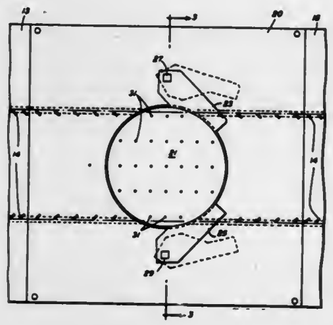
with the forwardly-directed part passing between the heat exchangers to produce a spread of heated air at least approximately 90° in angular extent.

4,518,848

APPARATUS FOR BAKING RESIST ON SEMICONDUCTOR WAFERS

T. Jerome Weber, Mt. View, Calif., assignor to GCA Corporation, Bedford, Mass.

Filed May 15, 1981, Ser. No. 263,928
Int. Cl.³ F27B *9/06*; F27D *11/02*
U.S. Cl. 219—388 **10 Claims**



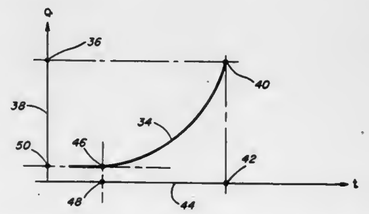
1. Apparatus for baking resist on the upper surface of a semiconductor wafer, said apparatus comprising:
- a heating station;
- means for transporting wafers sequentially to said heating station;
- at said heating station, a thin disc-like heater plate having a diameter essentially not smaller than that of a wafer to be baked, the heat capacity of said heater plate being essentially uniform over its surface and not greatly disparate from that of the wafers to be baked, said heater plate including a heating means which effects essentially uniform heating thereof,
- means for energizing said heater plate, prior to a bake cycle, to raise said plate to a temperature substantially above the temperature desired at which the resist is to be baked;
- selective actuable stop means in line with said transporting means for stopping a wafer in line with said plate; and
- bringing the wafers into alignment and contact with said plate for a preselectable time during which a predetermining heating impulse is provided through the wafer to resist on its upper surface, the plate being cooled as the wafer is heated, the wafer being then removed from the plate to effectively terminate the baking.

4,518,849

ELECTRONIC TOASTER TIMER WITH PRECEDING OFF-TIME TEMPERATURE CONTROL COMPENSATION

Gerard T. Rolland, Brewerton, N.Y., assignor to SSAC, Inc., Liverpool, N.Y.

Filed Sep. 30, 1982, Ser. No. 432,123
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—492 **13 Claims**



5. In combination with an electrical toaster having a heater element, a source of voltage, a manually operable power switch connected to the source, timer means connected to the power switch for intermittently energizing the heater element during timing cycles of limited duration in response to actuation of the power switch, said timing cycles being spaced by off-time intervals during which the heater element is deenergized, and a toast darkness selector connected to the timer means for selecting the duration of said timing cycles, the improvement comprising capacitor means discharged during said off-time intervals between the timing cycles for establishing a voltage discharge level in the timer means, and means responsive to variations in the discharge level of the capacitor means for reducing the selected duration of each of the timing cycles as an inverse function of the off-time intervals preceding the timing cycles, said timer means including a timing capacitor charged from said source simultaneously with said energization of the heater element at a rate determined by adjustment of the toast darkness selector in response to actuation of the power switch, and means responsive to establishment of a threshold voltage level of the timing capacitor for discharging said capacitor to deenergize the heater element, said capacitor means including a second storage capacitor connected to the toast darkness selector, means for discharging the second storage capacitor in response to said deenergization of the heater element upon termination of one of the timing cycles, and means for delaying said discharge of the second storage capacitor to shorten the succeeding timing cycles.

4,518,850

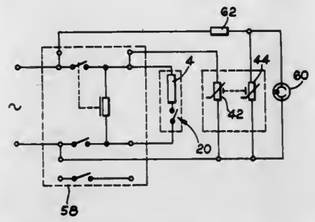
ELECTRIC COOKER HAVING TEMPERATURE WARNING MEANS

Alfie L. Grasso, Bewdley, England, assignor to Micropore International Limited, Droitwich, England

Filed Feb. 10, 1982, Ser. No. 347,537
Claims priority, application United Kingdom, Feb. 18, 1981, 8105068; Dec. 17, 1981, 8138031
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—505 **9 Claims**

1. An electric cooker comprising:
a cooking surface;

one or more electrical heaters arranged on the underside of the cooking surface;
a temperature monitoring device in the form of a hollow cylindrical housing which is closed at one end and having mounted therein;
a thermally responsive device in the form of a thermistor;
an auxiliary electrical heater for supplying heat to the thermistor when at least one of said one or more electrical heaters is energized; and
a thermal buffer located between the auxiliary heater and the thermistor such that the thermistor is heated to at least a



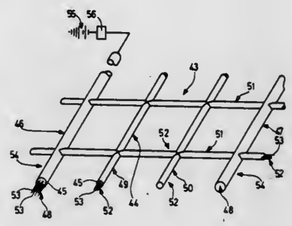
predetermined temperature after at least one of said one or more electrical heaters is energized consistent with said cooking surface rising above a safe touching temperature;
means for thermally coupling said temperature monitoring device with at least one of said one or more electrical heaters such that when said one or more electrical heaters are subsequently de-energized said thermistor cools below said predetermined temperature consistent with said cooking surface falling to said safe touching temperature; and
means for indicating when said thermistor is at or above said predetermined temperature.

4,518,851

PLANAR HEATING ELEMENT

Hans Oppitz, Mils, Austria, assignor to Eltac Nogler & Daum KG, Innsbruck, Austria

Filed Nov. 7, 1983, Ser. No. 549,613
Claims priority, application Austria, Nov. 11, 1982, 4094/82
Int. Cl.³ H05B *3/38*
U.S. Cl. 219—549 **7 Claims**



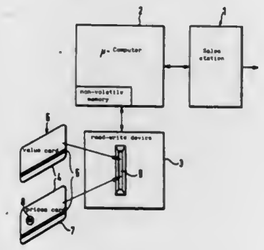
1. A planar heating element having a positive temperature coefficient, which comprises a plurality of spaced electric current supply lines and a planar support equally flexible in all direction and constituted by a net, the electric current supply lines forming strands of the planar net support, and all the net strands including an electrically conductive synthetic resin whose electrical resistance has a positive temperature coefficient.

4,518,852

METHOD FOR OPERATING AUTOMATIC DEVICES SUCH AS CASH REGISTERS OR THE LIKE AND A DEVICE FOR CARRYING OUT THE METHOD

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Strasse 36, D-7730 VS-Villingen, both of Fed. Rep. of Germany

PCT No. PCT/EP82/00059, § 371 Date Nov. 8, 1982, § 102(e) Date Nov. 8, 1982, PCT Pub. No. WO82/03289, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 23, 1982, Ser. No. 442,225
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 3111355
Int. Cl.³ G06F *7/08*
U.S. Cl. 235—381 **6 Claims**



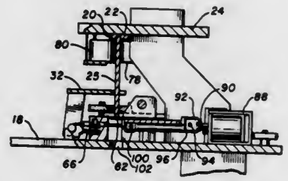
1. A cash register apparatus comprising:
- a computer having a memory for storing price parameters for goods and/or services; and
- a read-write device connected with said computer, said read-write device including means for reading a card-like data carrier, means for checking said data carrier for authenticity, and means for reading a value card presented for a purchase operation and for reading a prices card comprising information for determining said price parameters in said memory, whereby said single read-write device can handle said value card and said prices card to perform a purchase operation and a price determining operation.

4,518,853

MAGNETIC STRIPE CHARACTER APPLYING MODULE

Edward R. Gabel, Minnetonka; Edward J. Puumala, Minneapolis, and Rodney J. LeVasseur, Farmington, all of Minn., assignors to Data Card Corporation, Minnetonka, Minn.

Filed May 12, 1983, Ser. No. 493,771
Int. Cl.³ G06K *7/08*
U.S. Cl. 235—449 **15 Claims**



1. A card transport module for receiving cards inserted at an input end of a card transfer path and delivering cards at an output end of the transfer path comprising, in combination:
- (a) a frame having a card transfer path thereupon;
- (b) carriage means mounted on said frame for moving the card along said transfer path, said carriage means including card engaging means for engaging an edge of the card when in a first operating condition and for releasing the card when in a second operating condition, said transport means being movable along an axis parallel to the card

transfer path for moving the card along the path when in the first operating condition and for moving independently of the card when in the second operating condition;

(c) control means for switching said card engaging means between said first and said second operating conditions at the ends of the card transfer path; and

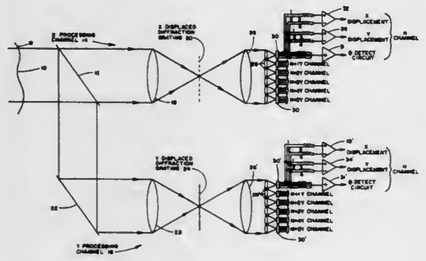
(d) drive means for moving said carriage means to transport a card from the input end of the card transfer path to the output end and for returning said carriage means to the input end of said card transfer path.

4,518,854

COMBINED SHEARING INTERFEROMETER AND HARTMANN WAVEFRONT SENSOR

Richard A. Hutchin, Marlboro, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jun. 17, 1982, Ser. No. 389,330
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **4 Claims**



1. A wavefront sensor for generating two substantially independent indications of the slope of an incident wavefront, thereby providing a comparatively sensitive wavefront sensor, comprising:

a. focusing means for focusing an incident wavefront, the slope of which is to be detected, to a focal point;

b. a first diffraction grating, positioned substantially at the focal point of said focusing means, for shearing and modulating the focused wavefront, which then diverges beyond the focal point;

c. first optical means, positioned in the diverging wavefront beyond the focal point at said first diffraction grating, for dividing the sheared wavefront into an array of subapertures, the local slope of each of which is to be determined, and for focusing the wavefront in each subaperture to a focal point;

d. first means for detecting the position of the focal point in each subaperture, which is indicative of the local wavefront slope in that subaperture, and for producing a positional output signal representative thereof; and

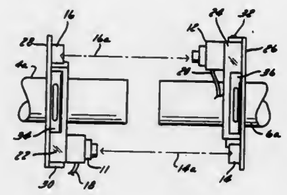
e. first means for detecting the radiation in each subaperture as modulated by said first diffraction grating and for producing a modulated output signal representative thereof, the phase of which relative to modulation by the first diffraction grating is also indicative of the local slope in that subaperture, whereby two substantially independent indications of the local slope of the wavefront in each subaperture are obtained to provide a comparatively sensitive wavefront sensor.

4,518,855

METHOD AND APPARATUS FOR STATICALLY ALIGNING SHAFTS AND MONITORING SHAFT ALIGNMENT

Stephen P. Malak, Milwaukee, Wis., assignor to Spring-Mornne, Inc., Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 430,333
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **45 Claims**



1. A shaft alignment apparatus for statically aligning a first shaft with a second shaft, comprising:

a first dual-axis position sensing detector providing a first signal;

a second dual-axis position sensing detector providing a second signal;

first mount means for mounting the first dual-axis position sensing detector to the first shaft;

second mount means for mounting the second dual-axis position sensing detector to the second shaft;

a first alignment radiation source mounted on the first mount means and oriented to provide a first alignment radiation beam to the second dual-axis position sensing detector to generate the second signal;

a second alignment radiation source mounted on the second mount means and oriented to provide a second alignment radiation beam to the first dual-axis position sensing detector to generate the first signal; and

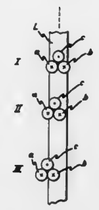
a readout means having defined alignment conditions and being responsive to the first signal and the second signal for visually displaying shaft alignment, whereby with adjustment of the first shaft with respect to the second shaft, alignment of the first shaft with the second shaft will be indicated on the readout means according to the defined alignment conditions.

4,518,856

LINE SENSING METHOD AND APPARATUS

Paul A. Blackington, Vandling, Pa., assignor to Sheltered Workshop for the Disabled, Inc., Binghamton, N.Y.

Filed Sep. 14, 1982, Ser. No. 418,006
Int. Cl.³ G05B *1/00*
U.S. Cl. 250—202 **8 Claims**



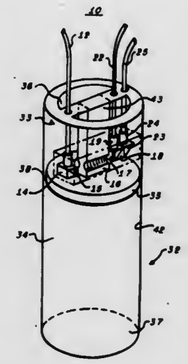
1. Optical sensing apparatus for sensing a line carried on a surface having a contrasting energy-reflective property, comprising in combination: first and second optic fibers each having a first end affixed to a sensing head member with the first ends of said fibers pointing in the same direction, and each having a second end, the first ends of said fibers being spaced apart at a distance such that said line affects direct reception of reflected light by each of said fibers when a midpoint between said fibers is centered over said line; first and second photosensors, each of said photosensors being connected to receive light from the second end of a respective one of said optic fibers and to provide a respective electrical signal commensurate with the amount of light directly reflected into said respective one of said optic fibers; and a differential amplifier connected to provide an output signal commensurate with the difference between said photosensor electrical signals.

4,518,857

TEMPERATURE AND PRESSURE COMPENSATED ELASTO-OPTIC SENSOR

Donald H. McMahon, Carlisle, and William B. Spillman, Jr., Acton, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 473,170
Int. Cl.³ G02F *1/01*
U.S. Cl. 250—225 **10 Claims**



1. An apparatus for sensing acoustic signals of the type having a transducer which includes input and output optical fibers, light polarizers, and components in cooperation with a birefringent element having pressure sensitive birefringent properties for measuring differential phase of optical signals, further comprising:

a housing having closed and open ends;

means for sealing said housing and for transferring pressure variations caused by incident acoustic signals to said birefringent element; and

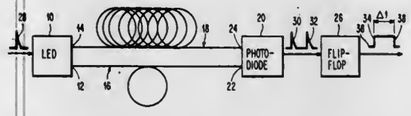
rigid diaphragm means coupled to said birefringent element and located in said housing to form a first chamber wherein said transducer is positioned, and a second chamber, said rigid means being movable for neutralizing pressure applied to said diaphragm and birefringent elements.

4,518,858

FIBER OPTIC TIME STANDARD

Gary Southard, Coral Springs, Fla., assignor to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Dec. 20, 1982, Ser. No. 451,220
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **9 Claims**



1. Apparatus for producing a time standard comprising:

(a) a source of radiation;

(b) first and second fibers capable of transmitting said radiation;

(1) each of said fibers having an input end and an output end, said input end of said first fiber and said input end of said second fiber being arranged to receive said radiation from said source at substantially the same time,

(2) said first fiber having an index of refraction N_1, and length L_1, said second fiber having an index of refraction N_2 and length L_2, said indices of refraction N_1 and N_2 and said lengths L_1 and L_2 being chosen such that said radiation propagates from said input end of said first fiber to said output end of said first fiber faster than said radiation propagates from said input end of said second fiber to said output end of said second fiber, and the change in propagation time of said radiation transmitted by said first fiber from said input end of said first fiber to said output end of said first fiber due to a change in temperature substantially equals the change in propagation time of said radiation transmitted by said second fiber from said input end of said second fiber to said output end of said second fiber due to said change in temperature, and

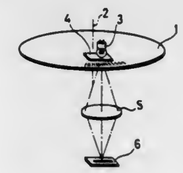
(c) means for receiving the radiation emitted from said output ends of said first and said second fibers and producing a signal representative of the difference between said propagation time from said input of said first fiber to said output of said first fiber and said propagation time from said input of said second fiber to said output of said second fiber.

4,518,859

ANGLE MEASURING DEVICE WITH LINE SENSOR

Shuji Hoshika, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,345
Claims priority, application Japan, Dec. 20, 1980, 55-181025
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **13 Claims**



1. An angle measuring device comprising:

a scale board having a scale which consists of substantially equiangular transparent portions and opaque portions which are alternately arranged at equiangular intervals in the form of a circle;

light source means for illuminating said scale on said scale board;

line sensor means having a plurality of substantially contiguous light receiving sections.

projection lens means for projecting an image of said scale of said scale board in such a manner that the pitch of an image of a combined transparent and opaque portion is greater than twice the pitch of said light receiving sections in said line sensor means;

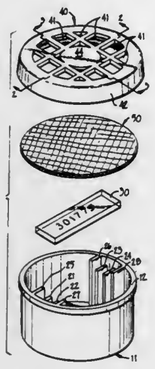
a processing circuit for detecting an angle of rotation of said scale board from the values of multiple finite outputs of said line sensor with a resolution substantially greater than said equiangular interval; and

a display section for displaying an output of said processing circuit.

4,518,860
COMPACT DETECTOR FOR RADON AND RADON DAUGHTER PRODUCTS

H. Ward Alter, Walnut Creek, and Richard A. Oswald, Benicia, both of Calif., assignors to Terradex Corporation, Walnut Creek, Calif.

Filed Oct. 19, 1982, Ser. No. 435,197
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—253 **19 Claims**



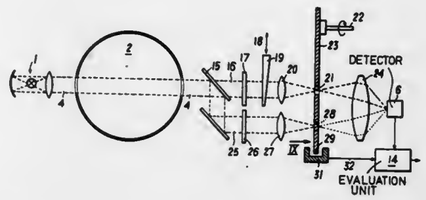
1. An improved compact track registration detector for radon gas, said detector comprising:
- a housing having an open mouth, a bottom and side walls defining an interior volume;
- means for providing longitudinal and lateral support within said housing adjacent the inner side wall surfaces and said mouth;
- track registration means supported in the interior of said housing by said support means, said track registration means having the property of forming damage tracks therein along paths traversed by alpha particles;
- microporous filter means positioned across the mouth of said housing for preventing entry of radon daughters and particulate matter into said housing interior so that substantially only gases enter said volume; and
- an apertured cap removably received on the mouth end of said housing for retaining said filter means and said track registration means in place adjacent said mouth,
- said housing having internal wall surfaces dimensioned to optimize the registration of alpha particles from radon present in said housing interior and from radon daughter products present in said housing interior which are a result of the decay of radon gas admitted through said filter means into said housing interior.

4,518,861
METHOD FOR THE CONTINUOUS MEASUREMENT OF THE MASS OF AEROSOL PARTICLES IN GASEOUS SAMPLES AND A DEVICE FOR THE IMPLEMENTATION OF THE METHOD

Peter W. Krempl; Wolfgang Schindler, both of Graz, and Leopold Faschingleitner, Mank, all of Austria, assignors to Hans List, Graz, Austria

Filed Nov. 5, 1982, Ser. No. 439,596
Claims priority, application Austria, Nov. 9, 1981, 4814/81
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—339 **16 Claims**

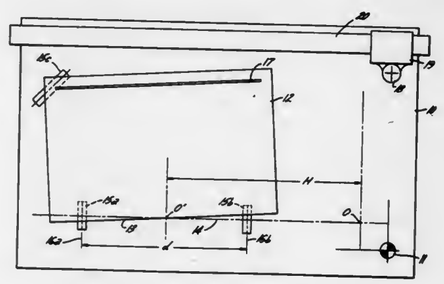
1. A method for the continuous measurement of the mass of aerosol particles in gaseous samples, wherein a sample being traversed by electromagnetic radiation of a wavelength greater than the mean radius of said aerosol particles, and the absorption caused being measured for at least two different frequencies, and wherein the difference of the signals which have been received for the different frequencies and which are proportional to the respective absorption is used as a measurement value corresponding to the total mass of said aerosol particles.



4,518,862
SYSTEM FOR DETECTING THE POSITION OF A SHEET ON ITS SUPPORT

Alfred Dorn, Rodgau, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Del.X

Filed Sep. 13, 1982, Ser. No. 417,068
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135022
Int. Cl.³ G01B *11/00*
U.S. Cl. 250—561 **11 Claims**

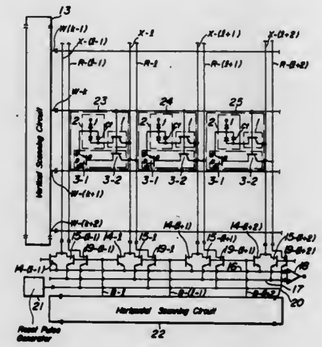


4. An apparatus for determining the position of a sheet when the sheet is placed on a support, comprising, in combination,
- at least two spaced-apart image sensors affixed to the support and each having a plurality of light sensing points receiving an image of an edge portion of the sheet when the sheet is placed on the support,
- electronic means for scanning the light sensing points of the image sensors along generally linear paths and generating, for each image sensor, a respective electrical signal correlating received light intensity with the position of the scanned light sensing points, and
- edge detecting means receiving said respective electrical signals for detecting the respective portions of said electrical signals generated by the scanning of the light sensing points receiving the respective images of the edges of the sheet and determining the respective corresponding locations of the light sensing points, so that respective locations of the intersections of the respective sheet edges and the respective scanned paths on the sheet are determined, thereby indicating sheet position,
- wherein at least one of said image sensors is oriented on the support to have its light sensing elements partially covered by both a longitudinal and a transverse edge portion of the sheet when the sheet is placed on the support.

4,518,863
STATIC INDUCTION TRANSISTOR IMAGE SENSOR WITH NOISE REDUCTION

Kenji Fukuoka, Fussa; Masatoshi Ida, Hachioji; Atsuo Goto, Hachioji; Toshimasa Akagi, Hachioji; Masaharu Imai, Hino, and Kenji Kimura, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,915
Claims priority, application Japan, Jul. 16, 1981, 56-111355
Int. Cl.³ H01L *27/14, 31/00*
U.S. Cl. 250—578 **8 Claims**

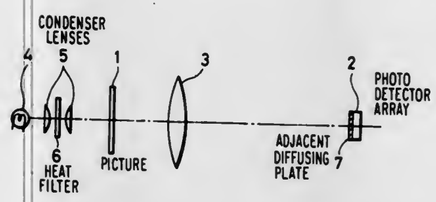


8. An image sensor comprising:
- a semiconductor image cell array having a plurality of semiconductor image cells arranged in a matrix, each semiconductor image cell of said matrix including a photoelectric transducer which transforms incident light into an electric charge and integrates that electric charge, a read switching means coupled to said transducer for reading said transducer to provide an output signal representing said integrated electric charge, and a reset switching means coupled to said transducer for resetting said photoelectric transducer; and
- means for sequentially scanning each of said semiconductor image cells in such a manner that while one cell is being read the next preceding cell is being reset to cause resetting of each preceding cell simultaneous with the reading of a scanned cell so that the integration time between reset and reading of each cell is substantially the same for all cells.

4,518,864
IMAGE READER WITH A LIGHT DIFFUSER

Masafumi Inulya, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 293,061, Aug. 17, 1981,. This application Sep. 12, 1984, Ser. No. 649,579
Claims priority, application Japan, Aug. 19, 1980, 55-113593
Int. Cl.³ H04N *5/30*
U.S. Cl. 250—578 **1 Claim**

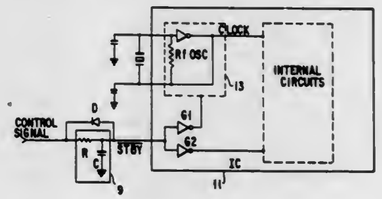


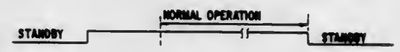
1. An image reader having a solid-state image pickup device consisting of a plurality of photosensitive elements having a surface layer which interferes with light in a photosensitive wavelength range of said solid-state image pickup device, the improvement comprising a diffusing plate disposed adjacent said surface layer for overcoming the interference of said surface layer, said diffusing plate applying light bearing data of a picture to be read to said solid-state image pickup device in a manner that the diffused light to one photosensitive element does not substantially overflow to neighboring photosensitive elements in said pickup device.

4,518,865
MISOPERATION PREVENTION CIRCUIT

Tomonobu Iwasaki, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 11, 1982, Ser. No. 387,559
Claims priority, application Japan, Jun. 18, 1981, 56-94282
Int. Cl.³ H03K *17/06;* G06F *1/00, 11/00*
U.S. Cl. 307—200 A **4 Claims**





1. A misoperation prevention circuit for preventing misoperation of an integrated circuit comprising a logic circuit and an oscillator for providing clock signals to said logic circuit after the release of a standby mode, the misoperation prevention circuit comprising:
- an integrator for receiving a control signal, the control signal being supplied for releasing the standby mode;
- a control terminal for receiving an output of the integrator;
- a first gate circuit having a first threshold voltage connected to the control terminal for triggering the oscillator at said first threshold voltage of said integrated output;
- a second gate circuit having a second threshold voltage connected to the control terminal for triggering said logic circuit at said second threshold voltage of said integrated ouptput;
- the second threshold voltage being larger than the first threshold voltage so that said second gate circuit is triggered after said first gate circuit and a period of the time elapses during which said oscillator is stabilized.

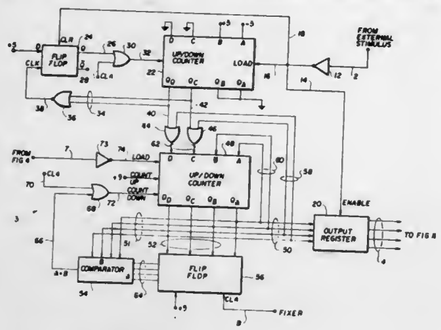
4,518,866
METHOD OF AND CIRCUIT FOR SIMULATING NEURONS

Roy E. Clymer, Columbia, Md., assignor to Psychologics, Inc., Columbia, Md.

Filed Sep. 28, 1982, Ser. No. 425,765
Int. Cl.³ G06F *15/42*
U.S. Cl. 307—201 **12 Claims**

5. A neuron simulator, comprising:
- at least one synapse simulator means having an input for receiving a stimulus which then generates as an output, a synaptic value, each said synapse simulator means including means for storing said synaptic value and means for varying said synaptic value depending upon the temporal relationship between said input and the output of said neuron simulator; and

generator means having an input connected to the output of each said synapse simulator means, said generator means including means responsive to successive inputs from said at least one synapse simulator means to produce an accu-



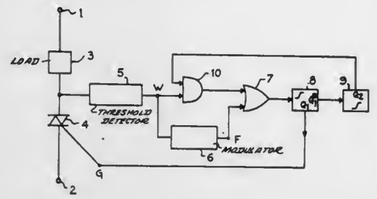
mulated generator value which decays with time toward a rest value, said generator means having an output which produces a neuron output signal whenever said accumulated generator value exceeds a predetermined threshold value.

4,518,867

SELF-ADAPTING PROCESS AND DEVICE FOR TRIGGERING A TRIAC

Jean J. Lamboley, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 23, 1982, Ser. No. 371,420
Claims priority, application France, Apr. 27, 1981, 81 08336
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 B **3 Claims**



1. A triac triggering circuit for use with a triac having two terminals and a gate, and an electric load such that the current in the electric load will progressively decrease when the triac is turned off, said triggering circuit being used for controlling the triac and comprising:

a threshold circuit for outputting a threshold signal indicating that the voltage across the terminals of the triac exceeds a predetermined threshold level;

an adjustable modulating circuit for receiving the threshold signal from said threshold circuit and for supplying to the gate of the triac a first gate pulse of short duration at the end of an adjustable time after issuance of said threshold signal, said first gate pulse being issued only if said threshold signal has not been interrupted during said adjustable time;

means for supplying successive gate pulses of short duration to the gate of the triac; and

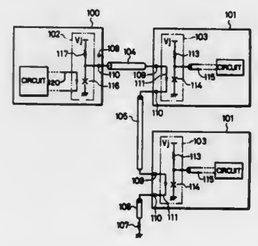
a monostable flip-flop actuated by said first and successive gate pulses for outputting an output signal after each gate pulse, wherein said means for supplying successive gate pulses has inputs connected to the output of said monostable flip-flop, to the output of said threshold circuit, and to said modulating circuit, and having an output supplying a successive gate pulse whenever said threshold signal is issued outside said adjustable time during said output signal, and said output signal having a short duration such that the current in the load will not decrease in a significant way during this duration in case of triggering failure of the triac.

4,518,868

SUPERCONDUCTIVE LARGE-SCALE INTEGRATED CIRCUIT CHIP

Yutaka Harada, Kodaira; Kunio Yamashita, Hachioji; Nobuo Kotera, Kokubunji, and Hirotoshi Tanaka, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,730
Claims priority, application Japan, Jun. 27, 1980, 55-86622
Int. Cl.³ H03K *19/195*
U.S. Cl. 307—306 **2 Claims**



1. A combination of a plurality of superconductive large-scale integrated circuit chips, each comprising:

a plurality of conductive pads which are disposed along at least one of peripheral edges of said chip;

an input superconductive line which short-circuits a pair of said plurality of pads;

an input buffer magnetically coupled to said input superconductive line, said input buffer including a Josephson device which operates in a superconductive state when no current flows through said input superconductive line and in a voltage state when current flows through the input superconductive line, wherein said input buffer further comprises means coupled between the Josephson device and a predetermined circuit in the chip for controlling the application of current to said predetermined circuit in accordance with the state of operation of the Josephson device;

an output superconductive line with the chip coupled to receive an output from the predetermined circuit within the chip so that current flows in said output superconductive line when the predetermined circuit produces an output;

an output buffer magnetically coupled to the output superconductive line, wherein the output buffer includes a Josephson device which operates in a superconductive state when no current flows through the output superconductive line and in a voltage state when the current flows through the output superconductive line,

wherein an output buffer at least one of said superconductive chips is coupled in series to input superconductive lines of at least two other superconductive chips.

4,518,869

RESISTANCE COMPARATOR FOR SWITCH DETECTION

Barry W. Herold, Lauderhill, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1982, Ser. No. 451,662
Int. Cl.³ H03K *5/153, 5/24*
U.S. Cl. 307—350 **18 Claims**

1. A resistance comparator having an input and output, comprising:

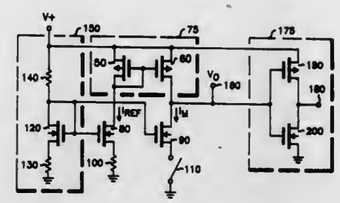
current source means having a reference current output

coupled to a first conduction path and a current limited output coupled to a second conduction path;

first current control means having a first control node for controlling the current flow in said first conduction path;

means for coupling a reference resistance in series with said first conduction path;

second current control means having second control node for controlling the current flow in said second conduction path;



input means for coupling an input resistance in series with said second conduction path; and

means for supplying a bias signal to said first and second control nodes of said first and second current control means respectively,

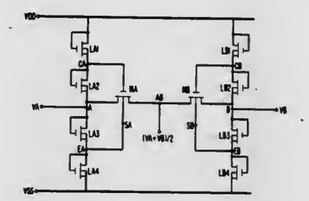
whereby, the output is in a first logic state when said input resistance is less than a predetermined value and in a second logic state when said input resistance is greater than said predetermined value.

4,518,870

COMMON MODE SIGNAL DETECTOR

Mihai Banu, Woodside, N.Y., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 6, 1983, Ser. No. 539,619
Int. Cl.³ H03F *3/45*
U.S. Cl. 307—356 **10 Claims**



7. A circuit for detecting the common mode signal present on first and second input terminals comprising

(a) a first transistor one of whose high current carrying terminals is connected to the first input terminal;

(b) a second, identical transistor one of whose high current carrying terminals is connected to the second input terminal;

(c) electrically connecting means for connecting another high current terminal of each of the first and second transistors to an output terminal;

(d) first control means, connected to a control terminal of the first transistor, for delivering to the control terminal of the first transistor a first control voltage which is midway between a first reference voltage and the voltage on the first input terminal,

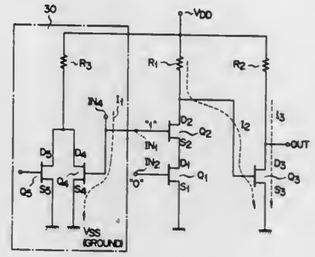
(e) second control means, connected to a control terminal of the second transistor, for delivering to the control terminal of the second transistor a second control voltage which is midway between the first reference voltage and the voltage on the second input terminal.

4,518,871

GA/AS NOR/NAND GATE CIRCUIT USING ENHANCEMENT MODE FET'S

Nobuyuki Toyoda, and Akimichi Hojo, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 15, 1982, Ser. No. 449,997
Claims priority, application Japan, Dec. 26, 1981, 56-214911
Int. Cl.³ H03K *19/003, 19/094, 19/20*
U.S. Cl. 307—443 **12 Claims**



1. A NOR/NAND gate circuit comprising:

a NAND gate comprising at least first and second normally off type field effect transistors having source-to-drain current paths series-connected between a power source (VDD) and a ground potential (VSS) via a load, wherein the source of said first transistor is connected to ground potential and the gate thereof is connected to a first input terminal, and wherein the gate of said second transistor is connected to a second input terminal; and

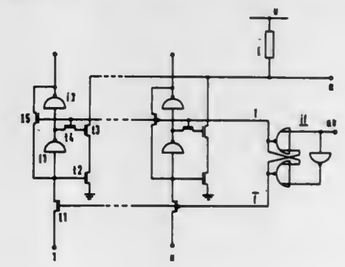
NOR gate means for bypassing a forward current which would otherwise pass through said NAND gate, comprising third and fourth normally-off field effect transistors having respective source-to-drain current paths connected to ground potential, wherein the gate electrode of one of said third and fourth transistors is connected to said second input terminal and to the gate electrode of said second transistor of said NAND gate.

4,518,872

MOS TRANSITION DETECTOR FOR PLURAL SIGNAL LINES USING NON-OVERLAPPING COMPLEMENTARY INTERROGATION PULSES

Reiner Backes, Freiburg-Tiengen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,620
Claims priority, application European Pat. Off., Mar. 4, 1982, 82101667.2
Int. Cl.³ H03K *19/096, 17/693*
U.S. Cl. 307—448 **1 Claim**



1. Insulated-gate field-effect transistor integrated circuit for delivering a digital signal (a) at the application of an interrogation pulse (as) if a change of state has occurred in a one-out-of-

n system until the instant of interrogation, characterized by the following features:

each signal (1 . . . n) of the one-out-of-n system is applied via the channel of a first transistor (t1) to the input of a first inverter (i1) and to the gate of a second transistor (t2) whose channel is grounded at one end, while the other end is connected via the channel of a third transistor (t3) to a load device (l) common to all signals (1 . . . n) and connected to a supply-voltage source (u);

the output of the first inverter (i1) is connected to the input of a second inverter (i2) and, via the channel of a fourth transistor (t4), to the gate of the third transistor (t3);

the input of the first inverter (i1) is connected to the output of the second inverter (i2) via the channel of a fifth transistor (t5);

the interrogation pulses (as) are applied to a pulse shaper (if) which produces two nonoverlapping clock signals (f, f̄) therefrom;

the first clock signal (f) is applied to the gates of the fourth and fifth transistors (t4, t5), and

the second clock signal (f̄) is applied to the gate of the first transistor (t1).

4,518,873

BUFFER CIRCUIT FOR DRIVING A C-MOS INVERTER

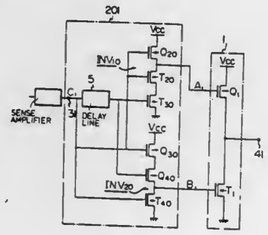
Yasuo Suzuki, Yokohama; Hiroshi Hirao, Kawasaki, and Masanori Nagasawa, Kamakura, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

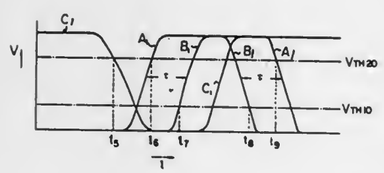
Filed Aug. 13, 1982, Ser. No. 407,953

Claims priority, application Japan, Aug. 13, 1981, 56-125981

Int. Cl.³ H03K *17/284, 17/26, 17/687, 17/16*

U.S. Cl. 307—451 **9 Claims**





1. A buffer circuit, operatively connected to receive an input signal, for driving a C-MOS inverter having first and second transistors, said buffer circuit comprising:

first and second inverters operatively connected between a power supply line and ground and operatively connected to receive the input signal, for inverting the input signal and for providing an output signal for driving the first and second transistors in the C-MOS inverter, said first inverter having a first output terminal operatively connected to the first transistor and comprising at least one first switching delay transistor operatively connected in series between the power supply line and ground, said second inverter having a second output terminal operatively connected to the second transistor and comprising at least one second switching delay transistor operatively connected in series between the power supply line and ground;

delay means, operatively connected to said first and second inverters and operatively connected to receive the input signal, for providing a delay signal having a predetermined delay time with respect to the input signal; and

said first and second switching delay transistors receiving the delay signal from said delay means, having a predetermined delay time with respect to the input signal to prevent simultaneous conduction of current through the first and second transistors in the C-MOS inverter.

4,518,874

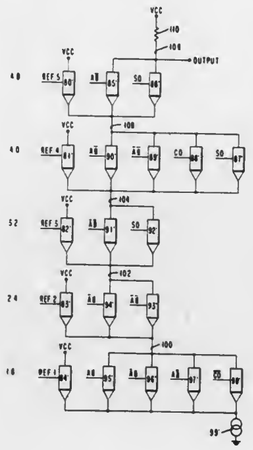
CASCODED PLA ARRAY

James W. Davis, Boca Raton, Fla., and Frank D. Jones, Wallkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 236,390, Feb. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 22,589, Mar. 21, 1979, abandoned. This application Jan. 20, 1984, Ser. No. 572,322

Int. Cl.³ H03K *19/086, 19/092, 19/177;* **H01L** *27/10*

U.S. Cl. 307—467 **14 Claims**



1. A bipolar transistor integrated circuit comprising:

a first horizontally elongated, isolated epitaxial region in a semiconductor substrate;

a second horizontally elongated, isolated epitaxial region in said substrate;

a first plurality of common collector bipolar transistors formed in a spaced, horizontal row in said first epitaxial region which forms the common collectors thereof, with selected ones of said plurality having their emitters connected in common to a first current source;

a second plurality of common collector bipolar transistors formed in a spaced, horizontal row in said second epitaxial region which forms the common collectors thereof, with selected ones of said second plurality having their emitters connected in common to said first epitaxial region and each of said second plurality of transistors being vertically aligned with a respective one of said first plurality of transistors;

the bases of said vertically aligned transistors from said first and said second epitaxial regions being selectively connected to vertically oriented input signal lines;

said second epitaxial region being connected to an output mode;

a third vertically elongated, isolated epitaxial region in said substrate;

a plurality of common collector bipolar transistors formed in a spaced, vertical row in said third epitaxial region which forms the common collectors thereof, with a first one of said plurality having its emitter connected in common with said emitters of said selected ones of said plurality of transistors in said first epitaxial region and being vertically aligned therewith, a second one of said plurality of transistors in said third epitaxial region having its emitter connected in common with said emitters of said selected ones of said second plurality of transistors in said second epitaxial region and being vertically aligned therewith;

said first one of said transistors in said third epitaxial region serving as a reference transistor for said selected ones of said plurality of transistors in said first epitaxial region, being connected in a current switched logic configuration;

said second one of said plurality of transistors in said third epitaxial region serving as a reference transistor for said selected ones of said second plurality of transistors in said second epitaxial region, connected in a current switched logic configuration;

whereby a cascode connected logic array is formed.

4,518,875

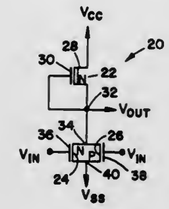
THREE-LEVEL MOS LOGIC CIRCUIT

Haluk M. Aytac, P.O. Box 10117, Berkeley, Calif. 94709

Continuation-in-part of Ser. No. 385,072, Jun. 4, 1982, abandoned. This application Sep. 22, 1983, Ser. No. 534,269

Int. Cl.³ H03K *19/20, 19/094*

U.S. Cl. 307—473 **8 Claims**



1. A three-level logic circuit comprising:

an MOS load device connected to a first voltage supply;

an input logic element comprised of at least one pair of P-channel and N-channel enhancement type complementary MOS devices and connected at a node to said load device and said element further connected to a second voltage supply at a different level;

logic input means to said input logic element and an output at said node;

wherein the absolute value of said N-channel MOS device threshold voltage is greater than the absolute value of said P-channel MOS device threshold voltage when said first voltage supply is algebraically greater that the said second voltage supply and conversely, the absolute value of said N-channel MOS device threshold voltage is less than the absolute value of said P-channel MOS device threshold voltage when said first voltage supply is algebraically less than said second voltage supply;

whereby inputs to said logic input means at three predetermined voltage levels will produce active logic outputs at three different voltage levels from said node.

4,518,876

TTL-ECL INPUT TRANSLATION WITH AND/NAND FUNCTION

Ion Constantinescu, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 30, 1983, Ser. No. 480,994

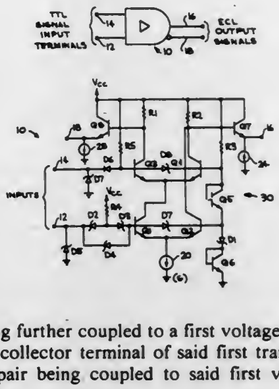
Int. Cl.³ H03K *19/092, 19/086;* **H03F** *3/45*

U.S. Cl. 307—475 **17 Claims**

1. A circuit for converting the voltage levels of at least a pair of signals provided by transistor-transistor-logic (TTL) circuits to voltage levels that are compatible with emitter-coupled logic (ECL) circuitry and for performing a logic function on said signal pair, comprising:

first and second input terminals for respectively receiving the pair of TTL signals;

a first pair of transistors having their emitter terminals coupled to a current source, a first base terminal of a first transistor of said first pair being coupled to the first input terminal for receiving one of the TTL signals; a second pair of transistors having their emitter terminals coupled to a collector terminal of the first transistor of the first pair, a base terminal of a first transistor of the second pair being coupled to the second input terminal, a collector terminal of a second transistor of the second pair being coupled to a collector terminal of the second transistor of the first pair, the collector terminals of the second transistors being further coupled to a first voltage supply terminal, the collector terminal of said first transistor of said second pair being coupled to said first voltage supply terminal;



means for generating a first and a second reference voltage, a base terminal of the second transistor of the first pair being coupled to the generating means for receiving the first reference voltage, a base terminal of the second transistor of the second pair being coupled to the generating means for receiving the second reference voltage; an output terminal being coupled to the collector terminal of the second transistor of the second transistor pair and

two series-connected diodes, each having their anode terminals connected to one another, coupling the first input terminal to the base terminal of the first transistor of the first pair.

4,518,877

PRECISION ABSOLUTE VALUE AMPLIFIER FOR A PRECISION VOLTMETER

William E. Hearn, Berkeley, and Donald J. Rondeau, El Sobrante, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 19, 1982, Ser. No. 435,157

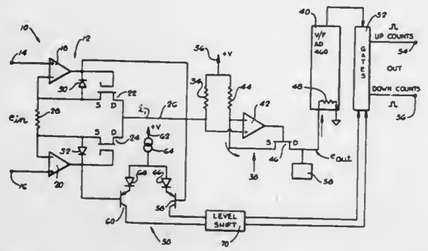
Int. Cl.³ H03K *5/22;* **G06G** *7/12*

U.S. Cl. 307—490 **11 Claims**

1. An absolute value amplifier for a precision voltmeter or the like, comprising first and second differential input amplifier devices having plus and minus inputs, said plus inputs affording bipolar input terminals for said amplifier, a gain determining resistor connected between said minus inputs of said differential input amplifier devices, first and second diodes connected between the respective minus inputs and the respective outputs of said differential input amplifier devices, an output terminal for said amplifier, first and second transistors having respective output connections connected between the respective minus inputs and said output terminal, said transistors having respective input connections connected to the respective outputs of said amplifier devices, and load means for supplying output

current to said output terminal, said output current being proportional to the absolute value of the input voltage between said input terminals,

said load means comprising a load resistor connected between said output terminal and a voltage source, said amplifier comprising a third differential amplifier device having a plus input connected said output terminal, said third differential amplifier device having a minus input, a second gain determining resistor connected between said last-mentioned



minus input and said voltage source, feedback means connected between the output of said third differential amplifier device and said minus input, and output means connected to the output of said third differential amplifier device,

said feedback means comprising a third transistor having output connections between said last-mentioned minus input and said output means, said third transistor having an input connection connected to the output of said third differential amplifier device.

4,518,878

"ALL-PASS" FILTER CIRCUIT INCLUDING AN INTEGRABLE BAND-PASS FILTER CIRCUIT

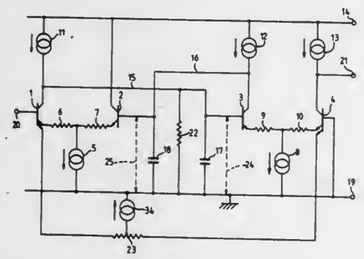
Kenneth W. Moulding, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,610

Claims priority, application United Kingdom, Oct. 30, 1981, 8132756

Int. Cl.³ H03H *11/08, 11/18*

U.S. Cl. 307—520 **7 Claims**



1. An all-pass filter circuit having a circuit arrangement comprising a first long-tailed pair of first and second transistors, a second long-tailed pair of third and fourth transistors, a first load impedance connected between a first supply potential node and an output electrode of one transistor of the first pair, second and third load impedances connected, respectively, between second and third supply potential nodes and output electrodes of the third and fourth transistors, respectively, an output electrode of the other transistor of said first pair being connected to a fourth supply potential node, a first means for coupling said first load impedance to a control electrode of one transistor of the second pair, a second means for coupling said second load impedance to a control electrode of said second transistor, first and second capacitive elements connecting said first and second coupling means, respectively, to a first reference potential node so that a first voltage-to-current converter, including said one transistor of the second pair, couples said first capacitive element to said second capacitive element and a second voltage-to-current converter, including said second transistor, couples said second capacitive element to said first capacitive element, the signal path through one of the said converters passing through only one transistor of the corresponding pair so that said one converter is inverting, the signal path through the other of said converters passing through both transistors of the corresponding pair so that said other of said converters is non-inverting, a third means for coupling a signal input to a control electrode of said first transistor so that a first amplifier, including said first transistor, couples said signal input to said first capacitive element, a fourth means for coupling a second reference potential node to a control electrode of the other transistor of the second pair, a fifth means for coupling said third load impedance to a signal output so that a second amplifier, including said fourth transistor, couples said first capacitive element to said signal output, and a resistor included in parallel with said capacitive element, characterized in that said all-pass filter circuit further comprises a second resistor connecting a common electrode of a transistor, included in the signal path from said signal input to the output electrode of said first transistor, to a common electrode of a transistor, which is included in the signal path from the second reference potential node to the output electrode of said other transistor of the second pair, and which has its output electrode connected to said signal output, so that a non-inverting signal path exists from said signal input to said signal output via said second resistor, said second resistor having a value such that the circuit arrangement constitutes said "all-pass" filter circuit.

4,518,879

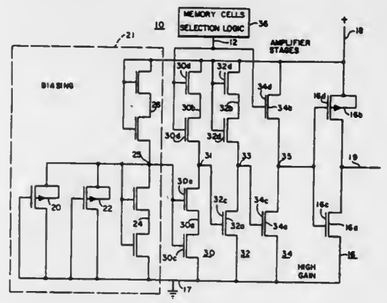
STABLE RAIL SENSE AMPLIFIER IN CMOS MEMORIES

Richard M. Greene, Ambler, Pa., assignor to Solid State Scientific, Inc., Willow Grove, Pa.

Filed Aug. 31, 1983, Ser. No. 528,096

Int. Cl.³ H03K *5/19;* **G11C** *7/06;* **G01R** *19/165;* **H03F** *3/18*

U.S. Cl. 307—530 **9 Claims**



1. A stable rail FET sense amplifier in a CMOS chip memory for sensing small output voltage swings from an output of said memory, said memory output voltage swings being at a level that is substantially or very close to the level of a voltage supply rail of said memory circuit, comprising means for shifting the voltage level of said memory voltage swings to substantially the center of the voltage range between the levels of said supply voltage rail and a reference voltage rail, said shifting means being comprised of a plurality of cascaded level shifting stages, an output of said memory being connected to the input of the first of said cascaded stages, each of said stages being capable of contributing to said shifting and each of said stages having a relatively small amount of gain or loss, and a bias reference means being coupled to said first stage for determining the level of said voltage range center; and high gain amplifier means coupled to the output of the last of said cascaded stages for providing a relatively high gain to the signal at said last stage output.

4,518,880

MOS SWITCH CIRCUIT WITH CONSISTENT LOW ON RESISTANCE

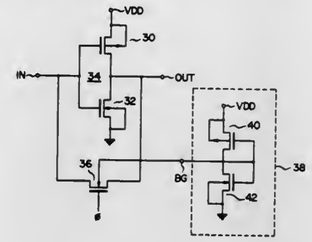
Eiji Masuda, Kawasaki, and Kenji Matsuo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

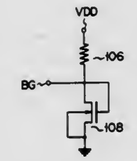
Filed Feb. 25, 1983, Ser. No. 469,971

Claims priority, application Japan, Feb. 26, 1982, 57-29938; Feb. 26, 1982, 57-29966

Int. Cl.³ H03K *17/687, 17/12, 17/04, 17/30*

U.S. Cl. 307—577 **5 Claims**





1. An MOS switch circuit with low ON resistance with low-variation, which comprises:

a first MOS transistor switch having source and drain electrodes connected to input and output terminals of the switch circuit, respectively, and also having gate and back gate electrodes, the on/off state of the first MOS transistor switch being controlled by a control signal supplied to the gate electrode thereof; and

biasing means, including a second MOS transistor switch having a channel type the same as the channel type of the first MOS transistor switch, for supplying a voltage corresponding to a threshold voltage of the second MOS transistor switch to the back gate of the first MOS transistor switch.

4,518,881

LINEAR MOTOR

Joseph J. Stupak, Jr., San Pedro, Calif., assignor to Ibis Systems, Inc., West Lake Village, Calif.

Filed Oct. 25, 1982, Ser. No. 436,324

Int. Cl.³ H02K *33/02*

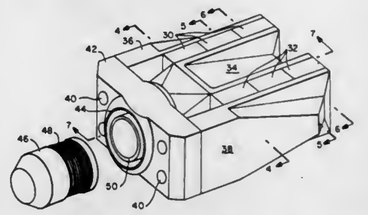
U.S. Cl. 310—13 **12 Claims**

1. A linear motor comprising

a center pole of magnetic material including a front generally cylindrical portion and a back portion,

an outer pole of magnetic material including first and second side members and a front portion, said side members being affixed to said front portion for transmission of magnetic flux, said front portion having a generally cylindrical opening with said front center pole portion positioned therein and defining a generally cylindrical gap between said front portion of said outer pole and said front portion of said center pole,

said side members of said outer pole and said back portion of said center pole being tapered (near the outer edges thereof) with the cross-sections of said side members being largest near said front portions and decreasing away from said front portions to facilitate uniform flux transmission, said side members and said back portion being tapered near the edges thereof to minimize magnetic flux leakage back to said magnet means,



a bobbin having generally cylindrical inner and outer surfaces positioned in said generally cylindrical gap, said bobbin including a coil, and

first and second generally planar magnet means supported between said back portion of said center pole and said first and second side members, respectively, with said first and second magnet means being in spaced and generally parallel alignment thereby defining magnetic paths through said side members to said front portion of said outer pole, across said generally cylindrical gap, and to said center pole.

4,518,882

ELECTROMAGNETIC LINEAR DRIVING DEVICE

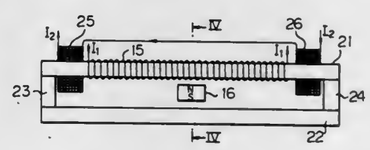
Seiji Morino, Okazaki, and Hisasi Kawai, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 1, 1983, Ser. No. 510,303

Claims priority, application Japan, Jul. 12, 1982, 57-119848

Int. Cl.³ H02K *33/00*

U.S. Cl. 310—15 **8 Claims**



1. An electromagnetic linear driving device comprising:

a first magnetic member having a longitudinal axis defining a longitudinal direction which member forms at least a portion of a magnetic circuit path;

a first winding wound around a central portion of said stationary magnetic member along said longitudinal direction for inducing, responsive to a first current flowing therein, a first magnetic flux in said magnetic circuit;

a second winding, wound around a terminal portion of said stationary magnetic member apart from said central portion thereof, for inducing, responsive to a second current flowing therein, a second magnetic flux in said stationary magnetic member, which second flux opposes said first magnetic flux; and

a first permanent magnet having north (N) and south (S) poles defining a N-S axis, movable along a path substantially parallel to said longitudinal direction and along said central portion of said stationary magnetic member, for generating a magnetic flux linking at least some turns of said first winding, the N-S axis being substantially perpendicular to said longitudinal axis.

4,518,883

ELECTRIC MOTOR WITH PERMANENT MAGNET ROTOR

Claude Oudet, Besancon, France, assignor to Portescap, La Chaux de Fonds, Switzerland

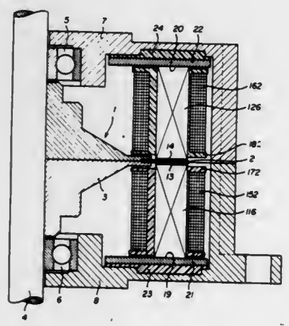
PCT No. PCT/CH82/00127, § 371 Date Aug. 3, 1983, § 102(e) Date Aug. 3, 1983, PCT Pub. No. WO83/02042, PCT Pub. Date Jun. 9, 1983

PCT Filed Dec. 3, 1982, Ser. No. 530,585

Claims priority, application Switzerland, Dec. 4, 1981, 7766/81

Int. Cl.³ H02K *1/18*

U.S. Cl. 310—49 R **18 Claims**



1. An electrical stepper motor comprising on the one hand a permanently magnetized rotative part which is mounted on the motor shaft and presents a rotatory symmetry about the same, this part having a small thickness as compared to its outer diameter and being magnetized in the direction of its thickness so as to present on each of its opposite faces 2N magnetic poles of alternating polarity, N being a natural number, these poles being arranged regularly along an annular zone, and comprising on the other hand, at least one magnetic stator circuit and at least two electric coils coupled with this magnetic circuit, each circuit comprising at least one air gap in which the magnetized part is placed, and at least two polar parts having an axial plane of symmetry and being arranged for co-operation with the magnetic poles of the magnetized part, characterized in that each magnetic stator circuit (**9, 10,** . . .) comprises a first (**91**) and a second (**92**) group of polar parts including each at least two polar parts (**111, 112; 115, 116**), the axial planes of symmetry of the polar parts of each group forming between each other at least approximately an angle of $2k\pi/N$, k being a natural number, and the respective axial planes of symmetry of a polar part (**111**) of the first group and of a polar part (**115**) of the second group forming between each other at least approximately an angle of $(2r+1)\pi/N$, r being a natural number, the polar parts of said first group being coupled with at least one of said coils (**151**) and the polar parts of said second group being coupled with at least one other of said coils (**152**), the coils coupled respectively with polar parts of the two groups producing, in response to a given exciting current, magnetic fields having in the transversal direction of the magnetized part, opposite directions for each of the two groups, each magnetic stator circuit comprising or being coupled with two yoke parts (**21, 22**) placed on either side of the magnetized part (**2**), so that the magnetic field produced in these circuits is substantially within the two space portions extending respectively above the magnetic poles of each face of the magnetized part.

4,518,884

STEP MOTOR PARTICULARLY FOR ELECTRONIC TIMEPIECES

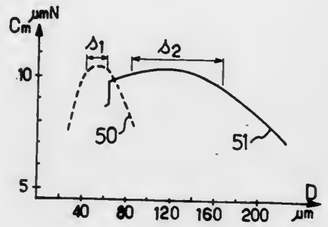
Jean C. Chatelain, Beure, France, assignor to Centre Technique de l'Industrie Horlogere "Cetehor", France

Filed Jan. 20, 1984, Ser. No. 572,432

Claims priority, application France, Apr. 18, 1980, 8008807

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 **3 Claims**



1. A step motor particularly for an electronic timepiece, comprising

a stator formed by assembly of two pole piece parts having free ends bent towards one another to form two pole pieces, respectively, delimiting therebetween an air-gap;

an exciting coil associated with the stator;

a rotor consisting of a permanent magnet having a predetermined radius accommodated in said air-gap, the free end of each pole piece having a recess substantially cylindrical in shape such that the axis of each said recess is substantially parallel to the axis of rotation of said rotor, each of said recesses having a radius, said pole pieces being shiftable with respect to one another in a direction perpendicular to the main direction of the magnetic flux generated by said coil without a shift of said pole pieces, the portions of said pole pieces facing one another having substantially the same shape, wherein the value of the ratio of the mean air-gap to the radius of said rotor is between 0.7 and 1 and the value of the shift of said two pole pieces with respect to said main direction of said magnetic flux being variable between 80 and 200 microns when said radius of said rotor is in the order of 800 microns, without prejudice to ensuring correct operation of said motor, to permit an increase of the manufacturing and adjustment tolerances; and

displacement means for displacing at least one of said pole pieces with respect to the other, in one direction or the plane perpendicular to the axis of rotation of said rotor, to reverse the direction of rotation of said rotor and to permit manual adjustment of said motor.

4,518,885

SUPERCONDUCTING ROTOR WITH VAPOR COOLED CRYOGENIC LEADS HAVING A REGENERATOR PORTION

Phillip W. Eckels, Penn Hills, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 16, 1984, Ser. No. 571,263

Int. Cl.³ H02K *9/16*

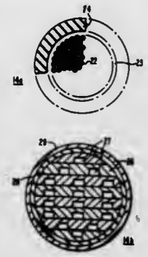
U.S. Cl. 310—52 **3 Claims**

1. A superconducting rotor comprising:

a superconducting rotor winding within a rotatable chamber, means for supplying a liquified coolant to said chamber to cool said rotor winding, one or more normal electrical conductors having a first end connected with said superconducting field winding within said chamber and a second end located external of said chamber for supplying excitation to said winding;

said one or more conductors each having an inner portion comprising a conductive element with vapor transfer passages for transferring out of said chamber vapor generated from coolant therein and for cooling said conductive element by said vapor as it is transferred; and,

each of said conductors having a regenerator portion, extending external of said chamber, comprising a conductive member of a thermal mass that is greater than that of said



transferred vapor, including that transferred during fault conditions, by at least about an order of magnitude, said conductive member of said regenerator portion having vapor transfer passages communicating with said vapor transfer passages of said conductor inner portion.

4,518,886

CHARGING GENERATOR HAVING WATERPROOF COVER

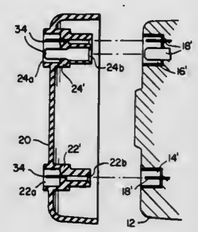
Kazutoshi Kaneyuki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 460,047

Claims priority, application Japan, Jan. 27, 1982, 57-10455[U]

Int. Cl.³ H02K *5/10*

U.S. Cl. 310—71 **4 Claims**



1. A charging generator comprising:

a main body of said charging generator;

an externally connecting terminal unit having male terminal unit terminals on said main body;

a waterproof cover for covering at least said externally connecting terminal unit;

a bracket on said main body, said terminal unit being disposed on said bracket, said waterproof cover comprising a waterproof cup-shaped cover of an electrically unsulating material, having an open end for facing said bracket, for being positioned over and fixed to said bracket to substantially cover the same;

an externally connecting connector unit on said waterproof cover; and

a plurality of fitting terminals fixedly inserted into said connector unit on said cover for directly connecting said externally connecting terminal unit to said connector unit when said waterproof cover is covering said terminal unit;

said externally connecting connector unit including a first connector housing subunit and a second connector housing subunit, respectively extending toward and away from said terminal unit when said waterproof cover is covering said terminal unit, opposite ends of said fitting terminals being respectively disposed in said first and second connector housing subunits; and

each of said fitting terminals including a male terminal portion at the end thereof disposed in said second subunit and a female terminal portion at the end thereof disposed in said first subunit, the male terminal portions of said fitting terminals being exposed for external connection, said first subunit being insertable into said terminal unit to electrically connect the male terminal portions of said fitting terminals to said terminal unit terminals when said cover is covering said terminal unit.

4,518,887

DIFFERENTIAL LEVER ACTUATOR INCLUDING DIFFERENTIALLY FORCE-TRANSMITTING MEMBERS WHICH ARE NOT LIABLE TO BREAK

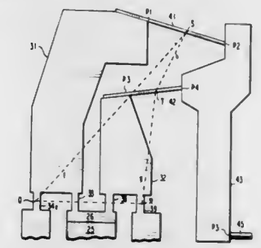
Takeshi Yano; Izumu Fukui; Takeshige Hamatsuki; Eiichi Sato, and Osamu Inui, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,667

Claims priority, application Japan, Feb. 25, 1983, 58-30284; Jun. 14, 1983, 58-106211; Jul. 21, 1983, 58-133340; Oct. 11, 1983, 58-189530; Dec. 9, 1983, 58-232326

Int. Cl.³ H01V *7/00*

U.S. Cl. 310—328 **12 Claims**



1. In a differential lever actuator comprising a driving member having an axis, a first end fixed to a base member, and a second end susceptible to a linear displacement along said axis, first and second lever members attached to said base member at first and second fulcrum points, respectively, and to said second end at first and second power points, respectively, first and second plate-shaped resilient power transmission members having principal surfaces perpendicular to a reference plane including said axis and said first and said second power points and attached to said first and said second lever members at first and second weight points, respectively, and a differential lever member carried by said first and said second transmission members at first and second predetermined points, respectively, wherein said first and second fulcrum points, said first and second power points, said first and second weight points, and said first and second predetermined points are arranged to satisfy the following equation:

$$\frac{\phi_2}{\phi_1} = \frac{\frac{e}{g}\,\mathrm{Sin}\phi(e,f) - \mathrm{Sin}(\phi(e,g) - \phi(e,f))}{\frac{e}{f}\,\mathrm{Sin}\phi(e,f) - \mathrm{Sin}(\phi(e,g) - \phi(e,f))}$$

where

e: the distance between the first and second fulcrum points

f: the distance between the first fulcrum point and the midpoint between the first weight point and the first predetermined point (first midpoint)

g: the distance between the second fulcrum point and the midpoint between the second weight point and the second predetermined point (second midpoint)

$\phi(e,f)$: an angle which is measured counterclockwise from the line including the first and second fulcrum points to

the line including the first fulcrum point and the first midpoint

$\phi(e,g)$: an angle which is measured counterclockwise from the line including the first and second fulcrum points to the line including the second fulcrum point and the second midpoint

ϕ_1: an increment angle added to the angle $\phi(e,f)$

ϕ_2: an increment angle added to the angle $\phi(e,g)$

$$\phi_2/\phi_1 = l_1/l_2$$

where

l_1: the distance between the first fulcrum point and the first power point

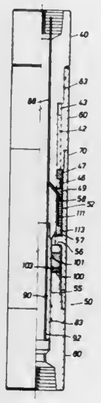
l_2: the distance between the second fulcrum point and the second power point.

4,518,888

DOWNHOLE APPARATUS FOR ABSORBING VIBRATORY ENERGY TO GENERATE ELECTRICAL POWER

Clarence J. Zabcik, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,333
Int. Cl.³ G01V *1/40;* E21B *17/07*
U.S. Cl. 310—334 **22 Claims**



18. Apparatus for use in a drill string operating in a borehole, comprising:

means for converting oscillating rotational and longitudinal motion occurring in said drill string into electrical energy; downhole electrically operated means; and

means for transmitting said electrical energy to said downhole electrically operated means.

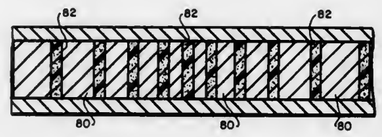
4,518,889

PIEZOELECTRIC APODIZED ULTRASOUND TRANSDUCERS

Pieter J. 'T Hoen, Mission Viejo, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Sep. 22, 1982, Ser. No. 421,558
Int. Cl.³ H04R *17/00;* H01L *41/08*
U.S. Cl. 310—357 **11 Claims**

5. An apodized ultrasound transducer comprising a body of piezoelectric material which is polarized in a direction substantially perpendicular to a surface of the body and wherein the polarization decreases as a function of distance from a central line or point on the surface wherein, as an improvement, the body comprises a matrix of substantially parallel rods of piezoelectric ceramic which are embedded in and isolated from one another by an electrically inert binder and are polarized in a direction parallel to their length and wherein the distance



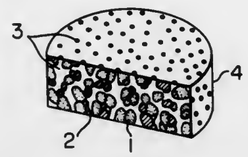
between the rods varies as function of the distance from the center line or point.

4,518,890

IMPREGNATED CATHODE

Sadanori Taguchi, Tokyo; Toshiyuki Aida, Chofu; Shigehiko Yamamoto, Tokorozawa, and Yukio Honda, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,247
Claims priority, application Japan, Mar. 10, 1982, 57-36412
Int. Cl.³ H01J *1/14, 19/06;* H01K *1/04*
U.S. Cl. 313—346 R **16 Claims**



1. An impregnated cathode which comprises a porous refractory substrate and an electron emissive material impregnated into pores in the pourous substrate, wherein said pourous refractory substrate includes at least one of scandium oxide particles and oxide particles containing scandium.

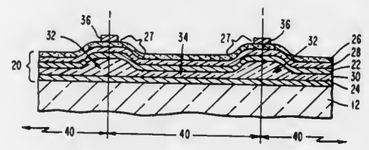
10. A process for preparing an impregnated cathode which comprises sintering a mixture of at least one metal selected from the group consisting of tungsten, molybdenum, tantalum and rhenium, and at least one of scandium oxide and oxide particles containing scandium, to thereby form a heat-resistant, porous substrate; and impregnating an electron emissive material into pores of the porous substrate.

4,518,891

RESISTIVE MESH STRUCTURE FOR ELECTROLUMINESCENT CELL

Webster E. Howard, Jr., Yorktown Hgts., N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,483
Int. Cl.³ H01J *31/10, 29/28, 1/70*
U.S. Cl. 313—398 **14 Claims**



1. An array of electroluminescent cells for displaying data wherein each said electroluminescent (EL) cell includes a transparent conductor, a first insulator layer thereon, a layer of luminescent material on said first insulator layer, a second insulator layer applied to said luminescent material layer, a second conductive layer applied to said second insulator layer, said EL cell having the improvement comprising:

each said EL cell having a substantially planar first region substantially parallel to said transparent conductor wherein luminance level is alterable, and a second region surrounding and substantially coplanar with said first region, said second region being nonluminous; and

said luminescent material layer being continuous across said first and second regions; and

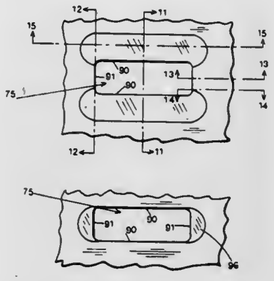
said second conductive layer having a predetermined resistivity overlaying said second insulator layer to reduce damage to said luminescent layer due to defects in said EL cell structure.

4,518,892

TELEVISION PICTURE TUBE WITH APERTURE MASK HAVING RECESSES THEREIN

Roland Thoms, Mullheim, Fed. Rep. of Germany, assignor to Buckbee Mears Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 343,149, Jan. 28, 1982, Pat. No. 4,389,592, which is a continuation of Ser. No. 148,682, May 12, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 416,571
Int. Cl.³ H01J *29/07*
U.S. Cl. 313—403 **5 Claims**



1. A color television tube comprising:

an enclosure having a viewing surface on one end with a plurality of phosphor regions for generating light of three primary colors on the viewing surface of said enclosure, at least one electron gun to excite said phosphor regions;

an aperture mask located proximate said viewing surface, said aperture mask having a plurality of line of sight openings with a recess located therearound, said recess having a center portion and end portions and characterized by having a depth which is greater at the center portion of said recess than at the ends of said recess, said aperture mask having a first side and a second side, said aperture mask first side having surfaces which define an outline of a portion of a line of sight opening located proximate said first side of said aperture mask;

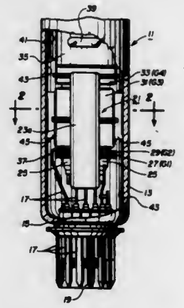
said aperture mask second side having surfaces which define an outline of a portion of a line of sight opening located proximate said second side of said aperture mask so that a line of sight opening of said plurality of line of sight openings comprises an aperture for electrons to pass through which is partially bounded by said surfaces proximate said aperture mask first side and partially bounded by said surfaces proximate said aperture mask second side, said aperture mask positioned between said electron gun and said phosphor regions with said aperture mask first side facing said viewing surface and said aperture mask second side facing said electron gun to thereby permit said second side of said mask to act as a shield to prevent electrons from impinging on the improper phosphor region.

4,518,893

CRT WITH INTERNAL NECK COATING OF CRYSTALLINE TIN OXIDE FOR SUPPRESSING ARCING THEREIN

James Kane, Lawrenceville, and John Murr, Jr., Allentown, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 23, 1982, Ser. No. 443,921
Int. Cl.³ A01J *29/88;* B05D *5/12*
U.S. Cl. 313—479 **9 Claims**



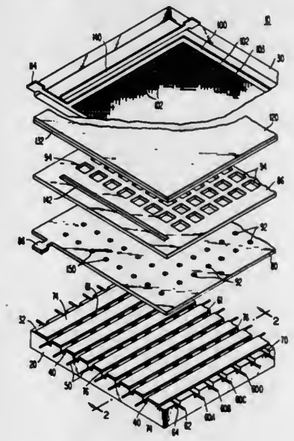
1. In a cathode-ray tube comprising an evacuated glass envelope, an electron-gun mount assembly housed in said envelope, electrodes of said mount assembly being confined by closely-spaced glass surfaces, and an electrically-conductive coating on said glass surfaces opposite electrodes of said mount assembly, the improvement wherein said coating is a smooth film consisting essentially of crystalline tin oxide, and is floating electrically.

4,518,894

DISPLAY PANEL HAVING MEMORY

Nicholas C. Andreadakis, Branchburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 6, 1982, Ser. No. 395,696
Int. Cl.³ H01J *17/04, 61/04, 61/54*
U.S. Cl. 313—491 **3 Claims**



1. A gas-filled memory display panel comprising

a gas-filled envelope made up of a base plate and a face plate hermetically sealed together,

a layer of rows and columns of scan/address cells disposed adjacent to said base plate, each scan/address cell compris-

ing a volume of gas and an anode electrode and a cathode electrode,

a layer of rows and columns of display cells adjacent to said layer of scan/address cells, said display cells having as their components:

a first apertured plate electrode disposed adjacent to said layer of scan/address cells, the apertures in said first apertured plate electrode being small holes each in operative relation with a scan/address cell,

a second apertured plate seated on said first plate with its apertures being larger than the apertures in said first plate and comprising the display cells of the panel and each being in operative relation with one of the apertures in said first apertured plate,

the face plate carrying on its inner surface a large-area apertured A.C. electrode which is in the nature of a mesh and is covered by a layer of insulating material whereby said apertured electrode is insulated from the gas in the panel and thus operates as an A.C. electrode,

the apertures in said A.C. apertured electrode being considerably smaller than the display cell apertures in said second apertured plate and so numerous that the eye sees substantially all light output from a display cell which is emitting light,

the solid portions of said A.C. apertured electrode which define the apertures therein comprising fine conductors which are parallel to each other but are disposed at an angle to the rows and columns of display cells, so that the rows and columns of apertures in said A.C. mesh electrode are disposed at an angle to the rows and columns of display cells, the combination of the angular orientation of said solid portions of said A.C. electrode and the presence of large numbers of apertures therein for each display cell making it unnecessary to critically align said A.C. electrode and said second apertured plate and its display cells,

said A.C. electrode serving as a sustaining electrode and having sustaining signals coupled between it and said first conductive plate whereby said A.C. electrode serves both to apply electrical sustaining signals to said display cells and to provide aperture definition for said display cells,

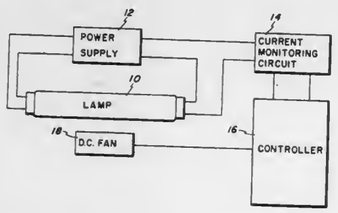
said scan/address cells being adapted to be scanned sequentially column by column, with selected cells being energizable at the same time to cause excited particles therein to flow through apertures in said first apertured plate and into the associated display cell in said second apertured plate and onto the walls thereof to form wall charge which combines with said sustaining signals, applied across said display cells between said A.C. electrode and said first apertured plate electrode, to cause and sustain glow in said display cells, all of the display cells energized in all of the columns of display cells combining to display a message.

4,518,895

MECHANISM AND METHOD FOR CONTROLLING THE TEMPERATURE AND OUTPUT OF A FLUORESCENT LAMP

Richard F. Lehman, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1983, Ser. No. 478,749
Int. Cl.³ H01J *7/24, 13/32, 17/28, 19/74, 61/52*
U.S. Cl. 315—117 **2 Claims**



1. A monitoring and control mechanism for optimizing the light output of a fluorescent lamp containing an excess of mercury at a cold spot therein, said mechanism comprising:

a power supply for applying operating current to said lamp, said operating current at normal lamp operation corresponding to a minimum current level associated with an optimum cold spot temperature,

a monitoring means for detecting an increase in lamp current and generating a signal indicative thereof,

a temperature control device placed in proximity to said cold spot, said device, when operational, lowering the temperature of the cold spot and, when non-operational, effectively permitting the cold spot temperature to rise, and

a controller circuit adapted to change the operational state of said temperature control device in response to the output signals from said monitoring means.

2. A method of optimizing the light output of a fluorescent lamp containing an excess of mercury at a cold spot thereon comprising the steps of

determining the lamp current level corresponding to an optimum cold spot temperature and lamp light output,

monitoring the current level of said lamp,

modifying the temperature at said cold spot by means of a cooling device having an active (cooling) mode of operation and an inactive (inoperative) mode of operation, and

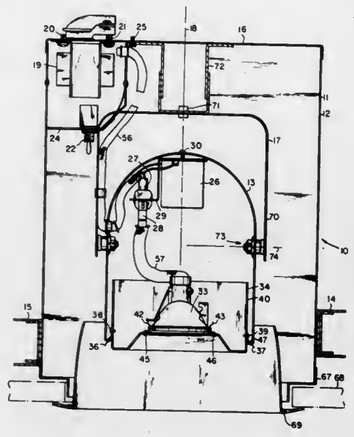
generating an electrical signal responsive to an increase of monitored current level, causing the instant mode of operation of said cooling device to be changed in response to said current increase.

4,518,896

DUAL VOLTAGE LIGHTING FIXTURE

Earl F. Miles, Jr., Indianapolis, Ind., assignor to Indy Lighting, Inc., Indianapolis, Ind.

Filed Jul. 6, 1982, Ser. No. 395,497
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—162 **6 Claims**



1. A dual voltage lighting fixture for permitting the ready use of light bulbs having different operating voltages, comprising:

a housing;

a shade directing means including a yoke rotatably mounted to said housing;

a beam-directing shade pivotably mounted to said yoke;

a lamp supply means mounted to said housing and being for receiving an electrical current at a single supply voltage and providing electrical current at a first output voltage and a second output voltage different from the first output voltage;

a mating connector plug including male and female members, one of said male and female members mounted within said beam-directing shade and electrically connected to said lamp supply means to receive electrical current at said second output voltage;

a first light bulb socket fixedly mounted within said beam-directing shade and adapted to operatively receive therein a first light bulb having an operating voltage corresponding to said first output voltage;

a light fixture including a plurality of spring mounting clips resiliently urging against said beam-directing shade so as to fasten said light fixture within said beam-directing shade and permit removal therefrom by pressing said clips inwardly away from said shade, said light fixture including a second light bulb socket electrically connected to the other of said male and female connector plug members and positioned directly below said first light bulb socket, said second light bulb socket adapted to operatively receive therein a second light bulb having an operating voltage corresponding to said second output voltage, said second light bulb sufficiently different in size from said first light bulb to preclude substitution of said first light bulb in said second light bulb socket, and vice versa; and

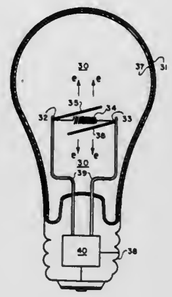
a switch means mounted to said housing and electrically connected to said lamp supply means for switching electrical current from said supply means to either said first light bulb socket or said second light bulb socket, whereby, only one of said first and second light bulbs is operational in said dual voltage lighting fixture at any time, said detachable fixture being detached from said beam-directing shade and removed from the remainder of said dual voltage lighting fixture to render said first light-bulb operational.

4,518,897

TWIN ANODE BEAM MODE FLUORESCENT LAMP

Joseph M. Proud, Wellesley Hills; A. Bowman Budinger, Westford; Leslie A. Riseberg, Sudbury, and Wojciech W. Byszewski, Arlington, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 4, 1982, Ser. No. 336,971
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—260 **10 Claims**



1. A beam mode fluorescent lamp comprising:

a light transmitting envelope enclosing a fill material which emits ultraviolet radiation upon excitation;

a phosphor coating, which emits visible light upon absorption of ultraviolet radiation, on an inner surface of said envelope;

a thermionic cathode having proper resistance located within said envelope for emitting electrons, said cathode having first and second ends;

a first and a second anode, each of said anodes located within said envelope for accelerating electrons and alternately forming corresponding first and second electron beams in response to a voltage applied between said anodes and said cathode, each of said anodes being spaced apart from said cathode by a distance which is preferably less than the electron range in said fill material and having a structure which permits said electron beams to pass therethrough;

said first anode being connected to said first end of said cathode and disposed at an upward angle with respect to said cathode and said second anode being connected to said second end of said cathode and disposed at a downward angle with respect to said cathode and parallel to said first anode;

first and second drift regions, each located within said envelope through which said first and said second electron beams drift after passing through said first and said second anodes respectively, each of said drift regions having a dimension in the direction of travel of said respective electron beam which is greater than the electron range in said fill material, so that the electrons in each of said electron beams collide with the atoms of said fill material in said respective drift region, thereby causing excitation of a portion of said fill material atoms and emission of ultraviolet radiation and causing ionization of another portion of said fill material atoms and emission of secondary electrons, said secondary electrons causing emission of additional ultraviolet radiation;

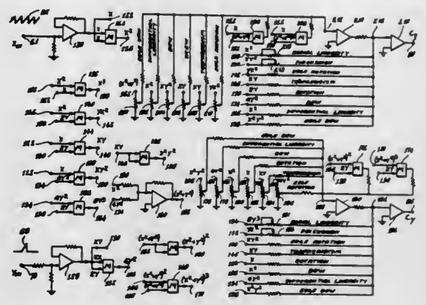
a power source external to said envelope; and means for connecting said cathode and each of said anodes to said power source.

4,518,898

METHOD AND APPARATUS FOR CORRECTING IMAGE DISTORTIONS

Andrew A. Tarnowski, New Caanan, and Brian G. Anderson, Fairfield, both of Conn., assignors to Image Graphics, Incorporated, Fairfield, Conn.

Filed Feb. 22, 1983, Ser. No. 468,045
Int. Cl.³ H01J *29/56*
U.S. Cl. 315—371 **23 Claims**



1. In an electron beam recording apparatus having means for deflecting a charged particle beam in the X and Y direction therein, the method for improving the geometric fidelity of the reproduced image comprising the steps of:

(a) positioning a charged particle sensitive medium in the path of a charged particle beam to retain a permanent image on said medium,

(b) projecting the particle beam to form on said medium a test pattern having a predetermined configuration,

(c) providing a reference alignment image,

(d) dividing each of the X_{in} and Y_{in} signals into a plurality of non-interactive parallel correction circuits with each arranged to produce a correction signal for a predetermined spatial deviation shown on said medium,

(e) comparing the deviation of the test pattern image with the reference alignment image for each of said predetermined spatial deviations, by measuring the deviations for a particular deflection distortion at a plurality of predetermined corresponding locations on said images,

(f) adjusting each of the X_{in} and Y_{in} deflection signal functions in each of said circuits so that the correction signal from each circuit is that for which it was determined, and

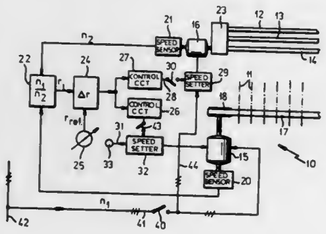
(g) combining the sum of the signals from each of said plurality of correction circuits and summing the same with the X_{in} and Y_{in} signal to produce total correction signals (X_c,Y_c) to the X and Y deflection means whereby the test pattern image aligns with said reference alignment image.

4,518,899

PROCESS AND APPARATUS FOR CORRELATING STARTUP AND CUTOFF PERIODS OF DIFFERENT INDUCTION MOTORS WITH ONE ANOTHER

Horst Wolf, Albershausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,408
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1983, 3309370
Int. Cl.³ H02P *5/46*
U.S. Cl. 318—68 **10 Claims**



1. A process for mutually correlating, during a startup period and a cutoff period, the speeds of two asynchronous alternating current induction motors driving different loads in textile machinery whose speed ratio is to remain at least approximately constant in all phases of operation, said motors having different acceleration times to reach their respective operating speeds with full supply voltage on startup and having different deceleration times to reach standstill after de-energization on cutoff,

comprising the steps of:

(a) on startup, modulating the alternating current supply voltage of the motor with the shorter acceleration time to let it reach its operating speed substantially concurrently with the other motor; and

(b) on cutoff, braking the motor with the longer deceleration time to let it reach standstill substantially concurrently with the other motor.

4,518,900

PULSE MOTOR DRIVING APPARATUS

Yoshiaki Nawata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

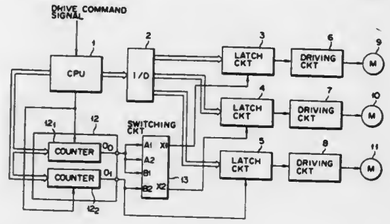
Filed Jul. 12, 1983, Ser. No. 513,031
Claims priority, application Japan, Jul. 15, 1982, 57-123651
Int. Cl.³ H02P *1/58*
U.S. Cl. 318—102 **3 Claims**

1. A pulse motor driving apparatus for driving a plurality of pulse motors by transferring the operational mode thereof from a slue-up operation wherein the speeds of rotation of said motors are gradually increased to a normal operation wherein said motors are rotated at a constant speed, comprising:

at least first and second timing pulse generating sections for selectively generating slue-up timing pulses having gradually decreasing pulse intervals and normal operation timing pulses having a constant pulse interval, respectively;

a plurality of driving means each connected to an associated one of said plurality of pulse motors for driving the same in synchronization with said slue-up timing pulses and normal operation timing pulses; and

switching means connected between said timing pulse generating sections and said driving means for producing, during the slue-up operation of at least one of said pulse motors, a first switching mode wherein the respective slue-up timing pulses generated by said first timing pulse generating section are supplied to the one of said plurality of driving means associated with said one pulse motor to



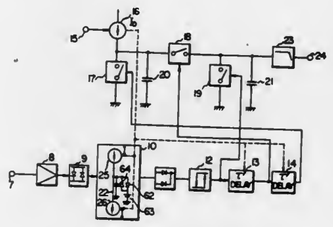
independently drive said one motor according to slue-up timing pulses and, during the normal operation of at least two of said pulse motors, for producing a second switching mode wherein the normal operation timing pulses generated by said second timing pulse generating sections are supplied in common to the two driving means associated with said two pulse motors to drive said two pulse motors in common according to the normal operation timing pulses.

4,518,901

MOTOR CONTROL APPARATUS

Isao Fukushima; Yasunori Kobori; Hideo Nishijima, and Yoshinori Masuda, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 454,028
Claims priority, application Japan, Jan. 6, 1982, 57-304
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—328 **9 Claims**



1. A motor control apparatus for driving and controlling a motor, in which a signal frequency proportional to a rotation number of said motor is converted into a d.c. voltage by a frequency/voltage converter so as to drive and control said motor by said d.c. voltage, said frequency/voltage converter comprising:

a first, a second, and a third pulse generator for successively producing a first, a second, and a third repetitive pulse, respectively, in response to a signal having said signal frequency proportional to the rotation number of said motor;

a constant current source for supplying output current in accordance with a selected speed of rotation for said motor;

first reset means driven by said third pulse to reset the output current of said constant current source;

a first capacitor connected to said first reset means in parallel with said first reset means and charged by the output current of said constant current source;

sampling means driven by said second pulse to sample a saw tooth wave signal appearing across said first capacitor;

second reset means driven by said first pulse;

a second capacitor connected to said second reset means in parallel therewith for charging said saw tooth wave signal through said sampling means; and

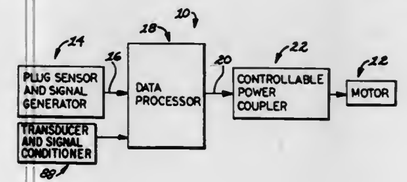
means responsive to the output current of said constant current source for changing a pulse width of at least one of said first, second and third pulses substantially in accordance with the output current of said constant current source.

4,518,902

PLUGGING ELECTRICAL BRAKING CONTROL CIRCUIT

Grant C. Melocik, Chardon, and William Pickering, University Heights, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 5, 1983, Ser. No. 455,776
Int. Cl.³ H02P *3/10*
U.S. Cl. 318—373 **11 Claims**



1. In an apparatus (10) for electrically braking a motor (12), said apparatus (10) having means (88) for generating a plurality of different motor power command signals each in response to a respective motor speed command, and controllable supplying means (22) for delivering motor power control signals to said motor (12), the improvement comprising:

means (14) for supplying a plug signal in response to plugging of said motor (12);

means (56) for supplying a current signal in response to the magnitude of current passing through said motor (12); and,

blocking means (102) for receiving said current signal and said plug signal, and limiting said current to a first preselected maximum magnitude in response to the receiving of said plug signal and to a second preselected maximum magnitude in response to the absence of said plug signal, said blocking means (102) including means (98) for controllably modifying said control signals.

8. A motor braking apparatus (10), comprising:

an accelerator pedal (92) being movable to a plurality of motor speed command positions;

means (88) for generating respective digital motor power command signals each in response to a different one of said command positions;

means (14) for supplying a plug signal in response to plugging of said motor (12);

processor means (18) for receiving said plug signal and said command signals, supplying a first preselected motor power control signal in response to the receiving of said command signals in a first preselected range and the receiving of said plug signal, and supplying a plurality of second preselected control signals in response to the receiving of said command signals in the absence of said plug signal; and,

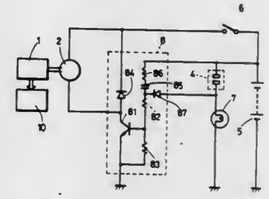
controllable supplying means (22) for receiving said control signals and delivering respective pulse trains to said motor (12) in response to each of said control signals.

4,518,903

DELAYED TURN-OFF CONTROL FOR VEHICLE PUMPING DEVICE

Akio Matsumoto, and Mitsuyoshi Yokota, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 549,181
Claims priority, application Japan, Nov. 12, 1982, 57-171904[U]
Int. Cl.³ B60T *13/72*
U.S. Cl. 318—481 **4 Claims**



1. In a control for a vacuum pump for a vehicle brake, having a power supply, a motor supplied with a voltage from said power supply, said vacuum pump activated by said motor for generating a negative pressure, and a pressure operating unit operable with the pressure from said pump, the improvement comprising:

a brake activated switch means for causing said control to activate said pressure operating unit for a time period coincident with an activated state of said switch means,

said control including circuit means responsive to said switch means for connecting said power supply to said motor,

delay means for causing said control to maintain said pressure operating unit active for a predetermined time period after termination of said activated state of said switch means,

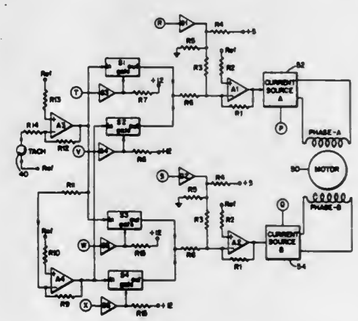
said delay means comprising power supply correcting means responsive to deactivation of said switch means upon termination of said activated state thereof for connecting said power supply to said motor for said predetermined time period subsequent to deactivation of said switch means.

4,518,904

STEPPER MOTOR CONTROL FOR DATA DISK SYSTEM

Nigel MacLeod, Glenrothes, and David Ruxton, Crieff, both of Scotland, assignors to Rodime plc, Glenrothes, Scotland

Filed Jan. 25, 1984, Ser. No. 573,708
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—685 **26 Claims**



1. A stepper motor for use in controlling the operation data

disk storage system, said stepper motor having a rotor and a stator, with the rotor being coupled to an output shaft, and comprising:

first drive means for generating a first phase signal within the stator for creating a first drive force for rotating the rotor;

second drive means for generating a second phase signal within the stator for creating a second drive force for rotating the rotor;

control means for selectively providing positive and negative phase current signals to said first and second drive means for generating 8 stable step positions for the rotor during each motor cycle, said control means controlling the current supplied to said first and second drive means so that the resulting holding torque on the rotor generated by said first and second drive means is substantially the same at each step position.

4,518,905

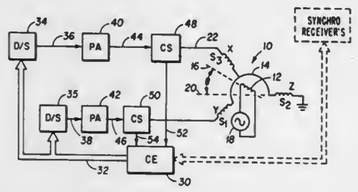
CURRENT CONTROL OF SYNCHRO POWER AMPLIFIERS

William D. Rhodes, Jr., Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1983, Ser. No. 495,187

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—661 **12 Claims**



1. A synchro system, comprising:

a synchro receiver;

a microprocessor control element coupled to said synchro receiver, said microprocessor control element emulating a synchro transmitter and generating a control signal defining an orientation of said synchro receiver commanded by said microprocessor control element; and

a current sensing circuit coupled between said synchro receiver and said microprocessor control element, said current sensing circuit measuring the magnitude of current developed in said synchro receiver responsive to the control signal set generated by said microprocessor control element, said microprocessor control element being responsive to the measured current to alter the control signal current in the synchro receiver within predetermined maximum and minimum limits.

4,518,906

DRIVING DEVICE OF STEPPING MOTOR

Makoto Ueda, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

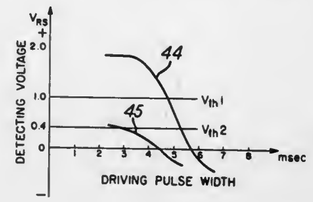
Filed Dec. 3, 1981, Ser. No. 327,234

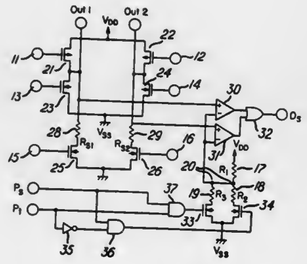
Claims priority, application Japan, Dec. 18, 1980, 55-179504

Int. Cl.³ G04B *19/00;* **G04C** *3/00;* **G05B** *19/40*

U.S. Cl. 318—696 **7 Claims**

1. A driving device for a stepping motor having a rotor and driving coil comprising: driver/detector circuit means for detecting whether or not the rotor has rotated by comparing a voltage induced across the driving coil by the free oscillation of the rotor with a reference voltage after a driving pulse is cut off; and control circuit means for automatically changing the pulse width of the driving pulse in response to an output of said driver/detector circuit means, said control circuit means including means for lowering said reference voltage whenever the pulse width of the driving pulse is longer than a predetermined value thereby enabling the pulse width of the driving





pulse to be changed over a wider range than would otherwise be possible if the reference voltage were maintained constant.

4,518,907

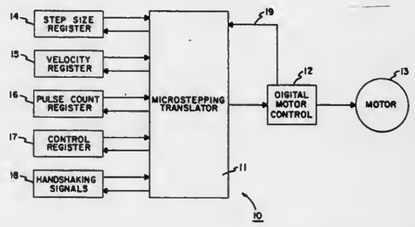
DIGITAL MOTOR CONTROL METHOD AND MEANS

Irving J. Giguere, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Nov. 7, 1983, Ser. No. 549,438

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **6 Claims**



1. A method for continuously controlling a digital motor, comprising:

(a) operating the motor in a microstepping mode over a first range of motor velocities;

(b) operating the motor in a non-microstepping mode over a second range of motor velocities; and

(c) switching from one stepping mode to the other at a predetermined motor velocity.

4,518,908

CONTROL CIRCUIT OF A SYNCHRONOUS MOTOR WITH TWO INDUCTION WINDINGS

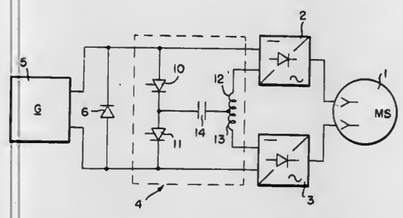
Albert Wiart, Sannois, France, assignor to Jeumont-Schneider Corporation, France

Filed Sep. 13, 1983, Ser. No. 531,772

Claims priority, application France, Oct. 7, 1982, 82 16786

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—723 **4 Claims**



1. Apparatus for controlling the energization of a synchronous motor having two induction windings, comprising an electrical power supply assembly of the mixed bridge or chopper type delivering a current of predetermined polarity and having output terminals connected by a freewheel branch including at least one freewheel diode with its cathode connected to the positive output terminal of the power supply assembly, two oscillators having outputs connected respectively to the windings of the motor, and an intermediary circuit connected between said power supply assembly and said oscillators, said intermediary circuit having, in combination, input terminals connected to the output terminals of said power supply assembly, respectively, two thyristors connected in series across the input terminals, two inductances of equal value mutually coupled with a high mutual induction coupling factor, and a condenser, one side of said condenser being connected to the junction of said thyristors, and means connecting the input terminals of the intermediary circuit to a first pair of input terminals of said oscillators, respectively, that are of opposite polarity and connecting the other side of said condenser to a second pair of input terminals of said oscillators, respectively, that are of opposite polarity, with said inductances connected in series, respectively, with the terminals of one of said pairs.

4,518,909

SET VALUE TRANSMITTER FOR A DRIVE REGULATION APPARATUS

Paul Friedli, Zurich; Thomas Hinderling, Ebikon, and Guntram Begle, Adligenswil, all of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Nov. 14, 1983, Ser. No. 551,319

Claims priority, application Switzerland, Nov. 19, 1982, 6740/82

Int. Cl.³ G05B *13/02*

U.S. Cl. 318—566 **3 Claims**

1. A reference value transmitter for a drive control system, comprising:

a control store in which there are stored at least permissible jerk values and threshold values of acceleration;

a reference value clock pulse generator to which said control store is connected and operating at a predetermined clock pulse frequency;

said reference value clock pulse generator having an input;

three integrators for the respective formation of acceleration, velocity and displacement path;

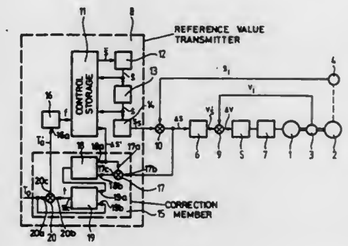
said three integrators being connected in circuit with said control store;

a displacement path regulation circuit to which an output of the integrator for the displacement path is supplied, said output constituting a displacement path-reference value upon appearance of clock pulse signals from said reference value clock pulse generator;

a correction member having a first input, a second input and an output;

said correction member being connected by said first input with said control store and by said second input with said displacement path regulation circuit;

said correction member being connected at said output to said input of said reference value clock pulse generator;



said displacement path regulation circuit supplying a displacement path-regulation deviation to the second input of said correction member;

said control store supplying a threshold value of said displacement path-regulation deviation to the first input of said correction member; and

said correction member altering the clock pulse frequency of said reference value clock pulse generator when said threshold value is exceeded and proportional to an excess defined by the amount that the displacement path-regulation deviation exceeds the threshold value.

4,518,910

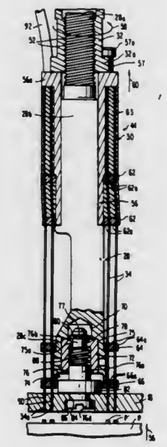
BUCKLING BEAM TWIST PROBE CONTACTOR ASSEMBLY WITH SPRING BIASED STRIPPER PLATE

Hans G. Hottenrott, Wappingers Falls, N.Y.; Philo B. Hodge, Roxbury, Conn., and Thomas J. Cochran, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,519

Int. Cl.³ G01R *31/02, 1/06*

U.S. Cl. 324—158 P **8 Claims**



1. In a buckling beam test probe assembly comprising an array of current carrying electrically conductive beams

mounted so as to buckle when biased into contact with the product to be tested, the improvement wherein said array of buckling beams comprises continuous wires to the test apparatus interface, and said assembly comprises:

at least one support post movable, relatively, towards and away from the product,

a slide mounted on said support post,

means for fixing said wires intermediate of their ends to said slide,

a stripper plate,

spring loaded means mounting said stripper plate to the bottom of said support post and overlying the product,

slidable guide means carried by said stripper plate for aligning the ends of the probe wires with the underlying product for precise contact with product test points, and

means for adjusting the axial position of the slide relative on said post to adjust said beams lengthwise of said stripper plate;

whereby, during relative movement of said support post towards the product, said stripper plate initially contacts the product to accurately locate the ends of the wires relative to the product, the wires function as uninterrupted conductors to reduce electric opens and shorts within the test equipment, said stripper plate protects the probe tips from damage, and wherein the beams deflect intermediate of said slide and said stripper plate to insure low ohmage engagement with the product.

4,518,911

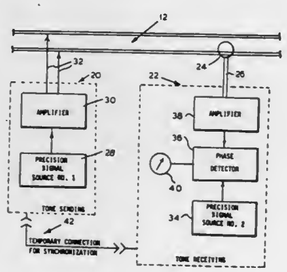
CABLE TEST APPARATUS

James L. Cass, Northridge, Calif., assignor to Perkins Research & Mfg. Co., Inc., Canoga Park, Calif.

Filed Jan. 19, 1983, Ser. No. 459,134

Int. Cl.³ G01R *31/08*

U.S. Cl. 324—52 **9 Claims**



5. Apparatus for testing two-wire conductive pairs exhibiting fixed resistance and capacitance per unit length, comprising:

(a) means for applying a continuous, fixed a.c. signal to a conductive pair;

(b) means for sensing the current flow in the pair from the signal;

(c) means for determining the phase angle between the applied a.c. signal and the sensed current resulting from the resistive and capacitive components of the current flow; and

(d) means for comparing the phase angle of the applied signal to the phase angle of the sensed current flow in the signal source.

4,518,912

RADIATION DETECTOR

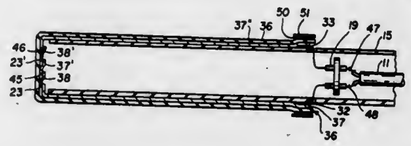
Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Hauppauge, N.Y.

Continuation of Ser. No. 678,901, Apr. 21, 1976, abandoned, which is a continuation of Ser. No. 423,754, Dec. 11, 1973, abandoned, which is a division of Ser. No. 200,536, Nov. 19, 1971, Pat. No. 3,794,914, and a continuation-in-part of Ser. No. 848,620, Aug. 8, 1969, Pat. No. 3,641,439. This application Apr. 5, 1978, Ser. No. 893,588

The portion of the term of this patent subsequent to Feb. 8, 1989, has been disclaimed.

Int. Cl.³ G01R *5/26, 21/04*

U.S. Cl. 324—95 **3 Claims**



1. A radiation detector comprising a sensor assembly mounted at one end of an elongated handle, said sensor assembly including first metallic films for converting free space electromagnetic radiation into direct current voltage, said films including overlapping films forming hot and cold thermocouple junctions, said overlapping films including thin films of dissimilar metals, said thin films being resistive and converting alternating currents induced by said radiation into thermal energy, the hot and cold junctions of said films having electrical and thermal conductivities selected to cause said alternating currents to heat said hot junction to a higher temperature than said cold junction and produce said direct current voltage, said handle including conductive members aligned with the direction of elongation and electrically connected to said thermocouples thereby to provide said direct current voltage to a voltage measuring apparatus.

4,518,913

MEASURING PROBES

Rodney P. Jackson, Southport, England, assignor to H.E.M.E. International Limited, St. Helens, England

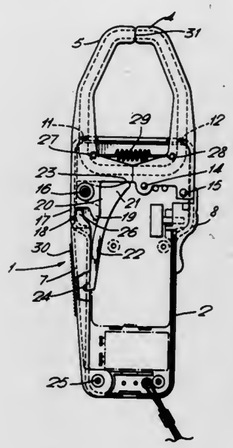
Filed May 18, 1982, Ser. No. 379,344

Claims priority, application United Kingdom, May 22, 1981, 8115877

Int. Cl.³ G01R *1/22, 33/00*; H01F *17/06*

U.S. Cl. 324—127 **10 Claims**

1. A measuring probe of the kind in which a substantially complete ring or magnetisable material is formed around a conductor, said probe comprising: a set of opposed jaws of magetisable material mounted to be relatively movable between an open position in which the ring is broken and the jaws can be placed over a conductor, and a closed position in which the jaws meet around the conductor and the ring of magnetisable material is at least substantially complete; an opening mechanism for said jaws with an actuator; means coupling said mechanism to at least one of said jaws to actuate said jaws to said open position, said mechanism including leverage means constructed such that initial pressure on said actuator urges said jaws apart from said closed position at a first mechanical advantage and, after initial movement of said actuator, subsequent pressure on said actuator urges said jaws toward said open position at a second lower mechanical advantage, the ratio of said first mechanical advantage to said second mechanical advantage being at least 3:1.



4,518,914

TESTING APPARATUS OF SEMICONDUCTOR WAFERS

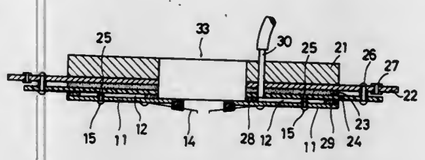
Masao Okubo, Tokyo; Yasuro Yoshimitsu, Takatsuki; Fumio Nakai, Amagasaki, all of Japan, and Oliver R. Garretson, Cupertino, Calif., assignors to Japan Electronic Materials Corportion, Amagasaki, Japan

Filed Aug. 2, 1982, Ser. No. 404,055

Claims priority, application Japan, Aug. 3, 1981, 56-122135

Int. Cl.³ G01R *1/06, 31/02*

U.S. Cl. 324—158 F **5 Claims**



1. A testing apparatus for testing semiconductor wafers, said apparatus comprising:

a base plate of rigid material and having an opening at the center thereof, and a plurality of electrically conductive lead-out terminals on said base plate;

a sheet of resilient material against said base plate and having an opening concentric with said opening in said base plate, and electrically conductive connecting pins connecting said resilient material sheet to said plate and being electrically connected to corresponding ones of said lead-out terminals;

at least two sealing sheets of resilient material on the surface of said resilient material sheet facing away from said base plate and spaced from each other along the surface of said resilient material sheet for defining a space therebetween;

electrically conductive terminal contacts in said resilient material sheet having end portions protruding into said space and said contacts being electrically connected to said connecting pins;

vacuum means extending through said base plate and said resilient material sheet and communicating with said space for producing a vacuum in said space; and

a probe card against said two sealing sheets and held there against by the vacuum in said space and having an opening concentric with said opening in said base plate, and a plurality of probe needles thereon extending generally radially into said probe card opening in an arrangement for contacting test terminal of a semi-conductor wafer to be tested, each of said probe needles having a terminal contact with a portion protruding into said space, said terminal contacts being located to contact said terminal contacts on said resilient material sheet for effecting electrical connection therewith when said probe card is against said sealing sheets.

4,518,915

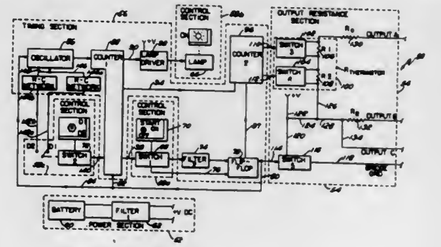
TEST DEVICE FOR EXPENDABLE BATHYTHERMOGRAPH SET (XBT)

Philip G. Danforth, Old Mystic; Thomas G. Bucko, Colchester; Kenneth R. Galliher, Mystic, all of Conn.; Joseph T. Lucia, West Springfield, Mass.; Richard L. Miller, Niantic, and Timothy B. Straw, New London, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1983, Ser. No. 463,103

Int. Cl.³ G01K *15/00*

U.S. Cl. 324—158 R **5 Claims**



1. A device for testing an XBT system, comprising:

a D.C. power source;

a first control means, connected to said D.C. power source, for applying said D.C. power to said test device in such a way as to initiate a test cycle, said first control means further comprising a three position switch, the START position of which is capable of providing a momentary pulse;

timing means, attached to said first control means, for receiving said momentary pulse from said first control means and producing a preselected number of pulses over a preset time interval for controlling said test cycle, said timing means further comprising, a flip-flop, connected to said first control means, for receiving said momentary pulse and setting in such a way as to produce an appropriate output signal, said flip-flop remaining in said test state after said switch returns to its normal ON position, an oscillator, connected to said flip-flop, for receiving said flip-flop output signal and producing an output stream of pulses therefrom, a first counter, connected to said oscillator and to said three position switch for receiving said output pulse stream from said oscillator to count the number thereof, and the output of said flip-flop, a second counter, connected to said first counter and said flip-flop, for receiving the outputs therefrom and dividing the output pulse stream from said first counter into six equal intervals, and a plurality of R-C networks, connected to said second control means and to said oscillator, for controlling the output pulse rate of said oscillator;

a second control means, attached to said timing means, for providing a preselected test cycle time duration;

a third control means, attached to said timing means, for indicating test device power-on and test-in-progress; and

thermistor simulating means, attached to said timing means, for receiving sequenced timing signals from said timing

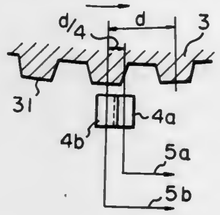
means and switching a preset sequence of resistance values across the output of said thermistor simulating means in such a way as to simulate a plurality of temperature-proportional resistance measurements produced by an actual XBT probe.

4,518,916

SYSTEM FOR DETECTING ROTATIONAL SPEED

Shigeki Kawada, Hino, and Hiroshi Ishida, Tokyo, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

PCT No. PCT/JP81/00313, § 371 Date Jun. 23, 1982, § 102(e) Date Jun. 23, 1982, PCT Pub. No. WO82/01594, PCT Pub. Date May 13, 1982
PCT Filed Oct. 29, 1981, Ser. No. 395,020
Claims priority, application Japan, Oct. 30, 1980, 55-151453
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—173 **1 Claim**



1. A system for detecting the rotational speed of a rotating body comprising the steps of:

generating two kinds of signals A and B having alternating wave forms and corresponding to the rotational speed of said rotating body by means of an electromagnetic position-detecting device including a rotary disc having circumferential projections and fixed electromagnetic position detector elements, said signals A and B having the same amplitude and the phases of said signals A and B always differing by 90°,

producing switching signals S(A), S($\overline{A}$), S(B), and S($\overline{B}$) from said signals A and B by means of zero-cross circuits and also producing inverted signals $\overline{A}$ and $\overline{B}$ from said signals A and B by means of inverter circuits,

producing differentiation signals dA, $\overline{dA}$, dB, and $\overline{dB}$ from differentiation circuits consisting of resistors and capacitors to which the produced signals A, $\overline{A}$, B, and $\overline{B}$ are suppllied and

obtaining output signals corresponding to the rotational speed of said rotating body by selectively switching the differentiation signals dA, $\overline{dA}$, dB, and $\overline{dB}$ in switching circuits in accordance with switching signals S(A), S($\overline{A}$), S(B), and S($\overline{B}$) applied to the switching circuits, whereby the rotational speed of said rotational body is detected as a direct current voltage signal having an amplitude proportional to the rotational speed of the rotating body and having a small ripple ratio.

4,518,917

PLURAL SENSOR APPARATUS FOR MONITORING TURBINE BLADING WITH UNDESIRED COMPONENT ELIMINATION

Robert M. Oates, Murrysville; Carlo F. Petronio, Ross Township, Allegheny County, and Mark G. Kraus, Churchill Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

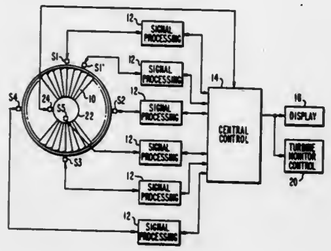
Filed Aug. 31, 1982, Ser. No. 413,638
Int. Cl.³ G01H *11/00;* **G01B** *7/14;* **G01M** *1/22;* **G01N** *27/72*
U.S. Cl. 324—207 **17 Claims**

1. Turbine blading monitoring apparatus comprising:

(A) a plurality of sensors of the type having a certain impedance which changes in response to the sensor's proximity to a conducting member;

(B) said sensors being positioned adjacent said blading at respective positions around the periphery thereof for providing respective output signals each having a component related to turbine blading proximity, and being subject to inclusion of an indesired component which is non-proximity related;

(C) signal processing means responsive to said sensor output signals for generating detected sensor signals having alternate positive and negative peaks;



(D) control means including computer means for deriving proximity indications in response to said detected sensor signals;

(E) peak detector means operable to receive said detected sensor signals to provide a peak signal indicative of the envelope of said detected sensor signals applied to it;

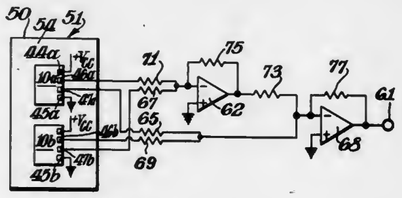
(F) said signal processing means including circuit means for generating respective balancing signals and combining them with respective ones of said output signals due to said turbine blading to minimize the effects of said undesired component therein whenever said peak signal exceeds predetermined positive and negative threshold values.

4,518,918

FERROMAGNETIC ARTICLE DETECTOR WITH DUAL HALL-SENSORS

Grant D. Avery, Loudon, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 28, 1982, Ser. No. 425,213
Int. Cl.³ G01B *7/14;* **G01R** *33/06;* **H01L** *43/06*
U.S. Cl. 324—208 **10 Claims**



1. A ferromagnetic article detector comprising:

(a) a pair of essentially identical silicon-integrated-circuit-Hall-sensor chips each of the type capable of providing between a first and a second output thereof a differential output voltage that is a continuous function of the strength of a magnetic field perpendicular to a major face of the integrated circuit chip, each of said chips comprising a Hall element being co-planar with said major face of said each chip and a differential amplifier having an input connected to the output of said Hall element; and having an output connected to said first and second outputs

(b) a permanent magnet in the shape of a bar having at least one substantially flat end and being magnetized in a direction perpendicular to said end, said pair of integrated circuit chips being mounted spaced apart at said magnet end with their major surfaces lying in a plane that is parallel to said bar end;

(c) a differential comparator means having one and another inputs; and

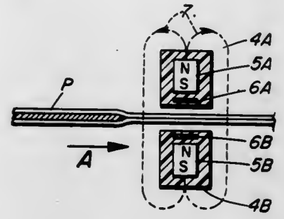
(d) a voltage summing means coupling to said one comparator means input a sum of the output voltages at the first differential output of one of said Hall-sensor chips and the second differential output of the other of said Hall sensor chips, and coupling to said another comparator means input a sum of the output voltages at the second differential output of said one chip and at the first differential output of said other chip, said differential comparator means being for producing a detector-output-signal that is proportioned to the difference between the output signals of said two amplifiers.

4,518,919

DETECTING DEVICE FOR DETECTING A MAGNETIC STRIP EMBEDDED IN A SHEET

Tsuyoshi Ishida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 4, 1982, Ser. No. 336,684
Claims priority, application Japan, Jan. 16, 1981, 56-3893; Jun. 3, 1981, 56-84314; Jun. 29, 1981, 56-99619
Int. Cl.³ G01R *33/12;* **G01N** *27/72;* **G07D** *7/00;* **G06K** *7/08*
U.S. Cl. 324—228 **3 Claims**



1. A detecting device for detecting a sheet of genuine paper money having a longer dimension and a shorter dimension, the sheet including an embedded magnetic strip having a length substantially equal to the shorter dimension of the sheet and a predetermined width, the strip being oriented within the sheet so that its length is substantially parallel to the shorter dimension of the sheet, said detecting device comprising:

transporting means for rapidly transporting the sheet in the direction of its longer dimension along a transportation path;

first and second magnetic sensors having long and narrow shaped planes positioned on directly opposite sides of said path along a line substantially perpendicular to said transportation path, each sensor including:

magnetic field generating means for generating a magnetic field which intersects said transportation path and passes through the generating means of said other magnetic sensor, the intersection of the magnetic field and the transportation path being long and narrow and having a longitudinal axis oriented substantially coincident with said magnetic strip at the moment when said magnetic strip passes between said first and second sensors; and

variable magnetic resistance means adjacent said generating means having a resistance which is dependent on the magnetic field received from said generating means; and

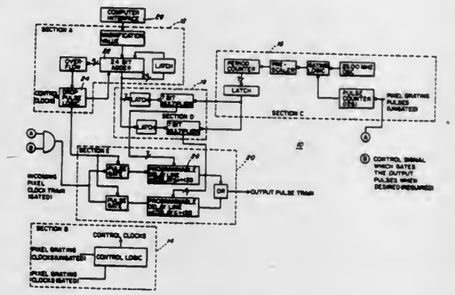
means for detecting the resistance variation of said variable magnetic resistance means when said magnetic strip passes between said first and second sensors.

4,518,920

FREQUENCY SYNTHESIZER AND METHOD

Andrew Warner, Harvard, Mass., and David A. Zlotek, Nashua, N.H., assignors to Klimsch/Optronics, Inc., Chelmsford, Mass.

Filed Jun. 3, 1982, Ser. No. 384,611
Int. Cl.³ H03L *7/16*
U.S. Cl. 328—14 **7 Claims**



1. A method for synthesizing a variable frequency that is less than the variable frequency of an input pulse train, said method comprising the steps of:

(1) selecting a percent reduction of the variable frequency of the input pulse train;

(2) determining the reciprocal value of the percent reduction;

(3) generating a variable output pulse train; and,

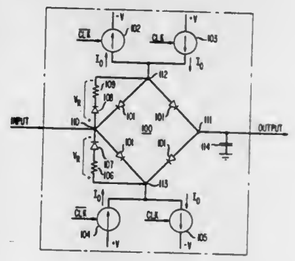
(4) varying the spacing of the variable output pulse train pulses so that their spacing relative to the variable input pulse train pulse is equal to the fractional value of repeated additions when the reciprocal value of the percent reduction is added to the accumulated value of all additions.

4,518,921

TRACK AND HOLD CIRCUIT

Shawn M. Logan, Andover, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 18, 1982, Ser. No. 435,057
Int. Cl.³ H03K *17/74;* **G11C** *27/02*
U.S. Cl. 328—151 **14 Claims**



1. A track and hold circuit comprising

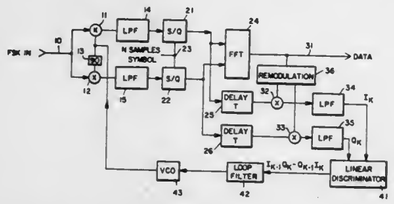
first storing means,

switch means for coupling a time varying input signal from an input node to said first storing means in response to at least one track control signal and isolating said input node from said first storing means in response to at least one hold control signal, and

means for respectively supplying said track and hold control signals to said switch means during successive tracking and holding time intervals, said track signal varying with said input signal over the tracking interval and said hold

control signal varying with said input signal over the holding interval.

4,518,922
DECISION-DIRECTED, AUTOMATIC FREQUENCY CONTROL TECHNIQUE FOR NON-COHERENTLY DEMODULATED M-ARY FREQUENCY SHIFT KEYING
James R. Luecke, Franklin, Mass., assignor to Harris Corporation, Melbourne, Fla.
Filed Jan. 17, 1983, Ser. No. 458,459
Int. Cl.³ H03L *7/08;* H04L *27/14*
U.S. Cl. 329—50 **14 Claims**



1. For use in a demodulator for detecting information symbols which are encoded in the form of a frequency shift keying carrier signal, said demodulator containing means for generating a local carrier signal, an arrangement for controlling said local carrier signal for tracking frequency changes therein comprising:

first means for combining said local carrier signal and an incoming frequency shift keying signal to be demodulated and producing therefrom signals representative of the modulation information contained in said incoming signals;

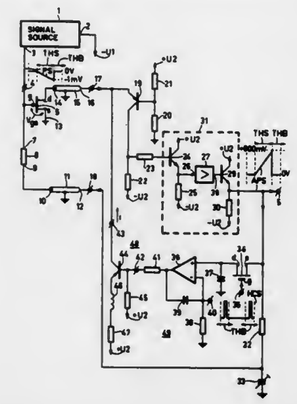
second means, coupled to said first means, for deriving output signals representative of the information symbols by which said carrier signal was modulated to form said frequency shift keying signals;

third means, responsive to signals produced by said first and second means, for deriving error signals representative of the frequency error in said local carrier signal; and

linear discriminator means, responsive to said error signals, for controlling said local carrier signal generating means so as to track frequency changes in said incoming frequency shift keying signal to be demodulated.

4,518,923
PREAMPLIFIER
Pieter B. Dielhof, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 14, 1983, Ser. No. 458,122
Claims priority, application Netherlands, Feb. 19, 1982, 8200670
Int. Cl.³ H03F *1/02, 1/34*
U.S. Cl. 330—9 **6 Claims**

1. A preamplifier having an input terminal for receiving a periodically varying input signal to be amplified, which input terminal is connected to at least one control electrode of a voltage controlled transistor and to a terminal of a resistor, the transistor and the resistor forming part of a first stage of the preamplifier, an output electrode of this transistor being coupled to an input terminal of a second stage of the preamplifier via a direct current connection, an output terminal of the second stage being coupled to a further terminal of the resistor via a direct current connection, which preamplifier has an output terminal for supplying the amplified input signal, the preamplifier comprising a fedback signal clamping circuit, which is fedback from the output terminal of the preamplifier, for periodically clamping a signal level in the amplified signal at this output terminal at a first reference voltage, characterized in that the fedback signal clamping circuit is present between said output terminal of the preamplifier and said input terminal of the second stage of the preamplifier and said output terminal of the preamplifier has a direct current connection to said output terminal of the second stage of the preamplifier.



4,518,924
HIGH VOLTAGE AMPLIFIER
Robert E. Vosteen, 1027 Archbald Rd., Waterport, N.Y. 14571
Filed Dec. 21, 1982, Ser. No. 451,815
Int. Cl.³ H03F *17/00*
U.S. Cl. 330—51 **20 Claims**

1. A high voltage amplifier system capable of developing a high voltage output signal at an output terminal in response to a low voltage input signal presented to an input terminal, the system comprising:

means coupled to the input terminal for producing a high voltage signal of a first polarity in response to the input signal, said first polarity high voltage signal being directly proportional to the input signal when the input signal exceeds a first predetermined level and being constant when the input signal is below said first predetermined level;

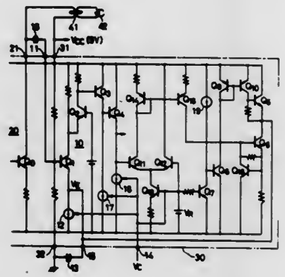
means coupled to the input terminal for producing a high voltage signal of a second polarity in response to the input signal, said second polarity high voltage signal being directly proportional to the input signal when the input signal falls below a second predetermined level and being constant when the input signal is above said second predetermined level;

first conductive means connected between said first polarity high voltage signal producing means and the output terminal;

second conductive means connected between said second polarity high voltage signal producing means and the output terminal; and

means for selectively adjusting the conductivity of said first and second conductive means in response to the input signal such that said first conductive means is heavily conducting when the input signal exceeds said first predetermined level and said second conductive means is heavily conducting when the input signal falls below said second predetermined level.

4,518,925
SIGNAL PROCESSING CIRCUITS
Hideki Fukasawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 29, 1983, Ser. No. 566,896
Claims priority, application Japan, Dec. 30, 1982, 57-198542
Int. Cl.³ H03F *3/04;* G11B *5/02*
U.S. Cl. 330—51 **8 Claims**



1. A signal processing circuit for supplying with an amplified output signal, comprising;

amplifying circuit means having an input terminal connected to a signal source, an output terminal for delivering the amplified output signal threrfrom, and a control terminal,

capacitive means coupled to the control terminal of said amplifying circuit means for serving as a bypass capacitor for said amplifying circuit means,

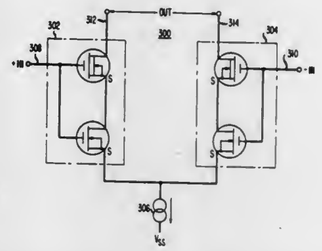
charging circuit means connected to the control terminal of said amplifying circuit means for forming a path for a charging current to said capacitive means,

discharging circuit means connected to the control terminal of said amplifying circuit means for forming a path for a discharging current from said capacitive means, and

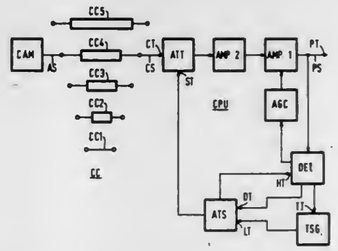
controlling circuit means having a control signal input terminal supplied with a control signal taking at least first and second states, and being operative to control said charging circuit means to allow the charging current to flow to said capacitive means so as to produce thereat a potential for making said amplifying circuit means inoperative when said control signal is turned to take the first state and control said discharging circuit means to allow the discharging current to flow from said capacitive means to as to produce thereat a potential for making said amplifying circuit means operative when the control signal is turned to take the second state.

4,518,926
GATE-COUPLED FIELD-EFFECT TRANSISTOR PAIR AMPLIFIER
Eric J. Swanson, Reading, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 20, 1982, Ser. No. 451,025
Int. Cl.³ H03F *3/16, 3/45*
U.S. Cl. 330—253 **6 Claims**

1. The combination of a first enhancement mode and a first depletion mode field effect transistor with their gates connected together and providing a linear input node, their drain-to-source conduction paths being connected in series and provided with a substantially constant bias current supply means for establishing a bias current therethrough.



4,518,927
SIGNAL PROCESSING SYSTEM COMPRISING A SIGNAL SOURCE, A SIGNAL PROCESSING UNIT AND CONNECTING CABLES
Rudolf P. Koppe, and Hendrik Blom, both of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 23, 1983, Ser. No. 507,201
Claims priority, application Netherlands, Jun. 24, 1982, 8202571
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—284 **5 Claims**



1. A signal processing system which provides a substantially constant amplitude signal transmitted over a connecting cable selected from a plurality of connecting cables of different lengths of different losses, comprising:

a series signal processing circuit which receives a signal from said selected cable which includes:

a signal amplifier having automatic gain control,

a low noise signal amplifier having a fixed gain,

a switchable signal attenuator having a changeover input which selects and locks a different attenuation level in response to an applied signal

a timing signal generator for generating a delay signal in response to an input signal;

a signal detector connected to receive an output signal from said series circuit, and to supply an input signal to said timing signal generator; and

a changeover circuit connected to receive a signal from said signal detector and said timing signal generator, said changeover circuit connected to said switchable signal attenuator changeover input, said series signal processing circuit providing a controlled amplitude signal when a selected attenuation level is locked by said delay signal after a time delay generated by said timing signal generator.

4,518,928

POWER SUPPLY CIRCUIT FOR AMPLIFIER

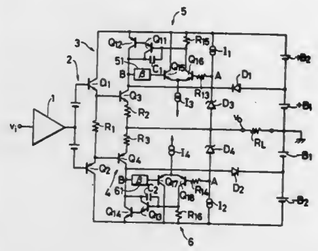
Satoshi Ishii, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 449,935

Claims priority, application Japan, Dec. 15, 1981, 56-202011

Int. Cl.³ H03F *3/30*

U.S. Cl. 330—297 **7 Claims**



1. A power supply circuit for an amplifier, comprising; means for generating a voltage corresponding to the amplifying output signal level of said amplifier and for supplying said voltage to the power supply terminal of said amplifier, said supply means comprising a phase compensated amplifying means having a signal corresponding to said amplifying output signal level as an input, the output of said amplifying means being supplied to said power supply terminal, said amplifying means increasing the amplification degree rather than decreasing said degree in the high frequency region.

4,518,929

FREQUENCY SYNTHESIZER HAVING OVERTONE CRYSTAL OSCILLATOR

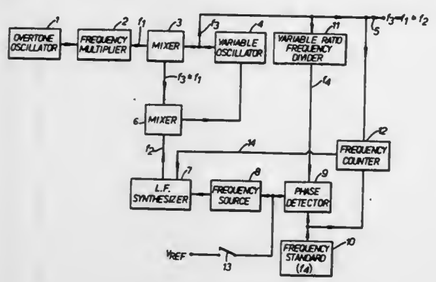
David P. Owen, Dunstable, England, assignor to Marconi Instruments, Ltd., St. Albans, England

Filed Aug. 2, 1982, Ser. No. 404,474

Claims priority, application United Kingdom, Aug. 4, 1981, 8123809

Int. Cl.³ H03L *7/00*

U.S. Cl. 331—11 **8 Claims**



1. A frequency synthesizer including an overtone; crystal oscillator arranged to produce a first frequency; a variable frequency source arranged to produce a second frequency which is lower than said first frequency; means for combining the first and second frequencies to produce a required output signal at a third frequency; and means for adjusting the value of said second frequency to compensate for departures of the first frequency from a nominal value causing variations in said third frequency, wherein said combining means comprises an output oscillator for generating said third frequency and means for mixing said first frequency with said third frequency to generate a frequency which is nominally equal to said second frequency, any difference between said second frequency and said frequency which is nominally equal to said second frequency being used to adjust the frequency of oscillation of said output oscillator.

4,518,930

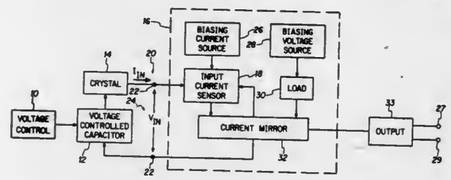
NEGATIVE RESISTANCE CIRCUIT FOR VCO

John G. Rozema, Wheaton, and William I. H. Chen, Naperville, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 30, 1982, Ser. No. 403,896

Int. Cl.³ H03B *5/36, 7/06;* **H03H** *11/52;* **H03L** *7/00*

U.S. Cl. 331—36 C **10 Claims**



1. A high-frequency negative resistance circuit having at least one pair of input terminals, thereby defining an input current at said input terminals which causes a voltage at said input terminals, said circuit comprising:

means for sensing the input current;

a biasing voltage source;

a load impedance connected to said biasing voltage source; and

current mirror means connected to said means for sensing and to said load impedance for producing a current in said load impedance approximately equal to said input current and for controlling said means for sensing to cause the voltage at the input terminal to decrease as the input current increases and to increase as the input current decreases, when the input current is less than a knee current.

4,518,931

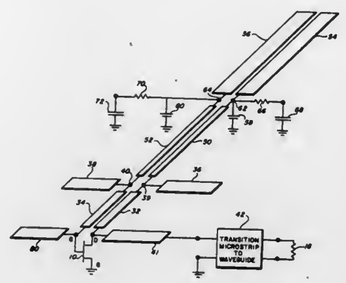
TRANSISTOR OSCILLATOR/FREQUENCY DOUBLER WITH OPTIMIZED HARMONIC FEEDBACK

Christen Rauscher, 3101 Crafford Dr., Ft. Washington, Md. 20744

Filed May 5, 1983, Ser. No. 491,841

Int. Cl.³ H03B *5/18, 1/04*

U.S. Cl. 331—76 **26 Claims**



1. An oscillator circuit for generating power at a desired harmonic frequency comprising:

a transistor with a B, a C, and an E terminals which form ports C-E and B-E;

a coupling network connected to said B, C, and E terminals and including a first circuit for providing feedback at a fundamental frequency f_o from said C-E port to said B-E port in order to make said transistor oscillate at said frequency f_o, and a second circuit connected to and operating in conjunction with said first circuit for providing isolation between ports C-E and B-E at the desired harmonic frequency of f_o to thereby prevent coupling at the harmonic frequency;

a bias circuit for supplying appropriate voltages to said transistor terminals to effect biasing thereof; and

means for coupling the desired harmonic from said port C-E to a load.

4,518,932

COAXIAL MAGNETRON HAVING CAVITY WALLS VIBRATED BY TUNING FORK

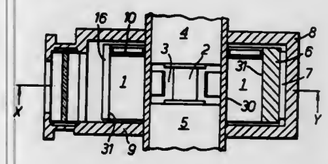
Alan H. Pickering, Springfield, United Kingdom, assignor to English Electric Valve Company, Ltd., Chelmsford, England

Filed Aug. 10, 1982, Ser. No. 407,274

Claims priority, application United Kingdom, Sep. 8, 1981, 8127125

Int. Cl.³ H03B *9/10;* **H01J** *25/55*

U.S. Cl. 331—90 **21 Claims**



1. A co-axial magnetron including an annular resonant cavity which is delimited by an outer cylindrical wall within the magnetron, which surrounds a cathode and which determines the frequency of oscillation of a microwave signal generated by the magnetron; tuning fork means operative to induce vibratory motion in the outer cylindrical wall of said annular resonant cavity so as to cyclically alter its resonant frequency; and means responsive to the movement of the outer cylindrical wall for generating a signal representative of the instantaneous resonant frequency of the cavity.

4,518,933

INTEGRABLE TRANSISTOR OSCILLATOR REQUIRING ONLY ONE PIN TO QUARTZ RESONATOR

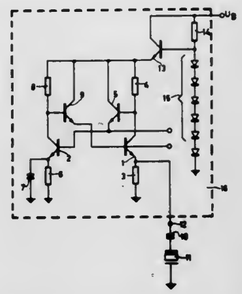
Klaus Kröner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1982, Ser. No. 345,995

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104849

Int. Cl.³ H03B *5/30;* **H03K** *3/281*

U.S. Cl. 331—108 D **4 Claims**



1. A quartz oscillator comprising first and second transistors whose collectors are connected via respective serial collector impedances to a pole of a direct voltage source and are coupled via respective semiconductor junctions to the base of the other transistor, a two-pole network comprising a quartz resonator being connected to the emitter of the first transistor; said quartz oscillator being characterized in that the emitters of the first and second transistors are each connected to the other pole of the direct voltage source via respective emitter impedances which are conductive to direct current, the product of the emitter impedances being greater than the product of the collector impedances, that the two-pole network is arranged in parallel with the emitter impedance of the first transistor and that a supply voltage of the direct voltage source has been chosen so low that the collector-base diodes of the first and second transistors are always in the non-conducting state.

4,518,934

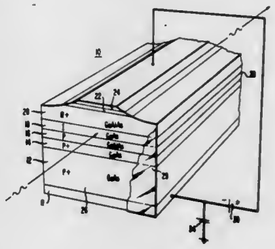
OPTICAL BISTABLE DEVICE

Thirumalai N. C. Venkatesan, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 16, 1982, Ser. No. 348,869

Int. Cl.³ H01S *3/10;* **G02F** *1/28*

U.S. Cl. 332—7.51 **5 Claims**



1. An optical bistable device of the type comprising:

means defining a Fabry-Perot interferometer cavity with an input face parallel to and spaced from an output face:

an optical absorbing medium within said cavity;

and

means including a pair of electrodes for generating an electric field within said medium;

said device being characterized by:

at least two contiguous regions of different conductivity type in said medium and oriented between said electrodes so that a reverse-bias electric field results when a driving voltage is applied to said electrodes by a driving voltage source; and

resistance means connected in series between one of said electrodes and said driving voltage source for generating a back-voltage in response to photo-generated current flow between said electrodes,

whereby photo-generated current which is generated between said electrodes results in a reduction of the electric field within said medium to provide negative feedback response to a light signal incident on said medium.

4,518,935

BAND-REJECTION FILTER OF THE SWITCHED CAPACITOR TYPE

Arthur H. M. van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,497

Claims priority, application Netherlands, Jul. 12, 1983, 8302482

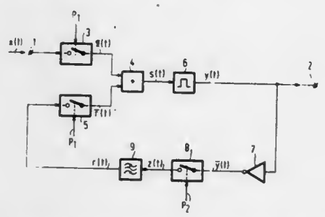
Int. Cl.³ H03H *19/00*

U.S. Cl. 333—173 **1 Claim**

1. A band-rejection filter of the switched capacitor type for suppressing at least one unwanted frequency component present in an analogue information signal, comprising:

(a) a filter input for receiving the analogue information signal and a filter output;

(b) combining means whose output is coupled to the filter output;
(c) first switching means for applying the information signal and a feedback signal to the combining means and which are controlled by a first control signal;
(d) a bandpass filter of the switched capacitor type the passband of which comprises at least the unwanted frequency component and which produces the said feedback signal;
(e) second switching means for coupling the input of the bandpass filter to the filter output and which are controlled by a second control signal;



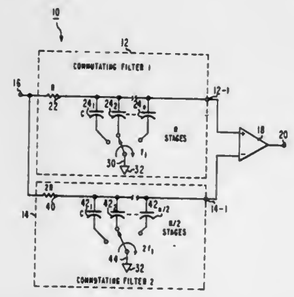
(f) a control signal generator for producing the first and second control signals, each consisting of a sequence of control signal periods of a duration T_s and occurring at a frequency f_s ($T_s = 1/f_s$), each control signal period being partitioned into a tracking phase and an interrupt phase, the instants at which the tracking phases in the first and second control signals end evidencing a fixed phase shift which is unequal to zero and less than half a control signal period.

4,518,936

COMMUTATING FILTER PASSING ONLY THE FUNDAMENTAL FREQUENCY AND ODD HARMONICS THEREOF

Eldon M. Sutphin, Jr., Hillsboro Township, Hancock County, N.H., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 14, 1983, Ser. No. 551,587
Int. Cl.³ H03H *19/00, 11/04*
U.S. Cl. 333—173 **5 Claims**



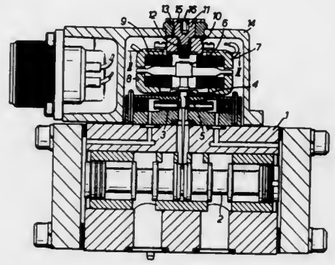
1. A commutating filter comprising in combination:
a filter input terminal;
a filter output terminal;
a first commutating filter coupled to receive a signal of frequency f_1 from said filter input terminal and comprising N storage stages, each having a time constant RC, said first commutating filter having an output terminal at which is presented a first filter output signal;
a second commutating filter coupled to receive said frequency f_1 from said filter input terminal and comprising $N \div 2$ storage stages each having a time constant 2 RC, said second commutating filter having an output terminal at which is presented a second filter output signal;
first means coupled to said first and second filters to sample said first filter storage stages at f_1 and to sample said second filter storage stages at $2f_1$; and
second means coupled between said output terminals from said first and second commutating filters and said filter output terminal for subtractively combining the filter output signals at said filter output terminal.

4,518,937

ELECTRO-HYDRAULIC SERVO VALVES AND ELECTRICAL FORCE MOTORS SUITABLE THEREFOR

Dennis W. Parker, Cheltenham, United Kingdom, assignor to Dowty Hydraulic Units Limited, England

Filed Mar. 7, 1983, Ser. No. 473,279
Claims priority, application United Kingdom, Mar. 19, 1982, 8208146
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—229 **4 Claims**



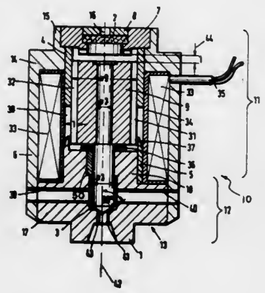
1. An electrical force motor having first and second pole pieces, an armature having a portion thereof disposed between poles of the first and second pole pieces for movement relative thereto and a circular permanent magnet, polarized across a diameter thereof, disposed at least partly within and between poles of one of the pole pieces and rotatably adjustable with respect to that pole piece magnetically to adjust the position of the armature relative to the pole pieces.

4,518,938

SOLENOID HAVING LOW-FRICTION COATING INTERNALLY OF THE ARMATURE SLEEVE

Reiner Bartholomäus, Neuendorf, and Christoph Gibas, Neunkirchen, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,164
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309904
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—262 **19 Claims**



1. A solenoid comprising:
a housing having two ends;

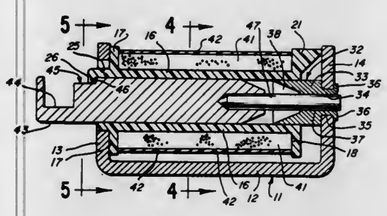
winding means adapted for being energized by flow of electricity;
winding support means, arranged within said housing, for supporting said winding means;
an armature mounted for reciprocal movement within said winding support means in response to energization of said winding means;
sleeve means, provided radially inward of said winding support means, for guiding said armature during its movement including a magnetically conductive supporting element provided on its inner surface with a non-magnetic low friction coating adapted to contact said armature so as to define an air gap facing said armature and a low friction bearing for said armature;
at least one stem extending from said armature;
first end piece means for closing one end of said housing;
second end piece means for closing the other end of said housing; and
bearing means, provided in one of said first and second end piece means, for guiding said stem.

4,518,939

SOLENOID WITH RETAINER STOP

Reginald A. Read, LaGrange, and Richard N. Houston, Western Springs, both of Ill., assignors to Regdon Corporation, Brookfield, Ill.

Filed Apr. 12, 1984, Ser. No. 599,498
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—262 **18 Claims**



1. A solenoid device comprising an integrally molded bobbin provided with a central bore therein and including a resiliently retractable catch portion protruding into and partially closing said bore; a plunger extending into said bore and serving as an armature of such solenoid, said plunger adapted for axial, reciprocating movement in said bore and having a cross-section providing interfering engagement with said catch portion in said bore, with first stop means for stopping engagement with said catch; second stop means for limiting movement of said plunger in an opposite direction; and coil means surrounding said bobbin for generating magnetic flux to move said plunger; said plunger being formed of material having high magnetic permeability whereby said plunger may be inserted in said bore by resilient retraction of said catch portion and thereafter will engage said first and second stop means.

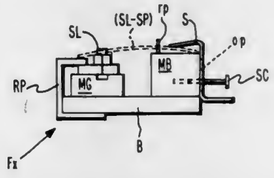
4,518,940

BACK-BAR ATTACHMENT AND ASSOCIATED FIXTURE

Otto Fuchs, Westlake Village, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 3, 1981, Ser. No. 299,096
Int. Cl.³ H01F *7/20*
U.S. Cl. 335—285 **19 Claims**

1. A fixture for attaching a back-bar means to core legs of a magnetic recording slider assembly comprising:
magnetic block means adapted to project a prescribed magnetic flux through said core legs to attract and hold said back-bar means;



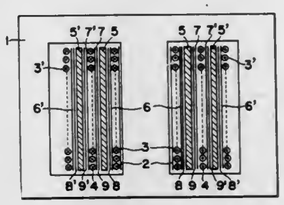
plus means for holding said slider registered with said block means.

4,518,941

PULSE TRANSFORMER FOR SWITCHING POWER SUPPLIES

Hajime Harada, Tokyo, Japan, assignor to Nihon Kohden Corporation, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,458
Int. Cl.³ H01F *15/04, 15/15*
U.S. Cl. 336—69 **1 Claim**



1. A pulse transformer for use in a switching power supply, comprising a common core, primary and secondary windings wound concentrically around said common core, one of said primary and secondary windings being disposed inwardly of the other, including another winding wound around the other winding and connected parallel to said one winding, a first pair of electrostatic shield foils interposed between said one winding and said other winding, a second pair of electrostatic shield foils interposed between said other winding and said another winding, and an insulator interposed between said electrostatic shield foils in each of said first and second pairs of foils, and connecting wires drawn from said electrostatic shield foils at points thereon where pulsed electromotive forces are induced which are of equal levels as seen from leading ends of the electrostatic shield foils.

4,518,942

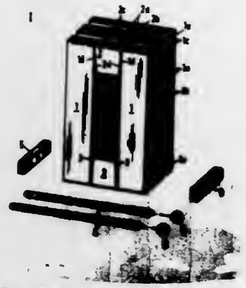
ELECTRIC MACHINE, SUCH AS TRANSFORMER CHOKE, CONSTANT-VOLTAGE REGULATOR OR THE LIKE

Hugo-Werner Geschka, Düsseldorf, Fed. Rep. of Germany, assignor to E. Blum GmbH & Co., Vaihinsen/Enz, Fed. Rep. of Germany

Continuation of Ser. No. 292,024, Aug. 11, 1981, abandoned, which is a continuation of Ser. No. 73,523, Sep. 7, 1979, abandoned. This application Apr. 18, 1984, Ser. No. 601,115
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839114
Int. Cl.³ H01F *27/26, 41/02*
U.S. Cl. 336—178 **8 Claims**

1. An iron core for use in electric machines such as transformers, chokes, magnetic constant voltage regulators and the like, comprising a plurality of substantially rectangular first and second core parts, each of said core parts comprising a

plurality of parallel metallic laminations and said first and second core parts together defining joint abutments, the planes of the laminations of said core parts being parallel to the planes of the laminations of said second core parts, said first core parts having outer contours provided with clamping surfaces and the laminations of each of said first core parts and each of said second core parts including groups of laminations defining external channels extending and being open all the way between the clamping surfaces of said first core parts substan-



tially transversely of said joint abutments and in substantial parallelism with the planes of said laminations, said groups of laminations having surfaces bounding the respective channels and being devoid of metal cuttings; and means for urging said first core parts against said second core parts in the regions of said joint abutments, including clamping members adjacent to said clamping surfaces and elongated clamping elements received in said channels and arranged to urge said clamping members against the respective clamping surfaces.

4,518,943

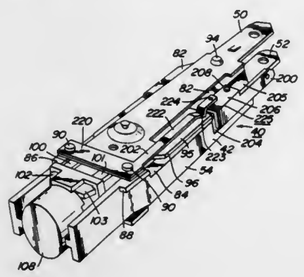
BIMETALLIC CIRCUIT BREAKER WITH AN AUXILIARY SWITCH

George J. Giessner, Cherry Hill, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Continuation of Ser. No. 426,237, Sep. 28, 1982, abandoned. This application May 7, 1984, Ser. No. 607,428

Int. Cl.³ H01H *71/16*

U.S. Cl. 337—68 **4 Claims**



1. In a circuit breaker the combination of;

a case having an end wall,

circuit breaker structure including circuit breaker contacts within said case,

a pair of main terminals connected to each of said contacts extending through and out from said end wall, said main terminals being disposed parallel to each other,

a frame within the case,

an auxiliary terminal extending from a stationary auxiliary contact within the case on the frame through and out from said end wall, said auxiliary terminal being disposed at right angles to and intermediate said main terminals,

an auxiliary movable blade including a movable contact arranged to make contact with the stationary auxiliary contact and electrically connected to one of said main terminals,

an insulator slide within the case slidably mounted on the frame and movable from a first position assumed when the circuit breaker contacts are closed to a second position when the circuit breaker contacts are opened, said slide engaging said movable blade and keeping it separated from said stationary contact when said slide is in its first position and releasing said blade when said slide is in its second position to permit said movable contact of said blade to engage said stationary contact of the auxiliary stationary terminal.

4,518,944

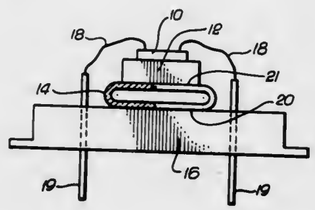
TEMPERATURE STABILIZER

Alan E. Faris, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 18, 1983, Ser. No. 542,919

Int. Cl.³ H01C *7/02;* **H01L** *41/08*

U.S. Cl. 338—22 R **7 Claims**



1. A temperature-stabilizing device for regulating the operating temperature of an electronic component that is to be mounted on a package, said device comprising:

a positive-temperature-coefficient thermistor mounted in thermal contact with the electronic component whose temperature is to be regulated; and

an insulating body mounted between said thermistor and the package, said insulating body including a length of tubing that has been deformed to provide two flat surfaces for contact with said thermistor and with the package, respectively, whereby the interior volume of said tubing increases the thermal resistance of the path between said thermistor and the package;

said tubing being of a material that produces no contaminant gases.

4,518,945

REMOTE CONTROL SYSTEM

Richard C. Doyle, Greenlawn, and Lester Rivera, Brooklyn, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Continuation of Ser. No. 207,534, Nov. 17, 1980, Pat. No. 4,386,338. This application Sep. 30, 1982, Ser. No. 431,982

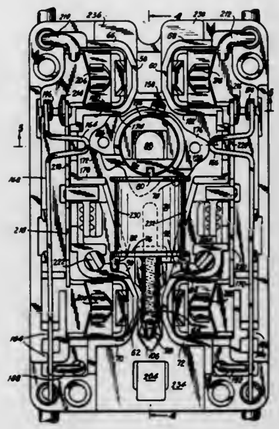
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.

Int. Cl.³ H04Q *5/04*

U.S. Cl. 340—310 A **5 Claims**

1. Switching apparatus for selectively completing or interrupting an electrical connection between input and output conductors, or the like, comprising, in combination: a housing; a magnetizable armature disposed within a portion of said housing and being movable between first and second positions; electromagnet coil means disposed within said housing for moving said armature when energized from the first position to the second position; an input contact electrically connected to said input conductor; an output contact electrically connected to said output conduct; strap means for mounting the switching apparatus upon a selected surface, said strap means including portions thereof which define a path of the magnetic field

generated by said coil means to influence the position of said armature, and movable cam means responsive to movement of said armature for influencing a separation of said input and output contacts, thereby interrupting electrical connection between them, said apparatus further including movable actuating means having portions thereof in contact with said armature means for influencing the position of said cam means, said movable actuating means including kicking means for contact-



ing and causing alternating rotary and counter-direction rotary movements of said cam means in response to movement of said armature, said rotary and counter-direction rotary movements causing electrical paths to open and close, said movable cam means being formed with an opening therethrough, thereby providing a recess into which a conducting pin of an electrical plug is able to be positioned, during use, without interfering with the operation of both the cam means and parts with which it cooperatively engages.

4,518,946

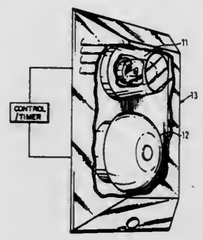
AUDIO-VISUAL ALARM DEVICE WITH TRANSLUCENT COVER

Dennis R. Solomon, Wallasey, England, assignor to CQR Security Systems Limited, Wallasey, England

Filed May 19, 1982, Ser. No. 379,873

Int. Cl.³ G08B *27/00*

U.S. Cl. 340—326 **4 Claims**



1. An alarm device comprising a housing enclosing an audible alarm means and a visual, light emitting warning means, said housing being formed of translucent material that shields the audible alarm and visual warning means from direct viewing while permitting the light emitted by the visual warning means to be transmitted therethrough, and means for operating each of said audible alarm means and said visual warning means.

4,518,947

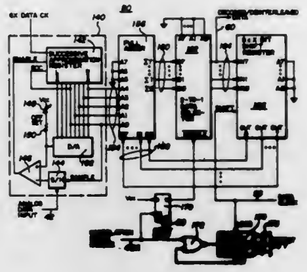
APPARATUS FOR DECODING REDUNDANT INTERLEAVED DATA

Billy R. Poston, St. Petersburg, and Carl F. Andren, Indiatlantic, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 306,489, Sep. 28, 1981, abandoned. This application Mar. 8, 1984, Ser. No. 586,996

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **4 Claims**



1. A method for decoding a digital signal data stream having interleaved redundantly coded information bits, comprising the steps of:

(a) sampling each coded information bit in a character string in the data stream to produce at least two quantitative samples for each sampled coded information bit;

(b) transferring said quantitative samples for the sampled bits to an adder;

(c) summing in said adder said quantitative samples for the sampled bits with cumulative quantitative samples for each coded information bit in the character string to produce summation samples for said character string;

(d) transferring said summation samples to a storage means to form said cumulative quantitative samples for said character string;

(e) repeating steps (a)–(d) for redundant occurrences of said character string in the data stream; and

(f) selecting a most significant digit of each of the summation samples to be a determined state of the redundantly coded information bits.

4,518,948

ANALOG-TO-DIGITAL CONVERTER

Frederik J. VanRoessel, Upper Saddle River, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,123

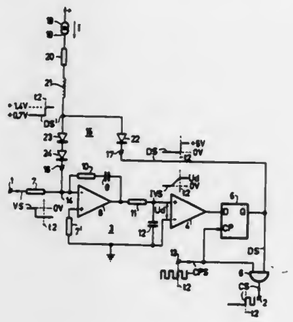
Claims priority, application Netherlands, Nov. 20, 1981, 8105254

Int. Cl.³ H03K *13/02, 13/20*

U.S. Cl. 340—347 NT **6 Claims**

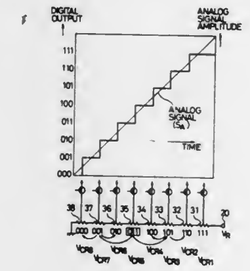
1. An analog-to-digital converter incorporating a series arrangement between an input and an output terminal of the converter, comprising an integrating circuit, a comparison circuit, a flip-flop and a coincidence gate, a clock pulse input of the flip-flop and an input of the coincidence gate being connected to a clock pulse input terminal of the converter, the converter incorporating, provided in a feedback path, a switchable current source circuit, a current output terminal of which is connected to an input of the integrating circuit and which is further coupled to the input terminal of the converter, and a current source change-over terminal which is connected to an output of said flip-flop, characterized in that a first input of a differential amplifier incorporated in the integrating circuit is connected to the current source output terminal and to an amplifier output thereof via a series arrangement comprising a first capacitor and a first resistor, a second input being coupled to a terminal carrying a reference voltage and said output of this differential amplifier being coupled, via a series arrangement of a second resistor and a second capacitor, to said termi-

nal carrying a reference voltage, the junction between the second resistor and the second capacitor forming the output of the integrating circuit, and the product of the values of the first



capacitor and the first resistor being substantially equal to the product of the values of the second capacitor and the second resistor.

4,518,949
METHOD OF A/D CONVERSION BY SUCCESSIVE APPROXIMATIONS
Tetsuro Kanai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 14, 1983, Ser. No. 504,153
Claims priority, application Japan, Jun. 15, 1982, 57-102616
Int. Cl.³ H03K *13/03*
U.S. Cl. 340—347 AD **1 Claim**



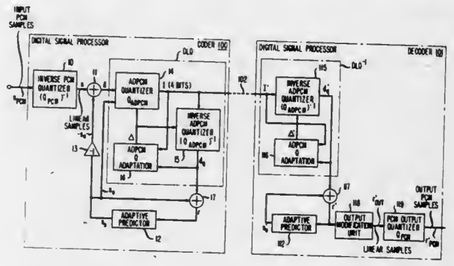
1. A method of A/D conversion by successive approximations, wherein a sampled analog signal is converted into a n-bit digital signal (wherein "n" is a positive integer) by successively approximating a comparison reference signal to said sampled analog signal through successive comparisons therebetween, which method comprises:

setting initially all the bits of the approximation control code to logic "1" except for the MSB which is set to logic "0";

comparing said sampled analog signal with said comparison reference signal, and at the m-th comparison step (m=1, 2, 3, . . . , n), (a) when the analog signal is greater than the comparison reference signal which is proportional to said approximation control code, replacing the m-th and (m+1)th MSBs of said approximation control code with logics "1" and "0" respectively, and, (b) when the analog signal is less than the comparison reference signal, replacing the (m+1)th MSB of said approximation control code with logic "0"; and

repeating the above comparison step until the "n" times of comparison are completed.

4,518,950
DIGITAL CODE CONVERTER
David W. Petr, Red Bank, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 22, 1982, Ser. No. 435,968
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **11 Claims**



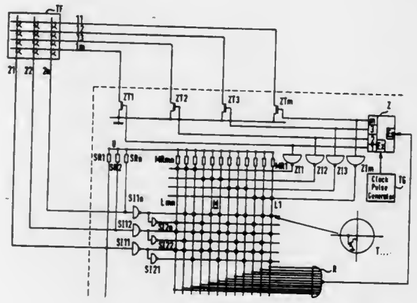
1. A coder for converting digital samples from a first code to a second code including,

means for converting samples in said first code to linear versions thereof,

quantizer means supplied with said linear first code samples for generating corresponding samples in said second code, said quantizer means characterized by,

means for controllably modifying said second code sample values, in accordance with prescribed criteria including selecting between a preliminary second code sample value and second code sample values adjacent to said preliminary second code sample value generated by said quantizer means by evaluating at least one second-to-first code conversion quantization error value, so that a next subsequent coder will ultimately generate the same value second code samples as said quantizer means.

4,518,951
INTEGRATED CIRCUIT FOR A KEYBOARD OF AN ELECTRONIC APPARATUS
Reiner Backes, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jun. 24, 1982, Ser. No. 391,617
Claims priority, application European Pat. Off., Jul. 10, 1981, 81105385.9
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 S **2 Claims**



1. An integrated circuit for electronic keyboard apparatus, said keyboard apparatus comprising a plurality of pushbutton keys each having a pair of contacts, said contacts being connected in a matrix array such that a first one of each of said pair of contacts is connected to one of n first column lines and that the other one of each of said pair of

contacts is connected to one of m row lines so that when one of said pushbutton keys is operated the one first column line and the one row line connected to said pushbutton key are directly connected together,

said integrated circuit comprising:

n first inverters each having its input connected to one of said n first column lines and to an operating potential via one of a plurality of first resistors;

m row transistors, each of said row transistors having its controlled current path permanently connected to one of said row lins and to the zero point of said circuit;

a clock pulse generator;

a counter havng a count input coupled to said clock pulse generator, having m count outputs and adapted to cyclically count to m, and further having an enable input;

each of said row transistors having its gate connected to one of said m count outputs;

m row inverters each having its input connected to one of said m count outputs;

a matrix comprising a plurality of column lines arranged as m line groups of n lines each, a l-ex-m-times-n code appearing at said plurality of column lines

a plurality of second resistances each having one end connected to said operating potential and each having its other end connected to a different one of said n column lines of said line groups;

said matrix comprising a plurality of matrix transistors each having one end of its controlled current path connected to said zero point of said circuit and each having the other end of its controlled current path connected to a different one of said second resistances, said plurality of matrix transistors being arranged as m groups of transistors, all of the matrix transistors of each group having their control terminals commonly connected, each group of transistors having its commonly connected control terminals connected to the output of a different one of said row inverters;

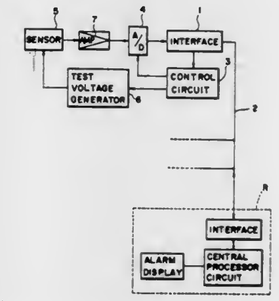
a plurality of second transistors each having its current controlled path connected between one of said column lines and said zero point of said circuit, said second transistors being arranged in a matrix arrangement having n pairs of row lines, said second transistors of a first one of each of said pairs of row lines each being connected to a corresponding column line in a different one of said line groups with said second transistors in different ones of said first one row lines being connected to different corresponding column lines in said line groups, said second transistors of the other one of each said pair of row lines being connected to the ones of said column lines that are not connected to said second transistors of said first one of said pair of row lines;

each of said first column inverters having its output connected to the control terminals of said second transistors which are in one of said other one of each of said pair of row lines;

n second column inverters each having its input connected to the output of a corresponding one of said first column inverters and having its output connected to the control terminals of said second matrix transistors which are in said first one row line of the pair of row lines having its said other one of said pair of row lines coupled to said corresponding one of said first column inverters;

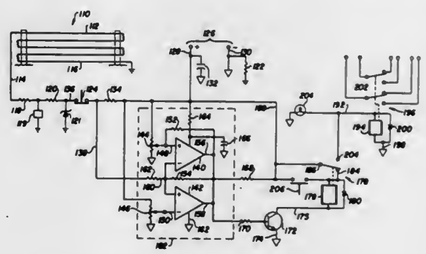
logic gate means having inputs coupled to all of said column lines and for providing a logic nor function or its equivalent and for generating a signal at an output coupled to said enable input of said counter.

4,518,952
SENSOR TEST CIRCUIT OF AN ALARM SYSTEM
Hiroshi Tanaka; Tetsuo Kimura, both of Tokyo; Seiichi Tanaka, Chiba, and Takashi Suzuki, Tokyo, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan
Filed Aug. 29, 1983, Ser. No. 527,465
Claims priority, application Japan, Sep. 10, 1982, 57-156598
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—514 **8 Claims**



4. An alarm system test circuit responsive to a test instruction signal received from a remote control unit, comprising: control circuit means for recognizing a test instruction signal received from the remote unit; sensor means for detecting smoke, heat, or other alarm inducing parameters and having an analog voltage output indicative of an alarm parameter being sensed; and test voltage generator means activated by the control circuit means and connected to the sensor means for causing a predetermined analog voltage change from the sensor means useful in testing operation of an alarm system associated with the sensor means.

4,518,953
SECURITY FENCE SYSTEM
Kent Hunter, Frost Mill Rd., Mill Neck, N.Y. 11765, and Lawrence D. Hunter, 2509 Calle Montilla, Santa Barbara, Calif. 93109
Continuation of Ser. No. 198,889, Oct. 20, 1980, abandoned.
This application May 31, 1983, Ser. No. 499,712
Int. Cl.³ G08B *13/22*
U.S. Cl. 340—564 **19 Claims**



1. A security fence system, comprising:

a plurality of fence posts arranged around a selected area;

a plurality of high tensile strength, highly stressed wires arranged substantially horizontal to the ground and being attached to said fence posts in a mutually spaced-apart relationship;

a resistor network interconnecting said plurality of wires one to another and forming an electrical circuit such that making an electrical connection between any two wires

will remove at least one resistor from said electrical circuit;

a voltage source connected to said circuit for causing a current of predetermined level to flow in said circuit; and

a sensing means connected to said circuit for providing an indication of changes in said predetermined current level;

a plurality of intermediate nonmetallic posts, at least one of which is arranged between said fence posts, each of said plurality of wires passing through each of said intermediate nonmetallic posts and further comprising a metal assembly arranged internal to said nonmetallic post, such that cutting the intermediate nonmetallic post will cause said metal assembly to make an electrical circuit between at least two of each of said plurality of fence wires, thereby altering said predetermined current level in said circuit.

19. A security fence system, comprising:

a plurality of fence posts arranged around a selected area;

a plurality of small diameter high tensile strength wires arranged substantially horizontal to the ground and being attached to said fence posts in a mutually spaced-apart manner;

each of said small diameter high tensile strength wires includes at least one annealed segment located between every two of said plurality of fence posts to which said wires are attached, said annealed segment having a lower tensile strength than the nonannealed portions of said wires.

4,518,954

DOZING WARNING DEVICE FOR A VEHICLE

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

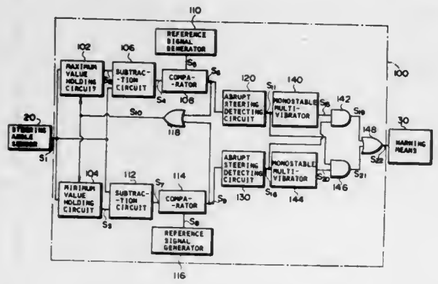
PCT No. PCT/JP81/00246, § 371 Date May 6, 1982, § 102(e) Date May 6, 1982, PCT Pub. No. WO82/00979, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 21, 1981, Ser. No. 377,268

Claims priority, application Japan, Sep. 22, 1980, 55-132059

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—576 **17 Claims**



1. A dozing warning device comprising:

steering angle detecting means for producing a signal S_1 representative of variations in the steering angular position;

first and second abrupt steering detecting means for producing first and second abrupt steering pulses S_{11}, S_{16} respectively when the value of an increase of the signal S_1 exceeds a value representative of a predetermined angle variation or when the value of the decrease of the signal S_1 exceeds said value, respectively;

means for producing a warning signal S_{22} when both of said abrupt steering pulses S_{11} and S_{16} are produced within a predetermined period of time T; and

warning means for producing a warning in response to said warning signal S_{22}.

4,518,955

METHOD AND APPARATUS FOR DETECTING LEAKAGE IN A FLUID CONDUIT SYSTEM

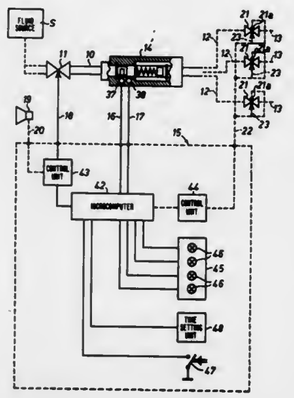
Knut Meyer, 2960, Rungsted Kyst, Denmark

Filed May 4, 1982, Ser. No. 374,799

Claims priority, application Denmark, May 6, 1981, 2007/81

Int. Cl.³ G08B *19/00*; F16K *17/00*

U.S. Cl. 340—605 **9 Claims**



1. A method of detecting leakage in a conduit system communicating with a supply source of a pressurized fluid to be consumed and having at least one selectively operable fluid drain, said method comprising:

A. detecting by means of a flow detector capable of detecting possible fluid flows exceeding at least two predetermined flow values, at at least one location of the conduit system, a possible fluid flow exceeding a predetermined first value and a possible fluid flow exceeding a predetermined second value, substantially greater than said first value;

B. supplying from said flow detector to a control device a first detecting signal, when a fluid flow exceeding said first value has been detected, and a second detecting signal when a fluid flow exceeding said second value has been detected by said flow detector;

C. supplying a first emergency signal from said control device, when the duration of said first detecting signal has uninterruptedly exceeded a predetermined first period of time, and

D. supplying a second emergency signal from said control device when the duration of said second detecting signal has exceeded a predetermined second period of time which is substantially shorter than said first period.

4,518,956

ELECTRIC LIQUID LEVEL DETECTOR

Junji Kitagawa, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 7, 1982, Ser. No. 366,387

Claims priority, application Japan, Apr. 13, 1981, 56-52783[U]

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—620 **6 Claims**

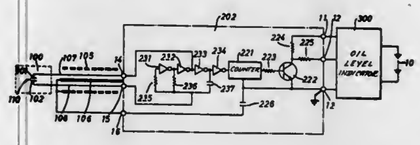
1. An electric liquid level detector of the condenser type for detecting the level of remaining liquid within a liquid container, comprising:

an electrode assembly including a pair of electrodes arranged to be submerged into the liquid within said container;

a flexible tubular guide member of conductive material fixed at its one end to said electrode assembly and being grounded;

an elongated flexible partition plate of conductive material fixed at its one end to said electrode assembly and arranged within said guide member to subdivide the interior of said guide member into a pair of elongated spaces, said flexible partition plate being grounded;

an electric circuit assembly fixed to the other ends of said guide member and said flexible partition plate respectively



and being provided with an electric detecting circuit for generating an output signal indicative of the level of remaining liquid in dependence upon an electrostatic capacity between said electrodes; and

a pair of insulated electric wires extending through the subdivided spaces in said guide member respectively for connecting said electrodes to said electric detecting circuit.

4,518,957

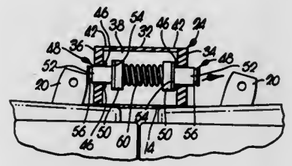
CIRCUIT BREAKER WARNING DEVICE

Rex W. Wheeler, 1202 S. Judson, Fort Scott, Kans. 66701

Filed Mar. 31, 1983, Ser. No. 480,938

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—639 **9 Claims**



1. In combination:

a circuit breaker box having a face plate with at least two laterally spaced apart, juxtaposed vertical rows of circuit breaker arm-receiving openings therethrough, there being individual circuit breakers behind said vertical rows of arm-receiving openings with shiftable breaker arms extending through respective ones of said arm-receiving openings, each of said arms normally being in a circuit closed position and shiftable from said circuit closed position to a circuit open position when the corresponding circuit breaker experiences sufficient electrical overload;

an alarm device for signalling when one or more of said circuit breakers has experienced an electrical overload sufficient to shift the associated breaker arm from the circuit closed to the circuit open position thereof, said device including:

shiftable means for each of said breaker arms respectively;

means mounting said respective shiftable means between said rows of arm-receiving openings and adjacent a corresponding breaker arm for movement of the shiftable means between a first and a second position in response to overload-induced movement of said corresponding breaker arm; and

means for giving a perceptible warning signal when one of said shiftable means has moved to said second position thereof.

4,518,958

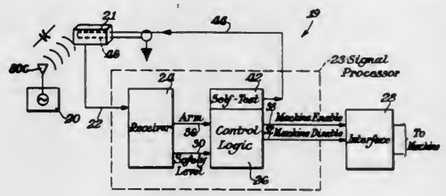
CAPACITIVELY COUPLED MACHINE TOOL SAFETY HAVING A SELF-TEST NETWORK

William A. Cook, Wilmington, Del.; Gary R. Hoffman, and William M. Pulford, both of Glen Arm, Md., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1982, Ser. No. 345,191

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—679 **15 Claims**



1. A machine tool safety system comprising:

an electric field generator adapted to be carried on a portion of the person of a machine tool operator for generating an electric field;

a capacitive receptor antenna mountable in a predetermined location with respect to a machine tool and cooperable with the electric field generator to form a capacitively coupled transmission arrangement operative to induce, by the action of the electric field through the capacitive coupling, a monotonically increasing electrical signal the magnitude of which is functionally related to the distance between the electric field generator and the capacitive receptor antenna;

a signal processor connected to the capacitive receptor antenna and responsive to the signal induced in the capacitive receptor antenna by the electric field to generate an indication when the magnitude of the induced electrical signal exceeds a predetermined threshold, the indication being able to be used to permit safe operation of a machine tool;

a self-test radiating antenna disposed in proximity to the capacitive receptor antenna; and

a self-test network electrically connected to the self-test radiating antenna for generating an excitation signal operative to induce in the capacitive receptor antenna a test signal having a magnitude greater than the threshold.

4,518,959

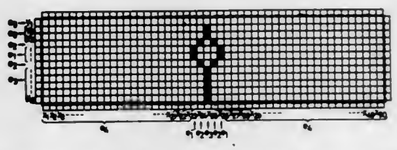
ELECTRONIC ANALOG DISPLAY DEVICE

Fumio Ueda; Yoshiaki Tsubol; Hirotsugu Arai; Kenji Horikiri, and Hiroaki Ideno, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,768

Int. Cl.³ G09G *3/34*

U.S. Cl. 340—784 **8 Claims**



1. An electronic analog display device for displaying a display pattern having a predetermined configuration, the position of said predetermined configuration in said display being variable in accordance with an input signal, said device comprising:

a display unit including a two-dimensional array of a plurality of electro-optical display elements each energizable in accordance with signals applied to its two inputs;

coupling means for coupling one input of each element in a row to a corresponding row conductor extending in a row

direction, and for coupling another input of each element in a column to a corresponding column conductor extending in a column direction; and

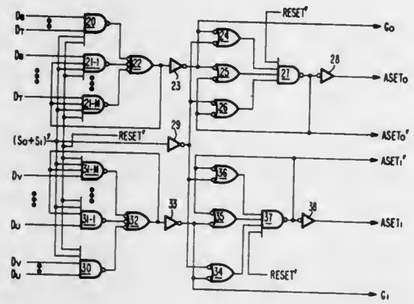
control means for applying to each row and column conductor one of a predetermined number of control signals selected in accordance with the value of said input signal, said predetermined number being less than the number of said row and column conductors, to select a group of said elements defining said predetermined configuration at a position along said row direction which varies in accordance with the value of said input signal.

4,518,960

SPEED INDEPENDENT SELECTOR SWITCH EMPLOYING M-OUT-OF-N CODES

Becky J. Clark, Del Mar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 23, 1982, Ser. No. 444,063
Int. Cl.³ H04Q *9/00*; H04J *6/00*
U.S. Cl. 340—825.02 **10 Claims**



1. A selector comprised of:

one input port and two output ports, said input port having N input data lines and each of said output ports having N output data lines;

means for selecting only one of said two output ports at a time;

means for passing characters from said input port to said selected output port;

each of said characters being represented by active logic signals that asynchronously occur with respect to each other on M-out-of-N data lines of said input port, with M being at least two and N being greater than M and greater than three; and

said means for passing including means for detecting when M of said active logic signals are present on said N data lines of said input port and for initiating their passage to said output port in response thereto.

4,518,961

UNIVERSAL PAGING DEVICE WITH POWER CONSERVATION

Walter L. Davis, Plantation, Fla., and Kuppuswamy Raghunathan, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 192,779, Oct. 1, 1980, abandoned. This application Jan. 30, 1984, Ser. No. 575,472
Int. Cl.³ G08B *5/22*
U.S. Cl. 340—825.44 **103 Claims**

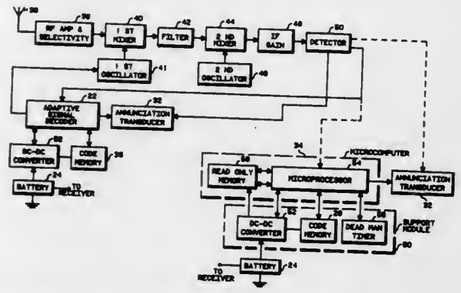
1. A communication system message receiving device for decoding signals transmitted in accordance with one of a plurality of multi-bit different word length information encoding formats comprising:

a communication receiver for detecting encoded signals transmitted over a communication channel;

a power source;

a data sampler, coupled to said power source and to said receiver to process said detected encoded signals in real time and to process said detected signals in accordance with any one of a plurality of information decoding formats corresponding to said plurality of information encoding formats;

coding format selection means, coupled to said receiver and said data sampler, including identification means responsive to predetermined characteristics of said detected encoded signals for identifying the format of the transmitted message, said selection means automatically selecting, in response to said identification means, which of said plurality of information decoding formats will be utilized for processing said detected encoded signals;



a code memory coupled to said selection means containing predetermined sequences of decoded signals corresponding to each of said plurality of information encoding formats;

comparison means, coupled to said data sampler and said code memory, for determining if said decoded signals correlate to said predetermined sequence of decoded signals for the selected information decoding format, said comparison means producing a control signal if said signals correlate and;

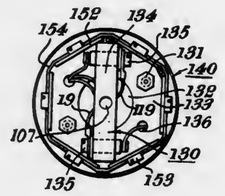
annunciation means coupled to said comparison means and responsive to said control signal for signalling the user of the reception of a message.

4,518,962

DEVICE FOR TRANSMITTING MEASUREMENT DATA FROM A ROTATING BODY

Kazuo Imose, Ashiya; Kiyoshi Yamamuro, Kokubunji; Hironori Takeuchi, Tachikawa, and Takashi Misawa, Tokyo, all of Japan, assignors to Teijin Limited and Fuji Electric Co., Ltd., both of, Japan

Filed Dec. 17, 1981, Ser. No. 331,552
Int. Cl.³ H05K *1/11, 1/14, 7/14*; G08G *19/12*
U.S. Cl. 340—870.28 **10 Claims**



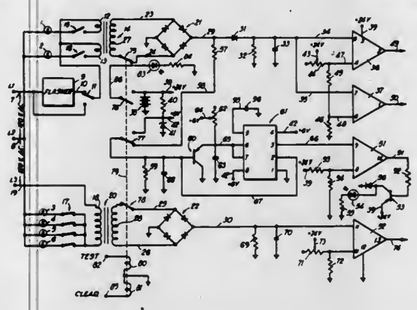
1. An apparatus for a signal transmitter for mounting on the axis of rotation of a rotating body, comprising a rotary printed circuit board assembly further comprisprising at least two generally planar printed circuit boards having electronic components mounted thereon, said circuit boards being mounted in said assembly so that when the rotating body rotates, the resultant centrifugal force acting on the electronic components will be substantially free of net vector force components directly urging the electronic components away from the plane of the printed circuit boards, including a bobbin-shaped attachment base having a pair of flanges, and wherein components are secured and mounted to the surfaces of said printed circuit boards which face radially inwardly, and wherein said printed circuit boards are mounted on said pair of flanges and around said attachment base in a circumferentially spaced and cylindrical arrangement.

4,518,963

AUTOMATIC INDICATOR FOR TOWER LIGHTS

Curtis F. Rogers, Jr., Rte. #5, Box 273, Fitzgerald, Ga. 31750

Filed Apr. 26, 1982, Ser. No. 371,799
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—981 **10 Claims**



1. A failure-detecting circuit for a signalling system having a top warning illumination and a flasher for intermittently energizing such top warning illumination, said circuit comprising the combination of:

means for producing a d.c. signal in response to energization of said top warning illumination and for producing an intermittent signal related to the "on" times of said flasher;

means responsive to said d.c. signal for detecting and indicating either when the top warning illumination has failed or when said flasher has failed in the "off" condition; and

means responsive to said intermittent signal for detecting and indicating when said flasher has failed in the "on" condition.

4,518,964

PULSE ARRIVAL TIME DETERMINING DEVICE, USE THEREOF IN DISTANCE-MEASURING EQUIPMENT AND MEASURING EQUIPMENT COMPRISING SUCH A DEVICE

Joseph Hetyei, Paris, France, assignor to Thomson-CSF, Paris, France

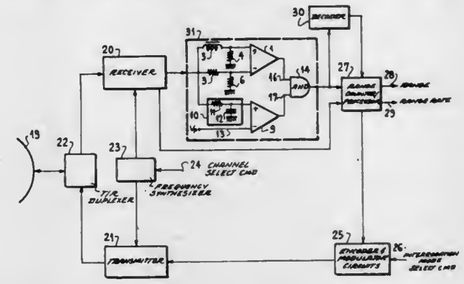
Filed Jan. 6, 1982, Ser. No. 337,367
Claims priority, application France, Jan. 9, 1981, 81 00315
Int. Cl.³ G01S *13/76, 7/28*
U.S. Cl. 343—7.3 **8 Claims**

7. A distance measuring equipment (DME) system having an airborne interrogator receiver and a ground transponder and having two operating modes, "enroute" and "in approach", said system including a video pulse arrival time determination device connected to the output of the ground transponder receiver, said device comprising:

(a) DAC (Delay And Compare) detector means, for receiving an input pulse signal, for delaying said input pulse signal, for attenuating said input pulse signal and for comparing said delayed signal and said attenuated signal to generate a first comparison signal;

(b) threshold detector means for receiving said input pulse signal for filtering said input pulse signal and for comparing said filtered signal and a threshold signal to generate a second comparison signal; and

(c) a coincidence circuit having its inputs respectively connected to said DAC detector means and threshold detector means outputs, for delivering an output signal representative of an arrival time of an interrogating pulse transmitted from said airborne interrogator.

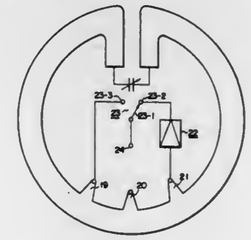


4,518,965

TUNED SMALL LOOP ANTENNA AND METHOD FOR DESIGNING THEREOF

Kazutaka Hidaka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 12, 1982, Ser. No. 348,206
Claims priority, application Japan, Feb. 27, 1981, 56-26910
Int. Cl.³ H01Q *11/12*
U.S. Cl. 343—742 **10 Claims**



1. A tunable small closed loop antenna, having an input admittance, for transmitting or receiving signals within the VHF and UHF frequency band and tunable over a wide range of resonant frequencies while substantially maintaining impedance matching between the antenna and an antenna feeder line comprising:

a loop conductor having a loop area A, circumferential length S and equivalent conductor radius b;

said loop conductor including feeding taps circumferentially spaced on said conductor wherein said taps are coupled to said antenna feeder line;

a capacitive element connected in series with said loop conductor for providng a resonant circuit having a loaded Q of not less than 20; characterizing in that said loop area, said circumferential length and said equivalent radius are selected so that the ratio of the resonant frequency f_o of said resonant circuit and the resonant frequency fm, at which said input admittance is a minimum, is within the range: $0.5 \leqq f_o/f_m \leqq 3.0$

whereby the selected values of A, S and b satisfy the following equation:

$$\frac{A^2 b}{S} = 5.43 \times 10^{28} \sqrt{\frac{\mu}{\sigma}} \cdot f_m^{-\frac{7}{2}}$$

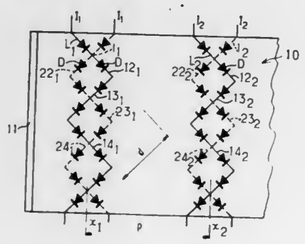
where μ is the permeability of the medium and σ is the conductivity of the loop conductor, and f_m has a value which falls within said range for various resonant frequencies f_o existing within a predetermined frequency band.

4,518,966

ADAPTIVE SPATIAL MICROWAVE FILTER FOR MULTIPOLARIZED ANTENNAS AND THE PROCESS OF ITS APPLICATION

Henri Sadones, Paris, France, assignor to Societe d'Etude du Radant, Les Ulis Cedex, France

Filed Sep. 29, 1982, Ser. No. 426,379
Claims priority, application France, Oct. 5, 1981, 81 18674
Int. Cl.³ H01Q *17/00*
U.S. Cl. 343—754 **4 Claims**



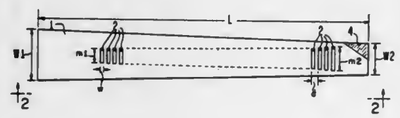
1. A microwave filter positionable in front of a radar antenna for attenuating or cancelling secondary lobes of a microwave beam, the filter comprising:
a plurality of first zig-zag planar networks, each having conductors serially connected to diodes biased in the same direction and lying along respective parallel axes;
a second plurality of zig-zag networks, each having conductors serially connected to diodes biased in the same direction and lying in a parallel spaced plane with respect to that of the first networks, the second zig-zag networks being the mirror image of the first and lying along respective parallel axes; and
terminal means connected to respective networks for conducting control currents of adjustable values therethrough which varies the resistance of the diodes accordingly, thereby attenuating or cancelling secondary lobes of the microwave beam without affecting the primary lobes regardless of polarization type.

4,518,967

TAPERED-WIDTH LEAKY-WAVEGUIDE ANTENNA

Charles W. Westerman, El Toro, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Mar. 5, 1982, Ser. No. 354,992
Int. Cl.³ H01Q *13/20*
U.S. Cl. 343—771 **16 Claims**



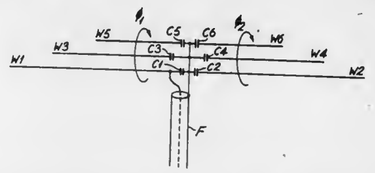
1. A slotted waveguide antenna comprising:
an elongated hollow conductive waveguide having two ends and two elongated faces, one end being fed with electromagnetic energy which then propagates along within the waveguide towards its other ends;
cut out of one of the faces, several elongated slots each having its long axis substantially orthogonal to the long axis of the waveguide;
wherein the width of the slotted face decreases as the waveguide is traversed in the direction of transmitting propagation; and
the length of the slots increases as the waveguide is traversed in the direction of transmitting propagation; wherein
the antenna has been fabricated by selecting slot length that give a desired sidelobe pattern; and
the width variations of the slotted face have been selected to compensate for changes in wave propagation velocity caused by the variable slot lengths, in such manner that the wave propagation velocity is kept substantially constant along the length of the waveguide.

4,518,968

DIPOLE AND GROUND PLANE ANTENNAS WITH IMPROVED TERMINATIONS FOR COAXIAL FEEDERS

Maurice C. Hately, Aberdeen, Scotland, assignor to National Research Development Corporation, London, England

Filed Sep. 7, 1982, Ser. No. 415,545
Claims priority, application United Kingdom, Sep. 10, 1981, 8127439
Int. Cl.³ H01Q *9/16*
U.S. Cl. 343—802 **23 Claims**



1. A multiband ground plane antenna, comprising:
a structure having a ground plane conductor and at least two spaced apart elongated conductor portions of different lengths normal to the ground plane conductor and in close proximity with one another, one end of each elongated conductor portion being adjacent to the ground plane conductor;
a respective capacitor associated with each of said conductor portions except the longest, each said capacitor connecting said one end of said associated conductor portion to said ground plane conductor, respectively and
first and second connecting points, for the connection of the inner and outer conductors of a coaxial feeder, connected to one end of the longest conductor portion and the ground plane conductor, respectively,
each of said capacitors providing a phase shift of several tens of degrees between voltage and current applied thereto at a frequency at which the conductor portion connected to that capacitor has a resonant length.

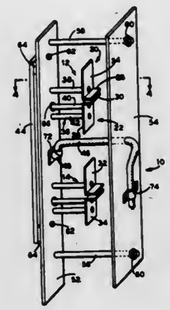
4,518,969

VERTICALLY POLARIZED OMNIDIRECTIONAL ANTENNA

Richard D. Bogner, Roslyn, N.Y., assignor to Leonard H. King, Valley Stream, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,397
Int. Cl.³ H01Q *19/30, 19/10*
U.S. Cl. 343—819 **26 Claims**

1. An antenna for producing an omnidirectional radiation pattern comprising:
at least one dipole having a pair of electrically conductive arms extending oppositely along a common axis from a feed point;
feeding means connected to said feed point for coupling said dipole to a signal source of a wavelength λ where λ is the wavelength of interest;
and a pair of opposing axially extending electrically conductive reflecting members spaced apart on opposite sides of said dipole, said members having a width of less than $\lambda/4$ transverse to the axis of the dipole, the respective axis of each of said conductive members and said dipole arms being coplanar and parallel;



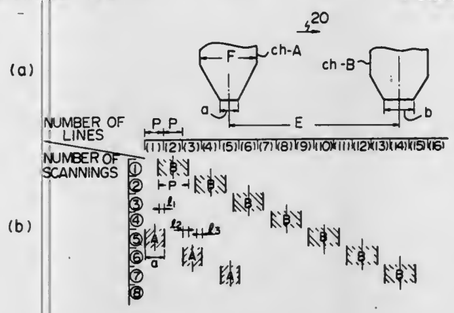
whereby the polarization of the antenna is transverse to the plane of omnidirectionality.

4,518,970

METHOD FOR FORMING A LATENT IMAGE AND APPARATUS FOR CARRYING OUT THE SAME

Norio Kokaji, Hino, and Kunio Kinoshita, Hachioji, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 370,135, Apr. 20, 1982, abandoned.
This application Sep. 18, 1984, Ser. No. 652,160
Claims priority, application Japan, Apr. 21, 1981, 56-60318
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.2 **4 Claims**



2. A method of forming latent images in a magnetic printing apparatus comprising the steps of:
a. recording latent images on a plurality of channels of different widths as measured in the main scanning direction, the tracking locus of each of said differentwidth channels corresponding to a different number of lines in the sub-scanning direction;
b. controlling the recording by selecting and driving at least two channels of different widths such that the line-recorded latent images of a wider channel are reduced in width by subsequently recorded latent images of a succeeding narrower channel which overlaps an edge portion of said wider channel, thereby to provide data tracks in the sub-scanning direction which are of substantially equal width as measured in the main scanning direction, and without unrecorded line space therebetween.

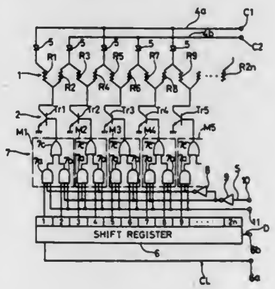
4,518,971

THERMAL HEAD

Takafumi Endo, Osaka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,750
Claims priority, application Japan, Dec. 29, 1982, 57-229804
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **2 Claims**

1. A thermal head for use in thermally recording data, the thermal head comprising:
a heating resistor group including 2n pieces of heating elements;
n pieces of buffer elements for driving said heating elements, wherein said heating elements are adjacently paired for one said buffer element so as to enable one of said paired heating elements to be energized;
a first common electrode and a second common electrode for energizing said heating elements through said buffer elements, wherein said heating elements are adjacently paired for being connected alternately to said first common electrode and said second common electrode;



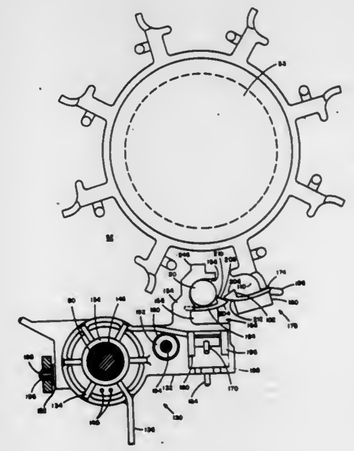
a 2n-bit shift register for storing printing data for said heating resistor group; and
n pieces of multiplexors each for selecting one of the 2 bit signals adjacently located in the parallel outputs of said shift register according to the output timing of said first common electrode or said second common electrode, thereby applying said selected signal to said buffer elements.

4,518,972

GRAPHICS PLOTTER TURRET HEAD

Charles Gunderson, Bueno Park, and Henry W. Hammond, Yorba Linda, both of Calif., assignors to Sanders Associates, Inc., Nashua, N.H.

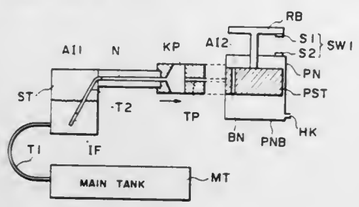
Filed Jul. 23, 1984, Ser. No. 633,174
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—139 R **4 Claims**



1. In a graphics plotter, a turret head assembly for holding a plurality of liquid ink pens on a pen carriage adjacent the point of writing and for selectively exchanging the pens to be the writing pen, said turret head assembly comprising:

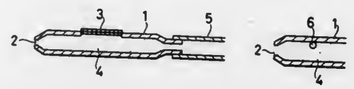
(a) a base plate member carried by the pen carriage;
(b) a turret mounted to said base plate member for rotary motion about a first axis normal to said base plate member;
(c) first drive means for selectively rotating said turret about said axis between previously selected main positions and sub-positions of each of said main positions, said main positions being radially equally spaced and equal in number to the number of pens to be carriable by the turret head, said sub-positions being equal in number to said main positions and each being a fixed radial distance from its respective main position, one of said main positions being designated as the writing position and one of said main positions being designated as the home position with respect to which said main positions are numbered for identification purposes, said base plate member having access therethrough adjacent said writing position through which the writing tip of a pen can pass to contact a writing medium disposed below said plate member for writing thereupon;
(d) a plurality of first pen gripping arms extending radially outward from said turret horizontal to said base plate member at respective ones of said main positions, said arms each having first gripping means for releasably gripping a pen along one edge adjacent the outer end thereof;
(e) a pen holder member mounted to said base plate member for movement up and down along a second axis normal to said base plate member between raised and lowered positions;
(f) second drive means for selectively moving said pen holder member between said raised and lowered positions; and,
(g) a second pen gripping arm extending radially outward from said pen holder member horizontal to said base plate member along a radial line through said first axis, said second arm being disposed adjacent said writing position and adapted to pass vertically between adjacent ones of said first arms and to pass below said first arms when said pen carriage member is in said lowered position and said turret is rotated, said second arm having second gripping means for releasably gripping a pen adjacent the outer end thereof and facing towards said first gripping means, said first and second gripping means being adapted to exchange a pen from one gripping means to the other when they are brought together.

4,518,973
INK JET PRINTER VACUUM PURGING SYSTEM
Shigemitsu Tazaki, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 3, 1983, Ser. No. 491,301
Claims priority, application Japan, May 11, 1982, 57-77547
Int. Cl.³ E01D *15/18*
U.S. Cl. 346—140 R **11 Claims**



1. An ink jet printer comprising:
a recording head for discharging ink from an end of thereof;
capping means for releasably sealing said end of said recording head;
suction means connected to said capping means for sucking said end of said recording head through said capping means by producing a negative pressure;
detection means associated with said suction means for detecting the sucking operating of said suction means; and
indication means for providing an indication that the sucking operation of said suction means is in progress on the basis of detecting signal from said detection means, and terminating the indication when the pressure at said end of said recording head reaches a predetermined level.

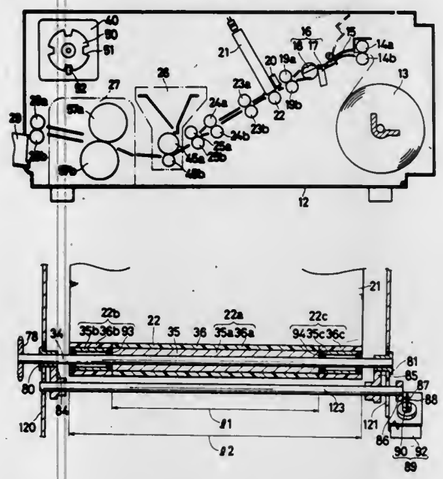
4,518,974
INK JET AIR REMOVAL SYSTEM
Takuro Isayama, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Sep. 21, 1982, Ser. No. 420,865
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **12 Claims**



1. An ink jet printing system for printing an image in the form of dots of ink droplets on a recording medium comprising:
a nozzle defining an ink chamber for containing a quantity of ink, said nozzle being provided with an ink discharging hole through which the ink is discharged out into the atmosphere;
an ink reservoir connected to a supply side of said nozzle for supplying ink to said nozzle;
ink drive means for driving the ink inside said ink chamber to be discharged through said ink discharging hole;
detecting means connected to said ink drive means for detecting the fact that the amount of air bubbles trapped in the ink inside said ink chamber has reached a predetermined level; and
ink drawing means with a first state of non-activation and a second state of activation as responsive to said detecting means and connected to said nozzle for temporarily drawing said ink in said nozzle such that an air-ink boundary defined between the atmosphere and said ink in said nozzle is pulled into said ink chamber over a predetermined distance thereby transferring the air bubbles in said ink to the atmosphere, said ink drawing means being returned to its first state after a predetermined time period has elapsed so that said ink chamber can be filled with ink free of air bubbles.

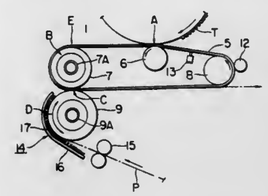
4,518,975
ELECTROSTATIC RECORDING APPARATUS
Yoshihiro Kawahara, and Kiyoshi Hayashi, both of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan
Filed Nov. 30, 1982, Ser. No. 445,475
Claims priority, application Japan, Nov. 30, 1981, 56-192381; Nov. 30, 1981, 56-192382; Nov. 30, 1981, 56-192384
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **7 Claims**

1. An electrostatic recording apparatus for recording an image on sheets of recording paper of various widths, said apparatus comprising:
an electrostatic recording head for forming an electrostatic image on a sheet of recording paper;
a roller for pressing the sheet of recording paper against said recording head;
means mounting said recording head and said roller for relative displacement toward and away from each other between an operative position, whereat said roller presses the sheet of recording paper against said recording head during a first period of time in which the sheet of recording paper travels between said recording head and said roller to enable said recording head to form the electrostatic image on the sheet of recording paper, and an inoperative position, whereat said roller is spaced from said recording head during periods of time other than said first period of time;
said roller comprising a first length portion and at least one second length portion mounted for free idling rotation relative to said first length portion; and



means for rotating said first length portion such that, with said roller and said recording head being in said operative position, when the sheet of recording paper has a width equal to the length of said first length portion, said second length portion is held stationary against said recording head, and when the sheet of recording paper has a width greater than said length of said first length portion, said second length portion is pressed against the sheet of recording paper and caused to rotate thereby.

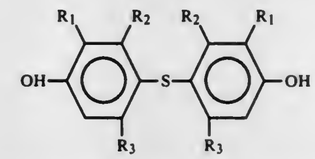
4,518,976
RECORDING APPARATUS
Noriyoshi Tarumi; Yukio Okamoto; Kiyoshi Kimura; Masakazu Fukuchi; Tadashi Miwa, and Kunio Ito, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Nov. 15, 1983, Ser. No. 552,087
Claims priority, application Japan, Nov. 17, 1982, 57-201663; Dec. 13, 1982, 57-188217[U]
Int. Cl.³ G01D *15/06, 15/12;* **G03G** *15/00*
U.S. Cl. 346—153.1 **13 Claims**



1. In a recording apparatus including a toner image carrier, an intermediate image transfer member onto which is transferred said toner image on said toner image carrier and which further transfers said toner image onto a subsequent transfer material, and an image transfer section for transferring said toner image onto said subsequent material, said section comprising a transfer roller and a pressure roller pressing on said transfer roller, said recording apparatus comprising a pre-heating means for pre-heating said subsequent transfer material at a position prior to said image transfer section, said pre-heating means comprising a heat member and a pressing member which brings said subsequent transfer material into contact with said heat member, wherein at least one side of said pressing member facing said subsequent transfer material comprises a heat-resistant, elastically deformable porous material.

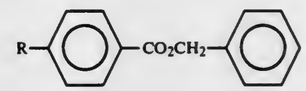
4,518,977
HEAT-SENSITIVE RECORDING SHEET
Fumio Fujimura; Toshimi Satake; Makoto Iwaguro, and Toshiaki Minami, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan
Filed Sep. 8, 1983, Ser. No. 531,173
Claims priority, application Japan, Sep. 14, 1982, 57-158821
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—209 **5 Claims**

1. A heat sensitive recording sheet having a color forming layer comprising a colorless basic dyestuff and an organic color-developing agent, said color-forming layer using a bis-(4-hydroxyphenyl) sulfide compound of the general formula (I) and a compound of the general formula (II) as a color-developing agent:

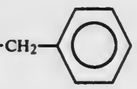
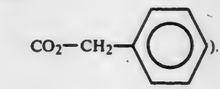


(I)

(in which R^1 represents an alkyl group with 1–4 carbon atoms or cyclohexyl group, and each of R_2 and R_3 represents an alkyl group with 1–10 carbon atoms or hydrogen atom, provided that at least one of R_2 and R_3 is not hydrogen atom),



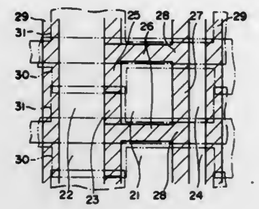
(II)

(in which R represents  or ).

4,518,978
SOLID STATE IMAGE SENSOR
Kaneyoshi Takeshita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,894
Claims priority, application Japan, Jul. 20, 1981, 56-113382
Int. Cl.³ H01L *29/78, 27/14, 31/00*
U.S. Cl. 357—24 **3 Claims**

1. A solid state image sensor comprising: a sensing and vertical transfer portion having a large number of sensing element regions each of said sensing element regions containing a photo-sensing area for producing and storing signal charges, a vertical charge transfer portion for vertically transferring the signal charges, a transfer gate area for transferring the signal charges to said vertical charge transfer portion from said photo-sensing area and a channel stopper area provided which surrounds said photo-sensing area and forms said trans-

fer gate area at a portion thereof, a horizontal charge transfer portion provided at one end of said sensing and vertical transfer portion for transferring horizontally the signal charges which have been transferred from said sensing and vertical transfer portion, a first transfer electrode extending over a first part of said vertical charge transfer portion and a part of said channel stopper area and located between two adjacent said photo-sensing areas, and a second transfer electrode extending over a second part of said vertical charge transfer portion, said



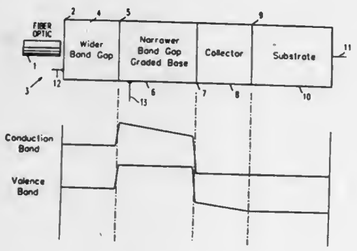
transfer gate area and said part of the channel stopper area, said second transfer electrode being placed over said first transfer electrode at the position of said part of said channel stopper area so that it is shielded from said part of said channel stop area by said first transfer electrode, and wherein said first transfer electrode has a greater dimension in the direction between adjacent sensing areas than the dimension of said second transfer electrode in the region of said part of said channel stopper in the direction between adjacent sensing areas.

4,518,979

SEMICONDUCTOR TRANSISTOR WITH GRADED BASE AND COLLECTOR

William P. Dumke, Chappaqua, and Jerry M. P. Woodall, Bedford Hills, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,923
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **8 Claims**



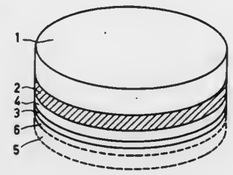
1. A transistor comprising in combination in an epitaxial layered monocrystalline structure,
an emitter layer having an energy gap of a first magnitude,
a base layer forming a first p-n junction with said emitter layer and having an energy gap of a second magnitude narrower than said emitter energy gap, said base energy gap decreasing with distance from said first p-n junction,
a collector layer including a substrate forming a second p-n junction with said base layer, said collector energy gap increasing with distance from said second p-n junction, and
an external electrical connection each to said substrate, to said base and to said emitter layer.

4,518,980

SEMICONDUCTOR DEVICE FOR THE VACUUM-EMISSION OF ELECTRONS

Pierre Guittard, Montlhery Longpont; Philippe Jarry, Sucy-en-Brie; Alphonse Ducarre, Sainte-Genevieve-des-Bois, and Lazhar Haji, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1982, Ser. No. 380,633
Claims priority, application France, Jun. 3, 1981, 81 10993
Int. Cl.³ H01L *29/161, 27/14, 31/00, 29/205*
U.S. Cl. 357—30 **10 Claims**



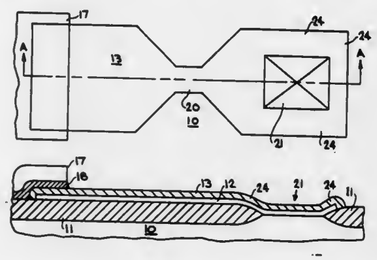
1. An electron emitting device including an active semiconductor layer having a surface for emitting electrons into a vacuum, characterized in that said active layer is doped through at least a substantial portion of its thickness with impurity atoms, the density of said atoms decreasing with distance from said surface.

4,518,981

MERGED PLATINUM SILICIDE FUSE AND SCHOTTKY DIODE AND METHOD OF MANUFACTURE THEREOF

Ronald L. Schlupp, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 12, 1981, Ser. No. 320,368
Int. Cl.³ H01L *29/48, 27/02, 29/40, 23/48*
U.S. Cl. 357—71 **17 Claims**



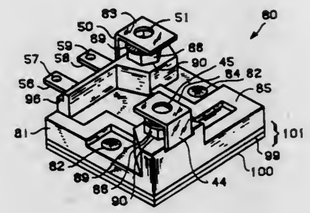
1. In an integrated circuit formed at a surface of a semiconductor substrate, a merged fuse and Schottky diode device comprising:
an insulating layer having an aperture therethrough over said substrate surface,
a silicon layer on said insulating layer and said aperture, said silicon layer shaped as an interconnecting line of said integrated circuit and having a first portion on said insulating layer and a second portion in contact with said substrate through said aperture, and
a metal silicide layer over said silicon layer having substantially the same shape as said silicon layer so that a first portion of said metal silicide layer over said first portion of said silicon layer has a cross sectional dimension so as to open by the application of electrical voltage greater than a preselected electric voltage and a second portion of said metal silicide layer over said second portion of said silicon layer forms a Schottky diode at said aperture.

4,518,982

HIGH CURRENT PACKAGE WITH MULTI-LEVEL LEADS

Jerry M. Du Bois, Mesa, and Keith G. Spanjer, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 238,799, Feb. 27, 1981, abandoned. This application Sep. 20, 1983, Ser. No. 534,261
Int. Cl.³ H01L *23/34, 23/12, 23/48, 25/04*
U.S. Cl. 357—74 **15 Claims**



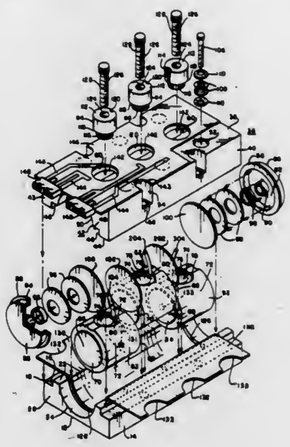
1. A high current semiconductor device comprising:
a base electrode having a bent-up portion located substantially at one corner of said base electrode and extending at substantially a right angle from said base electrode, and having a bent-over portion extending from said bent-up portion forming a first external connection means;
wherein said base electrode has an elongated die attach portion having first and second long sides, and wherein said die attach portion is adapted to receive semiconductor die between said first and second long sides, wherein said elongated die attach portion extends away from said bent-up portion of said base electrode in a direction substantially parallel with said bent-over portion;
a first electrode having an elongated first planar portion bonded by insulating means to said base electrode along said first long side of said elongated die attach portion of said base electrode, a bent-up portion extending at substantially a right angle from an end of said elongated first planar portion, and a bent-over portion extending from said bent-up portion substantially parallel with said elongated first planar portion and aligned substantially parallel with said first long side of said die attach portion, wherein said bent-over portion forms a second external connection means;
a second electrode, separate from said first electrode, having an elongated second planar portion bonded by insulating means to said base electrode along said second long side of said elongated die attach portion of said base electrode, a bent-up portion extending at substantially a right angle from said elongated second planar portion, and a bent-over portion extending from said bent-up portion substantially parallel with said elongated second planar portion and aligned substantially parallel with said second long side of said die attach portion, wherein said bent-over portion forms a third external connection means; and
encapsulating means adapted to cover said die attach portion of said base electrode, said elongated planar portions of said first and second insulated electrodes, and at least a part of said bent-up portions, leaving free at least part of said bent-over portions which form said external connection means.

4,518,983

ASSEMBLY-HEAT SINK FOR SEMICONDUCTOR DEVICES

Kenneth G. Longenecker, Greensburg, and Thomas B. Geary, Derry, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 22, 1982, Ser. No. 436,104
Int. Cl.³ H01L *23/34, 23/02, 23/04, 25/04*
U.S. Cl. 357—81 **8 Claims**



1. A semiconductor modular assembly comprising, a metal base member and a metal top member, said base member having a top surface, a bottom surface and two end faces said top metal member having a top surface, a bottom surface and two end faces, a central portion of said top surface of said base member being curved and concave relative to said top surface, a central portion of said bottom surface of said top member being curved and concave relative to said bottom surface, whereby when said top member is disposed on said base member, the curved concave portions of said base and top member form a cavity between the end faces of said members, said cavity having a circular cross-section, a plurality of metal cylindrical members disposed within said cavity, semiconductor fusions disposed within said cavity between adjacent cylindrical members, compression means holding said semiconductor fusions in an electrical and thermal conductive relationship with said adjacent metal cylindrical members, means for electrically insulating said cylindrical members and said fusions from said base and top members, and means for making electrical contact to said semiconductor fusions through said cylindrical members.

4,518,984

DEVICE FOR FLICKER-FREE REPRODUCTION OF TELEVISION PICTURES AND TEXT AND GRAPHICS PAGES

Helmut Mitschke, Königsbach-Stein, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

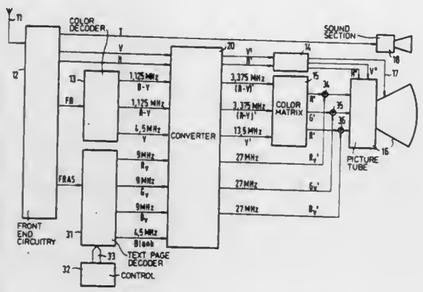
Filed Mar. 1, 1983, Ser. No. 471,075
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209876
Int. Cl.³ H04N *9/42, 9/535*
U.S. Cl. 358—11 **2 Claims**

1. Television picture reproducer with digital frame store, wherein the video signal received from the transmitter at a given field and line frequency is sampled, and wherein the sample values are converted into digital data units, written into the frame store at a first frequency, the write frequency, read out of the frame store at a second frequency, the read fre-

quency, which is a multiple of the write frequency, returned to analog form, and reproduced on the screen at a higher field and line frequency, characterized in

that the reproducer contains a decoder for the selection and display of text and graphics pages (e.g., for Viewdata or Videotext), called "text-page decoder" (31) for short, which forms at least color signals (R_y, G_y, B_y) and a blanking signal (Blank),

that the frame store (221, 222, 223) is preceded by a multiplexer (26) which permits the (digital) color signals for the text and graphics pages, called "text pages" for short, to be stored instead of at least part of the data units for the television picture,



that the data units read from the frame store are separated into text-page and television-picture signals by a demultiplexer (27),

that the switchover of the multiplexer (26) and the demultiplexer (27) as well as the blanking of the respective picture or picture section not to be displayed is effected by the original or a suitably converted blanking signal (Blank),

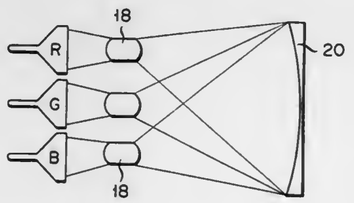
and that groups of n successive values of the color signals of the text page are simultaneously written into and simultaneously read from the frame store, for which purpose an additional multiplexer (25) with a buffer (251) and an additional demultiplexer (28) are inserted in the path of the text-page signal at the input end and the output end, respectively.

4,518,985

PROJECTION TYPE GREEN CATHODE RAY TUBE, METHOD FOR MANUFACTURING PHOSPHOR SCREEN FOR THE SAME, AND PROJECTION VIDEO DEVICE USING THE SAME

Masaaki Tamatani, Fujisawa; Nobuyuki Tsuda, Kawasaki; Norio Koike, and Sakae Ajiro, both of Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 4, 1982, Ser. No. 384,947
Claims priority, application Japan, Jun. 10, 1981, 56-88251
Int. Cl.³ H04N *9/31*
U.S. Cl. 358—60 **7 Claims**



1. A projection type green cathode ray tube comprising:

a main body having a transparent faceplate;

a phosphor screen formed on the inner surface of said faceplate, said phosphor screen including a cerium-activated calcium sulfide phosphor which contains 0.01 to 0.3 mol % of cerium; and

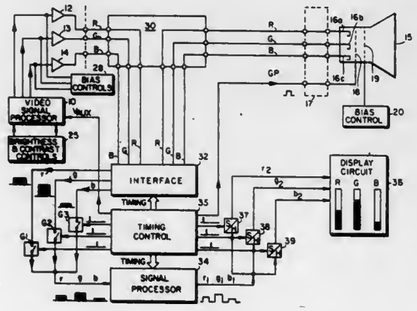
means housed in said main body for emitting an electron beam on said phosphor screen, said means being capable of radiating the electron beam with energy sufficient to project an image on said faceplate onto an external screen.

4,518,986

APPARATUS FOR ACCURATE ADJUSTMENT OF KINESCOPE BLACK LEVEL BIAS

Werner Hinn, Zollikerberg, and Hans-Rudolf Fecht, Berikon, both of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 29, 1982, Ser. No. 454,446
Claims priority, application United Kingdom, Apr. 6, 1982, 8210291
Int. Cl.³ H04N *9/62*
U.S. Cl. 358—65 **22 Claims**



1. In combination with a video signal processing system including an image reproducing device responsive to video information signals encompassing periodic vertical image field intervals each constituted by a plurality of horizontal image line intervals, control apparatus comprising:

means for suppressing normal video information signals during control intervals to simulate a black image signal input to said image reproducing device;

means coupled to said image reproducing device for deriving therefrom a composite signal representative of the black image bias condition of said image reproducing device, said composite signal comprising a reference component and a plurality of bias representative signal components which are derived during plural horizontal line intervals and which are significant in number relative to the number of horizontal line intervals associated with a vertical field interval;

signal processing means responsive to said composite signal and including means for integrating said composite signal; and

means for developing a bias control signal in response to an integrated composite signal from said integrating means.

4,518,987

THREE-COLOR COPYING MACHINE

Hiroyuki Saitoh, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,643
Claims priority, application Japan, Apr. 6, 1982, 57-55999
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—75 **6 Claims**

1. A three-color copying machine, comprising:

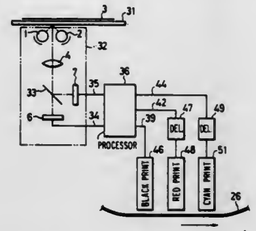
an optical system for forming an image of the picture data of an original at predetermined positions;

first wavelength selecting means for selecting the wavelength component of a particular color other than black;

second wavelength selecting means for selecting at least the wavelength component of the color complementary to said particular color;

a first image sensor for performing photo-electric conversion at one said predetermined position with respect to said wavelength selecting means with the aid of said optical system;

a second image sensor for performing photo-electric conversion at a second said predetermined position with respect



to said wavelength component selected by said second wavelength selecting means with the aid of said optical system;

a signal processing means for subjecting image signals outputted by said image sensors to binary-encoding and logical operations, to provide image signals representing black, said particular color and said complementary color; and

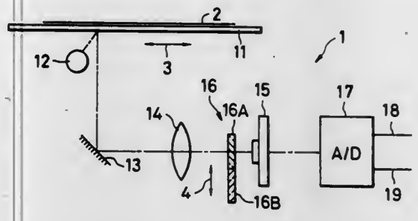
recording means for receiving said image signals from said signal processing section to perform recording in said colors, respectively.

4,518,988

TWO-COLOR COPYING MACHINE

Hiroyuki Saitoh, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,642
Claims priority, application Japan, Apr. 6, 1982, 57-55997
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—75 **9 Claims**



1. A two-color copying machine, comprising;

an image sensor for twice reading an original, to form analog image signals;

an optical system for applying image data respecting said original to said image sensor;

complementary color filter means which, in one reading of said original, is placed in said optical system in a manner so as to absorb wavelength components of a particular chromatic color to be read;

means for binary-encoding said analog image signals, to respectively form a first digital image signal for image data respecting an achromatic color and a second digital image signal for image data respecting the sum of said achromatic and chromatic colors;

an achromatic recording section receiving an ink donor sheet assembly and said first digital image signal for said image data respecting said achromatic color, for recording said achromatic color on said recording sheet;

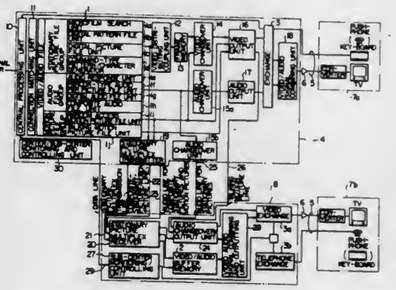
a chromatic recording section receiving a part of said ink donor sheet assembly containing a chromatic ink layer and said second image signal respecting the sum of said achromatic and chromatic colors, for recording said chromatic color on said recording sheet; and means for preventing recording of said chromatic color over said recorded achromatic color on said recording sheet.

4,518,989

BUFFER MEMORY DISPERSION TYPE VIDEO/AUDIO TRANSMISSION SYSTEM WITH SPATIALLY AND TIMEWISE DIVIDED INTER-OFFICE JUNCTION LINES

Akira Yabiki, Tokyo; Norio Imanishi, Yokohama; Yoji Shibata, Yokohama; Wataru Kosuge, Yokohama, and Nobumichi Yukawa, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Continuation of Ser. No. 97,127, Nov. 26, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 428,971
Claims priority, application Japan, Nov. 24, 1978, 53-144159
Int. Cl.³ H04N *7/10*
U.S. Cl. 358—86 **14 Claims**



1. A buffer memory dispersion type video/audio transmission system with spatially and timewise divided interoffice junction lines comprising:

a center comprising:

a group of audio files for storing audio information;

a group of video files for storing video information;

means for fetching specific information from said audio and video file groups in response to an information request received at said center from a subscriber terminal unit and for dividing fetched video information into a luminance signal and a chrominance signal; and

means for transmitting said luminance signal with a superimposing signal in a time-divisional fashion by a first junction line and for transmitting said chrominance signal with an audio signal based on fetched audio information in a time-divisional fashion by a second junction line; and

a plurality of subcenters comprising:

a multiplex receiver for receiving said transmitted signals from said first and second junction lines;

video and audio buffer memories for temporarily storing video and audio information received by said multiplex receiver from said first and second junction lines; and

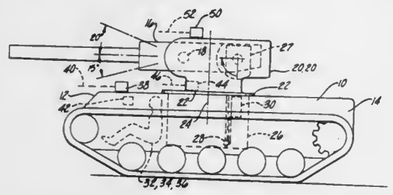
an audio output unit and a video output unit and an audio changeover unit and a video changeover unit for coupling said temporarily stored video and audio information to said subscriber terminal units.

4,518,990

OBSERVATION SYSTEM FOR MILITARY VEHICLES

Jaunutis B. Gilvydis, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 11, 1983, Ser. No. 512,516
Int. Cl.³ H04N *7/18, 5/26*
U.S. Cl. 358—87 **3 Claims**



1. In a military ground vehicle that includes a hull having front and rear ends, a gun platform centrally mounted on the hull for rotational motion in the azimuth plane, two laterally-spaced gun-cradle walls extending upwardly from the platform, and a main gun centrally located in the space between said cradle walls for swinging ajustments in the elevational plane: the improvement comprising a first driver-controlled television camera located on the hull near its front end; means for adjusting said first camera so that its line-of-sight is movable in the azimuth and elevational planes; a first television receiver located within the hull at the driver's station; first cable connections between the first camera and first receiver, whereby the driver is enabled to view the terrain in front of the vehicle; a second television camera located on the rotary platform between the gun cradle walls and directly below the main gun, with its line-of-sight oriented on the elevational plane of the gun-aiming axis; a second television receiver located within the hull at the gunner's station; second cable connections between the second camera and second receiver whereby the gunner is enabled to train the gun on targets within the second camera field-of-view; a third commander-controlled television camera located at an elevated point on one of the gun cradle walls; means for adjusting said third camera so that its light-of-sight is movable in the aximuth and elevational planes; a third television receiver located within the hull at the commander's station; and cable connections between the third camera and third receiver whereby the commander is enabled to seek new targets while the gunner is firing the main gun at a previously-selected target.

4,518,991

APPARATUS FOR STORING AND PROCESSING ANALOGUE SIGNALS TO BE DISPLAYED AS AN OSCILLOSCOPIC IMAGE AND OSCILLOSCOPE COMPRISING SUCH APPARATUS

Pierre J. C. Dureux, Corbeil-Essonnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1982, Ser. No. 421,609
Claims priority, application France, Sep. 28, 1981, 81 18212
Int. Cl.³ H04M *7/18*
U.S. Cl. 358—93 **10 Claims**

1. An apparatus for storing and processing arbitrary analog signals comprising

a camera having a target providing images for a temporary analog memory, said camera including a video scanning system for scanning said temporary analog memory, and a video preamplifier for converting electrical signals of said images into video frequency signals; and

a processing circuit receiving signals from said video preamplifier for processing said video frequency signals, said processing circuit including

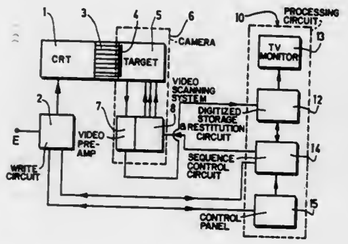
(a) a detection circuit for detecting an average black level value corresponding to used parts of said temporary analog memory, said detection circuit receiving output signals from said video preamplifier, and said detector circuit generating a reference threshold value by adding a constant voltage to said detected average black level value;

(b) an analog comparator circuit for receiving said output signals of said video preamplifier on a first input and for receiving said reference threshold value on a second input, said comparator circuit for providing a logic "1" signal only when said output values exceed said reference threshold value,

(c) a signal regenerator circuit receiving a signal from said analog comparator circuit for reconstructing missing parts of maximum instantaneous write signals, said missing parts having a duration shorter than a predetermined value, said signal regenerator circuit providing a binary signal representing said missing parts;

(d) a conversion circuit for converting said binary signal into a pulse train of the same duration as said missing parts, said duration being equal to at least a few pulse periods of said pulse train for restoring said missing parts, said conversion circuit providing an output signal;

(e) a change detector circuit for detecting positions of rising and falling edges of said output signal of said conversion circuit, said change detector circuit supplying pulse signals indicating beginnings and ends of said missing parts;



(f) a digital memory circuit for storing positions of said beginnings and ends of said missing parts, said memory circuit being loaded by an input buffer register having quantized values being defined by a digitization counter, said values indicating positions of said pulse signals providing beginnings and ends of said missing parts;

(g) a circuit for restitution of positions of instants characteristic of a beginning or an end of a missing part, said restitution circuit receiving values read into said digital memory circuit by an output buffer register circuit;

(h) a circuit for reconstructing said missing parts between positions of said beginnings and ends of said missing parts;

(i) a television monitor means for forming display of said images, said monitor means enabling display of contents of said digital memory circuit permanently, said contents being information corresponding to write signals in said temporary analog memory;

(j) a sequence control circuit providing a synchronous supply of clock signals for scanning said temporary analog memory and clock signals for converting said binary signal of said signal regenerator, said sequence control circuit controlling clock signals for said digital memory circuit, and said sequence control circuit providing an entire operator write circuit communication; and

(k) an accessible control panel.

4,518,992

ACOUSTIC IMAGING SYSTEM AND METHOD

Lawrence W. Kessler, Glenview, and Donald E. Yuhas, Wood Dale, both of Ill., assignors to Sonoscan, Inc., Bensenville, Ill.

Filed Nov. 17, 1982, Ser. No. 442,264
Int. Cl.³ H04N *5/30*
U.S. Cl. 358—112 **51 Claims**

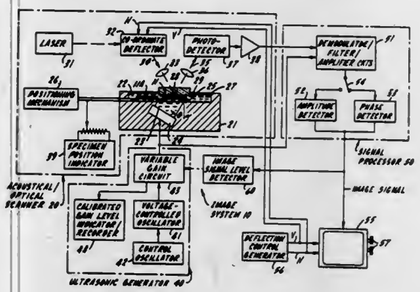
1. In an acoustic imaging system for generating a visual image representative of the acoustic properties of an object, of the kind including:

insonification means for insonifying the object with acoustic waves having a frequency above ten megahertz to develop a pattern of perturbations on an at least partially light-reflective interface surface, coupled to the object, which pattern is representative of acoustic properties of the object;

scanning means for scanning a high-energy small-diameter light beam across the interface surface;

photodetection means for detecting a portion of the light beam reflected from the interface surface to develop an initial electrical signal;

signal processor means, coupled to the photodetection means, for processing the initial electrical signal to develop an acoustic image signal;



and display means, coupled to the signal processor means, for utilizing the image signal to develop a visual image representative of acoustic properties of the object;

the improvement comprising:

image signal level determination means, coupled to the signal processor means, for detecting the amplitude level of the image signal;

and variable gain means, incorporated in the insonification means, for adjusting the intensity of the acoustic waves insonifying the object to afford an image signal level corresponding to a given reference level,

the adjustment of the variable gain means affording a quantitative measure of variation of acoustic properties of the object, relative to the reference, that minimizes the effects of inadequate dynamic range and non-linearities in the imaging system.

4,518,993

TELEVISION SIGNAL RECEIVING SYSTEM

Hisao Okada, Yokohama; Seiichiro Tanaka, Tokyo, and Seiji Kawaberi, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 324,137
Claims priority, application Japan, Nov. 27, 1980, 55-167110
Int. Cl.³ H04N *7/16;* **H04B** *1/26*
U.S. Cl. 358—114 **20 Claims**

1. A television signal receiving system comprising:

tuner means;

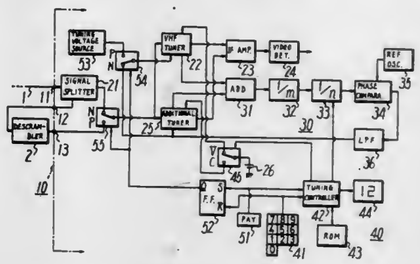
channel selecting means connected to said tuner means and actuable for selecting a plurality of television channels;

an input terminal for receiving television signals including standard television signals each transmitted through an allotted channel of said plurality of television channels which can be selected by actuation of said channel selecting means and a non-standard television signal transmitted through a television channel other than said plurality of television channels which can be selected;

signal splitting means connected to said input terminal and having first and second output terminals;

converting means connected to said first output terminal of said signal splitting means for converting said non-standard television signal to a converted standard television signal occupying a vacant one of said plurality of television channels which can be selected by actuation of said channel selecting means, said converting means having an output terminal;

switch means for connecting one of said second output terminal of said signal splitting means and said output terminal of said converting means to said tuner means; and



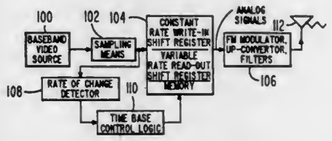
switch control means connected to said channel selecting means and said switch means for controlling said switch means upon actuation of said channel selecting means so that said switch means supplies one of said standard television signals and said converted standard television signal to said tuner means, and said channel selecting means is actuable to select any one of the received television signals for viewing.

4,518,994

COMMUNICATION SYSTEM COMPANDOR

Paul Schnitzler, Kendall Park, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 20, 1982, Ser. No. 451,743
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—133 **3 Claims**



1. In a signal transmission system comprising a transmitter, a transmission medium, and a receiver, a system for processing a signal to improve the transmission characteristics thereof comprising:

first means for decreasing and increasing, respectively, the rate of change of amplitude (dA/dt) of first and second portions of said signal, respectively, whose dA/dt exceeds or is less than a predetermined dA/dt, in a non-linear manner as the dA/dt of said first and second portions increase or decrease, respectively, to produce a processed signal whose maximum and minimum dA/dt's define a bandwidth less than that of the unprocessed signal, said first means including

sampling means for sampling said signal into samples haing a given order of succession,

first timing means for generating first clock pulses at a rate f_c,

first N stage shift register means responsive to said first clock pulses to receive and store said samples in said given order,

a dA/dt detector responsive to said samples to determine the dA/dt of adjacent samples,

logic means responsive to the dA/dt of adjacent samples to produce and store a count value representative of the time

duration between such adjacent samples after the dA/dt has been decreased or increased in accordance with said non-linear rate,

adder means for adding the total count value of said count values over each successive group of N count values, where the group of corresponding N samples occupies a time period T,

means for determining the number of counts W by which said total count value exceeds or is less than a predetermined nominal count value X,

logic comprising a variable timing means for generating second clock pulses and responsive to said count W to alter the frequency f_2 of said second clock pulses so that $(X+W)/f_2=T$,

second N stage shift register means responsive to the completion of the entry of each group of N samples into said first shift register means to receive the samples stored in said first shift register means,

presettable counting means coupled to said logic and responsive to said second clock pulses,

second logic means for presetting said stored count values in said presettable counting means in said given order upon the entry of each group of N samples into said second shift register means from said first shift register means,

whereby said counting means responds to said second clock pulses to count through successive ones of said count values to output a shift signal each time said counting means counts through one of said count values, said second shift register is responsive to each of said shift signals to shift therefrom one of the samples stored therein; and

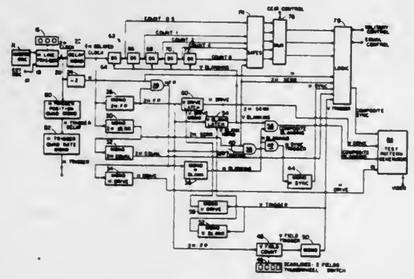
second means for altering the dA/dt of the processed signal at the receiver in a manner which is the reciprocal of the changes in dA/dt which occurred at said transmitter to reproduce said unprocessed signal.

4,518,995

SELECTABLE RATE SYNC GENERATOR SYSTEM

John H. Harshbarger, Xenia, and William M. Shores, Dayton, both of Ohio, assignors to Visual Information Institute, Inc., Xenia, Ohio

Division of Ser. No. 196,154, Oct. 10, 1980, Pat. No. 4,417,275. This application Nov. 2, 1983, Ser. No. 548,226
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ H04N *7/02, 5/06*
U.S. Cl. 358—139 **5 Claims**



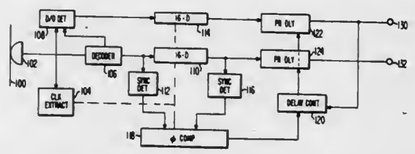
1. For use with a television test pattern generator, a selectable rate sync generator system comprising: master oscillator means having a predetermined frequency; means for selecting the desired total horizontal line time comprising a binary coded decimal selector having manually setable inputs, an indicator showing the total horizontal line time and a binary coded decimal output; means coupled to said oscillator means and to said selecting means for counting the cycles provided by said master oscillator means and comparing the cycle count with the binary coded decimal output of said means for selecting to generate a train of clock pulses having x times the repetition rate (xH) of the line time selected; means for generating H rate blanking and drive pulses of predetermined duration in response to said clock means; second means for selecting the desired number of horizontal scanning lines in x fields comprising a binary coded decimal selector having manually settable inputs, an indicator showing the number of horizontal scanning lines in x fields, and a binary coded decimal output; means coupled to said clock pulses generating means and to said second selecting means for counting said train of clock pulses and comparing the clock pulse count with the binary coded output of said second selecting means to generate vertical trigger pulses having the repetition rate (V) of the number of lines selected; means for generating V rate blanking and drive pulses of predetermined duration in response to said V trigger pulses; means for summing said H and V rate blanking pulses to provide a composite blanking signal; means for generating H rate sync pulses of predetermined duration in response to said clock pulses and delayed therefrom by a predetermined interval; means for generating V rate sync pulse having a predetermined duration in response to said V rate blanking pulses, and means for summing said H and V rate sync pulses to provide a composite sync signal.

4,518,996

SYNCHRONIZATION SYSTEM THAT USES ALL VALID SIGNALS

Glenn A. Reitmeier, Trenton, and Charles R. Thompson, Moorestown, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 21, 1983, Ser. No. 477,492
Int. Cl.³ H04N *5/04*
U.S. Cl. 358—148 **10 Claims**



2. Apparatus for recovering valid information from an information signal having periodic synchronization signals and subject to loss of signal, said apparatus comprising comparing means for comparing successive synchronization signals to produce an error signal representing the timing difference between expected and actual synchronization signals, delaying means for delaying said information signal, and changing means for changing said delay during the loss of signal in accordance with said error signal so that said information signal following loss of signal is synchronized with the information signal preceding loss of signal.

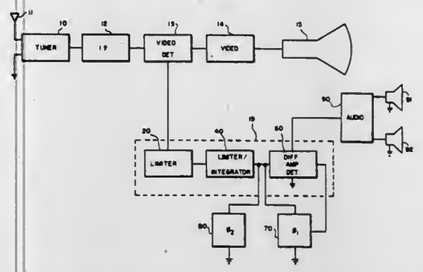
4,518,997

DEMODULATOR HAVING TWO PHASE SHIFT NETWORKS FOR WIDE BAND TELEVISION AUDIO

Orval E. Beckman, Wheaton, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 13, 1983, Ser. No. 457,604
Int. Cl.³ H04N *5/60, 7/04*
U.S. Cl. 358—198 **10 Claims**

1. In a television receiver of the type having an integrated circuit audio system including a limiter/integrator, a differential amplifier detector, and a single phase shift network coupled across inputs of the detector for producing a detected output from an input of angle-modulated waves, the phase shift network being effective for producing signals that are substantially 180 degrees out of phase with respect to the inputs of the detector, the improvement comprising:



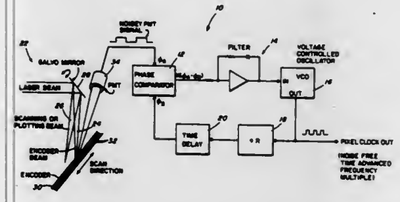
means coupled directly across the output of said limiter/integrator and ground for linearizing the response of said system.

4,518,998

METHOD AND APPARATUS FOR PRODUCING A TIME ADVANCED OUTPUT PULSE TRAIN FROM AN INPUT PULSE TRAIN

Andrew Warner, Harvard, Mass., assignor to Klimsch/Optronics, Inc., Chelmsford, Mass.

Filed Jun. 3, 1982, Ser. No. 384,476
Int. Cl.³ H03L *7/08;* H04N *3/08*
U.S. Cl. 358—208 **9 Claims**



1. A method for producing a time advanced output pulse train from an input pulse train comprising the steps of:

(1) generating an input pulse train;

(2) generating a feedback pulse train;

(3) time delaying said feedback pulse train;

(4) comparing the phase of said input pulse train with the phase of said time delayed feedback pulse train;

(5) generating a control signal that is a function of the phase difference between said input and time delayed feedback pulse train; and,

(6) adjusting the phase of said feedback pulse train in response to said control signal whereby said feedback pulse train constitutes a time advanced output pulse train with respect to said input pulse train.

4,518,999

PICTURE IMAGE POSITION SETTING APPARATUS

Masami Kurata; Hiroyuki Saitoh, and Masakane Matsuda, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

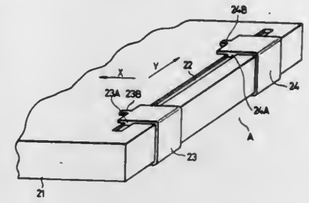
Filed Mar. 7, 1983, Ser. No. 472,824
Claims priority, application Japan, Mar. 11, 1982, 57-37289
Int. Cl.³ H04N *1/04*
U.S. Cl. 358—285 **9 Claims**

1. A picture image position setting apparatus comprising: a platen supporting a document;

linear reading means for obtaining picture information by scanning an original document line by line;

a position designating cursor attached to said platen for sliding movement in a main scanning direction to designate an end portion of a document scanning region on the platen;

said cursor being adapted to be sensed by said linear reading means; and



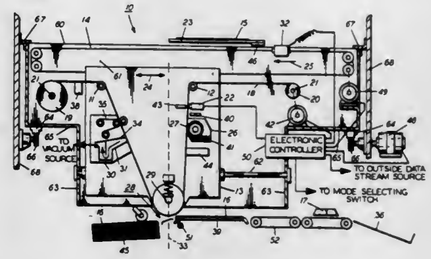
circuit means for converting picture image information with respect to the position designating cursor into positional information in the main scanning direction.

4,519,000

MAGNETOGRAPHIC CARRIAGE PRINTER

Thomas M. Frey, Webster, and Larry A. Kovnat, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1983, Ser. No. 553,926
Int. Cl.³ H04N *1/28*
U.S. Cl. 358—301 **12 Claims**



1. A magnetographic carriage printer for reproducing documents placed on a fixed platen thereof when a reproduction mode of the printer is activated, comprising:

means for scanning segments of a document placed on the fixed platen, the scanning means moving from a start-of-scan position across the document in a scanning direction to an end-of-scan position and returning to the start-of-scan position, said scanning means being adapted to scan uniformly wide segments of the document and to convert the scanned segments into digital image data signals;

means for moving the scanning means in a direction transverse to said scanning direction upon each return of the scanning means to the start-of-scan position during the reproduction mode, the moving means relocating the scanning means for a distance equal to the width of one segment so that segments of said document are sequentially scanned until the entire document has been scanned;

a magnetic tape having a magnetizable surface for recording latent magnetic images thereon, the width of the magnetic tape being determined by the width of the segment scanned by the scanning means;

a movable carriage having mounted thereon a magnetic recording head for receiving the digital image data signals from the scanning means and for recording them on the magnetic tape as latent magnetic images, a means for developing the latent magnetic images with toner particles, a means for transferring the developed images to a copy medium, and a means for cleaning any residual toner

particles from the tape to prepare it for reuse, the magnetic tape being positioned in operative relationship with the recording head, developing means, transferring means and cleaning means;

means for interconnecting the scanning means to the carriage so that they move concurrently and in a predetermined, fixed relation to each other;

means for mounting the magnetic tape, said means for mounting being adapted to hold the tape stationary during the reproduction of a document by the printer, so that as the carriage moves the tape passes by the recording head, developing means, transferring means and cleaning means;

means for activating said scanning means at a predetermined time as it moves from a start-of-scan position to scan each segment of the document to be reproduced, so that the beginning and ends of the transferred image segments are accurately aligned on the copy medium; and

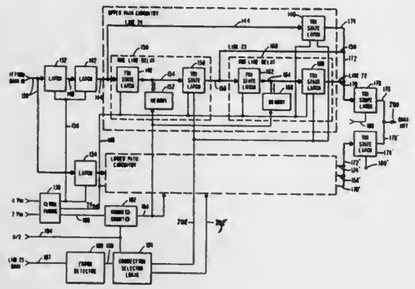
means for controlling the width of the segment scanned by said scanning means to insure that each scanned segment has the same width, so that the transferred image segments are accurately stitched together to form a high quality reproduction of the document.

4,519,001

APPARATUS FOR PROVIDING DROPOUT COMPENSATION AND ERROR CONCEALMENT IN A PAL FORMAT VIDEO INFORMATION SIGNAL

Eric F. Morrison, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 27, 1981, Ser. No. 315,578
Int. Cl.³ H04N *9/491*
U.S. Cl. 358—310 **7 Claims**



1. Apparatus for providing substitute digital data samples in a stream of digital data samples taken from an analog video information signal having a PAL television format that has been digitally sampled at four times the frequency of a color subcarrier of the video signal at instants of 45°, 135°, 225° and 315° relative to the U chrominance component of said video information signal, said digital data stream having samples corresponding to horizontal line locations of a raster display of successive horizontal lines wherein said locations of each line are vertically aligned with said locations of the other lines, said apparatus comprising:

means for receiving data word samples from at least three successive horizontal video lines and for storing said video data samples from at least two of said horizontal video lines;

means for detecting a missing or defective sample in one of said video lines and for generating an indicating signal when a missing or defective sample is detected;

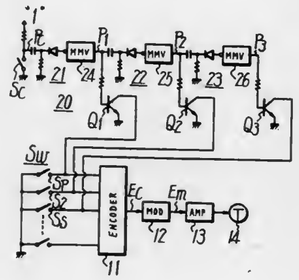
means, responsive to said indicating signal and operatively coupled to said receiving and storing means and to said detecting means, for inserting a substitute data sample into said one video line for said missing or defective data sample, said substitute data sample being selected from one of the samples of one of the preceding or succeeding horizontal lines relative to said one video line, said substitute data sample selected being vertically aligned and correspondingly phased relative to said missing or defective sample.

4,519,002

CONTROLLING THE OPERATIONS OF AT LEAST TWO DEVICES

Toshio Amano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,346
Claims priority, application Japan, Oct. 30, 1980, 55-152739
Int. Cl.³ H04N *5/76, 5/64;* **H04M** *11/10*
U.S. Cl. 358—335 **16 Claims**



1. Remote control apparatus for generating and transmitting command signals to a video playback device and to a video display device for controlling said devices to play back and display video signals, comprising:

a plurality of command switches, each being selectively operable to command a predetermined device to perform a particular function, said command switches including at least a playback command switch to command said video playback device to perform a playback operation and a channel select command switch to command said video display device to select a predetermined channel over which played back video signals are displayed, encoder means having plural inputs coupled to respective ones of said command switches and responsive to the selective operation of a command switch to generate an encoded representation of the function commanded by the operated switch, transmitting means coupled to said encoder means for transmitting said encoded representation to said video playback and display devices, selectively operable control switch means, and control means coupled to said encoder means and responsive to the operation of said control switch means to cause said encoder means to generate successive encoded representations of at least the functions commanded by said playback and channel select command switches.

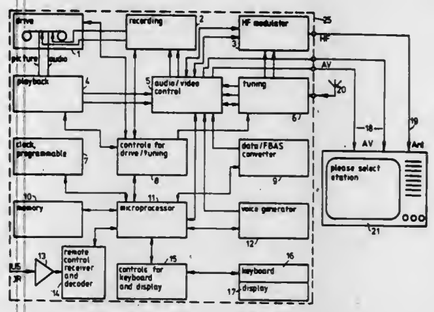
4,519,003

VIDEO RECORDER INCLUDING A PLURALITY OF OPERATING ELEMENTS

Gerhard Scholz, Vienenburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,447
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104843
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—335 **14 Claims**

1. In a video recorder system including a video recorder having an output means, a plurality of functional means including a video storage means connected to the output means for recording video signals and for playing back such signals via the output means, and a plurality of operating elements which can be operated by an operator according to a desired mode of operation as outlined in operating instructions for controlling the functional means, the improvement wherein said video recorder includes instruction storage means coupled to said output means for storing video and audio representations of the operating instructions and for selectively applying the representations to said output means during operation of the video recorder, and said system further includes a television playback device connected to said output means for receiving and utilizing the representations, in addition to the video signals, for establishing a dialog between the operator and said video recorder for the purpose of operating, programming and monitoring said recorder.

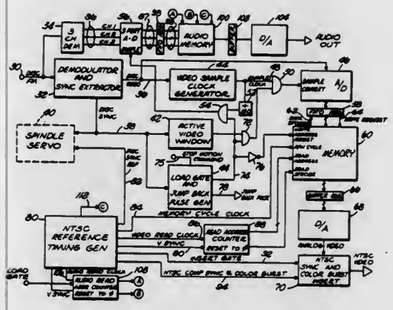


4,519,004

EXTENDED PLAY VIDEODISC

Richard L. Wilkinson, El Toro, and Gary M. Giddings, Laguna Hills, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Jun. 1, 1982, Ser. No. 384,140
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—342 **21 Claims**



1. A method of displaying video information recorded on a storage medium, comprising the steps of:

a. reading a first segment of video information from the medium during a first period of time;

b. repetitively outputting the first segment of video information during a predetermined number of consecutive second periods of time, each of said second periods of time being longer than said first period of time;

c. reading a further segment of video information from the medium simultaneously with a portion of the last of the predetermined number of second periods of time during which the first segment of video is being outputted; and

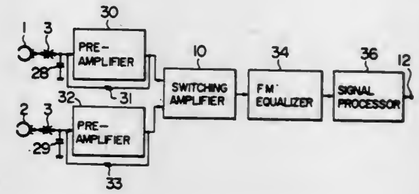
d. functionally repeating steps b and c for each video information segment read.

4,519,005

MAGNETIC TAPE REPRODUCING APPARATUS

Akira Shibata; Koichi Hirose, and Akihiro Yamamoto, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 248,534, Mar. 27, 1981. This application Sep. 16, 1983, Ser. No. 532,896
Claims priority, application Japan, Mar. 28, 1980, 55-38934
Int. Cl.³ G11B *5/45, 15/02*
U.S. Cl. 360—65 **7 Claims**



1. A magnetic tape reproducing apparatus comprising:

first, second, third and fourth playback heads;

first and second playback mode switches each having first and second positions;

first and second damping circuit means, the first damping circuit means being selectively connectable to said first and third playback heads by the positioning of said first playback mode switch, the second damping circuit means being selectively connectable to said second and fourth playback heads by the positioning of said second playback mode switch, the first and second playback heads operating during a first tape feeding speed in the first playback mode and the third and fourth playback heads operating during a second tape feeding speed in the second playback mode;

said first and second playback heads in said first playback mode being connected via said first and second playback mode switches to said first and second damping circuit means respectively while in said second playback mode said third and fourth playback heads being connected via said first and second playback mode switches to said first and second damping circuit means respectively;

each damping circuit means damping the output from the playback head to which it is connected so that the peaking characteristic is substantially flat as a function of frequency in the frequency band of the recorded signal, the peaking characteristic being determined by its equivalent capacitance, its equivalent damping resistance, the inductance of the playback head to which it is connected, and the capacitance, the peaking characteristic not governing a total reproduction equalizing characteristic, each of the damping circuit means including a preamplifier having an input and an output between which is coupled a feedback resistance;

said playback heads each have substantially equal inductance and the equivalent resonant capacitance and equivalent damping resistance of the first and second damping means are equal;

a switching circuit for sequentially passing the output signals from said first and second damping circuits in turn, the outputs of the preamplifiers being coupled to said switching circuit;

reproduction equalizer means for creating substantially the total reproduction equalizing characteristic for the output signal from the switching circuit;

a signal processor for converting the output signal from the reproduction equalizer circuit, to a recorded information signal; and

wherein each of said damping circuit means includes an emitter grounded amplifier having a first transistor, the base of which is supplied with an output signal from the associated video head, a base grounded amplifier having a

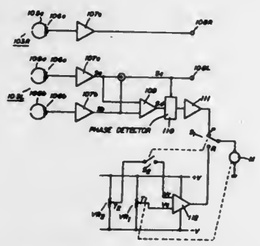
second transistor, the emitter thereof is connected to the collector of said first transistor, and a resistor connected between the base of said first transistor and an output terminal connected to the collector of said second transistor through an emitter follower to thereby apply the collector output signal of said second transistor to the base of said first transistor together with a D.C. bias current through said emitter follower and said resistor.

4,519,006

MAGNETIC HEAD DEVICE

Niro Nakamichi, Higashikurume, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,450
Claims priority, application Japan, Dec. 14, 1981, 56-201420
Int. Cl.³ G11B *5/43*
U.S. Cl. 360—76 **4 Claims**



1. A magnetic head device for a magnetic recording and reproducing apparatus comprising:

magnetic head means having a reproducing gap to separately scan an upper portion and a lower portion of a single signal track on a magnetic tape and providing two reproduced signals from the single track on which an identical signal is recorded;

means for determining a difference in phase between said two reproduced signals in a playback mode;

means for adjusting the azimuth position of said gap of said magnetic head means relative to the signal recorded on the track in response to a phase difference between said two reproduced signals in a playback mode;

means for returning said azimuth position of said gap of said magnetic head means to a predetermined reference azimuth position;

and means for selecting operation of said adjusting means in response to said playback mode and selecting operation of said returning means in response to a record mode whereby said azimuth position of said gap is adjusted relative to said signal recorded on the track in said playback mode and is returned to said reference azimuth position in said record mode.

4,519,007

SERVO-TRACK POSITION DETECTION SYSTEMS

Graham P. Sellars, Winsford, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 8, 1982, Ser. No. 447,834
Int. Cl.³ G11B *5/58*
U.S. Cl. 360—77 **20 Claims**

1. A system for indicating the position of a transducer relative to a servo track on a moving medium by measurement of the difference between first and second signal components recovered respectively from first and second sub-tracks of said servo track simultaneously accessed by said transducer with respective amplitudes proportional to the respective extents of interaction of said transducer with said first and second sub-tracks, said system being characterized by:

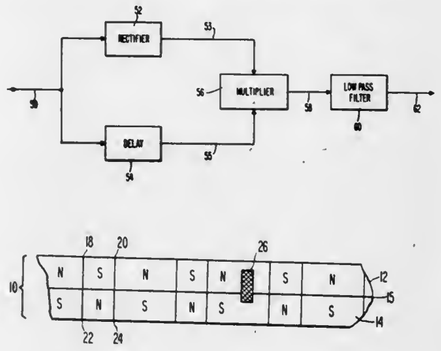
said first sub-track comprising a first component for inducing a first response of a first polarity in said transducer and a second component for inducing a second response of a second polarity in said transducer,

said second sub-track comprising a third component for inducing a third response of said second polarity in said transducer and a fourth component for inducing a fourth response of said first polarity in said transducer,

said first and third responses being simultaneously induced in said transducer,

said second and fourth responses being simultaneously induced in said transducer to provide a residual response resulting from the cancellation in whole or in part of said second and fourth responses, and

said system comprising a decoder coupled to receive the output of said transducer and operable to respond to the receipt of said first and/or said third responses to sample said residual response, said residual response being indicative by polarity and magnitude of the direction and distance of displacement of said transducer from equal interaction with each of said sub-tracks.

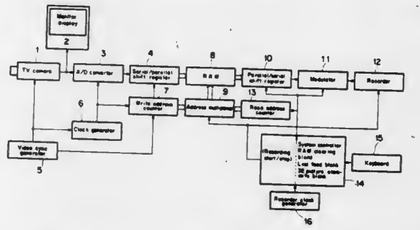


4,519,008

METHOD OF RECORDING AND REPRODUCING VISUAL INFORMATION IN AUDIO RECORDING MEDIUM AND AUDIO RECORDING MEDIUM RECORDED WITH VISUAL INFORMATION

Tsutomu Takenouchi; Tsunehiko Nagasawa, and Masatada Nanasawa, all of Tokyo, Japan, assignors to Toshiba-EMI Limited, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,671
Claims priority, application Japan, May 31, 1982, 57-92618
Int. Cl.³ G11B *31/00*; H04N *5/782*
U.S. Cl. 360—79 **4 Claims**



1. A method of recording visual information in an audio recording medium and reproducing the same comprising the steps of:

quantizing a signal from a television camera photographing letters and characters by means of clock pulses having a certain frequency to produce two kinds of pulse signals;

modulating said two kinds of pulse signals into two kinds of sine waves each having a specific audio frequency band;

adding blank portions to said two kinds of sine waves at predetermined intervals to form a character signal, said blank portions having time durations of their own respectively;

recording said character signal on an audio recording medium;

picking up said character signal from said recording medium; and

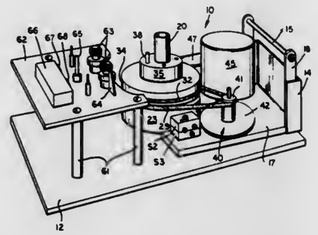
processing said picked-up character signal by separate means according to said sine waves and said blank portions, said sine waves being reproduced on a screen in the form of photographed letters and characters, said blank portions being used as command signals including a command for starting reproduction on the screen of words, a command for vertical line feeding, and a command to clear the screen.

4,519,009

DICTATION RECORDING AND TRANSCRIBING SYSTEM UTILIZING A MULTIPLE MEDIA CARTRIDGE APPARATUS

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Division of Ser. No. 137,802, Apr. 7, 1980, , which is a division of Ser. No. 970,357, Dec. 18, 1978, Pat. No. 4,247,876. This application Jul. 20, 1982, Ser. No. 400,124
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.³ G11B *15/68*
U.S. Cl. 360—92 **1 Claim**



1. In a dictation recording system, a cartridge means for carrying a first recording medium and a second recording medium, said cartridge means having an aperture about the center of which said first recording medium and said second recording medium are symmetrically positioned; and

a cartridge positioning means for selectively positioning said cartridge means to place either said first recording medium or said second recording medium in a recording position relative to a transducer for recording thereon with said transducer, said cartridge positioning means comprising:

a cylindrical drive member mounted on a frame for rotation about an axis, said drive member including engaging means insertable into said aperture for engaging said cartridge means with the center of said aperture along said axis so that said cartridge is supported and positioned relative to said frame entirely by said drive member and so that rotation of said drive member about said axis rotates said cartridge means about said axis with said first recording medium and said second recording medium symmetrically positioned about said axis, said drive member having a lower position relative to said frame in which said drive member in a first rotational position about said axis positions said cartridge means to place said first recording medium in said recording position relative to said transducer and in which said drive member in a second rotational position about said axis positions said cartridge means to place said second recording medium in said recording position relative to said transducer, and said drive member having an upper position relative to said frame in which said drive member in all rotational positions about said axis positions said cartridge means to place said first recording medium and said second recording medium in a plane of rotation of said cartridge means about said axis with said drive member which is above said transducer;

cam means mounted on said frame for moving said drive member between said lower position and said upper position in response to selective motion of a cam surface; and

driving means selectively operative first to move said cam surface to cause said drive member to move from said lower position to said upper position, then to rotate said drive member about said axis from said first rotational position to said second rotational position, and then to move said cam surface to cause said drive member to move from said upper position to said lower position and thereby place said second recording medium in said recording position relative to said transducer;

brake means for preventing rotation of said drive member when said drive member is in said lower position; and

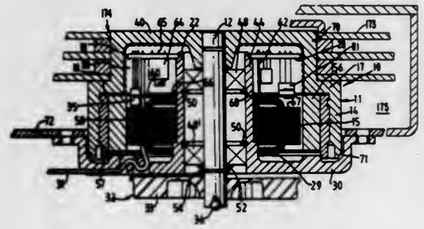
means for releasing said brake means to allow said drive member to rotate when said drive member is in said upper position.

4,519,010

DRIVING MECHANISM FOR MAGNETIC HARD DISC MEMORIES

Dieter Elsaesser, St. Georgen; Johann von der Heide, Moenchweiler; Rolf Müller, and Georg Papst, both of St. Georgen, all of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St Georgen, Fed. Rep. of Germany

Filed Dec. 2, 1981, Ser. No. 326,559
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045972
Int. Cl.³ G11B *5/12*
U.S. Cl. 360—97 **25 Claims**



1. A driving mechanism for magnetic hard disc memory having a read/write head, comprising:

means in said mechanism isolating an enclosed space for maximum cleanness;

a brushless direct current driving motor mounted within said driving mechanism and having a stator, including a stator lamination, and a rotor, said rotor being a permanent magnet outer rotor having a bell-shaped rotor casing and at least one permanent magnet fixed in the rotor casing, said motor when energized having parts producing magnetic flux;

a rotor shaft mounting said rotor, said shaft being mounted by bearing means in said driving mechanism;

a hub extending into the isolated enclosed space of maximum cleanness for receiving therein at least one magnetic hard memory disc having magnetic tracks with which the read/write head aligns in a reciprocal alignment relationship;

means connecting said motor and said hub for driving said hub;

means forming a magnetic flux shield and located between

the parts producing the magnetic flux and the isolated enclosed space of maximum cleanness; and

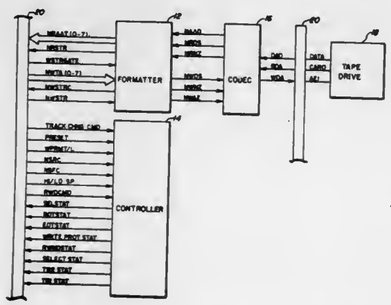
means detachably connecting the rotor to the rotor shaft independently of said means connecting said motor and said hub, whereby said rotor is removable from said rotor shaft without affecting the reciprocal alignment between the read/write head and the magnetic tracks of the hard memory disc.

4,519,011

POWER CONTROL CIRCUIT

Edgar A. Bowden, Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 8, 1982, Ser. No. 338,175
Int. Cl.³ G11B *5/00, 31/00*
U.S. Cl. 360—137 **6 Claims**



4. A power control circuit for use with a seismic data multi track tape recorder system and a power supply in an ocean bottom seismometer comprising:

very low power circuits for retaIning information consisting of tape movement direction and track number,

first distribution means connected to the power supply for providing continuous power to said very low power circuits,

second distribution means connected to the power supply and to additional portions of the tape recorder system for providing power to said additional portions of the tape recorder system said second distribution means having a standby state wherein no power is provided and an energized state wherein power is provided, and

selective means connected to said second distribution means for changing said second distribution means from said standby state to said energized state.

4,519,012

LIQUID QUANTITY SENSOR OF CAPACITOR TYPE AND METHOD OF PRODUCING SAME

Hiroshi Kobayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 8, 1983, Ser. No. 521,171
Claims priority, application Japan, Sep. 10, 1982, 57-157861
Int. Cl.³ H01G *5/28;* **G01F** *23/00*
U.S. Cl. 361—284 **23 Claims**

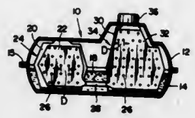
1. A sensor for detecting the quantity of a liquid in a vessel, the sensor comprising at least one set of electrode plate assembly which comprises:

a first electrode plate substantially vertically disposed in the vessel;

a second electrode plate arranged parallel to and spaced from said first electrode plate such that said first and second electrode plates provide a capacitor;

a plurality of spacers having a generally annular shape and made of electrically insulating synthetic resin material, said spacers being tightly and substantially interposed between said first and second electrode plates in such an arrangement that the distance between each adjacent pair of said spacers is between 50 and 80 mm, each of said spacers having a thickness which corresponds with a predetermined horizontal distance between said first and second electrode plates;

a plurality of fastening means for fastening said second electrode plate to said first electrode plate, said fastening means extending through holes formed in said first and



second electrode plates at each location where one of said spacers is interposed between said first and second electrode plates, each of said spacers being subjected to a compressive load between 40 and 100 kgf; and

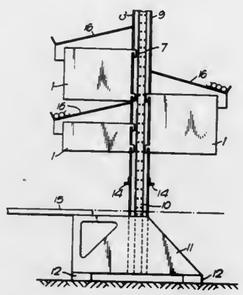
a plurality of insulator collars, each having the shape of a flaged tube, the tubular portion of each of said indulators being inserted in the central hole of one of said spacers interposed between said first and second electrode plates.

4,519,013

ASSEMBLIES OF ELECTRICAL OR ELECTRONIC APPARATUS

Gerald D. Breeze, West Midlands, and Donald C. Elliott, Warwick, both of England, assignors to The General Electric Company, p.l.c., England

Filed Jun. 2, 1982, Ser. No. 384,336
Claims priority, application United Kingdom, Jun. 9, 1981, 8117626
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—384 **7 Claims**



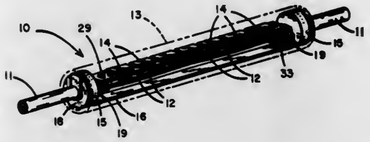
2. An assembly of electrical or electronic apparatus comprising at least two substantially vertical column members, a pair of vertical planar support members supported on and separated by said vertical column members, each of said support members having therein over at least a part of its area an array of apertures, at least one unit of electrical or electronic apparatus, means extending from said one unit into at least one of said apertures to attach said one unit to one of said support members, a planar deflector member, means to attach said deflector member above said one unit at an angle to said one support member so as to channel air rising from said one unit through at least some of said apertures in said one support member, and said support members and an adjacent pair of said vertical column members defining a vertical path for the passage of air so channelled from said one unit of the apparatus for the cooling of said apparatus in operation.

4,519,014

CABLE ACCESS ASSEMBLY

Daniel G. Skovran, Minnetonka; Brett A. Shockley, Edina, and Harvey J. Chouanard, Deephaven, all of Minn., assignors to Magnetic Controls Company, Minneapolis, Minn.

Filed May 9, 1983, Ser. No. 492,944
Int. Cl.³ H05K *7/02*
U.S. Cl. 361—397 **24 Claims**



2. A multi-conductor cable access assembly comprising:

a pair of end elements each having an opening through which a multi-conductor cable extends, said end elements being spaced apart along said multi-conductor cable;

an elongated strain relief bar extending between said spaced apart end elements;

means for connecting said strain relief bar with each of said end elements to prevent relative rotational and longitudinal movement between each of said end elements and said strain relief bar, said means including a pair of spaced apart yoke members at each end of said strain relief bar, said yoke members in each of said pairs of yoke members straddling a corresponding one of said end elements; and

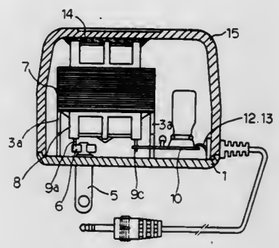
a tubular member enclosing said end members and said strain relief bar.

4,519,015

PLUG-IN TYPE OF POWER SUPPLY

Jiing S. Lin, 15, Lane 62, Tsai Kung I Rd., Tsoying, Kaohsiung, R.O.C., Taiwan

Filed Aug. 23, 1983, Ser. No. 525,766
Int. Cl.³ H05K *5/06*
U.S. Cl. 361—399 **3 Claims**



1. A plug-in type of power supply comprising

a casing including a bottom lid and an upper lid in sealing connection therewith,

said bottom lid having openings therethrough,

support means mounted on said bottom lid,

a transformer coil section and a circuit board both mounted on said support means,

said transformer coil section having shaft members extending therethrough,

said shaft members having input plug prongs and output insertion prongs mounted on and electrically connected to said shaft members,

power plug prongs extending through said openings in said bottom lid,

conductive metal joint pieces engaged on said power plug prongs,

said input plug prongs extending into said joint pieces,

said circuit board having holes therethrough to receive said output insertion prongs therein for rigid connection of said transformer coil section with said circuit board,

output means connected from said circuit board through said casing,

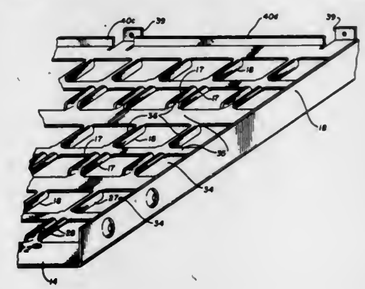
said transformer coil section and said circuit board in rigid connection to each other and to said upper and bottom lids.

4,519,016

PRINTED CIRCUIT BOARD CARD CAGE

James D. Bradley, Mound, and Gregg B. Amundson, Bloomington, both of Minn., assignors to Magnetic Controls Company, Minneapolis, Minn.

Filed Sep. 29, 1983, Ser. No. 537,336
Int. Cl.³ H05K *7/18*
U.S. Cl. 361—415 **10 Claims**



1. A dual density printed circuit board card cage comprising:

an upper frame member having a plurality of spaced guide means for engaging an edge of a printed circuit board card and guiding the same into an operable position within said card cage;

a lower frame member having a plurality of spaced guide means for engaging an edge of a printed circuit board card and guiding the same into an operable position within said card cage; and

an intermediate frame member having front, back and a pair of side edges, an upper and a lower surface and being spaced in parallel relationship between said upper and lower frame members, said intermediate frame member comprising a generally flat sheet of metal having a plurality of openings separated from each other by a plurality of web portions and a plurality of spaced, guide means on both its upper and lower surfaces for engaging an edge of a printed circuit board card and guiding the same into an operable position with said card cage, each of said guide means on the upper surface of said intermediate frame member being aligned and adapted for cooperation with a corresponding guide means of said upper frame member and each of said guide means on the lower surface of said intermediate frame member being aligned and adapted for cooperation with a corresponding guide means of said lower frame member, the plurality of guide means on the upper and lower surfaces of said intermediate frame member further being arranged in opposing pairs of guide means which are aligned with one another but which face in opposite directions, each of said opposing pairs of guide means being formed by a plurality of guide sections comprised of at least one pair of guide edges extending generally toward said upper frame member and at least one pair of guide edges extending generally toward said lower frame member.

4,519,017

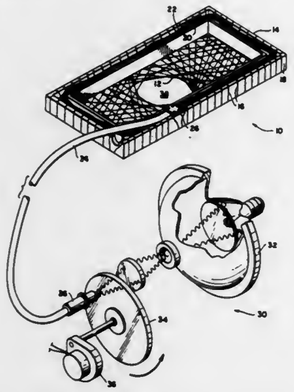
LIGHT EMITTING OPTICAL FIBER ASSEMBLIES AND METHOD FOR FORMING THE SAME

Maurice Daniel, 550 Jaycox Rd., Avon Lake, Ohio 44012

Filed Sep. 29, 1982, Ser. No. 427,155

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **27 Claims**



1. A light emitting panel assembly comprising supporting frame means having a front face and a rear face, a plurality of elongated light emitting fiber means mounted upon said supporting frame means and extending on the front face thereof, said light emitting fiber means being of the type which leak light traveling therethrough when said light emitting fibers are bent, and being mounted on said frame means in a manner such that there are no bends in those light emitting fiber means large enough to cause an undesirably high percentage of light to leak from said light emitting fiber means, said light emitting fiber means being operative to emit light along the length thereof, at least one of the ends of each of said plurality of elongated light emitting fiber means being bundled together with the ends of other light emitting fiber means to form a unitary bundle, said unitary bundle being positioned adjacent the rear face of said supporting frame means.

4,519,018

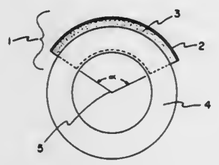
CAR DOME LIGHT WITH ACCESSORY

David B. Rowland, 8713 Langtree La., Raleigh, N.C. 27612

Filed Apr. 2, 1984, Ser. No. 596,241

Int. Cl.³ B60Q *3/02*

U.S. Cl. 362—74 **1 Claim**



1. A removable automobile dome light accessory consisting essentially of a shape-sustaining material surface extending in a substantially vertical plane continuously around a dome light central axis substantially parallel to said plane so as to block out light emanating therefrom into the passenger area of an automobile, the outermost edges of said shape-sustaining material surface forming an angle of between 90 degrees and 180 degrees with said axis, and said surface having flange portions connected thereto and extending inwardly from the uppermost edges of said surface toward the said central axis, said flange portion slidably engaging the dome light of the automobile, wherein said surface extends downwardly in a substantially vertical plane from the upper edge of said surface a distance of at least approximately two inches, wherein said flange portions extend inwardly a sufficient distance to slide under a portion of the outer edge of a fixed automobile dome light, whereby said accessory is readily attachable to and removable from said automobile dome light, and is selectively adjustable to illuminate one passenger area while blocking light that would be generated towards other passenger areas of the automobile.

4,519,019

CEILING LIGHT FITTING

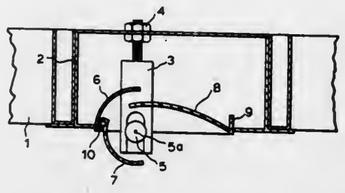
Stephen M. Hall, London, England, assignor to Quantum Lighting Limited, England

Filed Apr. 20, 1984, Ser. No. 602,492

Claims priority, application United Kingdom, Apr. 22, 1983, 8311075

Int. Cl.³ F21S *1/02*

U.S. Cl. 362—147 **12 Claims**



1. A ceiling light fitting for lighting a wall, comprising:
means for mounting the fitting in the ceiling;
holding means for holding a lamp in the fitting with its light source roughly at ceiling level;
an extended reflector for extending substantially parallel to the wall, the shape of the reflector surface as seen in section at right angles to the wall being substantially constant wherever the section is taken along the length of the reflector, the reflector facing generally downwards and having at least its major part positioned above the level of the light source and on the wall side of the light source, the said shape of the reflector as seen in the said section being generally concave and arranged to direct reflected light towards the base portion of the wall.

4,519,020

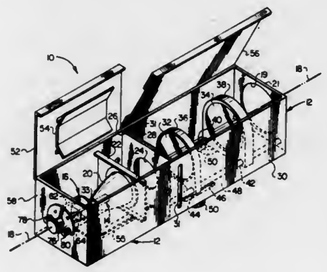
VARIABLE MAGNIFICATION STAGE LIGHT

William D. Little, 3548 Townsend Dr., Dallas, Tex. 75229

Filed Nov. 14, 1983, Ser. No. 551,031

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—268 **8 Claims**



1. An optical projection system for projecting light onto an object in which the area of projected illumination is selectively variable comprising, in combination:

a projector housing having an open end through which light may be projected along an optical axis;
an open ended reflector received within said housing and aligned generally with said optical axis, said reflector having a lip radius R_R;
a lamp disposed within said reflector;
first and second lenses spaced apart on said optical axis through which light from said light source successively passes and is projected out said open end, said first lens having a radius R_1 and a focal length f_1, and said second lens having a radius R_2 and a focal length f_2;
a gate having a gate aperture interposed between said reflector and said first lens at an axial distance L_g from said reflector; and,
the diameter of said reflector and its axial spacing with respect to the gate aperture, together with the diameter and focal length of said lenses being selected whereby the following ratio is established:

$$B_1/B_R \simeq B_2/B_1 = k$$

where:
B_R=arc tan (R_R/L_g);
B_1=arc tan (R_1/f_1);
B_2=arc tan (R_2/f_2); and,
k=constant.

4,519,021

OPERATING THEATRE TABLE LIGHT

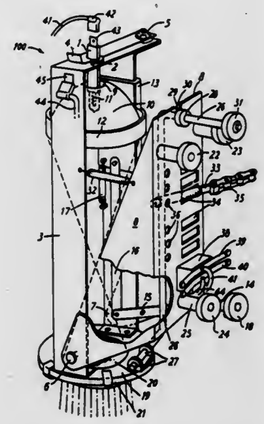
John A. Oram, 243 Heath Rd., Leighton Buzzard, Bedfordshire, England

Division of Ser. No. 488,879, Apr. 26, 1983,. This application Jul. 24, 1984, Ser. No. 633,997

Claims priority, application European Pat. Off., Apr. 28, 1982, 82 302194.4

Int. Cl.³ F21V *9/00*

U.S. Cl. 362—277 **10 Claims**



1. A lamp unit comprising a mounting for a light source, a member defining an aperture, and a reflector positioned to reflect light from a light source mounted in said mounting, to generate a beam which is directed towards said aperture and converges at a point between said reflector and said aperture, said mounting and said reflector being movable one with respect to the other to move the point of convergence toward and away from said aperture.

4,519,022

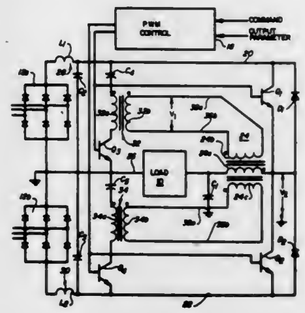
RIPPLE REDUCTION CIRCUIT FOR AN INVERTER

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 22, 1983, Ser. No. 554,250

Int. Cl.³ H02M *1/14*

U.S. Cl. 363—41 **9 Claims**



1. In an inverter for converting DC power supplied on a pair of buses into AC power to drive a load, the inverter having a power switch coupled between a bus and the load with the load being in turn coupled to the other bus, the power switch being operated to develop the AC power, an improved ripple reduction circuit for reducing ripple in the AC power caused by ripple on the buses, comprising:
a sensing transformer coupled between the buses having a primary winding which senses the ripple on the bus and a secondary winding which develops a periodic waveform in response to the sensed ripple; and
an output inductor having a secondary winding coupled to the sensing transformer secondary winding and a primary winding coupled between the power switch and the load, the primary winding receiving a first ripple component due to ripple in the bus, the periodic waveform in the output inductor secondary winding inducing a second ripple component in the output inductor primary winding which opposes the first ripple component to reduce ripple delivered to the load.

4,519,023

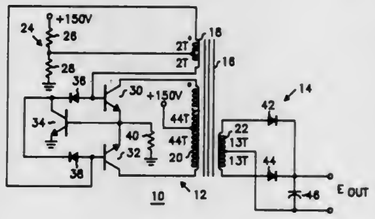
SELF-OSCILLATING INVERTER INCLUDING A DC TO DC CONVERTER AND METHOD FOR CONTROL THEREOF

Theodore V. Lester, Schiller Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1983, Ser. No. 496,378

Int. Cl.³ H02H *7/122;* **H02M** *3/335*

U.S. Cl. 363—56 **19 Claims**



1. A control circuit for a one-transformer DC to AC inverter comprising:
first and second switching means for alternately switching a current through a primary winding of said transformer

connected to like first electrodes of said first and second switching means;

means connected to common connected second electrodes of said first and second switching means for sensing a level of said current therethrough;

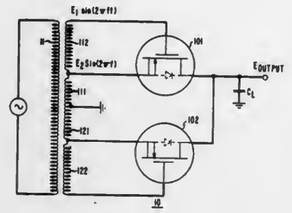
means coupled to respective third electrodes of said first and second switching means for comparing said sensed current level to a reference level, said reference level corresponding to a current level just less than the primary current required for transformer saturation, and alternately deactivating and activating said first and second switching means each time said current level is substantially equal to said reference level wherein transformer saturation is prevented; and

inductive loading means coupled to a secondary winding of said transformer for providing a generally linear ramp shaped increasing waveform to said current through said first and second switch means throughout the conduction time thereof, respectively, until said reference level is reached.

4,519,024
TWO-TERMINAL TRANSISTOR RECTIFIER CIRCUIT ARRANGEMENT

Joseph Federico, Berkeley Heights, and Sigurd G. Waaben, Princeton, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 2, 1983, Ser. No. 528,899
Int. Cl.[3] H02N *7/217*
U.S. Cl. 363—127 **16 Claims**



1. A rectifier comprising:

(a) a power transistor device having a first high current carrying terminal serving as a rectifier output terminal and a second high current carrying terminal serving as a rectifier input terminal, and having a low current carrying control terminal for turning the transistor on and off; and

(b) comparator feedback means having first and second feedback input terminals connected to the rectifier input and output terminals, respectively, and having a feedback output terminal connected to the control terminal of the power transistor for supplying feedback to the control terminal device whereby the power transistor turns on when the voltage at the input terminal exceeds the voltage at the output terminal less a prescribed amount.

4,519,025
SENSE POINT MONITOR CIRCUIT

Brad K. Fayette, St. Petersburg, Fla., assignor to GTE Communication Systems Corporation, Northlake, Ill.

Filed Nov. 8, 1982, Ser. No. 439,955
Int. Cl.[3] H03K *13/32*
U.S. Cl. 364—141 **5 Claims**

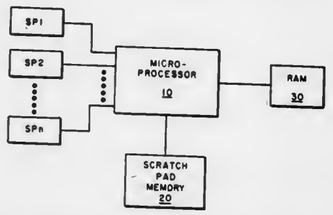
1. A sense point monitor circuit connected to a plurality of sense points each operated to provide a status signal of a first or second characteristic, said sense point monitor circuit comprising:

storage means having a plurality of first, second and third storage locations;

scanning means connected to said sense points and said storage means and operated to periodically scan each sense point and store the status signal of each scanned sense point in an associated first storage location;

processing means connected to said storage means and operated to transfer the contents of said first storage location to an associated second storage location prior to each subsequent scan of said associated sense point;

said processing means being further operated in response to a signal of said first characteristic from said associated first and second storage locations to store a resultant signal of a first characteristic in an associated third storage location;



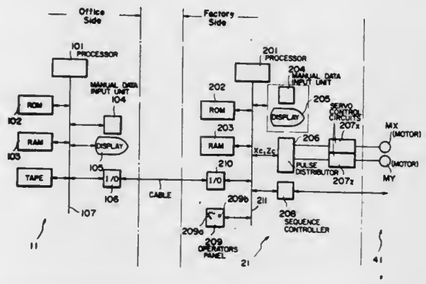
said processing means being further operated in response to a signal of said first characteristic from said associated first and third or second and third storage locations to store said resultant signal of a first characteristic in said associated third storage location; and

said processing means being further operated in response to a signal of said second characteristic from said associated first and second or first and third or second and third storage locations to store a resultant signal of a second characteristic in said associated third storage location.

4,519,026
NUMERICAL CONTROL SYSTEM WITH GRAPHICAL DISPLAY PROCESSING OF SIZE AND SHAPE OF PART CONTOUR

Ryoichiro Nozawa, and Nobuyuki Kiya, assignors to Fujitsu Fanuc Limited, Minamitsuru, Japan

Filed Jun. 21, 1982, Ser. No. 390,378
Claims priority, application Japan, Jun. 22, 1981, 56-96375
Int. Cl.[3] G05B *19/42*
U.S. Cl. 364—167 **9 Claims**



1. A numerical control system for a machine tool, comprising:

a cable;

an automatic programmer; and

a numerical control device connected to the machine tool and to said automatic programmer through said cable;

said automatic programmer comprising:

an input unit for entering data required for the preparation of a numerical control program;

a first processor, operatively connected to said input unit, which edits the data entered by said input unit for preparing the numerical control program and which produces an output;

display means, operatively connected to said first processor, for displaying graphics in accordance with the output from said first processor;

first memory means, operatively connected to said first processor, for storing the prepared numerical control program; and

a first interface circuit, operatively connected to said first processor, for administering the exchange of the data with said numerical control device; and

said first processor of said automatic programmer displays, on said display means, a graphic which conforms to a contour pattern entered through said input unit, numerical data entered by said input unit being used to edit the displayed graphic, to display on said display means a graphic modified in shape on the basis of said entered numerical data, and prepares the numerical control program on the basis of said entered contour pattern and numerical data;

said numerical control device comprising:

a second interface circuit operatively connected to said first interface circuit of said automatic programmer through said cable;

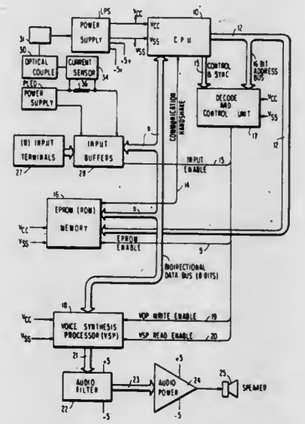
second memory means, operatively connected to said second interface circuit, for storing the numerical control program transferred from said first memory means of the automatic programmer through said first and second interface circuits and said cable; and

a second processor, operatively connected to said second memory means and the machine tool, which executes numerical control processing in accordance with the numerical control program stored in said second memory means for numerically controlling the machine tool connected to said numerical control device.

4,519,027
INDUSTRIAL CONTROL, COMMUNICATIONS AND INFORMATION SYSTEM

Walter Vogelsberg, Doylestown, Pa., assignor to Cybersonic Corporation, Montgomery, Pa.

Filed Jun. 10, 1982, Ser. No. 387,578
Int. Cl.[3] G06F *15/46;* **G08B** *25/02*
U.S. Cl. 364—185 **13 Claims**



5. In an industrial communication and information control system having electrical switch means for producing a plurality of electrical signals corresponding to a plurality of alarm conditions in an industrial facility, a central data processing unit for scanning said means for producing a plurality of signals, the improvement comprising,

means for sensing the presence of signals corresponding to any one of said alarm conditions, and producing an activating signal,

means coupling said activating signal to said central data processing unit for activating same,

each said switch means being connected to an optical couple having a light emitting element and a light detecting element,

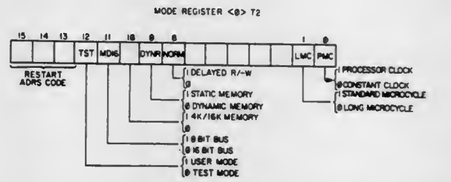
said activating signal being constituted by current flow to one of said light emitting elements, and

all of said light detecting elements being simultaneously electrically energized by a common signal from said central data processing unit.

4,519,028
CPU WITH MULTI-STAGE MODE REGISTER FOR DEFINING CPU OPERATING ENVIRONMENT INCLUDING CHARGING ITS COMMUNICATIONS PROTOCOL

Richard E. Olsen, Framingham, and Dwight C. Baker, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 17, 1981, Ser. No. 234,926
Int. Cl.[3] G06F *9/00*
U.S. Cl. 364—200 **12 Claims**



1. A central processor unit for connection in a data processing system, the central processor unit including:

A. means for performing an information transfer, including means for transmitting information signals, including address signals and data signals, to, and means for receiving data signals and interrupt request signals from, other units in the data processing system over respective information and interrupt request transfer lines;

B. an operating mode register including a first stage having a set condition and a reset condition; and

C. means connected to said first stage of said operating mode register and to said transmitting means and said receiving means for enabling the transmitting means to contemporaneously transmit data signals over the information signal transfer lines and address signals over the interrupt request signal transfer lines when said first stage is set, and for alternately transmitting address signals and data signals over the information signal transfer lines when said first stage is reset.

4,519,029
DATA COMMUNICATIONS SYSTEM WITH AUTOMATIC COMMUNICATIONS MODE

E. Earle Thompson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1981, Ser. No. 264,882
Int. Cl.[3] G06F *3/14*
U.S. Cl. 364—200 **6 Claims**

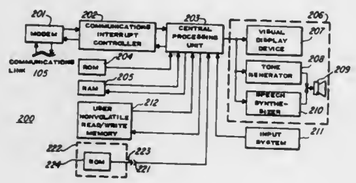
1. A data communications system comprising:

a host data processing system for performing predetermined data processing functions and for generating output signals comprising the results of said predetermined data processing functions in response to receiving data processing request signals, said performed data processing functions corresponding to said received data processing request signals;

a data transmission means for transmitting signals generated

by said host data processing system and for transmitting signals to said host data processing system; and

a remote data processing system having means for receiving output signals from said host data processing system transmitted by said data transmission means, means for generating an operator selected set of data processing request signals having an operator selected order, memory means for storing said set of data processing request signals, means for generating a time interval signal corresponding to an operator selected time interval and storing said time interval signal in said memory means, a memory access means for recalling said set of data processing request



signals from said memory means in said operator selected order in response to an operator initiation signal and output means connected to said memory means for applying said recalled data processing request signals to said data transmission means for transmission to said host data processing system, said memory access means further comprising means for recalling said time interval signal in an operator selected position in said operator selected order of said set of data processing request signals and means for causing a delay in said recall of the next sequential data processing request signal upon recall of a time interval signal, said delay equal to said operator selected time interval.

4,519,030

UNIQUE MEMORY FOR USE IN A DIGITAL DATA SYSTEM

Brett L. Bachman, Boston; Ward Baxter, II, Carlisle, both of Mass.; Ronald H. Gruner; David L. Houseman, both of Cary, N.C.; Thomas M. Jones, Chapel Hill, N.C.; Stephen R. Redfield, San Jose, Calif.; Louis E. Drew, Princeton, and Michael B. Druke, Chelmsford, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,420
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **3 Claims**

1. A memory system for use with a digital data system, said memory system comprising:

memory I/O means connected from a first portion and from a second portion of said digital data system for interfacing between said digital data system and the remainder of said memory system;

said remainder of said memory system including:

(a) memory bank means for storing said data; and

(b) memory control means adapted to receive first addresses from said memory I/O means and adapted to provide second addresses to both said I/O means and said memory bank means, for controlling operation of said memory bank means;

said memory I/O means having first port means, second port means and third port means;

first bus means connected between said first portion and said first port means for conducting first certain of said first addresses and first certain of said data therebetween;

second bus means connected between said second portion and both said second port means and said third port means for conducting second certain of said first addresses therebetween, and for conducting third certain of said first addresses therebetween;

third bus means connected between said second portion and both said second port means and said third port means for conducting second certain of said data therebetween, and for conducting third certain of said data therebetween;

fourth bus means connected between said second portion and said second port means for conducting fourth certain of said data therebetween; and,

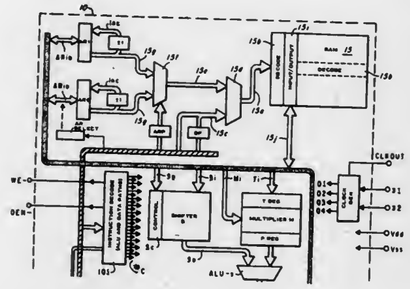
formatting means responsive to operation of said memory control means for performing format manipulation operations upon said second certain of said data, and upon third certain of said data.

4,519,031

MICROCOMPUTER WITH ACCUMULATOR SATURATION UPON OVERFLOW

Surendar Magar, and Wanda K. Gass, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,953
Int. Cl.³ G06F *9/00, 13/00*
U.S. Cl. 364—200 **16 Claims**



1. A microcomputer system comprising:

(a) a microcomputer device formed in a single integrated circuit and having data input/output terminals and address output terminals;

(b) memory means external to the microcomputer device having an address input and data input/output means;

(c) input/output peripheral means for transfer for information to or from external equipment;

(d) external address bus means coupled to the address output terminals of the microcomputer device and to the address input of the memory means;

(e) external data bus means coupled to the data input/output terminals of the microcomputer device and to the data input/output means of the memory means;

(f) the microcomputer device comprising:

an arithmetic/logic unit having data input and data output;

an accumulator having an input receiving said data output of the arithmetic/logic unit and having an accumulator data output;

saturate-control means having input means and output means connected to the accumulator, said saturate-control means having an overflow latch responsive to said input means indicating that the contents of the accumulator has reached on overflow condition, said saturate-control means responsive to said overflow latch and the most significant bit of the data output of the arithmetic/logic unit to produce a fixed binary number at the

output means of the saturate-control means for loading into the accumulator;

a data memory having an address input and having data input/output means;

internal data bus means coupled to the data input of the arithmetic/logic unit and said accumulator data output are coupled to the data input/output means of the data memory;

an internal program memory having an address input and having an instruction output, the program memory storing instruction words:

program address means connected to the address input of the program memory means;

internal program bus means coupled to said instruction output, to said program address means and to said address output terminals,

control means having an input coupled to said internal program bus means for receiving instruction words and having means for generating controls in response to said instruction words; said controls being coupled to the arithmetic/logic unit, to the overflow latch, to the saturate-control means and to the internal data bus means, to define the operation thereof;

timing means having outputs coupled to said control means, to said internal data bus means, and to said internal program bus means, said timing means establishing overlapping operating cycles during one of which cycles:

data is transferred from the data input/output means of the data memory via said internal data bus means to the data input of the arithmetic/logic and the arithmetic/logic unit produces a result at said data input of the accumulator for one of said instruction words,

the control means receives an instruction word from the instruction output of the program memory via said internal program bus means for the next one of said instruction words,

said accumulator receives said saturate controls from said saturate-control means for a prior one of said instruction words,

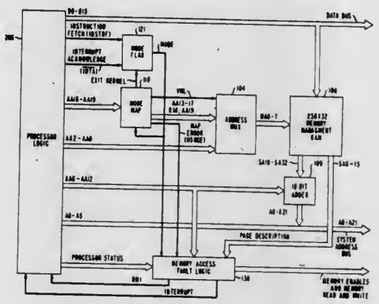
and the program address means applies an address to the address input of the program memory for another succeeding one of said instruction words.

4,519,032

MEMORY MANAGEMENT ARRANGEMENT FOR MICROPROCESSOR SYSTEMS

Harry B. Mendell, New York, N.Y., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 9, 1982, Ser. No. 386,806
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **32 Claims**



1. A circuit for use in conjunction with a single user single mode processor, said processor having a set of pre-established input and output leads and operable for executing instruction sets, and operable in response to an interrupt signal for jumping from the instruction set currently being executed to a different instruction set under control of a vector address provided from an external memory, said circuit arranged to provide multi-user processing capability and comprising

means for establishing within said circuit at least first and second modes of operation,

means for dividing said external memory into blocks,

means for controlling said memory such that certain of said memory blocks are accessible by instructions executed by said processor while said circuit is in said first mode and certain of said memory blocks are accessible by instructions executed by said processor while said circuit is in said second mode,

said establishing means includes first means for switching from said first mode to said second mode under control of an interrupt, and

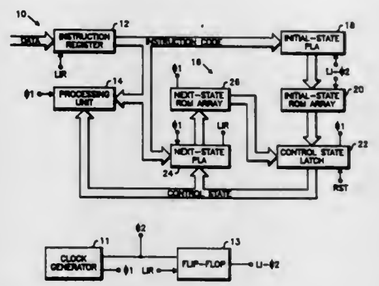
second means for switching from said second mode to said first mode by decoding output bits from said processor.

4,519,033

CONTROL STATE SEQUENCER

Herchel A. Vaughn, and Ashok H. Someshwar, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1982, Ser. No. 404,073
Int. Cl.³ G06F *9/06, 9/22*
U.S. Cl. 364—200 **5 Claims**



2. A control state sequencer for use with a microprocessor having a processing unit for processing instructions comprised of a predetermined sequence of control states, comprising:

a first ROM array, having a plurality of input lines each corresponding to a control state, programmed to provide, in response to an input line being enabled, the control state which corresponds to the input line which is enabled;

a first PLA having a plurality of input lines for receiving an instruction code representative of an instruction and for receiving a current control state of the represented instruction, and having a plurality of output lines coupled to the input lines of the first ROM array, wherein the first PLA is programmed to enable the input line of the first ROM array which corresponds to a next control state, wherein the next control state is a control state which follows the current control state in the predetermined sequence of control states of said represented instruction;

an initial-state ROM array, having a plurality of input lines, each corresponding to an initial control state of an instruction, programmed to provide to the first PLA, in response to an input line being enabled, the initial control state which corresponds to the input line which is enabled; and

an initial-state PLA having a plurality of input lines coupled to the input lines of the first PLA for receiving the instruction code representative of the instruction, and a plurality of output lines coupled to the input lines of the initial-state ROM array, wherein the initial-state PLA is programmed to enable the input line of the initial-state ROM array which corresponds to the initial control state of the instruction in response to receiving the instruction code and an instruction enable signal.

4,519,034

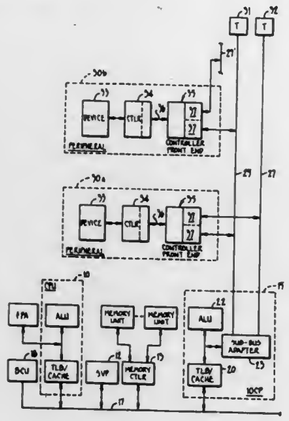
I/O BUS CLOCK

Gehrard J. Smith, Santa Clara, and Kenneth Holly, San Jose, both of Calif., assignors to ELXSI, San Jose, Calif.

Continuation-in-part of Ser. No. 393,860, Jun. 30, 1982,. This application Sep. 28, 1982, Ser. No. 426,046

Int. Cl.³ G06F *1/04*

U.S. Cl. 364—200 **20 Claims**



1. In a data communication system wherein a channel processor may communicate with a plurality of devices coupled in parallel at sequential points along a data bus, an improved clock system comprising:

a first clock line originating at said channel processor and extending to a termination point beyond the last of said devices;

means for coupling said devices to said first clock line in the same sequence as that in which said devices are coupled to said data bus;

a second clock line having a first segment originating at said channel processor and extending to a turn-around point, and a second segment extending from said turn-around point toward said channel processor;

means for coupling said devices to said second segment in the reverse sequence to that in which said devices are coupled to said data bus; and

means associated with channel processor for driving said first clock line and said first segment of said second clock line at a common predetermined frequency to produce respective first and second clock signals, said first clock signal propagating along said first clock line away from said channel processor while being controlled by said channel processor, said second clock signal propagating along said second segment of said second clock line toward said channel processor while being controlled by said channel processor.

4,519,035

BRANCHED-SPIRAL WAFER-SCALE INTEGRATED CIRCUIT

John T. Chamberlain, Macclesfield, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 12, 1982, Ser. No. 441,314

Claims priority, application United Kingdom, Dec. 2, 1981, 8136339

Int. Cl.³ G06F *13/00*

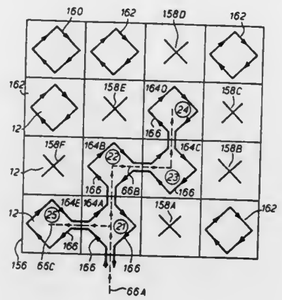
U.S. Cl. 364—200 **28 Claims**

1. A data processing system comprising:

an integrated circuit comprising a plurality of data-processing cells and a port, at least one of said plurality of cells being adjacent to said port, and

a controller, coupled to said at least one of said cells via said port to pass data, commands and associated command addresses to said circuit, where;

each of said plurality of cells is coupled to receive a connection from said controller, if not already in receipt of said connection, via a first neighboring cell, to receive a unique cell name from said controller, and to obey the associated command if a command address matches said unique cell name;



each of said plurality of cells responds to said commands selectably to provide or cease to provide said connection to any selectable one or more than one other neighboring cell or cells;

said controller tests each cell newly in receipt of said connection by the provision of test data thereto and the examination of return data therefrom; and where

said controller issues commands to said cells to grow a branched-spiral of interconnected cells which have passed said test starting with said at least one of said cells.

4,519,036

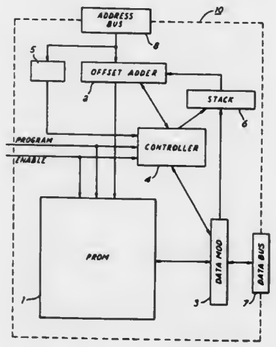
PROGRAM STORAGE HARDWARE WITH SECURITY SCHEME

Ian M. Green, Buckie, Scotland, assignor to EMI Limited, Hayes, England

Filed Jan. 5, 1983, Ser. No. 455,738

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—200 **17 Claims**



1. A program storage device for a computer, the device including means capable of falsifying output data and further including complementary systems capable, in response to false inputs occuring as a consequence of said false output data, of correcting said false inputs.

4,519,037

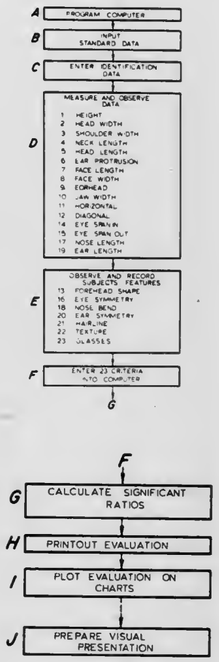
COMPUTER ASSISTED SYMMETRICAL ANALYSIS FOR HAIR STYLISTS

Jacques Brodeur, and Mireille Brodeur, both of 1546 Armida Verde Vista, San Dimas, Calif. 91773

Continuation of Ser. No. 55,012, Jul. 5, 1979, abandoned. This application Dec. 3, 1981, Ser. No. 327,195

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—400 **19 Claims**



1. A method of analyzing an individual subject person's physical characteristics to assist in hair styling comprising:

measuring a plurality of values of the person's height and head dimensions.

inputting said measured values of physical measurements of the subject person into a digital computer and temporarily storing said values therein,

inputting into the digital computer predetermined values of normal ratios of the height and head dimensions for subjects of the same sex,

storing the values of said normal ratios in said digital computer,

inputting into said digital computer predetermined recommendations of distribution of hair volume as a function of deviations from said normal ratios,

storing said recommendations in said digital computer in a table,

calculating in said digital computer the ratios of the subject person corresponding to the said normal ratios for subjects of the same sex,

calculating in said digital computer the deviations between values of the subject person ratios and the values of the normal ratios stored in said computer,

comparing in said digital computer the deviations of the ratios of said subject person with the stored recommendations,

driving with said computer a display device which displays the recommendations for hair volume distribution corresponding to the correspondence of said recommendations with the deviations of the ratios of said subject person and said recommendations, and manually preparing a chart representing said recommendations on a facial outline.

4,519,038

OPTIMIZING SPARK TIMING CONTROL APPARATUS AND METHOD

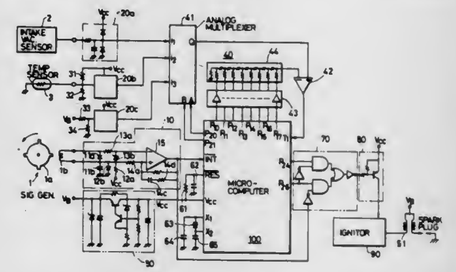
Takeski Matsui, Toyohashi; Hideo Ohyama, Toyota; Ryosuke Tachi, Kariya; Teruyoshi Ito, and Motoshi Kawai, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 24, 1982, Ser. No. 381,508

Claims priority, application Japan, May 27, 1981, 56-80572

Int. Cl.³ F02P *5/08*; F02B *5/02*

U.S. Cl. 364—431.03 **8 Claims**



3. A method for generating a rectangular wave output signal in accordance with a predetermined engine crankshaft position, comprising the steps of:

(a) generating a reference pulse having a leading edge advanced with respect to said predetermined crankshaft position as a function of the speed of rotation of the crankshaft and having a trailing edge substantially coinciding with said predetermined crankshaft position;

(b) detecting the trailing edge of a preceding reference pulse and deriving from engine power demand and engine crankshaft speed a first value and successively decrementing said first value;

(c) detecting whether the crankshaft speed is higher than a predetermined value;

(d) detecting the occurrence of (1) said first value being reduced to zero and of (2) the leading edge of a subsequent reference pulse, causing a voltage to rise in response to the detection of the earlier of either one of occurrences (1) and (2) if the crankshaft speed is higher than said predetermined value, and causing said voltage to rise in response to the detection of occurrence (2) if the crankshaft speed is lower than said predetermined value;

(e) deriving from said engine power demand and engine crankshaft speed a second value and successively decrementing said second value; and

(f) detecting the trailing edge of said subsequent reference pulse and causing said voltage to fall in response to the detection of the trailing edge if said crankshaft speed is lower than said predetermined value; and

(g) detecting when said second value reduces to zero and causing said voltage to fall in response to the detection of the second value becoming zero if said crankshaft speed is higher than said predetermined value.

6. Apparatus for generating a rectangular wave output signal in accordance with a predetermined crankshaft position of an internal combustion engine which is controlled in response to engine power demand, comprising:

means for generating a first signal representing the amount of power demand of said engine;

means for generating a second signal representing the speed of rotation of the engine crankshaft;

means for generating a reference pulse having a leading edge advanced with respect to said predetermined crankshaft position by an amount that is a function of said second

signal representing the crankshaft rotation speed and having a trailing edge substantially coinciding with said predetermined crankshaft position;

means for generating clock pulses;

control means comprising means for detecting whether said second signal is higher or lower than a predetermined value, means for deriving from said first and second signals, in response to the trailing edge of a preceding reference pulse, a first and a second value representing respectively first and second optimum periods of time, means for counting said clock pulses in response to said trailing edge to provide a first count value and counting said clock pulses in response to the leading edge of a subsequent reference pulse to provide a second count value, means for detecting a first match between said first value and said first count value and a second match between said second value and said second count value, means for causing a voltage to rise in response to the leading edge of said subsequent reference pulse if said second signal is lower than said predetermined value and in response to the earlier occurring one of said leading edge and said first match if said second signal is higher than said predetermined value, and means for causing said voltage to fall in response to the trailing edge of said subsequent reference pulse if said second signal is lower than said predetermined value and in response to said second match if said second signal is higher than said predetermined value.

4,519,039

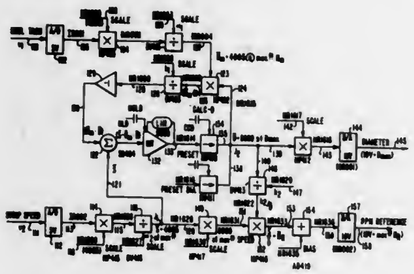
DIGITAL COIL DIAMETER FUNCTION GENERATOR AND REEL MOTOR DRIVE SYSTEM EMBODYING THE SAME

Bhupendra S. Surana, East Amherst, and William H. Snedden, Newstead, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 23, 1982, Ser. No. 401,425

Int. Cl.³ G06G *7/26*

U.S. Cl. 364—469 **2 Claims**



1. In a line for processing a strip of material at a controllable strip velocity between a pay-off and a winding reel driven at a controllable speed, a motor drive system for controlling the speed of one of said pay-off and winding reels, in relation to a motor speed representative signal and a strip speed representative signal, comprising:

a program controller including:

first A/D converter means operative upon each of successive scan time intervals (T) for converting said strip velocity signal into a first digital signal S representative of strip velocity;

second A/D converter means operative upon each of successive scan time intervals for converting said reel speed signal into a second digital signal N representative of reel speed;

means responsive to said N digital signal and to a digital representation of the actual diameter D of the wound coil upon said reel at the beginning of a new scan time interval for calculating the product ND;

means responsive to the product ND and to said S digital signal for deriving an error (S−ND);

integrating means responsive to said error (S−ND) for increasing said digital representation D by a corresponding and proportionate amount at the end of a current time interval (T) to provide a new initial diameter for the next time interval;

first D/A converter means responsive upon each scan time interval to said diameter D digital representative signal for deriving a diameter D instantaneous value analog representative signal;

means responsive to said diameter D digital representative signal and to said S digital representative signal for providing S/D digital representative signal; and

second D/A converter means responsive upon each scan time interval to said S/D digital signal for deriving a speed reference signal in accordance with said new initial diameter;

said motor drive system further including means for controlling the speed of said reel in accordance with said speed reference signal.

4,519,040

METHOD FOR DETECTING AND RECOGNIZING DEVIATIONS OF CYCLICALLY RECURRING PROCESSES FOR THE SHAPING OF WORKPIECES

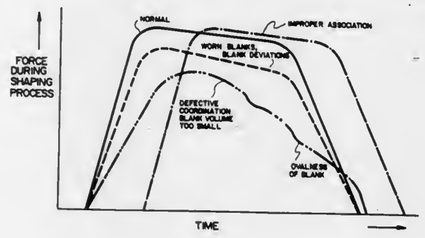
Klaus Brankamp, Sperber Weg 10, 4006 Erkrath 1; Volker Bialas, Hilden, and Heinz B. Bongartz, Düsseldorf, all of Fed. Rep. of Germany, assignors to Klaus Brankamp, Erkrath, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,010

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136433

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—474 **5 Claims**



1. A method of detecting and recognizing deviations from a normal course of cyclically recurring processes for the shaping of workpieces from the solid by cold-working, particularly upon the profiling of elongated blanks of circular cross section by shaping from the solid, for instance upon thread-rolling, the improvement comprising

determining values of force employed to carry out a shaping process in case of the normal course of the shaping of a workpiece at a suitable and significant point of a tool from the start to the end of the course of force,

storing said values of force,

determining corresponding values of force for each of the cyclically recurring shaping processes on the workpieces,

comparing said corresponding values with the values stored and determining values deviating from the stored values, and

taking corrective action so as to eliminate a source of error when the deviating values exceed a predetermined range of tolerance according to the nature of the deviation, and wherein said step of taking corrective action includes checking the association of parts of the tool with respect to each other and/or the blanks based on the deviation values corresponding to a deviation at the start and/or the end of the course of the force from the normal course of the shaping process, and readjusting said association if necessary.

4,519,041

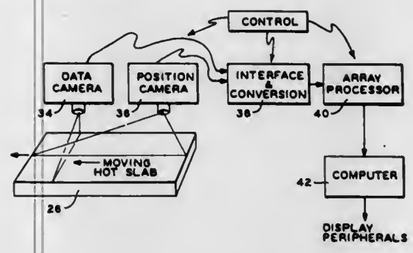
REAL TIME AUTOMATED INSPECTION

Karl M. Fant, Minneapolis; Richard A. Fundakowski, Saint Paul; Tod S. Levitt, Minneapolis; John E. Overland, Plymouth; Bindinganavle R. Suresh, New Brighton, and Franz W. Ulrich, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 3, 1982, Ser. No. 374,373

Int. Cl.³ G06F *15/20, 15/46;* G06G *7/48*

U.S. Cl. 364—552 **24 Claims**



1. A method for the real time automatic detection and classification of characteristic type surface imperfections occurring on the surfaces of material of interest comprising the steps of;

transversely scanning a relatively moving surface of said material of interest with data generating means to sense the light intensities of scanned pixels and generating signals indicative of the sensed intensities of said scanned pixels;

converting said signals to corresponding digital values to form a digital image of said surface and storing said digital values;

edge enhancing said digital image formed by said digital values with an edge enhancement operator on the fly to form an edge enhanced image containing intervals of said image corresponding to the edges of said surface imperfections;

thresholding said edge enhanced image to segment out said edges to form a thresholded image;

interval matching said thresholded image to establish connectivity of intervals on adjacent scan lines and bin tracking connected ones of said interval (threshold image) to track and segment out imperfection objects formed by said edges;

forming object feature vectors by computing and accruing directly determinable features including an object identifier of each of said objects; and

classifying said objects with the aid of said features into characteristic type surface imperfections.

4,519,042

METHOD OF INDICATING RESULTS OF COMBINATORIAL COMPUTATIONS

Kazukiyo Minamida, and Yoshiharu Asai, both of Shiga, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

PCT No. PCT/JP81/00176, § 371 Date Mar. 23, 1982, § 102(e) Date Mar. 23, 1982, PCT Pub. No. WO82/00711, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 13, 1981, Ser. No. 364,859

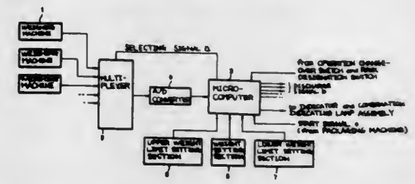
Claims priority, application Japan, Aug. 20, 1980, 55-115009

Int. Cl.³ G01G *13/00, 19/42*

U.S. Cl. 364—567 **6 Claims**

1. In a combinatorial system for measuring the respective values of a physical quality of a plurality of sets of objects such as the weight or quantity thereof, computing a plurality of combinatorial values of said measured values, and discharging those sets of objects the total combinatorial value of which most closely approximates a set value, the method of indicating the results of said combinatorial computations comprising the steps of:

arranging said combinatorial values in ranking order of closest approximation to said set value;



storing a numerical value representative of each of said combinatorial values and the combination corresponding thereto;

selectively retrieving one of said stored numerical values by rank and displaying said selected value on a visual numerical display.

4,519,043

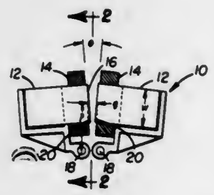
SOLENOID ACTIVATED CLOSURE DEVICE

David H. La Forge, and Peer M. Portner, both of Kensington, Calif., assignors to Novacor Medical Corporation, Oakland, Calif.

Filed Jul. 20, 1982, Ser. No. 400,027

Int. Cl.³ G01B *7/14;* A61F *1/00*

U.S. Cl. 364—571 **8 Claims**



1. In a solenoid activated closure device having a pair of poles in a facing relationship to each other and normally biased apart from each other defining a gap therebetween, said poles being accelerated toward each other when said device is activated, a method for substantially eliminating impact of said poles against each other after activation of said device, said method comprising the steps of:

a. measuring an initial width of said gap;

b. measuring an instantaneous width of said gap at selected time intervals after activation of said device;

c. computing an instantaneous rate of closure of said gap from each instantaneous width and computing an error between each instantaneous rate and a predetermined rate of closure;

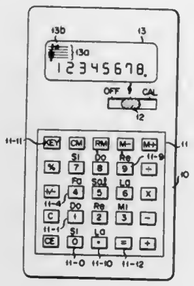
d. adjusting said instantaneous rate as a function of said error; and

e. repeating steps b-d until closure of said device is determined.

4,519,044
SMALL-SIZED ELECTRONIC CALCULATOR CAPABLE OF FUNCTIONING AS A MUSICAL INSTRUMENT

Eiichi Munetsugu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 9, 1981, Ser. No. 319,412
Claims priority, application Japan, Nov. 13, 1980, 55-159925
Int. Cl.[3] G06F *3/16*
U.S. Cl. 364—709
1 Claim



1. An electronic musical tone generating system operable in conjunction with an electronic calculator having data input keys, said system comprising:

memory means having storage locations for storing tone codes;

tone generating means for producing audible output tones and including tone control means for selecting the frequency of said output tones in response to tone code input signals, said tone control means including register means for storing said tone code selected from said memory means, decode means for decoding said selected tone code to produce an address signal, ROM means receiving said address signal and supplying at its output in response thereto a frequency division code, and variable frequency signal generation means responsive to said frequency division code for generating a signal of predetermined frequency for controlling the frequency of said audible output tone;

means operated by said data input keys for generating key input codes indicating the identity of an activated input key;

function control means operable in response to the generation of a first key input code produced by activation of a first data input key to access a first storage location in said memory means and to supply to said tone control means a first stored tone code, whereby activation of said first data input key produces a first audible output tone; and

key selection means responsive to activation of a second data input key for changing the operation of said function control means such that said first key input code accesses a second storage location in said memory means and supplies to said tone control means a second stored tone code, whereby activation of said first data input key following operation of said key selection means produces a second audible output tone having a frequency different from said first audible output tone;

said tone generating means further including:

a frequency division register for storing said frequency division code supplied by said ROM means;

a plurality of AND circuits connected such that a first input terminal of each said AND circuit receives a different digit of said stored frequency division code;

a plurality of binary counters each having a Q output, a set input, a trigger input, and a reset terminal, each said counter being connected via its reset terminal to the output of one of said AND circuits and said counters being cascade-connected through interconnection of the Q output and trigger input of respective adjacent counters;

a reference pulse generator circuit for supplying a reference frequency signal to the trigger input of the first stage binary counter;

a NOR circuit to which is applied the Q output from each of said binary counters;

a flip-flop connected to receive the output of said NOR circuit;

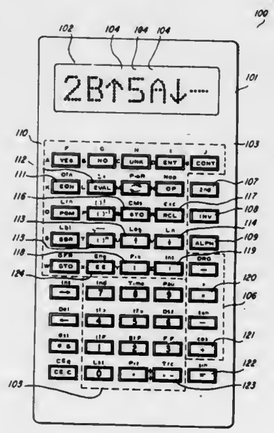
means for supplying the output of said flip-flop commonly to the set inputs of said binary counters and to second input terminals of each of said AND circuits; and

means for producing said audible output tones having a frequency contolled by the output of said flip-flop.

4,519,045
ELECTRONIC DATA PROCESSING APPARATUS WITH EQUATION OPERATING SYSTEM HAVING IMPROVED UNARY OPERATION IMPLEMENTATION

David Caldwell; Linda J. Ferrio, and Arthur C. Hunter, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 381,985, May 25, 1982,. This application Feb. 29, 1984, Ser. No. 584,707
Int. Cl.[3] G06F *7/48, 3/02*
U.S. Cl. 364—709
8 Claims



1. An electronic data processing apparatus comprising:

an input means for entering data processing functions including numeric data and a plurality of operational commands, said operational commands including at least one unary operational command corresponding to a data processing operation having a single operand, and including at least one unary operation completing command;

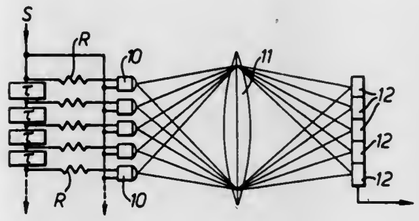
and arithmetic means for performing entered data processing functions and generating a numeric result, said arithemtic means including a unary operation means for performing unary operational commands upon entry of a unary operation completing command employing the numeric data entered after entry of said unary operational command as the operand if numeric data is entered after entry of said unary operational command prior to entry of said unary operation completing command, and for performing entered unary operational commands on the numeric data entered prior to entry of said unary operational command if no numeric data is entered following entry of said unary operational command prior to entry of said unary operation completing command; and

an output means for generating an operator perceivable indication of said numeric result generated by said arithmetic means.

4,519,046
SIGNAL PROCESSING APPARATUS AND METHOD

Trevor W. Cole, 28 Gordon Crescent, Stanmore, New South Wales 2048, Australia

PCT No. PCT/AU80/00109, § 371 Date Aug. 7, 1981, § 102(e) Date Aug. 7, 1981, PCT Pub. No. WO81/01927, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 16, 1980, Ser. No. 293,225
Claims priority, application Australia, Dec. 19, 1979, PE1784
Int. Cl.[3] G06G *9/00;* H03K *19/14*
U.S. Cl. 364—822
18 Claims



1. A correlator for performing autocorrelation, comprising:

(a) a linear array of illumination control elements each having a first optical state in which a first light output is provided and a second optical state in which a second light output is provided, each said element changing from its first optical state to its second optical state when a voltage is applied across it, each element being adapted to receive two voltage signals, the optical state of each element at any instant being dependent on the relative values of the voltage signals;

(b) means for applying a voltage signal from a single signal source to one input of each element in the linear array, said voltage signal from said single signal source representing a signal to be autocorrelated;

(c) means for applying said signal from said single signal source, after a delay thereof by a respective integral number of time delay periods, to the other input of each element in the linear array; and

(d) an array of photodiodes, each photodiode receiving light from a respective one of said elements and providing an output signal responsive to said received light, the output signals of said photodiodes representing an autocorrelation of said signal to be correlated.

14. A method of correlating a plurality of pairs of quantized electrical signals, comprising the steps of:

(a) applying each pair of quantized signals to the two terminals of a respective element in an array of illumination control elements each having a first optical state in which a first light output is provided and a second optical state in which a second light output is provided, each element having two terminals and changing from its first optical state to its second optical state when a voltage difference is applied across its two terminals;

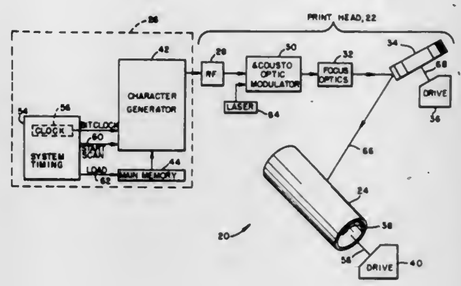
(b) observing the optical state of each element in the array by focusing the light from each element onto a respective photodiode in an array of photodiodes which is complementary to said array of elements; and

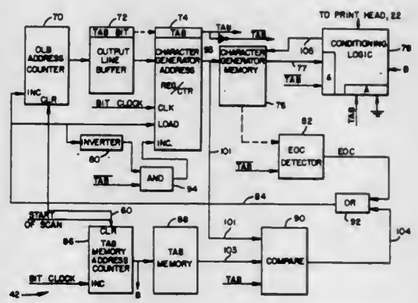
(c) reading out the information contained in said complementary array of photodiodes, said information contained in said complementary array of photodiodes representing a correlation of said plurality of pairs of quantized electrical signals.

4,519,047
PRINTER WITH POSITIONAL TABBING

George W. Crozier, Hatfield, and Bernard J. McDevitt, Norristown, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,759
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—900
11 Claims





1. A printing system for providing a proportional width mode and a columnar mode of presenting printed material comprising:

a character recording medium;

means for printing characters on said medium, said medium movable relative to said printing means for the printing of successive lines of said characters;

timing means for synchronizing movement of said printing means and said recording medium;

character generator means for driving said printing means, said timing means including a clock for clocking said character generator means, said character generator means comprises a character memory storing components of characters to be printed by said printing means, a separate address of said memory corresponding to each of said stored components;

counter means for addressing said character memory;

means for presetting said counter means with the starting address of a character, said counter means counting through successive addresses of the components of the character in response to clock signals of said clock;

tab memory means for storing a print signal at an address corresponding to the location of the leading edge of a column;

comparator means for comparing the output of said tab memory means with a tab signal for designating the starting point of a character for positions of characters in a columnar presentation, said character memory including an output circuit for signaling the end of a character for proportional width printing; and

means for alternatively coupling said presetting means to said output circuit and to said comparator to select a

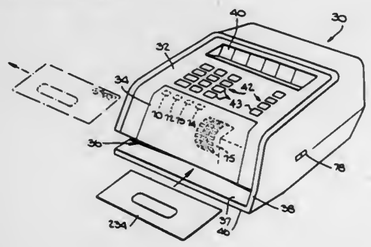
proportional width mode and columnar mode of character presentation.

4,519,048

POSTAGE METER SYSTEM FOR COMMUNICATING PLATEN MOVEMENT TO A MICROPROCESSOR TO SIGNAL COMPLETION OF PRINTING

Jovito N. Abellana, and Edward C. Duwel, both of Trumbull, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,904
Int. Cl.³ G06F *15/21, 3/12, 3/02*
U.S. Cl. 364—900 **6 Claims**



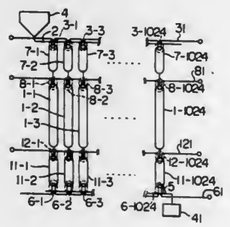
1. A self-contained electronic mailing machine having means for determining completion of a postage printing operation, comprising: a housing, a microprocessor received within said housing, a platen movably supported within said housing, a print head supported within said housing spaced from and addressing said platen, a single revolution clutch located within said housing, means connected to said single revolution clutch for moving said platen into printing engagement with said print head, a shaft rotatably supported within said housing, means for rotating said shaft, said shaft being in engagement with said single revolution clutch whereby upon rotation of said shaft, said single revolution clutch causes said moving means to move said platen into contact with said print head means connected to said microprocessor for sensing the rotation of said shaft, whereby upon rotation of said shaft said sensing means will sense the rotation of said shaft and send a signal to said microprocessor to communicate the activation of said single revolution clutch and the completion of a printing operation.

4,519,049

MAGNETIC BUBBLE MEMORY HAVING AUXILIARY STORAGE LOOPS

Takashi Toyooka, Sayama; Hirokazu Aoki, Hachioji, and Mamoru Sugie, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,510
Claims priority, application Japan, Dec. 4, 1981, 56-194521
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—12 **12 Claims**



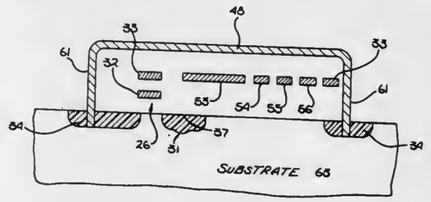
1. A magnetic bubble memory for accessing stored data sequences by the presence or absence of magnetic bubble domains, comprising:
- a plurality of minor loops for circulating the stored data sequences;
- data updating means coupled to said plurality of minor loops for updating the data sequences;
- first replicator means for replicating the data sequences of said plurality of minor loops;
- a plurality of auxiliary loops coupled to said first replicator means for ciculating the replicated data sequences;
- a read line for transferring the data sequences to be read from said auxiliary loops; and
- second replicator means coupled to said read line and said auxiliary loops and for replicating the data in said auxiliary loops to said read line.

4,519,050

RADIATION SHIELD FOR AN INTEGRATED CIRCUIT MEMORY WITH REDUNDANT ELEMENTS

Alan C. Folmsbee, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 17, 1982, Ser. No. 389,415
Int. Cl.³ G11C *11/34*
U.S. Cl. 365—53 **6 Claims**



1. In a metal-oxide-semiconductor (MOS) electrically programmable read only-memory (EPROM) which is fabricated on a substrate and which is erased when exposed to radiation, an improvement comprising:
- redundant elements to be used in place of defective elements;
- a programming means for programming said redundant elements so as to cause said redundant elements to be used in place of said defective elements, said programming means including at least one EPROM cell which is erased when exposed to radiation; and
- a shielding member comprising an upper cover and upstanding members extending from said upper cover to said substrate disposed about said EPROM cell which causes radiation incident on said memory to be attenuated before striking said EPROM cell thus inhibiting said EPROM cell from being erased when said memory is exposed to radiation;
- whereby said EPROM cell can be permanently programmed so that said redundant elements are always used in place of said defective elements.

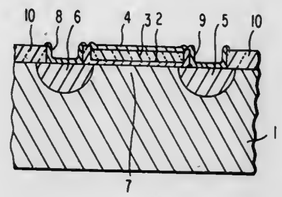
4,519,051

MNOS TYPE NON-VOLATILE MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Tatsuo Fuji, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 434,989
Claims priority, application Japan, Oct. 16, 1981, 56-165339
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—184 **2 Claims**

1. An MNOS type non-volatile memory comprising a semiconductor substrate of one conductivity type, source and drain regions of the opposite conductivity type provided in said semiconductor substrate, a thin silicon oxide layer provided on a channel region between said source and drain regions, a silicon nitride layer provided on said thin silicon oxide layer and having trap states therein, and a gate electrode provided on said silicon nitride layer, the density of trap states in said



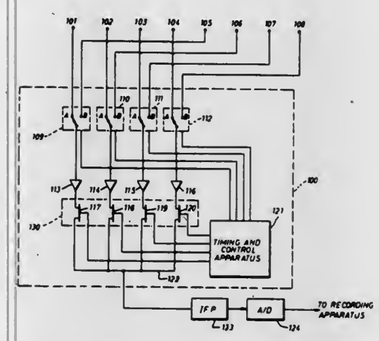
silicon nitride layer decreasing continuously in the direction from the interface between said silicon nitride layer and said silicon oxide layer to the interface between said silicon nitride layer and said gate electrode.

4,519,052

ELECTRONIC ROLL-A-LONG SWITCH

Donnie J. Tantillo, Houston; David F. Kratochvil, Sugarland; Robert G. Moore, and Edward M. Browne, both of Houston, all of Tex., assignors to Geosource Inc., Houston, Tex.

Filed Jun. 16, 1981, Ser. No. 274,216
Int. Cl.³ G01V *1/22;* H04Q *11/04*
U.S. Cl. 367—79 **12 Claims**



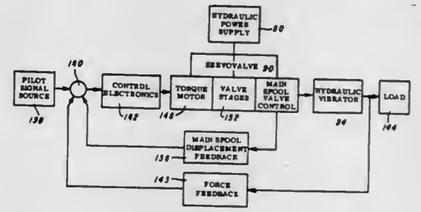
8. An electronic roll-a-long switch for use in a seismic exploration system, said system including N receiver points, which are sequentially numbered and which are located at spaced intervals along the earth's surface, and a recording system having M channels for recording seismic data, comprising:
- N/2 input channels, each channel including a preamplifier having an input and an output, and a two possible-position, electronic input switch for connecting the input of its associated preamplifier to either of two receiver points which are spaced N/2 receiver points apart;
- a multiplexer for time-division multiplexing the outputs of the preamplifiers to a signal bus;
- timing and control circuitry for operating the multiplexer during each channel sample time of a record interval time to connect the preamplified signals from a group of M receiver points to the signal bus in a sequential order corresponding to the sequential numbers of the receiver points of that group, and for changing the group of N/2 receiver points which are connected to the inputs of the preamplifiers during a successive recording interval.

4,519,053

FORCE OR PRESSURE FEEDBACK CONTROL FOR SEISMIC VIBRATORS

John W. Bedenbender, Ponca City, Okla., and Gilbert H. Kelly, deceased, late of Irving, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 325,618, Nov. 27, 1981, abandoned, which is a continuation of Ser. No. 870,236, Jan. 17, 1978, abandoned, which is a continuation of Ser. No. 673,854, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 427,899, Dec. 26, 1973, abandoned. This application Oct. 1, 1984, Ser. No. 655,999
Int. Cl.³ G01V *1/14*
U.S. Cl. 367—190 **4 Claims**



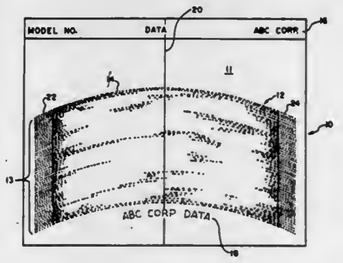
1. A seismic vibrator source having a reaction mass comprising:
- (a) a vibrator means for imparting acoustic energy into the earth, including a baseplate structure for contacting the earth connected to the reaction mass;
- (b) a drive means for vibrating the vibrator means;
- (c) a force measuring transducer means integral with said vibrator means and operative responsive to the vibrator means to produce electrical signals directly representative of the force applied to the earth, the force including the weight of the reaction mass and the weight of the baseplate structure mass, to thereby accurately represent a decoupling condition for controlling the drive means; and
- (d) comparator means for comparing the electrical signals representative of the force with a predetermined representative value for maintaining the force at that corresponding to that of the predetermined representative value.

4,519,054

METHOD FOR FORMATTING OPTICALLY ENCODED DIGITAL DATA ON A SUBSTRATE AND THE DATA RECORD CARRIER FORMED THEREBY

Alan A. Jewer, Whitewater, Wis., assignor to News Log International, Inc., Janesville, Wis.

Continuation-in-part of Ser. No. 384,582, Jun. 3, 1982,. This application Aug. 2, 1982, Ser. No. 404,507
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—30 **47 Claims**



1. A method for formatting optically encoded digital data on a planar substrate without timing or synchronization data to

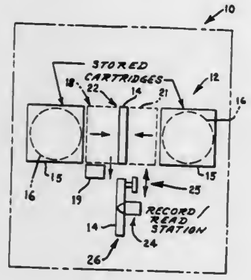
form a data record carrier including the steps of: selecting an arcuate track path on the substrate for each one of a plurality of tracks of data; selecting a data cell length in the direction of each track for each bit of data to be stored in each cell on each track; selecting a cell width dimension transverse to the direction of the track; selecting a non-transition cell for one form of logic (0 to 1) to be stored in each such cell; selecting a transition cell for the other form of logic (1 or 0) to be stored in each such other cell; establishing a leader section for each track; establishing a tailer section for each track; establishing a front track address section for each track; establishing a back track address section for each track and creating on said substrate a plurality of such arcuate tracks with the above parameters, and with each track being spaced from an adjacent track along a common centerline of the tracks, and each track having the same radius throughout the arcuate path of the track such that the tracks extend in an arcuate manner across the data record carrier and are arranged in a nested manner relative to adjacent tracks along said common centerline.

4,519,055

OPTICAL DISC TRANSPORT SYSTEM

Alan P. Gilson, King of Prussia, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 19, 1983, Ser. No. 486,477
Int. Cl.³ G11B *17/00*
U.S. Cl. 369—37 **1 Claim**



1. An optical disc transport system comprising

a cartridge storage module, said cartridge storage module having a plurality of rectangular shaped cartridges removably stored therein, said cartridges having discs contained therein, said storage module being donut shaped,

a changer, said changer being centrally located in said cartridge storage module, said changer being rotatably driven for accessing said cartridges, said changer reciprocally transporting a selected cartridge between said cartridge storage module and a transfer location within said changer, said changer having a housing centrally located in said cartridge storage module; driving means for selectively rotating said housing within said cartridge storage module; and means for transporting said selected cartridge, said means for transporting attached to said housing, said means for transporting having a reciprocating transporting means for moving said selected cartridge between said cartridge storage module and said transfer location; and means for releasably engaging said selected cartridge, said means for releasably engaging attached to and translating on said reciprocating transporting means; said reciprocating transporting means including a ball screw and a drive, said drive selectively rotating said ball screw whereby a carrier translates upon said ball screw, said carrier including

a carriage translatably attached to said reciprocating transporting means;

a frame fixedly attached to said carriage;

means for selectively rotating a shaft, said means for selectively rotating fixedly attached to said carriage;

a pair of transporting arms for releasably engaging said selected cartridge, said transporting arms pivoted on one end to said frame; and

means for connecting said shaft to said transporting arms, said means for connecting including a plurality of connecting rods rotatably connected to a flange, said flange fixedly mounted to said shaft, said connecting rods operably connected to said transporting arms such that selective rotation of said flange by said shaft causes said transporting arms to releasably engage said selected cartridge, said connecting means pivoted to one end to said transporting arms near said pivot connecting said arms to said frame whereby motion of said connecting means causes said arms to rotate about said pivots in said frame; and

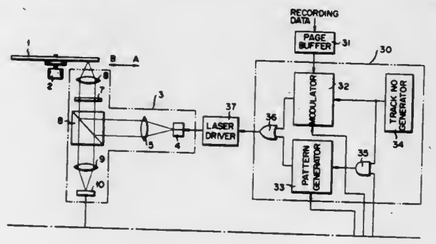
a data interface unit, said data interface unit attached to said changer, said data interface unit reversibly transporting said selected cartridge from said transfer location in said changer to a read/record station within said data interface unit.

4,519,056

OPTICAL DISK APPARATUS

Katsumi Kimoto, and Atsushi Ishihara, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 9, 1983, Ser. No. 473,629
Claims priority, application Japan, Mar. 15, 1982, 57-40605; Mar. 15, 1982, 57-40608
Int. Cl.³ G11B *7/00*; H04N *5/76*
U.S. Cl. 369—43 **8 Claims**



1. A data recording apparatus, comprising:

(a) recording/reproduction head means for recording data on a recording medium having a plurality of tracks formed at a predetermined trace pitch, for reproducing the data from the recording medium and for detecting and outputting a detection result corresponding to a desired recording start track;

(b) moving means, connected to said recording/reproduction head means, for moving said recording/reproducing head means on the recording medium;

(c) position detecting means having a predetermined scale pitch for detecting the position of the head and for outputting a scale value corresponding to positions of the recording medium:

(d) scale translating means for translating a desired track number to a scale value corresponding to said scale value detected by said position detecting means in accordance with the track and scale pitches;

(e) driving means, connected to said scale translating means, said position detecting means and said moving means, for driving said moving means until the scale value from said scale translating means coincides with the scale value detected by said position detecting means; and

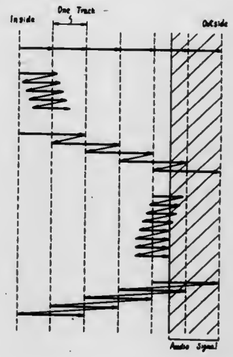
(f) controlling means, connected to said recording/reproduction head means, said position detecting means, said scale translating means, and said driving means, for detecting when access to the recording start track cannot be made by said recording/reproduction head for recording the data, for determining a track number in the vicinity of the recording start track in accordance with said detection result output by said recording/reproduction head means, and for controlling said recording/reproduction head means, said position detecting means, said scale translating means and said driving means so as to move said recording/reproduction head means to a target track ahead of a predetermined number of tracks which corresponds to a distance between the target track and the recording start track.

4,519,057

DIGITAL AUDIO DISC PLAYER INCLUDING APPARATUS FOR FINDING THE BEGINNING OF A RECORDED AUDIO SIGNAL

Teruaki Higashihara, Tokyo; Chiaki Nonaka; Tadao Yoshida, both of Kanagawa, and Hideo Kawachi, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,120
Claims priority, application Japan, Aug. 21, 1981, 56-131909
Int. Cl.³ G11B *7/00, 17/02, 27/10*
U.S. Cl. 369—50 **14 Claims**



1. An apparatus for optically reproducing audio information recorded on an optical disc in substantially circular tracks on the latter, said information being recorded in at least one signal segment having a beginning portion which is intended to be the first portion thereof reproduced and which is immediately preceded by a blank segment; said apparatus comprising:

means for rotating said disc at a constant linear velocity;

pickup means for reproducing said information recorded on said disc in said tracks;

tracking control means for adjusting the tracking position of said pickup means in forward and reverse directions which are transverse with respect to said tracks; and

means operative through said tracking control means for selectively establishing a slow-playback mode and a reverse slow-playback mode in each of which, after said pickup means reproduces a respective predetermined first number of said tracks while moving in said forward transverse direction, said tracking position of said pickup means is moved in said reverse transverse direction a respective predetermined integral number of said tracks, said predetermined integral number of said tracks being less than twice said predetermined first number of said tracks;

said means operative through said tracking control means also selectively establishing a standby mode in which, after said pickup means reproduces a given integral number of tracks while moving in said forward transverse direction, said tracking position of said pickup means is moved said given integral number of tracks in said reverse transverse direction;

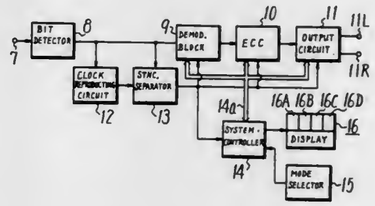
whereby said pickup means is adapted first to find, and then to remain poised at, said beginning portion of said signal segment.

4,519,058

OPTICAL DISC PLAYER

Katsuaki Tsurushima, Kawasaki; Tsuneo Furuya, Tokyo, and Tadashi Fukami, Koganei, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,215
Claims priority, application Japan, Aug. 31, 1981, 56-136844
Int. Cl.³ H04N *5/76*; G11B *7/00*
U.S. Cl. 369—53 **5 Claims**



1. In an optical disc player for playing an optical disc having a digital data including an error detecting code thereon and wherein digital data is obtained and supplied to an error detecting and correcting circuit means for at least indicating whether or not digital words have been corrected, wherein the improvement comprises:

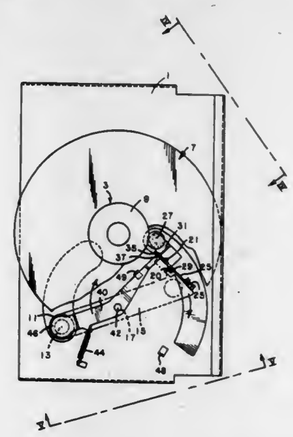
indicating means responsive to the error detecting and correcting circuit means and for providing an indication to a user of the optical disc player of a measure of contamination of the optical disc being played.

4,519,059

CLEANING MODE FOR DISCS OR RECORDS

Philippe V. Denis, Genappe, Belgium, assignor to Staar S. A., Belgium

Filed Nov. 18, 1983, Ser. No. 553,189
Claims priority, application Belgium, Apr. 15, 1983, 210,556
Int. Cl.³ G11B *3/58, 21/02*
U.S. Cl. 369—74 **12 Claims**



1. In an apparatus for transferring information to or from a disc, which apparatus includes a base, means for rotating the disc, means for transferring information to or from the disc, said information transferring means held by an arm movably mounted on the base to shift said information transferring

means across the surface of the disc in one direction or the opposite direction between the periphery and substantially the center, a disc cleaning device comprising:

means for cleaning the disc mounted movably on said arm;

means for moving said disc cleaning means into a disc-contacting cleaning position on a surface of the disc when said information transferring means is in an inoperative mode and for moving said disc cleaning means while in a cleaning position across the surface of the disc in one direction while said information transferring means is shifted across the surface of the disc in the opposite direction and remains in an inoperative mode; and

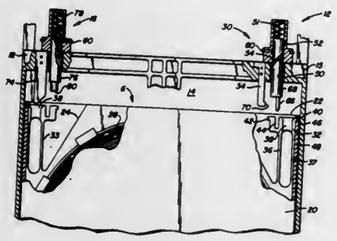
means for disassociating said disc cleaning means from the surface of the disc when said information transferring means is in an operative mode.

4,519,060

DISC LATCHING MECHANISM

John A. Ycas, Boulder, Colo., assignor to Reference Technology, Boulder, Colo.

Filed Nov. 29, 1983, Ser. No. 556,507
Int. Cl.³ G11B *5/82*
U.S. Cl. 369—77.2 **13 Claims**



1. A disc latching mechanism for use with a disc system of the type including a disc drive, a disc mounted for rotation within a disc carrier, the disc carrier and disc temporarily housed within a protective cartridge when outside of the disc drive, the mechanism comprising:

a catch member mounted to the carrier and biased in a first direction to a first position;

a catch member actuator mounted within the disc drive and positioned to engage said catch member when the protective cartridge, and the disc carrier and disc therewith, is inserted into the disc drive, said actuator arranged and adapted to bias said catch member in a second direction to a second position during insertion of said disc carrier and to maintain said catch member in said second position when the protective cartridge is retracted from the disc drive;

a carrier stop mounted to the disc drive and positioned to engage said catch member when said catch member is in said second position to prevent the retraction of the disc carrier as the cartridge is retracted from the disc drive; and

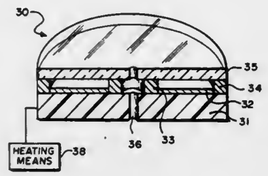
said catch member actuator including a rotatable cam member mounted for axial movement between retracted and extended positions, said cam member including a circumferential cam groove having first, second, third and fourth groove segments, said first and third groove segments arranged and adapted to rotate said cam member in a first rotary direction during said respective insertion and reinsertion of said cartridge, said second and fourth groove segments arranged and adapted to maintain a generally constant rotary orientation of said cam member during said retraction and withdrawal of said cartridge, said cam member eccentrically coupled to said catch member to move said catch member from said first position to said second position during insertion of said cartridge and from said second position to said first position during reinsertion of said cartridge and to maintain said catch member in said second position during retraction and withdrawal of said cartridge so when the cartridge is withdrawn from the disc drive the disc carrier is withdrawn from the disc drive along with the cartridge.

4,519,061

SEALED OPTICAL DISK UNIT, APPARATUS AND METHOD FOR DEBRIS-SUPPRESSED RECORDING

Barton E. Dahneke, Palmyra, and Alan B. Marchant, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,225
Int. Cl.³ G11B *7/24*
U.S. Cl. 369—109 **19 Claims**



1. An optical disk write/read apparatus of the kind adapted for use with a disk unit including: (i) a record element having an ablatable record portion and (ii) a cover sheet mounted in spaced relation to the record portion in a manner forming a generally enclosed space between the record element and cover sheet, said apparatus comprising:

(a) turntable means for receiving and rotating such disk unit;

(b) means for writing and/or reading ablated markings on the record portion of a received disk unit; and

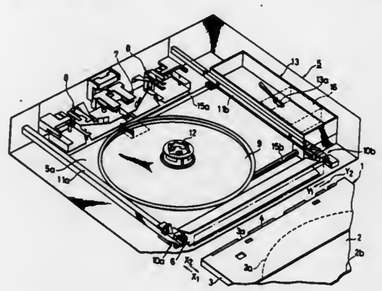
(c) means for controlling the temperature of the record element or the cover sheet of a received disk unit so that thermophoretic forces exerted by gas in its enclosed space drive ablative debris particles toward the cover sheet.

4,519,062

SIGNAL PICKUP DEVICE

Hiroyuki Sugiyama, Isehara, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 21, 1982, Ser. No. 390,737
Claims priority, application Japan, Jun. 22, 1981, 56-91895
Int. Cl.³ G11B *11/00*
U.S. Cl. 369—126 **5 Claims**



1. A signal pickup device comprising:

a single base plate;

a pickup needle for picking up an information-dependent quantity;

a transducer unit disposed adjacent to said pickup needle for converting said information-dependent quantity into an electrical signal and including an oscillator, a transformer,

a resonator and an inductor which are all fabricated on said single base plate, elongated in shape, and juxtaposed parallel to each other transversely in the order named;

a preamplifier mounted on said single base plate and positioned adjacent to and across a longitudinal end of said transducer unit; and

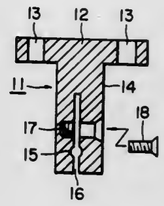
a power supply terminal disposed substantially at an interface between said transducer unit and said preamplifier for supplying electric power to said oscillator and said preamplifier.

4,519,063

PHONO PICKUP CARTRIDGE

Kazuo Nishikawa; Hiroyuki Ichino, and Keniti Okura, all of Saitama, Japan, assignors to Pioneer Electric Corporation, Japan

Filed Jun. 29, 1981, Ser. No. 278,037
Claims priority, application Japan, Jul. 1, 1980, 55-92457[U]
Int. Cl.³ G11B *3/02*
U.S. Cl. 369—172 **17 Claims**



1. A phono pickup cartridge comprising: a first body having a mount portion having at least one mount hole for mounting said first body to a pickup arm and a support portion for supporting a vibrating unit including a cantilever, said mount portion and said support portion being integral, a second hole being formed in said support portion, a vibrating supporting member being received in said second hole and being coupled to a rear end of said cantilever, a slit being provided in said support portion adjacent said second hole, and means for adjusting a width of said slit so that said vibrating supporting member can be pressingly secured in said second hole, said pickup cartridge further comprising first and second pickup coils coupled to said cantilever, and a magnet unit including a pair of magnets having like poles confronting each other, a center pole piece disposed between said like poles and first and second pole pieces disposed adjacent said magnets opposite said like poles confronting each other, said magnet unit being secured to said first body so that said center pole piece is positioned adjacent a center of said first and second pickup coils.

4,519,064

OPTICAL RECORD DISC

Toshihiko Takagi; Yoshikazu Kobayashi, both of Kawasaki; Yoshiji Suzuki, and Tsutomu Hara, both of Hamamatsu, all of Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

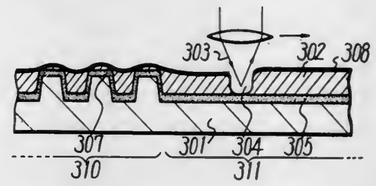
Filed Oct. 22, 1981, Ser. No. 313,764
Claims priority, application Japan, Oct. 27, 1980, 55-150382; May 21, 1981, 56-77100
Int. Cl.³ G11B *7/24*
U.S. Cl. 369—275 **8 Claims**

1. An optical record disc, comprising:

(a) a base plate having a blank portion of substantially uniform thickness and a guide signal pit portion of projections extending upwardly from one surface of said base plate;

(b) a light reflecting film layer on said one surface of said base plate coating, said blank portion and said guide signal pit portion; and

(c) a thin layer of recording material of the removing type coated on said reflection film layer, said recording material having a high light absorption factor, a substantially uniform thickness over said blank portion and a thickness over the top sections of said projections substantially smaller than over said blank portion.



4,519,065

METALLIZED INFORMATION CARRYING DISCS

Terry W. Lewis; Roger J. Anderson, and Donald J. Kerfeld, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 189,000, Sep. 22, 1980, Pat. No. 4,363,844.
This application Aug. 9, 1982, Ser. No. 406,121
Int. Cl.³ G11B *7/24*; B32B *3/02*
U.S. Cl. 369—275 **2 Claims**

1. A multilayered article for use in the manufacture of coded information bearing surfaces which may be electronically decoded comprising:

(a) a base having at least one surface which is a layer of a thermoplastic, radiation curable polymeric resin, wherein said layer of polymeric resin exhibits a maximum loss modulus which appears between 30° and 180° C.,

(b) an embossable electrically conductive or electromagnetic radiation reflective layer over said at least one surface,

said embossable layer comprising metal having a thickness in the range of 0.2 to 60 nm.

4,519,066

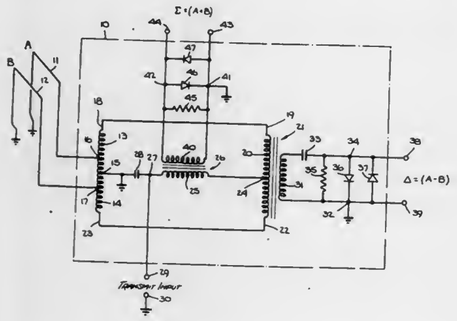
DUPLEXER WITH SUM AND DIFFERENCE SIGNAL OUTPUTS

Raymond L. Barrett, Jr., Oakland Park, Fla., and Thomas A. O. Gross, Lincoln, Mass., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Dec. 6, 1982, Ser. No. 447,221
Int. Cl.³ H04B *5/02*
U.S. Cl. 370—24 **6 Claims**

1. A duplexer for use in a signalling system wherein a first signal is to be transmitted in one direction through first and second coupling devices, and a second signal, distinguishable from said first signal, is to be received in the opposite direction through said coupling devices for communication to a first and second output, respectively, as the algebraic sum and difference of the separate components of said second signal that are received, respectively, through each of said coupling devices, said duplexer comprising in combination first and second transformation means for converting separate single ended transmission paths to one double ended path, means for coupling

said double ended path to said second output, means for coupling said first and second transformation means in parallel to said first output, means for coupling said first signal in parallel to said transformation means, means for coupling each of said



coupling devices to said transformation means for providing separate single ended transmission paths to said transformation means, and means for limiting the absorption of power from said first signal by said first output.

4,519,067

COMMUNICATION SYSTEM PROVIDING AMPLIFIER GAIN BY HALF-CYCLE CARRIER SIGNAL CONTROL

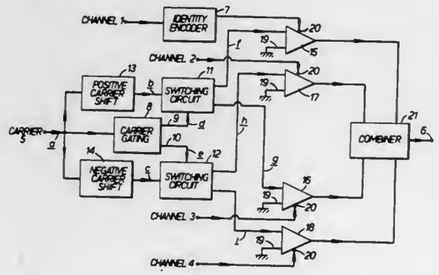
Douglas S. Friedrich, Benfleet, England, assignor to Marconi Avionics Limited, Rochester, England

Filed Apr. 21, 1983, Ser. No. 487,027

Claims priority, application United Kingdom, Apr. 22, 1982, 8211655

Int. Cl.³ H04J *7/02, 3/02*

U.S. Cl. 370—78 **4 Claims**



1. A communication system including means for transmitting a plurality of information channels on a single carrier signal by arranging that the amplitudes of predetermined half-cycles of one polarity of the carrier signal relate to one of said channels, and that the amplitudes of predetermined half-cycles of the other polarity of the carrier signal relate to another of said channels, said transmitting means including means for shifting the level of selected cycles of said carrier signal by a polarity which depends on the polarity of the predetermined half-cycles, a plurality of amplifiers connected to receive respective level shifted half-cycles of the carrier signal, wherein signals relating to each of said information channels are utilized to alter the gain of respective ones of said amplifiers so as to control the amplitudes of corresponding level shifted half-cycles of the carrier signal which are applied to said amplifiers, and receiving means for receiving the carrier signal and for reconstituting the plurality of information channels.

4,519,068

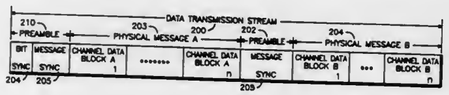
METHOD AND APPARATUS FOR COMMUNICATING VARIABLE LENGTH MESSAGES BETWEEN A PRIMARY STATION AND REMOTE STATIONS OF A DATA COMMUNICATIONS SYSTEM

Jay Krebs, Crystal Lake, and Thomas A. Freeburg, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 11, 1983, Ser. No. 512,801

Int. Cl.³ H04J *3/16*

U.S. Cl. 370—82 **10 Claims**



1. A signalling system for communicating messages via a communications medium between a primary station and a plurality of remote stations in a data communications system, said signalling system including a variable length message which is transmitted between an originating station and received by at least one destination station and is comprised of:

a bit synchronization field;

a message synchronization field; and

a plurality of channel data blocks being comprised of:

said first channel data block including: an information field including at least one command, a station address and a check word coded from the command and station address; and a parity field coded from the information field according to a predetermined code; the bits of the fields being interleaved such that consecutive bits of a field are separated by a predetermined number of bits;

said second channel data block including: an information field including a block count; a message sequence number incremented for each message and a check word coded from the block count and message sequence number; and a parity field coded from the information field according to a predetermined code; the bits of the fields being interleaved such that consecutive bits of a field are separated by a predetermined number of bits; and

said third and following channel data blocks each including: an information field including data; and a parity field coded from the information field; the bits of the fields being interleaved such that consecutive bits of a field are separated by a predetermined number of bits; and the information field of the last channel data block further including a check word coded from the data in the information field of the third and following channel data blocks.

4,519,069

COMMUNICATION SYSTEM INTERCONNECTING RADIOS AND OPERATORS LOCATED AT DIFFERENT POSITIONS

David G. Pudsey, Rayleigh, England, assignor to GEC Avionics Limited, Rochester, England

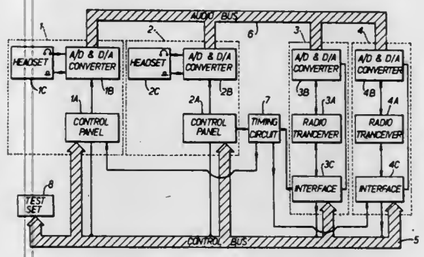
Filed Oct. 27, 1982, Ser. No. 437,165

Claims priority, application United Kingdom, Oct. 28, 1981, 8132436

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—85 **7 Claims**

1. A communication system for interconnecting radios, each able to provide at least one radio facility, and operators located at different positions, the system comprising: a control bus and an audio bus for interconnecting the operator positions and the radios, means at each operator position for applying, in turn to the control bus, a request code constituting a request for a particular radio facility, means associated with each radio for responding to receipt of a request code by applying to the control bus an availability code indicating the radio's availability for providing the said facility, means at each operator position for applying to the control bus an instruction code instructing a particular radio to provide a facility requested



and for connecting the operator position to a particular channel of the audio bus, and means at the said particular radio for providing the requested facility on the said particular channel of the audio bus.

4,519,070

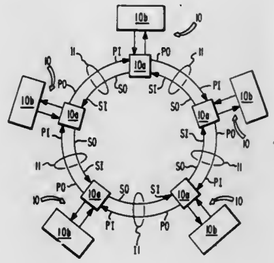
METHOD OF INITIALIZING AND RECOVERING FROM FAILURES IN A LOCAL AREA NETWORK

John L. Bell, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 19, 1984, Ser. No. 571,928

Int. Cl.³ H04J *3/14*

U.S. Cl. 370—88 **11 Claims**



1. A method of operating a station having two input-output ports for coupling said station to two other stations in a communication network; said method including the steps of:

monitoring the input section of one port in said station to detect an idle signal, a delimiter signal, or silence thereon;

transmitting said idle signal from the output section of said one port if silence is detected by said monitoring step;

sending said delimiter signal from the output section of said one port if said idle signal is detected by said monitoring step; and

coupling internally in said station the input section of said one port to an output section of either said one port or the other port of said station in a predetermined fashion to permit signals on the input section of said one port to pass through said station if said delimiter signal is detected by said monitoring step.

4,519,071

PHASE-LOCKED LOOP AND CLOCK CIRCUIT FOR A LINE SWITCH

Robert L. Miller, Westerville, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,602

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—100 **21 Claims**

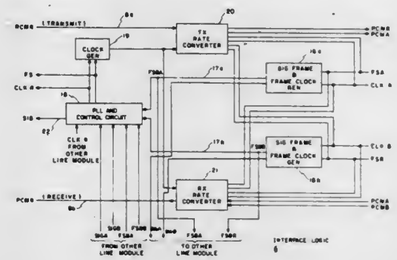
1. A circuit arrangement responsive to an input signal of a first frequency at a first terminal for generating output signals of a second frequency and having a predetermined phase relationship to said input signals at a second terminal, said circuit arrangement comprising:

a voltage controlled oscillator having an output coupled to said second terminal and having a control input, said voltage controlled oscillator generating a signal having a frequency dependent on the voltage level at said control input;

means coupled to said voltage controlled oscillator output for supplying feedback signals; and

first means responsive to said input signals and said feedback signals for supplying said voltage level, said first means comprising:

a controlled voltage source for generating said voltage level in response to first and second control signals, said controlled voltage source being responsive to said first control signal to change said voltage level in a first direction and being responsive to said second control signal to change said voltage level in a second direction opposite said first direction; and



detection means for generating said first and second control signals in response to said input signals and said feedback signals, said detection means having a first stable state whereby neither said first nor said second control signals are generated, a second stable state whereby only said first control signal is generated, and a third stable state whereby said second control signal is generated, said detection means normally being in said first stable state, said detection means assuming said second stable state each time said input signal occurs prior to said feedback signal and remaining in said second stable state for substantially the time difference between the occurrences of said input signal and said feedback signal, said detection means returning to said first stable state from said second stable state after the occurrence of said feedback signal, said detection means assuming said third stable state each time said feedback signal occurs prior to said input signal and remaining in said third stable state for substantially the time difference between the occurrence of said feedback signal and said input signal, said detector means returning to said first stable state from said second stable state after the occurrence of said input signal.

4,519,072

ANSWER SUPERVISION SYSTEM

William A. Fechalos, Naperville, and Joseph M. DeMarco, Elmhurst, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 10, 1982, Ser. No. 440,690

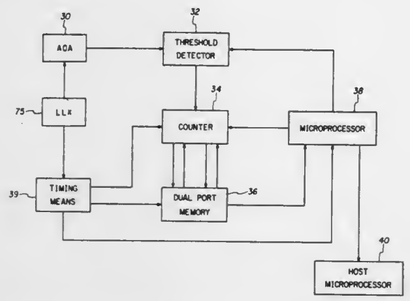
Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—110.1 **14 Claims**

1. In a telecommunication supervision system for evaluating the status of an input signal from a communication channel, said signal having one of a plurality of different cadences, the system comprising:

detection means receiving the input signal from the communication channel and outputting channel signal when the

input signal has an energy level exceeding a threshold reference; and



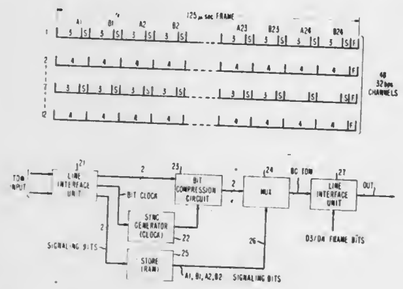
means for analyzing periods between interruptions of said output signal to determine the identity of the particular cadence of the input signal.

4,519,073

BIT COMPRESSION MULTIPLEXER

Guido Bertocci, Neptune, and Stephen M. Walters, Aberdeen, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1983, Ser. No. 505,926
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—118 **8 Claims**



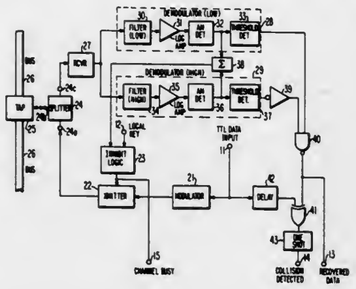
1. A bit compression multiplexing system (FIG. 2) for a pair of time division multiplexed digital bit streams each of which includes a plurality of PCM encoded signals deposited in separate and distinct channels of a repetitive frame and signaling bits multiplexed therewith comprising means (**23**) for normally bit compressing the PCM encoded signals of successive frames into n-bit signals and periodically bit compressing a frame of said encoded signals into (n−1) bit signals, means (**21**) for extracting the signaling bits from the pair of digital bit streams, and multiplex means (**24**) for time division muotiplexing the bit compressed signals of the pair of bit streams so that the multiplexed compressed signals occupy separate and distinct channels of a repetitive frame, said multiplex means also serving to insert the extracted signaling bits into predetermined (n−1) bit channels of the last-recited repetitive frame, the signaling bits placed in a given channel being related to the encoded message signal of that channel.

4,519,074

TRANSCEIVER HAVING COLLISION DETECTION CAPABILITY FOR CONTENTION-FORMATTED FDM LOCAL AREA NETWORKS

Philip C. Basile, Turnersville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 31, 1983, Ser. No. 499,796
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—124 **27 Claims**



1. An apparatus for transmitting RF modulated signals onto a communications medium and for receiving RF modulated signals from said communications medium, said apparatus including:

means for frequency modulating a baseband signal;

means for transmitting the output signal of said frequency modulating means to said communications medium and for receiving a signal from said communications medium;

said transmitting and receiving means further including means for combining the output signal of said frequency modulating means with said signal received from said communications medium;

means for demodulating the output signal of said combining means; and

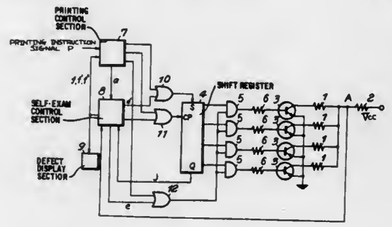
means for comparing the output signal of said demodulating means with said baseband signal.

4,519,075

DEVICE FOR CHECKING THE PRINTING CIRCUIT OF A THERMAL PRINTER

Hatsuo Kawaguchi, Kurita, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Aug. 12, 1982, Ser. No. 407,327
Claims priority, application Japan, Aug. 12, 1981, 56-127144
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—15 **8 Claims**



1. A device for checking the printing circuit of a thermal printer which includes a plurality of heaters arranged in a predetermined pattern on a thermal print head for printing print data; a power supply resistor connected between one end of said heaters and a source of current for supplying heating current to said heaters; a plurality of driver transistors each in operable connection with another end of said heaters and a ground, for selectively conducting heating current through

said heaters; a shift register for providing parallel print data output signals to be printed by said thermal print head as said print data; and a plurality of logic gate circuits each in operable connection with individual parallel data output terminals of said shift register and, through current limiting resistors, with the base of one of said plurality of driver transistors for selectively transferring said print data output signals to be printed from said shift register to the bases of said plurality of driver transistors in accordance with head control pulse signals applied to said logic gate circuits in order to selectively cause said driver transistors to conduct heating current through said heaters to print said print data on thermal paper in contact with said heaters; said device comprising:

printing control circuit means for applying serial print data input signals corresponding to said print data to be printed to a serial data input terminal of said shift register and for applying said head control pulse signals to said plurality of logic gate circuits, said serial print data input signals and said head control pulse signals being applied, respectively, at suitable times for causing said print data to be normally printed;

self-examination control circuit means for applying serial checking data signals to said serial data input terminal of said shift register and for applying head control pulse signals to said plurality of logic gate circuits so as to check the level of a potential at a circuit connection point between said power supply resistor and said heaters so as to judge whether or not said heaters and said driver transistors are in good condition, said head control pulse signals having such a short pulse duration time as not to effect color development or printing, while detecting serial output data signals from a serial data output terminal of said shift register so as to judge whether said shift register is in good operating condition;

defect display circuit means for indicating a defect condition detected by said self-examination control circuit means;

first OR gate logic circuit means in operable connection with said printing control circuit means, said self-examination control circuit means and said serial data input terminal of said shift register for transferring said serial print data input signals from said printing control circuit means or said checking data signals from said self-examination control circuit means to said serial data input terminal of said shift register;

second OR gate logic circuit means in operable connection with said printing control circuit means, said self-examination control circuit means and said shift register for transferring shift pulse signals from said printing control circuit means of said self-examination control circuit means to a shift pulse terminal of said shift register; and

third OR gate logic circuit means in operable connection with said printing control circuit means, said self-examination control circuit means and said plurality of logic gate circuits for transferring head control pulse signals from said printing control circuit means or said self-examination control circuit means to said plurality of logic gate circuits.

4,519,076

MEMORY CORE TESTING SYSTEM

Ury Priel; Giora Yaron, both of Cupertino, and Mark S. Ebel, Santa Clara, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 28, 1981, Ser. No. 334,699
Int. Cl.³ G06F *11/22*
U.S. Cl. 371—21 **7 Claims**

1. Apparatus to gain direct access to current carrying portions of a non-volatile electrically alterable read only memory to permit testing of the memory core to determine the current flow of said current carrying portions, said apparatus comprising:

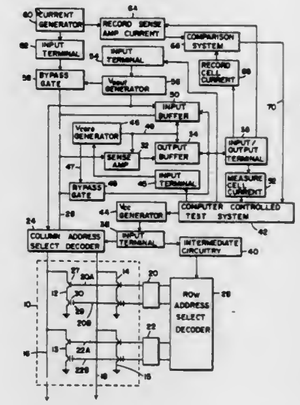
an electrical connection terminal on the memory;

an addressable memory core on the memory;

current conditioning buffer means connected between said terminal and said memory core so as to permit efficient electrical communication with said memory core;

a first bypass gate connected between said terminal and said memory core:

first bypass signal generating means operable in response to the application of a predetermined first access signal to disable said current conditioning buffer means and enable first bypass gate so as to permit current flow directly from said memory core to the terminal;



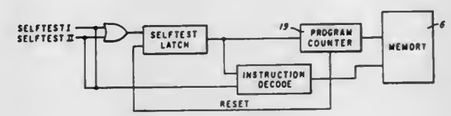
a computer controlled test system external to said memory and connected to said terminal and said first generating means, said test system operable to provide said predetermined first access signal to said first generating means and further operable to measure the current flow from said memory core, through said first bypass gate and said terminal.

4,519,077

DIGITAL PROCESSING SYSTEM WITH SELF-TEST CAPABILITY

Pravin T. Amin, 7414 Dew Mist La., Houston, Tex. 77095

Filed Aug. 30, 1982, Ser. No. 412,640
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—21 **12 Claims**



1. A digital processing system comprising:

a memory means for the storing of words containing data and instructions that define operations on said data, each word contains M binary digits;

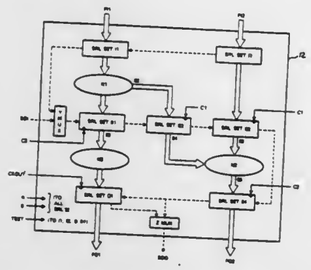
an N (where N is less than M) binary digit parallel arithmetic and logic unit connected to said memory means and for performing said operations; and

self-test means connected to said memory means and said arithmetic and logic means for summing the numeric value of the contents of said memory means into a plurality of binary digital sums and comparing said sums with corresponding constants, said self test means includes: first self test means for controlling the testing of a first portion of the M binary digits, second self test means for controlling the testing of a second portion of the M binary digits, and accumulator means for accumulating the results of the testing of the first and second portions.

4,519,078
LSI SELF-TEST METHOD

Donald Komonytsky, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Sep. 29, 1982, Ser. No. 426,451
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 **15 Claims**



1. An improved method of testing a combination of logic elements that includes a plurality of combinational networks, input means for selectively entering data into said networks, said input means including a group of input shift register latches, output means for selectively exiting data from said networks, and a plurality of sequential circuit means for selectively passing data between said combinational networks, said sequential circuit means having access for selectively and independently scanning data therethrough, said method comprising the steps of:

(a) isolating all of said sequential circuit means into a plurality of sets of sequential circuits, at least one set being associated with each of said combinational networks;

(b) internally generating a data test pattern by:

(1) selectively configuring a plurality of said input shift register latches into a feedback shift register having at least one logic gate in its feedback path that combines the outputs of a plurality of said shift register latches with an exclusive-or function,

(2) initializing each of the shift register latches of said feedback shift register to a prescribed state; and

(3) clocking said feedback shift register so as to produce a serial pseudorandom test pattern;

(c) scanning said test pattern into said sequential circuit means through said scanning access;

(d) applying said test pattern to at least one of said combinational networks through said input means so that an output response pattern is obtained;

(e) clocking said output response pattern of said combination network into one of said respective sequential circuit means;

(f) scanning out, through said scanning access, the resulting response patterns held in said sequential circuit means;

(g) analyzing said response pattern for an indication of the test status of the combinational networks tested; and

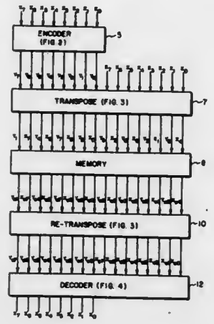
(h) repeating steps (b) through (g), as desired, until all of the combinational networks have been tested.

4,519,079
ERROR CORRECTION METHOD AND APPARATUS

Howard Hamer, Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 17, 1983, Ser. No. 467,551
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 **9 Claims**

1. Error correction circuitry comprising means to generate a redundant byte, y_7-y_0, for each original byte, x_7-x_0, by modulo 2 addition of adjacent pairs of bits of said original byte, means to store both said original and redundant bytes in memory, means to recall said original and redundant bytes from memory, said recalled original and redundant bytes being represented as $x_{a7}-x_{a0}$ and $y_{a7}-y_{a0}$, respectively, means to apply said recalled original and redundant bytes to two arrays of modulo 2 adders to obtain two new bytes represented as $x_{b7}-x_{b0}$ and $x_{c7}-x_{c0}$, wherein $x_{bn}=x_{a(n+1)}\oplus y_{an}$, and



$x_{cn}=x_{a(n-1)}\oplus y_{a(n-1)}$, and means to apply corresponding bits of said new bytes and said recalled original byte to one of an array of majority vote circuits, whereby the output of said array of majority vote circuits comprises the corrected code.

4,519,080
ANALOG THRESHOLD DECODER

John S. Snyder, Jr., Monrovia, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 29, 1982, Ser. No. 437,600
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—43 **18 Claims**

1. A threshold decoder of the type wherein a sequence of information and parity signals are received, wherein said information signals are hard-detected and each information signal is then decoded in accordance with a decision signal to obtain a respective digital decoded information signal, said decoder comprising:

first digital storage means for storing a sequence of first digital signals resulting from hard-detection of said received information signals, said first digital signals representing information signals yet to be decoded including an information signal currently being decoded;

second digital storage means for storing a sequence of digital decoded information signals;

means responsive to said received information signals for providing analog values representing the value and reliability of said received information signals represented in said first digital storage means;

means responsive to said received parity signals for providing analog values representing said received parity signals;

first analog storage means for storing said analog values

representing the value and reliability of said received information signals represented in said first digital storage means and for storing said analog values representing received parity signals;

syndrome means for generating syndrome analog signals from combinations of signals of said first analog storage means and said second digital storage means;

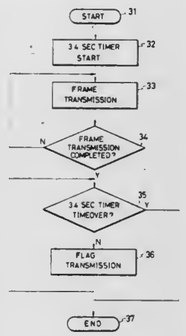
decision means for combining a plurality of decision input signals and for generating a decision signal in accordance with the combination of said plurality of decision input signals, said decision input signals including a plurality of said syndrome signals; and

decoding means responsive to said generated decision signal for decoding said information signal currently being decoded to provide a digital decoded information signal.

4,519,081
FACSIMILE COMMUNICATION METHOD WITH ANTI-ECHO STRATEGY

Masatoshi Sugie, Zama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jun. 29, 1982, Ser. No. 393,304
Claims priority, application Japan, Jun. 29, 1981, 56-102063
Int. Cl.³ H04M *1/36*
U.S. Cl. 371—57 **5 Claims**



1. A facsimile communication method for preventing receipt of an echo of data being transmitted by ensuring that an echo returns only while transmission of data is in progress, said method being for transmitting and receiving data in the form of preamble-preceded frames in which a frame is allowed to be received only when its preceding preamble has been received prior thereto, said method comprising the steps of:

transmitting a preamble-preceded frame and at the same time measuring a time length of transmitting said preamble-preceded frame;

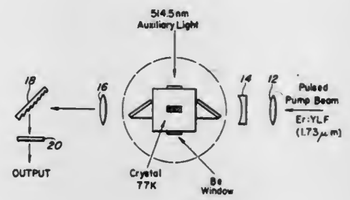
comparing the measured time length of transmitting said preamble-preceded frame with a predetermined time length when said transmitting step is completed; and

adding one or more flags to the end of said preamble-preceded frame until the frame time length exceeds the predetermined time length only when said measured time length is shorter than said predetermined time length, thereby preventing an echo of said preamble-preceded frame from being received.

4,519,082
COLOR CENTER LASER, MATERIAL, AND METHOD OF LASING

Irwin Schneider, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 10, 1982, Ser. No. 356,863
Int. Cl.³ H01S *3/16*
U.S. Cl. 372—42 **18 Claims**

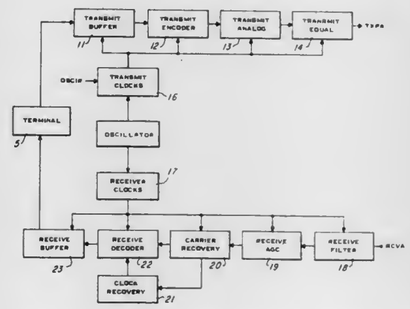


1. A laser material for a solid-state tunable laser which comprises a potassium or rubidium halide crystal having a lithium and/or sodium cation impurity, said crystal having a crystalographic structure with point defects consisting essentially of F_2^+ and $(F_2^+)_A$ color centers and electron traps, said F_2^+ and $(F_2^+)_A$ color centers being present in concentrations sufficient to obtain lasing from two types of color centers and said electron traps being present in a concentrations sufficient to prevent bleaching of said color centers.

4,519,083
BILATERAL DIGITAL DATA TRANSMISSION SYSTEM

Kerry A. Hanson, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 16, 1982, Ser. No. 408,559
Int. Cl.³ H04L *27/18*
U.S. Cl. 375—9 **37 Claims**



1. A bilateral digital data communication system for originating digital signals and for transmitting PSK modulated signals representative thereof on a first carrier frequency over a first transmission line, and for receiving PSK modulated signals on a second carrier frequency over a second transmission line, and for conversion to digital signals representative thereof, comprising:

(a) digital data originating and receiving means;

(b) PSK modem transmit encoding means connected to receive digital data from the digital data originating and receiving means for encoding digital data into a first format for conversion to corresponding PSK signals;

(c) PSK modem transmit modulating means, implemented in switched capacitor circuitry and connected to receive the first format for phase modulating the first carrier fre-

quency according to the first format to provide corresponding PSK signals;

(d) PSK modem receive demodulating means, implemented in switched capacitor circuitry, for demodulating the PSK signals on the second carrier frequency to provide PSK signals in a second format for conversion to corresponding digital signals; and

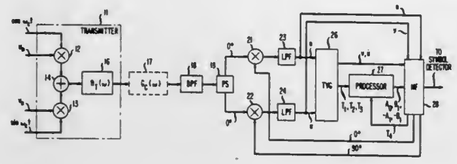
(e) PSK modem receive encoding means connected to receive the second format for encoding the second format into corresponding digital signals and connected to send the corresponding digital signals to the digital data originating and receiving means.

4,519,084

MATCHED FILTER FOR COMBATING MULTIPATH FADING

Rollin E. Langseth, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 29, 1982, Ser. No. 426,816
Int. Cl.³ H04B *3/06*
U.S. Cl. 375—14 **10 Claims**



1. Apparatus for combating phase error introduced by a transmission path on a received signal, the apparatus using a prescribed power series mathematical model of the transmission path to reduce the effect of phase error, the apparatus comprising:

characterizing means for generating an output of test variables using components of the received signal and a derivative of each component;

processing means for mathematically manipulating the test variables in accordance with relationships expressing the power series mathematical model to produce weighting coefficients for operating on the received signal; and

filtering means, connected to receive the weighting coefficients and the signal components, for using those portions of the frequency spectrum of the received signal having the greater signal-to-noise ratio to a greater extent than the remaining portions having lesser signal-to-noise ratios for producing a recovered clock signal and data outputs with reduced phase error.

4,519,085

DIFFERENTIAL DATA CODING AND DECODING PROCESS AND SYSTEM RESTRICTING PROPAGATION OF TRANSMISSION ERRORS

Jean Y. Catros, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 27, 1982, Ser. No. 423,726
Claims priority, application France, Oct. 27, 1981, 81 20167
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—27 **8 Claims**

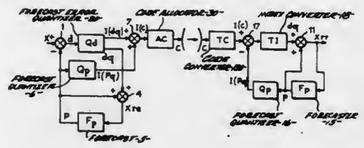
1. A differential digital data coding-decoding process reducing propagation of transmission errors, comprising the steps of:

(A) coding a signal to be transmitted, said coding including the steps of :

(a) quantizing a forecasting error between a digital quantity to be coded, and a forecast value of said digital quantity, calculated on the basis of reconstructed previous values of said digital quantity, (b) quantizing the forecast value and (c) assigning a code word, selected from 2^k (where k is an integer) code words, to the quantized forecasting error, the code word being based at least in part on the quantized forecast value,

(B) transmitting the assigned code word, and

(C) receiving the transmitted code word and, decoding it, the decoding including the steps of (a) deducing from the code word received the corresponding forecast error and forecast value, then (b) deducing the corresponding reconstructed



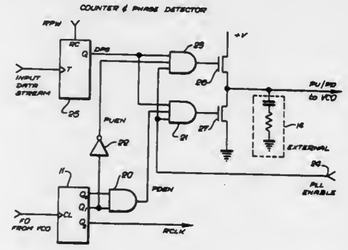
value for a forecast calculated in substantially the same way as for coding, from reconstructed previous values, the forecasting error being calculated during decoding, on the basis of the quantized forecast, a transmission error which during decoding causes an error in a corresponding quantized forecast value for a following value being compensated for calculation of the forecasting error, which takes this quantized forecast into account.

4,519,086

MOS PHASE LOCK LOOP SYNCHRONIZATION CIRCUIT

Richard W. Hull, Mission Viejo, and Leonard Teslenko, Fountain Valley, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Jun. 16, 1982, Ser. No. 388,899
Int. Cl.³ H03L *7/06*
U.S. Cl. 375—120 **2 Claims**



1. An improved phase detector circuit comprising:

(a) a variable voltage controlled oscillator having a variable resistance means for varying the frequency of the oscillator output signal in response to a voltage correction signal;

(b) counter means for receiving the output signal from the oscillator, for generating during each four clock cycles of the oscillator output signal a first phase detection enable signal during every fourth clock cycle, and a second phase detection enable signal during every first and second clock cycles, and further for generating a clock output;

(c) a signal shaping means for receiving a data input signal of approximately the same frequency as the clock output of the counter means and for generating an approximately uniform width data output signal;

(d) a first logical AND gate means for receiving the data output signal and the first phase detection enable signal and generating a first phase difference signal;

(e) a second logical AND gate means for receiving the data output signal and the second phase detection enable signal and generating a second phase difference signal; and

(f) a switchable voltage pulse generator comprising first and second transistor means in series coupled respectively to the output of said first and second logical AND gates, with the junction of the first and second transistors being

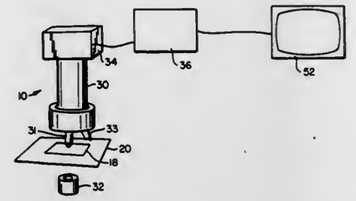
coupled to the variable resistance means of the oscillator, for generating and transmitting a voltage correction signal to the variable resistance means of the oscillator in response to the presence of the first or second phase difference signals, wherein the voltage correction signal causes the variable resistance means to change the frequency output of the variable voltage controlled oscillator, thereby causing the clock output of the counter means to become synchronized with the frequency of the input data signal.

4,519,087

METHOD OF DETERMINING THE DIAGNOSTIC SIGNIFICANCE OF THE CONTENT OF A VOLUME OF BIOLOGICAL SAMPLE CONTAINING PARTICLES

Fred H. Deindoerfer, Northridge, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Jun. 20, 1983, Ser. No. 505,908
Int. Cl.³ G01N *33/48*
U.S. Cl. 377—10 **3 Claims**



1. A method of determining the diagnostic significance of the content of a volume of biological sample containing particles, said method comprising the steps of:

(a) distributing an aliquot of said sample over an extended area;

(b) examining the aliquot under low resolution by a first microscopic means;

(c) forming an optical still image of said extended area;

(d) converting said optical image to an electronic image;

(e) electronically counting the number of particles in said electronic image;

(f) repeating the steps of (a)–(e) until the number of aliquot examined under low resolution equals a first a priori determined number of aliquots;

(g) totalling the number of particles in said aliquots examined under low resolution;

(h) comparing said number of particles totalled to a first a priori determined number of particles;

(i) terminating said method, upon said comparison of the content of said volume of biological sample being diagnostically insignificant; otherwise

(j) continuing said method based upon said comparison;

(k) distributing an aliquot of said sample over an extended area;

(l) examining the aliquot under high resolution by a second microscopic means;

(m) forming an optical still image of said extended area;

(n) converting said optical image to an electronic image;

(o) electronically counting the number of particles in said electronic image;

(p) repeating the steps of (k)–(o) until the number of aliquots examined under high resolution equals a second a priori determined number of aliquots;

(q) totalling the number of particles in said aliquots examined under high resolution;

(r) comparing said number of particles totalled to a second a priori determined number of particles;

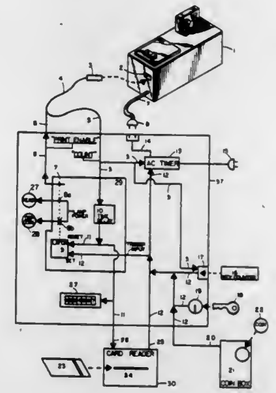
(s) determining the diagnostic significance of the content of said biological sample based upon said comparison.

4,519,088

USAGE CONTROL SYSTEM

Darrell Rademacher, Freeville; Thomas Neville, Dryden, both of N.Y., and Roger T. Simpson, 365 E. King Rd., Ithaca, N.Y., assignors to XCP, Inc., Dryden, N.Y., by said Darrell Rademacher and Thomas Neville

Filed Aug. 3, 1982, Ser. No. 404,754
Int. Cl.³ G06M *3/02;* **G07F** *5/10, 7/02*
U.S. Cl. 377—16 **11 Claims**



1. A usage control system for electrically powered machines for performing a function, such as copiers or the like, said machine requiring a first signal to initiate the desired function, and emitting a second signal related to the performance of the function; said machine having socket means for interconnection of external equipment giving access to at least said first and second signals; said machine being enabled to perform its function upon receipt of the first signal, and emitting the second signal on or before completion of the function; the system comprising:

a. plug means for interconnection of external equipment adapted to mate with said socket means;

b. control means, conductively attached to the plug means by a cable means having at least a first set of conductors for conveying the first signal from the control means to the machine through the plug socket means; and a second set for conveying the second signal from the machine to the control means through the socket and plug means; the control means comprising:

1. latch means having a first latched and second unlatched state, a set input causing the latch means to assume the latched state, a reset input causing the latch means to assume the unlatched state, and an output connected to the first set of conductors in the cable means whereby the first signal is sent to the machine when the latch means is in the latched state;

2. trigger input means connected to the set input of the latch means, whereby a signal at the trigger input means causes the latch means to assume the latched state;

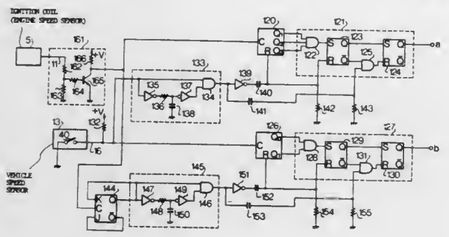
3. delay timer means having an input connected to the second set of conductors of the cable means and a delayed output connected to the reset input of the latch means, said delayed output being adapted to apply a signal to the said reset input, causing the latch means to assume the unlatched state, said delay being chosen to be a period of time after receiving the second signal from the machine sufficient to permit the machine to complete a single incompleted function cycle;

c. check-operated means having an output adapted for activating the trigger input means of the control means in response to entry of a check by user.

4,519,089
SYSTEM FOR DETECTING NEUTRAL STATE OF A TRANSMISSION OF AN ENGINE FOR VEHICLES

Kazuo Hara, Musashino, and Kunihiro Abe, Higashimurayama, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 334,057
Claims priority, application Japan, Dec. 27, 1980, 55-187175
Int. Cl.³ G07C *1/00*
U.S. Cl. 377—16 **7 Claims**

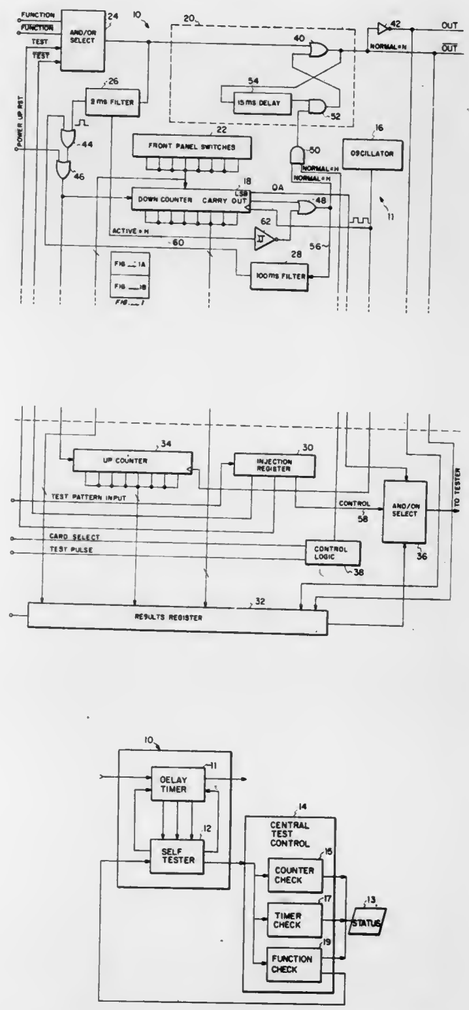


1. A system for detecting a neutral state of a transmission for an engine mounted on a vehicle, the transmission having a plurality of transmission ratios dependent on change speed gears of said transmission, the system comprising
an engine speed detecting means for producing an engine speed output in proportion to the engine speed;
a vehicle speed detecting means for producing a vehicle speed output in proportion to the vehicle speed;
an operation circuit means for judging whether the ratio of said engine speed output to said vehicle speed output is in a range of the transmission ratios dependent on said transmission;
said operation circuit means producing at least one neutral state output when said ratio is outside of said range of said transmission ratios, thereby detecting the neutral state of the transmission,
said engine speed detecting means produces output pulses and said vehicle speed detecting means produces output pulses,
said operation circuit means comprises,
counter means for counting said output pulses from one of said detecting means and for producing a first signal when counting a predetermined number of the pulses before said counter means is reset,
first circuit means responsive to each of said output pulses from the other detecting means for producing a second signal for resetting said counter means thereby determining a respective period of operation of said counter means, and
second circuit means including gate means responsive to said first and second signals for producing said neutral state output in dependency on the result of said counting during said period.

4,519,090
TESTABLE TIME DELAY

Kenneth B. Stackhouse, and William D. Hill, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 27, 1982, Ser. No. 402,323
Int. Cl.³ G06F *11/00*; G06M *3/02*
U.S. Cl. 377—29 **2 Claims**

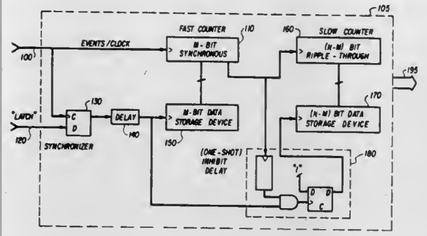


1. A self-testing apparatus for generating time delays comprising:
an input select circuit for receiving function input signals and test signals;
time delay generating means comprising a latchable flip-flop for generating an output signal at a preselected time delay in response to an input signal from said select circuit, said flip-flop including latch inhibiting means for preventing a stable state change in response to input signals of a duration shorter than a preselected interval;
an oscillator providing a continuous series of clock pulses;
a first counter connected to receive said clock pulses to provide a count thereof, said first counter having reset input;
a second counter connected to receive said clock pulses to provide a count thereof, said second counter having a reset input, said second counter being incremented in a sense opposite to said first counter;
a counter reset circuit for applying said input signals to said reset inputs of said first and second counters and a feedback circuit from an output of said first counter to said counter reset circuit including a low pass filter for inhibiting application of input signals of less than a predetermined duration to said reset inputs of said first and second counters;
an injection register for receiving a pattern of test signals and for applying said test signals to said input select circuit; and
a results register connected to said first and second counters for comparing the counts therein.

4,519,091
DATA CAPTURE IN AN UNINTERRUPTED COUNTER

David C. Chu, Woodside, and Michael J. Ward, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 3, 1983, Ser. No. 519,953
Int. Cl.³ H03K *21/18, 21/34, 21/10*
U.S. Cl. 377—44 **7 Claims**

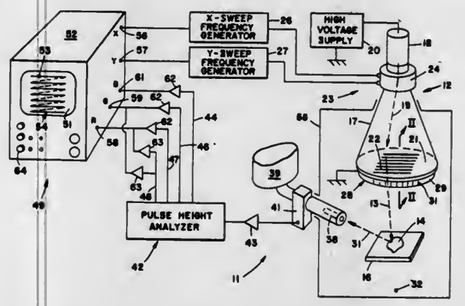


1. An N-bit counting apparatus comprising:
an M-bit low-order synchronous counter;
an (N-M)-bit high-order counter coupled to said synchronous counter in tandem;
first storage means coupled to said synchronous counter for capturing the contents of said synchronous counter;
second storage means coupled to said high-order counter for capturing the contents of said high-order counter; and
delay means coupled to said second storage means to prevent capturing for a predetermined period in response to the most significant bit from said synchronous counter.

4,519,092
SCANNING X-RAY SPECTROMETRY METHOD AND APPARATUS

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Filed Oct. 27, 1982, Ser. No. 437,037
Int. Cl.³ G01N *21/24, 23/20*
U.S. Cl. 378—045 **10 Claims**

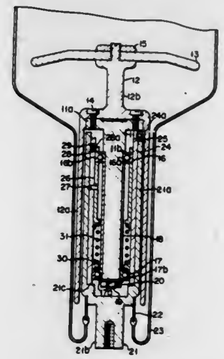


1. In an x-ray spectrometer for detecting the distribution of at least one chemical element within an object and having scanning means for directing primary x-rays to successive points situated along a scan path on said object, detector means for detecting fluorescent x-rays emitted from said object in response to said primary x-rays, and means for detecting variations of the amount of said element along said scan path by analyzing the energy of said fluorescent x-rays the improvement comprising:
said scanning means having a charged particle beam source, a target plate formed of material which produces x-rays in response to said charged particle beam, and beam deflector means for establishing a varying electrical and/or magnetic field in the path of said charged particle beam to sweep said charged particle beam along an impact path on said plate which corresponds to said scan path on said object, and
means for suppressing detection of said primary x-rays by said detector means.

4,519,093
ROTARY ANODE X-RAY TUBE

Teruo Kurihara, and Takeshi Oowa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 290,306, Aug. 5, 1981,. This application Feb. 21, 1984, Ser. No. 580,298
Claims priority, application Japan, Aug. 19, 1980, 55-113031
Int. Cl.³ H01J *35/04*
U.S. Cl. 378—132 **7 Claims**



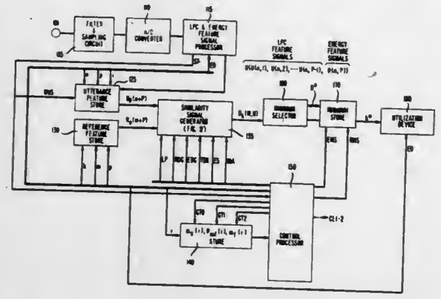
1. A rotary anode X-ray tube comprising:
a bulb;
a support frame having a shaft portion and disposed inside said bulb;
a rotary anode fixed to the shaft portion of said support frame;
a rotating shaft attached to said support frame coaxially with said shaft portion;
a support member having a cylindrical portion concentrically surrounding said rotating shaft at a given space therefrom wherein said support member is constructed of a soft material which is subject to deformation at normal operating temperatures of said tube;
an auxiliary tube concentrically disposed between said rotating shaft and said cylindrical portion and fixed to said cylindrical portion wherein said auxiliary tube is constructed of a material which is hard relative to said material of said support member and wherein said material of said auxiliary tube is not subject to deformation at normal operating temperatures of said tube;
first and second bearings concentrically disposed between said auxiliary tube and said rotating shaft at given spaces therefrom, each said bearing having an inner race located on the rotating shaft side and an outer race located on the auxiliary tube side wherein the outer circumferential surface of said outer race of each bearing abuts on the inner circumferential surface of said auxiliary tube so that both said bearings are concentrically supported by said auxiliary tube;
an urging means for elastically pressing one race of at least one of said bearings along said rotating shaft; and
a means for fixing the other race of said one bearing.

4,519,094

LPC WORD RECOGNIZER UTILIZING ENERGY FEATURES

Michael K. Brown, Piscataway, and Lawrence R. Rabiner, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 26, 1982, Ser. No. 411,834
Int. Cl.³ G10L 1/00
U.S. Cl. 381—43 **18 Claims**



1. A speech analyzer for recognizing a speech pattern comprising: means for storing a plurality of reference pattern templates, each template including a time frame sequence of acoustic feature signals of a prescribed reference pattern; means responsive to the speech pattern for generating a time frame sequence of acoustic feature signals corresponding to said speech pattern; means responsive to the feature signals of said speech pattern and said reference pattern templates for generating a set of signals each representative of the similarity between the feature signal sequence of the speech pattern and the feature signal sequence of one of said reference patterns; and means responsive to said similarity signals for identifying the speech pattern as one of the reference patterns; said prescribed reference feature signal sequence and said speech pattern feature signal sequence each comprising at least a time frame sequence of predetermined type acoustic spectral feature signals and a time frame sequence of predetermined type acoustic nonspectral feature signals; said similarity signal generating means including: means responsive to said time frame sequences of speech pattern and reference template spectral and nonspectral feature signals for generating a plurality of signals for each time frame of the speech pattern including a signal measuring the correspondence between said spectral feature signals of the speech pattern time frame and the spectral feature signals of the reference pattern template and a signal measuring the correspondence between the nonspectral feature signals of the speech pattern time frame and the nonspectral feature signals of the reference pattern template; and means responsive to the plurality of correspondence measuring signals for forming a signal for the reference pattern representative of the similarity between said speech pattern and said reference pattern.

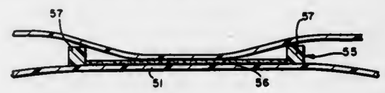
4,519,095

ADHESIVE CHANNEL CLOSURE FOR FLEXIBLE BAGS

William J. Clayton, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 335,798, Dec. 30, 1981, abandoned. This application Dec. 9, 1983, Ser. No. 559,846
Int. Cl.³ B65D 33/20
U.S. Cl. 383—86 **19 Claims**

1. A flexible thermoplastic bag comprising:
a front wall and a back wall, said walls being joined along the major portion of their opposite longitudinal edges and bottom;
an open mouth adjacent to the top edge of said front wall, said open mouth of said bag having a flap which is an extension of the back bag wall and having longitudinal edges which are not joined to the upper edges of said back wall; and
a closure comprising:
a female channel strip affixed to a surface of one of said front wall or said flap at a preselected distance from said opening, said channel strip having a trough between two spreadable channel ribs wherein the height of the interior walls of said channel ribs is about 40 mils, the distance between the interior walls of said channel is about one-quarter inch, and the thickness of each of said channel ribs is about 20 mils; and



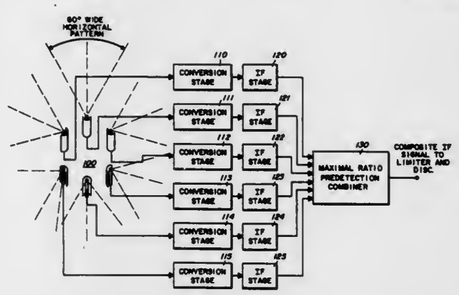
a pressure sensitive adhesive layer in said trough, the thickness of said adhesive layer being less than the interior height of said channel ribs, said closure being positioned on said bag such that when said flap is folded over the opening of said bag, a flat deformable portion of said bag is pressable into said trough by spreading said channel ribs, whereby a seal is formed without a need for mating registration between said female channel strip and any particular portion of said flat deformable portion of said bag by contacting said pressure sensitive adhesive layer with said flat deformable portion.

4,519,096

LARGE DYNAMIC RANGE MULTIPLIER FOR A MAXIMAL-RATIO DIVERSITY COMBINER

Frank J. Cerny, Jr., North Riverside, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 493,802, May 12, 1983, abandoned, which is a continuation of Ser. No. 268,613, Jun. 1, 1981, abandoned, which is a continuation of Ser. No. 84,980, Oct. 15, 1979, abandoned. This application Feb. 21, 1984, Ser. No. 580,775
Int. Cl.³ H04B 7/08
U.S. Cl. 455—137 **28 Claims**



1. A maximal-ratio predetection diversity combiner for coherently combining a plurality of input signals each having a linear dynamic range exceeding forty decibels (40 db), having substantially the predetermined frequency and further having unknown and varying phases and magnitudes with respect to one another, said maximal ratio predetection diversity combiner comprising:
means for generating a reference signal having a predetermined reference frequency for each input signal;
for each input signal;
(i) means for dividing each input signal into first and second portions;
(ii) first means for multiplying the first portion of each input signal with the reference signal to provide a first product signal having a phase that is the difference between the phase of the input signal and the reference signal;
(iii) means for providing a variable phase shift to said first product signal, said phase shift being a function of the frequency of said first product signal; and
(iv) second means for multiplying the second portion of each input signal and the corresponding phase shifted first product signal to provide a second product signal that is substantially co-phased with the reference signal and substantially independent of the phase of the input signal, said second multiplying means being comprised of only a single field-effect transistor (FET) having source, gate and drain terminals, said FET being predeterminedly biased as an active device with the drain-to-source channel of said FET biased within the FET's pinch-off region and the gate-to-source junction of said FET biased at substantially one-half of the FET's gate pinch-off voltage for multiplying the second portion of the input signal and the phase shifted first product signal to provide the second product signal, such that the magnitude of the second product signal is proportional to the product of the magnitudes of the second portion of the input signal and the first product signal over substantially twice the dynamic range of the corresponding input signal; and
said FET's each being arranged such that the second portion of the input signal is coupled to the source terminal thereof, the phase shifted product signal is coupled to the gate terminal thereof, and the second product signal is provided at the drain terminal thereof; and the drain terminals of all FET's being connected to a common point for providing a phase coherent composite signal.

DESIGNS

MAY 21, 1985

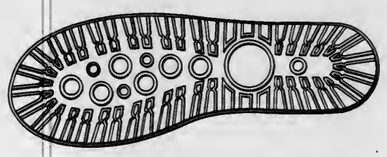
278,850
SHOE UPPER
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,946
Term of patent 14 years
U.S. Cl. D2—314



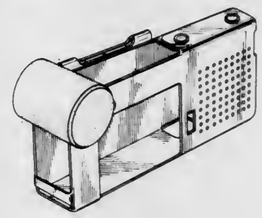
278,851
SHOE SOLE
Arnold S. Austin, East Brookfield, Mass., assignor to Quabaug Rubber Company, North Brookfield, Mass.
Filed Sep. 27, 1982, Ser. No. 424,210
Term of patent 14 years
U.S. Cl. D2—320



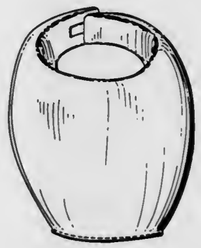
278,852
SHOE SOLE
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,948
Term of patent 14 years
U.S. Cl. D2—320



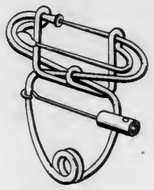
278,853
TAPE RECORDER CASE
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1983, Ser. No. 470,470
Claims priority, application Japan, Oct. 6, 1982, 57-45296
Term of patent 14 years
U.S. Cl. D2—400



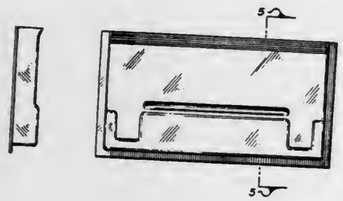
278,854
COLD WEATHER NECK COVER
Gary F. Protto, 611 E. 25th, Spokane, Wash. 99203
Filed Sep. 27, 1982, Ser. No. 424,166
Term of patent 14 years
U.S. Cl. D2—343



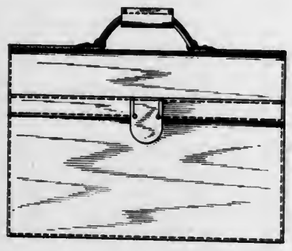
278,855
AGILE SAFETY PIN
Fan B. Liang, 2Fl., 61, Jen Shou St., Shan Chung City, Taiwan
Filed Dec. 3, 1982, Ser. No. 446,573
Term of patent 14 years
U.S. Cl. D2—405

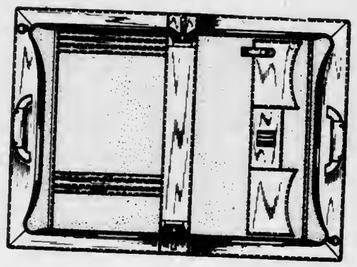


278,856
CASSETTE CONTAINER
Peter V. Bodourian, 2537 Paladin St., Anaheim, Calif. 92806, and Joseph M. Grispino, 3069 Loren La., Costa Mesa, Calif. 92626
Filed Jul. 14, 1982, Ser. No. 398,307
Term of patent 14 years
U.S. Cl. D3—35

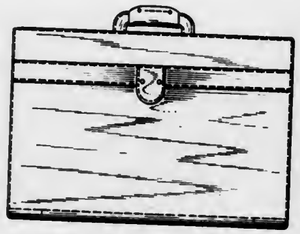


278,857
EXECUTIVE CASE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed May 18, 1983, Ser. No. 495,790
Term of patent 14 years
U.S. Cl. D3—52



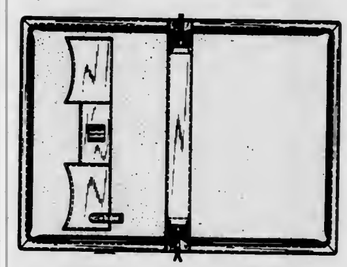


278,858
EXECUTIVE CASE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed May 18, 1983, Ser. No. 495,792
Term of patent 14 years
U.S. Cl. D3—71

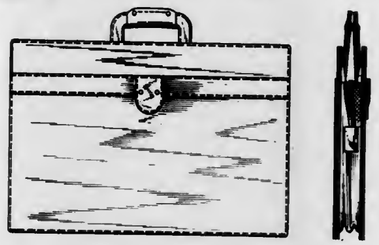


278,859
EXECUTIVE CASE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed May 18, 1983, Ser. No. 495,791
Term of patent 14 years
U.S. Cl. D3—71

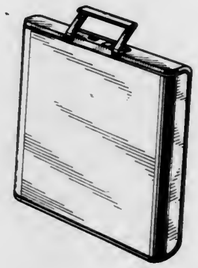




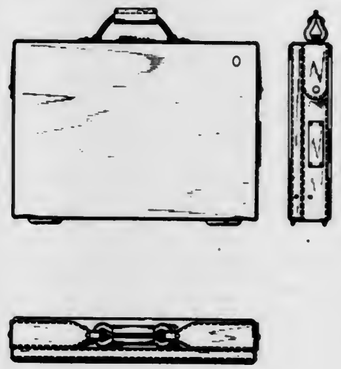
278,860
EXECUTIVE CASE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed May 18, 1983, Ser. No. 495,789
Term of patent 14 years
U.S. Cl. D3—71



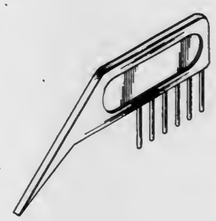
278,861
LUGGAGE CASE
Makio Hasuike, Milan, Italy, assignor to Poltrona Frau S.p.A., Tolentino, Italy
Filed Jan. 11, 1982, Ser. No. 338,496
Claims priority, application Italy, Jul. 3, 1981, 22278 B/81
Term of patent 14 years
U.S. Cl. D3—72



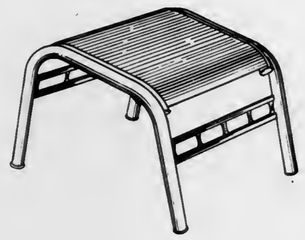
278,862
EXECUTIVE CASE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed May 18, 1983, Ser. No. 495,795
Term of patent 14 years
U.S. Cl. D3—76



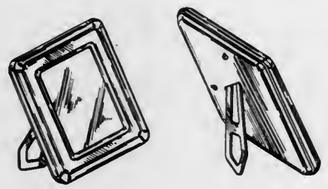
278,863
TOOTH CLEANSING DEVICE
William F. Bradley, 2301 Roscomare Rd., Bel-Air, Calif. 90077
Filed Mar. 21, 1983, Ser. No. 477,426
Term of patent 14 years
U.S. Cl. D4—108



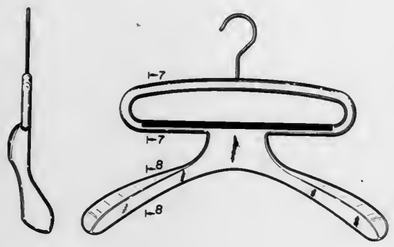
278,864
OTTOMAN
Donald J. Borichevsky, Wells, Vt., assignor to Telescope Folding Furniture Co., Inc., Granville, N.Y.
Filed Jan. 28, 1983, Ser. No. 462,034
Term of patent 14 years
U.S. Cl. D6—349



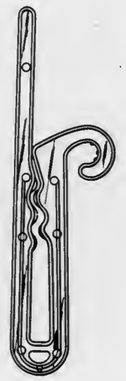
278,865
PICTURE FRAME
James A. McCaffrey, 1220 St. Lawrence Dr., Alpharetta, Ga. 30201
Filed Jul. 22, 1983, Ser. No. 516,099
Term of patent 14 years
U.S. Cl. D6—311



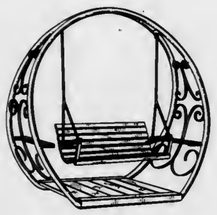
278,866
CLOTHES HANGER
Robert Rieser, 407 Littleworth La., Seacliff, N.Y. 11579
Filed Jul. 7, 1983, Ser. No. 511,490
Term of patent 14 years
U.S. Cl. D6—319



278,867
HANGER
Donald Tendrup, 32 Del Marie La., Nesconsett, N.Y. 11767, and Joseph Devito, 7 Ingrid Ct., Hauppauge, N.Y. 11788
Filed Nov. 2, 1983, Ser. No. 547,968
Term of patent 14 years
U.S. Cl. D6—327



278,868
COMBINED SWING AND PLURAL SHELF UNIT
Richard L. Burris, Joplin, Mo., and Bill W. Stoner, Miami, Okla., assignors to George Mayer Manufacturing, Inc., Miami, Okla.
Filed Mar. 9, 1983, Ser. No. 473,856
Term of patent 14 years
U.S. Cl. D6—347



278,869
CHAIR
Rainer Bohl, Schondorf, Fed. Rep. of Germany, assignor to Roeder GmbH Sitzmoebelwerke, Fed. Rep. of Germany
Filed Mar. 15, 1983, Ser. No. 475,496
Term of patent 14 years
U.S. Cl. D6—366



278,870
CHAIR
Carlo Giorgetti, Meda, Italy, assignor to Giorgetti S.p.A., Meda, Italy
Filed Mar. 16, 1983, Ser. No. 475,847
Claims priority, application Italy, Sep. 16, 1982, 22914-B/82
Term of patent 14 years
U.S. Cl. D6—369



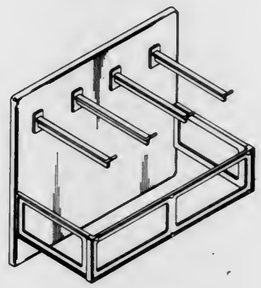
278,871
ARM-CHAIR
Carlo Giorgetti, Meda, Italy, assignor to Giorgetti S.p.A., Meda, Italy
Filed Mar. 16, 1983, Ser. No. 475,846
Claims priority, application Italy, Sep. 16, 1982, 22913 B/82
Term of patent 14 years
U.S. Cl. D6—369



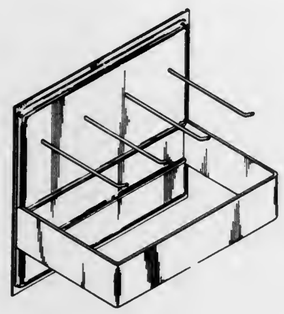
278,872
SEAT
Pierre E. C. Roset, Montagnieu, France, assignor to Roset S.A., Briord, France
Filed Dec. 20, 1982, Ser. No. 451,238
Claims priority, application France, Jun. 21, 1982, DM/001556
Term of patent 14 years
U.S. Cl. D6—381



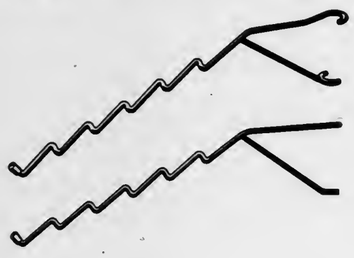
278,873
HOSIERY PACKAGE DISPLAY RACK
James L. Thorneburg, P.O. Box 5440, Statesville, N.C. 28677, and Ilan Plawker, Englewood Cliffs, N.J., assignors to James L. Thorneburg, Statesville, N.C.
Filed Nov. 7, 1983, Ser. No. 549,085
Term of patent 14 years
U.S. Cl. D6—517



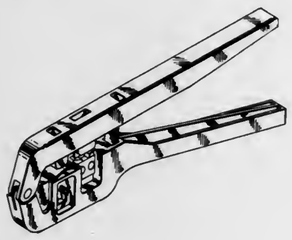
278,874
HOSIERY PACKAGE DISPLAY RACK
James L. Thorneburg, P.O. Box 5440, Statesville, N.C. 28677, and Ilan Plawker, Englewood Cliffs, N.J., assignors to James L. Thorneburg, Statesville, N.C.
Filed Nov. 7, 1983, Ser. No. 549,288
Term of patent 14 years
U.S. Cl. D6—517



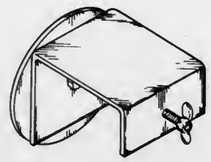
278,875
SUPPORT ARM FOR RACKS OR THE LIKE
Howard R. Beard, Unit 4, 309 Young St., Wayville, South Australia, Australia
Filed Aug. 13, 1982, Ser. No. 407,755
Term of patent 14 years
U.S. Cl. D6—566



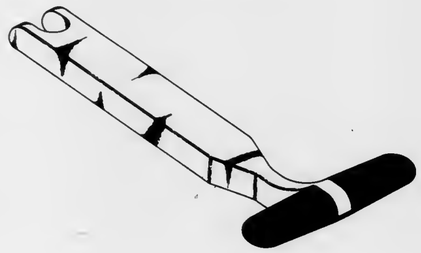
278,876
COMMUNICATION PLUG INSTALLATION TOOL
Daniel Meyer, Hector, Minn., assignor to Communications Systems, Inc., Hector, Minn.
Filed Aug. 4, 1982, Ser. No. 405,293
Term of patent 14 years
U.S. Cl. D8—52



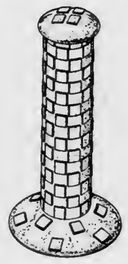
278,877
SAW BLADE HOLDER
Ralph Bozorth, 912 Front St., Glendora, N.J. 08029
Filed Jul. 23, 1982, Ser. No. 401,237
Term of patent 14 years
U.S. Cl. D8—71



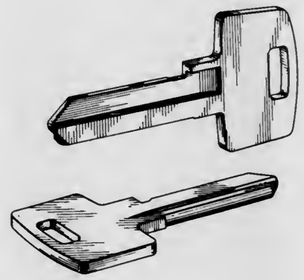
278,878
LUGGAGE STEERING HANDLE
David E. Workman, Evergreen, and William L. King, Denver, both of Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Jan. 3, 1983, Ser. No. 453,812
Term of patent 14 years
U.S. Cl. D8—300



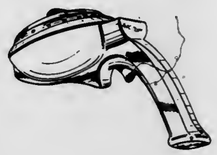
278,879
GRIP
Chun-Hsiung Hwung, No. 66, Lin Jou West St., Tainan, Taiwan
Filed Oct. 14, 1983, Ser. No. 542,680
Term of patent 14 years
U.S. Cl. D8—303

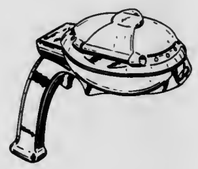


278,880
KEY BLANK
Bo Widén, Torshälla, Sweden, assignor to GKN-Stenman AB, Eskilstuna, Sweden
Filed Feb. 10, 1982, Ser. No. 347,612
Claims priority, application Sweden, Aug. 14, 1981, 81-1748
Term of patent 14 years
U.S. Cl. D8—347



278,881
KITE RETRIEVER
Woodroe C. Nicholson, R.R. #3, Lakefield, Ontario, Canada (K0L 2H0)
Filed Aug. 9, 1982, Ser. No. 406,386
Claims priority, application Canada, Aug. 6, 1982, 06-08-82-5
Term of patent 14 years
U.S. Cl. D8—359

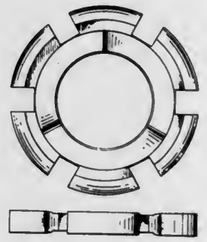




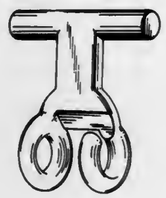
278,882
SELF-LOCKING DISPLAY CHIP
Richard L. Vater, Alexandria, Ky., and William F. Clements, Fairfield, Ohio, assignors to Container Corporation of America, Chicago, Ill.
Filed Sep. 7, 1982, Ser. No. 415,180
Term of patent 14 years
U.S. Cl. D8—382



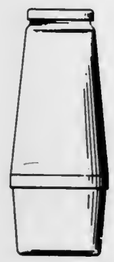
278,883
REVERSIBLE FRICTION-RING WASHER
Bengt O. Frieberg, 869 Picaacho, La Habra Heights, Calif. 90631
Filed Dec. 30, 1982, Ser. No. 454,726
Term of patent 14 years
U.S. Cl. D8—399



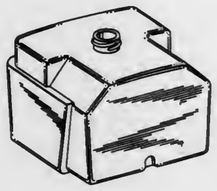
278,884
CHAIN LINK
Gerald Glass, Springfield, Mo., assignor to Custom Metalcraft, Inc., Springfield, Mo.
Filed Apr. 28, 1983, Ser. No. 489,383
Term of patent 14 years
U.S. Cl. D8—499



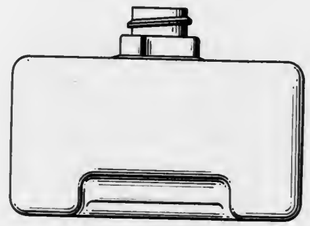
278,885
PLASTIC BOTTLE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Jan. 7, 1983, Ser. No. 456,193
Term of patent 14 years
U.S. Cl. D9—349



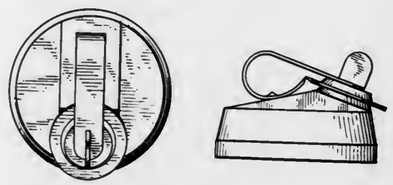
278,886
CONTAINER FOR LIQUIDS
Joseph S. Kanfer, 2825 N. Walnut Ridge, Akron, Ohio 44313
Filed Jan. 31, 1983, Ser. No. 462,531
Term of patent 14 years
U.S. Cl. D9—375



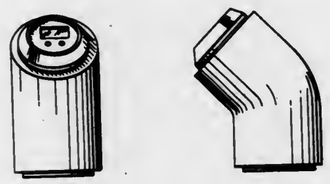
278,887
SOAP CONTAINER
Robert L. Steiner, Chicago, Ill., assignor to Steiner Corporation, Salt Lake City, Utah
Filed Sep. 30, 1982, Ser. No. 430,133
Term of patent 14 years
U.S. Cl. D9—403



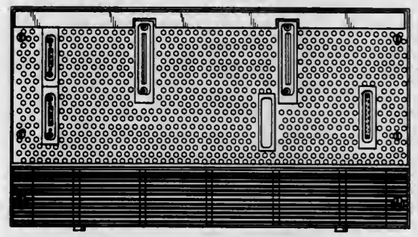
278,888
BEVERAGE CAN LID
Brad A. Plumb, 9934 Summerson La., Lakeside, Calif. 92040
Filed May 5, 1983, Ser. No. 491,877
Term of patent 14 years
U.S. Cl. D9—449



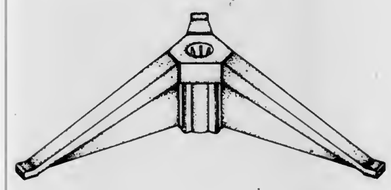
278,889
DIGITAL CLOCK/CALENDAR
George L. McCain, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed May 9, 1983, Ser. No. 495,391
Term of patent 14 years
U.S. Cl. D10—15



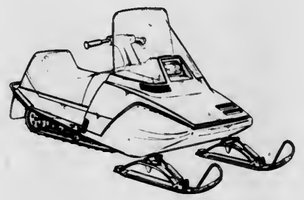
278,890
CIRCUIT BOARD TESTING EQUIPMENT
Kurt Groetzner, Stuttgart, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 19, 1982, Ser. No. 340,792
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, MR 5332
Term of patent 14 years
U.S. Cl. D10—75



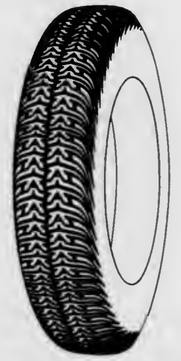
278,891
TREE STAND
Monte Levin, New York, N.Y., assignor to Standex International Corporation, Salem, N.H.
Filed Jan. 3, 1983, Ser. No. 455,036
Term of patent 14 years
U.S. Cl. D11—130.1



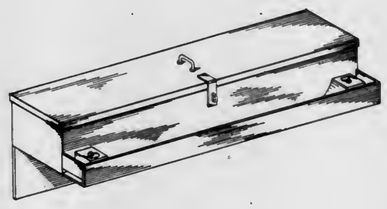
278,892
SNOWMOBILE
Heiji Kobayashi, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Dec. 21, 1982, Ser. No. 451,793
Term of patent 14 years
U.S. Cl. D12—7



278,893
TIRE
Stephen Lash, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 24, 1983, Ser. No. 507,327
Term of patent 14 years
U.S. Cl. D12—146



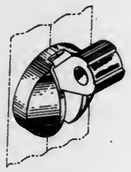
278,894
COMBINED TOOL BOX VEHICLE BUMPER, BICYCLE CARRIER AND AIR DAM
Tommy H. James, 6828 Donerail Dr., Sacramento, Calif. 95842
Filed Sep. 27, 1982, Ser. No. 424,332
Term of patent 14 years
U.S. Cl. D12—157



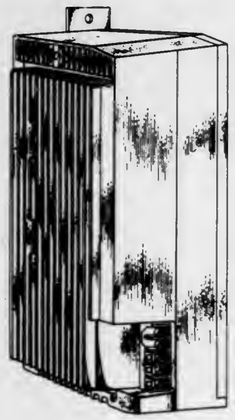
278,895
DOOR GUARD FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1983, Ser. No. 458,853
Term of patent 14 years
U.S. Cl. D12—167



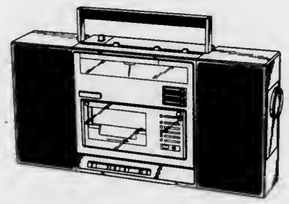
278,896
CIRCUIT BREAKER HANDLE
George S. Harper, Cambridge, Md., assignor to Airpax Corporation, Cambridge, Mass.
Continuation of Ser. No. 193,479, Oct. 3, 1980,. This application Nov. 10, 1983, Ser. No. 551,129
The portion of the term of this patent subsequent to Jun. 19, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—34



278,897
HOUSING FOR A CENTRAL PROCESSING UNIT
Jay M. Prager, Nashua, N.H., and Roman Y. Gonzales, Andover, Mass., assignors to Gould, Inc., Rolling Meadows, Ill.
Filed Sep. 23, 1982, Ser. No. 421,858
Term of patent 14 years
U.S. Cl. D13—40



278,898
COMBINED TAPE RECORDER AND RADIO RECEIVER
Teruyuki Nishimoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 16, 1982, Ser. No. 450,301
Claims priority, application Japan, Jun. 16, 1982, 57-27167
Term of patent 14 years
U.S. Cl. D14—5



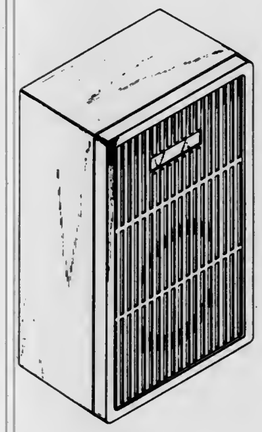
278,899
TAPE RECORDER
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1983, Ser. No. 470,468
Claims priority, application Japan, Oct. 6, 1982, 57-45297
Term of patent 14 years
U.S. Cl. D14—6



278,900
TAPE RECORDER
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1983, Ser. No. 470,472
Claims priority, application Japan, Sep. 14, 1982, 57-41857
Term of patent 14 years
U.S. Cl. D14—6



278,901
SPEAKER
Patrick J. Murphy, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 20, 1983, Ser. No. 459,487
Term of patent 14 years
U.S. Cl. D14—33



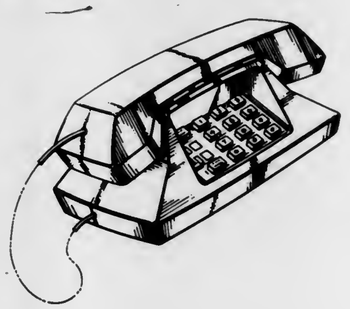
278,902
CABINET FOR A COMMUNICATION CONTROL SYSTEM OR THE LIKE
William M. Bissonette, North Hollywood, Calif., assignor to Security Technology Limited, West Los Angeles, Calif.
Filed Dec. 16, 1982, Ser. No. 450,480
Term of patent 14 years
U.S. Cl. D14—52



278,903
TELEPHONE
Teturo Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Taikodenki Seisakusho, Tokyo, Japan
Filed Aug. 4, 1982, Ser. No. 404,980
Claims priority, application Japan, May 10, 1982, 57-20054
Term of patent 14 years
U.S. Cl. D14—53



278,904
TELEPHONE
Donald R. White, 5406 Amalfi Dr., Irvine, Calif. 92715
Filed Jun. 16, 1982, Ser. No. 389,003
Term of patent 14 years
U.S. Cl. D14—53

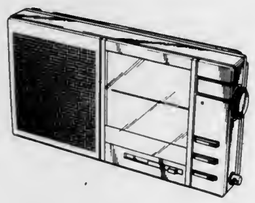


278,905
RADIO PAGER OR SIMILAR ARTICLE
William J. Scheid, Coral Springs, and Richard J. Toth, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 28, 1983, Ser. No. 470,897
Term of patent 14 years
U.S. Cl. D14—68

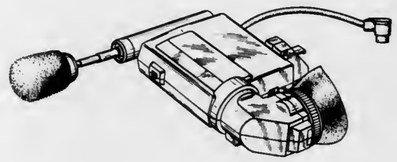




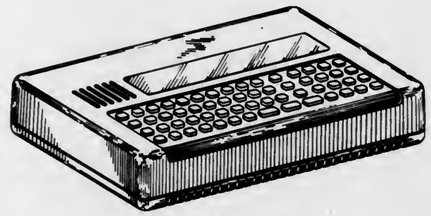
278,906
RADIO RECEIVER
Manao Nakamura, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 16, 1982, Ser. No. 450,175
Claims priority, application Japan, Jun. 16, 1982, 57-27171
Term of patent 14 years
U.S. Cl. D14—71



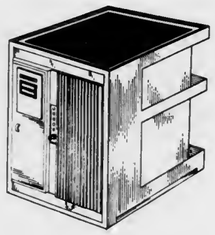
278,907
VIEW FINDER FOR VIDEO CAMERA
Koya Kurokawa, and Noriyuki Arai, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 28, 1982, Ser. No. 426,034
Claims priority, application Japan, Apr. 1, 1982, 57-13983
Term of patent 14 years
U.S. Cl. D14—84



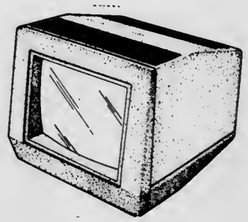
278,908
PORTABLE TERMINAL OR SIMILAR ARTICLE
William J. Scheid, Coral Springs, Fla., and Robert E. Steinbugler, Raleigh, N.C., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 19, 1983, Ser. No. 459,156
Term of patent 14 years
U.S. Cl. D14—100



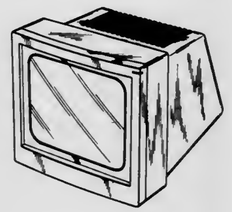
278,909
MODULE HOUSING FOR MAN-MACHINE INTERFACE
Paul Ramos, Woburn, Mass.; Richard E. Hudnall, Nashua, N.H., and Yuri Kunimi, Groton, Mass., assignors to Gould, Inc., Rolling Meadows, Ill.
Filed Mar. 29, 1982, Ser. No. 363,087
Term of patent 14 years
U.S. Cl. D14—102



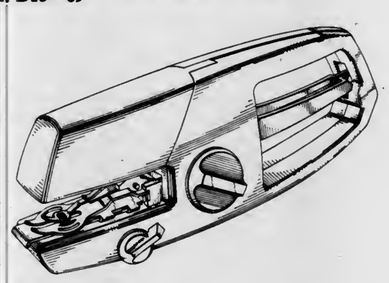
278,910
CRT DISPLAY HOUSING
David P. Moriconi, Ben Lomond, Calif., assignor to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Sep. 30, 1982, Ser. No. 429,768
Term of patent 14 years
U.S. Cl. D14—113



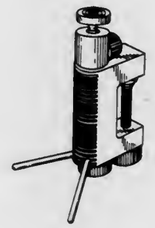
278,911
COMPUTER DISPLAY
Mitsuru Ohnuma, Tokyo; Kazuyuki Tsuburaya, Kodaira, and Masato Tanitsu, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 25, 1983, Ser. No. 469,807
Claims priority, application Japan, Mar. 26, 1982, 57-12219
Term of patent 14 years
U.S. Cl. D14—113



278,912
HAND OPERABLE SEWING MACHINE
Michael E. Laude, Danbury; Thomas J. Pendleton, N. Wilton, both of Conn.; Douglas W. Smith, Belle Mead, N.J.; Robert E. Dawson, Ridgefield, Conn., and Andrew J. Blance, Rye, N.Y., assignors to The Singer Company, Stamford, Conn.
Filed Jan. 14, 1983, Ser. No. 457,841
Term of patent 14 years
U.S. Cl. D15—69



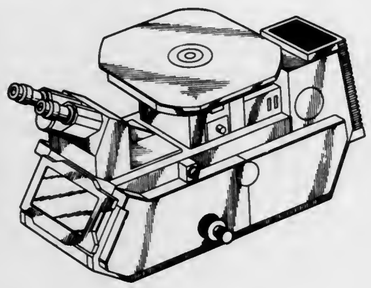
278,913
COMBINED CLAMP AND TABLE STAND FOR PHOTOGRAPHY
Rudolph Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG Hanke & Thomas, Monheim, Fed. Rep. of Germany
Filed May 12, 1982, Ser. No. 377,329
Term of patent 14 years
U.S. Cl. D16—45



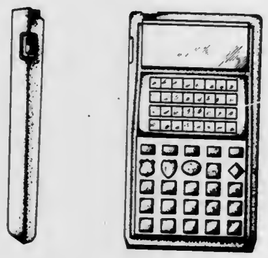
278,914
CONTACT LENS INSERTER
Arthur C. Jermyn, 15914 Overview Rd., Poway, Calif. 92064
Filed Jun. 25, 1982, Ser. No. 392,260
Term of patent 14 years
U.S. Cl. D16—124



278,915
MICROSCOPE
Werner Hoelbl; Georg N. Nyman, and Karl Moser, all of Vienna, Austria, assignors to C. Reichert Optische Werke AG, Vienna, Austria
Filed Feb. 7, 1983, Ser. No. 464,170
Term of patent 14 years
U.S. Cl. D16—131



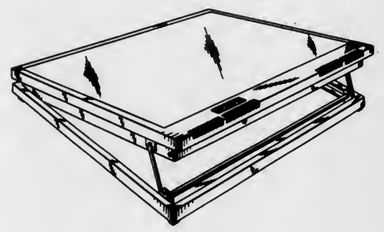
278,916
CALCULATOR FOR HIGHWAY TRAVEL
John E. Gallman, P.O. Box 178, Denver, N.C. 28037
Filed Dec. 19, 1983, Ser. No. 563,205
Term of patent 14 years
U.S. Cl. D18—7



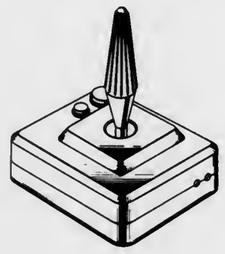
278,917
PORTABLE ELECTRONIC MUSICAL CHORD INSTRUMENT
Barry N. Sinkoff, and Howard P. Feldman, both of San Diego, Calif., assignors to Suzuki Musical Instrument Corporation, San Diego, Calif.
Filed Sep. 30, 1982, Ser. No. 431,131
Term of patent 14 years
U.S. Cl. D17—1



278,918
PORTABLE LIGHT BOX
Bernard Morcheles, Short Hills, N.J., assignor to Stacor Corporation, Newark, N.J.
Filed Oct. 7, 1982, Ser. No. 433,257
Term of patent 14 years
U.S. Cl. D19—52



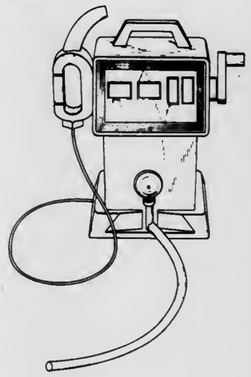
278,919
CONTROL FOR A VIDEO GAME OR THE LIKE
Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Jan. 6, 1983, Ser. No. 456,259
Term of patent 14 years
U.S. Cl. D21—48



278,920
TOY CHAIN LINK
William J. Wichman, Glendora, Calif., assignor to Discovery Toys, Benicia, Calif.
Filed Dec. 20, 1982, Ser. No. 450,828
Term of patent 14 years
U.S. Cl. D21—59



278,921
TOY GAS PUMP
Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,608
Term of patent 14 years
U.S. Cl. D21—124



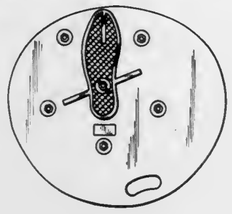
278,922
ROBOT
Douglas H. Jones, Felton, and Siegfried W. Salat, Palo Alto Hills, both of Calif., assignors to Androbot, Inc., San Jose, Calif.
Filed Dec. 7, 1982, Ser. No. 447,655
Term of patent 14 years
U.S. Cl. D21—150



278,923
ROCKING PONY FOR A CRIB RAIL OR SIMILAR ARTICLE
Christine H. Anderson, Fullerton, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Continuation-in-part of Ser. No. 417,317, Sep. 13, 1982,. This application Oct. 25, 1982, Ser. No. 436,491
Term of patent 14 years
U.S. Cl. D21—165



278,924
EXERCISING PLATFORM
Jerry E. Seel, 595 Meadowbrook Dr., and Gary W. Gray, 12 Maume Ct., both of Adrian, Mich. 49221
Continuation-in-part of Ser. No. 269,601, Jun. 2, 1981,. This application Sep. 30, 1982, Ser. No. 431,135
Term of patent 14 years
U.S. Cl. D21—193



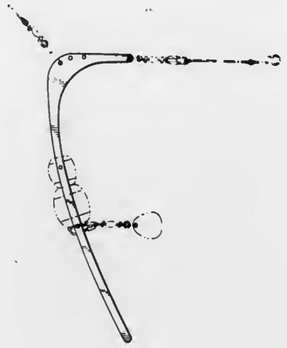
278,925
ROLLER SKATE CHASIS
Melvin H. Scheller, Mt. Olive, Ill., assignor to Roller Derby Skate Corporation, Litchfield, Ill.
Filed Dec. 7, 1982, Ser. No. 447,647
Term of patent 14 years
U.S. Cl. D21—226



278,926
FISHING LURE
James L. Bagley, Box 6751, Winter Haven, Fla. 33880
Filed Mar. 2, 1983, Ser. No. 471,467
Term of patent 14 years
U.S. Cl. D22—27



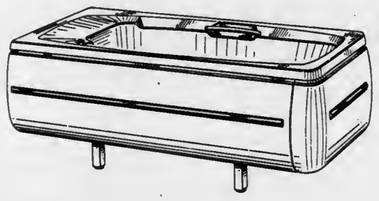
278,927
TROLLING SINKER
Clifford E. Uzell, Mayfield Heights, Ohio, assignor to Ray-J, Inc., Nokomis, Fla.
Filed Mar. 30, 1983, Ser. No. 480,253
Term of patent 14 years
U.S. Cl. D22—30



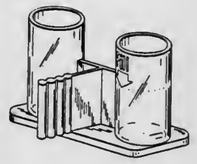
278,928
WATERING CAN
William C. Gerber, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 13, 1982, Ser. No. 449,523
Term of patent 14 years
U.S. Cl. D23—11



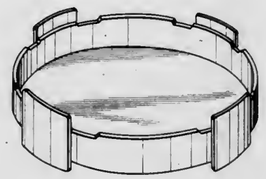
278,929
BATHTUB
John D. Burgess, Loretto, and Thomas E. Taylor, Rexdale, both of Canada, assignors to Acriform Engineering Inc., Newmarket, Canada
Filed May 3, 1983, Ser. No. 491,310
Claims priority, application Canada, Nov. 23, 1982, 23-11-82-4
Term of patent 14 years
U.S. Cl. D23—56



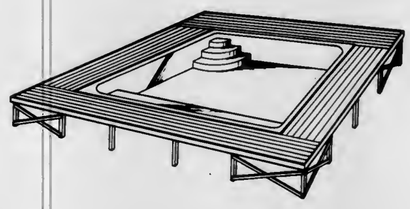
278,930
PLASMA SEPARATOR CARTRIDGE OR SIMILAR ARTICLE
Gianfranco D. Zaccai, Boston; David B. Wheinstone, Danvers; Hamid Keramaty, Lexington, and William E. Flynn, Chelmsford, all of Mass., assignors to Allied Corporation, Morristown, N.J.
Filed Apr. 5, 1982, Ser. No. 365,876
Term of patent 14 years
U.S. Cl. D24—21



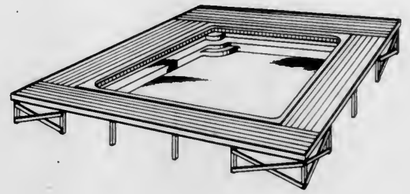
278,931
PETRI TRAY
Lars P. Larsson, Vastra Palmgrensgatan 91, S-421 77 Vastra Frolunda, and Bror J.-E. Brorsson, Safjallsgatan 24, S-431 39 Molndal, both of Sweden
Filed Aug. 25, 1982, Ser. No. 411,290
Claims priority, application Sweden, Feb. 26, 1982, 82-0457
Term of patent 14 years
U.S. Cl. D24—31



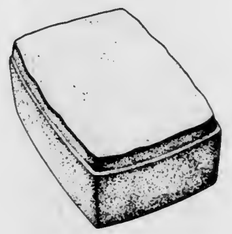
278,932
PREFABRICATED SWIMMING POOL
George P. Sullivan, Seattle, Wash., assignor to San Juan Products, Inc., Hemet, Calif.
Continuation-in-part of Ser. No. 266,841, May 26, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,856
Term of patent 14 years
U.S. Cl. D25—2



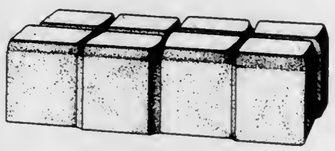
278,933
PREFABRICATED SWIMMING POOL
George P. Sullivan, Seattle, Wash., assignor to San Juan Products, Inc., Hemet, Calif.
Continuation of Ser. No. 266,959, May 16, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,855
Term of patent 14 years
U.S. Cl. D25—2



278,934
PAVING STONE
Rolf Scheiwiller, Beichelacker, CH-3115 Gerzensee, Switzerland
Filed Dec. 17, 1981, Ser. No. 331,785
Claims priority, application Switzerland, Jul. 7, 1981, 111890
Term of patent 14 years
U.S. Cl. D25—86



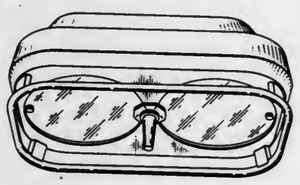
278,935
PAVING STONE
Rolf Scheiwiller, Beichelacker, CH-3115 Gerzensee, Switzerland
Filed Dec. 17, 1981, Ser. No. 331,783
Claims priority, application Switzerland, Jul. 7, 1981, 111874
Term of patent 14 years
U.S. Cl. D25—86



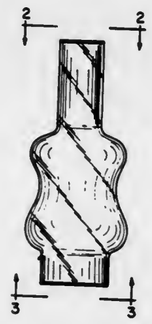
278,936
TORCH
Kung C. Hung, Tsuen Wan, Hong Kong, assignor to Freezinhot Bottle Company Limited, Kowloon, Hong Kong
Filed Aug. 3, 1982, Ser. No. 404,875
Claims priority, application United Kingdom, Jun. 11, 1982, 1007211
Term of patent 14 years
U.S. Cl. D26—49



278,937
SURGICAL LIGHT
Donald H. Peeler, Pittsford, and Daniel Calabra, Henrietta, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Nov. 22, 1982, Ser. No. 443,247
Term of patent 14 years
U.S. Cl. D26—65



278,938
LAMP CHIMNEY
Kenneth A. Burket, Horseheads, and Gerhard F. Koenig, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 24, 1982, Ser. No. 381,014
Term of patent 14 years
U.S. Cl. D26—132

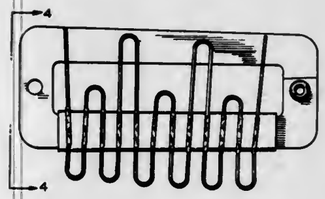


278,939
ARTIFICIAL FINGERNAIL
Yosh Hokama, Torrance, Calif., assignor to International Beauty Distributors, Inc., Gardena, Calif.
Filed Sep. 9, 1982, Ser. No. 416,265
Term of patent 14 years
U.S. Cl. D28—56





278,940
HAIRPIECE SECURING CLIP
Peter A. Incando, 8907 Valley Blvd., Rosemead, Calif. 91770
Filed Dec. 5, 1983, Ser. No. 557,887
Term of patent 14 years
U.S. Cl. D28—93



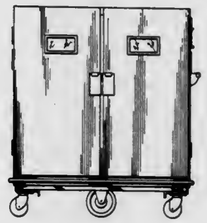
278,941
AQUARIUM
Duane F. Bohnsack, Grand Forks, N. Dak., assignor to Mid-American Industries, Inc., Detroit Lakes, Minn.
Filed Jun. 22, 1983, Ser. No. 506,729
Term of patent 14 years
U.S. Cl. D30—8



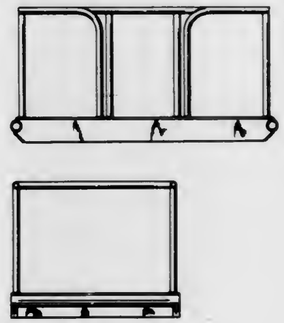
278,942
VACUUM CLEANER
Lawrence L. Chiu, North Point, Hong Kong, assignor to Joiner Electric Products Company Ltd., Kwai Chung, Hong Kong
Filed Mar. 3, 1983, Ser. No. 471,472
Claims priority, application United Kingdom, Oct. 27, 1982, 1009424
Term of patent 14 years
U.S. Cl. D32—18



278,943
CIRCUIT BOARD CURING CART
Douglas K. Dennis, Guelph, Canada, assignor to AMF Incorporated, White Plains, N.Y.
Filed Sep. 22, 1982, Ser. No. 421,649
Term of patent 14 years
U.S. Cl. D34—19



278,944
EQUIPMENT SKID
Don A. Bresie; Jack M. Burns, and Donald W. Fowler, all of 5407 N. IH 35, Austin, Tex. 78723
Filed Sep. 7, 1982, Ser. No. 415,419
Term of patent 14 years
U.S. Cl. D34—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Virea, Seppo, 4,518,500, Cl. 210-380.300.

A. B. Dick Company: *See—*
Dutko, Wolodymyr, 4,518,167, Cl. 277-81.00R.

A. H. Robins Company, Inc.: *See—*
Lo, Young S.; and Taylor, Chandler R., Jr., 4,518,603, Cl. 514-352.000.

A & M Cousin Etablissements Cousin Freres S.a.r.l.: *See—*
Cousin, Maurice; Pipon, Yves; Droulon, Georges; and Lebrun, Jean, 4,518,182, Cl. 292-201.000.

A. Nattermann & Cie GmbH: *See—*
Biedermann, Jurgen; Prop, Gerrit; and Doppelfeld, Ille-Stephanie, 4,518,783, Cl. 548-353.000.

AB Fixfabriken: *See—*
Bengtsson, Sigurd W., 4,518,178, Cl. 292-8.000.

Abatjoglou, Anthony G.; and Bryant, David R., to Union Carbide Corporation. Process for removing hydroperoxides and aldehydes from allyl-alkyl ether. 4,518,805, Cl. 568-444.000.

Abbot, Ralph H.: *See—*
Penny, Michael F.; Woodcock, Brian; Abbot, Ralph H.; Phillips, David M.; and Spaans, Leendert B., 4,518,254, Cl. 356-5.000.

Abe, Kunihiro: *See—*
Hara, Kazuo; and Abe, Kunihiro, 4,519,089, Cl. 377-16.000.

Abellana, Jovito N.; and Duwel, Edward C., to Pitney Bowes Inc. Postage meter system for communicating platen movement to a microprocessor to signal completion of printing. 4,519,048, Cl. 364-900.000.

Abex Corporation: *See—*
Olds, John R.; and Alt, Mark R., 4,517,756, Cl. 37-118.00R.

Acheson Industries, Inc.: *See—*
Stoetzer, Steven R., 4,518,524, Cl. 252-514.000.

Acrobe Technology Inc.: *See—*
Grzybowski, Bohdan; and Horbal, Mark T., 4,518,308, Cl. 414-735.000.

Adachi, Keiichi: *See—*
Kobayashi, Hidetoshi; Takahashi, Toshiro; Hirano, Shigeo; Hirose, Takeshi; and Adachi, Keiichi, 4,518,682, Cl. 430-543.000.

Adachi, Shigeki, to Hitachi, Ltd. Fuel control method for gas turbine. 4,517,797, Cl. 60-39.281.

Adachi, Ysushi: *See—*
Kageyama, Katsuaki; and Adachi, Ysushi, 4,518,244, Cl. 355-3.0FU.

Advanced Ceramic Systems, Inc.: *See—*
Jahn, Paul F., 4,518,736, Cl. 524-404.000.

Advanced Micro Devices, Inc.: *See—*
Allen, Landon K., 4,518,678, Cl. 430-311.000.
Constantinescu, Ion, 4,518,876, Cl. 307-475.000.
Schlupp, Ronald L., 4,518,981, Cl. 357-71.000.

Ag-Chem Equipment Co., Inc.: *See—*
Takata, Harry H., 4,518,118, Cl. 239-163.000.

Aida, Toshiyuki: *See—*
Taguchi, Sadanori; Aida, Toshiyuki; Yamamoto, Shigehiko; and Honda, Yukio, 4,518,890, Cl. 313-346.00R.

Aihara, Akira: *See—*
Shimizu, Masaaki; and Aihara, Akira, 4,518,380, Cl. 493-420.000.

AirSensors, Inc.: *See—*
Watkins, Dennis W., 4,517,735, Cl. 29-621.000.

Aisin Seiki Kabushikikaisha: *See—*
Oguma, Tomio; Hirosawa, Kouichiro; and Mitsui, Tsutomu, 4,518,068, Cl. 192-0.052.

Ajiro, Sakae: *See—*
Tamatani, Masaaki; Tsuda, Nobuyuki; Koike, Norio; and Ajiro, Sakae, 4,518,985, Cl. 358-60.000.

Akagi, Toshimasa: *See—*
Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, 4,518,863, Cl. 250-578.000.

Akamatsu, Norio: *See—*
Toyosu, Yasuhiro; and Akamatsu, Norio, 4,517,983, Cl. 128-639.000.

Akazawa, Hiroyuki, to Epson Corporation. Serial printer. 4,518,269, Cl. 400-124.000.

Akimoto, Shinichi: *See—*
Mizogami, Shigeyoshi; and Akimoto, Shinichi, 4,518,751, Cl. 526-114.000.

Akita, Shigeyuki: *See—*
Kitagawa, Junji; and Akita, Shigeyuki, 4,518,956, Cl. 340-620.000.

Aktieselskabet Jens Villadsens Fabriker: *See—*
Harder, Sven, 4,517,783, Cl. 52-481.000.

Albert, Richard D. Scanning x-ray spectrometry method and apparatus. 4,519,092, Cl. 378-045.000.

Albertini, Rocco D.; and Grzeczkowski, Thomas V., to Baldt Incorporated. Mooring system with frangible links. 4,517,913, Cl. 114-293.000.

Alberts, Robert: *See—*
Rosenbaum, Leslie; and Alberts, Robert, 4,517,753, Cl. 36-128.000.

Albrecht, Joachim; and Duerig, Thomas, to BBC Brown, Boveri & Company, Limited. Material which is at least partially made from a constituent having a one-way shape memory effect and process to produce said material. 4,518,444, Cl. 148-402.000.

Alcan International Limited: *See—*
Sivilotti, Olivo G., 4,518,475, Cl. 204-247.000.

Alexander, L. Bruce, to Brown International Corporation. Method and apparatus for finishing juices from fruits and vegetables and the like. 4,518,621, Cl. 426-495.000.

Alexander, Peter W.; and Haddad, Paul R., to Unisearch Limited. Potentiometric method. 4,518,463, Cl. 204-1.00T.

Alexeev, Alexei I.: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Alger, Jeffrey L.: *See—*
Kobayashi, Robert J.; Nancarrow, James H.; and Alger, Jeffrey L., 4,517,802, Cl. 60-606.000.

Alieri, Rodiero, to SACMI Cooperativa Meccanici Imola Soc. Coop. a Resp. Lim. Apparatus for forming plastic material gaskets in stoppers comprising a cup, such as screw-on and crown caps. 4,518,336, Cl. 425-110.000.

Allais, Andre ; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, to Roussel Uclaf. Benzoxazine-4-one intermediates. 4,518,775, Cl. 544-92.000.

Allegheny Ludlum Steel Corporation: *See—*
Robinson, Philip R., 4,518,101, Cl. 222-1.000.

Allen, C. Wayne: *See—*
Halcomb, F. Joseph, III; and Allen, C. Wayne, 4,517,969, Cl. 128-92.00E.

Allen, Landon K., to Advanced Micro Devices, Inc. Selective removal of coating material on a coated substrate. 4,518,678, Cl. 430-311.000.

Allen, Richard A. Folding carrier. 4,518,108, Cl. 224-314.000.

Allen, Richard C.: *See—*
Kosley, Raymond W., Jr.; and Allen, Richard C., 4,518,713, Cl. 514-326.000.

Allewitz, Murry, to Koomey, Inc. Guided float accumulator. 4,518,005, Cl. 137-207.000.

Allied Corporation: *See—*
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., 4,517,740, Cl. 29-857.000.
Gallusser, David O., 4,518,213, Cl. 339-48.000.
McCombs, Howard L., Jr., 4,517,796, Cl. 60-39.281.
Pujari, Vimal K., 4,518,335, Cl. 425-78.000.
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,518,413, Cl. 71-28.000.

Alps Electric Co., Ltd.: *See—*
Miyata, Hiroyasu; and Ito, Kazuhiko, 4,518,648, Cl. 428-256.000.

Alsthom-Atlantique: *See—*
Bigret, Roland, 4,517,822, Cl. 73-1.00B.

Alt, Mark R.: *See—*
Olds, John R.; and Alt, Mark R., 4,517,756, Cl. 37-118.00R.

Alter, H. Ward; and Oswald, Richard A., to Terradex Corporation. Compact detector for radon and radon daughter products. 4,518,860, Cl. 250-253.000.

Aluminium Pechiney: *See—*
Bucourt, Francois, 4,518,028, Cl. 164-460.000.

Aluminum Company of America: *See—*
Ormesher, Robert J., 4,518,424, Cl. 75-65.00R.

Amano, Toshio, to Sony Corporation. Controlling the operations of at least two devices. 4,519,002, Cl. 358-335.000.

Amchem Products, Inc.: *See—*
Koch, Robert W., 4,518,518, Cl. 252-142.000.

Amcor Ltd.: *See—*
Movshovitz, Avner; and Ityel, Amos, 4,517,808, Cl. 62-160.000.

American Can Company: *See—*
Latreille, Maurice G.; and Tennant, William A., 4,518,344, Cl. 425-570.000.

American Cyanamid Company: *See—*
Barton, Jerry M.; Long, Don W.; and Lotts, Kenneth D., 4,518,780, Cl. 546-167.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,518,790, Cl. 560-118.000.
Kaufman, Ernest D.; and Dexter, Robin W., 4,518,511, Cl. 252-8.55B.
Pasarela, Nunzio R., 4,518,580, Cl. 424-16.000.

Schamper, Thomas J.; Perl, Martin M.; and Warren, James D., 4,518,582, Cl. 424-66.000.
Wang, David W.; and Draney, Daniel R., 4,518,786, Cl. 549-552.000.
Yarossi, Mary E.; and Trevisan, Carey S., 4,518,553, Cl. 264-234.000.

American Dental Association Health Foundation: *See—*
Brown, Walter E.; and Chow, Laurence C., 4,518,430, Cl. 106-35.000.

American Microsystems, Incorporated: *See—*
Batra, Tarsaim L., 4,517,729, Cl. 29-571.000.

American Seating Company: *See—*
Lewis, Robert E., 4,518,199, Cl. 297-248.000.

AMFIT, Inc.: *See—*
Schartz, Vern R., 4,517,696, Cl. 12-1.00R.

Amin, Pravin T. Digital processing system with self-test capability. 4,519,077, Cl. 371-21.000.

Amos, Jacquelyn V., to Ski Pack International, Inc. Carrier system for ski equipment. 4,518,107, Cl. 224-215.000.

AMP Incorporated: *See—*
Johnson, Keith, Jr., 4,517,718, Cl. 29-33.00M.

Ampex Corporation: *See—*
Morrison, Eric F., 4,519,001, Cl. 358-310.000.

Amundson, Gregg B.: *See—*
Bradley, James D.; and Amundson, Gregg B., 4,519,016, Cl. 361-415.000.

Ananieva, Alla A.: *See—*
Rusakova, Svetlana V.; Glyzin, Vladimir I.; Kocherga, Stepan I.; Ananieva, Alla A.; and Libizova, Larisa F., 4,518,592, Cl. 424-195.100.

Anderson, Brian G.: *See—*
Tarnowski, Andrew A.; and Anderson, Brian G., 4,518,898, Cl. 315-371.000.

Anderson, Ingvar G.: *See—*
Mackenzie, Harold B.; and Anderson, Ingvar G., 4,517,925, Cl. 122-2.000.

Anderson, Jack F.; Melrose, Clayton; and Melrose, Floyd, to Anderson, Jack F. Tool apparatus with control to move tool when object approached. 4,518,043, Cl. 172-6.000.

Anderson, Roger J.: *See—*
Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J., 4,519,065, Cl. 369-275.000.

Andersson, Arne; and Larsson, Peter, to Trilack Utrustningar AB. Agitator. 4,518,265, Cl. 366-318.000.

Andersson, Karl Erik E., to Verktygsingustri I Blidsberg Aktiebolag. Machine comprising a reciprocating operative member. 4,517,879, Cl. 92-136.000.

Andre, Michel: *See—*
Calmettes, Lionel; and Andre, Michel, 4,517,708, Cl. 24-20.0CW.

Andreadakis, Nicholas C., to Burroughs Corporation. Display panel having memory. 4,518,894, Cl. 313-491.000.

Andreev, Vladimir V.: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Andren, Carl F.: *See—*
Poston, Billy R.; and Andren, Carl F., 4,518,947, Cl. 340-347.0DD.

Andresen, Arild A.: *See—*
Sollie, Steinar; and Andresen, Arild A., 4,518,050, Cl. 175-250.000.

Andresen, Arilo A.: *See—*
Sollie, Steinar; and Andresen, Arilo A., 4,518,051, Cl. 175-250.000.

Andresen, Erik E.; and Pedersen, Svend P., to Danfoss A/S. Valve with presetting of the amount of throughflow. 4,518,147, Cl. 251-121.000.

Andrews, Dana G., to Boeing Company, The. Aerodynamic braking system for a space vehicle. 4,518,137, Cl. 244-113.000.

Anglo-American Clays Corporation: *See—*
Bilimoria, Bomi M.; and May, Anthony A., 4,518,491, Cl. 209-166.000.

Antilla, Arthur: *See—*
Hess, Dennis R.; and Antilla, Arthur, 4,518,432, Cl. 106-117.000.

Antol, Ronald F.; Kalkbrenner, Ralph W.; and Kobuck, Richard M., to Westinghouse Electric Corp. Laser lens and light assembly. 4,518,843, Cl. 219-121.0LC.

Antonen, Robert C., to Dow Corning Corporation. Thixotropic curable coating compositions. 4,518,631, Cl. 427-96.000.

Anway, Kenneth L.; and Born, Gerald W., to Quality Products, Inc. Parison stretcher. 4,518,558, Cl. 264-515.000.

Aoki, Hirokazu: *See—*
Toyooka, Takashi; Aoki, Hirokazu; and Sugie, Mamoru, 4,519,049, Cl. 365-12.000.

Aoshima, Atsushi; Suzuki, Yoshio; and Nakamura, Mikihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Distillation process for purifying methyl methacrylate. 4,518,462, Cl. 203-39.000.

Aoshima, Atsushi; Suzuki, Yoshio; Yamamatsu, Setsuo; and Yamaguchi, Tatsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for preparing carboxylic esters. 4,518,796, Cl. 560-208.000.

Applezweig, Norman: *See—*
Coleman, Douglas L.; and Applezweig, Norman, 4,518,595, Cl. 514-178.000.

APV Anderson Bros. Inc.: *See—*
Copas, Gordon A.; Wilke, Howard C.; and Dykema, Dennis A., 4,518,021, Cl. 141-172.000.

Arai, Hirotsugu: *See—*
Ueda, Fumio; Tsuboi, Yoshiaki; Arai, Hirotsugu; Horikiri, Kenji; and Ideno, Hiroaki, 4,518,959, Cl. 340-784.000.

Arai, Yoshio: *See—*
Shimizu, Shigeaki; Kubo, Yoshimi; Arai, Yoshio; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,517,727, Cl. 29-570.000.

Araki, Tamio: *See—*
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Hirano, Masami; Araki, Tamio; and Kojima, Koichi, 4,518,023, Cl. 152-361.0FP.

Aranykalasz Mgtsz: *See—*
Hegedus, Karoly, 4,518,176, Cl. 280-229.000.

Arbed S.A.: *See—*
Metz, Paul, 4,518,422, Cl. 75-58.000.

Arbuthnot, Gerald: *See—*
Walling, Jorg-Hein; Shannon, Michael A.; and Arbuthnot, Gerald, 4,518,633, Cl. 427-120.000.

ARC Technologies Systems, Ltd.: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.

Ardo International Marketing: *See—*
Vogel, Peter, 4,517,692, Cl. 5-451.000.

Arendt, Hans F.: *See—*
Hoffmann, Ernst H.; Arendt, Hans F.; Spiewok, Leonhard; and Rettich, Jakob, 4,517,695, Cl. 8-158.000.

Arentsen, Norbert; and Rentchler, Frances A., to Rentchler, Frances. Clothes hanger hook. 4,517,709, Cl. 24-232.00R.

Armstrong, William H. Seat pad with adjustable lumbar support. 4,518,200, Cl. 297-284.000.

Arora, Mulk R., to North American Philips Corporation. Two step electrochemical etch process for high volt aluminum anode foil. 4,518,471, Cl. 204-129.100.

Asada, Shuji; and Nanbu, Tadamasa, to Matsushita Electric Industrial Co., Ltd. Electric iron with cord reel device. 4,517,757, Cl. 38-88.000.

Asahi Glass Co., Ltd.: *See—*
Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, 4,518,470, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Aoshima, Atsushi; Suzuki, Yoshio; and Nakamura, Mikihiko, 4,518,462, Cl. 203-39.000.
Aoshima, Atsushi; Suzuki, Yoshio; Yamamatsu, Setsuo; and Yamaguchi, Tatsuo, 4,518,796, Cl. 560-208.000.
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,518,497, Cl. 210-259.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Hama, Yoshihiro, 4,518,238, Cl. 354-270.000.
Hoshika, Shuji, 4,518,859, Cl. 250-231.0SE.
Kobayashi, Takeo, 4,518,243, Cl. 354-418.000.
Tomori, Yasumasa, 4,518,239, Cl. 354-286.000.

Asai, Mitsuko: *See—*
Imada, Akira; Harada, Setsuo; and Asai, Mitsuko, 4,518,529, Cl. 260-245.20T.

Asai, Yoshiharu: *See—*
Minamida, Kazukiyo; and Asai, Yoshiharu, 4,519,042, Cl. 364-567.000.

Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Rotary compressor with heat exchanger. 4,518,330, Cl. 418-63.000.

Asanae, Masumi: *See—*
Noguchi, Koji; Asanae, Masumi; and Kimura, Fumio, 4,518,673, Cl. 430-108.000.

Ash, Robin T., to Frito-Lay, Inc. Separator-folder for form-and-fill packaging machines. 4,517,789, Cl. 53-545.000.

Aslan, Edward E., to Narda Microwave Corporation, The. Radiation detector. 4,518,912, Cl. 324-95.000.

Aspera A.p.A.: *See—*
Peruzzi, Federigo; and Zgliczynski, Marek, 4,518,326, Cl. 417-372.000.

AT&T Bell Laboratories: *See—*
Banu, Mihai, 4,518,870, Cl. 307-356.000.
Bertocci, Guido; and Walters, Stephen M., 4,519,073, Cl. 370-118.000.
Bjorkholm, John E., 4,518,456, Cl. 156-626.000.
Brown, Michael K.; and Rabiner, Lawrence R., 4,519,094, Cl. 381-43.000.
Drexler, Leonard H.; Flynn, Richard M.; Fox, George R.; Illium, Herbert C., Jr.; and O'Connor, Robert J., 4,518,830, Cl. 179-103.000.
Federico, Joseph; and Waaben, Sigurd G., 4,519,024, Cl. 363-127.000.
Langseth, Rollin E., 4,519,084, Cl. 375-14.000.
Logan, Shawn M., 4,518,921, Cl. 328-151.000.
Mendell, Harry B., 4,519,032, Cl. 364-200.000.
Petr, David W., 4,518,950, Cl. 340-347.0DD.
Swanson, Eric J., 4,518,926, Cl. 330-253.000.
Venkatesan, Thirumalai N. C., 4,518,934, Cl. 332-7.510.

AT&T Technologies, Inc.: *See—*
Chisholm, William M.; and Thompson, Fred E., 4,518,085, Cl. 206-454.000.
Muething, Kevin A., 4,518,455, Cl. 156-613.000.
NG, Sau-Lan L.; Plewes, John T.; and Robbins, Murray, 4,518,469, Cl. 204-44.500.

Atago, Takeshi: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Ataka, Kikuo: *See—*
Uchiumi, Shinichiro; and Ataka, Kikuo, 4,518,793, Cl. 560-175.000.

Atlantic Richfield Company: *See—*
Kaplan, Steven E.; and Frink, Richard C., 4,518,770, Cl. 528-487.000.
Kesling, Haven S., Jr., 4,518,806, Cl. 568-659.000.

Atsumi, Akira; Oguni, Kensaku; Kuroda, Shigeaki; Senshu, Takao; and Yoshioka, Kazuo, to Hitachi, Ltd. Refrigerating apparatus having a gas injection path. 4,517,811, Cl. 62-197.000.

Atzler, Peter: *See—*
Heiden, Ulrich; and Atzler, Peter, 4,517,773, Cl. 51-336.000.

Audeh, Costandi A.; and Mitchell, Thomas O., to Mobil Oil Corporation. Process for the efficient utilization of solvent modified oil shales. 4,518,480, Cl. 208-11.0LE.

Auerbach, Guenther, to Sandoz Ltd. Monoazo compounds having a sulfo group-containing diazo component radical and a 6-(2'-chloro-1',3',5'-triazin-6'-ylamino)-1-hydroxy-3-sulfonaphthalene coupling component radical having a substituted amino group in the 4'-position. 4,518,391, Cl. 8-549.000.

Augenstein, Reiner, to Otto Bihler Maschinenfabrik GmbH & Co. KG. Method and apparatus for formation of packs of punched plates useful for spark extinguishing. 4,517,725, Cl. 29-417.000.

Autio, Karin; Kiesvaara, Martti; and Malkki, Yrjo , to Valtion Teknillinen Tutkimuskeskus. Method for dividing blood hemoglobin into heme and globin. 4,518,525, Cl. 260-112.00B.

Autoflug GmbH: *See—*
Butenop, Klaus; and Singer, Klaus-Peter, 4,518,131, Cl. 242-107.40B.
Sedlmayr, Gerhard, 4,518,174, Cl. 280-808.000.

Automation Industries, Inc.: *See—*
Kutnyak, Thomas A.; Dunn, George T.; and Guiles, Chester L., 4,518,018, Cl. 138-130.000.

Automotive Products Limited: *See—*
Windsor, Harry M., 4,518,064, Cl. 192-3.580.

Avco Everett Research Laboratory, Inc.: *See—*
Dagenais, Dominique M., 4,518,232, Cl. 350-620.000.

Avery, Grant D., to Sprague Electric Company. Ferromagnetic article detector with dual Hall-sensors. 4,518,918, Cl. 324-208.000.

Aykut, Kurt; and Reissmann, Klaus, to E.C.H. Will (GmbH & Co.). Apparatus for gathering and singularizing stacks of paper sheets or the like. 4,518,075, Cl. 198-460.000.

Aytac, Haluk M. Three-level MOS logic circuit. 4,518,875, Cl. 307-473.000.

Azar, Jack C.: *See—*
Henry, Arnold W.; Azar, Jack C.; and Sagal, John, 4,518,655, Cl. 428-329.000.

B.A.T. Cigaretten-Fabriken GmbH: *See—*
Krappitz, Heinz; Carstensen, Hans-Peter; and Weinhold, Friedrich, 4,517,829, Cl. 73-49.800.

Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for the preparation of fluorinated nitroalkanes. 4,518,812, Cl. 568-946.000.

Babcock & Wilcox Company, The: *See—*
Bohl, Thomas L., 4,518,699, Cl. 436-49.000.

Babyak, Richard J.: *See—*
Oefinger, Richard W.; and Babyak, Richard J., 4,517,820, Cl. 72-391.000.

Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., to Data General Corporation. Unique memory for use in a digital data system. 4,519,030, Cl. 364-200.000.

Backes, Reiner, to ITT Industries, Inc. MOS Transition detector for plural signal lines using non-overlapping complementary interrogation pulses. 4,518,872, Cl. 307-448.000.

Backes, Reiner, to ITT Industries, Inc. Integrated circuit for a keyboard of an electronic apparatus. 4,518,951, Cl. 340-365.00S.

Badaliants, Khoren A.: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Badders, Edwin T. Noise attenuating filter for fluid flow systems. 4,518,493, Cl. 210-137.000.

Baer, Jurgen: *See—*
Gillhaus, Horst; Hegewaldt, Fritz; Faber, Wolfgang; Baer, Jurgen; and Toplak, Ernst, 4,518,352, Cl. 432-199.000.

Baeten, Roger L.: *See—*
Tressler, Richard E.; Stach, Joseph; and Baeten, Roger L., 4,518,349, Cl. 432-11.000.

Bailey, Helen A. B.: *See—*
Pierce, Harry C.; and Bailey, Helen A. B., 4,518,152, Cl. 254-134.30R.

Baker, Dwight C.: *See—*
Olsen, Richard E.; and Baker, Dwight C., 4,519,028, Cl. 364-200.000.

Baker, Robert G., to Nordson Corporation. Hot melt adhesive hose cuff. 4,518,016, Cl. 138-96.00R.

Baker, Walter F. Woodbox. 4,517,956, Cl. 126-283.000.

Baldenko, Dmitry F.; Gusman, Moisei T.; and Semenets, Valery I., to Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Tekhniki. Bottom hole motor for driving rock-breaking tool. 4,518,049, Cl. 175-107.000.

Baldt Incorporated: *See—*
Albertini, Rocco D.; and Grzeczkowski, Thomas V., 4,517,913, Cl. 114-293.000.

Bales, Michael E., to Maytag Company, The. Grease collection system for range. 4,517,886, Cl. 99-425.000.

Ball, Herbert. Internal combustion engine. 4,517,937, Cl. 123-190.00D.

Ballu, Patrick J., to Tecnoma. Hand-operated hose for atomizing a liquid for the treatment of plants. 4,518,122, Cl. 239-530.000.

Baltimore Aircoil Company, Inc.: *See—*
Carter, Thomas P.; Schinner, Edward N.; Harrison, Richard H., Jr.; and Cates, Robert E., 4,518,544, Cl. 261-112.000.

Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, to Chugai Ro Co., Ltd.; and Mitsubishi Kinzoku Kabushiki Kaisha. Vacuum sintering furnace. 4,518,353, Cl. 432-205.000.

Bantick, John R.; Fuher, John; Hardern, David N.; and Lee, Thomas B., to Fisons plc. Naphthalene and 2-oxo-benzopyran acids and derivatives and pharamaceutical use thereof. 4,518,612, Cl. 514-457.000.

Banu, Mihai, to AT&T Bell Laboratories. Common mode signal detector. 4,518,870, Cl. 307-356.000.

Baravian, Jean; and Barbey, Jacques, to Rhone-Poulenc Fibres. Waterproof membrane with fuse bonded non-woven reinforcement. 4,518,658, Cl. 428-291.000.

Barbee, Robert B.; and Davis, Burns, to Eastman Kodak Company. Copolyesters from ether-containing glycols and acids. 4,518,763, Cl. 528-173.000.

Barbey, Jacques: *See—*
Baravian, Jean; and Barbey, Jacques, 4,518,658, Cl. 428-291.000.

Barch, Herbert W.; Salego, George T.; and Blair, Rudolph, to PPG Industries, Inc. Applicator for treating textile filaments with chemical treatments. 4,517,916, Cl. 118-234.000.

Bares, Jan, to Xerox Corporation. Development system using a thin layer of marking particles. 4,518,245, Cl. 355-3.0DD.

Barfell, Don L., to Elkhart Machine & Tool Co., Inc. Seat pedestal. 4,518,139, Cl. 248-418.000.

Barham, Jerel J.: *See—*
Moser, William H., 4,518,303, Cl. 414-528.000.

Barker, Jeffrey G., to Ranks Hovis McDougall p.l.c. Method of and apparatus for wrapping articles. 4,517,786, Cl. 53-450.000.

Barker, Michael, to Dow Chemical Company, The. Roof insulation retention. 4,517,776, Cl. 52-90.000.

Barnhart, Ronald W.: *See—*
Wehmeyer, Donald T.; and Barnhart, Ronald W., 4,518,061, Cl. 187-18.000.

Barr, William A. Safety parking brake for automatic transmissions. 4,518,066, Cl. 192-4.00C.

Barrett, Raymond L., Jr.; and Gross, Thomas A. O., to Sensormatic Electronics Corporation. Duplexer with sum and difference signal outputs. 4,519,066, Cl. 370-24.000.

Barry Wright Corporation: *See—*
Peretti, Mark F., 4,518,368, Cl. 464-70.000.

Bartenbach, Christian. Protection device against solar light. 4,517,960, Cl. 126-440.000.

Barth, Gerald D., to Illinois Tool Works Inc. Rotary fastener. 4,518,294, Cl. 411-188.000.

Bartholomaus, Reiner; and Gibas, Christoph, to Mannesmann Rexroth GmbH. Solenoid having low-friction coating internally of the armature sleeve. 4,518,938, Cl. 335-262.000.

Bartnik, Friedhelm; Schindler, Joachim; Weiss, Albrecht; and Schmid, Rolf, to Henkel Kommanditgesellschaft auf Aktien. Acid stable protease from mutants of genus Aspergillus. 4,518,697, Cl. 435-254.000.

Barton, Jerry M.; Long, Don W.; and Lotts, Kenneth D., to American Cyanamid Company. Process for the preparation of 2-(5,5-disubstituted-4-oxo-2-imidazolin-2-yl)nicotinic acids and quinoline-3-carboxylic acids. 4,518,780, Cl. 546-167.000.

BASF Aktiengesellschaft: *See—*
Eckhardt, Heinz; Halbritter, Klaus; and Rohr, Wolfgang, 4,518,785, Cl. 549-453.000.
Ernst, Hansgeorg; Vogel, Friedrich; and Paust, Joachim, 4,518,813, Cl. 570-241.000.
Naarmann, Herbert; Muench, Volker; Kohler, Gernot; and Simak, Petr, 4,518,535, Cl. 260-438.100.
Schirmer, Ulrich; Plath, Peter; and Wuerzer, Bruno, 4,518,414, Cl. 71-90.000.

Basile, Philip C., to RCA Corporation. Transceiver having collision detection capability for contention-formatted FDM local area networks. 4,519,074, Cl. 370-124.000.

Basso, Peter J. Insulated modular cooler. 4,517,815, Cl. 62-457.000.

Bateson, Paul F.: *See—*
Drake, Cyril F.; Maries, Alan; and Bateson, Paul F., 4,518,429, Cl. 106-14.390.

Batorewicz, Wadim; and Wheeler, Edward L., to Uniroyal, Inc. Process for the preparation of p-nitrosodiphenylamine. 4,518,803, Cl. 564-410.000.

Batra, Tarsaim L., to American Microsystems, Incorporated. Method for fabricating MOS device with self-aligned contacts. 4,517,729, Cl. 29-571.000.

Battenfeld Extrusionstechnik GmbH: *See—*
Schafer, Heinrich, 4,517,858, Cl. 74-801.000.

Battiston, Joseph, Jr.: *See—*
Battiston, Joseph D., Sr.; and Battiston, Joseph, Jr., 4,518,002, Cl. 135-67.000.

Battiston, Joseph D., Sr.; and Battiston, Joseph, Jr., to Tubular Fabricators Ind., Inc. Foldable walker with plunger actuated latch assembly. 4,518,002, Cl. 135-67.000.

Bauer, Hannsgeorg: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.

Baxter Technologies Inc.: *See—*
Heathe, William R., 4,518,205, Cl. 308-3.00R.

Baxter, Ward, II: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.

Bayer Aktiengesellschaft: *See—*
Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, 4,518,812, Cl. 568-946.000.
Brandes, Wilhelm; and Daum, Werner, 4,518,605, Cl. 514-383.000.
Breidenbach, Peter; Hurnik, Helmut; and Pedain, Josef, 4,518,729, Cl. 524-101.000.
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,518,416, Cl. 71-94.000.
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,518,521, Cl. 252-188.310.
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,518,600, Cl. 514-256.000.
Lindner, Christian; Ott, Karl-Heinz; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,743, Cl. 525-80.000.
Ott, Karl-Heinz; Lindner, Christian; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,515, Cl. 525-79.000.
Richter, Roland; Muller, Hanns P.; Wagner, Kuno; Riberi, Bernd; and Frohlich, Jurg, 4,518,761, Cl. 528-67.000.
Sehnem, Hans P., 4,518,791, Cl. 560-124.000.
Stix, Wolfgang; Bottenbruch, Ludwig; and Neuray, Dieter, 4,518,747, Cl. 525-462.000.

Bayerische Motoren Werke AG: *See—*
Emonts, Johannes, 4,517,801, Cl. 60-602.000.

Bayerische Motoren Werke A.G.: *See—*
Heiden, Ulrich; and Atzler, Peter, 4,517,773, Cl. 51-336.000.

Bays, David E.: *See—*
Hayes, Roger; Bays, David E.; Mackinnon, John W. M.; Carey, Linda; and Blatcher, Philip, 4,518,598, Cl. 514-212.000.

Bazuin, Johannes, to LeBlond Makino Machine Tool Co. Steadyrest for slant bed lathe. 4,517,866, Cl. 82-39.000.

BBC Brown, Boveri & Company, Limited: *See—*
Albrecht, Joachim; and Duerig, Thomas, 4,518,444, Cl. 148-402.000.
Mayer, Andreas; El-Nashar, Ibrahim; and Spinnler, Fritz, 4,517,950, Cl. 123-559.000.

Bean, Jackie E.: *See—*
Fischer, Larry E.; Sridhar, Bettadapur N.; and Bean, Jackie E., 4,518,559, Cl. 376-230.000.

Beaudet, Leo A.: *See—*
Fotland, Richard A.; and Beaudet, Leo A., 4,518,468, Cl. 204-38.300.

Becker, Kunibert; Kirchbrucher, Rudiger; and Pohlmann, Klaus D., to Gewerkschaft Eisenhutte Westfalia. Mine roof supports. 4,518,284, Cl. 405-296.000.

Beckett, Joel M., to Marq Packaging Systems, Inc. Programmable case sealing machine. 4,517,784, Cl. 53-75.000.

Beckman Instruments, Inc.: *See—*
Stephens, Donald E., 4,518,700, Cl. 436-52.000.

Beckman, Orval E., to Zenith Radio Corporation. Demodulator having two phase shift networks for wide band television audio. 4,518,997, Cl. 358-198.000.

Beckmann, Norbert, to Ford Motor Company. Fastening clip for motor vehicle trim. 4,517,710, Cl. 24-453.000.

Beckmann, Wolfgang: *See—*
Weber, Karl-Heinz; Beckmann, Wolfgang; and Gebauer, Hartmut, 4,518,285, Cl. 405-302.000.

Becton Dickinson and Company: *See—*
Tice, Gregory, 4,517,851, Cl. 73-864.910.

Bedenbender, John W.; and Kelly, Gilbert H., deceased, to Texas Instruments Incorporated. Force or pressure feedback control for seismic vibrators. 4,519,053, Cl. 367-190.000.

Beecham Group Limited: *See—*
Saias, Edmond, 4,518,606, Cl. 514-197.000.

Beem, W. Wayne: *See—*
Johnson, Wallace R.; and Beem, W. Wayne, 4,518,362, Cl. 440-6.000.

Begle, Guntram: *See—*
Friedli, Paul; Hinderling, Thomas; and Begle, Guntram, 4,518,909, Cl. 318-566.000.

Belanger, Thomas D., Jr.: *See—*
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,518,211, Cl. 339-17.0LM.

Belani, Jadish G.: *See—*
Goodrich, Gary B.; and Belani, Jadish G., 4,518,735, Cl. 524-403.000.

Bell, John L., to Burroughs Corporation. Method of initializing and recovering from failures in a local area network. 4,519,070, Cl. 370-88.000.

Belt, Robert. Cooking apparatus for pickup trucks. 4,518,189, Cl. 296-22.000.

Belter, Jerome G., to Dana Corporation. Multi-thickness fire ring assembly. 4,518,168, Cl. 277-235.00B.

Bengtsson, Sigurd W., to AB Fixfabriken. Locking device. 4,518,178, Cl. 292-8.000.

Benjamin, Lawrence; Rodriguez, Sheila S.; and Meinberg, Nancy A., to Procter & Gamble Company, The. Animal litter composition. 4,517,919, Cl. 119-1.000.

Benson, Robert D. Windshield washer apparatus. 4,517,704, Cl. 15-250.040.

Bentley, Arthur C.: *See—*
Bruder, Frank J., 4,518,163, Cl. 272-132.000.

Bergwerksverband GmbH: *See—*
Vaupel, Knut; and Schulz, Peter, 4,518,286, Cl. 406-46.000.

Berken, George A.: *See—*
Lewis, Frederick M.; and Berken, George A., 4,517,906, Cl. 110-346.000.

Berkman Industries, Inc.: *See—*
Berkman, Joseph L., 4,518,084, Cl. 206-387.000.

Berkman, Joseph L., to Berkman Industries, Inc. Storage system for either boxed or unboxed cassettes. 4,518,084, Cl. 206-387.000.

Bert, Jack A.; and Olsen, R. Eric, to Chevron Research Company. Dynamic methods and apparatus for reducing octane requirement increase. 4,517,943, Cl. 123-415.000.

Bertocci, Guido; and Walters, Stephen M., to AT&T Bell Laboratories. Bit compression multiplexer. 4,519,073, Cl. 370-118.000.

Bertolini, Guglielmo: *See—*
Greco, Alberto; and Bertolini, Guglielmo, 4,518,766, Cl. 528-370.000.

Better Semiconductor Processes (BSP): *See—*
Tressler, Richard E.; Stach, Joseph; and Baeten, Roger L., 4,518,349, Cl. 432-11.000.

Beversdorf, Wallace D.; Erickson, Lawrence R.; and Grant, Ian, to University of Guelph. Hybridization process utilizing a combination of cytoplasmic male sterility and herbicide tolerance. 4,517,763, Cl. 47-58.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method for producing glass fiber. 4,518,408, Cl. 65-6.000.

Bialas, Volker: *See—*
Brankamp, Klaus; Bialas, Volker; and Bongartz, Heinz B., 4,519,040, Cl. 364-474.000.

Bianchin, Bernard: *See—*
Perrin, Bernard; Bianchin, Bernard; and Sauret, Georges, 4,518,499, Cl. 210-332.000.

Biedermann, Jurgen; Prop, Gerrit; and Doppelfeld, Ille-Stephanie, to A. Nattermann & Cie GmbH. Process for producing (-)-2-[1-(2,6-dichlorophenoxy)-ethyl]-1,3-diazacyclopent-2-ene. 4,518,783, Cl. 548-353.000.

Bigbee, Marvin L.: *See—*
Rettig, Vernon E.; Bigbee, Marvin L.; Steilen, Ronald M.; and Head, Glenn D., Jr., 4,518,046, Cl. 172-311.000.

Bigret, Roland, to Alsthom-Atlantique. Device for applying imbalance to a rotor. 4,517,822, Cl. 73-1.00B.

Bilgutay, Ilhan M. Four function vital sign monitor. 4,517,986, Cl. 128-671.000.

Bilimoria, Bomi M.; and May, Anthony A., to Anglo-American Clays Corporation. Beneficiation of clays by froth flotation. 4,518,491, Cl. 209-166.000.

Billard, Alain A.; and Santalucia, Andre R., to Etienne LaCroix - Tous Artifices. Electromagnetic decoy launching device, in particular for an aircraft. 4,517,896, Cl. 102-342.000.

Binks Manufacturing Company: *See—*
Smith, David H., 4,518,121, Cl. 239-526.000.

Bio-Rad Laboratories, Inc.: *See—*
Delony, Timothy E.; and Chu, Daniel Y. M., 4,518,476, Cl. 204-299.00R.

Bisabri-Ershadi, Barat: *See—*
Rigterink, Raymond H.; and Bisabri-Ershadi, Barat, 4,518,804, Cl. 564-442.000.

Bishop, Donald E.: *See—*
Lough, Wendell J.; and Bishop, Donald E., 4,518,405, Cl. 55-385.00A.

Bisping, Heinz: *See—*
Lang, Gusztav; Hoffmann, Armin; and Bisping, Heinz, 4,518,291, Cl. 411-60.000.

Biswas, Dipak R.; and Nath, Dilip K., to International Telephone and Telegraph Corporation. Hermetic coating by heterogeneous nucleation thermochemical deposition. 4,518,628, Cl. 427-55.000.

Bitsch, Hans-Ulrich. Seating piece of furniture. 4,518,202, Cl. 297-452.000.

Bjorkholm, John E., to AT&T Bell Laboratories. Light induced etching of InP by aqueous solutions of H_3PO_4. 4,518,456, Cl. 156-626.000.

Black, Philip W.; and Irven, John, to International Standard Electric Corporation. Optical fibre preform manufacture. 4,518,407, Cl. 65-3.120.

Black, Robert H.: *See—*
Green, Arthur A.; and Black, Robert H., 4,518,506, Cl. 210-747.000.

Blackington, Paul A., to Sheltered Workshop for the Disabled, Inc. Line sensing method and apparatus. 4,518,856, Cl. 250-202.000.

Blair, Rudolph: *See—*
Barch, Herbert W.; Salego, George T.; and Blair, Rudolph, 4,517,916, Cl. 118-234.000.

Blanchette, Henry J., to Plastican, Inc. Mold for forming a container having a pivot means. 4,518,143, Cl. 249-142.000.

Bland, Gerald F.; and Sullivan, Donald K., to Outboard Marine Corporation. Vent assembly for marine propulsion devices. 4,518,363, Cl. 440-89.000.

Blande, Carl-Axel: *See—*
Tengzelius, Jan R.; Blande, Carl-Axel; and Svensson, Lars-Erik, 4,518,427, Cl. 75-251.000.

Blatcher, Philip: *See—*
Hayes, Roger; Bays, David E.; Mackinnon, John W. M.; Carey, Linda; and Blatcher, Philip, 4,518,598, Cl. 514-212.000.

Blatchford, Michael I., to Ralph Blatchford & Company Limited. Load handling apparatus. 4,518,304, Cl. 414-542.000.

Blatt, Leland F.; and Crorey, David J., to Leland F. Blatt. Parallel movement gripper head. 4,518,187, Cl. 294-88.000.

Bleggi, Joseph N. Boat railing mounted fishing rod holder. 4,517,761, Cl. 43-21.200.

Bloch, Joseph T., to Boeing Company, The. Compliant robot arm adapter assembly. 4,518,307, Cl. 414-729.000.

Blom, Hendrik: *See—*
Koppe, Rudolf P.; and Blom, Hendrik, 4,518,927, Cl. 330-284.000.

Bloor, Trevor J.; and Walton, Lawrence J. Solar water heating apparatus. 4,517,961, Cl. 126-450.000.

Bloxom, Ingrid B., Jr. Apparatus for colonic and intestinal irrigation. 4,518,382, Cl. 604-27.000.

Blum, Patricia R.; Milberger, Ernest C.; and Nicholas, Mark L., to Standard Oil Company, The. Method for adding make-up fluid bed oxidation catalysts for fluid bed oxidation catalysts containing the mixed oxides of vanadium and phosphorus. 4,518,523, Cl. 502-209.000.

Board of Regents, The University of Texas System: *See—*
Cuff, George W.; and McGinity, James W., 4,518,547, Cl. 264-4.700.

Bochtler, Franz: *See—*
Schulze, Ehrhart; and Bochtler, Franz, 4,518,378, Cl. 493-204.000.

Boden, Richard M., to International Flavors & Fragrances Inc. 3,4,5,6,6-Pentamethyl hexanol-2 and alkyl homologues thereof; process for preparing same and organoleptic uses thereof. 4,517,990, Cl. 131-276.000.

Boden, Richard M., to International Flavors & Fragrances Inc. 3,4,5,6,6-Pentamethyl hexanol-2 and alkyl homologues thereof; process for preparing same and organoleptic uses thereof. 4,517,991, Cl. 131-276.000.

Boeckmann, Eduard F. B., to GTE Communications Systems Corporation. Two terminal microphone active load gain regulation circuit. 4,518,829, Cl. 179-81.00B.

Boeing Company, The: *See—*
Andrews, Dana G., 4,518,137, Cl. 244-113.000.
Bloch, Joseph T., 4,518,307, Cl. 414-729.000.
Dontscheff, Helmut, 4,517,872, Cl. 85-880.000.
Eggebrecht, John L.; Rogers, Harold D.; and Yorozu, Arthur S., 4,517,813, Cl. 62-284.000.
Fenner, James A., 4,518,179, Cl. 292-166.000.

Boger, David L.; Pugh, Jerry T.; and Zuidema, Jack, to Miles Laboratories, Inc. Reagent test device holder. 4,518,565, Cl. 422-58.000.

Bogner, Richard D., to King, Leonard H. Vertically polarized omnidirectional antenna. 4,518,969, Cl. 343-819.000.

Bohl, Thomas L., to Babcock & Wilcox Company, The. On-line coal analyzer. 4,518,699, Cl. 436-49.000.

Bohm, Jurgen, to Bopp & Reuther GmbH. Testing device for flowmeter. 4,517,823, Cl. 73-3.000.

Boig, Robert W.: *See—*
Milton, James W.; and Boig, Robert W., 4,518,097, Cl. 220-307.000.

Bolick, Fred C., Jr., to Lanier Business Products, Inc. Dictation recording and transcribing system utilizing a multiple media cartridge apparatus. 4,519,009, Cl. 360-92.000.

Boll & Kirch, Filterbau GmbH, Firma: *See—*
Lennartz, Rudiger; Rott, Willi; and Sindorf, Heinz, 4,518,501, Cl. 210-411.000.

Bolze, Rudolf; Geiger, Friedhelm; Spindler, Manfred; and Tanner, Herbert. Process for the hydrolysis of 5-(β-methylmercaptoethyl)-hydantoin. 4,518,801, Cl. 562-559.000.

Bonanno, Anthony J.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,518,458, Cl. 159-47.100.

Bongartz, Heinz B.: *See—*
Brankamp, Klaus; Bialas, Volker; and Bongartz, Heinz B., 4,519,040, Cl. 364-474.000.

Bonicalzi, Leopold: *See—*
Lacombe, Gerard A.; and Bonicalzi, Leopold, 4,517,780, Cl. 52-233.000.

Booth, Michael R.: *See—*
Levchenko, Alec; and Booth, Michael R., 4,517,883, Cl. 98-115.300.

Bopp & Reuther GmbH: *See—*
Bohm, Jurgen, 4,517,823, Cl. 73-3.000.

Borg-Warner Chemicals, Inc.: *See—*
Halpern, Yuval, 4,518,795, Cl. 560-193.000.

Borg-Warner Corporation: *See—*
Harnish, James R., 4,517,807, Cl. 62-156.000.
Mott, Philip J., 4,517,877, Cl. 91-48.000.

Borg-Warner Limited: *See—*
Foley, Peter N.; and Turbard, Alan M., 4,517,810, Cl. 62-186.000.

Born, Gerald W.: *See—*
Anway, Kenneth L.; and Born, Gerald W., 4,518,558, Cl. 264-515.000.

Bornemann, Hans-Joachim; and Zlab, Horst, to Thyssen Industrie Aktiengesellschaft. Mixer for continuously mixing granular to powdery materials. 4,518,262, Cl. 366-156.000.

Borning, Jeffrey M.: *See—*
Breske, Carl D.; and Borning, Jeffrey M., 4,518,110, Cl. 228-20.000.

Borrelli, Nicholas F.; and Trotter, Donald M., to Corning Glass Works. Optical device and method. 4,518,222, Cl. 350-167.000.

Bortz, Botho; and Wulfes, Erwin, to Volkswagenwerk Aktiengesellschaft. Energy-dissipatingly flexible knee-restraining element. 4,518,172, Cl. 280-751.000.

Bosco, Peter M.: *See—*
Wilson, Mildred N.; Danielson, Robert L.; Bosco, Peter M.; and Steensen, Wayne L., 4,518,622, Cl. 426-578.000.

Bossler, Robert B., Jr., to Western Gear Corporation. Method of face mill generation of spiral bevel gears with integral central structure and resulting product. 4,518,287, Cl. 409-26.000.

Bottenbruch, Ludwig: *See—*
Stix, Wolfgang; Bottenbruch, Ludwig; and Neuray, Dieter, 4,518,747, Cl. 525-462.000.

Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, to Societe de Vente de l'Aluminium Pechiney. Telomers which can be cross-linked by light. 4,518,794, Cl. 560-192.000.

Bowden, Edgar A., to Mobil Oil Corporation. Power control circuit. 4,519,011, Cl. 360-137.000.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D., 4,517,881, Cl. 98-208.000.

Boysen, Lennart; and Ottoson, Ulf. Crushers. 4,518,125, Cl. 241-141.000.

Bozler, Carl O.: *See—*
Leonberger, Frederick J.; Melngailis, Ivars; Bozler, Carl O.; and McClelland, Robert W., 4,518,219, Cl. 350-96.120.

Brachman, Dina I.: *See—*
Eigen, Edward; Twersky, David Z.; and Brachman, Dina I., 4,518,517, Cl. 252-107.000.

Brackman, Warren A.; and Snaidr, Stanislav M. Feeding tobacco cutting machines. 4,517,988, Cl. 131-116.000.

Bradley, James D.; and Amundson, Gregg B., to Magnetic Controls Company. Printed circuit board card cage. 4,519,016, Cl. 361-415.000.

Brady, William C.: *See—*
Perkins, Richard A.; Brady, William C.; and Glaser, Hellmut I., 4,518,406, Cl. 65-1.000.

Braese, Hans-Eberhard: *See—*
Lindner, Christian; Ott, Karl-Heinz; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,743, Cl. 525-80.000.
Ott, Karl-Heinz; Lindner, Christian; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,515, Cl. 525-79.000.

Braginsky, Yakov I.; Gultsev, Igor V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; and Yaroshenko, Yury F., to Vsesojuzny Nauchno-Issledovatelsky I Exerimentalno-Konstruktorsky Institut Prodovol-Stvennogo Mashinostroenia. Apparatus for recovering meat of small crustaceans. 4,517,707, Cl. 17-71.000.

Braithwaite, David, to Emhart Industries, Inc. Parison screening in a glassware forming machine. 4,518,412, Cl. 65-244.000.

Branca, Virgilio, to Somiver s.r.l. Apparatus for forming centrifuged poles. 4,518,342, Cl. 425-435.000.

Brand, Erich: *See—*
Lochner, Kaspar; Schurmann, Helmut; and Brand, Erich, 4,518,513, Cl. 252-62.000.

Brandeau, Edward P., to Thomas & Betts Corporation. Wire termination system and terminator therefor. 4,518,216, Cl. 339-97.00P.

Brandes, Wilhelm; and Daum, Werner, to Bayer Aktiengesellschaft. Fungicidal azole-substituted oximino-cyano-acetamide derivatives. 4,518,605, Cl. 514-383.000.

Brandes, Wilhelm: *See—*
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,518,600, Cl. 514-256.000.

Branham, Doud R., to International Game Technology. Coin handling apparatus. 4,518,001, Cl. 133-5.00R.

Brankamp, Klaus; Bialas, Volker; and Bongartz, Heinz B., to Brankamp, Klaus. Method for detecting and recognizing deviations of cyclically recurring processes for the shaping of workpieces. 4,519,040, Cl. 364-474.000.

Brase, Ingrid E.: *See—*
Gleason, Patricia A.; and Brase, Ingrid E., 4,518,510, Cl. 252-8.50C.

Breeze, Gerald D.; and Elliott, Donald C., to General Electric Company, p.l.c., The. Assemblies of electrical or electronic apparatus. 4,519,013, Cl. 361-384.000.

Breidenbach, Peter; Hurnik, Helmut; and Pedain, Josef, to Bayer Aktiengesellschaft. Solutions of isocyanato-isocyanurates in plasticizers for polyvinyl chloride, a process for their production and their use as adhesion-improving additives in coating compositions based on plasticized polyvinyl chloride. 4,518,729, Cl. 524-101.000.

Breitfeld & Schliekert GmbH: *See—*
Kopp, Hubert, 4,517,870, Cl. 83-411.00R.

Brennan, John F., to UOP Inc. Catalyst for the reduction of nitrogen oxides in gaseous mixtures and method of making the catalyst. 4,518,710, Cl. 502-309.000.

Breske, Carl D.; and Borning, Jeffrey M., to Control Data Corporation. Device for soldering/desoldering apertured lendless packages. 4,518,110, Cl. 228-20.000.

Bresson, Clarence R.; and Kimble, Kenneth B. Ore flotation with combined collectors. 4,518,492, Cl. 209-166.000.

Brichta, Corrado: *See—*
Zamboni, Valentino; Brichta, Corrado; and Troglia, Claudio, 4,518,731, Cl. 524-166.000.

Bridgestone Tire Company Limited: *See—*
Matsunuma, Tamotsu, 4,518,024, Cl. 152-361.0DM.
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Hirano, Masami; Araki, Tamio; and Kojima, Koichi, 4,518,023, Cl. 152-361.0FP.

Bridson, Robert C.: *See—*
Wedge, Philip J.; and Bridson, Robert C., 4,518,348, Cl. 431-265.000.

Brinkerhoff, Jesse R.; and Brinkerhoff, Richard S., to Telecalc, Inc. Telephone interconnect detection system. 4,518,825, Cl. 179-11.000.

Brinkerhoff, Richard S.: *See—*
Brinkerhoff, Jesse R.; and Brinkerhoff, Richard S., 4,518,825, Cl. 179-11.000.

Brinkmann, Egon; Putenat, Mandred; and Dorre, Erhard, to Fedlmuhle Aktiengesellschaft. Fastening system for mucous membrane-supported denture. 4,518,357, Cl. 433-173.000.

Bristol-Myers Company: *See—*
Cundall, Robert L.; and Walker, Derek, 4,518,773, Cl. 544-16.000.
Konishi, Masataka; Sugawara, Koko; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,518,589, Cl. 514-27.000.

British Gas Corporation: *See—*
Wedge, Philip J.; and Bridson, Robert C., 4,518,348, Cl. 431-265.000.

Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., to Hoffmann-La Roche Inc. Cyclic compounds. 4,518,784, Cl. 549-39.000.

Brockmueller, Bernd, to PPG Industries, Inc. Storing bending molds. 4,518,410, Cl. 65-106.000.

Brodeur, Jacques; and Brodeur, Mireille. Computer assisted symmetrical analysis for hair stylists. 4,519,037, Cl. 364-400.000.

Brodeur, Mireille: *See—*
Brodeur, Jacques; and Brodeur, Mireille, 4,519,037, Cl. 364-400.000.

Brody, Harry, to Imperial Chemical Industries PLC. Process of melt spinning of a blend of a fibre-forming polymer and an immiscible polymer and melt spun fibres produced by such process. 4,518,744, Cl. 525-184.000.

Broersma, Harmen. Colour analyser. 4,518,258, Cl. 356-405.000.

Bronner, Jean-Claude, to CEM Compagnie Electro-Mecanique. Method and apparatus for minimizing the power induced in a flat conducting product maintained in position electromagnetically without contact. 4,518,840, Cl. 219-10.670.

Brookman, Donald L.: *See—*
Grollimund, Everett C.; Smick, William H., III; and Brookman, Donald L., 4,517,825, Cl. 73-38.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hirata, Yoshikatsu, 4,518,271, Cl. 400-636.100.

Brouillette, Bruce R.; and Shafer, Martha J., to Rust-Oleum Corporation. Water based aerosol coatings. 4,518,734, Cl. 524-378.000.

Brown, Boveri & Cie. AG.: *See—*
Gillhaus, Horst; Hegewaldt, Fritz; Faber, Wolfgang; Baer, Jurgen; and Toplak, Ernst, 4,518,352, Cl. 432-199.000.

Brown, Herbert C.: *See—*
Kramer, George M.; Weissman, Walter; Brown, Herbert C.; and Pettit, Rowland, deceased, 4,518,798, Cl. 560-233.000.

Brown International Corporation: *See—*
Alexander, L. Bruce, 4,518,621, Cl. 426-495.000.

Brown, Joe R. High speed pipe handling apparatus. 4,518,309, Cl. 414-745.000.

Brown, Michael K.; and Rabiner, Lawrence R., to AT&T Bell Laboratories. LPC Word recognizer utilizing energy features. 4,519,094, Cl. 381-43.000.

Brown, Walter E.; and Chow, Laurence C., to American Dental Association Health Foundation. Dental resptorative cement pastes. 4,518,430, Cl. 106-35.000.

Brown & Williamson Tobacco Corporation: *See—*
Korte, Kevin R.; and Snyder, Daniel D., 4,517,992, Cl. 131-304.000.
Vester, Rudolph P., 4,517,996, Cl. 131-339.000.

Browne, Edward M.: *See—*
Tantillo, Donnie J.; Kratochvil, David F.; Moore, Robert G.; and Browne, Edward M., 4,519,052, Cl. 367-79.000.

Bruder, Frank J., to Bentley, Arthur C. Exerciser with electrically controlled resistance. 4,518,163, Cl. 272-132.000.

Bryant, David R.: *See—*
Abatjoglou, Anthony G.; and Bryant, David R., 4,518,805, Cl. 568-444.000.

Brym, Stanley J.; and Valbona, Bruno M., to Dynamics Corporation of America. Splatter shield for use with a drink mixer. 4,518,263, Cl. 366-206.000.

Buckbee Mears Company: *See—*
Thoms, Roland, 4,518,892, Cl. 313-403.000.

Buckner, Arthur B.; Davies, Michael L.; and Weber, Lawrence W., to Sperry Corporation. Fan mounting assembly. 4,517,880, Cl. 98-1.000.

Bucko, Thomas G.: *See—*
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., 4,518,915, Cl. 324-158.00R.

Bucourt, Francois, to Aluminium Pechiney. Process and apparatus for obtaining stackable auto-clamping blocks. 4,518,028, Cl. 164-460.000.

Budinger, A. Bowman: *See—*
Proud, Joseph M.; Budinger, A. Bowman; Riseberg, Leslie A.; and Byszewski, Wojciech W., 4,518,897, Cl. 315-260.000.

Buechler, Lawrence W.: *See—*
Fenster, Abraham S.; and Buechler, Lawrence W., 4,518,008, Cl. 137-552.000.

Burgio di Aragona, Antonio, to Fiat Auto S.p.A. Tappet for internal combustion engines with variable profile camshafts. 4,517,936, Cl. 123-90.500.

Burkhardt, Terry J.: *See—*
Schulz, Donald N.; Kitano, Kissho; Burkhardt, Terry J.; and Langer, Arthur W., 4,518,757, Cl. 526-329.000.

Burns, Eugene A.; and Colby, Bruce N., to Maxwell Laboratories, Inc. Method of extracting organic contaminants from process waters. 4,518,502, Cl. 210-634.000.

Burroughs Corporation: *See—*
Andreadakis, Nicholas C., 4,518,894, Cl. 313-491.000.
Bell, John L., 4,519,070, Cl. 370-88.000.
Chamberlain, John T., 4,519,035, Cl. 364-200.000.
Clark, Becky J., 4,518,960, Cl. 340-825.020.
Fuchs, Otto, 4,518,940, Cl. 335-285.000.
Sellars, Graham P., 4,519,007, Cl. 360-77.000.

Bush, Harold G.; and Wallsom, Richard E., to United States of America, National Aeronautics and Space Administration. Self-locking mechanical center joint. 4,518,277, Cl. 403-102.000.

Bush, Phillip V.: *See—*
Pontius, Duane H.; and Bush, Phillip V., 4,518,401, Cl. 55-101.000.

Bussing, Jurgen; and Muller, Hubert, to Ciba Geigy Corporation. Solid stabilizer composition. 4,518,732, Cl. 524-178.000.

Butenop, Klaus; and Singer, Klaus-Peter, to Autoflug GmbH. Inertial element for winding the safety belt of a motor vehicle. 4,518,131, Cl. 242-107.40B.

Byszewski, Wojciech W.: *See—*
Proud, Joseph M.; Budinger, A. Bowman; Riseberg, Leslie A.; and Byszewski, Wojciech W., 4,518,897, Cl. 315-260.000.

Cabot Corporation: *See—*
Stewart, Harvey; and Mosheim, C. Edward, 4,518,570, Cl. 423-63.000.

Calandra, Frank, Jr., to Jennmar Corporation. Method and apparatus for combining resin bonding and mechanical anchoring of a bolt in a rock formation. 4,518,292, Cl. 411-82.000.

Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., to Texas Instruments Incorporated. Electronic data processing apparatus with equation operating system having improved unary operation implementation. 4,519,045, Cl. 364-709.000.

Caldwell Manufacturing Company: *See—*
Haltof, Garry P., 4,517,766, Cl. 49-417.000.

Calhoun, L. Owen, to W. C. Pursley Limited. Trenchduct side member extrusion adapted for multiple positioning of cover plate. 4,517,777, Cl. 52-126.200.

Calmettes, Lionel; and Andre, Michel, to Establissements Caillau. Clamp. 4,517,708, Cl. 24-20.0CW.

Cameron Iron Works, Inc.: *See—*
Vicic, John C.; La Velle, Carl A.; and Parris, Joe P., III, 4,518,144, Cl. 251-1.00A.

Campbell, Frank P. Auxiliary closet system. 4,518,089, Cl. 211-118.000.

Campbell, Willis R.; and Walker, James D., to Sperry Corporation. Twine wrapping apparatus for a roll baling machine. 4,517,890, Cl. 100-5.000.

Campbell, Willis R.: *See—*
Walker, James D.; Underhill, Kenneth R.; and Campbell, Willis R., 4,517,889, Cl. 100-5.000.

Camph, Sven E. Automatic slack adjuster. 4,518,063, Cl. 188-196.0BA.

Canada Wire and Cable Limited: *See—*
Vokey, David E., 4,518,034, Cl. 156-54.000.

Canadas, Jean C.; and Vigo, Gilles, to Compagnie Industrielle de Mecanismes en abrege C.I.M. Sun-glare shield in particular for an automobile vehicle. 4,518,192, Cl. 296-97.00H.

Canon Kabushiki Kaisha: *See—*
Misumi, Teruo; and Osato, Yoichi, 4,518,671, Cl. 430-84.000.
Sugiura, Muneharu, 4,518,228, Cl. 350-427.000.
Tazaki, Shigemitsu, 4,518,973, Cl. 346-140.00R.
Toyama, Masamichi, 4,518,242, Cl. 354-403.000.
Urawa, Motoo; and Imai, Eiichi, 4,518,672, Cl. 430-106.000.
Yashiki, Yuichi, 4,518,669, Cl. 430-57.000.

Cantu, Terry S.: *See—*
Pace, Gerald F.; and Cantu, Terry S., 4,518,393, Cl. 44-6.000.

Carey, Linda: *See—*
Hayes, Roger; Bays, David E.; Mackinnon, John W. M.; Carey, Linda; and Blatcher, Philip, 4,518,598, Cl. 514-212.000.

Caris, Marcel. Device for the electric connection of a cylindrical conductor. 4,518,214, Cl. 339-74.00R.

Carl-Zeiss-Stiftung: *See—*
Muchel, Franz; and Strahle, Fritz, 4,518,231, Cl. 350-516.000.
Weber, Klaus, 4,518,230, Cl. 350-511.000.

Carnes, Ronald C.: *See—*
Thompson, Craig R.; Carnes, Ronald C.; and Naumann, Ted F., Jr., 4,517,840, Cl. 73-644.000.

Carstensen, Hans-Peter: *See—*
Krappitz, Heinz; Carstensen, Hans-Peter; and Weinhold, Friedrich, 4,517,829, Cl. 73-49.800.

Carter, Thomas P.; Schinner, Edward N.; Harrison, Richard H., Jr.; and Cates, Robert E., to Baltimore Aircoil Company, Inc. Serpentine film fill packing for evaporative heat and mass exchange. 4,518,544, Cl. 261-112.000.

Carus, Edmund H.; and White, Eric F. T., to Vernon-Carus Limited. Radio opaque fibre. 4,517,793, Cl. 57-243.000.

Cascini, Michael R.: *See—*
Fredrickson, Lee R.; Cascini, Michael R.; and Mosier, Donald E., 4,518,225, Cl. 350-338.000.

Casparian, Robert E.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,518,458, Cl. 159-47.100.

Cass, James L., to Perkins Research & Mfg. Co., Inc. Cable test apparatus. 4,518,911, Cl. 324-52.000.

Cassella Aktiengesellschaft: *See—*
Engelhardt, Friedrich; and Greiner, Ulrich, 4,518,745, Cl. 525-326.600.

Castelluzzo, James M. Knife with plural replaceable blade storage and means for single blade extension. 4,517,741, Cl. 30-162.000.

Caterpillar Tractor Co.: *See—*
Mitchell, Thomas L.; McMahill, Patrick D.; Valbert, Gary G.; and Wellauer, John C., 4,518,276, Cl. 403-13.000.
Sandroni, Gianni, 4,517,819, Cl. 72-353.000.

Cates, Robert E.: *See—*
Carter, Thomas P.; Schinner, Edward N.; Harrison, Richard H., Jr.; and Cates, Robert E., 4,518,544, Cl. 261-112.000.

Catros, Jean Y., to Thomson-CSF. Differential data coding and decoding process and system restricting propagation of transmission errors. 4,519,085, Cl. 375-27.000.

Caudill, Eddie T.; Caudill, Richard T.; and Conley, Lyle N., to Mountain Systems, Inc. Vandal-proof communication system. 4,518,826, Cl. 179-37.000.

Caudill, Richard T.: *See—*
Caudill, Eddie T.; Caudill, Richard T.; and Conley, Lyle N., 4,518,826, Cl. 179-37.000.

Cavazza, Claudio; and Tinti, Maria O. Thioalkanoyl-carnitines, process for their preparation and mucolytic pharmaceutical compositions containing same. 4,518,613, Cl. 514-513.000.

Cavezzan, Jacques; and Prud'Homme, Christian, to Rhone-Poulenc Specialites Chimiques. Organopolysiloxane/polyurethane elastomeric block copolymers. 4,518,758, Cl. 528-12.000.

Cecere, Andrew P.: *See—*
Diggle, Edmund A., Jr.; and Cecere, Andrew P., 4,517,712, Cl. 26-51.400.

Celotex Corporation, The: *See—*
Frentzel, Richard L., 4,518,719, Cl. 521-136.000.

CEM Compagnie Electro-Mecanique: *See—*
Bronner, Jean-Claude, 4,518,840, Cl. 219-10.670.

Central Soya Company, Inc.: *See—*
Monagle, Charles W.; and Smith, Janet C., 4,518,620, Cl. 426-291.000.

Centre Technique de L'Industrie des Papiers, Cartons et Celluloses: *See—*
Perrin, Bernard; Bianchin, Bernard; and Sauret, Georges, 4,518,499, Cl. 210-332.000.

Centre Technique de l'Industrie Horlogere "Cetehor": *See—*
Chatelain, Jean C., 4,518,884, Cl. 310-49.000.

Cerny, Frank J., Jr., to Motorola, Inc. Large dynamic range multiplier for a maximal-ratio diversity combiner. 4,519,096, Cl. 455-137.000.

Cetus Corporation: *See—*
Mark, David F.; Lin, Leo S.; and Lu, Shi-Da Y., 4,518,584, Cl. 424-85.000.

Challenge-Cook Brothers, Inc.: *See—*
Gould, Bruce M., 4,517,888, Cl. 99-472.000.

Chamberlain, John T., to Burroughs Corporation. Branched-spiral wafer-scale integrated circuit. 4,519,035, Cl. 364-200.000.

Champeau, Kenneth L.: *See—*
Youngblood, Harold C.; and Champeau, Kenneth L., 4,518,037, Cl. 166-125.000.

Champion International Corporation: *See—*
Roccaforte, Harry I., 4,518,086, Cl. 206-485.000.

Chan, Rebecca L. S.: *See—*
Dawson, Marcia I.; and Chan, Rebecca L. S., 4,518,609, Cl. 514-448.000.

Charchanko, Eugene W.: *See—*
Lenaerts, George V.; Charchanko, Eugene W.; and Dambenieks, Andrejs, 4,517,739, Cl. 29-846.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Consales, Emanuel J.; and Kondoleon, Anthony, 4,517,744, Cl. 33-169.00C.

Charlton Associates: *See—*
Elliott, Richard J., 4,517,772, Cl. 51-281.0SF.

Charron, Jean-Claude. Pressure responsive cap for gas appliances. 4,518,003, Cl. 137-65.000.

Chastain, Charles E.; and King, Donald R., to PRM Energy Systems, Inc. Particulate waste product combustion system. 4,517,905, Cl. 110-346.000.

Chatelain, Jean C., to Centre Technique de l'Industrie Horlogere "Cetehor". Step motor particularly for electronic timepieces. 4,518,884, Cl. 310-49.000.

Chem-Technics, Inc.: *See—*
Conner, Jesse R., 4,518,507, Cl. 210-747.000.

Chemische Werke Huls Aktiengesellshcaft: *See—*
Disteldorf, Josef; and Flakus, Werner, 4,518,740, Cl. 524-783.000.

Chen, Clay T.; Wan, K. Ming; and Chen, Mary S., to Hatco Chemical Corporation. Process for preparing N-benzyloxycarbonyl-L-aspartic acid. 4,518,792, Cl. 560-163.000.

Chen, Li-Fu. Apparatus for automatically measuring height. 4,518,052, Cl. 177-245.000.

Chen, Mary S.: *See—*
Chen, Clay T.; Wan, K. Ming; and Chen, Mary S., 4,518,792, Cl. 560-163.000.

Chen, Nai Y.: *See—*
LaPierre, Rene B.; Partridge, Randall D.; Chen, Nai Y.; and Wong, Stephen S., 4,518,485, Cl. 208-89.000.

Chen, Sow-Mei L.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,518,790, Cl. 560-118.000.

Chen, William I. H.: *See—*
Rozema, John G.; and Chen, William I. H., 4,518,930, Cl. 331-36.00C.

Cherukuri, Subraman R.; Marschall-Helman, Ellen; and Hriscisce, Frank T., to Warner-Lambert Company. Non-adhesive chewing gum base composition. 4,518,615, Cl. 426-4.000.

Chevron Research Company: *See—*
Bert, Jack A.; and Olsen, R. Eric, 4,517,943, Cl. 123-415.000.
Sollie, Steinar; and Andresen, Arild A., 4,518,050, Cl. 175-250.000.
Sollie, Steinar; and Andresen, Arilo A., 4,518,051, Cl. 175-250.000.

Chicago Bridge & Iron Company: *See—*
Korzonas, Raymond, 4,517,806, Cl. 62-123.000.

Chicopee: *See—*
Wang, Robert C.; Sampson, Arthur J.; and Persinko, Mark M., 4,518,649, Cl. 428-284.000.

Childress, J. Phillip. Taco shell frying mold. 4,517,887, Cl. 99-426.000.

Chin, Herbert A., to United Technologies Corporation. Method of producing columnar crystal superalloy material with controlled orientation and product. 4,518,442, Cl. 148-11.50N.

CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Chisholm, William M.; and Thompson, Fred E., to AT&T Technologies, Inc. Multi-purpose transport tray. 4,518,085, Cl. 206-454.000.

Chiu, Herman S., to Union Carbide Corporation. Preparation of smoke treated, stuffed food casings. 4,518,619, Cl. 426-265.000.

Cho, Hyun S.: *See—*
Gigl, Paul D.; and Cho, Hyun S., 4,518,659, Cl. 428-539.500.

Chouanard, Harvey J.: *See—*
Skovran, Daniel G.; Shockley, Brett A.; and Chouanard, Harvey J., 4,519,014, Cl. 361-397.000.

Chow, Laurence C.: *See—*
Brown, Walter E.; and Chow, Laurence C., 4,518,430, Cl. 106-35.000.

Chr. Hansen's Laboratory, Inc.: *See—*
Gehrman, Sybil H.; and Porubcan, Randolph S., 4,518,696, Cl. 435-253.000.

Christian, J. Vernon. Control circuit for a solid fuel furnace. 4,517,902, Cl. 110-190.000.

Christidis, Yani: *See—*
Schouteeten, Alain; and Christidis, Yani, 4,518,800, Cl. 562-459.000.

Chryso S.A.: *See—*
Guicquero, Jean P., 4,518,725, Cl. 524-3.000.

Chu, Daniel Y. M.: *See—*
Delony, Timothy E.; and Chu, Daniel Y. M., 4,518,476, Cl. 204-299.00R.

Chu, David C.; and Ward, Michael J., to Hewlett-Packard Company. Data capture in an uninterrupted counter. 4,519,091, Cl. 377-44.000.

Chugai Ro Co., Ltd.: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.

Ciba-Geigy AG: *See—*
Leppard, David G.; and Rody, Jean, 4,518,679, Cl. 430-372.000.
Leppard, David G.; and Rody, Jean, 4,518,688, Cl. 430-551.000.

Ciba Geigy Corporation: *See—*
Bussing, Jurgen; and Muller, Hubert, 4,518,732, Cl. 524-178.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,518,533, Cl. 260-245.400.
Haug, Theobald; and Stockinger, Friedrich, 4,518,748, Cl. 525-481.000.
Irving, Edward, 4,518,676, Cl. 430-280.000.
Kristiansen, Odd; and Drabek, Jozef, 4,518,601, Cl. 514-340.000.
Krueger, Ulf A.; and Meshako, Thomas M., 4,518,762, Cl. 528-95.000.
Martin, Henry, 4,518,536, Cl. 260-465.00D.
Meyer, Willy; Fory, Werner; and Topfl, Werner, 4,518,776, Cl. 544-206.000.
Mollet, Hans; and Dussy, Paul, 4,518,392, Cl. 8-609.000.

Ciesco, Richard: *See—*
Ellenbaum, Frank H.; and Ciesco, Richard, 4,518,428, Cl. 75-257.000.

Cilindro, Leticia D., to Turco, Loreto. Machinable wax for prototype patterns. 4,518,288, Cl. 409-219.000.

Cimarusti, Robert J.; and Posinger, Stanley A. Bar stock feeding tool. 4,517,722, Cl. 29-234.000.

Citizen Watch Co., Ltd.: *See—*
Osaka, Takatoshi; Nishimura, Katsuo; and Nakagiri, Tadahiko, 4,517,953, Cl. 124-17.000.

CL Industries, Inc.: *See—*
Woodson, Wayne D., 4,518,723, Cl. 523-466.000.

Claassen, George R.: *See—*
Frank, Robert G.; Fecik, Michael T.; and Claassen, George R., 4,518,411, Cl. 65-106.000.

Clabburn, Robin J. T.: *See—*
Larsson, Peter L.; and Clabburn, Robin J. T., 4,518,819, Cl. 174-78.000.

Claes, Constant J. P.: *See—*
Lambrechts, Eric G. Y.; Verhoeven, Herman K. M.; and Claes, Constant J. P., 4,518,160, Cl. 271-214.000.

Clarion Co., Ltd.: *See—*
Niimi, Morihiro, 4,517,728, Cl. 29-571.000.

Clark, Becky J., to Burroughs Corporation. Speed independent selector switch employing M-out-of-N codes. 4,518,960, Cl. 340-825.020.

Clark, Charles W., Jr.: *See—*
West, Harold H.; Johnson, Roger A.; and Clark, Charles W., Jr., 4,518,153, Cl. 254-274.000.

Clark, Larry G. Transaction drawer assembly. 4,517,901, Cl. 109-19.000.
Claude, Timothy J.: *See—*
Timm, Gerald W.; Sandford, Donald L.; and Claude, Timothy J., 4,517,967, Cl. 128-79.000.
Clayton, William J., to Mobil Oil Corporation. Adhesive channel closure for flexible bags. 4,519,095, Cl. 383-86.000.
Clegg, Lynaveta: *See—*
Moser, William H., 4,518,303; Cl. 414-528.000.
Clemence, Francois: *See—*
Allais, Andre ; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,518,775, Cl. 544-92.000.
Clorox Company, The: *See—*
Hsia, Samson T.; and Ogasawara, Pam, 4,518,618, Cl. 426-262.000.
Clough, John M.: *See—*
Marchington, Anthony F.; Lewis, Timothy; Clough, John M.; Worthington, Paul A.; and Dalziel, John, 4,518,415, Cl. 71-92.000.
Clymer, Roy E., to Psychologics, Inc. Method of and circuit for simulating neurons. 4,518,866, Cl. 307-201.000.
Coca-Cola Limited: *See—*
Phillips, Stephen J., 4,518,639, Cl. 428-35.000.
Cochran, Harvey B.: *See—*
Smith, Maurice R.; and Cochran, Harvey B., 4,518,760, Cl. 528-48.000.
Cochran, Thomas J.: *See—*
Hottenrott, Hans G.; Hodge, Philo B.; and Cochran, Thomas J., 4,518,910, Cl. 324-158.00P.
Codman & Shurtleff, Inc.: *See—*
Waters, George F., 4,518,223, Cl. 350-254.000.
Coe, Thomas J. Ice suppression mat. 4,518,281, Cl. 405-61.000.
Cohen, Abraham B.: *See—*
Heiart, Robert B.; and Cohen, Abraham B., 4,518,667, Cl. 430-22.000.
Colby, Bruce N.: *See—*
Burns, Eugene A.; and Colby, Bruce N., 4,518,502, Cl. 210-634.000.
Cole, Charles; and Cole, Wayne, to Enercorp Management, Ltd. Apparatus and method for determining the air leakage characteristics of a structure. 4,517,826, Cl. 73-40.000.
Cole, Trevor W. Signal processing apparatus and method. 4,519,046, Cl. 364-822.000.
Cole, Wayne: *See—*
Cole, Charles; and Cole, Wayne, 4,517,826, Cl. 73-40.000.
Coleman, Douglas L.; and Applezweig, Norman, to Jackson Laboratory, The. Method for treating diabetes using DHEA compounds. 4,518,595, Cl. 514-178.000.
Coles Cranes Limited: *See—*
Thomasson, William R., 4,518,090, Cl. 212-189.000.
Colgate-Palmolive Company: *See—*
Eigen, Edward; Twersky, David Z.; and Brachman, Dina I., 4,518,517, Cl. 252-107.000.
Hayes, Harry; and Harvey, Kenneth, 4,518,578, Cl. 424-7.100.
Colvin, Floyd W.: *See—*
Khanna, Pyare L.; and Colvin, Floyd W., 4,518,701, Cl. 436-500.000.
Commissariat a l'Energie Atomique: *See—*
Jeuch, Pierre, 4,518,629, Cl. 427-89.000.
Robert, Andre, 4,518,816, Cl. 174-3.000.
Schnedecker, Guy; and Mougin, Jacques, 4,518,635, Cl. 427-232.000.
Commonwealth of Australia, The: *See—*
Penny, Michael F.; Woodcock, Brian; Abbot, Ralph H.; Phillips, David M.; and Spaans, Leendert B., 4,518,254, Cl. 356-5.000.
Communications Satellite Corporation: *See—*
Snyder, John S., Jr., 4,519,080, Cl. 371-43.000.
Compagnie Francaise des Petroles: *See—*
Lefebvre, Herve M.; and Helderle, Paul M., 4,518,036, Cl. 166-105.000.
Compagnie Generale des Etablissements Michelin: *See—*
Faure, Raymond, 4,517,848, Cl. 73-862.520.
Compagnie Industrielle de Mecanismes en abrege C.I.M.: *See—*
Canadas, Jean C.; and Vigo, Gilles, 4,518,192, Cl. 296-97.00H.
Concast Incorporated: *See—*
Langner, Carl; Poran, Michael; and Szarka, Geza, 4,518,074, Cl. 198-425.000.
Conley, Lyle N.: *See—*
Caudill, Eddie T.; Caudill, Richard T.; and Conley, Lyle N., 4,518,826, Cl. 179-37.000.
Connecticut Artcraft Corporation: *See—*
Viesturs, Eric A., 4,517,693, Cl. 5-451.000.
Conner, Jesse R., to Chem-Technics, Inc. Method for chemically solidifying and encapsulating hazardous wastes in one continuous operation. 4,518,507, Cl. 210-747.000.
Conner, Jesse R., to SolidTek Systems, Inc. Method for treating wastes by solidification. 4,518,508, Cl. 210-751.000.
Conoco Inc.: *See—*
Graf, Harlan G.; and Janssen, Harry R., 4,518,487, Cl. 208-131.000.
Pace, Gerald F.; and Cantu, Terry S., 4,518,393, Cl. 44-6.000.
Consales, Emanuel J.; and Kondoleon, Anthony, to Charles Stark Draper Laboratory, Inc., The. Compliant assembly system with force sensor members. 4,517,744, Cl. 33-169.00C.
Constantinescu, Ion, to Advanced Micro Devices, Inc. TTL-ECL Input translation with AND/NAND function. 4,518,876, Cl. 307-475.000.
Contracap, Inc.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,517,970, Cl. 128-131.000.
Contreras, Joseph P., Sr. Molded container with living hinges. 4,518,092, Cl. 220-20.500.
Control Data Corporation: *See—*
Breske, Carl D.; and Borning, Jeffrey M., 4,518,110, Cl. 228-20.000.
Control Process, Inc.: *See—*
Kent, David P., 4,518,300, Cl. 414-46.000.
Conway, Malcolm J. Method and apparatus for effecting and evaluating action upon visual imaging. 4,518,361, Cl. 434-307.000.
Cook, William A.; Hoffman, Gary R.; and Pulford, William M., to Du Pont de Nemours, E. I., and Company. Capacitively coupled machine tool safety having a self-test network. 4,518,958, Cl. 340-679.000.
Coombs, Daniel M.: *See—*
Mann, David P.; Kukes, Simon G.; and Coombs, Daniel M., 4,518,484, Cl. 208-87.000.
Coons, Terry L., to Tech Development Inc. Apparatus for preventing overspeed of a turbine drive means. 4,518,310, Cl. 415-36.000.
Cooper, Robin D. G., to Eli Lilly and Company. Allylic chlorination process and compounds prepared thereby. 4,518,531, Cl. 260-245.400.
Copas, Gordon A.; Wilke, Howard C.; and Dykema, Dennis A., to APV Anderson Bros. Inc. Machine for filling containers. 4,518,021, Cl. 141-172.000.
Copeland Corporation: *See—*
Elson, John P.; Muir, Earl B.; and Riffe, Delmar R., 4,518,323, Cl. 417-312.000.
Corabelment A.G.: *See—*
Rumble, Clive S., 4,518,212, Cl. 339-31.00R.
Corazzari, Canzio: *See—*
Govoni, Gabriele; Corazzari, Canzio; Di Stefano, Giovanni; and Loconsolo, Mauro, 4,518,750, Cl. 526-68.000.
Cordis Corporation: *See—*
Pecenka, Frank, 4,517,979, Cl. 128-325.000.
Corey, Victor B.: *See—*
Peters, Rex B.; Tonn, Jeffrey F.; Malametz, Arnold; Hilliker, Richard A.; and Corey, Victor B., 4,517,841, Cl. 73-517.0AV.
Corl, Paul D.: *See—*
Teslawski, Georg; and Corl, Paul D., 4,517,985, Cl. 128-660.000.
Corning Glass Works: *See—*
Borrelli, Nicholas F.; and Trotter, Donald M., 4,518,222, Cl. 350-167.000.
Corrigan, John J., III. Electrical connector and receptacle. 4,518,217, Cl. 339-183.000.
Cote , Gerard G. M.; and Zuber, Bretislav P., to Northern Telecom Limited. Coilers. 4,518,129, Cl. 242-78.000.
Cousin, Maurice; Pipon, Yves; Droulon, Georges; and Lebrun, Jean, to A & M Cousin Etablissements Cousin Freres S.a.r.l. Electric safety lock more specially for motor vehicle doors. 4,518,182, Cl. 292-201.000.
Cox, Michael; Gray, Michael J.; and Duke, Phillip W., to National Research Development Corporation. Winning metal from ore. 4,518.420, Cl. 75-26.000.
CQR Security Systems Limited: *See—*
Solomon, Dennis R., 4,518,946, Cl. 340-326.000.
Crivello, James V., to General Electric Company. Aromatic polyvinyl ethers and heat curable molding compositions obtained therefrom. 4,518,788, Cl. 560-064.000.
Crockett & Kelly, Inc.: *See—*
Horst, Paul V., Sr.; and Hoyt, Charles D., 4,518,847, Cl. 219-365.000.
Crorey, David J.: *See—*
Blatt, Leland F.; and Crorey, David J., 4,518,187, Cl. 294-88.000.
Crosby, Jeffrey N.: *See—*
Mason, John J.; Cunningham, Michael T.; and Crosby, Jeffrey N., 4,518,467, Cl. 204-37.100.
Croskell, Henry; and Graham, Tommy E., to Monsanto Company. Process for recovering gases from landfills. 4,518,399, Cl. 55-16.000.
Crozier, George W.; and McDevitt, Bernard J., to Sperry Corporation. Printer with positional tabbing. 4,519,047, Cl. 364-900.000.
Crump, Druce K.; and Wilson, David A., to Dow Chemical Company, The. Methylene phosphonic acid scale inhibitor compositions derived from aminohydrocarcarbylpiperazine urea adducts. 4,518,777, Cl. 544-337.000.
CSM Suiker B.V.: *See—*
van der Poel, Pieter W., 4,518,436, Cl. 127-60.000.
Cuff, George W.; and McGinity, James W., to Board of Regents, The University of Texas System. Microencapsulation process. 4,518,547, Cl. 264-4.700.
Cummings, Dennis: *See—*
Liebig, William J.; and Cummings, Dennis, 4,517,687, Cl. 3-1.400.
Cundall, Robert L.; and Walker, Derek, to Bristol-Myers Company. "3-Carbamoyloxy cephalosporins". 4,518,773, Cl. 544-16.000.
Cunningham, Michael T.: *See—*
Mason, John J.; Cunningham, Michael T.; and Crosby, Jeffrey N., 4,518,467, Cl. 204-37.100.
Cusano, Dominic A.; Greskovich, Charles D.; and DiBianca, Frank A., to General Electric Company. Method for sintering high density yttria-gadolinia ceramic scintillators. 4,518,545, Cl. 264-1.200.
Cusano, Dominic A.: *See—*
Greskovich, Charles D.; Cusano, Dominic A.; and DiBianca, Frank A., 4,518,546, Cl. 264-1.200.
Cuscurida, Michael; Waddill, Harold G.; and Peterson, Bruce W., to Texaco Inc. Flexible polyurethane foams made from polyether polyols modified with epoxy resin-diamine adducts. 4,518,720, Cl. 521-156.000.

Cuscurida, Michael, to Texaco Inc. Polymer polyols from alkylene oxide adducts of alkanolamines. 4,518,778, Cl. 544-398.000.
Custom Packaging Systems, Inc.: *See—*
LaFleur, Arthur E., 4,518,106, Cl. 222-460.000.
Cybersonic Corporation: *See—*
Vogelsberg, Walter, 4,519,027, Cl. 364-185.000.
Czebe, Laszlo : *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.
Czulak, Joseph, to Institut National de la Recherche Agronomique. Process for recovering the whey proteins, the application thereof to cheese-making and the resulting cheeses. 4,518,616, Cl. 426-40.000.
Dacomed Corporation: *See—*
Timm, Gerald W.; Sandford, Donald L.; and Claude, Timothy J., 4,517,967, Cl. 128-79.000.
Daewoo Heavy Industries Ltd.: *See—*
Park, Kwang S., 4,517,908, Cl. 112-129.000.
Dagenais, Dominique M., to Avco Everett Research Laboratory, Inc. Method and apparatus for optical beam shaping. 4,518,232, Cl. 350-620.000.
DAGMA Deutsche Automaten-und Getrankemaschinen GmbH & Co., Ltd.: *See—*
Kuckens, Alexander; and Kohl, Horst, 4,518,105, Cl. 222-207.000.
Dahneke, Barton E.; and Marchant, Alan B., to Eastman Kodak Company. Sealed optical disk unit, apparatus and method for debris-suppressed recording. 4,519,061, Cl. 369-109.000.
Daimler-Benz AG: *See—*
Forster, Alfred; Geyer, Willi; and Kober, Leo, 4,518,196, Cl. 296-204.000.
Daimler-Benz Aktiengesellschaft: *See—*
Gallitzendorfer, Joseph; Pfeiffer, Peter; Tomforde, Johann; Parisch, Jochen; and Zweigart, Gerhard, 4,518,197, Cl. 296-213.000.
Merkle, Josef, 4,518,154, Cl. 267-34.000.
Scheurenbrand, Dieter; Stotz, Manfred; Distel, Manfred; and Kleinschmit, Einhard, 4,518,091, Cl. 220-5.00A.
Dalziel, John: *See—*
Marchington, Anthony F.; Lewis, Timothy; Clough, John M.; Worthington, Paul A.; and Dalziel, John, 4,518,415, Cl. 71-92.000.
Dambenieks, Andrejs: *See—*
Lenaerts, George V.; Charchanko, Eugene W.; and Dambenieks, Andrejs, 4,517,739, Cl. 29-846.000.
Damco Testers, Inc.: *See—*
Miller, Darwin L.; and Miller, Ronnie F., 4,517,828, Cl. 73-46.000.
Dameron, James L., Jr. Picture locating tool. 4,517,860, Cl. 81-487.000.
Dana Corporation: *See—*
Belter, Jerome G., 4,518,168, Cl. 277-235.00B.
Hennon, Erin D.; and Joyner, Robert G., 4,518,017, Cl. 138-96.00R.
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., to United States of America, Navy. Test device for expendable bathythermograph set (XBT). 4,518,915, Cl. 324-158.00R.
Danfoss A/S: *See—*
Andresen, Erik E.; and Pedersen, Svend P., 4,518,147, Cl. 251-121.000.
Daniel, Maurice. Light emitting optical fiber assemblies and method for forming the same. 4,519,017, Cl. 362-32.000.
Daniels, Jean G., to Monahan, William Jay, a part interest. Lawn furniture covering. 4,518,198, Cl. 297-229.000.
Daniels, Phillip D. Method of making multi-section decorative panel. 4,518,447, Cl. 156-71.000.
Danielson, Robert L.: *See—*
Wilson, Mildred N.; Danielson, Robert L.; Bosco, Peter M.; and Steensen, Wayne L., 4,518,622, Cl. 426-578.000.
Dannelly, Clarence C.: *See—*
Wu, Stephen H.; and Dannelly, Clarence C., 4,518,769, Cl. 528-486.000.
Dargel, Robert L. Reuseable air filter system. 4,518,402, Cl. 55-103.000.
Das, Balbhadra: *See—*
McWilliams, Donald E.; Melle, Carl A.; and Das, Balbhadra, 4,518,653, Cl. 428-378.000.
Data Card Corporation: *See—*
Gabel, Edward R.; Puumala, Edward J.; and LeVasseur, Rodney J., 4,518,853, Cl. 235-449.000.
Data General Corporation: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.
Daum, Werner: *See—*
Brandes, Wilhelm; and Daum, Werner, 4,518,605, Cl. 514-383.000.
Davies, Michael L.: *See—*
Buckner, Arthur B.; Davies, Michael L.; and Weber, Lawrence W., 4,517,880, Cl. 98-1.000.
Davis, Burns: *See—*
Barbee, Robert B.; and Davis, Burns, 4,518,763, Cl. 528-173.000.
Davis, Dale M.; and Robbins, John C. Highly accurate projectile for use with small arms. 4,517,898, Cl. 102-514.000.
Davis, James R.; and Hoffend, John C. Modular screen printing apparatus. 4,517,894, Cl. 101-126.000.
Davis, James W.; and Jones, Frank D., to International Business Machines Corporation. Cascoded PLA array. 4,518,874, Cl. 307-467.000.
Davis, Walter L.; and Raghunathan, Kuppuswamy, to Motorola, Inc. Universal paging device with power conservation. 4,518,961, Cl. 340-825.440.
Dawley, Dale K. Swimmer's lap pacer. 4,518,266, Cl. 368-10.000.
Dawson, Marcia I.; and Chan, Rebecca L. S., to SRI International. Naphtenic and heterocyclic retinoic acid analogues. 4,518,609, Cl. 514-448.000.
de la Cruz Toran, D. Mariano. Air cushion vehicle provided with a lift system with automatic transversal air distribution. 4,518,054, Cl. 180-118.000.
Deakins, Thomas A. Hubless pipe coupling. 4,518,177, Cl. 285-64.000.
Deal, Troy M. Cutterhead attachment for a dredge. 4,517,754, Cl. 37-66.000.
de Bentzmann, Bertrand L. Device for producing reinforcements for use in reinforced concrete. 4,518,841, Cl. 219-56.000.
Dedolph, Richard R., to Gravi-Mechanics. Chain of soil plugs and a process for producing a chain of soil plugs. 4,517,764, Cl. 47-77.000.
Deere & Company: *See—*
Denning, Barry K.; and Ziegler, Duane H., 4,517,792, Cl. 56-10.200.
Goodell, Bradley D., 4,518,320, Cl. 417-217.000.
Lane, Lloyd L.; and Hosford, Gregory S., 4,517,855, Cl. 74-528.000.
Meiers, Gerald F., 4,517,795, Cl. 56-341.000.
Nelson, Roger J., 4,518,045, Cl. 172-7.000.
Rettig, Vernon E.; Bigbee, Marvin L.; Steilen, Ronald M.; and Head, Glenn D., Jr., 4,518,046, Cl. 172-311.000.
Ring, Curtis P., 4,518,319, Cl. 417-217.000.
Roth, Wolfgang, 4,518,373, Cl. 474-109.000.
Schafer, Helmut; Huckler, Volker; and Teich, Michael, 4,517,856, Cl. 74-528.000.
Stuhrmann, Heinz, 4,518,305, Cl. 414-719.000.
Tindall, Gary W.; Lysenko, George P.; Vize, Richard J.; Kiefer, Edward H.; and Smith, Richard J., 4,518,195, Cl. 296-148.000.
Wiegardt, Gordon K.; Hanks, Thomas W.; and Kittle, Carl E., 4,518,044, Cl. 172-7.000.
Deflecta-Shield Corporation: *See—*
Williams, Robert D.; and Mastin, James, 4,518,191, Cl. 296-91.000.
Deindoerfer, Fred H., to International Remote Imaging Systems, Inc. Method of determining the diagnostic significance of the content of a volume of biological sample containing particles. 4,519,087, Cl. 377-10.000.
Deiss, Willy-Jean: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,518,794, Cl. 560-192.000.
Deitz, Victor R. In situ regeneration of the efficiency of activated carbon filters for trapping radioactive iodine. 4,518,562, Cl. 376-313.000.
deKok, Peter T.; and Phildius, John, to Gran-Quartz Trading, Inc. Removable mount for cutting means. 4,517,954, Cl. 125-15.000.
de Larosiere, Pierre J. Multi-unit tear-away container carrier. 4,518,081, Cl. 206-158.000.
Delony, Timothy E.; and Chu, Daniel Y. M., to Bio-Rad Laboratories, Inc. End clamp for gel slab plate assembly. 4,518,476, Cl. 204-299.00R.
Deluxe Innovations, Inc.: *See—*
Petricka, Ronald E., 4,517,699, Cl. 15-104.040.
DeMarco, Joseph M.: *See—*
Fechalos, William A.; and DeMarco, Joseph M., 4,519,072, Cl. 370-110.100.
Denis, Philippe V., to Staar S. A. Cleaning mode for discs or records. 4,519,059, Cl. 369-74.000.
Denning, Barry K.; and Ziegler, Duane H., to Deere & Company. Grain loss monitor sensor mounting arrangement for a combine. 4,517,792, Cl. 56-10.200.
Dennison Manufacturing Company: *See—*
Fotland, Richard A.; and Beaudet, Leo A., 4,518,468, Cl. 204-38.300.
Dentsply Research & Development Corp.: *See—*
Green, Russell D., 4,518,356, Cl. 433-102.000.
Deraedt, Roger: *See—*
Allais, Andre ; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,518,775, Cl. 544-92.000.
Dernedde, Robert; Franke, Hans-Joachim; and Havekost, Peter, to Klein, Schanzlin & Becker Aktiengesellschaft. Centrifugal pump. 4,518,311, Cl. 415-102.000.
DeSoto, Inc.: *See—*
Sekmakas, Kazys; Shah, Raj; Lewarchik, Ronald J.; and Murray, Kevin P., 4,518,746, Cl. 525-443.000.
Devico, Michael J.; and Hillman, Gary, to Machine Technology, Inc. Splash retarder. 4,517,752, Cl. 34-58.000.
Dewilde, Francois: *See—*
Rouy, Noel; and Dewilde, Francois, 4,518,781, Cl. 548-221.000.
Dewson, Frederick J. Mine ventilation door. 4,517,767, Cl. 49-464.000.
Dexter, Robin W.: *See—*
Kaufman, Ernest D.; and Dexter, Robin W., 4,518,511, Cl. 252-8.55B.
Dhabhar, Dadi J.; and Schmidt, Nicholas F., to Richardson-Vicks Inc. Hydrophilic denture adhesive. 4,518,721, Cl. 523-120.000.
Diasonics, Inc.: *See—*
Teslawski, Georg; and Corl, Paul D., 4,517,985, Cl. 128-660.000.
Diaz, Zaida, to Shell Oil Company. H_2S Removal from gas streams. 4,518,576, Cl. 423-573.00R.
DiBianca, Frank A.: *See—*
Cusano, Dominic A.; Greskovich, Charles D.; and DiBianca, Frank A., 4,518,545, Cl. 264-1.200.
Greskovich, Charles D.; Cusano, Dominic A.; and DiBianca, Frank A., 4,518,546, Cl. 264-1.200.

Dickakian, Ghazi, to Du Pont de Nemours, E. I., and Company. Pitch for direct spinning into carbon fibers derived from a coal distillate feedstock. 4,518,482, Cl. 208-22.000.
Dickakian, Ghazi, to Du Pont de Nemours, E. I., and Company. Aromatic pitch from asphaltene fractions. 4,518,483, Cl. 208-44.000.
Dielhof, Pieter B., to U.S. Philips Corporation. Preamplifier. 4,518,923, Cl. 330-9.000.
Diepeveen, Neal, to Magnavox Government and Industrial Electronics Co. Stepped polygon scan mirror. 4,518,218, Cl. 350-6.800.
Diesel Kiki Co., Ltd.: *See—*
Hirano, Yutaka, 4,517,831, Cl. 73-116.000.
DiFonzo, Anthony E.: *See—*
Swis, Philip E.; and DiFonzo, Anthony E., 4,518,268, Cl. 374-144.000.
Diggle, Edmund A., Jr.; and Cecere, Andrew P., to Samcoe Holding Corporation. Method for automatically detecting and orienting the edge of a tubular knitted fabric. 4,517,712, Cl. 26-51.400.
Digital Equipment Corporation: *See—*
Olsen, Richard E.; and Baker, Dwight C., 4,519,028, Cl. 364-200.000.
Dill, M. Reese, Jr. Article separator for materials handling. 4,518,151, Cl. 254-93.0HP.
Director-General of the Agency of Industrial Science and Technology: *See—*
Yoshida, Hisayoshi; Ogawa, Ichitaro; Hagio, Tsuyoshi; Kobayashi, Kazuo; and Yamamoto, Takayoshi, 4,518,702, Cl. 501-90.000.
Discovision Associates: *See—*
Wilkinson, Richard L.; and Giddings, Gary M., 4,519,004, Cl. 358-342.000.
Di Stefano, Giovanni: *See—*
Govoni, Gabriele; Corazzari, Canzio; Di Stefano, Giovanni; and Loconsolo, Mauro, 4,518,750, Cl. 526-68.000.
Distel, Manfred: *See—*
Scheurenbrand, Dieter; Stotz, Manfred; Distel, Manfred; and Kleinschmit, Einhard, 4,518,091, Cl. 220-5.00A.
Disteldorf, Josef; and Flakus, Werner, to Chemische Werke Huls Aktiengesellshcaft. Moisture-hardening varnishes with an isocyanate resin base. 4,518,740, Cl. 524-783.000.
Ditter, Stephen D.: *See—*
Pirkey, Robert J.; and Ditter, Stephen D., 4,517,942, Cl. 123-376.000.
Dituri, Angelo: *See—*
LiDonnici, Kenneth; and Dituri, Angelo, 4,518,233, Cl. 353-87.000.
Dr. Johannes Heidenhain GmbH: *See—*
Ernst, Alfons, 4,517,742, Cl. 33-125.00C.
Dr. Karl Thomae GmbH: *See—*
Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, 4,518,597, Cl. 514-228.000.
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,518,596, Cl. 514-232.000.
Dohi, Takashi: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,517,909, Cl. 112-275.000.
Donaldson, Charles W., to General Electric Company. Optical inspection system and method. 4,518,257, Cl. 356-375.000.
Dontscheff, Helmut, to Boeing Company, The. Controlled depth cutting method and apparatus. 4,517,872, Cl. 85-880.000.
Doppelfeld, Ille-Stephanie: *See—*
Biedermann, Jurgen; Prop, Gerrit; and Doppelfeld, Ille-Stephanie, 4,518,783, Cl. 548-353.000.
Dor Seal Limited: *See—*
Drennan, Frank E., 4,518,446, Cl. 156-63.000.
Dorn, Alfred, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. System for detecting the position of a sheet on its support. 4,518,862, Cl. 250-561.000.
Dorn, Peter: *See—*
Sung, Rodney L.; Kaufman, Benjamin J.; and Dorn, Peter, 4,518,782, Cl. 548-353.000.
Dorre, Erhard: *See—*
Brinkmann, Egon; Putenat, Mandred; and Dorre, Erhard, 4,518,357, Cl. 433-173.000.
Dorsch, Dieter, to Grittmann, Gunter. Device for the dosed diffusion of gases in liquids. 4,518,543, Cl. 261-64.00B.
Dorst Maschinen-und Anlagenbau Otto Dorst und Dipl.-Ing. Walter Schlegel & Co.: *See—*
Suffa, Hilmar, 4,518,341, Cl. 425-405.00H.
Dossekker, Bruno, to Sodecom SA. Reed mouthpiece for musical wind instrument. 4,517,875, Cl. 84-383.00R.
Dover Corporation: *See—*
Greenburg, Jimmy L., 4,518,150, Cl. 251-306.000.
Dow Chemical Company, The: *See—*
Barker, Michael, 4,517,776, Cl. 52-90.000.
Crump, Druce K.; and Wilson, David A., 4,518,777, Cl. 544-337.000.
Johnson, Oscar; and Luecke, Robert A., 4,518,681, Cl. 430-532.000.
Rigterink, Raymond H.; and Bisabri-Ershadi, Barat, 4,518,804, Cl. 564-442.000.
Wolcott, Richard A., 4,518,504, Cl. 210-670.000.
Dow Corning Corporation: *See—*
Antonen, Robert C., 4,518,631, Cl. 427-96.000.
Lee, Chi-Long; and Rabe, James A., 4,518,716, Cl. 521-82.000.
Dow Corning Limited: *See—*
Treadgold, Richard C., 4,518,787, Cl. 556-442.000.
Dowty Hydraulic Units Limited: *See—*
Parker, Dennis W., 4,518,937, Cl. 335-229.000.
Doyle, Richard C.; and Rivera, Lester, to Leviton Manufacturing Company, Inc. Remote control system. 4,518,945, Cl. 340-310.00A.
Drabek, Jozef: *See—*
Kristiansen, Odd; and Drabek, Jozef, 4,518,601, Cl. 514-340.000.
Drackett Company, The: *See—*
Shaer, Elias H., 4,518,694, Cl. 435-188.000.
Drake, Cyril F.; Maries, Alan; and Bateson, Paul F., to ITT Industries, Inc. Corrosion inhibiting paint composition. 4,518,429, Cl. 106-14.390.
Draney, Daniel R.: *See—*
Wang, David W.; and Draney, Daniel R., 4,518,786, Cl. 549-552.000.
Drennan, Frank E., to Dor Seal Limited. Method of making bevelled glass window. 4,518,446, Cl. 156-63.000.
Dresser Industries, Inc.: *See—*
Kerzner, Mark G., 4,517,835, Cl. 73-152.000.
Drew, Louis E.: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.
Drexler, Leonard H.; Flynn, Richard M.; Fox, George R.; Illium, Herbert C., Jr.; and O'Connor, Robert J., to AT&T Bell Laboratories. Armored telephone cord with a longitudinal strength member. 4,518,830, Cl. 179-103.000.
Droulon, Georges: *See—*
Cousin, Maurice; Pipon, Yves; Droulon, Georges; and Lebrun, Jean, 4,518,182, Cl. 292-201.000.
Druke, Michael B.: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.
Du Pont Canada Inc.: *See—*
Fletcher, Eldon L., 4,518,280, Cl. 405-17.000.
Du Bois, Jerry M.; and Spanjer, Keith G., to Motorola, Inc. High current package with multi-level leads. 4,518,982, Cl. 357-74.000.
Ducarre, Alphonse: *See—*
Guittard, Pierre; Jarry, Philippe; Ducarre, Alphonse; and Haji, Lazhar, 4,518,980, Cl. 357-30.000.
Dudding, Frank. Wet blasting apparatus. 4,517,774, Cl. 51-436.000.
Duerig, Thomas: *See—*
Albrecht, Joachim; and Duerig, Thomas, 4,518,444, Cl. 148-402.000.
Duhon, Dane J. Cymbal support. 4,517,876, Cl. 84-422.00R.
Duke, Phillip W.: *See—*
Cox, Michael; Gray, Michael J.; and Duke, Phillip W., 4,518,420, Cl. 75-26.000.
Dumke, William P.; and Woodall, Jerry M. P., to International Business Machines Corporation. Semiconductor transistor with graded base and collector. 4,518,979, Cl. 357-30.000.
Dunn, George T.: *See—*
Kutnyak, Thomas A.; Dunn, George T.; and Guiles, Chester L., 4,518,018, Cl. 138-130.000.
Dunsworth, Charles L., to Metalines, Inc. Fire resistant expansion joint cover. 4,517,779, Cl. 52-232.000.
Du Pont de Nemours, E. I., and Company: *See—*
Cook, William A.; Hoffman, Gary R.; and Pulford, William M., 4,518,958, Cl. 340-679.000.
Dickakian, Ghazi, 4,518,482, Cl. 208-22.000.
Dickakian, Ghazi, 4,518,483, Cl. 208-44.000.
Gessell, Donald E., 4,518,706, Cl. 502-104.000.
Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., 4,518,650, Cl. 428-286.000.
Heiart, Robert B.; and Cohen, Abraham B., 4,518,667, Cl. 430-22.000.
Hill, Broadus E., Jr., 4,518,133, Cl. 242-165.000.
Phillips, William L., Jr., 4,518,440, Cl. 148-6.14R.
Quinn, John A.; and O'Neil, James W., 4,518,666, Cl. 430-7.000.
Rucker, Klaus G., 4,517,895, Cl. 102-202.200.
Seiffert, Edward J., 4,518,343, Cl. 425-466.000.
Wolfe, William R., Jr., 4,518,651, Cl. 428-308.800.
Dupro AG: *See—*
Hug, Nikolaus, 4,517,705, Cl. 15-351.000.
Dureux, Pierre J. C., to U.S. Philips Corporation. Apparatus for storing and processing analogue signals to be displayed as an oscilloscopic image and oscilloscope comprising such apparatus. 4,518,991, Cl. 358-93.000.
Dussy, Paul: *See—*
Mollet, Hans; and Dussy, Paul, 4,518,392, Cl. 8-609.000.
Dutko, Wolodymyr, to A. B. Dick Company. Sealing means. 4,518,167, Cl. 277-81.00R.
Duval Corporation: *See—*
Fletcher, Archibald W.; and Hunt, Charles d'A., 4,518,418, Cl. 75-10.00R.
Duvier, Henry A., Jr. Light weight insulating building blocks and method of making same. 4,518,431, Cl. 106-97.000.
Duwel, Edward C.: *See—*
Abellana, Jovito N.; and Duwel, Edward C., 4,519,048, Cl. 364-900.000.
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., to Allied Corporation. Method for grounding and terminating a cable. 4,517,740, Cl. 29-857.000.
Dye, Donald D. Idler pulley and method of mounting a precision bearing. 4,518,372, Cl. 474-94.000.

Dykema, Dennis A.: *See—*
Copas, Gordon A.; Wilke, Howard C.; and Dykema, Dennis A., 4,518,021, Cl. 141-172.000.
Dynamics Corporation of America: *See—*
Brym, Stanley J.; and Valbona, Bruno M., 4,518,263, Cl. 366-206.000.
E. Beaudrey & Cie: *See—*
Jackson, Philip, 4,518,494, Cl. 210-158.000.
E. Blum GmbH & Co.: *See—*
Geschka, Hugo-Werner, 4,518,942, Cl. 336-178.000.
E.C.H. Will (GmbH & Co.): *See—*
Aykut, Kurt; and Reissmann, Klaus, 4,518,075, Cl. 198-460.000.
E. R. Squibb & Sons: *See—*
Jensen, Ole R., 4,518,388, Cl. 604-332.000.
E-Systems, Inc.: *See—*
Poston, Billy R.; and Andren, Carl F., 4,518,947, Cl. 340-347.0DD.
Easley, Thomas E. Method and apparatus for decoding wafer combination locks. 4,517,746, Cl. 33-549.000.
Eastman Kodak Company: *See—*
Barbee, Robert B.; and Davis, Burns, 4,518,763, Cl. 528-173.000.
Dahneke, Barton E.; and Marchant, Alan B., 4,519,061, Cl. 369-109.000.
Gustafson, Bruce L., 4,518,714, Cl. 518-721.000.
Rubin, Jacob D., 4,517,734, Cl. 29-577.00C.
Spitzner, Jerome G.; and Stoudt, Michael D., 4,518,246, Cl. 355-4.000.
Wang, Richard H. S.; and Myers, Garry L., 4,518,808, Cl. 568-765.000.
Ward, John W., 4,518,259, Cl. 356-446.000.
Wu, Stephen H.; and Dannelly, Clarence C., 4,518,769, Cl. 528-486.000.
Ebato, Noboru: *See—*
Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, 4,518,665, Cl. 429-153.000.
Ebel, Mark S.: *See—*
Priel, Ury; Yaron, Giora; and Ebel, Mark S., 4,519,076, Cl. 371-21.000.
Eberhart, Gerald E.; and Sauls, Goah T., to Olin Corporation. Primer pocketing method for brass cartridge cases. 4,517,716, Cl. 29-1.300.
Ebisu, Tomio: *See—*
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,518,556, Cl. 264-295.000.
Eby, Randall W.: *See—*
Lamp'l, Thomas A.; and Eby, Randall W., 4,517,698, Cl. 14-72.500.
Eckels, Phillip W., to Electric Power Research Institute, Inc. Superconducting rotor with vapor cooled cryogenic leads having a regenerator portion. 4,518,885, Cl. 310-52.000.
Eckhardt, Heinz; Halbritter, Klaus; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Malondialdehyde tetraalkylacetals and their preparation. 4,518,785, Cl. 549-453.000.
Economics Laboratory, Inc.: *See—*
Freis, Richard E.; Maloney, James E.; and Oakes, Thomas R., 4,518,459, Cl. 162-5.000.
Economy Engineering, Inc.: *See—*
Wehmeyer, Donald T.; and Barnhart, Ronald W., 4,518,061, Cl. 187-18.000.
Ederer Incorporated: *See—*
West, Harold H.; Johnson, Roger A.; and Clark, Charles W., Jr., 4,518,153, Cl. 254-274.000.
Edwards, John V.: *See—*
Steer, Peter L.; and Edwards, John V., 4,518,389, Cl. 604-339.000.
Ege, Sigmund: *See—*
Pedersen, Jack R.; and Ege, Sigmund, 4,518,445, Cl. 156-49.000.
Eggebrecht, John L.; Rogers, Harold D.; and Yorozu, Arthur S., to Boeing Company, The. Air conditioning system and air mixing/water separation apparatus therein. 4,517,813, Cl. 62-284.000.
Ehrlich, Conrad P.; and Ehrlich, Sandra L. Stove safety guard. 4,517,955, Cl. 126-211.000.
Ehrlich, Sandra L.: *See—*
Ehrlich, Conrad P.; and Ehrlich, Sandra L., 4,517,955, Cl. 126-211.000.
Eichbauer, George N.; and LeBlanc, Beth A., to Mobil Oil Corporation. One-sided cling stretch wrap. 4,518,654, Cl. 428-331.000.
Eigen, Edward; Twersky, David Z.; and Brachman, Dina I., to Colgate-Palmolive Company. Non-antimicrobial deodorant cleansing composition. 4,518,517, Cl. 252-107.000.
Eldridge, Charles W., to Herrin, Melvin B. Apparatus and method for joining individual blanks. 4,518,379, Cl. 493-334.000.
Electric Power Research Institute, Inc.: *See—*
Eckels, Phillip W., 4,518,885, Cl. 310-52.000.
Park, Dong-Sil; and Zabala, Robert J., 4,518,624, Cl. 427-34.000.
Elevator GmbH: *See—*
Makinen, Heimo; and Suur-Askola, Seppo, 4,518,062, Cl. 187-29.00R.
Eli Lilly and Company: *See—*
Cooper, Robin D. G., 4,518,531, Cl. 260-245.400.
Elias, Charles R. Adjustable speed drive utilizing radially movable hollow pistons which act on a cam surface. 4,518,069, Cl. 192-60.000.
Elkhart Machine & Tool Co., Inc.: *See—*
Barfell, Don L., 4,518,139, Cl. 248-418.000.
Ellenbaum, Frank H.; and Ciesco, Richard, to International Minerals & Chemical Corp. Agglomerates containing olivine. 4,518,428, Cl. 75-257.000.
Elliott, Donald C.: *See—*
Breeze, Gerald D.; and Elliott, Donald C., 4,519,013, Cl. 361-384.000.
Elliott, Richard J., to Charlton Associates. Rigid computer memory disc manufacturing method. 4,517,772, Cl. 51-281.0SF.
Ellison, Arthur E. Tissue retractor. 4,517,965, Cl. 128-20.000.
Ellman, Alan G.: *See—*
Garito, Jon C.; and Ellman, Alan G., 4,517,975, Cl. 128-303.130.
El-Nashar, Ibrahim: *See—*
Mayer, Andreas; El-Nashar, Ibrahim; and Spinnler, Fritz, 4,517,950, Cl. 123-559.000.
Elopak Limited: *See—*
Skinner, Edward A., 4,518,377, Cl. 493-58.000.
Elsaesser, Dieter; von der Heide, Johann; Muller, Rolf; and Papst, Georg, to Papst-Motoren GmbH & Co. KG. Driving mechanism for magnetic hard disc memories. 4,519,010, Cl. 360-97.000.
Elson, John P.; Muir, Earl B.; and Riffe, Delmar R., to Copeland Corporation. Hermetic refrigeration compressor. 4,518,323, Cl. 417-312.000.
Eltac Nogler & Daum KG: *See—*
Oppitz, Hans, 4,518,851, Cl. 219-549.000.
Eltech Systems Corporation: *See—*
Solomon, Frank; and Grun, Charles, 4,518,705, Cl. 502-101.000.
ELXSI: *See—*
Smith, Gehrard J.; and Holly, Kenneth, 4,519,034, Cl. 364-200.000.
Emerson Electric Co.: *See—*
Mueller, Carl J.; and Haefner, John S., 4,518,345, Cl. 431-24.000.
Emhart Industries, Inc.: *See—*
Braithwaite, David, 4,518,412, Cl. 65-244.000.
EMI Limited: *See—*
Green, Ian M., 4,519,036, Cl. 364-200.000.
Emkay Manufacturing Co.: *See—*
Kaplan, Alan, 4,517,918, Cl. 118-723.000.
Emonts, Johannes, to Bayerische Motoren Werke AG. Supercharging pressure control device for turbocharged internal combustion engines. 4,517,801, Cl. 60-602.000.
Empire Abrasive Equipment Corporation: *See—*
Keltz, Douglas; and Heaton, Robert, 4,518,145, Cl. 251-5.000.
Endelson, Robert A., to Microtech Associates. Flat cigarette lighter. 4,517,994, Cl. 131-329.000.
Endo, Takafumi, to Mitsubishi Denki Kabushiki Kaisha. Thermal head. 4,518,971, Cl. 346-76.0PH.
Enercorp Management, Ltd.: *See—*
Cole, Charles; and Cole, Wayne, 4,517,826, Cl. 73-40.000.
Energy Development Associates, Inc.: *See—*
Kodali, Satyanarayana; Singh, Bhim S.; Whittlesey, Curtis C.; and Henriksen, Gary L., 4,518,663, Cl. 429-18.000.
Whittlesey, Curtis C.; Henriksen, Gary L.; Keryluk, Walter B.; and Wolff, Merle T., 4,518,664, Cl. 429-38.000.
Engel, Thomas H. Telescoping support apparatus for containers. 4,517,775, Cl. 52-40.000.
Engelhardt, Friedrich; and Greiner, Ulrich, to Cassella Aktiengesellschaft. Metal chelates of water soluble copolymers. 4,518,745, Cl. 525-326.600.
English Electric Valve Company, Ltd.: *See—*
Pickering, Alan H., 4,518,932, Cl. 331-90.000.
Engwert, Gerald H., to Fresh Tech, Inc. Door assembly. 4,518,095, Cl. 220-260.000.
Enichimica Secondaria, S.p.A.: *See—*
Greco, Alberto; and Bertolini, Guglielmo, 4,518,766, Cl. 528-370.000.
Eoga, Anthony B. J., to Warner-Lambert Company. Cleaner having improved dissolution time and clarity and improved of preparation. 4,518,520, Cl. 252-174.230.
Epson Corporation: *See—*
Akazawa, Hiroyuki, 4,518,269, Cl. 400-124.000.
Erickson, Lawrence R.: *See—*
Beversdorf, Wallace D.; Erickson, Lawrence R.; and Grant, Ian, 4,517,763, Cl. 47-58.000.
Ernest, Ivan: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,518,533, Cl. 260-245.400.
Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Apparatus and method for correcting errors in a length or angle measuring system. 4,517,742, Cl. 33-125.00C.
Ernst, Hansgeorg; Vogel, Friedrich; and Paust, Joachim, to BASF Aktiengesellschaft. Optically active units for the synthesis of the side chain of (R,R,R)-α-tocopherol and their preparation. 4,518,813, Cl. 570-241.000.
Essilor International Cie Generale d'Optique: *See—*
Tagnon, Luc, 4,517,980, Cl. 128-395.000.
Establissements Caillau: *See—*
Calmettes, Lionel; and Andre, Michel, 4,517,708, Cl. 24-20.0CW.
Ethyl Corporation: *See—*
Francis, Michael A., 4,518,643, Cl. 428-131.000.
Etienne LaCroix - Tous Artifices: *See—*
Billard, Alain A.; and Santalucia, Andre R., 4,517,896, Cl. 102-342.000.
Eue, Ludwig: *See—*
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,518,416, Cl. 71-94.000.
Evans, John M. Instrument and method for epidural and spinal anaesthesia. 4,518,383, Cl. 604-51.000.
Evers, Walter: *See—*
Hoffmann, Peter; and Evers, Walter, 4,518,006, Cl. 137-218.000.
Explosive Fabricators, Inc.: *See—*
Hardwick, Roy, 4,518,111, Cl. 228-107.000.

Exxon Production Research Co.: *See—*
Lim, Git B.; and Konak, A. Riza, 4,518,505, Cl. 210-712.000.

Exxon Research & Engineering Co.: *See—*
Johnson, Jack W.; and Jacobson, Allan J., 4,518,534, Cl. 260-429.00R.
Kramer, George M.; Weissman, Walter; Brown, Herbert C.; and Pettit, Rowland, deceased, 4,518,798, Cl. 560-233.000.
Marin, Pierre D., 4,518,481, Cl. 208-19.000.
Osman, Robert M.; and Shulik, Larry J., 4,518,574, Cl. 423-360.000.
Schulz, Donald N.; Kitano, Kissho; Burkhardt, Terry J.; and Langer, Arthur W., 4,518,757, Cl. 526-329.000.
Soled, Stuart L.; and Fiato, Rocco A., 4,518,707, Cl. 502-174.000.

Faber, Wolfgang: *See—*
Gillhaus, Horst; Hegewaldt, Fritz; Faber, Wolfgang; Baer, Jurgen; and Toplak, Ernst, 4,518,352, Cl. 432-199.000.

Faessel, Andre ; Mennel, Gabriel B.; and Michaux, Jacques M., to Sacilor. Shaped blanks, methods for their production and improvements to the universal rolling of rails. 4,518,660, Cl. 428-577.000.

Fairchild Camera & Instrument Corporation: *See—*
Khan, Mahboob; and Trieu, Tom. 4,517,731, Cl. 29-571.000.

Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., to Honeywell Inc. Real time automated inspection. 4,519,041, Cl. 364-552.000.

Fanuc Ltd.: *See—*
Obara, Haruki, 4,518,842, Cl. 219-69.00W.

Fareri, Elizabeth L.: *See—*
Templin, Philip R.; and Fareri, Elizabeth L., 4,518,394, Cl. 44-38.000.

Faris, Alan E., to TRW Inc. Temperature stabilizer. 4,518,944, Cl. 338-22.00R.

Faschingleitner, Leopold: *See—*
Krempl, Peter W.; Schindler, Wolfgang; and Faschingleitner, Leopold, 4,518,861, Cl. 250-339.000.

Faure, Raymond, to Compagnie Generale des Etablissements Michelin. Apparatus for measuring forces. 4,517,848, Cl. 73-862.520.

Fayette, Brad K., to GTE Communication Systems Corporation. Sense point monitor circuit. 4,519,025, Cl. 364-141.000.

Febopal Limited: *See—*
Levchenko, Alec; and Booth, Michael R., 4,517,883, Cl. 98-115.300.

Fechalos, William A.; and DeMarco, Joseph M., to Rockwell International Corporation. Answer supervision system. 4,519,072, Cl. 370-110.100.

Fecht, Hans-Rudolf: *See—*
Hinn, Werner; and Fecht, Hans-Rudolf, 4,518,986, Cl. 358-65.000.

Fecik, Michael T.: *See—*
Frank, Robert G.; Fecik, Michael T.; and Claassen, George R., 4,518,411, Cl. 65-106.000.

Federico, Joseph; and Waaben, Sigurd G., to AT&T Bell Laboratories. Two-terminal transistor rectifier circuit arrangement. 4,519,024, Cl. 363-127.000.

Fedlmuhle Aktiengesellschaft: *See—*
Brinkmann, Egon; Putenat, Mandred; and Dorre, Erhard, 4,518,357, Cl. 433-173.000.

Feisel, Armin; and Wirz, Walter, to Reishauer AG. Workpiece pallet tray with plastic insert holders. 4,518,076, Cl. 198-648.000.

Fender, C. Leo. String lock mechanism for musical instruments. 4,517,874, Cl. 84-314.00N.

Fenner, James A., to Boeing Company, The. Test stop assembly for oxygen box door. 4,518,179, Cl. 292-166.000.

Fenster, Abraham S.; and Buechler, Lawrence W., to Milwaukee Valve Company. Quarter turn valve including supervisory switch assembly. 4,518,008, Cl. 137-552.000.

Fermaglich, Saul, to Intercontinental Water Corp. Water purification method and device. 4,518,503, Cl. 210-662.000.

Ferranto, John J. Drawing board assembly. 4,518,140, Cl. 248-456.000.

Ferrio, Linda J.: *See—*
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,519,045, Cl. 364-709.000.

Fiat Auto S.p.A.: *See—*
Burgio di Aragona, Antonio, 4,517,936, Cl. 123-90.500.

Fiato, Rocco A.: *See—*
Soled, Stuart L.; and Fiato, Rocco A., 4,518,707, Cl. 502-174.000.

Figueredo, Fernando F.: *See—*
Valdes, Guillermo A.; Pacheco, Benjamin G.; Figueredo, Fernando F.; and Framil, Armando, 4,518,022, Cl. 30-166.00R.

Finamore, Paul V. Hairpiece and method of making same. 4,517,999, Cl. 132-53.000.

Finch, Robert E., Jr. Method and apparatus for applying a therapeutic article to a body. 4,517,972, Cl. 128-156.000.

Fischer, Larry E.; Sridhar, Bettadapur N.; and Bean, Jackie E., to General Electric Company. Control of nuclear reactors. 4,518,559, Cl. 376-230.000.

Fischer, William H., to Presray Corporation, The. Inflatable plug. 4,518,015, Cl. 138-93.000.

Fish, Richard H., to United States of America, Energy. Removal of arsenic compounds from petroliferous liquids. 4,518,490, Cl. 208-251.00R.

Fisher, Robert A.; and Peters, David L., to Singer Company, The. Device to compensate for distortion in target location in a visual system. 4,518,360, Cl. 434-20.000.

Fisons plc: *See—*
Bantick, John R.; Fuher, John; Hardern, David N.; and Lee, Thomas B., 4,518,612, Cl. 514-457.000.

Fister, Louis P.; Pearson, Herby O.; and Fitch, Lawrence H., to Moog Automotive, Inc. Engine torgue resisting strut and vibration damper. 4,518,058, Cl. 180-300.000.

Fitch, Lawrence H.: *See—*
Fister, Louis P.; Pearson, Herby O.; and Fitch, Lawrence H., 4,518,058, Cl. 180-300.000.

Flakus, Werner: *See—*
Disteldorf, Josef; and Flakus, Werner, 4,518,740, Cl. 524-783.000.

Fleischer, Lane G. Combination vending and slot machine. 4,518,098, Cl. 221-15.000.

Fletcher, Archibald W.; and Hunt, Charles d'A., to Duval Corporation. Electron beam refinement of metals, particularly copper. 4,518,418, Cl. 75-10.00R.

Fletcher, Eldon L., to Du Pont Canada Inc. Aquatic weed barrier. 4,518,280, Cl. 405-17.000.

Flowmetering Instruments Limited: *See—*
Harrison, Derek N.; and Purling, Trevor C., 4,517,846, Cl. 73-861.120.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-vinyl and cyclopropyl substituted prostanoic acids and congeners. 4,518,790, Cl. 560-118.000.

Flynn, Richard M.: *See—*
Drexler, Leonard H.; Flynn, Richard M.; Fox, George R.; Illium, Herbert C., Jr.; and O'Connor, Robert J., 4,518,830, Cl. 179-103.000.

FMC Corporation: *See—*
McGinley, Emanuel J.; and Tuason, Domingo C., Jr., 4,518,433, Cl. 106-180.000.

Focke & Co.: *See—*
Focke, Heinz, 4,517,791, Cl. 53-566.000.

Focke, Heinz, to Focke & Co. Apparatus for grouping cigarette cartons and loading containers therewith. 4,517,791, Cl. 53-566.000.

Foley, James; Habbal, Fawwaz; and Leahy, John, to Polaroid Corporation. Apparatus and method for disorienting magnetic particles in magnetic recording media. 4,518,627, Cl. 427-48.000.

Foley, Peter N.; and Turbard, Alan M., to Borg-Warner Limited. Environmental control system. 4,517,810, Cl. 62-186.000.

Folmsbee, Alan C., to Intel Corporation. Radiation shield for an integrated circuit memory with redundant elements. 4,519,050, Cl. 365-53.000.

Forchetti, A. Patrick. Hair implant structure. 4,517,997, Cl. 132-5.000.

Ford Aerospace & Communications Corporation: *See—*
Westerman, Charles W., 4,518,967, Cl. 343-771.000.

Ford Motor Company: *See—*
Beckmann, Norbert, 4,517,710, Cl. 24-453.000.
Holland, Scott B.; Greene, Edward S.; Kowalski, David A.; and Strachan, Bruce D., 4,517,832, Cl. 73-118.000.
Stutenkemper, Paul; Rest, Heinz; and Kloppe, Herbert, 4,518,138, Cl. 248-73.000.

Forrest, Garland F., Jr.: *See—*
Kirkham, Robert L.; and Forrest, Garland F., Jr., 4,518,194, Cl. 296-100.000.

Forster, Alfred; Geyer, Willi; and Kober, Leo, to Daimler-Benz AG. Motor vehicle with integrally formed hydraulic and/or air lines. 4,518,196, Cl. 296-204.000.

Forster, Denis; and Schaefer, George F., to Monsanto Company. Preparation of pentyl nonanols. 4,518,809, Cl. 568-840.000.

Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Certain trimethyl silyl-lower-alkyl esters of pyridyloxy-phenoxy-lower alkanoic acids, compositions containing same and herbicidal method of use. 4,518,416, Cl. 71-94.000.

Fory, Werner: *See—*
Meyer, Willy; Fory, Werner; and Topfl, Werner, 4,518,776, Cl. 544-206.000.

Fotland, Richard A.; and Beaudet, Leo A., to Dennison Manufacturing Company. Process for making electrostatic imaging surface. 4,518,468, Cl. 204-38.300.

Foulard, Jean; Rimbert, Jean F.; Vernet, Gilles; and Goursat, Albert-Gilbert, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for producing solid metal particles from a bath of metal. 4,518,421, Cl. 75-49.000.

Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See—*
Masumoto, Hakaru; and Nakamura, Naoji, 4,518,439, Cl. 148-3.000.

Fox, George R.: *See—*
Drexler, Leonard H.; Flynn, Richard M.; Fox, George R.; Illium, Herbert C., Jr.; and O'Connor, Robert J., 4,518,830, Cl. 179-103.000.

Foxboro Company, The: *See—*
Miller, Richard W., 4,517,847, Cl. 73-861.740.

Framatome et Cie: *See—*
Hista, Jean C., 4,518,561, Cl. 376-293.000.

Framil, Armando: *See—*
Valdes, Guillermo A.; Pacheco, Benjamin G.; Figueredo, Fernando F.; and Framil, Armando, 4,518,022, Cl. 30-166.00R.

Francis, Michael A., to Ethyl Corporation. Plastic film. 4,518,643, Cl. 428-131.000.

Francois, Fort. Image conductors with a reticulated screen. 4,518,221, Cl. 350-96.260.

Frank, Robert G.; Fecik, Michael T.; and Claassen, George R., to PPG Industries, Inc. Shaping glass sheets to complicated shapes using special lift mold. 4,518,411, Cl. 65-106.000.

Franke, Hans-Joachim: *See—*
Dernedde, Robert; Franke, Hans-Joachim; and Havekost, Peter, 4,518,311, Cl. 415-102.000.

Franke, John M., Sr., to Singer Company, The. Driven work folder. 4,517,907, Cl. 112-121.150.

Fratta, Peter J. Cylindrical pin wrench. 4,517,864, Cl. 81-436.000.

Fredrickson, Lee R.; Cascini, Michael R.; and Mosier, Donald E., to Rockwell International Corporation. Multicolored liquid crystal displays utilizing photoluminescent transflectors and mask. 4,518,225, Cl. 350-338.000.

Freeburg, Thomas A.: *See—*
Krebs, Jay; and Freeburg, Thomas A., 4,519,068, Cl. 370-82.000.

Freeouf, John L.; and Jackson, Thomas N., to International Business Machines Corporation. Heater assembly for molecular beam epitaxy furnace. 4,518,846, Cl. 219-271.000.

Freese, Uwe E.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,517,970, Cl. 128-131.000.

Freis, Richard E.; Maloney, James E.; and Oakes, Thomas R., to Economics Laboratory, Inc. Methods of deinking secondary fibers. 4,518,459, Cl. 162-5.000.

French Oil Mill Machinery Co., The: *See—*
Tribbett, Murray C., 4,518,337, Cl. 425-167.000.

Frenco Verzahnungslehren GmbH: *See—*
Och, Rudolf, 4,517,743, Cl. 33-147.00M.

Frentzel, Richard L., to Celotex Corporation, The. Metal catalyzed preparation of polyoxyalkylene surfactants for phenolic foam stabilization. 4,518,719, Cl. 521-136.000.

Fres-co System USA, Inc.: *See—*
Goglio, Luigi, 4,518,087, Cl. 206-632.000.

Fresh Tech, Inc.: *See—*
Engwert, Gerald H., 4,518,095, Cl. 220-260.000.

Frey, Thomas M.; and Kovnat, Larry A., to Xerox Corporation. Magnetographic carriage printer. 4,519,000, Cl. 358-301.000.

Frey-Wigger, Paul. Attachment for the booms of cranes or the like. 4,518,059, Cl. 182-2.000.

Frichmann, Albert; Sternisa, Danilo; Mermi, Kurt; and Kistner, Herbert, to Upat GmbH & Co. Anchoring bolt. 4,518,290, Cl. 411-30.000.

Friedli, Paul; Hinderling, Thomas; and Begle, Guntram, to Inventio AG. Set value transmitter for a drive regulation apparatus. 4,518,909, Cl. 318-566.000.

Friedrich, Douglas S., to Marconi Avionics Limited. Communication system providing amplifier gain by half-cycle carrier signal control. 4,519,067, Cl. 370-78.000.

Frigoscandia Contracting AB: *See—*
Rothstein, Sven O., 4,517,814, Cl. 62-374.000.

Frink, Richard C.: *See—*
Kaplan, Steven E.; and Frink, Richard C., 4,518,770, Cl. 528-487.000.

Frito-Lay, Inc.: *See—*
Ash, Robin T., 4,517,789, Cl. 53-545.000.
Kreager, William D., 4,517,787, Cl. 53-450.000.
Kreager, William D., 4,517,790, Cl. 53-552.000.

Frohberger, Paul-Ernst: *See—*
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,518,600, Cl. 514-256.000.

Frohlich, Jurg: *See—*
Richter, Roland; Muller, Hanns P.; Wagner, Kuno; Riberi, Bernd; and Frohlich, Jurg, 4,518,761, Cl. 528-67.000.

Frost, Charles B., to United States of America, Energy. Rigid zeolite containing polyurethane foams. 4,518,718, Cl. 521-122.000.

Frost, Richard B., to Unisearch Limited. Co-axial tube surgical infusion/suction cutter tip. 4,517,977, Cl. 128-305.000.

Fuchs, Otto, to Burroughs Corporation. Back-bar attachment and associated fixture. 4,518,940, Cl. 335-285.000.

Fuher, John: *See—*
Bantick, John R.; Fuher, John; Hardern, David N.; and Lee, Thomas B., 4,518,612, Cl. 514-457.000.

Fuji Electric Co., Ltd.: *See—*
Imose, Kazuo; Yamamuro, Kiyoshi; Takeuchi, Hironori; and Misawa, Takashi, 4,518,962, Cl. 340-870.280.

Fuji Heavy Industries Ltd.: *See—*
Watanabe, Masaru; Sakai, Toshihide; and Takase, Toshio, 4,517,882, Cl. 98-6.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Hara, Kazuo; and Abe, Kunihiro, 4,519,089, Cl. 377-16.000.

Fuji Photo Film Co., Ltd.: *See—*
Hirano, Tsumoru; Umemoto, Makoto; and Hirano, Mitsunori, 4,518,687, Cl. 430-548.000.
Inuiya, Masafumi, 4,518,864, Cl. 250-578.000.
Kato, Mikihiko; Komine, Shigeo; Kawamata, Toshio; Morita, Kazuhiko; and Sato, Tsunehiko, 4,518,626, Cl. 427-48.000.
Kobayashi, Hidetoshi; Takahashi, Toshiro; Hirano, Shigeo; Hirose, Takeshi; and Adachi, Keiichi, 4,518,682, Cl. 430-543.000.
Murakoshi, Makoto; and Ota, Takahiro, 4,517,976, Cl. 128-303.150.
Nakayama, Takao, 4,518,668, Cl. 430-49.000.
Noguchi, Yasuhiro; and Mihara, Yuji, 4,518,689, Cl. 430-574.000.
Ohtsuka, Shuichi, 4,518,252, Cl. 355-133.000.
Oishi, Kengo; and Suzuki, Osamu, 4,518,134, Cl. 242-199.000.
Okita, Tsutomu; and Naruo, Kyoichi, 4,518,656, Cl. 428-403.000.
Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,518,466, Cl. 204-28.000.
Takeda, Hideo; and Sato, Tsunehiko, 4,518,637, Cl. 427-359.000.
Yagihara, Morio; Ikegawa, Akihiko; Ono, Mitsunori; and Mihara, Yuji, 4,518,685, Cl. 430-505.000.
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,518,354, Cl. 430-527.000.

Fuji, Tatsuo, to Nippon Electric Co., Ltd. MNOS Type non-volatile memory device and method of manufacturing the same. 4,519,051, Cl. 365-184.000.

Fuji Xerox Co., Ltd.: *See—*
Hamano, Toshihisa, 4,517,733, Cl. 29-572.000.
Kurata, Masami; Saitoh, Hiroyuki; and Matsuda, Masakane, 4,518,999, Cl. 358-285.000.
Moriguchi, Haruhiko; and Inui, Toshiharu, 4,518,645, Cl. 428-212.000.
Saitoh, Hiroyuki; and Kurata, Masami, 4,518,987, Cl. 358-75.000.
Saitoh, Hiroyuki; and Kurata, Masami, 4,518,988, Cl. 358-75.000.
Wakatsuki, Susumu, 4,518,381, Cl. 493-444.000.

Fujieda, Mamoru: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Fujii, Akio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.

Fujimoto, Hirotsugu: *See—*
Takaku, Kazuo; Naruse, Akisuke; Fujimoto, Hirotsugu; and Kimura, Hiroshi, 4,518,560, Cl. 376-245.000.

Fujimoto, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for forming oblique groove in semiconductor device. 4,517,769, Cl. 51-105.00R.

Fujimura, Fumio; Satake, Toshimi; Iwaguro, Makoto; and Minami, Toshiaki, to Jujo Paper Co., Ltd. Heat-sensitive recording sheet. 4,518,977, Cl. 346-209.000.

Fujimura, Hajime; Hiramatsu, Yasuzo; Yamazaki, Tomio; Yamada, Shozo; and Honna, Takaji, to Taiho Pharmaceutical Company Limited. Piperazine derivative and analgesic composition containing the same. 4,518,712, Cl. 514-255.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, to Hitachi, Ltd.; and Showa Denko K.K. Sheet-shaped polymer secondary battery of layer built type. 4,518,665, Cl. 429-153.000.

Fujita, Mituo, to Kabushiki Kaisha Shinsei Industries. Manually-operated labeler. 4,518,454, Cl. 156-541.000.

Fujitsu Fanuc Limited: *See—*
Kawada, Shigeki; and Ishida, Hiroshi, 4,518,916, Cl. 324-173.000.
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,519,026, Cl. 364-167.000.

Fujitsu Limited: *See—*
Iwasaki, Tomonobu, 4,518,865, Cl. 307-200.00A.
Oshikawa, Yoshihiro, 4,517,732, Cl. 29-571.000.
Suzuki, Yasuo; Hirao, Hiroshi; and Nagasawa, Masanori, 4,518,873, Cl. 307-451.000.

Fujiwara, Michiaki: *See—*
Sakai, Shoji; Fujiwara, Michiaki; Kubota, Nobunori; and Noda, Koshi, 4,517,794, Cl. 57-304.000.

Fukami, Tadashi: *See—*
Tsurushima, Katsuaki; Furuya, Tsuneo; and Fukami, Tadashi, 4,519,058, Cl. 369-53.000.

Fukasawa, Hideki, to Sony Corporation. Signal processing circuits. 4,518,925, Cl. 330-51.000.

Fukuchi, Masakazu: *See—*
Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, 4,518,976, Cl. 346-153.100.

Fukui, Izumu: *See—*
Yano, Takeshi; Fukui, Izumu; Hamatsuki, Takeshige; Sato, Eiichi; and Inui, Osamu, 4,518,887, Cl. 310-328.000.

Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, to Olympus Optical Co., Ltd. Static induction transistor image sensor with noise reduction. 4,518,863, Cl. 250-578.000.

Fukuoka, Yoshitaka; and Komine, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for packaging electronic parts. 4,517,738, Cl. 29-840.000.

Fukushima, Isao; Kobori, Yasunori; Nishijima, Hideo; and Masuda, Yoshinori, to Hitachi, Ltd. Motor control apparatus. 4,518,901, Cl. 318-328.000.

Fukuyama, Yasuo: *See—*
Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, 4,517,719, Cl. 29-124.000.

Fultz, Carl, Jr; and Fultz, Phyllis D. W. Manipulable doll. 4,518,366, Cl. 446-366.000.

Fultz, Phyllis D. W.: *See—*
Fultz, Carl, Jr; and Fultz, Phyllis D. W., 4,518,366, Cl. 446-366.000.

Fuminier, Claude B., to Pont-A-Mousson S.A. Method and apparatus for cutting a cast iron pipe. 4,517,867, Cl. 82-101.000.

Funasaki, Ken; Iijima, Toshiki; and Kagohata, Tsuneo, to Hitachi, Ltd. Temperature control apparatus for automobile air-conditioning systems. 4,518,032, Cl. 165-12.000.

Fundakowski, Richard A.: *See—*
Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., 4,519,041, Cl. 364-552.000.

Furco, Samuel J. Comb for geometric hair styling. 4,517,998, Cl. 132-11.00R.
Furuhashi, Shoji: *See—*
Ishigami, Kazuhiro; Furuhashi, Shoji; and Yuzawa, Haruo, 4,517,945, Cl. 123-425.000.
Furukawa, Hisao: *See—*
Kato, Yasushi; and Furukawa, Hisao, 4,518,726, Cl. 524-32.000.
Furuya, Tsuneo: *See—*
Tsurushima, Katsuaki; Furuya, Tsuneo; and Fukami, Tadashi, 4,519,058, Cl. 369-53.000.
G.D Societa' per Azioni: *See—*
Seragnoli, Enzo; and Mattei, Riccardo, 4,517,871, Cl. 83-677.000.
Gabel, Edward R.; Puumala, Edward J.; and LeVasseur, Rodney J., to Data Card Corporation. Magnetic stripe character applying module. 4,518,853, Cl. 235-449.000.
Gabriele, Leonard A., to Lear Siegler, Inc. Pot broach. 4,518,289, Cl. 409-244.000.
Gagliani, John: *See—*
Long, John V.; and Gagliani, John, 4,518,717, Cl. 521-109.100.
Gagnaire, Philippe: *See—*
Godard, Gerard; Joubert, Daniel; and Gagnaire, Philippe, 4,518,516, Cl. 252-91.000.
Galliher, Kenneth R.: *See—*
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., 4,518,915, Cl. 324-158.00R.
Gallina, Damian J. Hemorrhoid and anorectal disease treatment method. 4,518,583, Cl. 424-80.000.
Gallitzendorfer, Joseph; Pfeiffer, Peter; Tomforde, Johann; Parisch, Jochen; and Zweigart, Gerhard, to Daimler-Benz Aktiengesellschaft. Water guide channel for motor vehicles. 4,518,197, Cl. 296-213.000.
Gallusser, David O., to Allied Corporation. One piece hermaphroditic contact for an electrical connector and a method of making the contact. 4,518,213, Cl. 339-48.000.
Garcia, Moises R., deceased (by Garcia, Teresa A., personal representative), to United States of America, Army. Wheel alignment tool. 4,517,862, Cl. 81-119.000.
Garcia, Teresa A., personal representative: *See—*
Garcia, Moises R., deceased, 4,517,862, Cl. 81-119.000.
Gardner, John F.; and Hobson, David, to Xomox Corporation. Valve assembly and method of making same. 4,518,149, Cl. 251-144.000.
Garg, Diwaker: *See—*
Schweigharett, Frank; Hoover, David S.; and Garg, Diwaker, 4,518,479, Cl. 208-8.0LE.
Garito, Jon C.; and Ellman, Alan G. Electrosurgical electrode for matrisectomy. 4,517,975, Cl. 128-303.130.
Garland Manufacturing Co.: *See—*
Otto, Ronald F.; and Kempel, John J., 4,518,026, Cl. 160-232.000.
Garner, Daniel C.: *See—*
Gillett, James E.; Garner, Daniel C.; Wineman, Arthur L.; and Robey, Robert M., 4,517,927, Cl. 122-510.000.
Garretson, Oliver R.: *See—*
Okubo, Masao; Yoshimitsu, Yasuro; Nakai, Fumio; and Garretson, Oliver R., 4,518,914, Cl. 324-158.00F.
Garrett, Charles B., to Varian Associates, Inc. Wafer transport system. 4,518,078, Cl. 198-775.000.
Garrett Corporation, The: *See—*
Jamison, Terry, 4,517,803, Cl. 60-611.000.
Kobayashi, Robert J.; Nancarrow, James H.; and Alger, Jeffrey L., 4,517,802, Cl. 60-606.000.
Gartner, Karl, to Josef Gartner & Co. Device for controlling the temperature of rooms in a building. 4,518,033, Cl. 165-53.000.
Gas Conditioning Industries, Inc.: *See—*
Rawson, William E., 4,518,396, Cl. 48-196.00R.
Gass, Wanda K.: *See—*
Magar, Surendar; and Gass, Wanda K., 4,519,031, Cl. 364-200.000.
Gastaldo, Giancarlo, to Ing. C. Olivetti & C., S.p.A. Transparent antireflection varnish for glass supports, and related varnishing method for glass video screens. 4,518,730, Cl. 524-114.000.
Gates Data Products, Inc.: *See—*
Watkins, Richard L., 4,518,833, Cl. 200-5.00A.
Gattiker, Anton: *See—*
Taylor, Charles F.; Wnukiewicz, Stanley A., Jr.; and Gattiker, Anton, 4,518,240, Cl. 354-312.000.
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Multi-turn coils of controlled pitch for electromagnetic casting. 4,518,030, Cl. 164-503.000.
Gavronsky, German, to Pitney Bowes Inc. Module latching mechanism. 4,518,207, Cl. 312-107.500.
Gaz de France: *See—*
Pistien, Jacques F., 4,518,346, Cl. 431-266.000.
GCA Corporation: *See—*
Weber, T. Jerome, 4,518,848, Cl. 219-388.000.
Geary, Thomas B.: *See—*
Longenecker, Kenneth G.; and Geary, Thomas B., 4,518,983, Cl. 357-81.000.
Gebauer, Hartmut: *See—*
Weber, Karl-Heinz; Beckmann, Wolfgang; and Gebauer, Hartmut, 4,518,285, Cl. 405-302.000.
Gebauer, Ludwig; Irmscher, Hans-Jurgen; Lang, Gusztav; and Mauthe, Peter, to Hilti Aktiengesellschaft. Hardenable synthetic resin composition and its use. 4,518,283, Cl. 405-260.000.
Gebeke, Charles D., to Minnesota Mining and Manufacturing Company. Slack limiter for a magnetic tape cassette. 4,518,135, Cl. 242-199.000.
Geboers, Josephus J. A.; and Janssen, Daniel J. G., to U.S. Philips Corporation. Transmission circuit for an electronic telephone set. 4,518,828, Cl. 179-81.00R.
Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH: *See—*
Weber, Karl-Heinz; Beckmann, Wolfgang; and Gebauer, Hartmut, 4,518,285, Cl. 405-302.000.
GEC Avionics Limited: *See—*
Pudsey, David G., 4,519,069, Cl. 370-85.000.
Gee, Elmer M. Seaming tool. 4,517,724, Cl. 29-275.000.
Gehrman, Sybil H.; and Porubcan, Randolph S., to Chr. Hansen's Laboratory, Inc. Stabilized liquid bacterial suspension for oral administration to animals. 4,518,696, Cl. 435-253.000.
Gehrmann, Klaus; Ohorodnik, Alexander; Rosenthal, Johannes; and Schafer, Stefan, to Hoechst Aktiengesellschaft. Process for making methyldichlorophosphane. 4,518,538, Cl. 260-543.00P.
Geiger, Friedhelm: *See—*
Bolze, Rudolf; Geiger, Friedhelm; Spindler, Manfred; and Tanner, Herbert, 4,518,801, Cl. 562-559.000.
Gelfand, Jan, to Krupp-Koppers GmbH. Support for batteries of coking furnaces heated from the top. 4,518,461, Cl. 202-270.000.
Genentech, Inc.: *See—*
Olson, Kenneth C., 4,518,526, Cl. 260-112.00R.
General Audio-Visual Inc.: *See—*
LiDonnici, Kenneth; and Dituri, Angelo, 4,518,233, Cl. 353-87.000.
General Electric Company: *See—*
Crivello, James V., 4,518,788, Cl. 560-064.000.
Cusano, Dominic A.; Greskovich, Charles D.; and DiBianca, Frank A., 4,518,545, Cl. 264-1.200.
Donaldson, Charles W., 4,518,257, Cl. 356-375.000.
Fischer, Larry E.; Sridhar, Bettadapur N.; and Bean, Jackie E., 4,518,559, Cl. 376-230.000.
Gigl, Paul D.; and Cho, Hyun S., 4,518,659, Cl. 428-539.500.
Greskovich, Charles D.; Cusano, Dominic A.; and DiBianca, Frank A., 4,518,546, Cl. 264-1.200.
Nichols, Roy F., Jr., 4,518,646, Cl. 428-248.000.
Richards, William D. C.; and Straub, Harry, 4,518,175, Cl. 285-47.000.
Stackhouse, Kenneth B.; and Hill, William D., 4,519,090, Cl. 377-29.000.
Thompson, Craig R.; Carnes, Ronald C.; and Naumann, Ted F., Jr., 4,517,840, Cl. 73-644.000.
Traver, Frank J., 4,518,727, Cl. 524-35.000.
General Electric Company, p.l.c., The: *See—*
Breeze, Gerald D.; and Elliott, Donald C., 4,519,013, Cl. 361-384.000.
General Foods Incorporated: *See—*
Tapscott, Donald A., 4,517,827, Cl. 73-45.400.
General Instrument Corp.: *See—*
Grossar, Francis, 4,518,835, Cl. 200-61.45M.
General Motors Corporation: *See—*
Gloomis, Lawrence A., 4,518,130, Cl. 242-107.000.
General Safety Corporation: *See—*
Schmidt, Timothy J., 4,518,132, Cl. 242-107.40A.
General Signal Corporation: *See—*
Ross, Steven L.; and Tachovsky, Otto H., 4,517,751, Cl. 34-10.000.
Stinson, Walter J.; and Phillips, Larry J., 4,518,146, Cl. 251-28.000.
Genetics Institute, Inc.: *See—*
Rozzell, J. David, 4,518,692, Cl. 435-116.000.
Gentry, Elvin O. Crankshaft inspection apparatus and method. 4,517,717, Cl. 29-6.000.
George, Rick A., to NCR Corporation. Position indicator means for a high speed printer or the like. 4,518,272, Cl. 400-705.100.
Geosource Inc.: *See—*
Tantillo, Donnie J.; Kratochvil, David F.; Moore, Robert G.; and Browne, Edward M., 4,519,052, Cl. 367-79.000.
Geracitano, Vincent. Inflatable reversible liferaft. 4,517,914, Cl. 114-345.000.
Gere, Pal: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.
Geremia, Leo F., to Haydon Switch & Instrument, Inc. Rotary and/or push-pull wiping switch. 4,518,832, Cl. 200-4.000.
Gerlach Industries: *See—*
Iannelli, Frank M.; and James, David H., 4,518,104, Cl. 222-146.600.
Geschka, Hugo-Werner, to E. Blum GmbH & Co. Electric machine, such as transformer choke, constant-voltage regulator or the like. 4,518,942, Cl. 336-178.000.
Gessell, Donald E., to Du Pont de Nemours, E. I., and Company. Hydrocarbon soluble catalyst supports and resultant polymerization catalysts. 4,518,706, Cl. 502-104.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; and Pohlmann, Klaus D., 4,518,284, Cl. 405-296.000.
Geyer, Willi: *See—*
Forster, Alfred; Geyer, Willi; and Kober, Leo, 4,518,196, Cl. 296-204.000.
Gibas, Christoph: *See—*
Bartholomaus, Reiner; and Gibas, Christoph, 4,518,938, Cl. 335-262.000.
Gibson-Stephens Institute: *See—*
Hruby, Victor J.; and Mosberg, Henry, 4,518,711, Cl. 514-11.000.
Giddings, Gary M.: *See—*
Wilkinson, Richard L.; and Giddings, Gary M., 4,519,004, Cl. 358-342.000.

Giessner, George J., to Heinemann Electric Company. Bimetallic circuit breaker with an auxiliary switch. 4,518,943, Cl. 337-68.000.
Gigl, Paul D.; and Cho, Hyun S., to General Electric Company. Sweep through process for making polycrystalline compacts. 4,518,659, Cl. 428-539.500.
Giguere, Irving J., to Superior Electric Company, The. Digital motor control method and means. 4,518,907, Cl. 318-696.000.
Gillett, James E.; Garner, Daniel C.; Wineman, Arthur L.; and Robey, Robert M., to United States of America, Energy. Steam generator for liquid metal fast breeder reactor. 4,517,927, Cl. 122-510.000.
Gillhaus, Horst; Hegewaldt, Fritz; Faber, Wolfgang; Baer, Jurgen; and Toplak, Ernst, to Brown, Boveri & Cie. AG. Industrial oven with air recirculation for heat treating processes. 4,518,352, Cl. 432-199.000.
Gilson, Alan P., to United States of America, Air Force. Optical disc transport system. 4,519,055, Cl. 369-37.000.
Gilvydis, Jaunutis B., to United States of America, Army. Observation system for military vehicles. 4,518,990, Cl. 358-87.000.
Gini, Donald; and Stockton, Dean B., to International Business Machines Corporation. Method and apparatus for coating magnetic recording media. 4,518,634, Cl. 427-128.000.
Glaenzer Spicer: *See—*
Orain, Michel A., 4,518,370, Cl. 464-113.000.
Glaser, Hellmut I.: *See—*
Perkins, Richard A.; Brady, William C.; and Glaser, Hellmut I., 4,518,406, Cl. 65-1.000.
Glaxo Group Limited: *See—*
Hayes, Roger; Bays, David E.; Mackinnon, John W. M.; Carey, Linda; and Blatcher, Philip, 4,518,598, Cl. 514-212.000.
Gleason, Patricia A.; and Brase, Ingrid E., to National Starch and Chemical Corporation. Drilling mud dispersants. 4,518,510, Cl. 252-8.50C.
Glennon, Timothy F., to Sundstrand Corporation. Ripple reduction circuit for an inverter. 4,519,022, Cl. 363-41.000.
Gloomis, Lawrence A., to General Motors Corporation. Lap and shoulder belt retractor. 4,518,130, Cl. 242-107.000.
Glyzin, Vladimir I.: *See—*
Rusakova, Svetlana V.; Glyzin, Vladimir I.; Kocherga, Stepan I.; Ananieva, Alla A.; and Libizova, Larisa F., 4,518,592, Cl. 424-195.100.
Godard, Gerard; Joubert, Daniel; and Gagnaire, Philippe, to Rhone-Poulenc Chimie De Base. Sodium metasilicate particulates and detergent compositions comprised thereof. 4,518,516, Cl. 252-91.000.
Goebel, Franz, to GTE Communications Products Corp. Method of fabrication of an electrochemical cell. 4,517,736, Cl. 29-623.200.
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., to University Patents, Inc.; and Contracap, Inc. Conforming valved cervical cap assembly and in-situ molding method. 4,517,970, Cl. 128-131.000.
Goglio, Luigi, to Fres-co System USA, Inc. Sealed flexible container with non-destructive peelable opening. 4,518,087, Cl. 206-632.000.
Gogniat, Paul; and Loth, Eric. Watch case. 4,518,093, Cl. 220-82.00R.
Goi, Kowichi, to Laurel Bank Machine Co., Ltd. Guide for use in a bank note handling machine. 4,518,158, Cl. 271-9.000.
Goins, Robert R., to Phillips Petroleum Company. Apparatus for blending solids or the like. 4,518,260, Cl. 366-134.000.
Goodell, Bradley D., to Deere & Company. Variable displacement pump system. 4,518,320, Cl. 417-217.000.
Goodrich, Gary B.; and Belani, Jadish G., to National Semiconductor Corporation. High temperature stable adhesive for semiconductor device packages, low-cost semiconductor device package and process. 4,518,735, Cl. 524-403.000.
Gordon, Linda A.: *See—*
Tarello, William R.; Lopez, Claudio; Gordon, Linda A.; Whalen, Thomas D.; and Harvey, William B., 4,518,384, Cl. 604-61.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba Geigy Corporation. Azetidinone-4-disulfides as intermediates for thia-aza compounds with a beta-lactam ring. 4,518,533, Cl. 260-245.400.
Goto, Atsuo: *See—*
Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, 4,518,863, Cl. 250-578.000.
Goto, Yasuo: *See—*
Murata, Tomoji; Hayashi, Masamichi; Goto, Yasuo; and Sakurai, Seiichi, 4,518,249, Cl. 355-67.000.
Gould, Bruce M., to Challenge-Cook Brothers, Inc. Food processor. 4,517,888, Cl. 99-472.000.
Gournay, Luke S.: *See—*
Lyle, W. D., Jr.; and Gournay, Luke S., 4,517,836, Cl. 73-152.000.
Goursat, Albert-Gilbert: *See—*
Foulard, Jean; Rimbert, Jean F.; Vernet, Gilles; and Goursat, Albert-Gilbert, 4,518,421, Cl. 75-49.000.
Govoni, Gabriele; Corazzari, Canzio; Di Stefano, Giovanni; and Loconsolo, Mauro, to Montedison S.p.A. Fluid bed reactor. 4,518,750, Cl. 526-68.000.
Graf, Harlan G.; and Janssen, Harry R., to Conoco Inc. Process for improving product yields from delayed coking. 4,518,487, Cl. 208-131.000.
Graham, John W.; and Sinclair, A. Richard. Method for treating subterranean formations. 4,518,039, Cl. 166-276.000.
Graham, Tommy E.: *See—*
Croskell, Henry; and Graham, Tommy E., 4,518,399, Cl. 55-16.000.
Graham, William R., to TI (Group Services) Limited. Method of making a tube in sheet heat exchanger. 4,517,721, Cl. 29-157.30C.
Gran-Quartz Trading, Inc.: *See—*
deKok, Peter T.; and Phildius, John, 4,517,954, Cl. 125-15.000.
Grant, Ian: *See—*
Beversdorf, Wallace D.; Erickson, Lawrence R.; and Grant, Ian, 4,517,763, Cl. 47-58.000.
Grant, Willie T. Automatic damper operator. 4,518,116, Cl. 236-1.00B.
Grasser, Leo, to Siemens AG. Method for forming silicon oxide films. 4,518,630, Cl. 427-93.000.
Grasso, Alfie L., to Micropore International Limited. Electric cooker having temperature warning means. 4,518,850, Cl. 219-505.000.
Gravi-Mechanics: *See—*
Dedolph, Richard R., 4,517,764, Cl. 47-77.000.
Gray, Michael J.: *See—*
Cox, Michael; Gray, Michael J.; and Duke, Phillip W., 4,518,420, Cl. 75-26.000.
Gray, Thomas J., to Olin Corporation. Raney alloy coated cathode for chlor-alkali cells. 4,518,457, Cl. 156-656.000.
Greco, Alberto; and Bertolini, Guglielmo, to Enichimica Secondaria, S.p.A. Polyoxyalkylenediol-α,ω-bisallyl polycarbonate useful as a base for sealants and process for its preparation. 4,518,766, Cl. 528-370.000.
Green, Arthur A.; and Black, Robert H. Method for treating the upper layer of a body of water. 4,518,506, Cl. 210-747.000.
Green, Ian M., to EMI Limited. Program storage hardware with security scheme. 4,519,036, Cl. 364-200.000.
Green, Russell D., to Dentsply Research & Development Corp. Ultrasonic dental file and method of determining failure resistant lengths thereof. 4,518,356, Cl. 433-102.000.
Greenburg, Jimmy L., to Dover Corporation. Valve with split ring retainer. 4,518,150, Cl. 251-306.000.
Greene, Donald F.; and Urban, Virginia L., to Sterling Drug Inc. Hydrogen peroxide disinfecting and sterilizing compositions. 4,518,585, Cl. 424-130.000.
Greene, Edward S.: *See—*
Holland, Scott B.; Greene, Edward S.; Kowalski, David A.; and Strachan, Bruce D., 4,517,832, Cl. 73-118.000.
Greene, Richard M., to Solid State Scientific, Inc. Stable rail sense amplifier in CMOS memories. 4,518,879, Cl. 307-530.000.
Greene, Ted J.; and Irons, George P., to United States Manufacturing Company. Composite orthosis for ankle sprains and the like. 4,517,968, Cl. 128-80.00H.
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., to Hanover Research Corporation. Process for removing light oil from solids. 4,518,458, Cl. 159-47.100.
Greenwell, Joseph D., to R. A. Jones & Co. Inc. Orbital feeder. 4,518,301, Cl. 414-129.000.
Gregory, Paul E., Jr.: *See—*
Sneed, Scott W.; Schwam, Bill R.; and Gregory, Paul E., Jr., 4,517,714, Cl. 28-103.000.
Greiner, Ulrich: *See—*
Engelhardt, Friedrich; and Greiner, Ulrich, 4,518,745, Cl. 525-326.600.
Greskovich, Charles D.; Cusano, Dominic A.; and DiBianca, Frank A., to General Electric Company. Preparation of yttria-gadolinia ceramic scintillators by sintering and gas hot isostatic pressing. 4,518,546, Cl. 264-1.200.
Greskovich, Charles D.: *See—*
Cusano, Dominic A.; Greskovich, Charles D.; and DiBianca, Frank A., 4,518,545, Cl. 264-1.200.
Griesdorn, Carl P.: *See—*
Wile, George J.; and Griesdorn, Carl P., 4,517,893, Cl. 101-123.000.
Griffith, Ronald C., to Pennwalt Corporation. 1,2,3,4-Tetrahydro-1-aminomethyl-4-phenyl isoquinolines. 4,518,779, Cl. 546-144.000.
Grimes, Donald: *See—*
Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., 4,518,077, Cl. 198-731.000.
Grittmann, Gunter: *See—*
Dorsch, Dieter, 4,518,543, Cl. 261-64.00B.
Grollimund, Everett C.; Smick, William H., III; and Brookman, Donald L., to Philip Morris Incorporated. Self-cleaning porosimeter. 4,517,825, Cl. 73-38.000.
Gross, Thomas A. O.: *See—*
Barrett, Raymond L., Jr.; and Gross, Thomas A. O., 4,519,066, Cl. 370-24.000.
Grossar, Francis, to General Instrument Corp. Force responsive switch. 4,518,835, Cl. 200-61.45M.
Grossman, Steven J.; and Onder, Kemal, to Upjohn Company, The. Anionic polymerization of lactam with azetidine-2,4-dione promoter. 4,518,765, Cl. 528-314.000.
Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., to Du Pont de Nemours, E. I., and Company. Protective clothing of fabric containing a layer of highly fluorinated ion exchange polymer. 4,518,650, Cl. 428-286.000.
Grudzinskas, Charles V.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,518,790, Cl. 560-118.000.
Grun, Charles: *See—*
Solomon, Frank; and Grun, Charles, 4,518,705, Cl. 502-101.000.
Grundfos A/S: *See—*
Jensen, Niels D.; Nielsen, Kurt F.; and Larden, Bent, 4,518,318, Cl. 417-53.000.
Gruner, Ronald H.: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.

Grunwald, Raymond M.: *See—*
Lindmayer, Istvan; and Grunwald, Raymond M., 4,518,385, Cl. 604-68.000.

Grzeczkowski, Thomas V.: *See—*
Albertini, Rocco D.; and Grzeczkowski, Thomas V., 4,517,913, Cl. 114-293.000.

Grzybowski, Bohdan; and Horbal, Mark T., to Acrobe Technology Inc. Manipulator apparatus. 4,518,308, Cl. 414-735.000.

GTE Automatic Electric Inc.: *See—*
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,518,211, Cl. 339-17.0LM.

GTE Communication Systems Corporation: *See—*
Fayette, Brad K., 4,519,025, Cl. 364-141.000.

GTE Communications Products Corp.: *See—*
Goebel, Franz, 4,517,736, Cl. 29-623.200.

GTE Communications Systems Corporation: *See—*
Boeckmann, Eduard F. B., 4,518,829, Cl. 179-81.00B.

GTE Laboratories Incorporated: *See—*
Proud, Joseph M.; Budinger, A. Bowman; Riseberg, Leslie A.; and Byszewski, Wojciech W., 4,518,897, Cl. 315-260.000.

GTE Products Corporation: *See—*
Swanson, Steven E., 4,518,220, Cl. 350-96.200.

Guicquero, Jean P., to Chryso S.A. Fluidizing agents for hydraulic bonding materials; hydraulic bonding materials containing said fluidizing agents; method of making and using same. 4,518,725, Cl. 524-3.000.

Guiles, Chester L.: *See—*
Kutnyak, Thomas A.; Dunn, George T.; and Guiles, Chester L., 4,518,018, Cl. 138-130.000.

Guittard, Pierre; Jarry, Philippe; Ducarre, Alphonse; and Haji, Lazhar, to U.S. Philips Corporation. Semiconductor device for the vacuum-emission of electrons. 4,518,980, Cl. 357-30.000.

Gulf Research & Development Company: *See—*
Templin, Philip R.; and Fareri, Elizabeth L., 4,518,394, Cl. 44-38.000.

Gullfiber AB: *See—*
Ransheim, Anders P.; Thomsen, Arne; and Holmgren, Per, 4,517,845, Cl. 73-861.050.

Gultsev, Igor V.: *See—*
Braginsky, Yakov I.; Gultsev, Igor V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; and Yaroshenko, Yury F., 4,517,707, Cl. 17-71.000.

Gunderson, Charles; and Hammond, Henry W., to Sanders Associates, Inc. Graphics plotter turret head. 4,518,972, Cl. 346-139.00R.

Gunn, Damon M., deceased; and Gunn, Robert M., administrator. Blood viscosity instrument. 4,517,830, Cl. 73-57.000.

Gunn, Robert M., administrator: *See—*
Gunn, Damon M., deceased; and Gunn, Robert M., administrator, 4,517,830, Cl. 73-57.000.

Guntaka, Ramareddy V., to Research Corporation. DNA promoter sequence of Avian tumor virus and use thereof for enhanced gene expression in *E. coli*. 4,518,690, Cl. 435-71.000.

Gusman, Moisei T.: *See—*
Baldenko, Dmitry F.; Gusman, Moisei T.; and Semenets, Valery I., 4,518,049, Cl. 175-107.000.

Gustafson, Bruce L., to Eastman Kodak Company. Process for the selective production of olefins from synthesis gas. 4,518,714, Cl. 518-721.000.

H.E.M.E. International Limited: *See—*
Jackson, Rodney P., 4,518,913, Cl. 324-127.000.

Haarmann, Walter: *See—*
Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, 4,518,597, Cl. 514-228.000.
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,518,596, Cl. 514-232.000.

Haas, Franz, Jr.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,518,617, Cl. 426-231.000.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann. Process for continuously making an endless wafer laminate of uniform width, consisting of individual wafer sheet layers and intervening cream layers. 4,518,617, Cl. 426-231.000.

Haas, Johann: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,518,617, Cl. 426-231.000.

Habbal, Fawwaz: *See—*
Foley, James; Habbal, Fawwaz; and Leahy, John, 4,518,627, Cl. 427-48.000.

Haberli, Peter, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Sabot projectile. 4,517,899, Cl. 102-521.000.

Habro, Bertil. Omnidirectional reflector with helically turned segments. 4,518,224, Cl. 350-606.000.

Hackman, Charles H. Rotary peristaltic pump. 4,518,327, Cl. 417-477.000.

Haddad, Paul R.: *See—*
Alexander, Peter W.; and Haddad, Paul R., 4,518,463, Cl. 204-1.00T.

Haefner, John S.: *See—*
Mueller, Carl J.; and Haefner, John S., 4,518,345, Cl. 431-24.000.

Hafele KG: *See—*
Koch, Gerhard, 4,518,278, Cl. 403-230.000.

Hagemann, Hermann: *See—*
Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, 4,518,812, Cl. 568-946.000.

Hagio, Tsuyoshi: *See—*
Yoshida, Hisayoshi; Ogawa, Ichitaro; Hagio, Tsuyoshi; Kobayashi, Kazuo; and Yamamoto, Takayoshi, 4,518,702, Cl. 501-90.000.

Hagiwara, Toshio: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,518,466, Cl. 204-28.000.

Hailey, Robert W. Method of producing metal alloys with high modulus of elasticity. 4,518,441, Cl. 148-11.50P.

Haji, Lazhar: *See—*
Guittard, Pierre; Jarry, Philippe; Ducarre, Alphonse; and Haji, Lazhar, 4,518,980, Cl. 357-30.000.

Halbritter, Klaus: *See—*
Eckhardt, Heinz; Halbritter, Klaus; and Rohr, Wolfgang, 4,518,785, Cl. 549-453.000.

Halcomb, F. Joseph, III; and Allen, C. Wayne, to Zimmer, Inc. Prosthetic gauge. 4,517,969, Cl. 128-92.00E.

Hale, John M.: *See—*
Wright, Harry D.; Hale, John M.; and Weber, Eugen, 4,518,477, Cl. 204-415.000.

Hall, Stephen M., to Quantum Lighting Limited. Ceiling light fitting. 4,519,019, Cl. 362-147.000.

Halliburton Company: *See—*
Middleton, James D., 4,518,040, Cl. 166-307.000.

Halpern, Yuval, to Borg-Warner Chemicals, Inc. Bis(beta-pentabromophenoxyethyl) succinate, a flame retardant for ABS. 4,518,795, Cl. 560-193.000.

Haltof, Garry P., to Caldwell Manufacturing Company. Adjustable friction sash holder. 4,517,766, Cl. 49-417.000.

Hama, Yoshihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Rotation control mechanism for diaphragm-operating ring in interchangeable objective for photographic camera. 4,518,238, Cl. 354-270.000.

Hamada, Fumio: *See—*
Kato, Kazuo; Hamada, Fumio; and Ito, Kenji, 4,518,683, Cl. 430-546.000.

Hamano, Toshihisa, to Fuji Xerox Co., Ltd. Process for fabricating thin film image pick-up element. 4,517,733, Cl. 29-572.000.

Hamatsuki, Takeshige: *See—*
Yano, Takeshi; Fukui, Izumu; Hamatsuki, Takeshige; Sato, Eiichi; and Inui, Osamu, 4,518,887, Cl. 310-328.000.

Hamer, Howard, to United States of America, Army. Error correction method and apparatus. 4,519,079, Cl. 371-38.000.

Hammond, Henry W.: *See—*
Gunderson, Charles; and Hammond, Henry W., 4,518,972, Cl. 346-139.00R.

Hanaoka, Tadashi; and Umezu, Hiroaki, to Misawa Home Co., Ltd. Heat utilizing system using internal combustion engine. 4,517,799, Cl. 62-323.100.

Hanggi, Rolf. Pen with built-in illumination. 4,518,274, Cl. 401-195.000.

Hanks, Thomas W.: *See—*
Wiegardt, Gordon K.; Hanks, Thomas W.; and Kittle, Carl E., 4,518,044, Cl. 172-7.000.

Hanover Research Corporation: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,518,458, Cl. 159-47.100.

Hanson, David K. Power tool drive attachment. 4,518,371, Cl. 474-114.000.

Hanson, Kerry A., to Texas Instruments Incorporated. Bilateral digital data transmission system. 4,519,083, Cl. 375-9.000.

Hara, Kazuo; and Abe, Kunihiro, to Fuji Jukogyo Kabushiki Kaisha. System for detecting neutral state of a transmission of an engine for vehicles. 4,519,089, Cl. 377-16.000.

Hara, Tsutomu: *See—*
Takagi, Toshihiko; Kobayashi, Yoshikazu; Suzuki, Yoshiji; and Hara, Tsutomu, 4,519,064, Cl. 369-275.000.

Harada, Hajime, to Nihon Kohden Corporation. Pulse transformer for switching power supplies. 4,518,941, Cl. 336-69.000.

Harada, Setsuo: *See—*
Imada, Akira; Harada, Setsuo; and Asai, Mitsuko, 4,518,529, Cl. 260-245.20T.

Harada, Takashi: *See—*
Kaji, Yasumasa; Isomura, Shigenori; Harada, Takashi; and Sakakibara, Shuji, 4,517,948, Cl. 123-489.000.

Harada, Yutaka; Yamashita, Kunio; Kotera, Nobuo; and Tanaka, Hirotoshi, to Hitachi, Ltd. Superconductive large-scale integrated circuit chip. 4,518,868, Cl. 307-306.000.

Harder, Sven, to Aktieselskabet Jens Villadsens Fabriker. Roof or wall structure. 4,517,783, Cl. 52-481.000.

Hardern, David N.: *See—*
Bantick, John R.; Fuher, John; Hardern, David N.; and Lee, Thomas B., 4,518,612, Cl. 514-457.000.

Harding, Henry W. Pool skimmer. 4,518,495, Cl. 210-169.000.

Harding, John D.: *See—*
Levin, Paul D.; and Harding, John D., 4,517,978, Cl. 128-314.000.

Hardwick, Roy, to Explosive Fabricators, Inc. Method of fabricating a bi-metal tube. 4,518,111, Cl. 228-107.000.

Hare, Bruce L., to Hare, Bruce L., Jr. Apparatus for measuring the shoulder of a drill pipe joint. 4,517,745, Cl. 33-169.00B.

Hare, Bruce L., Jr.: *See—*
Hare, Bruce L., 4,517,745, Cl. 33-169.00B.

Harnish, James R., to Borg-Warner Corporation. Heat pump water heater with supplemental heat supply. 4,517,807, Cl. 62-156.000.

Harris Corporation: *See—*
Luecke, James R., 4,518,922, Cl. 329-50.000.

Harris, Derek W., to Sodastream Limited. Liquid aerating apparatus. 4,518,541, Cl. 261-27.000.

Harris, Richard K.: *See—*
Twomey, James R.; McCutcheon, Hugh W.; and Harris, Richard K., 4,517,842, Cl. 73-701.000.

Harrison, Derek N.; and Purling, Trevor C., to Flowmetering Instruments Limited. Electromagnetic flowmeter. 4,517,846, Cl. 73-861.120.

Harrison, Richard H., Jr.: *See—*
Carter, Thomas P.; Schinner, Edward N.; Harrison, Richard H., Jr.; and Cates, Robert E., 4,518,544, Cl. 261-112.000.

Harshbarger, John H.; and Shores, William M., to Visual Information Institute, Inc. Selectable rate sync generator system. 4,518,995, Cl. 358-139.000.

Hart, Reginald J., to Roymere Limited. Apparatus for and method of cooling the core rods of an injection blow moulding machine. 4,518,549, Cl. 264-39.000.

Harvey, Kenneth: *See—*
Hayes, Harry; and Harvey, Kenneth, 4,518,578, Cl. 424-7.100.

Harvey, William B.: *See—*
Tarello, William R.; Lopez, Claudio; Gordon, Linda A.; Whalen, Thomas D.; and Harvey, William B., 4,518,384, Cl. 604-61.000.

Hasegawa, Mineo, to Kewpie Kabushiki Kaisha. Process for eluting egg white lysozyme. 4,518,695, Cl. 435-206.000.

Hashimoto, Hisayoshi; and Tamura, Morio, to Hitachi Construction Machinery Co., Ltd. Shock absorbing device for hydraulic cylinder. 4,517,878, Cl. 91-396.000.

Hassall, Cedric H.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,518,784, Cl. 549-39.000.

Hatakeyama, Yoshiharu; Ishikawa, Tatsuo; and Teshima, Kenzo, to Yoshida Industry Co., Ltd. Method and apparatus for molding a tubular container with a cap. 4,518,554, Cl. 264-262.000.

Hatco Chemical Corporation: *See—*
Chen, Clay T.; Wan, K. Ming; and Chen, Mary S., 4,518,792, Cl. 560-163.000.

Hately, Maurice C., to National Research Development Corporation. Dipole and ground plane antennas with improved terminations for coaxial feeders. 4,518,968, Cl. 343-802.000.

Haug, Theobald; and Stockinger, Friedrich, to Ciba Geigy Corporation. Curable epoxy resin mixtures. 4,518,748, Cl. 525-481.000.

Hauser, Ludwig; and Wanke, Wilhelm, to J.M. Voith GmbH. Press roll for web material. 4,518,460, Cl. 162-361.000.

Hausermann Abrading Process Company: *See—*
Hausermann, Marten C.; and Hausermann, Elmer P., 4,517,768, Cl. 51-58.000.

Hausermann, Elmer P.: *See—*
Hausermann, Marten C.; and Hausermann, Elmer P., 4,517,768, Cl. 51-58.000.

Hausermann, Marten C.; and Hausermann, Elmer P., to Hausermann Abrading Process Company. Orbital polisher. 4,517,768, Cl. 51-58.000.

Hauske, James R.; and Nagel, Arthur A., to Pfizer Inc. 9α-Aza-9α-homoerythromycin compounds, pharmaceutical compositions and therapeutic method. 4,518,590, Cl. 514-29.000.

Havekost, Peter: *See—*
Dernedde, Robert; Franke, Hans-Joachim; and Havekost, Peter, 4,518,311, Cl. 415-102.000.

Haws, Spencer K. Automatic hot water recovery system. 4,518,007, Cl. 137-337.000.

Hayakawa, Takaki: *See—*
Kikuchi, Masakazu; Hayakawa, Takaki; and Kida, Makoto, 4,518,698, Cl. 435-317.000.

Hayashi, Kiyoshi: *See—*
Kawahara, Yoshihiro; and Hayashi, Kiyoshi, 4,518,975, Cl. 346-153.100.

Hayashi, Masamichi: *See—*
Murata, Tomoji; Hayashi, Masamichi; Goto, Yasuo; and Sakurai, Seiichi, 4,518,249, Cl. 355-67.000.

Hayashi, Munehisa: *See—*
Wachi, Akira; and Hayashi, Munehisa, 4,517,838, Cl. 73-204.000.

Haydon Switch & Instrument, Inc.: *See—*
Geremia, Leo F., 4,518,832, Cl. 200-4.000.

Hayes, Harry; and Harvey, Kenneth, to Colgate-Palmolive Company. Dentifrice composition containing visually clear pigment-colored stripe. 4,518,578, Cl. 424-7.100.

Hayes, Roger; Bays, David E.; Mackinnon, John W. M.; Carey, Linda; and Blatcher, Philip, to Glaxo Group Limited. 1,2,4-Triazole-3-amines, their pharmaceutical compositions and method of use. 4,518,598, Cl. 514-212.000.

Hayford, Robert L., Jr. Video game control console. 4,518,164, Cl. 273-148.00B.

Haythornthwaite, James A. Animal rearing house. 4,517,921, Cl. 119-16.000.

Head, Glenn D., Jr.: *See—*
Rettig, Vernon E.; Bigbee, Marvin L.; Steilen, Ronald M.; and Head, Glenn D., Jr., 4,518,046, Cl. 172-311.000.

Head Lites Corporation: *See—*
Lesley, Gary M., 4,517,685, Cl. 2-170.000.

Hearn, William E.; and Rondeau, Donald J., to United States of America, Energy. Precision absolute value amplifier for a precision voltmeter. 4,518,877, Cl. 307-490.000.

Heathe, William R., to Baxter Technologies Inc. Sliding bearing. 4,518,205, Cl. 308-3.00R.

Heaton, Robert: *See—*
Keltz, Douglas; and Heaton, Robert, 4,518,145, Cl. 251-5.000.

Heckele, Helmut, to Richard Wolf GmbH. Nasal endoscopes. 4,517,962, Cl. 128-6.000.

Hedenberg, William E. Air suspension system. 4,518,171, Cl. 280-711.000.

Hegedus, Karoly, to Aranykalasz Mgtsz. Vehicle with eccentrically mounted wheels. 4,518,176, Cl. 280-229.000.

Hegewaldt, Fritz: *See—*
Gillhaus, Horst; Hegewaldt, Fritz; Faber, Wolfgang; Baer, Jurgen; and Toplak, Ernst, 4,518,352, Cl. 432-199.000.

Hehl, Karl. Injection molding machine with mold changing and mold preconditioning device. 4,518,338, Cl. 425-183.000.

Heiart, Robert B.; and Cohen, Abraham B., to Du Pont de Nemours, E. I., and Company. Automatic repetitive registration and image wise exposure of sheet substrates. 4,518,667, Cl. 430-22.000.

Heiden, Ulrich; and Atzler, Peter, to Bayerische Motoren Werke A.G. Drivable wheel for the finish grinding or polishing of the surface of a vehicle body or the like. 4,517,773, Cl. 51-336.000.

Heider, Dale J.: *See—*
Heider, Merle J.; Heider, Dale J.; and Heider, Leon J., 4,518,193, Cl. 296-98.000.

Heider, Leon J.: *See—*
Heider, Merle J.; Heider, Dale J.; and Heider, Leon J., 4,518,193, Cl. 296-98.000.

Heider, Merle J.; Heider, Dale J.; and Heider, Leon J. Top closure for a rectangular box and method for using same. 4,518,193, Cl. 296-98.000.

Heinemann Electric Company: *See—*
Giessner, George J., 4,518,943, Cl. 337-68.000.

Helderle, Paul M.: *See—*
Lefebvre, Herve M.; and Helderle, Paul M., 4,518,036, Cl. 166-105.000.

Hendrickson, Larry L.: *See—*
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,518,413, Cl. 71-28.000.

Hendrischk, Wolfgang, to Mannesmann Aktiengesellschaft. Multicolored printing. 4,518,270, Cl. 400-240.400.

Henkel Corporation: *See—*
Hess, Dennis R.; and Antilla, Arthur, 4,518,432, Cl. 106-117.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Bartnik, Friedhelm; Schindler, Joachim; Weiss, Albrecht; and Schmid, Rolf, 4,518,697, Cl. 435-254.000.

Hennon, Erin D.; and Joyner, Robert G., to Dana Corporation. Protective cover assembly. 4,518,017, Cl. 138-96.00R.

Henriksen, Gary L.: *See—*
Kodali, Satyanarayana; Singh, Bhim S.; Whittlesey, Curtis C.; and Henriksen, Gary L., 4,518,663, Cl. 429-18.000.
Whittlesey, Curtis C.; Henriksen, Gary L.; Keryluk, Walter B.; and Wolff, Merle T., 4,518,664, Cl. 429-38.000.

Henry, Arnold W.; Azar, Jack C.; and Sagal, John, to Xerox Corporation. Fusing member for electrostatographic copiers. 4,518,655, Cl. 428-329.000.

Henry, James W., to Sperry Corporation. Control linkage for continuous roll baling machine. 4,517,891, Cl. 100-88.000.

Henry, Rene H.; and Nolf, Jean M. E., to N. V. Raychem S.A. Closure assembly and method of using it. 4,518,448, Cl. 156-86.000.

Hepp, Volker. Mobile event-module. 4,518,267, Cl. 368-107.000.

Hercules Incorporated: *See—*
Pohl, Rudolph L., 4,518,677, Cl. 430-306.000.

Herlihy, Walter C., to Repligen Corporation. In vitro enzymatic process for preparing glucuronides of ester-containing anticholinergics. 4,518,691, Cl. 435-74.000.

Hermann Behr & Sohn GmbH & Co.: *See—*
Vetter, Kurt, 4,518,119, Cl. 239-223.000.

Hermann Heye: *See—*
Monden, Norbert, 4,518,409, Cl. 65-79.000.

Herold, Barry W., to Motorola, Inc. Resistance comparator for switch detection. 4,518,869, Cl. 307-350.000.

Herrin, Melvin B.: *See—*
Eldridge, Charles W., 4,518,379, Cl. 493-334.000.

Herter, Carl J. Method for preparing a low residual alloy steel charge from scrap metal. 4,518,423, Cl. 75-64.000.

Hertz, Darryl W., to Standard Oil Company, The. Degasser-desurger unit. 4,518,403, Cl. 55-194.000.

Hess, Dennis R.; and Antilla, Arthur, to Henkel Corporation. Slag briquette. 4,518,432, Cl. 106-117.000.

Hess, Herman A. Earring fastener. 4,517,816, Cl. 63-12.000.

Hetyei, Joseph, to Thomson-CSF. Pulse arrival time determining device, use thereof in distance-measuring equipment and measuring equipment comprising such a device. 4,518,964, Cl. 343-7.300.

Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, to Bayer Aktiengesellschaft. Homogeneous, storage-stable polyol compositions of high ethylene glycol content and their use for the production of polyurethanes. 4,518,521, Cl. 252-188.310.

Hewlett-Packard Company: *See—*
Chu, David C.; and Ward, Michael J., 4,519,091, Cl. 377-44.000.
Quimby, Bruce D., 4,517,824, Cl. 73-23.000.
Walsh, Thomas A., 4,518,114, Cl. 228-180.100.

HGM, Inc.: *See—*
Tanner, Howard M. C., 4,517,974, Cl. 128-303.100.

Hibino, Akira: *See—*
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,518,354, Cl. 430-527.000.

Hidaka, Kazutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Tuned small loop antenna and method for designing thereof. 4,518,965, Cl. 343-742.000.

Hiddleston, James N.: *See—*
May, Denis R. W.; and Hiddleston, James N., 4,517,688, Cl. 3-2.000.

Hideaki Takahashi: *See*—
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.

Higashihara, Teruaki; Nonaka, Chiaki; Yoshida, Tadao; and Kawachi, Hideo, to Sony Corporation. Digital audio disc player including apparatus for finding the beginning of a recorded audio signal. 4,519,057, Cl. 369-50.000.

Higuchi, Moeko: *See*—
Ishikawa, Masao; Kobayashi, Kazuhiro; Kimura, Toshihiko; and Higuchi, Moeko, 4,518,680, Cl. 430-393.000.

Hill, Broadus E., Jr., to Du Pont de Nemours, E. I., and Company. Yarn package. 4,518,133, Cl. 242-165.000.

Hill, William D.: *See*—
Stackhouse, Kenneth B.; and Hill, William D., 4,519,090, Cl. 377-29.000.

Hilliker, Richard A.: *See*—
Peters, Rex B.; Tonn, Jeffrey F.; Malametz, Arnold; Hilliker, Richard A.; and Corey, Victor B., 4,517,841, Cl. 73-517.0AV.

Hillman, Gary: *See*—
Devico, Michael J.; and Hillman, Gary, 4,517,752, Cl. 34-58.000.

Hilti Aktiengesellschaft: *See*—
Gebauer, Ludwig; Irmscher, Hans-Jurgen; Lang, Gusztav; and Mauthe, Peter, 4,518,283, Cl. 405-260.000.
Lang, Gusztav; Hoffmann, Armin; and Bisping, Heinz, 4,518,291, Cl. 411-60.000.
Listemann, Peter; and Monch, Sigurd, 4,518,662, Cl. 428-675.000.

Hinderling, Thomas: *See*—
Friedli, Paul; Hinderling, Thomas; and Begle, Guntram, 4,518,909, Cl. 318-566.000.

Hiniker Company: *See*—
Peterson, Richard L.; and Scheurer, Roger J., 4,518,047, Cl. 172-611.000.

Hinn, Werner; and Fecht, Hans-Rudolf, to RCA Corporation. Apparatus for accurate adjustment of kinescope black level bias. 4,518,986, Cl. 358-65.000.

Hintsch, Otto; and Schmitz, Gerd, to Sulzer Brothers Limited. Lubricator for a weft picking element in a weaving machine. 4,518,019, Cl. 139-1.00R.

Hiramatsu, Yasuzo: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yamazaki, Tomio; Yamada, Shozo; and Honna, Takaji, 4,518,712, Cl. 514-255.000.

Hiramoto, Junichi: *See*—
Shiga, Tetsuya; Okawa, Shinichi; Yoshida, Kenichi; and Hiramoto, Junichi, 4,517,982, Cl. 128-635.000.

Hirano, Masami: *See*—
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Hirano, Masami; Araki, Tamio; and Kojima, Koichi, 4,518,023, Cl. 152-361.0FP.

Hirano, Mitsunori: *See*—
Hirano, Tsumoru; Umemoto, Makoto; and Hirano, Mitsunori, 4,518,687, Cl. 430-548.000.

Hirano, Shigeo: *See*—
Kobayashi, Hidetoshi; Takahashi, Toshiro; Hirano, Shigeo; Hirose, Takeshi; and Adachi, Keiichi, 4,518,682, Cl. 430-543.000.

Hirano, Tsumoru; Umemoto, Makoto; and Hirano, Mitsunori, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,518,687, Cl. 430-548.000.

Hirano, Yutaka, to Diesel Kiki Co., Ltd. Trouble detecting apparatus for a sensor in an internal combustion engine system. 4,517,831, Cl. 73-116.000.

Hirao, Hiroshi: *See*—
Suzuki, Yasuo; Hirao, Hiroshi; and Nagasawa, Masanori, 4,518,873, Cl. 307-451.000.

Hirata, Yoshikatsu, to Brother Kogyo Kabushiki Kaisha. Printer with moveable carriage actuating pinch roller to release position. 4,518,271, Cl. 400-636.100.

Hirosawa, Kouichiro: *See*—
Oguma, Tomio; Hirosawa, Kouichiro; and Mitsui, Tsutomu, 4,518,068, Cl. 192-0.052.

Hirose, Koichi: *See*—
Shibata, Akira; Hirose, Koichi; and Yamamoto, Akihiro, 4,519,005, Cl. 360-65.000.

Hirose, Takeshi: *See*—
Kobayashi, Hidetoshi; Takahashi, Toshiro; Hirano, Shigeo; Hirose, Takeshi; and Adachi, Keiichi, 4,518,682, Cl. 430-543.000.

Hista, Jean C., to Framatome et Cie. Reactor building. 4,518,561, Cl. 376-293.000.

Hitachi Cable Limited: *See*—
Kamada, Osao, 4,518,449, Cl. 156-153.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Hashimoto, Hisayoshi; and Tamura, Morio, 4,517,878, Cl. 91-396.000.

Hitachi Engineering Co., Ltd.: *See*—
Takaku, Kazuo; Naruse, Akisuke; Fujimoto, Hirotsugu; and Kimura, Hiroshi, 4,518,560, Cl. 376-245.000.

Hitachi Heating Appliances Co., Ltd.: *See*—
Taguchi, Shunichi; Ohkawa, Shuji; Watanabe, Mitsuru; and Kikuchi, Itsuo, 4,518,839, Cl. 219-10.55B.

Hitachi, Ltd.: *See*—
Adachi, Shigeki, 4,517,797, Cl. 60-39.281.
Atsumi, Akira; Oguni, Kensaku; Kuroda, Shigeaki; Senshu, Takao; and Yoshioka, Kazuo, 4,517,811, Cl. 62-197.000.
Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, 4,518,665, Cl. 429-153.000.
Fukushima, Isao; Kobori, Yasunori; Nishijima, Hideo; and Masuda, Yoshinori, 4,518,901, Cl. 318-328.000.
Funasaki, Ken; Iijima, Toshiki; and Kagohata, Tsuneo, 4,518,032, Cl. 165-12.000.
Harada, Yutaka; Yamashita, Kunio; Kotera, Nobuo; and Tanaka, Hirotoshi, 4,518,868, Cl. 307-306.000.
Kamohara, Hideaki; Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,518,514, Cl. 252-70.000.
Mizuno, Takao; Uchikawa, Naoshi; Murayama, Akira; and Tamura, Takahiro, 4,518,324, Cl. 417-366.000.
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.
Shibata, Akira; Hirose, Koichi; and Yamamoto, Akihiro, 4,519,005, Cl. 360-65.000.
Taguchi, Sadanori; Aida, Toshiyuki; Yamamoto, Shigehiko; and Honda, Yukio, 4,518,890, Cl. 313-346.00R.
Takaku, Kazuo; Naruse, Akisuke; Fujimoto, Hirotsugu; and Kimura, Hiroshi, 4,518,560, Cl. 376-245.000.
Toyooka, Takashi; Aoki, Hirokazu; and Sugie, Mamoru, 4,519,049, Cl. 365-12.000.
Ura, Katsumi; Inui, Taiji; and Sakka, Kenji, 4,517,804, Cl. 60-657.000.
Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, 4,518,989, Cl. 358-86.000.

Hitachi Metals, Ltd.: *See*—
Noguchi, Koji; Asanae, Masumi; and Kimura, Fumio, 4,518,673, Cl. 430-108.000.

Hitachi Shipbuilding & Engineering Co. Ltd.: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,518,556, Cl. 264-295.000.

Hitzman, Donald O., to Phillips Petroleum Company. Oil Treatment. 4,518,489, Cl. 208-223.000.

Hobson, David: *See*—
Gardner, John F.; and Hobson, David, 4,518,149, Cl. 251-144.000.

Hodge, Philo B.: *See*—
Hottenrott, Hans G.; Hodge, Philo B.; and Cochran, Thomas J., 4,518,910, Cl. 324-158.00P.

Hoechst Aktiengesellschaft: *See*—
Gehrmann, Klaus; Ohorodnik, Alexander; Rosenthal, Johannes; and Schafer, Stefan, 4,518,538, Cl. 260-543.00P.
Pistorius, Rudolf, 4,518,537, Cl. 260-504.00R.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Kosley, Raymond W., Jr.; and Allen, Richard C., 4,518,713, Cl. 514-326.000.

Hoffend, John C.: *See*—
Davis, James R.; and Hoffend, John C., 4,517,894, Cl. 101-126.000.

Hoffman, Gary R.: *See*—
Cook, William A.; Hoffman, Gary R.; and Pulford, William M., 4,518,958, Cl. 340-679.000.

Hoffmann, Armin: *See*—
Lang, Gusztav; Hoffmann, Armin; and Bisping, Heinz, 4,518,291, Cl. 411-60.000.

Hoffmann, Ernst H.; Arendt, Hans F.; Spiewok, Leonhard; and Rettich, Jakob. Method and apparatus for balancing of out-of-balance forces in centrifuges or combined washing machines-spin driers. 4,517,695, Cl. 8-158.000.

Hoffmann-La Roche Inc.: *See*—
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,518,784, Cl. 549-39.000.

Hoffmann, Peter; and Evers, Walter, to Lang Apparatebau GmbH. Backflow-preventing valve. 4,518,006, Cl. 137-218.000.

Hoffmeister, Jurgen; and Kuhn, Bernhard, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,518,355, Cl. 433-29.000.

Hoganas AB: *See*—
Tengzelius, Jan R.; Blande, Carl-Axel; and Svensson, Lars-Erik, 4,518,427, Cl. 75-251.000.

Hojo, Akimichi: *See*—
Toyoda, Nobuyuki; and Hojo, Akimichi, 4,518,871, Cl. 307-443.000.

Holland, Scott B.; Greene, Edward S.; Kowalski, David A.; and Strachan, Bruce D., to Ford Motor Company. Air suspension system service diagnostics. 4,517,832, Cl. 73-118.000.

Holles Laboratories: *See*—
Holly, Frank J., 4,518,579, Cl. 424-9.000.

Holly, Frank J., to Holles Laboratories. pH stabilized fluorescing ophthalmic composition containing fluorexon. 4,518,579, Cl. 424-9.000.

Holly, Kenneth: *See*—
Smith, Gehrard J.; and Holly, Kenneth, 4,519,034, Cl. 364-200.000.

Holmgren, Per: *See*—
Ransheim, Anders P.; Thomsen, Arne; and Holmgren, Per, 4,517,845, Cl. 73-861.050.

Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, to Bayer Aktiengesellschaft. Combating fungi with 1-phenoxy-2-pyrimidinyl alkanols. 4,518,600, Cl. 514-256.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Koyanagi, Takahiro; and Sakaoka, Hiromu, 4,517,940, Cl. 123-198.00E.
Ooka, Yuzo, 4,518,070, Cl. 192-85.0CA.
Otaka, Shoichi; Kondo, Yukio; Kumada, Masayuki; Kawamoto, Hideyo; and Miura, Keiji, 4,517,951, Cl. 123-572.000.
Takada, Minoru, 4,518,204, Cl. 301-63.00R.
Yasutake, Kousuke, 4,517,933, Cl. 123-55.0VF.

Honda, Yukio: *See*—
Taguchi, Sadanori; Aida, Toshiyuki; Yamamoto, Shigehiko; and Honda, Yukio, 4,518,890, Cl. 313-346.00R.

Honeywell Inc.: *See*—
Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., 4,519,041, Cl. 364-552.000.

Hong, Soon Y. Pollen gathering device. 4,517,694, Cl. 6-4.00R.

Honna, Takaji: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yamazaki, Tomio; Yamada, Shozo; and Honna, Takaji, 4,518,712, Cl. 514-255.000.

Hoover, David S.: *See*—
Schweigharett, Frank; Hoover, David S.; and Garg, Diwaker, 4,518,479, Cl. 208-8.0LE.

Horbal, Mark T.: *See*—
Grzybowski, Bohdan; and Horbal, Mark T., 4,518,308, Cl. 414-735.000.

Hori, Takashi; Ueda, Sanae; and Kojima, Yoshihiro, to Maruzen Oil Co., Ltd. Process for the production of basic alkaline earth metal phenates. 4,518,807, Cl. 568-716.000.

Horikiri, Kenji: *See*—
Ueda, Fumio; Tsuboi, Yoshiaki; Arai, Hirotsugu; Horikiri, Kenji; and Ideno, Hiroaki, 4,518,959, Cl. 340-784.000.

Horio, Masamitsu: *See*—
Matsuda, Morio; and Horio, Masamitsu, 4,518,810, Cl. 568-905.000.

Horizon Co., Ltd.: *See*—
Shimizu, Masaaki; and Aihara, Akira, 4,518,380, Cl. 493-420.000.

Hornberg, Gunnar, to Konstruktions Teknik. Automatic coupling device for loading platforms. 4,518,186, Cl. 294-82.240.

Horst, Paul V., Sr.; and Hoyt, Charles D., to Crockett & Kelly, Inc. Electrically-powered portable space heater. 4,518,847, Cl. 219-365.000.

Hosford, Gregory S.: *See*—
Lane, Lloyd L.; and Hosford, Gregory S., 4,517,855, Cl. 74-528.000.

Hoshi, Yoshikazu: *See*—
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.
Takano, Yoshiya; and Hoshi, Yoshikazu, 4,517,946, Cl. 123-450.000.

Hoshika, Shuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Angle measuring device with line sensor. 4,518,859, Cl. 250-231.0SE.

Hosoya, Katsumi, to Nissan Motor Company, Limited. Twin ignition plug control system for an internal combustion engine. 4,517,952, Cl. 123-638.000.

Hospital For Sick Children, The: *See*—
Morin, J. Donald, 4,517,747, Cl. 33-178.00B.

Hottenrott, Hans G.; Hodge, Philo B.; and Cochran, Thomas J., to International Business Machines Corporation. Buckling beam twist probe contactor assembly with spring biased stripper plate. 4,518,910, Cl. 324-158.00P.

Houseman, David L.: *See*—
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.

Houston, Richard N.: *See*—
Read, Reginald A.; and Houston, Richard N., 4,518,939, Cl. 335-262.000.

Howard, Webster E., Jr., to International Business Machines Corporation. Resistive mesh structure for electroluminescent cell. 4,518,891, Cl. 313-398.000.

Howell, Edward H.: *See*—
Musick, Donald R.; and Howell, Edward H., 4,517,929, Cl. 123-41.100.

Hoyt, Charles D.: *See*—
Horst, Paul V., Sr.; and Hoyt, Charles D., 4,518,847, Cl. 219-365.000.

Hoyt, Wilber S. Energy conservation system for heating and cooling of structures. 4,517,809, Cl. 62-183.000.

HR Textron Inc.: *See*—
Hsu, William W.; and Runkel, Manfred A., 4,518,004, Cl. 137-116.000.

Hriscisce, Frank T.: *See*—
Cherukuri, Subraman R.; Marschall-Helman, Ellen; and Hriscisce, Frank T., 4,518,615, Cl. 426-4.000.

Hruby, Victor J.; and Mosberg, Henry, to Gibson-Stephens Institute. Conformationally constrained cyclic enkephalin analogs with delta receptor specificity. 4,518,711, Cl. 514-11.000.

Hsia, Samson T.; and Ogasawara, Pam, to Clorox Company, The. Food coating compositions for foods cooked by microwave. 4,518,618, Cl. 426-262.000.

Hsu, William W.; and Runkel, Manfred A., to HR Textron Inc. Multifunction valve. 4,518,004, Cl. 137-116.000.

Huang, Yung-Lung. Torque-adjustable screwdriver. 4,517,865, Cl. 81-475.000.

Huberts, John T.: *See*—
Wiseman, Alan G.; and Huberts, John T., 4,517,850, Cl. 73-864.210.

Huckler, Volker: *See*—
Schafer, Helmut; Huckler, Volker; and Teich, Michael, 4,517,856, Cl. 74-528.000.

Hudson Products Corporation: *See*—
Larinoff, Michael W., 4,518,035, Cl. 165-101.000.

Hug, Nikolaus, to Dupro AG. Suction device for cleaning textile floor coverings. 4,517,705, Cl. 15-351.000.

Hull, Richard W.; and Teslenko, Leonard, to Western Digital Corporation. MOS Phase lock loop synchronization circuit. 4,519,086, Cl. 375-120.000.

Hundebol, Keld O. Method for producing a grinding- or polishing disc and a machine for this purpose. 4,518,452, Cl. 156-211.000.

Hunt, Charles d'A.: *See*—
Fletcher, Archibald W.; and Hunt, Charles d'A., 4,518,418, Cl. 75-10.00R.

Hunter, Arthur C.: *See*—
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,519,045, Cl. 364-709.000.

Hunter Enterprises Orillia Limited: *See*—
Richmond, Iain J.; Wong, David; Puust, Ants; and Oldham, James A., 4,517,903, Cl. 110-233.000.

Hunter, Kent; and Hunter, Lawrence D. Security fence system. 4,518,953, Cl. 340-564.000.

Hunter, Lawrence D.: *See*—
Hunter, Kent; and Hunter, Lawrence D., 4,518,953, Cl. 340-564.000.

Hurnik, Helmut: *See*—
Breidenbach, Peter; Hurnik, Helmut; and Pedain, Josef, 4,518,729, Cl. 524-101.000.
Lindner, Christian; Ott, Karl-Heinz; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,743, Cl. 525-80.000.
Ott, Karl-Heinz; Lindner, Christian; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,515, Cl. 525-79.000.

Hurst, Peter. Web splicing apparatus. 4,518,127, Cl. 242-58.300.

Huss, Heinrich. Installation for supplying photographic emulsion carriers to a developing machine. 4,518,241, Cl. 354-319.000.

Hutchin, Richard A., to Itek Corporation. Combined shearing interferometer and Hartmann wavefront sensor. 4,518,854, Cl. 250-201.000.

Hydromatik GmbH: *See*—
Schniederjan, Reinhold, 4,518,321, Cl. 417-218.000.

Hylton, Thomas A., to Upjohn Company, The. Processes for the preparation of hydratropic acids. 4,518,799, Cl. 562-423.000.

Iannelli, Frank M.; and James, David H., to Gerlach Industries. Wine dispensing apparatus and method. 4,518,104, Cl. 222-146.600.

Ibis Systems, Inc.: *See*—
Stupak, Joseph J., Jr., 4,518,881, Cl. 310-13.000.

Ichino, Hiroyuki: *See*—
Nishikawa, Kazuo; Ichino, Hiroyuki; and Okura, Keniti, 4,519,063, Cl. 369-172.000.

Ida, Masatoshi: *See*—
Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, 4,518,863, Cl. 250-578.000.

Idemitsu Kosan Company Limited: *See*—
Kanamori, Hideo, 4,518,512, Cl. 252-49.500.
Mizogami, Shigeyoshi; and Akimoto, Shinichi, 4,518,751, Cl. 526-114.000.

Ideno, Hiroaki: *See*—
Ueda, Fumio; Tsuboi, Yoshiaki; Arai, Hirotsugu; Horikiri, Kenji; and Ideno, Hiroaki, 4,518,959, Cl. 340-784.000.

Igarashi, Hitoshi: *See*—
Shimizu, Shigeaki; Kubo, Yoshimi; Arai, Yoshio; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,517,727, Cl. 29-570.000.

Iida, Seiu; Inokuchi, Tomio; and Munakata, Hiroaki, to Mitsubishi Chemical Industries Limited. Hypoglycemic agents. 4,518,591, Cl. 424-195.100.

Iijima, Toshiki: *See*—
Funasaki, Ken; Iijima, Toshiki; and Kagohata, Tsuneo, 4,518,032, Cl. 165-12.000.

Iinuma, Hironobu: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.

Ijames, Gerald A. Furnace structure. 4,518,117, Cl. 237-53.000.

Ikeda, Daishiro: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.

Ikegawa, Akihiko: *See*—
Yagihara, Morio; Ikegawa, Akihiko; Ono, Mitsunori; and Mihara, Yuji, 4,518,685, Cl. 430-505.000.

Illes, Janos: *See*—
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.

Illinois Tool Works Inc.: *See*—
Barth, Gerald D., 4,518,294, Cl. 411-188.000.
Pleickhardt, George C.; and Swick, E. Grant, 4,518,293, Cl. 411-107.000.

Illium, Herbert C., Jr.: *See*—
Drexler, Leonard H.; Flynn, Richard M.; Fox, George R.; Illium, Herbert C., Jr.; and O'Connor, Robert J., 4,518,830, Cl. 179-103.000.

Imada, Akira; Harada, Setsuo; and Asai, Mitsuko, to Takeda Chemical Industries, Ltd. Antibiotics C-19393S_2 . 4,518,529, Cl. 260-245.20T.

Image Graphics, Incorporated: *See*—
Tarnowski, Andrew A.; and Anderson, Brian G., 4,518,898, Cl. 315-371.000.

Imai, Eiichi: *See—*
Urawa, Motoo; and Imai, Eiichi, 4,518,672, Cl. 430-106.000.
Imai, Masaharu: *See—*
Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, 4,518,863, Cl. 250-578.000.
Imamiya, Tamotsu: *See—*
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,518,497, Cl. 210-259.000.
Imanishi, Norio: *See—*
Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, 4,518,989, Cl. 358-86.000.
Imea SA: *See—*
Lehmann, Franz, 4,518,155, Cl. 269-60.000.
Imose, Kazuo; Yamamuro, Kiyoshi; Takeuchi, Hironori; and Misawa, Takashi, to Teijin Limited; and Fuji Electric Co., Ltd. Device for transmitting measurement data from a rotating body. 4,518,962, Cl. 340-870.280.
Imperial Chemical Industries Limited: *See—*
Stansfield, James F.; Toole, James; and Topham, Arthur, 4,518,435, Cl. 106-308.00N.
Imperial Chemical Industries PLC: *See—*
Brody, Harry, 4,518,744, Cl. 525-184.000.
Marchington, Anthony F.; Lewis, Timothy; Clough, John M.; Worthington, Paul A.; and Dalziel, John, 4,518,415, Cl. 71-92.000.
Inaba, Shigeru: *See—*
Makishima, Takao; Inaba, Shigeru; and Wada, Yasuyoshi, 4,518,099, Cl. 221-30.000.
Inagaki, Kenji: *See—*
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,518,497, Cl. 210-259.000.
INCO Selective Surfaces Limited: *See—*
Mason, John J.; Cunningham, Michael T.; and Crosby, Jeffrey N., 4,518,467, Cl. 204-37.100.
Indy Lighting, Inc.: *See—*
Miles, Earl F., Jr., 4,518,896, Cl. 315-162.000.
Infrasonik AB: *See—*
Olsson, Mats A.; and Sandstrom, Roland, 4,517,915, Cl. 116-137.00R.
Ing. C. Olivetti & C., S.p.A.: *See—*
Gastaldo, Giancarlo, 4,518,730, Cl. 524-114.000.
Ing. G. Knapp Ges.mgH & Co. KG: *See—*
Knapp, Gunter, 4,518,302, Cl. 414-273.000.
Inokuchi, Tomio: *See—*
Iida, Seiu; Inokuchi, Tomio; and Munakata, Hiroaki, 4,518,591, Cl. 424-195.100.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,518,317, Cl. 417-45.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Fluid pumping system. 4,518,317, Cl. 417-45.000.
Inoue, Shingo; Iwata, Toshiharu; and Takasu, Yasuhito, to Nippondenso Co., Ltd. Ignition timing control for internal combustion engines. 4,517,944, Cl. 123-425.000.
Institut National de la Recherche Agronomique: *See—*
Czulak, Joseph, 4,518,616, Cl. 426-40.000.
Intel Corporation: *See—*
Folmsbee, Alan C., 4,519,050, Cl. 365-53.000.
Intercontinental Water Corp.: *See—*
Fermaglich, Saul, 4,518,503, Cl. 210-662.000.
International Business Machines Corporation: *See—*
Davis, James W.; and Jones, Frank D., 4,518,874, Cl. 307-467.000.
Dumke, William P.; and Woodall, Jerry M. P., 4,518,979, Cl. 357-30.000.
Freeouf, John L.; and Jackson, Thomas N., 4,518,846, Cl. 219-271.000.
Gini, Donald; and Stockton, Dean B., 4,518,634, Cl. 427-128.000.
Hottenrott, Hans G.; Hodge, Philo B.; and Cochran, Thomas J., 4,518,910, Cl. 324-158.00P.
Howard, Webster E., Jr., 4,518,891, Cl. 313-398.000.
Miller, William R.; and Prasad, Chandrika, 4,518,112, Cl. 228-124.000.
International Coal Refining Company: *See—*
Schweigharett, Frank; Hoover, David S.; and Garg, Diwaker, 4,518,479, Cl. 208-8.0LE.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,517,990, Cl. 131-276.000.
Boden, Richard M., 4,517,991, Cl. 131-276.000.
International Game Technology: *See—*
Branham, Doud R., 4,518,001, Cl. 133-5.00R.
International Harvester Company: *See—*
Musick, Donald R.; and Howell, Edward H., 4,517,929, Cl. 123-41.100.
International Jensen Incorporated: *See—*
Johnston, George C.; and Swieboda, Michael A., 4,518,642, Cl. 428-172.000.
International Minerals & Chemical Corp.: *See—*
Ellenbaum, Frank H.; and Ciesco, Richard, 4,518,428, Cl. 75-257.000.
International Remote Imaging Systems, Inc.: *See—*
Deindoerfer, Fred H., 4,519,087, Cl. 377-10.000.
International Shoe Machine Corporation: *See—*
Vornberger, Walter, 4,517,697, Cl. 12-10.500.
International Standard Electric Corporation: *See—*
Black, Philip W.; and Irven, John, 4,518,407, Cl. 65-3.120.
Lambrechts, Eric G. Y.; Verhoeven, Herman K. M.; and Claes, Constant J. P., 4,518,160, Cl. 271-214.000.
Mitschke, Helmut, 4,518,984, Cl. 358-11.000.
Pedersen, Jack R.; and Ege, Sigmund, 4,518,445, Cl. 156-49.000.
International Telephone and Telegraph Corporation: *See—*
Biswas, Dipak R.; and Nath, Dilip K., 4,518,628, Cl. 427-55.000.
Miller, Robert L., 4,519,071, Cl. 370-100.000.
Inui, Osamu: *See—*
Yano, Takeshi; Fukui, Izumu; Hamatsuki, Takeshige; Sato, Eiichi; and Inui, Osamu, 4,518,887, Cl. 310-328.000.
Inui, Taiji: *See—*
Ura, Katsumi; Inui, Taiji; and Sakka, Kenji, 4,517,804, Cl. 60-657.000.
Inui, Toshiharu: *See—*
Moriguchi, Haruhiko; and Inui, Toshiharu, 4,518,645, Cl. 428-212.000.
Inuiya, Masafumi, to Fuji Photo Film Co., Ltd. Image reader with a light diffuser. 4,518,864, Cl. 250-578.000.
Inventio AG: *See—*
Friedli, Paul; Hinderling, Thomas; and Begle, Guntram, 4,518,909, Cl. 318-566.000.
Irie, Namio: *See—*
Kuroki, Junsuke; Irie, Namio; and Tanaka, Haruto, 4,518,169, Cl. 280-6.00R.
Irmscher, Hans-Jurgen: *See—*
Gebauer, Ludwig; Irmscher, Hans-Jurgen; Lang, Gusztav; and Mauthe, Peter, 4,518,283, Cl. 405-260.000.
Irons, George P.: *See—*
Greene, Ted J.; and Irons, George P., 4,517,968, Cl. 128-80.00H.
Irven, John: *See—*
Black, Philip W.; and Irven, John, 4,518,407, Cl. 65-3.120.
Irving, Edward, to Ciba Geigy Corporation. Photopolymerizable compositions containing diaryliodosyl salts. 4,518,676, Cl. 430-280.000.
Isayama, Takuro, to Ricoh Company, Ltd. Ink jet air removal system. 4,518,974, Cl. 346-140.00R.
Ishida, Hiroshi: *See—*
Kawada, Shigeki; and Ishida, Hiroshi, 4,518,916, Cl. 324-173.000.
Ishida, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Detecting device for detecting a magnetic strip embedded in a sheet. 4,518,919, Cl. 324-228.000.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,517,818, Cl. 68-5.00E.
Ishigami, Kazuhiro; Furuhashi, Shoji; and Yuzawa, Haruo, to Nissan Motor Company, Limited. Engine vibration transmission structure. 4,517,945, Cl. 123-425.000.
Ishiguro, Tomihiro: *See—*
Kobayashi, Hisamine; Ishiguro, Tomihiro; and Murata, Akio, 4,517,771, Cl. 51-163.200.
Ishihara, Atsushi: *See—*
Kimoto, Katsumi; and Ishihara, Atsushi, 4,519,056, Cl. 369-43.000.
Ishii, Satoshi, to Pioneer Electronic Corporation. Power supply circuit for amplifier. 4,518,928, Cl. 330-297.000.
Ishijima, Koji: *See—*
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,518,330, Cl. 418-63.000.
Ishikawa, Masao; Kobayashi, Kazuhiro; Kimura, Toshihiko; and Higuchi, Moeko, to Konishiroku Photo Industry Co., Ltd. Bleach-fixing solution and processing of light-sensitive color photographic material by use thereof. 4,518,680, Cl. 430-393.000.
Ishikawa, Shigeru, to Muro Kinzoku Kogyo Co., Ltd. Successive screw feeder driver. 4,517,863, Cl. 81-434.000.
Ishikawa, Tatsuo: *See—*
Hatakeyama, Yoshiharu; Ishikawa, Tatsuo; and Teshima, Kenzo, 4,518,554, Cl. 264-262.000.
Ishikawa, Yasuhiro; Yamada, Kazuhiro; and Kida, Masashi, to Yokohama Rubber Co., Ltd., The. Rubber compositions comprising (1) polyisoprene (2) cobalt salt of rosin (3) carbon black and (4) sulphur. 4,518,733, Cl. 524-274.000.
Ishikura, Shinichi: *See—*
Kuwajima, Teruaki; Kida, Katsuaki; and Ishikura, Shinichi, 4,518,724, Cl. 523-501.000.
Ishizuka, Hiroshi. High temperature high pressure apparatus. 4,518,334, Cl. 425-77.000.
Isobe, Toshiaki: *See—*
Ito, Toshimitsu; and Isobe, Toshiaki, 4,517,949, Cl. 123-489.000.
Isomura, Shigenori: *See—*
Kaji, Yasumasa; Isomura, Shigenori; Harada, Takashi; and Sakakibara, Shuji, 4,517,948, Cl. 123-489.000.
Itek Corporation: *See—*
Hutchin, Richard A., 4,518,854, Cl. 250-201.000.
Ito, Kazuhiko: *See—*
Miyata, Hiroyasu; and Ito, Kazuhiko, 4,518,648, Cl. 428-256.000.
Ito, Kenji: *See—*
Kato, Kazuo; Hamada, Fumio; and Ito, Kenji, 4,518,683, Cl. 430-546.000.
Ito, Kunio: *See—*
Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, 4,518,976, Cl. 346-153.100.
Ito, Teruyoshi: *See—*
Matsui, Takeski; Ohyama, Hideo; Tachi, Ryosuke; Ito, Teruyoshi; and Kawai, Motoshi, 4,519,038, Cl. 364-431.030.
Ito, Toshimitsu; and Isobe, Toshiaki, to Toyota Jidosha Kabushiki Kaisha. Air fuel ratio control method. 4,517,949, Cl. 123-489.000.

Ito, Yo: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; and Ito, Yo, 4,518,029, Cl. 164-463.000.
ITT Industries, Inc.: *See—*
Backes, Reiner, 4,518,872, Cl. 307-448.000.
Backes, Reiner, 4,518,951, Cl. 340-365.00S.
Drake, Cyril F.; Maries, Alan; and Bateson, Paul F., 4,518,429, Cl. 106-14.390.
Ityel, Amos: *See—*
Movshovitz, Avner; and Ityel, Amos, 4,517,808, Cl. 62-160.000.
Iwaguro, Makoto: *See—*
Fujimura, Fumio; Satake, Toshimi; Iwaguro, Makoto; and Minami, Toshiaki, 4,518,977, Cl. 346-209.000.
Iwasaki, Morikatsu: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.
Iwasaki, Tomonobu, to Fujitsu Limited. Misoperation prevention circuit. 4,518,865, Cl. 307-200.00A.
Iwata, Toshiharu: *See—*
Inoue, Shingo; Iwata, Toshiharu; and Takasu, Yasuhito, 4,517,944, Cl. 123-425.000.
Iwatsu Electric Co., Ltd.: *See—*
Kokaji, Norio; and Kinoshita, Kunio, 4,518,970, Cl. 346-74.200.
J. D. Hanger & Company Limited: *See—*
May, Denis R. W.; and Hiddleston, James N., 4,517,688, Cl. 3-2.000.
J.M. Voith GmbH: *See—*
Hauser, Ludwig; and Wanke, Wilhelm, 4,518,460, Cl. 162-361.000.
Jaccaud, Michel: *See—*
Perrot, Michel; and Jaccaud, Michel, 4,518,569, Cl. 423-19.000.
Jackson, Frank W. Endoscopic scrub device. 4,517,702, Cl. 15-114.000.
Jackson Laboratory, The: *See—*
Coleman, Douglas L.; and Applezweig, Norman, 4,518,595, Cl. 514-178.000.
Jackson, Philip, to E. Beaudrey & Cie. Cleaning device for industrial water intakes. 4,518,494, Cl. 210-158.000.
Jackson, Rodney P., to H.E.M.E. International Limited. Measuring probes. 4,518,913, Cl. 324-127.000.
Jackson, Thomas N.: *See—*
Freeouf, John L.; and Jackson, Thomas N., 4,518,846, Cl. 219-271.000.
Jacobine, Anthony F., to Upjohn Company, The. Compositions and process. 4,518,473, Cl. 204-159.180.
Jacobs, Marcellus L.; and Jacobs, Paul R., to Jacobs Wind Electric. Dual fold tail vane assembly for wind energy systems. 4,518,312, Cl. 416-13.000.
Jacobs, Paul R.: *See—*
Jacobs, Marcellus L.; and Jacobs, Paul R., 4,518,312, Cl. 416-13.000.
Jacobs Wind Electric: *See—*
Jacobs, Marcellus L.; and Jacobs, Paul R., 4,518,312, Cl. 416-13.000.
Jacobson, Allan J.: *See—*
Johnson, Jack W.; and Jacobson, Allan J., 4,518,534, Cl. 260-429.00R.
Jacobson, Vivian R. Swimming instruction device. 4,518,364, Cl. 441-129.000.
Jacquinot, Bernard: *See—*
Lhonore, Pierre; Quibel, Jacques; Jacquinot, Bernard; Jestin, Yvon; and Pelletier, Robert, 4,518,811, Cl. 568-943.000.
Jahn, Paul F., to Advanced Ceramic Systems, Inc. Boron nitride paint for ceramic hot pressing. 4,518,736, Cl. 524-404.000.
Jakobsen, Kjell M.; and Nilsson, Claes T., to PLM Aktiebolag. Apparatus for the manufacture of a blank for a container. 4,518,340, Cl. 425-393.000.
Jalowsky, Lewis, to Joy Insignia, Inc. Embroidered design for securement to an article and method of making the same. 4,517,910, Cl. 112-439.000.
James, David H.: *See—*
Iannelli, Frank M.; and James, David H., 4,518,104, Cl. 222-146.600.
James River-Norwalk, Inc.: *See—*
Wecker, Sheldon M., 4,518,557, Cl. 264-45.900.
Jamison, Terry, to Garrett Corporation, The. Turbocharger compressor valve. 4,517,803, Cl. 60-611.000.
Jandrich, Henry C. Wine fermentation apparatus. 4,517,884, Cl. 99-276.000.
Janninck, Robert F.: *See—*
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,518,211, Cl. 339-17.0LM.
Jansma, John C., to Standard Oil Company, The. Concurrent production of two grades of coke using a single fractionator. 4,518,486, Cl. 208-131.000.
Janssen, Daniel J. G.: *See—*
Geboers, Josephus J. A.; and Janssen, Daniel J. G., 4,518,828, Cl. 179-81.00R.
Janssen, Harry R.: *See—*
Graf, Harlan G.; and Janssen, Harry R., 4,518,487, Cl. 208-131.000.
Japan Electronic Materials Corportion: *See—*
Okubo, Masao; Yoshimitsu, Yasuro; Nakai, Fumio; and Garretson, Oliver R., 4,518,914, Cl. 324-158.00F.
Jargosch, Reiner E.: *See—*
Lott, Peter F.; and Jargosch, Reiner E., 4,518,519, Cl. 252-148.000.
Jarry, Philippe: *See—*
Guittard, Pierre; Jarry, Philippe; Ducarre, Alphonse; and Haji, Lazhar, 4,518,980, Cl. 357-30.000.
Jeneric Industries, Inc.: *See—*
Prasad, Arun, 4,518,564, Cl. 420-464.000.
Jennmar Corporation: *See—*
Calandra, Frank, Jr., 4,518,292, Cl. 411-82.000.
Jensen, Niels D.; Nielsen, Kurt F.; and Larden, Bent, to Grundfos A/S. Pumping sets. 4,518,318, Cl. 417-53.000.
Jensen, Ole R., to E. R. Squibb & Sons. Ostomy pouch with reduced friction insert. 4,518,388, Cl. 604-332.000.
Jensen, Paul L.: *See—*
Mueller, Edward E.; and Jensen, Paul L., 4,518,350, Cl. 432-13.000.
Jensen, Ronald N.; and Walker, John A. Wind blade vibration eliminator for helicopters. 4,518,313, Cl. 416-18.000.
Jestin, Yvon: *See—*
Lhonore, Pierre; Quibel, Jacques; Jacquinot, Bernard; Jestin, Yvon; and Pelletier, Robert, 4,518,811, Cl. 568-943.000.
Jeuch, Pierre, to Commissariat a l'Energie Atomique. Process for positioning an electrical contact hole between two interconnection lines of an integrated circuit. 4,518,629, Cl. 427-89.000.
Jeumont-Schneider Corporation: *See—*
Wiart, Albert, 4,518,908, Cl. 318-723.000.
Jewer, Alan A., to News Log International, Inc. Method for formatting optically encoded digital data on a substrate and the data record carrier formed thereby. 4,519,054, Cl. 369-30.000.
Johnson, Gregory L., to Shell Oil Company. Non-fouling oil atomization tip. 4,518,120, Cl. 239-424.000.
Johnson, Jack W.; and Jacobson, Allan J., to Exxon Research & Engineering Co. Layered vanadium compounds containing phosphorus or arsenic and pendant organic groups. 4,518,534, Cl. 260-429.00R.
Johnson, Keith, Jr., to AMP Incorporated. Cable clamping and orienting apparatus. 4,517,718, Cl. 29-33.00M.
Johnson, Oscar; and Luecke, Robert A., to Dow Chemical Company, The. Process for the manufacture of synthetic paper and the product thereof. 4,518,681, Cl. 430-532.000.
Johnson, Roger A.: *See—*
West, Harold H.; Johnson, Roger A.; and Clark, Charles W., Jr., 4,518,153, Cl. 254-274.000.
Johnson, Wallace R.; and Beem, W. Wayne, to Outboard Marine Corporation. Operation control for electric outboard motor. 4,518,362, Cl. 440-6.000.
Johnston, David B. R., to Merck & Co., Inc. 2-Amino-3-cyano-5-halo-6-(substituted)pyrazine. 4,518,599, Cl. 514-255.000.
Johnston, George C.; and Swieboda, Michael A., to International Jensen Incorporated. Loudspeaker diaphragm and method for making same. 4,518,642, Cl. 428-172.000.
Jones, Clyde B. Hydrofoil control. 4,517,912, Cl. 114-275.000.
Jones, Frank D.: *See—*
Davis, James W.; and Jones, Frank D., 4,518,874, Cl. 307-467.000.
Jones, Thomas E., to United States of America, Navy. Metallized synthetic cable. 4,518,632, Cl. 427-118.000.
Jones, Thomas M.: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.
Josef Gartner & Co.: *See—*
Gartner, Karl, 4,518,033, Cl. 165-53.000.
Joubert, Daniel: *See—*
Godard, Gerard; Joubert, Daniel; and Gagnaire, Philippe, 4,518,516, Cl. 252-91.000.
Jow, Long J.: *See—*
Jow, Long S.; and Jow, Long J., 4,518,067, Cl. 192-0.090.
Jow, Long S.; and Jow, Long J., to Transtech Industrial Corporation. Automobile brake device. 4,518,067, Cl. 192-0.090.
Joy Insignia, Inc.: *See—*
Jalowsky, Lewis, 4,517,910, Cl. 112-439.000.
Joyner, Robert G.: *See—*
Hennon, Erin D.; and Joyner, Robert G., 4,518,017, Cl. 138-96.00R.
Judkins, Ren S., to Verosol USA Inc. Sun blind construction. 4,518,025, Cl. 160-84.00R.
Jujo Paper Co., Ltd.: *See—*
Fujimura, Fumio; Satake, Toshimi; Iwaguro, Makoto; and Minami, Toshiaki, 4,518,977, Cl. 346-209.000.
Juvin, Pierre; and Moreau, Pierre, to S.E.R.T.O.G. Insecticide composition for use in the form of a shampoo. 4,518,593, Cl. 424-195.000.
K-D Tools, Inc.: *See—*
Taggart, Kenneth J.; and Traub, Kevin W., 4,517,821, Cl. 73-1.00C.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Miyake, Toshio; Yoshida, Mikihiko; and Takeuchi, Kano , 4,518,581, Cl. 424-48.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Kawaguchi, Hatsuo, 4,519,075, Cl. 371-15.000.
Minamida, Kazukiyo; and Asai, Yoshiharu, 4,519,042, Cl. 364-567.000.
Kabushiki Kaisha Kanemitsu: *See—*
Kanemitsu, Yukio, 4,518,374, Cl. 474-170.000.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kamei, Futoshi, 4,518,027, Cl. 164-435.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Karakama, Tadao; and Uehara, Kazuo, 4,517,800, Cl. 60-337.000.
Shinsen, Mitsuhisa, 4,518,369, Cl. 464-101.000.
Yamanishi, Akio; and Sato, Kanichi, 4,518,031, Cl. 164-526.000.
Kabushiki Kaisha Murayama Seisakusho: *See—*
Nemoto, Kiyoshi, 4,518,328, Cl. 417-511.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Yasukawa, Kazuyoshi, 4,518,298, Cl. 414-4.000.
Kabushiki Kaisha Shinsei Industries: *See—*
Fujita, Mituo, 4,518,454, Cl. 156-541.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Shionozaki, Yoshio, 4,518,226, Cl. 350-350.00R.

Kabushiki Kaisha Takai-Pika-Denki-Seisakusho: *See—*
Yamada, Makoto; Kubota, Tatsushi; and Kojima, Ikuzo, 4,518,173, Cl. 280-806.000.

Kabushiki Kaisha Toshiba: *See—*
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kawabata, Yasuhiro; Kadokawa, Yoshio; Mori, Nobuyuki; and Suzuki, Shinji, 4,517,854, Cl. 74-492.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kawabata, Yasuhiro; Kadokawa, Yoshio; Mori, Nobuyuki; and Suzuki, Shinji, 4,517,854, Cl. 74-492.000.

Kadokawa, Yoshio: *See—*
Kawabata, Yasuhiro; Kadokawa, Yoshio; Mori, Nobuyuki; and Suzuki, Shinji, 4,517,854, Cl. 74-492.000.

Kageyama, Katsuaki; and Adachi, Ysushi, to Toray Silicone Company, Ltd. Heat fixer roll with an evaporated metal surface. 4,518,244, Cl. 355-3.0FU.

Kagohata, Tsuneo: *See—*
Funasaki, Ken; Iijima, Toshiki; and Kagohata, Tsuneo, 4,518,032, Cl. 165-12.000.

Kahan, Agostne, to Medimpex Gyogyszerkuelkereskedelmi Vaallalat. Watersoluble derivatives of non-steroidal anti-inflammatory agents and a process for the production thereof. 4,518,608, Cl. 514-420.000.

Kaji, Yasumasa; Isomura, Shigenori; Harada, Takashi; and Sakakibara, Shuji, to Nippondenso Co., Ltd. Method and apparatus for controlling air-fuel ratio in internal combustion engines. 4,517,948, Cl. 123-489.000.

Kakei, Tsutomu: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,518,466, Cl. 204-28.000.

Kakiuchi, Hazime: *See—*
Mashimo, Satoshi; Kakiuchi, Hazime; and Nakajima, Masayoshi, 4,518,376, Cl. 474-261.000.

Kalkbrenner, Ralph W.: *See—*
Antol, Ronald F.; Kalkbrenner, Ralph W.; and Kobuck, Richard M., 4,518,843, Cl. 219-121.0LC.

Kals, Walter, to Niagara Blower Company. Vacuum producing condenser. 4,517,805, Cl. 60-688.000.

Kaltenbach & Voigt GmbH & Co.: *See—*
Hoffmeister, Jurgen; and Kuhn, Bernhard, 4,518,355, Cl. 433-29.000.

Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievo Magnievoi I Elektrodnoi Promyshlennosti; and Leningradsky Tekhnologichesky Institut Imeni Lensoveta. Process for desilication of aluminate liquors in the production of alumina. 4,518,571, Cl. 423-119.000.

Kamada, Osao, to Hitachi Cable Limited. Process for production of hydrate surfaced rolled copper foil laminated plates. 4,518,449, Cl. 156-153.000.

Kamei, Futoshi, to Kabushiki Kaisha Kobe Seiko Sho. Mold adapted to house electromagnetic stirrer coil for continuous casting equipment. 4,518,027, Cl. 164-435.000.

Kamohara, Hideaki; Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, to Hitachi, Ltd. Heat storage material. 4,518,514, Cl. 252-70.000.

Kan, Takahiro: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; and Ito, Yo, 4,518,029, Cl. 164-463.000.

Kanai, Tetsuro, to NEC Corporation. Method of A/D conversion by successive approximations. 4,518,949, Cl. 340-347.0AD.

Kanamori, Hideo, to Idemitsu Kosan Company Limited. Water-containing lubricant. 4,518,512, Cl. 252-49.500.

Kane, James; and Murr, John, Jr., to RCA Corporation. CRT with internal neck coating of crystalline tin oxide for suppressing arcing therein. 4,518,893, Cl. 313-479.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kato, Yasushi; and Furukawa, Hisao, 4,518,726, Cl. 524-32.000.
Muramatsu, Eiichi; Matsumoto, Shigemi; and Nagoshi, Fumiya, 4,518,742, Cl. 525-67.000.

Kaneko, Tadashi: *See—*
Nishikawa, Toshio; Kaneko, Tadashi; and Othuka, Kazutoshi, 4,517,947, Cl. 123-489.000.

Kanekubo, Minoru. Liquid branch flow guide conduit assembly for use in a magnetic apparatus for separating foreign matters from waste liquids containing the foreign matters. 4,518,496, Cl. 210-222.000.

Kanemitsu, Yukio, to Kabushiki Kaisha Kanemitsu. Poly-V pulleys. 4,518,374, Cl. 474-170.000.

Kaneyuki, Kazutoshi, to Mitsubishi Denki Kabushiki Kaisha. Charging generator having waterproof cover. 4,518,886, Cl. 310-71.000.

Kao Corporation: *See—*
Matsuda, Morio; and Horio, Masamitsu, 4,518,810, Cl. 568-905.000.

Kaplan, Alan, to Emkay Manufacturing Co. Crystal plating chamber apparatus. 4,517,918, Cl. 118-723.000.

Kaplan, Steven E.; and Frink, Richard C., to Atlantic Richfield Company. Process for the preparation of polyhydroxybutadienes. 4,518,770, Cl. 528-487.000.

Karakama, Tadao; and Uehara, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic control system for off-highway self-propelled work machines. 4,517,800, Cl. 60-337.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl; Lautenschlager, Horst; and Lautenschlager, Gerhard, 4,517,706, Cl. 16-238.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Wilkens, Christian, 4,518,640, Cl. 428-102.000.

Kasamatsu, Kiyoshi; and Konishi, Hiroyuki, to Sumitomo Chemical Company, Limited. Use of trifluoromethanesulfonanilides. 4,518,594, Cl. 514-155.000.

Kashiwaya, Mineo: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Kataoka, Mutsuo, to Toray Industries, Inc. Stripper for radiosensitive resist. 4,518,675, Cl. 430-256.000.

Katayama Chemical Works Co., Ltd.: *See—*
Umekawa, Osamu; and Katayama, Sakae, 4,518,610, Cl. 514-516.000.

Katayama, Sakae: *See—*
Umekawa, Osamu; and Katayama, Sakae, 4,518,610, Cl. 514-516.000.

Kato, Kazuo; Hamada, Fumio; and Ito, Kenji, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic light-sensitive material. 4,518,683, Cl. 430-546.000.

Kato, Mikihiko; Komine, Shigeo; Kawamata, Toshio; Morita, Kazuhiko; and Sato, Tsunehiko, to Fuji Photo Film Co., Ltd. Process for preparing magnetic recording medium. 4,518,626, Cl. 427-48.000.

Kato, Yasushi; and Furukawa, Hisao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Metallic base paint. 4,518,726, Cl. 524-32.000.

Kaufman, Benjamin J.: *See—*
Sung, Rodney L.; Kaufman, Benjamin J.; and Dorn, Peter, 4,518,782, Cl. 548-353.000.

Kaufman, Ernest D.; and Dexter, Robin W., to American Cyanamid Company. Delivery of polymeric antiprecipitants in oil wells employing an oil soluble carrier system. 4,518,511, Cl. 252-8.55B.

Kawabata, Yasuhiro; Kadokawa, Yoshio; Mori, Nobuyuki; and Suzuki, Shinji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Low-vibration steering device. 4,517,854, Cl. 74-492.000.

Kawaberi, Seiji: *See—*
Okada, Hisao; Tanaka, Seiichiro; and Kawaberi, Seiji, 4,518,993, Cl. 358-114.000.

Kawachi, Hideo: *See—*
Higashihara, Teruaki; Nonaka, Chiaki; Yoshida, Tadao; and Kawachi, Hideo, 4,519,057, Cl. 369-50.000.

Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. System for detecting rotational speed. 4,518,916, Cl. 324-173.000.

Kawagoe, Nobukazu: *See—*
Yuasa, Yoshio; and Kawagoe, Nobukazu, 4,518,250, Cl. 355-69.000.

Kawaguchi, Hatsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Device for checking the printing circuit of a thermal printer. 4,519,075, Cl. 371-15.000.

Kawaguchi, Hiroshi: *See—*
Konishi, Masataka; Sugawara, Koko; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,518,589, Cl. 514-27.000.

Kawaguchi, Masafumi: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.

Kawahara, Yoshihiro; and Hayashi, Kiyoshi, to Mita Industrial Company Limited. Electrostatic recording apparatus. 4,518,975, Cl. 346-153.100.

Kawai, Hisasi: *See—*
Morino, Seiji; and Kawai, Hisasi, 4,518,882, Cl. 310-15.000.

Kawai, Motoshi: *See—*
Matsui, Takeski; Ohyama, Hideo; Tachi, Ryosuke; Ito, Teruyoshi; and Kawai, Motoshi, 4,519,038, Cl. 364-431.030.

Kawakami, Kouichi; and Tanaka, Mamoru, to Nippin Seiko Kabushiki Kaisha. Carriage apparatus. 4,517,852, Cl. 74-89.150.

Kawamata, Toshio: *See—*
Kato, Mikihiko; Komine, Shigeo; Kawamata, Toshio; Morita, Kazuhiko; and Sato, Tsunehiko, 4,518,626, Cl. 427-48.000.

Kawamoto, Hideyo: *See—*
Otaka, Shoichi; Kondo, Yukio; Kumada, Masayuki; Kawamoto, Hideyo; and Miura, Keiji, 4,517,951, Cl. 123-572.000.

Kawasaki, Hiroshi: *See—*
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,518,354, Cl. 430-527.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nakano, Hideaki; Ozu, Tadahiro; and Shirai, Eiichi, 4,517,930, Cl. 123-41.310.

Kawasaki Steel Corporation: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; and Ito, Yo, 4,518,029, Cl. 164-463.000.

Kazuoka, Koji: *See—*
Suganuma, Tetsuya; and Kazuoka, Koji, 4,518,563, Cl. 419-29.000.

Keiper Automobiltechnik GmbH & Co. KG: *See—*
Kluting, Bernd; and Zaveri, Vikram H., 4,518,190, Cl. 296-65.00R.

Kellogg, Michael S., to Pfizer Inc. 6-β-Substituted penicillanic acids as β-lactamase inhibitors. 4,518,530, Cl. 260-245.20R.

Kelly, Gilbert H., deceased: *See—*
Bedenbender, John W.; and Kelly, Gilbert H., deceased, 4,519,053, Cl. 367-190.000.

Kelso, Robert G.: *See—*
Markusch, Peter H.; Kelso, Robert G.; and Schmitt, Peter D., 4,518,522, Cl. 252-188.310.

Keltz, Douglas; and Heaton, Robert, to Empire Abrasive Equipment Corporation. Valve for regulating the pressurized flow of abrasives, in particular blast media. 4,518,145, Cl. 251-5.000.

Kempel, John J.: *See—*
Otto, Ronald F.; and Kempel, John J., 4,518,026, Cl. 160-232.000.

Kendall Company, The: *See—*
Perlin, Alfred R., 4,517,984, Cl. 128-642.000.

Kent, David P., to Control Process, Inc. Take-away technique for sliced bulk products. 4,518,300, Cl. 414-46.000.

Kerey, Gyorgy: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.

Kerfeld, Donald J.: *See—*
Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J., 4,519,065, Cl. 369-275.000.

Keryluk, Walter B.: *See—*
Whittlesey, Curtis C.; Henriksen, Gary L.; Keryluk, Walter B.; and Wolff, Merle T., 4,518,664, Cl. 429-38.000.

Kerzner, Mark G., to Dresser Industries, Inc. Method for determining formation dip. 4,517,835, Cl. 73-152.000.

Kesling, Haven S., Jr., to Atlantic Richfield Company. Production of aryl alkyl ethers from methylbenzyl alcohol using bis-(dithiobenzyl)-nickel(II) catalyst. 4,518,806, Cl. 568-659.000.

Kessler, Bayard F., to Novation, Inc. Modem cartridge and connection for program cartridge type computers. 4,518,823, Cl. 179-2.0DP.

Kessler, Lawrence W.; and Yuhas, Donald E., to Sonoscan, Inc. Acoustic imaging system and method. 4,518,992, Cl. 358-112.000.

Kewpie Kabushiki Kaisha: *See—*
Hasegawa, Mineo, 4,518,695, Cl. 435-206.000.

Key Systems, Inc.: *See—*
Palmer, Tom, 4,517,923, Cl. 119-51.00R.

Khan, Mahboob; and Trieu, Tom, to Fairchild Camera & Instrument Corporation. Double polysilicon process for fabricating CMOS integrated circuits. 4,517,731, Cl. 29-571.000.

Khanna, Pyare L.; and Colvin, Floyd W., to Syntex (U.S.A.) Inc. Reduction in non-specific interference in hydrophobic ligand assays. 4,518,701, Cl. 436-500.000.

Kholm, Gunnar B.: *See—*
Kiisler, Karl R.; Sjuld, Tiiya-Maya F.; Kristyanson, Peep G.; Kholm, Gunnar B.; Rokk, Juri K.; and Post, Kalju M., 4,518,453, Cl. 156-307.500.

Kida, Katsuaki: *See—*
Kuwajima, Teruaki; Kida, Katsuaki; and Ishikura, Shinichi, 4,518,724, Cl. 523-501.000.

Kida, Makoto: *See—*
Kikuchi, Masakazu; Hayakawa, Takaki; and Kida, Makoto, 4,518,698, Cl. 435-317.000.

Kida, Masashi: *See—*
Ishikawa, Yasuhiro; Yamada, Kazuhiro; and Kida, Masashi, 4,518,733, Cl. 524-274.000.

Kiefer, Edward H.: *See—*
Tindall, Gary W.; Lysenko, George P.; Vize, Richard J.; Kiefer, Edward H.; and Smith, Richard J., 4,518,195, Cl. 296-148.000.

Kiekert GmbH & Co. Kommanditgesellschaft: *See—*
Kleefeldt, Frank; and Raetz, Rolf, 4,518,180, Cl. 292-201.000.

Kiesvaara, Martti: *See—*
Autio, Karin; Kiesvaara, Martti; and Malkki, Yrjo , 4,518,525, Cl. 260-112.00B.

Kiisler, Karl R.; Sjuld, Tiiya-Maya F.; Kristyanson, Peep G.; Kholm, Gunnar B.; Rokk, Juri K.; and Post, Kalju M. Method of processing the outside surfaces of a ski. 4,518,453, Cl. 156-307.500.

Kikuchi, Itsuo: *See—*
Taguchi, Shunichi; Ohkawa, Shuji; Watanabe, Mitsuru; and Kikuchi, Itsuo, 4,518,839, Cl. 219-10.55B.

Kikuchi, Masakazu; Hayakawa, Takaki; and Kida, Makoto, to Takeda Chemical Industries, Ltd. Plasmid and production thereof. 4,518,698, Cl. 435-317.000.

Kim, Chong S.: *See—*
Sackner, Marvin A.; and Kim, Chong S., 4,517,987, Cl. 128-719.000.

Kimble, Kenneth B.: *See—*
Bresson, Clarence R.; and Kimble, Kenneth B., 4,518,492, Cl. 209-166.000.

Kimoto, Katsumi; and Ishihara, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical disk apparatus. 4,519,056, Cl. 369-43.000.

Kimura, Fumio: *See—*
Noguchi, Koji; Asanae, Masumi; and Kimura, Fumio, 4,518,673, Cl. 430-108.000.

Kimura, Hiroshi: *See—*
Takaku, Kazuo; Naruse, Akisuke; Fujimoto, Hirotsugu; and Kimura, Hiroshi, 4,518,560, Cl. 376-245.000.

Kimura, Kazushige: *See—*
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.

Kimura, Kenji: *See—*
Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, 4,518,863, Cl. 250-578.000.

Kimura, Kiyoshi: *See—*
Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, 4,518,976, Cl. 346-153.100.

Kimura, Masami: *See—*
Yokozeki, Shinichi; Kimura, Masami; and Tsukagoshi, Tsunehiro, 4,518,443, Cl. 148-400.000.

Kimura, Tetsuo: *See—*
Tanaka, Hiroshi; Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,518,952, Cl. 340-514.000.

Kimura, Toshihiko: *See—*
Ishikawa, Masao; Kobayashi, Kazuhiro; Kimura, Toshihiko; and Higuchi, Moeko, 4,518,680, Cl. 430-393.000.

Kinde, Ronald: *See—*
Reinhard, George G.; Kinde, Ronald; and Singer, Bernard S., 4,517,926, Cl. 123-3.000.

King, Donald R.: *See—*
Chastain, Charles E.; and King, Donald R., 4,517,905, Cl. 110-346.000.

King, Leonard H.: *See—*
Bogner, Richard D., 4,518,969, Cl. 343-819.000.

Kingsdown Medical Consultants, Limited: *See—*
Steer, Peter L.; and Edwards, John V., 4,518,389, Cl. 604-339.000.

Kingston, James E. Aerifying device for whirlpool bath or tub. 4,518,325, Cl. 417-368.000.

Kinoshita, Kunio: *See—*
Kokaji, Norio; and Kinoshita, Kunio, 4,518,970, Cl. 346-74.200.

Kirby, James R.; and Looney, Donald F. Buried conductor cable energy distribution system with conductor loop enclosure. 4,518,817, Cl. 174-38.000.

Kirchbrucher, Rudiger: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; and Pohlmann, Klaus D., 4,518,284, Cl. 405-296.000.

Kirkham, Robert L.; and Forrest, Garland F., Jr. Automatic truck bed cover assembly. 4,518,194, Cl. 296-100.000.

Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Sugimori, Masahiro, to Mitsubishi Rayon Company Ltd. Delustering coating composition excellent in abrasion resistance. 4,518,472, Cl. 204-159.150.

Kiss, Pal: *See—*
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Kistner, Herbert: *See—*
Frichmann, Albert; Sternisa, Danilo; Mermi, Kurt; and Kistner, Herbert, 4,518,290, Cl. 411-30.000.

Kita, Sumio: *See—*
Nishibori, Toshiki; Kita, Sumio; and Takano, Sakuharu, 4,518,159, Cl. 271-103.000.

Kitagawa, Junji; and Akita, Shigeyuki, to Nippon Soken, Inc. Electric liquid level detector. 4,518,956, Cl. 340-620.000.

Kitaguchi, Tadashi: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Kitano, Kissho: *See—*
Schulz, Donald N.; Kitano, Kissho; Burkhardt, Terry J.; and Langer, Arthur W., 4,518,757, Cl. 526-329.000.

Kittle, Carl E.: *See—*
Wiegardt, Gordon K.; Hanks, Thomas W.; and Kittle, Carl E., 4,518,044, Cl. 172-7.000.

Kiya, Nobuyuki: *See—*
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,519,026, Cl. 364-167.000.

Kiyooka, Katsumi, to Komatsu Zenoah Co. Dust collecting device. 4,517,939, Cl. 123-198.00E.

Klarhorst, Gunter: *See—*
Vaillant, Michael; and Klarhorst, Gunter, 4,518,404, Cl. 55-256.000.

Klauke, Erich: *See—*
Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, 4,518,812, Cl. 568-946.000.
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,518,416, Cl. 71-94.000.

Klausing, Karl-Heinz: *See—*
Wahlmann, Ernst; and Klausing, Karl-Heinz, 4,518,201, Cl. 297-316.000.

Klecka, Miro E., to Shell Oil Company. Sulfur separation process. 4,518,577, Cl. 423-573.00R.

Kleefeldt, Frank; and Raetz, Rolf, to Kiekert GmbH & Co. Kommanditgesellschaft. Automobile power door latch. 4,518,180, Cl. 292-201.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Dernedde, Robert; Franke, Hans-Joachim; and Havekost, Peter, 4,518,311, Cl. 415-102.000.

Kleinschmit, Einhard: *See—*
Scheurenbrand, Dieter; Stotz, Manfred; Distel, Manfred; and Kleinschmit, Einhard, 4,518,091, Cl. 220-5.00A.

Klimsch/Optronics, Inc.: *See—*
Warner, Andrew; and Zlotek, David A., 4,518,920, Cl. 328-14.000.
Warner, Andrew, 4,518,998, Cl. 358-208.000.

Klinner, Wilfred E.; and Knight, Andrew C., to National Research Development Corporation. Crop comminuting apparatus having vibrating cutting blades. 4,518,124, Cl. 241-101.700.

Kloppe, Herbert: *See—*
Stutenkemper, Paul; Rest, Heinz; and Kloppe, Herbert, 4,518,138, Cl. 248-73.000.

Kluting, Bernd; and Zaveri, Vikram H., to Keiper Automobiltechnik GmbH & Co. KG. Hinge unit for a seat, particularly a power vehicle seat. 4,518,190, Cl. 296-65.00R.

Knapp, Gunter, to Ing. G. Knapp Ges.mgH & Co. KG. System and process for automatic stacking, storage and withdrawal of packaged merchandise in large warehouses. 4,518,302, Cl. 414-273.000.

Kneubuhl, Beat, to Schweizerische Eidgenossenschaft, Vertreten Durch Die Eidg. Munitionsfabrik Thun Der Gruppe Fur Rustungsdienste. Small arms projectile. 4,517,897, Cl. 102-439.000.

Knifton, John F., to Texaco Inc. Process for producing ethylene glycol using a ruthenium-copper catalyst. 4,518,715, Cl. 518-700.000.

Knight, Andrew C.: *See*—
Klinner, Wilfred E.; and Knight, Andrew C., 4,518,124, Cl. 241-101.700.

Knudsen, Ronald D.; and Reiter, Stephen E., to Phillips Petroleum Company. Ethylene oligomeration. 4,518,814, Cl. 585-523.000.

Kobari, Yuji: *See*—
Yagi, Eiji; Kobari, Yuji; and Takahashi, Sadahiro, 4,518,055, Cl. 180-142.000.

Kobayashi, Hidetoshi; Takahashi, Toshiro; Hirano, Shigeo; Hirose, Takeshi; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,518,682, Cl. 430-543.000.

Kobayashi, Hiroshi, to Nissan Motor Company, Limited. Liquid quantity sensor of capacitor type and method of producing same. 4,519,012, Cl. 361-284.000.

Kobayashi, Hisamine; Ishiguro, Tomihiro; and Murata, Akio, to Shikishima Tipton Manufacturing Co., Ltd. Elongated annular vibratory barrel finishing apparatus having unbalanced weights controlled by an electronic processor. 4,517,771, Cl. 51-163.200.

Kobayashi, Kazuhiro: *See*—
Ishikawa, Masao; Kobayashi, Kazuhiro; Kimura, Toshihiko; and Higuchi, Moeko, 4,518,680, Cl. 430-393.000.

Kobayashi, Kazuo: *See*—
Yoshida, Hisayoshi; Ogawa, Ichitaro; Hagio, Tsuyoshi; Kobayashi, Kazuo; and Yamamoto, Takayoshi, 4,518,702, Cl. 501-90.000.

Kobayashi, Masakazu: *See*—
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Kobayashi, Robert J.; Nancarrow, James H.; and Alger, Jeffrey L., to Garrett Corporation, The. Turbocharger combustor method. 4,517,802, Cl. 60-606.000.

Kobayashi, Takashi, to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile. 4,518,056, Cl. 180-193.000.

Kobayashi, Takeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter speed setting device for camera. 4,518,243, Cl. 354-418.000.

Kobayashi, Yoshikazu: *See*—
Takagi, Toshihiko; Kobayashi, Yoshikazu; Suzuki, Yoshiji; and Hara, Tsutomu, 4,519,064, Cl. 369-275.000.

Kobe Steel, Limited: *See*—
Tanaka, Kazuo; Motonaga, Kenjiro; and Tanaka, Kozo, 4,518,123, Cl. 241-18.000.

Kober, Leo: *See*—
Forster, Alfred; Geyer, Willi; and Kober, Leo, 4,518,196, Cl. 296-204.000.

Kobori, Yasunori: *See*—
Fukushima, Isao; Kobori, Yasunori; Nishijima, Hideo; and Masuda, Yoshinori, 4,518,901, Cl. 318-328.000.

Kobuck, Richard M.: *See*—
Antol, Ronald F.; Kalkbrenner, Ralph W.; and Kobuck, Richard M., 4,518,843, Cl. 219-121.0LC.

Koch, Gerhard, to Hafele KG. Connecting device for detachably maintaining flat structures perpendicular to each other. 4,518,278, Cl. 403-230.000.

Koch, Robert W., to Amchem Products, Inc. Cold paint stripping composition. 4,518,518, Cl. 252-142.000.

Kocherga, Stepan I.: *See*—
Rusakova, Svetlana V.; Glyzin, Vladimir I.; Kocherga, Stepan I.; Ananieva, Alla A.; and Libizova, Larisa F., 4,518,592, Cl. 424-195.100.

Kochi, Hiromu: *See*—
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Kodali, Satyanarayana; Singh, Bhim S.; Whittlesey, Curtis C.; and Henriksen, Gary L., to Energy Development Associates, Inc. Electrolyte circulation subsystem. 4,518,663, Cl. 429-18.000.

Kodman, Ronald W. Removable lid and pour spout. 4,518,094, Cl. 220-254.000.

Kohl, Horst: *See*—
Kuckens, Alexander; and Kohl, Horst, 4,518,105, Cl. 222-207.000.

Kohler, Gernot: *See*—
Naarmann, Herbert; Muench, Volker; Kohler, Gernot; and Simak, Petr, 4,518,535, Cl. 260-438.100.

Koike, Keiichi: *See*—
Kamohara, Hideaki; Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,518,514, Cl. 252-70.000.

Koike, Norio: *See*—
Tamatani, Masaaki; Tsuda, Nobuyuki; Koike, Norio; and Ajiro, Sakae, 4,518,985, Cl. 358-60.000.

Koizumi, Nobuyuki: *See*—
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Hirano, Masami; Araki, Tamio; and Kojima, Koichi, 4,518,023, Cl. 152-361.0FP.

Kojima, Ikuzo: *See*—
Yamada, Makoto; Kubota, Tatsushi; and Kojima, Ikuzo, 4,518,173, Cl. 280-806.000.

Kojima, Koichi: *See*—
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Hirano, Masami; Araki, Tamio; and Kojima, Koichi, 4,518,023, Cl. 152-361.0FP.

Kojima, Yoshihiro: *See*—
Hori, Takashi; Ueda, Sanae; and Kojima, Yoshihiro, 4,518,807, Cl. 568-716.000.

Kokaji, Norio; and Kinoshita, Kunio, to Iwatsu Electric Co., Ltd. Method for forming a latent image and apparatus for carrying out the same. 4,518,970, Cl. 346-74.200.

Koke, Eric J. Hair brush with cleaning feature. 4,517,703, Cl. 15-246.000.

Kolc, Jaroslav F.: *See*—
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,518,413, Cl. 71-28.000.

Komatsu Zenoah Co.: *See*—
Kiyooka, Katsumi, 4,517,939, Cl. 123-198.00E.

Kominami, Naoya: *See*—
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,518,497, Cl. 210-259.000.

Komine, Shigeo: *See*—
Kato, Mikihiko; Komine, Shigeo; Kawamata, Toshio; Morita, Kazuhiko; and Sato, Tsunehiko, 4,518,626, Cl. 427-48.000.

Komine, Toshiaki: *See*—
Fukuoka, Yoshitaka; and Komine, Toshiaki, 4,517,738, Cl. 29-840.000.

Komonytsky, Donald, to Storage Technology Corporation. LSI self-test method. 4,519,078, Cl. 371-25.000.

Komura, Akio: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,518,556, Cl. 264-295.000.

Konak, A. Riza: *See*—
Lim, Git B.; and Konak, A. Riza, 4,518,505, Cl. 210-712.000.

Kondo, Shinichi: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.

Kondo, Yukio: *See*—
Otaka, Shoichi; Kondo, Yukio; Kumada, Masayuki; Kawamoto, Hideyo; and Miura, Keiji, 4,517,951, Cl. 123-572.000.

Kondoleon, Anthony: *See*—
Consales, Emanuel J.; and Kondoleon, Anthony, 4,517,744, Cl. 33-169.00C.

Kone Oy: *See*—
Makinen, Heimo; and Suur-Askola, Seppo, 4,518,062, Cl. 187-29.00R.

Konishi, Hiroyuki: *See*—
Kasamatsu, Kiyoshi; and Konishi, Hiroyuki, 4,518,594, Cl. 514-155.000.

Konishi, Masataka; Sugawara, Koko; Miyaki, Takeo; and Kawaguchi, Hiroshi, to Bristol-Myers Company. BBM-2478 Antibiotic complex. 4,518,589, Cl. 514-27.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ishikawa, Masao; Kobayashi, Kazuhiro; Kimura, Toshihiko; and Higuchi, Moeko, 4,518,680, Cl. 430-393.000.
Kato, Kazuo; Hamada, Fumio; and Ito, Kenji, 4,518,683, Cl. 430-546.000.
Matsuzaki, Masatoshi; Yamazaki, Toshinori; and Nomori, Hiroyuki, 4,518,670, Cl. 430-58.000.
Sasaki, Masao; and Onodera, Kaoru, 4,518,686, Cl. 430-512.000.
Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, 4,518,976, Cl. 346-153.100.
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,518,674, Cl. 430-108.000.

Konstruktions Teknik: *See*—
Hornberg, Gunnar, 4,518,186, Cl. 294-82.240.

Koomey, Inc.: *See*—
Allewitz, Murry, 4,518,005, Cl. 137-207.000.

Kopp, Hubert, to Breitfeld & Schliekert GmbH. Machine for manufacturing a template for edge grinding a spectacle lens. 4,517,870, Cl. 83-411.00R.

Koppe, Rudolf P.; and Blom, Hendrik, to U.S. Philips Corporation. Signal processing system comprising a signal source, a signal processing unit and connecting cables. 4,518,927, Cl. 330-284.000.

Korbonits, Dezso: *See*—
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Korneev, Valentin I.: *See*—
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Korte, Kevin R.; and Snyder, Daniel D., to Brown & Williamson Tobacco Corporation. Tobacco conditioning apparatus. 4,517,992, Cl. 131-304.000.

Korzonas, Raymond, to Chicago Bridge & Iron Company. Apparatus for separating ice from a slurry and washing the ice. 4,517,806, Cl. 62-123.000.

Kosley, Raymond W., Jr.; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Inc. Analgesic substituted-1-aminoalkylamino-4-aryloxypiperidines. 4,518,713, Cl. 514-326.000.

Kostin, Ivan M.: *See*—
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Kosuge, Wataru: *See*—
Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, 4,518,989, Cl. 358-86.000.

Kotera, Nobuo: *See*—
Harada, Yutaka; Yamashita, Kunio; Kotera, Nobuo; and Tanaka, Hirotoshi, 4,518,868, Cl. 307-306.000.

Kovnat, Larry A.: *See*—
Frey, Thomas M.; and Kovnat, Larry A., 4,519,000, Cl. 358-301.000.

Kowalski, David A.: *See*—
Holland, Scott B.; Greene, Edward S.; Kowalski, David A.; and Strachan, Bruce D., 4,517,832, Cl. 73-118.000.

Koyanagi, Takahiro; and Sakaoka, Hiromu, to Honda Giken Kogyo Kabushiki Kaisha. Intake device for internal combustion engine. 4,517,940, Cl. 123-198.00E.

Kramer, George M.; Weissman, Walter; Brown, Herbert C.; and Pettit, Rowland, deceased (by Pettit, Flora H., executrix), to Exxon Research & Engineering Co. Preparing esters and carboxylic acids from lower olefins. 4,518,798, Cl. 560-233.000.

Krappitz, Heinz; Carstensen, Hans-Peter; and Weinhold, Friedrich, to B.A.T. Cigaretten-Fabriken GmbH. Pneumatic sealing arrangement. 4,517,829, Cl. 73-49.800.

Kratochvil, David F.: *See*—
Tantillo, Donnie J.; Kratochvil, David F.; Moore, Robert G.; and Browne, Edward M., 4,519,052, Cl. 367-79.000.

Kraus, Mark G.: *See*—
Oates, Robert M.; Petronio, Carlo F.; and Kraus, Mark G., 4,518,917, Cl. 324-207.000.

Kraus, Willibald, to TRW Inc. Molded plastic socket with easy-on hard-off stud engager. 4,518,297, Cl. 411-437.000.

Krause, Arthur A.: *See*—
Lim, Walter K.; and Krause, Arthur A., 4,518,103, Cl. 222-135.000.

Kreager, William D., to Frito-Lay, Inc. Method and apparatus for sealing bags. 4,517,787, Cl. 53-450.000.

Kreager, William D., to Frito-Lay, Inc. Apparatus and method for ultrasonic sealing of packages. 4,517,790, Cl. 53-552.000.

Krebs, Jay; and Freeburg, Thomas A., to Motorola, Inc. Method and apparatus for communicating variable length messages between a primary station and remote stations of a data communications system. 4,519,068, Cl. 370-82.000.

Krempl, Peter W.; Schindler, Wolfgang; and Faschingleitner, Leopold, to List, Hans. Method for the continuous measurement of the mass of aerosol particles in gaseous samples and a device for the implementation of the method. 4,518,861, Cl. 250-339.000.

Krishnamurthy, Sowmithri; Landolt, George R.; and Schoennagel, Hans J., to Mobil Oil Corporation. Pretreatment of a fresh iridium-containing catalyst. 4,518,708, Cl. 502-230.000.

Kristiansen, Odd; and Drabek, Jozef, to Ciba Geigy Corporation. 2-(3-Pyridyl)-1,3,4-oxadiazoles and use thereof in pest control. 4,518,601, Cl. 514-340.000.

Kristyanson, Peep G.: *See*—
Kiisler, Karl R.; Sjuld, Tiiya-Maya F.; Kristyanson, Peep G.; Kholm, Gunnar B.; Rokk, Juri K.; and Post, Kalju M., 4,518,453, Cl. 156-307.500.

Kroner, Klaus, to U.S. Philips Corporation. Integrable transistor oscillator requiring only one pin to quartz resonator. 4,518,933, Cl. 331-108.00D.

Krueger, Ulf A.; and Meshako, Thomas M., to Ciba Geigy Corporation. Process for making epoxy novolac resins with high epoxy values. 4,518,762, Cl. 528-95.000.

Kruger, Hermann, to Volkswagenwerk Aktiengesellschaft. Rotary valve arrangement. 4,517,938, Cl. 123-190.00E.

Kruger, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Arrangement for connecting a ceramic rotor wheel, particularly a turbine rotor wheel of a turbomachine, such as a gas turbine engine, to a metallic shaft. 4,518,315, Cl. 416-241.00B.

Krupp-Koppers GmbH: *See*—
Gelfand, Jan, 4,518,461, Cl. 202-270.000.

Kubo, Yoshimi: *See*—
Shimizu, Shigeaki; Kubo, Yoshimi; Arai, Yoshio; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,517,727, Cl. 29-570.000.

Kubota, Nobunori: *See*—
Sakai, Shoji; Fujiwara, Michiaki; Kubota, Nobunori; and Noda, Koshi, 4,517,794, Cl. 57-304.000.

Kubota, Tatsushi: *See*—
Yamada, Makoto; Kubota, Tatsushi; and Kojima, Ikuzo, 4,518,173, Cl. 280-806.000.

Kuckens, Alexander; and Kohl, Horst, to DAGMA Deutsche Automaten-und Getrankemaschinen GmbH & Co., Ltd. Method of and device for dispensing viscous concentrates of variable viscosity in accurately metered quantities of variable volume. 4,518,105, Cl. 222-207.000.

Kuhlmann, Gerhard; and Wolf, Erwin, to Robert Bosch GmbH. Saw table for a compass saw. 4,517,869, Cl. 83-100.000.

Kuhn, Bernhard: *See*—
Hoffmeister, Jurgen; and Kuhn, Bernhard, 4,518,355, Cl. 433-29.000.

Kukes, Simon G.: *See*—
Mann, David P.; Kukes, Simon G.; and Coombs, Daniel M., 4,518,484, Cl. 208-87.000.

Kumada, Masayuki: *See*—
Otaka, Shoichi; Kondo, Yukio; Kumada, Masayuki; Kawamoto, Hideyo; and Miura, Keiji, 4,517,951, Cl. 123-572.000.

Kurata, Masami; Saitoh, Hiroyuki; and Matsuda, Masakane, to Fuji Xerox Co., Ltd. Picture image position setting apparatus. 4,518,999, Cl. 358-285.000.

Kurata, Masami: *See*—
Saitoh, Hiroyuki; and Kurata, Masami, 4,518,987, Cl. 358-75.000.
Saitoh, Hiroyuki; and Kurata, Masami, 4,518,988, Cl. 358-75.000.

Kuri, Takeshi: *See*—
Tanaka, Motomu; Osuka, Masanari; Kuri, Takeshi; and Takakuwa, Sadao, 4,518,764, Cl. 528-271.000.

Kurihara, Teruo; and Oowa, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary anode X-ray tube. 4,519,093, Cl. 378-132.000.

Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; and Matsuura, Kazuo, to Nippon Oil Co., Ltd. Process for polyolefins production. 4,518,752, Cl. 526-116.000.

Kuroda, Shigeaki: *See*—
Atsumi, Akira; Oguni, Kensaku; Kuroda, Shigeaki; Senshu, Takao; and Yoshioka, Kazuo, 4,517,811, Cl. 62-197.000.

Kuroki, Junsuke; Irie, Namio; and Tanaka, Haruto, to Nissan Motor Company, Limited. Automatic vehicle height-adjusting system. 4,518,169, Cl. 280-6.00R.

Kushi, Kenji: *See*—
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Sugimori, Masahiro, 4,518,472, Cl. 204-159.150.

Kutnyak, Thomas A.; Dunn, George T.; and Guiles, Chester L., to Automation Industries, Inc. Reinforced formed hose. 4,518,018, Cl. 138-130.000.

Kuu, Wei-Youh, to Research Corporation. Immobilized biocatalysts. 4,518,693, Cl. 435-178.000.

Kuwajima, Teruaki; Kida, Katsuaki; and Ishikura, Shinichi, to Nippon Paint Co., Ltd. Aqueous coating composition. 4,518,724, Cl. 523-501.000.

Kyle, James C. Terminal assembly for heart pacemakers. 4,518,820, Cl. 174-152.0GM.

Kyoto Ceramic Kabushiki Kaisha: *See*—
Okabayashi, Yoshikatsu; Nakamura, Noboru; Matsumoto, Takeshi; and Osumi, Yoshimasa, 4,518,704, Cl. 502-80.000.

La Jolla Cancer Research Foundation: *See*—
Ruoslahti, Erkki I.; and Pierschbacher, Michael D., 4,517,686, Cl. 3-1.000.

Lacombe, Gerard A.; and Bonicalzi, Leopold. Insulated wall unit construction. 4,517,780, Cl. 52-233.000.

LaFleur, Arthur E., to Custom Packaging Systems, Inc. Collapsible bag and discharge valve therefor. 4,518,106, Cl. 222-460.000.

La Forge, David H.; and Portner, Peer M., to Novacor Medical Corporation. Solenoid activated closure device. 4,519,043, Cl. 364-571.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Foulard, Jean; Rimbert, Jean F.; Vernet, Gilles; and Goursat, Albert-Gilbert, 4,518,421, Cl. 75-49.000.

Lamboley, Jean J., to Thomson-CSF. Self-adapting process and device for triggering a triac. 4,518,867, Cl. 307-252.00B.

Lambrechts, Eric G. Y.; Verhoeven, Herman K. M.; and Claes, Constant J. P., to International Standard Electric Corporation. Flat article stacking and tray loading apparatus. 4,518,160, Cl. 271-214.000.

Lamere, Jean-Claude. Method and apparatus for reproducing at least one colored surface. 4,518,234, Cl. 354-20.000.

Lamp'l, Thomas A.; and Eby, Randall W. Cargo handling ramp. 4,517,698, Cl. 14-72.500.

Landolt, George R.: *See*—
Krishnamurthy, Sowmithri; Landolt, George R.; and Schoennagel, Hans J., 4,518,708, Cl. 502-230.000.

Lane, Lloyd L.; and Hosford, Gregory S., to Deere & Company. Power take-off lever arrangement for a tractor. 4,517,855, Cl. 74-528.000.

Lang Apparatebau GmbH: *See*—
Hoffmann, Peter; and Evers, Walter, 4,518,006, Cl. 137-218.000.

Lang, Gusztav; Hoffmann, Armin; and Bisping, Heinz, to Hilti Aktiengesellschaft. Plastics material expansion dowel with wave-form slots. 4,518,291, Cl. 411-60.000.

Lang, Gusztav: *See*—
Gebauer, Ludwig; Irmscher, Hans-Jurgen; Lang, Gusztav; and Mauthe, Peter, 4,518,283, Cl. 405-260.000.

Langer, Arthur W.: *See*—
Schulz, Donald N.; Kitano, Kissho; Burkhardt, Terry J.; and Langer, Arthur W., 4,518,757, Cl. 526-329.000.

Langille, Donald S.: *See*—
Penterson, Craig A.; and Langille, Donald S., 4,517,904, Cl. 110-264.000.

Langner, Carl; Poran, Michael; and Szarka, Geza, to Concast Incorporated. Arrangement and a method for transferring products in metal processing installations. 4,518,074, Cl. 198-425.000.

Langseth, Rollin E., to AT&T Bell Laboratories. Matched filter for combating multipath fading. 4,519,084, Cl. 375-14.000.

Lanier Business Products, Inc.: *See*—
Bolick, Fred C., Jr., 4,519,009, Cl. 360-92.000.

LaPierre, Rene B.; Partridge, Randall D.; Chen, Nai Y.; and Wong, Stephen S., to Mobil Oil Corporation. Hydrotreating/isomerization process to produce low pour point distillate fuels and lubricating oil stocks. 4,518,485, Cl. 208-89.000.

Larden, Bent: *See—*
Jensen, Niels D.; Nielsen, Kurt F.; and Larden, Bent, 4,518,318, Cl. 417-53.000.

Larinoff, Michael W., to Hudson Products Corporation. Air-cooled, vacuum steam condenser. 4,518,035, Cl. 165-101.000.

Larizza, Pietro, to Larizza & Scuratti s.d.f. Instrument for writing and drawing with pivotable cover. 4,518,273, Cl. 401-98.000.

Larizza & Scuratti s.d.f.: *See—*
Larizza, Pietro, 4,518,273, Cl. 401-98.000.

Larsson, Ingemar. Apparatus for handling sheets for microfilming or other similar recording. 4,518,251, Cl. 355-75.000.

Larsson, Peter: *See—*
Andersson, Arne; and Larsson, Peter, 4,518,265, Cl. 366-318.000.

Larsson, Peter L.; and Clabburn, Robin J. T., to Raychem Corporation. Clamp assembly for power cables. 4,518,819, Cl. 174-78.000.

Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, to S.A. Panmedica. Dipeptides of L-5-hydroxytryptophan, processes for their preparation and drugs in which they are present. 4,518,587, Cl. 514-19.000.

Latreille, Maurice G.; and Tennant, William A., to American Can Company. Methods and apparatus for maintaining a pressure contact seal between nozzles and cavities of an on-line injection molding machine. 4,518,344, Cl. 425-570.000.

Laurel Bank Machine Co., Ltd.: *See—*
Goi, Kowichi, 4,518,158, Cl. 271-9.000.

Lautenschlager, Gerhard: *See—*
Lautenschlager, Karl; Lautenschlager, Horst; and Lautenschlager, Gerhard, 4,517,706, Cl. 16-238.000.

Lautenschlager, Horst: *See—*
Lautenschlager, Karl; Lautenschlager, Horst; and Lautenschlager, Gerhard, 4,517,706, Cl. 16-238.000.

Lautenschlager, Karl; Lautenschlager, Horst; and Lautenschlager, Gerhard, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Adjustable cabinet hinge having a biased catch. 4,517,706, Cl. 16-238.000.

La Velle, Carl A.: *See—*
Vicic, John C.; La Velle, Carl A.; and Parris, Joe P., III, 4,518,144, Cl. 251-1.00A.

Lazarus, John H. Pressure compensating water flow control devices. 4,518,013, Cl. 137-811.000.

Leahy, John: *See—*
Foley, James; Habbal, Fawwaz; and Leahy, John, 4,518,627, Cl. 427-48.000.

Lear Siegler, Inc.: *See—*
Gabriele, Leonard A., 4,518,289, Cl. 409-244.000.

LeBlanc, Beth A.: *See—*
Eichbauer, George N.; and LeBlanc, Beth A., 4,518,654, Cl. 428-331.000.

LeBlanc, J. T. Apparatus and process for placement of prefabricated structures. 4,517,781, Cl. 52-299.000.

LeBlond Makino Machine Tool Co.: *See—*
Bazuin, Johannes, 4,517,866, Cl. 82-39.000.

Lebrun, Jean: *See—*
Cousin, Maurice; Pipon, Yves; Droulon, Georges; and Lebrun, Jean, 4,518,182, Cl. 292-201.000.

Lee, Chi-Long; and Rabe, James A., to Dow Corning Corporation. Foamable organosiloxane compositions. 4,518,716, Cl. 521-82.000.

Lee, Joseph K. Extendible safety impact bags for vehicles. 4,518,183, Cl. 293-118.000.

Lee, Thomas B.: *See—*
Bantick, John R.; Fuher, John; Hardern, David N.; and Lee, Thomas B., 4,518,612, Cl. 514-457.000.

Leesona Corporation: *See—*
Marshall, Bryce G., 4,518,126, Cl. 242-18.00R.

Lefebvre, Herve M.; and Helderle, Paul M., to Compagnie Francaise des Petroles. Device for controlling a safety valve disposed below an activation pump in a hydrocarbon production well. 4,518,036, Cl. 166-105.000.

Leger, Joachim. Material and component testing machine. 4,517,843, Cl. 73-847.000.

Lehman, Richard F., to Xerox Corporation. Mechanism and method for controlling the temperature and output of a fluorescent lamp. 4,518,895, Cl. 315-117.000.

Lehmann, Franz, to Imea SA. Fixing device of workpieces for wire spark erosion machines. 4,518,155, Cl. 269-60.000.

Leibowitz, Alec. Gemstone polishing machine. 4,517,770, Cl. 51-125.500.

Leitheiser, Melvin A.; and Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Articles containing non-fused aluminum oxide-based abrasive mineral. 4,518,397, Cl. 51-293.000.

Leland F. Blatt: *See—*
Blatt, Leland F.; and Crorey, David J., 4,518,187, Cl. 294-88.000.

Leloux, Arnoldus W. J., to Wavin B.V. Method of and device for making perforations in a tubular web of plastics foil. 4,517,868, Cl. 83-54.000.

Lemartret, Odile: *See—*
Allais, Andre ; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,518,775, Cl. 544-92.000.

Lenaerts, George V.; Charchanko, Eugene W.; and Dambenieks, Andrejs, to Northern Telecom Limited. Method for making circuit boards with die stamped contact pads and conductive ink circuit patterns. 4,517,739, Cl. 29-846.000.

Leningradsky Tekhnologichesky Institut Imeni Lensoveta: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Lennartz, Rudiger; Rott, Willi; and Sindorf, Heinz, to Boll & Kirch, Filterbau GmbH, Firma. Flush-back filter. 4,518,501, Cl. 210-411.000.

Le Ny, Jacques; and Val, Christian, to Thomson-CSF. Encapsulating case able to resist high external pressures. 4,518,818, Cl. 174-52.0FP.

Leonberger, Frederick J.; Melngailis, Ivars; Bozler, Carl O.; and McClelland, Robert W., to Massachusetts Institute of Technology. Optical guided wave devices employing semiconductor-insulator structures. 4,518,219, Cl. 350-96.120.

Lepant, Marcel: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,518,587, Cl. 514-19.000.

Leppard, David G.; and Rody, Jean, to Ciba-Geigy AG. Color-photographic recording material. 4,518,679, Cl. 430-372.000.

Leppard, David G.; and Rody, Jean, to Ciba-Geigy AG. Color-photographic recording material. 4,518,688, Cl. 430-551.000.

Lesley, Gary M., to Head Lites Corporation. Retro-reflective attachment for wearing apparel. 4,517,685, Cl. 2-170.000.

Lester, Theodore V., to Motorola, Inc. Self-oscillating inverter including a DC to DC converter and method for control thereof. 4,519,023, Cl. 363-56.000.

Leutgob, Alois: *See—*
Lugscheider, Walter; Leutgob, Alois; Riegler, Ernst; and Mullner, Paul, 4,518,417, Cl. 75-10.00R.

LeVasseur, Rodney J.: *See—*
Gabel, Edward R.; Puumala, Edward J.; and LeVasseur, Rodney J., 4,518,853, Cl. 235-449.000.

Levchenko, Alec; and Booth, Michael R., to Febopal Limited. Air extract method and apparatus. 4,517,883, Cl. 98-115.300.

Leverette, Edward H. Dental floss applicator. 4,518,000, Cl. 132-92.00A.

Levin, Ed. Method and setting for mounting ornamental beads and gems. 4,517,817, Cl. 63-26.000.

Levin, Paul D.; and Harding, John D. Blood sampling instrument. 4,517,978, Cl. 128-314.000.

Leviton Manufacturing Company, Inc.: *See—*
Doyle, Richard C.; and Rivera, Lester, 4,518,945, Cl. 340-310.00A.

Levitt, Tod S.: *See—*
Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., 4,519,041, Cl. 364-552.000.

Lewarchik, Ronald J.: *See—*
Sekmakas, Kazys; Shah, Raj; Lewarchik, Ronald J.; and Murray, Kevin P., 4,518,746, Cl. 525-443.000.

Lewis, Frederick M.; and Berken, George A., to Zimpro Inc. Method and apparatus for controlling auxiliary fuel addition to a pyrolysis furnace. 4,517,906, Cl. 110-346.000.

Lewis, Robert E., to American Seating Company. Contour seat module. 4,518,199, Cl. 297-248.000.

Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J., to Minnesota Mining and Manufacturing Company. Metallized information carrying discs. 4,519,065, Cl. 369-275.000.

Lewis, Timothy: *See—*
Marchington, Anthony F.; Lewis, Timothy; Clough, John M.; Worthington, Paul A.; and Dalziel, John, 4,518,415, Cl. 71-92.000.

Lhonore, Pierre; Quibel, Jacques; Jacquinot, Bernard; Jestin, Yvon; and Pelletier, Robert, to Societe Chimique de la Grande Paroisse - Azote et Products Chimiques. Reactor for nitration of hydrocarbons in the gaseous phase under pressure. 4,518,811, Cl. 568-943.000.

Libizova, Larisa F.: *See—*
Rusakova, Svetlana V.; Glyzin, Vladimir I.; Kocherga, Stepan I.; Ananieva, Alla A.; and Libizova, Larisa F., 4,518,592, Cl. 424-195.100.

Licentia Patent-Verwaltungs-GmbH: *See—*
Scholz, Gerhard, 4,519,003, Cl. 358-335.000.

LiDonnici, Kenneth; and Dituri, Angelo, to General Audio-Visual Inc. Automatic lamp changer for modular slide projector. 4,518,233, Cl. 353-87.000.

Liebig, William J.; and Cummings, Dennis, to Meadox Medicals, Inc. Synthetic woven double-velour graft. 4,517,687, Cl. 3-1.400.

Lim, Git B.; and Konak, A. Riza, to Exxon Production Research Co. Thermal softening process. 4,518,505, Cl. 210-712.000.

Lim, Walter K.; and Krause, Arthur A. Method and apparatus for releasing additional ingredients in a pressurized container. 4,518,103, Cl. 222-135.000.

Lin, Jiing S. Plug-in type of power supply. 4,519,015, Cl. 361-399.000.

Lin, Leo S.: *See—*
Mark, David F.; Lin, Leo S.; and Lu, Shi-Da Y., 4,518,584, Cl. 424-85.000.

Lin, Peter T., to RCA Corporation. Method and apparatus for trimming and finishing the outer edge of a molded record. 4,518,551, Cl. 264-107.000.

Lind, Jeannine H. Pet amusement device. 4,517,922, Cl. 119-29.000.

Lindmayer, Istvan; and Grunwald, Raymond M., to Preci-Tech Ltd. Disposable syringe for needleless injector. 4,518,385, Cl. 604-68.000.

Lindner, Christian; Ott, Karl-Heinz; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, to Bayer Aktiengesellschaft. Moulding compositions of vinyl chloride polymers, certain copolymers and polymeric plasticisers having a high resistance to ageing. 4,518,743, Cl. 525-80.000.

Lindner, Christian: *See—*
Ott, Karl-Heinz; Lindner, Christian; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,515, Cl. 525-79.000.

Lipp, Herbert; and Reckeweg, Horst, to Rheinmetall GmbH. Testing and/or practice projectile for an artillery weapon. 4,517,900, Cl. 102-529.000.

List, Hans: *See—*
Krempl, Peter W.; Schindler, Wolfgang; and Faschingleitner, Leopold, 4,518,861, Cl. 250-339.000.

Listemann, Peter; and Monch, Sigurd, to Hilti Aktiengesellschaft. Copper solder containing cobalt. 4,518,662, Cl. 428-675.000.

Little, William D. Variable magnification stage light. 4,519,020, Cl. 362-268.000.

Lo, Young S.; and Taylor, Chandler R., Jr., to A. H. Robins Company, Inc. [2-[(Nitropyridinyl)amino]phenyl]arylmethanones in a process for preparing pyrido[1,4]benzodiazepines. 4,518,603, Cl. 514-352.000.

Locatelli, Jean L.; and Rollet, Bernard, to Rhone-Poulenc Industries. Imido copolymers. 4,518,754, Cl. 526-262.000.

Locatelli, Jean L.; and Rollet, Bernard, to Rhone-Poulenc Industries. Imido copolymers. 4,518,755, Cl. 526-262.000.

Lochner, Kaspar; Schurmann, Helmut; and Brand, Erich, to Schiedel GmbH & Co. Pasty damping medium method for preparing and using same. 4,518,513, Cl. 252-62.000.

Lockheed Corporation: *See—*
Morrison, Robert A., 4,518,210, Cl. 339-17.0LM.

Loconsolo, Mauro: *See—*
Govoni, Gabriele; Corazzari, Canzio; Di Stefano, Giovanni; and Loconsolo, Mauro, 4,518,750, Cl. 526-68.000.

Loeb, Marvin P.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,517,970, Cl. 128-131.000.

Logan, Shawn M., to AT&T Bell Laboratories. Track and hold circuit. 4,518,921, Cl. 328-151.000.

Long, Don W.: *See—*
Barton, Jerry M.; Long, Don W.; and Lotts, Kenneth D., 4,518,780, Cl. 546-167.000.

Long, John V.; and Gagliani, John. Low density, modified polyimide foams and methods of making same. 4,518,717, Cl. 521-109.100.

Longenecker, Kenneth G.; and Geary, Thomas B., to Westinghouse Electric Corp. Assembly-heat sink for semiconductor devices. 4,518,983, Cl. 357-81.000.

Lonza, Ltd.: *See—*
Tschan, Rene , 4,517,723, Cl. 29-235.000.

Looney, Donald F.: *See—*
Kirby, James R.; and Looney, Donald F., 4,518,817, Cl. 174-38.000.

Lopez, Claudio: *See—*
Tarello, William R.; Lopez, Claudio; Gordon, Linda A.; Whalen, Thomas D.; and Harvey, William B., 4,518,384, Cl. 604-61.000.

Loth, Eric: *See—*
Gogniat, Paul; and Loth, Eric, 4,518,093, Cl. 220-82.00R.

Lott, Peter F.; and Jargosch, Reiner E. Acid based variable viscosity compositions such as corrosion and grease removers and polishes. 4,518,519, Cl. 252-148.000.

Lotts, Kenneth D.: *See—*
Barton, Jerry M.; Long, Don W.; and Lotts, Kenneth D., 4,518,780, Cl. 546-167.000.

Lough, Wendell J.; and Bishop, Donald E., to Weber Technical Products, Division of Craig Systems Corporation. Clean room with replaceable filter and a seal cutting mechanism. 4,518,405, Cl. 55-385.00A.

LTV Aerospace and Defense Company: *See—*
Musgrove, Robert G., 4,518,170, Cl. 280-96.000.

Lu, Shi-Da Y.: *See—*
Mark, David F.; Lin, Leo S.; and Lu, Shi-Da Y., 4,518,584, Cl. 424-85.000.

Luceri, Thomas J.; and Molee, Kenneth J., to Personal Products Company. Embossed panty liner. 4,518,451, Cl. 156-202.000.

Lucia, Joseph T.: *See—*
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., 4,518,915, Cl. 324-158.00R.

Luecke, James R., to Harris Corporation. Decision-directed, automatic frequency control technique for non-coherently demodulated M-ARY frequency shift keying. 4,518,922, Cl. 329-50.000.

Luecke, Robert A.: *See—*
Johnson, Oscar; and Luecke, Robert A., 4,518,681, Cl. 430-532.000.

Lugscheider, Walter; Leutgob, Alois; Riegler, Ernst; and Mullner, Paul, to Voest-Alpine Aktiengesellschaft. Method of, and arrangement for, reducing oxide-containing fine-particle ores. 4,518,417, Cl. 75-10.00R.

Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, to SKW Trostberg Aktiengesellschaft; and Voest-Alpine Aktiengesellschaft. Method of carrying out metallurgical or chemical processes in a shaft furnace, and a low shaft furnace therefor. 4,518,419, Cl. 75-11.000.

Luke, Douglas V., to Smiths Industries Public Limited Company. Tire pressure sensing systems. 4,517,834, Cl. 73-146.500.

LVC Industries, Inc.: *See—*
Paranicas, Peter C., 4,518,834, Cl. 200-16.00D.

Lyle, W. D., Jr.; and Gournay, Luke S., to Mobil Oil Corporation. Method for determining oil saturation in a subsurface formation. 4,517,836, Cl. 73-152.000.

Lyles, Mark B. Filters for polynuclear aromatic hydrocarbon-containing smoke. 4,517,995, Cl. 131-334.000.

Lysenko, George P.: *See—*
Tindall, Gary W.; Lysenko, George P.; Vize, Richard J.; Kiefer, Edward H.; and Smith, Richard J., 4,518,195, Cl. 296-148.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Dorn, Alfred, 4,518,862, Cl. 250-561.000.

Machine Technology, Inc.: *See—*
Devico, Michael J.; and Hillman, Gary, 4,517,752, Cl. 34-58.000.

Mackenzie, Harold B.; and Anderson, Ingvar G., to New Life Foundation. High efficiency refuse-derived-fuel supplying system for industrial boilers. 4,517,925, Cl. 122-2.000.

Mackinnon, John W. M.: *See—*
Hayes, Roger; Bays, David E.; Mackinnon, John W. M.; Carey, Linda; and Blatcher, Philip, 4,518,598, Cl. 514-212.000.

MacLeod, Nigel; and Ruxton, David, to Rodime plc. Stepper motor control for data disk system. 4,518,904, Cl. 318-685.000.

Maddox, Jim, Jr.; and Schievelbein, Vernon H., to Texaco Inc. Method of extracting and reutilizing surfactants from emulsions using sulfonated alkyl benzenes and ethoxylated phenols. 4,518,038, Cl. 166-266.000.

Maeda, Mitsuo: *See—*
Nakahori, Ichiro; Nakayama, Shigeki; Maeda, Mitsuo; Yamauchi, Shiro; and Ozawa, Junichiro, 4,517,849, Cl. 73-863.310.

Maekawa, Yukio: *See—*
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, 4,518,354, Cl. 430-527.000.

Magar, Surendar; and Gass, Wanda K., to Texas Instruments Incorporated. Microcomputer with accumulator saturation upon overflow. 4,519,031, Cl. 364-200.000.

Magnavox Government and Industrial Electronics Co.: *See—*
Diepeveen, Neal, 4,518,218, Cl. 350-6.800.

Magnetic Controls Company: *See—*
Bradley, James D.; and Amundson, Gregg B., 4,519,016, Cl. 361-415.000.
Skovran, Daniel G.; Shockley, Brett A.; and Chouanard, Harvey J., 4,519,014, Cl. 361-397.000.

Makinen, Heimo; and Suur-Askola, Seppo, to Elevator GmbH; and Kone Oy. Procedure and measuring circuit for stopping an elevator. 4,518,062, Cl. 187-29.00R.

Makishima, Takao; Inaba, Shigeru; and Wada, Yasuyoshi, to Sunstar Kabushiki Kaisha. Portable toothpick case. 4,518,099, Cl. 221-30.000.

Makrotalo Oy: *See—*
Miettinen, Jorma K.; and Virtanen, Eero J., 4,518,550, Cl. 264-46.500.

Malak, Stephen P., to Spring-Mornne, Inc. Method and apparatus for statically aligning shafts and monitoring shaft alignment. 4,518,855, Cl. 250-201.000.

Malametz, Arnold: *See—*
Peters, Rex B.; Tonn, Jeffrey F.; Malametz, Arnold; Hilliker, Richard A.; and Corey, Victor B., 4,517,841, Cl. 73-517.0AV.

Maliszewicz, Marc: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,518,794, Cl. 560-192.000.

Malkki, Yrjo : *See—*
Autio, Karin; Kiesvaara, Martti; and Malkki, Yrjo , 4,518,525, Cl. 260-112.00B.

Maloney, James E.: *See—*
Freis, Richard E.; Maloney, James E.; and Oakes, Thomas R., 4,518,459, Cl. 162-5.000.

Mann, David P.; Kukes, Simon G.; and Coombs, Daniel M. Metals removal with a light hydrocarbon and an organophosphorous compound. 4,518,484, Cl. 208-87.000.

Mannesmann Aktiengesellschaft: *See—*
Hendrischk, Wolfgang, 4,518,270, Cl. 400-240.400.

Mannesmann Rexroth GmbH: *See—*
Bartholomaus, Reiner; and Gibas, Christoph, 4,518,938, Cl. 335-262.000.
Mucheyer, Norbert; and Schulte, Heinz, 4,518,010, Cl. 137-587.000.

Marchant, Alan B.: *See—*
Dahneke, Barton E.; and Marchant, Alan B., 4,519,061, Cl. 369-109.000.

Marchington, Anthony F.; Lewis, Timothy; Clough, John M.; Worthington, Paul A.; and Dalziel, John, to Imperial Chemical Industries PLC. 1-(Tetrahydrofurylmethyl)azoles. 4,518,415, Cl. 71-92.000.

Marconi Avionics Limited: *See—*
Friedrich, Douglas S., 4,519,067, Cl. 370-78.000.

Marconi Instruments, Ltd.: *See—*
Owen, David P., 4,518,929, Cl. 331-11.000.

Marder, Herbert B. Apparatus and method for dispensing medicine. 4,518,208, Cl. 312-209.000.

Maries, Alan: *See—*
Drake, Cyril F.; Maries, Alan; and Bateson, Paul F., 4,518,429, Cl. 106-14.390.

Marin, Pierre D., to Exxon Research & Engineering Co. Process for production of oxidation-resistant hydrocarbon oil composition, and oxidation-resistant composition made thereby. 4,518,481, Cl. 208-19.000.

Marine Concepts of America: *See—*
Wall, Ronald E., 4,517,759, Cl. 43-7.000.

Mark, David F.; Lin, Leo S.; and Lu, Shi-Da Y., to Cetus Corporation. Human recombinant interleukin-2 muteins. 4,518,584, Cl. 424-85.000.

Markusch, Peter H.; Kelso, Robert G.; and Schmitt, Peter D., to Mobay Chemical Corporation. Blocked polyisocyanates with improved storage stability. 4,518,522, Cl. 252-188.310.

Marq Packaging Systems, Inc.: *See—*
Beckett, Joel M., 4,517,784, Cl. 53-75.000.

Marschall-Helman, Ellen: *See—*
Cherukuri, Subraman R.; Marschall-Helman, Ellen; and Hriscisce, Frank T., 4,518,615, Cl. 426-4.000.

Marshall, Bryce G., to Leesona Corporation. Take-up mechanism. 4,518,126, Cl. 242-18.00R.

Martin, George E. Newspaper dispensing machine. 4,518,100, Cl. 221-225.000.

Martin, Henry, to Ciba-Geigy Corporation. Compositions, which promote plant growth and protect plants, based on oxime ethers and oxime esters. 4,518,536, Cl. 260-465.00D.

Martin, Howard. Rapid X-ray developing system. 4,518,684, Cl. 430-403.000.

Martinez, Louis, to McGraw-Edison Company. Method and apparatus for automatically establishing telephone communication links. 4,518,822, Cl. 179-2.00E.

Maruzen Oil Co., Ltd.: *See—*
Hori, Takashi; Ueda, Sanae; and Kojima, Yoshihiro, 4,518,807, Cl. 568-716.000.

Marvin Glass & Associates: *See—*
Zaruba, John V.; and Meyer, Burton C., 4,518,367, Cl. 446-373.000.

Maryland Cup Corporation: *See—*
Winstead, Thomas W., 4,518,096, Cl. 220-268.000.

Mashimo, Satoshi; Tanaka, Masayuki; and Yamaguchi, Yoshio, to Mitsuboshi Belting Ltd. Toothed belt. 4,518,375, Cl. 474-205.000.

Mashimo, Satoshi; Kakiuchi, Hazime; and Nakajima, Masayoshi, to Mitsuboshi Belting Ltd. Power transmission belt manufacture. 4,518,376, Cl. 474-261.000.

Mason, John J.; Cunningham, Michael T.; and Crosby, Jeffrey N., to INCO Selective Surfaces Limited. Selective solar surfaces. 4,518,467, Cl. 204-37.100.

Massachusetts Institute of Technology: *See—*
Leonberger, Frederick J.; Melngailis, Ivars; Bozler, Carl O.; and McClelland, Robert W., 4,518,219, Cl. 350-96.120.

Mastin, James: *See—*
Williams, Robert D.; and Mastin, James, 4,518,191, Cl. 296-91.000.

Masuda, Eiji; and Matsuo, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. MOS Switch circuit with consistent low on resistance. 4,518,880, Cl. 307-577.000.

Masuda, Fumihiko, to Shin Nihon Machine Manufacturing Co., Ltd. Automatic confectionary-and-likes manufacturing equipment. 4,517,785, Cl. 53-116.000.

Masuda, Yoshinori: *See—*
Fukushima, Isao; Kobori, Yasunori; Nishijima, Hideo; and Masuda, Yoshinori, 4,518,901, Cl. 318-328.000.

Masugi, Takashi: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Masumoto, Hakaru; and Nakamura, Naoji, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. Alloy with small change of electric resistance over wide temperature range and method of producing the same. 4,518,439, Cl. 148-3.000.

Masumoto, Nobuyoshi: *See—*
Yokoshima, Naohiko; Masumoto, Nobuyoshi; and Sui, Akira, 4,517,726, Cl. 29-527.400.

Mather, Naomi. Educational toy and method. 4,518,358, Cl. 434-195.000.

Matsubara, Toshiya: *See—*
Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, 4,518,470, Cl. 204-98.000.

Matsuda, Masakane: *See—*
Kurata, Masami; Saitoh, Hiroyuki; and Matsuda, Masakane, 4,518,999, Cl. 358-285.000.

Matsuda, Morio; and Horio, Masamitsu, to Kao Corporation. Process for preparation of Guerbet alcohols. 4,518,810, Cl. 568-905.000.

Matsuda, Shinpei: *See—*
Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, 4,518,665, Cl. 429-153.000.

Matsui, Takeski; Ohyama, Hideo; Tachi, Ryosuke; Ito, Teruyoshi; and Kawai, Motoshi, to Nippondenso Co., Ltd. Optimizing spark timing control apparatus and method. 4,519,038, Cl. 364-431.030.

Matsumoto, Akio; and Yokota, Mitsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Delayed turn-off control for vehicle pumping device. 4,518,903, Cl. 318-481.000.

Matsumoto, Akio: *See—*
Seki, Kimiaki; and Matsumoto, Akio, 4,518,333, Cl. 418-152.000.

Matsumoto, Shigemi: *See—*
Muramatsu, Eiichi; Matsumoto, Shigemi; and Nagoshi, Fumiya, 4,518,742, Cl. 525-67.000.

Matsumoto, Takeshi: *See—*
Okabayashi, Yoshikatsu; Nakamura, Noboru; Matsumoto, Takeshi; and Osumi, Yoshimasa, 4,518,704, Cl. 502-80.000.

Matsunuma, Tamotsu, to Bridgestone Tire Company Limited. Pneumatic radial tire having an improved durability in the running on bad road. 4,518,024, Cl. 152-361.0DM.

Matsuo, Kenji: *See—*
Masuda, Eiji; and Matsuo, Kenji, 4,518,880, Cl. 307-577.000.

Matsuo, Tadao; Matsuoka, Fumio; Yokota, Nobuo; and Yamamoto, Masaaki, to Mitsuboshi Belting Ltd. Method of producing accurately sized material of ultra high molecular weight polyethylene. 4,518,552, Cl. 264-126.000.

Matsuoka, Fumio: *See—*
Matsuo, Tadao; Matsuoka, Fumio; Yokota, Nobuo; and Yamamoto, Masaaki, 4,518,552, Cl. 264-126.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Asada, Shuji; and Nanbu, Tadamasa, 4,517,757, Cl. 38-88.000.
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,517,909, Cl. 112-275.000.

Matsuura, Kazuo: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; and Matsuura, Kazuo, 4,518,752, Cl. 526-116.000.

Matsuzaki, Masatoshi; Yamazaki, Toshinori; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Recording material for electrophotography comprising amorphous silicon containing nitrogen. 4,518,670, Cl. 430-58.000.

Mattei, Riccardo: *See—*
Seragnoli, Enzo; and Mattei, Riccardo, 4,517,871, Cl. 83-677.000.

Matuschek, Josip, to Textron Inc. Multi-part fastening nut, including jam nut. 4,518,295, Cl. 411-291.000.

Mauthe, Peter: *See—*
Gebauer, Ludwig; Irmscher, Hans-Jurgen; Lang, Gusztav; and Mauthe, Peter, 4,518,283, Cl. 405-260.000.

Maxwell Laboratories, Inc.: *See—*
Burns, Eugene A.; and Colby, Bruce N., 4,518,502, Cl. 210-634.000.

May, Anthony A.: *See—*
Bilimoria, Bomi M.; and May, Anthony A., 4,518,491, Cl. 209-166.000.

May, Denis R. W.; and Hiddleston, James N., to J. D. Hanger & Company Limited. Artificial leg for occasional use. 4,517,688, Cl. 3-2.000.

Mayer, Andreas; El-Nashar, Ibrahim; and Spinnler, Fritz, to BBC Brown, Boveri & Company, Limited. Method and device for controlling the recirculation of exhaust gas in a pressure wave supercharger for an internal combustion engine. 4,517,950, Cl. 123-559.000.

Mayer, Oscar C., Jr., to Woodstream Corporation. Poultry trussing device cartridge. 4,518,083, Cl. 206-340.000.

Maytag Company, The: *See—*
Bales, Michael E., 4,517,886, Cl. 99-425.000.

Mazda Motor Corporation: *See—*
Nagaoka, Mitsuru; and Yasuno, Mitsuo, 4,517,859, Cl. 74-866.000.
Nishikawa, Toshio; Kaneko, Tadashi; and Othuka, Kazutoshi, 4,517,947, Cl. 123-489.000.

McAlpine & Co., Ltd.: *See—*
McAlpine, James E., 4,518,014, Cl. 137-843.000.

McAlpine, James E., to McAlpine & Co., Ltd. Relief valves for sanitation systems or the like. 4,518,014, Cl. 137-843.000.

McCallum, Michael. Wheelchair transporting with selectively raisable platform means. 4,518,057, Cl. 180-210.000.

McCan, Duane A.; and Smith, Carl L., Jr., to Valley Sales Co. Animal headgate. 4,517,924, Cl. 119-98.000.

McClelland, Robert W.: *See—*
Leonberger, Frederick J.; Melngailis, Ivars; Bozler, Carl O.; and McClelland, Robert W., 4,518,219, Cl. 350-96.120.

McCombs, Howard L., Jr., to Allied Corporation. Power lever apparatus for a turbine engine. 4,517,796, Cl. 60-39.281.

McCutcheon, Hugh W.: *See—*
Twomey, James R.; McCutcheon, Hugh W.; and Harris, Richard K., 4,517,842, Cl. 73-701.000.

McDevitt, Bernard J.: *See—*
Crozier, George W.; and McDevitt, Bernard J., 4,519,047, Cl. 364-900.000.

McDonnell Douglas Corporation: *See—*
Zuleeg, Rainer, 4,518,255, Cl. 356-5.000.

McGinity, James W.: *See—*
Cuff, George W.; and McGinity, James W., 4,518,547, Cl. 264-4.700.

McGinley, Emanuel J.; and Tuason, Domingo C., Jr., to FMC Corporation. Enteric coating for pharmaceutical dosage forms. 4,518,433, Cl. 106-180.000.

McGraw-Edison Company: *See—*
Martinez, Louis, 4,518,822, Cl. 179-2.00E.
Shiffer, Robert J., 4,518,185, Cl. 294-67.100.

McMahill, Patrick D.: *See—*
Mitchell, Thomas L.; McMahill, Patrick D.; Valbert, Gary G.; and Wellauer, John C., 4,518,276, Cl. 403-13.000.

McMahon, Donald H.; and Spillman, William B., Jr., to Sperry Corporation. Temperature and pressure compensated elasto-optic sensor. 4,518,857, Cl. 250-225.000.

McWilliams, Donald E.; Melle, Carl A.; and Das, Balbhadra, to PPG Industries, Inc. Chemically treated glass fibers for reinforcing polymeric materials and processes. 4,518,653, Cl. 428-378.000.

Mead Corporation, The: *See—*
Suttles, James M., 4,518,279, Cl. 403-231.000.

Meadox Medicals, Inc.: *See—*
Liebig, William J.; and Cummings, Dennis, 4,517,687, Cl. 3-1.400.

Medimpex Gyogyszerkuelkereskedelmi Vaallalat: *See—*
Kahan, Agostne, 4,518,608, Cl. 514-420.000.

Meiers, Gerald F., to Deere & Company. Bale-shape gauge for baler for forming cylindrical bales. 4,517,795, Cl. 56-341.000.

Meignant, Didier S., to U.S. Philips Corporation. Method of providing a small-sized opening, use of this method for the manufacture of field effect transistors having an aligned gate in the submicron range and transistors thus obtained. 4,517,730, Cl. 29-571.000.

Meinberg, Nancy A.: *See—*
Benjamin, Lawrence; Rodriguez, Sheila S.; and Meinberg, Nancy A., 4,517,919, Cl. 119-1.000.

Meisner, Donald D. Universal can crusher. 4,517,892, Cl. 100-292.000.

Melle, Carl A.: *See—*
McWilliams, Donald E.; Melle, Carl A.; and Das, Balbhadra, 4,518,653, Cl. 428-378.000.

Mellen, Robert H., Sr. Method of providing a dynamic temperature gradient. 4,518,351, Cl. 432-18.000.

Melngailis, Ivars: *See—*
Leonberger, Frederick J.; Melngailis, Ivars; Bozler, Carl O.; and McClelland, Robert W., 4,518,219, Cl. 350-96.120.

Melocik, Grant C.; and Pickering, William, to Towmotor Corporation. Plugging electrical braking control circuit. 4,518,902, Cl. 318-373.000.

Melrose, Clayton: *See—*
Anderson, Jack F.; Melrose, Clayton; and Melrose, Floyd, 4,518,043, Cl. 172-6.000.

Melrose, Floyd: *See—*
Anderson, Jack F.; Melrose, Clayton; and Melrose, Floyd, 4,518,043, Cl. 172-6.000.

Mendell, Harry B., to AT&T Bell Laboratories. Memory management arrangement for microprocessor systems. 4,519,032, Cl. 364-200.000.

Mennel, Gabriel B.: *See—*
Faessel, Andre ; Mennel, Gabriel B.; and Michaux, Jacques M., 4,518,660, Cl. 428-577.000.

Mensik, John A. Cigarette holder and filter cartridge. 4,517,989, Cl. 131-187.000.

Merck & Co., Inc.: *See—*
Johnston, David B. R., 4,518,599, Cl. 514-255.000.

Merkle, Josef, to Daimler-Benz Aktiengesellschaft. Pneumatic spring, especially for motor vehicles. 4,518,154, Cl. 267-34.000.

Mermi, Kurt: *See—*
Frichmann, Albert; Sternisa, Danilo; Mermi, Kurt; and Kistner, Herbert, 4,518,290, Cl. 411-30.000.

Meshako, Thomas M.: *See—*
Krueger, Ulf A.; and Meshako, Thomas M., 4,518,762, Cl. 528-95.000.

Metalines, Inc.: *See—*
Dunsworth, Charles L., 4,517,779, Cl. 52-232.000.

Metals Production Research, Inc.: *See—*
Murphy, Andrew H., 4,518,426, Cl. 75-112.000.

Metz, Paul, to Arbed S.A. Process and apparatus for refining steel in a metallurgical vessel. 4,518,422, Cl. 75-58.000.

Meyer, Burton C.: *See—*
Zaruba, John V.; and Meyer, Burton C., 4,518,367, Cl. 446-373.000.

Meyer, Knut. Method and apparatus for detecting leakage in a fluid conduit system. 4,518,955, Cl. 340-605.000.

Meyer, Willy; Fory, Werner; and Topfl, Werner, to Ciba Geigy Corporation. Process for producing sulfonylureas. 4,518,776, Cl. 544-206.000.

Michaux, Jacques M.: *See—*
Faessel, Andre ; Mennel, Gabriel B.; and Michaux, Jacques M., 4,518,660, Cl. 428-577.000.

Michel, Thomas J., to Unger, Harold. Image-erecting barrel rotator for articulated optical arm. 4,517,963, Cl. 128-6.000.

Micheron, Francois: *See—*
Ravinet, Pierre; and Micheron, Francois, 4,518,555, Cl. 264-292.000.

Micropore International Limited: *See—*
Grasso, Alfie L., 4,518,850, Cl. 219-505.000.

Microtech Associates: *See—*
Endelson, Robert A., 4,517,994, Cl. 131-329.000.

Middleton, James D., to Halliburton Company. Method of fracturing a subterranean formation. 4,518,040, Cl. 166-307.000.

Miettinen, Jorma K.; and Virtanen, Eero J., to Makrotalo Oy. Method of manufacturing rigid frame building elements filled with hard foam plastic. 4,518,550, Cl. 264-46.500.

Mihara, Yuji: *See—*
Noguchi, Yasuhiro; and Mihara, Yuji, 4,518,689, Cl. 430-574.000.
Yagihara, Morio; Ikegawa, Akihiko; Ono, Mitsunori; and Mihara, Yuji, 4,518,685, Cl. 430-505.000.

Milberger, Ernest C.: *See—*
Blum, Patricia R.; Milberger, Ernest C.; and Nicholas, Mark L., 4,518,523, Cl. 502-209.000.

Miles, Earl F., Jr., to Indy Lighting, Inc. Dual voltage lighting fixture. 4,518,896, Cl. 315-162.000.

Miles Laboratories, Inc.: *See—*
Boger, David L.; Pugh, Jerry T.; and Zuidema, Jack, 4,518,565, Cl. 422-58.000.

Millen, Edward G., to Morton Thiokol, Inc. Curing of polysulfide liquid polymers with zinc oxide and a source of copper ions. 4,518,767, Cl. 528-374.000.

Miller, Darwin L.; and Miller, Ronnie F., to Damco Testers, Inc. Apparatus for leak testing of pipe. 4,517,828, Cl. 73-46.000.

Miller, Frank E.: *See—*
Sulcek, Charles E.; and Miller, Frank E., 4,518,142, Cl. 248-649.000.

Miller, Henry W., to Mobil Oil Corporation. Subsea wellhead connection assembly. 4,518,042, Cl. 166-347.000.

Miller, Richard L.: *See—*
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., 4,518,915, Cl. 324-158.00R.

Miller, Richard W., to Foxboro Company, The. Flowmeter having uniform response under both laminar and turbulent flow conditions. 4,517,847, Cl. 73-861.740.

Miller, Robert L., to International Telephone and Telegraph Corporation. Phase-locked loop and clock circuit for a line switch. 4,519,071, Cl. 370-100.000.

Miller, Ronnie F.: *See—*
Miller, Darwin L.; and Miller, Ronnie F., 4,517,828, Cl. 73-46.000.

Miller, William R.; and Prasad, Chandrika, to International Business Machines Corporation. Process for controlled braze joining of electronic packaging elements. 4,518,112, Cl. 228-124.000.

Milton, James W.; and Boig, Robert W., to Van Dorn Co. Plastic container and closure. 4,518,097, Cl. 220-307.000.

Milwaukee Valve Company: *See—*
Fenster, Abraham S.; and Buechler, Lawrence W., 4,518,008, Cl. 137-552.000.

Minami, Toshiaki: *See—*
Fujimura, Fumio; Satake, Toshimi; Iwaguro, Makoto; and Minami, Toshiaki, 4,518,977, Cl. 346-209.000.

Minamida, Kazukiyo; and Asai, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of indicating results of combinatorial computations. 4,519,042, Cl. 364-567.000.

Minnesota Mining and Manufacturing Company: *See—*
Gebeke, Charles D., 4,518,135, Cl. 242-199.000.
Leitheiser, Melvin A.; and Sowman, Harold G., 4,518,397, Cl. 51-293.000.
Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J., 4,519,065, Cl. 369-275.000.
Pearson, Walter C.; and Thompson, Dorman N., Jr., 4,518,296, Cl. 412-37.000.
Svendsen, John A., 4,518,845, Cl. 219-216.000.

Minolta Camera Kabushiki Kaisha: *See—*
Murata, Tomoji; Hayashi, Masamichi; Goto, Yasuo; and Sakurai, Seiichi, 4,518,249, Cl. 355-67.000.
Yasukuni, Mitsuo, 4,518,229, Cl. 350-454.000.
Yuasa, Yoshio; and Kawagoe, Nobukazu, 4,518,250, Cl. 355-69.000.

Misawa Home Co., Ltd.: *See—*
Hanaoka, Tadashi; and Umezu, Hiroaki, 4,517,799, Cl. 62-323.100.

Misawa, Takashi: *See—*
Imose, Kazuo; Yamamuro, Kiyoshi; Takeuchi, Hironori; and Misawa, Takashi, 4,518,962, Cl. 340-870.280.

Misumi, Teruo; and Osato, Yoichi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive Se or Se alloy doped with oxygen. 4,518,671, Cl. 430-84.000.

Mita Industrial Company Limited: *See—*
Kawahara, Yoshihiro; and Hayashi, Kiyoshi, 4,518,975, Cl. 346-153.100.

Mitchell, Thomas L.; McMahill, Patrick D.; Valbert, Gary G.; and Wellauer, John C., to Caterpillar Tractor Co. Method and apparatus for repeatably aligning adjacent member. 4,518,276, Cl. 403-13.000.

Mitchell, Thomas O.: *See—*
Audeh, Costandi A.; and Mitchell, Thomas O., 4,518,480, Cl. 208-11.0LE.

Mitrofanov, Viktor A.: *See—*
Braginsky, Yakov I.; Gultsev, Igor V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; and Yaroshenko, Yury F., 4,517,707, Cl. 17-71.000.

Mitschke, Helmut, to International Standard Electric Corporation. Device for flicker-free reproduction of television pictures and text and graphics pages. 4,518,984, Cl. 358-11.000.

Mitsubishi Chemical Industries Limited: *See—*
Iida, Seiu; Inokuchi, Tomio; and Munakata, Hiroaki, 4,518,591, Cl. 424-195.100.
Numa, Shosaku; and Yanaihara, Noboru, 4,518,527, Cl. 260-112.50R.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,518,330, Cl. 418-63.000.
Endo, Takafumi, 4,518,971, Cl. 346-76.0PH.
Kaneyuki, Kazutoshi, 4,518,886, Cl. 310-71.000.
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,518,903, Cl. 318-481.000.
Nakahori, Ichiro; Nakayama, Shigeki; Maeda, Mitsuo; Yamauchi, Shiro; and Ozawa, Junichiro, 4,517,849, Cl. 73-863.310.
Seki, Kimiaki; and Matsumoto, Akio, 4,518,333, Cl. 418-152.000.
Ueda, Fumio; Tsuboi, Yoshiaki; Arai, Hirotsugu; Horikiri, Kenji; and Ideno, Hiroaki, 4,518,959, Cl. 340-784.000.
Yokota, Mitsuyoshi, 4,518,316, Cl. 417-12.000.

Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See—*
Nohso, Hidenori, 4,518,264, Cl. 366-208.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.

Mitsubishi Rayon Company Ltd.: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Sugimori, Masahiro, 4,518,472, Cl. 204-159.150.

Mitsuboshi Belting Ltd.: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; and Yamaguchi, Yoshio, 4,518,375, Cl. 474-205.000.
Mashimo, Satoshi; Kakiuchi, Hazime; and Nakajima, Masayoshi, 4,518,376, Cl. 474-261.000.
Matsuo, Tadao; Matsuoka, Fumio; Yokota, Nobuo; and Yamamoto, Masaaki, 4,518,552, Cl. 264-126.000.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Yamada, Shinjiro, 4,518,181, Cl. 292-201.000.

Mitsui, Tsutomu: *See—*
Oguma, Tomio; Hirosawa, Kouichiro; and Mitsui, Tsutomu, 4,518,068, Cl. 192-0.052.

Miura, Keiji: *See—*
Otaka, Shoichi; Kondo, Yukio; Kumada, Masayuki; Kawamoto, Hideyo; and Miura, Keiji, 4,517,951, Cl. 123-572.000.

Miwa, Tadashi: *See—*
Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, 4,518,976, Cl. 346-153.100.

Miyakawa, Eiji, to Miyakawa Industry Co., Ltd.. Gear interference preventing mechanism in multi-spindle head attachment. 4,517,857, Cl. 74-665.0GA.

Miyakawa Industry Co., Ltd.: *See—*
Miyakawa, Eiji, 4,517,857, Cl. 74-665.0GA.

Miyake, Toshio; Yoshida, Mikihiko; and Takeuchi, Kano , to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Imparting low- or anti-cariogenic property to orally-usable products. 4,518,581, Cl. 424-48.000.

Miyaki, Takeo: *See—*
Konishi, Masataka; Sugawara, Koko; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,518,589, Cl. 514-27.000.

Miyamoto, Seigo: *See—*
Kamohara, Hideaki; Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,518,514, Cl. 252-70.000.

Miyata, Hiroyasu; and Ito, Kazuhiko, to Alps Electric Co., Ltd. Sheet material and production method thereof. 4,518,648, Cl. 428-256.000.

Mizogami, Shigeyoshi; and Akimoto, Shinichi, to Idemitsu Kosan Company Limited. Process for the production of polyethylene. 4,518,751, Cl. 526-114.000.

Mizokami, Kazunori, to Olympus Optical Company Ltd. Indicator for proper or improper exposure by automatic electronic flash. 4,518,237, Cl. 354-127.100.

Mizuno, Takao; Uchikawa, Naoshi; Murayama, Akira; and Tamura, Takahiro, to Hitachi, Ltd. Sealed type electrically operated compressor. 4,518,324, Cl. 417-366.000.

Mobay Chemical Corporation: *See—*
Markusch, Peter H.; Kelso, Robert G.; and Schmitt, Peter D., 4,518,522, Cl. 252-188.310.

Mobil Oil Corporation: *See—*
Audeh, Costandi A.; and Mitchell, Thomas O., 4,518,480, Cl. 208-11.0LE.
Bowden, Edgar A., 4,519,011, Cl. 360-137.000.
Clayton, William J., 4,519,095, Cl. 383-86.000.
Eichbauer, George N.; and LeBlanc, Beth A., 4,518,654, Cl. 428-331.000.
Krishnamurthy, Sowmithri; Landolt, George R.; and Schoennagel, Hans J., 4,518,708, Cl. 502-230.000.
LaPierre, Rene B.; Partridge, Randall D.; Chen, Nai Y.; and Wong, Stephen S., 4,518,485, Cl. 208-89.000.
Lyle, W. D., Jr.; and Gournay, Luke S., 4,517,836, Cl. 73-152.000.
Miller, Henry W., 4,518,042, Cl. 166-347.000.

Molee, Kenneth J.: *See—*
Luceri, Thomas J.; and Molee, Kenneth J., 4,518,451, Cl. 156-202.000.

Mollet, Hans; and Dussy, Paul, to Ciba Geigy Corporation. Process for the HT dyeing of polyester materials with ethylene oxide propylene oxide block polymer. 4,518,392, Cl. 8-609.000.

Monagle, Charles W.; and Smith, Janet C., to Central Soya Company, Inc. Process for breading food. 4,518,620, Cl. 426-291.000.

Monahan, William Jay: *See—*
Daniels, Jean G., 4,518,198, Cl. 297-229.000.

Monch, Sigurd: *See—*
Listemann, Peter; and Monch, Sigurd, 4,518,662, Cl. 428-675.000.

Mondardini, Massimo, to Urmet Sud S.P.A. Public telephone method and apparatus wherein the user's personal telephone number and a personal dialing code are used to effect debiting charges. 4,518,824, Cl. 179-6.3CC.

Monden, Norbert, to Hermann Heye. Method of and apparatus for making a parison. 4,518,409, Cl. 65-79.000.

Monsanto Company: *See—*
Croskell, Henry; and Graham, Tommy E., 4,518,399, Cl. 55-16.000.
Forster, Denis; and Schaefer, George F., 4,518,809, Cl. 568-840.000.
Otstot, Roger S.; and Runkle, Charles J., 4,517,720, Cl. 29-157.00R.
Pollard, Robert E., 4,518,728, Cl. 524-88.000.

Montedison S.p.A.: *See—*
Govoni, Gabriele; Corazzari, Canzio; Di Stefano, Giovanni; and Loconsolo, Mauro, 4,518,750, Cl. 526-68.000.
Zamboni, Valentino; Brichta, Corrado; and Troglia, Claudio, 4,518,731, Cl. 524-166.000.

Monteyne, Guido, to Paul Wurth S.A. Metallurgical slag filtering apparatus which effects uniform charging of a conveyer belt. 4,518,498, Cl. 210-297.000.

Moog Automotive, Inc.: *See—*
Fister, Louis P.; Pearson, Herby O.; and Fitch, Lawrence H., 4,518,058, Cl. 180-300.000.

Moore, Robert G.: *See—*
Tantillo, Donnie J.; Kratochvil, David F.; Moore, Robert G.; and Browne, Edward M., 4,519,052, Cl. 367-79.000.

Moreau, Pierre: *See—*
Juvin, Pierre; and Moreau, Pierre, 4,518,593, Cl. 424-195.000.

Morgenthaler, Eugen, to Seewer AG. Dough-rolling machine. 4,518,339, Cl. 425-367.000.

Mori, Nobuyuki: *See—*
Kawabata, Yasuhiro; Kadokawa, Yoshio; Mori, Nobuyuki; and Suzuki, Shinji, 4,517,854, Cl. 74-492.000.

Moriguchi, Haruhiko; and Inui, Toshiharu, to Fuji Xerox Co., Ltd. Transfer type heat sensitive recording medium. 4,518,645, Cl. 428-212.000.

Morimoto, Etsuji; and Orito, Keijiro, to Oki Electric Industry Co., Ltd. Method of manufacturing printed wiring boards. 4,518,465, Cl. 204-15.000.

Morimoto, Takeshi: *See—*
Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, 4,518,470, Cl. 204-98.000.

Morin, J. Donald, to Hospital For Sick Children, The. Corneal template set. 4,517,747, Cl. 33-178.00B.

Morino, Seiji; and Kawai, Hisasi, to Nippon Soken, Inc. Electromagnetic linear driving device. 4,518,882, Cl. 310-15.000.

Morita, Kazuhiko: *See—*
Kato, Mikihiko; Komine, Shigeo; Kawamata, Toshio; Morita, Kazuhiko; and Sato, Tsunehiko, 4,518,626, Cl. 427-48.000.

Moriya, Hisanori: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Morohashi, Yasushi: *See—*
Yoshida, Haruo; Tagoshi, Hirotaka; Morohashi, Yasushi; and Tanikoshi, Toshiaki, 4,518,756, Cl. 526-313.000.

Morrison Company, Inc.: *See—*
Morrison, Donald, 4,518,647, Cl. 428-250.000.

Morrison, Donald, to Morrison Company, Inc. Agricultural belting material. 4,518,647, Cl. 428-250.000.

Morrison, Eric F., to Ampex Corporation. Apparatus for providing dropout compensation and error concealment in a PAL format video information signal. 4,519,001, Cl. 358-310.000.

Morrison, Robert A., to Lockheed Corporation. Zero-insertion-force housing for circuit boards. 4,518,210, Cl. 339-17.0LM.

Morton Thiokol, Inc.: *See—*
Millen, Edward G., 4,518,767, Cl. 528-374.000.

Mosberg, Henry: *See—*
Hruby, Victor J.; and Mosberg, Henry, 4,518,711, Cl. 514-11.000.

Moser, James R., to Stobb, Inc. Method for conveying folded sheets. 4,518,156, Cl. 270-54.000.

Moser, William H., to Barham, Jerel J.; and Clegg, Lynaveta, part interest to each. Movable floor self-unloading trailer. 4,518,303, Cl. 414-528.000.

Mosheim, C. Edward: *See—*
Stewart, Harvey; and Mosheim, C. Edward, 4,518,570, Cl. 423-63.000.

Mosier, Donald E.: *See—*
Fredrickson, Lee R.; Cascini, Michael R.; and Mosier, Donald E., 4,518,225, Cl. 350-338.000.

Motonaga, Kenjiro: *See—*
Tanaka, Kazuo; Motonaga, Kenjiro; and Tanaka, Kozo, 4,518,123, Cl. 241-18.000.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Kruger, Wolfgang, 4,518,315, Cl. 416-241.00B.

Motorola, Inc.: *See—*
Cerny, Frank J., Jr., 4,519,096, Cl. 455-137.000.
Davis, Walter L.; and Raghunathan, Kuppuswamy, 4,518,961, Cl. 340-825.440.
Du Bois, Jerry M.; and Spanjer, Keith G., 4,518,982, Cl. 357-74.000.
Herold, Barry W., 4,518,869, Cl. 307-350.000.
Krebs, Jay; and Freeburg, Thomas A., 4,519,068, Cl. 370-82.000.
Lester, Theodore V., 4,519,023, Cl. 363-56.000.
Vaughn, Herchel A.; and Someshwar, Ashok H., 4,519,033, Cl. 364-200.000.

Mott, Philip J., to Borg-Warner Corporation. Step control apparatus for a fluid motor. 4,517,877, Cl. 91-48.000.

Mougin, Jacques: *See—*
Schnedecker, Guy; and Mougin, Jacques, 4,518,635, Cl. 427-232.000.

Moulding, Kenneth W., to U.S. Philips Corporation. "All-pass" filter circuit including an integrable band-pass filter circuit. 4,518,878, Cl. 307-520.000.

Mountain Systems, Inc.: *See—*
Caudill, Eddie T.; Caudill, Richard T.; and Conley, Lyle N., 4,518,826, Cl. 179-37.000.

Movshovitz, Avner; and Ityel, Amos, to Amcor Ltd. Heat pumping system. 4,517,808, Cl. 62-160.000.

Mucha, Basil, to Teleflex Incorporated. Remotely controllable vent door. 4,517,765, Cl. 49-3.000.

Muchel, Franz; and Strahle, Fritz, to Carl-Zeiss-Stiftung. Stereomicroscope. 4,518,231, Cl. 350-516.000.

Mucheyer, Norbert; and Schulte, Heinz, to Mannesmann Rexroth GmbH. Pressure container for two hydraulic circuits. 4,518,010, Cl. 137-587.000.

Mueller, Carl J.; and Haefner, John S., to Emerson Electric Co. Direct ignition gas burner control system. 4,518,345, Cl. 431-24.000.

Mueller, Edward E.; and Jensen, Paul L., to Whirl-Air-Flow Corporation. Apparatus and method for calcining sand. 4,518,350, Cl. 432-13.000.

Muellner, James M.; and Pastien, Eugene R. Cart conveyor and dispenser apparatus. 4,518,072, Cl. 194-4.00D.

Muench, Volker: *See—*
Naarmann, Herbert; Muench, Volker; Kohler, Gernot; and Simak, Petr, 4,518,535, Cl. 260-438.100.

Muething, Kevin A., to AT&T Technologies, Inc. CVD Process. 4,518,455, Cl. 156-613.000.

Muhlenbeck, Josef: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.

Muir, Earl B.: *See—*
Elson, John P.; Muir, Earl B.; and Riffe, Delmar R., 4,518,323, Cl. 417-312.000.

Muller, Erich: *See—*
Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, 4,518,597, Cl. 514-228.000.
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,518,596, Cl. 514-232.000.

Muller, Hanns P.: *See—*
Richter, Roland; Muller, Hanns P.; Wagner, Kuno; Riberi, Bernd; and Frohlich, Jurg, 4,518,761, Cl. 528-67.000.

Muller, Hubert: *See—*
Bussing, Jurgen; and Muller, Hubert, 4,518,732, Cl. 524-178.000.

Muller, Rolf: *See—*
Elsaesser, Dieter; von der Heide, Johann; Muller, Rolf; and Papst, Georg, 4,519,010, Cl. 360-97.000.

Mullner, Paul: *See—*
Lugscheider, Walter; Leutgob, Alois; Riegler, Ernst; and Mullner, Paul, 4,518,417, Cl. 75-10.00R.

Munakata, Hiroaki: *See—*
Iida, Seiu; Inokuchi, Tomio; and Munakata, Hiroaki, 4,518,591, Cl. 424-195.100.

Munetsugu, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Small-sized electronic calculator capable of functioning as a musical instrument. 4,519,044, Cl. 364-709.000.

Murakoshi, Makoto; and Ota, Takahiro, to Fuji Photo Film Co., Ltd. High frequency scalpel and endoscope system and method of operating same. 4,517,976, Cl. 128-303.150.

Muramatsu, Eiichi; Matsumoto, Shigemi; and Nagoshi, Fumiya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin composition having toughness and high heat distortion resistance. 4,518,742, Cl. 525-67.000.

Muramatsu, Masamitsu: *See—*
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.

Murata, Akio: *See—*
Kobayashi, Hisamine; Ishiguro, Tomihiro; and Murata, Akio, 4,517,771, Cl. 51-163.200.

Murata Kikai Kabushiki Kaisha: *See—*
Sakai, Shoji; Fujiwara, Michiaki; Kubota, Nobunori; and Noda, Koshi, 4,517,794, Cl. 57-304.000.

Murata, Tomoji; Hayashi, Masamichi; Goto, Yasuo; and Sakurai, Seiichi, to Minolta Camera Kabushiki Kaisha. Slit illumination system for copying machine and the like. 4,518,249, Cl. 355-67.000.

Murayama, Akira: *See—*
Mizuno, Takao; Uchikawa, Naoshi; Murayama, Akira; and Tamura, Takahiro, 4,518,324, Cl. 417-366.000.

Muro Kinzoku Kogyo Co., Ltd.: *See—*
Ishikawa, Shigeru, 4,517,863, Cl. 81-434.000.

Murphy, Andrew H., to Metals Production Research, Inc. Process for electrolytic recovery of titanium metal sponge from its ore. 4,518,426, Cl. 75-112.000.

Murphy, Frank; and Peterson, William F. Syringe injection apparatus with adjustable dosage indicator. 4,518,387, Cl. 604-187.000.

Murr, John, Jr.: *See—*
Kane, James; and Murr, John, Jr., 4,518,893, Cl. 313-479.000.

Murray, Kevin P.: *See—*
Sekmakas, Kazys; Shah, Raj; Lewarchik, Ronald J.; and Murray, Kevin P., 4,518,746, Cl. 525-443.000.

Musgrove, Robert G., to LTV Aerospace and Defense Company. Vehicular steering apparatus employing an eccentric actuator. 4,518,170, Cl. 280-96.000.

Musick, Donald R.; and Howell, Edward H., to International Harvester Company. Self-adjusting cooling system for diesel engines. 4,517,929, Cl. 123-41.100.

Myers, Garry L.: *See—*
Wang, Richard H. S.; and Myers, Garry L., 4,518,808, Cl. 568-765.000.

N. V. Raychem S.A.: *See—*
Henry, Rene H.; and Nolf, Jean M. E., 4,518,448, Cl. 156-86.000.

Naarmann, Herbert; Muench, Volker; Kohler, Gernot; and Simak, Petr, to BASF Aktiengesellschaft. Preparation of electrically conductive systems from substituted phenalenes, and the products obtained. 4,518,535, Cl. 260-438.100.

Nabisco Brands, Inc.: *See—*
Wilson, Mildred N.; Danielson, Robert L.; Bosco, Peter M.; and Steensen, Wayne L., 4,518,622, Cl. 426-578.000.

Nadalaan S.A.: *See—*
Shamszadeh, Khosrow, 4,517,782, Cl. 52-309.700.

Nagahara, Toshio: *See—*
Tani, Shigetaka; and Nagahara, Toshio, 4,517,853, Cl. 74-89.150.

Nagaoka, Mitsuru; and Yasuno, Mitsuo, to Mazda Motor Corporation. Shift up clutch control in a multiple clutch type gear transmission for automobile. 4,517,859, Cl. 74-866.000.

Nagasawa, Masanori: *See—*
Suzuki, Yasuo; Hirao, Hiroshi; and Nagasawa, Masanori, 4,518,873, Cl. 307-451.000.

Nagasawa, Toshio: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.

Nagasawa, Tsunehiko: *See—*
Takenouchi, Tsutomu; Nagasawa, Tsunehiko; and Nanasawa, Masatada, 4,519,008, Cl. 360-79.000.

Nagel, Arthur A.: *See—*
Hauske, James R.; and Nagel, Arthur A., 4,518,590, Cl. 514-29.000.

Nagoshi, Fumiya: *See—*
Muramatsu, Eiichi; Matsumoto, Shigemi; and Nagoshi, Fumiya, 4,518,742, Cl. 525-67.000.

Nakagawa, Norihisa, to Toyota Jidosha Kabushiki Kaisha. Air introduction system of a fuel injection type engine. 4,517,941, Cl. 123-336.000.

Nakagiri, Tadahiko: *See—*
Osaka, Takatoshi; Nishimura, Katsuo; and Nakagiri, Tadahiko, 4,517,953, Cl. 124-17.000.

Nakahori, Ichiro; Nakayama, Shigeki; Maeda, Mitsuo; Yamauchi, Shiro; and Ozawa, Junichiro, to Mitsubishi Denki Kabushiki Kaisha. Sampling system for water quality sensors. 4,517,849, Cl. 73-863.310.

Nakai, Fumio: *See—*
Okubo, Masao; Yoshimitsu, Yasuro; Nakai, Fumio; and Garretson, Oliver R., 4,518,914, Cl. 324-158.00F.

Nakajima, Masayoshi: *See—*
Mashimo, Satoshi; Kakiuchi, Hazime; and Nakajima, Masayoshi, 4,518,376, Cl. 474-261.000.

Nakajima, Tamotsu: *See—*
Yoshida, Shusuke; Nakajima, Tamotsu; and Okamoto, Miyoshi, 4,517,715, Cl. 28-144.000.

Nakamichi Corporation: *See—*
Nakamichi, Niro, 4,519,006, Cl. 360-76.000.

Nakamichi, Niro, to Nakamichi Corporation. Magnetic head device. 4,519,006, Cl. 360-76.000.

Nakamura, Kunihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet sorting apparatus. 4,518,161, Cl. 271-303.000.

Nakamura, Mikihiko: *See—*
Aoshima, Atsushi; Suzuki, Yoshio; and Nakamura, Mikihiko, 4,518,462, Cl. 203-39.000.

Nakamura, Naoji: *See—*
Masumoto, Hakaru; and Nakamura, Naoji, 4,518,439, Cl. 148-3.000.

Nakamura, Noboru: *See—*
Okabayashi, Yoshikatsu; Nakamura, Noboru; Matsumoto, Takeshi; and Osumi, Yoshimasa, 4,518,704, Cl. 502-80.000.

Nakamura, Teruya: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.

Nakamura, Toru: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; and Matsuura, Kazuo, 4,518,752, Cl. 526-116.000.

Nakano, Hideaki; Ozu, Tadahiro; and Shirai, Eiichi, to Kawasaki Jukogyo Kabushiki Kaisha. Piston of combustion engine. 4,517,930, Cl. 123-41.310.

Nakayama, Shigeki: *See—*
Nakahori, Ichiro; Nakayama, Shigeki; Maeda, Mitsuo; Yamauchi, Shiro; and Ozawa, Junichiro, 4,517,849, Cl. 73-863.310.

Nakayama, Takao, to Fuji Photo Film Co., Ltd. Method for preparing a lithographic printing plate. 4,518,668, Cl. 430-49.000.

Nanasawa, Masatada: *See—*
Takenouchi, Tsutomu; Nagasawa, Tsunehiko; and Nanasawa, Masatada, 4,519,008, Cl. 360-79.000.

Nanbu, Tadamasa: *See—*
Asada, Shuji; and Nanbu, Tadamasa, 4,517,757, Cl. 38-88.000.

Nancarrow, James H.: *See—*
Kobayashi, Robert J.; Nancarrow, James H.; and Alger, Jeffrey L., 4,517,802, Cl. 60-606.000.

Narda Microwave Corporation, The: *See—*
Asian, Edward E., 4,518,912, Cl. 324-95.000.

Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, to Dr. Karl Thomae GmbH. Substituted benzoxazin-2-ones and pharmaceutical compositions containing them. 4,518,597, Cl. 514-228.000.

Narr, Berthold: *See—*
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,518,596, Cl. 514-232.000.

Naruo, Kyoichi: *See—*
Okita, Tsutomu; and Naruo, Kyoichi, 4,518,656, Cl. 428-403.000.

Naruse, Akisuke: *See—*
Takaku, Kazuo; Naruse, Akisuke; Fujimoto, Hirotsugu; and Kimura, Hiroshi, 4,518,560, Cl. 376-245.000.

Nason, Martin L. Paired beam engines and pumps. 4,517,932, Cl. 123-54.00A.

Natchev, Emil. Support for hand and knee at work on low level. 4,518,060, Cl. 182-230.000.

Nath, Dilip K.: *See—*
Biswas, Dipak R.; and Nath, Dilip K., 4,518,628, Cl. 427-55.000.

National Foundation for Cancer Research, Inc.: *See—*
Veltri, Robert W., 4,518,611, Cl. 514-470.000.

National Patent Development Corporation: *See—*
Rabenau, Richard; and Ryder, Jeffery A., 4,518,390, Cl. 8-507.000.

National Research Development Corporation: *See—*
Cox, Michael; Gray, Michael J.; and Duke, Phillip W., 4,518,420, Cl. 75-26.000.
Hately, Maurice C., 4,518,968, Cl. 343-802.000.
Klinner, Wilfred E.; and Knight, Andrew C., 4,518,124, Cl. 241-101.700.
Richards, David H.; and Stewart, Malcolm J., 4,518,753, Cl. 526-177.000.

National Semiconductor Corporation: *See—*
Goodrich, Gary B.; and Belani, Jadish G., 4,518,735, Cl. 524-403.000.
Priel, Ury; Yaron, Giora; and Ebel, Mark S., 4,519,076, Cl. 371-21.000.

National Starch and Chemical Corporation: *See—*
Gleason, Patricia A.; and Brase, Ingrid E., 4,518,510, Cl. 252-8.50C.

Naumann, Ted F., Jr.: *See—*
Thompson, Craig R.; Carnes, Ronald C.; and Naumann, Ted F., Jr., 4,517,840, Cl. 73-644.000.

Nawata, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Pulse motor driving apparatus. 4,518,900, Cl. 318-102.000.

NCR Corporation: *See—*
George, Rick A., 4,518,272, Cl. 400-705.100.

NEC Corporation: *See—*
Kanai, Tetsuro, 4,518,949, Cl. 340-347.0AD.
Shimizu, Shigeaki; Kubo, Yoshimi; Arai, Yoshio; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,517,727, Cl. 29-570.000.
Yano, Takeshi; Fukui, Izumu; Hamatsuki, Takeshige; Sato, Eiichi; and Inui, Osamu, 4,518,887, Cl. 310-328.000.

Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek: *See—*
Wolters, Leendert, 4,517,928, Cl. 123-27.0GE.

Needham, James C., to Welding Institute, The. Short-circuit MIG welding. 4,518,844, Cl. 219-137.0PS.

Neese, Wayne E.: *See—*
Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., 4,518,211, Cl. 339-17.0LM.

Negley, Loren E., to Welcon Connector Company. Connector block with RF shield. 4,518,209, Cl. 339-14.00R.

Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, to Matsushita Electric Industrial Co., Ltd. Sewing machine having a digital command circuit. 4,517,909, Cl. 112-275.000.

Nelson, Carl D. Variable stroke engine. 4,517,931, Cl. 123-48.00B.

Nelson, Roger J., to Deere & Company. Vehicle with coolant pressure responsive hitch control. 4,518,045, Cl. 172-7.000.

Nemoto, Kiyoshi, to Kabushiki Kaisha Murayama Seisakusho. Piston for piston pump. 4,518,328, Cl. 417-511.000.

NESELCO: *See—*
Sorensen, Gunnar; and Svendsen, Leo, 4,518,738, Cl. 524-435.000.

Neszmelyi, Erzsebet: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.

Netzer, Yishay. Vertical indicating method and device. 4,517,750, Cl. 33-396.000.

Neuray, Dieter: *See—*
Stix, Wolfgang; Bottenbruch, Ludwig; and Neuray, Dieter, 4,518,747, Cl. 525-462.000.

Neville, Thomas: *See—*
Rademacher, Darrell; Neville, Thomas; and Simpson, Roger T., 4,519,088, Cl. 377-16.000.

New Life Foundation: *See—*
Mackenzie, Harold B.; and Anderson, Ingvar G., 4,517,925, Cl. 122-2.000.

Newberry, Michael E., to Petrolite Corporation. Particulate compositions. 4,518,509, Cl. 252-8.300.

Newby, Gerald R. Steam-sieve method and apparatus. 4,518,400, Cl. 55-68.000.

News Log International, Inc.: *See—*
Jewer, Alan A., 4,519,054, Cl. 369-30.000.

NG, Sau-Lan L.; Plewes, John T.; and Robbins, Murray, to AT&T Technologies, Inc. Method of making non-precious metal electrical contacts by electroplating. 4,518,469, Cl. 204-44.500.

Niagara Blower Company: *See—*
Kals, Walter, 4,517,805, Cl. 60-688.000.

Nicholas, Mark L.: *See—*
Blum, Patricia R.; Milberger, Ernest C.; and Nicholas, Mark L., 4,518,523, Cl. 502-209.000.

Nichols, Roy F., Jr., to General Electric Company. Printed circuit board laminate with arc-resistance. 4,518,646, Cl. 428-248.000.

Nicholson, Walter. Multi-tined claw/rake attachment. 4,517,755, Cl. 37-117.500.

Nickl, Josef: *See—*
Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, 4,518,597, Cl. 514-228.000.
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,518,596, Cl. 514-232.000.

Nicolai, Charles M. Earthquake-proof building with improved foundation. 4,517,778, Cl. 52-167.000.

Nielsen, Kurt F.: *See—*
Jensen, Niels D.; Nielsen, Kurt F.; and Larden, Bent, 4,518,318, Cl. 417-53.000.

Nifco Inc.: *See—*
Tanaka, Toshie, 4,517,711, Cl. 24-453.000.

Nigel, Ken: *See—*
Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., 4,518,077, Cl. 198-731.000.

Nihon Kohden Corporation: *See—*
Harada, Hajime, 4,518,941, Cl. 336-69.000.

Niimi, Morihiro, to Clarion Co., Ltd. Manufacturing method for MIS-type semiconductor device. 4,517,728, Cl. 29-571.000.

Nikitushkin, Nikolai A.: *See—*
Braginsky, Yakov I.; Gultsev, Igor V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; and Yaroshenko, Yury F., 4,517,707, Cl. 17-71.000.

Nilsson, Claes T.: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,518,340, Cl. 425-393.000.

Nippin Seiko Kabushiki Kaisha: *See—*
Kawakami, Kouichi; and Tanaka, Mamoru, 4,517,852, Cl. 74-89.150.

Nippon Columbia Kabushikikaisha: *See—*
Takagi, Toshihiko; Kobayashi, Yoshikazu; Suzuki, Yoshiji; and Hara, Tsutomu, 4,519,064, Cl. 369-275.000.

Nippon Electric Co., Ltd.: *See—*
Fuji, Tatsuo, 4,519,051, Cl. 365-184.000.

Nippon Light Metal Company Ltd.: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,518,466, Cl. 204-28.000.

Nippon Oil Co., Ltd.: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; and Matsuura, Kazuo, 4,518,752, Cl. 526-116.000.

Nippon Paint Co., Ltd.: *See—*
Kuwajima, Teruaki; Kida, Katsuaki; and Ishikura, Shinichi, 4,518,724, Cl. 523-501.000.

Nippon Soken, Inc.: *See—*
Kitagawa, Junji; and Akita, Shigeyuki, 4,518,956, Cl. 340-620.000.
Morino, Seiji; and Kawai, Hisasi, 4,518,882, Cl. 310-15.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, 4,518,989, Cl. 358-86.000.

Nippondenso Co., Ltd.: *See—*
Inoue, Shingo; Iwata, Toshiharu; and Takasu, Yasuhito, 4,517,944, Cl. 123-425.000.
Kaji, Yasumasa; Isomura, Shigenori; Harada, Takashi; and Sakakibara, Shuji, 4,517,948, Cl. 123-489.000.
Matsui, Takeski; Ohyama, Hideo; Tachi, Ryosuke; Ito, Teruyoshi; and Kawai, Motoshi, 4,519,038, Cl. 364-431.030.

Nishibori, Toshiki; Kita, Sumio; and Takano, Sakuharu, to Sharp Kabushiki Kaisha. Sheet paper attracting system. 4,518,159, Cl. 271-103.000.

Nishijima, Hideo: *See—*
Fukushima, Isao; Kobori, Yasunori; Nishijima, Hideo; and Masuda, Yoshinori, 4,518,901, Cl. 318-328.000.

Nishikawa, Kazuo; Ichino, Hiroyuki; and Okura, Keniti, to Pioneer Electric Corporation. Phono pickup cartridge. 4,519,063, Cl. 369-172.000.

Nishikawa, Kohei: *See—*
Terao, Shinji; and Nishikawa, Kohei, 4,518,602, Cl. 514-332.000.

Nishikawa, Masaji, to Olympus Optical Company Limited. Apparatus for forming image by developing charge latent image with toner. 4,518,247, Cl. 355-15.000.

Nishikawa, Masaji, to Olympus Optical Company Limited. Apparatus for forming image by developing charge latent image with two component dry developing agent. 4,518,248, Cl. 355-15.000.

Nishikawa, Toshio; Kaneko, Tadashi; and Othuka, Kazutoshi, to Mazda Motor Corporation. Multiple cylinder engine having air-fuel ratio control means in accordance with a signal from an exhaust gas sensor. 4,517,947, Cl. 123-489.000.

Nishimura, Katsuo: *See—*
Osaka, Takatoshi; Nishimura, Katsuo; and Nakagiri, Tadahiko, 4,517,953, Cl. 124-17.000.

Nishimura, Shigeoki: *See—*
Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, 4,518,665, Cl. 429-153.000.

Nishimura, Takeo: *See—*
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,518,674, Cl. 430-108.000.

Nishimura, Yutaka: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Nishino, Atsushi: *See—*
Sonetaka, Kazunori; Nishino, Atsushi; and Suzuki, Tadashi, 4,518,347, Cl. 431-325.000.

Nishino, Yoshinori: *See—*
Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, 4,518,556, Cl. 264-295.000.

Nissan Motor Company, Limited: *See—*
Hosoya, Katsumi, 4,517,952, Cl. 123-638.000.
Ishigami, Kazuhiro; Furuhashi, Shoji; and Yuzawa, Haruo, 4,517,945, Cl. 123-425.000.
Kobayashi, Hiroshi, 4,519,012, Cl. 361-284.000.
Kuroki, Junsuke; Irie, Namio; and Tanaka, Haruto, 4,518,169, Cl. 280-6.00R.
Nozawa, Koji, 4,518,071, Cl. 192-106.200.
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,518,954, Cl. 340-576.000.
Yagi, Eiji; Kobari, Yuji; and Takahashi, Sadahiro, 4,518,055, Cl. 180-142.000.

Nittan Company, Limited: *See—*
Tanaka, Hiroshi; Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,518,952, Cl. 340-514.000.

Nitto Kagaku Kogyo Kabushiki Kaisha: *See—*
Sekimoto, Yukihiko; and Okamoto, Osamu, 4,518,261, Cl. 366-150.000.

NL Industries, Inc.: *See—*
Zabcik, Clarence J., 4,518,888, Cl. 310-334.000.

Noda, Koshi: *See—*
Sakai, Shoji; Fujiwara, Michiaki; Kubota, Nobunori; and Noda, Koshi, 4,517,794, Cl. 57-304.000.

Noguchi, Koji; Asanae, Masumi; and Kimura, Fumio, to Hitachi Metals, Ltd. Electrophotographic developer. 4,518,673, Cl. 430-108.000.

Noguchi, Yasuhiro; and Mihara, Yuji, to Fuji Photo Film Co., Ltd. Spectrally sensitized inner latent image type silver halide photographic emulsions. 4,518,689, Cl. 430-574.000.

Nohso, Hidenori, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Stirring apparatus. 4,518,264, Cl. 366-208.000.

Nolf, Jean M. E.: *See—*
Henry, Rene H.; and Nolf, Jean M. E., 4,518,448, Cl. 156-86.000.

Nomori, Hiroyuki: *See—*
Matsuzaki, Masatoshi; Yamazaki, Toshinori; and Nomori, Hiroyuki, 4,518,670, Cl. 430-58.000.

Nonaka, Chiaki: *See—*
Higashihara, Teruaki; Nonaka, Chiaki; Yoshida, Tadao; and Kawachi, Hideo, 4,519,057, Cl. 369-50.000.

Nonnenmacher, Gerhard, to Robert Bosch GmbH. Arrangement for regulating a supply flow and for limiting a supply pressure of an adjustable pump. 4,518,322, Cl. 417-222.000.

Nordson Corporation: *See—*
Baker, Robert G., 4,518,016, Cl. 138-96.00R.

Norsk Hydro a.s.: *See—*
Storen, Harald, 4,518,438, Cl. 134-22.100.

North American Philips Corporation: *See—*
Arora, Mulk R., 4,518,471, Cl. 204-129.100.
T Hoen, Pieter J., 4,518,889, Cl. 310-357.000.

Northern Telecom Limited: *See—*
Cote , Gerard G. M.; and Zuber, Bretislav P., 4,518,129, Cl. 242-78.000.
Lenaerts, George V.; Charchanko, Eugene W.; and Dambenieks, Andrejs, 4,517,739, Cl. 29-846.000.
Walling, Jorg-Hein; Shannon, Michael A.; and Arbuthnot, Gerald, 4,518,633, Cl. 427-120.000.

Novacor Medical Corporation: *See—*
La Forge, David H.; and Portner, Peer M., 4,519,043, Cl. 364-571.000.

Novation, Inc.: *See—*
Kessler, Bayard F., 4,518,823, Cl. 179-2.0DP.

Nozawa, Koji, to Nissan Motor Company, Limited. Clutch disc having damper springs. 4,518,071, Cl. 192-106.200.

Nozawa, Ryoichiro; and Kiya, Nobuyuki, to Fujitsu Fanuc Limited. Numerical control system with graphical display processing of size and shape of part contour. 4,519,026, Cl. 364-167.000.

Numa, Shosaku; and Yanaihara, Noboru, to Mitsubishi Chemical Industries Limited. Polypeptides related to the pre-acetylcholine receptor-α of the electric organ of *Torpedo californica*. 4,518,527, Cl. 260-112.50R.

Nuodex Inc.: *See—*
Petronella, Joseph, 4,518,395, Cl. 44-53.000.

Oakes, Thomas R.: *See—*
Freis, Richard E.; Maloney, James E.; and Oakes, Thomas R., 4,518,459, Cl. 162-5.000.

Oates, Robert M.; Petronio, Carlo F.; and Kraus, Mark G., to Westinghouse Electric Corp. Plural sensor apparatus for monitoring turbine blading with undesired component elimination. 4,518,917, Cl. 324-207.000.

Oates, William J. Weighted exercise bar. 4,518,162, Cl. 272-93.000.

Obara, Haruki, to Fanuc Ltd. Method of controlling wire-cut electric discharge contour machines errors. 4,518,842, Cl. 219-69.00W.

Occidental Chemical Corporation: *See—*
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., 4,518,573, Cl. 423-303.000.

Och, Rudolf, to Frenco Verzahnungslehren GmbH. Gauge. 4,517,743, Cl. 33-147.00M.

O'Connor, Robert J.: *See—*
Drexler, Leonard H.; Flynn, Richard M.; Fox, George R.; Illium, Herbert C., Jr.; and O'Connor, Robert J., 4,518,830, Cl. 179-103.000.

Oda, Kazutaka: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,518,466, Cl. 204-28.000.

Oda, Yoshio; Morimoto, Takeshi; and Matsubara, Toshiya, to Asahi Glass Co., Ltd. Ion exchange membrane cell and electrolytic process using thereof. 4,518,470, Cl. 204-98.000.

Oefinger, Richard W.; and Babyak, Richard J., to USM Corporation. Blind rivet tool. 4,517,820, Cl. 72-391.000.

Ogasawara, Pam: *See—*
Hsia, Samson T.; and Ogasawara, Pam, 4,518,618, Cl. 426-262.000.

Ogawa, Ichitaro: *See—*
Yoshida, Hisayoshi; Ogawa, Ichitaro; Hagio, Tsuyoshi; Kobayashi, Kazuo; and Yamamoto, Takayoshi, 4,518,702, Cl. 501-90.000.

Oguma, Tomio; Hirosawa, Kouichiro; and Mitsui, Tsutomu, to Aisin Seiki Kabushikikaisha. Automatic clutch control system. 4,518,068, Cl. 192-0.052.

Oguni, Kensaku: *See—*
Atsumi, Akira; Oguni, Kensaku; Kuroda, Shigeaki; Senshu, Takao; and Yoshioka, Kazuo, 4,517,811, Cl. 62-197.000.

O'Hara, Robert J. Air damper assembly with movable blades. 4,518,012, Cl. 137-601.000.

Ohkawa, Shuji: *See—*
Taguchi, Shunichi; Ohkawa, Shuji; Watanabe, Mitsuru; and Kikuchi, Itsuo, 4,518,839, Cl. 219-10.55B.

Ohkura Electric Co., Ltd.: *See—*
Wachi, Akira; and Hayashi, Munehisa, 4,517,838, Cl. 73-204.000.

Ohlson, Kurt L. Card, especially ID-card intended retainer. 4,518,080, Cl. 206-39.000.

Ohorodnik, Alexander: *See—*
Gehrmann, Klaus; Ohorodnik, Alexander; Rosenthal, Johannes; and Schafer, Stefan, 4,518,538, Cl. 260-543.00P.

Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Method of recording pieces of image information of different kinds in electrophotography. 4,518,252, Cl. 355-133.000.

Ohyama, Hideo: *See—*
Matsui, Takeski; Ohyama, Hideo; Tachi, Ryosuke; Ito, Teruyoshi; and Kawai, Motoshi, 4,519,038, Cl. 364-431.030.

Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,518,134, Cl. 242-199.000.

Okabayashi, Yoshikatsu; Nakamura, Noboru; Matsumoto, Takeshi; and Osumi, Yoshimasa, to Kyoto Ceramic Kabushiki Kaisha. Activated carbon formed body and method of producing the same. 4,518,704, Cl. 502-80.000.

Okada, Hisao; Tanaka, Seiichiro; and Kawaberi, Seiji, to Sony Corporation. Television signal receiving system. 4,518,993, Cl. 358-114.000.

Okamoto, Miyoshi: *See—*
Yoshida, Shusuke; Nakajima, Tamotsu; and Okamoto, Miyoshi, 4,517,715, Cl. 28-144.000.

Okamoto, Osamu: *See—*
Sekimoto, Yukihiko; and Okamoto, Osamu, 4,518,261, Cl. 366-150.000.

Okamoto, Yukio: *See—*
Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, 4,518,976, Cl. 346-153.100.

Okawa, Shinichi: *See—*
Shiga, Tetsuya; Okawa, Shinichi; Yoshida, Kenichi; and Hiramoto, Junichi, 4,517,982, Cl. 128-635.000.

Oki Electric Industry Co., Ltd.: *See—*
Morimoto, Etsuji; and Orito, Keijiro, 4,518,465, Cl. 204-15.000.
Sagara, Iwao, 4,518,827, Cl. 179-81.00R.

Okita, Tsutomu; and Naruo, Kyoichi, to Fuji Photo Film Co., Ltd. Magnetic recording medium and process for producing the same. 4,518,656, Cl. 428-403.000.

Okubo, Masao; Yoshimitsu, Yasuro; Nakai, Fumio; and Garretson, Oliver R., to Japan Electronic Materials Corportion. Testing apparatus of semiconductor wafers. 4,518,914 Cl. 324-158.00F.

Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, to Yamauchi Rubber Industry Co., Ltd. Magnetic rolls for electrostatic recording devices. 4,517,719, Cl. 29-124.000.

Okura, Keniti: *See—*
Nishikawa, Kazuo; Ichino, Hiroyuki; and Okura, Keniti, 4,519,063, Cl. 369-172.000.

Oldham, James A.: *See—*
Richmond, Iain J.; Wong, David; Puust, Ants; and Oldham, James A., 4,517,903, Cl. 110-233.000.

Olds, John R.; and Alt, Mark R., to Abex Corporation. Snubber for dipper door. 4,517,756, Cl. 37-118.00R.

Olin Corporation: *See—*
Eberhart, Gerald E.; and Sauls, Goah T., 4,517,716, Cl. 29-1.300.
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,518,030, Cl. 164-503.000.
Gray, Thomas J., 4,518,457, Cl. 156-656.000.
Smith, Maurice R.; and Cochran, Harvey B., 4,518,760, Cl. 528-48.000.

Olsen, R. Eric: *See—*
Bert, Jack A.; and Olsen, R. Eric, 4,517,943, Cl. 123-415.000.

Olsen, Richard E.; and Baker, Dwight C., to Digital Equipment Corporation. CPU with multi-stage mode register for defining CPU operating environment including charging its communications protocol. 4,519,028, Cl. 364-200.000.

Olson, Kenneth C., to Genentech, Inc. Purification and activity assurance of precipitated heterologous proteins. 4,518,526, Cl. 260-112.00R.

Olsson, Mats A.; and Sandstrom, Roland, to Infrasonik AB. Low-frequency sound generator. 4,517,915, Cl. 116-137.00R.

Olympus Optical Co., Ltd.: *See—*
Fukuoka, Kenji; Ida, Masatoshi; Goto, Atsuo; Akagi, Toshimasa; Imai, Masaharu; and Kimura, Kenji, 4,518,863, Cl. 250-578.000.
Mizokami, Kazunori, 4,518,237, Cl. 354-127.100.
Nishikawa, Masaji, 4,518,247, Cl. 355-15.000.
Nishikawa, Masaji, 4,518,248, Cl. 355-15.000.
Yanagida, Tuneo, 4,518,657, Cl. 428-450.000.

Onder, Kemal: *See—*
Grossman, Steven J.; and Onder, Kemal, 4,518,765, Cl. 528-314.000.

O'Neil, James W.: *See—*
Quinn, John A.; and O'Neil, James W., 4,518,666, Cl. 430-7.000.

Ong, Kenneth K. H.: *See—*
Scheurer, Heinrich P.; and Ong, Kenneth K. H., 4,518,768, Cl. 528-483.000.

Ono, Mitsunori: *See—*
Yagihara, Morio; Ikegawa, Akihiko; Ono, Mitsunori; and Mihara, Yuji, 4,518,685, Cl. 430-505.000.

Onodera, Kaoru: *See—*
Sasaki, Masao; and Onodera, Kaoru, 4,518,686, Cl. 430-512.000.

Ooka, Yuzo, to Honda Giken Kogyo Kabushiki Kaisha. Clutch release apparatus for change speed transmission. 4,518,070, Cl. 192-85.0CA.

Oowa, Takeshi: *See—*
Kurihara, Teruo; and Oowa, Takeshi, 4,519,093, Cl. 378-132.000.

Oppitz, Hans, to Eltac Nogler & Daum KG. Planar heating element. 4,518,851, Cl. 219-549.000.

Optimizer, Limited: *See—*
Reinhard, George G.; Kinde, Ronald; and Singer, Bernard S., 4,517,926, Cl. 123-3.000.

Orain, Michel A., to Glaenzer Spicer. Transmission for a motor vehicle. 4,518,370, Cl. 464-113.000.

Oram, John A. Operating theatre table light. 4,519,021, Cl. 362-277.000.

Orbisphere Corporation Wilmington: *See—*
Wright, Harry D.; Hale, John M.; and Weber, Eugen, 4,518,477, Cl. 204-415.000.

Orito, Keijiro: *See—*
Morimoto, Etsuji; and Orito, Keijiro, 4,518,465, Cl. 204-15.000.

Ormesher, Robert J., to Aluminum Company of America. Metal scrap reclamation system. 4,518,424, Cl. 75-65.00R.

Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
Pellegri, Alberto, 4,518,113, Cl. 228-170.000.

Osaka Soda Co. Ltd.: *See—*
Tanaka, Motomu; Osuka, Masanari; Kuri, Takeshi; and Takakuwa, Sadao, 4,518,764, Cl. 528-271.000.

Osaka, Takatoshi; Nishimura, Katsuo; and Nakagiri, Tadahiko, to Citizen Watch Co., Ltd. Ball throwing machine. 4,517,953, Cl. 124-17.000.

Osato, Yoichi: *See—*
Misumi, Teruo; and Osato, Yoichi, 4,518,671, Cl. 430-84.000.

Oshikawa, Yoshihiro, to Fujitsu Limited. Method for fabricating an EEPROM. 4,517,732, Cl. 29-571.000.

Osman, Robert M.; and Shulik, Larry J., to Exxon Research & Engineering Co. Catalytic gas synthesis process. 4,518,574, Cl. 423-360.000.

Osuka, Masanari: *See—*
Tanaka, Motomu; Osuka, Masanari; Kuri, Takeshi; and Takakuwa, Sadao, 4,518,764, Cl. 528-271.000.

Osumi, Yoshimasa: *See—*
Okabayashi, Yoshikatsu; Nakamura, Noboru; Matsumoto, Takeshi; and Osumi, Yoshimasa, 4,518,704, Cl. 502-80.000.

Oswald, Richard A.: *See—*
Alter, H. Ward; and Oswald, Richard A., 4,518,860, Cl. 250-253.000.

Ota, Takahiro: *See—*
Murakoshi, Makoto; and Ota, Takahiro, 4,517,976, Cl. 128-303.150.

Otaka, Shoichi; Kondo, Yukio; Kumada, Masayuki; Kawamoto, Hideyo; and Miura, Keiji, to Honda Giken Kogyo Kabushiki Kaisha. Intake manifold apparatus in multi-cylinder engine. 4,517,951, Cl. 123-572.000.

Otani, Tadahiko: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Othuka, Kazutoshi: *See—*
Nishikawa, Toshio; Kaneko, Tadashi; and Othuka, Kazutoshi, 4,517,947, Cl. 123-489.000.

Otstot, Roger S.; and Runkle, Charles J., to Monsanto Company. Method of mounting a fluid separation module in a tubular shell. 4,517,720, Cl. 29-157.00R.

Ott, Karl-Heinz; Lindner, Christian; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, to Bayer Aktiengesellschaft. Moulding compositions of vinyl chloride polymers, graft polymers and polymeric plasticizers having a high resistance to ageing. 4,518,515, Cl. 525-79.000.

Ott, Karl-Heinz: *See—*
Lindner, Christian; Ott, Karl-Heinz; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,743, Cl. 525-80.000.

Otto Bihler Maschinenfabrik GmbH & Co. KG: *See—*
Augenstein, Reiner, 4,517,725, Cl. 29-417.000.

Otto, Josef: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.

Otto, Ronald F.; and Kempel, John J., to Garland Manufacturing Co. Energy efficient garage door construction and the like. 4,518,026, Cl. 160-232.000.

Ottoson, Ulf: *See—*
Boysen, Lennart; and Ottoson, Ulf, 4,518,125, Cl. 241-141.000.

Oudet, Claude, to Portescap. Electric motor with permanent magnet rotor. 4,518,883, Cl. 310-49.00R.

Outboard Marine Corporation: *See—*
Bland, Gerald F.; and Sullivan, Donald K., 4,518,363, Cl. 440-89.000.
Johnson, Wallace R.; and Beem, W. Wayne, 4,518,362, Cl. 440-6.000.

Overland, John E.: *See—*
Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., 4,519,041, Cl. 364-552.000.

Owen, David P., to Marconi Instruments, Ltd. Frequency synthesizer having overtone crystal oscillator. 4,518,929, Cl. 331-11.000.

Owens-Corning Fiberglas Corporation: *See—*
Bhatti, Mohinder S., 4,518,408, Cl. 65-6.000.
Perkins, Richard A.; Brady, William C.; and Glaser, Hellmut I., 4,518,406, Cl. 65-1.000.
Uffner, William E.; and White, Robert N., 4,518,741, Cl. 525-54.500.

Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, to Hitachi, Ltd. Air flow rate measuring apparatus. 4,517,837, Cl 73-202.000.

Ozawa, Junichiro: *See—*
Nakahori, Ichiro; Nakayama, Shigeki; Maeda, Mitsuo; Yamauchi, Shiro; and Ozawa, Junichiro, 4,517,849, Cl. 73-863.310.

Ozu, Tadahiro: *See—*
Nakano, Hideaki; Ozu, Tadahiro; and Shirai, Eiichi, 4,517,930, Cl. 123-41.310.

P.A. Rentrop Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG: *See—*
Wahlmann, Ernst; and Klausing, Karl-Heinz, 4,518,201, Cl. 297-316.000.

Pace, Gerald F.; and Cantu, Terry S., to Conoco Inc. Coal based cement cover for coal pile. 4,518,393, Cl. 44-6.000.

Pacheco, Benjamin G.: *See—*
Valdes, Guillermo A.; Pacheco, Benjamin G.; Figueredo, Fernando F.; and Framil, Armando, 4,518,022, Cl. 30-166.00R.

Paelke, Jurgen. Bend unit for a belt conveyor. 4,518,079, Cl. 198-864.000.

Palmer, Tom, to Key Systems, Inc. Animal feeding system. 4,517,923, Cl. 119-51.00R.

Papez, Stanislav, to Volkswagenwerk Aktiengesellschaft. Controllable camshaft for a drive, preferably an internal combustion engine. 4,517,934, Cl. 123-90.170.

Papst, Georg: *See—*
Elsaesser, Dieter; von der Heide, Johann; Muller, Rolf; and Papst, Georg, 4,519,010, Cl. 360-97.000.

Papst-Motoren GmbH & Co. KG: *See—*
Elsaesser, Dieter; von der Heide, Johann; Muller, Rolf; and Papst, Georg, 4,519,010, Cl. 360-97.000.

Paranicas, Peter C., to LVC Industries, Inc. Matrix slide switch. 4,518,834, Cl. 200-16.00D.

Parisch, Jochen: *See—*
Gallitzendorfer, Joseph; Pfeiffer, Peter; Tomforde, Johann; Parisch, Jochen; and Zweigart, Gerhard, 4,518,197, Cl. 296-213.000.

Park, Dong-Sil; and Zabala, Robert J., to Electric Power Research Institute, Inc. Process of making a corrosion-resistant coated ferrous body. 4,518,624, Cl. 427-34.000.

Park, Kwang S., to Daewoo Heavy Industries Ltd. Automatic notching device in a sewing machine. 4,517,908, Cl. 112-129.000.

Parker, Dennis W., to Dowty Hydraulic Units Limited. Electro-hydraulic servo valves and electrical force motors suitable therefor. 4,518,937, Cl. 335-229.000.

Parkin, Robert L. Ceiling mounting assembly. 4,518,141, Cl. 248-546.000.

Parkinson, Richard W., to Redken Laboratories, Inc. Cosmetic preparation. 4,518,614, Cl. 514-2.000.

Parris, Joe P., III: *See—*
Vicic, John C.; La Velle, Carl A.; and Parris, Joe P., III, 4,518,144, Cl. 251-1.00A.

Partridge, Randall D.: *See—*
LaPierre, Rene B.; Partridge, Randall D.; Chen, Nai Y.; and Wong, Stephen S., 4,518,485, Cl. 208-89.000.

Pasarela, Nunzio R., to American Cyanamid Company. Expanded corncob grits having increased absorptivity and a method for the preparation thereof. 4,518,580, Cl. 424-16.000.

Passoni, Mario, to Passoni Paolo & Figli S.r.l. Modular assembly-type stand structure particularly for supporting storage batteries. 4,518,088, Cl. 211-13.000.

Passoni Paolo & Figli S.r.l.: *See—*
Passoni, Mario, 4,518,088, Cl. 211-13.000.

Pastien, Eugene R., to Smarte Carte, Inc. Vehicle lock apparatus and method. 4,518,073, Cl. 194-4.00C.

Pastien, Eugene R.: *See—*
Muellner, James M.; and Pastien, Eugene R., 4,518,072, Cl. 194-4.00D.

Paul, Volker: *See—*
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,518,600, Cl. 514-256.000.

Paul Wurth S.A.: *See—*
Monteyne, Guido, 4,518,498, Cl. 210-297.000.

Paust, Joachim: *See—*
Ernst, Hansgeorg; Vogel, Friedrich; and Paust, Joachim, 4,518,813, Cl. 570-241.000.

Pearson, Herby O.: *See—*
Fister, Louis P.; Pearson, Herby O.; and Fitch, Lawrence H., 4,518,058, Cl. 180-300.000.

Pearson, Walter C.; and Thompson, Dorman N., Jr., to Minnesota Mining and Manufacturing Company. Apparatus for binding sheets together. 4,518,296, Cl. 412-37.000.

Pecenka, Frank, to Cordis Corporation. Detachable balloon catheter. 4,517,979, Cl. 128-325.000.

Pechine Ugine Kuhlmann: *See—*
Perrot, Michel; and Jaccaud, Michel, 4,518,569, Cl. 423-19.000.

Pecorini, Claude. Device for remotely passing a cord in or around an anchoring member. 4,518,184, Cl. 294-19.100.

Pedain, Josef: *See—*
Breidenbach, Peter; Hurnik, Helmut; and Pedain, Josef, 4,518,729, Cl. 524-101.000.

Pedersen, Jack R.; and Ege, Sigmund, to International Standard Electric Corporation. Method for making electrical cables. 4,518,445, Cl. 156-49.000.

Pedersen, Svend P.: *See—*
Andresen, Erik E.; and Pedersen, Svend P., 4,518,147, Cl. 251-121.000.

Pellegri, Alberto, to Oronzio deNora Impianti Elettrochimici S.p.A. Electrolyzer and process. 4,518,113, Cl. 228-170.000.

Pellet, Regis J., to Standard Oil Company (Indiana). Dual particle hydrotreating catalyst. 4,518,709, Cl. 502-254.000.

Pelletier, Robert: *See—*
Lhonore, Pierre; Quibel, Jacques; Jacquinot, Bernard; Jestin, Yvon; and Pelletier, Robert, 4,518,811, Cl. 568-943.000.

Pelley, Ronald L. Inflation supported solar collector. 4,517,957, Cl. 126-426.000.

Pennwalt Corporation: *See—*
Griffith, Ronald C., 4,518,779, Cl. 546-144.000.

Penny, Michael F.; Woodcock, Brian; Abbot, Ralph H.; Phillips, David M.; and Spaans, Leendert B., to Commonwealth of Australia, The. Ocean depth sounding from the air by laser beam. 4,518,254, Cl. 356-5.000.

Penterson, Craig A.; and Langille, Donald S., to Riley Stoker Corporation. Furnace, burner and method for burning pulverized coal. 4,517,904, Cl. 110-264.000.

Peretti, Mark F., to Barry Wright Corporation. Coupling. 4,518,368, Cl. 464-70.000.

Perkins Research & Mfg. Co., Inc.: *See—*
Cass, James L., 4,518,911, Cl. 324-52.000.

Perkins, Richard A.; Brady, William C.; and Glaser, Hellmut I., to Owens-Corning Fiberglas Corporation. Drain bushing. 4,518,406, Cl. 65-1.000.

Perl, Martin M.: *See—*
Schamper, Thomas J.; Perl, Martin M.; and Warren, James D., 4,518,582, Cl. 424-66.000.

Perlin, Alfred R., to Kendall Company, The. Esophageal probe. 4,517,984, Cl. 128-642.000.

Perrin, Bernard; Bianchin, Bernard; and Sauret, Georges, to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses. Apparatus for fractionating solid particles suspended in a liquid. 4,518,499, Cl. 210-332.000.

Perrot, Michel; and Jaccaud, Michel, to Pechine Ugine Kuhlmann. Process for cleaning the inner walls of a reactor. 4,518,569, Cl. 423-19.000.

Persinko, Mark M.: *See—*
Wang, Robert C.; Sampson, Arthur J.; and Persinko, Mark M., 4,518,649, Cl. 428-284.000.

Personal Products Company: *See—*
Luceri, Thomas J.; and Molee, Kenneth J., 4,518,451, Cl. 156-202.000.

Peruzzi, Federigo; and Zgliczynski, Marek, to Aspera A.p.A. Hermetic motor compressor for refrigeration systems and the like. 4,518,326, Cl. 417-372.000.

Peters, David L.: *See—*
Fisher, Robert A.; and Peters, David L., 4,518,360, Cl. 434-20.000.

Peters, Rex B.; Tonn, Jeffrey F.; Malametz, Arnold; Hilliker, Richard A.; and Corey, Victor B., to Sundstrand Data Control, Inc. Accelerometer with beam resonator force transducer. 4,517,841, Cl. 73-517.0AV.

Peterson, Bruce W.: *See—*
Cuscurida, Michael; Waddill, Harold G.; and Peterson, Bruce W., 4,518,720, Cl. 521-156.000.

Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., to Occidental Chemical Corporation. Differential flotation reagent and method of preparation. 4,518,573, Cl. 423-303.000.

Peterson, Richard L.; and Scheurer, Roger J., to Hiniker Company. Tool bar with slidably insertable ballast block. 4,518,047, Cl. 172-611.000.

Peterson, William F.: *See—*
Murphy, Frank; and Peterson, William F., 4,518,387, Cl. 604-187.000.

Petr, David W., to AT&T Bell Laboratories. Digital code converter. 4,518,950, Cl. 340-347.0DD.

Petricka, Ronald E., to Deluxe Innovations, Inc. Paint roller cleaning apparatus. 4,517,699, Cl. 15-104.040.

Petrolite Corporation: *See—*
Newberry, Michael E., 4,518,509, Cl. 252-8.300.

Petronella, Joseph, to Nuodex Inc. Process for the stabilization of metal-containing hydrocarbon fuel compositions. 4,518,395, Cl. 44-53.000.

Petronio, Carlo F.: *See—*
Oates, Robert M.; Petronio, Carlo F.; and Kraus, Mark G., 4,518,917, Cl. 324-207.000.

Pettit, Flora H., executrix: *See—*
Kramer, George M.; Weissman, Walter; Brown, Herbert C.; and Pettit, Rowland, deceased, 4,518,798, Cl. 560-233.000.

Pettit, Rowland, deceased: *See—*
Kramer, George M.; Weissman, Walter; Brown, Herbert C.; and Pettit, Rowland, deceased, 4,518,798, Cl. 560-233.000.

Pfeiffer, Peter: *See—*
Gallitzendorfer, Joseph; Pfeiffer, Peter; Tomforde, Johann; Parisch, Jochen; and Zweigart, Gerhard, 4,518,197, Cl. 296-213.000.

Pfizer Inc.: *See—*
Hauske, James R.; and Nagel, Arthur A., 4,518,590, Cl. 514-29.000.
Kellogg, Michael S., 4,518,530, Cl. 260-245.20R.
Richardson, Kenneth; and Whittle, Peter J., 4,518,604, Cl. 514-340.000.

Phase One Products Corporation: *See—*
Taylor, Charles F.; Wnukiewicz, Stanley A., Jr.; and Gattiker, Anton, 4,518,240, Cl. 354-312.000.

Phildius, John: *See—*
deKok, Peter T.; and Phildius, John, 4,517,954, Cl. 125-15.000.

Philip Morris Incorporated: *See—*
Grollimund, Everett C.; Smick, William H., III; and Brookman, Donald L., 4,517,825, Cl. 73-38.000.

Phillips, David M.: *See—*
Penny, Michael F.; Woodcock, Brian; Abbot, Ralph H.; Phillips, David M.; and Spaans, Leendert B., 4,518,254, Cl. 356-5.000.

Phillips, Larry J.: *See—*
Stinson, Walter J.; and Phillips, Larry J., 4,518,146, Cl. 251-28.000.

Phillips Petroleum Company: *See—*
Goins, Robert R., 4,518,260, Cl. 366-134.000.
Hitzman, Donald O., 4,518,489, Cl. 208-223.000.
Knudsen, Ronald D.; and Reiter, Stephen E., 4,518,814, Cl. 585-523.000.
Porter, Randall A.; and Reed, Larry E., 4,518,575, Cl. 423-447.300.

Phillips, Raymond M. Motion damping system for water bed mattresses. 4,517,691, Cl. 5-450.000.

Phillips, Stephen J., to Coca-Cola Limited. Game cup with game information under the rolled lip. 4,518,639, Cl. 428-35.000.

Phillips, William L., Jr., to Du Pont de Nemours, E. I., and Company. Method for passivating stainless steel surfaces and product thereof. 4,518,440, Cl. 148-6.14R.

Pickering, Alan H., to English Electric Valve Company, Ltd. Coaxial magnetron having cavity walls vibrated by tuning fork. 4,518,932, Cl. 331-90.000.

Pickering, William: *See—*
Melocik, Grant C.; and Pickering, William, 4,518,902, Cl. 318-373.000.

Pierce, Harry C.; and Bailey, Helen A. B. Device for loosening a cable within a conduit. 4,518,152, Cl. 254-134.30R.

Pierschbacher, Michael D.: *See—*
Ruoslahti, Erkki I.; and Pierschbacher, Michael D., 4,517,686, Cl. 3-1.000.

Pietrasanta, Yves: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,518,794, Cl. 560-192.000.

Pinto, Joseph G., to Sherwin-Williams Company, The. Adjustable scraper tool. 4,517,700, Cl. 15-105.000.

Pioneer Electric Corporation: *See—*
Nishikawa, Kazuo; Ichino, Hiroyuki; and Okura, Keniti, 4,519,063, Cl. 369-172.000.

Pioneer Electronic Corporation: *See—*
Ishii, Satoshi, 4,518,928, Cl. 330-297.000.
Yokozeki, Shinichi; Kimura, Masami; and Tsukagoshi, Tsunehiro, 4,518,443, Cl. 148-400.000.

Pipon, Yves: *See—*
Cousin, Maurice; Pipon, Yves; Droulon, Georges; and Lebrun, Jean, 4,518,182, Cl. 292-201.000.

Pirkey, Robert J.; and Ditter, Stephen D., to Tecumseh Products Company. Override speed control. 4,517,942, Cl. 123-376.000.

Pistien, Jacques F., to Gaz de France. Gas fuel burner with incorporated ignition and safety devices. 4,518,346, Cl. 431-266.000.

Pistorius, Rudolf, to Hoechst Aktiengesellschaft. Process for isolating paraffinsulfonate from the reaction mixture obtained on sulfoxidating paraffins. 4,518,537, Cl. 260-504.00R.

Pitney Bowes Inc.: *See—*
Abellana, Jovito N.; and Duwel, Edward C., 4,519,048, Cl. 364-900.000.
Gavronsky, German, 4,518,207, Cl. 312-107.500.

Planet Products Corporation: *See—*
Wile, George J.; and Griesdorn, Carl P., 4,517,893, Cl. 101-123.000.

Plastican, Inc.: *See—*
Blanchette, Henry J., 4,518,143, Cl. 249-142.000.

Plath, Peter: *See—*
Schirmer, Ulrich; Plath, Peter; and Wuerzer, Bruno, 4,518,414, Cl. 71-90.000.

Pleickhardt, George C.; and Swick, E. Grant, to Illinois Tool Works Inc. Tube connector. 4,518,293, Cl. 411-107.000.

Plessey Overseas Limited: *See—*
Wood, Robert S., 4,518,331, Cl. 418-132.000.

Plewes, John T.: *See—*
NG, Sau-Lan L.; Plewes, John T.; and Robbins, Murray, 4,518,469, Cl. 204-44.500.

PLM Aktiebolag: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,518,340, Cl. 425-393.000.

Podrini, Maurizio. Device for the electrolytic treatment of metal strip. 4,518,474, Cl. 204-206.000.

Pohl, Rudolph L., to Hercules Incorporated. Process for making printing plates. 4,518,677, Cl. 430-306.000.

Pohlmann, Klaus D.: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; and Pohlmann, Klaus D., 4,518,284, Cl. 405-296.000.

Polaroid Corporation: *See—*
Foley, James; Habbal, Fawwaz; and Leahy, John, 4,518,627, Cl. 427-48.000.

Pollard, James B.: *See—*
Shimmin, Bryan F.; and Pollard, James B., 4,518,641, Cl. 428-150.000.

Pollard, Robert E., to Monsanto Company. Carbon black filled nylons modified for improved toughness. 4,518,728, Cl. 524-88.000.

Pomfret, Colin T. Device for transmitting movement. 4,517,935, Cl. 123-90.400.

Pont-A-Mousson S.A.: *See—*
Fuminier, Claude B., 4,517,867, Cl. 82-101.000.

Pontius, Duane H.; and Bush, Phillip V., to United States of America, Environmental Protection Agency. Electrostatic precipitating system. 4,518,401, Cl. 55-101.000.

Poran, Michael: *See—*
Langner, Carl; Poran, Michael; and Szarka, Geza, 4,518,074, Cl. 198-425.000.

Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Catalytic fibrous carbon. 4,518,575, Cl. 423-447.300.

Portescap: *See—*
Oudet, Claude, 4,518,883, Cl. 310-49.00R.

Portner, Peer M.: *See—*
La Forge, David H.; and Portner, Peer M., 4,519,043, Cl. 364-571.000.
Porubcan, Randolph S.: *See—*
Gehrman, Sybil H.; and Porubcan, Randolph S., 4,518,696, Cl. 435-253.000.
Posinger, Stanley A.: *See—*
Cimarusti, Robert J.; and Posinger, Stanley A., 4,517,722, Cl. 29-234.000.
Post, Kalju M.: *See—*
Kiisler, Karl R.; Sjuld, Tiiya-Maya F.; Kristyanson, Peep G.; Kholm, Gunnar B.; Rokk, Juri K.; and Post, Kalju M., 4,518,453, Cl. 156-307.500.
Poston, Billy R.; and Andren, Carl F., to E-Systems, Inc. Apparatus for decoding redundant interleaved data. 4,518,947, Cl. 340-347.0DD.
Powell, Steven. Fluid damping device for a compliant system. 4,517,844, Cl. 73-707.000.
Powers, Earl W.: *See—*
Wilcox, Raymond J.; and Powers, Earl W., 4,518,282, Cl. 405-259.000.
PPG Industries, Inc.: *See—*
Barch, Herbert W.; Salego, George T.; and Blair, Rudolph, 4,517,916, Cl. 118-234.000.
Brockmueller, Bernd, 4,518,410, Cl. 65-106.000.
Frank, Robert G.; Fecik, Michael T.; and Claassen, George R., 4,518,411, Cl. 65-106.000.
McWilliams, Donald E.; Melle, Carl A.; and Das, Balbhadra, 4,518,653, Cl. 428-378.000.
Prasad, Arun, to Jeneric Industries, Inc. Gallium and silver free, palladium based dental alloys for porcelain-fused-to-metal restorations. 4,518,564, Cl. 420-464.000.
Prasad, Chandrika: *See—*
Miller, William R.; and Prasad, Chandrika, 4,518,112, Cl. 228-124.000.
Preci-Tech Ltd.: *See—*
Lindmayer, Istvan; and Grunwald, Raymond M., 4,518,385, Cl. 604-68.000.
Presray Corporation, The: *See—*
Fischer, William H., 4,518,015, Cl. 138-93.000.
Priel, Ury; Yaron, Giora; and Ebel, Mark S., to National Semiconductor Corporation. Memory core testing system. 4,519,076, Cl. 371-21.000.
Priesnitz, Uwe: *See—*
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,518,416, Cl. 71-94.000.
PRM Energy Systems, Inc.: *See—*
Chastain, Charles E.; and King, Donald R., 4,517,905, Cl. 110-346.000.
Procter & Gamble Company, The: *See—*
Benjamin, Lawrence; Rodriguez, Sheila S.; and Meinberg, Nancy A., 4,517,919, Cl. 119-1.000.
Sedwick, William E., 4,518,115, Cl. 229-52.00B.
Sneed, Scott W.; Schwam, Bill R.; and Gregory, Paul E., Jr., 4,517,714, Cl. 28-103.000.
Proctor & Gamble Company, The: *See—*
Volpenhein, Robert A., 4,518,772, Cl. 536-119.000.
Prop, Gerrit: *See—*
Biedermann, Jurgen; Prop, Gerrit; and Doppelfeld, Ille-Stephanie, 4,518,783, Cl. 548-353.000.
Proud, Joseph M.; Budinger, A. Bowman; Riseberg, Leslie A.; and Byszewski, Wojciech W., to GTE Laboratories Incorporated. Twin anode beam mode fluorescent lamp. 4,518,897, Cl. 315-260.000.
Prud'Homme, Christian: *See—*
Cavezzan, Jacques; and Prud'Homme, Christian, 4,518,758, Cl. 528-12.000.
Psychologics, Inc.: *See—*
Clymer, Roy E., 4,518,866, Cl. 307-201.000.
Pudsey, David G., to GEC Avionics Limited. Communication system interconnecting radios and operators located at different positions. 4,519,069, Cl. 370-85.000.
Pugh, Jerry T.: *See—*
Boger, David L.; Pugh, Jerry T.; and Zuidema, Jack, 4,518,565, Cl. 422-58.000.
Pujari, Vimal K., to Allied Corporation. Dilatant mold and dilatant molding apparatus. 4,518,335, Cl. 425-78.000.
Pulford, William M.: *See—*
Cook, William A.; Hoffman, Gary R.; and Pulford, William M., 4,518,958, Cl. 340-679.000.
Purling, Trevor C.: *See—*
Harrison, Derek N.; and Purling, Trevor C., 4,517,846, Cl. 73-861.120.
Putenat, Mandred: *See—*
Brinkmann, Egon; Putenat, Mandred; and Dorre, Erhard, 4,518,357, Cl. 433-173.000.
Puumala, Edward J.: *See—*
Gabel, Edward R.; Puumala, Edward J.; and LeVasseur, Rodney J., 4,518,853, Cl. 235-449.000.
Puust, Ants: *See—*
Richmond, Iain J.; Wong, David; Puust, Ants; and Oldham, James A., 4,517,903, Cl. 110-233.000.
Quality Products, Inc.: *See—*
Anway, Kenneth L.; and Born, Gerald W., 4,518,558, Cl. 264-515.000.
Quantum Lighting Limited: *See—*
Hall, Stephen M., 4,519,019, Cl. 362-147.000.
Queveau, Gerard. Articulated vehicle drive and control system. 4,518,053, Cl. 180-14.200.
Quibel, Jacques: *See—*
Lhonore, Pierre; Quibel, Jacques; Jacquinot, Bernard; Jestin, Yvon; and Pelletier, Robert, 4,518,811, Cl. 568-943.000.
Quimby, Bruce D., to Hewlett-Packard Company. Solvent dumping apparatus. 4,517,824, Cl. 73-23.000.
Quinn, John A.; and O'Neil, James W., to Du Pont de Nemours, E. I., and Company. Enlargement of photopolymer images in photopolymer mask. 4,518,666, Cl. 430-7.000.
R. A. Jones & Co. Inc.: *See—*
Greenwell, Joseph D., 4,518,301, Cl. 414-129.000.
Rabe, James A.: *See—*
Lee, Chi-Long; and Rabe, James A., 4,518,716, Cl. 521-82.000.
Rabenau, Richard; and Ryder, Jeffery A., to Ryder International Corporation; and National Patent Development Corporation. Lens tinting fixture and system utilizing said fixture. 4,518,390, Cl. 8-507.000.
Rabiner, Lawrence R.: *See—*
Brown, Michael K.; and Rabiner, Lawrence R., 4,519,094, Cl. 381-43.000.
Rademacher, Darrell; Neville, Thomas; and Simpson, Roger T., to XCP, Inc., by said Darrell Rademacher and Thomas Neville. Usage control system. 4,519,088, Cl. 377-16.000.
Raetz, Rolf: *See—*
Kleefeldt, Frank; and Raetz, Rolf, 4,518,180, Cl. 292-201.000.
Raghunathan, Kuppuswamy: *See—*
Davis, Walter L.; and Raghunathan, Kuppuswamy, 4,518,961, Cl. 340-825.440.
Ralph Blatchford & Company Limited: *See—*
Blatchford, Michael I., 4,518,304, Cl. 414-542.000.
Randle, Jules. Drive mechanism for fishing reel. 4,517,760, Cl. 43-21.000.
Ranks Hovis McDougall p.l.c.: *See—*
Barker, Jeffrey G., 4,517,786, Cl. 53-450.000.
Ransheim, Anders P.; Thomsen, Arne; and Holmgren, Per, to Gullfiber AB. Method and apparatus for determining the flow velocity of a molten, radiation-emitting material. 4,517,845, Cl. 73-861.050.
Rasmussen, Oystein. Method for the protection of ships and other objects against fouling. 4,518,638, Cl. 427-407.100.
Rasnick, David W. α Amino fluoro ketones. 4,518,528, Cl. 260-112.50R.
Rasshofer, Werner: *See—*
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,518,521, Cl. 252-188.310.
Rauch, Cloyd D., III; and Schneberger, Ronald W., to Rundel Products, Inc. Package and storage container for diskettes. 4,518,275, Cl. 402-80.00P.
Rauscher, Christen. Transistor oscillator/frequency doubler with optimized harmonic feedback. 4,518,931, Cl. 331-76.000.
Ravinet, Pierre; and Micheron, Francois, to Thomson-CSF. Manufacturing an active suspension electromechanical transducer. 4,518,555, Cl. 264-292.000.
Rawson, William E., to Gas Conditioning Industries, Inc. Method of dehydrating natural gas. 4,518,396, Cl. 48-196.00R.
Raychem Corporation: *See—*
Larsson, Peter L.; and Clabburn, Robin J. T., 4,518,819, Cl. 174-78.000.
Raynier, Bernard: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,518,587, Cl. 514-19.000.
RCA Corporation: *See—*
Basile, Philip C., 4,519,074, Cl. 370-124.000.
Hinn, Werner; and Fecht, Hans-Rudolf, 4,518,986, Cl. 358-65.000.
Kane, James; and Murr, John, Jr., 4,518,893, Cl. 313-479.000.
Lin, Peter T., 4,518,551, Cl. 264-107.000.
Reitmeier, Glenn A.; and Thompson, Charles R., 4,518,996, Cl. 358-148.000.
Schnitzler, Paul, 4,518,994, Cl. 358-133.000.
Sutphin, Eldon M., Jr., 4,518,936, Cl. 333-173.000.
Read, Reginald A.; and Houston, Richard N., to Regdon Corporation. Solenoid with retainer stop. 4,518,939, Cl. 335-262.000.
Reckeweg, Horst: *See—*
Lipp, Herbert; and Reckeweg, Horst, 4,517,900, Cl. 102-529.000.
Redfield, Stephen R.: *See—*
Bachman, Brett L.; Baxter, Ward, II; Gruner, Ronald H.; Houseman, David L.; Jones, Thomas M.; Redfield, Stephen R.; Drew, Louis E.; and Druke, Michael B., 4,519,030, Cl. 364-200.000.
Redken Laboratories, Inc.: *See—*
Parkinson, Richard W., 4,518,614, Cl. 514-2.000.
Reed International P.L.C.: *See—*
Shimmin, Bryan F.; and Pollard, James B., 4,518,641, Cl. 428-150.000.
Reed, James R.: *See—*
Reed, Richard K.; Reed, James R.; and Sorg, James D., 4,518,235, Cl. 354-86.000.
Reed, Larry E.: *See—*
Porter, Randall A.; and Reed, Larry E., 4,518,575, Cl. 423-447.300.
Reed, Richard K.; Reed, James R.; and Sorg, James D., to Sorg, James D. Collapsible disposable camera. 4,518,235, Cl. 354-86.000.
Reference Technology: *See—*
Ycas, John A., 4,519,060, Cl. 369-77.200.
Regdon Corporation: *See—*
Read, Reginald A.; and Houston, Richard N., 4,518,939, Cl. 335-262.000.
Reichmann, Wolfgang: *See—*
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,518,521, Cl. 252-188.310.

Reinhard, George G.; Kinde, Ronald; and Singer, Bernard S., to Optimizer, Limited. Device for improving fuel efficiency and method of use therefor. 4,517,926, Cl. 123-3.000.
Reishauer AG: *See—*
Feisel, Armin; and Wirz, Walter, 4,518,076, Cl. 198-648.000.
Reissmann, Klaus: *See—*
Aykut, Kurt; and Reissmann, Klaus, 4,518,075, Cl. 198-460.000.
Reiter, Stephen E.: *See—*
Knudsen, Ronald D.; and Reiter, Stephen E., 4,518,814, Cl. 585-523.000.
Reitmeier, Glenn A.; and Thompson, Charles R., to RCA Corporation. Synchronization system that uses all valid signals. 4,518,996, Cl. 358-148.000.
Renfro, Wesley E. Hydraulic choke device. 4,518,148, Cl. 251-122.000.
Rentchler, Frances: *See—*
Arentsen, Norbert; and Rentchler, Frances A., 4,517,709, Cl. 24-232.00R.
Rentchler, Frances A.: *See—*
Arentsen, Norbert; and Rentchler, Frances A., 4,517,709, Cl. 24-232.00R.
Repligen Corporation: *See—*
Herlihy, Walter C., 4,518,691, Cl. 435-74.000.
Republic Corporation: *See—*
Wilcox, Raymond J.; and Powers, Earl W., 4,518,282, Cl. 405-259.000.
Research Corporation: *See—*
Guntaka, Ramareddy V., 4,518,690, Cl. 435-71.000.
Kuu, Wei-Youh, 4,518,693, Cl. 435-178.000.
Rest, Heinz: *See—*
Stutenkemper, Paul; Rest, Heinz; and Kloppe, Herbert, 4,518,138, Cl. 248-73.000.
Rettich, Jakob: *See—*
Hoffmann, Ernst H.; Arendt, Hans F.; Spiewok, Leonhard; and Rettich, Jakob, 4,517,695, Cl. 8-158.000.
Rettig, Vernon E.; Bigbee, Marvin L.; Steilen, Ronald M.; and Head, Glenn D., Jr., to Deere & Company. Multiple implement hitch and transport. 4,518,046, Cl. 172-311.000.
Rexnord Inc.: *See—*
Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., 4,518,077, Cl. 198-731.000.
Rheinische Braunkohlenwerke AG: *See—*
Velling, Gunther; Schrader, Lothar; and Schumacher, Hermann, 4,518,567, Cl. 422-143.000.
Rheinmetall GmbH: *See—*
Lipp, Herbert; and Reckeweg, Horst, 4,517,900, Cl. 102-529.000.
Rhodes, William D., Jr., to Rockwell International Corporation. Current control of synchro power amplifiers. 4,518,905, Cl. 318-661.000.
Rhone-Poulenc Agrochimie: *See—*
Rouy, Noel; and Dewilde, Francois, 4,518,781, Cl. 548-221.000.
Rhone-Poulenc Chimie De Base: *See—*
Godard, Gerard; Joubert, Daniel; and Gagnaire, Philippe, 4,518,516, Cl. 252-91.000.
Rhone-Poulenc Fibres: *See—*
Baravian, Jean; and Barbey, Jacques, 4,518,658, Cl. 428-291.000.
Rhone-Poulenc Industries: *See—*
Locatelli, Jean L.; and Rollet, Bernard, 4,518,754, Cl. 526-262.000.
Locatelli, Jean L.; and Rollet, Bernard, 4,518,755, Cl. 526-262.000.
Rhone-Poulenc Specialites Chimiques: *See—*
Cavezzan, Jacques; and Prud'Homme, Christian, 4,518,758, Cl. 528-12.000.
Riberi, Bernd: *See—*
Richter, Roland; Muller, Hanns P.; Wagner, Kuno; Riberi, Bernd; and Frohlich, Jurg, 4,518,761, Cl. 528-67.000.
Richard Wolf GmbH: *See—*
Heckele, Helmut, 4,517,962, Cl. 128-6.000.
Richards, David H.; and Stewart, Malcolm J., to National Research Development Corporation. Anionic polymerization of conjugated dienes in the presence of hindered triaryl boron or aluminum derivatives. 4,518,753, Cl. 526-177.000.
Richards, Michael A., to S. G. Owen Limited. Selective plating. 4,518,636, Cl. 427-282.000.
Richards, William D. C.; and Straub, Harry, to General Electric Co. Tubular assembly including insulated conduits and couplers for the transfer of high temperature and high pressure fluids. 4,518,175, Cl. 285-47.000.
Richardson, Kenneth; and Whittle, Peter J., to Pfizer Inc. Antifungal 1-aryl-2-(1H-1,2,4-triazol-1yl)-1-perfluoroalkylethyl halides. 4,518,604, Cl. 514-340.000.
Richardson-Vicks Inc.: *See—*
Dhabhar, Dadi J.; and Schmidt, Nicholas F., 4,518,721, Cl. 523-120.000.
Richartz, Adolf: *See—*
Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, 4,518,521, Cl. 252-188.310.
Richmond, Iain J.; Wong, David; Puust, Ants; and Oldham, James A., to Hunter Enterprises Orillia Limited. Solid fuel furnace. 4,517,903, Cl. 110-233.000.
Richter Gedeon Vegyeszeti Gyar RT.: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.
Richter, Roland; Muller, Hanns P.; Wagner, Kuno; Riberi, Bernd; and Frohlich, Jurg, to Bayer Aktiengesellschaft. Process for the preparation of mixed trimers from organic isocyanates, the mixed trimers obtained according to the process and the use thereof for the production of polyurethanes. 4,518,761, Cl. 528-67.000.
Ricoh Company, Ltd.: *See—*
Isayama, Takuro, 4,518,974, Cl. 346-140.00R.
Sugie, Masatoshi, 4,519,081, Cl. 371-57.000.
Takahashi, Akira, 4,518,253, Cl. 356-4.000.
Riebel, Hans-Jochem: *See—*
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,518,416, Cl. 71-94.000.
Riegler, Ernst: *See—*
Lugscheider, Walter; Leutgob, Alois; Riegler, Ernst; and Mullner, Paul, 4,518,417, Cl. 75-10.00R.
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,518,419, Cl. 75-11.000.
Riffe, Delmar R.: *See—*
Elson, John P.; Muir, Earl B.; and Riffe, Delmar R., 4,518,323, Cl. 417-312.000.
Rigterink, Raymond H.; and Bisabri-Ershadi, Barat, to Dow Chemical Company, The. Halo(alkoxy/alkylthio)-benzenamines. 4,518,804, Cl. 564-442.000.
Riley, Harry J., to S. W. Hart & Co. Pty Ltd. Jacketed solar hot water system. 4,517,959, Cl. 126-437.000.
Riley Stoker Corporation: *See—*
Penterson, Craig A.; and Langille, Donald S., 4,517,904, Cl. 110-264.000.
Riley, Thomas J. Polymeric film coating method with continuous deposition pressure control. 4,518,623, Cl. 427-8.000.
Rimbert, Jean F.: *See—*
Foulard, Jean; Rimbert, Jean F.; Vernet, Gilles; and Goursat, Albert-Gilbert, 4,518,421, Cl. 75-49.000.
Ring, Curtis P., to Deere & Company. Variable displacement pump system. 4,518,319, Cl. 417-217.000.
Rippere, Ralph E. Consolidation of wires by chemical deposition and products resulting therefrom. 4,518,661, Cl. 428-598.000.
Riseberg, Leslie A.: *See—*
Proud, Joseph M.; Budinger, A. Bowman; Riseberg, Leslie A.; and Byszewski, Wojciech W., 4,518,897, Cl. 315-260.000.
Ritter, Horst. Method of washing hydrogen sulfide from coke oven gas by the ammonium sulfide method. 4,518,572, Cl. 423-234.000.
Rittmann, Friedrich: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.
Rivera, Lester: *See—*
Doyle, Richard C.; and Rivera, Lester, 4,518,945, Cl. 340-310.00A.
Rivers, Joseph T.: *See—*
Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., 4,518,650, Cl. 428-286.000.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. GRF Analogs III. 4,518,586, Cl. 514-12.000.
Robbins, John C.: *See—*
Davis, Dale M.; and Robbins, John C., 4,517,898, Cl. 102-514.000.
Robbins, Murray: *See—*
NG, Sau-Lan L.; Plewes, John T.; and Robbins, Murray, 4,518,469, Cl. 204-44.500.
Robert, Andre, to Commissariat a l'Energie Atomique. Lightning conductor with piezoelectric device for initiating the corona effect. 4,518,816, Cl. 174-3.000.
Robert Bosch GmbH: *See—*
Kuhlmann, Gerhard; and Wolf, Erwin, 4,517,869, Cl. 83-100.000.
Nonnenmacher, Gerhard, 4,518,322, Cl. 417-222.000.
Schwarzhoff, Wolfgang, 4,518,215, Cl. 339-92.00R.
Robert F. Varley Co., Inc.: *See—*
Varley, Robert F., 4,518,048, Cl. 175-61.000.
Roberts, Thomas G., to United States of America, Army. Porous catalytic metal plate degeneration bed in a gas generator. 4,517,798, Cl. 60-39.462.
Robey, Robert M.: *See—*
Gillett, James E.; Garner, Daniel C.; Wineman, Arthur L.; and Robey, Robert M., 4,517,927, Cl. 122-510.000.
Robinson, Philip R., to Allegheny Ludlum Steel Corporation. Metering system for corrosive liquids and method therefor. 4,518,101, Cl. 222-1.000.
Roccaforte, Harry I., to Champion International Corporation. Reinforced display carton and blank therefor. 4,518,086, Cl. 206-485.000.
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., to Dr. Karl Thomae GmbH. Antithrombotic use of 2-(perhydro-1,4-diazino)-pyrimido (5,4,D)-pyrimidines. 4,518,596, Cl. 514-232.000.
Roch, Josef: *See—*
Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, 4,518,597, Cl. 514-228.000.
Rockwell International Corporation: *See—*
Fechalos, William A.; and DeMarco, Joseph M., 4,519,072, Cl. 370-110.100.
Fredrickson, Lee R.; Cascini, Michael R.; and Mosier, Donald E., 4,518,225, Cl. 350-338.000.
Rhodes, William D., Jr., 4,518,905, Cl. 318-661.000.
Rozema, John G.; and Chen, William I. H., 4,518,930, Cl. 331-36.00C.
Rodime plc: *See—*
MacLeod, Nigel; and Ruxton, David, 4,518,904, Cl. 318-685.000.

Rodriguez, Sheila S.: *See—*
Benjamin, Lawrence; Rodriguez, Sheila S.; and Meinberg, Nancy A., 4,517,919, Cl. 119-1.000.

Rody, Jean: *See—*
Leppard, David G.; and Rody, Jean, 4,518,679, Cl. 430-372.000.
Leppard, David G.; and Rody, Jean, 4,518,688, Cl. 430-551.000.

Rogers Corporation: *See—*
Traut, G. Robert, 4,518,737, Cl. 524-413.000.

Rogers, Curtis F., Jr. Automatic indicator for tower lights. 4,518,963, Cl. 340-981.000.

Rogers, Harold D.: *See—*
Eggebrecht, John L.; Rogers, Harold D.; and Yorozu, Arthur S., 4,517,813, Cl. 62-284.000.

Rogers, Jerry L. Carburetor attachment. 4,518,542, Cl. 261-34.00R.

Rogic, Milorad M.: *See—*
Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., 4,518,413, Cl. 71-28.000.

Rohner, Joachim, to W. Schlafhorst & Co. Device for collecting spools. 4,518,136, Cl. 242-35.50A.

Rohr, Wolfgang: *See—*
Eckhardt, Heinz; Halbritter, Klaus; and Rohr, Wolfgang, 4,518,785, Cl. 549-453.000.

Rokk, Juri K.: *See—*
Kiisler, Karl R.; Sjuld, Tiiya-Maya F.; Kristyanson, Peep G.; Kholm, Gunnar B.; Rokk, Juri K.; and Post, Kalju M., 4,518,453, Cl. 156-307.500.

Rolland, Gerard T., to SSAC, Inc. Electronic toaster timer with preceding off-time temperature control compensation. 4,518,849, Cl. 219-492.000.

Rollet, Bernard: *See—*
Locatelli, Jean L.; and Rollet, Bernard, 4,518,754, Cl. 526-262.000.
Locatelli, Jean L.; and Rollet, Bernard, 4,518,755, Cl. 526-262.000.

Roman, Steven A., to Shell Oil Company. Cyclopropanecarboxylate pesticides and their preparation. 4,518,797, Cl. 560-231.000.

Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., to Rexnord Inc. Polymeric snap-through attachment for a hollow rivet chain. 4,518,077, Cl. 198-731.000.

Rondeau, Donald J.: *See—*
Hearn, William E.; and Rondeau, Donald J., 4,518,877, Cl. 307-490.000.

Rosenbaum, Leslie; and Alberts, Robert. Shoe. 4,517,753, Cl. 36-128.000.

Rosenberg, Harold; and Tsai, Tsu-tzu, to United States of America, Air Force. Synthesis of arylene siloxanylene polymers and copolymers. 4,518,759, Cl. 528-35.000.

Rosenthal, Johannes: *See—*
Gehrmann, Klaus; Ohorodnik, Alexander; Rosenthal, Johannes; and Schafer, Stefan, 4,518,538, Cl. 260-543.00P.

Ross, Steven L.; and Tachovsky, Otto H., to General Signal Corporation. Azeotropic drying process. 4,517,751, Cl. 34-10.000.

Roth, Wolfgang, to Deere & Company. Self tensioning belt drive. 4,518,373, Cl. 474-109.000.

Rothstein, Sven O., to Frigoscandia Contracting AB. Apparatus for continuous direct treatment of products by means of a fluid cooling medium. 4,517,814, Cl. 62-374.000.

Rott, Willi: *See—*
Lennartz, Rudiger; Rott, Willi; and Sindorf, Heinz, 4,518,501, Cl. 210-411.000.

Roussel Uclaf: *See—*
Allais, Andre ; Clemence, Francois; Deraedt, Roger; and Lemartret, Odile, 4,518,775, Cl. 544-92.000.

Rouy, Noel; and Dewilde, Francois, to Rhone-Poulenc Agrochimie. Process for the preparation of 3-hydroxymethyl chlorobenzoxazolone. 4,518,781, Cl. 548-221.000.

Rova, Jan-Erik. Device in a bucket-provided loading machine particularly a so-called wheel loader. 4,518,306, Cl. 414-726.000.

Rowland, David B. Car dome light with accessory. 4,519,018, Cl. 362-74.000.

Roymere Limited: *See—*
Hart, Reginald J., 4,518,549, Cl. 264-39.000.

Rozema, John G.; and Chen, William I. H., to Rockwell International Corporation. Negative resistance circuit for VCO. 4,518,930, Cl. 331-36.00C.

Rozzell, J. David, to Genetics Institute, Inc. Production of L-amino acids by transamination. 4,518,692, Cl. 435-116.000.

Rubin, Jacob D., to Eastman Kodak Company. Method of passivating aluminum interconnects of non-hermetically sealed integrated circuit semiconductor devices. 4,517,734, Cl. 29-577.00C.

Rucker, Klaus G., to Du Pont de Nemours, E. I., and Company. Electric initiator resistant to actuation by radio frequency and electrostatic energies. 4,517,895, Cl. 102-202.200.

Rudolf, Peter: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, 4,518,771, Cl. 536-21.000.

Rudolph, Ronald M.; and Wendl, Daniel P. Measuring bridge for determining motor vehicle damage. 4,517,748, Cl. 33-180.0AT.

Rumble, Clive S., to Corabelment A.G. Multiple pin electrical plug. 4,518,212, Cl. 339-31.00R.

Rundel Products, Inc.: *See—*
Rauch, Cloyd D., III; and Schneberger, Ronald W., 4,518,275, Cl. 402-80.00P.

Runkel, Manfred A.: *See—*
Hsu, William W.; and Runkel, Manfred A., 4,518,004, Cl. 137-116.000.

Runkle, Charles J.: *See—*
Otstot, Roger S.; and Runkle, Charles J., 4,517,720, Cl. 29-157.00R.

Ruoslahti, Erkki I.; and Pierschbacher, Michael D., to La Jolla Cancer Research Foundation. Polypeptide. 4,517,686, Cl. 3-1.000.

Rusakova, Svetlana V.; Glyzin, Vladimir I.; Kocherga, Stepan I.; Ananieva, Alla A.; and Libizova, Larisa F. Process for preparing mangiferin. 4,518,592, Cl. 424-195.100.

Rust-Oleum Corporation: *See—*
Brouillette, Bruce R.; and Shafer, Martha J., 4,518,734, Cl. 524-378.000.

Ruxton, David: *See—*
MacLeod, Nigel; and Ruxton, David, 4,518,904, Cl. 318-685.000.

Ryder International Corporation: *See—*
Rabenau, Richard; and Ryder, Jeffery A., 4,518,390, Cl. 8-507.000.

Ryder, Jeffery A.: *See—*
Rabenau, Richard; and Ryder, Jeffery A., 4,518,390, Cl. 8-507.000.

S.E.R.T.O.G.: *See—*
Juvin, Pierre; and Moreau, Pierre, 4,518,593, Cl. 424-195.000.

S. G. Owen Limited: *See—*
Richards, Michael A., 4,518,636, Cl. 427-282.000.

S. W. Hart & Co. Pty Ltd.: *See—*
Riley, Harry J., 4,517,959, Cl. 126-437.000.

Sacilor: *See—*
Faessel, Andre ; Mennel, Gabriel B.; and Michaux, Jacques M., 4,518,660, Cl. 428-577.000.

Sackner, Marvin A.; and Kim, Chong S. Method for measurement of nonradioisotopic aerosol retained in the lungs with re-breathing. 4,517,987, Cl. 128-719.000.

SACMI Cooperativa Meccanici Imola Soc. Coop. a Resp. Lim.: *See—*
Alieri, Rodiero, 4,518,336, Cl. 425-110.000.

Sadones, Henri, to Societe d'Etude du Radant. Adaptive spatial microwave filter for multipolarized antennas and the process of its application. 4,518,966, Cl. 343-754.000.

Saegusa, Yasuyoshi, to Sumimoto Electric Industries, Ltd. Oil pump. 4,518,332, Cl. 418-150.000.

Sagal, John: *See—*
Henry, Arnold W.; Azar, Jack C.; and Sagal, John, 4,518,655, Cl. 428-329.000.

Sagara, Iwao, to Oki Electric Industry Co., Ltd. Telephone answering and message recording system. 4,518,827, Cl. 179-81.00R.

Saias, Edmond, to Beecham Group Limited. Pharmaceutical compositions. 4,518,606, Cl. 514-197.000.

Saitoh, Hiroyuki; and Kurata, Masami, to Fuji Xerox Co., Ltd. Three-color copying machine. 4,518,987, Cl. 358-75.000.

Saitoh, Hiroyuki; and Kurata, Masami, to Fuji Xerox Co., Ltd. Two-color copying machine. 4,518,988, Cl. 358-75.000.

Saitoh, Hiroyuki: *See—*
Kurata, Masami; Saitoh, Hiroyuki; and Matsuda, Masakane, 4,518,999, Cl. 358-285.000.

Saitoh, Kiyoshi: *See—*
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.

Sakai, Shoji; Fujiwara, Michiaki; Kubota, Nobunori; and Noda, Koshi, to Murata Kikai Kabushiki Kaisha. Method of guiding yarn end in air spinning apparatus. 4,517,794, Cl. 57-304.000.

Sakai, Toshihide: *See—*
Watanabe, Masaru; Sakai, Toshihide; and Takase, Toshio, 4,517,882, Cl. 98-6.000.

Sakakibara, Shuji: *See—*
Kaji, Yasumasa; Isomura, Shigenori; Harada, Takashi; and Sakakibara, Shuji, 4,517,948, Cl. 123-489.000.

Sakamoto, Shinichi: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Sakaoka, Hiromu: *See—*
Koyanagi, Takahiro; and Sakaoka, Hiromu, 4,517,940, Cl. 123-198.00E.

Sakka, Kenji: *See—*
Ura, Katsumi; Inui, Taiji; and Sakka, Kenji, 4,517,804, Cl. 60-657.000.

Sakurai, Seiichi: *See—*
Murata, Tomoji; Hayashi, Masamichi; Goto, Yasuo; and Sakurai, Seiichi, 4,518,249, Cl. 355-67.000.

Salego, George T.: *See—*
Barch, Herbert W.; Salego, George T.; and Blair, Rudolph, 4,517,916, Cl. 118-234.000.

Salk Institute for Biological Studies, The: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,518,586, Cl. 514-12.000.

Samcoe Holding Corporation: *See—*
Diggle, Edmund A., Jr.; and Cecere, Andrew P., 4,517,712, Cl. 26-51.400.

Sampson, Arthur J.: *See—*
Wang, Robert C.; Sampson, Arthur J.; and Persinko, Mark M., 4,518,649, Cl. 428-284.000.

Sanders Associates, Inc.: *See—*
Gunderson, Charles; and Hammond, Henry W., 4,518,972, Cl. 346-139.00R.
Schwartz, Jacob, 4,518,256, Cl. 356-5.000.

Sandford, Donald L.: *See—*
Timm, Gerald W.; Sandford, Donald L.; and Claude, Timothy J., 4,517,967, Cl. 128-79.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,517,818, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. High pressure steamer for continuous wet-heat treatment of a cloth. 4,517,818, Cl. 68-5.00E.

Sandoz Ltd.: *See—*
Auerbach, Guenther, 4,518,391, Cl. 8-549.000.

Sandroni, Gianni, to Caterpillar Tractor Co. Method and apparatus for forging sprocket segments. 4,517,819, Cl. 72-353.000.

Sandstrom, Roland: *See—*
Olsson, Mats A.; and Sandstrom, Roland, 4,517,915, Cl. 116-137.00R.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Takayasu, Hidekazu, 4,518,540, Cl. 261-18.00B.

Santalucia, Andre R.: *See—*
Billard, Alain A.; and Santalucia, Andre R., 4,517,896, Cl. 102-342.000.

Santefort, Richard A., to Valco Cincinnati, Inc. Blow-off manifold for preventing trailing from a non-contact extrusion adhesive application valve. 4,517,917, Cl. 118-302.000.

Santopietro, Frank J.; and Santopietro, Thomas V., Jr. Orthotic device. 4,517,981, Cl. 128-581.000.

Santopietro, Thomas V., Jr.: *See—*
Santopietro, Frank J.; and Santopietro, Thomas V., Jr., 4,517,981, Cl. 128-581.000.

Saran, Mohan S.: *See—*
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., 4,518,573, Cl. 423-303.000.

Sasaki, Isao: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Sugimori, Masahiro, 4,518,472, Cl. 204-159.150.

Sasaki, Masao; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Color photographic light-sensitive material containing UV filter compounds. 4,518,686, Cl. 430-512.000.

Sasayama, Takao: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Satake, Toshimi: *See—*
Fujimura, Fumio; Satake, Toshimi; Iwaguro, Makoto; and Minami, Toshiaki, 4,518,977, Cl. 346-209.000.

Sato, Eiichi: *See—*
Yano, Takeshi; Fukui, Izumu; Hamatsuki, Takeshige; Sato, Eiichi; and Inui, Osamu, 4,518,887, Cl. 310-328.000.

Sato, Kanemasa: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Sato, Kanichi: *See—*
Yamanishi, Akio; and Sato, Kanichi, 4,518,031, Cl. 164-526.000.

Sato, Tsunehiko: *See—*
Kato, Mikihiko; Komine, Shigeo; Kawamata, Toshio; Morita, Kazuhiko; and Sato, Tsunehiko, 4,518,626, Cl. 427-48.000.
Takeda, Hideo; and Sato, Tsunehiko, 4,518,637, Cl. 427-359.000.

Sato, Yutaka: *See—*
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,518,330, Cl. 418-63.000.

Sauls, Goah T.: *See—*
Eberhart, Gerald E.; and Sauls, Goah T., 4,517,716, Cl. 29-1.300.

Sauret, Georges: *See—*
Perrin, Bernard; Bianchin, Bernard; and Sauret, Georges, 4,518,499, Cl. 210-332.000.

Schaefer, George F.: *See—*
Forster, Denis; and Schaefer, George F., 4,518,809, Cl. 568-840.000.

Schafer, Heinrich, to Battenfeld Extrusionstechnik GmbH. Drive for single-worm extruder. 4,517,858, Cl. 74-801.000.

Schafer, Helmut; Huckler, Volker; and Teich, Michael, to Deere & Company. Power take-off lever arrangement for a tractor. 4,517,856, Cl. 74-528.000.

Schafer, Stefan: *See—*
Gehrmann, Klaus; Ohorodnik, Alexander; Rosenthal, Johannes; and Schafer, Stefan, 4,518,538, Cl. 260-543.00P.

Schamper, Thomas J.; Perl, Martin M.; and Warren, James D., to American Cyanamid Company. Acid stable dibenzyl monosorbitol acetal gels. 4,518,582, Cl. 424-66.000.

Schartz, Vern R., to AMFIT, Inc. System and method for forming custom-made shoe inserts. 4,517,696, Cl. 12-1.00R.

Scheffers, Richard W., to Signode Corporation. Mechanism for filling bags of different sizes. 4,517,788, Cl. 53-459.000.

Scheurenbrand, Dieter; Stotz, Manfred; Distel, Manfred; and Kleinschmit, Einhard, to Daimler-Benz Aktiengesellschaft. Motor vehicle fuel tank. 4,518,091, Cl. 220-5.00A.

Scheurer, Heinrich P.; and Ong, Kenneth K. H., to Warner-Lambert Company. Removal of benzene from carboxy polymethylene resin. 4,518,768, Cl. 528-483.000.

Scheurer, Roger J.: *See—*
Peterson, Richard L.; and Scheurer, Roger J., 4,518,047, Cl. 172-611.000.

Schiedel GmbH & Co.: *See—*
Lochner, Kaspar; Schurmann, Helmut; and Brand, Erich, 4,518,513, Cl. 252-62.000.

Schiemann, Wolfram. Device for fuel tanks for cars. 4,518,009, Cl. 137-571.000.

Schievelbein, Vernon H.: *See—*
Maddox, Jim, Jr.; and Schievelbein, Vernon H., 4,518,038, Cl. 166-266.000.

Schindler, Joachim: *See—*
Bartnik, Friedhelm; Schindler, Joachim; Weiss, Albrecht; and Schmid, Rolf, 4,518,697, Cl. 435-254.000.

Schindler, Wolfgang: *See—*
Krempl, Peter W.; Schindler, Wolfgang; and Faschingleitner, Leopold, 4,518,861, Cl. 250-339.000.

Schinner, Edward N.: *See—*
Carter, Thomas P.; Schinner, Edward N.; Harrison, Richard H., Jr.; and Cates, Robert E., 4,518,544, Cl. 261-112.000.

Schirmer, Ulrich; Plath, Peter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Thiadiazole derivatives and their use for controlling undesirable plant growth. 4,518,414, Cl. 71-90.000.

Schlupp, Ronald L., to Advanced Micro Devices, Inc. Merged platinum silicide fuse and Schottky diode and method of manufacture thereof. 4,518,981, Cl. 357-71.000.

Schmid, Rolf: *See—*
Bartnik, Friedhelm; Schindler, Joachim; Weiss, Albrecht; and Schmid, Rolf, 4,518,697, Cl. 435-254.000.

Schmidt, Nicholas F.: *See—*
Dhabhar, Dadi J.; and Schmidt, Nicholas F., 4,518,721, Cl. 523-120.000.

Schmidt, Robert R.: *See—*
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,518,416, Cl. 71-94.000.

Schmidt, Timothy J., to General Safety Corporation. Combination seat belt retractor mechanism. 4,518,132, Cl. 242-107.40A.

Schmitt, Peter D.: *See—*
Markusch, Peter H.; Kelso, Robert G.; and Schmitt, Peter D., 4,518,522, Cl. 252-188.310.

Schmitz, Gerd: *See—*
Hintsch, Otto; and Schmitz, Gerd, 4,518,019, Cl. 139-1.00R.

Schneberger, Ronald W.: *See—*
Rauch, Cloyd D., III; and Schneberger, Ronald W., 4,518,275, Cl. 402-80.00P.

Schnedecker, Guy; and Mougin, Jacques, to Commissariat a l'Energie Atomique. Process for sealing at least one end of a cellular module. 4,518,635, Cl. 427-232.000.

Schneider, Irwin, to United States of America, Navy. Color center laser, material, and method of lasing. 4,519,082, Cl. 372-42.000.

Schniederjan, Reinhold, to Hydromatik GmbH. Power regulation device for a hydraulic pump. 4,518,321, Cl. 417-218.000.

Schnitzler, Paul, to RCA Corporation. Communication system compandor. 4,518,994, Cl. 358-133.000.

Schoennagel, Hans J.: *See—*
Krishnamurthy, Sowmithri; Landolt, George R.; and Schoennagel, Hans J., 4,518,708, Cl. 502-230.000.

Scholz, Gerhard, to Licentia Patent-Verwaltungs-GmbH. Video recorder including a plurality of operating elements. 4,519,003, Cl. 358-335.000.

Schouteeten, Alain; and Christidis, Yani, to Societe Francaise Hoechst. Process for preparation of crystallized monohydrated sodium phenylpyruvate. 4,518,800, Cl. 562-459.000.

Schrader, Lothar: *See—*
Velling, Gunther; Schrader, Lothar; and Schumacher, Hermann, 4,518,567, Cl. 422-143.000.

Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, to ARC Technologies Systems, Ltd. Device for nippling active electrode sections onto a combination electrode. 4,518,365, Cl. 445-67.000.

Schulte, Heinz: *See—*
Mucheyer, Norbert; and Schulte, Heinz, 4,518,010, Cl. 137-587.000.

Schultz, Charles R. Decorative fan motor cover and mounting structure therefor. 4,518,314, Cl. 416-93.00R.

Schulz, Donald N.; Kitano, Kissho; Burkhardt, Terry J.; and Langer, Arthur W., to Exxon Research & Engineering Co. Drag reduction agent for hydrocarbon liquid. 4,518,757, Cl. 526-329.000.

Schulz, Peter: *See—*
Vaupel, Knut; and Schulz, Peter, 4,518,286, Cl. 406-46.000.

Schulze, Ehrhart; and Bochtler, Franz, to Stiegler, Karl Heinz. Apparatus for the manufacture of plastic bags. 4,518,378, Cl. 493-204.000.

Schulze, Heinz: *See—*
Waddill, Harold G.; and Schulze, Heinz, 4,518,749, Cl. 525-504.000.

Schumacher, Hermann: *See—*
Velling, Gunther; Schrader, Lothar; and Schumacher, Hermann, 4,518,567, Cl. 422-143.000.

Schurmann, Helmut: *See—*
Lochner, Kaspar; Schurmann, Helmut; and Brand, Erich, 4,518,513, Cl. 252-62.000.

Schuster, Max, to Zahnradfabrik Friedrichshafen AG. Axle drive mechanism. 4,518,065, Cl. 192-4.00A.

Schutt, John B.; and Shai, Michael C., to United States of America, National Aeronautics and Space Administration. Diffusely reflecting paints including polytetrafluoroethylene and method of manufacture. 4,518,722, Cl. 523-135.000.

Schwam, Bill R.: *See—*
Sneed, Scott W.; Schwam, Bill R.; and Gregory, Paul E., Jr., 4,517,714, Cl. 28-103.000.
Schwartz, Jacob, to Sanders Associates, Inc. Enhanced accuracy optical radar. 4,518,256, Cl. 356-5.000.
Schwarzhoff, Wolfgang, to Robert Bosch GmbH. Multi-pole electric plug. 4,518,215, Cl. 339-92.00R.
Schweigharett, Frank; Hoover, David S.; and Garg, Diwaker, to International Coal Refining Company. Time phased alternate blending of feed coals for liquefaction. 4,518,479, Cl. 208-8.0LE.
Schweizerische Eidgenossenschaft, Vertreten Durch Die Eidg. Munitionsfabrik Thun Der Gruppe Fur Rustungsdienste: *See—*
Kneubuhl, Beat, 4,517,897, Cl. 102-439.000.
Scotto, Dominick P., to Sperry Corporation. Stable plumb beam optical projector. 4,517,749, Cl. 33-346.000.
Sedlmayr, Gerhard, to Autoflug GmbH. Apparatus for adjusting the height of the fixing or guide fitting for the shoulder belt of a safety belt system. 4,518,174, Cl. 280-808.000.
Sedwick, William E., to Procter & Gamble Company, The. Integral flap-cut handle for a carton. 4,518,115, Cl. 229-52.00B.
Seefeld, Wayne F. Flotation device. 4,517,911, Cl. 114-267.000.
Seewer AG: *See—*
Morgenthaler, Eugen, 4,518,339, Cl. 425-367.000.
Sehnem, Hans P., to Bayer Aktiengesellschaft. Preparation of menthyl permethrate. 4,518,791, Cl. 560-124.000.
Seiffert, Edward J., to Du Pont de Nemours, E. I., and Company. Extrusion die. 4,518,343, Cl. 425-466.000.
Seiko Instruments & Electronics Ltd.: *See—*
Ueda, Makoto, 4,518,906, Cl. 318-696.000.
Seki, Kimiaki; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Rotary blade pump having blades with wear resistant end surfaces. 4,518,333, Cl. 418-152.000.
Seki, Tadashi: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.
Sekimoto, Yukihiko; and Okamoto, Osamu, to Nitto Kagaku Kogyo Kabushiki Kaisha. Equipment for dissolving polyacrylamide powder for obtaining an aqueous solution thereof for enhanced oil recovery. 4,518,261, Cl. 366-150.000.
Sekmakas, Kazys; Shah, Raj; Lewarchik, Ronald J.; and Murray, Kevin P., to DeSoto, Inc. Polyester oligomer and high solids thermosetting coatings. 4,518,746, Cl. 525-443.000.
Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Dozing warning device for a vehicle. 4,518,954, Cl. 340-576.000.
Sellars, Graham P., to Burroughs Corporation. Servo-track position detection systems. 4,519,007, Cl. 360-77.000.
Semenets, Valery I.: *See—*
Baldenko, Dmitry F.; Gusman, Moisei T.; and Semenets, Valery I., 4,518,049, Cl. 175-107.000.
Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,518,815, Cl. 136-244.000.
Senshu, Takao: *See—*
Atsumi, Akira; Oguni, Kensaku; Kuroda, Shigeaki; Senshu, Takao; and Yoshioka, Kazuo, 4,517,811, Cl. 62-197.000.
Sensormatic Electronics Corporation: *See—*
Barrett, Raymond L., Jr.; and Gross, Thomas A. O., 4,519,066, Cl. 370-24.000.
Seragnoli, Enzo; and Mattei, Riccardo, to G.D Societa' per Azioni. Cutting device for continuous rods of cigarette. 4,517,871, Cl. 83-677.000.
Shaer, Elias H., to Drackett Company, The. Aqueous compositions containing stabilized enzymes. 4,518,694, Cl. 435-188.000.
Shafer, Martha J.: *See—*
Brouillette, Bruce R.; and Shafer, Martha J., 4,518,734, Cl. 524-378.000.
Shah, Raj: *See—*
Sekmakas, Kazys; Shah, Raj; Lewarchik, Ronald J.; and Murray, Kevin P., 4,518,746, Cl. 525-443.000.
Shai, Michael C.: *See—*
Schutt, John B.; and Shai, Michael C., 4,518,722, Cl. 523-135.000.
Shamszadeh, Khosrow, to Nadalaan S.A. Construction element. 4,517,782, Cl. 52-309.700.
Shannon, Bruce L., to Standard Oil Company, The. System to produce a brine-based drilling fluid. 4,518,568, Cl. 422-261.000.
Shannon, Michael A.: *See—*
Walling, Jorg-Hein; Shannon, Michael A.; and Arbuthnot, Gerald, 4,518,633, Cl. 427-120.000.
Sharp Kabushiki Kaisha: *See—*
Nishibori, Toshiki; Kita, Sumio; and Takano, Sakuharu, 4,518,159, Cl. 271-103.000.
Shell Oil Company: *See—*
Diaz, Zaida, 4,518,576, Cl. 423-573.00R.
Johnson, Gregory L., 4,518,120, Cl. 239-424.000.
Klecka, Miro E., 4,518,577, Cl. 423-573.00R.
Roman, Steven A., 4,518,797, Cl. 560-231.000.
Sheltered Workshop for the Disabled, Inc.: *See—*
Blackington, Paul A., 4,518,856, Cl. 250-202.000.
Sherwin-Williams Company, The: *See—*
Pinto, Joseph G., 4,517,700, Cl. 15-105.000.
Sherwood, Cy E.: *See—*
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., 4,517,740, Cl. 29-857.000.
Shibata, Akira; Hirose, Koichi; and Yamamoto, Akihiro, to Hitachi, Ltd. Magnetic tape reproducing apparatus. 4,519,005, Cl. 360-65.000.
Shibata, Yoji: *See—*
Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, 4,518,989, Cl. 358-86.000.
Shibuya, Kiyoshi; Kan, Takahiro; and Ito, Yo, to Kawasaki Steel Corporation. Method of and apparatus for producing thin metallic sheet by rapid cooling. 4,518,029, Cl. 164-463.000.
Shiffer, Robert J., to McGraw-Edison Company. Die handling device. 4,518,185, Cl. 294-67.100.
Shiga, Tetsuya; Okawa, Shinichi; Yoshida, Kenichi; and Hiramoto, Junichi, to Sumitomo Electric Industries, Ltd. Sensing device for cardio-pulmonary functions. 4,517,982, Cl. 128-635.000.
Shikatani, Yutaka: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; and Matsuura, Kazuo, 4,518,752, Cl. 526-116.000.
Shikishima Tipton Manufacturing Co., Ltd.: *See—*
Kobayashi, Hisamine; Ishiguro, Tomihiro; and Murata, Akio, 4,517,771, Cl. 51-163.200.
Shimizu, Masaaki; and Aihara, Akira, to Horizon Co., Ltd. Paper folding device. 4,518,380, Cl. 493-420.000.
Shimizu, Shigeaki; Kubo, Yoshimi; Arai, Yoshio; Suzuki, Tetsuo; and Igarashi, Hitoshi, to NEC Corporation. Method of producing a porous body for electrolytic capacitor having a lead wire. 4,517,727, Cl. 29-570.000.
Shimmin, Bryan F.; and Pollard, James B., to Reed International P.L.C. Non-slip surface coatings. 4,518,641, Cl. 428-150.000.
Shin Nihon Machine Manufacturing Co., Ltd.: *See—*
Masuda, Fumihiko, 4,517,785, Cl. 53-116.000.
Shinozaki, Nozomu: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,517,909, Cl. 112-275.000.
Shinsen, Mitsuhisa, to Kabushiki Kaisha Komatsu Seisakusho. Coupling arrangement for rotating shafts. 4,518,369, Cl. 464-101.000.
Shionozaki, Yoshio, to Kabushiki Kaisha Suwa Seikosha. Ester-azoxy compounds. 4,518,226, Cl. 350-350.00R.
Shirai, Eiichi: *See—*
Nakano, Hideaki; Ozu, Tadahiro; and Shirai, Eiichi, 4,517,930, Cl. 123-41.310.
Shiroyama, Tadayoshi, to Tachikawa Pin Seisakujo Co., Ltd. Magazine device of air nailer. 4,518,109, Cl. 227-109.000.
Shmueli, Shmuel S. Three dimensional combination assembly game. 4,518,165, Cl. 273-156.000.
Shockley, Brett A.: *See—*
Skovran, Daniel G.; Shockley, Brett A.; and Chouanard, Harvey J., 4,519,014, Cl. 361-397.000.
Shoji, Tetsuo: *See—*
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.
Shores, William M.: *See—*
Harshbarger, John H.; and Shores, William M., 4,518,995, Cl. 358-139.000.
Showa Denko K.K.: *See—*
Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, 4,518,665, Cl. 429-153.000.
Showa Denko Kabushiki Kaisha: *See—*
Yoshida, Haruo; Tagoshi, Hirotaka; Morohashi, Yasushi; and Tanikoshi, Toshiaki, 4,518,756, Cl. 526-313.000.
Showa Highpolymer Co., Ltd.: *See—*
Yoshida, Haruo; Tagoshi, Hirotaka; Morohashi, Yasushi; and Tanikoshi, Toshiaki, 4,518,756, Cl. 526-313.000.
Shulik, Larry J.: *See—*
Osman, Robert M.; and Shulik, Larry J., 4,518,574, Cl. 423-360.000.
Siebtuchfabrik AG: *See—*
Vuorio, Tauno A., 4,518,644, Cl. 428-198.000.
Siemens AG: *See—*
Grasser, Leo, 4,518,630, Cl. 427-93.000.
Siemens Aktiengesellschaft: *See—*
Werner, Peter, 4,518,838, Cl. 200-303.000.
Siemens Corporate Research & Support, Inc.: *See—*
Southard, Gary, 4,518,858, Cl. 250-227.000.
Signode Corporation: *See—*
Scheffers, Richard W., 4,517,788, Cl. 53-459.000.
Silva, Raimund H.: *See—*
Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., 4,518,650, Cl. 428-286.000.
Simak, Petr: *See—*
Naarmann, Herbert; Muench, Volker; Kohler, Gernot; and Simak, Petr, 4,518,535, Cl. 260-438.100.
Simpson, Roger T.: *See—*
Rademacher, Darrell; Neville, Thomas; and Simpson, Roger T., 4,519,088, Cl. 377-16.000.
Sinclair, A. Richard: *See—*
Graham, John W.; and Sinclair, A. Richard, 4,518,039, Cl. 166-276.000.
Sindorf, Heinz: *See—*
Lennartz, Rudiger; Rott, Willi; and Sindorf, Heinz, 4,518,501, Cl. 210-411.000.
Singer, Bernard S.: *See—*
Reinhard, George G.; Kinde, Ronald; and Singer, Bernard S., 4,517,926, Cl. 123-3.000.
Singer Company, The: *See—*
Fisher, Robert A.; and Peters, David L., 4,518,360, Cl. 434-20.000.
Franke, John M., Sr., 4,517,907, Cl. 112-121.150.
Singer, Klaus-Peter: *See—*
Butenop, Klaus; and Singer, Klaus-Peter, 4,518,131, Cl. 242-107.40B.

Singh, Bhim S.: *See—*
Kodali, Satyanarayana; Singh, Bhim S.; Whittlesey, Curtis C.; and Henriksen, Gary L., 4,518,663, Cl. 429-18.000.
Sivilotti, Olivo G., to Alcan International Limited. Apparatus for metal production by electrolysis of a molten electrolyte. 4,518,475, Cl. 204-247.000.
Sizyakov, Viktor M.: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.
Sjuld, Tüya-Maya F.: *See—*
Kiisler, Karl R.; Sjuld, Tüya-Maya F.; Kristyanson, Peep G.; Kholm, Gunnar B.; Rokk, Juri K.; and Post, Kalju M., 4,518,453, Cl. 156-307.500.
Ski Pack International, Inc.: *See—*
Amos, Jacquelyn V., 4,518,107, Cl. 224-215.000.
Skinner, Edward A., to Elopak Limited. Method of making a carton. 4,518,377, Cl. 493-58.000.
Skovran, Daniel G.; Shockley, Brett A.; and Chouanard, Harvey J., to Magnetic Controls Company. Cable access assembly. 4,519,014, Cl. 361-397.000.
SKW Trostberg Aktiengesellschaft: *See—*
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,518,419, Cl. 75-11.000.
Slope Indicator Co.: *See—*
Twomey, James R.; McCutcheon, Hugh W.; and Harris, Richard K., 4,517,842, Cl. 73-701.000.
Smarte Carte, Inc.: *See—*
Pastien, Eugene R., 4,518,073, Cl. 194-4.00C.
Smick, William H., III: *See—*
Grollimund, Everett C.; Smick, William H., III; and Brookman, Donald L., 4,517,825, Cl. 73-38.000.
Smith, Carl L., Jr.: *See—*
McCan, Duane A.; and Smith, Carl L., Jr., 4,517,924, Cl. 119-98.000.
Smith, David H., to Binks Manufacturing Company. Bead dispenser for paint striper. 4,518,121, Cl. 239-526.000.
Smith, Gehrard J.; and Holly, Kenneth, to ELXSI. I/O Bus clock. 4,519,034, Cl. 364-200.000.
Smith, Janet C.: *See—*
Monagle, Charles W.; and Smith, Janet C., 4,518,620, Cl. 426-291.000.
Smith, John R.: *See—*
Smith, John T.; and Smith, John R., 4,517,689, Cl. 4-235.000.
Smith, John T.; and Smith, John R. Toilet seat. 4,517,689, Cl. 4-235.000.
Smith, Maurice R.; and Cochran, Harvey B., to Olin Corporation. Process for producing poly(dithiocarbamate) chelating resins. 4,518,760, Cl. 528-48.000.
Smith, Richard J.: *See—*
Tindall, Gary W.; Lysenko, George P.; Vize, Richard J.; Kiefer, Edward H.; and Smith, Richard J., 4,518,195, Cl. 296-148.000.
Smiths Industries Public Limited Company: *See—*
Luke, Douglas V., 4,517,834, Cl. 73-146.500.
Snaidr, Stanislav M.: *See—*
Brackman, Warren A.; and Snaidr, Stanislav M., 4,517,988, Cl. 131-116.000.
Snedden, William H.: *See—*
Surana, Bhupendra S.; and Snedden, William H., 4,519,039, Cl. 364-469.000.
Sneed, Scott W.; Schwam, Bill R.; and Gregory, Paul E., Jr., to Procter & Gamble Company, The. Nonwoven fabric barrier layer. 4,517,714, Cl. 28-103.000.
Snyder, Daniel D.: *See—*
Korte, Kevin R.; and Snyder, Daniel D., 4,517,992, Cl. 131-304.000.
Snyder, John S., Jr., to Communications Satellite Corporation. Analog threshold decoder. 4,519,080, Cl. 371-43.000.
S.A. Panmedica: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,518,587, Cl. 514-19.000.
Societe Chimique de la Grande Paroisse - Azote et Products Chimiques: *See—*
Lhonore, Pierre; Quibel, Jacques; Jacquinot, Bernard; Jestin, Yvon; and Pelletier, Robert, 4,518,811, Cl. 568-943.000.
Societe de Vente de l'Aluminium Pechiney: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,518,794, Cl. 560-192.000.
Societe d'Etude du Radant: *See—*
Sadones, Henri, 4,518,966, Cl. 343-754.000.
Societe Francaise Hoechst: *See—*
Schouteeten, Alain; and Christidis, Yani, 4,518,800, Cl. 562-459.000.
Sodastream Limited: *See—*
Harris, Derek W., 4,518,541, Cl. 261-27.000.
Sodecom SA: *See—*
Dossekker, Bruno, 4,517,875, Cl. 84-383.00R.
Soled, Stuart L.; and Fiato, Rocco A., to Exxon Research & Engineering Co. Process for preparing high surface area iron/cobalt Fischer-Tropsch slurry catalysts. 4,518,707, Cl. 502-174.000.
Solid State Scientific, Inc.: *See—*
Greene, Richard M., 4,518,879, Cl. 307-530.000.
SolidTek Systems, Inc.: *See—*
Conner, Jesse R., 4,518,508, Cl. 210-751.000.
Sollie, Steinar; and Andresen, Arild A., to Chevron Research Company. Rotating double barrel core sampler. 4,518,050, Cl. 175-250.000.
Sollie, Steinar; and Andresen, Arilo A., to Chevron Research Company. Percussion actuated core sampler. 4,518,051, Cl. 175-250.000.
Solomon, Dennis R., to CQR Security Systems Limited. Audio-visual alarm device with translucent cover. 4,518,946, Cl. 340-326.000.
Solomon, Frank; and Grun, Charles, to Eltech Systems Corporation. Three layer laminate. 4,518,705, Cl. 502-101.000.
Someshwar, Ashok H.: *See—*
Vaughn, Herchel A.; and Someshwar, Ashok H., 4,519,033, Cl. 364-200.000.
Somiver s.r.l.: *See—*
Branca, Virgilio, 4,518,342, Cl. 425-435.000.
Sommer, Peter, to Sommer, Schenk AG. Method and apparatus for cleaning a water tank. 4,518,437, Cl. 134-18.000.
Sommer, Robert: *See—*
Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., 4,518,077, Cl. 198-731.000.
Sommer, Schenk AG: *See—*
Sommer, Peter, 4,518,437, Cl. 134-18.000.
Sonetaka, Kazunori; Nishino, Atsushi; and Suzuki, Tadashi, to Vatsushita Electric Industrial Company, Limited. Liquid fuel combustion apparatus. 4,518,347, Cl. 431-325.000.
Sonoscan, Inc.: *See—*
Kessler, Lawrence W.; and Yuhas, Donald E., 4,518,992, Cl. 358-112.000.
Sony Corporation: *See—*
Amano, Toshio, 4,519,002, Cl. 358-335.000.
Fukasawa, Hideki, 4,518,925, Cl. 330-51.000.
Higashihara, Teruaki; Nonaka, Chiaki; Yoshida, Tadao; and Kawachi, Hideo, 4,519,057, Cl. 369-50.000.
Okada, Hisao; Tanaka, Seiichiro; and Kawaberi, Seiji, 4,518,993, Cl. 358-114.000.
Takeshita, Kaneyoshi, 4,518,978, Cl. 357-24.000.
Tsurushima, Katsuaki; Furuya, Tsuneo; and Fukami, Tadashi, 4,519,058, Cl. 369-53.000.
Sorbonne, Robert L. Guard for venipuncture site and catheter retainer. 4,517,971, Cl. 128-133.000.
Sorensen, Ansgar C. H. Device for determining the concentration of an absorbable component in a gaseous mixture. 4,518,566, Cl. 422-88.000.
Sorensen, Gunnar; and Svendsen, Leo, to NESELCO. Powder for use in dry sensitization for electroless plating. 4,518,738, Cl. 524-435.000.
Sorg, James D.: *See—*
Reed, Richard K.; Reed, James R.; and Sorg, James D., 4,518,235, Cl. 354-86.000.
Southard, Gary, to Siemens Corporate Research & Support, Inc. Fiber optic time standard. 4,518,858, Cl. 250-227.000.
Sowman, Harold G.: *See—*
Leitheiser, Melvin A.; and Sowman, Harold G., 4,518,397, Cl. 51-293.000.
Spaans, Leendert B.: *See—*
Penny, Michael F.; Woodcock, Brian; Abbot, Ralph H.; Phillips, David M.; and Spaans, Leendert B., 4,518,254, Cl. 356-5.000.
Spanjer, Keith G.: *See—*
Du Bois, Jerry M.; and Spanjer, Keith G., 4,518,982, Cl. 357-74.000.
Speich, Francisco, to Textilma AG. Drive assembly for producing a nonuniform output from a uniform input. 4,518,020, Cl. 139-55.100.
Sperry Corporation: *See—*
Buckner, Arthur B.; Davies, Michael L.; and Weber, Lawrence W., 4,517,880, Cl. 98-1.000.
Campbell, Willis R.; and Walker, James D., 4,517,890, Cl. 100-5.000.
Crozier, George W.; and McDevitt, Bernard J., 4,519,047, Cl. 364-900.000.
Henry, James W., 4,517,891, Cl. 100-88.000.
McMahon, Donald H.; and Spillman, William B., Jr., 4,518,857, Cl. 250-225.000.
Scotto, Dominick P., 4,517,749, Cl. 33-346.000.
Walker, James D.; Underhill, Kenneth R.; and Campbell, Willis R., 4,517,889, Cl. 100-5.000.
Spiewok, Leonhard: *See—*
Hoffmann, Ernst H.; Arendt, Hans F.; Spiewok, Leonhard; and Rettich, Jakob, 4,517,695, Cl. 8-158.000.
Spillman, William B., Jr.: *See—*
McMahon, Donald H.; and Spillman, William B., Jr., 4,518,857, Cl. 250-225.000.
Spindler, Manfred: *See—*
Bolze, Rudolf; Geiger, Friedhelm; Spindler, Manfred; and Tanner, Herbert, 4,518,801, Cl. 562-559.000.
Spinnler, Fritz: *See—*
Mayer, Andreas; El-Nashar, Ibrahim; and Spinnler, Fritz, 4,517,950, Cl. 123-559.000.
Spitzner, Jerome G.; and Stoudt, Michael D., to Eastman Kodak Company. Apparatus and method for forming multicolor electrophotographic images. 4,518,246, Cl. 355-4.000.
Sprague Electric Company: *See—*
Avery, Grant D., 4,518,918, Cl. 324-208.000.
Spring-Mornne, Inc.: *See—*
Malak, Stephen P., 4,518,855, Cl. 250-201.000.
SRI International: *See—*
Dawson, Marcia I.; and Chan, Rebecca L. S., 4,518,609, Cl. 514-448.000.
Sridhar, Bettadapur N.: *See—*
Fischer, Larry E.; Sridhar, Bettadapur N.; and Bean, Jackie E., 4,518,559, Cl. 376-230.000.
SSAC, Inc.: *See—*
Rolland, Gerard T., 4,518,849, Cl. 219-492.000.

Staar S. A.: *See—*
Denis, Philippe V., 4,519,059, Cl. 369-74.000.

Stacey, Robert E.: *See—*
Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., 4,518,077, Cl. 198-731.000.

Stach, Joseph: *See—*
Tressler, Richard E.; Stach, Joseph; and Baeten, Roger L., 4,518,349, Cl. 432-11.000.

Stackhouse, Kenneth B.; and Hill, William D., to General Electric Company. Testable time delay. 4,519,090, Cl. 377-29.000.

Stadler nee Szoke, Agnes: *See—*
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Standard Oil Company, The: *See—*
Blum, Patricia R.; Milberger, Ernest C.; and Nicholas, Mark L., 4,518,523, Cl. 502-209.000.
Hertz, Darryl W., 4,518,403, Cl. 55-194.000.
Jansma, John C., 4,518,486, Cl. 208-131.000.
Shannon, Bruce L., 4,518,568, Cl. 422-261.000.

Standard Oil Company (Indiana): *See—*
Pellet, Regis J., 4,518,709, Cl. 502-254.000.
Wennerberg, Arnold N., 4,518,488, Cl. 208-216.00R.

Stanford, Roy E., Jr. Toothbrushes for cleaning sulcular areas of the teeth. 4,517,701, Cl. 15-106.000.

Stanley, W. Kent; and Tibbetts, George C., to Tibbetts Industries, Inc. Transducer with translationally adjustable armature. 4,518,831, Cl. 179-119.00A.

Stansfield, James F.; Toole, James; and Topham, Arthur, to Imperial Chemical Industries Limited. Dispersing agent for solids in polar organic liquids. 4,518,435, Cl. 106-308.00N.

Steensen, Wayne L.: *See—*
Wilson, Mildred N.; Danielson, Robert L.; Bosco, Peter M.; and Steensen, Wayne L., 4,518,622, Cl. 426-578.000.

Steer, Peter L.; and Edwards, John V., to Kingsdown Medical Consultants, Limited. Interdigitated coupling for an ostomy bag. 4,518,389, Cl. 604-339.000.

Steilen, Ronald M.: *See—*
Rettig, Vernon E.; Bigbee, Marvin L.; Steilen, Ronald M.; and Head, Glenn D., Jr., 4,518,046, Cl. 172-311.000.

Stemberger, Ivan. Continuous travel hand wrench. 4,517,861, Cl. 81-57.290.

Stepan, William E.; Neese, Wayne E.; Belanger, Thomas D., Jr.; and Janninck, Robert F., to GTE Automatic Electric Inc. Device for mounting, interconnecting and terminating printed circuits. 4,518,211, Cl. 339-17.0LM.

Stephens, Donald E., to Beckman Instruments, Inc. Method and apparatus for regulating the temperature of an analytical instrument reactor. 4,518,700, Cl. 436-52.000.

Sterling Drug Inc.: *See—*
Greene, Donald F.; and Urban, Virginia L., 4,518,585, Cl. 424-130.000.

Sternisa, Danilo: *See—*
Frichmann, Albert; Sternisa, Danilo; Mermi, Kurt; and Kistner, Herbert, 4,518,290, Cl. 411-30.000.

Stewart, Harvey; and Mosheim, C. Edward, to Cabot Corporation. Process for separating antimony from columbium solutions. 4,518,570, Cl. 423-63.000.

Stewart, Malcolm J.: *See—*
Richards, David H.; and Stewart, Malcolm J., 4,518,753, Cl. 526-177.000.

Stiegler, Karl Heinz: *See—*
Schulze, Ehrhart; and Bochtler, Franz, 4,518,378, Cl. 493-204.000.

Stinson, Walter J.; and Phillips, Larry J., to General Signal Corporation. Valve operator control system. 4,518,146, Cl. 251-28.000.

Stix, Wolfgang; Bottenbruch, Ludwig; and Neuray, Dieter, to Bayer Aktiengesellschaft. Polycarbonates having terminal groups which contain conjugated double bonds. 4,518,747, Cl. 525-462.000.

Stobb, Inc.: *See—*
Moser, James R., 4,518,156, Cl. 270-54.000.
Stobb, Walter J., 4,518,157, Cl. 270-58.000.

Stobb, Walter J., to Stobb, Inc. Method for trimming a signature held in a rotary clamp. 4,518,157, Cl. 270-58.000.

Stockburger, Hermann; and Winderlich, Hans-Georg. Method for operating automatic devices such as cash registers or the like and a device for carrying out the method. 4,518,852, Cl. 235-381.000.

Stockinger, Friedrich: *See—*
Haug, Theobald; and Stockinger, Friedrich, 4,518,748, Cl. 525-481.000.

Stockton, Dean B.: *See—*
Gini, Donald; and Stockton, Dean B., 4,518,634, Cl. 427-128.000.

Stoetzer, Steven R., to Acheson Industries, Inc. Silver coating composition for use in electronic applications and the like. 4,518,524, Cl. 252-514.000.

Stoll, Kurt. Control valve unit for the cylinder of a fluid actuator. 4,518,011, Cl. 137-596.170.

Storage Technology Corporation: *See—*
Komonytsky, Donald, 4,519,078, Cl. 371-25.000.

Storen, Harald, to Norsk Hydro a.s. Method of transport, cooling and compression of nitrogen oxide-containing gases. 4,518,438, Cl. 134-22.100.

Stotz, Manfred: *See—*
Scheurenbrand, Dieter; Stotz, Manfred; Distel, Manfred; and Kleinschmit, Einhard, 4,518,091, Cl. 220-5.00A.

Stoudt, Michael D.: *See—*
Spitzner, Jerome G.; and Stoudt, Michael D., 4,518,246, Cl. 355-4.000.

Stouffer, Ronald D., to Bowles Fluidics Corporation. Sweeping air stream apparatus and method. 4,517,881, Cl. 98-208.000.

Strachan, Bruce D.: *See—*
Holland, Scott B.; Greene, Edward S.; Kowalski, David A.; and Strachan, Bruce D., 4,517,832, Cl. 73-118.000.

Strahle, Fritz: *See—*
Muchel, Franz; and Strahle, Fritz, 4,518,231, Cl. 350-516.000.

Straub, Harry: *See—*
Richards, William D. C.; and Straub, Harry, 4,518,175, Cl. 285-47.000.

Straw, Timothy B.: *See—*
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., 4,518,915, Cl. 324-158.00R.

Stuhrmann, Heinz, to Deere & Company. Vehicle-mounted apparatus for supporting ballast weights and for elevating the weights. 4,518,305, Cl. 414-719.000.

Stupak, Joseph J., Jr., to Ibis Systems, Inc. Linear motor. 4,518,881, Cl. 310-13.000.

Stutenkemper, Paul; Rest, Heinz; and Kloppe, Herbert, to Ford Motor Company. Fastening device. 4,518,138, Cl. 248-73.000.

Suffa, Hilmar, to Dorst Maschinen-und Anlagenbau Otto Dorst und Dipl.-Ing. Walter Schlegel & Co. Press for manufacturing plates, etc. 4,518,341, Cl. 425-405.00H.

Suganuma, Tetsuya; and Kazuoka, Koji, to Toyota Jidosha Kabushiki Kaisha. Method for manufacturing a slide member. 4,518,563, Cl. 419-29.000.

Sugawara, Koko: *See—*
Konishi, Masataka; Sugawara, Koko; Miyaki, Takeo; and Kawaguchi, Hiroshi, 4,518,589, Cl. 514-27.000.

Sugie, Mamoru: *See—*
Toyooka, Takashi; Aoki, Hirokazu; and Sugie, Mamoru, 4,519,049, Cl. 365-12.000.

Sugie, Masatoshi, to Ricoh Company, Ltd. Facsimile communication method with anti-echo strategy. 4,519,081, Cl. 371-57.000.

Sugimori, Masahiro: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Sugimori, Masahiro, 4,518,472, Cl. 204-159.150.

Sugimoto, Hiroyuki: *See—*
Fujita, Kazunori; Nishimura, Shigeoki; Sugimoto, Hiroyuki; Ebato, Noboru; and Matsuda, Shinpei, 4,518,665, Cl. 429-153.000.

Sugiura, Muneharu, to Canon Kabushiki Kaisha. Zoom lens. 4,518,228, Cl. 350-427.000.

Sugiyama, Hiroyuki, to Victor Company of Japan, Limited. Signal pickup device. 4,519,062, Cl. 369-126.000.

Sui, Akira: *See—*
Yokoshima, Naohiko; Masumoto, Nobuyoshi; and Sui, Akira, 4,517,726, Cl. 29-527.400.

Sulcek, Charles E.; and Miller, Frank E., to Whirlpool Corporation. Support and leveling system for refuse compactor. 4,518,142, Cl. 248-649.000.

Sulcon, Inc.: *See—*
Yarbrough, Roger L., 4,518,548, Cl. 264-32.000.

Sullivan, Donald K.: *See—*
Bland, Gerald F.; and Sullivan, Donald K., 4,518,363, Cl. 440-89.000.

Sulzer Brothers Limited: *See—*
Hintsch, Otto; and Schmitz, Gerd, 4,518,019, Cl. 139-1.00R.

Sulzle, Walther, to Sulzle, Wilhelm. Apparatus for securing connectors to a fabric. 4,517,737, Cl. 29-798.000.

Sulzle, Wilhelm: *See—*
Sulzle, Walther, 4,517,737, Cl. 29-798.000.

Sumimoto Electric Industries, Ltd.: *See—*
Saegusa, Yasuyoshi, 4,518,332, Cl. 418-150.000.

Sumitomo Chemical Company, Limited: *See—*
Kasamatsu, Kiyoshi; and Konishi, Hiroyuki, 4,518,594, Cl. 514-155.000.

Sumitomo Electric Industries, Ltd.: *See—*
Shiga, Tetsuya; Okawa, Shinichi; Yoshida, Kenichi; and Hiramoto, Junichi, 4,517,982, Cl. 128-635.000.
Sunago, Katsuyoshi; and Takenaka, Shinya, 4,517,973, Cl. 128-303.100.

Sun Electric Corporation: *See—*
Swis, Philip E.; and DiFonzo, Anthony E., 4,518,268, Cl. 374-144.000.

Sunago, Katsuyoshi; and Takenaka, Shinya, to Sumitomo Electric Industries, Ltd. Laser scalpel. 4,517,973, Cl. 128-303.100.

Sundstrand Corporation: *See—*
Glennon, Timothy F., 4,519,022, Cl. 363-41.000.

Sundstrand Data Control, Inc.: *See—*
Peters, Rex B.; Tonn, Jeffrey F.; Malametz, Arnold; Hilliker, Richard A.; and Corey, Victor B., 4,517,841, Cl. 73-517.0AV.

Sung, Rodney L.; Kaufman, Benjamin J.; and Dorn, Peter, to Texaco Inc. Fuel compositions containing N-alkyl glycyl imidazoline. 4,518,782, Cl. 548-353.000.

Sunstar Kabushiki Kaisha: *See—*
Makishima, Takao; Inaba, Shigeru; and Wada, Yasuyoshi, 4,518,099, Cl. 221-30.000.

Superior Electric Company, The: *See—*
Giguere, Irving J., 4,518,907, Cl. 318-696.000.

Surana, Bhupendra S.; and Snedden, William H., to Westinghouse Electric Corp. Digital coil diameter function generator and reel motor drive system embodying the same. 4,519,039, Cl. 364-469.000.

Suresh, Bindinganavle R.: *See—*
Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., 4,519,041, Cl. 364-552.000.

Survival Technology, Inc.: *See—*
Tarello, William R.; Lopez, Claudio; Gordon, Linda A.; Whalen, Thomas D.; and Harvey, William B., 4,518,384, Cl. 604-61.000.

Sutphin, Eldon M., Jr., to RCA Corporation. Commutating filter passing only the fundamental frequency and odd harmonics thereof. 4,518,936, Cl. 333-173.000.

Suttles, James M., to Mead Corporation, The. Base element connection for sheet metal furniture. 4,518,279, Cl. 403-231.000.

Suur-Askola, Seppo: *See—*
Makinen, Heimo; and Suur-Askola, Seppo, 4,518,062, Cl. 187-29.00R.

Suzuki, Osamu: *See—*
Oishi, Kengo; and Suzuki, Osamu, 4,518,134, Cl. 242-199.000.

Suzuki, Shinji: *See—*
Kawabata, Yasuhiro; Kadokawa, Yoshio; Mori, Nobuyuki; and Suzuki, Shinji, 4,517,854, Cl. 74-492.000.

Suzuki, Tadashi: *See—*
Sonetaka, Kazunori; Nishino, Atsushi; and Suzuki, Tadashi, 4,518,347, Cl. 431-325.000.

Suzuki, Takashi: *See—*
Tanaka, Hiroshi; Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,518,952, Cl. 340-514.000.

Suzuki, Tetsuo: *See—*
Shimizu, Shigeaki; Kubo, Yoshimi; Arai, Yoshio; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,517,727, Cl. 29-570.000.

Suzuki, Yasuo; Hirao, Hiroshi; and Nagasawa, Masanori, to Fujitsu Limited. Buffer circuit for driving a C-MOS inverter. 4,518,873, Cl. 307-451.000.

Suzuki, Yoshiji: *See—*
Takagi, Toshihiko; Kobayashi, Yoshikazu; Suzuki, Yoshiji; and Hara, Tsutomu, 4,519,064, Cl. 369-275.000.

Suzuki, Yoshio: *See—*
Aoshima, Atsushi; Suzuki, Yoshio; and Nakamura, Mikihiko, 4,518,462, Cl. 203-39.000.
Aoshima, Atsushi; Suzuki, Yoshio; Yamamatsu, Setsuo; and Yamaguchi, Tatsuo, 4,518,796, Cl. 560-208.000.

Svendsen, John A., to Minnesota Mining and Manufacturing Company. Device for processing thermally developable films and papers. 4,518,845, Cl. 219-216.000.

Svendsen, Leo: *See—*
Sorensen, Gunnar; and Svendsen, Leo, 4,518,738, Cl. 524-435.000.

Svensson, Lars-Erik: *See—*
Tengzelius, Jan R.; Blande, Carl-Axel; and Svensson, Lars-Erik, 4,518,427, Cl. 75-251.000.

Swallert, Sven A. Coffin. 4,517,713, Cl. 27-4.000.

Swanson, Eric J., to AT&T Bell Laboratories. Gate-coupled field-effect transistor pair amplifier. 4,518,926, Cl. 330-253.000.

Swanson, Steven E., to GTE Products Corporation. Fiber optic drawer connector assembly. 4,518,220, Cl. 350-96.200.

Swerdloff, Michael D.; Kolc, Jaroslav F.; Rogic, Milorad M.; and Hendrickson, Larry L., to Allied Corporation. Poly-phosphorodiamide urease inhibitors and urease inhibited urea based fertilizer compositions. 4,518,413, Cl. 71-28.000.

Swick, E. Grant: *See—*
Pleickhardt, George C.; and Swick, E. Grant, 4,518,293, Cl. 411-107.000.

Swieboda, Michael A.: *See—*
Johnston, George C.; and Swieboda, Michael A., 4,518,642, Cl. 428-172.000.

Swis, Philip E.; and DiFonzo, Anthony E., to Sun Electric Corporation. Diesel engine diagnostic system. 4,518,268, Cl. 374-144.000.

Syntex (U.S.A.) Inc.: *See—*
Khanna, Pyare L.; and Colvin, Floyd W., 4,518,701, Cl. 436-500.000.
Walker, Keith A. M., 4,518,607, Cl. 514-399.000.

Szarka, Geza: *See—*
Langner, Carl; Poran, Michael; and Szarka, Geza, 4,518,074, Cl. 198-425.000.

Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for the preparation of an inclusion complex of N-(1--phenylethyl)-3,3-diphenylpropylamine and the hydrochloride thereof respectively with cyclodextrin. 4,518,588, Cl. 514-58.000.

'T Hoen, Pieter J., to North American Philips Corporation. Piezoelectric apodized ultrasound transducers. 4,518,889, Cl. 310-357.000.

Tachi, Ryosuke: *See—*
Matsui, Takeski; Ohyama, Hideo; Tachi, Ryosuke; Ito, Teruyoshi; and Kawai, Motoshi, 4,519,038, Cl. 364-431.030.

Tachikawa Pin Seisakujo Co., Ltd.: *See—*
Shiroyama, Tadayoshi, 4,518,109, Cl. 227-109.000.

Tachovsky, Otto H.: *See—*
Ross, Steven L.; and Tachovsky, Otto H., 4,517,751, Cl. 34-10.000.

Taggart, Kenneth J.; and Traub, Kevin W., to K-D Tools, Inc. Automatic torque wrench tester. 4,517,821, Cl. 73-1.00C.

Tagnon, Luc, to Essilor International Cie Generale d'Optique. Ophthalmic surgical laser apparatus. 4,517,980, Cl. 128-395.000.

Tagoshi, Hirotaka: *See—*
Yoshida, Haruo; Tagoshi, Hirotaka; Morohashi, Yasushi; and Tanikoshi, Toshiaki, 4,518,756, Cl. 526-313.000.

Taguchi, Sadanori; Aida, Toshiyuki; Yamamoto, Shigehiko; and Honda, Yukio, to Hitachi, Ltd. Impregnated cathode. 4,518,890, Cl. 313-346.00R.

Taguchi, Shunichi; Ohkawa, Shuji; Watanabe, Mitsuru; and Kikuchi, Itsuo, to Hitachi Heating Appliances Co., Ltd. High frequency heating apparatus with wireless temperature probe. 4,518,839, Cl. 219-10.55B.

Taiho Pharmaceutical Company Limited: *See—*
Fujimura, Hajime; Hiramatsu, Yasuzo; Yamazaki, Tomio; Yamada, Shozo; and Honna, Takaji, 4,518,712, Cl. 514-255.000.

Tajima, Akira. Method of widening the angular field of a photographic objective lens. 4,518,227, Cl. 350-422.000.

Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo ; and Neszmelyi, Erzsebet, to Richter Gedeon Vegyeszeti Gyar RT. Process for the production of heparin-containing particulate products. 4,518,771, Cl. 536-21.000.

Takada, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Wheel for a vehicle. 4,518,204, Cl. 301-63.00R.

Takagi, Toshihiko; Kobayashi, Yoshikazu; Suzuki, Yoshiji; and Hara, Tsutomu, to Nippon Columbia Kabushikikaisha. Optical record disc. 4,519,064, Cl. 369-275.000.

Takahashi, Akira, to Ricoh Company, Ltd. Distance measurement system. 4,518,253, Cl. 356-4.000.

Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, to Kabushiki Kaisha Toshiba; Hideaki Takahashi; and Tetsuo Shoji. Method of detecting embrittlement of heat-resisting steel. 4,518,464, Cl. 204-1.00T.

Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, to Fuji Photo Film Co., Ltd.; and Nippon Light Metal Company Ltd. Web conveying method. 4,518,466, Cl. 204-28.000.

Takahashi, Nobuo: *See—*
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,518,674, Cl. 430-108.000.

Takahashi, Sadahiro: *See—*
Yagi, Eiji; Kobari, Yuji; and Takahashi, Sadahiro, 4,518,055, Cl. 180-142.000.

Takahashi, Toshiro: *See—*
Kobayashi, Hidetoshi; Takahashi, Toshiro; Hirano, Shigeo; Hirose, Takeshi; and Adachi, Keiichi, 4,518,682, Cl. 430-543.000.

Takaku, Kazuo; Naruse, Akisuke; Fujimoto, Hirotsugu; and Kimura, Hiroshi, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Rail apparatus around nuclear reactor pressure vessel and method of installing the same. 4,518,560, Cl. 376-245.000.

Takakuwa, Sadao: *See—*
Tanaka, Motomu; Osuka, Masanari; Kuri, Takeshi; and Takakuwa, Sadao, 4,518,764, Cl. 528-271.000.

Takano, Sakuharu: *See—*
Nishibori, Toshiki; Kita, Sumio; and Takano, Sakuharu, 4,518,159, Cl. 271-103.000.

Takano, Yoshiya; and Hoshi, Yoshikazu. Fuel injection pump. 4,517,946, Cl. 123-450.000.

Takase, Toshio: *See—*
Watanabe, Masaru; Sakai, Toshihide; and Takase, Toshio, 4,517,882, Cl. 98-6.000.

Takasu, Yasuhito: *See—*
Inoue, Shingo; Iwata, Toshiharu; and Takasu, Yasuhito, 4,517,944, Cl. 123-425.000.

Takasugi, Hisashi: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Takata, Harry H., to Ag-Chem Equipment Co., Inc. Modular low pressure strip spraying apparatus and system. 4,518,118, Cl. 239-163.000.

Takaya, Takao: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,518,774, Cl. 544-22.000.

Takayasu, Hidekazu, to Yamaha Hatsudoki Kabushika Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Multi-fuel carburetor. 4,518,540, Cl. 261-18.00B.

Takeda Chemical Industries, Ltd.: *See—*
Imada, Akira; Harada, Setsuo; and Asai, Mitsuko, 4,518,529, Cl. 260-245.20T.
Kikuchi, Masakazu; Hayakawa, Takaki; and Kida, Makoto, 4,518,698, Cl. 435-317.000.
Terao, Shinji; and Nishikawa, Kohei, 4,518,602, Cl. 514-332.000.

Takeda, Hideo; and Sato, Tsunehiko, to Fuji Photo Film Co., Ltd. Coating solution metering method and apparatus. 4,518,637, Cl. 427-359.000.

Takenaka, Shinya: *See—*
Sunago, Katsuyoshi; and Takenaka, Shinya, 4,517,973, Cl. 128-303.100.

Takenouchi, Tsutomu; Nagasawa, Tsunehiko; and Nanasawa, Masatada, to Toshiba-EMI Limited. Method of recording and reproducing visual information in audio recording medium and audio recording medium recorded with visual information. 4,519,008, Cl. 360-79.000.

Takeshita, Kaneyoshi, to Sony Corporation. Solid state image sensor. 4,518,978, Cl. 357-24.000.

Takeuchi, Hironori: *See—*
Imose, Kazuo; Yamamuro, Kiyoshi; Takeuchi, Hironori; and Misawa, Takashi, 4,518,962, Cl. 340-870.280.

Takeuchi, Kano : *See—*
Miyake, Toshio; Yoshida, Mikihiko; and Takeuchi, Kano 4,518,581, Cl. 424-48.000.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.

Tamatani, Masaaki; Tsuda, Nobuyuki; Koike, Norio; and Ajiro, Sakae, to Tokyo Shibaura Denki Kabushiki Kaisha. Projection type green cathode ray tube, method for manufacturing phosphor screen for the same, and projection video device using the same. 4,518,985, Cl. 358-60.000.

Tamura, Morio: *See—*
Hashimoto, Hisayoshi; and Tamura, Morio, 4,517,878, Cl. 91-396.000.

Tamura, Takahiro: *See—*
Mizuno, Takao; Uchikawa, Naoshi; Murayama, Akira; and Tamura, Takahiro, 4,518,324, Cl. 417-366.000.

Tanaka, Atsuo: *See—*
Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, 4,517,719, Cl. 29-124.000.

Tanaka, Haruto: *See—*
Kuroki, Junsuke; Irie, Namio; and Tanaka, Haruto, 4,518,169, Cl. 280-6.00R.

Tanaka, Hiroshi; and Yamamoto, Yoshihiro. Manufacturing process for sintered ceramic body for cutting tools. 4,518,398, Cl. 51-309.000.

Tanaka, Hiroshi; Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, to Nittan Company, Limited. Sensor test circuit of an alarm system. 4,518,952, Cl. 340-514.000.

Tanaka, Hirotoshi: *See—*
Harada, Yutaka; Yamashita, Kunio; Kotera, Nobuo; and Tanaka, Hirotoshi, 4,518,868, Cl. 307-306.000.

Tanaka, Kazuo; Motonaga, Kenjiro; and Tanaka, Kozo, to Kobe Steel, Limited. Method for controlling the pulverization and dryness of flammable materials passing through a pulverizer, and method of controlling the pulverizing rate of the pulverizer. 4,518,123, Cl. 241-18.000.

Tanaka, Kozo: *See—*
Tanaka, Kazuo; Motonaga, Kenjiro; and Tanaka, Kozo, 4,518,123, Cl. 241-18.000.

Tanaka, Mamoru: *See—*
Kawakami, Kouichi; and Tanaka, Mamoru, 4,517,852, Cl. 74-89.150.

Tanaka, Masayuki: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; and Yamaguchi, Yoshio, 4,518,375, Cl. 474-205.000.

Tanaka, Motomu; Osuka, Masanari; Kuri, Takeshi; and Takakuwa, Sadao, to Osaka Soda Co. Ltd. Diallyl terephthalate copolymer and composition comprising said copolymer. 4,518,764, Cl. 528-271.000.

Tanaka, Seiichi: *See—*
Tanaka, Hiroshi; Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,518,952, Cl. 340-514.000.

Tanaka, Seiichiro: *See—*
Okada, Hisao; Tanaka, Seiichiro; and Kawaberi, Seiji, 4,518,993, Cl. 358-114.000.

Tanaka, Toshie, to Nifco Inc. Plate clamping device. 4,517,711, Cl. 24-453.000.

Tanaka, Yukio: *See—*
Banno, Takashi; Seki, Tadashi; Kawaguchi, Masafumi; Tanaka, Yukio; Iwasaki, Morikatsu; and Nagasawa, Toshio, 4,518,353, Cl. 432-205.000.

Tani, Shigetaka; and Nagahara, Toshio, to Toyama Machine Works, Limited. Balancing device. 4,517,853, Cl. 74-89.150.

Tanikoshi, Toshiaki: *See—*
Yoshida, Haruo; Tagoshi, Hirotaka; Morohashi, Yasushi; and Tanikoshi, Toshiaki, 4,518,756, Cl. 526-313.000.

Tanner, Dale. Metering device for fluids. 4,518,102, Cl. 222-61.000.

Tanner, Herbert: *See—*
Bolze, Rudolf; Geiger, Friedhelm; Spindler, Manfred; and Tanner, Herbert, 4,518,801, Cl. 562-559.000.

Tanner, Howard M. C., to HGM, Inc. Disposable hand piece for surgical lasers. 4,517,974, Cl. 128-303.100.

Tantillo, Donnie J.; Kratochvil, David F.; Moore, Robert G.; and Browne, Edward M., to Geosource Inc. Electronic roll-a-long switch. 4,519,052, Cl. 367-79.000.

Tapscott, Donald A., to General Foods Incorporated. Apparatus and method for testing for leakages in hermetically-sealed packages. 4,517,827, Cl. 73-45.400.

Tarello, William R.; Lopez, Claudio; Gordon, Linda A.; Whalen, Thomas D.; and Harvey, William B., to Survival Technology, Inc. Multiple medicament cartridge clip and medicament discharging device therefor. 4,518,384, Cl. 604-61.000.

Tarnowski, Andrew A.; and Anderson, Brian G., to Image Graphics, Incorporated. Method and apparatus for correcting image distortions. 4,518,898, Cl. 315-371.000.

Tartaglia, John A., Medicine container having lyophilized powder and diluent stored in separate sealed chambers. 4,518,386, Cl. 604-89.000.

Tarumi, Noriyoshi; Okamoto, Yukio; Kimura, Kiyoshi; Fukuchi, Masakazu; Miwa, Tadashi; and Ito, Kunio, to Konishiroku Photo Industry Co., Ltd. Recording apparatus. 4,518,976, Cl. 346-153.100.

Taylor, Chandler R., Jr.: *See—*
Lo, Young S.; and Taylor, Chandler R., Jr., 4,518,603, Cl. 514-352.000.

Taylor, Charles F.; Wnukiewicz, Stanley A., Jr.; and Gattiker, Anton, to Phase One Products Corporation. Photographic print making and developing tray assembly. 4,518,240, Cl. 354-312.000.

Tazaki, Shigemitsu, to Canon Kabushiki Kaisha. Ink jet printer vacuum purging system. 4,518,973, Cl. 346-140.00R.

Tech Development Inc.: *See—*
Coons, Terry L., 4,518,310, Cl. 415-36.000.

Tecnoma: *See—*
Ballu, Patrick J., 4,518,122, Cl. 239-530.000.

Tecumseh Products Company: *See—*
Pirkey, Robert J.; and Ditter, Stephen D., 4,517,942, Cl. 123-376.000.

Teich, Michael: *See—*
Schafer, Helmut; Huckler, Volker; and Teich, Michael, 4,517,856, Cl. 74-528.000.

Teijin Limited: *See—*
Imose, Kazuo; Yamamuro, Kiyoshi; Takeuchi, Hironori; and Misawa, Takashi, 4,518,962, Cl. 340-870.280.

Telecalc, Inc.: *See—*
Brinkerhoff, Jesse R.; and Brinkerhoff, Richard S., 4,518,825, Cl. 179-11.000.

Teleflex Incorporated: *See—*
Mucha, Basil, 4,517,765, Cl. 49-3.000.

Templin, Philip R.; and Fareri, Elizabeth L., to Gulf Research & Development Company. Wax-impregnated fire kindling sticks. 4,518,394, Cl. 44-38.000.

Tengzelius, Jan R.; Blande, Carl-Axel; and Svensson, Lars-Erik, to Hoganas AB. Iron or steel powder, a process for its manufacture and press-sintered products made therefrom. 4,518,427, Cl. 75-251.000.

Tennant, William A.: *See—*
Latreille, Maurice G.; and Tennant, William A., 4,518,344, Cl. 425-570.000.

Teramachi, Hiroshi. Linear slide roller bearing unit. 4,518,206, Cl. 308-6.00C.

Terao, Shinji; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. Vinyl carboxylic acid derivatives, their production and use as inhibitors of thromboxane synthetase. 4,518,602, Cl. 514-332.000.

Terradex Corporation: *See—*
Alter, H. Ward; and Oswald, Richard A., 4,518,860, Cl. 250-253.000.

Teshima, Kenzo: *See—*
Hatakeyama, Yoshiharu; Ishikawa, Tatsuo; and Teshima, Kenzo, 4,518,554, Cl. 264-262.000.

Teslawski, Georg; and Corl, Paul D., to Diasonics, Inc. Neonate ultrasonic scanner. 4,517,985, Cl. 128-660.000.

Teslenko, Leonard: *See—*
Hull, Richard W.; and Teslenko, Leonard, 4,519,086, Cl. 375-120.000.

Tetsuo Shoji: *See—*
Takahashi, Hideaki; Shoji, Tetsuo; Saitoh, Kiyoshi; Muramatsu, Masamitsu; and Kimura, Kazushige, 4,518,464, Cl. 204-1.00T.

Texaco Inc.: *See—*
Cuscurida, Michael; Waddill, Harold G.; and Peterson, Bruce W., 4,518,720, Cl. 521-156.000.
Cuscurida, Michael, 4,518,778, Cl. 544-398.000.
Knifton, John F., 4,518,715, Cl. 518-700.000.
Maddox, Jim, Jr.; and Schievelbein, Vernon H., 4,518,038, Cl. 166-266.000.
Sung, Rodney L.; Kaufman, Benjamin J.; and Dorn, Peter, 4,518,782, Cl. 548-353.000.
Waddill, Harold G.; and Schulze, Heinz, 4,518,749, Cl. 525-504.000.

Texas Instruments Incorporated: *See—*
Bedenbender, John W.; and Kelly, Gilbert H., deceased, 4,519,053, Cl. 367-190.000.
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,519,045, Cl. 364-709.000.
Hanson, Kerry A., 4,519,083, Cl. 375-9.000.
Magar, Surendar; and Gass, Wanda K., 4,519,031, Cl. 364-200.000.
Thompson, E. Earle, 4,519,029, Cl. 364-200.000.

Textilma AG: *See—*
Speich, Francisco, 4,518,020, Cl. 139-55.100.

Textron Inc.: *See—*
Matuschek, Josip, 4,518,295, Cl. 411-291.000.

Thomas & Betts Corporation: *See—*
Brandeau, Edward P., 4,518,216, Cl. 339-97.00P.

Thomas, Gareth J.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,518,784, Cl. 549-39.000.

Thomasson, William R., to Coles Cranes Limited. Booms for cranes and the like. 4,518,090, Cl. 212-189.000.

Thompson, Charles R.: *See—*
Reitmeier, Glenn A.; and Thompson, Charles R., 4,518,996, Cl. 358-148.000.

Thompson, Craig R.; Carnes, Ronald C.; and Naumann, Ted F., Jr., to General Electric Company. Ultrasonic sector scanner having fluid replacement capability. 4,517,840, Cl. 73-644.000.

Thompson, Dorman N., Jr.: *See—*
Pearson, Walter C.; and Thompson, Dorman N., Jr., 4,518,296, Cl. 412-37.000.

Thompson, E. Earle, to Texas Instruments Incorporated. Data communications system with automatic communications mode. 4,519,029, Cl. 364-200.000.

Thompson, Elmer E. Wiener roaster. 4,517,885, Cl. 99-421.0HV.

Thompson, Fred E.: *See—*
Chisholm, William M.; and Thompson, Fred E., 4,518,085, Cl. 206-454.000.

Thompson, Marion E. Light bulb attached sign assembly. 4,517,758, Cl. 40-431.000.

Thoms, Roland, to Buckbee Mears Company. Television picture tube with aperture mask having recesses therein. 4,518,892, Cl. 313-403.000.

Thomsen, Arne: *See—*
Ransheim, Anders P.; Thomsen, Arne; and Holmgren, Per, 4,517,845, Cl. 73-861.050.

Thomson-CSF: *See—*
Catros, Jean Y., 4,519,085, Cl. 375-27.000.
Hetyei, Joseph, 4,518,964, Cl. 343-7.300.
Lamboley, Jean J., 4,518,867, Cl. 307-252.00B.
Le Ny, Jacques; and Val, Christian, 4,518,818, Cl. 174-52.0FP.
Ravinet, Pierre; and Micheron, Francois, 4,518,555, Cl. 264-292.000.

Thyssen Industrie Aktiengesellschaft: *See—*
Bornemann, Hans-Joachim; and Zlab, Horst, 4,518,262, Cl. 366-156.000.

TI (Group Services) Limited: *See—*
Graham, William R., 4,517,721, Cl. 29-157.30C.

Tibbetts, George C.: *See—*
Stanley, W. Kent; and Tibbetts, George C., 4,518,831, Cl. 179-119.00A.

Tibbetts Industries, Inc.: *See—*
Stanley, W. Kent; and Tibbetts, George C., 4,518,831, Cl. 179-119.00A.

Tice, Gregory, to Becton Dickinson and Company. System for controlling septum damage. 4,517,851, Cl. 73-864.910.

Timm, Gerald W.; Sandford, Donald L.; and Claude, Timothy J., to Dacomed Corporation. Penile prosthesis. 4,517,967, Cl. 128-79.000.

Tindall, Gary W.; Lysenko, George P.; Vize, Richard J.; Kiefer, Edward H.; and Smith, Richard J., to Deere & Company. Window structure for tractor cab. 4,518,195, Cl. 296-148.000.

Tinti, Maria O.: *See—*
Cavazza, Claudio; and Tinti, Maria O., 4,518,613, Cl. 514-513.000.

Tobias, John D. Pipe rack. 4,517,993, Cl. 131-329.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fujimoto, Shigeru, 4,517,769, Cl. 51-105.00R.
Fukuoka, Yoshitaka; and Komine, Toshiaki, 4,517,738, Cl. 29-840.000.
Hidaka, Kazutaka, 4,518,965, Cl. 343-742.000.
Ishida, Tsuyoshi, 4,518,919, Cl. 324-228.000.
Kimoto, Katsumi; and Ishihara, Atsushi, 4,519,056, Cl. 369-43.000.
Kurihara, Teruo; and Oowa, Takeshi, 4,519,093, Cl. 378-132.000.
Masuda, Eiji; and Matsuo, Kenji, 4,518,880, Cl. 307-577.000.
Munetsugu, Eiichi, 4,519,044, Cl. 364-709.000.
Nakamura, Kunihiko, 4,518,161, Cl. 271-303.000.
Nawata, Yoshiaki, 4,518,900, Cl. 318-102.000.
Tamatani, Masaaki; Tsuda, Nobuyuki; Koike, Norio; and Ajiro, Sakae, 4,518,985, Cl. 358-60.000.
Toyoda, Nobuyuki; and Hojo, Akimichi, 4,518,871, Cl. 307-443.000.
Umezu, Kenji, 4,517,812, Cl. 62-228.500.

Tomforde, Johann: *See—*
Gallitzendorfer, Joseph; Pfeiffer, Peter; Tomforde, Johann; Parisch, Jochen; and Zweigart, Gerhard, 4,518,197, Cl. 296-213.000.

Tomono, Makoto: *See—*
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,518,674, Cl. 430-108.000.

Tomori, Yasumasa, to Asahi Kogaku Kogyo Kabushiki Kaisha. Intermediate adapter for camera. 4,518,239, Cl. 354-286.000.

Tonn, Jeffrey F.: *See—*
Peters, Rex B.; Tonn, Jeffrey F.; Malametz, Arnold; Hilliker, Richard A.; and Corey, Victor B., 4,517,841, Cl. 73-517.0AV.

Toole, James: *See—*
Stansfield, James F.; Toole, James; and Topham, Arthur, 4,518,435, Cl. 106-308.00N.

Topfl, Werner: *See—*
Meyer, Willy; Fory, Werner; and Topfl, Werner, 4,518,776, Cl. 544-206.000.

Topham, Arthur: *See—*
Stansfield, James F.; Toole, James; and Topham, Arthur, 4,518,435, Cl. 106-308.00N.

Toplak, Ernst: *See—*
Gillhaus, Horst; Hegewaldt, Fritz; Faber, Wolfgang; Baer, Jurgen; and Toplak, Ernst, 4,518,352, Cl. 432-199.000.

Toray Industries, Inc.: *See—*
Kataoka, Mutsuo, 4,518,675, Cl. 430-256.000.
Yoshida, Shusuke; Nakajima, Tamotsu; and Okamoto, Miyoshi, 4,517,715, Cl. 28-144.000.

Toray Silicone Company, Ltd.: *See—*
Kageyama, Katsuaki; and Adachi, Ysushi, 4,518,244, Cl. 355-3.0FU.

Toshiba-EMI Limited: *See—*
Takenouchi, Tsutomu; Nagasawa, Tsunehiko; and Nanasawa, Masatada, 4,519,008, Cl. 360-79.000.

Towmotor Corporation: *See—*
Melocik, Grant C.; and Pickering, William, 4,518,902, Cl. 318-373.000.

Toyama Machine Works, Limited: *See—*
Tani, Shigetaka; and Nagahara, Toshio, 4,517,853, Cl. 74-89.150.

Toyama, Masamichi, to Canon Kabushiki Kaisha. Automatic focus adjusting device. 4,518,242, Cl. 354-403.000.

Toyoda, Nobuyuki; and Hojo, Akimichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ga/As NOR/NAND gate circuit using enhancement mode FET's. 4,518,871, Cl. 307-443.000.

Toyooka, Takashi; Aoki, Hirokazu; and Sugie, Mamoru, to Hitachi, Ltd. Magnetic bubble memory having auxiliary storage loops. 4,519,049, Cl. 365-12.000.

Toyosu, Yasuhiro; and Akamatsu, Norio. Electrode sets with resiliently mounted pin electrodes. 4,517,983, Cl. 128-639.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Ito, Toshimitsu; and Isobe, Toshiaki, 4,517,949, Cl. 123-489.000.
Nakagawa, Norihisa, 4,517,941, Cl. 123-336.000.
Suganuma, Tetsuya; and Kazuoka, Koji, 4,518,563, Cl. 419-29.000.
Yamada, Makoto; Kubota, Tatsushi; and Kojima, Ikuzo, 4,518,173, Cl. 280-806.000.

Transtech Industrial Corporation: *See—*
Jow, Long S.; and Jow, Long J., 4,518,067, Cl. 192-0.090.

Traub, Kevin W.: *See—*
Taggart, Kenneth J.; and Traub, Kevin W., 4,517,821, Cl. 73-1.00C.

Traut, G. Robert, to Rogers Corporation. Dielectric material and method of making the dielectric material. 4,518,737, Cl. 524-413.000.

Traver, Frank J., to General Electric Company. Water based resin emulsions. 4,518,727, Cl. 524-35.000.

Treadgold, Richard C., to Dow Corning Limited. Silylation process. 4,518,787, Cl. 556-442.000.

Tressler, Richard E.; Stach, Joseph; and Baeten, Roger L., to Better Semiconductor Processes (BSP). Cantilevered boat-free semiconductor wafer handling system. 4,518,349, Cl. 432-11.000.

Trevisan, Carey S.: *See—*
Yarossi, Mary E.; and Trevisan, Carey S., 4,518,553, Cl. 264-234.000.

Tribbett, Murray C., to French Oil Mill Machinery Co., The. Hydraulic press. 4,518,337, Cl. 425-167.000.

Trieu, Tom: *See—*
Khan, Mahboob; and Trieu, Tom, 4,517,731, Cl. 29-571.000.

Trilack Utrustningar AB: *See—*
Andersson, Arne; and Larsson, Peter, 4,518,265, Cl. 366-318.000.

Troglia, Claudio: *See—*
Zamboni, Valentino; Brichta, Corrado; and Troglia, Claudio, 4,518,731, Cl. 524-166.000.

Trott, Millard C. Playing court and method of use. 4,518,166, Cl. 273-411.000.

Trotter, Donald M.: *See—*
Borrelli, Nicholas F.; and Trotter, Donald M., 4,518,222, Cl. 350-167.000.

TRW Inc.: *See—*
Faris, Alan E., 4,518,944, Cl. 338-22.00R.
Kraus, Willibald, 4,518,297, Cl. 411-437.000.

Tsai, Tsu-tzu: *See—*
Rosenberg, Harold; and Tsai, Tsu-tzu, 4,518,759, Cl. 528-35.000.

Tschan, Rene , to Lonza, Ltd. Device for inserting a resiliently deformable article into a pocket. 4,517,723, Cl. 29-235.000.

Tsuboi, Yoshiaki: *See—*
Ueda, Fumio; Tsuboi, Yoshiaki; Arai, Hirotsugu; Horikiri, Kenji; and Ideno, Hiroaki, 4,518,959, Cl. 340-784.000.

Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Blood treating system. 4,518,497, Cl. 210-259.000.

Tsuda, Nobuyuki: *See—*
Tamatani, Masaaki; Tsuda, Nobuyuki; Koike, Norio; and Ajiro, Sakae, 4,518,985, Cl. 358-60.000.

Tsukagoshi, Tsunehiro: *See—*
Yokozeki, Shinichi; Kimura, Masami; and Tsukagoshi, Tsunehiro, 4,518,443, Cl. 148-400.000.

Tsurushima, Katsuaki; Furuya, Tsuneo; and Fukami, Tadashi, to Sony Corporation. Optical disc player. 4,519,058, Cl. 369-53.000.

Tuason, Domingo C., Jr.: *See—*
McGinley, Emanuel J.; and Tuason, Domingo C., Jr., 4,518,433, Cl. 106-180.000.

Tubular Fabricators Ind., Inc.: *See—*
Battiston, Joseph D., Sr.; and Battiston, Joseph, Jr., 4,518,002, Cl. 135-67.000.

Turbard, Alan M.: *See—*
Foley, Peter N.; and Turbard, Alan M., 4,517,810, Cl. 62-186.000.

Turco, Loreto: *See—*
Cilindro, Leticia D., 4,518,288, Cl. 409-219.000.

Turcsan, Istvan: *See—*
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Twersky, David Z.: *See—*
Eigen, Edward; Twersky, David Z.; and Brachman, Dina I., 4,518,517, Cl. 252-107.000.

Twomey, James R.; McCutcheon, Hugh W.; and Harris, Richard K., to Slope Indicator Co. Fluid pressure transducer. 4,517,842, Cl. 73-701.000.

Tyler, Derek E.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,518,030, Cl. 164-503.000.

UBE Industries, Ltd.: *See—*
Uchiumi, Shinichiro; and Ataka, Kikuo, 4,518,793, Cl. 560-175.000.

Uchikawa, Naoshi: *See—*
Mizuno, Takao; Uchikawa, Naoshi; Murayama, Akira; and Tamura, Takahiro, 4,518,324, Cl. 417-366.000.

Uchiumi, Shinichiro; and Ataka, Kikuo, to UBE Industries, Ltd. Preparation of acetone dicarboxylic acid diesters. 4,518,793, Cl. 560-175.000.

Ueda, Fumio; Tsuboi, Yoshiaki; Arai, Hirotsugu; Horikiri, Kenji; and Ideno, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Electronic analog display device. 4,518,959, Cl. 340-784.000.

Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, to Fujisawa Pharmaceutical Co., Ltd. 3-Cephem intermediates. 4,518,774, Cl. 544-22.000.

Ueda, Makoto, to Seiko Instruments & Electronics Ltd. Driving device of stepping motor. 4,518,906, Cl. 318-696.000.

Ueda, Sanae: *See—*
Hori, Takashi; Ueda, Sanae; and Kojima, Yoshihiro, 4,518,807, Cl. 568-716.000.

Uehara, Kazuo: *See—*
Karakama, Tadao; and Uehara, Kazuo, 4,517,800, Cl. 60-337.000.

Ueno, Sadayasu: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.

Uerdingen, Walter: *See—*
Lindner, Christian; Ott, Karl-Heinz; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,743, Cl. 525-80.000.
Ott, Karl-Heinz; Lindner, Christian; Uerdingen, Walter; Braese, Hans-Eberhard; and Hurnik, Helmut, 4,518,515, Cl. 525-79.000.

Uffner, William E.; and White, Robert N., to Owens-Corning Fiberglas Corporation. Chemically modified asphalts and glass fibers treated therewith. 4,518,741, Cl. 525-54.500.

Ulrich, Franz W.: *See—*
Fant, Karl M.; Fundakowski, Richard A.; Levitt, Tod S.; Overland, John E.; Suresh, Bindinganavle R.; and Ulrich, Franz W., 4,519,041, Cl. 364-552.000.

Umekawa, Osamu; and Katayama, Sakae, to Katayama Chemical Works Co., Ltd.; and Yoshitomi Pharmaceutical Industries, Ltd. Microbicidal/microbistatic compositions and use thereof employing mixtures of 4,5-dichloro-1,2-dithiol-3-one and alkylenebisthiocyanate. 4,518,610, Cl. 514-516.000.

Umemoto, Makoto: *See—*
Hirano, Tsumoru; Umemoto, Makoto; and Hirano, Mitsunori, 4,518,687, Cl. 430-548.000.

Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. N-[4-(3-aminopropyl)-aminobutyl]-2-(ω-guanidino-fatty-acid-amido)-2-substituted-ethanamide and salt thereof. 4,518,532, Cl. 260-404.500.

Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. N-[4-[(3-aminopropyl-)amino]butyl]-2,2-dihydroxyethanamide. 4,518,802, Cl. 564-201.000.

Umezu, Hiroaki: *See—*
Hanaoka, Tadashi; and Umezu, Hiroaki, 4,517,799, Cl. 62-323.100.

Umezu, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Load control device for a heat-pump type air conditioning apparatus. 4,517,812, Cl. 62-228.500.

Underhill, Kenneth R.: *See—*
Walker, James D.; Underhill, Kenneth R.; and Campbell, Willis R., 4,517,889, Cl. 100-5.000.

Unger, Harold: *See—*
Michel, Thomas J., 4,517,963, Cl. 128-6.000.

Union Carbide Corporation: *See—*
Abatjoglou, Anthony G.; and Bryant, David R., 4,518,805, Cl. 568-444.000.
Chiu, Herman S., 4,518,619, Cl. 426-265.000.

Union Oil Company of California: *See—*
Young, Dean A., 4,518,703, Cl. 502-63.000.

Uniroyal, Inc.: *See—*
Batorewicz, Wadim; and Wheeler, Edward L., 4,518,803, Cl. 564-410.000.

Unisearch Limited: *See—*
Alexander, Peter W.; and Haddad, Paul R., 4,518,463, Cl. 204-1.00T.
Frost, Richard B., 4,517,977, Cl. 128-305.000.

Unit Rig & Equipment Co.: *See—*
Van Dyke, Harry, 4,517,839, Cl. 73-432.00R.

United States Gypsum Company: *See—*
Willoughby, Michael D., 4,518,652, Cl. 428-312.400.

United States Manufacturing Company: *See—*
Greene, Ted J.; and Irons, George P., 4,517,968, Cl. 128-80.00H.

United States of America
Air Force: *See—*
Gilson, Alan P., 4,519,055, Cl. 369-37.000.
Rosenberg, Harold; and Tsai, Tsu-tzu, 4,518,759, Cl. 528-35.000.
Army: *See—*
Garcia, Moises R., deceased, 4,517,862, Cl. 81-119.000.
Gilvydis, Jaunutis B., 4,518,990. Cl. 358-87.000.
Hamer, Howard, 4,519,079, Cl. 371-38.000.
Roberts, Thomas G., 4,517,798, Cl. 60-39.462.
Energy: *See—*
Fish, Richard H., 4,518,490, Cl. 208-251.00R.
Frost, Charles B., 4,518,718, Cl. 521-122.000.
Gillett, James E.; Garner, Daniel C.; Wineman, Arthur L.; and Robey, Robert M., 4,517,927, Cl. 122-510.000.
Hearn, William E.; and Rondeau, Donald J., 4,518,877, Cl. 307-490.000.
Weller, Sol W., 4,518,478, Cl. 208-8.0LE.
Environmental Protection Agency: *See—*
Pontius, Duane H.; and Bush, Phillip V., 4,518,401, Cl. 55-101.000.
National Aeronautics and Space Administration: *See—*
Bush, Harold G.; and Wallsom, Richard E., 4,518,277, Cl. 403-102.000.
Schutt, John B.; and Shai, Michael C., 4,518,722, Cl. 523-135.000.
Westfall, Leonard J., 4,518,625, Cl. 427-37.000.
Navy: *See—*
Danforth, Philip G.; Bucko, Thomas G.; Galliher, Kenneth R.; Lucia, Joseph T.; Miller, Richard L.; and Straw, Timothy B., 4,518,915, Cl. 324-158.00R.
Jones, Thomas E., 4,518,632, Cl. 427-118.000.
Schneider, Irwin, 4,519,082, Cl. 372-42.000.

U.S. Philips Corporation: *See—*
Dielhof, Pieter B., 4,518,923, Cl. 330-9.000.
Dureux, Pierre J. C., 4,518,991, Cl. 358-93.000.
Geboers, Josephus J. A.; and Janssen, Daniel J. G., 4,518,828, Cl. 179-81.00R.
Guittard, Pierre; Jarry, Philippe; Ducarre, Alphonse; and Haji, Lazhar, 4,518,980, Cl. 357-30.000.
Koppe, Rudolf P.; and Blom, Hendrik, 4,518,927, Cl. 330-284.000.
Kroner, Klaus, 4,518,933, Cl. 331-108.00D.
Meignant, Didier S., 4,517,730, Cl. 29-571.000.
Moulding, Kenneth W., 4,518,878, Cl. 307-520.000.
van Roermund, Arthur H. M., 4,518,935, Cl. 333-173.000.
VanRoessel, Frederik J., 4,518,948, Cl. 340-347.0NT.

United Technologies Automotive, Inc.: *See—*
Wooldridge, George A., 4,518,836, Cl. 200-61.540.

United Technologies Corporation: *See—*
Chin, Herbert A., 4,518,442, Cl. 148-11.50N.
Wagner, Thomas R., 4,518,837, Cl. 200-81.00R.

University of Guelph: *See—*
Beversdorf, Wallace D.; Erickson, Lawrence R.; and Grant, Ian, 4,517,763, Cl. 47-58.000.

University of Waterloo: *See—*
Wynnyckyj, John R., 4,518,425, Cl. 75-67.00R.

University Patents, Inc.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,517,970, Cl. 128-131.000.

UOP Inc.: *See—*
Brennan, John F., 4,518,710, Cl. 502-309.000.

Upat GmbH & Co.: *See—*
Frichmann, Albert; Sternisa, Danilo; Mermi, Kurt; and Kistner, Herbert, 4,518,290, Cl. 411-30.000.

Upjohn Company, The: *See—*
Grossman, Steven J.; and Onder, Kemal, 4,518,765, Cl. 528-314.000.
Hylton, Thomas A., 4,518,799, Cl. 562-423.000.
Jacobine, Anthony F., 4,518,473, Cl. 204-159.180.

Upsher, Michael S. Dual bladed laryngoscope. 4,517,964, Cl. 128-11.000.

Ura, Katsumi; Inui, Taiji; and Sakka, Kenji, to Hitachi, Ltd. Condenser vacuum retaining apparatus for steam power plant. 4,517,804, Cl. 60-657.000.

Urawa, Motoo; and Imai, Eiichi, to Canon Kabushiki Kaisha. Cyan color toner for developing electrostatic image. 4,518,672, Cl. 430-106.000.

Urban, Virginia L.: *See—*
Greene, Donald F.; and Urban, Virginia L., 4,518,585, Cl. 424-130.000.

Urmet Sud S.P.A.: *See—*
Mondardini, Massimo, 4,518,824, Cl. 179-6.3CC.

USM Corporation: *See—*
Oefinger, Richard W.; and Babyak, Richard J., 4,517,820, Cl. 72-391.000.

Vaillant, Michael; and Klarhorst, Gunter. Apparatus for generating an aerosol. 4,518,404, Cl. 55-256.000.

Val, Christian: *See—*
Le Ny, Jacques; and Val, Christian, 4,518,818, Cl. 174-52.0FP.

Valbert, Gary G.: *See—*
Mitchell, Thomas L.; McMahill, Patrick D.; Valbert, Gary G.; and Wellauer, John C., 4,518,276, Cl. 403-13.000.

Valbona, Bruno M.: *See—*
Brym, Stanley J.; and Valbona, Bruno M., 4,518,263, Cl. 366-206.000.

Valco Cincinnati, Inc.: *See—*
Santefort, Richard A., 4,517,917, Cl. 118-302.000.

Valdes, Guillermo A.; Pacheco, Benjamin G.; Figueredo, Fernando F.; and Framil, Armando. Oscillating cutting element. 4,518,022, Cl. 30-166.00R.

Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,518,586, Cl. 514-12.000.

Valley Sales Co.: *See—*
McCan, Duane A.; and Smith, Carl L., Jr., 4,517,924, Cl. 119-98.000.

Valtion Teknillinen Tutkimuskeskus: *See—*
Autio, Karin; Kiesvaara, Martti; and Malkki, Yrjo , 4,518,525, Cl. 260-112.00B.

Van Dorn Co.: *See—*
Milton, James W.; and Boig, Robert W., 4,518,097, Cl. 220-307.000.

Vanderlei, Clarence B. Round bale carrier and unroller. 4,518,299, Cl. 414-24.600.

van der Poel, Pieter W., to CSM Suiker B.V. Process for the production of graft crystals for use in seeding sugar boiling brines. 4,518,436, Cl. 127-60.000.

Van Dyke, Harry, to Unit Rig & Equipment Co. Off-highway vehicle systems simulator and control panel testing. 4,517,839, Cl. 73-432.00R.

van Roermund, Arthur H. M., to U.S. Philips Corporation. Band-rejection filter of the switched capacitor type. 4,518,935, Cl. 333-173.000.

VanRoessel, Frederik J., to U.S. Philips Corporation. Analog-to-digital converter. 4,518,948, Cl. 340-347.0NT.

Van Scott, Eugene J.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., 4,518,789, Cl. 560-105.000.

Varian Associates, Inc.: *See—*
Garrett, Charles B., 4,518,078, Cl. 198-775.000.
Wiseman, Alan G.; and Huberts, John T., 4,517,850, Cl. 73-864.210.

Varley, Robert F., to Robert F. Varley Co., Inc. Method for improved hydraulic jetting of drill bore holes using high pressure pulses of fluid. 4,518,048, Cl. 175-61.000.

Vatsushita Electric Industrial Company, Limited: *See—*
Sonetaka, Kazunori; Nishino, Atsushi; and Suzuki, Tadashi, 4,518,347, Cl. 431-325.000.

Vaughn, Herchel A.; and Someshwar, Ashok H., to Motorola, Inc. Control state sequencer. 4,519,033, Cl. 364-200.000.

Vaupel, Knut; and Schulz, Peter, to Bergwerksverband GmbH. System for pumping suspended particles upward. 4,518,286, Cl. 406-46.000.

Velling, Gunther; Schrader, Lothar; and Schumacher, Hermann, to Rheinische Braunkohlenwerke AG. Reactor for the gasification of solid carbonaceous materials. 4,518,567, Cl. 422-143.000.

Veltri, Robert W., to National Foundation for Cancer Research, Inc. 2-Furylbutyrolactone modulation of the immune system in mammals. 4,518,611, Cl. 514-470.000.

Venetz, Louis M. Animal trap holder. 4,517,762, Cl. 43-96.000.

Venkatesan, Thirumalai N. C., to AT&T Bell Laboratories. Optical bistable device. 4,518,934, Cl. 332-7.510.

Verhoeven, Herman K. M.: *See—*
Lambrechts, Eric G. Y.; Verhoeven, Herman K. M.; and Claes, Constant J. P., 4,518,160, Cl. 271-214.000.

Verktygsingustri I Blidsberg Aktiebolag: *See—*
Andersson, Karl Erik E., 4,517,879, Cl. 92-136.000.

Vernet, Gilles: *See—*
Foulard, Jean; Rimbert, Jean F.; Vernet, Gilles; and Goursat, Albert-Gilbert, 4,518,421, Cl. 75-49.000.

Vernon-Carus Limited: *See—*
Carus, Edmund H.; and White, Eric F. T., 4,517,793, Cl. 57-243.000.

Verosol USA Inc.: *See—*
Judkins, Ren S., 4,518,025, Cl. 160-84.00R.

Vester, Rudolph P., to Brown & Williamson Tobacco Corporation. Ventilated filter and smoke dispersing mouthpiece. 4,517,996, Cl. 131-339.000.

Vetter, Kurt, to Hermann Behr & Sohn GmbH & Co. Sprayer. 4,518,119, Cl. 239-223.000.

Vicic, John C.; La Velle, Carl A.; and Parris, Joe P., III, to Cameron Iron Works, Inc. Ram-type blowout preventer and packer therefor. 4,518,144, Cl. 251-1.00A.

Victor Company of Japan, Limited: *See—*
Sugiyama, Hiroyuki, 4,519,062, Cl. 369-126.000.

Vielstich, Gunter: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.

Viesturs, Eric A., to Connecticut Artcraft Corporation. Body support apparatus. 4,517,693, Cl. 5-451.000.

Vigo, Gilles: *See—*
Canadas, Jean C.; and Vigo, Gilles, 4,518,192, Cl. 296-97.00H.

Vikmon nee Kiraly, Maria: *See—*
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Virag, Sandor: *See—*
Szejtli, Jozsef; Stadler nee Szoke, Agnes; Vikmon nee Kiraly, Maria; Korbonits, Dezso; Virag, Sandor; Turcsan, Istvan; and Kiss, Pal, 4,518,588, Cl. 514-58.000.

Virea, Seppo, to A. Ahlstrom Osakeyhtio. Apparatus for treating a fibrous material. 4,518,500, Cl. 210-380.300.

Virtanen, Eero J.: *See—*
Miettinen, Jorma K.; and Virtanen, Eero J., 4,518,550, Cl. 264-46.500.

Visual Information Institute, Inc.: *See—*
Harshbarger, John H.; and Shores, William M., 4,518,995, Cl. 358-139.000.

Vize, Richard J.: *See—*
Tindall, Gary W.; Lysenko, George P.; Vize, Richard J.; Kiefer, Edward H.; and Smith, Richard J., 4,518,195, Cl. 296-148.000.

Voest-Alpine Aktiengesellschaft: *See—*
Lugscheider, Walter; Leutgob, Alois; Riegler, Ernst; and Mullner, Paul, 4,518,417, Cl. 75-10.00R.
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,518,419, Cl. 75-11.000.

Vogel, Friedrich: *See—*
Ernst, Hansgeorg; Vogel, Friedrich; and Paust, Joachim, 4,518,813, Cl. 570-241.000.

Vogel, Peter, to Ardo International Marketing. Anti-decubitus water-floatation system. 4,517,692, Cl. 5-451.000.

Vogelsberg, Walter, to Cybersonic Corporation. Industrial control, communications and information system. 4,519,027, Cl. 364-185.000.

Vogt, Wilhelm. Process for making acetic anhydride. 4,518,539, Cl. 260-549.000.

Vokey, David E., to Canada Wire and Cable Limited. Method and apparatus for manufacturing cables having composite shield and armor sheath designs. 4,518,034, Cl. 156-54.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Bortz, Botho; and Wulfes, Erwin, 4,518,172, Cl. 280-751.000.
Kruger, Hermann, 4,517,938, Cl. 123-190.00E.
Papez, Stanislav, 4,517,934, Cl. 123-90.170.

Volpenhein, Robert A., to Proctor & Gamble Company, The. Synthesis of higher polyol fatty acid polyesters using high soap:polyol ratios. 4,518,772, Cl. 536-119.000.

von der Heide, Johann: *See—*
Elsaesser, Dieter; von der Heide, Johann; Muller, Rolf; and Papst, Georg, 4,519,010, Cl. 360-97.000.

von Othegraven, Achim. Apparatus for stretching and strengthening the back muscles. 4,517,966, Cl. 128-75.000.

Vornberger, Walter, to International Shoe Machine Corporation. Adhesive applicator. 4,517,697, Cl. 12-10.500.

Vosteen, Robert E. High voltage amplifier. 4,518,924, Cl. 330-51.000.

Vsesojuzny Nauchno-Issledovatelsky I Exerimentalno-Konstruktorsky Institut Prodovol-Stvennogo Mashinostroenia: *See—*
Braginsky, Yakov I.; Gultsev, Igor V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; and Yaroshenko, Yury F., 4,517,707, Cl. 17-71.000.

Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievo Magnievoi I Elektrodnoi Promyshlennosti: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.

Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Tekhniki: *See—*
Baldenko, Dmitry F.; Gusman, Moisei T.; and Semenets, Valery I., 4,518,049, Cl. 175-107.000.

Vuorio, Tauno A., to Siebtuchfabrik AG. Paper machine screen. 4,518,644, Cl. 428-198.000.

W. C. Pursley Limited: *See—*
Calhoun, L. Owen, 4,517,777, Cl. 52-126.200.

W. Schlafhorst & Co.: *See—*
Rohner, Joachim, 4,518,136, Cl. 242-35.50A.

Waaben, Sigurd G.: *See—*
Federico, Joseph; and Waaben, Sigurd G., 4,519,024, Cl. 363-127.000.

Wachi, Akira; and Hayashi, Munehisa, to Ohkura Electric Co., Ltd. Thermal mass flow meter. 4,517,838, Cl. 73-204.000.

Wada, Fumio: *See—*
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,518,330, Cl. 418-63.000.

Wada, Yasuyoshi: *See—*
Makishima, Takao; Inaba, Shigeru; and Wada, Yasuyoshi, 4,518,099, Cl. 221-30.000.

Waddill, Harold G.; and Schulze, Heinz, to Texaco Inc. Epoxy resin curatives. 4,518,749, Cl. 525-504.000.

Waddill, Harold G.: *See—*
Cuscurida, Michael; Waddill, Harold G.; and Peterson, Bruce W., 4,518,720, Cl. 521-156.000.

Wagner, Kuno: *See—*
Richter, Roland; Muller, Hanns P.; Wagner, Kuno; Riberi, Bernd; and Frohlich, Jurg, 4,518,761, Cl. 528-67.000.

Wagner, Thomas R., to United Technologies Corporation. Electrical switch for induction heating system. 4,518,837, Cl. 200-81.00R.

Wahlmann, Ernst; and Klausing, Karl-Heinz, to P.A. Rentrop Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG. Rear seat for use in a motor vehicle. 4,518,201, Cl. 297-316.000.

Wakatsuki, Susumu, to Fuji Xerox Co., Ltd. Sheet folding machine. 4,518,381, Cl. 493-444.000.

Walker, Derek: *See—*
Cundall, Robert L.; and Walker, Derek, 4,518,773, Cl. 544-16.000.

Walker, James D.; Underhill, Kenneth R.; and Campbell, Willis R., to Sperry Corporation. Twine cutting and clamping apparatus for a roll baling machine. 4,517,889, Cl. 100-5.000.

Walker, James D.: *See—*
Campbell, Willis R.; and Walker, James D., 4,517,890, Cl. 100-5.000.

Walker, John A.: *See—*
Jensen, Ronald N.; and Walker, John A., 4,518,313, Cl. 416-18.000.

Walker, Keith A. M., to Syntex (U.S.A.) Inc. Male oral contraceptive N-alkylimidazole derivatives, compositions, and method of use therefor. 4,518,607, Cl. 514-399.000.

Wall, Ronald E., to Marine Concepts of America. Stopper for braided line. 4,517,759, Cl. 43-7.000.

Walling, Jorg-Hein; Shannon, Michael A.; and Arbuthnot, Gerald, to Northern Telecom Limited. Production of insulated electrical conductors. 4,518,633, Cl. 427-120.000.

Wallsom, Richard E.: *See—*
Bush, Harold G.; and Wallsom, Richard E., 4,518,277, Cl. 403-102.000.

Walsh, Thomas A., to Hewlett-Packard Company. Dip soldering apparatus and method. 4,518,114, Cl. 228-180.100.

Walters, Stephen M.: *See—*
Bertocci, Guido; and Walters, Stephen M., 4,519,073, Cl. 370-118.000.

Walton, Lawrence J.: *See—*
Bloor, Trevor J.; and Walton, Lawrence J., 4,517,961, Cl. 126-450.000.

Wan, K. Ming: *See—*
Chen, Clay T.; Wan, K. Ming; and Chen, Mary S., 4,518,792, Cl. 560-163.000.

Wang, David W.; and Draney, Daniel R., to American Cyanamid Company. N,N,N',N'-tetraglycidyl-1,3-propylene bis(p-aminobenzoate. 4,518,786, Cl. 549-552.000.

Wang, Richard H. S.; and Myers, Garry L., to Eastman Kodak Company. Preparation of 2,5-dichlorohydroquinone. 4,518,808, Cl. 568-765.000.

Wang, Robert C.; Sampson, Arthur J.; and Persinko, Mark M., to Chicopee. Soil releasing textiles containing fluorochemical soil release agents and method for producing same. 4,518,649, Cl. 428-284.000.

Wanke, Wilhelm: *See—*
Hauser, Ludwig; and Wanke, Wilhelm, 4,518,460, Cl. 162-361.000.

Ward, John W., to Eastman Kodak Company. Light guide reflectometer. 4,518,259, Cl. 356-446.000.

Ward, Michael J.: *See—*
Chu, David C.; and Ward, Michael J., 4,519,091, Cl. 377-44.000.

Warmann, Bruno D. Label dispensing apparatus. 4,518,450, Cl. 156-566.000.

Warner, Andrew; and Zlotek, David A., to Klimsch/Optronics, Inc. Frequency synthesizer and method. 4,518,920, Cl. 328-14.000.

Warner, Andrew, to Klimsch/Optronics, Inc. Method and apparatus for producing a time advanced output pulse train from an input pulse train. 4,518,998, Cl. 358-208.000.

Warner-Lambert Company: *See—*
Cherukuri, Subraman R.; Marschall-Helman, Ellen; and Hriscisce, Frank T., 4,518,615, Cl. 426-4.000.
Eoga, Anthony B. J., 4,518,520, Cl. 252-174.230.
Scheurer, Heinrich P.; and Ong, Kenneth K. H., 4,518,768, Cl. 528-483.000.

Warren, James D.: *See—*
Schamper, Thomas J.; Perl, Martin M.; and Warren, James D., 4,518,582, Cl. 424-66.000.

Watanabe, Hiroaki. Correction tape take-up spool assembly for typewriter. 4,518,128, Cl. 242-71.800.

Watanabe, Masaru; Sakai, Toshihide; and Takase, Toshio, to Fuji Heavy Industries Ltd. Ventilating device for a container. 4,517,882, Cl. 98-6.000.

Watanabe, Mitsuru: *See—*
Taguchi, Shunichi; Ohkawa, Shuji; Watanabe, Mitsuru; and Kikuchi, Itsuo, 4,518,839, Cl. 219-10.55B.

Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, to Konishiroku Photo Industry Co., Ltd. Developing material for electrophotography, process for preparation. 4,518,674, Cl. 430-108.000.

Waters, Edwin R.: *See—*
Dyce, John W.; Waters, Edwin R.; and Sherwood, Cy E., 4,517,740, Cl. 29-857.000.

Waters, George F., to Codman & Shurtleff, Inc. Automatic magnification changer for a surgical microscope. 4,518,223, Cl. 350-254.000.

Watkins, Dennis W., to AirSensors, Inc. Apparatus and method for tensioning resistive wire. 4,517,735, Cl. 29-621.000.

Watkins, Richard L., to Gates Data Products, Inc. Conductive elastomeric ink composition. 4,518,833, Cl. 200-5.00A.

Wavin B.V.: *See—*
Leloux, Arnoldus W. J., 4,517,868, Cl. 83-54.000.

Weaver, Joe T. Wear resistant pump valve. 4,518,329, Cl. 417-566.000.

Weber, Eugen: *See—*
Wright, Harry D.; Hale, John M.; and Weber, Eugen, 4,518,477, Cl. 204-415.000.

Weber, Karl-Heinz; Beckmann, Wolfgang; and Gebauer, Hartmut, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Control system for longwall mining roof supports. 4,518,285, Cl. 405-302.000.

Weber, Klaus, to Carl-Zeiss-Stiftung. Universal binocular tube for microscopes. 4,518,230, Cl. 350-511.000.

Weber, Lawrence W.: *See—*
Buckner, Arthur B.; Davies, Michael L.; and Weber, Lawrence W., 4,517,880, Cl. 98-1.000.

Weber, T. Jerome, to GCA Corporation. Apparatus for baking resist on semiconductor wafers. 4,518,848, Cl. 219-388.000.

Weber Technical Products, Division of Craig Systems Corporation: *See—*
Lough, Wendell J.; and Bishop, Donald E., 4,518,405, Cl. 55-385.00A.

Wecker, Sheldon M., to James River-Norwalk, Inc. Process for skin foam. 4,518,557, Cl. 264-45.900.

Wedge, Philip J.; and Bridson, Robert C., to British Gas Corporation. Fuel fired burner assembly. 4,518,348, Cl. 431-265.000.

Wegener, Jack. Air pallet having multiple entry integrated air inlet valves. 4,517,690, Cl. 5-81.00R.

Wehmeyer, Donald T.; and Barnhart, Ronald W., to Economy Engineering, Inc. Translating mobile work platform. 4,518,061, Cl. 187-18.000.

Weinhold, Friedrich: *See—*
Krappitz, Heinz; Carstensen, Hans-Peter; and Weinhold, Friedrich, 4,517,829, Cl. 73-49.800.

Weisenberger, Johannes M.: *See—*
Roch, Josef; Muller, Erich; Narr, Berthold; Nickl, Josef; Haarmann, Walter; and Weisenberger, Johannes M., 4,518,596, Cl. 514-232.000.

Weisenberger, Johannes-Maximilian: *See—*
Narr, Berthold; Nickl, Josef; Muller, Erich; Roch, Josef; Haarmann, Walter; and Weisenberger, Johannes-Maximilian, 4,518,597, Cl. 514-228.000.

Weiss, Albrecht: *See—*
Bartnik, Friedhelm; Schindler, Joachim; Weiss, Albrecht; and Schmid, Rolf, 4,518,697, Cl. 435-254.000.

Weiss, Martin J.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,518,790, Cl. 560-118.000.

Weissman, Walter: *See—*
Kramer, George M.; Weissman, Walter; Brown, Herbert C.; and Pettit, Rowland, deceased, 4,518,798, Cl. 560-233.000.

Welcon Connector Company: *See—*
Negley, Loren E., 4,518,209, Cl. 339-14.00R.

Welding Institute, The: *See—*
Needham, James C., 4,518,844, Cl. 219-137.0PS.

Wellauer, John C.: *See—*
Mitchell, Thomas L.; McMahill, Patrick D.; Valbert, Gary G.; and Wellauer, John C., 4,518,276, Cl. 403-13.000.

Weller, Sol W., to United States of America, Energy. Liquefaction with microencapsulated catalysts. 4,518,478, Cl. 208-8.0LE.

Wendl, Daniel P.: *See—*
Rudolph, Ronald M.; and Wendl, Daniel P., 4,517,748, Cl. 33-180.0AT.

Wennerberg, Arnold N., to Standard Oil Company (Indiana). Metal-containing active carbon and methods for making and using same. 4,518,488, Cl. 208-216.00R.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Haberli, Peter, 4,517,899, Cl. 102-521.000.

Werner, Peter, to Siemens Aktiengesellschaft. Multipole high voltage circuit breaker. 4,518,838, Cl. 200-303.000.

Wesley, William M. Inductive adaptor/generator for diesel engines. 4,517,833, Cl. 73-119.00A.

West, Harold H.; Johnson, Roger A.; and Clark, Charles W., Jr., to Ederer Incorporated. Safety mechanism for hoisting drums. 4,518,153, Cl. 254-274.000.

Westerman, Charles W., to Ford Aerospace & Communications Corporation. Tapered-width leaky-waveguide antenna. 4,518,967, Cl. 343-771.000.

Western Digital Corporation: *See—*
Hull, Richard W.; and Teslenko, Leonard, 4,519,086, Cl. 375-120.000.

Western Gear Corporation: *See—*
Bossler, Robert B., Jr., 4,518,287, Cl. 409-26.000.

Westfall, Leonard J., to United States of America, National Aeronautics and Space Administration. Arc spray fabrication of metal matrix composite monotape. 4,518,625, Cl. 427-37.000.

Westinghouse Electric Corp.: *See—*
Antol, Ronald F.; Kalkbrenner, Ralph W.; and Kobuck, Richard M., 4,518,843, Cl. 219-121.0LC.
Longenecker, Kenneth G.; and Geary, Thomas B., 4,518,983, Cl. 357-81.000.
Oates, Robert M.; Petronio, Carlo F.; and Kraus, Mark G., 4,518,917, Cl. 324-207.000.
Surana, Bhupendra S.; and Snedden, William H., 4,519,039, Cl. 364-469.000.

Whalen, Thomas D.: *See—*
Tarello, William R.; Lopez, Claudio; Gordon, Linda A.; Whalen, Thomas D.; and Harvey, William B., 4,518,384, Cl. 604-61.000.

Wheeler, Edward L.: *See—*
Batorewicz, Wadim; and Wheeler, Edward L., 4,518,803, Cl. 564-410.000.

Wheeler, Rex W. Circuit breaker warning device. 4,518,957, Cl. 340-639.000.

Whirl-Air-Flow Corporation: *See—*
Mueller, Edward E.; and Jensen, Paul L., 4,518,350, Cl. 432-13.000.

Whirlpool Corporation: *See—*
Sulcek, Charles E.; and Miller, Frank E., 4,518,142, Cl. 248-649.000.

White, Eric F. T.: *See—*
Carus, Edmund H.; and White, Eric F. T., 4,517,793, Cl. 57-243.000.

White, Kirk E. Convertible cushion furniture. 4,518,203, Cl. 297-456.000.

White, Robert N.: *See—*
Uffner, William E.; and White, Robert N., 4,518,741, Cl. 525-54.500.

Whittle, Peter J.: *See—*
Richardson, Kenneth; and Whittle, Peter J., 4,518,604, Cl. 514-340.000.

Whittlesey, Curtis C.; Henriksen, Gary L.; Keryluk, Walter B.; and Wolff, Merle T., to Energy Development Associates, Inc. Comb-type bipolar stack. 4,518,664, Cl. 429-38.000.

Whittlesey, Curtis C.: *See—*
Kodali, Satyanarayana; Singh, Bhim S.; Whittlesey, Curtis C.; and Henriksen, Gary L., 4,518,663, Cl. 429-18.000.

Wiart, Albert, to Jeumont-Schneider Corporation. Control circuit of a synchronous motor with two induction windings. 4,518,908, Cl. 318-723.000.

Wiegardt, Gordon K.; Hanks, Thomas W.; and Kittle, Carl E., to Deere & Company. Vehicle with control system for raising and lowering implement. 4,518,044, Cl. 172-7.000.

Wilcox, Raymond J.; and Powers, Earl W., to Republic Corporation. Mine roof bearing plate with embossed area having conical and cylindrical sections. 4,518,282, Cl. 405-259.000.

Wilder, Charles R. Carbon black and process for preparing same. 4,518,434, Cl. 106-307.000.

Wile, George J.; and Griesdorn, Carl P., to Planet Products Corporation. Silk screen printing with the curing of polymerizable liquids. 4,517,893, Cl. 101-123.000.

Wilke, Howard C.: *See—*
Copas, Gordon A.; Wilke, Howard C.; and Dykema, Dennis A., 4,518,021, Cl. 141-172.000.

Wilkens, Christian, to Karl Mayer Textilmaschinenfabrik GmbH. Warp knitted ware with reinforcing threads. 4,518,640, Cl. 428-102.000.

Wilkinson, Richard L.; and Giddings, Gary M., to Discovision Associates. Extended play videodisc. 4,519,004, Cl. 358-342.000.

Williams, Robert D.; and Mastin, James, to Deflecta-Shield Corporation. Air current deflector shield and bracket combination. 4,518,191, Cl. 296-91.000.

Willoughby, Michael D., to United States Gypsum Company. Method for forming a lightweight cementitious structural product and product formed thereby. 4,518,652, Cl. 428-312.400.

Wilson, David A.: *See—*
Crump, Druce K.; and Wilson, David A., 4,518,777, Cl. 544-337.000.

Wilson, John S., to Wilson Manufacturing Company. Die cutting apparatus. 4,517,873, Cl. 83-881.000.

Wilson Manufacturing Company: *See—*
Wilson, John S., 4,517,873, Cl. 83-881.000.

Wilson, Mildred N.; Danielson, Robert L.; Bosco, Peter M.; and Steensen, Wayne L., to Nabisco Brands, Inc. Dry mix for preparation of pie and pastry fillings. 4,518,622, Cl. 426-578.000.

Winderlich, Hans-Georg: *See—*
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,518,852, Cl. 235-381.000.

Windsor, Harry M., to Automotive Products Limited. Clutch control means. 4,518,064, Cl. 192-3.580.

Wineman, Arthur L.: *See—*
Gillett, James E.; Garner, Daniel C.; Wineman, Arthur L.; and Robey, Robert M., 4,517,927, Cl. 122-510.000.

Winstead, Thomas W., to Maryland Cup Corporation. Drink-through container lid with removable drink-through section. 4,518,096, Cl. 220-268.000.

Wirz, Walter: *See—*
Feisel, Armin; and Wirz, Walter, 4,518,076, Cl. 198-648.000.

Wiseman, Alan G.; and Huberts, John T., to Varian Associates, Inc. Sample handling method and apparatus. 4,517,850, Cl. 73-864.210.

Wisnouskas, Joseph S.: *See—*
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., 4,518,573, Cl. 423-303.000.

Witten, Hans J. Aerodynamic side panels for a tractor-trailer truck. 4,518,188, Cl. 296-1.00S.

Wnukiewicz, Stanley A., Jr.: *See—*
Taylor, Charles F.; Wnukiewicz, Stanley A., Jr.; and Gattiker, Anton, 4,518,240, Cl. 354-312.000.

Wolcott, Richard A., to Dow Chemical Company, The. Treatment of contaminated Stretford solution. 4,518,504, Cl. 210-670.000.

Wolf, Erwin: *See—*
Kuhlmann, Gerhard; and Wolf, Erwin, 4,517,869, Cl. 83-100.000.

Wolf, Horst, to Zinser Textilmaschinen GmbH. Process and apparatus for correlating startup and cutoff periods of different induction motors with one another. 4,518,899, Cl. 318-68.000.

Wolfe, William R., Jr., to Du Pont de Nemours, E. I., and Company. Microwave absorber. 4,518,651, Cl. 428-308.800.

Wolff, Merle T.: *See—*
Whittlesey, Curtis C.; Henriksen, Gary L.; Keryluk, Walter B.; and Wolff, Merle T., 4,518,664, Cl. 429-38.000.

Wolters, Leendert, to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek. System for the use of gas as secondary fuel in diesel engines. 4,517,928, Cl. 123-27.0GE.

Wong, David: *See—*
Richmond, Iain J.; Wong, David; Puust, Ants; and Oldham, James A., 4,517,903, Cl. 110-233.000.

Wong, Stephen S.: *See—*
LaPierre, Rene B.; Partridge, Randall D.; Chen, Nai Y.; and Wong, Stephen S., 4,518,485, Cl. 208-89.000.

Wood, Robert S., to Plessey Overseas Limited. Pressure loaded gear pump. 4,518,331, Cl. 418-132.000.

Woodall, Jerry M. P.: *See—*
Dumke, William P.; and Woodall, Jerry M. P., 4,518,979, Cl. 357-30.000.

Woodcock, Brian: *See—*
Penny, Michael F.; Woodcock, Brian; Abbot, Ralph H.; Phillips, David M.; and Spaans, Leendert B., 4,518,254, Cl. 356-5.000.

Woodson, Wayne D., to CL Industries, Inc. Curable epoxy resin compositions and use in preparing formed, shaped, filled bodies. 4,518,723, Cl. 523-466.000.

Woodstream Corporation: *See—*
Mayer, Oscar C., Jr., 4,518,083, Cl. 206-340.000.

Woodward, Robert B.: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,518,533, Cl. 260-245.400.

Wooldridge, George A., to United Technologies Automotive, Inc. Control pod and switch assembly. 4,518,836, Cl. 200-61.540.

Worf, Douglas L. Heat exchange system. 4,517,958, Cl. 126-429.000.

Worthington, Paul A.: *See—*
Marchington, Anthony F.; Lewis, Timothy; Clough, John M.; Worthington, Paul A.; and Dalziel, John, 4,518,415, Cl. 71-92.000.

Wright, Harry D.; Hale, John M.; and Weber, Eugen, to Orbisphere Corporation Wilmington. Thermal protection for electroanalytical cell and amperometric probe. 4,518,477, Cl. 204-415.000.

Wu, Stephen H.; and Dannelly, Clarence C., to Eastman Kodak Company. Fractionation of polymers. 4,518,769, Cl. 528-486.000.

Wuerzer, Bruno: *See—*
Schirmer, Ulrich; Plath, Peter; and Wuerzer, Bruno, 4,518,414, Cl. 71-90.000.

Wulfes, Erwin: *See—*
Bortz, Botho; and Wulfes, Erwin, 4,518,172, Cl. 280-751.000.

Wynnyckyj, John R., to University of Waterloo. Production of magnesium metal. 4,518,425, Cl. 75-67.00R.

XCP, Inc.: *See—*
Rademacher, Darrell; Neville, Thomas; and Simpson, Roger T. (said Darrell Rademacher and Thomas Neville assors. to), 4,519,088, Cl. 377-16.000.

Xerox Corporation: *See—*
Bares, Jan, 4,518,245, Cl. 355-3.0DD.
Frey, Thomas M.; and Kovnat, Larry A., 4,519,000, Cl. 358-301.000.
Henry, Arnold W.; Azar, Jack C.; and Sagal, John, 4,518,655, Cl. 428-329.000.
Lehman, Richard F., 4,518,895, Cl. 315-117.000.

Xomox Corporation: *See—*
Gardner, John F.; and Hobson, David, 4,518,149, Cl. 251-144.000.

Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Buffer memory dispersion type video/audio transmission system with spatially and timewise divided inter-office junction lines. 4,518,989, Cl. 358-86.000.

Yagi, Eiji; Kobari, Yuji; and Takahashi, Sadahiro, to Nissan Motor Company, Limited. Pump-drive device of power-assisted steering system. 4,518,055, Cl. 180-142.000.

Yagihara, Morio; Ikegawa, Akihiko; Ono, Mitsunori; and Mihara, Yuji, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,518,685, Cl. 430-505.000.

Yamada, Kazuhiro: *See—*
Ishikawa, Yasuhiro; Yamada, Kazuhiro; and Kida, Masashi, 4,518,733, Cl. 524-274.000.

Yamada, Makoto; Kubota, Tatsushi; and Kojima, Ikuzo, to Toyota Jidosha Kabushiki Kaisha; and Kabushiki Kaisha Takai-Pika-Denki-Seisakusho. Ring joint for seatbelt system. 4,518,173, Cl. 280-806.000.

Yamada, Shinjiro, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Locking device. 4,518,181, Cl. 292-201.000.

Yamada, Shozo: *See—*
Fujimura, Hajime; Hiramatsu, Yasuzo; Yamazaki, Tomio; Yamada, Shozo; and Honna, Takaji, 4,518,712, Cl. 514-255.000.

Yamaguchi, Tatsuo: *See—*
Aoshima, Atsushi; Suzuki, Yoshio; Yamamatsu, Setsuo; and Yamaguchi, Tatsuo, 4,518,796, Cl. 560-208.000.

Yamaguchi, Yoshio: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; and Yamaguchi, Yoshio, 4,518,375, Cl. 474-205.000.

Yamaguchi, Yutaka; Koizumi, Nobuyuki; Hirano, Masami; Araki, Tamio; and Kojima, Koichi, to Bridgestone Tire Company Limited. Pneumatic tire. 4,518,023, Cl. 152-361.0FP.

Yamaha Hatsudoki Kabushika Kaisha: *See—*
Takayasu, Hidekazu, 4,518,540, Cl. 261-18.00B.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kobayashi, Takashi, 4,518,056, Cl. 180-193.000.

Yamakawa, Goichi: *See—*
Watanabe, Shotaro; Tomono, Makoto; Yamakawa, Goichi; Nishimura, Takeo; and Takahashi, Nobuo, 4,518,674, Cl. 430-108.000.

Yamamatsu, Setsuo: *See—*
Aoshima, Atsushi; Suzuki, Yoshio; Yamamatsu, Setsuo; and Yamaguchi, Tatsuo, 4,518,796, Cl. 560-208.000.

Yamamoto, Akihiro: *See—*
Shibata, Akira; Hirose, Koichi; and Yamamoto, Akihiro, 4,519,005, Cl. 360-65.000.

Yamamoto, Masaaki: *See—*
Matsuo, Tadao; Matsuoka, Fumio; Yokota, Nobuo; and Yamamoto, Masaaki, 4,518,552, Cl. 264-126.000.

Yamamoto, Masahiko; Nishino, Yoshinori; Komura, Akio; and Ebisu, Tomio, to Hitachi Shipbuilding & Engineering Co. Ltd. Method for molding bent pipes made up of composite material. 4,518,556, Cl. 264-295.000.

Yamamoto, Shigehiko: *See—*
Taguchi, Sadanori; Aida, Toshiyuki; Yamamoto, Shigehiko; and Honda, Yukio, 4,518,890, Cl. 313-346.00R.

Yamamoto, Takayoshi: *See—*
Yoshida, Hisayoshi; Ogawa, Ichitaro; Hagio, Tsuyoshi; Kobayashi, Kazuo; and Yamamoto, Takayoshi, 4,518,702, Cl. 501-90.000.

Yamamoto, Yoshihiro: *See—*
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 4,518,398, Cl. 51-309.000.

Yamamoto, Yoshikazu. Domestic pets' chamberpot. 4,517,920, Cl. 119-1.000.

Yamamuro, Kiyoshi: *See—*
Imose, Kazuo; Yamamuro, Kiyoshi; Takeuchi, Hironori; and Misawa, Takashi, 4,518,962, Cl. 340-870.280.

Yamanishi, Akio; and Sato, Kanichi, to Kabushiki Kaisha Komatsu Seisakusho. Method for making molds. 4,518,031, Cl. 164-526.000.

Yamashita, Kunio: *See—*
Harada, Yutaka; Yamashita, Kunio; Kotera, Nobuo; and Tanaka, Hirotoshi, 4,518,868, Cl. 307-306.000.

Yamauchi Rubber Industry Co., Ltd.: *See—*
Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, 4,517,719, Cl. 29-124.000.

Yamauchi, Shiro: *See—*
Nakahori, Ichiro; Nakayama, Shigeki; Maeda, Mitsuo; Yamauchi, Shiro; and Ozawa, Junichiro, 4,517,849, Cl. 73-863.310.
Yamauchi, Teruo: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; Fujieda, Mamoru; Nishimura, Yutaka; Sasayama, Takao; Sakamoto, Shinichi; Moriya, Hisanori; Atago, Takeshi; Sato, Kanemasa; Hoshi, Yoshikazu; Ueno, Sadayasu; Otani, Tadahiko; and Kashiwaya, Mineo, 4,517,837, Cl. 73-202.000.
Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Photoelectric conversion device. 4,518,815, Cl. 136-244.000.
Yamazaki, Tomio: *See—*
Fujimura, Hajime; Hiramatsu, Yasuzo; Yamazaki, Tomio; Yamada, Shozo; and Honna, Takaji, 4,518,712, Cl. 514-255.000.
Yamazaki, Toshinori: *See—*
Matsuzaki, Masatoshi; Yamazaki, Toshinori; and Nomori, Hiroyuki, 4,518,670, Cl. 430-58.000.
Yanadori, Michio: *See—*
Kamohara, Hideaki; Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,518,514, Cl. 252-70.000.
Yanagida, Tuneo, to Olympus Optical Co., Ltd. Recording medium and recording-reproduction system provided with the recording medium. 4,518,657, Cl. 428-450.000.
Yanagishima, Takayuki: *See—*
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,518,954, Cl. 340-576.000.
Yanaihara, Noboru: *See—*
Numa, Shosaku; and Yanaihara, Noboru, 4,518,527, Cl. 260-112.50R.
Yano, Takeshi; Fukui, Izumu; Hamatsuki, Takeshige; Sato, Eiichi; and Inui, Osamu, to NEC Corporation. Differential lever actuator including differentially force-transmitting members which are not liable to break. 4,518,887, Cl. 310-328.000.
Yao-Psong, Wang. Multi-purpose instructing block. 4,518,359, Cl. 434-195.000.
Yarbrough, Roger L., to Sulcon, Inc. Method of overlaying sulphur concrete on horizontal and vertical surfaces. 4,518,548, Cl. 264-32.000.
Yaron, Giora: *See—*
Priel, Ury; Yaron, Giora; and Ebel, Mark S., 4,519,076, Cl. 371-21.000.
Yaroshenko, Yury F.: *See—*
Braginsky, Yakov I.; Gultsev, Igor V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; and Yaroshenko, Yury F., 4,517,707, Cl. 17-71.000.
Yarossi, Mary E.; and Trevisan, Carey S., to American Cyanamid Company. Process for producing a wax-like stick product. 4,518,553, Cl. 264-234.000.
Yarwood, John C.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,518,030, Cl. 164-503.000.
Yashiki, Yuichi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member. 4,518,669, Cl. 430-57.000.
Yasukawa, Kazuyoshi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Head for industrial robot. 4,518,298, Cl. 414-4.000.
Yasukuni, Mitsuo, to Minolta Camera Kabushiki Kaisha. Telephoto lens system. 4,518,229, Cl. 350-454.000.
Yasuno, Mitsuo: *See—*
Nagaoka, Mitsuru; and Yasuno, Mitsuo, 4,517,859, Cl. 74-866.000.
Yasutake, Kousuke, to Honda Giken Kogyo Kabushiki Kaisha. Crank shaft of V-type internal-combustion engine. 4,517,933, Cl. 123-55.0VF.
Ycas, John A., to Reference Technology. Disc latching mechanism. 4,519,060, Cl. 369-77.200.
Ye, Shem D. Device for temporarily isolating an additive in a beverage container. 4,518,082, Cl. 206-217.000.
Yokohama Rubber Co., Ltd., The: *See—*
Ishikawa, Yasuhiro; Yamada, Kazuhiro; and Kida, Masashi, 4,518,733, Cl. 524-274.000.
Yokoshima, Naohiko; Masumoto, Nobuyoshi; and Sui, Akira. Method of producing seal ring. 4,517,726, Cl. 29-527.400.
Yokota, Mitsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Pressure sustaining apparatus. 4,518,316, Cl. 417-12.000.
Yokota, Mitsuyoshi: *See—*
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,518,903, Cl. 318-481.000.
Yokota, Nobuo: *See—*
Matsuo, Tadao; Matsuoka, Fumio; Yokota, Nobuo; and Yamamoto, Masaaki, 4,518,552, Cl. 264-126.000.
Yokoyama, Shigeki; Hibino, Akira; Maekawa, Yukio; and Kawasaki, Hiroshi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials with antistatic layer containing nonionic surface active agent. 4,518,354, Cl. 430-527.000.
Yokozeki, Shinichi; Kimura, Masami; and Tsukagoshi, Tsunehiro, to Pioneer Electronic Corporation. Acoustic diaphragm. 4,518,443, Cl. 148-400.000.
Yorozu, Arthur S.: *See—*
Eggebrecht, John L.; Rogers, Harold D.; and Yorozu, Arthur S., 4,517,813, Cl. 62-284.000.
Yoshida, Haruo; Tagoshi, Hirotaka; Morohashi, Yasushi; and Tanikoshi, Toshiaki, to Showa Denko Kabushiki Kaisha; and Showa High-polymer Co., Ltd. Biphenyloxy mono- and dimethacrylate polymerizable compositions. 4,518,756, Cl. 526-313.000.
Yoshida, Hisayoshi; Ogawa, Ichitaro; Hagio, Tsuyoshi; Kobayashi, Kazuo; and Yamamoto, Takayoshi, to Director-General of the Agency of Industrial Science and Technology. Silicon carbide-boron carbide carbonaceous body. 4,518,702, Cl. 501-90.000.
Yoshida Industry Co., Ltd.: *See—*
Hatakeyama, Yoshiharu; Ishikawa, Tatsuo; and Teshima, Kenzo, 4,518,554, Cl. 264-262.000.
Yoshida, Kenichi: *See—*
Shiga, Tetsuya; Okawa, Shinichi; Yoshida, Kenichi; and Hiramoto, Junichi, 4,517,982, Cl. 128-635.000.
Yoshida, Mikihiko: *See—*
Miyake, Toshio; Yoshida, Mikihiko; and Takeuchi, Kano , 4,518,581, Cl. 424-48.000.
Yoshida, Shusuke; Nakajima, Tamotsu; and Okamoto, Miyoshi, to Toray Industries, Inc. Chenille woven or knitted fabric and process for producing the same. 4,517,715, Cl. 28-144.000.
Yoshida, Tadao: *See—*
Higashihara, Teruaki; Nonaka, Chiaki; Yoshida, Tadao; and Kawachi, Hideo, 4,519,057, Cl. 369-50.000.
Yoshimitsu, Yasuro: *See—*
Okubo, Masao; Yoshimitsu, Yasuro; Nakai, Fumio; and Garretson, Oliver R., 4,518,914, Cl. 324-158.00F.
Yoshioka, Kazuo: *See—*
Atsumi, Akira; Oguni, Kensaku; Kuroda, Shigeaki; Senshu, Takao; and Yoshioka, Kazuo, 4,517,811, Cl. 62-197.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Umekawa, Osamu; and Katayama, Sakae, 4,518,610, Cl. 514-516.000.
Young, Dean A., to Union Oil Company of California. Crystalline silicate catalysts. 4,518,703, Cl. 502-63.000.
Youngblood, Harold C.; and Champeau, Kenneth L. Retrievable well tool. 4,518,037, Cl. 166-125.000.
Yu, Ruey J.; and Van Scott, Eugene J. Phenyl alpha-acyloxyacetamide derivatives and their therapeutic use. 4,518,789, Cl. 560-105.000.
Yuasa, Yoshio; and Kawagoe, Nobukazu, to Minolta Camera Kabushiki Kaisha. Exposure control device for a photographic enlarger. 4,518,250, Cl. 355-69.000.
Yuhas, Donald E.: *See—*
Kessler, Lawrence W.; and Yuhas, Donald E., 4,518,992, Cl. 358-112.000.
Yukawa, Nobumichi: *See—*
Yabiki, Akira; Imanishi, Norio; Shibata, Yoji; Kosuge, Wataru; and Yukawa, Nobumichi, 4,518,989, Cl. 358-86.000.
Yuter, Seymour C. Restaurant telephone entertainment system. 4,518,821, Cl. 179-2.00R.
Yuzawa, Haruo: *See—*
Ishigami, Kazuhiro; Furuhashi, Shoji; and Yuzawa, Haruo, 4,517,945, Cl. 123-425.000.
Zabala, Robert J.: *See—*
Park, Dong-Sil; and Zabala, Robert J., 4,518,624, Cl. 427-34.000.
Zabcik, Clarence J., to NL Industries, Inc. Downhole apparatus for absorbing vibratory energy to generate electrical power. 4,518,888, Cl. 310-334.000.
Zahnradfabrik Friedrichshafen AG: *See—*
Schuster, Max, 4,518,065, Cl. 192-4.00A.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,532, Cl. 260-404.500.
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,518,802, Cl. 564-201.000.
Zajicek, Ernst: *See—*
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,518,419, Cl. 75-11.000.
Zamboni, Valentino; Brichta, Corrado; and Troglia, Claudio, to Montedison S.p.A. Process for the crystallization of high polymers in the presence of nucleant systems based on zeo lites. 4,518,731, Cl. 524-166.000.
Zaruba, John V.; and Meyer, Burton C., to Marvin Glass & Associates. Figure including means for extruding plastic substance. 4,518,367, Cl. 446-373.000.
Zatulovsky, Isaak A.: *See—*
Kaluzhsky, Nikolai A.; Sizyakov, Viktor M.; Andreev, Vladimir V.; Alexeev, Alexei I.; Badaliants, Khoren A.; Zatulovsky, Isaak A.; Korneev, Valentin I.; and Kostin, Ivan M., 4,518,571, Cl. 423-119.000.
Zaveri, Vikram H.: *See—*
Kluting, Bernd; and Zaveri, Vikram H., 4,518,190, Cl. 296-65.00R.
Zenith Radio Corporation: *See—*
Beckman, Orval E., 4,518,997, Cl. 358-198.000.
Zgliczynski, Marek: *See—*
Peruzzi, Federigo; and Zgliczynski, Marek, 4,518,326, Cl. 417-372.000.
Ziegler, Duane H.: *See—*
Denning, Barry K.; and Ziegler, Duane H., 4,517,792, Cl. 56-10.200.
Zimmer, Inc.: *See—*
Halcomb, F. Joseph, III; and Allen, C. Wayne, 4,517,969, Cl. 128-92.00E.
Zimpro Inc.: *See—*
Lewis, Frederick M.; and Berken, George A., 4,517,906, Cl. 110-346.000.
Zinser Textilmaschinen GmbH: *See—*
Wolf, Horst, 4,518,899, Cl. 318-68.000.

Zirbes, James A.: *See—*
Ronco, Kenneth J.; Sommer, Robert; Nigel, Ken; Grimes, Donald; Zirbes, James A.; and Stacey, Robert E., 4,518,077, Cl. 198-731.000.
Zlab, Horst: *See—*
Bornemann, Hans-Joachim; and Zlab, Horst, 4,518,262, Cl. 366-156.000.
Zlotek, David A.: *See—*
Warner, Andrew; and Zlotek, David A., 4,518,920, Cl. 328-14.000.
Zollner, Dieter H.: *See—*
Schudlich, Kurt; Vielstich, Gunter; Muhlenbeck, Josef; Otto, Josef; Bauer, Hannsgeorg; Zollner, Dieter H.; and Rittmann, Friedrich, 4,518,365, Cl. 445-67.000.
Zuber, Bretislav P.: *See—*
Cote , Gerard G. M.; and Zuber, Bretislav P., 4,518,129, Cl. 242-78.000.
Zublin, Casper W. Hydraulic jet well cleaning assembly using a non-rotating tubing string. 4,518,041, Cl. 166-312.000.
Zuidema, Jack: *See—*
Boger, David L.; Pugh, Jerry T.; and Zuidema, Jack, 4,518,565, Cl. 422-58.000.
Zuleeg, Rainer, to McDonnell Douglas Corporation. Temperature tracking range finder. 4,518,255, Cl. 356-5.000.
Zweigart, Gerhard: *See—*
Gallitzendorfer, Joseph; Pfeiffer, Peter; Tomforde, Johann; Parisch, Jochen; and Zweigart, Gerhard, 4,518,197, Cl. 296-213.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, Charles H.: *See—*
Peters, Kenneth D.; and Anderson, Charles H., Re. 31,894, Cl. 313-422.000.

Bardong, Helmut: *See—*
Nonnenmann, Manfred; and Bardong, Helmut, Re. 31,889, Cl. 165-173.000.

Kalvitis, Robert E.: *See—*
Tickner, Donald R.; and Kalvitis, Robert E., Re. 31,891, Cl. 355-75.000.

Kneip, George D., Jr., to Varian Associates, Inc. NMR spectrometer with superconducting coil having rectangular cross-section wire. Re. 31,895, Cl. 324-319.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, Re. 31,893, Cl. 430-544.000.

Lowe, David J., to National Research Development Corp. Chart recorders. Re. 31,896, Cl. 346-136.000.

National Research Development Corp.: *See—*
Lowe, David J., Re. 31,896, Cl. 346-136.000.

Nonnenmann, Manfred; and Bardong, Helmut, to Suddeutsche Kuhlerfabrik Julius Fr. Behr. Heat exchanger. Re. 31,889, Cl. 165-173.000.

Peters, Kenneth D.; and Anderson, Charles H., to RCA Corporation. Modular guided beam flat display device. Re. 31,894, Cl. 313-422.000.

RCA Corporation: *See—*
Peters, Kenneth D.; and Anderson, Charles H., Re. 31,894, Cl. 313-422.000.

Saito, Shizuo: *See—*
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, Re. 31,893, Cl. 430-544.000.

Sato, Ryosuke: *See—*
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, Re. 31,893, Cl. 430-544.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr: *See—*
Nonnenmann, Manfred; and Bardong, Helmut, Re. 31,889, Cl. 165-173.000.

Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. Re. 31,893, Cl. 430-544.000.

Tickner, Donald R.; and Kalvitis, Robert E., to Xerox Corporation. Platen module for computer fanfold reproduction. Re. 31,891, Cl. 355-75.000.

Vangedal-Nielsen, Erling. Freezing mould bag. Re. 31,890, Cl. 249-61.000.

Varian Associates, Inc.: *See—*
Kneip, George D., Jr., Re. 31,895, Cl. 324-319.000.

Xerox Corporation: *See—*
Tickner, Donald R.; and Kalvitis, Robert E., Re. 31,891, Cl. 355-75.000.

Yamashita, Kiyoshi: *See—*
Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, Re. 31,893, Cl. 430-544.000.

LIST OF DESIGN PATENTEES

Acriform Engineering Inc.: *See—*
Burgess, John D.; and Taylor, Thomas E., 278,929, Cl. D23-56.000.

Airpax Corporation: *See—*
Harper, George S., 278,896, Cl. D13-34.000.

Allied Corporation: *See—*
Zaccai, Gianfranco D.; Wheinstone, David B.; Keramaty, Hamid; and Flynn, William E., 278,930, Cl. D24-21.000.

AMF Incorporated: *See—*
Dennis, Douglas K., 278,943, Cl. D34-19.000.

Anderson, Christine H., to Mattel, Inc. Rocking pony for a crib rail or similar article. 278,923, 5-21-85, Cl. D21-165.000.

Ando, Teturo, to Kabushiki Kaisha Taikodenki Seisakusho. Telephone. 278,903, 5-21-85, Cl. D14-53.000.

Androbot, Inc.: *See—*
Jones, Douglas H.; and Salat, Siegfried W., 278,922, Cl. D21-150.000.

Arai, Noriyuki: *See—*
Kurokawa, Koya; and Arai, Noriyuki, 278,907, Cl. D14-84.000.

Austin, Arnold S., to Quabaug Rubber Company. Shoe sole. 278,851, 5-21-85, Cl. D2-320.000.

Bagley, James L. Fishing lure. 278,926, 5-21-85, Cl. D22-27.000.

Beard, Howard R. Support arm for racks or the like. 278,875, 5-21-85, Cl. D6-566.000.

Bissonette, William M., to Security Technology Limited. Cabinet for a communication control system or the like. 278,902, 5-21-85, Cl. D14-52.000.

Blance, Andrew J.: *See—*
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 278,912, Cl. D15-69.000.

Bodourian, Peter V.; and Grispino, Joseph M. Cassette container. 278,856, 5-21-85, Cl. D3-35.000.

Bohl, Rainer, to Roeder GmbH Sitzmoebelwerke. Chair. 278,869, 5-21-85, Cl. D6-366.000.

Bohnsack, Duane F., to Mid-American Industries, Inc. Aquarium. 278,941, 5-21-85, Cl. D30-8.000.

Borichevsky, Donald J., to Telescope Folding Furniture Co., Inc. Ottoman. 278,864, 5-21-85, Cl. D6-349.000.

Bozorth, Ralph. Saw blade holder. 278,877, 5-21-85, Cl. D8-71.000.

Bradley, William F. Tooth cleansing device. 278,863, 5-21-85, Cl. D4-108.000.

Bresie, Don A.; Burns, Jack M.; and Fowler, Donald W. Equipment skid. 278,944, 5-21-85, Cl. D34-28.000.

Brorsson, Bror J.-E.: *See—*
Larsson, Lars P.; and Brorsson, Bror J.-E., 278,931, Cl. D24-31.000.

Burgess, John D.; and Taylor, Thomas E., to Acriform Engineering Inc. Bathtub. 278,929, 5-21-85, Cl. D23-56.000.

Burket, Kenneth A.; and Koenig, Gerhard F., to Corning Glass Works. Lamp chimney. 278,938, 5-21-85, Cl. D26-132.000.

Burns, Jack M.: *See—*
Bresie, Don A.; Burns, Jack M.; and Fowler, Donald W., 278,944, Cl. D34-28.000.

Burris, Richard L.; and Stoner, Bill W., to George Mayer Manufacturing, Inc. Combined swing and plural shelf unit. 278,868, 5-21-85, Cl. D6-347.000.

C. Reichert Optische Werke AG: *See—*
Hoelbl, Werner; Nyman, Georg N.; and Moser, Karl, 278,915, Cl. D16-131.000.

Calabra, Daniel: *See—*
Peeler, Donald H.; and Calabra, Daniel, 278,937, Cl. D26-65.000.

Chaussures Mephisto S.A.: *See—*
Michaeli, Martin, 278,850, Cl. D2-314.000.
Michaeli, Martin, 278,852, Cl. D2-320.000.

Chiu, Lawrence L., to Joiner Electric Products Company Ltd. Vacuum cleaner. 278,942, 5-21-85, Cl. D32-18.000.

Clements, William F.: *See—*
Vater, Richard L.; and Clements, William F., 278,882, Cl. D8-382.000.

Communications Systems, Inc.: *See—*
Meyer, Daniel, 278,876, Cl. D8-52.000.

Container Corporation of America: *See—*
Vater, Richard L.; and Clements, William F., 278,882, Cl. D8-382.000.

Corning Glass Works: *See—*
Burket, Kenneth A.; and Koenig, Gerhard F., 278,938, Cl. D26-132.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E., 278,885, Cl. D9-349.000.

Custom Metalcraft, Inc.: *See—*
Glass, Gerald, 278,884, Cl. D8-499.000.

Davis, Robert P.: *See—*
Katz, Ira R.; and Davis, Robert P., 278,857, Cl. D3-52.000.
Katz, Ira R.; and Davis, Robert P., 278,858, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 278,859, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 278,860, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 278,862, Cl. D3-76.000.

Dawson, Robert E.: *See—*
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 278,912, Cl. D15-69.000.

Dennis, Douglas K., to AMF Incorporated. Circuit board curing cart. 278,943, 5-21-85, Cl. D34-19.000.

Devito, Joseph: *See—*
Tendrup, Donald; and Devito, Joseph, 278,867, Cl. D6-327.000.

Discovery Toys: *See—*
Wichman, William J., 278,920, Cl. D21-59.000.

Feldman, Howard P.: *See—*
Sinkoff, Barry N.; and Feldman, Howard P., 278,917, Cl. D17-1.000.

Flynn, William E.: *See—*
Zaccai, Gianfranco D.; Wheinstone, David B.; Keramaty, Hamid; and Flynn, William E., 278,930, Cl. D24-21.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Plastic bottle. 278,885, 5-21-85, Cl. D9-349.000.

Fowler, Donald W.: *See—*
Bresie, Don A.; Burns, Jack M.; and Fowler, Donald W., 278,944, Cl. D34-28.000.

Freezinhot Bottle Company Limited: *See—*
Hung, Kung C., 278,936, Cl. D26-49.000.

Frieberg, Bengt O. Reversible friction-ring washer. 278,883, 5-21-85, Cl. D8-399.000.

Gallman, John E. Calculator for highway travel. 278,916, 5-21-85, Cl. D18-7.000.

George Mayer Manufacturing, Inc.: *See—*
Burris, Richard L.; and Stoner, Bill W., 278,868, Cl. D6-347.000.

Gerber, William C., to Rubbermaid Incorporated. Watering can. 278,928, 5-21-85, Cl. D23-11.000.

Giorgetti, Carlo, to Giorgetti S.p.A. Chair. 278,870, 5-21-85, Cl. D6-369.000.

Giorgetti, Carlo, to Giorgetti S.p.A. Arm-chair. 278,871, 5-21-85, Cl. D6-369.000.

Giorgetti S.p.A.: *See—*
Giorgetti, Carlo, 278,870, Cl. D6-369.000.
Giorgetti, Carlo, 278,871, Cl. D6-369.000.

GKN-Stenman AB: *See—*
Widen, Bo, 278,880, Cl. D8-347.000.

Glass, Gerald, to Custom Metalcraft, Inc. Chain link. 278,884, 5-21-85, Cl. D8-499.000.

Gonzales, Roman Y.: *See—*
Prager, Jay M.; and Gonzales, Roman Y., 278,897, Cl. D13-40.000.

Goodyear Tire & Rubber Company, The: *See—*
Lash, Stephen, 278,893, Cl. D12-146.000.

Gould, Inc.: *See—*
Prager, Jay M.; and Gonzales, Roman Y., 278,897, Cl. D13-40.000.
Ramos, Paul; Hudnall, Richard E.; and Kunimi, Yuri, 278,909, Cl. D14-102.000.

Gray, Gary W.: *See—*
Seel, Jerry E.; and Gray, Gary W., 278,924, Cl. D21-193.000.

Grispino, Joseph M.: *See—*
Bodourian, Peter V.; and Grispino, Joseph M., 278,856, Cl. D3-35.000.

Groetzner, Kurt; and Wurst, Bert, to Robert Bosch GmbH. Circuit board testing equipment. 278,890, 5-21-85, Cl. D10-75.000.

Hama Hamaphot KG Hanke & Thomas: *See—*
Hanke, Rudolph, 278,913, Cl. D16-45.000.

Hanke, Rudolph, to Hama Hamaphot KG Hanke & Thomas. Combined clamp and table stand for photography. 278,913, 5-21-85, Cl. D16-45.000.

Harper, George S., to Airpax Corporation. Circuit breaker handle. 278,896, 5-21-85, Cl. D13-34.000.

Hartmann Luggage Company: *See—*
Katz, Ira R.; and Davis, Robert P., 278,857, Cl. D3-52.000.
Katz, Ira R.; and Davis, Robert P., 278,858, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 278,859, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 278,860, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 278,862, Cl. D3-76.000.

Hasuike, Makio, to Poltrona Frau S.p.A. Luggage case. 278,861, 5-21-85, Cl. D3-72.000.

Hitachi, Ltd.: *See—*
Ohnuma, Mitsuru; Tsuburaya, Kazuyuki; and Tanitsu, Masato, 278,911, Cl. D14-113.000.

Hoelbl, Werner; Nyman, Georg N.; and Moser, Karl, to C. Reichert Optische Werke AG. Microscope. 278,915, 5-21-85, Cl. D16-131.000.

Hokama, Yosh, to International Beauty Distributors, Inc. Artificial fingernail. 278,939, 5-21-85, Cl. D28-56.000.

Hudnall, Richard E.: *See—*
Ramos, Paul; Hudnall, Richard E.; and Kunimi, Yuri, 278,909, Cl. D14-102.000.

Hung, Kung C., to Freezinhot Bottle Company Limited. Torch. 278,936, 5-14-85, Cl. D26-49.000.

Hwung, Chun-Hsiung. Grip. 278,879, 5-21-85, Cl. D8-303.000.

Incando, Peter A. Hairpiece securing clip. 278,940, 5-21-85, Cl. D28-93.000.

International Beauty Distributors, Inc.: *See—*
Hokama, Yosh, 278,939, Cl. D28-56.000.

James, Tommy H. Combined tool box vehicle bumper, bicycle carrier and air dam. 278,894, 5-21-85, Cl. D12-157.000.

Jermyn, Arthur C. Contact lens inserter. 278,914, 5-21-85, Cl. D16-124.000.

John Fluke Mfg. Co., Inc.: *See—*
McCain, George L., 278,889, Cl. D10-15.000.

Joiner Electric Products Company Ltd.: *See—*
Chiu, Lawrence L., 278,942, Cl. D32-18.000.

Jones, Douglas H.; and Salat, Siegfried W., to Androbot, Inc. Robot. 278,922, 5-21-85, Cl. D21-150.000.

Kabushiki Kaisha Taikodenki Seisakusho: *See—*
Ando, Teturo, 278,903, Cl. D14-53.000.

Kanfer, Joseph S. Container for liquids. 278,886, 5-21-85, Cl. D9-375.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Executive case. 278,857, 5-21-85, Cl. D3-52.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Executive case. 278,858, 5-21-85, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Executive case. 278,859, 5-21-85, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Executive case. 278,860, 5-21-85, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Executive case. 278,862, 5-21-85, Cl. D3-76.000.

Keramaty, Hamid: *See—*
Zaccai, Gianfranco D.; Wheinstone, David B.; Keramaty, Hamid; and Flynn, William E., 278,930, Cl. D24-21.000.

Kim, Syng N., to Wico Corporation. Control for a video game or the like. 278,919, 5-21-85, Cl. D21-48.000.

King, William L.: *See—*
Workman, David E.; and King, William L., 278,878, Cl. D8-300.000.

Kobayashi, Heiji, to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile. 278,892, 5-21-85, Cl. D12-7.000.

Koenig, Gerhard F.: *See—*
Burket, Kenneth A.; and Koenig, Gerhard F., 278,938, Cl. D26-132.000.

Kunimi, Yuri: *See—*
Ramos, Paul; Hudnall, Richard E.; and Kunimi, Yuri, 278,909, Cl. D14-102.000.

Kurokawa, Koya; and Arai, Noriyuki, to Matsushita Electric Industrial Co., Ltd. View finder for video camera. 278,907, 5-21-85, Cl. D14-84.000.

Larsson, Lars P.; and Brorsson, Bror J.-E. Petri tray. 278,931, 5-21-85, Cl. D24-31.000.

Lash, Stephen, to Goodyear Tire & Rubber Company, The. Tire. 278,893, 5-21-85, Cl. D12-146.000.

Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., to Singer Company, The. Hand operable sewing machine. 278,912, 5-21-85, Cl. D15-69.000.

Levin, Monte, to Standex International Corporation. Tree stand. 278,891, 5-21-85, Cl. D11-130.100.

Liang, Fan B. Agile safety pin. 278,855, 5-21-85, Cl. D2-405.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kurokawa, Koya; and Arai, Noriyuki, 278,907, Cl. D14-84.000.
Nakamura, Manao, 278,906, Cl. D14-71.000.
Nishimoto, Teruyuki, 278,898, Cl. D14-5.000.

Mattel, Inc.: *See—*
Anderson, Christine H., 278,923, Cl. D21-165.000.

McCaffrey, James A. Picture frame. 278,865, 5-21-85, Cl. D6-311.000.

McCain, George L., to John Fluke Mfg. Co., Inc. Digital clock/calendar. 278,889, 5-21-85, Cl. D10-15.000.

Meyer, Daniel, to Communications Systems, Inc. Communication plug installation tool. 278,876, 5-21-85, Cl. D8-52.000.

Michaeli, Martin, to Chaussures Mephisto S.A. Shoe upper. 278,850, 5-21-85, Cl. D2-314.000.

Michaeli, Martin, to Chaussures Mephisto S.A. Shoe sole. 278,852, 5-21-85, Cl. D2-320.000.

Mid-American Industries, Inc.: *See—*
Bohnsack, Duane F., 278,941, Cl. D30-8.000.

Morcheles, Bernard, to Stacor Corporation. Portable light box. 278,918, 5-21-85, Cl. D19-52.000.

Moriconi, David P., to Victor Technologies, Inc. CRT Display housing. 278,910, 5-21-85, Cl. D14-113.000.

Moser, Karl: *See—*
Hoelbl, Werner; Nyman, Georg N.; and Moser, Karl, 278,915, Cl. D16-131.000.

Motorola, Inc.: *See—*
Scheid, William J.; and Toth, Richard J., 278,905, Cl. D14-68.000.
Scheid, William J.; and Steinbugler, Robert E., 278,908, Cl. D14-100.000.

Murphy, Patrick J., to Quaker Oats Company, The. Speaker. 278,901, 5-21-85, Cl. D14-33.000.

Nagode, Larry R., to Quaker Oats Company, The. Toy gas pump. 278,921, 5-21-85, Cl. D21-124.000.

Nakamura, Manao, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 278,906, 5-21-85, Cl. D14-71.000.

Nicholson, Woodroe C. Kite retriever. 278,881, 5-21-85, Cl. D8-359.000.

Nishimoto, Teruyuki, to Matsushita Electric Industrial Co., Ltd. Combined tape recorder and radio receiver. 278,898, 5-21-85, Cl. D14-5.000.

Nyman, Georg N.: *See—*
Hoelbl, Werner; Nyman, Georg N.; and Moser, Karl, 278,915, Cl. D16-131.000.

Ohnuma, Mitsuru; Tsuburaya, Kazuyuki; and Tanitsu, Masato, to Hitachi, Ltd. Computer display. 278,911, 5-21-85, Cl. D14-113.000.

Olympus Optical Co., Ltd.: *See—*
Takata, Kazuaki, 278,853, Cl. D2-400.000.
Takata, Kazuaki, 278,899, Cl. D14-6.000.
Takata, Kazuaki, 278,900, Cl. D14-6.000.

Peeler, Donald H.; and Calabra, Daniel, to Sybron Corporation. Surgical light. 278,937, 5-21-85, Cl. D26-65.000.

Pendleton, Thomas J.: *See*—
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 278,912, Cl. D15-69.000.
Plawker, Ilan: *See*—
Thorneburg, James L.; and Plawker, Ilan, 278,873, Cl. D6-517.000.
Thorneburg, James L.; and Plawker, Ilan, 278,874, Cl. D6-517.000.
Plumb, Brad A. Beverage can lid. 278,888, 5-21-85, Cl. D9-449.000.
Poltrona Frau S.p.A.: *See*—
Hasuike, Makio, 278,861, Cl. D3-72.000.
Prager, Jay M.; and Gonzales, Roman Y., to Gould, Inc. Housing for a central processing unit. 278,897, 5-21-85, Cl. D13-40.000.
Protto, Gary F. Cold weather neck cover. 278,854, 5-21-85, Cl. D2-343.000.
Quabaug Rubber Company: *See*—
Austin, Arnold S., 278,851, Cl. D2-320.000.
Quaker Oats Company, The: *See*—
Murphy, Patrick J., 278,901, Cl. D14-33.000.
Nagode, Larry R., 278,921, Cl. D21-124.000.
Ramos, Paul; Hudnall, Richard E.; and Kunimi, Yuri, to Gould, Inc. Module housing for man-machine interface. 278,909, 5-21-85, Cl. D14-102.000.
Ray-J, Inc.: *See*—
Uzell, Clifford E., 278,927, Cl. D22-30.000.
Rieser, Robert. Clothes hanger. 278,866, 5-21-85, Cl. D6-319.000.
Robert Bosch GmbH: *See*—
Groetzner, Kurt; and Wurst, Bert, 278,890, Cl. D10-75.000.
Roeder GmbH Sitzmoebelwerke: *See*—
Bohl, Rainer, 278,869, Cl. D6-366.000.
Roller Derby Skate Corporation: *See*—
Scheller, Melvin H., 278,925, Cl. D21-226.000.
Roset, Pierre E. C., to Roset S.A. Seat. 278,872, 5-21-85, Cl. D6-381.000.
Roset S.A.: *See*—
Roset, Pierre E. C., 278,872, Cl. D6-381.000.
Rubbermaid Incorporated: *See*—
Gerber, William C., 278,928, Cl. D23-11.000.
Salat, Siegfried W.: *See*—
Jones, Douglas H.; and Salat, Siegfried W., 278,922, Cl. D21-150.000.
Samsonite Corporation: *See*—
Workman, David E.; and King, William L., 278,878, Cl. D8-300.000.
San Juan Products, Inc.: *See*—
Sullivan, George P., 278,932, Cl. D25-2.000.
Sullivan, George P., 278,933, Cl. D25-2.000.
Scheid, William J.; and Toth, Richard J., to Motorola, Inc. Radio pager or similar article. 278,905, 5-21-85, Cl. D14-68.000.
Scheid, William J.; and Steinbugler, Robert E., to Motorola, Inc. Portable terminal or similar article. 278,908, 5-21-85, Cl. D14-100.000.
Scheiwiller, Rolf. Paving stone. 278,934, 5-21-85, Cl. D25-86.000.
Scheiwiller, Rolf. Paving stone. 278,935, 5-21-85, Cl. D25-86.000.
Scheller, Melvin H., to Roller Derby Skate Corporation. Roller skate chasis. 278,925, 5-21-85, Cl. D21-226.000.
Security Technology Limited: *See*—
Bissonette, William M., 278,902, Cl. D14-52.000.
Seel, Jerry E.; and Gray, Gary W. Exercising platform. 278,924, 5-21-85, Cl. D21-193.000.
Singer Company, The: *See*—
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 278,912, Cl. D15-69.000.
Sinkoff, Barry N.; and Feldman, Howard P., to Suzuki Musical Instrument Corporation. Portable electronic musical chord instrument. 278,917, 5-21-85, Cl. D17-1.000.
Smith, Douglas W.: *See*—
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 278,912, Cl. D15-69.000.
Stacor Corporation: *See*—
Morcheles, Bernard, 278,918, Cl. D19-52.000.
Standex International Corporation: *See*—
Levin, Monte, 278,891, Cl. D11-130.100.
Steinbugler, Robert E.: *See*—
Scheid, William J.; and Steinbugler, Robert E., 278,908, Cl. D14-100.000.
Steiner Corporation: *See*—
Steiner, Robert L., 278,887, Cl. D9-403.000.
Steiner, Robert L., to Steiner Corporation. Soap container. 278,887, 5-21-85, Cl. D9-403.000.
Stoner, Bill W.: *See*—
Burris, Richard L.; and Stoner, Bill W., 278,868, Cl. D6-347.000.
Sullivan, George P., to San Juan Products, Inc. Prefabricated swimming pool. 278,932, 5-21-85, Cl. D25-2.000.
Sullivan, George P., to San Juan Products, Inc. Prefabricated swimming pool. 278,933, 5-21-85, Cl. D25-2.000.
Suzuki Musical Instrument Corporation: *See*—
Sinkoff, Barry N.; and Feldman, Howard P., 278,917, Cl. D17-1.000.
Sybron Corporation: *See*—
Peeler, Donald H.; and Calabra, Daniel, 278,937, Cl. D26-65.000.
Takata, Kazuaki, to Olympus Optical Co., Ltd. Tape recorder case. 278,853, 5-21-85, Cl. D2-400.000.
Takata, Kazuaki, to Olympus Optical Co., Ltd. Tape recorder. 278,899, 5-21-85, Cl. D14-6.000.
Takata, Kazuaki, to Olympus Optical Co., Ltd. Tape recorder. 278,900, 5-21-85, Cl. D14-6.000.
Tanaka Manufacturing Co., Ltd.: *See*—
Tanaka, Yoshihisa, 278,895, Cl. D12-167.000.
Tanaka, Yoshihisa, to Tanaka Manufacturing Co., Ltd. Door guard for vehicles. 278,895, 5-21-85, Cl. D12-167.000.
Tanitsu, Masato: *See*—
Ohnuma, Mitsuru; Tsuburaya, Kazuyuki; and Tanitsu, Masato, 278,911, Cl. D14-113.000.
Taylor, Thomas E.: *See*—
Burgess, John D.; and Taylor, Thomas E., 278,929, Cl. D23-56.000.
Telescope Folding Furniture Co., Inc.: *See*—
Borichevsky, Donald J., 278,864, Cl. D6-349.000.
Tendrup, Donald; and Devito, Joseph. Hanger. 278,867, 5-21-85, Cl. D6-327.000.
Thorneburg, James L.; and Plawker, Ilan, to Thorneburg, James L. Hosiery package display rack. 278,873, 5-21-85, Cl. D6-517.000.
Thorneburg, James L.; and Plawker, Ilan, to Thorneburg, James L. Hosiery package display rack. 278,874, 5-21-85, Cl. D6-517.000.
Toth, Richard J.: *See*—
Scheid, William J.; and Toth, Richard J., 278,905, Cl. D14-68.000.
Tsuburaya, Kazuyuki: *See*—
Ohnuma, Mitsuru; Tsuburaya, Kazuyuki; and Tanitsu, Masato, 278,911, Cl. D14-113.000.
Uzell, Clifford E., to Ray-J, Inc. Trolling sinker. 278,927, 5-21-85, Cl. D22-30.000.
Vater, Richard L.; and Clements, William F., to Container Corporation of America. Self-locking display chip. 278,882, 5-21-85, Cl. D8-382.000.
Victor Technologies, Inc.: *See*—
Moriconi, David P., 278,910, Cl. D14-113.000.
Wheinstone, David B.: *See*—
Zaccai, Gianfranco D.; Wheinstone, David B.; Keramaty, Hamid; and Flynn, William E., 278,930, Cl. D24-21.000.
White, Donald R. Telephone. 278,904, 5-21-85, Cl. D14-53.000.
Wichman, William J., to Discovery Toys. Toy chain link. 278,920, 5-21-85, Cl. D21-59.000.
Wico Corporation: *See*—
Kim, Syng N., 278,919, Cl. D21-48.000.
Widen, Bo, to GKN-Stenman AB. Key blank. 278,880, 5-21-85, Cl. D8-347.000.
Workman, David E.; and King, William L., to Samsonite Corporation. Luggage steering handle. 278,878, 5-21-85, Cl. D8-300.000.
Wurst, Bert: *See*—
Groetzner, Kurt; and Wurst, Bert, 278,890, Cl. D10-75.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Kobayashi, Heiji, 278,892, Cl. D12-7.000.
Zaccai, Gianfranco D.; Wheinstone, David B.; Keramaty, Hamid; and Flynn, William E., to Allied Corporation. Plasma separator cartridge or similar article. 278,930, 5-21-85, Cl. D24-21.000.

LIST OF PLANT PATENTEES

Bennett, Cecelia L. D. Miniature rose plant. 5,470, 5-21-85, Cl. 9.000.
Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Silverado. 5,475, 5-21-85, Cl. 74.000.
Jenkins, Philip J., deceased (by Jenkins, Zona G., legal representative), to Stark Brothers Nurseries & Orchards Company. Red delicious apple tree—Jenred cultivar. 5,472, 5-21-85, Cl. 35.000.
Jenkins, Zona G., legal representative: *See*—
Jenkins, Philip J., deceased, 5,472, Cl. 35.000.
Nor'East Miniature Roses, Inc.: *See*—
Saville, F. Harmon, 5,471, Cl. 10.000.
Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Rose plant. 5,471, 5-21-85, Cl. 10.000.
Stark Brothers Nurseries & Orchards Company: *See*—
Jenkins. Philip J., deceased, 5,472, Cl. 35.000.
Superior Farming Company: *See*—
Weinberger, John H., 5,473, Cl. 41.000.
Weinberger, John H., to Superior Farming Company. Nectarine tree, Sunecttwelve. 5,473, 5-21-85, Cl. 41.000.
Yoder Brothers, Inc.: *See*—
Duffett, William E., 5,475, Cl. 74.000.
Zaiger, Chris F. Peach tree (June Maid). 5,474, 5-21-85, Cl. 43.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 21, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
170 4,517,685

CLASS 3
1 4,517,686
1.4 4,517,687
2 4,517,688

CLASS 4
235 4,517,689

CLASS 5
81 R 4,517,690
450 4,517,691
451 4,517,692
4,517,693

CLASS 6
4 R 4,517,694

CLASS 8
158 4,517,695
507 4,518,390
549 4,518,391
609 4,518,392

CLASS 12
1 R 4,517,696
10.5 4,517,697

CLASS 14
72.5 4,517,698

CLASS 15
104.04 4,517,699
105 4,517,700
106 4,517,701
114 4,517,702
246 4,517,703
250.04 4,517,704
351 4,517,705

CLASS 16
238 4,517,706

CLASS 17
71 4,517,707

CLASS 24
20 CW 4,517,708
232 R 4,517,709
453 4,517,710
4,517,711

CLASS 26
51.4 4,517,712

CLASS 27
4 4,517,713

CLASS 28
103 4,517,714
144 4,517,715

CLASS 29
1.3 4,517,716
6 4,517,717
33 M 4,517,718
124 4,517,719
157 R 4,517,720
157.3 C 4,517,721
234 4,517,722
235 4,517,723
275 4,517,724
417 4,517,725
527.4 4,517,726
570 4,517,727
571 4,517,728
4,517,729
4,517,730
4,517,731
4,517,732
572 4,517,733
577 C 4,517,734
621 4,517,735
623.2 4,517,736
798 4,517,737
840 4,517,738
846 4,517,739
857 4,517,740

CLASS 30
162 4,517,741
166 R 4,518,022

CLASS 33
125 C 4,517,742
147 M 4,517,743
169 B 4,517,745
169 C 4,517,744
178 B 4,517,747
180 AT 4,517,748
346 4,517,749
396 4,517,750
549 4,517,746

CLASS 34
10 4,517,751
58 4,517,752

CLASS 36
128 4,517,753

CLASS 37
66 4,517,754
117.5 4,517,755
118 R 4,517,756

CLASS 38
88 4,517,757

CLASS 40
431 4,517,758

CLASS 43
7 4,517,759
21 4,517,760
21.2 4,517,761
96 4,517,762

CLASS 44
6 4,518,393
38 4,518,394
53 4,518,395

CLASS 47
58 4,517,763
77 4,517,764

CLASS 48
196 R 4,518,396

CLASS 49
3 4,517,765
417 4,517,766
464 4,517,767

CLASS 51
58 4,517,768
105 R 4,517,769
125.5 4,517,770
163.2 4,517,771
281 SF 4,517,772
293 4,518,397
309 4,518,398
336 4,517,773
436 4,517,774

CLASS 52
40 4,517,775
90 4,517,776
126.2 4,517,777
167 4,517,778
232 4,517,779
233 4,517,780
299 4,517,781
309.7 4,517,782
481 4,517,783

CLASS 53
75 4,517,784
116 4,517,785
450 4,517,786
4,517,787
459 4,517,788
545 4,517,789
552 4,517,790
566 4,517,791

CLASS 55
16 4,518,399
68 4,518,400
101 4,518,401
103 4,518,402
194 4,518,403
256 4,518,404
385 A 4,518,405

CLASS 56
10.2 4,517,792
341 4,517,795

CLASS 57
243 4,517,793
304 4,517,794

CLASS 60
39.281 4,517,796
4,517,797
39.462 4,517,798
337 4,517,800
602 4,517,801
606 4,517,802
611 4,517,803
657 4,517,804
688 4,517,805

CLASS 62
123 4,517,806
156 4,517,807
160 4,517,808
183 4,517,809
186 4,517,810
197 4,517,811
228.5 4,517,812
284 4,517,813
323.1 4,517,799
374 4,517,814
457 4,517,815

CLASS 63
12 4,517,816
26 4,517,817

CLASS 65
1 4,518,406
3.12 4,518,407
6 4,518,408
79 4,518,409
106 4,518,410
4,518,411
244 4,518,412

CLASS 68
5 E 4,517,818

CLASS 71
28 4,518,413
90 4,518,414
92 4,518,415
94 4,518,416

CLASS 72
353 4,517,819
391 4,517,820

CLASS 73
1 B 4,517,822
1 C 4,517,821
3 4,517,823
23 4,517,824
38 4,517,825
40 4,517,826
45.4 4,517,827
46 4,517,828
49.8 4,517,829
57 4,517,830
116 4,517,831
118 4,517,832
119 A 4,517,833
146.5 4,517,834
152 4,517,835
4,517,836
202 4,517,837
204 4,517,838
432 R 4,517,839
517 AV 4,517,841
644 4,517,840
701 4,517,842
707 4,517,844
847 4,517,843
861.05 4,517,845
861.12 4,517,846
861.74 4,517,847
862.52 4,517,848
863.31 4,517,849
864.21 4,517,850
864.91 4,517,851

CLASS 74
89.15 4,517,852
4,517,853
492 4,517,854
528 4,517,855
4,517,856
665 GA 4,517,857
801 4,517,858
866 4,517,859

CLASS 75
10 R 4,518,417
4,518,418
11 4,518,419
26 4,518,420
49 4,518,421
58 4,518,422
64 4,518,423
65 R 4,518,424
67 R 4,518,425
112 4,518,426
251 4,518,427
257 4,518,428

CLASS 81
57.29 4,517,861
119 4,517,862
434 4,517,863
436 4,517,864
475 4,517,865
487 4,517,860

CLASS 82
39 4,517,866
101 4,517,867

CLASS 83
54 4,517,868
100 4,517,869
411 R 4,517,870
677 4,517,871
881 4,517,873

CLASS 84
314 N 4,517,874
383 R 4,517,875
422 R 4,517,876

CLASS 85
880 4,517,872

CLASS 91
48 4,517,877
396 4,517,878

CLASS 92
136 4,517,879

CLASS 98
1 4,517,880
6 4,517,882
115.3 4,517,883
208 4,517,881

CLASS 99
276 4,517,884
421 HV 4,517,885
425 4,517,886
426 4,517,887
472 4,517,888

CLASS 100
5 4,517,889
4,517,890
88 4,517,891
292 4,517,892

CLASS 101
123 4,517,893
126 4,517,894

CLASS 102
202.2 4,517,895
342 4,517,896
439 4,517,897
514 4,517,898
521 4,517,899
529 4,517,900

CLASS 106
14.39 4,518,429
35 4,518,430
97 4,518,431
117 4,518,432
180 4,518,433
307 4,518,434
308 N 4,518,435

CLASS 109
19 4,517,901

CLASS 110
190 4,517,902
233 4,517,903
264 4,517,904
346 4,517,905
4,517,906

CLASS 112
121.15 4,517,907
129 4,517,908
275 4,517,909
439 4,517,910

CLASS 114
267 4,517,911
275 4,517,912
293 4,517,913
345 4,517,914

CLASS 116
137 R 4,517,915

CLASS 118
234 4,517,916
302 4,517,917
723 4,517,918

CLASS 119
1 4,517,919
4,517,920
16 4,517,921
29 4,517,922
51 R 4,517,923
98 4,517,924

CLASS 122
2 4,517,925
510 4,517,927

CLASS 123
3 4,517,926
27 GE 4,517,928
41.1 4,517,929
41.31 4,517,930
48 B 4,517,931
54 A 4,517,932
55 VF 4,517,933
90.17 4,517,934
90.4 4,517,935
90.5 4,517,936
190 D 4,517,937
190 E 4,517,938
198 E 4,517,939
4,517,940
336 4,517,941
376 4,517,942
415 4,517,943
425 4,517,944
4,517,945
450 4,517,946
489 4,517,947
4,517,948
4,517,949
559 4,517,950
572 4,517,951
638 4,517,952

CLASS 124
17 4,517,953

CLASS 125
15 4,517,954

CLASS 126
211 4,517,955
283 4,517,956
426 4,517,957
429 4,517,958
437 4,517,959
440 4,517,960
450 4,517,961

CLASS 127
60 4,518,436

CLASS 128
6 4,517,962
4,517,963
11 4,517,964
20 4,517,965
75 4,517,966
79 4,517,967
80 H 4,517,968
92 E 4,517,969
131 4,517,970
133 4,517,971
156 4,517,972
303.1 4,517,973
4,517,974
303.13 4,517,975
303.15 4,517,976
305 4,517,977
314 4,517,978
325 4,517,979
395 4,517,980
581 4,517,981
635 4,517,982
639 4,517,983
642 4,517,984
660 4,517,985
671 4,517,986
719 4,517,987

CLASS 131
116 4,517,988
187 4,517,989
276 4,517,990
4,517,991
304 4,517,992
329 4,517,993
4,517,994
334 4,517,995
339 4,517,996

CLASS 132
5 4,517,997
11 R 4,517,998
53 4,517,999
92 A 4,518,000

CLASS 133
5 R 4,518,001

CLASS 134
18 4,518,437
22.1 4,518,438

CLASS 135
67 4,518,002

CLASS 136
244 4,518,815

CLASS 137
65 4,518,003
116 4,518,004
207 4,518,005
218 4,518,006
337 4,518,007
552 4,518,008
571 4,518,009
587 4,518,010
596.17 4,518,011
601 4,518,012
811 4,518,013
843 4,518,014

CLASS 138
93 4,518,015
96 R 4,518,016
4,518,017
130 4,518,018

CLASS 139
1 R 4,518,019
55.1 4,518,020

CLASS 141
172 4,518,021

CLASS 148
3 4,518,439
6.14 R 4,518,440
11.5 N 4,518,442
11.5 P 4,518,441
400 4,518,443
402 4,518,444

CLASS 152
361 DM 4,518,024
361 FP 4,518,023

CLASS 156
49 4,518,445

54 4,518,034
63 4,518,446
71 4,518,447
86 4,518,448
153 4,518,449
202 4,518,451
211 4,518,452
307.5 4,518,453
541 4,518,454
566 4,518,450
613 4,518,455
626 4,518,456
656 4,518,457

CLASS 159

47.1 4,518,458

CLASS 160

84 R 4,518,025
232 4,518,026

CLASS 162

5 4,518,459
361 4,518,460

CLASS 164

435 4,518,027
460 4,518,028
463 4,518,029
503 4,518,030
526 4,518,031

CLASS 165

12 4,518,032
53 4,518,033
101 4,518,035
173 Re.31,889

CLASS 166

105 4,518,036
125 4,518,037
266 4,518,038
276 4,518,039
307 4,518,040
312 4,518,041
347 4,518,042

CLASS 172

6 4,518,043
7 4,518,044
4,518,045
311 4,518,046
611 4,518,047

CLASS 174

3 4,518,816
38 4,518,817
52 FP 4,518,818
78 4,518,819
152 GM 4,518,820

CLASS 175

61 4,518,048
107 4,518,049
250 4,518,050
4,518,051

CLASS 177

245 4,518,052

CLASS 179

2 DP 4,518,823
2 E 4,518,822
2 R 4,518,821
6.3 CC 4,518,824
11 4,518,825
37 4,518,826
81 B 4,518,829
81 R 4,518,827
4,518,828
103 4,518,830
119 A 4,518,831

CLASS 180

14.2 4,518,053
118 4,518,054
142 4,518,055
193 4,518,056
210 4,518,057
300 4,518,058

CLASS 182

2 4,518,059
230 4,518,060

CLASS 187

18 4,518,061
29 R 4,518,062

CLASS 188

196 BA 4,518,063

CLASS 192

0.052 4,518,068
0.09 4,518,067
3.58 4,518,064
4 A 4,518,065
4 C 4,518,066
60 4,518,069
85 CA 4,518,070
106.2 4,518,071

CLASS 194

4 C 4,518,073
4 D 4,518,072

CLASS 198

425 4,518,074
460 4,518,075
648 4,518,076
731 4,518,077
775 4,518,078
864 4,518,079

CLASS 200

4 4,518,832
5 A 4,518,833
16 D 4,518,834
61.45 M 4,518,835
61.54 4,518,836
81 R 4,518,837
303 4,518,838

CLASS 202

270 4,518,461

CLASS 203

39 4,518,462

CLASS 204

1 T 4,518,463
4,518,464
15 4,518,465
28 4,518,466
37.1 4,518,467
38.3 4,518,468
44.5 4,518,469
98 4,518,470
129.1 4,518,471
159.15 4,518,472
159.18 4,518,473
206 4,518,474
247 4,518,475
299 R 4,518,476
415 4,518,477

CLASS 206

39 4,518,080
158 4,518,081
217 4,518,082
340 4,518,083
387 4,518,084
454 4,518,085
485 4,518,086
632 4,518,087

CLASS 208

8 LE 4,518,478
4,518,479
11 LE 4,518,480
19 4,518,481
22 4,518,482
44 4,518,483
87 4,518,484
89 4,518,485
131 4,518,486
4,518,487
216 R 4,518,488
223 4,518,489
251 R 4,518,490

CLASS 209

166 4,518,491
4,518,492

CLASS 210

137 4,518,493
158 4,518,494
169 4,518,495
222 4,518,496
259 4,518,497
297 4,518,498
332 4,518,499
380.3 4,518,500
411 4,518,501
634 4,518,502
662 4,518,503
670 4,518,504
712 4,518,505
747 4,518,506
4,518,507
751 4,518,508

CLASS 211

13 4,518,088
118 4,518,089

CLASS 212

189 4,518,090

CLASS 219

10.55 B 4,518,839
10.67 4,518,840
56 4,518,841
69 W 4,518,842
121 LC 4,518,843
137 PS 4,518,844
216 4,518,845
271 4,518,846
365 4,518,847
388 4,518,848
492 4,518,849
505 4,518,850
549 4,518,851

CLASS 220

5 A 4,518,091
20.5 4,518,092
82 R 4,518,093
254 4,518,094
260 4,518,095
268 4,518,096
307 4,518,097

CLASS 221

15 4,518,098
30 4,518,099
225 4,518,100

CLASS 222

1 4,518,101
61 4,518,102
135 4,518,103
146.6 4,518,104
207 4,518,105
460 4,518,106

CLASS 224

215 4,518,107
314 4,518,108

CLASS 227

109 4,518,109

CLASS 228

20 4,518,110
107 4,518,111
124 4,518,112
170 4,518,113
180.1 4,518,114

CLASS 229

52 B 4,518,115

CLASS 235

381 4,518,852
449 4,518,853

CLASS 236

1 B 4,518,116

CLASS 237

53 4,518,117

CLASS 239

163 4,518,118
223 4,518,119
424 4,518,120
526 4,518,121
530 4,518,122

CLASS 241

18 4,518,123
101.7 4,518,124
141 4,518,125

CLASS 242

18 R 4,518,126
35.5 A 4,518,136
58.3 4,518,127
71.8 4,518,128
78 4,518,129
107 4,518,130
107.4 A 4,518,132
107.4 B 4,518,131
165 4,518,133
199 4,518,134
4,518,135

CLASS 244

113 4,518,137

CLASS 248

73 4,518,138
418 4,518,139
456 4,518,140
546 4,518,141
649 4,518,142

CLASS 249

61 Re.31,890
142 4,518,143

CLASS 250

201 4,518,854
4,518,855
202 4,518,856
225 4,518,857
227 4,518,858
231 SE 4,518,859
253 4,518,860
339 4,518,861
561 4,518,862
578 4,518,863
4,518,864

CLASS 251

1 A 4,518,144
5 4,518,145
28 4,518,146
121 4,518,147
122 4,518,148
144 4,518,149
306 4,518,150

CLASS 252

8.3 4,518,509
8.5 C 4,518,510
8.55 B 4,518,511
49.5 4,518,512
62 4,518,513
70 4,518,514
91 4,518,516
107 4,518,517
142 4,518,518
148 4,518,519
174.23 4,518,520
188.31 4,518,521
4,518,522
514 4,518,524

CLASS 254

93 HP 4,518,151
134.3 R 4,518,152
274 4,518,153

CLASS 260

112 B 4,518,525
112 R 4,518,526
112.5 R 4,518,527
4,518,528
245.2 R 4,518,530
245.2 T 4,518,529
245.4 4,518,531
4,518,533
404.5 4,518,532
429 R 4,518,534
438.1 4,518,535
465 D 4,518,536
504 R 4,518,537
543 P 4,518,538
549 4,518,539

CLASS 261

18 B 4,518,540
27 4,518,541
34 R 4,518,542
64 B 4,518,543
112 4,518,544

CLASS 264

1.2 4,518,545
4,518,546
4.7 4,518,547
32 4,518,548
39 4,518,549
45.9 4,518,557
46.5 4,518,550
107 4,518,551
126 4,518,552
234 4,518,553
262 4,518,554
292 4,518,555
295 4,518,556
515 4,518,558

CLASS 267

34 4,518,154

CLASS 269

60 4,518,155

CLASS 270

54 4,518,156
58 4,518,157

CLASS 271

9 4,518,158
103 4,518,159
214 4,518,160
303 4,518,161

CLASS 272

93 4,518,162
132 4,518,163

CLASS 273

148 B 4,518,164
156 4,518,165
411 4,518,166

CLASS 277

81 R 4,518,167
235 B 4,518,168

CLASS 280

6 R 4,518,169
96 4,518,170
229 4,518,176
711 4,518,171
751 4,518,172
806 4,518,173
808 4,518,174

CLASS 285

47 4,518,175
64 4,518,177

CLASS 292

8 4,518,178
166 4,518,179
201 4,518,180
4,518,181
4,518,182

CLASS 293

118 4,518,183

CLASS 294

19.1 4,518,184
67.1 4,518,185
82.24 4,518,186
88 4,518,187

CLASS 296

1 S 4,518,188
22 4,518,189
65 R 4,518,190
91 4,518,191
97 H 4,518,192
98 4,518,193
100 4,518,194
148 4,518,195
204 4,518,196
213 4,518,197

CLASS 297

229 4,518,198
248 4,518,199
284 4,518,200
316 4,518,201
452 4,518,202
456 4,518,203

CLASS 301

63 R 4,518,204

CLASS 307

200 A 4,518,865
201 4,518,866
252 B 4,518,867
306 4,518,868
350 4,518,869
356 4,518,870
443 4,518,871
448 4,518,872
451 4,518,873
467 4,518,874
473 4,518,875
475 4,518,876
490 4,518,877
520 4,518,878
530 4,518,879
577 4,518,880

CLASS 308

3 R 4,518,205
6 C 4,518,206

CLASS 310

13 4,518,881
15 4,518,882
49 4,518,884
49 R 4,518,883
52 4,518,885
71 4,518,886
328 4,518,887
334 4,518,888
357 4,518,889

CLASS 312

107.5 4,518,207
209 4,518,208

CLASS 313

346 R 4,518,890
398 4,518,891
403 4,518,892
Re.31,894
479 4,518,893
491 4,518,894

CLASS 315

117 4,518,895
162 4,518,896
260 4,518,897
371 4,518,898

CLASS 318

68 4,518,899
102 4,518,900
328 4,518,901
373 4,518,902
481 4,518,903
566 4,518,909
661 4,518,905
685 4,518,904
696 4,518,906
4,518,907
723 4,518,908

CLASS 324

52 4,518,911
95 4,518,912
127 4,518,913
158 F 4,518,914
158 P 4,518,910
158 R 4,518,915
173 4,518,916
207 4,518,917
208 4,518,918
228 4,518,919
319 Re.31,895

CLASS 328

14 4,518,920
151 4,518,921

CLASS 329

50 4,518,922

CLASS 330

9 4,518,923
51 4,518,924
4,518,925
253 4,518,926
284 4,518,927
297 4,518,928

CLASS 331

11 4,518,929
36 C 4,518,930
76 4,518,931
90 4,518,932
108 D 4,518,933

CLASS 332

7.51 4,518,934

CLASS 333

173 4,518,935
4,518,936

CLASS 335

229 4,518,937
262 4,518,938
4,518,939
285 4,518,940

CLASS 336

69 4,518,941
178 4,518,942

CLASS 337

68 4,518,943

CLASS 338

22 R 4,518,944

CLASS 339

14 R 4,518,209
17 LM 4,518,210
4,518,211
31 R 4,518,212
48 4,518,213
74 R 4,518,214
92 R 4,518,215
97 P 4,518,216
183 4,518,217

CLASS 340

310 A 4,518,945
326 4,518,946
347 AD 4,518,949
347 DD 4,518,947
4,518,950
347 NT 4,518,948
365 S 4,518,951
514 4,518,952
564 4,518,953
576 4,518,954
605 4,518,955
620 4,518,956
639 4,518,957
679 4,518,958
784 4,518,959
825.02 4,518,960
825.44 4,518,961
870.28 4,518,962
981 4,518,963

CLASS 343

7.3 4,518,964
742 4,518,965
754 4,518,966
771 4,518,967
802 4,518,968
819 4,518,969

CLASS 346

74.2 4,518,970
76 PH 4,518,971
136 Re.31,896
139 R 4,518,972
140 R 4,518,973
4,518,974
153.1 4,518,975
4,518,976

209 4,518,977

CLASS 350

6.8 4,518,218
96.12 4,518,219
96.20 4,518,220
96.26 4,518,221
167 4,518,222
254 4,518,223
338 4,518,225
350 R 4,518,226
422 4,518,227
427 4,518,228
454 4,518,229
511 4,518,230
516 4,518,231
606 4,518,224
620 4,518,232

CLASS 353

87 4,518,233

CLASS 354

20 4,518,234
86 4,518,235
127.1 4,518,237
270 4,518,238
286 4,518,239
312 4,518,240
319 4,518,241
403 4,518,242
418 4,518,243

CLASS 355

3 DD 4,518,245
3 FU 4,518,244
4 4,518,246
15 4,518,247
4,518,248
67 4,518,249
69 4,518,250
75 Re.31,891
4,518,251
133 4,518,252

CLASS 356

4 4,518,253
5 4,518,254
4,518,255
4,518,256
375 4,518,257
405 4,518,258
446 4,518,259

CLASS 357

24 4,518,978
30 4,518,979
4,518,980
71 4,518,981
74 4,518,982
81 4,518,983

CLASS 358

11 4,518,984
60 4,518,985
65 4,518,986
75 4,518,987
4,518,988
86 4,518,989
87 4,518,990
93 4,518,991
112 4,518,992
114 4,518,993
133 4,518,994
139 4,518,995
148 4,518,996
198 4,518,997
208 4,518,998
285 4,518,999
301 4,519,000
310 4,519,001
335 4,519,002
4,519,003
342 4,519,004

CLASS 360

65 4,519,005
76 4,519,006
77 4,519,007
79 4,519,008
92 4,519,009
97 4,519,010
137 4,519,011

CLASS 361

284 4,519,012
384 4,519,013
397 4,519,014
399 4,519,015
415 4,519,016

CLASS 362

32 4,519,017
74 4,519,018
147 4,519,019
268 4,519,020
277 4,519,021

CLASS 363

41 4,519,022
56 4,519,023
127 4,519,024

CLASS 364

141 4,519,025
167 4,519,026
185 4,519,027
200 4,519,028
4,519,029
4,519,030
4,519,031
4,519,032
4,519,033
4,519,034
4,519,035
4,519,036
400 4,519,037
431.03 4,519,038
469 4,519,039
474 4,519,040
552 4,519,041
567 4,519,042
571 4,519,043
709 4,519,044
4,519,045
822 4,519,046
900 4,519,047
4,519,048

CLASS 365

12 4,519,049
53 4,519,050
184 4,519,051

CLASS 366

134 4,518,260
150 4,518,261
156 4,518,262
206 4,518,263
208 4,518,264
318 4,518,265

CLASS 367

79 4,519,052
190 4,519,053

CLASS 368

10 4,518,266
107 4,518,267

CLASS 369

30 4,519,054
37 4,519,055
43 4,519,056
50 4,519,057
53 4,519,058
74 4,519,059
77.2 4,519,060
109 4,519,061
126 4,519,062
172 4,519,063
275 4,519,064
4,519,065

CLASS 370

24 4,519,066
78 4,519,067
82 4,519,068
85 4,519,069
88 4,519,070
100 4,519,071
110.1 4,519,072
118 4,519,073
124 4,519,074

CLASS 371

15 4,519,075
21 4,519,076
4,519,077
25 4,519,078
38 4,519,079
43 4,519,080
57 4,519,081

CLASS 372

42 4,519,082

CLASS 374

144 4,518,268

CLASS 375

9 4,519,083
14 4,519,084
27 4,519,085
120 4,519,086

CLASS 376

230 4,518,559
245 4,518,560
293 4,518,561
313 4,518,562

CLASS 377

10 4,519,087
16 4,519,088
4,519,089
29 4,519,090
44 4,519,091

CLASS 378

045 4,519,092
132 4,519,093

CLASS 381

43 4,519,094

CLASS 383

86 4,519,095

CLASS 400

124 4,518,269
240.4 4,518,270
636.1 4,518,271
705.1 4,518,272

CLASS 401

98 4,518,273
195 4,518,274

CLASS 402

80 P 4,518,275

CLASS 403

13 4,518,276
102 4,518,277
230 4,518,278
231 4,518,279

CLASS 405

17 4,518,280
61 4,518,281
259 4,518,282
260 4,518,283
296 4,518,284
302 4,518,285

CLASS 406

46 4,518,286

CLASS 409

26 4,518,287
219 4,518,288
244 4,518,289

CLASS 411

30 4,518,290
60 4,518,291
82 4,518,292
107 4,518,293
188 4,518,294
291 4,518,295
437 4,518,297

CLASS 412

37 4,518,296

CLASS 414

4 4,518,298
24.6 4,518,299
46 4,518,300
129 4,518,301
273 4,518,302
528 4,518,303
542 4,518,304
719 4,518,305
726 4,518,306
729 4,518,307
735 4,518,308
745 4,518,309

CLASS 415

36 4,518,310
102 4,518,311

CLASS 416

13 4,518,312
18 4,518,313
93 R 4,518,314
241 B 4,518,315

CLASS 417

12 4,518,316
45 4,518,317
53 4,518,318
217 4,518,319
4,518,320
218 4,518,321
222 4,518,322
312 4,518,323
366 4,518,324
368 4,518,325
372 4,518,326
477 4,518,327
511 4,518,328
566 4,518,329

CLASS 418

63 4,518,330
132 4,518,331
150 4,518,332
152 4,518,333
153 4,518,665

CLASS 419

29 4,518,563

CLASS 420

464 4,518,564

CLASS 422

58 4,518,565
88 4,518,566
143 4,518,567
261 4,518,568

CLASS 423

19 4,518,569
63 4,518,570
119 4,518,571
234 4,518,572
303 4,518,573
360 4,518,574
447.3 4,518,575
573 R 4,518,576
4,518,577

CLASS 424

7.1 4,518,578
9 4,518,579
16 4,518,580
48 4,518,581
66 4,518,582
80 4,518,583
85 4,518,584
130 4,518,585
195 4,518,593
195.1 4,518,591
4,518,592

CLASS 425

77 4,518,334
78 4,518,335
110 4,518,336
167 4,518,337
183 4,518,338
367 4,518,339
393 4,518,340
405 H 4,518,341
435 4,518,342
466 4,518,343
570 4,518,344

CLASS 426

4 4,518,615
40 4,518,616
231 4,518,617
262 4,518,618
265 4,518,619
291 4,518,620
495 4,518,621
578 4,518,622

CLASS 427

8 4,518,623
34 4,518,624
37 4,518,625
48 4,518,626
4,518,627
55 4,518,628
89 4,518,629
93 4,518,630
96 4,518,631
118 4,518,632
120 4,518,633
128 4,518,634
232 4,518,635
282 4,518,636
359 4,518,637
407.1 4,518,638

CLASS 428

35 4,518,639
102 4,518,640
131 4,518,643
150 4,518,641
172 4,518,642
198 4,518,644
212 4,518,645
248 4,518,646
250 4,518,647
256 4,518,648
284 4,518,649
286 4,518,650
291 4,518,658
308.8 4,518,651
312.4 4,518,652
329 4,518,655
331 4,518,654
378 4,518,653
403 4,518,656
450 4,518,657
539.5 4,518,659
577 4,518,660
598 4,518,661
675 4,518,662

CLASS 429

18 4,518,663
38 4,518,664

CLASS 430

7 4,518,666
22 4,518,667
49 4,518,668
57 4,518,669
58 4,518,670
84 4,518,671
106 4,518,672
108 4,518,673
4,518,674
256 4,518,675
280 4,518,676
306 4,518,677
311 4,518,678
372 4,518,679
393 4,518,680
403 4,518,684
505 4,518,685
512 4,518,686
527 4,518,354
532 4,518,681
543 4,518,682
544 Re.31,893
546 4,518,683
548 4,518,687
551 4,518,688
574 4,518,689

CLASS 431

24 4,518,345
265 4,518,348
266 4,518,346
325 4,518,347

CLASS 432

11 4,518,349
13 4,518,350
18 4,518,351
199 4,518,352
205 4,518,353

CLASS 433

29 4,518,355
102 4,518,356
173 4,518,357

CLASS 434

20 4,518,360
195 4,518,358
4,518,359
307 4,518,361

CLASS 435

71 4,518,690
74 4,518,691
116 4,518,692
178 4,518,693
188 4,518,694
206 4,518,695
253 4,518,696
254 4,518,697
317 4,518,698

CLASS 436

49 4,518,699
52 4,518,700
500 4,518,701

CLASS 440

6 4,518,362
89 4,518,363

CLASS 441

129 4,518,364

CLASS 445

67 4,518,365

CLASS 446

366 4,518,366
373 4,518,367

CLASS 455

137 4,519,096

CLASS 464

70 4,518,368
101 4,518,369
113 4,518,370

CLASS 474

94 4,518,372
109 4,518,373
114 4,518,371
170 4,518,374
205 4,518,375
261 4,518,376

CLASS 493

58 4,518,377
204 4,518,378
334 4,518,379
420 4,518,380
444 4,518,381

CLASS 501

90 4,518,702

CLASS 502

63 4,518,703
80 4,518,704
101 4,518,705
104 4,518,706
174 4,518,707
209 4,518,523
230 4,518,708
254 4,518,709
309 4,518,710

CLASS 514

2 4,518,614
11 4,518,711
12 4,518,586
19 4,518,587
27 4,518,589
29 4,518,590
58 4,518,588
155 4,518,594
178 4,518,595
197 4,518,606
212 4,518,598
228 4,518,597
232 4,518,596
255 4,518,599
4,518,712
256 4,518,600
326 4,518,713
332 4,518,602
340 4,518,601
4,518,604
352 4,518,603
383 4,518,605
399 4,518,607
420 4,518,608
448 4,518,609
457 4,518,612
470 4,518,611
513 4,518,613
516 4,518,610

CLASS 518

700 4,518,715
721 4,518,714

CLASS 521

82 4,518,716
109.1 4,518,717
122 4,518,718
136 4,518,719
156 4,518,720

CLASS 523

120 4,518,721
135 4,518,722
466 4,518,723
501 4,518,724

CLASS 524

3 4,518,725
32 4,518,726
35 4,518,727
88 4,518,728
101 4,518,729
114 4,518,730
166 4,518,731
178 4,518,732
274 4,518,733
378 4,518,734
403 4,518,735
404 4,518,736
413 4,518,737
435 4,518,738
783 4,518,740

CLASS 525

54.5 4,518,741
67 4,518,742
79 4,518,515
80 4,518,743
184 4,518,744
326.6 4,518,745
443 4,518,746
462 4,518,747
481 4,518,748
504 4,518,749

CLASS 526

68 4,518,750
114 4,518,751
116 4,518,752
177 4,518,753
262 4,518,754
4,518,755
313 4,518,756
329 4,518,757

CLASS 528

12 4,518,758
35 4,518,759
48 4,518,760
67 4,518,761

CLASSIFICATION OF PATENTS

95	4,518,762		CLASS 544	353	4,518,782	124	4,518,791		CLASS 564	946	4,518,812
173	4,518,763	16	4,518,773		4,518,783	163	4,518,792	201	4,518,802		CLASS 570
271	4,518,764	22	4,518,774		CLASS 549	175	4,518,793	410	4,518,803	241	4,518,813
314	4,518,765	92	4,518,775	39	4,518,784	192	4,518,794	442	4,518,804		CLASS 585
370	4,518,766	206	4,518,776	453	4,518,785	193	4,518,795		CLASS 568	523	4,518,814
374	4,518,767	337	4,518,777	552	4,518,786	208	4,518,796	444	4,518,805		CLASS 604
483	4,518,768	398	4,518,778		CLASS 556	231	4,518,797	659	4,518,806	27	4,518,382
486	4,518,769		CLASS 546	442	4,518,787	233	4,518,798	716	4,518,807	51	4,518,383
487	4,518,770	144	4,518,779		CLASS 560		CLASS 562	765	4,518,808	61	4,518,384
	CLASS 536	167	4,518,780	064	4,518,788	423	4,518,799	840	4,518,809	68	4,518,385
21	4,518,771		CLASS 548	105	4,518,789	459	4,518,800	905	4,518,810	89	4,518,386
119	4,518,772	221	4,518,781	118	4,518,790	559	4,518,801	943	4,518,811	187	4,518,387
										332	4,518,388
										339	4,518,389

CLASSIFICATION OF DESIGNS

D2—	314	278,850		327	278,867		382	278,882	D14—	5	278,898		124	278,914
	320	278,851		347	278,868		399	278,883		6	278,899		131	278,915
		278,852		349	278,864		499	278,884			278,900	D17—	1	278,917
	343	278,854		366	278,869	D9—	349	278,885		33	278,901	D18—	7	278,916
	400	278,853		369	278,870		375	278,886		52	278,902	D19—	52	278,918
	405	278,855			278,871		403	278,887		53	278,903	D21—	48	278,919
D3—	35	278,856		381	278,872		449	278,888			278,904		59	278,920
	52	278,857		517	278,873	D10—	15	278,889		68	278,905		124	278,921
	71	278,858			278,874		75	278,890		71	278,906		150	278,922
		278,859		566	278,875	D11—	130.1	278,891		84	278,907		165	278,923
		278,860	D8—	52	278,876	D12—	7	278,892		100	278,908		193	278,924
	72	278,861		71	278,877		146	278,893		102	278,909		226	278,925
	76	278,862		300	278,878		157	278,894		113	278,910	D22—	27	278,926
D4—	108	278,863		303	278,879		167	278,895			278,911		30	278,927
D6—	311	278,865		347	278,880	D13—	34	278,896	D15—	69	278,912	D23—	11	278,928
	319	278,866		359	278,881		40	278,897	D16—	45	278,913		56	278,929

D24—	21	278,930			278,933			278,936			278,939			278,942
	31	278,931		86	278,934		65	278,937	D28—	56	278,939	D32—	18	278,942
D25—	2	278,932			278,935		132	278,938		93	278,940	D34—	19	278,943
		278,933	D26—	49	278,936				D30—	8	278,941		28	278,944

CLASSIFICATION OF PLANTS

P.—	9	5,470	10	5,471	35	5,472	41	5,473	43	5,474	74	5,475

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 :	4,518,094		4,518,441	08 :	4,517,758		4,518,426		4,518,294	21 :	4,517,923
01 :	4,517,798		4,518,476		4,518,089		4,518,442		4,518,308		4,517,992
	4,518,390		4,518,490		4,518,107		4,518,580		4,518,344		4,517,995
	4,518,396		4,518,493		4,518,111		4,518,719		4,518,362		4,518,142
	4,518,401		4,518,502		4,518,116		4,518,728		4,518,364		4,518,301
	4,518,829		4,518,526		4,518,634		4,518,858		4,518,367	22 :	4,517,760
04 :	4,518,418		4,518,528		4,518,833		4,518,869		4,518,428		4,517,781
	4,518,661		4,518,559		4,518,847		4,518,874		4,518,488		4,517,809
	4,518,711		4,518,584		4,519,060		4,518,947		4,518,548		4,517,828
	4,518,982		4,518,586		4,519,078		4,518,961		4,518,557		4,518,048
05 :	4,517,905		4,518,607	09 :	4,517,693		4,519,025		4,518,619		4,518,148
06 :	Re.31,895		4,518,609		4,517,759		4,519,066		4,518,652		4,518,164
	4,517,686		4,518,618		4,517,820	13 :	4,517,954		4,518,710		4,518,693
	4,517,691		4,518,621		4,518,207		4,517,956		4,518,723	23 :	4,517,932
	4,517,696		4,518,632		4,518,217		4,518,016		4,518,734		4,518,595
	4,517,729		4,518,678		4,518,263		4,518,194		4,518,746		4,518,831
	4,517,731		4,518,700		4,518,281		4,518,279		4,518,795	24 :	4,517,690
	4,517,772		4,518,701		4,518,386		4,518,491		4,518,930		4,517,700
	4,517,778		4,518,703		4,518,457		4,518,507		4,518,939		4,517,851
	4,517,802		4,518,717		4,518,473		4,518,508		4,518,992		4,517,864
	4,517,803		4,518,718		4,518,506		4,518,963		4,518,997		4,517,881
	4,517,840		4,518,735		4,518,530		4,519,009		4,519,022		4,518,066
	4,517,874		4,518,797		4,518,564	17 :	4,517,709		4,519,023		4,518,096
	4,517,888		4,518,819		4,518,590		4,517,716		4,519,068		4,518,335
	4,517,892		4,518,822		4,518,622		4,517,717		4,519,072		4,518,384
	4,517,906		4,518,823		4,518,721		4,517,722		4,519,096		4,518,430
	4,517,907		4,518,848		4,518,737		4,517,764	18 :	4,517,756		4,518,544
	4,517,912		4,518,860		4,518,765		4,517,768		4,517,796		4,518,562
	4,517,943		4,518,875		4,518,786		4,517,788		4,517,886		4,518,684
	4,517,957		4,518,876		4,518,803		4,517,792		4,517,901		4,518,722
	4,517,964		4,518,877		4,518,832		4,517,806		4,517,929		4,518,866
	4,517,968		4,518,881		4,518,898		4,517,833		4,517,969		4,518,931
	4,517,978		4,518,889		4,518,907		4,517,844		4,517,996		4,519,080
	4,517,985		4,518,911		4,518,915		4,517,877		4,518,139	25 :	4,517,697
	4,517,989		4,518,940		4,519,048		4,517,925		4,518,235		4,517,736
	4,518,004		4,518,944	10 :	4,518,343		4,517,970		4,518,531		4,517,744
	4,518,041		4,518,960		4,518,356		4,517,972		4,518,547		4,517,847
	4,518,078		4,518,967		4,518,440		4,517,984		4,518,565		4,517,904
	4,518,103		4,518,972		4,518,651		4,517,999		4,518,620		4,517,955
	4,518,121		4,518,981		4,518,958		4,518,000		4,518,830		4,517,965
	4,518,140		4,519,001	11 :	4,517,830		4,518,012		4,518,896		4,517,981
	4,518,152		4,519,004	12 :	Re.31,894		4,518,021	19 :	4,517,795		4,518,108
	4,518,163		4,519,034		4,517,698		4,518,057		4,517,855		4,518,143
	4,518,183		4,519,037		4,517,754		4,518,061		4,518,044		4,518,151
	4,518,188		4,519,043		4,517,861		4,518,086		4,518,045		4,518,219
	4,518,210		4,519,050		4,517,898		4,518,167		4,518,046		4,518,223
	4,518,240		4,519,070		4,517,963		4,518,168		4,518,191		4,518,232
	4,518,255		4,519,076		4,517,979		4,518,171		4,518,193		4,518,256
	4,518,274		4,519,086		4,517,986		4,518,199		4,518,225		4,518,361
	4,518,282		4,519,087		4,517,987		4,518,208		4,518,905		4,518,368
	4,518,287		4,519,090		4,518,022		4,518,211	20 :	4,518,372		4,518,379
	4,518,295		4,519,091		4,518,312		4,518,276		4,518,647		4,518,468
	4,518,371		4,519,092		4,518,402		4,518,293		4,518,957		4,518,627

4,518,691
4,518,692
4,518,854
4,518,857
4,518,897
4,518,920
4,518,921
4,518,922
4,518,998
4,519,028
4,519,030
26 : 4,517,724
4,517,815
4,517,832
4,517,926
4,517,993
4,518,026
4,518,069
4,518,106
4,518,117
4,518,130
4,518,132
4,518,187
4,518,200
4,518,268
4,518,289
4,518,447
4,518,450
4,518,524
4,518,631
4,518,663
4,518,664
4,518,716
4,518,736
4,518,799
4,518,804
4,518,836
4,518,990
27 : 4,517,685
4,517,689
4,517,699
4,517,704
4,517,884
4,517,922
4,517,967
4,518,047
4,518,072
4,518,073
4,518,110
4,518,118
4,518,135
4,518,296
4,518,320
4,518,350
4,518,397
4,518,432
4,518,459
4,518,845
4,518,853
4,519,014
4,519,016
4,519,041
4,519,065
29 : 4,517,873
4,518,058
4,518,345
4,518,399
4,518,509
4,518,519
4,518,542
4,518,809
31 : 4,517,924
32 : 4,518,001

4,518,098
4,518,203
33 : 4,518,351
4,518,405
4,518,918
4,518,936
34 : 4,517,687
4,517,703
4,517,712
4,517,752
4,517,895
4,517,918
4,517,990
4,517,991
4,518,002
4,518,030
4,518,092
4,518,097
4,518,102
4,518,114
4,518,157
4,518,165
4,518,216
4,518,218
4,518,358
4,518,388
4,518,395
4,518,413
4,518,451
4,518,455
4,518,456
4,518,458
4,518,469
4,518,480
4,518,485
4,518,503
4,518,510
4,518,517
4,518,520
4,518,534
4,518,551
4,518,553
4,518,574
4,518,582
4,518,585
4,518,599
4,518,615
4,518,649
4,518,666
4,518,667
4,518,690
4,518,707
4,518,708
4,518,713
4,518,757
4,518,767
4,518,780
4,518,792
4,518,798
4,518,893
4,518,894
4,518,934
4,518,943
4,518,948
4,518,950
4,518,994
4,518,996
4,519,024
4,519,073
4,519,074
4,519,079
4,519,084
4,519,094

35 : 4,517,745
4,517,862
4,518,314
4,518,826
36 : Re.31,891
4,517,734
4,517,740
4,517,741
4,517,749
4,517,766
4,517,805
4,517,817
4,517,894
4,517,975
4,517,994
4,517,998
4,518,015
4,518,074
4,518,084
4,518,112
4,518,141
4,518,213
4,518,222
4,518,233
4,518,245
4,518,246
4,518,259
4,518,272
4,518,360
4,518,400
4,518,478
4,518,545
4,518,546
4,518,573
4,518,624
4,518,654
4,518,655
4,518,705
4,518,709
4,518,727
4,518,773
4,518,779
4,518,782
4,518,788
4,518,790
4,518,821
4,518,834
4,518,837
4,518,846
4,518,849
4,518,870
4,518,891
4,518,895
4,518,910
4,518,912
4,518,924
4,518,945
4,518,953
4,518,969
4,518,979
4,519,000
4,519,032
4,519,039
4,519,061
4,519,088
4,519,095
37 : 4,517,720
4,517,958
4,518,034
4,518,133
4,518,642
4,519,018

38 : 4,518,043
39 : 4,517,751
4,517,866
4,517,893
4,517,917
4,517,919
4,518,017
4,518,095
4,518,115
4,518,149
4,518,166
4,518,257
4,518,266
4,518,288
4,518,310
4,518,323
4,518,337
4,518,387
4,518,406
4,518,408
4,518,486
4,518,523
4,518,558
4,518,623
4,518,625
4,518,646
4,518,659
4,518,681
4,518,694
4,518,699
4,518,741
4,518,759
4,518,772
4,518,902
4,518,995
4,519,017
4,519,071
40 : 4,517,775
4,517,779
4,517,885
4,518,040
4,518,150
4,518,260
4,518,393
4,518,434
4,518,484
4,518,487
4,518,489
4,518,492
4,518,575
4,518,706
4,518,814
4,519,053
41 : 4,517,746
4,518,275
4,518,820
42 : 4,517,702
4,517,718
4,517,762
4,517,765
4,517,782
4,517,807
4,517,821
4,517,824
4,517,889
4,517,890
4,517,913
4,517,916
4,517,927
4,517,997
4,518,083

4,518,101
4,518,145
4,518,156
4,518,175
4,518,185
4,518,209
4,518,220
4,518,292
4,518,300
4,518,349
4,518,394
4,518,411
4,518,423
4,518,424
4,518,433
4,518,479
4,518,518
4,518,522
4,518,570
4,518,583
4,518,611
4,518,650
4,518,653
4,518,677
4,518,789
4,518,806
4,518,843
4,518,856
4,518,879
4,518,885
4,518,917
4,518,926
4,518,983
4,519,027
4,519,055
4,519,047
43 : 4,517,910
44 : 4,518,126
4,518,762
45 : 4,518,018
4,518,104
4,518,162
4,518,471
4,518,482
4,518,483
4,518,817
46 : 4,518,299
47 : 4,517,714
4,517,902
4,518,177
4,518,366
4,518,431
4,518,714
4,518,760
4,518,763
4,518,769
4,518,808
48 : 4,517,761
4,517,787
4,517,789
4,517,790
4,517,835
4,517,836
4,517,876
4,517,931
4,518,005
4,518,035
4,518,037
4,518,038
4,518,039
4,518,042
4,518,120

4,518,144
4,518,146
4,518,170
4,518,189
4,518,303
4,518,309
4,518,329
4,518,495
4,518,504
4,518,576
4,518,577
4,518,579
4,518,715
4,518,720
4,518,749
4,518,770
4,518,777
4,518,778
4,518,888
4,519,011
4,519,020
4,519,029
4,519,031
4,519,033
4,519,045
4,519,052
4,519,077
4,519,083
49 : 4,517,880
4,517,971
4,517,974
4,518,025
4,518,568
4,518,614
51 : 4,517,701
4,517,825
4,517,860
4,517,887
4,518,085
4,518,198
4,518,277
4,518,313
4,518,382
4,518,603
4,518,628
4,518,643
4,519,082
53 : 4,517,735
4,517,784
4,517,813
4,517,841
4,517,842
4,517,872
4,518,007
4,518,137
4,518,153
4,518,179
4,518,307
4,518,325
4,518,825
54 : 4,518,805
55 : 4,517,748
4,517,911
4,517,942
4,518,008
4,518,077
4,518,195
4,518,363
4,518,696
4,518,855
4,519,054
56 : 4,518,403

DESIGN PATENTS

06 : 278,856
278,863
278,883
278,885
278,888
278,894
278,902
278,904
278,910
278,914
278,917

278,920
278,922
278,923
278,939
278,940
08 : 278,878
09 : 278,912
12 : 278,905
278,908
278,926
13 : 278,865

17 : 278,887
278,919
278,925
21 : 278,882
24 : 278,896
25 : 278,851
278,909
278,930
26 : 278,893
278,924
27 : 278,876

29 : 278,868
278,884
33 : 278,897
34 : 278,877
278,918
36 : 278,866
278,867
278,891
278,901
278,921

278,937
278,938
37 : 278,873
278,874
278,916
38 : 278,941
39 : 278,886
278,927
278,928
47 : 278,857

278,858
278,859
278,860
278,862
48 : 278,944
50 : 278,864
53 : 278,854
278,889
278,932
278,933

PLANT PATENTS

06 : 5,470

5,473

5,474

5,475

25 : 5,471

53 : 5,472

U.S. GOVERNMENT PRINTING OFFICE : O—1985

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Acting Commissioner*

oute to:

**U.S.
DEPARTMENT
F COMMERCE**

**Patent
and
Trademark
Office**

Vol. 1054 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 28, 1985

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
May 28, 1985 Volume 1054 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1054 OG 26
Notice of Maintenance Fees Payable	1054 OG 26
Board of Appeals Decisions Rendered	1054 OG 26
Reissue Applications Filed	1054 OG 26
Requests for Reexaminations Filed	1054 OG 27
Recordations of Trade Name	1054 OG 27
Notification of Errors in Trademark Official Gazette	1054 OG 28
PTO Status	1054 OG 29
Patent Certificates of Correction	1054 OG 31
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1054 OG 32
Condition of Patent Applications	1054 OG 33
Reexaminations	1475
Reissue Patents Granted (31,897)	1479
Plant Patents Granted (5,476)	1481
Patents Granted	
General and Mechanical (4,519,097)	1483
Chemical (4,519,802)	1729
Electrical (4,520,227)	1851
Design Patents Granted (278,945)	1949
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 53
Classification of	
Patents (Including Reissues and Reexaminations)	PI 57
Designs and Plants	PI 60
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 61
Designs and Plants	PI 62
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

May 7, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 25, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,330,887 through 4,332,032

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Board of Appeals Decisions Rendered in the Month of Apr. 1985

Affirmed	183
Affirmed in Part	27
Reversed	94
Total	304

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,997,241, Re. S.N. 711,820, Filed Mar. 14, 1985, Cl. 350/96.33, OPTICAL WAVEGUIDE TRANSMITTING LIGHT WAVE ENERGY IN SINGLE MODE, Shigeo Nishida, et al., Owner of Record: *50% to Hitachi, Ltd., Tokyo, Japan, 50% to Shojiro Kawakami, Sendai-Shi, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 251

4,027,171, Re. S.N. 699,350, Filed Feb. 8, 1985, Cl. 307/039, POWER DEMAND LIMITING SYSTEM, Joe B. Browder, et al., Owner of Record: *Assors. by direct and mesne assights. of 45% to Joe B. Browder; 5% to Walter R. Hensley; 45% to M.R.C. Realty , Inc. and 5⅓% collectivley to Edward Taylor Newton, George M. Hopkins, et al., Atlanta, Ga.,* Attorney or Agent: George M. Hopkins, et al., Ex. Gp.: 214

4,053,301, Re. S.N. 719,967, Filed Apr. 2, 1985, Cl. 075/011, PROCESS FOR THE DIRECT PRODUCTION OF STEEL, Frank M. Stephens, Owner of Record: *Hazen Research, Inc., Golden, Colo.,* Attorney or Agent: Philip H. Sheridan, et al., Ex. Gp.: 111

4,356,268, Re. S.N. 665,396, Filed Oct. 26, 1984, Cl. 210/611, METHOD FOR TREATING WASTE WATER, Norio Shimizu, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Thomas E. Beall, Jr., et al., Ex. Gp.: 136

4,372,705, Re. S.N. 699,698, Filed Feb. 8, 1985, Cl. 405/019, ARTICULATED EROSION CONTROL SYSTEM, Francis S. Atkinson, Owner of Record: *Inventor,* Attorney or Agent: Paul E. Krieger, et al., Ex. Gp.: 351

4,384,301, Re. S.N. 716,293, Filed Mar. 26, 1985, Cl. 357/23.3, HIGH PERFORMANCE SUBMICRON METAL-OXIDE-SEMICONDUCTOR FIELD EFFECT TRANSISTOR DEVICE STRUCTURE, Alf. Tasch, Jr., Pallab K. Chatterjee, et al., Owner of Record: *Texas Instruments, Inc., Dallas, Tex.,* Attorney or Agent: Douglas A. Sorensen, et al., Ex. Gp.: 253

4,436,376, Re. S.N. 710,846, Filed Mar. 12, 1985, Cl. 350/332, LIGHT MODULATOR, EMODULATOR AND METHOD OF COMMUNICATION EMPLOYING THE SAME, James L. Fergason, Owner of Record: *Inventor,* Attorney or Agent: Thomas H. Murray, et al., Ex. Gp.: 257

4,440,746, Re. S.N. 716,051, Filed Mar. 26, 1985, Cl. 424/078, GRANULAR PESTICIDE COMPOSITION, Michael J. Maglio, Owner of Record: *Pennwalt Corp., Philadelphia, Pa.,* Attorney or Agent: David Edwards, Ex. Gp.: 125

4,457,504, Re. S.N. 718,467, Filed Apr. 1, 1985, Cl. 269/296, COLLAPSIBLE/KNOCKDOWN SAWBUCK, Gilbert E. Mottla, Owner of Record: *Inventor,* Attorney or Agent: David S. Fishman, et al., Ex. Gp.: 323

4,458,318, Re. S.N. 720,327, Filed Apr. 5, 1985, Cl. 364/424.1, CONTROL ARRANGEMENT FOR A VARIABLE PULLEY TRANSMISSION, Jeoffrey N. Smit, et al., Owner of Record: *Borg-Warner Corp., Chicago, Ill.,* Attorney or Agent: Florian Gregorczyk, et al., Ex. Gp.: 237

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,500,938, Reexam. No. 90/000,768, Requested: Apr. 26, 1985, Cl. 173/40, UNIVERSALLY MOUNTED DRILLING MAST, John V. Watson, Owner of Record: *Watson Manufacturing Co., Fort Worth, Tex.,* Attorney or Agent: Wofford & Felsman, Ex. Gp.: 324, Requester: Jerry D. Wilkinson, Perris, Calif.

3,781,853, Reexam. No. 90/000,764, Requested: Apr. 24, 1985, Cl. 340/985, NAVIGATIONAL LIGHT SYSTEM, Thomas A. Jacobs, Owner of Record: *Tideland Signal Corp., Houston, Tex.,* Attorney or Agent: James F. Weiler, Ex. Gp.: 264, Requester: Automatic Power, Inc., Philadelphia, Pa.

4,140,387, Reexam. No. 90/000,769, Requested: Apr. 30, 1985, Cl. 355/14, APPARATUS FOR PRODUCING COLLATED COPIES FROM TWO SIDED ORIGINALS, Gary B. Gustafson, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: Paul R. Holmes, Ex. Gp.: 210, Requester: Boris Haskell, Arlington, Va.

4,141,973, Reexam. No. 90/000,770, Requested: Apr. 30, 1985, Cl. 514/54, ULTRAPURE HYALURANIC ACID AND THE USE THEREOF, Endre A. Balazs, Owner of Record: *Biotrics, Inc., Riverside, N.Y.,* Attorney or Agent: Sheldon Palmer, Ex. Gp.: 125, Requester: Roland T. Bryan, Stamford, Conn.

4,212,088, Reexam. No. 90/000,763, Requested: Apr. 22, 1985, Cl. 4/49, APPARATUS FOR CLEANING SWIMMING POOLS, John M. Goettl, et al., Owner of Record: *George J. Ghiz, Phoenix, Ariz.,* Attorney or Agent: Cahill, Sutton, et al., Ex. Gp.: 240, Requester: Aquarian Age Pools, Inc., Phoenix, Ariz.

4,355,032, Reexam. No. 90/000,765, Requested: Apr. 24, 1985, Cl. 424/253, 9-(1,3-DIHYDROXY-2-PROPOXYMETHYL) GUANINE AS ANTIVIRAL AGENT, Julien P. Verheyden, et al., Owner of Record: *Syntex (USA), Inc., Palo Alto, Calif.,* Attorney or Agent: Alan M. Krubiner, Ex. Gp.: 120, Requester: Howard J. Schaeffer, Raleigh, N.C.

4,385,794, Reexam. No. 90/000,767, Requested: Apr. 26, 1985, Cl. 339/36, INSULATION DISPLACEMENT TERMINAL, John E. Lucius, et al., Owner of Record: *AMP, Inc., Harrisburg, Pa.,* Attorney or Agent: Jay L. Seitchik, Ex. Gp.: 210, Requester: Molex, Inc., Lisle, Ill.

4,456,527, Reexam. No. 90/000,762, Requested: Apr. 19, 1985, Cl. 208/89, HYDROCARBON CONVERSION PROCESS, Waldeen C. Buss, et al., Owner of Record: *Chevron Research Co., San Francisco, Calif.,* Attorney or Agent: J. A. Buchanan, Jr., Ex. Gp.: 116, Requester: Exxon Chemical Co., Florham Park, N.J.

Department of the Treasury
UNITED STATES CUSTOMS SERVICE
(T.D. 85-69)
Recordation of Trade Name: "CRISSAIR INC."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Recordation
Summary: On Feb. 5, 1985, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "CRISSAIR INC." was published in the Federal Register (50 FR 5028). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views or arguments submitted in opposition to the recordation and received not later than Apr. 8, 1985. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "CRISSAIR

INC." is recorded as the trade name used by Crissair, Inc., a corporation organized under the laws of the State of California, located at 38905 Tenth St. E., Palmdale, Calif. 93550. The trade name is used in connection with the following merchandise manufactured in the United States: hydraulic, fuel, and pneumatic system components (such as valves and actuators) for both military and civilian aircraft and helicopters.
Date: Apr. 16, 1985
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765)

Apr. 11, 1985

STEVEN I. PINTER,
Acting Director, Entry Procedures and Penalties Division.

Department of the Treasury
UNITED STATES CUSTOMS SERVICE
(T.D. 85-68)
Recordation of Trade Name: "NEENAH FOUNDRY CO."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Recordation
Summary: On Jan. 30, 1985, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "NEENAH FOUNDRY CO." was published in the Federal Register (50 FR 4296). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views of arguments submitted in opposition to the recordation and received not later than Apr. 1, 1985. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "NEENAH FOUNDRY CO." is recorded as the trade name used by "Neenah, Foundry Co.," a corporation organized under the laws of the State of Wisconsin, located at 2121 Brooks Ave. (P.O. Box 729), Neenah, Wis. 54956. The trade name is used in connection with construction castings manufactured in the United States.
Date: Apr. 16, 1985.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765)

Apr. 11, 1985

STEVEN I. PINTER,
Acting Director, Entry Procedures and Penalties Division.

Notification of Errors in Trademark Official Gazette

In view of the establishment of in-house photocomposition of the Trademark Official Gazette, it is important that errors noted by the public be directed to a single office within the Trademark Examining Operation for verification and correction.

Written notification of errors in the publication of marks in the Trademark Official Gazette should include the correspondent's telephone number and should be addressed to the Paralegal Specialist, Office of the Deputy Assistant Commissioner for Trademarks, United States Department of Commerce, Patent and Trademark Office, Washington, D.C. 20231. Error notification may also be done by telephone to the Paralegal Specialist in the Office of the Deputy Assistant Commissioner for Trademarks, at 202-557-3268.

Applicants may use this procedure to notify the Office of errors in relation to marks published in the Official Gazette if the error is purely clerical (e.g. typographical error, drawing printed upside down, or incorrectly stated data). This procedure should not be used to dispute information that is actually of record in the application file. The Paralegal Specialist will review the notification of error and verify the existence of the clerical error, determine whether the error can be corrected without jurisdiction being restored to the Examining Attorney or republication being required, and coordinate the appropriate correction procedure.

Notification must be received by the Office within one week after the Official Gazette publication date to permit processing by the Office.

Apr. 11, 1985

MARGARET M. LAURENCE
Assistant Commissioner for Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for April 1985:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	32	Filings have increased 9% so far this year. Staff being augmented. Goal should be met by June.
Trademarks	30	29	
Patent/Trademark Copies:			
Window Coupons	5	99% within 5 days	
Mail Coupons	29	97% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		March 20, 1985	
Current Mail Date being processed		April 17, 1985	
Certified Copies:			
Trademark Registrations	30	26	
Applications-As-Filed	20	99% within 7 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	98% within 24 hours	
Trademark Search Library:			
Filing Pending Marks	21	27	Reduced 4 days since last month.
Filing Reg. Certificates	3	8	
Assignments:			
Patents	25	18	
Trademarks	25	17	
Avg. Days from Issue Fee Payment to Issue Date	90–100	88	
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Patent Grants Mailed	Issue Date	On schedule	
Trademark Official Gazette:			
In Bookstore	Issue Date	Issue Date	
Mailed	Issue Date	Issue Date	
Trademark Regs. Mailed	Issue Date	Issue Date	
Patent Copies Available	Issue Date	94% within 1 day	
Trademark Copies Available	Issue Date	97% on Issue Date	

*Figures include postal processing and delivery time.

NOTICE

On June 3, 1985, the procedures of the Patent and Trademark Office will be revised to preclude removal of files or other PTO documents from the Public Search Room. The need for this action resulted from an audit conducted by the Department of Commerce Inspector General's Office which found that the practice of removing files from the premises was "contrary to Federal Law" and "not in the best interests of PTO". The audit recommended that this practice be reevaluated and discontinued.

Subsequently, the Patent and Trademark Office, pursuant to the Inspector General's recommendations, conducted an analysis of the current public stenography procedures and their effect on both the security and confidentiality required by the operations of the office.

That analysis indicates that a considerable potential for abuse exists within the current procedures and that, once the removal of files from PTO premises is accomplished, we cannot ensure the security and confidentiality of the information contained therein. The fact that PTO property was recently discovered in premises outside the scope allowed by existing procedures, indicates that the concerns upon which this revision is predicated are valid.

HELPFUL HINTS FROM THE PTO

- *Patent Applications* — We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g. assignments) in separate envelopes from all other mail. Identify on the outside of the envelope "PATENT APPLICATION".
- *Application File Drawings* — Application Branch personnel are having some difficulty matching drawings with applications during pre-examination processing. It would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.
- When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extemely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84(l).
- *Power of Attorney* — The Office receives letters granting power to inspect patent applications. These may only be g ranted by the attorney of record or inventor. Sometimes the person signing the power is not authorized to do so, causing delay until proper authorization is received.
- *Certification Services* — Expedited service requests for certification of copies that have been made by the requester shall be limited to those files open for public inspection. If there is such a need for expedited service, the request should be made to the Manager, Examination Services Division. All other requests for copies must be made to the Certification Branch, which will fill your request within 7 days or less.
- *New Application Filing Problems* — Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to appli cations which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.
Most often, the problems that arise in this area can be characterized as the following:

— Applicants continue to fail to comply with the requirements of 37 CFR 1.60 with regard to what must be submitted upon filing under the rule. This is true even after the clarifying amendments (effective Apr. 1, 1984) were made to the rule. This problem was also addressed in the Official Gazette Notice of May 8, 1984 entitled "Filing of Patent Applications Pursuant to 37 CFR 1.60."
A true copy of the prior application must be filed including the specification (including claims), drawings, oath or declaration which must show the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application.
— Applicants are using transmittal forms which request filings under one rule when, in fact, they wish to file under another rule. For example, a transmittal form requesting filing under 37 CFR 1.62 may be filed when it was really desired to file a divisional application under 37 CFR 1.60 and not to abandon the parent application.
Applications have also been filed with a transmittal form requesting filing under 37 CFR 1.60 when it was intended to file under 37 CFR 1.62. The confusion in the record of such applications must be clarified by a decision on petition before the applications can be processed for examination.
— Some applicants fail to realize that the parent application is abandoned by the filing of a continuing application under 37 CFR 1.62. Paragraph (g) of 37 CFR 1.62 states:

> "The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application."

Correction after such a mistaken filing under 37 CFR 1.62 usually requires a revival of the parent application under 37 CFR 1.137 (a) or (b) which expends resources of both the applicant and the PTO.
— Some applicants are attempting to file continuing applications under 37 CFR 1.62 after payment of the issue fee in the parent application. Such applications are improper and are not entitled to a filing date. Additionally, such filings will not affect the prior application, i.e., the parent application may issue as a patent. Paragraph (a) of 37 CFR 1.62 specifies that continuing applications may be filed under 37 CFR 1.62 "before the payment of the issue fee, abando nment of, or termination of proceedings on the prior application".
— Some applicants are attempting to file continuation-in-part applications under 37 CFR 1.62 with a new specification rather than with the changes made by amendment to the prior application. As stated in 37 CFR 1.62(a) filings under 37 CFR 1.62 use the specification of the prior application.
Paragraph (c) of 37 CFR 1.62 also states:

> "In the case of a continuation-in-part application which *adds and claims additional disclosure by amendment,* an oath or declaration as required by §1.63 must also be filed. . . ." (emphasis added)

May 3, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of May 28, 1985

Re. 31,590	4,461,905	4,481,504	4,491,503
Re . 31,753	4,462,049	4,483,745	4,491,585
4,065,529	4,462,535	4,484,103	4,491,757
4,218,543	4,462,866	4,484,252	4,491,825
4,345,148	4,464,281	4,484,395	4,492,277
4,356,673	4,464,492	4,484,408	4,492,656
4,364,803	4,466,680	4,484,797	4,492,800
4,370,567	4,467,586	4,485,003	4,493,163
4,385,513	4,467,703	4,485,191	4,493,237
4,399,132	4,468,117	4,485,301	4,493,500
4,404,008	4,468,593	4,485,338	4,493,655
4,407,366	4,468,919	4,486,040	4,493,843
4,410,458	4,469,806	4,486,200	4,493,886
4,415,580	4,470,052	4,486,201	4,493,924
4,416,802	4,470,485	4,486,582	4,493,976
4,422,148	4,470,568	4,486,618	4,493,981
4,430,324	4,472,780	4,486,644	4,494,092
4,434,103	4,473,337	4,486,704	4,494,172
4,440,287	4,473,602	4,486,783	4,494,424
4,442,279	4,474,321	4,486,921	4,494,693
4,442,317	4,474,891	4,487,020	4,494,706
4,443,658	4,475,395	4,487,262	4,494,888
4,44 ,157	4,475,705	4,487,477	4,495,226
4,444,571	4,475,925	4,487,583	4,495,353
4,444,603	4,476,584	4,488,232	4,495,932
4,444,829	4,477,302	4,488,624	4,496,418
4,449,509	4,477,854	4,488,740	4,496,590
4,451,449	4,478,623	4,489,163	4,497,023
4,454,343	4,479,068	4,489,248	4,497,499
4,455,975	4,479,632	4,489,300	4,497,544
4,457,325	4,479,936	4,490,136	4,497,751
4,458,099	4,480,019	4,490,192	4,497,934
4,458,261	4,480,043	4,490,297	4,498,236
4,458,490	4,480,113	4,490,424	4,498,296
4,458,503	4,480,121	4,490,522	4,498,741
4,459,591	4,480,145	4,490,974	4,500,584
4,459,770	4,480,413	4,491,313	4,510,066
4,461,820	4,481,427	4,491,326	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln. Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 27, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-12-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	11-05-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-04-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-22-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-1-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-28-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-28-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	1-31-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	4-11-83

Expiration of patents: The patents within the range of numbers indicated below expire during April 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,375,529 to 3,381,302, inclusive

Plant Patents . . . . . Numbers 2,802 to 2,810 inclusive

REEXAMINATIONS

MAY 28, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,665,554 (351st)

METHOD OF EVISCERATING SHELLFISH

Richard T. Wenstrom, Hampton, Va., and Thomas S. Gorton, Jr., Cambridge, Mass., assignors to Slade Gorton & Co., Inc., Boston, Mass.

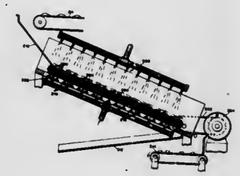
Reexamination Request No. 90/000,400, Jun. 16, 1983.

Reexamination Certificate for Patent No. 3,665,554, issued May 30, 1972, Ser. No. 71,118, Sep. 10, 1970.

Division of Ser. No. 659,274, Jul. 17, 1967, Pat. No. 3,528,124.

Int. Cl.[3] **A22C** *29/00*

U.S. Cl. 17—45



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

New claims **6** and **7** are added and determined to be patentable.

2. The method of removing the viscera from scallops which comprises the steps of feeding a plurality of scallops over a series of pairs of reversely rotating rollers arranged in an inclined flight in a direction substantially perpendicular to the axis of the rollers, successively rotating the scallops with all or less than all of the viscera attached thereto in one direction about their axes while progressively pinching and successively removing portions of the viscera and then rotating the rollers in another direction about their axes for moving the scallops over the flight of rollers to clean the viscera therefrom.

B1 3,903,127 (352nd)

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES WITH A BIURET STRUCTURE

Kuno Wagner; Johannes Eimer; Joachim Zirner, all of Leverkusen; Rainer Raab, Odenthal, and Dietrich Liebsch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Reexamination Request No. 90/000,333, Mar. 1, 1983.

Reexamination Certificate for Patent No. 3,903,127, issued Sep. 2, 1975, Ser. No. 441,778, Feb. 12, 1974.

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1973, 2308015

Int. Cl.[3] **C07C** *118/00, 119/42*

U.S. Cl. 260—453 AB

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **3** is cancelled.

Claims **1**, **2**, **4**, and **5** are determined to be patentable as amended.

1. A process for producing a polyisocyanate with a biuret structure, said polyisocyanate having a maximum viscosity of 50,000 cP at 20° C., said process comprising

A. reacting (1) excess quantities of [an organic] *hexamethylene* diisocyanate [having aliphatically bound isocyanate groups] with (2) a biuretizing agent selected from the group consisting of water and organic compounds which convert organic isocyanates into the corresponding biurets at elevated temperatures, the substituents of said organic compounds being inert in the biuretization process and not forming a constituent of the biuret, at a temperature of from 60° C. to 250° C., and

B. removing excess unreacted *hexamethylene* diisocyanate, said process characterized in that the [organic] *hexamethylene* diisocyanate and biuretizing agent are used in proportions corresponding to a molar ratio of diisocyanate to monofunctional biuretizing agent of at least 11:1.

B1 4,168,315 (353rd)

NOVEL DIANISYL THIAZOLE COMPOUND, COMPOSITIONS AND METHOD OF ANTITHROMBOTIC TREATMENT

Ronald H. Rynbrandt, Portage, and Edward E. Nishizawa, Schoolcraft Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Reexamination Request No. 90/000,466, Nov. 7, 1983.

Reexamination Certificate for Patent No. 4,168,315, issued Sep. 18, 1979, Ser. No. 837,083, Sep. 28, 1977.

Int. Cl.[3] **C07D** *277/20;* **A61K** *31/425*

U.S. Cl. 424—270

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2** and **3** is confirmed.

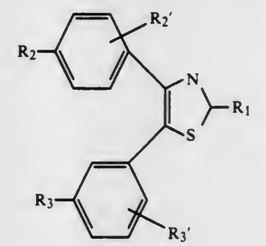
Claims **5**, **7** and **18** are cancelled.

Claims **1**, **8**, **9**, **12** and **16** are determined to be patentable as amended.

Claims **4**, **6**, **10**, **11**, **13–15** and **17**, dependent on an amended claim, are determined to be patentable.

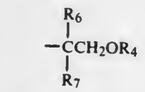
1. A compound of the formula

Formula I



wherein R_2 and R_3 are the same or different, and are selected from the group consisting of hydrogen, fluorine, chlorine, bromine, trifluoromethyl, alkoxy of from one to four carbon atoms, inclusive, thioalkyl of from one to four carbon atoms, inclusive, and alkyl of from one to four carbon atoms, inclusive; R_2' and R_3' are the same or different and are chosen from

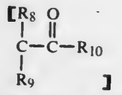
the group consisting of hydrogen and alkoxy *of* from one to four carbon atoms, inclusive, with the proviso that when R_2' is alkoxy, then $R_2=R_2'$ and when R_3' is alkoxy then $R_3=R_3'$; R_1 is selected from the group consisting of [hydrogen;] trifluoromethyl[;] *and*



wherein R_4 is hydrogen, alkyl of one to four carbon atoms, inclusive, or



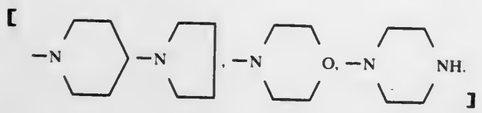
wherein R_5 is alkyl of one to six carbon atoms, inclusive, R_6 and R_7 are the same or different and are chosen from the group consisting of hydrogen and alkyl of one to three carbon atoms[,]



[where R_8 and R_9 are the same or different and are chosen from the group consisting of alkyl of from one to three carbon atoms, inclusive, R_{10} is alkoxy of from one to three carbon atoms, inclusive]



[wherein R_{11} and R_{12} are the same or different and are chosen from the group consisting of hydrogen, alkyl of from one to six carbon atoms, inclusive, cycloalkyl of from five to seven carbon atoms, inclusive, or taken together with the nitrogen atom to which they are attached.]



B1 4,291,597 (354th)
CORK EXTRACTOR

Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.

Reexamination Request No. 90/000,217, Jun. 10, 1982.
Reexamination Certificate for Patent No. 4,291,597, issued Sep. 29, 1981, Ser. No. 17,598, Mar. 5, 1979.
Continuation-in-part of Ser. No. 925,365, Jul. 17, 1978.
The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.48

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **7** is confirmed.

Claims **1** and **6** are determined to be patentable as amended.

Claims **2–5**, dependent on an amended claim, are determined to be patentable.

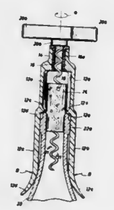
New claim **8** is added and determined to be patentable.

1. Cork extracting apparatus including:

a helical corkscrew comprising a central body and an outer layer of friction reducing polymeric material on at least a portion of the downwardly facing surfaces of said central body;

guide means receiving said corkscrew and permitting longitudinal and rotative movement of said corkscrew;

bottle-engaging means connected to said guide means for positioning said guide means and said corkscrew in generally coaxial alignment with the neck of a bottle, said bottle-engaging means including stop means for limiting downward movement of said guide means with respect to said bottle;



spacer means interconnecting said guide means and said bottle-engaging means and spacing said guide means upwardly from said bottle-engaging means, said spacer means defining an opening for receipt of said cork as it emerges from said bottle;

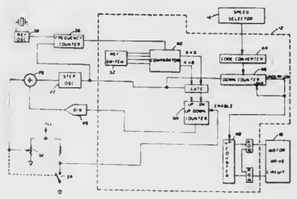
and abutment means carried by said corkscrew for limiting downward movement of said corkscrew with respect to said guide means;

said corkscrew being of a length such that, when said abutment means are engaged to so limit downward movement of said corkscrew, said corkscrew extends into said cork-receiving opening whereby said cork may move threadedly upwardly on said corkscrew as said corkscrew is rotated to withdraw said cork from said bottle.

B1 4,294,086 (355th)
LATCH NEEDLE FOR KNITTING MACHINES

Harald Mayer, and Hardo Berentzen, both of Albstadt, Fed. Rep. of Germany, assignors to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt, Fed. Rep. of Germany

Reexamination Request No. 90/000,556, May 18, 1984.
Reexamination Certificate for Patent No. 4,294,086, issued Oct. 13, 1981, Ser. No. 887,587, Mar. 17, 1978.
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714607
Int. Cl.³ D04B *35/04*
U.S. Cl. 66—121



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

1. A latch needle for knitting or like machines comprising:

an elongated needle shank having an upper edge and a lower edge, and a hook at at least one end thereof and a longitudinally-extending slot formed therein flanked by a pair of opposed faces, and a latch pivotably mounted in said slot and having a spine with a widened wedge-like, rounded portion, said needle shank having a supporting portion for the widened, rounded portion of the spine of the latch at the faces of said shank flanking said longitudinal slot and said supporting portion being recessed relative to the upper edge of said needle shank, said longitudinal slot having a short recessed portion defined by a curved base wall containing an aperture leading to the lower edge of said needle shank and a further portion adjacent to said short portion which defines a channel characterized by an initial substantially rectilinear base wall and a further curved base wall which merges with said upper edge of the needle shank, said supporting portion of said needle shank for said widened, rounded portion of the spine of the latch being located over the substantially rectilinear base wall region of said further portion and said channel of said further portion being deeper than half the height of said needle shank in said substantially rectilinear base wall region and projecting in length beyond the end of said latch when in its rearward open position displaced away from its associated hook.

B1 4,377,847 (356th)
MICROPROCESSOR CONTROLLED MICRO-STEPPING CHART DRIVE

Richard A. Daniel, Lakewood, and Ronald J. Geil, Vermilion, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Reexamination Request No. 90/000,554, May 14, 1984.
Reexamination Certificate for Patent No. 4,377,847, issued Mar. 22, 1983, Ser. No. 234,975, Feb. 17, 1981.
Int. Cl.³ G06F *15/46;* **G05B** *19/40*
U.S. Cl. 364—400

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

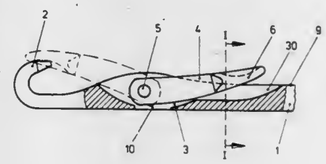
Claims **1–4** are cancelled.

[**1.** A micro-stepping control circuit for a stepper motor of the type used to drive the chart within an oscillographic recorder, said micro-stepping control circuit comprising:

a speed selector means for selecting the speed at which said stepper motor will drive said chart;

a step oscillator means for providing a step frequency pulse signal;

a controller means, said controller means being operatively connected to said speed selector means and said step oscillator means, said controller internally generating a numerical constant whose value is determined by the speed selector means, said numerical constant being either decremented or incremented by at least one pulse from



said step oscillator means, said controller means determining if said numerical constant has reached to some predetermined value and then generating a signal indicative thereof; and

drive means operatively connected to said controller means and said stepper motor for driving said stepper motor with a full wave rectified sine and cosine signal broken into staircase increments, said drive means being updated whenever said controller means determines that said numerical constant reaches said predetermined value wherein update for said drive means provides a incremental part of a full step of said stepper motor,

whereby said chart speed is determined by said numerical constant and the time it takes to reach said predetermined value.]

REISSUES

MAY 28, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

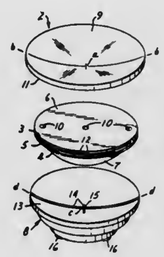
Re. 31,897
METHOD FOR THE ALTERATION OF A LENS

Dee Lynn Johnson, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 3,962,833, dated Jun. 15, 1976, Ser. No. 563,389, Mar. 31, 1975. Application for reissue May 17, 1978, Ser. No. 906,745

Int. Cl.³ B24B *1/00, 13/00*

U.S. Cl. 51—284 R **19 Claims**



27. The method of altering a lens comprising the steps of:

a. adhesively attaching and conforming a conformable lens adhesive blocking pad to one face of a lens, wherein said blocking pad comprises a conformable substrate having a pressure sensitive adhesive applied to the planar surfaces thereof and alignment means therein, and wherein the optical center of said lens is visible through said alignment means;

b. visually aligning the optical center of said lens with the center point of a rigid lens block through said alignment means;

c. adhesively attaching said lens to said block in the aligned condition by means of said pad; and

d. altering said lens.

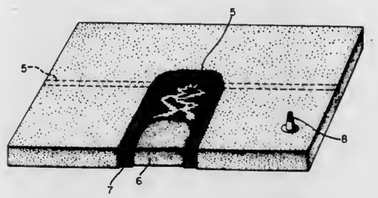
Re. 31,898
INFLATABLE-DEFLATABLE FLEXIBLE STRUCTURAL COMPONENT

Charles A. Suter, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Original No. 3,675,377, dated Jul. 11, 1972, Ser. No. 69,076, Sep. 2, 1970. Application for reissue May 17, 1984, Ser. No. 611,460

Int. Cl.³ E04B *1/343;* **E04G** *9/08;* **B32B** *3/08*

U.S. Cl. 52—2 **3 Claims**



1. An inflatable-deflatable flexible structural component comprising a flexible open celled foam core portion having a fabric covering adhered to and enclosing said foam and having a valve means in communication therewith, the fabric being sealed against loss of air by a flexible elastomeric coating.

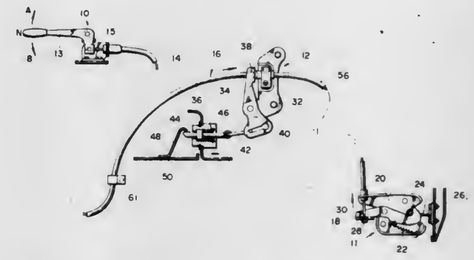
Re. 31,899
REMOTE CONTROL ARRANGEMENT

Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Original No. 4,374,597, dated Feb. 22, 1983, Ser. No. 222,454, Jan. 5, 1981. Application for reissue Sep. 8, 1983, Ser. No. 530,257

Int. Cl.³ E05C *9/00*

U.S. Cl. 292—8 **14 Claims**



5. A remote control arrangement comprising:

a first mechanism;

a second mechanism;

a wire operatively connected at one end to said first mechanism and which is slidably disposed through said second mechanism;

an actuating mechanism having a stationary member and a lever operatively connected to the other end of said wire for selectively moving said wire in first and second axial directions, said first mechanism being operated when said wire is moved in said first axial direction;

a first flexible housing disposed about said wire between said actuating mechanism and said second mechanism, said first flexible housing being operatively connected to said second mechanism;

a second flexible housing disposed about said wire between said second mechanism and said first mechanism, and

a stopper fixed on said wire and adapted to abut a stationary member of said second mechanism when said wire is moved in said second axial direction, said second mechanism being operated when said wire is moved in said second axial direction.

Re. 31,900
PROCESS FOR THE FLOCCULATION OF SUSPENDED SOLIDS

Frederick Halverson, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Original No. 4,342,653, dated Aug. 3, 1982, Ser. No. 216,891, Dec. 16, 1980. Continuation-in-part of Ser. No. 156,145, Jun. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 012,274, Feb. 15, 1979, abandoned. Application for reissue Mar. 16, 1983, Ser. No. 475,963

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—734 **5 Claims**

7. A process for flocculating suspending phosphate slime solids from an aqueous suspension thereof which comprises:

(a) Adding to said suspension an effective amount of a polymeric anionic flocculant comprising:

i. about 40 to about 99 mole percent of repeating units derived from acrylamide;

ii. about 10 to about 20 mole percent of repeating units derived from 2-acrylamido-2-methylpropanesulfonic acid; and

iii. 0 to about 25 mole percent of repeating units derived from acrylic acid;

and wherein said polymeric anionic flocculant has a Brookfield viscosity of about 2.0 centipoises;

(b) Flocculating said solids causing them to settle; and

(c) Compacting the settled floc to produce an underflow of flocculated material with a solids content greater than that of the suspended solids; where the polymeric anionic flocculant has a Brookfield viscosity of at least about 2.0 centipoises.

Re. 31,901

CONTINUOUS ELECTROLYTICAL TREATMENT OF ALUMINUM OR ITS ALLOYS

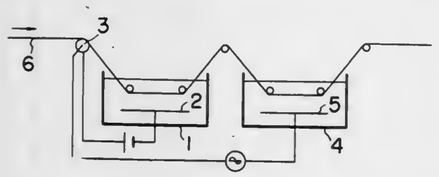
Satoshi Kawai; Yoichi Yamagiwa, both of Chigasaki; Masashi Mizusawa, Fugisawa; Hiroshi Watanabe, Hiratsuka; Yoshio Ando, and Masaaki Takahashi, both of Tokyo, all of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha and Toyo Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Original No. 4,014,758, dated Mar. 29, 1977, Ser. No. 570,376, Apr. 22, 1975. Application for reissue Jun. 24. 1981, Ser. No. 277,613

Claims priority, application Japan, Apr. 23, 1974, 49-46209

Int. Cl.³ C25D *7/06*

U.S. Cl. 204—28 **10 Claims**



10. A process for electrolytically treating aluminum or its alloy in the form of a strip, wire or foil material in a continuous manner which comprises continuously passing the material first through a negatively charging cell, then through an anodic oxidation treatment cell and finally through an electrolytic coloring cell, each cell containing therein an electrolytic solution and comprising an electrode immersed in the electrolytic solution; wherein a circuit is formed by commonly connecting to the electrode in the negatively charging cell a power source for anodizing and a power source for electrolytically coloring, said power source for anodizing being further connected to the electrode in the anodic oxidation treatment cell and said power source for electrolytically coloring being further connected to the electrode of the electrolytic coloring cell, said power source for anodizing being DC and the power source for electrolytically coloring being AC, or the power source for both of them being a single AC-superimposed DC, whereby a current having an alternative wave form rich in positive component is supplied to the electrode of the electrolytic coloring cell, and the aluminum material is negatively charged through the electrolytic solution in the negatively charging cell, anodized in the anodic oxidation treatment cell and colored in the electrolytic coloring cell.

Re. 31,902

DISPERSION STRENGTHENED METALS

Anil V. Nadkarni, Mentor, Ohio, assignor to SCM Corporation, New York, N.Y.

Original No. 4,315,770, dated Feb. 16, 1982, Ser. No. 146,140, May 2, 1980. Application for reissue Dec. 27, 1983, Ser. No. 565,342

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 BC **10 Claims**

1. In a process for dispersion-strengthening atomized alloy particles having an average particle size less than about 300 microns by internally oxidizing said alloy particles, the improvement comprising:

providing atomized *copper/aluminum* alloy particles being substantially free of oxide surface film whereby said alloy is internally oxidized without obstruction of the oxide surface film.

PLANT PATENTS

GRANTED MAY 28, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,476

CARNATION NAMED LONBALMA

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de La Londe, Antibes, France

Filed Jun. 25, 1983, Ser. No. 517,232

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinctive carnation cultivar, substantially as herein shown and described, characterized by the generally violet colored striation on the lightly pinkish background of the many petals of its medium sized blooms.

5,477

CHRYSANTHEMUM

Johannes W. Hubertus van Veen, Ter Aar, Netherlands, assignor to Chrysanthemum Breeders Assoc. N.V., Curacao, Netherlands Antilles

Filed Jul. 25, 1983, Ser. No. 517,219

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum, substantially as described and pictured herein, characterized by its pure white blooms, vigorous growth, eight and one-half week response and permanence.

5,478

CHERRY TREE (KING-44-P-477)

Fred W. Anderson, deceased, late of Merced, Calif., and by Wendel J. Olson, heir, 6015 N. Country Club Pl., Merced, Calif. 95340

Filed Sep. 2, 1983, Ser. No. 528,900

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry tree, substantially as illustrated and described, characterized, in particular, by blooming approximately four days before the Bing, and by the regular and very productive bearing of tough-skinned, firm, sweet, excellent quality, semi-freestone fruit which ripens approximately one week before the Bing; the stem of the fruit being easily detached from the fruiting spurs yet firmly attached to the fruit, and there being resistance to occurrence of spurs and doubling in the fruit in very hot climatic conditions.

5,479

POINSETTIA PLANT NAMED RED CHAMPION

Jack S. Sweet, St. Petersburg, Fla., assignor to Earl J. Small Growers, Inc., Pinellas Park, Fla.

Filed Jul. 19, 1983, Ser. No. 515,155

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct cultivar of poinsettia plant named Red Champion, substantially as illustrated and described, and particularly characterized by its large and deeper than normal red bracts and darker than normal green foliage, very vigorous and strong stems, long lasting characteristics for both foliage and bracts, excellent breaking when pinched, and its ease of propagation from cuttings.

5,480

NECTARINE TREE—N15500

Glenn T. Nakagawa, 15500 S. Chestnut Ave., Fresno, Calif. 93725, assignor to Glenn T. Nakagawa, Fresno and Allan T. Nakagawa, Selma, both of, Calif.

Filed Sep. 26, 1983, Ser. No. 535,734

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, particularly characterized, in comparison with the Flamekist, by late-ripening, clingstone fruit which, at commercial maturity, has more red blush and more skin wax, whereby the fruit has a brighter, glossier overall external finish and appearance.

5,481

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Filed Oct. 11, 1983, Ser. No. 540,413

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by large, well petaled cardinal red flowers borne one to a stem on a vigorous plant.

PATENTS

GRANTED MAY 28, 1985

ERRATA

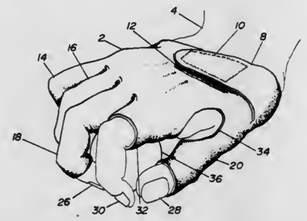
For CLASS	See PATENT NO.
105–218	4,519,329
227–152	4,519,616
111–065	4,519,735
415–092	4,519,744
209–040	4,519,896
427–083	4,520,010
514–012	4,520,016
514–054	4,520,017
514–469	4,520,018
514–212	4,520,021
514–200	4,520,022
514–241	4,520,023
514–255	4,520,024
514–275	4,520,025
514–299	4,520,026
514–354	4,520,027
514–447	4,520,028
514–479	4,520,029
514–629	4,520,030
514–632	4,520,031
514–156	4,520,131
514–560	4,520,132
514–568	4,520,133
514–625	4,520,134
514–598	4,520,176
514–085	4,520,226

PATENTS

GRANTED MAY 28, 1985

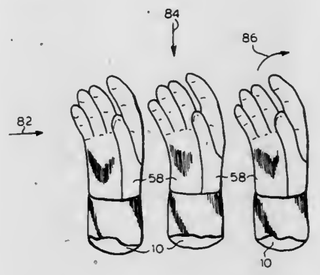
GENERAL AND MECHANICAL

4,519,097
VIDEO GAME PROTECTIVE GLOVE
Johnny L. Chappell, Jr., 5433 Colfax Ave. South, Minneapolis, Minn. 55419, and Charles Johnson, 30 W. 93rd St., No. 204A, Bloomington, Minn. 55420
Filed Apr. 7, 1983, Ser. No. 482,866
Int. Cl.³ A41D *13/10*
U.S. Cl. 2—16 **2 Claims**



1. A protective glove comprising: a glove body, an adjustable means for securing the glove on a user's hand, while adapting the glove for various hand sizes, said adjustable means adapted to leave the user's wrist unfettered and said adjustable means comprising VELCRO hook and loop fasteners; protective fingers at the little finger, ring finger and thumb positions comprising an open-ended tube from the glove body to cover the distal knuckle on these fingers while leaving the fingertips of the user's hand uncovered for better sensitivity of touch; a shorter protective finger at the forefinger position extending from the glove body to approximately one-half the distance of the proximal phalanx of the forefinger to allow greater sensitivity and freedom for the forefinger of the user's hand; and, ventilation means comprising a relatively large opening between the thumb and forefinger covers on said glove and adapted to prevent the user's hand from perspiring while providing the hand with sensitive feel of a video game control.

4,519,098
WEARING APPAREL AND METHODS FOR MANUFACTURING OF WEARING APPAREL
Robert W. Dunmire, Coshocton; Drew J. Miller, Canton, and Michael D. Johnson, Coshocton, all of Ohio, assignors to Becton, Dickinson and Company, Paramus, N.J.
Filed Jun. 8, 1983, Ser. No. 502,396
Int. Cl.³ B29D *27/04;* **A41D** *19/00;* **B29C** *13/04;* **B29H** *3/044*
U.S. Cl. 2—161 R **30 Claims**



1. A work glove, said glove formed in place on a mold passing through a production line; said glove formed by the steps of

(a) dipping in a second dipping step said plurality of liners formed on said molds in an adhesive dip;

(b) indexing said plurality of molds from said second dipping step upwardly;

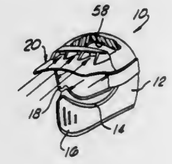
(c) applying a third applying step by blowing a quantity of said fibers from said first selecting step onto the surfaces of said formed liners on said plurality of molds;

(d) blowing off excess fibers from said molds from said third applying step;

(e) applying elevated temperatures to said plurality of molds from said third applying step for a period of time sufficient to dry said plurality of partially formed gloves thereon; and

(f) applying higher elevated temperatures to said plurality of molds from said drying step for a time sufficient to process to final form the said plurality of partially formed gloves on said plurality of molds.

4,519,099
HELMET
Tadashi Kamiya; Kazuhiro Kawasaki, and Akio Muranaka, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 31, 1983, Ser. No. 527,983
Claims priority, application Japan, Sep. 3, 1982, 57-133885[U]
Int. Cl.³ A42B *1/08*
U.S. Cl. 2—424 **14 Claims**



1. A helmet having a face opening comprising, a detachable visor assembly including a visor plate extending outwardly from the front of the helmet above the face opening, inlet air guide means adjacent said visor plate forming a plurality of frontal air pressure cavities with said visor plate, and the helmet having a plurality of interior venting channels connecting to inlet air at said frontal air pressure cavities and exiting air at the rear of said helmet.

4,519,100
DISTAL LOCKING INTRAMEDULLARY NAIL
Robert P. Wills, and Andrew F. Brooker, both of Baltimore, Md., assignors to Orthopedic Equipment Co. Inc., Bourbon, Ind.
Filed Sep. 30, 1982, Ser. No. 430,411
Int. Cl.³ A61F *1/00*
U.S. Cl. 3—1.9 **15 Claims**

1. A dynamic compression nail of intermedullary compression nailing, said nail comprising:

an elongated sheath having a front end and longitudinal slots proximate to said front end and at least partially circumferentially spaced therearound,

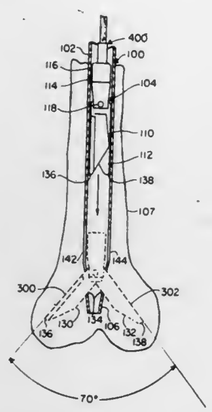
means for fixedly attaching said sheath to the proximal end of the fractured bone,

a conector member dimensioned to freely slide longitudinally within said sheath without rotation relative to said sheath,

a plurality of blades pivotally coupled to said connector member,

means for pivoting each blade outwarly to project through a respective one of said slots and to engage bone tissue at the

distal end of the bone, wherein each slot has a greater longitudinal dimension than the width of the outwardly projecting blades thereby enabling said blades to translate longitudinally within said slot, and said blades are free to move axially with respect to said sheath within the length of said slots, and

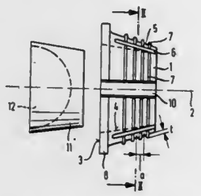


wherein said connector member and said pivoting means are arranged such that when said sheath is fixedly secured to said bone and said connector member is translated longitudinally towards said front end to engage said pivoting means, pivoting said blades outwardly through said slots and into said intermedullary bony tissue secures said nail across the fracture site and permits axial bone movement across the fracture site.

4,519,101
JOINT SOCKET

Adam Schreiber, Kusnacht, and Jacob Hilaire, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 3, 1983, Ser. No. 454,987
Claims priority, application Switzerland, Jan. 8, 1982, 91/82
Int. Cl.³ A61F *1/04*
U.S. Cl. 3—1.912 **10 Claims**



1. A joint socket for anchoring in a bone in cement-free manner; said joint socket comprising

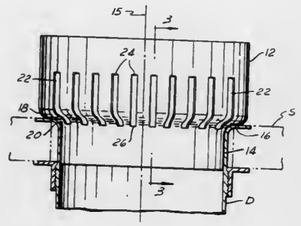
a longitudinally split sleeve of truncated conical shape open at opposite ends to permit radial expansion, said sleeve having a plurality of circumferential depressions defining a plurality of circuumferentially projecting ribs on an outer surface, a plurality of longitudinally disposed grooves in said outer surface and an internal cavity of conical shape; and

a conical insert sized to fit into said cavity of said sleeve in wedging relation and having an internal socket for receiving a joint head.

4,519,102
GARBAGE DISPOSAL GUARD

Ernest Efstratis, 6775 Wing Lake Rd., Birmingham, Mich. 48010

Continuation-in-part of Ser. No. 294,722, Aug. 20, 1981, abandoned. This application Dec. 7, 1983, Ser. No. 559,621
Int. Cl.³ E03C *1/26*
U.S. Cl. 4—292 **1 Claim**

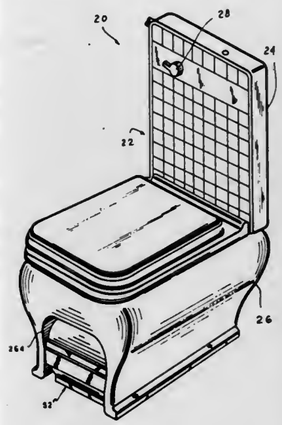


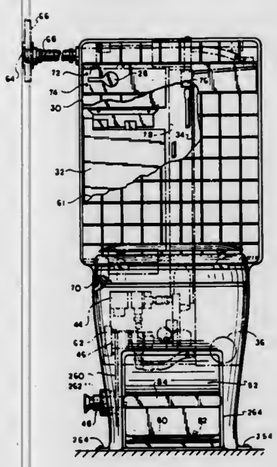
1. A garbage disposal guard comprising a sleeve of flexible, resilient plastic material having an upper substantially cylindrical wall portion of relatively large diameter which is open at the top and a lower substantially cylindrical base portion of smaller diameter than and concentric withsaid wall portion and which is open at the bottom, said wall and base portions being integrally joined by a substantially annular shoulder portion which is disposed substantially perpendicular to said wall and base portions, said shoulder portion merges into said wall and base portions via arcuate portions, said sleeve being adapted to be installed in the drain of a sink equipped with a garbage grinder with its shoulder portion seated upon a portion of the sink surrounding the drain, its base portion extending down into the drain and its wall portion projecting up above the drain, and passage means in said sleeve permitting the flow of liquid from said sink into said drain when said sleeve is installed as aforesaid, said passage means comprising a multiplicity of equally laterally spaced, elongated parallel slots extending through the wall, arcuate portions shoulder and base portions of said sleeve and each disposed in a plane which contains the longitudinal center line of said sleeve, the upper end of each slot being disposed near the mid point of said wall portion in spaced relation above said shoulder portion, each slot extending from its upper end downwardly through the lower part of said wall portion, through said shoulder portion and arcuate portions to its lower end above the bottom edge of said base portion, said slots being relatively narrow but sufficient in number to allow a large enough volume of water flow for the efficient operation of the garbage grinder yet each being sufficiently narrow to prevent flatware and the like from passing through and falling down the drain into the grinder, said sleeve being of one-piece construction and of uniform thickness throughout its full extent, the interior of said sleeve being open and unobstructed from top to bottom so that garbage may be introduced into the relatively large diameter wall portion and passed through the guard and into the grinder while the guard is installed as aforesaid in the drain of the sink, said sleeve being longitudinally split from the upper edge of said wall portion continuously down through the lower edge of said base portion to permit said sleeve to be circumferentially compressed to a smaller diameter in order to fit into drains of different diameters.

4,519,103
SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Kenneth J. De Graw, Montvale; William R. Bocchini, Wyckoff; Brian Wilcockson, Wayne; Armen Bogossian, Teaneck; Robert J. Ulh, Wayne; Earl E. Nause, Bellville, and Ernest R. Ramirez, Far Hills, all of N.J., assignors to American Standard Inc., New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,654
Int. Cl.³ E03D *5/019, 5/016*
U.S. Cl. 4—317 **18 Claims**



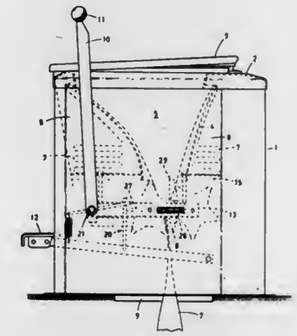


1. A self-contained sewage waste disposal system comprising; a housing structure, a tiolet bowl adapted to receive human waste and fluid for diluting the waste, transporting the waste and rinsing the bowl, a removable filter cassette in the housing in communication with the tiolet bowl, means for flushing the bowl and dumping the contents into the filter cassette and for subsequent refilling of the bowl, filter means in the cassette for separating the coarse and fine particles of solid material from the fluid received from the bowl, storage means in the cassette to store the solid material in a compact manner for subsequent disposal upon removal of the cassette, a reservoir for storage of fluid after removal of solid material therefrom in the cassette, said reservoir being located exteriorly of the cassette, pump means including interconected conduits in the housing to transport fluid from the interior of the system to fill the bowl after a flush and to transport filtered fluid from the filter cassette to a position for recirculation and to the reservoir, means for immediately removing the filtered fluid from the cassette and transferring it to the reservoir after separation from the solid materials, and control means to pass the fluid through the system to facilitate the collection and disposal of sewage waste within the system in a predetermined sequence and to facilitate immediate removal of filtered fluid from the cassette to the reservoir for storage until the next operational sequence without danger of contacting the stored solid material in the cassette.

4,519,104
DEVICE FOR COLLECTING SOLID OR FLUID WASTE

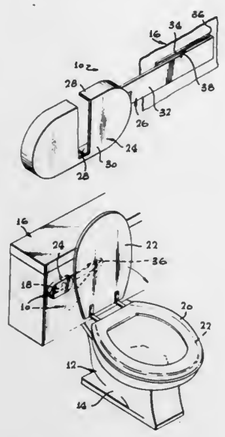
Karl I. Nilsson, Linköping, Sweden, assignor to Klintland, Sweden

PCT No. PCT/SE82/00225, § 371 Date Feb. 18, 1983, § 102(e) Date Feb. 18, 1983, PCT Pub. No. WO83/00082, PCT Pub. Date Jan. 20, 1983
PCT Filed Jul. 3, 1982, Ser. No. 474,572
Claims priority, application Sweden, Jul. 3, 1981, 8104145
Int. Cl.³ A47K *11/00*
U.S. Cl. 4—484 **1 Claim**



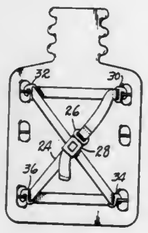
1. In a device for collecting solid or fluid waste in a tube formed of thin flexible impermeable material of considerable length, the tube being stored in a folded or pleated accordian-like fashion and kept outside of a funnel shaped body, the tube being arranged to be advanced over the upper edge of the funnel-shaped body and through a duct exiting from the bottom of the funnel shaped body, a waste receiving chamber positioned below the duct into which the flexible tube is advanced through the duct by means of a feed mechanism, said feed mechanism being arranged to feed a predetermined length of tube and its contents into the waste-receiving chamber, and said feeding mechanism comprises two oppositely mounted rollers which are positioned transverse to the feeding direction of the tube, said rollers serving to advance the tube when the rollers are rotated at essentially equal speed in opposite direction, said rollers being equipped with radially protruding flanges which extend along the full length of the rollers, the improvement wherein the rollers are provided at each end with tilted sliding surfaces against which the outer radial ends of the radial flanges of the other roller are arranged to slide as the rollers rotate, said sliding surfaces being arranged at an angle to the radial direction of each associated flange so as to provide a space for collected waste between the radial flanges as the rollers rotate, each flange being provided with a sealing tip extending axially between the sliding surfaces for engaging the tube extending over the surface of the adjacent roller to provide for sealing of the tube.

4,519,105
APPARATUS FOR CLOSING TOILET SEAT COVER
James R. Blanck, 8401 Remmet St., Canoga Park, Calif. 91304
Filed Apr. 16, 1984, Ser. No. 601,016
Int. Cl.³ A47K *17/00*
U.S. Cl. 4—661 **18 Claims**



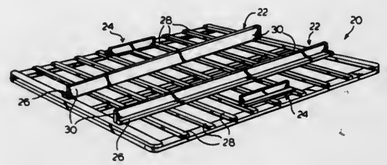
1. An apparatus for closing a toilet seat cover comprising:
a handle guard configured to interact with a toilet flush handle on a toilet tank when said handle guard is in a first position to inhibit access to the flush handle; and
attachment means for movably attaching said handle guard to a toilet tank so that when the toilet seat cover is in a raised position, said handle guard is in said first position wherein said handle guard inhibits access to the flush handle and said attachment means also being for moving the toilet seat cover toward the closed position upon movement of said handle guard away from its first position to achieve access to the toilet flush handle.

4,519,106
SPINE BOARD
Ralph Sandquist, R.D. #3, Jamestown, N.Y. 14701
Filed Aug. 19, 1981, Ser. No. 255,269
Int. Cl.³ A61G *7/08*
U.S. Cl. 5—82 R **3 Claims**



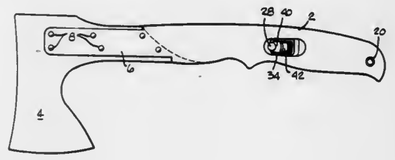
1. A spine board having openings with attachment means for receipt of hooks carried on a securing strap adapted to pass around a patient's torso to secure the torso to the board; comprising:
(a) a board having a substantially rectangular configuration with openings adjacent the opposite edges of the board;
(b) securing means comprising handles in the board openings;
(c) a hook and strap combination;
(d) said strap having a buckle on one free end and a catch on the other free end;
(e) a plurality of hooks carried on strap and freely slidable thereon;
(f) said hooks adapted to engage said handles with the strap passing about a patient's torso and with the buckle and catch locked, the strap being freely tightened to secure the torso to the board; and
(g) at least one of said hooks is permanently fixed to said strap with at least three remaining hooks being feely slidable on the strap.

4,519,107
BOXSPRING HAVING COIL COMPRESSION STOPS
Paul J. Dillon, Atlanta, and Walter Stumpf, Dunwoody, both of Ga., assignors to Simmons U.S.A. Corporation, Atlanta, Ga.
Filed Jul. 8, 1983, Ser. No. 512,099
Int. Cl.³ A47C *23/08*
U.S. Cl. 5—261 **10 Claims**



1. A boxspring comprising:
a frame;
a support surface for supporting a mattress;
spring means including a plurality of coil springs mounted to said frame and resiliently supporting said support surface; and
stop means including a plurality of hollow cylindrical stop members positioned respectively about a plurality of said coil springs and between said frame and said support surface for limiting the potential compression of said spring means, said stop means having a height sufficient to prevent overstressing of said spring means when a load is applied to said support surface.

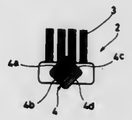
4,519,108
COMBINATION TOOL
Donald E. Hodgson, 9081 Tahoe, Boulder, Colo. 80301
Filed Sep. 9, 1983, Ser. No. 530,511
Int. Cl.³ B25G *1/08*
U.S. Cl. 7—167 **11 Claims**



1. A tool comprising:
a handle;
a head attached to one end of said handle, said head extending in a direction generally perpendicular to the longitudinal axis of said handle;
said head having tool means formed thereon;
a longitudinally extending cavity in said handle;
support means located in said handle adjacent the other end thereof with a portion of said means located in said cavity;
a cutting tool;
means for mounting said cutting tool in said cavity, said means also allowing said cutting means to be completely removed from said cavity and said handle;
said means comprising a cutout adjacent one end of said cutting tool, said cutout cooperating with said portion of said support means in said cavity to support said cutting tool when said cutting tool is mounted in said cavity;
said support means and said cutout cooperating to form means for permitting pivotal movement of said cutting tool into or out of said cavity; and
means for locking said cutting tool in position in said cavity.

4,519,109
TOOTH BRUSH
Beach D. Raymond, 8-20, Wada-cho, Atami-shi, Shizuoka-pref, Japan
Filed Apr. 16, 1984, Ser. No. 601,020
Int. Cl.³ A46B *9/04, 5/02*
U.S. Cl. 15—110 **3 Claims**





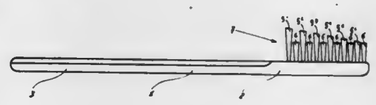
1. A toothbrush comprising
a handle extending in a plane;
a base structure having two sides and extending from said handle in said same plane;
a set of brushes attached to one side of said base and disposed to be perpendicular to said plane;
a protrusion disposed on the other side of said base;
wherein said handle has a holder portion comprising a front portion and a rear portion, said front portion being closest to said brushes;
wherein said front portion and said rear portion each has four inclined surfaces positioned at right angles to next adjacent surfaces, with at least a pair of next adjacent surfaces being at substantially 45° angle to a plane perpendicular to said plane of said base;
wherein each of said surfaces in said front portion has a different mark, and each of said surfaces in said rear portion has a different mark, with said marks in both front portion and said rear portion corresponding to thumb and first finger of a person holding said toothbrush when brushing selected parts of the mouth of said person and being as follows, as viewed from along the plane of said base towards said brushes;
front portion; left upper surface, first mark; right upper surface, second mark; right lower surface, third mark; and left lower surface, fourth mark;
rear portion; left upper surface, said third mark; right upper surface, said fourth mark; right lower surface, said first mark; and left lower surface, said second mark;
wherein for a right hand, said front portion is for placement of a thumb, and said rear portion is for placement of a first finger, with placement of said thumb on a certain marked surface of said first portion, and placement of said first finger on a surface of corresponding mark, for brushing the following locations of said teeth in said mouth;
first mark, upper jaw left outside surface of said teeth and upper jaw right inside surface of said teeth; second mark, lower jaw left outside surface of said teeth and lower jaw right outside surface of said teeth; third mark, lower jaw left inside surface of said teeth and lower jaw right inside surface of said teeth; and fourth mark, upper jaw right inside surface of said teeth and upper jaw left outside surface of said teeth.

4,519,110
BRUSH
Matvei Rubin, 89-11 63 Dr., Rego Park, N.Y. 11374
Filed Jan. 9, 1984, Ser. No. 569,497
Int. Cl.³ A46B *9/02*
U.S. Cl. 15—159 R **7 Claims**



1. A brush, comprising
a supporting portion having an uninterrupted surface with a predetermined outer contour and elongated in a first direction said supporting portion having a portion thereof adapted to be held by a person's hand during use, said surface facing a user;
a plurality of sets of bristles extending beyond said surface and arranged on said supporting portion so that each of said sets of bristles has a contour forming a letter and/or a numeral, and said sets of bristles are spaced from one another so as to form meaningful word and/or expression, only by said bristles and not by said supporting surface; the area of the supporting portion defined by the space between said sets of bristles being devoid of bristles and
two rows of bristles extending in said first direction and located at opposite sides of said letters and/or numerals, as considered in a second direction which is transverse to said first direction so as to provide a continuous line of bristles in said first direction and to maintain the brushing effect despite the spaces between said sets of bristles.

4,519,111
TOOTHBRUSH HAVING SERIES OF BRISTLES OF DIFFERENT HEIGHT
Paolo Cavazza, Viale dell'Umanesimo 178, Rome, Italy
Filed Oct. 26, 1982, Ser. No. 436,706
Claims priority, application Italy, Nov. 6, 1981, 36121/81[U]
Int. Cl.³ A46B *9/04*
U.S. Cl. 15—167 R **2 Claims**

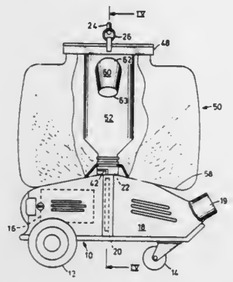


1. A toothbrush having the bristles grouped into tufts arranged in parallel rows, characterized in that the bristles as a whole (7) consist of a first series of tufts (5^1, 5^2, 5^3 . . .) whose height becomes greater the more distant they are from the end of the toothbrush opposite to the handle, and of a second series of tufts (6) of constant height, which alternate regularly with the tufts of bristles of the first series.

4,519,112
MUFFLED VACUUM CLEANER

John F. Bevington; Paul Meeker, both of Toledo, and Michael Savidge, Oregon, all of Ohio, assignors to The National Super Service Company, Maumee, Ohio

Filed Nov. 7, 1983, Ser. No. 549,067
Int. Cl.³ A47L 9/14
U.S. Cl. 15—326 7 Claims

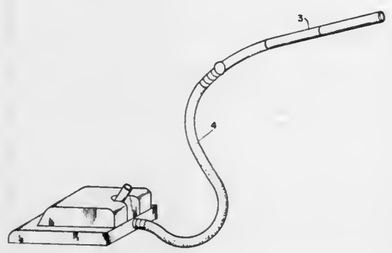


1. A muffled vacuum cleaner comprising:
(1) a motor and motor-driven fan in a housing,
(2) an outlet from said fan directed upwardly from said housing,
(3) a dirt-collecting flexible porous bag removably connected at its bottom to said outlet,
(4) a flexible non-porous tube in said bag connected at its lower end to the connection of said bag to said outlet, and connected at its upper end to the top of said bag, said tube having adjacent its top a tubular extension that extends outwardly and downwardly at at least 100° with the longitudinal vertical axis of said tube, said extension having a first end of larger cross-sectional area than the second end, said larger cross-sectional area end being connected to a correspondingly large opening in said tube, whereby said tube and its extension in said bag muffles the air noise from said fan.

4,519,113
TRANSFORMING THE UPRIGHT VACUUM CLEANER'S OWN PUSH-PULL HANDLE INTO A SUCTION CLEANING WAND

Robert J. Hipple, 2005 E. Maryland Ave., St. Paul, Minn. 55119

Filed Jul. 2, 1982, Ser. No. 394,859
Int. Cl.³ A47L 5/32
U.S. Cl. 15—335 1 Claim

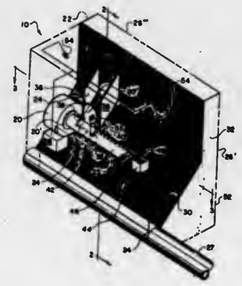


1. An upright vacuum cleaner having a tubular push-pull handle consisting of one or more hand-separable sections, said push-pull handle being hand-detachable at its base end from an air-tight socket assembly which is affixed to said vacuum cleaner and the opposite end of said push-pull handle being attached to one end of a flexible hose and the other end of said flexible hose leads to and has access to said vacuum cleaner's suction power system, said flexible hose combined with the tubing of said push-pull handle thus being the means of transferring said suction power of said vacuum cleaner to the detached base of said push-pull handle and thereby transforming said push-pull handle into a suction cleaning wand with the length of said cleaning wand being determined by the number of sections left attached to said flexible hose.

4,519,114
APPARATUS AND METHOD FOR CLEANING TEXTILE FIBER

Ralph H. Rhyne, Belmont, N.C., assignor to Rhyne Fibers, Inc., Belmont, N.C.

Filed Dec. 15, 1982, Ser. No. 450,139
Int. Cl.³ D01G 1/00
U.S. Cl. 19—200 14 Claims

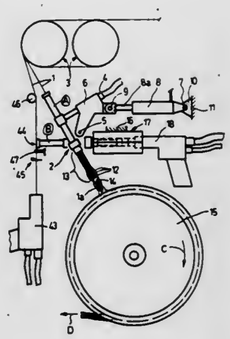


1. In an apparatus for cleaning textile fibers comprising a substantially enclosed cleaner housing having a perforated interior dividing wall separating said housing into a trash accumulating chamber and a fiber accumulating chamber, the perforations of said dividing wall being of a selected size sufficient for passage therethrough of debris on said fibers but to prevent passage therethrough of said fibers, fiber directing means associated with said cleaner housing for directing said fibers into said fiber accumulating chamber in a direction toward said dividing wall, and pneumatic conveying means associated with said airstream directing means upstream of said fiber accumulating chamber for creating a moving airstream for entraining said fibers therein and impelling said fibers through said airstream directing means into said fiber accumulating chamber for impact with said dividing wall to cause separation of said debris from said fibers by passage of said debris with said airstream through said perforations into said debris accumulating chamber and retention of said fibers in said accumulating chamber, the improvement comprising a pair of planar deflecting vanes pivotably mounted in said housing on opposite sides of said airstream directing means and operably connected for reciprocatory movement in generally parallel relation for reciprocably directing said fiber entrained airstream back and forth across the transverse extent of said dividing wall, whereby said fiber entrained airstream is continuously diverted away from said fibers following their impact against said dividing wall to prevent extended or progressive accumulation of said fibers on said dividing wall under the retaining impetus of said fiber entrained airstream and to permit said fibers to gravitationally fall from said dividing wall following said impact thereagainst.

4,519,115
METHOD OF THREADING A THREAD INTO A TEXTURING NOZZLE

Peter Gujer, Winterthur; Dieter Guldenfels, Dinhard; Armin Wirz, Ossingen, all of Switzerland; Hans Knopp, Ludwigshafen, Fed. Rep. of Germany; Dieter Herion, Frankenthal, Fed. Rep. of Germany, and Gerhard Conzelmann, Otterstadt, Fed. Rep. of Germany, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 185,906, Dec. 11, 1979, Pat. No. 4,416,041.
This application Mar. 21, 1983, Ser. No. 477,317
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817487; European Pat. Off., Mar. 24, 1979, 79/00019
Int. Cl.³ D02G 1/12, 1/16
U.S. Cl. 28—255 1 Claim



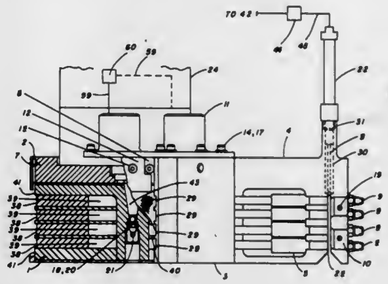
1. A method of threading threads into at least two texturing nozzles movable between a texturing position and a threading-in position comprising the steps of
moving each nozzle from said texturing position into said threading-in position;
drawing air simultaneously through a treatment chamber within each nozzle to draw air into and through an inlet opening of each nozzle into the treatment chamber;
engaging at least two moving threads in a mobile suction device;
guiding each engaged thread at a right angle in front of the thread inlet opening of a respective nozzle in said threading-in position; and
cutting each thread between the mobile suction device and the respective inlet opening to permit the severed threads to be drawn through the respective inlet opening into the treatment chamber of a respective nozzle.

4,519,116
YARN TEXTURING BY MOVING CAVITY JET WITH FLUID REMOVAL

Leonard J. Aberle; Dong W. Kim; Robert Lees; Dick C. Vermeer, all of Chester; Ernest W. Wohnig, Petersburg, all of Va., and Samuel L. Yates, Columbia, S.C., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 16, 1983, Ser. No. 475,783
Int. Cl.³ D02G 1/12, 1/16
U.S. Cl. 28—257 4 Claims

1. In a moving cavity texturing apparatus for texturing yarn comprising a texturing cavity having a barrier screen rotating in position to receive and transport as a textured wad said yarn entering said yarn texturing cavity and a yarn energy tube communicating with said texturing cavity to direct said yarn at high energy into said texturing cavity, said rotating barrier screen being mounted on a rotating wheel having a covering means for said rotating wheel, the improvement comprising
exhausting means for removing fluid from inside said covered rotating wheel and from areas at and adjacent to said rotating barrier screen
thereby cooling any yarn present on said barrier screen, wherein the exhausting means is a turbine mounted within said covering means, said turbine controlled to rotate slowly so that

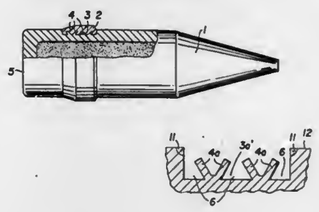


steam is deflected by turbine blades to outside the covering means for the rotating wheel, thereby preventing further disturbance of the wad of yarn on the barrier screen.

4,519,117
METHOD OF MAKING PROJECTILE

Udo Götz, Trossingen; Winfried Gleichauf, Oberndorf; Oswin Günther, and Dietrich Hoffmann, both of Schramberg, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Division of Ser. No. 435,500, Oct. 20, 1982,. This application Feb. 1, 1984, Ser. No. 576,014
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142636
Int. Cl.³ B21K 21/06
U.S. Cl. 29—1.2 2 Claims



1. A method of manufacturing a projectile for automatic rapid firearms and high-performance machine guns, the projectile having a body with an axially extending outer circumferential surface, comprising:
cutting an annular groove into the circumferential surface of the body while leaving at least two radial ribs extending radially in the groove, which ribs have an axial width which is less than their radial length and leaving an intermediate groove between the ribs;
bending the ribs axially outwardly away from each other to form the ribs into a V-shaped configuration and applying knurling at least to one of the ribs and the intermediate groove; and
injection molding a pigmented, fiber-filled plastic into the annular and intermediate grooves and over the ribs for forming a rotating band having at least a portion extending radially outwardly of the outer circumferential surface of the body.

4,519,118

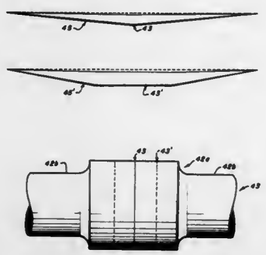
HOT MILL SELF-CENTERING ROLL DESIGN

George Shinopulos, Burlington, Mass.; M. Ronald Randlett, Bainbridge, and Terry F. Bower, Hudson, both of Ohio, assignors to Kennecott Corporation, Cleveland, Ohio

Continuation of Ser. No. 436,659, Oct. 26, 1982, abandoned. This application Aug. 17, 1984, Ser. No. 642,727

Int. Cl.³ A01B *29/00*

U.S. Cl. 29—121.5 **6 Claims**



1. In a roll for hot rolling a continuously cast metallic strand into a substantially flat, narrow strip, the improvement comprising a central working portion that engages the strand and strip across the entire width of said strand and strip, the outer surface of said working portions having a longitudinal profile that is slightly concave with a maximum depth at the central region of the roll working portion with the depth of profile concavity being less than 0.3% of the maximum diameter of the roll such that after thermal stabilization there is a slight remaining concavity that produces a strip with slightly more metal at its center than at its edges to control the lateral location of the strand and strip on said working portion, said working portion having a larger diameter than adjacent end portions of the roll and a considerably shorter length than said adjacent end portions.

4,519,119

METHOD OF MANUFACTURING A PISTON FOR A SWASH PLATE TYPE COMPRESSOR

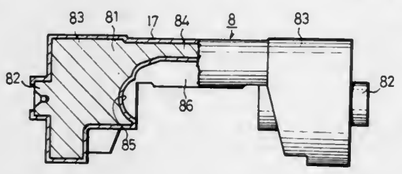
Shozo Nakayama, Kariya; Takamitsu Mukai, Anjo; Makoto Ohno, Kariya, and Mitsukane Inagaki, Anjo, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 308,633, Oct. 5, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,935

Claims priority, application Japan, Nov. 19, 1980, 55-163789

Int. Cl.³ B23P *15/10*

U.S. Cl. 29—156.5 R **6 Claims**



1. A method of manufacturing a piston adapted for a compressor, comprising:

preparing a metal piston body having two axially aligned columnar portions at respective ends thereof, each columnar portion having at least one axial projection including an end surface,

cleaning the piston body to remove any dirt and oxide film therefrom,

applying a fluorine resin selected from an ethylene fluoride polymer and an ethylene fluoride-vinyl compound copolymer to the overall surface of the piston body except portions of the end surface of each projection, said fluorine resin having lesser thermal conductivity than that of the piston body,

baking the piston body with the fluorine resin so that heat is gradually applied to the piston body evenly by passing through the exposed end surfaces of the projections as well as the surface of the piston body with the fluorine resin for positively bonding the resin onto the piston body without imparting strain and distortion to the piston body, and

cutting the projections after baking the piston body so that the height of each of the projections is equal to the thickness of the coating of the fluorine resin to make the end surfaces flat.

4,519,120

PROCESS FOR MANUFACTURING A CARTRIDGE FOR PURIFYING EXHAUST GAS

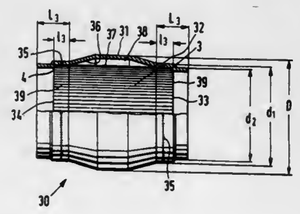
Manfred Nonnenmann, Schwieberdingen; Wolfgang Hesse, Remseck; Klaus Haller, Korntal, and Helmut Bardong, Stuttgart, all of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co., Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 251,963, Apr. 7, 1981, Pat. No. 4,400,860, which is a division of Ser. No. 104,019, Dec. 17, 1979, Pat. No. 4,282,186. This application Sep. 30, 1982, Ser. No. 430,249

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856030

Int. Cl.³ B01J *8/02;* **B21D** *39/02*

U.S. Cl. 29—157 R **21 Claims**



1. A method for manufacturing a cartridge for purifying exhaust gases, comprising a catalyst support matrix wound metal foil and a metal jacket housing said support matrix, wherein an area of press fit is formed between the exterior of the support matrix and the interior of the jacket, with the jacket directly contacting the support matrix, and wherein the support matrix and jacket are secured together in the area of the press fit, said method comprising the steps of:

providing a hollow metal jacket;

inserting the wound support matrix into the jacket with a radial clearance between the matrix and the jacket;

thereafter reducing the diameter of at least a portion of the jacket and until an area of press fit is established between an outer surface of the support matrix and an inner surface of the jacket; and

securing the support matrix and the jacket to each other by welding in the area of said press fit.

4,519,121

METHOD OF AND APPARATUS FOR MOUNTING PLATE FINS OF HAIRPIN PIPES

Tomoo Yokosawa, Chiisagata, Japan, assignor to Hidaka Seiki KK, Japan

Filed Oct. 28, 1983, Ser. No. 546,672

Claims priority, application Japan, Nov. 30, 1982, 57-208504

Int. Cl.³ B21D *53/02*

U.S. Cl. 29—157.3 C **2 Claims**

1. A method of mounting plate fins having punched holes on hairpin pipes, comprising the steps of:

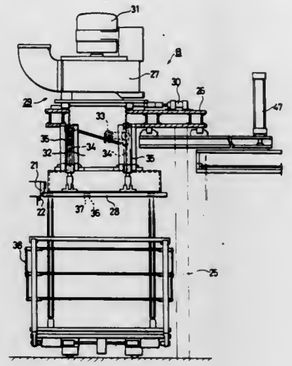
(a) placing a multiplicity of hairpin pipes in upstanding disposition with open ends thereof directly upwardly in a mobile carriage in spaced relation at the same interval as that of the punched holes in the plate fins;

(b) thereafter positioning said mobile carriage in a position for mounting the plate fins on the hairpin pipes;

(c) aligning tiers of punched holes in a web which has been continuously fed along from a fin press;

(d) moving said web past a cutter blade by a distance equal to a desired number of tiers of punched holes in the web while said web is being held under suction by a pressure plate;

(e) cutting said web into a plate fin with said cutter blade while said web is being held under suction by a pressure plate;



(f) moving said pressure plate with the cut-off plate fin held thereby horizontally in a direction away from said cutter blade;

(g) releasing said plate fin from said pressure plate to allow said plate fin to drop onto said mobile carriage until said hairpin pipes are inserted through the punched holes in the plate fin;

(h) moving said pressure plate back to an original position prior to the movement away from said cutter blade;

(i) repeating said steps (c) through (h) a predetermined number of times;

(j) lowering said pressure plate from said original position to depress said plate fins along said hairpin pipes toward lower ends thereof; and

(k) repeating said steps (c) through (j) until a prescribed number of plate fins are stacked on said hairpin pipes.

4,519,122

PULLER MECHANISM FOR ASSEMBLING PIPELINES

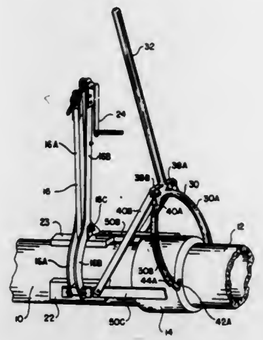
Thomas P. Miller, 1322 Second St., #18, Santa Monica, Calif. 90401

Filed Apr. 18, 1983, Ser. No. 485,868

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—237 **6 Claims**

1. A mechanism for moving the end of a first pipe into coupling engagement with an annular collar mounted on a second aligned pipe, said annular collar forming a shoulder with respect to said second pipe, said mechanism comprising: a first generally semi-circular yoke assembly including a pair of arcuate sections adapted to extend around the first pipe, the arcuate sections of said first yoke assembly being pivotally coupled to one another, said first yoke assembly further including two corresponding elongated sections extending upwardly from the arcuate sections, and a clamping mechanism mounted at the upper ends of said elongated sections to cause said pair of arcuate sections to be clamped to the first pipe; a second yoke assembly having an intermediate bight section and further having a pair of leg sections depending from said bight section and spaced from one another, said second yoke assembly being adapted to straddle the collar mounted on the second aligned pipe; a pair of arm members disposed on opposite sides of the first pipe and collar, each of said arm members being pivotally coupled at one end to the first yoke assembly, and being pivotally coupled at the other end to the second yoke



assembly; an elongated handle extending outwardly from the bight section of the second yoke assembly; and the legs of said second yoke assembly having respective ends configured to provide a fulcrum so that the first pipe and second pipe may be drawn together as the handle is turned with the end of the first pipe entering the collar.

4,519,123

METHOD OF MOUNTING VEHICLE WIPER MECHANISM

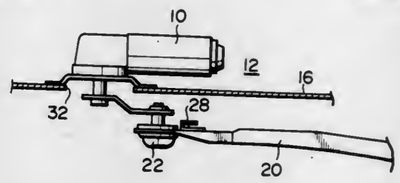
Kiyoyuki Imayoshi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 4, 1983, Ser. No. 464,108

Claims priority, application Japan, Feb. 5, 1982, 57-017254

Int. Cl.³ B60S *1/08*

U.S. Cl. 29—434 **4 Claims**



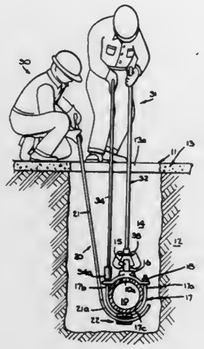
1. A method of mounting a vehicle wiper mechanism, the method comprising: inserting a wiper link into a cowl through an air duct hole provided in a cowl top, temporarily engaging a hook, provided in the vicinity of a rotary joint connector at one end of said wiper link, with an edge of an insertion hole in a cowl fore plate for receiving a wiper motor shaft, connecting a mating rotary joint connector on a crank fixed to a shaft of a wiper motor located on an engine compartment side of said fore plate to said rotary joint connector of the wiper link exposed through said insertion hole for receiving the wiper motor shaft, and, upon completion of said connection, disengaging said hook of the wiper link from the cowl fore plate, inserting the wiper motor shaft through said insertion hole, and affixing said wiper motor to the cowl.

4,519,124

METHOD OF POSITIONING A U-BOLT ON A CONDUIT

Stanley M. Burghardt, 94-20 Plattwood Ave., Ozone Park, N.Y. 11417

Filed Sep. 12, 1983, Ser. No. 531,430
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—526 R **2 Claims**



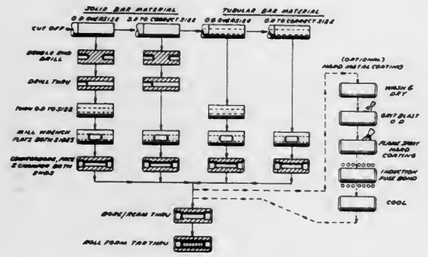
1. A method of positioning and holding a utility service saddle U-bolt, with its legs in an upright position, from beneath a utility conduit in position in a deep excavation for receiving and attaching the saddle thereto while standing at ground level adjacent to the deep excavation whose area of opening is too small for a person to enter, and within and near the bottom of which said utility conduit is exposed, comprising the steps of temporarily clamping said U-bolt in a clamp at a location substantially mid-way along its length with the legs of the U-bolt projecting upward with respect to the clamp while providing an extension handle extending from said clamp first in a direction towards and beyond one of said U-bolt legs and then substantially in said upward direction of projection of said U-bolt legs, and using said extension handle to move said U-bolt into said excavation and beneath said utility conduit, and thence upwardly whereby said upward projecting U-bolt legs are respectively positioned adjacent to said conduit on either side thereof.

4,519,125

SUCKER ROD COUPLING MANUFACTURING SYSTEM

Ray E. Colonius, Bloomfield Hills, and Edward Early, Romeo, both of Mich., assignors to Cargill Detroit Corp., Clawson, Mich.

Continuation of Ser. No. 323,967, Nov. 23, 1981, abandoned. This application Dec. 15, 1983, Ser. No. 561,660
Int. Cl.³ B23P *13/00*
U.S. Cl. 29—558 **16 Claims**



1. Production method for manufacturing sucker rod couplings comprising the steps of

clamping the finished O.D. of a tubular workpiece cut to length with finishing end stock at a coupling end machining station,

counterboring, facing and chamfering each coupling end while the coupling is clamped on the finished O.D.,

reclamping said finished O.D. at a boring station,

through boring the tubular I.D. at said boring station,

using a pilot extension on a boring bar engageable with a pilot guide means at said boring station,

reclamping said finished O.D. at a threading station,

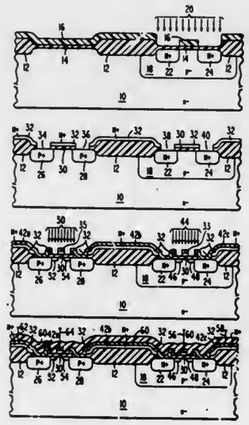
and roll threading said I.D. through said coupling.

4,519,126

METHOD OF FABRICATING HIGH SPEED CMOS DEVICES

Sheng T. Hsu, West Windsor Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 12, 1983, Ser. No. 560,459
Int. Cl.³ H01L *21/283*
U.S. Cl. 29—571 **5 Claims**



1. A process for fabricating integrated circuits each having buried drain and source contact regions of a first conductivity type at the surface of a body of monocrystalline silicon of a second conductivity type, the surface having a layer of insulator material thereon, comprising the sequential steps of:

depositing a buffer layer of polycrystalline silicon over the layer of insulator material;

etching contact openings in both the layer of polycrystalline silicon and in the layer of insulator material thereunder to expose portions of the buried contact regions;

further etching only the layer of polycrystalline silicon to expose portions of the layer of insulator material to form gate members and interconnect portions; and

forming a layer of refractory metal silicide on the interconnect portions of the polycrystalline silicon layer, in the contact openings and on the gate member.

4,519,127

METHOD OF MANUFACTURING A MESFET BY CONTROLLING IMPLANTED PEAK SURFACE DOPANTS

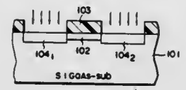
Kazuhiro Arai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

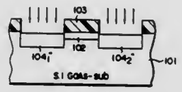
Filed Feb. 27, 1984, Ser. No. 583,746
Claims priority, application Japan, Feb. 28, 1983, 58-32424; Feb. 28, 1983, 58-32425
Int. Cl.³ H01L *21/324, 21/263*
U.S. Cl. 29—571 **32 Claims**

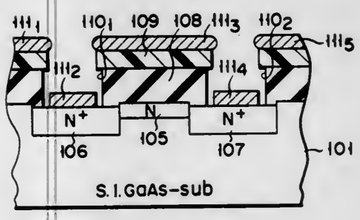
1. A method of manufacturing a metal semiconductor field-effect transistor (MESFET) by controlling implanted peak surface dopants, comprising the steps of:

performing a first ion implantation of an impurity into a portion of a semi-insulating substrate made of a compound selected from the group consisting of GaAs and InP, so as to form impurity ion-injection layers therein;

removing that portion of said impurity ion injection layers which extend from a surface thereof to a depth corresponding to a vicinity of a peak value of an impurity concentration distribution; and







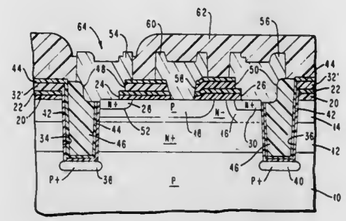
performing a second ion implantation of the impurity at least once from the surface of said remaining impurity ion injection layers to form high-concentration impurity ion injection layers, and thereafter annealing said layers to activate said high-concentration impurity ion injection layers to form source and drain regions.

4,519,128

METHOD OF MAKING A TRENCH ISOLATED DEVICE

Donald G. Chesebro, Colchester, and Francis J. Soychak, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,193
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—576 W **15 Claims**



1. A method of making a semiconductor device which includes the steps of:

forming a first layer of insulation on the surface of a semiconductor layer having a given conductivity type,

forming an opening in said first layer of insulation,

forming a diffusion region of a conductivity type opposite to that of said given conductivity type at the surface of said semiconductor layer through said opening to provide a P-N junction below the surface of said semiconductor layer,

forming in said semiconductor layer a trench having a sidewall located along a given plane through said opening and through said P-N junction,

forming an second layer of insulation on the sidewall of said trench, on said first layer of insulation and within said opening over said diffusion region,

etching with a dry etching process said second layer of insulation substantially only in the direction of said given plane to remove from said opening at least a portion of said second layer of insulation, and

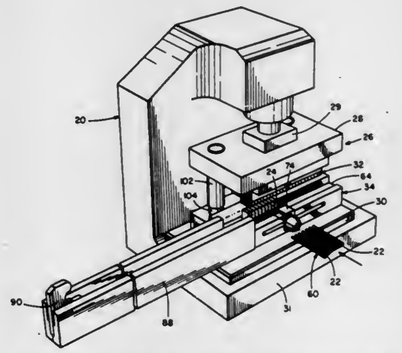
forming an ohmic contact on said diffusion region within said opening.

4,519,129

MASS TERMINATION CONNECTOR TOOL ASSEMBLY

Jack E. Caveney, Hinsdale; Roy A. Moody, Flossmoor; John J. Bulanda, New Lenox, and Russell E. Wende, Hometown, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Sep. 9, 1982, Ser. No. 416,530
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—749 **16 Claims**



1. A tool assembly for use with a prime mover, such as a bench press, for terminating a plurality of insulated conductors in a mass termination connector having a plurality of insulation displacement terminal elements corresponding to said conductors, said tool assembly comprising:

a pair of supports, at least one of which includes means for attachment to said prime mover to effect reciprocal movement of one of said support relative to the other of said supports;

a conductor insertion die set, comprising an insertion die corresponding to each connector terminal element, carried by one of said supports for inserting said conductors into corresponding terminal elements of said connector;

connector holding means carried by the other of said supports for holding said connector in alignment with said die set, said holding means including a channel for seating the connector to be terminated, said channel being defined by a front wall, rear wall, and a floor extending between said walls, said rear wall including a window; and

connector release means for retaining said connector in said holding means, said release means having a connector retention position and a connector release position, said release means being biased to said retention position, whereby moving said connector sufficiently to overcome the bias results in release of said connector from said holding means, said connector holding means comprising an arm extending through said window and positioned to interfere with attempted removal of a connector located in said channel.

4,519,130

TOOL FOR REMOVING AN ELECTRONIC SLIDE-IN UNIT FROM A FIXING RACK

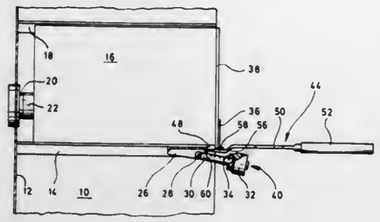
Lothar F. Schaefer, Hummelbaum 22, D 7263 Renningen, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,940

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1982, 8202450[U]

Int. Cl.³ H05K *13/04, 3/36*

U.S. Cl. 29—764 **16 Claims**



1. A tool for removing an electronic slide-in unit from a fixing rack, comprising an extracting section which engages in a front panel of the slide-in unit, a supporting section which engages in a rack and means for producing a relative movement between the extracting section and the supporting section, characterized in that the extracting section and the supporting section are formed by opposing surface sections of a rigid cam element (**48**) which is fixedly carried by the free end of an operating lever (**5**) so that the cam element axis is substantially perpendicular to the axis of the operating lever (**5**) the opposing surface sections of said cam element thus (being adapted to engaging) a member **24** forming part of the fixing rack and an opposing end portion of the front panel **38** of the slide-in unit **16**, respectively, said member **24** of the fixing rack and said end portion of the front panel **38** defining an interspace **42** therebetween.

4,519,131

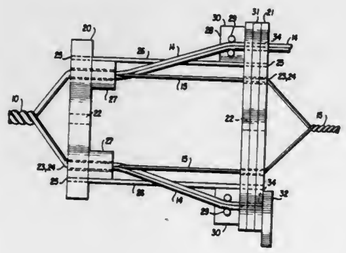
METHOD AND APPARATUS FOR STRIPPING MULTIPLEX WIRE AND CABLE

Ralph E. Starnes, Jr., and Danny P. Carden, both of Carroll County, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Jul. 1, 1983, Ser. No. 510,047

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—825 **7 Claims**



1. The method of continuously removing insulation from conductors of multiplex cable, comprising the steps of:

supplying lengths of insulated multiplex cable;

advancing each insulated strand of the multiplex cable along a straight path parallel to a predetermined longitudinal axis;

continuously removing insulation from said insulated strands in one or more lengths while in said straight path;

directing said insulation away from said longitudinal axis; plexing each conductor around said longitudinal axis; and collecting bare multiplex cable on storage means.

4,519,132

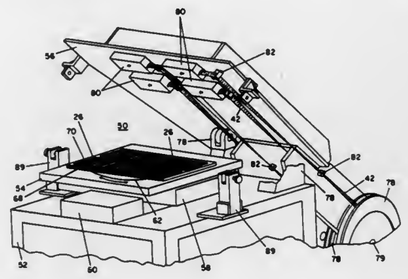
HIGH SPEED CONTACT INSERTION FACILITY

Gary E. Kleinedler, Hillsborough Township, Somerset County, and Herbert A. Pohl, Raritan Township, Hunterdon County, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,465

Int. Cl.³ H05K *3/00;* **B23P** *19/02*

U.S. Cl. 29—845 **4 Claims**



1. A method of inserting elongated contacts into cavities in connector housings, the method comprising the steps of:

positioning the housings in a planar array on an indexable table;

simultaneously indexing a plurality of strips of contacts past a respective plurality of contact insertion heads;

simultaneously activating the insertion heads to insert a contact from each strip into a cavity of a different connector housing in the array; and

continuously indexing and rotating the array of connector housings and inserting contacts into cavities therein until contacts have been inserted into predetermined cavities of the connector housings.

4. A machine for inserting elongated contacts into cavities in a planar array of connector housings, comprising:

a superstructure;

a plurality of contact insertion heads located on said superstructure and positioned proximate the planar array of connector housings;

means operatively associated with said superstructure for simultaneously indexing each of a plurality of strips of contacts proximate to a respective plurality of insertion heads;

means operatively associated with said indexing means for simultaneously activating the heads to urge a contact from each strip into a cavity of a different connector housing in the array; and

means operatively associated with said activating means for continuously indexing the array of connector housings to insert contacts into cavities therein until contacts have been inserted into predetermined cavities of the respective connector housings.

4,519,133

METHOD OF, AND APPARATUS FOR, TERMINATING A CONDUCTOR OF A FLAT FLEXIBLE CABLE

Jean C. Pansanel, Herblay, France, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 29, 1983, Ser. No. 508,954

Claims priority, application France, Jul. 15, 1982, 82 12385

Int. Cl.³ H01R *4/16*

U.S. Cl. 29—863 **8 Claims**

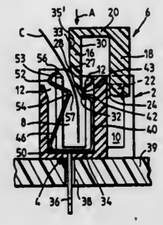
1. A method of terminating a conductor of a flat flexible film cable to an electrical terminal said terminal having a resiliently

deflectable arm upstanding from a base portion of the terminal and a contact surface remote from the base portion; the method comprising the steps of:

inserting the conductor adjacent said terminal,

inserting a camming element between the contact surface and an abutment opposite thereto and spaced therefrom,

urging said conductor against the contact surface by means of said camming element and thereby elastically and plastically deflecting the arm by movement of the contact surface away from the abutment by a distance at least



equal to the thickness of the cable, the resistance of the arm to its plastic deflection once the elastic limit of the arm has been overcome being less than the resistance to its elastic deflection, prior to said elastic limit being overcome, such deflection being to an extent to render the final contact force exerted against the conductor sensibly independent of the cable thickness with the conductor exposed, that is the final contact force increases by no more than 2 to 3.5N over the range of thickness concerned, which thickness does not exceed about "0.4 mm".

4,519,134

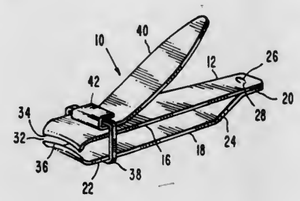
FINGERNAIL CLIPPING DEVICE

John Bumbera, 4 Stanworth La., Allentown, N.J. 08501

Filed Apr. 26, 1984, Ser. No. 604,244

Int. Cl.³ A45D *29/02*

U.S. Cl. 30—28 **13 Claims**



1. A fingernail clipping device comprising:

(a) an upper frame member defining a first upper end means and a second upper end means;

(b) a lower frame member secured with respect to said upper frame member, said lower frame member including a first lower end means and a second lower end means, said first lower end means and said first upper end means being secured with respect to one another, said lower frame member extending outwardly with respect to said upper frame member from the location of securement with said second lower end means being spatially disposed adjacent said second upper end means, said upper frame member and said lower frame member being movable with respect to one another to selectively abut said second upper end means and said second lower end means, said lower frame member and said upper frame member defining a central opening therebetween;

(c) a cutting means comprising:

(1) an upper cutting member fixedly secured with respect to said second upper end means of said upper frame means; and

(2) a lower cutting member fixedly secured with respect to said second lower end means of said lower frame means;

(d) a peripheral retaining means extending about the outer surfaces of said second upper end means and said second lower end means to restrict positioning of said said upper end means and said second lower end means to be adjacent and selectively spatially disposed with respect to one another; and

(e) an arm means secured pivotally with respect to said peripheral retaining means adjacent to said upper frame member, said arm means including an abutment surface in contact with said upper frame member allowing movement of said upper cutting means into contact with said lower cutting means for fingernail cutting responsive to movement of the outer end of said arm means toward said upper frame member.

4,519,135

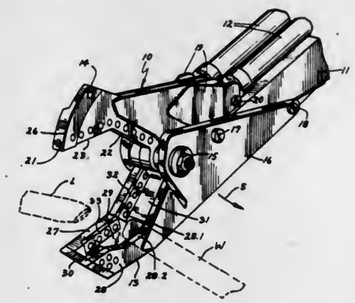
METAL DEMOLITION SHEAR

Roy E. LaBounty, 1607 8th Ave., Two Harbors, Minn. 55616

Filed Sep. 13, 1982, Ser. No. 416,902

Int. Cl.³ B23P *19/00;* **E02F** *3/28*

U.S. Cl. 30—134 **22 Claims**



1. A heavy duty shear for attachment to the boom structure and hydraulic system of a backhoe, comprising

a lower jaw and an upper jaw and pivot means interconnecting the jaws together, the lower jaw having frame means for attachment to the boom structure of the backhoe and the upper jaw having means for attachment to the hydraulic system of the backhoe for closing and opening the upper jaw relative to the lower jaw,

the lower jaw and the upper jaw having rigid lower and upper shear blades extending along each other and having a thickness and a width greater than the thickness to provide strength for shearing a workpiece of such scrap metal when the upper blade is closed onto the lower shear blade,

the upper and lower shear blades having inner and outer workpiece engaging edge portions opposite each other and also having intermediate portions between said inner and outer edge portions, the inner and outer edge portions of the upper shear blade extending obliquely of each other,

the lower jaw also having a rigid guide blade lying along the shear blade and in spaced relation therewith, the outer ends of the shear and guide blades being adjacent each other, rigid means securing the outer ends of the lower shear blade and the guide blade together,

the guide blade having a top surface extending from its outer end and toward the pivot means, said top surface having an outer end disposed directly opposite the cutting edge of the lower shear blade at the outer ends of the lower shear and guide blades, the upper shear blade traversing the lower shear blade and traversing the guide blade at the outer end of the top surface in a shearing motion, and said

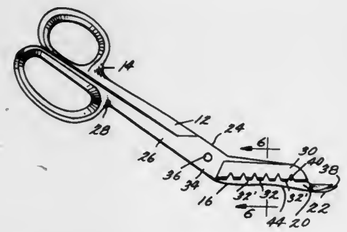
top surface also having support portions extending along both the inner and outer edge portions of the lower shear blade, and said support portions being spaced below the cutting edge of the lower shear blade by a distance at least as great as the approximate thickness of the lower shear blade to be normally spaced below a workpiece on the shear blade to receive and support the workpiece after the workpiece is severed by the shear blades.

4,519,136

SHELLFISH CUTTING AND EATING IMPLEMENT

Ernest D. Walker, 2116 Falling Creek Rd., Silver Spring, Md. 20904

Filed Feb. 27, 1984, Ser. No. 583,870
Int. Cl.³ A22C *29/02;* **B26B** *13/22*
U.S. Cl. 30—142 **8 Claims**



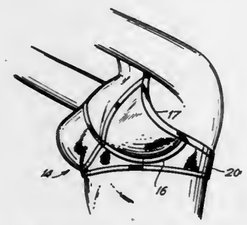
1. A shellfish cutting and eating implement comprising:
a first lever member including a first elongated handle portion, a first elongated jaw portion defining a first cutting edge a first substantially flat side surface and a flared end, and a first intermediate portion between said handle portion and said jaw portion;
a second lever member including a second elongated handle portion, a second elongated jaw portion defining a second notched cutting edge,and a second intermediate portion between said second handle portion and said second jaw portion: and
means in operative relationship with said first and second intermediate portions for pivotally connecting together said first and second lever members to enable said first and second cutting edges to be selectively moved in shearing relationship with each other;
said flared end being substantially flat and substantially perpendicular to said first flat side surface and defining a pointed forward end.

4,519,137

BRASSIERE

Dolores O'Boyle, Woodridge, and Phyllis Shonk, Glen Rock, both of N.J., assignors to International Playtex, Inc., Stamford, Conn.

Continuation of Ser. No. 422,611, Sep. 24, 1982, abandoned, which is a division of Ser. No. 219,111, Dec. 22, 1980, Pat. No. 4,393,875. This application Feb. 29, 1984, Ser. No. 584,900
Int. Cl.³ A41H *3/06*
U.S. Cl. 33—17 R **1 Claim**



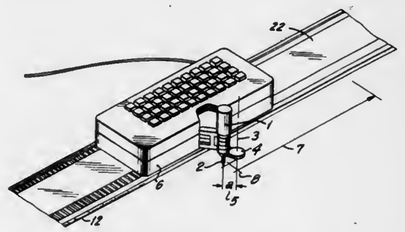
1. A method of grading a series of brassieres of like styling for women having the same body dimension except for breast sizes, based upon measurements of one woman having average sized breasts for said series of brassieres in which each brassiere includes a pair of breast receiving cups for supporting the breasts of a woman, and body encircling components associated with said pair of breast receiving cup and sized to fit around the body of each woman, said method comprising the steps of:
measuring the diaphragm dimension and body chest dimension of a woman having average sized breasts for said series of brassieres;
determining by formula the breast size of said woman having average sized breasts based upon the measurements of the diaphragm dimension and body chest dimension; and
reducing the size of the breast receiving cups while maintaining substantially the same the length of the body encircling components to accommodate a desired breast size for a second woman having less than the determined average breast size by:
(a) reducing the depth dimension of the breast receiving cups in accordance with the reduction from said determined average breast size to said desired breast size for said second woman; and
(b) reducing the overall perimeter of the breast receiving cups in accordance with said desired breast size for said second woman by
(1) maintaining substantially the same the lower arcuate extent of the breast receiving cups so that the length of the body encircling components remains substantially the same; and
(2) reducing the remainder of the perimeter of the breast receiving cups to said desired breast size for said second woman.

4,519,138

AUTOMATIC DRAFTING DEVICE WITH ADJUSTING AID

Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,204
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214760
Int. Cl.³ B43L *24/00*
U.S. Cl. 33—32 R **8 Claims**



1. An automatic drafting device comprising:
a carriage having stylus means mounted thereon for writing upon a planar drawing surface, said stylus including a writing tip;
a toothed rack having said carriage mounted thereon;
toothed wheels on said carriage engaging with said toothed rack for moving said carriage and said stylus means along said planar drawing surface;
means controlling movement of said stylus means relative to said carriage for controlling writing by said writing tip on said drafting surface;
adjusting aid means on said carriage arranged at said stylus means in close proximity to said writing tip for determining a writing position; and

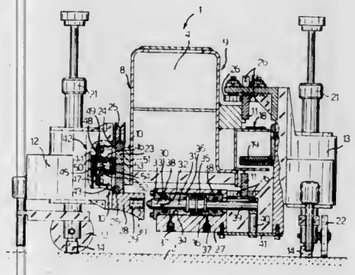
compensating control means for automatically compensating for the distance between said writing position and said writing tip when said distance is greater than zero by effecting displacement of said writing tip through a compensating distance equal to said distance between said writing position and said writing tip to bring said writing tip to said writing position.

4,519,139

DEVICE FOR AUTOMATIC MARKING OUT AND DIVIDING UP OF A FLAT SHEET OF GLASS WHICH CAN BE POSITIONED UPSTREAM OF A SHEET CUTTING LINE

Leonardo Ghinamo, Boves, Italy, assignor to Bottero S.p.A., Cuneo, Italy

Filed May 31, 1984, Ser. No. 616,015
Claims priority, application Italy, Jun. 14, 1983, 67655 A/83
Int. Cl.³ C03B *33/10*
U.S. Cl. 33—32 C **11 Claims**



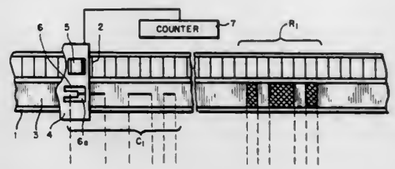
1. A device (1) for automatically marking out and dividing up a sheet of flat glass (2), in particular one which can be introduced upstream of a line for cutting the glass (2) itself, for forming rectilinear incisions thereon, of the type comprising a support platform (3) for the said sheet (2) and at least one crosspiece (4) relatively movable with respect to the said platform (3) along a first axis carrying a plurality of carriages (12,13) movable on the said crosspiece (4) along a second axis perpendicular to the first and each provided with an associated tool (14) for forming scored incisions on the said sheet (2), first carriages (12) being slidably mounted along first guides (10) on a first side (18) of the said crosspiece (4) for scoring the said sheet (2) along the said first axis and a second carriage (13) being slidably mounted along second guides (11) on a second slide (9) of the said crosspiece (4), opposite the first, for scoring the said sheet (2) along the said second axis, characterised by the fact that the said second carriage (13) is provided with actuation means (15) for displacing it along the said crosspiece (4) and with positioning means (20) for establishing at each instant the position of the said second carriage (13) and stopping it in predetermined positions, and in that the said second carriage (13) carries releasable engagement means (31) operable to cooperate with associated coupling means (29) for each said first carriage (12) for selectively displacing the first carriages (12) along the said crosspiece (4) together with the said second carriage (13).

4,519,140

SYSTEM FOR IDENTIFYING REFERENCE MARKS IN A PATH MEASURING DEVICE

Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Oct. 28, 1982, Ser. No. 437,488
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144334
Int. Cl.³ G01B *11/02*
U.S. Cl. 33—125 C **11 Claims**



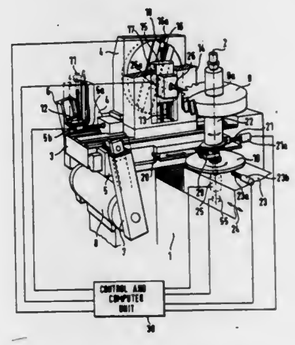
1. In an incremental path measuring instrument of the type comprising a scale, an incremental measuring division defined by the scale, a reference track defined by the scale which defines a plurality of identical reference marks, means for scanning the division and the reference track in parallel and dynamically generating output signals in response to both the division and the reference track during movement of the scanning means with respect to the scale, and means for evaluating the output signals, said evaluating means comprising a counter for counting output signals generated during and in response to scanning of the division as a measure of the position of the scanning means relative to the scale, the improvement comprising:
means for defining a plurality of code marks, each code mark serially associated with a respective one of the reference marks and distinctive from the other of the code marks such that each of the code marks unambiguously identifies the associated one of the reference marks, said code marks positioned such that the code marks are scanned by the scanning means in series with the reference marks.

4,519,141

GEAR PROBE

Willi Meder, Ettlingen; Hans-Ulrich Bertz, Rastatt, and Peter Golder, Ettlingen, all of Fed. Rep. of Germany, assignors to Willy Höfler, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 419,031
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136504
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—179.5 R **3 Claims**



1. A gear probe for testing the shape and orientation of tooth

flanks of a gear supported in the probe, comprising in combination:

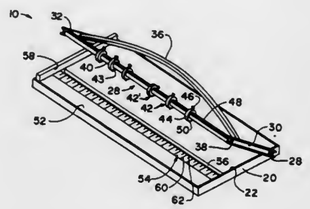
(a) a probe frame;
(b) a first guide way supported on said probe frame;
(c) a first carriage supported on said first guide way for displacement parallel to a first direction;
(d) a first motor means connected to said first carriage for displacing said first carriage parallel to said first direction;
(e) a second guide way supported on said first carriage angularly adjustably in a plane parallel to said first direction;
(f) a third guide way oriented in a second direction;
(g) a second carriage supported in said third guide way for displacement in said second direction and being slidably connected with said second guide way;
(h) a second motor means connected to said second carriage for displacing said second carriage parallel to said second direction;
(i) a measuring sensor mounted on said second carriage;
(j) a third carriage supported on said first guide way for displacement parallel to said first direction;
(k) means for coupling said first carriage to said third carriage for transmitting displacement forces from said first carriage to said third carriage;
(l) a linear transmission track shiftably supported on said third carriage for a linear displacement with respect to said third carriage parallel to said first direction;
(m) a third motor means connected to said linear transmission track for displacing said linear transmission track with respect to said third carriage linearly and parallel to said first direction;
(n) a fourth carriage supported on said probe frame for displacement parallel to a third direction;
(o) a gear support mounted on said fourth carriage and having a rotary axis extending transversely to said first direction and parallel to said second direction and said plane; said gear support being arranged for supporting a gear to be tested, in an axial alignment with said rotary axis;
(p) a transmission disc mounted on said gear support in axial alignment with said rotary axis;
(q) a motor and shaft encoder unit connected to said gear support for rotating in unison said transmission disc and the gear to be tested;
(r) a fourth motor means connected to said fourth carriage for displacing said fourth carriage transversely towards and away from said third carriage for bringing said transmission disc in force-transmitting frictional engagement with or, respectively, moving said transmission disc away from said linear transmission track; and
(s) a control and computer means connected to said motor and shaft encoder unit and said first, second, third, and fourth motor means for automatically acutating said motor and shaft encoder unit for a coarse positioning of the gear flank to be tested with respect to said measuring sensor, further for automatically actuating said fourth motor means to establish frictional engagement between said transmission disc and said linear transmission track, further for automatically actuating said first motor means for displacing said first and second carriages to move said measuring sensor at least approximately in the vicinity of the gear flank to be tested, further for automatically actuating said third motor means for displacing said linear transmission track linearly in said first direction with respect to said third carriage for a fine positioning of the gear flank to be tested with respect to said measuring sensor and further for a selective automatic actuation of said first or second motor means for performing a measuring process by moving said measuring sensor on the gear flank to be tested.

4,519,142
BLADE HEIGHT CALIBRATION DEVICE
Eli H. Parker, 2314 E. 37th St., Savannah, Ga. 31404
Filed Jan. 28, 1983, Ser. No. 461,854
Int. Cl.³ B27G *23/00*
U.S. Cl. 33—185 R **13 Claims**



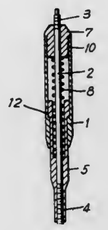
1. A device for calibrating the height of a blade above a blade drum surface of a blade drum on a machine comprising:
a. an upper section comprising a drum contact surface, sized and shaped to fit onto said blade drum surface of said blade drum of said machine;
b. a base section rigidly secured to said upper section and operative to be placed onto said machine;
c. stabilizing means securing said base section to said machine;
d. a notched opening in said drum contact surface of said upper section into which said blade may project when said drum contact surface rests on said blade drum surface;
e. adjustable electrical contact means projecting downward through said upper section into said notched opening and being aligned off-center in said opening and partially recessed into said upper section so that only a portion of the lower end of said electrical contact means is exposed within said notched opening; and
f. electrical indication means connected to said adjustable electrical contact means and to said blade, whereby when said adjustable electrical contact means contacts said blade, said electrical indication means is operative.

4,519,143
SHEET METAL BENDING POSITION MARKER SYSTEM
Antonino E. Correlli, 7919 35th St., Baltimore, Md. 21237
Filed Feb. 8, 1984, Ser. No. 578,060
Int. Cl.³ B23Q *35/02*; B23B *49/02*
U.S. Cl. 33—189 **18 Claims**



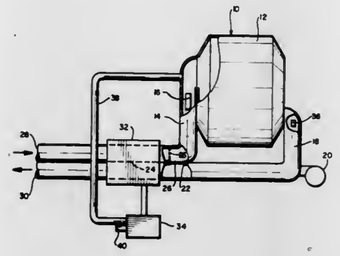
1. In a system for layout and marking of sheet metal on a base by a row of dies having respective points and means for holding the dies mutually parallel in adjustably slidable relation along die carrier rod pivoted relative points against and marking said sheet metal, the improvement comprising: means for causing said movement to move all said die points simultaneously against sheet metal, of any thickness within a range of thicknesses, including the pivoting of the die carrier rod by the means for pivoting being about an axis parallel-spaced from the die-carrier rod.

4,519,144
THREAD MEASURING TOOL
Leif G. Larsen, Sibbevej 10, 3230 Graested, Denmark
PCT No. PCT/DK83/00039, § 371 Date Dec. 12, 1983, § 102(e) Date Dec. 12, 1983, PCT Pub. No. WO83/03664, PCT Pub. Date Oct. 27, 1983
PCT Filed Mar. 28, 1983, Ser. No. 568,191
Claims priority, application Denmark, Apr. 16, 1982, 1698/82
Int. Cl.³ G01B *3/48*
U.S. Cl. 33—199 R **11 Claims**



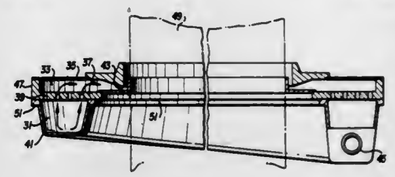
1. A thread measuring tool comprising:
a hollow housing;
a hollow plug gauge holder slidably and rotatably positioned within the lower end of said housing;
shoulder means provided within said housing limiting the travel of said holder out of the lower end of said housing;
a spring positioned within said housing urging said holder towards said shoulder means;
a cap secured to the upper end of said housing;
a spindle extending through said housing from above the cap at the upper end of said housing to below the lower end of said holder, the spindle secured to said cap; and
a plug gauge provided at each end of said spindle.

4,519,145
ELECTROSTATIC AND MOISTURE CONTROL SYSTEM FOR AUTOMATIC CLOTHES DRYERS
Sheldon W. Mandel, Galesburg, Ill., assignor to Magic Chef, Inc., Cleveland, Tenn.
Filed Mar. 12, 1984, Ser. No. 588,335
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—27 **11 Claims**



7. A method of drying clothes in an automatic clothes dryer wherein the clothes are dried in a chamber provided with an air inlet and an air outlet by preheated air circulated through the chamber and controlled by sensing the temperature of the outlet air, the improvement comprising the steps of:
(a) condensing moisture from the outlet air;
(b) injecting the condensed moisture into the air inlet when the outlet air reaches a predetermined temperature, thereby eliminating the buildup of static electricity and permitting uniform drying of the clothes.

4,519,146
AIR RING PLENUM WITH MOLDED HOUSING
F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Jun. 24, 1983, Ser. No. 507,368
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—104 **16 Claims**



1. An air plenum for cooling an extruded tubular film comprising:
an annular chamber for surrounding a travel path of an extruded tubular film and having an annular outlet nozzle adjacent to the travel path for directing air towards a tubular film extruded along said travel path, said chamber including an annular air distribution plate forming a wall of said chamber and having a plurality of apertures spaced along its extent for receiving cooling air; and,
an annular one-piece molded channel-like housing connected to said distribution plate and defining an annular air flow path for feeding cooling inlet air into said apertures, said housing having a height and width defining a cross-sectional area and at least one air inlet for directing air tangentially into said housing; said cross-sectional area progressively decreasing from each said inlet along at least a portion of the annular extent thereof by decreasing the height of said housing progressively along its annular extent.

4,519,147
FOOTWEAR HAVING CUSHION CAVITY
Paul Jones, Jr., Falmouth, Me., assignor to Kayser-Roth Corporation, New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,670
Int. Cl.³ A43B *9/12*
U.S. Cl. 36—19.5 **6 Claims**



1. A cement shoe comprising:
an upper including an upper member having margin portions;
a soft, flexible insole having margins, said margin portions of said upper overlapping and cemented to said margins of said insole;

a wear resistant outsole including a peripheral cement margin, said cement margin defining a cavity within said outsole, said upper being cemented to said cement margin; and

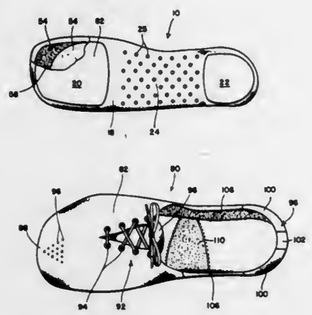
a cushion within said cavity, said insole overlaying said cushion.

4,519,148

EXERCISE SHOE

Jann L. Sisco, 819 Country Club Dr., Sonoma, Calif. 94576

Filed Jul. 18, 1983, Ser. No. 514,873
Int. Cl.³ A43B *7/22*
U.S. Cl. 36—91 **15 Claims**



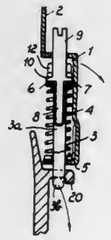
1. An exercise shoe, which comprises an upper and a sole fastened to said upper, said sole comprising first and second surface-gripping sole portions, said first and second sole portions being separated by a third, moisture-penetrable fabric sole portion, and a body of shock absorbent cushioning material positioned to be between said sole and at least a ball of a wearer's foot, said cushioning material terminating short of a toe end of said sole.

4,519,149

DEVICE FOR ADJUSTING THE FLEX IN REAR-ENTRY SKI BOOTS

Alessandro Pozzobon, Treviso, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Aug. 16, 1982, Ser. No. 408,318
Claims priority, application Italy, Aug. 31, 1981, 22767/81[U]
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—121 **6 Claims**



1. A device for adjusting the flex, particularly in rear-entry ski boots comprising within a receiving seat defined in the rear cuff of a ski boot settable elastic means connected to an engagement element protruding out of said receiving seat, said engagement element being adapted to engage, with said rear cuff in the closed position, with a retaining element provided rearwardly on the shell of said ski boot, wherein said engagement element is defined by the interconnecting portion of the arms of a substantially U-like link element accomodated inside said receiving seat and having coil springs arranged at the arms thereof, said coil springs acting between a reinforcement plate provided at the inside bottom of said receiving seat and a setting plate slidably supported on said arms of said link element, said setting plate having at a middle portion thereof a threaded hole wherein there engages a threaded shank defined at the bottom end of an adjusting pin protruding up from said receiving seat, wherein said adjusting pin has at a middle portion thereof a flange formation adapted to abut against a stop plate provided at the free top ends of said arms and secured thereon by locknuts mounted on the free ends of said arms of said link element.

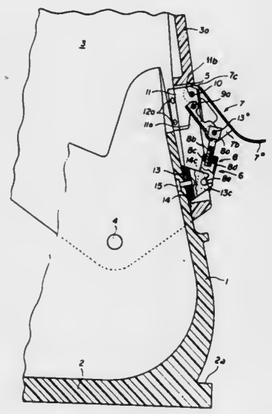
4. In a rear-entry ski boot including a rear cuff member pivotally mounted on a rear portion of the ski boot shell, a device for biasing the forward lean movement of the ski boot, comprising a seat on said rear cuff member, an engagement element movably located in said seat and having a portion thereof protruding out of said seat, spring means in said seat for biasing said engagement element into its retracted position, and a retaining element on said rear portion of the ski boot shell adapted for releasable engagement with said protruding portion of said engagement element, thereby said spring mean. resiliently opposing said engagement element to be entrained into its extended position by said retaining element when forward lean of the ski-boot is exerted and resiliently urging said engagement element into its retracted position.

4,519,150

SKI BOOT

Simon Arieh, and Guy Courvoisier, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jan. 21, 1983, Ser. No. 460,026
Claims priority, application Switzerland, Jan. 22, 1982, 395/82
Int. Cl.³ A43B *5/04*; A43C *11/14*
U.S. Cl. 36—121 **14 Claims**



1. In a ski boot having a lower member in the form of a casing formed with a sole piece and adapted to receive the foot of a skier, an upper member forming a cuff around the leg of the skier, means defining a pivot between said members substantially in the region of the ankle joint of the leg and foot, and latch means interconnecting said members, the improvement wherein said latch means comprises:

a toggle linkage having at least a pair of elements pivotally connected to one another at a first pivot;

means pivotally connecting one of said elements to said upper member at a second fixed on said upper member;

means pivotally connecting another of said elements to said lower member at a third pivot fixedly located on said lower member, said linkage having an actuating lever engaging said first pivot to shift the same toward and away from the boot, said first, second and third pivots having mutually parallel pivot axes with said first pivot disposed between said second and third pivots; and

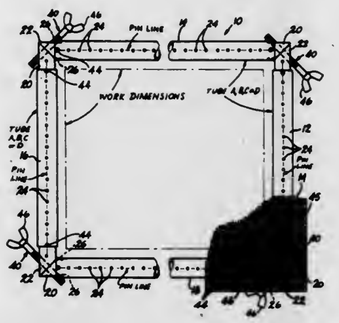
means on the boot forming an abutment, said toggle linkage being engageable with said abutment in a locking position of said linkage when said first pivot is displaced toward the boot, said toggle linkage having an unlocking position when said first pivot is displaced away from said boot, the angular displacement of said upper member relative to said lower member being limited in said locking position, said toggle linkage comprising a first link forming said element pivotally connected to said upper member at said second pivot, a second link pivotally connected to said lower member at said third pivot, said links being pivotally connected together at said first pivot, and an elastically deformable third link pivotally connected said first pivot and to said boot at a fourth pivot having an axis parallel to the axis of said first, second and third pivots and located in a seat formed in a member kinematically fixed to said upper member, said second, third and fourth pivots lying in a plane defining a metastable position of said linkage, said locking and unlocking positions lying to opposite sides of said plane, said elastically deformable third link constituting elastic means for ensuring bistable operation of said linkage.

4,519,151

EXPANDABLE AND CONTRACTIBLE FRAME FOR STRETCHING FABRIC MATERIAL, AND METHOD

Robert C. Johnson, Chagrin Falls, Ohio, assignor to Metalogic, Inc., Chagrin Falls, Ohio

Filed Nov. 3, 1983, Ser. No. 548,412
Int. Cl.³ D06C *3/08*
U.S. Cl. 38—102.9 **8 Claims**



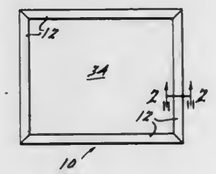
1. A relatively lightweight frame for stretching material, such as fabric material, adapted to be secured thereto, said frame comprising one-piece elongated, metal, defining side frame elements coupled together at their adjacent ends by a coacting pair of corner elements, said corner elements being selectively movable relative to one another so as to increase or decrease the frame size a selected amount, thus causing stretching or slackening of attached material, said side frame elements consisting of tubular members of metallic material, such as for instance aluminum, each of said corner elements of each pair on one end thereof comprising a beveled end surface, with said end surfaces of each said pair being disposed in generally confronting relation, means on said corner elements and on said side frame elements for detachably connecting the respective corner element to the associated side frame element, means on at least said side frame elements for rapidly securing fabric material thereto, the last mentioned means comprising a series of spaced openings in each said side frame element positioned lengthwise of the respective side frame element and adapted to receive therein pins which when passed first through associated fabric material are adapted to attach the fabric material to the frame, and rotatable actuating means coacting with each pair of said corner elements providing for selective expansion movement and contraction movement of the respective pair of corner elements relative to one another, thus providing for expansion and contraction of the frame and the stretching or slackening of material adapted to be secured thereto, said actuating means comprising a rotatable threaded shank provided with lefthand and righthand threaded portions, one of said corner elements of each of said pairs having a righthand threaded opening thereon while the other corner element of each of said pairs has a lefthand threaded opening thereon adapted for coaction with the respective of said righthand and lefthand threaded portions of said shank, thus providing for said expansion movement and retraction movement of the corner elements of each pair relative to one another upon rotation of said shank in a predetermined direction, said threaded openings extending inwardly from the respective of said beveled end surfaces generally perpendicularly thereto whereby said shank is disposed generally perpendicular to the respective beveled surface, and wherein each said shank projects through and laterally of the exterior sides of the respective pair of said corner elements, and said shank having on one end thereof a fixed handle adapted for gripping by a user's hand for manual rotation of said shank to cause said expansion and said retraction movements of the respective of said pair of corner elements, whereby said frame can be readily increased or decreased in size from exteriorly thereof.

4,519,152

TAMPER PROOF POSTER DISPLAY DEVICE

James R. Seely, Rochester, and Robert Sarkisian, Bloomfield Hills, both of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Aug. 8, 1983, Ser. No. 521,413
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—156 **29 Claims**



1. A tamper-proof poster display device of the type having front and back portions adapted to be assembled in pivotal relationship to one another in defining a polygonal frame structure to receive a display piece, said portions being provided with coacting hinge formations in mating pivotal engagement with one another, and spring means extending between said front and back portions to bias the former with a snap-over action between a closed position in clamping engagement with the display piece and an open position to removably receive said piece, the improvement comprising said front portion having outwardly presenting first surface and laterally presenting second surface, said first and second surfaces smoothly and continuously converging to define an included dihedral angle greater than 90° and further comprising opener means removably engageable with said front portion for opening said display device.

4,519,153
DISPLAY DEVICE

Joseph C. Moon, 127 Pinewood Dr., and Arthur T. Craig, Windsor Rd., both of Greer, S.C. 29651

Filed Jun. 11, 1982, Ser. No. 387,488
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—591 2 Claims

1. A display device for use on automobiles and the like comprising a bracket having a lower main body portion, a vertically extending bore provided in said main body portion, and an attachment means carried by said main body portion for securing said bracket to an automobile;

a removable staff having a lower portion extending into said bore and an upper vertically extending portion;

said lower portion including a bifurcated portion defined by a pair of resilient sides of said lower portion with a space therebetween which bias inwardly for insertion into and through said bore;

an enlarged ridge formed in said lower portion adjacent said bifurcated portion having a cross-section larger than the remainder of said lower portion for locking said lower portion in said bore allowing interlocking of said staff and bracket for highway use and repeated removal for hand-held use of said device;

a decorative flag;

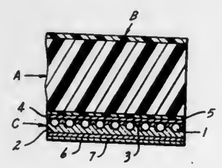
retaining members extending between said decorative flag and said upper vertically extending portion of said staff securing said flag thereto whereby said flag is permitted to wave as said automobile is driven down a highway, and said staff can be readily removed from said bracket for being carried by hand and;

said enlarged ridge portion extending through said bore and interlocking with a bottom surface of said lower main body portion of said bracket.

4,519,154
LAMINAR STRUCTURE OF POLYCARBONATE

Richard E. Molari, Jr., Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 30, 1982, Ser. No. 412,979
Int. Cl.³ G09F *19/00*; B32B *27/36*
U.S. Cl. 40—615 13 Claims



1. An improved light reflecting sign consisting essentially of, in combination:

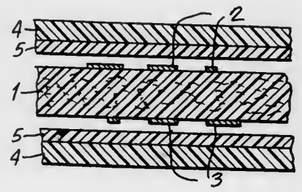
(i) a core structure having a rear face and a front face; and

(ii) a front visible light reflecting laminate disposed on and bonded to said front face of said core structure; the improvement comprising said core structure being comprised of at least one ply comprised of a high molecular weight aromatic polycarbonate resin and having disposed on and bonded to said rear face thereof a back ultraviolet radiation protective ply.

4,519,155
IDENTIFICATION CARD

Terence J. Gallagher, Brookfield, Conn., and Anthony La-Capria, Brooklyn, N.Y., assignors to American Bank Note Company, New York, N.Y.

PCT No. PCT/US81/01110, § 371 Date Apr. 17, 1983, § 102(e) Date Apr. 17, 1983
PCT Filed Aug. 17, 1981, Ser. No. 491,950
Int. Cl.³ G09F *3/02*
U.S. Cl. 40—625 20 Claims



1. A security document comprising:

a. a thermoplastic base sheet formed of film-fibrils bonded at its surfaces sufficiently to be receptive to printed markings thereon, said sheet having an internal structure less bonded than said surfaces;

b. security markings printed on at least one of said surfaces;

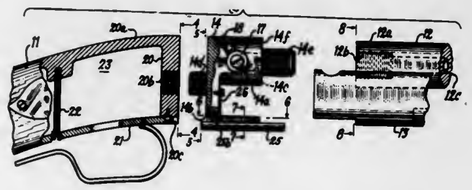
c. a layer of thermoplastic film having a melting temperature range overlapping the melting temperature range of the sheet material and having one surface fused directly to said one surface of the base sheet between the markings thereon, said layer forming with said one surface a matrix enclosing said security markings, said matrix having a delamination resistance greater than said internal structure; and

d. a protective layer bonded to the opposite surface of the layer of film.

4,519,156
FIREARM WITH INTERCHANGEABLE BARRELS

Myron J. Shaw, Church St., Lee, Mass. 01238

Filed Jun. 7, 1983, Ser. No. 501,851
Int. Cl.³ F41C *21/22*
U.S. Cl. 42—77 14 Claims

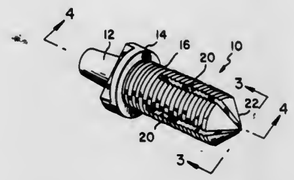


1. A muzzle-loading firearm adapted for interchangeable barrels comprising, in combination, a butt stock having a front end face, mounting means secured to said butt stock and having a front plate overlying said front end face, adapter means having a main front portion and a rear plate portion extending downwardly below said main front portion, the vertical dimension of said rear plate portion being substantially greater than the vertical dimension of the front portion, said rear plate portion being substantially co-extensive with and abutting said front plate of said mounting means, said mounting means and said adapter means having co-acting connecting means for removably securing said adapter means to said mounting means in abutting relation therewith, and barrel means secured at the front end of said adapter means and having a breech portion at its rear end abutting said adapter means at the front end thereof.

4,519,157
BLACK POWDER GUN NIPPLE

Frank Giangerelli, 14 River Edge Dr., Fairfield, N.J. 07006

Filed Oct. 17, 1983, Ser. No. 542,371
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—83 12 Claims

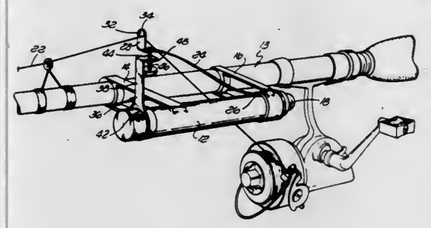


1. A nipple for use in conjunction with firearms to permit passage of an ingnition impetus to a propellant disposed in a chamber of the firearm, the nipple comprising an elongated body, having a longitudinal chamber disposed therethrough and opening through the ends thereof, one said end of said body configured for cooperating with the ignition impetus, a portion of said body adjacent to the other said end thereof for disposition in a propellant, said portion of said body having disposed therein at least one vent means opening through a wall thereof and said longitudinal chamber.

4,519,158
FISHING LINE ACTIVATOR INDICATOR

Johnie C. Kirk, Garden Grove, Calif., assignor to Carl R. Rodriguez, Hemet, Calif., a part interest

Filed Oct. 11, 1983, Ser. No. 540,564
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 1 Claim



1. Apparatus for indicating activation of a fishing line comprising:

a support body having a signal light indicator means mounted therein and having means for securing said body to a fishing pole having a fishing line associated therewith;

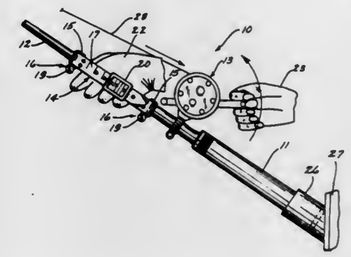
switching means for activating said light indicator when a force is applied to said fishing line, said switching means including an L-shaped base having a vertical arm and a horizontal arm, one end of said vertical arm being secured adjacent to said support body, the other end of said vertical arm being secured to one end of said horizontal arm; a screw contact number being secured to the other end of said horizontal arm and being adjustable along an axis perpendicular to the plane of said horizontal arm; and

a curved spring arm having one end secured adjacent to the other end of support body and its free end terminating in an upwardly-extending axis generally parallel to said L-shaped base vertical arm, said spring arm free end having an opening therein for positioning said fishing line therein once said fishing line has been cast, said adjustable contact member being adjustable to vary the distance between said contact member and said curved spring arm.

4,519,159
STABILIZER STRAP

Sebastian Fazio, 188 Raymond Rd., Rocky Hill, Conn. 06067

Filed Jan. 9, 1984, Ser. No. 569,406
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—25 4 Claims



1. An accessory for use with fishing poles of a type including a stiff handle section at one end thereof and a flexible section at the other end thereof, said flexible section having fishing line guide means thereon and said handle section having means intermediate the ends thereof for attachment of a fishing reel thereto, said accessory comprising:

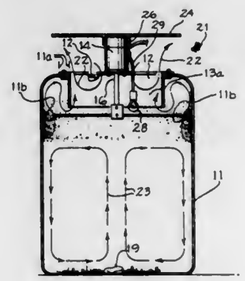
stablizer means for preventing undesirable rotation of said fishing pole while a fish is being reeled in, said stablizer means comprising a flexible strap; and

means for connecting each end of said strap to said handle section forwardly of said fishing reel for generally positioning said strap to one side of said handle section whereby one hand can be received between said strap and said handle section thereby preventing undesirable rotation of said fishing pole.

4,519,160
MEANS FOR KILLING FLYING INSECTS AND FOR DISCHARGING AN ATTRACTANT THEREFROM

Carl L. McBrayer, 428 Grand St., Redwood City, Calif. 94062

Continuation of Ser. No. 348,846, Feb. 16, 1982,. This application Jun. 8, 1984, Ser. No. 618,755
Int. Cl.³ A01M *1/04*, *5/02*
U.S. Cl. 43—113 1 Claim



1. A machine for killing flying insects and propagating a sex attractant therefrom comprising container means forming an enclosure having an opening leading into said enclosure, motive means carried by said container means externally of said enclosure and disposed substantially axially of said opening, an elongate stiff wire-like element extending substantially fully across said opening and coupled to said motive means to be rotated within said enclosure substantially in a plane lying across said opening and at a rate sufficient to substantially preclude any such insect from flying across said plane, said element serving to deflect any such insect to cause it to strike

the inner sidewall of said enclosure with sufficient impact to develop a sex attractant therefrom, said opening being surrounded by an edge margin, means forming a skirt depending downwardly from said edge margin of said opening, said skirt extending sufficiently downwardly so as to intercept parts of insects which ricochet from said sidewall toward said motive means to prevent the parts from reaching the motive means, said element further serving to pump said attractant into the atmosphere.

4,519,161

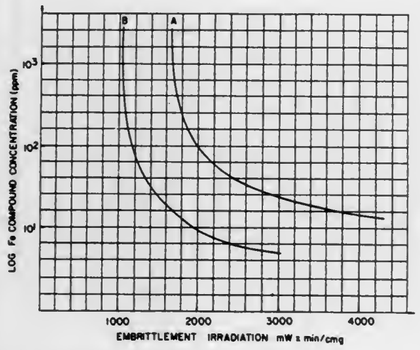
AGRICULTURAL PROCESS USING CONTROLLABLY DEGRADABLE POLYMER COMPOSITION FILM

Dan Gilead, Kibbutz Hazorea, Israel, and Gerald Scott, 338 Station Rd., Knonte, Solihull, England

Division of Ser. No. 503,629, Jun. 13, 1983, Pat. No. 4,461,853, which is a continuation of Ser. No. 304,663, Sep. 22, 1981, abandoned, and Ser. No. 940,726, Sep. 8, 1978, abandoned. This application Mar. 26, 1984, Ser. No. 593,528

Int. Cl.³ A01G *1/00;* **C08K** *5/47*

U.S. Cl. 47—9 **9 Claims**



1. Agricultural process which comprises laying out a protective or mulching film in a crop-blowing soil area, which film is capable of controllable degradation to embrittlement, allowing it to lay in the area at least until it has reached its embrittlement stage and subsequently carrying out soil working operations in said area thereby substantially to eliminate the film from the soil surface,

wherein said film comprises a plastic composition which is controllably degradable by photooxidation and which composition comprises a vinyl polymer, at least one first complex comprising a non-ionic organosoluble antioxidant complex of iron with a chain-breaking, peroxide-decomposing, metal ion deactivating or ultraviolet light stabilizing compound selected from the group consisting of a dithiocarbamate, dithiophosphate, xanthate, cyclic phosphate, oxime, benzthiozole and benzimidazole, and such that the iron complex is a photoactivator and is present in a concentration of about 0.0005 to 0.5% by weight, and at least one second complex comprising a non-ionic organosoluble ultraviolet light stabilizing complex of nickel or cobalt with a chain-breaking, peroxide-decomposing, metal ion deactivating or ultraviolet light stabilizing compound selected from the group consisting of a dithiocarbamate, dithiophosphate, xanthate, cyclic phosphate, oxime, benzthiazole and benzimidazole, and such that the nickel or cobalt complex is a photostabilizer and is present in a concentration of about 0.01 to 0.5% by weight, the concentrations of the iron complex and nickel or cobalt complex being independently varied relative to each other yet coordinated to produce a controllably desired ultraviolet photodegradation embrittlement time for the composition, which embrittlement time is capable of being retarded or delayed by controlling the length of the induction period defining the interval between the start of exposure to photodegrading ultraviolet light and the point at which ultraviolet photodegradation by photooxidation begins in dependence upon the controllable amount of the nickel or cobalt complex in relation to the amount of the iron complex, and which composition upon reaching the end of the induction period and the point at which ultraviolet photodegradation by photooxidation begins is capable of undergoing photodegration at a correspondingly comparative rapid photooxidation rate to ultimate embrittlement in dependence upon the controllable amount of the iron complex in relation to the amount of the nickel or cobalt complex, said composition being such that at a concentration ratio by weight of about 1:1 or the nickel or cobalt complex to the iron complex the embrittlement time thereof is at least about 125 hours after exposure to photodegrading ultraviolet light.

4,519,162

VERTICAL PLANT SUPPORT WITH HORIZONTAL HOOPS

William C. Stuckey, 1503 Virginia St. E., Charleston, W. Va. 25311

Filed Aug. 2, 1983, Ser. No. 519,658

Int. Cl.³ A01G *9/12*

U.S. Cl. 47—47 **4 Claims**



1. A plant support of the type having a post for driving into the ground and at least one cantilevered plant support wire rod members releasably and lockably supported in cantilever fashion from said post, the improvement comprising,

said post being of the type having a U-shaped center portion comprised of a base and a pair of legs with laterally projecting flanges projecting from the legs of said U, and a plurality of hole-slot pairs in said base of said U-shaped center portion and along the length thereof,

each said plant wire rod member having integrally formed on the ends thereof a brace member for engaging said pair of flanges on said post, and

a clip of resilient material having shape memory, said clip having a central portion and a pair of prong members, one prong member attached to each end of said central portion, said clip releasably and lockably engaging said brace member against said laterally spaced projecting flange members, and said central portion including a pair of hooks, one hook on each said prongs, for engaging the base portion of said post member through said hold-slot pairs.

4,519,163

CONTROLLED GROWTH OF MUNG BEAN SPROUTS

James F. Bonner, South Pasadena, Calif., assignor to Phytogen, Pasadena, Calif.

Continuation-in-part of Ser. No. 421,128, Sep. 22, 1982, abandoned. This application Sep. 9, 1983, Ser. No. 530,854

Int. Cl.³ A01B *79/00*

U.S. Cl. 47—58 **18 Claims**

1. A process for growing of mung bean sprouts of increased diameter which comprises exposing sprouted mung beans in the absence of light to a spray of aqueous plant-growth hormone solution comprising a plant-growth hormone selected from the group consisting of an auxin, a biological analogue thereof, and mixtures thereof, and present in a concentration of from about 0.1 to about 5 ppm by weight to volume of said aqueous solution and to a plant-growth regulator atmosphere comprising oxygen and from about 0.5 to about 3 ppm by volume of a plant-growth regulator selected from the group consisting of ethylene, acetylene and mixtures thereof for at least a portion of a selected period of mung bean sprout growth.

4,519,164

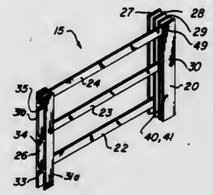
GATE WITH MULTIPLE PIVOT AXES FOR RAIL MEMBERS

Richard A. Porter, P.O. Box 11, Kittridge, Colo. 80457

Filed Jan. 9, 1984, Ser. No. 569,484

Int. Cl.³ E05C *7/06*

U.S. Cl. 49—108 **7 Claims**



1. A gate mechanism, comprising in combination, support post means and a plurality of rails, each of said rails being pivotally connected to said support post means for movement in parallel planes between a horizontal closed position and a vertical open position, drive means for driving each of said rails in concurrent pivotal movement, said drive means being operably connected to each of said rails near said pivotal connection.

4,519,165

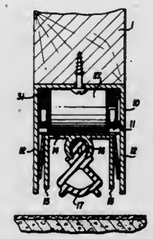
SEALING DEVICE FOR THE BOTTOM OF A DOOR

Dieter-Julius Cronenberg, and Jenö Faflek, both of Arnsberg, Fed. Rep. of Germany, assignors to F. Athmer, Arnsberg, Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,452

Int. Cl.³ E06B *7/20*

U.S. Cl. 49—307 **3 Claims**



1. A sealing device for the bottom of a door comprising

(a) a first inverted U-shaped sectional bar for mounting along the bottom of a door, said first sectional bar including a horizontal web and a pair of spaced legs depending therefrom and terminating in free longitudinal edges;

(b) a horizontal partition wall connecting the legs with one another at a position intermediate and spaced from the horizontal web of the first sectional bar and the free ends of the legs thereof to provide an upper rectangular chamber and a lower rectangular chamber, the latter being open at its bottom side;

(c) a second inverted U-shaped sectional bar including a horizontal web at its upper end portion and a pair of spaced legs depending therefrom and terminating in free longitudinal edges to provide a third rectangular chamber open at its bottom side, said second sectional bar being disposed in said lower chamber of said first sectional bar and vertically movable in said lower rectangular chamber, said second sectional bar being of smaller size than said first sectional bar such that a gap is provided between the confronting respective interior and exterior surfaces of said legs of said first and second sectional bars and the confronting respective lower surface of said horizontal partition wall and the upper surface of said web portion of said first and second sectional bars;

(d) a first elastic sealing means in the form of a sealing strip of profile material mounted in said third chamber of said second sectional bar;

(e) second elastic sealing means of plastic material and comprising at least one elongated sealing strip disposed in said gap, a longitudinal portion of said sealing strip, intermediate longitudinal edge portions on opposite sides thereof, extending between said respective lower surface of said horizontal partition wall of said first sectional bar and said upper surface of said web portion of said second sectional bar and being secured to said upper surface of said web portion of said second sectional bar and said longitudinal edge portions of said sealing strip on opposite sides of said central portion thereof extending downwardly between said respective adjacent interior surfaces of said legs of said first sectional bar and said exterior surfaces of said legs of said second sectional bar, said longitudinal edge portions of said sealing strip continuously contacting, due to the inherent elasticity of said sealing strip, the respective inner surfaces of said legs of said sectional bar, thereby to prevent the passing of draft or smoke in either direction through said gap between said respective legs of said first and second sectional bars and said respective partition wall and web portion of said first and second sectional bars; and

(f) means in said upper chamber of said first sectional bar for raising and lowering said sealing strip together with said second sectional bar upon opening and closing the door.

4,519,166

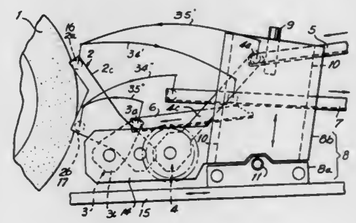
WORKPIECE HANDLING APPARATUS FOR GRINDING MACHINES

Harald Petermann, Nuremberg, and Karl G. Loesch, Spardorf, both of Fed. Rep. of Germany, assignors to Georg Muller Kugellagen Fabrik K.G., Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,039

Int. Cl.³ B24B *5/22*

U.S. Cl. 51—103 WH **12 Claims**



1. Workpiece handling apparatus for use in a grinding machine including a rotatable grinding wheel, comprising:

means for supporting a pair of workpieces at a respective pair of spaced load positions staggered on the periphery of the grinding wheel;

means for moving said workpiece supporting means and grinding wheel toward each other in a longitudinal direction in order to feed the pair of workpieces supported on said supporting means against the grinding wheel in a grinding operation;

means for holding unground workpieces so that each of a pair of unground workpieces is situated at a respective pickup position of a pair of pickup positions;

discharge means for receiving finished or ground workpieces;

loading means for simultaneously transporting each of the pair of unground workpieces from said respective pickup position at said holding means to said respective one of said pair of load positions and at the same time simultaneously unloading each of a pair of finished or ground workpieces from said respective load position and transporting the same to said discharge means, said loading means including three carrier arms, said three carrier arms comprising one unloading arm and two loading arms, said unloading arm including means for carrying both of the pair of finished workpieces to unload and transport the same from said respective load positions to said discharge means, said two loading arms each including means for carrying the respective one of the pair of unground workpieces from said respective pickup position at said holding means to said respective one of said pair of load positions;

means associated with said unloading arm for effecting engagement thereof with both of the pair of finished workpieces at said respective load positions and for effecting disengagement thereof at said discharge means;

means associated with each of said two loading arms for effecting engagement thereof with the respective one of the pair of unground workpieces at said respective one of said pair of pickup positions and for effecting disengagement thereof at said respective one of said pair of load positions; and including

means for lifting the pair of ground workpieces from said respective load positions at least slightly away from the grinding wheel over respective substantially rectilinear paths to unload the finished workpieces from said respective load positions prior to transporting the finished workpieces to said discharge means; and

means for moving said carrier arms in unison, each of said carrier arms being pivotally mounted on said carrier moving means.

4,519,167

PROCESS AND APPARATUS FOR THE AUTOMATIC CONTROL OF MOVEMENT OF AN EDGE GRINDING MACHINE

Friedrich Halberschmidt, Herzogenrath; Heinz-Josef Reinmold, Aachen; Alfred Schmitz, Aachen, and Heinz Mund, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, France

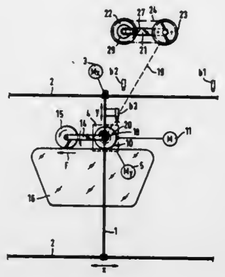
Filed Jan. 19, 1983, Ser. No. 459,116

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201494

Int. Cl.³ B24B *9/10*

U.S. Cl. 51—165.77 **26 Claims**

2. An apparatus for the automatic all-around path control of a processing tool mounted on a cross sled adapted for movement within an X-Y coordinate system comprising an X- drive motor and a Y- drive motor for driving said cross sled, a scanning instrument including a scanning organ for scanning a path along an edge of a glass pane and an arm mounting said scanning organ, said arm mounted to said cross sled for rotation about the axis of said processing tool, said arm locating said scanning organ in advance of said processing tool and maintaining said scanning organ and processing tool at a spaced distance equal to the length of said arm, means for maintaining said scanning organ in position against said glass pane, means responsive to the spatial position of said scanning organ within the X-Y coordinate system and the angular position of said arm in relation to one of said axes, said means generating continuously a signal representative of said positions for said path control, a storage having a double axis storage and a capability of storing said signal for path control over a distance of move-



ment always equal to the length of said arm, said signal being connected to said storage and passed to an output, and circuit control means connected at said storage output for regulating the speed ratio of said X-Y drive motors.

4,519,168

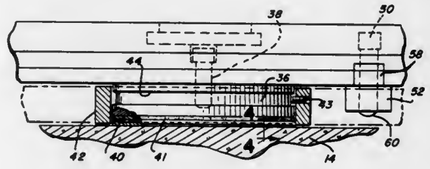
LIQUID WAXLESS FIXTURING OF MICROSIZE WAFERS

Joseph V. Cesna, Niles, Ill., assignor to Speedfam Corporation, Des Plaines, Ill.

Continuation of Ser. No. 290,615, Aug. 6, 1981, abandoned, which is a continuation of Ser. No. 76,670, Sep. 18, 1979, abandoned. This application Dec. 5, 1983, Ser. No. 557,904

Int. Cl.³ B24B *37/04*

U.S. Cl. 51—216 LP **5 Claims**



1. A fixture for use with a lapping machine to hold a plurality of thin generally flat wafers against a lapping wheel during a lapping operation, said fixture comprising, in combination, a baseplate, a plurality of round pedestal disc members of a diameter corresponding approximately to said wafers and secured to said baseplate in spaced relation to each other, a plurality of round pads of firm but resilient foam-like cellular material having internal open cells, one pad being secured to each pedestal surface to substantially cover the same, each pad having an exposed surface machined to match said lapping wheel surface to effect parallelism therewith, and a plurality of rings with one ring removably secured to each of said pedestals to closely surround and project beyond the surface of a corresponding one of said pads, said rings serving to assist in mounting each wafer centrally on a corresponding pad, and said rings also serving to cooperate with a corresponding pad so when said pad is wetted with a hygroscopic liquid and a wafer is pressed against the pad, said ring in combination with the hygroscopic liquid will aid in maintaining a seal to prevent abrasive slurry used in the lapping operation from entering the pad and damaging the side of the wafer opposite the side being lapped.

4,519,169

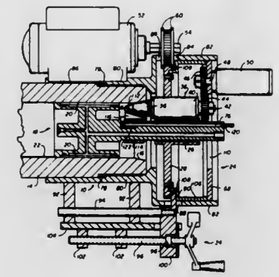
PORTABLE ORBITING GRINDING MACHINE

Thomas V. Smith, Troy, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1983, Ser. No. 550,856

Int. Cl.³ B24B *19/26*

U.S. Cl. 51—241 S **5 Claims**



1. A portable orbiting grinding machine for grinding the gas check seat on a gun tube, said machine comprising:

an expandable arbor adapted to fit within said gun tube,

an orbital spur gear assembly mounted on said arbor extension and adapted to revolve thereon,

said spur gear assembly including a grinding wheel having a shape desired for said gas check seat, and

a feed mechanism assembly for providing logitudinal travel of said spur gear assembly on said arbor extension to engage and disengage said grinding wheel with said gas check seat, and

means for revolving said grinding wheel and said orbital spur gear assembly.

4,519,170

METHOD OF AND APPARATUS FOR HOLDING A SHAFT DURING FINISH GRINDING

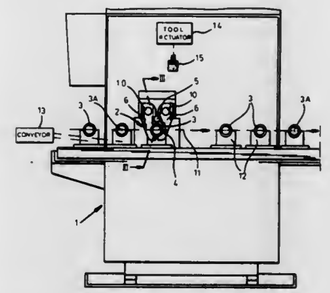
Ernst Thielenhaus, Wuppertal, Fed. Rep. of Germany, assignor to Ernst Thielenhaus KG, Wuppertal, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,509

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240332

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—289 R **11 Claims**



1. A method of machining a workpiece having a generally cylindrical outer surface centered on an axis, the method comprising the steps of:

closing a pair of journal halves having generally semicylindrical inner surfaces of slightly greater diameter than the outer workpiece surface around the workpiece;

pumping a fluid under superatmospheric pressure into the space between the journal inner surface and the workpiece outer surface and thereby supporting the workpiece in the journal halves on the liquid generally out of contact with the inner surfaces thereof;

rotating the thus supported workpiece about its axis; and

engaging a finishing tool radially against the workpiece.

4,519,171

WORK-HOLDING FIXTURE FOR CRYOGENIC DECOATING

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 26, 1983, Ser. No. 461,087

Int. Cl.³ B24C *9/00*

U.S. Cl. 51—419 **9 Claims**



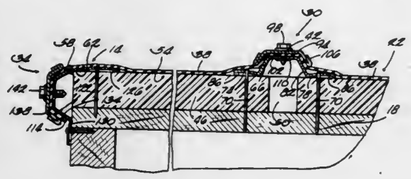
1. An apparatus for blasting of workpieces with impact media within a thermally insulated chamber having an outwardly opening access door,

a cantilever beam affixed adjacent the upper edge of said door and arranged to extend into the interior of said chamber when the door is in a closed position,

drive means affixed to the free end of said beam having a downwardly extending rotatable power take-off shaft,

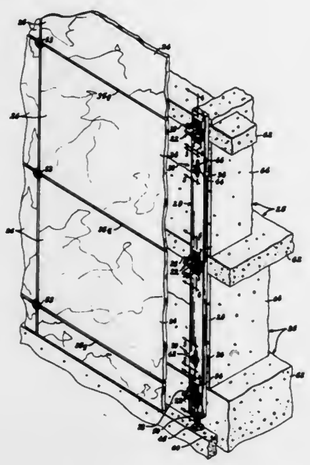
a work-supporting fixture suspended from said power take-off shaft by a quick coupling device, wherein said device comprises bevelled mating surfaces providing a friction drive between said power take-off shaft and said work-supporting fixture whereby the assembly of mating surfaces is self-centering and wherein said quick-coupling device also comprises a first coupling component affixed to said power take-off shaft and a mating C-shaped connector component, attached to said work-supporting fixture, in the form of a short hollow tube having an inner diameter substantially exceeding the outer diameter of said power take-off shaft, said connector component providing a slot at a side thereof affording lateral access for passage therethrough of said first coupling component for engagement and seating of said mating surfaces and an upper laterally extending arm and a lower laterally extending arm vertically spaced from one another at a distance substantially greater than the length of said first coupling component, the inner peripheral surface of said upper arm being bevelled to form a downwardly divergent frusto-conical rim for mating engagement with the first coupling component in nested position, the distance between the upper and lower arms being amply sufficient to afford an easy quick passage for insertion of said first coupling component therebetween when said connector component is in raised position above the lower arm of said connector component, and the opposed outer edges of the laterally extending arms of said connector component are bevelled to accommodate possible horizontal misalignment, whereby rotation of said power take-off shaft is transmitted to effect rotation of said fixture and the weight of the fixture exerts a downward force on the corresponding mating surface effecting sufficient friction at the surfaces of contact to establish a reliable friction drive for rotation of said C-shaped connector component.

4,519,172
WATERPROOF ROOF
Delano H. Ristow, 10015 Steinthal Rd., Kiel, Wis. 53042
Filed Apr. 1, 1983, Ser. No. 481,245
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—96 **18 Claims**



1. A waterproof roof including a supporting roof structure, an assembly including a first elongated member supported by said supporting roof structure and including a raised portion, and a second elongated member with a shape generally conforming to said raised portion, a generally continuous elastic sheathing member covering said supporting roof structure and sandwiched between said first and said second elongated members of said assembly, and means for attaching said second member to said raised portion, said attaching means comprising a fastener which extends through said sheathing member and between said second member and said raised portion and which is not connected to said supporting roof structure.

4,519,173
SLAB-HANGING SYSTEM
Lewis L. Roberts, Indianapolis, Ind., assignor to Mercury Development Corp., Indianapolis, Ind.
Filed Jun. 7, 1982, Ser. No. 385,861
Int. Cl.³ E04H *1/04*
U.S. Cl. 52—235 **1 Claim**

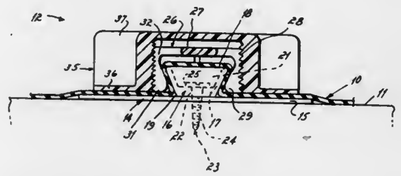


1. Slab-hanging means for removably supporting a vertically-arranged series of slabs upon associated supporting structure, the slab-hanging means comprising, in combination:
a vertical support column member;
retaining means for retaining the support column member to the associated support structure, the retaining means providing adjustments both horizontally and vertically and outwardly, with respect to the associated supporting structure;
the support column member being provided with a series of spaced connector means for co-operating with interconnecting means as mentioned below;
a shelf slab-hanger for each of the series of spaced connector means;
interconnecting means for interconnecting each of the slab-hangers to the support column member by co-operation with respective ones of said connector means;
the said slab-hangers each providing a support shelf or abutment upon which may rest one of said slabs, and the full adjustability of the support column member achieving the proper alignment and positioning of all of the said slab-hangers mounted thereon, and thus assuring that all slabs supported in the series will be properly aligned and positioned when seated upon the respective slab hanger.

4,519,174
STAIN-RESISTANT EARTHEN ARTICLES, GROUT AND FLOOR AND WALL SURFACES COMPOSED THEREOF
Alvin E. Witt, Media, Pa., assignor to PermaGrain Products, Inc., Media, Pa.
Division of Ser. No. 292,018, Aug. 11, 1981, Pat. No. 4,407,884.
This application Sep. 30, 1982, Ser. No. 431,610
Int. Cl.³ E04F *13/18*
U.S. Cl. 52—389 **24 Claims**

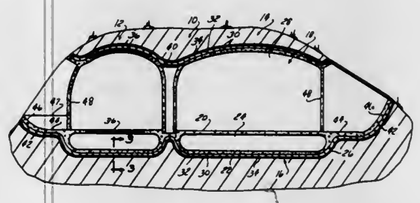
1. A stain- and wear-resistant wall or floor surface comprising:
a plurality of composite earthen-plastic articles having improved stain-resistance and strength;
said articles comprising a porous earthen body having a synthetic plastic polymerized in situ therein and being further impregnated with a penetrating solution comprising a drying oil or a semi-drying oil;
said polymerized synthetic plastic being substantially uniformly distributed throughout said earthen body;
said drying oil or semi-drying oil also being substantially uniformly distributed throughout said earthen body;
whereby said articles have a substantially uniform composition throughout the thickness thereof with the pores substantially filled with said plastic and oil to provide said stain-resistance;
said articles being assembled in said wall or floor surface imbedded in a layer of stain-resistant grout surrounding the edges of said articles and holding them in position in said surface;
whereby a wall or floor surface is provided having improved breaking strength and stain-resistance.

4,519,175
LUBRICATED ROOFING MEMBRANE FASTENER
Stevan A. Resan, Carlisle, Pa., assignor to Carlisle Corporation, Cincinnati, Ohio
Filed Jun. 15, 1983, Ser. No. 504,462
Int. Cl.³ E04D *5/14*
U.S. Cl. 52—713 **15 Claims**



1. A fastener for holding a roofing membrane to a roof without puncturing the roofing membrane comprising:
an anchoring disc, said disc including a central hollow inverted, frusto-conical button;
an externally threaded tined retainer cap adapted to snap onto said button of said anchor with said membrane held between said retainer and said button to clamp said membrane to said button;
a permanent lubricant applied to the internal surface of said tined retainer cap which does not evaporate under atmospheric conditions; and
an internally threaded cover adapted to screw onto said externally threaded retainer cap to hold said tined retainer cap and button engaged with said membrane gripped therebetween.

4,519,176
MODULAR METHOD OF MAKING A BUILDING STRUCTURE
Richard D. Britz, Eugene, Oreg., assignor to Earthship Enterprise, Inc., Mt. Pleasant, Mich.
Filed Jun. 28, 1982, Ser. No. 392,643
Int. Cl.³ E04B *1/62*
U.S. Cl. 52—742 **3 Claims**



1. A method for constructing a modular building structure comprising the steps of:
(A) forming a cavity in the ground having a planar bottom and upstanding side walls having an outwardly facing convex shape;
(B) applying a layer of a waterproof material over the interior surface of the cavity;
(C) applying a layer of an insulating material over the layer of waterproof material;
(D) applying a layer of concrete over the layer of insulating material to form a base with a hollow recess;
(E) filling the recess with inflatable means and a top layer of earth up to the top edges of the side walls of the base;
(F) applying a layer of concrete over the top of the base to form an upper planar portion for the base;
(G) removing the inflatable means and earth from the interior of the base to define a hollow interior space between the upper and lower portions and the side walls of the base;
(H) mounting in registry a plurality of frame panels on the base to form an upper shell frame;
(I) applying concrete about the exterior of the upper shell frame;
(J) applying a layer of an insulating material over the concrete layer;
(K) applying a layer of a waterproof material over the layer of insulating material; and
(L) removing the shell frame from the interior of the concrete layer to form a hollow upper shell.

4,519,177
METHOD FOR REINFORCING TUBULAR DUCTS
Derek V. Russell, Timperley Nr Altrincham, England, assignor to Alphacrete Construction Linings (UK) Limited, Cheshire, England
Filed Dec. 8, 1982, Ser. No. 447,979
Claims priority, application United Kingdom, Dec. 14, 1981, 8137653
Int. Cl.³ E04B *1/16*
U.S. Cl. 52—745 **10 Claims**

1. A method for reinforcing the walls of tubular ducts such as serers comprising introducing into the duct elongate board-like longitudinally flexible reinforcement members each comprising at least one layer of a first material having large interstices and at least one layer of a second material having relatively small interstices and arraying said members circumferentially inside the duct to form a tubular reinforcement covering the walls of the duct, securing said member against the wall of



the duct and applying concrete to said covered walls whereby to provide a reinforced concrete lining to said duct.

4,519,178
METHOD AND APPARATUS FOR PLACING TAGS ON PRODUCE AND THE LIKE
Richard V. Crabb, Jr., Aromas, Calif., assignor to Salinas Valley Engineering & Manufacturing, Inc., Salinas, Calif.
Filed Jul. 14, 1983, Ser. No. 513,608
Int. Cl.³ B65B *27/10, 61/26*
U.S. Cl. 53—137 **4 Claims**



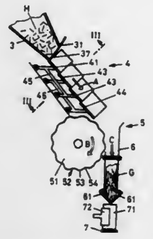
1. Apparatus for bunching and marking articles with a closure having an opening in one of its sides for receiving a ribbon object, said apparatus comprising:
a plurality of holding means each movable between first and second positions for receiving and holding an endless elastic band when in the first position and for stretching the elastic band to form a larger opening therethrough for placement of articles into said band opening and for reducing the cross section of the band when in the second position;
means for holding a closure in position for the opening therein to intersect the elastic band as the arms are moved from the first to the second position to cause the band to enter the opening;
moving means to move said holding means from the first to the second position to stretch the band and cause relative movement between said band and closure to cause said band to enter said closure openings; and
means to move the arms from the second to the first position with the elastic band attached to allow the elastic band to relax and increase in cross sectional area to pull and separate the closure from the holding means.

4,519,179
APPARATUS FOR ALIGNING AND BOXING FLAT ANGULAR ITEMS
Siegfried Meier, Neuhausen am Rheinfall, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Oct. 6, 1982, Ser. No. 433,032
Claims priority, application Switzerland, Nov. 6, 1981, 7124/81
Int. Cl.³ B65B *19/34*
U.S. Cl. 53—236 **10 Claims**

1. In an apparatus for filling packaging boxes with flat, angular articles, including an intermediate container accom-

modating the articles in a random pile; a charging hopper introducing the articles into the packaging boxes; and conveying means delivering the articles from said intermediate container into said charging hopper; the improvement in said conveying means comprising

(a) a first aligner including a plurality of serially arranged single troughs each having side walls and a bottom wall defining a channel; the channels formed in said troughs being serially connected to form a sole continuous conveying track having an outlet end; said channels including



aligning means for turning the articles, advancing thereon in a flow, into an at least approximately parallel orientation by the time they arrive to said outlet end of said conveying track; and

(b) a second aligner including a rotary transfer wheel situated between said outlet end of said conveying track and said discharge hopper for conveying articles in an at least approximately parallel orientation to one another from said outlet end of said conveying track to said charging hopper.

4,519,180

WRAPPING MACHINE

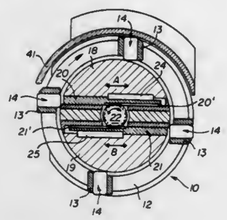
Jean Maure, Renens, Switzerland, assignor to Societe Anonyme des Plieuses Automatiques, Switzerland

Filed Apr. 23, 1982, Ser. No. 371,237

Claims priority, application Switzerland, Jun. 23, 1981, 4132/81

Int. Cl.³ B65B *11/28*

U.S. Cl. 53—234 **4 Claims**



1. A wrapping machine, for products to be grouped inside a common package, comprising a machine support, a device for feeding wrapping material, means for transporting groups of products, receptor means disposed to simultaneously receive at least one section of wrapping material of a predetermined length, ejector means to eject the product at least partially wrapped in said material, and a drive means, for the cylinder, with a hollow shaft, said hollow shaft containing a tubular piece affixed to the machine's support and connected to the stationary cylindrical block disposed inside the cylinder, wherein:

the receptor means and the transporting means consist of a hollow rotatable cylinder, the periphery of which is provided with openings each extending through to the interior of the cylinder for receiving and transporting a group of products and a corresponding section of wrapping material, a stationary cylindrical block disposed in the interior of the rotation cylinder to provide a guide surface defining a radially inward base for each said opening to guide said products and wrapping material;

the ejector means consists of at least one grooved slide mounted on said stationary cylindrical block;

the stationary cylindrical block has at least one opening disposed to house a said grooved slide which can be laterally displaced; and

the grooved slide is equipped with a bar which engages a toothed pinion connected to a rotatable shaft within said hollow shaft, said rotatable shaft being connected to a cam-driven mechanism for periodically laterally displacing the grooved slide.

4,519,181

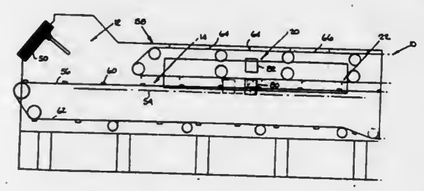
SLEEVE CARTON END PANEL AND FLAP FOLDING AND SEALING ASSEMBLY

Earle C. Sherman, and James B. P. Green, Jr., both of West Monroe, La., assignors to Johns-Manville Corporation, Denver, Colo. and Southern Tool Company, Inc., West Monroe, La.

Filed Jun. 7, 1983, Ser. No. 501,953

Int. Cl.³ B31B *1/26*

U.S. Cl. 53—374 **12 Claims**



1. In a sleeve carton machine for packaging a plurality of articles within a sleeve carton comprising a top panel, a bottom panel, a pair of side panels, a dust flap hingedly joined to each end of each side panel, an upper end panel hingedly joined to each end of said top panel, and a lower end panel hingedly joined to each end of said bottom panel, said machine including a sleeve carton conveyor means for conveying said sleeve cartons through said machine, means for folding said dust flaps on each end of said sleeve cartons inward toward each other after said sleeve cartons have been loaded with articles, means for applying adhesive to outer surfaces of said dust flaps after said dust flaps have been folded inward, and folding means for folding said upper and lower end panels against said dust flaps and pressing said end panels against said dust flaps while said adhesive sets to seal said carton, said folding means comprising a pair of lower end panel folding plates mounted directly opposite each other on either side of and adjacent said sleeve carton conveyor, means for moving said lower folding plates in unison in an upward and downstream direction to fold said lower end panels up against said dust flaps, a pair of upper end panel folding plates mounted above said lower folding plates and directly oposite each other on either side of and adjacent said sleeve carton conveyor, and means for moving said upper folding plates in unison in a downward and downstream direction to fold said upper end panels down against said dust flaps.

4,519,182

ARTICLE WRAPPER AND METHOD OF FORMING

John K. Lever, Redwood City, and Angelo N. DiVecchio, Los Altos, both of Calif., assignors to Certipak Corporation, Greenwich, Conn.

Filed Dec. 17, 1982, Ser. No. 450,522

Int. Cl.³ B65D *5/04;* **B65B** *11/00*

U.S. Cl. 53—461 **8 Claims**

1. An article wrapper for wrapping around an article or articles comprising an elongated blank having a top portion, side panels, fold means between said side panels and said top portion to connect them to each other, a pair of bottom panels, a pair of score lines between each of said bottom panels and the side panel to which said bottom panel is connected, a plurality of tabs formed between each pair of said score lines, and each of said tabs having its base connected to said score line farthest from said side panel to which said bottom panel is connected so that said tabs are not viewable when said blank is wrapped around the article.

4. A method of forming an article wrapper from an elongated blank in which the article wrapper is wrapped around an article or articles including forming the blank with a top portion, side panels connected to the opposite sides of the top



portion, fold means between each of the side panels and the top portion, a bottom panel connected to each of the side panels, and a pair of score lines between each of the side panels and the connected bottom panel, compression tabs for tightening the wrapper defined between said fold lines, positioning the blank substantially horizontal above the article to be wrapped, bending the side panels about the fold means, and bending and moving the bottom panels relative to the side panels about the two score lines to dispose each of the side panels with an angled corner with the connected bottom panel and the edge of the corner being defined by the score line closest to the side panel so as to maintain the side panels uninterrupted and the tabs hidden on the bottom of the wrapper.

4,519,183

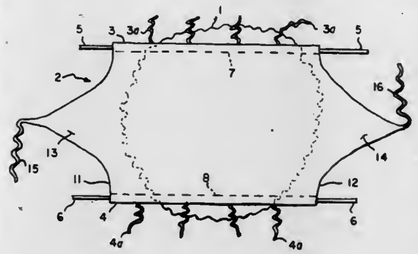
METHOD AND MEANS OF BAGGING LOOSE TRASH

Ross Parody, 1 Story Acres, Essex, Mass. 01929

Filed Aug. 5, 1983, Ser. No. 520,562

Int. Cl.³ B65B *11/00*

U.S. Cl. 53—461 **5 Claims**



1. A method of bagging loose material on a surface comprising the steps of:

(a) providing a flexible sheet having length and width to cover the material, of which two parralel long sides are rigid,

(b) laying the sheet over the material,

(c) moving the rigid long sides together between the surface and the material so that they are parallel and adjacent to each other and the sheet defines a cylindrical envelope enclosing the material,

(d) turning the envelope over,

(e) fastening the long sides together and

(f) securing the ends of the envelope so that the material is contained within the envelope.

4,519,184

LIQUID FILLING APPARATUS

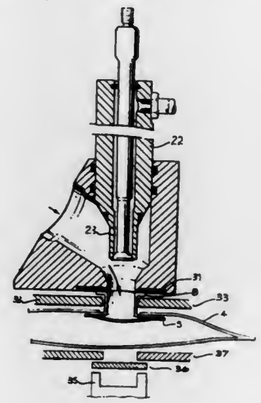
Robert Brunswick, Clayton, Australia, assignor to Wrightcel Limited, Victoria, Australia

Filed Jan. 11, 1982, Ser. No. 338,483

Claims priority, application Australia, Jan. 13, 1981, PE7222; Jan. 16, 1981, PE7227

Int. Cl.³ B65B *31/06, 1/48*

U.S. Cl. 53—503 **6 Claims**



1. Apparatus for filling flexible containers with a liquid, said flexible containers having collar means affixed to one wall of said flexible container, said collar having an opening for filling said container and a flap means for closing said opening, comprising:

a fixed filling head, with a peripheral seal means located at the bottom of said filling head;

holding means for gripping said collar of said flexible container and positioning said collar against said peripheral seal means to provide a seal;

support means below said filling head on which said flexible containter is borne, said support means including a port in said support surface having means to both support the flexible container during the filling operation and to provide access for a heat sealing member to be brought into contact with said flexible container, and a heat sealing member being located below said support member to seal fluid tight by heat, the flap over the opening in said collar means.

4,519,185

DEVICE FOR DEFLECTION OF A CONTINUOUS FILM WEB IN A PACKAGING MACHINE

Roland Horn, Frickenhausen, and Erhardt Glausch, Nürtingen-Neckarhausen, both of Fed. Rep. of Germany, assignors to Beck & Co., Packautomaten, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,648

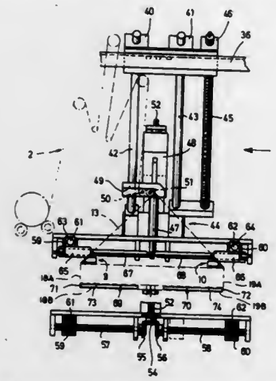
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125353; Dec. 31, 1981, 3152023

Int. Cl.³ B65B *9/06*

U.S. Cl. 53—550 **27 Claims**

1. In a packaging machine for wrapping objects sequentially fed into the machine with film from a continuous film web folded into two halves flat against each other about an axial midline and in which the two folded film web halves are fed in a vertical plane located parallel to the feed direction of objects into the machine, a device for deflecting the two folded film web halves so as to cause the web to open along its axial edges comprising means for causing separation of the two folded film web halves in a roof-like manner along a ridge edge line extending parallel to the feed direction of the objects such that the two film web halves are formed into respective roof side

zones extending from the respective axial edges of the web parallel to the feed directions of the objects to a triangular roof end zone opposite where the two film web halves axial edges have been opened and the triangular zone has an apex at the ridge edge line and a base which is transverse to the object feed direction and spaced from the apex of the triangular zone toward the open axial edges of the web and for forming the web into a top covering zone for the objects which extends horizontally from the base of the triangular zone and into further covering zones which extend vertically downwardly from the roof side zones for covering the sides of the objects and thence horizontally underneath the objects for covering the bottoms of the objects, said device comprising two guide



rails having free ends and extending parallel to the feed direction of the objects and which pass through the open axial edges of the two film web halves to engage the film web such that the free ends of the guide rails are at the ends of the base of the triangular zone and each guide rail engages a corresponding film web half at where the corresponding further zone extends downwardly from the corresponding roof side zone with said device being characterized by the fact that there are provided means for selectively spacing the guide rails in relation to each other dependent upon object size and means for selectively spacing the guide rails vertically in relation to the ridge edge line dependent upon the space between the guide rails as set by said means for spacing the guide rails relative to each other.

4,519,186

DEVICE FOR ATTACHING TUBULAR SEGMENTS OF PLASTIC FILM ON VESSELS

Horst Winter, Obertraubling, and Erich Eder, Donaustauf, both of Fed. Rep. of Germany, assignors to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,035

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3208234

Int. Cl.³ B65B *11/00, 13/00*

U.S. Cl. 53—585 **13 Claims**

1. Apparatus for depositing tubular segments of flexible material such as plastic film on a series of vessels as they move along a predetermined path, the apparatus comprising:

a rotor mounted for being driven rotationally in a vertical plane about a horizontal axis,

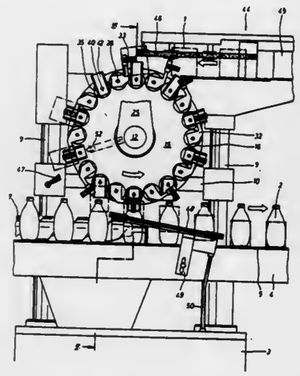
means for inserting tubular segments into a plane generally parallel to the rotational plane of said rotor,

means for moving said vessels along said predetermined path to said rotor,

a plurality of sucker means and a plurality of mandrel means respectively arranged alternately and generally in a circle on the rotor about the periphery thereof,

each sucker means comprising a pair of cooperating vacuum elements rotatable with said rotor in vertical planes and mechanism mounted on said rotor for swinging said vacuum elements along the rotational plane of the rotor alternately and cyclically in the direction of rotation of the rotor and oppositely of said direction and for moving at least one of said elements generally to the axis of rotor rotation to thereby cause said elements to cyclically move close together and separate in response to said rotor attaining different rotational positions, respectively,

each mandrel means comprising a pair of cooperating mandrel elements and a mechanism mounted on said rotor for swinging said mandrel elements along the rotational plane of the rotor alternately and cyclically in the direction of rotation of the rotor and oppositely of said direction and for moving at least one of said elements generally parallel to the axis of rotor to thereby cause said mandrel elements to cyclically move close together and separate in response



to said rotor attaining different rotational positions, respectively,

said rotational planes of said vacuum elements and mandrel elements being such that when the vacuum elements are together they grip opposite sides of a segment that is inserted between them, when said mechanism separates the vacuum elements they open the segment and align the opening with the mandrel means while said mandrel means are close together and the segment is swung by said mechanism over the mandrel means, and the mandrel elements are separated to effect gripping and transfer of the segment to the mandrel means, whereupon further rotation of said rotor effect transfer of the opened sleeve to a vessel moving in said path.

4,519,187

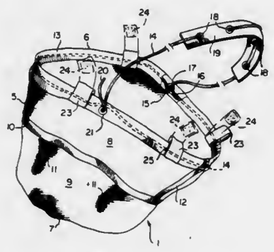
FLYGUARD

Jeannette Reynolds, 2711 Lindstrom Dr. NW., Calgary, Alberta, Canada T3E 6E5

Filed Nov. 22, 1983, Ser. No. 554,470

Int. Cl.³ B68B *7/00*

U.S. Cl. 54—81 **7 Claims**



1. A nose guard for horses for preventing flies and other insects from entering the nostrils of the horse comprising a generally cylindrical body of meshed fabric with a closed generally hemispherical bottom portion for covering the muzzle including the nostrils of the horse, and a top portion formed of at least one generally rectangular panel secured along one of its longer edges to said bottom portion, border seam means of a substantially U-shaped cross-section secured along the other of the longer edges of said top portion, draw string means passing through said border seam means and extending out of said border seam means from one point therein and re-engaging said border seam means at a generally diametrically opposed point thereon, thereby forming a head strap for securing said guard in place whereby tightening of said draw string means simultaneously secures said guard on the head and tightens said guard aroung the muzzle of a horse, and a plurality of tabs secured to said border seam means for connection to a bit harness arrangement.

4,519,188

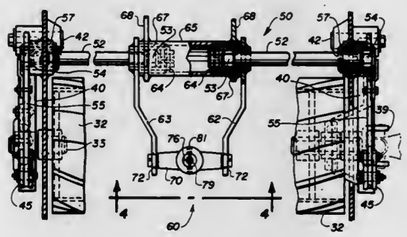
LINKAGE FOR EQUALIZING CONDITIONING ROLL PRESSURE

Emmett G. Webster, and Kenneth W. McLean, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Mar. 2, 1984, Ser. No. 585,673

Int. Cl.³ A01D *82/00*

U.S. Cl. 56—16.4 **10 Claims**



1. In a hy harvesting machine having a mobile frame; crop conditioning means supported by said frame to condition crop received thereby, said crop conditioning means having first and second cooperable conditioning members, said first conditioning member being movable relative to said second conditioning member and being biased toward a position relative to said second conditioning member, said first member having first and second opposing ends; crop cutting and conveying means supported by said frame to sever standing crop material and convey the severed crop material to said crop conditioning means, biasing means for biasing said first member toward said position relative to said second conditioning member, said biasing means having first and second biasing member connected to said first and second ends, respectively, to effect a respective biasing of the opposing ends of said first conditioning member toward said position relative to said second conditioning member, the improvement comprising:

a biasing force equalization member having a first arm connected to said first biasing member, a second arm spaced from said first arm and connected to said second biasing member and a trunnion interconnecting said first and second members to permit a limited relative movement between said first and second arms in corresponding planes, allowing an equalizing of the biasing forces exerted by said biasing members on the respective opposing ends of the first conditioning member.

4,519,189

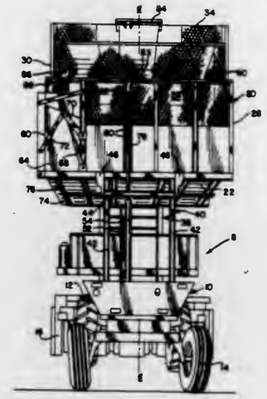
TELESCOPING BASKET COVER

Robert M. Fachini, Naperville; Jesse H. Orsborn, Clarendon Hills, and Monroe C. Barrett, Downers Grove, all of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 19, 1983, Ser. No. 524,791

Int. Cl.³ A01D *87/10, 46/08*

U.S. Cl. 56—16.6 **5 Claims**



1. In a cotton harvester having a wheeled chassis, a picking unit for harvesting cotton, and a unitary basket having a floor and upwardly extending wall for collecting cotton from said picking unit, said basket comprising:

a disassembleable roof section releaseably secured to said basket walls;

said roof section being uniformly adjacent to said basket walls;

raising means moving said basket between lowered and raised positions;

said raising means detachably secured to said roof section for telescopic movement of said section into and out of the space encompassed by said basket walls;

said raising means moving said roof section either together with or separately from said basket walls in a path being perpendicular to said chassis.

4,519,190

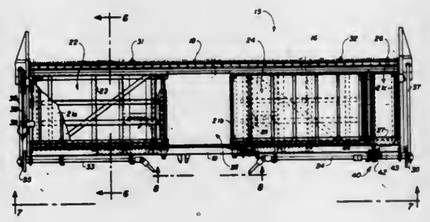
INTER-TROLLEY LATCH FOR DRAPER HEADER

Edward A. Blakeslee, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 16, 1983, Ser. No. 532,942

Int. Cl.³ A01D *35/14, 57/20*

U.S. Cl. 56—181 **5 Claims**



1. In a crop harvesting machine having a mobile frame adapted for movement across a field; a transverse header subframe connected to said mobile frame; first and second draper trolleys slidably mounted on said header subframe for independent lateral movement relative thereto, the summation of the transverse width of said first and second trolleys being less

than the transverse width of said header subframe, said trolleys being movable such that said first trolley is positionable in spaced relation to said second trolley as well as immediately laterally adjacent thereto; power means connected to said first draper trolley to effect the transverse sliding movement thereof relative to said header subframe, the improvement comprising:

latching means operatively connected to said second draper trolley to connect said second draper trolley to said first draper trolley in response to the positioning of said first draper trolley immediately laterally adjacent thereto;

release means connected to said latching means to selectively effect a release of said latching means to disconnect said second draper trolley from said first draper trolley; and

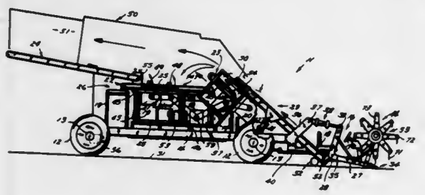
a spring clip affixed to said second trolley to be engageable with a retaining member on said header subframe to retain said second trolley in a fixed position relative to said subframe when said first trolley is disconnected from said second trolley, said spring clip being yieldable at a predetermined force to release said retaining member and permit said second draper trolley to move transversely on said header subframe.

4,519,191

STRAWBERRY HARVESTER AND PROCEDURES FOR GROWING AND HARVESTING OF SUCH FRUIT

Richard L. Ledebuhr, Haslett, and Clarence M. Hansen, East Lansing, both of Mich., assignors to Board of Trustees of Michigan State Univ., East Lansing, Mich.

Filed Mar. 7, 1984, Ser. No. 587,041
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—331 **5 Claims**



1. A harvester structure for the singulation of fruits from connective stems and separation from debris, comprising:

a moving openwork substantially horizontal bed conveyor;

a plurality of blowers beneath said conveyor in spaced-apart intervals and extending and raising said fruit above said conveyor across said moving bed;

a double-bladed hedger positioned selectively above and horizontally across said conveyor and positioned slightly downstream of the position of each of said blowers in respect to movement of said conveyor; and

debris removing means behind the most downstream of said double hedgers.

4,519,192

HOLD-DOWN SICKLE GUARD

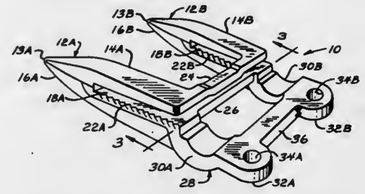
Fred H. Oppenhuisen, and Frank O. Allee, both of Buchanan, Mich., assignors to National-Standard Company, Niles, Mich.

Filed Mar. 5, 1984, Ser. No. 586,066
Int. Cl.³ A01D *55/08*
U.S. Cl. 56—298 **10 Claims**

1. A one-piece hold-down sickle guard for cooperating with a plurality of reciprocating sickle sections positioned on a cutterbar of a cutting implement and forming a plurality of cutting surfaces therewith and for protecting said sickle sections from damage, said hold-down sickle guard comprising:

a plurality of longitudinally extending guard members each including an upper body section and a lower body section in spaced relation so as to define a horizontal slot therebetween within which a respective sickle section is confined and freely movable, said upper and lower body sections coupled at respective forward portions thereof so as to form an integral guard member and wherein said lower body portions form cutting surfaces with immediately adjacent sickle sections;

mounting means coupled to an aft portion of said guard members for securely coupling said guard members to a cutterbar of said cutting implement; and



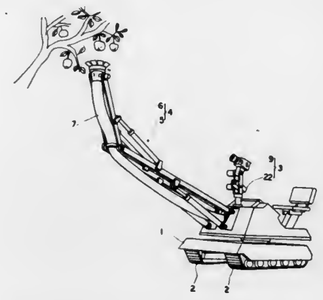
hold-down means formed into an aft portion of the upper body section of each of said guard members said hold-down means including a hold-down bar having a portion thereof projecting toward said lower body section of said guard member to provide a depressed area, with said depressed area for engaging and displacing the reciprocating sickle sections toward the corresponding lower body section of said guard member so as to maintain a predetermined cutting cooperation and clearance between said sickle sections and said sickle guard.

4,519,193

FRUIT HARVESTING APPARATUS WITH TELEVISION CAMERA AND MONITOR

Jituo Yoshida, Izumi; Shigeaki Okuyama, Kawachinagano, and Hiroshi Suzuki, Tondabayashi, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 19, 1983, Ser. No. 496,218
Claims priority, application Japan, Aug. 11, 1982, 57-140021
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—328 R **6 Claims**



1. A fruit harvesting apparatus comprising:

means for searching and detecting the positions of fruit including a TV camera with a variable shooting direction, a TV monitor for said camera, spot light emitting means for emitting light and means for varying the shooting direction of said camera and the direction of the emitted light and position of said spot emitting means in response to instructions supplied thereto;

movable means for picking fruit; and

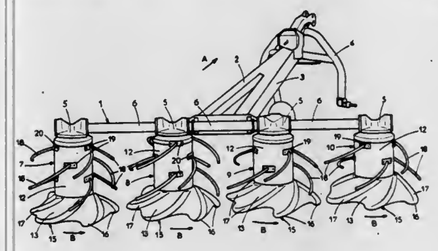
control means for supplying instructions for movement to said TV camera and spot light emitting means, for determining the position of a detected fruit from the direction of shooting of said camera, the position of said spot light emitting means and direction of light emitted by said spot light emitting means by triangulation and causing movement of said fruit picking means to the position of a detected fruit.

4,519,194

HAY HARVESTING MACHINE

Jerome Aron, Bouxwiller, and Michel Quirin, Wasselonne, both of France, assignors to Belrecolt S.A., Marmoutier, France

Filed Jul. 1, 1983, Ser. No. 510,268
Claims priority, application France, Jul. 8, 1982, 82 12159
Int. Cl.³ A01D *78/12*
U.S. Cl. 56—370 **7 Claims**



1. A hay harvesting machine for windrowing hay, moving swaths of hay, tedding hay and the like

comprising in combination

at least one drum having a base and a wall, and being rotatable about a substantially upright axis in a predetermined direction,

a flexible skirt connected to said base for sweeping up the hay, said skirt having substantially the shape of a truncated cone and including a plurality of ribs each having a predetermined curvature,

a plurality of arms arranged in a plurality of rows along said wall and extending therefrom,

each arm having a curvature substantially the same as the curvature of each rib so as to cooperate with said skirt for further movement of the hay,

at least the arms of the row nearest to said skirt extending in a direction substantially parallel to said skirt wherein the spacing of said skirt from each arm of the row nearest said skirt is at least 5 cm.

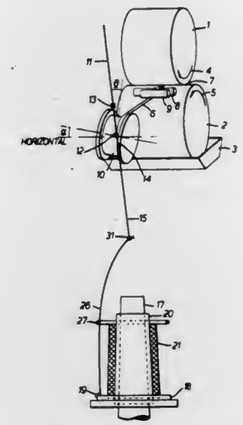
4,519,195

HELICAL WRAPPING OF TAPE

Rudolf E. Belin, Freshwater Creek; William F. Boyce, Buckley, and John D. Feehan, Belmont, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Aug. 18, 1983, Ser. No. 524,502
Claims priority, application Australia, Aug. 18, 1982, PF5453
Int. Cl.³ D02G *3/36, 3/06, 3/08, 3/40*
U.S. Cl. 57—3 **8 Claims**

1. A system for helically wrapping a tape comprising, tape twisting means, and, upstream of the twisting means, means for shaping the tape, said shaping means comprising a body over which the tape passes, said body being defined by the locus of a line moved at least partially around an axis, said line comprising a first portion extending generally parallel to said axis and an arcuate portion extending from an end of the first portion in a direction away from said axis, whereby said first portion defines a first surface of at least partially cylindrical form and said second portion defines an outwardly curved edge surface extending along a side of the first surface, and tape supply means for feeding the tape onto the first surface such that the tape is inclined to a plane at right angles to the axis of the first



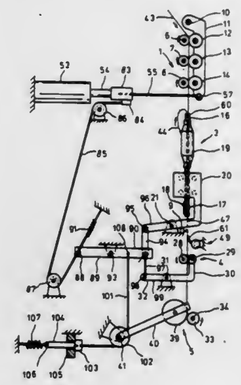
surface whereby an edge of the tape engages the curved edge surface and is thereby shaped in order to initiate wrapping.

4,519,196

WRAPPED YARN SPINNING MACHINE WITH SEVERAL SPINNING PLACES

Fritz Stahlecker, Bad Ueberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Sussen, Fed. Rep. of Germany, a part interest

Filed Sep. 29, 1982, Ser. No. 426,931
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139394
Int. Cl.³ D02G *3/36;* D01H *13/16*
U.S. Cl. 57—18 **12 Claims**



1. A wrapped yarn spinning machine having several spinning places, each spinning place comprising a drive means for rotatably driving a hollow spindle means, a hollow spindle means operatively connected with the drive means and having an inlet end, a binding thread rotating in unison with and carried by said hollow spindle means, a delivery means for at least one sliver to be wrapped by spinning and a take-off means for the wrapped yarn, the hollow spindle means being arranged between the delivery means and the take-off means, false twist means associated with the hollow spindle means, and yarn detecting means for detecting the yarn tension and operable to individually shut down a respective spinning place by interruption of the sliver feed and of the drive means of the

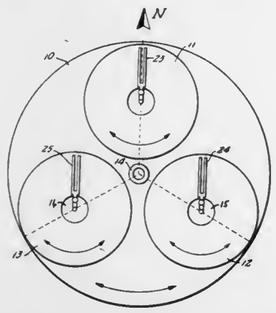
hollow spindle means in case of breakage of the binding thread and/or the sliver, the false twist means associated with the hollow spindle means of each spinning place being arranged at the inlet end of the hollow spindle means and being operable to impart a false twist into the sliver for each rotation of the respective hollow spindle means, and the yarn detector means associated with each spinning place being arranged between the hollow spindle means and the take-off means.

4,519,197

METHOD AND APPARATUS FOR LAYING-UP CORES OF A MULTI-CORE ELECTRIC CABLE

Andrea Borroni, Carimate, Italy, assignor to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Mar. 19, 1984, Ser. No. 590,731
Claims priority, application Italy, Mar. 24, 1983, 20252 A/83
Int. Cl.³ D07B *3/06*
U.S. Cl. 57—64 **10 Claims**



1. A process for the laying-up of a plurality of elongated cylindrical bodies without significant torsion thereon after they have been layed-up, said process comprising:

providing a plurality of windings of said bodies, one winding for each body and the body of each winding being substantially free of torsion;

removing each body from its winding and supplying each of said bodies to a laying-up member while rotating said windings in a first direction and rotating said windings, as a group, around an axis common to the group, in a second direction opposite to said first direction; and

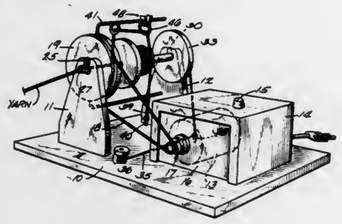
maintaining the orientation of the point of separation of each body from its winding substantially constant with respect to a fixed point as the bodies are removed from their respective windings.

4,519,198

YARN SPINNER

Thomas L. Kissel, 606 S. Rural St., Hartford, Wis. 53027

Filed Sep. 12, 1983, Ser. No. 531,449
Int. Cl.³ D01H *3/00, 7/26, 7/36*
U.S. Cl. 57—71 **2 Claims**



1. A yarn spinner comprising:

a wooden base,

a pair of upstanding wooden posts mounted to said base and spaced from each other, each of said posts having a slot aligned with the other and at substantially the same distance above the base, the said slots providing bearing surfaces,

spindle means including a tubular shaft member providing an orifice at one end for entering yarn and having an opposite end, said shaft member having a radial hole for the yarn to exit, and including another shaft member for supporting a bobbin joined coaxially to said tubular shaft member at said opposite end to thereby provide a unitary spindle shaft assembly whose opposite ends can be dropped in said slots in the posts, respectively, to journal said assembly for rotation,

a spindle pulley means fastened concentrically to said tubular shaft member and comprised of two concentric interfacing wooden discs bonded together, one of the discs having a peripheral groove for a driving belt to run in, at least one of said discs having a continuous groove in its surface that interfaces with the other, said groove including two diametrically opposite radially outwardly extending portions and a curved portion connecting the radially inward ends of said two portions, said curved portion allowing for passing around said tubular shaft member,

a flyer composed of a single piece of wire having two axially extending guide portions terminating in free ends and arranged in parallelism with each other and with the axis of said shafts and substantially equally radially spaced from said axis, and said wire having an intermediate portion disposed between said axially extending portions, said intermediate portion having a shape that is complementary to the shape of said groove at the interfaces of said disc and is registered in said groove for said flyer to rotate with said pulley means,

a distributor device mounted on one of said axially extending wire portions of said flyer for being moved axially thereof and having means for spun yarn to pass through for being directed to selected regions along a bobbin supported on said shaft, and

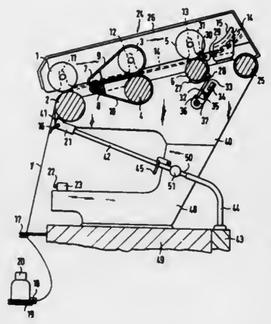
an electric motor having a shaft and a pulley thereon for a belt that couples said pulley in driving relation with said spindle pulley means.

4,519,199

DEVICE FOR INTERRUPTING THE FEED OF A ROVING TO THE DRAWING FRAMES OF A SPINNING MACHINE

Norbert Barauke, Donzdorf, Fed. Rep. of Germany, assignor to Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 367,999
Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119408
Int. Cl.³ D01H *13/16, 13/18, 5/66*
U.S. Cl. 57—87 **9 Claims**



1. The device for interrupting the feed of a roving to a drawing frame of a spinning machine of the type having a plurality of drawing frames, each of the drawing frames including a plurality of upper and lower forward, middle and rear drawing rollers disposed pairwise, comprising:

a clamping segment disposed on one of said drawing rollers adjacent a feed side of the roving, said clamping segment being movable from an operative position permitting driving of said drawing rollers and feed of said roving to an interrupting position interrupting feeding of said roving,

broken-end detector means for monitoring breaks in thread spun on the drawing frame,

electric means for controlling movement of said clamping segment between said operative and said interrupting positions,

control means for controlling said electric means to move the clamping segment to said interrupting position in response to detection of a broken thread by said broken-end detector means, and

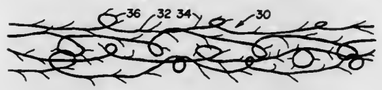
suction means associated with the drawing rollers on the thread formation side of the drawing frame for collecting rovings present in the respective drawing frame when the roving feed thereto is interrupted, said suction means including a suction device disposed in the vicinity of the forward lower drawing roller and mounted for movement away from said forward lower drawing roller, said suction device cooperating with said broken-end detector means and being lockable in respective operating and nonoperating positions.

4,519,200

TEXTILE YARNS WITH LOOPS AND FREE PROTRUDING ENDS

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1983, Ser. No. 525,388
Int. Cl.³ D02G *3/24, 1/16*
U.S. Cl. 57—246 **5 Claims**



1. A textile yarn having a staple yarn character and including continuous filaments, each continuous filament formed into coils, loops or whorls at random intervals along its length and comprising a continuous main body section having a portion thereof along the length of the main body section being intermittently separated from the main body section and a fraction of said intermittently separated portion being broken and providing free ends extending from said main body section.

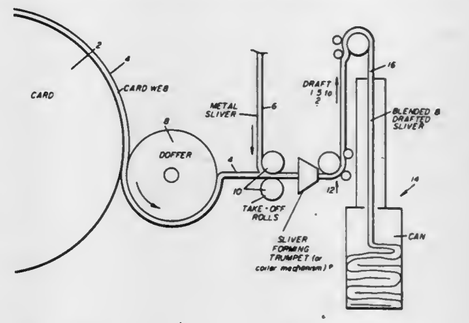
4,519,201

PROCESS FOR BLENDING FIBERS AND TEXTILES OBTAINED FROM THE FIBER BLENDS

John J. Toon, 2200 Piedmont Rd. NE., Marietta, Ga. 30062

Filed Sep. 8, 1982, Ser. No. 415,937
Int. Cl.³ D02G *3/12, 3/04;* D01G *13/00*
U.S. Cl. 57—252 **8 Claims**

4. A yarn comprised of a blend of a first group of fibers with a high modulus of elasticity and a second group of fibers with a low modulus of elasticity, the fiber length distribution of the high modulus fibers in the blend being substantially uniform



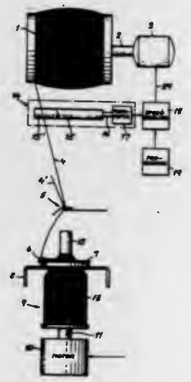
and the length of the high modulus fibers ranging therein between about 2 mm and about 30 mm.

4,519,202

SPINNING OR TWISTING MACHINE, ESPECIALLY FOR GLASS-FIBER THREADS

Gerd Hausner, Albershausen, and Rolf Semmelrodt, Ebersbach, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 480,868
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212084
Int. Cl.³ D01H *13/10, 13/20*
U.S. Cl. 57—264 **14 Claims**



1. In textile machines comprising first drive means for rotating a supply bobbin from which a thread is being drawn through a traveler onto a cop on a spindle rotated by second drive means,

the combination therewith of:

monitoring means disposed between said supply bobbin and said traveler for generating a velocity-measuring signal indicative of the rate of advance of a thread being payed out by the bobbin; and

speed-regulating means coupled with said first drive means and responsive to said velocity-measuring signal for controlling the rotation of said supply bobbin to maintain said rate of advance at a prescribed value.

4,519,203

YARN TWISTING METHOD AND APPARATUS

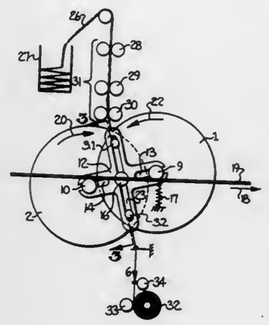
Heinz Schippers, Remscheid-Lennep, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,241

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217083

Int. Cl.³ D01H *5/28*; D02G *1/08*

U.S. Cl. 57—328 **9 Claims**



1. A method of twisting a yarn sliver composed of staple fibers, and comprising the steps of

providing a pair of twist imparting circular discs, with each disc including a yarn engaging friction surface, and with at least one of said discs being relatively thin and flexible, and with said discs being mounted for rotation about parallel spaced apart axes and such that portions of the respective yarn engaging friction surfaces are disposed in opposing, face to face relationship,

providing a first pressure applying member positioned intermediate said axes of rotation of said discs and on one side of the plane defined by such axes of rotation, and so as to locally bias said one flexible disc toward the other disc and thereby define a first twisting zone,

providing a second pressure applying member positioned intermediate said axes of rotation and on the side of the plane defined by such axes opposite said first pressure applying member, and so as to locally bias said one flexible disc toward the other disc and thereby define a second twisting zone,

rotating each of said discs in opposite directions about their respective axes, while

advancing the yarn sliver along a path of travel and including drafting the advancing sliver to obtain a desired density and then advancing the drafted sliver serially through said two twisting zones in a direction perpendicular to the plane defined by the axes of rotation of said discs so as to have twist imparted thereto at each of said twisting zones by frictional contact between the yarn sliver and the respective opposed friction surfaces resulting from the force exerted by said pressure applying member at each twisting zone, and

controlling the actuation of said first and second pressure applying members to apply opposite twisting forces to the advancing yarn sliver, with such twisting forces applying twist of one direction upstream of the first pressure applying member and applying twist of the opposite direction between the first and second members.

2. A method of twisting a yarn and comprising the steps of

providing a pair of twist imparting circular discs, with each disc including a yarn engaging friction surface, and with at least one of said discs being relatively thin and flexible, and with said discs being mounted for rotation about parallel spaced apart axes and such that portions of the respective yarn engaging friction surfaces are disposed in opposing, face to face relationship,

providing a first pressure applying member, with said first pressure applying member being positioned intermediate said axes of rotation of said discs and on one side of the plane defined by such axes of rotation, and so as to locally bias said one flexible disc toward the other disc and thereby define a first twisting zone,

providing a second pressure applying member, with said second member being positioned intermediate said axes of rotation and on the other side of the plane defined by such axes, and so as to locally bias said one flexible disc toward the other disc and thereby define a second twisting zone,

adjusting the biasing force of each of the first and second pressure applying members so as to impart a predetermined biasing force at each of said twisting zones,

rotating each of said discs in opposite directions about their respective axes, while

advancing a yarn along a path of travel so as to move serially through said first and second twisting zones with S twist being imparted at one of the zones and Z twist being concurrently imparted at the other of the zones, and with the degree of twist imparted at each of said twisting zones being determined by the adjustment of the biasing force.

4,519,204

YARN FALSE TWISTING APPARATUS

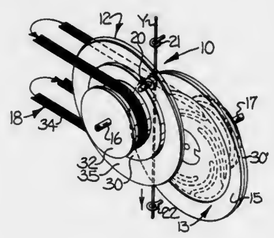
Peter Dammann; Hellmut Lorenz, both of Remscheid, and Roland Maier, Radevormwald, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,795

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3140261; Oct. 14, 1981, 3140856; Dec. 4, 1981, 3147966

Int. Cl.³ D02G *1/08*

U.S. Cl. 57—340 **33 Claims**



1. A circular disc adapted for use in a yarn false twisting apparatus of the like and which is characterized by the ability to be rotated at a relatively high speed and be laterally flexed into firm engagement with a running yarn or the like by a relatively small lateral biasing force, said disc comprising a sheet of thin springy material and which includes

a hub portion disposed adjacent the center of the disc,

an annular ring disposed concentrically about said hub portion and including a yarn engaging friction surface on one face thereof, and

distinct junction means joining said hub portion and said annular ring, with said junction means being substantially weaker than the remaining portions of said sheet, and such that the annular ring is adapted to readily flex in the lateral direction with respect to said hub portion and a rotating torque may be transmitted to the annular ring without significant circumferential deformation.

4,519,205

DRIVE AND MOUNTING FOR AN OPEN-END SPINNING UNIT

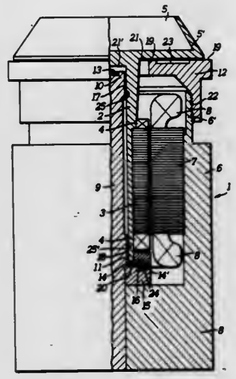
Hans-Rudolf Gubler, Gebenstorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 15, 1982, Ser. No. 449,999

Claims priority, application Switzerland, Dec. 22, 1981, 8195/81

Int. Cl.³ D01H *7/882*

U.S. Cl. 57—406 **11 Claims**



1. An open end spinning device, comprising:

a spinning container;

an electric motor housing having a bore and on which said container is mounted;

a laminated stator mounted in said bore of said housing;

a laminated rotor mounted within said stator, said rotor being mounted on a hollow shaft closed at an end nearest said spinning container, said hollow shaft having a first and second working surface at open and closed ends thereof, respectively, and wherein said rotor includes a rotor winding;

a spinning container located on one end of said hollow shaft and connected to said rotor; and

radial bearing journal means in said hollow shaft for radially guiding the rotation of said rotor, said radial journal means being fixed to said housing and extending the length of said bore;

wherein said radial journal means further comprises a first gas dynamic radial bearing located at the spinning container side thereof and having a working surface engageable with said first working surface of said hollow shaft and a second gas dynamic radial bearing having a working surface engageable with said second working surface of said hollow shaft and wherein said container, said hollow shaft, said rotor and said rotor winding are removable as a unit from said bore.

4,519,206

MULTI-FUEL ROTARY POWER PLANTS USING GAS PISTONS, ELLIPTIC COMPRESSORS, INTERNALLY COOLED THERMODYNAMIC CYCLES AND SLURRY TYPE COLLOIDAL FUEL FROM COAL AND CHARCOAL

Christopher van Michaels, 1817½ N. Las Palmas Ave., Los Angeles, Calif. 90028

Filed Jun. 5, 1980, Ser. No. 156,563

Int. Cl.³ F02C *7/00*

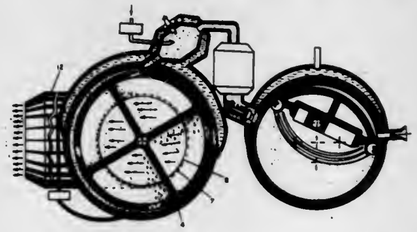
U.S. Cl. 60—39.54 **4 Claims**

1. A continuous combustion chamber rotary power plant using: a colloidal carbonaceous fuel, a special elliptically shaped rotary compressor, gas pistons, a circular rotary device housing said gas pistons and special internally cooling thermodynamical cycles comprising:

(1) a rotary compressor, based on my rotary centers of the ellipse, having an elliptical stator housing with an air inlet and a compressed air outlet opposite the air inlet, a check valve in said compressed air outlet to prevent reverse flow of the air, said compressor further having an elliptical rotor, suspended on a shaft passing mandatory through one of the two rotary centers of the elliptic cross section of the stator housing, said rotor having also two sets of sealing elements located on the sides and the ends of the elliptical rotor to form a gas tight seal between the rotor and stator housing;

(2) a combustion chamber surrounded by a cooling jacket receiving compressed air from said compressed air outlet, said combustion chamber having a fuel injection means and ignition means for the continuous combustion of a colloidal carbonaceous fuel with the compressed air, said combustion chamber further having a combustion gas outlet for directing the combustion gases to said circular rotary device;

(3) said circular rotary device housing the gas pistons, having a circular stator housing and a water jacket surrounding approximately half of the engine's stator housing, said water jacket being in fluid communication with the cooling jacket of the combustion chamber, said stator housing having a combustion gas inlet in communication with the combustion gas outlet of said combustion chamber and an exhaust gas outlet located in the center of stator housing, said water jacket further being located such that it surrounds the portion of the stator housing closest to the combustion gas inlet, said rotary engine further having a hollow cylindrical rotor having inlet ports along the rotor's periphery and being in fluid flow communication with the exhaust gas outlet of the stator housing, said hollow cylindrical rotor also having at least two radially extending rib wall portions dividing the rotor's hollow interior into at least two equal volume compartments such that combustion gases pass through the rotor's inlet ports strike the rotor's rib walls which directs the gas propagation toward stator's central exhaust outlet, forcing the gas to acquire a rotating spiral propagation shape, fitted inside the rotary volume compartments between the inlet ports, the ribs and the rotor's central exhaust outlet, more precisely the gas rotation acquiring a decreasing spiral path which together with the unavoidable and concurrent intervention of the law of the conservation of the angular momentum of the spirally spinning gas causes the gas to continuously push the rotor's ribs and act upon them like rotating gas pistons, till the exhaust of the rotating gas, causing the rotor to rotate as the combustion gases exit through the stator's central exhaust gas outlet,



(4) said rotary engine further having means for internal cooling and deriving from the cooling additional work through converting the classic thermodynamical cycles into the better internally cooling thermodynamical cycles, performed by enabling the engine to preheat the water of the cooling means to boiling temperature inside the engine's jackets and exhaust pipe, then injecting that hot water, through means for injecting, into the stator housing diametrically opposite the rotary engine's combustion gas

inlet, where said injected hot water becomes instantly vaporizing and preheated by the combusted gases, thus obtaining while cooling additional motive fluid force on the rotor's rib walls, which changes the classic thermodynamical cycles into the more heat efficient, steam and combustion gases mixed, internally cooling cycles without the need for boilers, the vaporized water then exiting through the stator's central exhaust gas outlet;

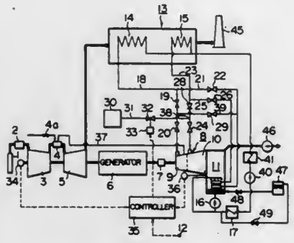
(5) a power output shaft, suspending the engine's rotor inside the engine's circular stator housing, connected with the shaft of the elliptical compressor, with the fuel injection means, with the ignition means and with the hot water injection means, to drive the air compressor, the fuel injection, the ignition, the hot water injection prompting the new thermodynamical cycles, said power output shaft providing also drive and additional energy from the mixed gas and steam pistons and cycles for universal use and multi-fuel application of said continuous combustion chamber of this new power plant.

4,519,207

COMBINED PLANT HAVING STEAM TURBINE AND GAS TURBINE CONNECTED BY SINGLE SHAFT

Akira Okabe; Haruo Urushidani, and Katsuto Kashiwahara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 452,935
Claims priority, application Japan, Dec. 29, 1981, 56-210662
Int. Cl.³ F02C *6/18*
U.S. Cl. 60—39.182 **6 Claims**



1. A combined plant comprising a gas turbine, steam turbine and a waste heat recovery boiler using exhaust gases of said gas turbine as a heat source for producing steam serving as a drive source of said steam turbine, said gas turbine and said steam turbine being connected together by a single shaft, wherein the improvement comprises:

an ancillary steam source;

ancillary steam line means connected to steam line means for introducing the steam generated by said waste heat recovery boiler to said steam turbine;

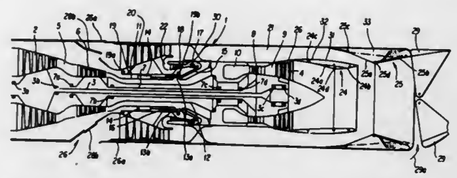
an ancillary steam control valve mounted in said ancillary steam line means whereby ancillary steam can be introduced through said ancillary steam line means into said steam turbine when said plant is started, to thereby avoid overheating of the steam turbine; and bypass line means for routing steam from the waste heat recovery boiler to a condenser by bypassing the steam turbine until the steam generated in the waste heat recovery boiler reaches a satisfactory condition at plant startup.

4,519,208

PROPULSION ENGINE, PARTICULARLY FOR SUPERSONIC AIRCRAFT

Jean M. Loisy, Saint Fargeau-Ponthierry, and Claude C. F. Menioux, Nogent sur Marne, both of France, assignors to S.N.E.C.M.A., Paris, France

Filed Sep. 21, 1982, Ser. No. 420,914
Claims priority, application France, Sep. 25, 1981, 81 18070
Int. Cl.³ F02K *3/06*
U.S. Cl. 60—262 **12 Claims**



1. A supersonic aircraft propulsion engine comprising:

at least one compressor rotatable about an engine axis;

a variable geometry internal nozzle coaxial with said compressor;

an internal envelope defining an internal gas flow path connecting said compressor and said nozzle, said internal envelope further defining a radially tapered portion;

at least one internal turbine rotatably fixed to said at least one compressor and positioned in said internal flow path;

an internal combustion chamber in said internal flow path and positioned between said tapered portion and said internal turbine, said compressor, internal nozzle, internal flow path, internal turbine and internal combustion chamber defining an internal propulsion system;

an external propulsion system at least partially concentrically positioned on the outside of said radially tapered portion, said external propulsion system comprising means for diverting any adjustable fraction of gas from said internal flow path to an external flow path whereby no external compressor is required, at least one external combustion chamber in said external flow path, at least one external turbine downstream from said external combustion chamber in said external flow path, a blower rotatably driven by said external turbine, and an external variable geometry nozzle downstream from said external turbine and said blower in said external flow path, said external nozzle being concentrically radially outside of, and downstream from, said internal nozzle; and

an external engine pod coaxial with, and radially surrounding said internal and external propulsion systems, said pod and internal envelope together defining an external annular conduit forming that portion of said external flow path between a confluence from said external turbine and blower at one end, and said external nozzle at a second end, said external turbine and blower both providing flow into said annular conduit.

4,519,209

HYDRAULIC MOTOR BYPASS APPARATUS

Charles M. Kline, Reinholds, Pa., assignor to Sperry Corporation, New Holland, Pa.

Division of Ser. No. 177,147, Aug. 11, 1980, Pat. No. 4,384,455.
This application Oct. 18, 1982, Ser. No. 434,809
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—433 **7 Claims**

1. In combination with a feed device adapted to be driven by a fluid motor, apparatus comprising:

a rotatable shaft;

a driven member rotatably mounted on said shaft;

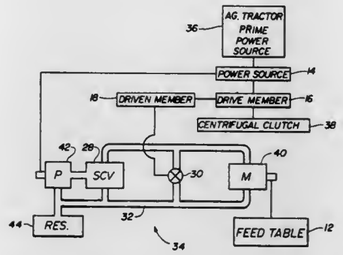
a pair of spaced plates connected to said driven member;

opposed friction pads mounted on said spaced plates;

means connected for rotating with said shaft, said means including a disc engaged between said pads;

means for urging said pads into engagement with said disc;

a valve in fluid communication with said fluid motor for permitting fluid to bypass said fluid motor, said valve having an inlet, an outlet and a fluid passageway interconnecting said inlet and outlet;



said shaft rotatably extending through said valve and said passageway;

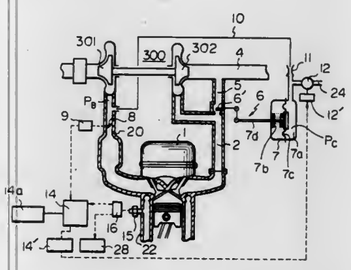
means on said shaft for blocking fluid passage through said passageway to thereby close said valve and cause fluid to be directed to said fluid motor to drive said feed device.

4,519,210

TURBOCHARGED INTERNAL COMBUSTION ENGINE WITH APPARATUS FOR CONTROLLING SUPERCHARGING PRESSURE

Kenji Iwamoto, Nishio; Kouichi Moriguchi, Nagoya, and Ryuiti Matusiro, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 18, 1983, Ser. No. 485,890
Claims priority, application Japan, Apr. 19, 1982, 57-65013
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—602 **13 Claims**



1. An internal combustion engine comprising:

an engine body;

an intake system for introducing a combustible mixture into the engine body;

a throttle valve arranged in the intake system;

an exhaust system for removing exhaust gas from the engine body;

a supercharger having a turbine arranged in the exhaust system and a compressor arranged in the intake system at a position upstream of the throttle valve;

a bypass conduit connected to the exhaust system so as to bypass the turbine;

a bypass valve for controlling the amount of opening of the bypass conduit;

an actuator means for operating the bypass valve for controlling maximum exhaust flow to the turbine thereby controlling the maximum value of the intake system pressure at an outlet of the compressor;

means for detecting a knocking condition of the engine;

means for detecting an acceleration condition of the engine;

means for maintaining the maximum value at a first value when the engine is in a steady state;

first operating means, responsive to signals from the acceleration detecting means, for increasing the maximum value from said first value to a second value when the engine is in an acceleration condition; and

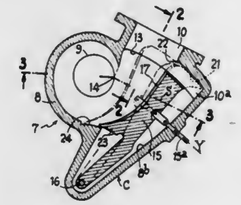
second operating means, responsive to signals from the knocking condition detecting means, for cancelling the operation of the first operating means thereby causing said maximum value to be said first value.

4,519,211

SUPERCHARGER DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Marcel Sédille, Paris, and Maurice Le Creurer, Taverny, both of France, assignors to Automobiles Peugeot/Automobiles Citroen, France

Filed May 27, 1983, Ser. No. 498,696
Claims priority, application France, Jun. 3, 1982, 82 09652
Int. Cl.³ F01D *17/17;* **F02B** *37/12*
U.S. Cl. 60—602 **7 Claims**



1. A turbine for a turbocompressor of a supercharger device of an internal combustion engine, said turbine comprising a turbine wheel, a housing wall internally defining a first part of a scroll in which said turbine wheel is mounted to be rotatable about an axis, said housing wall further defining an aperture laterally disposed relative to said wheel and scroll, a flap movably mounted in said aperture and having a concave surface which defines a second part of said scroll completing said scroll with said first part, said scroll having an inlet for exhaust gases from said engine and a partition element dividing said inlet into two conduits which are respectively for connection to two exhaust pipes, each pipe being connected to exhaust outlets of a respective group of cylinders of the engine, said flap being movable in said aperture between a withdrawn position in which withdrawn position said concave surface of said flap defines a given section of passage of a part of the scroll adjacent to said inlet and a position in which said flap projects from said aperture and said concave surface of said flap defines a section of passage which is smaller than said given section of said part of the scroll adjacent to said inlet, said flap having two extension portions which are respectively cooperative with said two conduits so as to substantially completely open said conduits in said withdrawn position of said flap and to partly close said conduits in said projecting position of said flap.

4,519,212

BOILER-DRIVEN POWER GENERATOR

Shye-Yih Deng, 10-4 Fl., No. 62, Chang-Chun Rd., Taipei, Taiwan

Filed Apr. 19, 1982, Ser. No. 370,451
Int. Cl.³ F01K *11/00*
U.S. Cl. 60—669 **1 Claim**

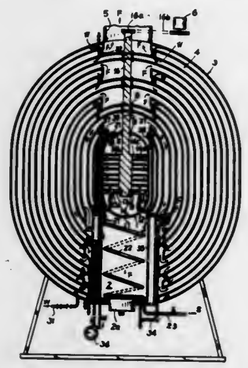
1. A boiler-driven power generator being formed within a vaporizing chamber of a boiler which comprises:

a plurality of water jackets disposed around said central

vaporizing chamber positioned atop on a combustion chamber;

a plurality of sandwiched flues each respectively partitioned between each two neighboring water jackets; several atomizers respectively connected to an innermost water jacket communicated with said water jackets; and a steam pipe, poking into said vaporizing chamber, which is connected with a coil formed in said combustion chamber and a discharge pipe for discharging end use, the improvement which comprises:

a rotor pivotedly installed in a casing of said vaporizing chamber of the boiler and extending several blades therefrom; several diaphragms respectively extending inwards from the casing of said vaporizing chamber, each diaphragm partitioning the two neighbouring blades of said



rotor and each diaphragm being formed with several nozzles thereon for passing steam therethrough;

a transmission shaft connected to one end of said rotor and terminated with a gear and a chain to couple a power generator; and a defining plate being positioned beyond said atomizers inserted into said vaporizing chamber of the boiler for rotatably mounting another end of said rotor, and formed with several injection holes for passing steam sprayed and vaporized from said atomizers,

whereby the feed water is heated when passing through said water jackets and sprayed through said atomizers to vaporize as steam to force said blades to rotate said rotor and transmission shaft for driving said power generator and the exhausted steam from said vaporizing chamber is led into said steam pipe, coil and discharged through said discharge pipe.

4,519,213

AMBIENT AIR HEATED ELECTRICALLY ASSISTED CRYOGEN VAPORIZER

William D. Brigham, Huntington Beach, and Nguyen D. Dung, Fullerton, both of Calif., assignors to Zwick Energy Research Organization, Inc., Huntington Beach, Calif.

Filed Aug. 1, 1983, Ser. No. 519,113
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—52 **21 Claims**

1. A cryogen vaporizer comprising:

a radiator for placing a first working fluid in heat exchanging contact with ambient air;

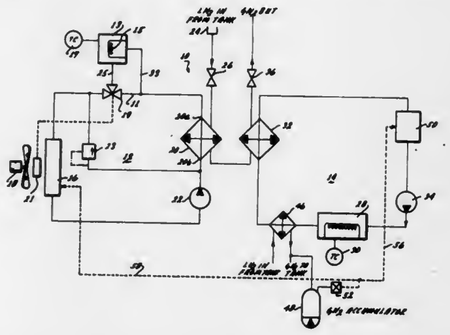
a first heat exchanger for placing a cryogen in heat exchanging contact with said first working fluid to thereby vaporize said cryogen;

means defining a first loop for circulating said first working fluid through said radiator and said first heat exchanger;

reservoir means for storing a quantity of working fluid;

heater means for heating working fluid stored in said reservoir means;

conduit means connecting said reservoir to said first loop; and



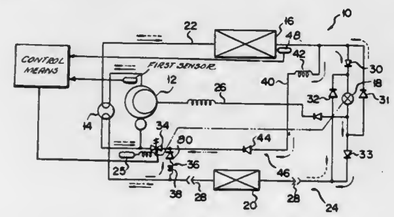
normally closed valve means actuatable for releasing heated working fluid stored in said reservoir through said conduit means into said first loop to thereby defrost said radiator.

4,519,214

AIR CONDITIONER

Tetsuo Sano, Fujinomiya; Susumu Orita, Fuji; Masaya Yamazaki, Shimizu, and Kazuhiro Moriyama, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 30, 1983, Ser. No. 567,344
Claims priority, application Japan, Jan. 17, 1983, 58-5479
Int. Cl.³ F25D *21/06*; F25B *13/00*
U.S. Cl. 62—156 **5 Claims**



1. An air conditioner capable of operating in either a cooling mode or a heating mode, as well as in a defrosting mode, comprising:

a compressor;

a four-way valve, connected between the exhaust side and the suction side of the compressor, adapted to be switched between a cooling position and a heating position;

an outdoor side heat exchanger connected to one side of the four-way valve;

a first indoor side heat exchanger connected to the other side of the four-way valve;

an expansion valve, connected between the outdoor side heat exchanger and the indoor side heat exchanger, having a throttling amount that is regulated in response to coolant temperature;

a switching control valve, connected to the suction side of the compressor;

a first sensor for detecting pressure at said high pressure side during heating mode operation;

a second sensor for detecting coolant temperature in said outdoor side heat exchanger during heating mode operation;

a first branch passage connected at a first end thereof between the four-way valve and the indoor side heat exchanger and at a second end thereof to the switching control valve at the side of the switching control valve

furthest from said suction side of said compressor, for releasing high pressure produced between the four-way valve and the indoor side heat exchanger, when the switching control valve is opened, during heating mode operation;

a second branch passage, connected at a first end thereof between outdoor side heat exchanger and the expansion valve and at a second end thereof to the switching control valve, for shortcircuiting refrigerant during defrosting mode operation; and

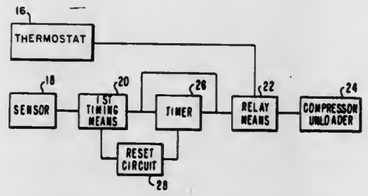
control means, responsive to said first and second sensors, for (1) opening the switching control valve when high pressure is produced at a high pressure side of the air conditioner during heating mode operation to produce a shortcircuit through said first branch passage, and (2) opening the switching control valve during defrosting mode operation to produce a shortcircuit through said second branch passage.

4,519,215

TRANSPORT REFRIGERATION SYSTEM WITH TOP FREEZING AVOIDANCE

Joe R. Barnett, Minneapolis, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 14, 1984, Ser. No. 579,930
Int. Cl.³ G05D *23/19*; F25B *1/00*
U.S. Cl. 62—158 **3 Claims**



1. Control apparatus for reducing top freezing probability of fresh cargo adjacent the path of refrigerated air discharged from a transport refrigeration unit having normal refrigerating capacity in one mode, and reduced refrigerating capacity in another mode, comprising:

means for sensing the temperature of said discharge air and providing a signal reflecting that temperature;

timing means actuated by said signal and operable in response to said signal indicating a discharge temperature below a predetermined temperature capable of causing top freezing after a given period, to provide time periods of progressively shorter duration, with progressively lower sensed discharge air temperatures, of operation of said unit in said normal capacity mode;

means responsive to the expiration of any of said time periods to shift said unit to said reduced capacity mode; and

thermostatic means for sensing the temperature of cargo air returning to said unit and for normally controlling said unit to a set point temperature.

4,519,216

SELF CONTAINED INDIRECT REFRIGERATION SYSTEM

Joseph A. Felicetta, 25 Eastlyn Dr., Bardonia, N.Y. 10954

Filed Dec. 23, 1982, Ser. No. 438,368
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—185 **7 Claims**

1. A refrigeration system for cooling a storage area through a cooling means in the storage area, comprising:

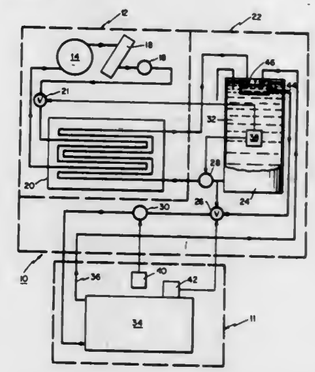
(a) a refrigeration means for cooling a coolant passing therethrough to a predetermined temperature;

(b) a coolant storage means for the coolant, the storage means comprising a primary and secondary coolant storage means;

(c) means for selectively conveying coolant from the primary coolant storage means directly to the refrigeration means for cooling the coolant to the predetermined temperature;

(d) means for returning the coolant from the refrigeration means directly to the primary coolant storage means;

(e) means for selectively conveying coolant from the primary coolant storage means to the cooling means for the storage area;



(f) means for conveying the coolant from the cooling means, after it has cooled the storage area and had its temperature raised to a temperature greater than the predetermined temperature, to the secondary coolant storage means; and

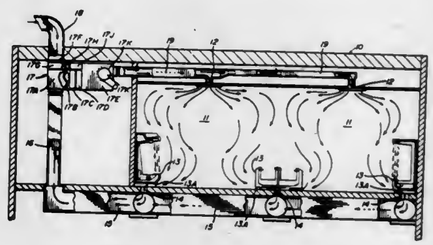
(g) means for selectively conveying coolant from the secondary coolant storage means and selectively mixing said coolant with the coolant being conveyed from the primary coolant storage means to the cooling means for the storage area.

4,519,217

SUPERMARKET ENVIRONMENTAL CONTROL SYSTEM

Parker V. Phillips, Brantford; Ness Lakdawala, St. Lambert, and Michel Lecompte, Mont St. Hilaire, all of Canada, assignors to Hussmann Corporation, Bridgeton, Mo.

Filed Jan. 4, 1983, Ser. No. 455,572
Int. Cl.³ F25D *17/08*; A47F *3/04*
U.S. Cl. 62—256 **9 Claims**



1. An air temperature control apparatus for conditioning an enclosed space having at least one refrigerated display fixture having an open display zone separated from the conditioned space by at least one plane of refrigerated air that is substantially lower in temperature than the air temperature throughout the enclosed space and which imposes a continuous refrigeration effect thereon in the form of cooling the space air adjacent to said plane and inducing a downward flow of said

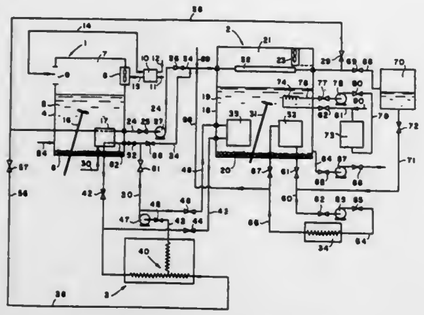
cooled space air adjacent to said refrigerated fixture, said apparatus comprising return air inlet means located under said refrigerated fixture for receiving said cooled space air, a housing having a return air chamber and a make-up air chamber isolated from each other, said return air chamber having an inlet in communication with said return air inlet means for being supplied with the air from the conditioned space that is cooled by said refrigeration effect, said make-up air chamber having an inlet being supplied by ambient air from outside said enclosed space, separate air treatment means in each of said chambers for separately conditioning the respective air flow therethrough, each of said chambers having an outlet connected to a mixing compartment for receiving and mixing the separately conditioned air from the respective return air and make-up air chambers and including air moving means for displacing said mixed conditioned air back into said enclosed space.

4,519,218

HEATING SYSTEM OPERATING ON STORED ENERGY

Avraham Melamed, and Zahal Harel, both of 31 Haoranim St., Kfar Shmariyahu 46 910, Israel

Filed Apr. 19, 1984, Ser. No. 602,008
Claims priority, application Israel, May 6, 1983, 68621
Int. Cl.³ F25D *23/00*
U.S. Cl. 62—271 **12 Claims**



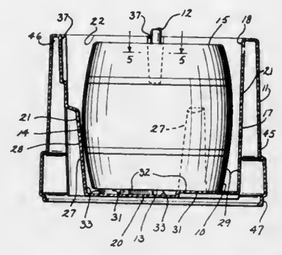
1. A multi-stage heating system comprising:
a first upstream heating stage unit and a second downstream heating stage unit, each of said heating stage units being adapted to hold a saturated solution of a hygroscopic system, with an air space being disposed above the hygroscopic system in each unit;
means for blowing ambient air thorugh the air space above the saturated solution of the hygroscopic system in said first heating stage unit;
means for transferring heat by means of water as heat carrier fluid from said first heating stage unit to said second heating stage unit comprising heating exchanger means submerged in the saturated solution within said first unit, an evaporator in the air space above the saturated solution in said second unit, means for conducting water from said heat exchanger means to said evaporator and means for causing air convection within the air space in said second unit;
heat exchanger means disposed in said second heating stage unit and being linked in a heat carrying manner to at least one heat consumption device;
a source of sensible heat outside of said first and second heating stage units; and
means for transferring sensible heat from said heat source to the respective hygroscopic systems in each of said heating stage units to cause evaporation of water from the respective solutions, thereby to regenerate the respective hygroscopic systems therein.

4,519,219

RECEPTACLE FOR BEVERAGE CONTAINER

Kay E. Prepodnik, Milwaukee; Peter A. Finn, Wauwatosa, and Daniel J. Manning, Thiensville, all of Wis., assignors to The Kelch Corp., Mequon, Wis.

Filed Aug. 15, 1983, Ser. No. 522,809
Int. Cl.³ F25D *3/06*
U.S. Cl. 62—457 **2 Claims**



1. A receptacle for holding a beer keg while the exterior of the keg is being subjected to an ice water bath, comprising:
a housing which is formed with a generally cup-shaped internal cavity, the cavity being defined by a bottom wall and cavity sidewalls;
the housing also being formed with an upper opening for allowing the keg and ice water to be inserted in and removed from the cavity;
a plurality of vertically extending centering ribs positioned in the cavity at circumferentially spaced locations around the radial periphery of the cavity;
said ribs having inner centering edges spaced radially inward from the cavity sidewalls;
side compartments which are bounded by adjacent ribs, the cavity sidewalls and upon insertion of the keg the keg outer side walls, and which are suitable for storing the ice water along the sides of the keg;
a platform positioned in the cavity and having an upper edge which is spaced upward from the cavity bottom wall, so that when the keg and ice water are inserted in the cavity and the keg is positioned on the upper edge, the upper edge can hold the keg up off the cavity bottom wall;
said platform being constructed so as not to cover a portion of the cavity bottom wall adjacent a central vertical axis of the cavity;
a bottom compartment adjacent the central vertical axis of the cavity which is bounded by the bottom wall of the cavity, the platform, and upon insertion of the keg the bottom of the keg, for storing ice water under the keg;
said side compartments being in direct communication with said bottom compartment when the keg has been positioned on the platform, whereby the ice water may readily pass therebetween once it is added to the cavity; and
a pocket formed in the upper end of a cavity side wall, said pocket being upwardly open, having a bottom closure, and having means defining pocket sides, whereby a support post may be mounted in said pocket and held by said pocket against other than substantially vertical movement.

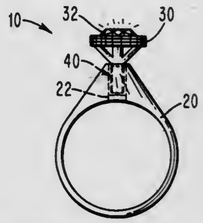
2. A receptacle for holding a beer keg while the exterior of the keg is being subjected to an ice water bath, comprising:
a housing which is formed with a generally cup-shaped internal cavity, the cavity being defined by a bottom wall and cavity sidewalls;
the housing also being formed with an upper opening for allowing the keg and ice water to be inserted in and removed from the cavity;
an outer insulating housing tube being formed integrally with the internal cavity, said tube surrounding the cavity sidewalls, and being positioned relative thereto so as to leave a space between the inside of the tube and a portion of the cavity sidewalls, said tube also extending below the bottom of the cavity bottom wall to form a pedestal support for the cavity;
a plurality of vertically extending centering ribs positioned in the cavity at circumferentially spaced locations around the radial periphery of the cavity;
said ribs having inner centering edges spaced radially inward from the cavity sidewalls;
side compartments which are bounded by adjacent ribs, the cavity sidewalls and upon insertion of the keg the keg outer side walls, and which are suitable for storing the ice water along the sides of the keg;
a platform positioned in the cavity and having an upper edge which is spaced upward from the cavity bottom wall, so that when the keg and ice water are inserted in the cavity and the keg is positioned on the upper edge, the upper edge can hold the keg up off the cavity bottom wall;
said platform being constructed so as not to cover a portion of the cavity bottom wall adjacent a central vertical axis of the cavity and to have a plurality of segments which radiate outwardly towards the cavity sidewalls;
a bottom compartment adjacent the central vertical axis of the cavity which is bounded by the bottom wall of the cavity, the platform, and upon insertion of the keg the bottom of the keg, for storing ice water under the keg;
said ribs and radiating platform segments being angularly offset from each other at a plurality of locations around the periphery of the cavity side walls; and
said housing being a one-piece unit made of molded thermoplastic, and being of substantially uniform thickness throughout.

4,519,220

INTERCHANGEABLE JEWELRY HAVING SECURING MEANS

Lynn M. Burrell, 36 Harvard Ct., White Plains, N.Y. 10605

Filed Feb. 22, 1983, Ser. No. 468,071
Int. Cl.³ A44C *17/02*
U.S. Cl. 63—29 R **6 Claims**



1. An interchangeable wearable jewelry device comprising:
a base unit, said base unit having means for attachment of the device to a wearer and containing a receiving structure including a rigid outer member and a resilient non-metallic insert concealed and supported within said outer member, said receiving structure being provided with an essentially tapered threaded hole having a wider opening at one end thereof and tapering to a narrower opening at the opposite end; and
a feature unit being set with a straight untapered rigid threaded stem structure, its thread being of a size to substantially mate with the thread of said receiving structure at the end of said tapered hole, the thread of said receiving structure being formed on the inner surface of said hole substantially from the wider opening and continuing to the narrower opening and being of sufficient length to contain the thread of said stem structure;
said feature unit being adapted to be securely engaged to said receiving structure by manually grasping said units, threading said threaded stem structure through the wider opening of said tapered hole, and adjusting said threaded stem structure further into the narrower end of said tapered hole, thereby more frictionally engaging said receiving structure;
said feature unit being adapted to be disengaged from said base unit through said wider opening by manually grasping said units and adjusting said threaded stem structure away from the narrower end of said tapered hole,
whereby said feature unit can be mounted securely on said base unit, or disengaged from said base unit and selectively mounted securely on a different base unit having also such a receiving structure.

4,519,221

KNITTING MACHINE

Hideo Hirano, Nara, Japan, assignor to Okamoto & Co., Ltd., Nara, Japan

Filed Sep. 8, 1983, Ser. No. 531,176
Claims priority, application Japan, Sep. 8, 1982, 57-157293; Jul. 13, 1983, 57-108566; Jul. 14, 1983, 58-129100
Int. Cl.³ D04B *15/06, 9/12*
U.S. Cl. 66—107 **1 Claim**



1. A circular knitting machine designed to form patterns with sinkers, said knitting machine comprising:
a cylinder provided with vertical slits on its outer circumference;
a sinker mounted in the upper part of every other slit, each one of said sinkers, disposed radially from the axis of the cylinder, being formed on its bottom edge with a cutout having a slanted front edge of the sinker;
a sinker selector jack provided in the slit such that when said sinker selector jack moves up within said slit, said sinker selector jack pushes against said slanted front edge of said cutout of said sinker to move said sinker towards a center of said cylinder; and
knitting needles mounted in the slits of the cylinders, each of said needles being in a slit next to the slit wherein the sinker is mounted.

4,519,222

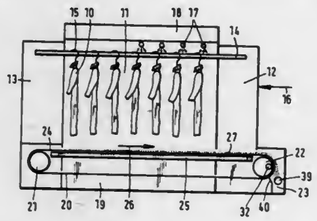
DEVICE FOR SMOOTHING GARMENTS

Martin Kannegiesser; Klaus Müssiger, both of Bad Salzuflen, and Wilfried Dreischmeier, Vlotho, all of Fed. Rep. of Germany, assignors to Herbert Kannegisser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed Jun. 8, 1983, Ser. No. 502,408
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222199
Int. Cl.³ D06B *3/30, 23/00*
U.S. Cl. 68—5 C **7 Claims**

1. A device for smoothing garments, in particular for the simultaneous drying and smoothing of washed garments, by means of flowing media, such as steam and hot air, said device comprising:
a treatment chamber (11),

a first chamber (12) connected to the front of the treatment chamber (11) and opening thereto,
a second chamber (13) connected to the rear of the treatment chamber (11) and opening thereto,
means for conveying garments horizontally through said treatment chamber from one of said first and second chambers to the other of said first and second chambers,
pipes (17) arranged in the rreatment chamber (11) above the garments (10) and having outlet nozzles for directing steam downwardly onto said garments,
hot air ducts (18) arranged in the treatment chamber (11) above the garments (10),
a media collecting chamber (19) arranged underneath the treatment chamber (11) for receiving the flowing media,
a filter arranged between the treatment chamber 911) and the media collecting chamber (19),
said filter constituting a sieve belt (20),
said sieve belt (20) extending over the full length and width of the treatment chamber (11) and over the full length of one of said first and second chambers,
reversing rolls (21, 22) operatively mounted for rotation



about their axes and positioned outside of the media collecting chamber (19),
said sieve belt (20) being conducted over the reversing rolls, such that a carrying run (24) of the sieve belt (20) acts to receive a carpet of fluff (27) during device operation,
means for pneumatically removing the carpet of fluff (27) from the sieve belt (20) outside of the media collection chamber (19),
said means for pneumatically removing said carpet of fluff (27) comprising compressed air nozzles (32) operatively positioned in the region where the sieve belt (20) is reversed, and
means for leading compressed air from the side of the sieve belt (20) opposite the fluff through said sieve the sieve belt (20) opposite the fluff through said sieve belt (20) to pneumatically remove the carpet of fluff (27) from the sieve belt (20), and
a receiving vessel (23) positioned outside of said one of said first and second chambers in proximity to the reversing roll (22) and functioning to collect the fluff pneumatically removed from the sieve belt (20) outside of the media collecting chamber (19).

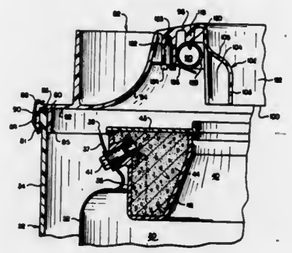
4,519,223

WASHING MACHINE TUB CONSTRUCTION

William A. Wasemann, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 546,847, Oct. 31, 1984,. This application Oct. 12, 1984, Ser. No. 660,319
Int. Cl.³ D06F *39/08*
U.S. Cl. 68—23.5 **5 Claims**

1. A washing machine having an outer tub with an open top, a spin tub mounted inside said outer tub for rotation about a vertical axis and having an open upper end adjacent the outer tub open top, an annular top cap secured to said outer tub open top and extending radially inward to an inner peripheral wall radially inward of said spin tub open upper end, said top cap inner peripheral wall having a plurality of spray channels opening downwardly into said spin tub, each of said spray channels including a vertical wall portion, and a spray tube secured to said top cap on the bottom side thereof and extending around said top cap to each of said spray channels, said spray tube having a discharge opening adjacent each spray



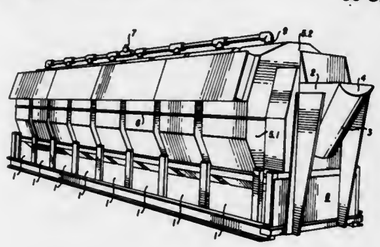
channel positioned to spray water against said vertical wall for deflection into said spin tub.

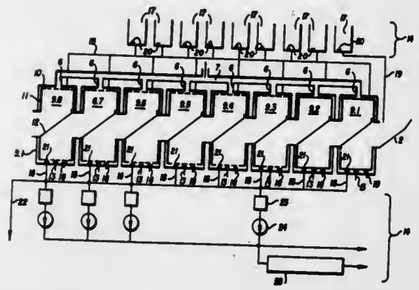
4,519,224

CONTINUOUSLY-OPERATING MACHINE FOR THE TREATMENT OF ANIMAL HIDES AND SKINS

Dieter Seifert; Harald Müller, both of Forst; Lothar Müller, Freiberg; Karl Pestel, Karl-Marx-Stadt, and Helmut Geissler, Forst, all of German Democratic Rep., assignors to VEB Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Dec. 15, 1982, Ser. No. 449,932
Claims priority, application German Democratic Rep., Dec. 17, 1981, 235884
Int. Cl.³ C14C *1/00*
U.S. Cl. 69—30 **36 Claims**





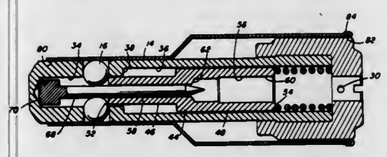
1. A continuously-operating machine for the treatment of animal hides and skins comprising a drum, said drum being rotatably positioned around its longitudinal axis and being surrounded by a sealed shell, said drum having a circular loading opening at one end and a circular discharge opening on the oppisite end, said drum of the continuously-operating machine including a plurality of segments, all of which in turn comprise said drum, so that said drum is subdivided in said plurality of segments, said machine including a fluid separation station, a delivery device, supply conduit system with inlet, discharge conduit system with dye discharge device, and heating apparatus with temperature regulation device, each of said segments being connected directly to said separation station via conduits, at least one segment of said drum being perforated, at least one further segment of said drum being unperforated, exhaust air conduits which exit in a centralized exhaust air pipe and which are arranged on said shell, and said separation station having dye cleaning devices and devices to restore the dye concentration.

4,519,225

SLEEVE BARREL LOCK

Lawrence W. Simmler, Shrewsbury, and John H. Carlson, West Boylston, both of Mass., assignors to Omco Inc., Holden, Mass.

Filed Oct. 31, 1983, Ser. No. 547,407
Int. Cl.³ E05B *67/36*
U.S. Cl. 70—34 **19 Claims**



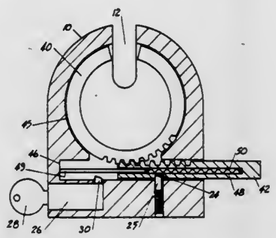
1. A high security lock comprising:
(a) a hollow cylindrical lock barrel having a closed front end and an apertured rear end, said lock barrel having an axially extending bore, the front bore having an relatively small diameter and the rear bore having a relatively large diameter;
(b) at least two radially extending passageways running from the exterior surface of said lock barrel to the front bore of said lock barrel;
(c) a locking member mounted in each said passageway for limited movement therein; and
(d) sleeve means mounted to said barrel, said sleeve means movable relative to said barrel between a locking member holding position and a locking member releasing position, said sleeve means contacting and restraining said locking members radially inward in said passageways when in said holding position, said sleeve means being out of contact with said locking members when in said releasing position.

4,519,226

PADLOCK

Robert J. Hadaway, 46 Buxton Rd., Wembley Downs, Australia 6019

Filed Aug. 13, 1982, Ser. No. 407,952
Claims priority, application Australia, Oct. 30, 1981, 76967/81
Int. Cl.³ E05B *67/28*
U.S. Cl. 70—48 **5 Claims**



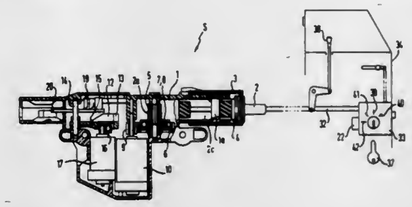
1. A padlock comprising a padlock body having formed therein a slot arranged to receive an object to be secured, a hasp mounted in the body for movement between a first, inoperative position in which the slot can receive an object to be secured and a second, operative position in which it is disposed across the slot for securing a received object therein, said hasp being retained in said body in all phases of its operation and, when in the operative position, extending across the slot within the confines of the body whereby the portion of the hasp securing the object is shrouded, said hasp comprising a pinion having a toothed portion, said pinion being mounted for partial rotation within the body and being formed with a gap which, in the first inoperative position of the hasp, corresponds with the slot in the body, a toothed rack mounted for free linear movement in said body, the toothed portion of said pinion meshing with said rack whereby, upon linear movement of said rack, partial rotation of the pinion is effected to move the hasp reversibly between its first and second positions, said rack having a first position, corresponding to the first position of the hasp, spring means resiliently urging said rack outwardly of the body and to its first position, said rack having a second position, corresponding to the second position of the hasp, said rack being manually accessible exteriorly of said body for manual depression of the rack toward said body and into its second position against the action of the spring means, and locking means for locking the hasp in its second, operative position.

4,519,227

CONTROL LOCKING INSTALLATION FOR MOTOR VEHICLE DOORS

Gerhard Dumbser, Niederwerrn; Manfred Lutz; Rainer Fey, both of Schweinfurt, and Kurt Weiss, Schwebheim, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,163
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210923
Int. Cl.³ E05B *65/36*
U.S. Cl. 70—264 **9 Claims**



1. Central locking installation for motor vehicle door locks or the like each having a locking element movable between a locking position, blocking said door lock and a position unlocking said door lock comprising:
(a) a first electric drive means for each locking element to be driven, which drives said locking element in a direction towards said locking position and a direction towards said unlocking position,
(b) a second electric drive means and for each locking element a blocking member movable by said second drive means in a blocking direction and a releasing directiion between a blocking position blocking said locking element in its locking position against manual unlocking and a releasing position releasing said locking element resp.,
(c) a drive current circuit having two current paths connected in parallel with one another, of which the first current path contains said first drive means connected in parallel with one another and the second current path contains said second drive means connected in parallel with one another,
(d) two controllable drive current switches connected to said drive current circuit, of which the first drive current

switch switches on said drive current circuit in said locking direction of said first drive means and said blocking direction of said second drive means and of which the second drive current switch switches on said drive current circuit in said unlocking direction of said first drive means and said releasing direction of the second drive means,

(e) at least one first control switch switchable between a first and a second switch position, at least one of said first control switches being actuatable by means of a key operating said door lock,

(f) a time control means connected with said drive current switches and said first control switch, said time control means switching on said drive current circuit in said first switch position of said first control switch for a predetermined time duration through said first drive current switch and in said second switch position of said first control switch for a predetermined time duratiion through said second drive current switch,

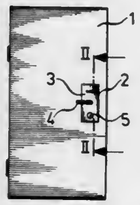
(g) at least one second control switch in series with said second current path containing said second drive means, said second control switch being actuatable by means of said key through said door lock which actuates the first control switch.

4,519,228

ELECTRONIC RECODEABLE LOCK

Tor Sornes, Moss, Norway, assignor to TrioVing A/S, Moss, Norway

Filed Mar. 24, 1982, Ser. No. 361,343
Claims priority, application Norway, Apr. 1, 1981, 811112
Int. Cl.³ E05B *47/00, 49/00*
U.S. Cl. 70—276 **3 Claims**



1. Method for recoding a lock of the type comprising a housing that includes a reading unit and a memory for recording codes for the lock, the lock being actuated by a preferably plate-formed key member containing a key code, the key member having thereon a recoding section on to which informations may be recorded and having a correct command for changing the code of the lock recorded on the recoding section, the method which comprises the steps of recoding said lock by inserting the key member into a slot in the lock, reading the key command for changing the code of the lock in said reading unit and storing the code of the inserted key member in said memory and removing the recording command from the key member upon removing the key member from the lock.

4,519,229

COMBINATION LOCK

Yaw-Kuen Yang, No. 190-30, Chang-Shui Rd., Tzu-Tung Li, Chang Hua City, Taiwan

Filed Feb. 22, 1983, Ser. No. 468,111
Int. Cl.³ E05B *37/12*
U.S. Cl. 70—312 **9 Claims**

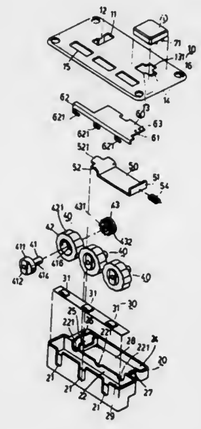
1. A combination lock comprising:

a casing;

dial wheel assemblies provided side by side in the front portion of said casing and biased upward to be exposed in part for manual operation; each of said dial wheel assemblies including an outer dial wheel, an axle member for mounting, and a collar member slidably sleeved onto said axle member and separably fitted to said dial wheel, said axle member of a first said wheel assembly being mounted in said casing separate from and parallel to said axle member of a second wheel assembly; each said axle member having an axial groove and each of said collar members having a radial bore, said radial bores being respectively registered with said axial grooves when said dial wheels are turned to a proper combination;

a bolt plate provided in the rear of said dial wheel assemblies and having an upwardly bent end;

means for biasing said bolt plate in the longitudinal direction to a latching position in contact with one side of said bent end;



a fence plate which is externally operated for movement to bring said bolt plate to a release position, provided longitudinally over said bolt plate and movable parallel relative to the longitudinal axis of said bolt plate, said fence plate having a first contact surface bearing against another side of said bent end, and having second contact surfaces bearing directly against the peripheral surfaces of said collar members so that it is locked against the movement in the direction opposite to the direction of said biasing means, said movement being permitted only when said dial wheel assemblies are turned to a proper combination of symbols.

4,519,230

APPARATUS FOR SIZING OF TUBES

Viktor N. Chachin; Vladimir K. Kolos; Viktor V. Botyan, all of Minsk, and Viktor M. Postnikov, Ivanovo, all of U.S.S.R., assignors to Fiziko-Tekhnichesky Institut Akademii Nauk Belorusskoi SSR, Minsk, U.S.S.R.

PCT No. PCT/SU82/00001, § 371 Date Sep. 30, 1983, § 102(e) Date Sep. 30, 1983, PCT Pub. No. WO83/02576, PCT Pub. Date Aug. 4, 1983
PCT Filed Feb. 2, 1982, Ser. No. 552,175
Int. Cl.³ B21D *26/02*
U.S. Cl. 72—56 **2 Claims**

1. An apparatus for the sizing of tubes under the pressure of a fluid, said apparatus comprising:

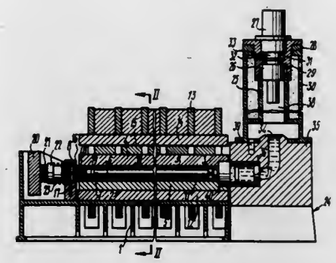
a bed;

a split die mounted on the bed and provided with a horizontally arranged sizing channel corresponding to the desired shape of a tube to be sized;

a mandrel within the sizing channel for setting the tube coaxially with the sizing channel;

means for delivery of fluid into an hermetically sealed clearance between mandrel and the tube; and

means for building up the pressure of fluid between the mandrel and the tube positioned in the sizing channel including an hydraulic striker unit having a working chamber filled with a fluid, a vertically arranged receiver with a barrel, a striking ram slidable within the barrel for building up the pressure of fluid in the working chamber



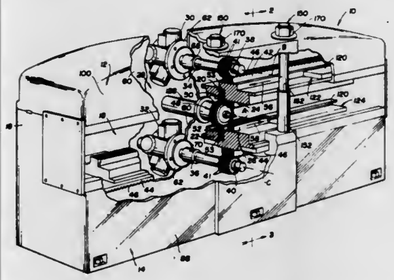
at impact with the fluid, and an adapter for connecting the working chamber to the sizing channel, said adapter including a piston for isolating the fluid filling the working chamber of the hydraulic striker unit from the fluid delivered into the clearance between the mandrel and the tube.

4,519,231

FORMING MACHINE INCLUDING DRIVE MECHANISM HAVING RACK AND GEAR SYNCHRONIZATION

Robert G. Roth, 17600 Collinson, East Detroit, Mich. 48021

Filed Mar. 11, 1983, Ser. No. 474,444
Int. Cl.³ B21D *17/00*
U.S. Cl. 72—88 **8 Claims**



1. In a forming machine including upper and lower bases (12, 14), a connecting portion (16) extending between the upper and lower bases to cooperate therewith in defining a work space (18), said upper base having a front wall (100), said lower base having a front wall (88), and said machine having a rear wall (60) common to the upper and lower bases and connecting portion; an intermediate wall (90) spaced rearwardly from said front walls (88, 100) and forwardly of said rear wall (60) defining the front vertical wall of said connecting portion; and upper and lower slides (20, 22) respectively mounted on the upper and lower bases for rectilinear movement, the improvement comprising: said upper base (12) having a pair of vertically spaced, horizontal upper and lower walls (116, 117) extending rearwardly from said front wall (100) above said work space; a pair of horizontally spaced vertical front and rear bosses (118, 119) extending between the upper and lower walls (116, 117) of the upper base (12); said lower base (14) having a pair of horizontal, vertically spaced, upper and lower walls (108, 110) extending rearwardly from said front wall (88) beneath said work space; a pair of vertical, horizontally spaced front and rear bosses (112, 114) extending between the upper and lower walls (108, 110) of the lower base (14); said front and rear bosses (118, 119) of said upper base (12) being in substantially co-planar relationship with the front and rear bosses (112, 114), respectively, of the lower base (14); said intermediate wall (90) being spaced from said rear bosses (114) and (119) on the sides thereof opposite the front bosses (112, 118) and extending between the lower wall (117) of the upper base (12) and the upper wall (108) of the lower base (14); aligned openings (134) in said rear and intermediate walls (60, 90); a headstock (128) projecting into the work space (18) and having a tubular housing (130) supported in said openings (132, 134); upper and lower slides (20, 22) mounted respectively on the lower wall (117) of said upper base (12) and the upper wall (108) of said lower base (14); upper and lower synchronizing racks (50, 52) mounted respectively on said upper and lower slides (20, 22); a synchronizing gear (48) lying in a plane and rotatably mounted on said headstock housing (130) in meshed engagement with said synchronizing racks (50, 52); and a pair of opposed, upper and lower forming racks (24, 26) mounted respectively on said upper and lower slides (20, 22) on the opposite side of said synchronizing racks (50, 52) from said intermediate wall (90); whereby said slides and forming racks are rectilinearly moveable in opposite directions in synchronized relationship; upper and lower hydraulic motors (30, 32) respectively mounted on the upper and lower bases operable to respectively move the upper and lower slides in opposite directions in parallel relationship to each other, said upper hydraulic motor having an output member (38, 192) connected with said upper slide in the space enclosed by said front and rear bosses (118, 119) and upper and lower walls (116, 117) of said upper base and forwardly of the plane of said synchronizing gear (48); said lower hydraulic motor having an output member (38, 192) connected with said lower slide in the space enclosed by said front and rear bosses (112, 114) and upper and lower walls (108, 110) of said lower base and forwardly of the plane of said synchronizing gear (48) so that said hydraulic motors apply forces on said slides to cause reciprocation thereof on the opposite side of said synchronizing gear from said intermediate wall; a pair of tie rod connections extending between the upper and lower bases to control deflection therebetween, each tie rod connection including a sleeve having opposite ends respectively engaged with the upper and lower bases, and each tie rod connection also having a tie rod extending through the sleeve thereof between the upper and lower bases and including a nut threaded thereto for compressing the sleeve and tensioning the tie rod in a preloaded manner to provide the prevention of deflection between the bases.

4,519,232

METHOD AND APPARATUS FOR NECKING CONTAINERS

Edward S. Traczyk, Lockport, and Michael M. Shulski, Northfield, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Dec. 27, 1982, Ser. No. 453,232
Int. Cl.³ B21B *39/02*
U.S. Cl. 72—133 **30 Claims**

9. Necking apparatus for necking open ends of metal containers comprising a support, a turret rotatable on said support and having a plurality of substantially identical necking stations spaced about and adjacent to the periphery thereof, each necking station including:

(a) an annular necking die on said turret;

(b) a knock-out punch reciprocable in said necking die;

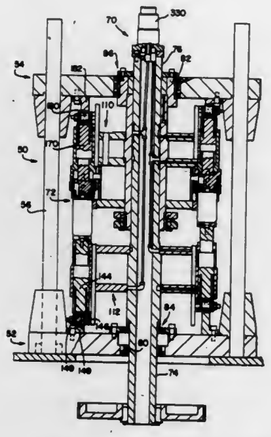
(c) means for reciprocating said punch in said necking die including a first cam follower;

(d) a platform spaced from and aligned with said necking die;

(e) means for moving said platform towards and away from said necking die including a second cam follower,

said support having a first cam engaged by all of said first cam followers and a second cam engaged by all of said second cam

followers and having at least one removable and replaceable segment to vary the extent of movement of said platform; and



pressurized pneumatic fluid means for maintaining said first cam followers in engagement with said first cam.

4,519,233

ROLL STAND WITH NONCYLINDRICAL ROLLS

Hugo Feldmann, Alsdorf; Friedrich Hollmann, Grevenbroich; Gerd Beisemann, Düsseldorf, and Horst Gärtner, Neuss, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG, Düsseldorf, Fed. Rep. of Germany

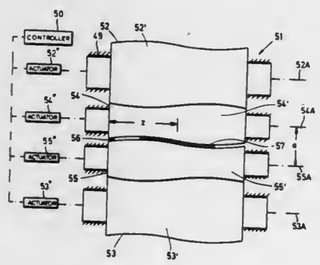
Filed Apr. 8, 1983, Ser. No. 483,372

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 3038865; Apr. 10, 1982, 3213496

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ B21B *31/18*

U.S. Cl. 72—247 **8 Claims**



1. A rolling stand comprising:

a housing defining a pair of parallel and spaced inner axes and a pair of parallel and spaced outer axes flanking the inner axes and defining therewith a plane;

respective inner rolls journaled in the housing at the inner axes and having bodies axially symmetrical about the respective axes and having centered on the respective axes roll-body surfaces of noncylindrical shape and each formed by rotation of a continuously curved generatrix about the respective axis, one of the inner rolls being displaceable axially relative to the other inner roll from an end position to another position, the inner-roll surfaces being spaced in the plane in the other position at a uniform distance and in the plane in the end position at a nonuniform distance;

respective outer rolls journaled in the housing at the outer axes and bearing toward each other on the respective inner rolls, the outer rolls having roll bodies axially symmetrical about the respective axes and having centered on the respective axes roll-body surfaces of noncylindrical shape complementary to that of the respective inner roll; and

means for displacing at least one of the rolls of one of the pairs axially relative to one of the rolls of the other pair.

4,519,234

DEVICE FOR MANUFACTURING LAMINATED SEMIFINISHED MATERIAL

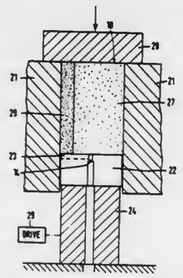
Joachim Grosse, Erlangen; Heinrich Hässler, Wendelstein, and Günter Tiefel, Fürth, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,075

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1982, 3229626

Int. Cl.³ B21C *23/22*

U.S. Cl. 72—258 **10 Claims**



8. In a device for manufacturing by indirect extrusion a laminated semifinished material having a plurality of layers each consisting at least partially of a metal, said device comprising a vessel with a rectangular chamber and an extrusion die with at least one cutout, said die being at least partially insertable into said chamber and having on one side a contact surface engageable with a multilayered blank disposed in said chamber during an extrusion operation, said cutout extending from the side of said die bearing said surface, the improvement wherein:

the side of the die bearing the contact surface is provided at least partially with a profiled portion, bounded on one side by the die cutout, in such a manner that the different layers of the blank are developed with a predetermined thickness distribution over an extrusion cross section.

4,519,235

LOUVER TOOL

Donald A. Gauck, 24 Falcon La., Cincinnati, Ohio 45218

Filed Oct. 13, 1983, Ser. No. 541,465

Int. Cl.³ B21D *17/02*

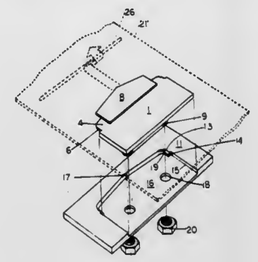
U.S. Cl. 72—414 **15 Claims**

1. A louver fabricating tool for forming louvers in a material wherein an operator only has access to one side of said material comprising:

(1) a shaper element; and

(2) a die element, said die element including a recessed area, said recessed area having side walls and projections, and an outwardly tapered apex wall; said shaper element including an abutting region designed to contact at least a portion of said recessed area, and including a shaper segment having recessed ledges at each end thereof and sized

to fit within the recessed area between the projections and apex said shaper element further including a tuck flap



attached to said shaper segment for insertion into an incision in the work material.

4,519,236

CLAMPING DEVICE TO BE MOUNTED ON A FRAME OR BENCH JIG FOR CHECKING ANY DEFORMATIONS OF A VEHICLE BODY

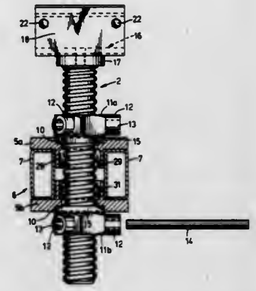
Germain Celette, Vienne, France, assignor to Celette, S.A., Vienne, France

Continuation of Ser. No. 404,920, Aug. 3, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,163

Claims priority, application France, Aug. 13, 1981, 81 15672

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—457 **8 Claims**



1. A clamping device adapted to be mounted on a frame for clamping to the body of a vehicle supported on the frame, the clamping device comprising slide means adapted to be supported at one end from the frame upon which the body of the vehicle is supported for positioning a clamping device in a predetermined position relative to the vehicle body, said slide means including a pair of horizontally-extending parallelly-spaced slide members forming a slideway between the opposed faces thereof, a pair of bearing blocks one disposed on each upper and lower side of said slide members and positionable along said slideway, a vertical screw positioned within said slideway and being supported thereby by a pair of tightening nuts, said vertical screw having a clamping means supported from an upper end thereof for clamping to the body of a vehicle supported on the frame, said pair of tightening nuts being carried upon said vertical screw with one of said nuts positioned to bear against an upper portion of said bearing block disposed on the upper side of said slide members and the other of said nut positioned to bear against a lower portion of said bearing block disposed on the lower side of said slide members for moving said clamping means in a vertical direction.

4,519,237

OXYGEN-SENSING SYSTEM

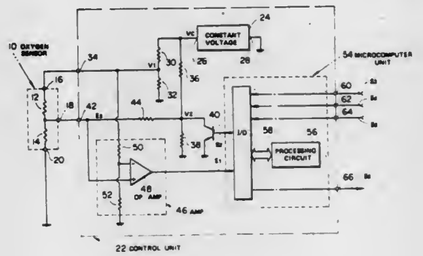
Hiromasa Kubo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 26, 1983, Ser. No. 545,696

Claims priority, application Japan, Oct. 30, 1982, 57-189993

Int. Cl.³ G01N *27/12*

U.S. Cl. 73—23 **6 Claims**



1. An oxygen-sensing system comprising:

(a) a sensing element exposed to a gas to be analyzed for oxygen concentration, the sensing element having an internal electrical resistance which depends on its temperature and also on the oxygen concentration in the gas;

(b) a thermistor having an internal electrical resistance which depends on its temperature, the thermistor being positioned near the sensing element so that the temperature of the thermistor substantially coincides with the temperature of the sensing element, the ratio of the internal resistances of the thermistor and the sensing element being substantially independent of the temperature of the thermistor and the sensing element but being dependent on the oxygen concentration in the gas;

(c) first means for sensing the internal resistance of the thermistor and thereby determining the temperature of the sensing element;

(d) second means for sensing the ratio of the internal resistances of the thermistor and the sensing element and thereby determining the oxygen concentration in the gas;

(e) means, responsive to the first means, for generating a first signal indicative of the temperature of the sensing element;

(f) means for generating a second signal indicative of a predetermined reference level for the temperature of the sensing element;

(g) means, responsive to the first and second signals, for determining whether or not the temperature of the sensing element is lower than the reference level and generating a third signal indicative thereof; and

(h) means, responsive to the third signal, for enabling the first means and disabling the second means when the temperature of the sensing element is lower than the reference level, and for enabling the second means and disabling the first means when the temperature of the sensing element rises to the reference level.

4,519,238

APPARATUS FOR INTERNALLY TESTING A PLURALITY OF INTERCONNECTED PIPE SECTIONS

Charles D. Hailey, P.O. Box 26063, Oklahoma City, Okla. 73126

Filed Apr. 28, 1983, Ser. No. 489,591

Int. Cl.³ G01M *3/08*

U.S. Cl. 73—40.5 R **20 Claims**

1. A pipe testing apparatus suitable for simultaneously but separately testing the joint and wall portions of a plurality of interconnected pipe sections, comprising:

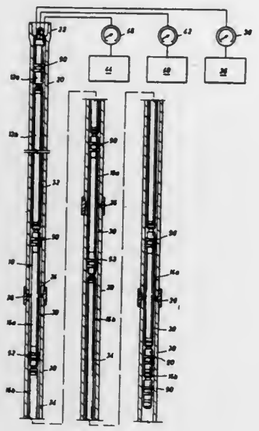
an elongated cylindrical body having an outer diameter smaller than the inner diameter of the pipe sections into

which said body is designed to be introduced for providing a radial clearance between said body and the inner surface of said pipe sections;

a plurality of first packer means spaced longitudinally along the external surface of said body, said first packer means when relaxed having outer diameters smaller than the diameter of said inner surface for providing said radial clearance, said first packer means sufficiently expandable to sealingly engage said inner surface for producing a plurality of annular test chambers about said body and within said interconnected pipe sections;

a plurality of second packer means spaced longitudinally along said external surface of said body, each spaced between two of said first packer means, each when relaxed having an outer diameter smaller than said inner diameter for providing said radial clearance, each sufficiently expandable to sealingly engage said inner surface for dividing one of said annular test chambers into two adjacent chambers, one of said adjacent chambers suitable for testing a pipe section wall, the other of said adjacent chambers suitable for testing a joint between pipe sections;

means for conducting a liquid through said body and into fluid communication with said first and second packer



means and with a plurality of closed ports, each of said ports in fluid communication with the exterior of said body;

means for pressurizing said liquid to a first predetermined pressure at which said first packer means is expanded and set, means for pressurizing said liquid to a second and higher predetermined pressure at which said second packer means is expanded and set only while said first packer means are in sealing engagement, and means for pressurizing said liquid to a predetermined wall test pressure below which each of said ports is opened causing each of said chambers suitable for testing a pipe section wall to fill with said liquid at said predetermined wall test pressure;

means for conducting a gas through said body and through a plurality of ports in said body to the exterior of said body;

means for pressurizing said gas to a predetermined joint test pressure to fill each of said chambers suitable for testing a joint between pipe sections with said gas at said predetermined joint test pressure; and

means for detecting a decrease in said predetermined test pressures indicative of a loss of test fluid through a leak.

4,519,239

APPARATUS FOR DETERMINING THE FLOW SHEAR STRESS OF SUSPENSIONS IN PARTICULAR BLOOD

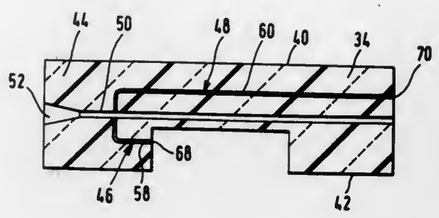
Holger Kiesewetter, Usch; Friedrich Jung, Aachen; Hartmut Radtke, Aachen, and Reinhard Witt, Aachen, all of Fed. Rep. of Germany, assignors to Holger Kiesewetter, Homburg-Kirrberg, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,594

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218037

Int. Cl.³ G01N *11/04*

U.S. Cl. 73—55 **15 Claims**



1. Apparatus for determining the flow shear stress of suspensions, in particular blood, comprising a means having a main passage therein and a network of capillary passages, said capillary passages diverging from the main passage at an angle characterized by at least two capillary passages of which the ratio of the length L_l of the long passage and the length L_k of the short passage lies in a range of 3:1 to 15:1 and which are connected to a means for producing a variable pressure differential, and by a detector system with which the flowing of the fluid can be detected.

4,519,240

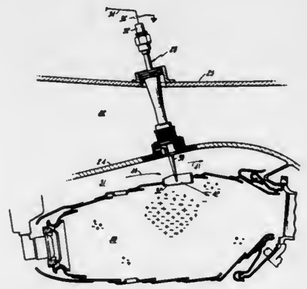
ELECTROSTATIC GAS TURBINE SURGE/STALL DETECTION

John W. St. Jacques, West Palm Beach, and Robert P. Couch, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,121

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **7 Claims**



1. Electrostatic responsive apparatus for detecting electrostatic charge in a gas turbine engine having a compressor, a burner section including a burner can with air inlet ports through the walls thereof for allowing compressor outflow to enter said burner section, a compressor duct for conducting compressor outflow to and around said burner section, and a turbine disposed downstream of said burner section, comprising:

a pair of electrostatic probes, each of said probes disposed for response to electrostatic charge in gas within said compressor duct adjacent to said burner section, said

probes being arcuately separated from one another by a known significant portion of a semicircle in substantially the same lateral engine cross section;

bias means for providing a bias voltage separately to each of said probes; and

signal processing means connected for response to said probes, for providing a first probe signal in response to each occurrence of significant conductivity of the gas adjacent a first one of said probes, for providing a second probe signal in response to each occurrence of significant conductivity of the gas adjacent a second one of said probes, and for providing time signals indicative of the relative times at which said first probe signal and said second probe signal are provided.

4,519,241

AUTOMATIC GEAR TESTING APPARATUS

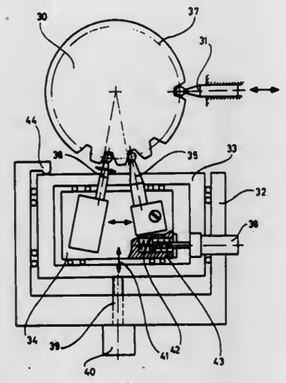
Willy Höfler, Fridtjof-Nansen-Strasse 35, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,785

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212078

Int. Cl.³ G01M *13/02*

U.S. Cl. 73—162 **15 Claims**



1. An automatic testing apparatus for testing the circumferential spacing of a gear rotationally driven in one rotational direction by a power source, comprising

an indexing means for indexing said gear from one measuring position to another,

a main slide displaceable on a frame,

a feeler means disposed on said main slide in the vicinity of a pitch circle of said gear,

means for measuring a deviation of a first tooth flank of at least one tooth gap and further means for measuring a second tooth flank during one insertion of said feeler means of the same tooth gap in the course of one gear revolution, including

means for automatic insertion of said feeler means into said measuring position and for the retraction therefrom via said main slide continuing from one tooth gap to the next for successive measuring positions,

a pickup means for providing a measurement value of respective tooth flanks relative to said at least one tooth gap before said gear is indexed to a successive measuring position, and

a control means responsive to said pickup means for transmitting said measurement value from said pickup means for further processing.

4,519,242

AUTOMATIC GEAR TESTING APPARATUS

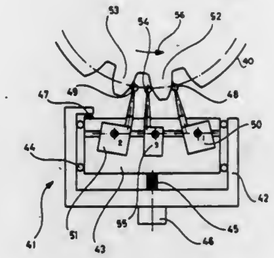
Willy Höfler, Fridtjof-Nansen-Strasse 35, D-7500 Karlsruhe 41, and Peter Golder, Ettlingen, both of Fed. Rep. of Germany, assignors to Willy Höfler, Karlsruhe, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,531

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224980

Int. Cl.³ G01M *13/02*

U.S. Cl. 73—162 **8 Claims**



1. An automatic testing apparatus for testing the circumferential spacing of gear teeth of a gear caused to rotate continuously in one direction comprising,

a slide displaceably mounted on a frame,

a drive means for radially moving said slide toward and away from said gear between adjustable stops for a testing operation,

first and second measuring feelers pivotably supported on said slide and each having a transducer means for sensing a measurement position value,

means for placing said feelers in contact with identical tooth flanks of said gear teeth in the vicinity of a pitch circle of said gear under the influence of a spring force when said feelers have been inserted into tooth spaces of said gear teeth by said slide and for raising said feelers from said tooth flanks counter to said spring force after a testing operation has been performed,

switching means connected to said first measuring feeler for transmitting the measurement value measured by said second measuring feeler for a specified pivoted position of said first feeler,

control means responsive to said switching means for operating said drive means to retract said feelers away from said gear teeth and reinsert said feelers into said gear teeth, and

a third measuring feeler having a transducer means for sensing a measurement position value disposed on said slide and positioned in the vicinity of the pitch circle of said gear pointing toward a tooth flank located opposite one of said first and second measuring feelers, and said switching means transmitting the measurement value measured by said third feeler for a specified pivoted position of said first feeler.

4,519,243

APPARATUS FOR THE NONDESTRUCTIVE TESTING OF ELONGATED TEST SPECIMENS BY MAGNETIC TECHNIQUES

Wolfgang Trautmann, Reutlingen, Fed. Rep. of Germany, assignor to Institut Dr. Friedrich Forster Prufgeratebau GmbH & Co. KG., Reutlingen, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 473,952

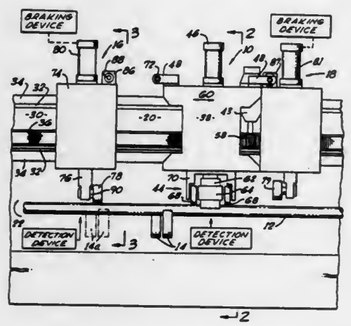
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3209006

Int. Cl.³ G01M *19/00*; G01N *37/00*

U.S. Cl. 73—432 R **8 Claims**

1. Testing apparatus for elongated test specimens having an

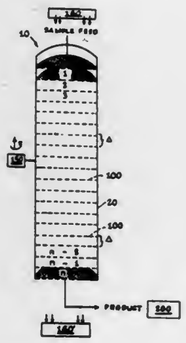
essentially circular cross-section, said apparatus having rollers supporting a test specimen from below and at least one of which being driven for rotating the test specimen about its central longitudinal axis, a transducer system for non-destructive testing of the test specimen including a transducer arrangement, a guiding arrangement to which the transducer arrangement is suspended, the structure of said guiding arrangement presetting a course or testing track along the test specimen in its longitudinal direction, means for moving the transducer arrangement in its course, and vertical positionable means for



pressing the test specimens in its lowered condition onto the rollers, comprising:

a plurality of pressing means arranged movably in a direction longitudinally of the test specimen, each said pressing means located immediately adjacent the guiding arrangement, at least one before and one behind the transducer system, and means for selectively and releasably coupling each of the pressing means to the transducer system such that the pressing means moves unitarily with the transducer system when so-coupled.

4,519,244
CASECADEOGRAPH AND METHOD OF USE
Thomas P. Meloy, 2202 Maple St., Morgantown, W. Va. 26505
Filed Jun. 21, 1983, Ser. No. 506,243
Int. Cl.³ G01N *15/00, 33/40, 33/00*
U.S. Cl. 73—432 R **54 Claims**



1. A method of separating and analyzing powders by virtue of their constituent particles having a pre-selected size range, comprising the steps of

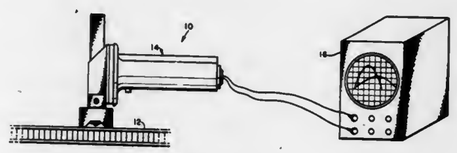
(a) separating at least a portion of the particles having the pre-selected size range from the powder

(b) creating a sample from a number x of the separated particles

(c) passing the entire sample over a period of time through a number n of repetitive elements having a number y_1 through n openings, wherein the maximum value of x is less than the minimum value of y

(d) determining the residence time, of the particles in the sample having similar shapes, during their passage through the n repetitive elements.

4,519,245
METHOD AND APPARATUS FOR THE NON-DESTRUCTIVE TESTING OF MATERIALS
Herbert M. Evans, R.D. #1, Box 231, Spring City, Pa. 19475
Filed Apr. 5, 1983, Ser. No. 482,149
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—579 **16 Claims**



1. A method for the nondestructive testing of materials comprising the steps:

a. impacting the surface of a reference sample of material known to be free of defects with a predetermined precisely regulated force of a variably controllable magnitude and duration;

b. sensing the response from the reference sample and generating a first electrical signal proportional thereto;

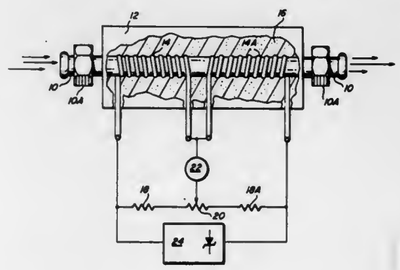
c. storing the generated first electrical signal;

d. impacting the surface of the material being tested at a first test location with the same predetermined, precisely regulated force as was applied in step a;

e. sensing the response from the material being tested and generating a second electrical signal proportional thereto; and

f. comparing the first and second electrical signals to determine the presence of an amplitude and/or frequency difference there between, such amplitude and/or frequency difference indicating the existence of a defect in the material.

4,519,246
IMPROVED FLOW METER
Gerrit A. Hartemink, Harderwijk, Netherlands, assignor to Advanced Semiconductor Materials International, N.V., Bilthoven, Netherlands
Filed Dec. 21, 1981, Ser. No. 332,557
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **17 Claims**



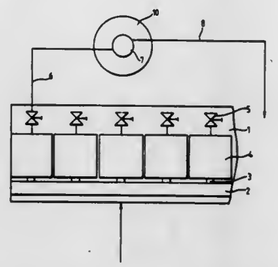
1. An improved flow meter comprising, in combination, sensor tube means for permitted flow of a fluid to be measured to be passed therethrough; fluid flow sensing means having electrical sensing resistance means operatively wound around said sensing tube to form two resistive sensing coils at adjacent

locations disposed along said sensor tube means for determining the fluid flow characteristics of a fluid flowing therein; the improvement comprising:

non-woven, polyester fiber insulation tape means wrapped tightly around said sensor tube means and said two resistance sensing coils for improved thermal insulation, for significantly reducing external thermal heat loss, for more securely holding said two resistive sensing coils against the outer surface of said sensor tube means, for greater physical strength, for preventing convection of air proximate said two resistive sensing coils thereby eliminating attitude sensitivity, for improved isolation from the surrounding temperature ambient, and for increasing the sensitivity of said electrical sensing resistance means; and

metallic thermal shield means having a high thermal conductivity and operably disposed concentrically around said insulation tape means for providing a homogeneous temperature distribution at the outer surface of said insulation tape means and in proximate contact with said non-woven polyester fiber insulation tape means for providing a homogeneous temperature distribution at the outer surface of said insulation tape means for substantially eliminating disturbances caused by radiation and conduction which can effect the accuracy of the sensor output in a non-symmetrical manner, said non-woven, polyester fiber insulation tape means further including solid plastic microspheres dispersed throughout said non-woven polyester fiber insulation for increasing thermal isolation from the surrounding temperature ambient and between adjacent resistive sensing coil windings, for increasing the strength and flexural support thereof, and for further lowering the thermal conductivity of said insulation tape means.

4,519,247
PROCEDURE FOR LUBRICATING THE BEARINGS IN EQUIPMENT COMPRISING A PLURALITY OF OIL-LUBRICATED BEARINGS
Kalevi Horttonen, Nurmijärvi, Finland, assignor to O. Kytölä ja Kumpp. Kommandiittiyhtiö , Muurame, Finland
Filed Jul. 18, 1983, Ser. No. 515,035
Claims priority, application Finland, Jul. 28, 1982, 822642
Int. Cl.³ G01F *15/18*
U.S. Cl. 73—198 **2 Claims**



1. A method for lubricating the bearings in equipment having a plurality of lubricated bearings, comprising:

locating a distribution header comprising, on a common frame,

(i) a plurality of volumetric meters,

(ii) a common supply conduit,

(iii) branch conduits connecting the supply conduit to the individual volumetric meters, and

(iv) valved outlets leading from the individual volumetric meters, adjacent selected ones of the bearings to be lubricated;

connecting the valved outlets from the individual volumetric meters, through connecting conduits, respectively to individual bearings of those selected;

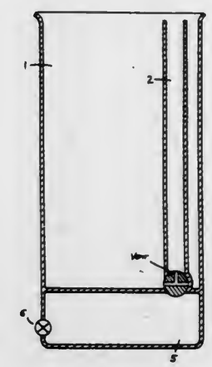
supplying lubricant to the common supply conduit, thereby to distribute the lubricant to the selected bearings through the individual volumetric meters and valved outlets respectively associated therewith;

generating electrical signals respectively proportional to the lubricant flow passing through each of the volumetric meters;

transferring those electrical signals to a convenient monitoring point whose location is independent of the location of the distribution header and its plurality of volumetric meters; and

controlling the quantity of lubricant distributed to the individual bearings in response to the signals at the monitoring point.

4,519,248
DEVICE FOR MEASURING A WHOLE DAY URINARY OUTPUT
Yoshihiko Torii, Tokyo, and Osamu Tochikubo, Yokohama, both of Japan, assignors to Kabushiki Kaisha Vine, Tokyo, Japan
Continuation of Ser. No. 317,387, Nov. 2, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,225
Claims priority, application Japan, Nov. 13, 1980, 55-158868; Oct. 15, 1981, 56-163394
Int. Cl.³ G01N *1/18;* G01F *5/00;* A61B *5/00*
U.S. Cl. 73—223 **1 Claim**



1. A device for measuring a whole day urinary output comprising an outer, flat-bottomed cylindrical container, an inner uncovered hollow tubular container positioned in said outer cylindrical container for sampling urine from the outer cylindrical container, and a reservoir positioned under the outer cylindrical container, characterized in that the hollow tubular container is vertically integrally fixed to the flat bottom surface of the outer container near the inner wall thereof and has a substantially constant cross-sectional area ratio with respect to the outer cylindrical container at any vertical location thereof, and that a single, two-way cock having an operating shaft operable from outside the device is provided to open communication between the two containers while closing communication between the inner container and the reservoir when said cock is in one position and to close communication between the two containers while opening communiction between the inner container and the reservoir when said cock is in a second position, said operating shaft being provided with a vent for effecting communication between the reservoir and the exterior of the device when said cock is in said second position.

4,519,249

APPARATUS FOR DETECTING THE CONDITION OF A SHEET OR WEB

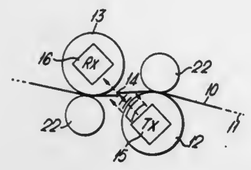
Steven A. Hunt, Petersfield, England, assignor to De la Rue Systems Limited, London, England

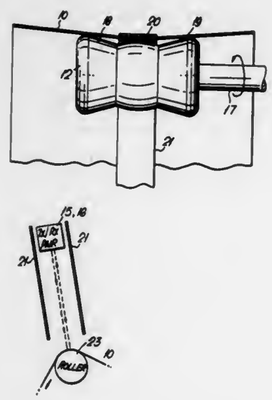
Filed Jun. 27, 1983, Ser. No. 508,188

Claims priority, application United Kingdom, Jun. 28, 1982, 8218618

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—596 **10 Claims**





1. In apparatus for detecting defects in webs or sheets, and having means defining a flow path for the web or for the sheets to be inspected, the combination of:

an ultrasonic transmitter arranged to direct ultrasonic energy towards the flow path in an inspection area;

an ultrasonic receiver directed to receive ultrasonic energy from the inspection area;

and signal analysing means (FIG. 7) responsive to the output of the receiver;

the transmitter directing the ultrasonic energy towards the inspection area as a continuous wave and the signal analysing means providing an output signal in response to changes in the output of the receiver during the passage of the web or sheet indicative of a defect in the inspected web or sheet;

and wherein the receiver includes means defining in the inspection area a flow path which is convex in the longitudinal direction of the flow path, whereby the sheet or web is caused to assume a convex bend in the area in which the ultrasonic energy impinges upon it.

4,519,250

ULTRASONIC DIAGNOSIS APPARATUS USING REDUCED NUMBERS OF PHOTO TRANSMISSION LINES

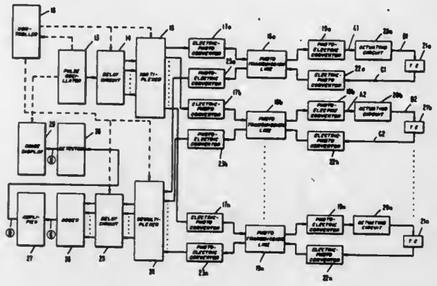
Yoichi Sumino, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 250,201, Apr. 2, 1981, abandoned. This application Jul. 22, 1983, Ser. No. 516,254

Claims priority, application Japan, May 8, 1980, 55-59942

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—626 **4 Claims**



1. An ultrasonic diagnosis appararus comprising:

an ultrasonic probe including N number of transducer elements actuated by electric pulses for emitting ultrasonic pulses, for receiving echo ultrasonic pulses, and for issuing electric pulses corresponding to said echo pulses;

a pre-programmed controller for designating the sequence of actuation of said transducer elements;

means for generating electronic pulses for actuating said transducer elements;

means for processing said electronic pulses corresponding to said echo pulses;

a signal transmission line including M number of photo transmission line for conveying photo pulses, said line interconnecting said generating means and said probe and interconnecting said probe and said processing means;

first electric-photo means in said generating means for converting said generated electric pulses to photo pulses for conveynce on said signal transmission line to said probe;

first photo-electric means in said probe for converting said photopulses generated by said first electric-photo means and conveyed by said signal transmission line to electric pulses for actuating said transducer elements;

second electric-photo means in said probe for converting said issued electric pulses to photo pulses for conveyance on said signal transmission line to said processing means;

second photo-electric means in said processing means for converting said photo pulses generated by said second electric-photo means and conveyed by said signal transmission line to electric pulses for feeding said processing means; and

M number of multiplexers in said ultrasonic probe, each said multiplexer having L number of taps which are interconnected with L number of transducer elements, the number N being equal to M multiplied by L, for actuating N number of said transducer elements M number at a time for each electric pulse generated by said generating means and for receiving from said transducer elements and forwarding to said processing means said issued electric pulses corresponding to said echo pulses, said multiplexers being controlled by said pre-programmed controller to actuate said transducer elements in a predetermined sequence and to distribute said issued electric pulses from said transducer elements to said second electric-photo means in said probe for conversion to photo pulses and transmission to said processing means on the appropriate photo transmission lines within said signal transmission line, each said multiplexer being interconnected with a single photo transmission line so that the photo pulses from said generating means to a transducer element and from the same transducer element to said processing means are transmitted by the same photo transmission line.

4,519,251

ROLLER-TYPE ULTRASONIC INSPECTION DEVICE WITH ACOUSTICAL ISOLATION

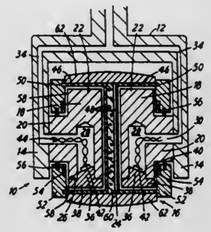
John K. Dickson, Waddesdon, England, assignor to Schlumberger Electronics (UK) Limited, Farnborough, England

Filed Sep. 6, 1983, Ser. No. 529,812

Claims priority, application United Kingdom, Sep. 15, 1982, 8226283

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—639 **9 Claims**



1. A roller-type ultrasonic inspection device for use in the ultrasonic inspection of an object, the device comprising:

a support having two spaced-apart generally parallel limbs;

two substantially coaxially aligned hub members each projecting from a respective one of the limbs towards the other hub member, the adjacent ends of the hub members defining a gap therebetween;

an acoustic isolation member disposed in said gap;

a respective ultrasonic transducer mounted in each hub member, one for use as an ultrasonic transmitter and the other as an ultrasonic receiver, each transducer being arrangd such that its principal transmitting/receiving axis extends generally radially of the hub members, both axes being in substantially the same plane, and such that said plane also contains the axis of alignment of the hub members; and

roller means rotatably mounted on said hub members, said roller means being adapted to make rolling contact with said object and to conduct ultrasonic signals from said one transducer to the object and from the object to said other transducer, wherein coupling between each transducer and said roller means is by means of a fluid surrounding each hub and the fluid associated with each hub is acoustically separated by said acoustic isolation member.

4,519,252

PRESSURE AND TEMPERATURE COMPENSATED PHOTOELASTIC HYDROPHONE

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 476,957

Int. Cl.³ H04R *23/00*; G01L *1/24*

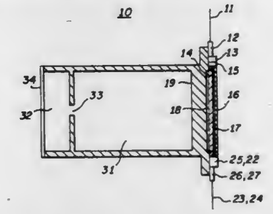
U.S. Cl. 73—655 **17 Claims**

1. An apparatus for sensing acoustic signals of the type comprising input and output optical fibers and polarizers in cooperation with an element having pressure sensitive birefringent properties further comprising:

housing means having a fluid filled acoustic chamber wherein said polarizers and birefringent element are positioned;

diaphragm means sealing one end of said acoustic chamber for transferring pressure variations caused by incident acoustic signals to said birefringent element and positioned a predetermined distance from one side of said birefringent element with said fluid therebetween, thereby establishing a first fluid filled space;

means fixed to said housing for supporting said birefringent element, and positioned a preselected distance from a side of said birefringent element opposite said one side to form



a second space, said second space having said fluid therein, whereby slow variations in ambient pressure and temperature cause said first and second spaces and said fluids therein to vary, thereby substantially relieving substantially static surface stresses in said birefringent element, while rapid pressure fluctuations are transferred therethrough substantially undiminished.

4,519,253

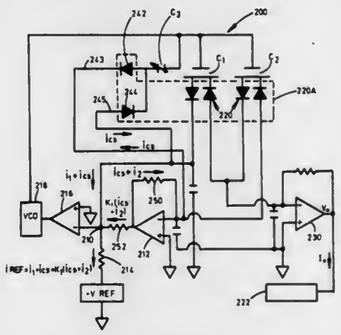
REACTANCE MEASUREMENT CIRCUIT WITH ENHANCED LINEARITY

Roger L. Frick, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Apr. 29, 1983, Ser. No. 489,856

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—718 **17 Claims**



1. A circuit for measuring a variable reactance means having at least two reactances, at least one of which varies responsive to a condition being sensed, the circuit providing an output signal representative of the sensed condition which has certain non-linearities with respect to the condition being sensed, the circuit comprising:

oscillator means coupled to the reactance means for providing a time varying oscillator signal to the variable reactance means;

rectification means coupled to the reactance means for providing separate charging signals to and separate discharging signals from each of the reactances comprising the reactance means, the charging and discharging signals being a function of the reactances of the reactance means; and

control means coupled to the rectification means and to the oscillator means for providing an input control signal to the oscillator means; and

means for selectively amplifying at least one of the charging and discharging signals to adjust the input control signal

from the control means and then to adjust the oscillator signal as a function of the selected amplified signal to substantially compensate for non-linearities of the output signal with respect to the condition being sensed to achieve a predetermined relationship between the output signal and the sensed condition.

4,519,254

HIGH PRESSURE TRANSDUCER

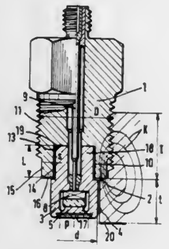
Hans-Conrad Sonderegger, Neftenbach, and Eugen Lutz, Winterthur, both of Switzerland, assignors to Kistler Instrumente A.G., Winterthur, Switzerland

Filed Apr. 4, 1983, Ser. No. 481,880

Claims priority, application European Pat. Off., Apr. 6, 1982, 82102930.3

Int. Cl.³ G01L *9/08, 23/10*

U.S. Cl. 73—726 **15 Claims**



1. A high pressure transducer having an externally threaded portion and operable to be threadably secured in a mounting aperture having an internally threaded portion and provided in a structural component, comprising a body member provided with said threaded portion, a sensor part connected with the body member and having a membrane portion for actuating a sensor element, means adapted to form a shoulder seal between mutually abutting surfaces of the transducer and the mounting aperture, said seal being located ahead of the threaded portion, and further means in said transducer operable to substantially keep away from the sensor part the force flux lines stemming from the sealing forces which are produced when sealing the transducer relative to the structural component including an annular gap between the sensor part and the body member, said annular gap being open toward the pressure medium to be measured by the transducer.

4,519,255

PRESSURE TRANSDUCER

Akira Ishii, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 6, 1983, Ser. No. 482,446

Claims priority, application Japan, Apr. 16, 1982, 57-62492

Int. Cl.³ G01L *9/06*

U.S. Cl. 73—727 **8 Claims**

1. A pressure transducer, comprising:

a body having a recess on one side which is defined by a curved surface portion; and

a semiconductor pressure-sensitive element mounted on one side of the body and adapted to show a resistive value when a pressure applies thereon, said semiconductor pressure-sensitive element including a deformable portion adapted to be displaced in the recess due to the pressure value to produce internal stress, and a plurality of resistive layers which show resistive values corresponding to the internal stress,

the curved surface portion being brought into face contact with the deformable portion to prevent further deformation of the deformable portion when the deformable portion is displaced due to a pressure value greater than a pressure value within a measuring range, but smaller than a pressure value corresponding to an elastic limit of the deformable portion wherein said semiconductor pressure-sensitive element includes a cylindrical depression which is opened on said one side of said body; and wherein said body includes a disc-like base on which said semiconductor pressure-sensitive element is mounted, and a restricting member placed on the base, fitted in the cylindrical depression and having said recess defined by said curved surface portion.

4,519,256

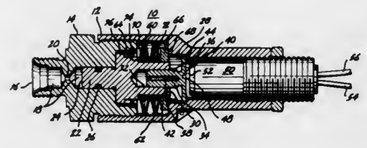
PRESSURE TRANSDUCER INCLUDING A PROXIMITY SENSOR

Ted M. Daniels, Edmonds, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Mar. 14, 1983, Ser. No. 475,309

Int. Cl.³ G01L *7/16, 9/10*

U.S. Cl. 73—745 **15 Claims**



1. Apparatus for activating electrical switching means in response to a predetermined applied fluid pressure level comprising:

a housing having a provided bore and an inlet port for introducing fluid under pressure into said bore;

a piston disposed within the housing and being slidable within said bore, the piston having first and second ends, the first end having a face portion with an effective area for reacting with the fluid under pressure;

target means having a piston portion and a target portion, said piston portion having a mating relationship with the second end of said piston such that the piston and target means move as a unit;

switching means mounted to said housing and positioned to be activated by said target means target portion in response to a predetermined displacement of said piston and target means unit resulting from a predetermined applied fluid pressure level;

spring means providing a reaction force to said piston means for resisting displacement of said piston in response to applied fluid pressure, said spring means exhibiting a wear characteristic such that said reaction force varies with spring means wear in a predetermined manner; and

compensating means compensating said apparatus for said predetermined spring means wear characteristic such that said switching means is activated by said target portion at said predetermined fluid pressure level substantially independent of said wear characteristic.

4,519,257

ELECTRONIC FLOW METER FOR MEASURING FLOW OF BULK SOLIDS PNEUMATICALLY CONVEYED THROUGH A HOSE

Otto K. Simpkins, 4308 Glen Eden Dr., Nashville, Tenn. 37205

Filed Jul. 26, 1983, Ser. No. 517,456

Int. Cl.³ G01F *1/74*

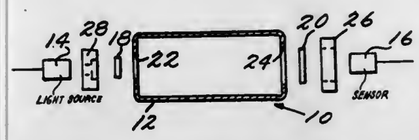
U.S. Cl. 73—861.04 **6 Claims**

1. Apparatus for measuring the flow of bulk solids pneumatically conveyed through a hose comprising:

a detector including a light source and a light responsive sensing device arranged to receive a beam of light from said source, the detector being joined to the hose in such a manner that the solids pass through said light beam to vary the intensity of light impinging on said sensing device thereby changing the output voltage of said device;

means for sampling and digitizing said output voltage;

a memory for accumulating digitized data produced by said sampling and digitizing means, said memory also storing a



constant representative of the type of solids conveyed through the hose; and

means for computing the weight of solids passing said detector by dividing the accumulated digital data by said constant.

4,519,258

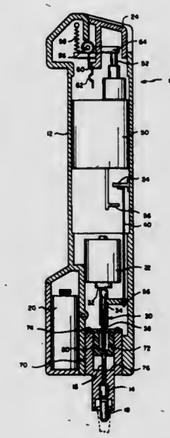
MOTORIZED PIPETTE

Raymond F. Jakubowicz, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,974

Int. Cl.³ B01L *3/02;* **G01N** *1/14*

U.S. Cl. 73—864.16 **3 Claims**



1. In a pipette comprising a pressure chamber, a piston for generating pressure within the chamber, and means for moving said piston between a withdrawn position and an extended position providing predetermined maximum liquid ejection, said means including (i) a motor susceptible to overtravel when activating power to the motor is terminated, (ii) drive means coupling said motor to said piston to move said piston between said withdrawn position and said extending position, (iii) means for alternately connecting and disconnecting said motor to and from a source of such activating power, and (iv) means for reversing said motor;

the improvement wherein said pipette further includes drive-decoupling means for decoupling the drive of said piston from that of said drive means when said piston arrives at either one of said two positions from the other position,

whereby overtravel of said motor does not cause said piston to overtravel,

said drive-decoupling means comprising

(a) a shuttle secured to said piston and mounted for linear movement within said pipette from a first position corresponding to one of said positions of said piston, to a final position corresponding to the other of said piston positions,

(b) a resilient member integral with said shuttle and secured to said drive means to transmit driving force from said drive means to said shuttle when the latter is between said first and said final positions,

said resilient member further comprising a bistable mechanical flip-flop that is integral with said shuttle and is secured to said drive means, said flip-flop occupying either a position distal to or proximal to said piston, depending upon whether said shuttle has last reached said final position or said first position, respectively,

and stop means for limiting the travel of said shuttle to only points between said first and said final positions,

said flip-flop having a resiliency sufficient, when said shuttle strikes said stop means, to allow said motor to overtravel while said shuttle remains motionless.

4,519,259

VORTEX SHEDDING FLUID FLOWMETER

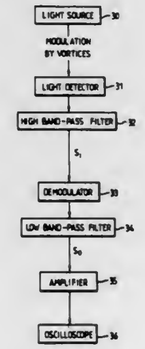
Gillies D. Pitt, Saffron Walden; Roger J. Williamson, Harlow; David N. Batchelder, London, all of England, and Arulanandam M. Prabakaran, Ayanavaram Madras, India, assignors to International Telephone & Telegraph Corp., New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,662

Claims priority, application United Kingdom, Mar. 2, 1982, 8206032

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **8 Claims**



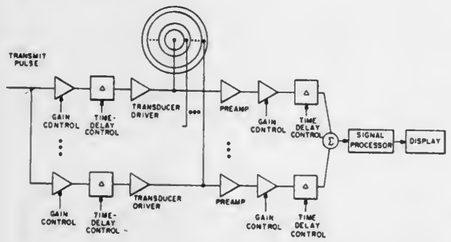
1. A method of monitoring the vortex shedding frequency from which a fluid flow rate or a parameter dependent thereon may be calculated, the method comprising: modulating an optical beam in dependence on the alternate high and low velocity regions comprising the vortex street, detecting the modulated beam, filtering the detector output by means of a first band-pass filter having a center frequency f_c, adjusting the pass-band of said filter in accordance with variations in the optimum value of frequency f_c, the first filter output comprising an amplitude modulated signal of frequency f_c modulated by the vortex shedding frequency, demodulating the first filter output and filtering the demodulated output by means of a second band-pass filter, the frequency of the second filter output comprising the vortex shedding frequency.

4,519,260

ULTRASONIC TRANSDUCERS AND APPLICATIONS THEREOF

Chong-Cheng Fu, Stanford, and Levy Gerzberg, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 350,020, Feb. 18, 1982, Pat. No. 4,431,936.
This application Jan. 26, 1984, Ser. No. 574,065
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.25 **2 Claims**



1. In a transducer structure comprising a plurality of concentric annular transducer elements, a method of energizing said transducer elements and transmitting an ultrasonic beam for use in volume flow measurements with independent amplitude and timing to achieve a Fourier-Bessel approximation, said method comprising the step of amplitude weighting each transducer element in accordance with the equation

$$S_n = b^2 a_n (a_n - a_{n+1})$$

where $a_1, a_2, \ldots, a_n$ is the amplitude of driving signals applied to said elements,

$r_1, r_2 \ldots, r_N$ are the radii of the elements from the center outward,

N is the number of elements,

$\alpha_1, \alpha_2, \ldots, \alpha_N$ are positive zeroes of the Bessel function $J_1(x)$,

$b = rn/\alpha n$, and

$$S_n = \frac{2}{J_2^2(\alpha_n)} \int_0^1 t\, g_o(t) J1(\alpha n t) dt$$

where

t is the integration variable

$g_o(\cdot)$ is defined by $g_o(v) = v \cdot f_o(v/b)$

$f_o(u)$ is a desired pattern of said beam, where

u is $(2\pi/\lambda) \sin \theta$, and θ is the field direction of said beam with respect to the axis of said elements.

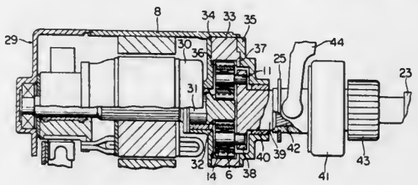
4,519,261

STARTING MOTOR WITH PLANETARY GEAR REDUCTION GEARS

Isao Hamano, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 29, 1982, Ser. No. 437,612
Claims priority, application Japan, Nov. 17, 1981, 56-171493[U]
Int. Cl.³ F02N *15/00*; F16H *3/44*
U.S. Cl. 74—7 E **1 Claim**

1. A starting motor with planetary gear reduction gears comprising a spur gear provided at a front end of a rotational shaft of said starting motor, a ring shaped gear having internal gear teeth fixed to a front end of a yoke of said motor, a planetary gear for engaging said spur gear with said ring shaped gear, an output rotational shaft for transmitting the rotary force of said motor through said planetary gear, and a pair of



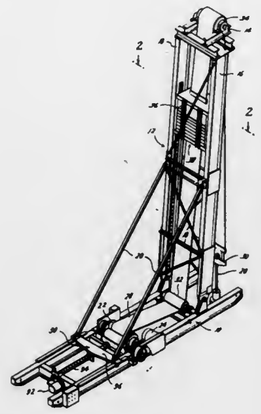
collars integral with said ring shaped gear and both ends of the internal teeth of said ring shaped gear.

4,519,262

POSITIVE ENGAGEMENT SAFETY MECHANISM AND LIFT BELT CONSTRUCTION FOR LONG STROKE, WELL PUMPING UNIT

Tam D. Le, and Weems D. Turner, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Houston, Tex.

Filed Apr. 29, 1983, Ser. No. 489,728
Int. Cl.³ B66B *5/26*
U.S. Cl. 74—89.2 **7 Claims**



1. A long stroke, well pumping unit for a well pump including a conventional polish rod, rod string and sucker rod comprising: a base platform and a tower mounted on the base platform; rotatable drum means on the base platform and power means for rotating the drum means; a flexible lift belt attached at one end to the drum means and at its other end to the upper end of the polish rod of a well pump; a freely rotatable spool atop the tower over which the lift belt is trained; a counterweight carried by the lift belt; means for reversing the power means thereby to provide reciprocating movement to the lift belt and thus the polish rod, and positive engagement safety means for arresting and locking the counterweight against free fall in the event of failure by fracture of the lift belt, polish rod, rod string or sucker rod comprising: a cross bar securely fastened to the upper end of that portion of the lift belt beneath the counterweight; guide means dependent from the counterweight and arranged to receive said cross bar and permit only limited movement thereof longitudinally in the plane of the lift belt; means mounted within said guide means for exerting a predetermined counter force on said cross bar in opposition to tension on said lower portion of the lift belt; a pair of racks mounted within the tower one on either side in the plane of the lift belt; latch means mounted to said guide means adjacent to each of said racks in opposing relationship for movement into and out of engagement therewith; means

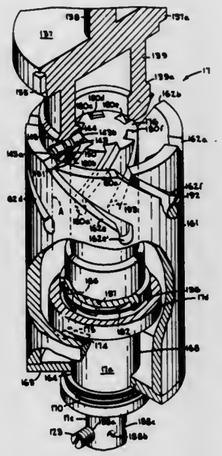
arranged in said guide means and responsive to movement of the cross bar longitudinally in the plane of the lift belt to move said latch means out of engagement with said racks when tension on the lift belt overcomes the predetermined counter force and for moving said latch means into engagement with said racks when tension on said lower porton of the lift belt is reduced below the level of the predetermined counter force, the predetermined counter force being selected so as to permit disengagement of the latch means from the racks under belt tensions corresponding to the normal operating loads of the pumping unit; whereupon failure by fracture of one of the well components or that portion of the lift belt between the polish rod and the spool, reduces belt tension below the level of the counter force in that portion of the lift belt beneath the counterweight thereby to allow said counter force exerting means to displace the cross bar longitudinally in the plane of the lift belt and cause said latch engagement means to move said latch means into engagement with said racks, thus to arrest and lock the counterweight against free fall.

4,519,263

MATRIX SWITCHING CONTROL OF SUBSEA PRODUCTION SYSTEMS

Lionel J. Milberger, Spring, Tex., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 271,728, Jun. 8, 1981, abandoned, which is a division of Ser. No. 101,993, Dec. 7, 1979, Pat. No. 4,356,841.
This application Sep. 13, 1982, Ser. No. 417,244
Int. Cl.³ F16H *27/02, 31/00*
U.S. Cl. 74—128 **6 Claims**



1. A bidirectional rotary actuator for providing successive increments of rotary motion of a shaft in a first direction and for reversing the direction of rotation and providing successive increments of rotary motion of the shaft in a second direction, said actuator comprising:

a pair of concentric cam members, each of said cam members having a plurality of cam slots therein;

means for coupling each of said cam members to said shaft;

a plunger;

means for mounting said plunger for axial movement relative to said shaft and for preventing rotary movement of said plunger;

a cam follower having first and second cam surfaces;

means for mounting said cam follower on said plunger and for arranging said cam slots in a first cam member to produce one increment of rotation of said shaft in a first direction when said first cam surface cooperates with cam slots in said first cam member as said plunger is moved in a first axial direction a distance greater than the length of one of said cam slots in said first cam member;

means for arranging said cam slots in a second cam member to produce one increment of rotation of said shaft in a second direction when said second cam surface cooperates with cam slots in said second cam member as said plunger is moved in a first axial direction a distance greater than the length of one of said cam slots in said second cam member;

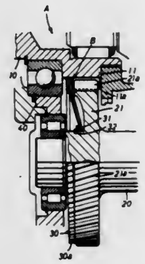
means for preventing rotation of said shaft when said plunger is moved in a second axial direction.

4,519,264

GEAR ASSEMBLY FOR ELIMINATING KNOCKING NOISES IN TRANSMISSION

Masaki Inui, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 28, 1982, Ser. No. 453,840
Int. Cl.³ F16H *55/18*
U.S. Cl. 74—409 **5 Claims**



1. A gear assembly including a pair of driving and driven helical gears permanently in meshing engagement with each other to provide a torque transmission therebetween, and an additional plate-like gear formed at its outer periphery with helical teeth the helix angle of which is different from each helix angle of respective teeth of said driving and driven helical gears and being resiliently deformable in an axial direction, said additional plate-like gear being concentrically rotatable on a hub portion of either one of said driving and driven helical gears and being successively meshed at the two teeth thereof with one tooth of the other gear in such a manner that said additional plate-like gear is resiliently in contact with one end face of said helical gear adjacent thereto at its radially opposed portion.

4,519,265

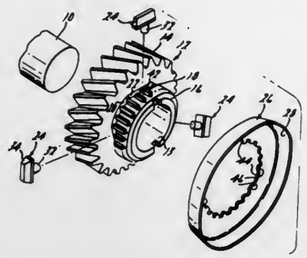
DAMPENING SHOES FOR SYNCHRONIZER GEARS

Courtney F. Dolan, Syracuse, and Stewart J. Woodcock, Fayetteville, both of N.Y., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 7, 1983, Ser. No. 511,604
Int. Cl.³ F16H *55/14*
U.S. Cl. 74—443 **4 Claims**

1. An anti-rattle arrangement for dampening oscillatory vibrations in a power transmission synchronizer mechanism having an input shaft provided with a journal surface, an input main gear having a through bore bearing surface received on said journal surface, said main gear including a reduced diameter shoulder portion formed with axially extending external jaw teeth, and a stop ring having a central opening therein formed with internal teeth adapted for slidable engagement with said shoulder jaw teeth, said anti-rattle arrangement comprising a plurality of chordal surfaces formed on said shoulder portion, a radial bore in each said chordal surface, said radial bore having its axis in a longitudinal radial plane of said main gear principal axis and oriented equidistant from two adjacent shoulder external jaw teeth, said stop ring having a plurality of

gaps formed by certain ones of its internal teeth being omitted, each said stop ring gap having its radial axis of symmetry located in said radial plane when said synchronizer mechanism is in its neutral condition, a plurality of T-like shoes molded of elastomeric material, each said shoe including a cross-head portion and a stem portion, each said shoe stem portion received in one of said radial bores, each said cross-head underface seated flush with its associated chordal surface, and each



said cross-head sized for snug reception in an associated stop ring gap upon said stop ring being axially seated on said reduced diameter shoulder and its internal teeth in meshing engagement with said external jaw teeth, such that said shoes maintain said stop ring gear internal teeth in spaced relation with said external jaw teeth, so as to obviate rattle between said main gear and said stop ring gear during no-load conditions of said synchronizer mechanism.

4,519,266

GEAR SELECTOR UNIT FOR A TRANSMISSION

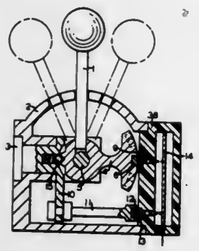
Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,079

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138827

Int. Cl.³ G05G *9/00;* **B60K** *20/00;* **H01H** *9/06, 9/00*

U.S. Cl. 74—471 XY **4 Claims**



1. A gear selector unit for manual selection of the gears in a transmission comprising:

(a) a housing;

(b) a plurality of magnetic sensors installed in said housing;

(c) a gear shift lever pivotally connected to said housing by gimbals, so as to rotate about a first axis for selection of the shift path and about a second axis for selection of the desired gear, said gear shift lever comprising:

(i) a first arm having an arcuate end on which at least one magnet is mounted in magnetic proximity with at least one of said plurality of magnetic sensors to provide an indication of the shift path in which said gear shift lever is positioned by rotation about said first axis; and

(ii) a second arm having at least one magnet mounted thereon in magnetic proximity with at least one of said plurality of magnetic sensors to provide an indication of the desired gear in the selected shift path by rotation of said gear shift lever about said second axis, thereby providing a signal corresponding to the desired transmission gear according to the gear shift lever position without physical engagement between said magnets and sensors.

4,519,267

AUTOMOTIVE MANUAL TRANSMISSION

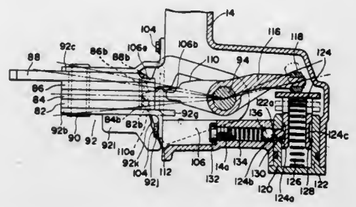
Kotei Takahashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Feb. 19, 1982, Ser. No. 350,388

Claims priority, application Japan, Feb. 20, 1981, 56-22885

Int. Cl.³ B60K *20/00*

U.S. Cl. 74—473 R **10 Claims**



1. In an automotive manual transmission including a control rod, for establishing a speed change of the transmission, the control rod being rotatable about and slidable along a longitudinal axis thereof to achieve selecting and shifting operation, an arrangement which comprises:

an arm secured to said control rod to be movable therewith;

a hollow holder secured to the transmission housing with and open end of the holder having at a side wall section thereof a through hole;

a piston axially movably received in said holder and having at a side section thereof a recess mating with said through hole of said holder when said piston assumes a predetermined position, said piston being contactable with a leading end of said arm when said arm rotates with the control rod about said axis through a predetermined angle in a direction toward said piston;

first biasing means for biasing said piston toward the leading end of said arm so that upon contact of said piston with said leading end, said arm and thereby said control rod are biased to rotate in a direction away from the piston;

a detent member slidably received in said through hole of said holder with a portion of the detent member projecting into said recess of the piston;

second biasing means for biasing said detent member toward the bottom of said recess, said second biasing means being received in a hole formed within the transmission housing; and

wherein said transmission housing is formed with a through hole into which said hollow holder is inserted from outside the transmission housing and secured thereto for positioning within the housing.

4,519,268

GEAR SHIFT APPARATUS FOR MANUAL TRANSMISSION

Masatoshi Oda, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 7, 1983, Ser. No. 472,751

Claims priority, application Japan, Mar. 9, 1982, 57-35835

Int. Cl.³ G05G *9/12*

U.S. Cl. 74—473 P **12 Claims**

1. A gear shift apparatus for a manual transmission, comprising:

a retainer member securely connected to an extension housing connected to a transmission housing and formed with a hollow cylindrical section a part of which extends into said extension housing, said cylindrical section being

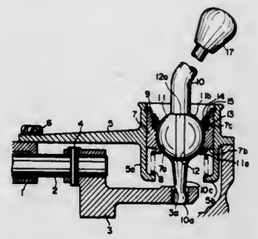
formed at its inner peripheral surface with straight grooves;

a cylindrical socket member slidably disposed in said cylindrical section and having a spherical surface;

a first spring interposed between one end portion of said cylindrical section and said socket member to bias said socket member in a direction;

a first stop member securely disposed at the other end portion of said cylindrical section to restrict the movement of said socket member in said direction;

a spherical projection formed at its pivotally supported section of a shift lever and formed with straight grooves, the outer spherical surface of said spherical projection



being in slidable contact with the spherical surface of said socket member, said spherical projection being mechanically connected to a transmission mechanism of the transmission;

an annular support member disposed on the inner surface of said socket member and formed with a spherical surface in slidable contact with the spherical projection outer surface; and

pins passing through the wall section of said socket member and each of which has a first end in engagement with said spherical projection straight grooves, and a second end in engagement with one of said cylindrical section vertical grooves.

4,519,269

TRANSMISSION SYSTEM IN A CAM MECHANISM

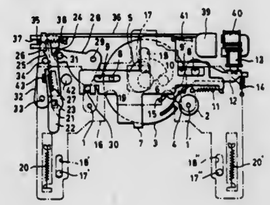
Yukio Itoh; Kazuki Takai, and Satoshi Takagi, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,909

Claims priority, application Japan, Jun. 19, 1981, 56-94838; Jun. 23, 1981, 56-95937

Int. Cl.³ G11B *5/54, 21/22*

U.S. Cl. 74—483 R **4 Claims**



1. A power transmission system, comprising:

a rotatable power member;

a rotatable engage member defining with said power member an intermittent power transmission device so that rotation of said power member imparts intermittent rotation to said engage member, said engage member having a rest period in which it does not rotate during each revolution of said power member;

a rotatable cam member coupled to said engage member for simultaneous rotation therewith;

a changeover member and means mounting said changeover member for shifting movement in response to rotation of said cam member between a first position and a second position;

select means for selectively releasably holding said changeover member in said first position or releasing said changeover member so that said changeover member is free to shift to said second position in response to rotation of said cam member;

an operating member and means mounting said operating member for shifting movement between third and fourth positions;

a movable control member operatively connected between and coupled to said changeover member and said operating member for causing said operating member to shift between said third and fourth positions in sequence with and in response to movement of said changeover member between said first and second positions;

a movable lock member releasably lockingly engageable with said control member to releasably lock same against movement when said operating member is in said fourth position whereby to hold said operating member in said fourth position; and

release means for releasing said control member from locking engagement with said lock member whereby to permit said operating member to be shifted to said third position.

4,519,270

FOOT-OPERATED CONTROL DEVICE FOR PARKING BRAKE

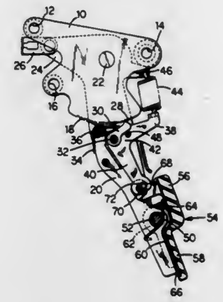
Hiroshi Kawaguchi, Mishima, and Shuho Nishina, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 10, 1982, Ser. No. 440,610

Claims priority, application Japan, Nov. 16, 1981, 56-170444[U]; Nov. 18, 1981, 56-171704[U]

Int. Cl.³ G05G *5/06*

U.S. Cl. 74—535 **15 Claims**



1. A foot-operated device for controlling a parking brake of a vehicle, comprising:

a sector fixed to a frame of the vehicle and having ratchet teeth formed along a circular arc;

a parking brake pedal connected to said sector pivotally about a center of said circular arc;

a pawl member pivotally connected to said brake pedal and having at one end thereof a pawl engageable with said ratchet teeth;

a lever pivotally connected to said brake pedal and having engaging means engageable with one side surface of said pawl member to pivot same in a first direction that causes said pawl to engage said ratchet teeth, said lever being pivotable in a second direction opposite to said first direction without engagement of said engaging means with said pawl member;

a first spring member associated with said lever and biasing the lever in said first direction, a biasing force of said first

spring member being transmitted to said pawl member through said engaging means of said lever to bias the pawl member in said first direction;

a pedal pad pivotally connected to said brake pedal and foot-operated to pivot said brake pedal in one direction toward its operated position for applying a parking brake, said pedal pad being engageable with said lever and pivoting same in said second direction against the biasing force of said first spring member when said pedal pad is pivoted in another direction opposite to said one direction; and

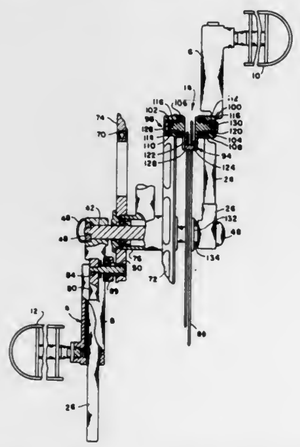
a second spring member directly biasing said pawl member in said second direction so as to cause said pawl to disengage from said ratchet teeth, a biasing force of said second spring member being smaller than an engagement force existing between said pawl member and said ratchet teeth in engagement with said pawl member.

4,519,271

PEDAL TELESCOPING DEVICE

Jesse Chattin, 7201 S. 49th Ave., Tampa, Fla. 33619

Filed Apr. 9, 1982, Ser. No. 367,029
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—594.3 **6 Claims**



1. An apparatus for telescoping a pedal of a pedal assembly between a retracted and extended position, said apparatus comprising:

a spindle housing having an axle shaft rotatable disposed therein;

a cam plate mounted on said axle shaft such that said cam plate is stationary relative said to housing;

a cam ring radially spaced from said cam plate by a ring bearing disposed circumferentially between said cam plate and said ring bearing;

a pedal arm attached to said shaft;

a pedal guide slidably mounted on said pedal arm, the pedal being attached to said pedal guide;

a first lead bolt assembly attached to said pedal guide for interconnecting said pedal guide to said cam ring;

a chain sprocket attached to said axle shaft to rotate with said axle shaft, said chain sprocket being disposed between said pedal arm and said cam ring;

said first lead bolt assembly further including:

an inner lead bolt element rotatably secured to said cam ring;

an outer lead bolt element rotatably secured to said pedal guide; and

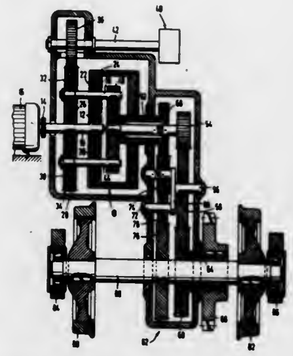
a bridge coupling extending through said chain sprocket and between said inner and outer lead bolt elements for coupling said cam ring and said pedal guide together for moving the pedal between the retracted and the extended positions.

4,519,272

TRANSMISSION HAVING A CONSTANT TORQUE RATIO OUTPUT AT A VARIABLE SPEED RATIO OUTPUT

Bruno Meier, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 22, 1982, Ser. No. 390,947
Claims priority, application Switzerland, Jul. 15, 1981, 4634/81
Int. Cl.³ F16H *3/74;* B61C *11/00*
U.S. Cl. 74—752 R **18 Claims**



1. A transmission comprising

a power division transmission having a power input shaft, a first branched transmission connected with said input shaft and a second branched transmission connected with said input shaft said branched transmissions characterized in having a constant torque ratio

a differential transmission connected with each said branched transmission and having a rotatable transmission part for rotation in response to a slip between said branched transmissions;

a braking means for selectively braking said rotatable transmission part; and

a speed control means connected solely to said rotatable transmission part for limiting the speed of said part to limit said slip between said branched transmissions, said speed control means including a speed senser for sensing the speed of said transmission part and emitting a signal in response thereto, and a control facility connected between and to said senser and said braking means for receiving said signal and selectively actuating said braking means in response to said signal.

4,519,273

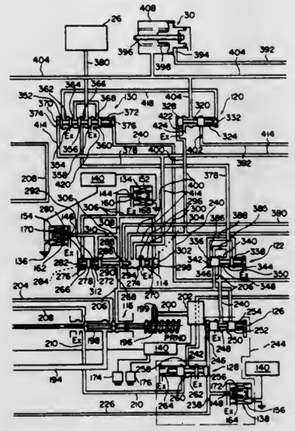
AUTOMATIC TRANSMISSION FOR VEHICLES

Takeo Shimizu; Takeo Hiramatsu; Bonnosuke Takamiya, and Hiroshi Fukuchi, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1982, Ser. No. 432,875
Claims priority, application Japan, Oct. 6, 1981, 56-159058
Int. Cl.³ F16H *3/74;* G05G *11/00;* B60K *41/08*
U.S. Cl. 74—752 A **15 Claims**

15. An automatic transmission for a vehicle, comprising; forward switch means by which a driver instructs forward driving, reverse switch means by which a driver instructs reverse driving, vehicle sensor means for detecting a stopped state of the vehicle, electronic control means for transmitting an output signal for selectively instructing a forward driving condition, a reverse driving condition or a neutral condition according to input signals from said switch means and said vehicle sensor, and actuator means for selectively attaining one

of said driving conditions in response to said output signal from said electronic control device, in a manner such that when a operational state of one of said forward and reverse switch means and a signal indicating the stopped state of said vehicle from said vehicle sensor are detected by said electronic control means, said forward or reverse driving condition corresponding to said switch means in the operational state is attained by said actuator means, whereas a non-operational state of both said switches is detected by said electronic control means, said actuator means attains said neutral condition, and further including key switch detection means, engine speed detection means, seat switch means and a driving condition changeover valve, said electronic control means operating said condition changeover valve so as to assume a neutral position upon the detection by the former of the non-operational states of both said forward and reverse switch means, and to assume a park or transmission lock position upon detection of said stopped state and an OFF position of said key switch, said forward and reverse switch means being placed in said non-operational state condition upon detection of a substantially zero output of said engine speed detection means.



4,519,274

AUTOMATIC SPEED RANGE CHANGE-OVER SYSTEM FOR A HYDRO-MECHANICAL TRANSMISSION

Ryoichi Maruyama; Takayoshi Nishijima; Hideaki Aida, all of Yokohama; Hideyuki Konishi, Kamakura, and Keiji Hatayama, Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,663
Claims priority, application Japan, Feb. 17, 1982, 57-22820
Int. Cl.³ B60K *41/18;* F16H *47/04*
U.S. Cl. 74—866 **3 Claims**

1. An automatic speed range change-over system for a hydro-mechanical transmission of a vehicle including an engine, mechanical transmission means connected to the engine and having a plurality of speed range change-over clutches each having clutch elements to be engaged, a pair of hydraulic pumps driven by the engine, and a pair of hydraulic motors each driven by the respective hydraulic pumps and operatively connected to the mechanical transmission, said speed range change-over system comprising:

engine speed detector means for detecting actual engine speed and generating a first signal;

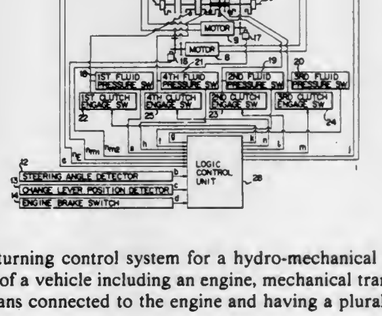
motor speed detector means for detecting the speed of the hydraulic motors and generating a second signal;

means for selectively detecting one of the speed range change-over clutches currently engaged and generating a third signal;

arithmetic unit means for calculating relative number of revolutions between the clutch elements of an other clutch adjacent to the one clutch currently engaged based upon the first, second and third signals fed therein and generating a fourth signal indicating the relative number of revolutions between the clutch elements of said other clutch;

comparator means for comparing the relative number of revolutions with a predetermined value stored therein and generating a fifth signal if the relative number of revolutions becomes less than the predetermined value;

means for generating speed range change-over signal based upon the fifth signal;



fluid supplying means for supplying fluid to the speed range change-over clutches; and

switch means responsive to the speed range change-over signal for directing fluid from said fluid supplying means to said other clutch to be engaged;

upon engagement of said other clutch said means for selectively detecting one of the speed range change-over clutch currently engaged being adapted to send out a sixth signal to said means for generating speed range change-over signal thereby disengaging the one clutch currently engaged.

4,519,275

TURNING CONTROL SYSTEM FOR A HYDRO-MECHANICAL TRANSMISSION

Ryoichi Maruyama; Takayoshi Nishijima; Hideaki Aida, all of Yokohama; Hideyuki Konishi, Kamakura, and Keiji Hatayama, Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,665
Claims priority, application Japan, Feb. 17, 1982, 57-22821
Int. Cl.³ B60K *41/18;* F16H *47/04*
U.S. Cl. 74—866 **3 Claims**

1. A turning control system for a hydro-mechanical transmission of a vehicle including an engine, mechanical transmission means connected to the engine and having a plurality of

speed range change-over clutches, a pair of output shafts connected to the mechanical transmission means, a pair of hydraulic pumps driven by the engine, a pair of hydraulic motors each driven by the respective hydraulic pumps and operatively connected to the mechanical transmission, and a change lever for changing forward and reverse running of the vehicle, said turning control system comprising:

engine speed detector means for detecting an actual engine speed and generating a first signal;

first motor speed detector means for detecting the speed of one of the hydraulic motors and generating a second signal;

second motor speed detector means for detecting the speed of the other hydraulic motor and generating a third signal;

means for selectively detecting one of the speed range change-over clutches currently engaged and generating a fourth signal;

first arithmetic unit means for calculating vehicle speed based upon the first, second, third and fourth signals fed therein and generating a fifth signal indicating the vehicle speed;

steering angle detector means for detecting steering angle and generating a sixth signal;

second arithmetic unit means including memory means for memorizing optimum radii of turning corresponding to steering angles, said second arithmetic unit means being adapted to compare current radius of turning with the optimum radius of turning corresponding to the current steering angle and vehicle speed and send out a seventh signal;

change lever position detector means for detecting change lever positions among neutral, forward and reverse positions and generating an eighth signal;

third arithmetic unit means for feeding the seventh and eighth signal and generating a ninth signal;

a pair of actuators for controlling displacement volume of the associated hydraulic pumps; and

a pair of adder means each connected with said third arithmetic unit means and respective actuators, each of said adder means being adapted to feed said ninth signal and send out a tenth or eleventh signal to said respective actuators, said tenth and eleventh signals being such signals which will gradually approximate said seventh signal to zero.

4,519,276

POWER DRIVEN BOTTLE OPENER

David L. Grabarski, and Harvey A. Williams, both of 247 Walnut Ave., Bellmawr, N.J. 08031

Filed Dec. 21, 1983, Ser. No. 563,777
Int. Cl.³ B67B *7/18*
U.S. Cl. 81—3.2 **7 Claims**

1. A power driven bottle opener comprising:

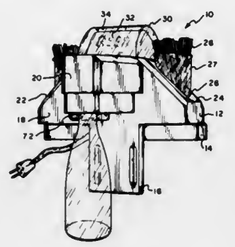
a housing and means for supporting said housing on a support surface;

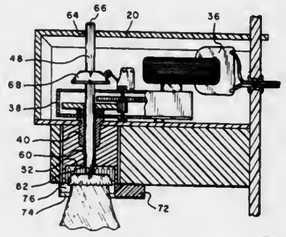
electric motor means within said housing and including switch means for starting and stopping said motor means;

an inverted cup-shaped bottle cap removing head including a top wall and a substantially cylindrical side wall, said side wall including a plurality of axially extending ribs thereon for engaging the screw top cap of a bottle;

means for mounting said head and for interconnecting the same with said motor means so that said head can be rotated by said motor means, said mounting means preventing axial movement of said head;

a cap ejection pin extending vertically within said housing, said pin being substantially coaxial with said head and being mounted for limited axial movement between a lower position wherein the lower end of said pin is within said head and below the top wall thereof and an upper position wherein the upper end of said pin is accessible from the top of said housing so that said pin can be manually pushed down when necessary to eject a removed bottle cap which may become lodged within said head.



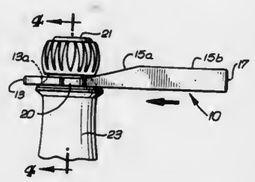


4,519,277

CHAMPAGNE BOTTLE OPENER

Clifford G. Raab, 3977 Aladdin Dr., Huntington Beach, Calif. 92649

Filed Sep. 4, 1984, Ser. No. 647,357
Int. Cl.³ B67B *7/06*
U.S. Cl. 81—3.55 **12 Claims**



1. A device for removing sparkling wine bottle caps of the type having a head portion and an integral stem, press-fitted into a bottle having a flange adjacent its top end, comprising:

a one-piece elongated, nominally flat member of rigid material forming a frame about a "keyhole" opening through the flat projection of said member, said keyhole opening having a generally circular portion adjacent a first end of said member and a slot portion extending from said circular portion toward a second end of said member, said circular opening portion having a diameter greater than that of said cap and said slot portion having a lateral dimension within said frame less than the diameter of said head portion of said cap;

a butt portion extending beyond said slot portion to said second end;

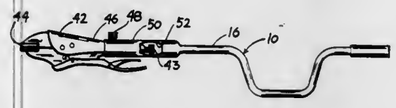
and ramps sloped upward toward said butt portion and being formed in said frame laterally bounding said slot portion to apply a lifting force to said cap with respect to said bottle flange in response to a compression force applied in the direction from said second end to said first end.

4,519,278

BRACE EXTENSION FOR LOCKING PLIERS

Carl R. Heldt, 320 S. Country Club, Tucson, Ariz. 85716

Filed May 16, 1983, Ser. No. 495,103
Int. Cl.³ B25B *7/00;* **B25G** *1/00*
U.S. Cl. 81—427.5 **2 Claims**



1. An improvement to a pair of locking pliers of the type having two jaws and a jaw throat adapted to hold a workpiece therebetween, an elongated handle having a longitudinal axis, the jaws and the jaw throat aligned in the longitudinal axis of the pliers' handle, and a jaw adjusting screw at one end of the handle for adjustment thereof, the improvement comprising:

an elongated cylindrical collar with one closed end, said collar adapted to surround a portion of the pliers' handle, said collar including a key attached interiorly to said cylindrical collar adapted to engage a channel formed in the pliers' handle, and a set screw threaded through said elongated cylindrical collar, both said set screw and said key adapted to forcibly engage the pliers' handle to hold said collar thereon, said collar further including at least two oppositely located openings in the sides of said cylindrical collar allowing entrance to the jaw adjusting screw at the end of the pliers' handle for adjustment thereof; and

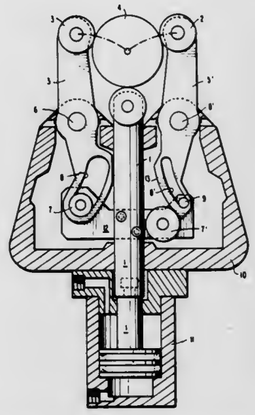
an elongated brace consisting of a rotatable handle portion, a shank portion, and an off-set handle portion connecting the shank portion to the rotatable handle portion, said brace rotatable handle portion and shank portion rotatable about an axis, said brace shank portion adapted to be attached to said collar whereby said elongated brace rotational axis aligns with the workpiece held in the pliers' jaw so when the pliers are desired to be put into use for extraction or rotating a workpiece held in the pliers' jaws, an operator may extract or rotate the workpiece by operation of the elongated brace.

4,519,279

SELFCENTERING WORK-REST

Stefano Ruggeri, 8, Via Portazza, I 40139, Bologna, Italy

Filed Aug. 18, 1982, Ser. No. 409,214
Claims priority, application Italy, Sep. 16, 1981, 3530 A/81
Int. Cl.³ B23B *25/00*
U.S. Cl. 82—38 R **2 Claims**



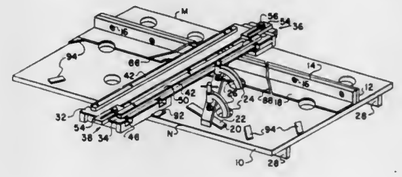
1. A self-centering work support comprising a support body, a push rod slidably mounted in said body, and having workpiece support means on one end thereof, power means for reciprocating said pushrod in said support body, a pair of two arm levers, means for pivotally and detachably mounting said levers on said body on opposite sides of said push rod with workpiece support means provided on one arm of each lever and a curved cam slot in the other arm of each lever, a cross arm, means for detachably mounting said cross arm on said push rod and a pair of rollers, means rotatably mounting said rollers on said crossarm with each roller disposed within a respective slot so that upon reciprocating movement of said push rod said arms will be pivoted to bring said workpiece support means into and out of engagement with a workpiece.

4,519,280

MITER BOARD AND SAW GUIDE

Carl E. Cook, 2120 Canyon Dr., Amarillo, Tex. 79109

Filed Jul. 29, 1983, Ser. No. 518,649
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—34 **11 Claims**



1. The method of making a cut at a desired angle in workpieces having

a. a side and

b. a corner at an end of the side; using

c. a power saw having

d. a circular saw blade extending through

e. a saw base; and

f. a device having

g. a base having a top surface with a substantially planar work area,

h. a saw guide pivoted to the top surface for movement about a pivot axis that is normal to the work area; and

i. the saw guide being adapted to support the saw base above the work area; and

j. the saw being slidably mounted on the saw guide with the saw blade in position to cut along a saw line through a workpiece positioned on the work area as the saw is moved along the saw guide:

wherein the improved process comprises the steps of:

k. positioning the saw guide at a preset location on the top surface with the saw line extending through a slot in a backup on the top surface,

l. selecting an angle mark corresponding to the desired angle from a plurality of preset angle marks on the top surface,

m. positioning the workpiece on the work area with the corner in the slot,

n. aligning the workpiece side with the selected angle mark so that the workpiece side is at the desired angle to the saw line; then

o. spinning the saw blade,

p. sliding the saw base on the saw guide, and

q. spinning the saw blade through the workpiece and into the slot in the backup,

r. unpivoting the saw guide from the base,

s. turning the base over,

t. repivoting the saw guide to a bottom surface of the base,

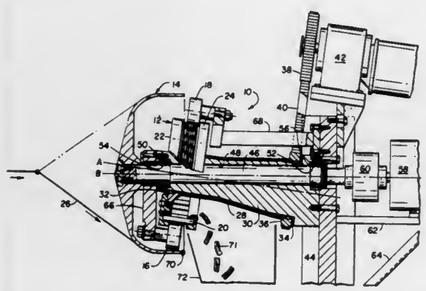
u. placing the workpiece on a substantially planar work area on the bottom surface,

v. aligning the workpiece side with a straight reference line on the bottom surface,

w. pivoting the saw guide about a bottom pivot axis until the saw line is aligned at the desired angle to the reference line; then

x. spinning the saw blade,
y. sliding the saw base on the saw guide, and
z. spinning the saw blade through the workpiece.

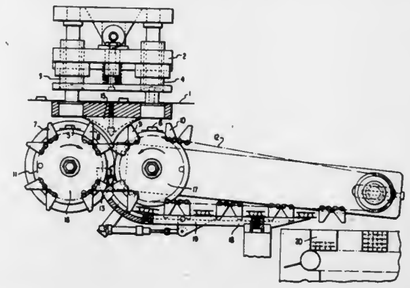
4,519,281
PACKAGE WIND CUTTER
Albert E. Spaller, Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 7, 1983, Ser. No. 472,509
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—37 **11 Claims**



1. Apparatus for cutting a strand into predetermined lengths, said apparatus characterized by:
(a) a cutting head mounted for rotation around its axis at a predetermined speed, said cutting head having a plurality of cutting blades mounted and arranged to form a cutting zone of predetermined width and predetermined peripheral length to receive and store in cutting position multiple windings of strand for subsequent cutting into said predetermined lengths;
(b) strand winding means mounted to rotate around an axis intercepting said axis of the cutting head in such manner that said strand winding means traverses back and forth along a predetermined width of said cutting zone during each revolution of the strand winding means, said strand winding means rotating at a significantly faster speed than said cutting head and the relative rotations of said strand winding means and said cutting head cooperating to position multiple crossing windings of said strand in said cutting position for said subsequent cutting; and
(c) means for applying pressure at predetermined locations against said windings and toward the cutting edges of said blades to cut said strand into said predetermined lengths.

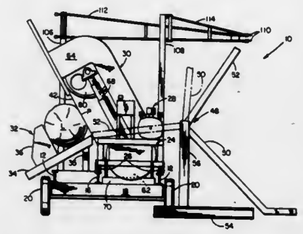
4,519,282
METHOD FOR BOXING BUBBLE STRIPS
Leo Masino, Karlsruhe, Fed. Rep. of Germany, assignor to E. Th. Noack Verpackungsmaschinen, Karlsruhe, Fed. Rep. of Germany
Filed Jun. 2, 1982, Ser. No. 384,382
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122271
Int. Cl.³ B26D *7/32*
U.S. Cl. 83—85 **2 Claims**

1. A machine for cutting a band containing individually packaged products into identical bubble strips each containing a plurality of the individually packaged products disposed at regular intervals along the strip and protruding transversely from one side of the strip, and for assembling such strips, said machine comprising: two cutting units disposed for simultaneously cutting two such bubble strips from the band; and a transporting device for moving said cut strips with a timed advance and disposed for receiving the two simultaneously cut strips from said cutting units, said transporting device comprising means for orienting the two strips relative to one another such that the packaged products on each strip protrude toward the other strip and the packaged products on one strip are offset from the packaged products on the other strip, and means for pushing the two strips, after they have been so



oriented, toward one another such that the products of one strip are adjacent those of the other strip and the strips are nested together.

4,519,283
BAND SAWMILL
Dale Sanborn, South Waterford, Me. 04081
Filed Jul. 21, 1983, Ser. No. 516,057
Int. Cl.³ B27B *15/00*
U.S. Cl. 83—104 **12 Claims**



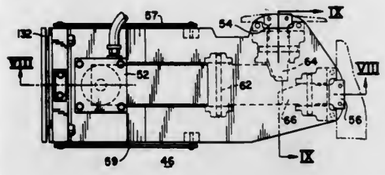
1. A sawmill for cutting planks from logs, including an elongated main frame, a portion of which comprises a cradle or bunk to support a log horizontally for cutting, a saw-supporting sub-frame mounted on said main frame for reciprocatory horizontal movement along a substantial portion of its length including the said cradle portion, an endless band saw mounted on said subframe for movement therewith and with its active cutting portion inclined at an acute angle to vertical from an apex below the cradled log whereby to define the plane of cut at said angle to vertical, and means associated with said cradle for periodically moving the log toward the cuting plane at substantially a right angle thereto, whereby during cutting travel of the saw with the sub-frame, a plank of determined thickness is cut from the cradled log.

4,519,284
UNIVERSAL SHEET METAL HOLDER
James R. Hunter, Chadds Ford, and S. James Lazzarotti, Broomall, both of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio
Filed Jul. 26, 1982, Ser. No. 401,446
Int. Cl.³ B26D *5/20, 7/06;* B25B *1/04*
U.S. Cl. 83—410 **18 Claims**

6. Positioning apparatus for positioning a worksheet comprising:
a worktable for supporting the worksheet;
a carriage extending above and across said worktable permitting full access to sid worktable beneath said carriage and being movable along said worktable;

a cross slide supported from and movable across said carriage;
a pair of sheet metal grippers extending from and supported by said cross slide and movable along said cross slide; and,
each of said pair of grippers constructed to grip a side of the worksheet, extending perpendicular to and beneath said carriage, and alternately to grip an end of the worksheet, extending parallel to said carriage across the front of said pair of grippers.

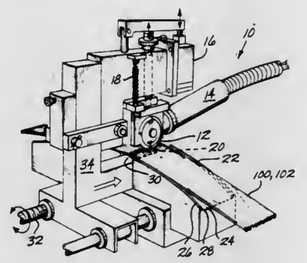
7. Positioning apparatus as claimed in claim 6 wherein said gripper comprises:



a first pair of gripping jaws extending from the end of each gripper for gripping the end of the worksheet extending parallel to the carriage; and,
a second pair of gripping jaws extending from the side of each gripper for gripping the side of the worksheet which extends perpendicular to the carriage.

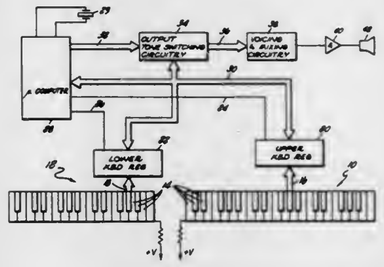
8. Positioning apparatus as claimed in claim 6 comprising:
a pair of workpiece gripping jaws extending at an angle from the end of each said gripper for gripping a worksheet along a gripping line which extends transverse to said carriage.

4,519,285
CUTTING METHOD AND APPARATUS FOR TAPE LAYING MACHINES
Helmut Dontscheff, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jun. 30, 1983, Ser. No. 509,665
Int. Cl.³ B26D *3/08*
U.S. Cl. 83—880 **7 Claims**



1. An improved tape laying machine of the type in which a tape to be laid is transported by a continuous strip of backing material and which has cutting means for making lateral cuts through the tape of essentially constant depth, wherein the improvement comprises:
a guide surface along which the tape and backing material move into position for the tape to be cut by the cutting means; said guide surface including two longitudinally spaced longitudinal sections, each of which has an essentially flat center portion and opposite side portions that are inclined toward the cutting means relative to the flat center portion; and
a support surface positioned longitudinally between said longitudinal sections and facing the cutting means for supporting the tape and backing material when the tape is being cut;
wherein said side portions guide the lateral edge portions of the tape and backing material, along the guide surface and across the support surface, to bend toward the cutting means and away from the support surface when a lateral cut is being made, to allow a cut of essentially constant depth to completely sever the tape, including any fibers that may have come loose from the edges of the backing material, without severing the backing material; and
wherein said flat center portions are sufficiently wide to provide an uncut center portion of the backing material that is sufficiently wide to prevent any nicks in the lateral edge portions of the backing material from impairing the transport of the tape by the backing material.

4,519,286
METHOD AND APPARATUS FOR ANIMATED HARMONIZATION
Robert J. Hall, Chatsworth; George R. Hall, Sherman Oaks, and Jack C. Cookerly, Saugus, all of Calif., assignors to Norlin Industries, Inc., Deerfield, Ill.
Continuation-in-part of Ser. No. 274,606, Jun. 17, 1981,. This application Jun. 24, 1982, Ser. No. 391,764
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **5 Claims**



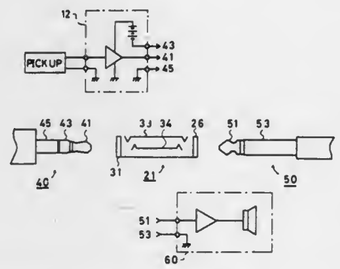
1. A method for deriving, in response to a melody note signal and a chord signal, a plurality of signals representing a corresponding plurality of accompaniment notes harmonically related to said melody note and to said chord and temporally related to effect a predetermined musical style, said method comprising the steps of:
(a) storing a plurality of groups of listings of accompaniment notes, each of said listings of a group corresponding to a chord type and providing at least one accompaniment note harmonically related to each melody note of the chromatic scale with respect to said chord type;
(b) said groups being arranged so that the listings of accompaniment notes for a particular musical chord type are related from group to group in accordance with said predetermined musical style;
(c) providing at least one preselected constant time value; then
(d) associating a time value with at least one of said groups of listings;
(e) deriving the root and type of said chord from said chord signal;
(f) deriving said melody note from said melody note signal; then
(g) selecting listings from said plurality of groups in accordance with the type of said chord; then
(h) locating in each of said listings at least one accompaniment note according to said chord root and melody note; and then
(i) sequentially generating a plurality of accompaniment note signals, each of said signals being responsive to said at least one accompaniment note of a selected listing and at least one of said signals having a duration corresponding to the constant time value associated with the group from which it is derived.

4,519,287

OUTPUT JACK FOR ELECTRIC GUITAR

Fumio Naruse, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 25, 1984, Ser. No. 573,518
Claims priority, application Japan, Feb. 10, 1983, 58-18470[U]
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **2 Claims**



1. A combined output jack and amplifier switching assembly in an electric guitar of the type having an amplifier and a battery for powering the amplifier contained within the body of the guitar, said assembly comprising:

a jack mounted in a wall of said guitar body, said jack having separate first and second plug receiving openings in respective ends thereof, said jack having an outer shield and two resilient contact electrodes interior thereof, the first ends of said contact electrodes being positioned respectively to provide electrical contact to the ring and tip terminals of a three wire plug inserted into said first opening, the other ends of said contact electrodes being positioned for electrical contact respectively with the tip and shaft of a two wire plug inserted into the second of said openings,

a three wire plug having a shaft, a ring and a tip, said plug having its tip wired to the output of said amplifier, having its ring wired to one terminal of said battery, the other terminal of said battery being connected to said amplifier, and the shaft of said plug being wired to amplifier ground, said plug being insertable into said first opening interiorly of said guitar, whereby when said two wire plug is inserted into said second opening, an electrical circuit will be completed from said battery to said amplifier via the ring terminal of said three wire plug, one of said resilient contact electrodes, the shaft of said two wire plug, the outer shield of said jack and the shaft of said three wire plug back to amplifier ground, so that removal of said second plug will disconnect the battery from said amplifier.

4,519,288

DRUM BAFFLE SYSTEM

Alan L. Aluisi, 4359 Batavia, Denver, Colo. 80220

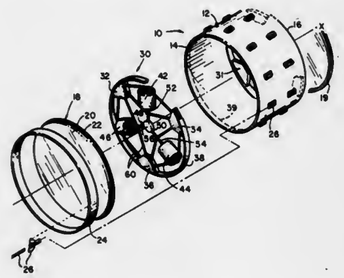
Filed Apr. 13, 1984, Ser. No. 600,327
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 M **18 Claims**

1. A baffling system for altering the sound produced by a drum of the type having a tubular drum shell with a central longitudinal drum axis and at least one batter head attached at one end of the drum shell comprising:

first baffle means for dampening vibrations in the drum batter head mounted in fixed relationship with the inner wall of the drum shell and contacting an inner peripheral surface portion of the drum batter head;

second baffle means for deepening the drum tone positioned in radially inwardly spaced relationship from the drum shell inner wall and spaced radially outwardly from the drum central longitudinal axis in contacting relationship with an inner surface of the drum batter head; and

second baffle suspension means for resiliently biasing said second baffle means against the batter head inner surface and for maintaining said second baffle means in radially fixed axially displaceable relationship relative said drum



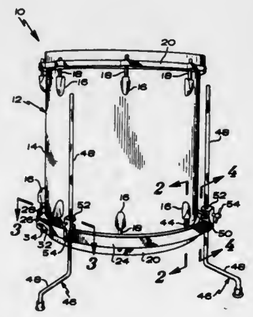
shell whereby said second baffle means makes substantially continuous contact with said drum head during vibrating and non-vibrating states of said drum head.

4,519,289

ADJUSTABLE CIRCUMFERENCE FLOOR TOM STAND

Gary L. Gauger, 15108 Highland La., Minnetonka, Minn. 55343

Filed Jan. 9, 1984, Ser. No. 569,447
Int. Cl.³ G10D *13/02*; G10G *5/00*
U.S. Cl. 84—421 **8 Claims**



1. A mounting bracket for floor toms having a cylindrical shell and a plurality of lugs, said bracket comprising:

an arcuate member having two ends and having a diameter slightly larger than said shell, said member extending substantially the full circumference of said shell;

means attached to said member for engaging at least three of said lugs;

support means attached to said member for supporting said drum over a surface; and

means attached to said member for varying the circumference thereof.

4,519,290

BRAIDED PREFORM FOR REFRACTORY ARTICLES AND METHOD OF MAKING

Frank S. Inman, Brigham City; Donald C. Giedt, Pleasant View, both of Utah, and Donald V. Lushis, Newark, Del., assignors to Thiokol Corporation, Chicago, Ill.

Filed Nov. 16, 1983, Ser. No. 552,565
Int. Cl.³ D04C *1/02, 1/06, 3/40*
U.S. Cl. 87—7 **12 Claims**

1. A braided fiber preform for an annular refractor article comprising the combination of:

a plurality of closely spaced annularly distributed carbon rods;

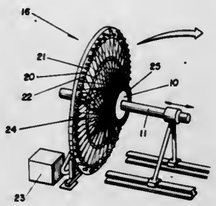
a tubular triaxial braid of carbon fiber strands braided in contact with and around said carbon rods, said braid comprising a repetition of braided unit cells each of which is formed of three strands lying in substantially the same plane, each of said carbon rods being oriented at a substantial angle to the plane of an associated one of said unit cells, and

a mandrel of high-temperature resistant material, said mandrel having an external contour that is approximately the same as the internal shape desired for the refractory article;

said carbon rods being inserted in the surface of said mandrel and extending radially therefrom uniformly to an extent approximately the same as that desired for the thickness of the refractory article; and

said mandrel providing a supporting structure for said braided fiber preform during the braiding thereof.

8. A method of making a braided preform for a refractory article comprising the steps of:



partially inserting a plurality of carbon rods into the exterior surface of an annular mandrel having a longitudinal axis and made of high-temperature resistant, low density material, the mandrel having an external shape that is approximately the same as that desired for the inner surface of the article, with the carbon rods being spaced on the mandrel exterior surface and extending radially therefrom to a length that is approximately the same as the desired thickness of the refractory article;

forming a braided annular fiber preform on the mandrel by braiding carbon fiber strands with a uniform tensile stress on each strand on the exterior surface of the mandrel in contact with and around the carbon rods with the strands applied in groups of three, each group having two oblique strands which are passed alternately over and under a longitudinal strand that is positioned in the plane of the axis of the mandrel, with one of the oblique strands being oblique clockwise with respect to the longitudinal strand and the other of the oblique strands being oblique counterclockwise with respect to the longitudinal strand.

4,519,291

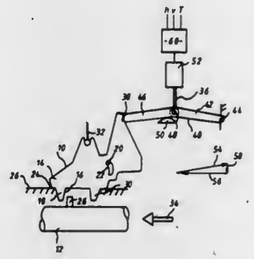
LOCKING DEVICE FOR AIR-TO-AIR GUIDED MISSILES

G. Hans J. Seeger, Überlingen; Peter Giesenberg, Salem, and Johannes Steimel, Constance, all of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 549,878
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301567
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.806 **11 Claims**

1. Locking device for air-to-air guided missiles having a solid propellant rocket motor and having means to delay release of the guided missile, characterized by

(a) means for setting a delay time for release of the guided missile relative to the firing of the rocket motor, said delay time being independent of the thrust of the rocket, and



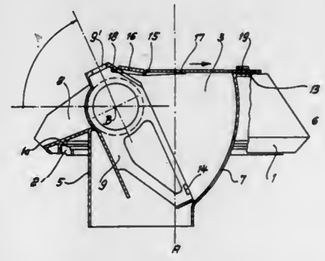
(b) a blocing device controlled by said setting means to release the guided missile after said delay time.

4,519,292

TURRET ASSEMBLY WITH ARTICULATED COVER FOR ACCESS OPENING

Gert Kausträter, Augsburg, Fed. Rep. of Germany, assignor to KUKA Wehrtechnik GmbH, Augsburg, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 398,909
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128861
Int. Cl.³ F41H *5/20*
U.S. Cl. 89—36.13 **11 Claims**



1. In a turret assembly, the combination comprising:

A. a turret having a port in its front wall for the barrel of a weapon and a top wall with an opening therein;

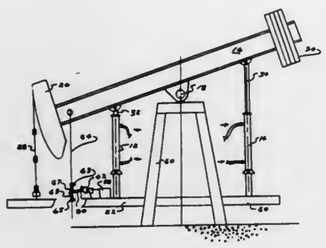
B. a weapon chamber in said turret below said opening in said top wall;

C. a weapon carrier mounted in said weapon chamber for pivotal movement below said turret opening about an axis extending transversely of said chamber and said turret, said carrier and chamber each having openings in their upper portions adjacent to and aligned below said turret opening, the front of said carrier and weapon chamber each having openings therein providing ports aligned with each other and with said port in said turret, said ports providing the functional opening for the barrel of a weapon mounted on said carrier in alignment with said turret opening; and

D. a cover for said turret opening extending rearwardly of and pivotably secured at its forward end to said weapon carrier adjacent the upper end of said port therein, said cover comprising at least two elements pivotably connected to each other, the forward one of which is pivotably secured to said weapon carrier adjacent the upper end of said port therein and the other element being spaced from said ports, said elements being freely slidably relative to said turret top wall, whereby said cover is movable with said weapon carrier during its pivotal movement and is slidable relative to said turret top wall to provide a

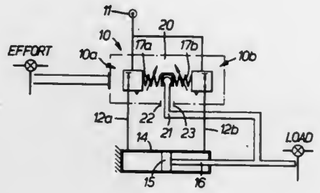
closure for said turret opening over said weapon chamber in the various pivoted positions of said weapon carrier.

4,519,293
OIL WELL JACK
Joe E. Dooling, 1101 Rio Brazos, Aztec, N. Mex. 87410
Filed Jun. 23, 1983, Ser. No. 507,286
Int. Cl.³ F01L *31/02*; F01B *1/00*
U.S. Cl. 91—178 **5 Claims**



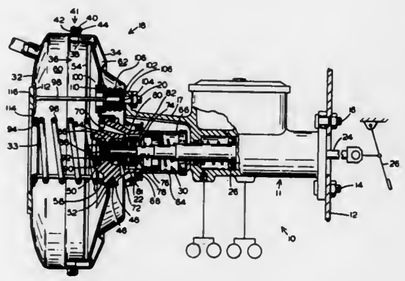
1. An oil well jack comprising in combination:
(a) A walking beam pivotally mounted on a frame for motion in a vertical plane,
(b) a plurality of hydraulic actuators connected between the frame and the walking beam, one on each respective side of the pivot point,
(c) a source of hydraulic fluid under pressure,
(d) a valve to direct the application of hydraulic pressure to the respective actuators in alternate sequence,
(e) an operating mechanism for said valve connected between said walking beam and said valve to control timed valve action comprising a housing, an arm pivtally mounted in said housing, a boss on said arm, means connecting said arm to said walking beam, means connecting said arm to said valve, over center means mounted on said housing to be engaged by said boss, resilient means normally urging said over center means against said boss, and a plurality of pins penetrating the housing and said resilient means each having a loose fit and arranged to move in a semi-circle during motion of said arm in a complete cycle.

4,519,294
POWER ASSISTANCE CONTROL DEVICE
James F. Hemens, Billericay, England, assignor to Teleflex Morse Limited, Basildon, England
Filed Sep. 15, 1983, Ser. No. 532,536
Claims priority, application United Kingdom, Sep. 16, 1982, 8226439
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—374 **10 Claims**



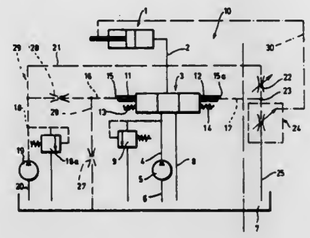
1. A power assistance device comprising:
an input, an output, power assistance means between said input and said output, said power assistance means having piston and cylinder means, whereby said piston means is caused to move in said cylinder means by creating a fluid pressure differential across said piston means, said piston means having piston rod means, whereby said piston means applies load to said output, and
regulator means operable substantially simultaneously with operation of said input, whereby fluid pressure active on said piston means of said power is assistance means is variable, and whereby the effort applied by said piston rod means to said output is proportional to the effort applied to said input, said regulator means further comprising two spring controlled fluid pressure regulators having inlets connected to a fluid pressure source and outlets connected to said cylinder means to apply opposing fluid pressures to said piston means, said piston rod means being connected to a member interposed between the springs of said two regulators, said regulator means further having a body supporting said two regulators, whereby said body is acted upon by said input such as to be caused to move when effort is applied to said input whilst said member is initially stationary when effort is applied to said input, and whereby relative movement occurs between said body and said member which causes differential loading to be applied to said springs of said two regulators in accordance with the effort applied to said input, whereby said two regulators regulate the supply fluid pressures to said cylinder means in accordance with said loadings applied to said regulator springs such that said fluid pressure differential across said piston means is proportional to the difference between said loadings of said regulator springs, and whereby movement of said piston means when subjected to said fluid pressure differential cuases movement of said member relative to said body until the loadings of said springs are such that opposing fluid forces acting on said piston means are balanced.

4,519,295
VACUUM BRAKE BOOSTERS
Keith H. Fulmer, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.
Filed Jun. 2, 1983, Ser. No. 500,517
Int. Cl.³ F15B *9/10*; B60T *13/48*; F01B *11/02*
U.S. Cl. 91—376 R **11 Claims**



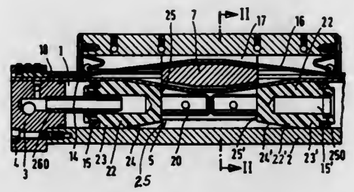
5. In a power assist apparatus having a housing formed by connecting a first shell to a second shell to define a cavity therein, said cavity being connected to a source of vacuum to suspend a movable wall located in said cavity, said housing being subjected to a closure force developed by a pressure differential created by the vacuum in said cavity and the air surrounding said housing, said housing being connected to a substantially stationary member by fastener members, the improvement wherein strut means have a first end secured to said first shell and a second end that extend through said cavity to a fixed position adjacent said second shell to oppose said closure force and thereby maintain a minimum internal space relationship between said first and second shell.

4,519,296
CONTROL-CIRCUIT THROTTLE VALVE
Heinz Schulte, Markthcidenfeld, Fed. Rep. of Germany, assignor to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany
Continuation of Ser. No. 265,661, May 20, 1981,. This application May 8, 1984, Ser. No. 608,265
Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019257
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—388 **2 Claims**



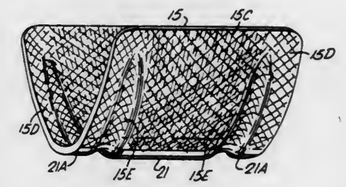
1. A control circuit throttling valve provided as a controlled dimension receiver in a hydraulic circuit for the control of a final control element, comprising:
a housing including a cylindrical bore, a run-off conduit operatively associated with said cylindrical bore and only a single control conduit having a pass through area and communicating with said cylindrical bore, said control conduit having a circular crosssection;
a single movable throttling body having the form of a piston disposed in said cylindrical bore and movable therein, said throttling body having a control surface such that movement of said throttling body controls the degree of communication between said control conduit and said run-off conduit by at least partially closing off said pass-through area through which said control conduit is in communication with said cylindrical bore;
means responsive to an operational condition of said final control element for effecting rotational movement of said single movable thottling body and for varying the magnitude of opening and closing off of said pass-through area as a linear function during rotational movement of said thottling body.

4,519,297
SEALED MOTION TRANSFER APPARATUS UTILIZING A PRESSURE FLUID CYLINDER
Reinhard Lipinski, Plochingen, Fed. Rep. of Germany, assignor to PROMA Produkt-und Marketing Gesellschaft mbH, Plochingen, Fed. Rep. of Germany
Filed Dec. 19, 1983, Ser. No. 563,028
Claims priority, application European Pat. Off., Jan. 14, 1983, 83100256.3
Int. Cl.³ F16J *1/14*; F01B *1/02*
U.S. Cl. 92—88 **20 Claims**



1. Sealed motion transfer apparatus having
a pressure cylinder (2) closed at one end and formed with a longitudinal slit (8);
a piston (5) slidable in the pressure cylinder;
a motion transfer element (6) coupled to the piston and having a portion (7) extending through the slit (8) for transferring motion of the piston externally of the cylinder;
a flexible elongated sealing element (14) sealingly positioned in the slit, in a pressurized region of the cylinder; and positioned outside of the slit in a region of the motion transfer element (6) to define an unpressurized region of the cylinder;
guide means (9) secured to the motion transfer element and at least partly surrounding the outside of the cylinder;
and guide tracks (12) formed on the outside of the cylinder and located adjacent opposite sides of the slit to receive the guide means,
wherein, in accordance with the invention,
the piston comprises
two elongated piston parts (22, 22'), each piston part including a piston-cylinder seal (15);
and wherein said piston parts (22, 22') are coupled to the motion transfer element (6) by a radially floating connection between the piston parts and permitting limited relative radial movement of the motion transfer element with respect to the piston parts.

4,519,298
MATERIAL HANDLING DEVICE
Leslie Sumner, Bath, England, assignor to Gallaher Limited, London, England
Division of Ser. No. 468,488, Feb. 22, 1983, , which is a continuation of Ser. No. 211,244, Nov. 28, 1980, abandoned. This application Apr. 11, 1984, Ser. No. 599,270
Int. Cl.³ F16J *3/00*; F04B *43/12*
U.S. Cl. 92—103 F **6 Claims**



1. A diaphragm for a diaphragm pump or motor device, having a chamber and deflector means adapted to flex the diaphragm radially, whereby the diaphragm forms a moving wall of a variable volume pumping chamber, said diaphragm comprising a premolded flexible diaphragm, opposite end edges and side edges of said diaphragm, a longitudinally extending central zone of said diaphragm, longitudinal reinforcement within said central zone rendering the diaphragm substantially longitudinally inextensible, a peripheral clamping portion of the diaphragm extending around the full periphery thereof so as to be clampable between first and second housing parts of said pump or motor device, and means defining two longitudinal corrugations in said diaphragm, one on each side of said central zone, between said central zone and said peripheral clamping portion, said corrugations allowing flexing of the diaphragm without any resultant longitudinal or transverse distortion of said central zone.

4,519,299

RECIPROCABLE PLUNGER FUEL INJECTION PUMP

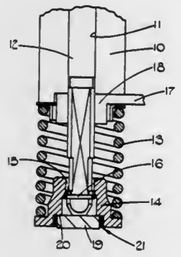
Kieron J. Moloney, Cheltenham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 8, 1983, Ser. No. 502,160

Claims priority, application United Kingdom, Jul. 8, 1982, 8219770

Int. Cl.³ F16J *1/10*

U.S. Cl. 92—129 **4 Claims**



1. A reciprocable plunger fuel injection pump comprising a body, a reciprocable plunger mounted within a bore defined in the body or a part thereof, the plunger extending from the bore, a spring abutment mounted about an outer end of the plunger, means connecting the plunger and spring abutment whereby a spring engaged with the abutment biases the plunger outwardly of the bore, a thrust member carried by the spring abutment, said thrust member in use being engaged by an engine driven actuating member, the thrust member engaging the end of the plunger to impart inward movement thereto, said thrust member being detachably mounted on the spring abutment whereby a thrust member of the desired thickness can in use be substituted, resilient means being provided to retain the thrust member relative to the abutment.

4,519,300

FILLED PISTON WITH CENTRAL OIL TUBE

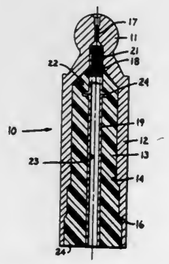
Peter P. Adomis, Jr., Dover, and Millard J. Martin, York, both of Pa., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00433, § 371 Date Apr. 5, 1982, § 102(e) Date Apr. 5, 1982, PCT Pub. No. WO83/03650, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 5, 1982, Ser. No. 624,501

Int. Cl.³ F16J *1/08*

U.S. Cl. 92—158 **4 Claims**



1. In a piston (**10**) having a base portion (**11**), a hollow open ended skirt portion (**12**), and a core (**13**) of lightweight filler material situated within the skirt portion (**12**), the improvement comprising:

a bore (**18**) formed in the base portion (**11**);

a tube (**19**) extending axially through the core (**13**) of filler material and having an inner end portion (**21**) extending into the bore (**18**) and including means for connecting said tube to the base portion (**11**);

means (**22**) for interlocking the tube (**19**) and the core (**13**) of filler material; and

said core (**13**) of filler material having an outer end surface at the open end of said skirt free from contact with all other elements of the piston.

4,519,301

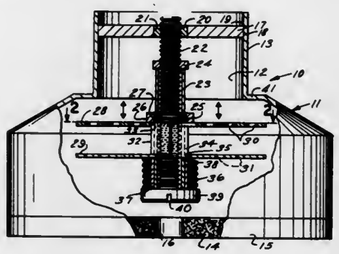
AIR FLOW BALANCING FIRE DAMPER

Lawrence E. Wetzel, 3590 Watervale Rd., Manlius, N.Y. 13104

Filed Jan. 12, 1984, Ser. No. 570,090

Int. Cl.³ E05F *15/20*

U.S. Cl. 98—1 **3 Claims**



1. For use with a filter module having an air flow duct, an air flow balancing fire damper having means for closing the duct if the temperature therein exceeds a predetermined limit, the closing means comprising a support member in the duct, an elongated rod in threaded engagement with the support member, the rod depending from the support member in substantially coaxial relation to the duct, a pair of circular plate members loosely mounted on the rod in coaxial relation thereto, the plate members having air passage openings therethrough, the openings in one of the respective plate members being out of axial alignment with those of the other plate member, spring means on the rod for biasing the plate members into duct closing position, and means normally holding the plate members in spaced relation to the duct and to one another, the last-named means including fusible means that permits the spring biasing means to move the plate members into duct closing position when the duct temperature exceeds the predetermined limit, the plate members at the same time coacting to shut off the plate member air passage openings.

4,519,302

ARRANGEMENT FOR DISTRIBUTING VENTILATION AIR IN VEHICLES

Sten E. Nilsson, Vargön, and Sven E. Elfverson, Trollhättan, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

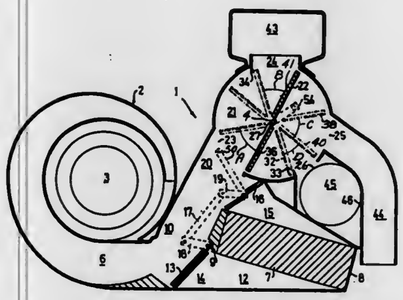
Continuation of Ser. No. 462,070, Jan. 28, 1983, abandoned, which is a continuation of Ser. No. 236,042, Feb. 20, 1981,. This application Jul. 9, 1984, Ser. No. 628,961

Claims priority, application Sweden, Feb. 27, 1980, 8001515

Int. Cl.³ B60H *1/00*

U.S. Cl. 98—2.08 **11 Claims**

1. An arrangement for distributing ventilation air in a vehicle, comprising a ventilation housing formed with a substantially cylindrical distribution chamber having an inlet located in its cylindrical surface, and a number of outlets also located in its cylindrical mantle surface, a distributing flap extending in a longitudinal direction in said distribution chamber and being pivotable supported by said ventilation housing about a centerline of said distribution chamber, wherein said inlet and each of said outlets are arranged at different angular sectors of said distribution chamber and wherein at least three of said outlets from said distribution chamber are arranged within an angular sector of 180° or less, each of said outlets from said distribution chamber being arranged, via separate ducts, to open out at given outlet locations in a passenger compartment of the vehicle.



4,519,303

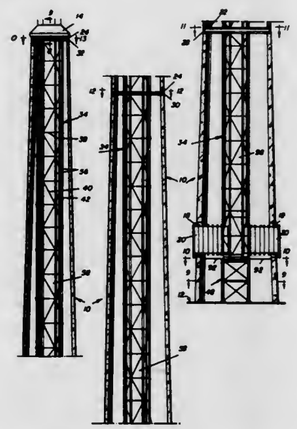
CHIMNEY LINING SYSTEM INCLUDING FRAME-SUPPORTED MEMBRANE

Randolph W. Snook, Pittsburgh, Pa., assignor to Crown Union, Inc., Pittsburgh, Pa.

Filed Mar. 24, 1983, Ser. No. 478,309

Int. Cl.³ E04H *12/28*

U.S. Cl. 98—58 **32 Claims**



1. For lining a chimney comprising a massive tubular columnar shaft, fixed upright on a foundation, a system comprising:

an upright gas-tight tubular liner made of thin, corrosion-resistant material, said liner including a plurality of axially spaced circumferential corrugations for accommodating axial expansion and contraction of the liner;

a relatively open skeletal framework that generally coaxially surrounds the liner throughout substantially the whole of the height of the liner;

generally radially extending means mechanically connecting the liner to the framework at a large plurality of axially and angularly distributed sites, these mechanically interconnecting means including means for accommodating radial expansion and contraction of said liner while preventing implosion of the liner;

said framework being arranged to be supported at least indirectly on said foundation, to extend within the chimney column, and being so open as to permit visual inspection of the liner from externally of the framework.

4,519,304

DEVICE FOR CONTROLLING AND MONITORING THE THICKNESS OF A CHOCOLATE FILM DELIVERED BY CHOCOLATE REFINERS

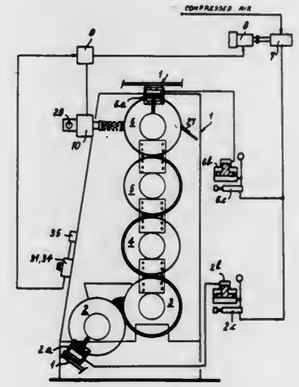
Sergio Ripani, Milan, Italy, assignor to Carle & Montanari S.p.A., Milan, Italy

Filed Jan. 26, 1984, Ser. No. 574,275

Claims priority, application Italy, Apr. 21, 1983, 20718 A/83

Int. Cl.³ B02C *25/00*

U.S. Cl. 99—489 **17 Claims**



1. A device for controlling and monitoring the thickness dimension of a chocolate film in a chocolate refiner, comprising:

detector means for detecting colorimetric signals for the film being delivered;

means for converting said colorimetric signals into digitally processable signals;

means for setting electronically processable reference signals indicative of corresponding values of rated thickness dimension for the chocolate film being delivered; and

means for processing and comparing the signals processed by the colorimetric signals and the settable reference signals, said processing and comparing means being effective to generate output signals functioning as operative signals for an adjustment circuit of the side bearings of refining rollers in said chocolate refiner to produce corresponding displacement movements of said rollers to vary the thickness of the chocolate film being delivered in accordance with the preset rated thickness.

4,519,305

VEGETABLE PEELER

Dennis L. Vanosdall, Galesburg, Ill., assignor to Hawkeye Food Machinery, Inc., Galesburg, Ill.

Filed Feb. 3, 1984, Ser. No. 576,627

Int. Cl.³ A23N *7/02*

U.S. Cl. 99—625 **6 Claims**

1. A vegetable peeler for peeling large quantities of vegetables comprising:

(a) a frame;

(b) a plurality of rollers rotatably attached to the frame in parallel relation to define a longitudinally extending, substantially horizontal, upwardly opening trough, the trough having sides, an intake end at which vegetables may be introduced into the trough, and a discharge end from which peeled vegetables may be discharged from the trough;

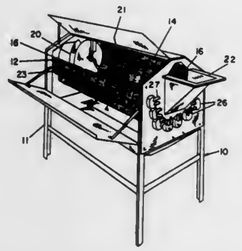
(c) roller rotating means for rotating the rollers about their longitudinal axes;

(d) a discharge auger extending longitudinally within the trough from the discharge end thereof parallel to the longitudinal axes of the rollers for a selected distance less

than the entire length of the trough, the sides of the trough extending upwardly on either side of the auger at least as high as the longitudinal axis thereof;

(e) mounting means for rotatably mounting the auger on the frame, the mounting means being adapted to leave a portion of the trough between the auger and the intake end substantially unobstructed, whereby the trough may receive an amount of vegetables placed therein for peeling, even if the amount is sufficiently large that the vegetables fill the trough at least as high as the longitudinal axis of the auger, without any interference to the free tumbling and other movement of the vegetables in the unobstructed portion of the trough; and

(f) auger rotating means for rotating the auger at a selected speed about its longitudinal axis.



4,519,306

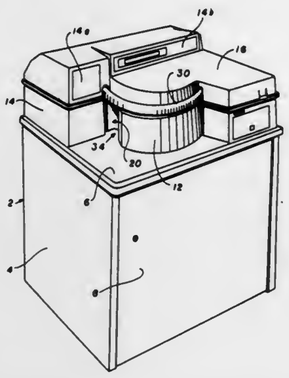
PROCESS FOR RECYCLING CONTAINERS

Robert L. LaBarge, Ben Avon; Jerrold D. Green, Murrysville; Eric D. Arndt, New Kensington; Frank J. Horansky, Apollo, all of Pa.; Ronald G. Hawkins, Massena, N.Y.; Charles J. Leftault, Jr., Murrysville, Pa.; Elmer E. Pohlenz, Richmond, Ind., and Thomas W. Scherf, Vandergrift, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1983, Ser. No. 559,233

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—35 **49 Claims**



1. A method for processing used containers in an apparatus, the method comprising the steps of:

(a) sensing the presence of an acceptable metal container inserted into a container receiving station in a rotatable carrier;

(b) unlocking an electromechanical latching mechanism to permit manual rotation by the user of said carrier if the presence of an acceptable container is sensed;

(c) manually rotating said carrier to convey said container to a crushing station;

(d) crushing the container in a crushing mechanism; and

(e) issuing a receipt for the crushed containers.

4,519,307

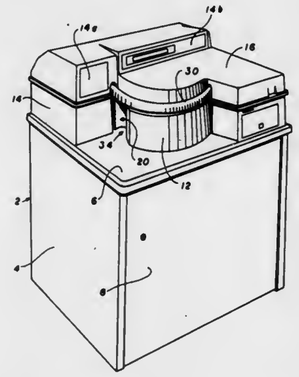
CONTAINER RECYCLING APPARATUS USING SCANNING MEANS TO READ CODE MARKINGS ON CONTAINERS

Robert L. La Barge, Ben Avon; Charles J. Leftault, Jr., Murrysville; Eric D. Arndt, New Kensington; Jerrold D. Green, Murrysville, all of Pa.; Ronald G. Hawkins, Massena, N.Y.; Frank J. Horansky, Apollo, Pa.; Elmer E. Pohlenz, Richmond, Ind., and Thomas W. Scherf, Vandergrift, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1983, Ser. No. 559,373

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—99 **25 Claims**



1. Apparatus for the receipt of acceptable containers, said apparatus being characterized by the analysis and initial acceptance or rejection of a container without mechanical movement apparent to the user which comprises:

(a) a manually operated rotatable carrier;

(b) a container receiving station associated with said carrier;

(c) detecting means coupled to said receiving station to determine the presence of a container comprised of material acceptable to said apparatus;

(d) scanning means for reading markings on said container;

(e) means for recording information read from said markings on said container; and

(f) means for subsequently permitting manual actuation of said rotatable carrier if said container comprises a material acceptable to said apparatus.

4,519,308

APPARATUS FOR DISPENSING AND COMPACTING PAPER TOWELS

Kurt Eberle, Scarborough, Canada, assignor to Johann K. Heuchert, Green Bay, Wis.

Filed Dec. 1, 1983, Ser. No. 557,040

Int. Cl.³ B30B *1/04*

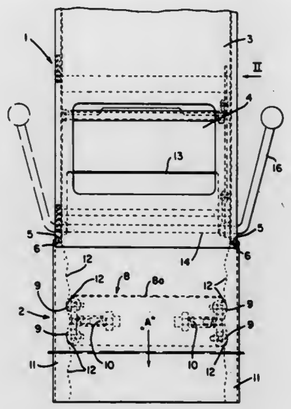
U.S. Cl. 100—102 **5 Claims**

1. A combination dispenser-compactor for disposable paper products, said dispenser-compactor having a body member including a holder for unused products and a receptacle for used products,

a dispensing-opening in the holder and a receiving-opening in the receptacle,

a movable cover for the dispenser-opening and a compactor cover above the receptacle and adjacent the receiving-opening, and

an actuator operatively interconnected to said movable cover and said compactor cover whereby an unused product will be exposed and withdrawable through the dispenser-opening and the used products in the receptacle simultaneously will be compacted by the compactor cover when the actuator is operated.



4,519,309

SLIDING TOOL TABLE INTENDED FOR THE EXCHANGE OF TOOLS IN PRESSES

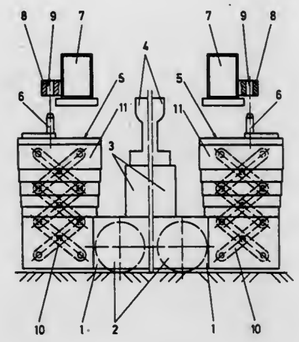
Egon Feirer, Weingarten; Ulrich Amann, and Günter Kuppinger, both of Baindt, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Müller-Weingarten AG, Weingarten, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 536,036

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316815

Int. Cl.³ B30B *15/00*

U.S. Cl. 100—229 R **5 Claims**



1. In a press comprising removable gripper rails for conveying workpieces, a sliding table, an exchangeable tool mounted on said sliding table, a gripper rail support means carried by said sliding table, the improvement comprising a raising and lowering means mounted on said table and connected to said gripper rail support means for a height level adjustment of said rail support means.

4,519,310

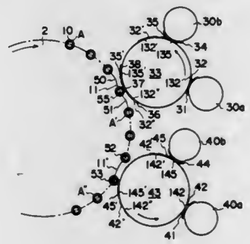
METHOD OF MULTI-COLOR PRINTING ON CYLINDRICAL CONTAINER

Hiromichi Shimizu; Akira Kuboshima, both of Sagamihara, and Tadashi Tanaka, Yokohama, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

Continuation of Ser. No. 258,017, Apr. 27, 1981, abandoned. This application Sep. 14, 1983, Ser. No. 531,630

Int. Cl.³ B41F *17/00*

U.S. Cl. 101—35 **1 Claim**



1. A method of multi-color printing the side wall of a cylindrical container in which at least some of the colors overlap others comprising,

transferring a first ink formulation from a first ink ductor onto a first area of the outer periphery of a first ink form roller which first area extends in a circumferential direction of said outer periphery and the length of which is equal to the length of the outer periphery of the container side wall,

transferring a second ink formulation of a color different from and of tack value lower than that of said first ink formulation from a second ink ductor onto a second area of the outer periphery of said first ink form roller, the length of said second area being to that of the first area and said second area being immediately adjacent to said first area and extending in a circumferential direction of said outer periphery, sequentially transferring third and fourth ink formulations of colors different from each other and those of said first and second ink formulations and of successively lower tack values than said second ink formulation from at least two further ink ductors onto first and second successively arranged areas of the outer periphery of a second ink form roller and which successive areas are each of length equal to those of the areas on said first ink form roller and extend in a circumferential direction of said second ink form roller outer periphery,

positioning said container at a first printing station and while at said first printing station bringing said container side wall into press- and rolling-contact with the first area of said first ink form roller to transfer a layer of said first ink formulation to said container, while rotating it one revolution,

bringing said container side wall while said container is still at said first printing station into press- and rolling contact with said first ink form roller second area and rotating said container one revolution while it is in contact with said second area to transfer the second ink formulation to said container side wall,

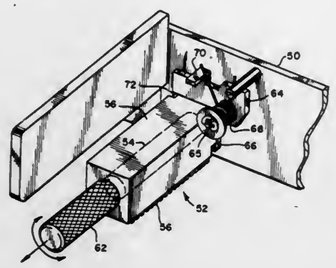
moving the thus far printed container to a second printing station remote from said first station, and while at said second printing station bringing said container side wall into press- and rolling contact successively with the first and second successively arranged areas of the outer periphery of said second ink form roller while rotating said container one revolution while it is in contact with each of said last-mentioned first and second areas to transfer the respective third and fourth ink formulations to said container, whereby the inks transferred to said container side wall are applied thereto in order of descending tack value and where inks are in overlapped relationship, the over-

lapping ink is one having a lower tack value than the overlapped ink.

4,519,311
AUXILIARY PRINTING DEVICE FOR A POSTAGE METER

Lynnwood Lowe, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 16, 1983, Ser. No. 475,775
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—109 **4 Claims**



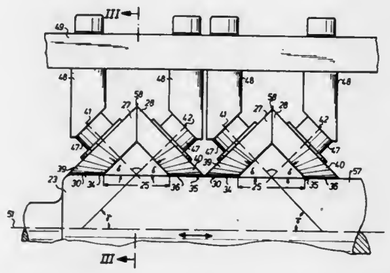
1. In a postage meter of the flat bed printing type having a fixed printing indicia and at least one selectable value printing indicia, both said indicias being mounted on the meter frame and a reciprocating platen to apply a postal article against both said indicias so as to simultaneously print a complete postal impression; the improvement comprising:
   (a) a multi-faced auxiliary printing member having additional postage identification data indicia on at least one of said faces, said member being rotatably mounted about an axis fixed in said meter frame and located adjacent said fixed indicia;
   (b) detent means engagable with said printing member for aligning said indicia on said one of said faces of said printing member in a coplaner relationship with said fixed indicia after rotation thereof about said axis, said detent means further serving to retain said printing member on said axis and in said postage meter, and,
   (c) a handle member attached to said multi-faced printing member to manually rotate said multi-faced printing member and select a face of said member and position said selected face in said coplaner relationship with said fixed indicia.

4,519,312
INKING UNIT

Claus D. Barrois, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,263
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127880
Int. Cl.³ B41F *31/26, 31/10*
U.S. Cl. 101—349 **12 Claims**

1. A liquid transport mechanism for distributing a liquid medium evenly on a surface of a rotatable cylinder bearing said liquid medium; said liquid transport mechanism comprising a plurality of cooperating pairs of rotatably supported transport roller, surface portions of said rollers in each said pair contacting each other, a surface portion of each said transport roller being in contact with said surface of said cylinder, an axis of rotation of each said transport roller intersecting an axis of rotation of said cylinder at an angle of less then 90° and axes of

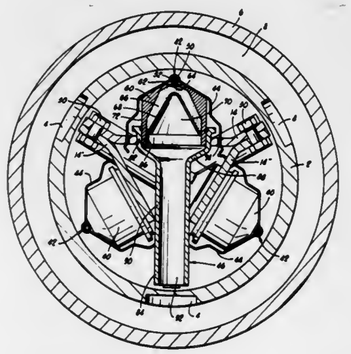


rotation of said rollers in each said pair intersecting at an angle of 90°.

4,519,313
CHARGE HOLDER

David J. Leidel, Arlington, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Mar. 21, 1984, Ser. No. 591,710
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—310 **20 Claims**



1. A perforating gun for use in a well bore, comprising:
charge holder means having a substantially centered longitudinal axis therethrough;
at least one shaped charge adapted to produce a jet upon initiation and positioned in said charge holder means so that the path of said jet substantially intersects said substantially centered longitudinal axis; and
charge initiation means.

4,519,314
BOREHOLE CHARGING METHOD INCLUDING TOROIDAL TRANSFORMER CORES

Gordon K. Jorgenson, Dollard des Ormeaux, Canada, assignor to C-I-L Inc., North York, Canada

Filed Jun. 11, 1981, Ser. No. 272,487
Claims priority, application United Kingdom, Jul. 29, 1980, 8024698
Int. Cl.³ F42B *3/00*
U.S. Cl. 102—313 **4 Claims**

1. A method of charging a borehole with a column of explosives for electrically induced initiation at more than one location along the column by means of an electrically actuable detonator assembly adapted for slidable electromagnetic coupling to an energy source by means of a toroidal transformer core, which method comprises the steps of

(a) providing a length of an insulated electrical conductor in the form of a looped wire extending into and throughout the length of said borehole, a portion of said looped wire conductor extending beyond said borehole;
(b) providing a first electrically actuable detonator assembly in slidable surrounding relationship with the said insulated conductor wire by means of a coupled toroidal transformer core;
(c) providing a second electrically actuable detonator assembly in slidable surrounding relationship with the said insulated conductor wire by means of a coupled toroidal transformer core;
(d) loading a first portion of explosive material into said borehole;
(e) sliding said first detonator assembly toroid along said insulated conductor wire to a location in said borehole

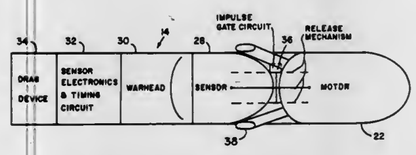


where the said detonator assembly is in initiating contact with the said first portion of explosive material;
(f) loading a second portion of explosive material into said borehole;
(g) sliding said second detonator assembly toroid along said insulated conductor wire to a location in said borehole where the said detonator assembly is in initiating contact with the said second portion of explosive material; and
(h) coupling the portion of said looped conductor wire beyond the borehole with an A.C. energy source to transmit an electric signal to said looped conductor, the said electric signal in said looped wire conductor, thereby inducing a magnetic flux within each toroid of each detonator assembly in sliding contact therewith, the said magnetic flux providing an electric signal sufficient to detonate each of said detonators.

4,519,315
FIRE AND FORGET MISSILES SYSTEM

Jerrold H. Arszman, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1982, Ser. No. 450,874
Int. Cl.³ F42B *15/00*
U.S. Cl. 102—377 **1 Claim**

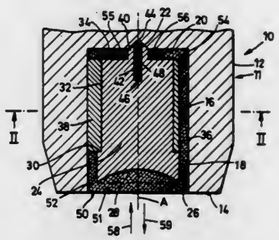


1. A light weight fire and forget weapon system comprising:
a. a shoulder held man transportable rocket launcher for launching a self forging fragment (SFF) warhead in a ballistic trajectory over a target, said launcher having a rangefinder carried thereon for determining the range to said target;
b. a missile carried in said launcher for delivering said warhead to said target, said missile including an impulse motor mounted at the forward end thereof and disposed for separation therefrom at a predetermined point in the trajectory, whereby said warhead continues in a ballistic trajectory after separation of said motor;
c. a body fixed sensor means located intermediate said motor and said warhead for detecting said target and for initiating warhead firing at a predetermined distance above said target;
d. drag spoiler means carried on the aft end of said missile and sensor electronics means carried intermediate said warhead and said drag spoiler means; and,
e. means for separating said motor and for deploying said drag device at predetermined points in the trajectory, said means including a gate circuit operatively connected through a voltage comparator and summation device to a pressure gauge in said motor, whereby responsive to actuation of said gate circuit at predetermined points in the trajectory said motor is separated and said drag device is deployed.

4,519,316
AMMUNITION, PREFERABLY FOR MACHINE CANNONS, INCLUDING A PROJECTILE EQUIPPED WITH A TRACER, WITH THE LETHAL RANGE OF THE PROJECTILE BEING LIMITED IF THE TARGET IS MISSED

Karl W. Bethmann, Gellertstrasse 15, D-4130 Moers 1, and Ulrich Theis, Kuhlendahl 92, D-4330 Mülheim/Ruhr, both of Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,324
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146645
Int. Cl.³ F42B *11/16*
U.S. Cl. 102—513 **10 Claims**



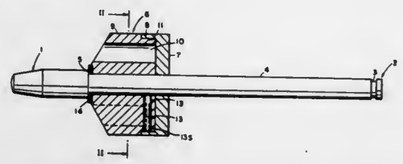
1. In ammunition, preferably for machine cannons, including a projectile, equipped with a tracer and a stabilizing element, whose lethal range is limited when the target is missed, the improvement wherein:
   (a) said projectile is a subcaliber projectile;
   (b) said stabilizing element is fixed with respect to said projectile by means of a body of consumable material;
   (c) the consumption of said material can be timed; and
   (d) said tracer is disposed adjacent said body of consumable material so that the consumption of said consumable material is caused by the heat generated by the burning of the tracer during flight of said projectile and causes said stabilizing element to change its original stabilizing position, whereby the projectile becomes ballistically unstable.

4,519,317

SUB-CALIBER PROJECTILE

Gideon Rosenberg, Kiryat Tivon, Israel, assignor to The State of Israel, Ministry of Defence, Rafael Development Authority, Tel-Aviv, Israel

Filed May 31, 1983, Ser. No. 501,069
Claims priority, application Israel, Jun. 1, 1982, 65929
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—521 **3 Claims**



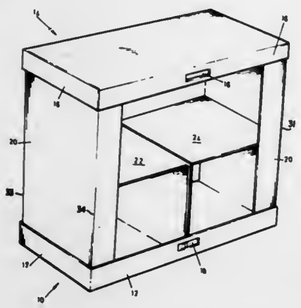
1. A sub-caliber projectile having a front end, a cylindrically shaped mid-section of substantially uniform diameter and having a substantially smooth surface and a tail end, at least the portion of the front end adjacent to said mid-section being of increased diameter with respect to the diameter of said mid-section so as to define an abutment shoulder adjacent said front end, sabot means comprising an annular stabilizing member and an annular obturating disc member, first retaining means for releasably securing said members together, said sabot means being mounted on and axially displacable as a unit along said mid-section between a first position wherein said stabilizing member abuts said abutment shoulder and a second position adjacent said tail end wherein said stabilizing member is retained and said obturating disc is axially detached therefrom, and second retaining means for retaining said stabilizing member adjacent said tail end.

4,519,318

COLLAPSIBLE SUPPORT STRUCTURES

Richard S. Weldon-Ming, 101 Waterfall Ave., Craighall, Johannesburg, Transvaal, South Africa

Filed Jan. 14, 1983, Ser. No. 458,028
Int. Cl.³ A47B *3/06, 47/00*
U.S. Cl. 108—33 **6 Claims**



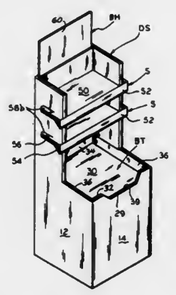
1. A collapsible table comprising a rectangular base having upstanding edges which meet to form four upstanding corners of the base, a lid having upstanding edges which meet to form four upstanding corners of the lid, the lid being arranged to form a closed box with the base when the lid and base are fitted together and the upstanding edges mate against one another, a foldable planar member arranged to fit when folded into the closed box and when unfolded to fit with opposite extreme surface regions thereof respectively against the upstanding edges and into the four corners of both the base and the lid and to support and hold the lid in a spaced parallel position relative to the base, the foldable planar member having a width corresponding to the height of the table when assembled and a length which is less than the total peripheral dimension of the assembled table, the planar member having five transverse fold lines, four of which correspond to and extend between the respective four corners of the base and lid and the fifth fold line allowing the planar member to fold intermediate its total length to enable the planar member to fit into the closed box, the planar member forming an incomplete surround for the table so that there is open access into the inside of the table, and foldable rectangular open box means having fold lines and which fits into the closed box when folded and the sides of which when unfolded lock into a rectangular form and present a cross support generally parallel to said lid and base and press against respective inside surfaces of the unfolded planar member to urge the respective extreme surface regions of the planar member towards the upstanding surfaces of the base and the lid so as to form and retain the table in its supporting configuration.

4,519,319

TUBULAR PAPERBOARD DISPLAY STAND

Robert J. Howlett, Edison, N.J., assignor to Container Corporation of America, Chicago, Ill.

Filed May 20, 1982, Ser. No. 380,078
Int. Cl.³ A47B *47/06*
U.S. Cl. 108—111 **1 Claim**



1. A collapsible display stand including a base formed of a unitary blank of foldable sheet material, such as paperboard, and comprising:

(a) pairs of opposed front and rear side wall and end wall panels foldably joined to each other to form a tubular structure;

(b) said front side wall panel and said end wall panels each having upper and lower portions separated from each other by transversely extending cut lines;

(c) said end wall panel upper portions each being divided, by a vertically disposed fold line, into front and rear sections which include aligned slots for receiving a horizontally disposed shelf;

(d) said front side wall panel upper portion and said end wall panel upper portion front sections being disposed to lie in face-to-face relation with inner surfaces of an upper portion of said rear side wall panel and rear sections of upper portions of said end wall panels, respectively, to reinforce upper areas of the rear and side wall panels of said structure for support of said shelf;

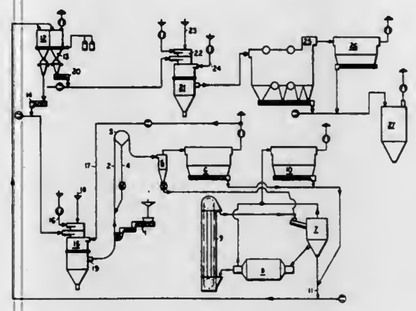
(e) said shelf including upper and lower panels disposed in face-to-face relation and having corresponding front edges foldably interconnected by a pair of relatively narrow connecting flanges which form with said upper and lower panels a triangular structure.

4,519,320

DEVICE FOR BURNING A COAL-CONTAINING ASH-RICE SLUDGE

Martin Wischniewski, Krefeld, Fed. Rep. of Germany, assignor to Deutsche Babcock Anlagen Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,953
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139409
Int. Cl.³ F23G *7/04*
U.S. Cl. 110—238 **3 Claims**



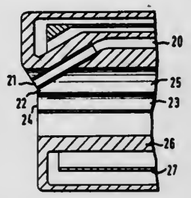
1. A device for burning waste sludge produced during a coal-gasifying process, comprising two separate gas fueled fireboxes each having an inlet for feeding-in waste sludge to be burned and an outlet for fume gases, a fume gas drier connected to the fume gas outlet of one firebox for drying waste sludge prior to its feeding into said inlets, a heat energy generator connected to the fume gas outlet of the second firebox, and means for feeding back waste gas from the heat energy generator to said second firebox.

4,519,321

BURNER FOR THE PARTIAL COMBUSTION OF SOLID FUEL

Ian Poll, The Hague, and Jacobus A. J. Smit, Amsterdam, both of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1984, Ser. No. 586,481
Claims priority, application United Kingdom, Mar. 18, 1983, 8307520
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—263 **12 Claims**



1. Burner for the partial combustion of a finely divided solid fuel, comprising:

a central channel with a central outlet for free-oxygen containing gas;

laterally disposed conduit means for finely divided solid fuel;

said conduit means having outlet means whose major axis is positioned to intersect the axis of the central outlet, said outlet means being asymmetrically arranged with respect to said central outlet; and

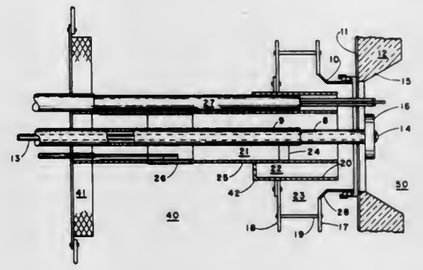
said conduit means having a diameter and disposition such that the finely divided solid fuel issuing from it penetrates into and is surrounded by a stream of free-oxygen containing gas issuing from said central channel without passing through that stream.

4,519,322

LOW PRESSURE LOSS BURNER FOR COAL-WATER SLURRY OR FUEL OIL

Gerald D. Lindstrom, N. Benton; Clifford F. Eckhart, Alliance; George A. Farthing, Jr., Homeworth; James J. Muckley, Louisville, and Brian E. Taylor, Akron, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 21, 1984, Ser. No. 622,900
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 **4 Claims**



1. In a boiler having wall means separating a windbox from a furnace chamber, the wall means having a frusto-conical burner port outwardly tapering therethrough from the windbox to the furnace chamber, an apparatus for burning a concentrated coal-water slurry fuel, composed of at least sixty-five weight percent of pulverized coal, comprising a coal-water fuel atomizer concentric within the burner port and fuel supply means including a burner barrel within the windbox connected with the atomizer, an outer cylindrical casing concentric with and radially spaced from the fuel supply means and having one end mounted to the wall means on the windbox side, a cylindrical sleeve surrounding and radially spaced from the fuel supply means to define an inner annulus therebetween, said sleeve having an end opening within the casing proximate to and axially spaced from the burner port, said sleeve including means for passing air therethrough to the inner annulus from the window, a cylindrical housing concentrically mounted about at least part of the sleeve intermediate and radially spaced from the sleeve and the casing to define an outer annulus between the housing and the casing, said cylindrical housing having a first end open proximate to and axially spaced from the burner port, a second end axially spaced remote from the burner port and a plate closing the second end, said casing having a series of openings at circumferentially-spaced intervals in its periphery radially aligned with the housing adapted to supply air from the windbox to the outer annulus, a plurality of cuvilinear vanes, each of said vanes movably mounted in a respective one of the openings to regulate air passage therethrough, each of said vanes having an offset end circumferentially overlapping and radially spaced from an opposite end of an adjacent one of said vanes.

4,519,323

VELOCITY CONTROLLING APPARATUS AND METHOD TO BE USED WITH A STOKER TYPE BURNING APPARATUS

Osamu Takano, Suita, and Koji Fujiwara, Yamatokooriyama, both of Japan, assignors to Kabushiki Kaisha Takuma, Osaka, Japan

Filed Mar. 26, 1984, Ser. No. 593,079
Claims priority, application Japan, Apr. 1, 1983, 58-58199
Int. Cl.³ F23H *7/08*
U.S. Cl. 110—281 **1 Claim**

1. A velocity controlling apparatus to be used with stoker

type burning apparatus on a refuse incinerator wherein refuse to be burned is moved forwardly by repeated reciprocating (forward and backward) motion of movable fire grates, said apparatus comprising:

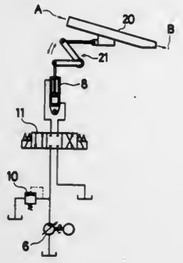
a time counter measuring time Tf of forward movement of the movable fire grates;

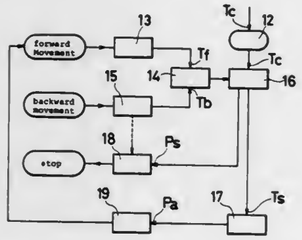
a time counter measuring time Tb of backward movement of the movable fire grates;

a grates-stopping apparatus which stops the movable fire grates;

a time adding machine which adds up time Tf of forward movement of the movable fire grates and time Tb of the backward movement of the same;

a standard-speed setting apparatus which sets a standard





cycle time Tc necessary for the movable fire grates to complete one cycle of the reciprocating motion, with the standard cycle time Tc being calculated on the basis of a predetermined frequency of the reciprocating motion of the fire grates;

a comparing apparatus which compares between the added-up time (Tf+Tb) and the standard cycle time Tc to calculate the time difference Ts between them;

a time counter which receives a signal representative of the time difference Ts and measures the stop time of the movable fire grates, said time counter issuing a signal Pa activating the movable fire grates when the stop time equals the said time difference Ts, and;

a grates-activating apparatus which receives the signal Pa and moves the movable fire grates to begin another cycle.

4,519,324

GAS INJECTION METHOD FOR IMPROVING THE OPERATION OF A FLUIDIZED BED REACTOR

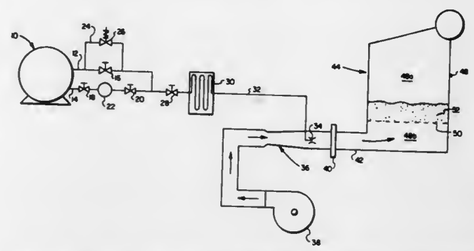
Dennis A. Toth, Lake Hopatcong, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Aug. 23, 1984, Ser. No. 643,525

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **3 Claims**

1. A method of operating a fluidized bed comprising the steps of forming a bed of relatively soft adsorbent material for adsorbing sulfur produced as a result of the combustion of a combustible material, introducing air into said bed to fluidize said soft material, injecting a gaseous agent into said bed to increase the surface hardness of said adsorbent material and prevent the latter from degrading and being carried away from



said bed by said air, and introducing a particulate combustible material to said bed.

4,519,325

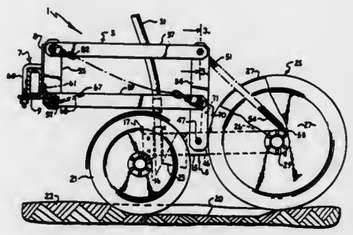
GRAIN DRILL SUSPENSION SYSTEM

Larry C. Miller, Harper, Kans., assignor to DewEze Manufacturing, Inc., Harper, Kans.

Filed Nov. 8, 1982, Ser. No. 439,999

Int. Cl.³ A01C *5/00*

U.S. Cl. 111—85 **3 Claims**



1. A grain drill suspension system adapted to be attached to a prime mover for transferring a seed planter employing said suspension system across a field, said suspension comprising:

(a) a mounting bracket for attaching said suspension system to the prime mover;

(b) a parallel link structure attached to said mounting bracket and having parallel front and rear vertical members and parallel upper and lower cross links pivotally connected at extremities thereof to said front and rear vertical members; said front vertical member being attached to said mounting bracket; and said rear vertical member including a lower portion extending below said lower cross link;

(c) an elongate walking beam having front, rear and medial portions thereof; said walking beam being pivotally attached to said rear vertical member lower portion along said walking beam medial portion;

(d) a furrow cutting member being mounted on said walking beam front portion and adapted to be engageable with a soil surface for cutting a furrow therein;

(e) a furrow closing member being mounted on said walking beam rear portion and adapted to be engageable with the furrow for closing and packing same;

(f) a seed depositing member being retained between said furrow cutting and furrow closing members and adapted to deposit a succession of seeds into the furrow;

(g) said upper and lower cross links comprising respective horizontally spaced pairs of upper and lower cross links; and means spacing said pairs of links sufficiently to allow said furrow cutting member to translate upwardly therebetween; and

(h) a stop plate being attached to and extending upwardly from said walking beam medial portion; said stop plate engaging said parallel link structure at the pivotal connection between said rear vertical member and said pair of lower cross links upon rotation of said walking beam relative to said vertical member when said furrow cutting member is being urged downwardly so as to limit pivotal movement of said walking beam relative to said parallel link structure, thereby limiting to a controlled depth of the furrow cut by said furrow cutting member.

4,519,326

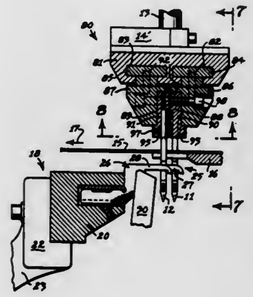
SEGMENTAL NEEDLE BAR FOR MULTIPLE NEEDLE TUFTING MACHINE

Jerry T. Green, Hixson, and Max M. Beasley, Chattanooga, both of Tenn., assignors to Tuftco Corporation, Chattanooga, Tenn.

Division of Ser. No. 464,410, Feb. 7, 1983, Pat. No. 4,483,261. This application Aug. 13, 1984, Ser. No. 639,804

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **5 Claims**



1. In a multiple needle tufting machine having a plurality of uniform needles, each needle having a pointed end portion and a shank adjacent its opposite end portion, and a needle drive member, a needle bar assembly comprising:

(a) an elongated needle mounting bar member comprising a pair of needle bars of predetermined length connected to the needle drive member for reciprocable movement in a stitching direction,

(b) a needle bar holder,

(c) means slideably mounting said needle bars in said needle bar holder for independent slideable movement longitudinally of said needle bars,

(d) a pair of sets of elongated needle bar segments, each set comprising a plurality of elongated needle bar segments, each segment being of a length substantially less than the length of said mounting bar member,

(e) each needle bar segment having a plurality of elongated needle holes therethrough having parallel longitudinal axes, each needle hole being adapted to coaxially receive the shank of a needle,

(f) needle securing means for holding a needle in a corresponding needle hole,

(g) said mounting bar member and each of said needle bar segments comprising overlapping portions,

(h) bolt means connecting the overlapping portions of one set of needle bar segments to one of said needle bars and connecting the overlapping portions of said other set of needle bar segments to the other of said needle bars, the needle bar segments in each set being arranged end-to-end along said mounting bar member so that the longitudinal axes of said needle holes are parallel to said stitching direction.

4,519,327

TRANSFER MACHINE FOR OVERTURNING A TEXTILE TUBULAR ELEMENT FOR THE SEWING OF THE EDGES THEREOF AND FOR THE SUBSEQUENT RE-OVERTURNING AND DISCHARGING

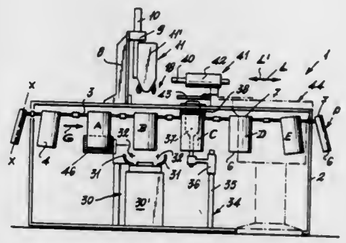
Fabio Selvi, Via Delle Massucce 12, 50020 La Romola (Firenze), Italy

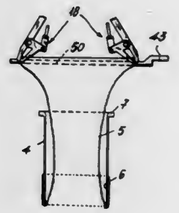
Filed Mar. 12, 1984, Ser. No. 588,249

Claims priority, application Italy, Mar. 11, 1983, 20035 A/83

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.15 **7 Claims**





1. A transfer machine for overturning a textile tubular element for the sewing of the edges thereof and for the subsequent re-overturning and discharging comprising:

a plurality of hollow shaped bodies having substantially elliptical cross-section and a lower and an upper edge;

drive means for the intermittent and unidirectional advancement of said bodies along a predetermined path, to each dwell of a considered body corresponding a station;

a first of said stations being a station for the threading on the outer surface of on considered body of a tubular element with an end portion thereof projecting beyond said lower edge;

a second of said stations having tucking means disposed below said path for tucking said projecting portion about the lower edge of the considered body and gripping means disposed above said path and aligned with said tucking means for gripping the tucked end portion to overturn said tubular element;

a third of said stations having levelling means disposed below said path for levelling the upper edges of said overturned tubular element;

transfer and gripping means disposed above said path moving along with a considered body and associated overturned tubular element from said second to said third station and from there to a fourth station having conventional sewing means; and

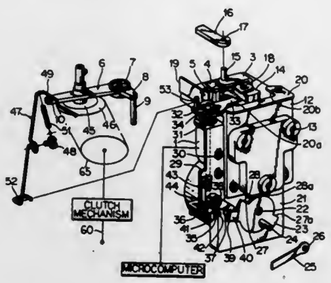
a fifth of said stations having means for re-overturning said overturned tubular elements and for removing it from said considered body.

4,519,328

ELECTRONIC SEWING MACHINE WITH CONTROL DETECTING DEVICE

Hideaki Takenoya, and Eiichi Shomura, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 388,985
Claims priority, application Japan, Jun. 16, 1981, 56-91564
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **4 Claims**



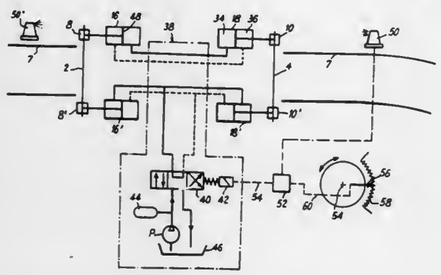
1. In a sewing machine comprising stitch forming instrumentalities, a needle swinging device and a fabric feed regulator, a motor-driven belt wheel, a drive shaft arranged in the sewing machine, clutch means interconnected between the belt wheel and the drive shaft and operated in one direction to connect the belt wheel to the drive shaft and in the opposite direction to disconnect the belt wheel from the drive shaft; at least two pulse motors (**1**, **21**) each having a control shaft and operatively connected to the needle swinging device and the fabric feed regulator, respectively to control the stitch forming instrumentalities; and microcomputer means operated in accordance with a predetermined program to control the pulse motors, an improvement comprising a first screening element (**4**) and a second screening element (**33**) each operated in association with the respective control shaft of the two pulse motors (**1**, **21**); and a single photoelectric sensor means (**5**) adapted to cooperate with said first screening element and said second screening element at predetermined anngular positions taken by the respective control shafts of the respective pulse motors to thereby produce a plurality of electric signals for operating the microcomputer means to set each of the pulse motors to an initial position.

4,519,329

BOGIE WITH ORIENTABLE AXLES FOR RAILROAD VEHICLES

Pierre Vacher, Paris, France, assignor to A.N.F. Industrie, France

Filed Jul. 25, 1983, Ser. No. 516,953
Claims priority, application France, Jul. 26, 1982, 82 12992
Int. Cl.³ B61F *5/30*
U.S. Cl. 105—218 A **18 Claims**



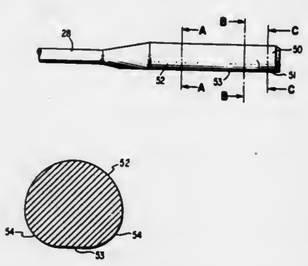
1. A bogie for a railroad vehicle of the type comprising a bogie frame and two axles coupled to the frame by means of resilient primary suspension elements and by means of substantially horizontal link-arms, one end of each link-arm being pivotally attached to the bogie frame and the other end being attached to one axle-box, wherein at least one link-arm of each axle is a variable-length controlled telescopic arm constituted by a double-acting hydraulic jack, one of the jack elements such as the piston or cylinder being coupled to the bogie frame and the other jack element being coupled to the axle-box, wherein said bogie comprises a hydraulic circuit provided with switching means for selectively establishing the supply, draining and isolation of the two jack chambers, wherein said bogie comprises control means which come into action in response to the curves of the track on which the bogie is running, and wherein each hydraulic jack is provided with a releasable locking mechanism for locking said jack in the mean position.

4,519,330

SEWING NEEDLE WITH TWO PORTION SHANK

Thaddeus J. Zylbert, Morris Plains, N.J.; Wolf-Dieter Fuhrmann, Aachen, Fed. Rep. of Germany; Hans Hammer, and Fritz Kappertz, both of Wurselen, Fed. Rep. of Germany, assignors to The Singer Company, Stamford, Conn.

Filed Dec. 28, 1983, Ser. No. 566,249
Int. Cl.³ D05B *55/02, 85/00*
U.S. Cl. 112—222 **5 Claims**



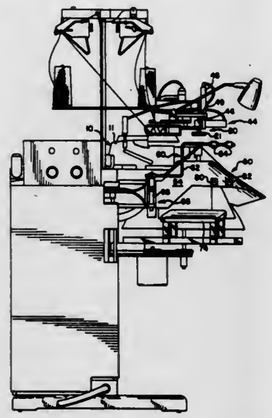
1. A needle for use with a sewing machine having a one way needle clamp of the type having a needle shank accommodating recess with a mouth shaped to admit a given irregular shaped needle shank in only one orientation, and means within said recess for locating a reference surface on said needle shank in a predetermined plane with respect to said sewing machine, said needle having a blade extending parallel to the lengthwise axis of said needle, an enlarged shank including a minor portion adjacent the free extremity thereof and a major portion extending from the blade and formed with a flat planar reference surface for cooperation with said locating means in said needle clamp, only said minor portion being formed with with said given irregular shape for cooperation with said needle clamp mouth to admit said needle into said needle clamp recess in only one orientation, in which said flat planar reference surface along said major portion of said shank extends into said given irregular shape in said minor portion at the free extremity of said shank, and said given irregular shape further includes protrusions formed at each side of said flat, said protrusions substantially extending the width of said flat in said minor portion as compared with the width of said flat along said major shank portion.

4,519,331

APPARATUS FOR TRANSFERING AND STACKING SHORT WORKPIECE PANELS

Robert L. Kosrow, Hoffmann Estates, and Robert C. Talsma, Glen Ellyn, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Apr. 25, 1984, Ser. No. 603,878
Int. Cl.³ D05B *33/00*
U.S. Cl. 112—262.3 **18 Claims**



1. A method of serging divergent edges of a workpiece with an automatic apparatus including an automatically controlled sewing machine having a work supporting surface, a stacking apparatus, said method comprising the steps of:
automatically serging the edges of the workpiece with said sewing machine;
moving the stacking apparatus to a first position to receive the serged workpiece from the work supporting surface of the machine prior to completion of the serging operation;
holding the serged workpiece against the stacking apparatus;
moving the stacking apparatus to a second position while simultaneously positioning the workpiece relative to the stacking apparatus; and
releasing the workpiece from the stacking apparatus.

3. In combination with a pedestal mounted overedge sewing machine having a work supporting surface and stitch forming instrumentalities adapted to operate along at least three sides of a workpiece, a control system for sequentially operating said sewing machine and a stacking device comprising:
stacker means pivotally arranged on said pedestal and responsive to said control system for transferring a workpiece received from the work supporting surface of the machine to a predetermined position whereat said workpiece is deposited; and
means operatively associated with said stacker means for orientating the workpiece in a predetermined disposition relative to the stacker means during its transferance to said predetermined position.

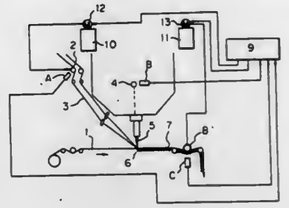
4,519,332

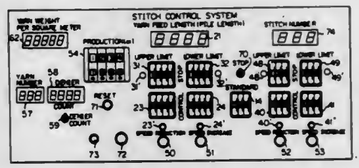
METHOD FOR CONTROLLING A TUFTING MACHINE

Tsutomu Fukuda, Kakogawa-shi, Hyogo-ken, Japan

Filed Dec. 12, 1983, Ser. No. 560,393
Int. Cl.³ D05C *15/20*
U.S. Cl. 112—266.2 **2 Claims**

1. A method for controlling a tufting machine utilized for manufacturing a tufted carpet by stitching yarns supplied by a yarn feed roller onto a ground fabric supplied by a spiked roller by means of needles; comprising:
pre-establishing a standard supply length of a ground fabric and a standard yarn feed length, each for a predetermined unit stitch number;
determining an actual supply length of the ground fabric and an actual yarn feed length, each for a unit stitch number by means of measured values respectively obtained from a ground fabric supply detector, a yarn feed detector, and a stitch number detector;
comparing the measured values with the standard values; and





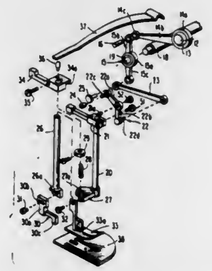
automatically controlling the rotational speeds of the spiked roller and/or the yarn feed roller, respectively, to correct the supply rate of the ground fabric and/or the yarn to the standard values when the measured values exceed upper or lower limit of a predetermined allowable range for each of the standard values.

4,519,333

AUXILIARY PRESSER FOOT FOR ENGAGING A PREVIOUSLY FORMED STITCH

Fumio Minakuchi, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Jan. 13, 1983, Ser. No. 457,603
Claims priority, application Japan, Jan. 13, 1982, 57-003888
Int. Cl.³ D05B *27/04*
U.S. Cl. 112—311 **4 Claims**



1. In a sewing machine having a frame supporting stitch-forming means, a drive mechanism, an apertured throat plate, a presser bar mounted above said throat plate for vertical reciprocating movement only, a presser foot secured to lower end of said presser bar, a feed dog located below said throat plate adapted to be oscillated through said apertured throat plate by said drive mechanism for feeding a workpiece past said stitch-forming means and a needle-thread tensioning lever, the improvement comprising an auxiliary presser foot device comprising an auxiliary presser bar mounted in said frame rearwardly of said presser bar in the direction of feed of said

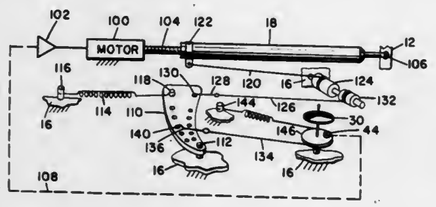
workpiece for vertical reciprocating movement only, an auxiliary presser foot secured to lower end of said auxiliary presser bar adapted to engage and press previously formed stitches in said workpiece against said throat plate during tensioning of a newly formed stitch, biasing means for urging said auxiliarly presser bar and said auxiliary presser foot in the downward direction, and lifting means coupled to said drive means for lifting said auxiliary presser foot during feeding of said workpiece by said feed dog.

4,519,334

STEERING CONTROLLERS FOR BOATS

Giltner J. Knudson, Costa Mesa, Calif., assignor to Nancy K. Hutchinson, Newport Beach, Calif.

Filed Mar. 22, 1983, Ser. No. 477,774
Int. Cl.³ B63H *25/04*
U.S. Cl. 114—144 R **2 Claims**



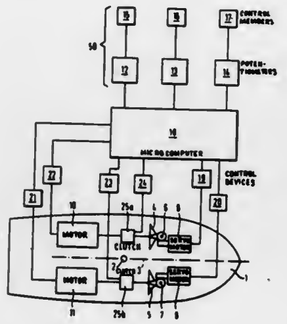
1. For connection to a boat rudder:
a rudder moving element;
heading error signal generating means including a feedback element movable in proportion to movement of said rudder moving element position for providing a signal indicative of the direction of heading error;
steering control means responsive to said signal for moving said rudder moving element and said feedback element in directions determined by said signal;
scale changing means for adjusting the degree of such movement of said feedback element relative to the degree of such movement of said rudder moving element;
said scale changing means comprising a lever movable as an incident to movement of said rudder moving element and to which said feedback element is connected for movement;
said feedback element being rotatable and including a rotatable drive element, said scale changing means comprising a cable having connection to a point on said lever and extending over said drive element whereby said feedback element is rotated as an incident to movement of said lever; and
further comprising a spring connected to said lever to tend to bias the lever to rotation in one direction and means in the form of a cable interconnecting said rudder moving element and said lever on a selected point on said lever for moving the lever in opposition to said bias, and in yielding to said bias, in a degree that is proportional to movement of said rudder moving element.

4,519,335

DEVICE FOR CONTROLLING THE DIRECTION OF MOVEMENT AND THRUST FORCE OF A WATERCRAFT

Franz Krautkremer; Siegfried Lais, both of Spay; Reinhold Knecht, Rhens, and Detlev Stache, Waldesch, all of Fed. Rep. of Germany, assignors to Schottel-Werft Josef Becker GmbH & Co KG., Spay, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,204
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222054
Int. Cl.³ B63H *25/42*
U.S. Cl. 114—144 R **18 Claims**



1. A device for controlling the direction of movement and the force in such direction for a watercraft, comprising two thrust generating devices, drive means for driving said thrust generating devices, and an input device which can control rotation of the watercraft about a vertical axis, linear movement of the watercraft in horizontal directions, and the thrust force produced by said thrust generating devices for effecting said rotational and linear movements; wherein said input device includes a first input element for defining the force for linear movement of the watercraft and a second input element for defining the direction of linear movement of the watercraft; wherein said first and second input elements are each controlled by a respective control member; wherein said control member for said second input element is a head which can be pivoted about a stationary first axis and operates said second input element through a first gear arrangement; wherein said control member for said first input element is a lever which is pivotally supported on said head for movement about a second axis which extends at a right angle to said first axis, said lever being operatively connected by a second gear arrangement to a longitudinally movably supported rack which operates said first input element through a pinion; and including a handwheel which is supported for rotation about a third axis and is operatively connected by a third gear arrangement to a third input element.

4,519,336

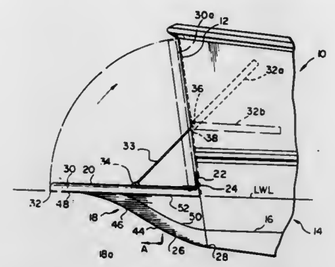
REAR EXTENSION FOR BOAT HULL

David A. Mason, 48 Maple Ave., Smiths Falls, Ontario, Canada K7A 2A5

Filed Aug. 23, 1983, Ser. No. 526,020
Claims priority, application Canada, Jun. 14, 1983, 430331
Int. Cl.³ B63B *1/22*
U.S. Cl. 114—286 **9 Claims**

1. A hull extension attachment for the transom of a boat, said attachment comprising:
a hollow body;
said hollow body defining a substantially flat top surface, a forward end and a bottom surface, and shape to form a continuous rearward extension, beyond the transom, of the shape of a bottom portion of the hull of said boat;

means for pivotally connecting a forward edge of said top surface to the transom; and
means connectible to said hollow body and said boat for pivoting said hollow body about said pivot means between (1) a lowermost position, in which said forward end of said hollow body is in face-to-face abutment with said transom from the bottom of said transom at least to the waterline of said boat, and in which a forward edge of said hollow body bottom surfacce is disposed adjacent and in



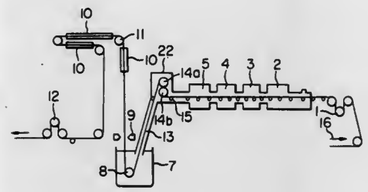
alignment with said boat hull bottom surface and said hollow body top surface projects horizontally from said transom, and (2) a raised portion in which said hollow body top surface is disposed at least substantially adjacent and facing said transom;
said bottom surface of said hollow body being upwardly and rearwardly inclined from the remainder of said boat hull bottom surface to establish substantially laminar water flow when said hollow body is in its lowermost position.

4,519,337

APPARATUS FOR CONTINUOUS HOT DIPPING OF METAL STRIP

Yoshio Ono, and Takashi Tanaka, both of Osaka, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 97,550, Nov. 26, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,805
Int. Cl.³ B05C *3/152, 11/00, 11/06*
U.S. Cl. 118—33 **1 Claim**



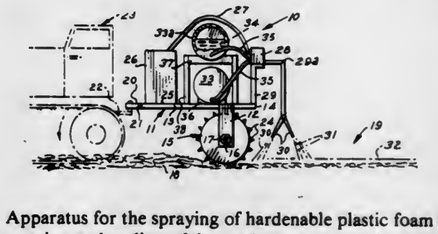
1. An apparatus for continuous hot dipping of metal strip comprising:
pre-treatment furnaces;
a dipping bath downstream of said pre-treatment furnaces;
air wiping nozzles adjacent the exit from said dipping bath for regulating the amount of molten metal adhering to a strip being dipped;
means for passing metal strip through said pre-treatment furnaces and dipping bath and past said nozzles, said means including tension roll means at the entrance of said pre-treatment furnaces and downstream of said nozzles;
tension control roll means comprising bridle rolls having driving motors for driving them, said bridle rolls being disposed downstream of said pre-treatment furnaces and upstream of said dipping bath for controlling the tension in said pre-treatment furnaces separately from the tension between said bridle rolls and said tension rolls downstream of said nozzles, said bridle rolls having shafts and bearings for said shafts and sealing boxes around said bearings;
a housing around said bridle rolls in communication with said pre-treatment furnace, the shafts of said bridle rolls extending through the opposite sides of said housing, said sealing boxes being on said housing covering the points at which said shafts extend through said housing, water jackets on said housing at said points, said bearings for each shaft being on said water jackets with said water jacket between said bearing and said housing, said bearings each having seal means for sealing the passage between said shaft and said housing, each shaft extending through one of said sealing boxes to the corresponding driving motor, and seal means between each shaft and said one sealing box for sealing the passage between said shafts and said sealing box; and
means for supplying an inert gas to said sealing boxes.

4,519,338

APPARATUS AND METHOD FOR APPLYING A FOAM LAYER TO COVER AND SEAL DUMPED WASTE

Fritz Kramer, Newport Beach, Calif.; Thomas E. Skornscheck, Brandon, Fla., and Ernest Strauss, Florence, S.C., assignors to Sanifoam, Inc., Costa Mesa, Calif.

Filed Oct. 20, 1983, Ser. No. 543,933
Int. Cl.³ B05B *13/00*
U.S. Cl. 118—305 **10 Claims**



1. Apparatus for the spraying of hardenable plastic foam for the covering and sealing of dumped waste comprising a compacting wheel, said compacting wheel adapted to be tracked over dumped waste, said compacting wheel wider than the tracks of a tractor vehicle adapted to track said wheel, hardenable foam generating means, yoke means, a plurality of nozzles extending from said yoke means, said foam generating means and yoke means and said nozzles adapted to track with said wheel, said nozzles alternatingly extending downwardly on said yoke means at an angle away from a vertical plane and juxtaposed to said compacting wheel, said hardenable plastic foam generating means adapted to deliver said foam at high velocity to said nozzles to adhere to said waste, and said nozzles adapted to spray a swath at least the width of said compacting wheel over waste computed by said wheel.

4,519,339

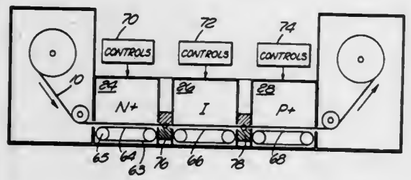
CONTINUOUS AMORPHOUS SOLAR CELL PRODUCTION SYSTEM

Masatsugu Izu, Birmingham; Vincent D. Cannella, Detroit, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Division of Ser. No. 240,493, Mar. 16, 1981, Pat. No. 4,410,558, which is a continuation-in-part of Ser. No. 151,301, May 10, 1980, Pat. No. 4,400,409. This application Jan. 19, 1982, Ser. No. 340,630
Int. Cl.³ C23C *17/00*
U.S. Cl. 118—718 **8 Claims**

1. A system for the production of semiconductor devices on the first surface of an elongated substrate, said system comprising:
a. at least first and second dedicated isolated deposition chambers having an electrode therein;

b. means for sequentially supplying said substrate into each of said deposition chambers;
c. supply means for providing a continuous flow of reaction gas including a semiconductor material across the first surface of said substrate;
d. power supply means operatively connected to the electrodes in said deposition chambers for causing a glow discharge plasma in the reaction gas for the deposition of semiconductor material in each of said chambers onto the first surface of said substrate;
e. means for providing a flow of gas to substantially isolate the reaction gas in each of the deposition chambers from the reaction gas in the adjacent chambers;
f. means for exhausting reaction gas from each of the chambers, whereby a layer of amorphous semiconductor mate-



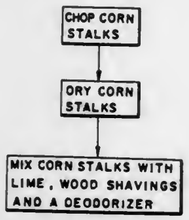
rial is sequentially deposited onto the first surface of the substrate in each of the deposition chambers for producing a semiconductor device;
g. a manifold positioned adjacent said substrate in each of said chambers, each said manifold having a plurality of openings therein for directing reaction gas closely adjacent the first surface of said substrate; said manifold openings further adapted to direct reaction gas from the edges of the substrate toward the center thereof in a direction substantially normal to substrate advance; and
h. each said manifold further having a set of exhaust port apertures operatively disposed in said chamber for providing an equilibrium flow of fresh reaction gas to said substrate and withdrawal of spent reaction gas from said substrate.

4,519,340

ABSORBENT COMPOSITION FOR ANIMAL EXCRETA AND PROCESS FOR MAKING AND USING SAME

Patricia C. Dickey, Long Lake, Minn., assignor to Dickey Natural Systems, Inc., Hamel, Minn.

Continuation-in-part of Ser. No. 359,151, Mar. 17, 1982, abandoned. This application Feb. 28, 1984, Ser. No. 584,489
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **10 Claims**



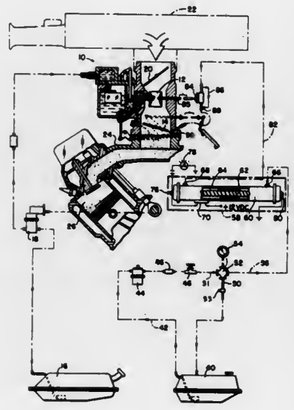
1. An absorbent composition comprising chopped corn stalks having a moisture level by weight less than 20%, lime, and an organic substance cut to be no larger than said corn stalks and having a density greater than said corn stalks, said organic substance for adding weight to said chopped corn stalks for said composition, said corn stalks comprising at least 50% by weight of said composition, said corn stalks being chopped into a distribution of lengths averaging between 13 and 38 millimeters.

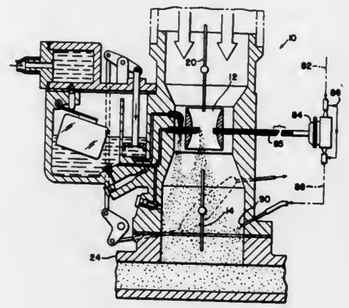
4,519,341

HEATED WATER-ALCOHOL INJECTION SYSTEM FOR CARBURETED INTERNAL COMBUSTION ENGINES

Clarence D. McGarr, 6018 - 133rd Ave., NE., Lake Stevens, Wash. 98258

Filed Aug. 5, 1982, Ser. No. 405,598
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—1 A **20 Claims**





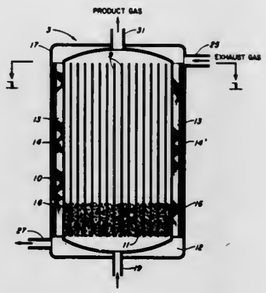
1. In a gasoline burning internal combustion engine having a carbureted fuel intake system, a heated water-alcohol injection system comprising:
means for storing a mixture comprising liquid water and alcohol,
means for electrically heating the mixture to a gaseous state;
pump means in combination with fluid conduit means to convey the mixture from the mixture storing means to the heating means;
backflow vent means connecting a point in the fluid conduit means intermediate the pump means and the heating means to the storage means; and
means to controllably deliver the heated mixture from the heating means to the fuel intake system of the engine.

4,519,342

ALCOHOL DISSOCIATION REACTOR FOR MOTOR VEHICLES

Heeyoung Yoon, McMurray, Pa., assignor to Conco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 414,744, Sep. 3, 1982, Pat. No. 4,444,158. This application Mar. 23, 1984, Ser. No. 624,360
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—3 **3 Claims**



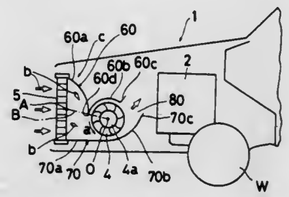
1. A reactor for providing fuel vapor to and for treating exhaust gases from an internal combustion engine, which reactor comprises:
(a) elongated reaction chamber means having inlet and outlet means disposed at substantially opposed ends of said chamber means,
(b) a plurality of longitudinal fins on the interior wall of said chamber means,
(c) a mass of particulate dissociation catalyst arranged within said chamber means and in heat exchange contact with said fins,
(d) means for supplying methanol to said inlet means, and means for conveying gaseous dissociation product from said outlet means to the fuel intake of said engine,
(e) housing means surrounding said chamber means and having a gas supply opening and a gas discharge opening, said openings being disposed in substantially opposed faces of said housing means, and
(f) means for conveying exhaust gas from said engine to said gas supply opening.

4,519,343

ENGINE COOLING SYSTEM

Masaharu Hayashi, Toyota; Syunzo Tsuchikawa, Ichinomiya, and Masato Itakura, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 2, 1983, Ser. No. 548,098
Claims priority, application Japan, Nov. 8, 1982, 57-195628; Nov. 8, 1982, 57-168975[U]; Nov. 8, 1982, 57-168976[U]
Int. Cl.³ F01P *5/06*
U.S. Cl. 123—41.49 **10 Claims**



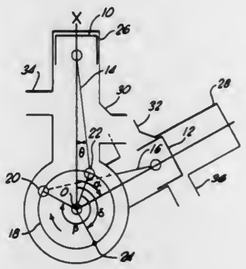
1. An engine cooling system for an automotive vehicle including a vehicle body, comprising:
(a) a radiator adapted to be mounted on the vehicle body;
(b) a cross-flow fan disposed behind said radiator and having a shaft;
(c) a casing assembly connected to said radiator and including an upper casing disposed above said cross-flow fan, a lower casing disposed below said cross-flow fan, and a pair of lateral casings disposed one on each side of said cross-flow fan; and
(d) a motor connected to one end of said shaft for driving said cross-flow fan to create an air flow through said radiator and said casing assembly,
wherein said upper casing includes a first curved portion extending from an upper end of said radiator, a second curved portion extending from said first curved portion in partly covering relation to said corss-flow fan, and a third end portion extending from said second curved portion, said first and second curved portions being joined by a downwardly projecting edge located on a straight line connecting between a vertically central point on said radiator and an axis of said shaft of said cross-flow fan, said lower casing including a first straight portion extending from a lower end of said radiator, a second curved portion extending from said first straight portion, and a third end portion extending from said second curved portion, said third end portions of said upper and lower casings jointly constituting an air flow outlet.

4,519,344

V-TYPE INTERNAL COMBUSTION ENGINE

Kazuo Ohyama, and Takashi Kitami, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1982, Ser. No. 440,031
Claims priority, application Japan, Nov. 7, 1981, 56-177831; Nov. 7, 1981, 56-177832
Int. Cl.³ F02B *75/06*
U.S. Cl. 123—55 VF **1 Claim**



1. An engine comprising
at least one pair of cylinders including a first cylinder and a second cylinder, each said pair of cylinders being arranged in a V having an included angle α;
a crank including at least a pair of nonaligned crankpins, a first crankpin of each said pair being positioned and arranged for use with said first cylinder and a second crankpin of each said pair being positioned and arranged for use with said second cylinder, said second crankpin being arranged on said crank at an angle β from said first crankpin as measured in a first direction about said crank substantially equal to 180 less than twice said included angle α of said pair of cylinders;
a reciprocating mass including a piston and connecting rod for each of said cylinders and crankpins, each said connecting rod being connected at a first end to said piston and at a second end to said crankpin for each of sayd cylinders;
a balance weight attached to said crank, said balance weight being attached at a balance angle δ measured in said first direction about said crank from said first crankpin whose tangent is substantially equal to U/V where

$$U=1+\cos(\beta-\alpha)\cos\alpha-\sin(\beta-\alpha)\cdot\sin$$

$$V=\cos(\beta-\alpha)\sin\alpha+\sin(\beta-\alpha)\cdot\cos\alpha.$$

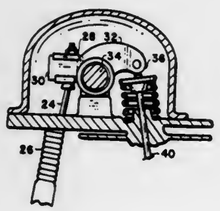
said balance weight being mounted at an equivalent radius to said crankpins and being equal in weight to substantially one-half the weight of one of said reciprocating masses multiplied by the square root of the sum of the squares of U and V.

4,519,345

ADJUSTABLE RATIO ROCKER ARM

Bob Walter, 19361 Lake Chabot Rd., Castro Valley, Calif. 94546

Filed Mar. 5, 1984, Ser. No. 586,231
Int. Cl.³ F01L *1/18*
U.S. Cl. 123—90.16 **2 Claims**



1. A method for altering the amount of valve lift in apparatus employing a cam actuated push rod, a rocker arm rotational about an axis and having a first leg displaced on one side of said axis and contacting one end of said push rod and a second leg displaced from said axis and contacting the stem end of a spring biased valve, said method comprising the steps of:

providing said first rocker arm leg with substantially flat, parallel first and second surfaces with an elongated slot intersecting said surfaces and through said first leg, each of said first and second surfaces having a projecting lip extending across the exterior end, said slot being aligned on an axis substantially perpendicular to the rotational axis of said rocker arm;

positioning first and second substantially square adjustment plates respectively on said first and second parallel surfaces, said adjustment plates having corresponding holes therethrough with the hole through said first plate being threaded, the position of said holes being offcenter and at differing distances from each edge of the substantially square plates, one edge of each of said plates being secured against the projecting lip across the exterior end of its respective flat parallel surface;

inserting a threaded tappet bolt through said first arm slot, and said first and second adjustment plates, said threaded bolt engaging the threaded hole in said first plate, the first end of said bolt having socket means for engaging the end of the cam actuated push rod;

securing said tappet bolt at a desired position in said first arm slot by applying and tightening a threaded nut to the end of said bolt extending from said second adjustment plate; and

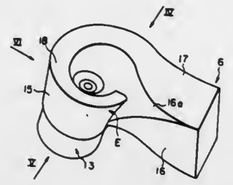
adjusting the position of said tappet bolt along the length of said slot by loosening said threaded nut and rotating said first and second adjustment plates on said parallel surfaces as desired to thereby vary the effective push rod arm length and the stroke of the valve.

4,519,346

HELICALLY-SHAPED INTAKE PORT OF AN INTERNAL COMBUSTION ENGINE

Kiyoshi Nakanishi, and Takeshi Okumura, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 38,819, May 14, 1979, abandoned. This application Aug. 4, 1981, Ser. No. 290,100
Claims priority, application Japan, Sep. 25, 1978, 53-116666
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—188 M **10 Claims**



1. An intake port of a spark-ignition internal combustion engine, which intake port includes a helical portion having an upper wall, a helically curved peripheral side wall, and an outlet at the bottom of the helix, wherein an intake valve is arranged at said outlet, and said peripheral side wall extends circumferentially about an axis of said intake valve, and an inlet passage portion tangentially connected at one end to said helical portion and having an inlet at its other end, said inlet passage portion being defined by an upper wall, a bottom wall, a first side wall, and a second side wall, said second side wall being more remote from the axis of said intake valve than said first side wall and being connected to the peripheral side wall of said helical portion, wherein said first side wall of said inlet passage portion has an inclined wall portion at said other end, the direction in which said wall portion is inclined being such as to make the width of said inlet passage portion above the lower edge of the inclined wall portion at any point along said inlet passage portion narrower than the width of said inlet passage portion below said inclined wall portion at said point, the width of said inclined wall portion increasing gradually towards said helical portion to comprise the entire first side wall at said one end of said inlet passage portion which is tangentially connected to said helical portion such that the cross-sectional shape of the passage at the entrance to the helical portion is trapezoidal, and the intake port comprising a valve guide projecting into said helical portion from the upper wall of said helical portion and having a circumferential wall, an upper part of said first side wall being tangentially connected to the circumferential wall of said valve guide, and a lower part of said first side wall being connected to the peripheral side wall of said helical portion so as to deflect part of the flow through the intake port downwards toward the outlet of the helical portion while allowing the remainder of the flow to pass around the helically curved peripheral side wall, thereby introducing said part of the flow directly into the combustion chamber with minimum flow resistance while allowing said remainder of the flow to develop a strong swirl motion in the helical portion of the intake port.

4,519,347

BRACKET FOR SUPPORTING LOW PRESSURE GAS CARBURETOR AND COMPONENTS

Robert L. Nolff, Romulus, Mich., assignor to Propane Carburetion Company, Inc., Romulus, Mich.

Continuation of Ser. No. 351,019, Feb. 22, 1982, abandoned. This application Aug. 9, 1983, Ser. No. 521,716
Int. Cl.³ F02F *7/00*
U.S. Cl. 123—195 A **4 Claims**

1. In combination with a low pressure gas, internal combustion engine intake manifold having an opening for receiving a fuel and air mixture;

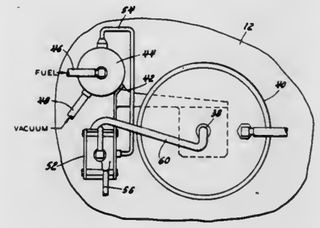
throat means having an opening, and fastener means for mounting the throat means on the intake manifold such that the throat opening is aligned with the intake manifold opening to pass a fuel and air mixture thereto;

a carburetor mounted on the throat means for delivering a fuel and air mixture through the throat means to the intake manifold;

an air cleaner having a generally cylindrical wall mounted on the carburetor such that the carburetor is substantially disposed within the air cleaner;

body means;

first mounting plate means carried by the body means, and second mounting plate means carried by the body means;



a low pressure gas converter mounted on the first mounting plate means, and conduit means for delivering low pressure gas from the converter to the carburetor;

fuel filter means mounted on the second mounting plate means in spaced relationship with respect to the gas converter, and conduit means connecting the fuel filter means to the gas converter;

the body means being supported adjacent the carburetor such that the gas converter and the fuel filter means are disposed adjacent the cylindrical wall of the air cleaner in spaced relationship to the throat means and the carburetor; and

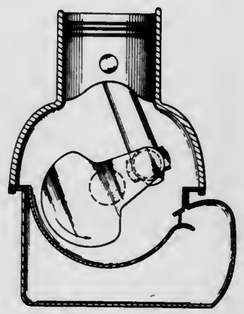
means forming a connection between the body means and the carburetor such that the body means, the throat means, the carburetor, the fuel filter and the converter are removable as a unit from the engine intake manifold.

4,519,348

OIL PAN AND WINDAGE TRAY FOR HIGH PERFORMANCE ENGINES

Edward Hamilton, 1746 Todd Rd., Toms River, N.J. 08753

Filed Apr. 21, 1983, Ser. No. 487,071
Int. Cl.³ F16N *31/00*
U.S. Cl. 123—195 C **12 Claims**



1. An improved tray and skimmer for an internal combustion engine that has rotating components, a crankcase housing at least some of the components, a crankcase housing at least some of the components, a lubrication system for supplying oil to the components, and an oil pan, the tray and skimmer comprising:

(a) a pair of longitudinally extending mounting flanges of a length substantially equal to longitudinally extending surfaces of the crankcase of the engine against which the pan mounts, the mounting flanges having means for mounting the tray and skimmer to the crankcase along the longitudinal surfaces of the crankcase and sandwiched between the crankcase and the pan;

(b) the skimmer extending longitudinally proximate one of the mounting flanges and on the side of the tray that will face opposite the direction of rotation of the engine's rotating components, the skimmer being adapted to scrape oil from the rotating components and for the adjustment of the clearance between it and the rotating components;

(c) the tray and one of the mounting flanges being physically connected together via a wall means with the tray and skimmer underlying the mounting flanges with the skimmer being in position for directing oil flung from rotating components of the engine towards the skimmer and for preventing oil in the pan from splashing up onto the rotating components;

(d) passage means through said wall means located between the tray and the skimmer to pass oil from the rotating components into the pan; and

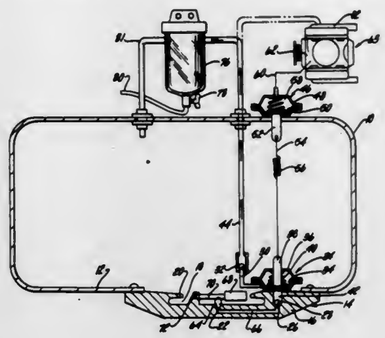
(e) the tray and skimmer being physically separate from the pan so that the clearance between the skimmer and the rotating components can be adjusted without the pan being mounted to the crankcase and blocking visual observation of the clearance.

4,519,349

WATER EJECTOR FUEL SYSTEM

Jack E. Cheney, Haslett, Mich., assignor to Schmelzer Corporation, Flint, Mich.

Filed Nov. 8, 1982, Ser. No. 439,744
Int. Cl.³ F02B *77/06*
U.S. Cl. 123—198 R **20 Claims**



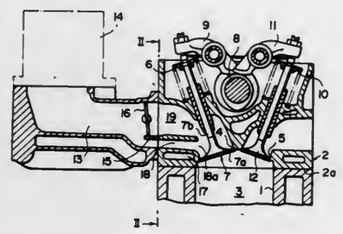
1. Apparatus for ejecting water from a fuel system of an internal combustion engine comprising: a fuel reservoir, pump means having an inlet communicating with said reservoir and an outlet communicating with the exterior of said reservoir, said pump means including reciprocating means movable in one direction to suck fluid to said inlet and movable in the other direction to discharge fluid at said outlet, and actuating means for moving said reciprocating means in said one direction upon starting said engine and in said other direction upon stopping said engine.

4,519,350

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiroyuki Oda; Yasuyuki Morita, and Akihito Nagao, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,618
Claims priority, application Japan, Apr. 26, 1982, 57-69931
Int. Cl.³ F02B *31/00*
U.S. Cl. 123—308 **9 Claims**



1. An improved intake system for an internal combustion engine comprising a primary intake passageway which has an opened end directed toward an intake port of a combustion chamber formed in a cylinder head having and exhaust port and an ignition plug and which connects the intake port with an intake gas source, a secondary intake passageway having an open end directed toward the intake port to connect it to an intake gas source, and intake valve provided in the intake port to close and open it, and a controllable valve means which is adapted to be opened so that the intake gas is introduced into the combustion chamber through both the primary and secondary intake passageways when the load on the engine is not lighter than a predetermined value and to be closed otherwise so that the intake gas is introduced into the combustion chamber only through the primary intake passageway, the center of the primary intake passageway being offset from the center of the cylinder bore, the improvement comprising that the primary intake passageway formed in the cylinder head extends substantially in parallel with the lower end surface of the cylinder head in the vicinity of the intake port so as to introduce the intake gas into the combustion chamber in the direction parallel with said lower end surface the primary intake passageway formed in the cylinderhead has a flat cross sectional configuration in the vicinity of the intake port with its longer axis extending substantially in parallel to the lower end surface of the cylinder head and the primary intake passageway formed in the cylinder head is throated in the vicinity of the intake port by narrowing its width as measured in the direction of the longer axis from upstream toward downstream in the direction of the flow of the intake gas.

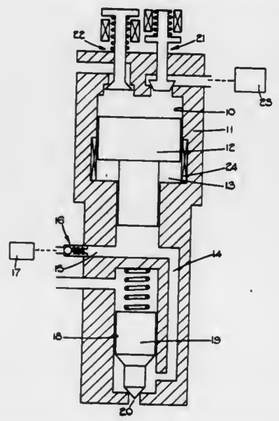
4,519,351

CONTROL SYSTEM FOR A FUEL SUPPLY SYSTEM

Michael A. Archer, Teddington, England, assignor to Lucas Industries, public limited company, Birmingham, England

Filed Aug. 9, 1984, Ser. No. 639,148
Claims priority, application United Kingdom, Aug. 25, 1983, 8322888
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—357 **3 Claims**

1. A control system for a fuel supply pump for an internal combustion engine, the pump being of the kind comprising a pumping piston reciprocable within a bore, an outlet for fuel at high pressure from one end of the bore, said outlet in use being connected to an injection nozzle of an associated engine, a first solenoid operable valve through which liquid under pressure can be admitted to the other end of the bore to cause displacement of said pumping piston towards said one end of the bore and delivery of fuel through said outlet, a second solenoid operated valve through which liquid can escape from said other end of the bore as a result of movement of said piston towards the other end of the bore under the action of fuel under pressure admitted through a non-return valve to said one end of the bore and transducer means for providing an output signal representative of the position of said piston within the bore and the amount of displaceable fuel in the bore comprising a governor circuit for controlling the operation of said first and second solenoid operated valves said governor circuit receiving an operator demand signal and engine position signals whereby the valves are operated in timed relation to the engine said governor circuit producing a desired fuel signal,



comparator means for comparing the desired fuel signal and the output of said transducer means during the period of closure of both valves, said comparator means producing a switch enable signal in the event that the displaceable fuel in said bore is greater than the desired fuel, means including a switch for producing a speed signal the polarity of which depends upon the state of said switch, an integrator which receives said speed signal, a summing amplifier including a summing junction, the output of said integrator being supplied to said summing junction together with said desired fuel signal, the output of said summing amplifier being supplied through circuit means to said governor circuit.

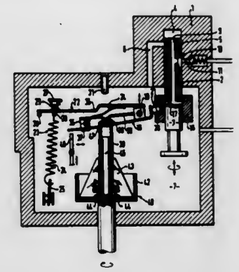
4,519,352

CONTROLLING DEVICE FOR A FUEL-QUANTITY ADJUSTING MEMBER OF A FUEL INJECTION PUMP

Franz Eheim, Stuttgart; Gerald Höfer, Weissach-Flacht; Karl Konrath, Ludwigsburg, and Max Straubel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,810
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147701
Int. Cl.³ F02M *59/24, 59/42*
U.S. Cl. 123—373 **4 Claims**

1. A controlling device for a fuel-quantity adjustment element of a fuel injection pump including a dual-arm adjusting lever pivotable around a shaft, said adjusting lever being coupled with a fuel-quantity adjustment element, a drag lever pivotable around said shaft of the adjusting lever, a governor spring assembly which stresses said drag lever with a variable load/rpm-dependent pressure, a first stop for stopping said drag lever, said adjusting lever communicates with said drag lever by way of a pivotable intermediate lever, a first stop which defines movement of said intermediate lever relative to said drag lever, a second stop which limits the distance between said intermediate lever and said adjusting lever, whereby a first compression spring is disposed between said intermediate lever and said drag lever, and a second compression spring is disposed between said intermediate lever and said adjusting lever, further including a device for generating rpm-dependent pressure transmittable to the drag lever via an adjusting sleeve and counter to a force of the governor spring assembly, whereby the drag lever and the adjusting lever are



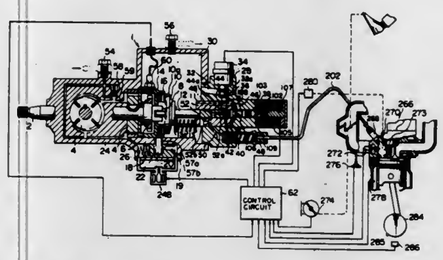
coupled at least at the end of each relative movement effected by the actuating element; the drag lever and the adjusting lever being jointly adjustable by the adjusting sleeve, characterized in that said adjusting lever communicates with at least one adjustable stop in dependence from the operating parameters of a combustion engine.

4,519,353

DIESEL FUEL INJECTION PUMP FUEL INJECTION CUTOFF UPON DETECTION OF EXCESSIVE ACTUAL FUEL COMBUSTION TIME

Yoshiyasu Ito; Fumiaki Kobayashi, and Hideo Miyagi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaishi, Toyota, Japan

Filed Sep. 13, 1984, Ser. No. 650,169
Claims priority, application Japan, Dec. 22, 1983, 58-242968
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—359 **5 Claims**



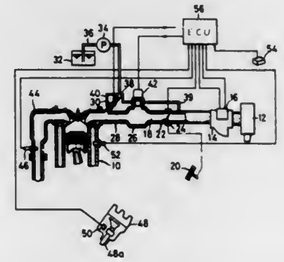
1. For a diesel engine:
a fuel injection pump, comprising:
(a) a means for calculating a proper fuel injection amount per each engine stroke;
(b) a means for injecting an amount of fuel per each engine stroke approximately equal to said proper fuel injection amount determined by said injection amount calculating means;
(c) a means for calculating a reference combustion time which represents approximately how long combustion in an engine stroke should last;
(d) a means for detecting the approximate start and end of combustion in said engine stroke;
(e) a means for calculating the approximate actual time of combustion in said engine stroke from information furnished by said means for detecting combustion start and end;
(f) a means for cutting off fuel injection; and
(g) a means for actuating said means for cutting off fuel injection according to comparison of said calculated approximate actual combustion time and said calculated reference combustion time.

4,519,354

FUEL SUPPLY SYSTEM IN INTERNAL COMBUSTION ENGINE

Yuuichi Katoh; Hiroki Matsuoka, and Minoru Iwata, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1983, Ser. No. 490,114
Claims priority, application Japan, Apr. 30, 1982, 57-72496
Int. Cl.³ F02B *33/00*
U.S. Cl. 123—472 **2 Claims**



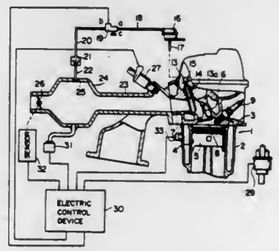
1. A fuel supply system of an internal combustion engine, comprising:
an injector for injecting fuel;
a fuel flow path for supplying fuel to said injector; and
an assist air flow path for supplying assist air to expedite spraying of the fuel to the neighborhood of a jet of said injector, wherein at least part of said assist air flow path is disposed in direct contact with a part of said fuel flow path on an engine compartment side thereof, said part covering an outer periphery of a fuel delivery pipe in a substantially U-shape, whereby said part of the fuel flow path is thermally insulated from the engine compartment and cooled by assist air flowing through said assist air flow path.

4,519,355

METHOD OF CONTROL OF INTERNAL COMBUSTION ENGINE VARIABLE SWIRL AIR-FUEL INTAKE SYSTEM WITH DIRECT AND HELICAL INTAKE PASSAGES

Kazushiro Fujimura, and Toshimitsu Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 10, 1984, Ser. No. 648,976
Claims priority, application Japan, Apr. 24, 1984, 59-82500
Int. Cl.³ F01L *3/06*; F02B *31/00*; F02N *17/00*
U.S. Cl. 123—491 **2 Claims**



1. For an air-fuel intake system, incorporated in an internal combustion engine having a cylinder head which defines a combustion chamber, comprising an intake port a downstream end of which opens to said combustion chamber and which

includes a helical passage which extends helically around and towards its said downstream end and a straight passage which extends substantially straight towards its said downstream end, a fuel injection nozzle which injects fuel into said intake port, and an intake passage switchover control valve system which is controllable so as to selectively alter the proportions of intake flow that pass through said straight passage and said helical passage:

a method of control, wherein from immediately after starting of the engine for a certain time period the amount of fuel injected through said fuel injection nozzle is increased by a ratio dependent on the temperature of the engine, and wherein:

when said fuel injection amount increase ratio is greater than or equal to a certain value, said intake passage switchover control valve system is controlled so as to maximize the proportion of intake flow that passes through said straight passage, irrespective of the operational conditions of the engine; while

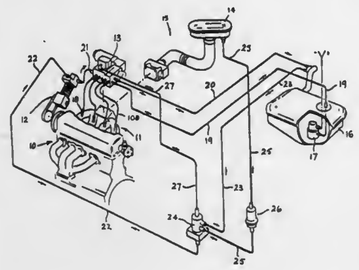
when said fuel injection amount increase ratio is less than said certain value, said intake passage switchover control valve system is controlled so as to alter the proportions of intake flow that pass through said straight passage and said helical passage, according to the operational conditions of the engine.

4,519,356

INTERNAL COMBUSTION ENGINE FUEL AND AIR SYSTEM

Tony R. Sarich, Karrinyup, Australia, assignor to Orbital Engine Company Proprietary Limited, Balcatta, Australia

Filed Dec. 30, 1982, Ser. No. 454,658
Claims priority, application Australia, Dec. 31, 1981, PF2126
Int. Cl.³ F02M *69/08*
U.S. Cl. 123—533 **19 Claims**



1. Apparatus for supplying liquid fuel by gas pressure to an engine comprising

a gas circuit including a means to supply compressed gas to a fuel metering device and a gas reservoir from which gas is drawn by said means and to which gas or gas and fuel are returned from the fuel metering device,

a liquid fuel circuit including means to supply liquid fuel to the fuel metering device a liquid fuel reservoir from which liquid fuel is drawn by said means and to which fuel or gas and fuel are returned from the liquid fuel metering device,

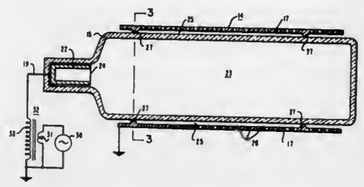
said gas reservoir and fuel reservoir being in communication so that the compressed gas supply means may draw gas including entrained fuel vapour from both reservoirs.

4,519,357

AIR IONIZER FOR INTERNAL COMBUSTION ENGINES

Don M. McAllister, Wethersfield, Conn., assignor to Am-Air Limited Partnership, Md.

Filed Sep. 29, 1982, Ser. No. 428,471
Int. Cl.³ F02M *27/00*
U.S. Cl. 123—539 **18 Claims**



1. An air ionizer, comprising:

a glass tube having a major portion with a generally cylindrical electrically nonconductive wall with inner and outer wall surfaces, and an extension substantially coaxial with said major portion;

an inner electrode disposed entirely within the extension of said tube;

an ionizable gas comprising an inert gas or mercury vapor disposed within said tube in communication with said inner electrode and the inner wall of the major portion of the tube;

a foraminous outer copper electrode spaced from and substantially surrounding the outer surface of only the major portion of said tube; and

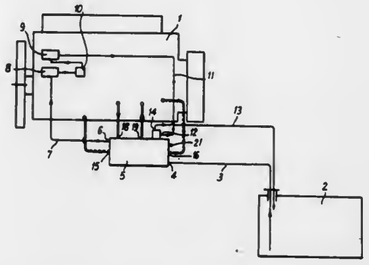
means for applying a high voltage between said inner and outer electrodes to ionize said gas and to generate ozone in air or oxygen-containing gas introduced into the space adjacent said outer surface of said tube.

4,519,358

FUEL HEATING METHOD AND DEVICE FOR VEHICLES

Jean E. A. Redele, Paris, France, assignor to Sxoma-Energie, Paris, France

Filed Feb. 22, 1984, Ser. No. 582,502
Claims priority, application France, Feb. 22, 1983, 83 02821
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **6 Claims**



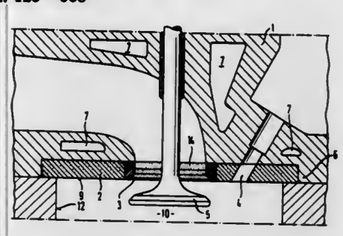
1. In an internal combustion diesel engine including means for circulating an engine cooling liquid through said engine, and means for circulating an engine lubricating oil through said engine for lubricating the moving parts thereof, a fuel tank for said engine, and a device for heating diesel fuel circulating from said fuel tank to said engine, the improvement wherein said device comprises a heat exchanger, three separate heat exchange circuits within said heat exchanger, including a first circuit for circulating engine cooling liquid from said engine, a second circuit for circulating fuel from said fuel tank to said engine, and a third circuit for circulating motor lubricating oil, and wherein said heat exchanger includes means defining separate heat exchange surfaces between said oil circuit and said fuel circuit, between said cooling liquid circuit and said fuel circuit and between said oil circuit and said cooling liquid circuit, for effecting simultaneously direct heat exchange between the fuel to be heated and the motor lubricating oil, and between the fuel to be heated and the engine cooling liquid, such that said diesel fuel passing through said heat exchanger absorbs heat from the relatively cool engine cooling liquid and is further heated by the hotter motor lubricating oil to a significantly higher degree than that available solely from the engine cooling liquid without danger of overheating the diesel fuel.

4,519,359

MULLITE PLATE

Ulf Dworak, Baltmannsweiler; Hans Olapinski, Aichwald; Dieter Fingerle, Hochdorf; Ulrich Krohn, Leonberg, all of Fed. Rep. of Germany; Martti J. A. Hakulinen, Rönninge, and Bengt N. J. Palm, Nykvarn, both of Sweden, assignors to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,172
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307115
Int. Cl.³ F02F *1/24*
U.S. Cl. 123—668 **5 Claims**



1. In a cylinder head of a piston engine having a thermal insulation component in the form of a planar plate made by sintering from ceramic materials and which has openings therethrough, the improvement comprising said thermal insulation component substantially covering the surface of the cylinder head facing the combustion chamber and being shrink-fitted or gripped in the cylinder head, said insulation component consisting of: 2 to 30 vol.% of a first oxide selected from the group consisting of zirconium oxide and hafnium oxide; from about 1 to 3 mol.% of a second oxide selected from the group consisting of oxides of magnesium, calcium, yttrium and a mixture thereof, with respect to said first oxide; a maximum of 0.5 wt.% of other oxidic impurities; and the remainder mullite to make up 100 vol.%.

4,519,360

ACCELERATOR PEDAL CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Terukiyo Murakami, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 9, 1984, Ser. No. 598,204
Int. Cl.³ F02D *9/00*
U.S. Cl. 123—399 **3 Claims**

1. An accelerator pedal control system for an automotive vehicle, which comprises:

(a) an accelerator pedal;

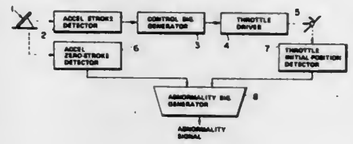
(b) a throttle valve;

(c) means for detecting a stroke of said accelerator pedal and outputting an accelerator pedal stroke signal;

(d) means for calculating a target throttle valve opening rate in response to the detected accelerator pedal stroke signal and generating a target throttle valve opening rate control command signal corresponding thereto;

(e) means for driving said throttle valve in response to the target throttle valve opening rate control command signal;

(f) means for detecting that said accelerator pedal is at its zero-stroke position and outputting an accelerator pedal zero-stroke signal;



(g) means for detecting that said throttle valve is at its initial position and outputting a throttle valve initial-position signal; and

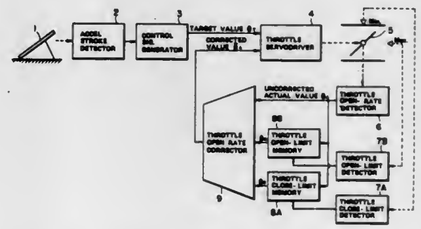
(h) means for generting an abnormality command signal when the throttle-valve initial-position signal is not outputted within a predetermined time interval after the accelerator pedal zero-stroke signal has been outputted.

4,519,361

THROTTLE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Terukiyo Murakami, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 9, 1984, Ser. No. 598,205
Claims priority, application Japan, Apr. 11, 1983, 58-63285
Int. Cl.³ F02D *9/00*
U.S. Cl. 123—399 **5 Claims**



1. A throttle control system for an automotive vehicle, which comprises:

(a) an accelerator pedal;

(b) a throttle valve;

(c) means for detecting a stroke of said accelerator pedal and outputting an accelerator pedal stroke signal;

(d) means for calculating a target throttle valve opening rate in response to the detected accelerator pedal stroke signal and generating a target throttle valve opening rate control command signal corresponding thereto;

(e) means for detecting an actual throttle valve opening rate and outputting an actual throttle valve opening rate signal corresponding thereto;

(f) means for detecting that said throttle valve is driven to its fully-closed position and outputting a throttle valve close-position signal corresponding thereto;

(g) means for detecting that said throttle valve is driven to its fully-open position and outputting a throttle valve open-position signal corresponding thereto;

(h) means for storing the actual throttle valve fully-closed position opening rate in response to the throttle valve close-position signal;

(i) means for storing the actual throttle valve fully-open position opening rate in response to the throttle valve open-position signal;

(j) means for correcting the actual throttle valve opening

rate on the basis of the stored actual throttle valve fully-closed and fully-opened position opening rates and outputting a corrected throttle valve opening rate; and

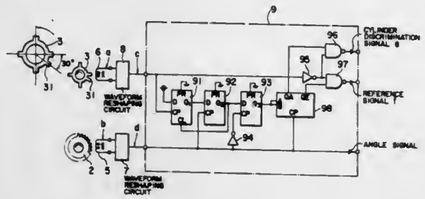
(k) means for driving said throttle valve in response to the target throttle valve opening rate control command signal and the corrected actual throttle valve opening rate signal.

4,519,362

ROTATIONAL POSITION DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Miyao Arakawa, Nagoya; Akihiko Takenaka, Kariya; Masahiro Sato, Toyoake; Hideo Ohyama. Toyota; Hiroo Utsumi, Kariya, and Shingo Inoue, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 5, 1984, Ser. No. 617,475
Claims priority, application Japan, Jun. 6, 1983, 58-100606
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—414 **4 Claims**



1. A rotational position detecting apparatus for internal combustion engines comprising:

first and second signal producing means each thereof including a signal rotor fixedly mounted on a rotary shaft rotating in synchronism with the rotation of an internal combustion engine and rotational position detecting elements arranged to face said signal rotor, said first signal producing means producing angle signals at intervals of a predetermined rotational angle of said engine, the signal rotor of said second signal producing means provided with a plurality of first signal producing positions each thereof corresponding to a reference angular position of one of a plurality of cylinders of said engine and a second signal producing position between two adjacent ones of said first signal producing positions and corresponding to a predetermined angular position of a specified one of said engine cylinders;

a first and a second waveform reshaping circuit for reshaping the waveform of output signals from said first and second signal producing means, respectively; and

a signal processing circuit for receiving output signals from said first and second waveform reshaping circuits and utilizing the reshaped angle signals supplied from said first waveform reshaping circuit as clock signals to separate reference signals indicative of said reference angular positions of said engine cylinders and a cylinder discrimination signal indicative of said predetermined angular position of said specified engine cylinder from among the output signals of said second waveform reshaping circuit and to output said reference signals and said cylinder discrimination signal.

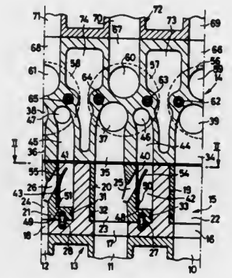
4,519,363

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE PROVIDED WITH SEVERAL INTAKE VALVES

Luigi Bernardoni, Tradate-Varese, and Domenico D'Angelo, Monza-Milan, both of Italy, assignors to Alfa Romeo Auto S.p.A., Napoli, Italy

Filed Jan. 17, 1984, Ser. No. 571,663
Claims priority, application Italy, Feb. 2, 1983, 19397 A/83
Int. Cl.³ F02M *25/06;* **F02B** *27/00*
U.S. Cl. 123—432 **4 Claims**

1. An intake system for a multi-cylinder internal combustion engine of the type comprising plural intake ducts and plural engine actuated intake valves for each cylinder, each engine actuated intake valve being arranged in a respective one of said plural intake ducts, and further comprising a non-return valve for each cylinder arranged inside one of said plural intake ducts



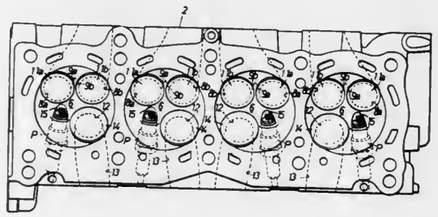
of each cylinder in series with the respective one of said engine actuated intake valves, said non-return valve being arranged to allow fluid flow towards the respective cylinder and to prevent fluid flow from said one of said plural intake ducts to the outside.

4,519,364

VALVE-ACTUATING MECHANISM FOR THREE-VALVE INTERNAL-COMBUSTION ENGINE

Masaru Enomoto, Wako; Kenji Kimura, Sayama, and Keiichi Kawada, Soka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,286
Claims priority, application Japan, Nov. 24, 1982, 57-205829
Int. Cl.³ F02M *23/04, 7/00*
U.S. Cl. 123—432 **2 Claims**



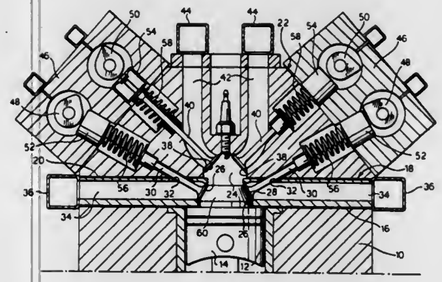
1. In a three-valve internal-combustion engine having a combustion chamber formed in the inner surface of a cylinder head so as to face the upper surface of a piston, two intake valves arranged side by side on one side of a roof surface of said combustion chamber, and an exhaust valve and an ignition source disposed on the other side thereof, a valve-actuating mechanism comprising: a cam shaft axially disposed along a straight line substantially equidistant from said intake valves and said exhaust valve; two intake valve-actuating cams and one exhaust valve-actuating cam mounted on said cam shaft, said exhaust valve-actuating cam being disposed between said two intake valve-actuating cams, with said two intake valve-actuating cams being symmetrically parallel to each other; rocker arm shafts supported on said cylinder head so as to extend parallel to said cam shaft; and intake rocker arms and an exhaust rocker arm pivotably mounted on said rocker arm shafts, said valve-actuating cams and the stem ends of said two intake valves and said exhaust valve engaging said intake rocker arms and said exhaust rocker arm, respectively, one of said two intake rocker arms and said exhaust rocker arm being formed to have the same dimensions for interchangeability therebetween.

4,519,365

RECIPROCATING INTERNAL COMBUSTION ENGINE WITH MULTIPLE-VALVE CYLINDERS

Mario Anfusio, Via S. Matteo 23, Moncalieri (Torino), Italy

Filed Feb. 17, 1984, Ser. No. 581,017
Claims priority, application Italy, Feb. 24, 1983, 67207 A/83
Int. Cl.³ F02B *15/00*
U.S. Cl. 123—432 **2 Claims**



1. A reciprocating internal combustion engine of the type including an engine block defining at least one cylinder, a piston slidable in said at least one cylinder, a head structure which defines a combustion chamber in correspondence with said at least one cylinder, a pair of transversely opposed mushroom valves associated with the combustion chamber and disposed in a V relative to the axis of said at least one cylinder, said valves having stems slidably mounted in the head structure, respective seats for said valves formed in said head structure facing the combustion chamber, and inlet and exhaust ducts defined by the head structure terminating at said valve seats respectively, wherein the improvement comprises:

said head structure including a cylinder head and a separate inserted plate clamped between the cylinder head and said engine block;

said combustion chamber of said at least one cylinder being formed in said cylinder head in a position centered on the axis of the cylinder;

said inserted plate being formed with an aperture centered on the axis of said at least one cylinder which puts the cylinder into communication with the combustion chamber;

said inserted plate defining, in correspondence with said at least one cylinder, at least one first pair of opposing valve seats facing said communication aperture, said seats having respective associated mushroom valves with stems slidable in said cylinder head, first respective inlet/exhaust ducts terminating at the valve seats of said at least one first pair, and respective holes in which said valve stems are slidable;

said cylinder head defining, in correspondence with said at least one cylinder, at least one second pair of opposing valve seats facing into said combustion chamber, said seats having respective associated mushroom valves with stems slidable in said cylinder head, the axes of these valves being substantially coplanar with the axes of said valves of said at least one first pair of seats, and respective second inlet/exhaust ducts terminating at the valve seats of said at least one second pair, and

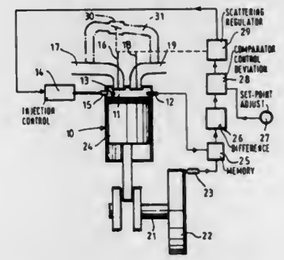
said piston having on its crown a projection of a form adapted to substantially fill said communication aperture when the piston is at top dead-centre.

4,519,366

METHOD AND APPARATUS FOR CONTROLLING THE COMPOSITION OF THE COMBUSTION CHARGE IN INTERNAL COMBUSTION ENGINES

Michael G. May, Bel Air, CH-1180 Rolle, Switzerland

Filed Mar. 24, 1983, Ser. No. 478,567
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210810
Int. Cl.³ F02D *35/02*
U.S. Cl. 123—435 **31 Claims**



1. An apparatus for controlling the composition of a combustion charge in an internal combustion engine having externally supplied ignition, said charges comprising an oxygen infused gas and a fuel, and said engine including a crankshaft, at least one cylinder having a piston operatively connected to said crankshaft for reciprocal motion therein, a combustion chamber in which during each combustion cycle a combustion charge is progressively ignited beginning at an ignitor location within said chamber to cause said piston to move toward an extreme position, and the progressive ignition of said charge defining a flame-front which expands throughout said chamber from said ignition location, comprising:

detection means in proximity with said combustion chamber and said crankshaft for directly ascertaining events ϕ corresponding to combustion and crankshaft angle,

means for storing a plurality of values of said events,

means for determining the scattering value of said stored events ϕ for consecutive combustion charges,

means providing a set-point value of a target scatter value of said events,

comparison means for comparing said scatter value of said stored values with said set-point value, and

regulating means responsive to said comparison means for adjusting the composition of said charge.

7. A method for controlling the composition of combustion charges in an internal combustion engine having externally-supplied ignition, said charges comprising an oxygen infused gas and a fuel, and said engine including a crankshaft, at least one cylinder having a piston operatively connected to said crankshaft for motion therein, a combustion chamber in which during each combustion cycle a combustion charge is progressively ignited beginning at an ignition location within said chamber to cause said piston to move towards an extreme position, and the progressive ignition of said charge defining a flame-front which expands throughout said chamber from said ignition location, comprising the steps of:

directly detecting in said chamber during at least one operating range of said engine an event in terms of a value ϕ caused by combustion of said charges related to said piston position at which a predetermined status of said events is attained,

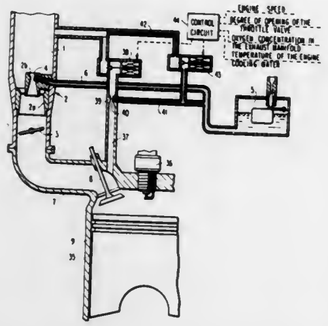
determining the scattering value of said events for consecutive combustion charges, and

regulating said scattering value towards a set-point value of said scattering by adjusting the composition of said charge.

4,519,367
CARBURETOR

Isshi Nomura, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 28, 1983, Ser. No. 461,708
Claims priority, application Japan, Jan. 28, 1982, 57-12292
Int. Cl.³ F02M 7/16
U.S. Cl. 123—440
4 Claims

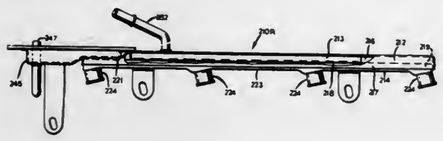


1. A carburetor for an internal combustion engine having an intake manifold and a suction valve means comprising a first air passage having an upper portion in communication with the atmosphere and a lower portion adapted to be connected to the intake manifold of an internal combustion engine, first venturi means and throttle valve means located in said first air passage, a fuel supply chamber, a first fuel passage having one end in communication with said first venturi means and the other end in communication with said fuel chamber, a second air passage having one end in communication with said intake manifold downstream of said throttle valve means and immediately upstream of said suction valve means and the other end in communication with said first air passage upstream of said first venturi means, second venturi means located in said second air passage, a first solenoid operated valve device positioned within said second air passage for controlling the flow of air therethrough, a second fuel passage having one end in communication with said second venturi means and the other end in communication with said fuel chamber, a third air passage having one end in communication with said second fuel passage and the other end in communication with said first air passage upstream of said first venturi means and a second solenoid operated valve device positioned in said third air passage to control the flow of air therethrough.

4,519,368
FUEL INJECTION RAIL ASSEMBLY

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Lambertville, Mich.

Continuation-in-part of Ser. No. 374,485, May 4, 1982, Pat. No. 4,457,280. This application Jun. 22, 1984, Ser. No. 623,403
Int. Cl.³ F02M 55/02
U.S. Cl. 123—468
8 Claims

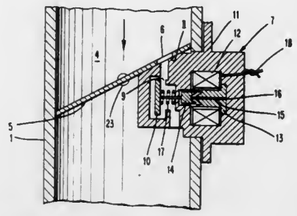


1. A fuel rail assembly for holding a plurality of separate electromechanical fuel injectors in position on an internal combustion engine, said assembly comprising: an elongated hollow fuel rail beam, a plurality of injector cups mounted in a row along said beam in circular apertures, said cups being in direct fluid communication with the hollow interior of said beam, and a divider in said beam partitioning said interior into passageways one of which has a closed end and an open end, said open end being in fluid communication with another passageway which provides a fluid flow path in a counter current direction to the flow path of said first mentioned passageway.

4,519,369
AIR SUCTION DEVICE FOR DIESEL ENGINE

Kazuhiko Kitamura, Nagoya, Japan, assignor to Aisin Keiki Kabushiki Kaisha, Japan

Filed Dec. 23, 1982, Ser. No. 452,828
Claims priority, application Japan, Dec. 26, 1981, 56-214836
Int. Cl.³ F02D 9/08
U.S. Cl. 123—337
4 Claims



1. An air suction device for a diesel engine having a throttle valve disposed within an air suction passage, said air suction device comprising:

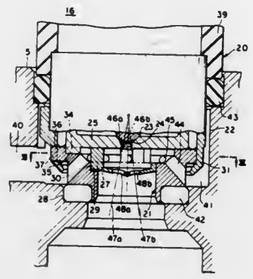
a. an opening in said throttle valve through which air may pass even when said throttle valve is in a closed position; and

b. air flow controlling means positioned within said air suction passage adjacent said throttle valve for selectively controlling the flow of air which may pass through said opening in said throttle valve, said air flow controlling means including: (i) an air flow passage which is located within said air suction passage and which is aligned to receive air from said opening of said throttle valve when said throttle valve is in a closed position, and (ii) valve means for selectively restricting the flow of air through said air flow passage in response to a control signal.

4,519,370
FUEL INJECTOR ELECTRONICALLY CONTROLLED ENGINE

Minoru Iwata, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1983, Ser. No. 491,642
Claims priority, application Japan, Feb. 23, 1983, 58-24452[U]
Int. Cl.³ F02B 15/00
U.S. Cl. 123—432
5 Claims



1. In an internal combustion engine wherein a combustion

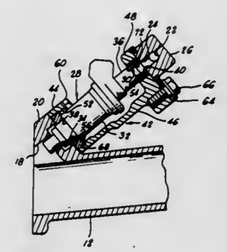
chamber has a plurality of intake valves, intake air is divided into intake air path portions each leading to one of the intake valves and a fuel injector is provided upstream of the intake air path portions, said injector having means for admitting air thereto to collide with injected fuel in the fuel injector to atomize the injected fuel, characterized in that:

the fuel injector has a plurality of fuel injection ports directed into the respective intake air path portions and a plurality of air-fuel injection ports each aligned coaxially downstream of a respective fuel injection port and through which injected fuel passes after colliding with incoming air.

4,519,371
MOUNTING DEVICE FOR FUEL INJECTION NOZZLES FOR INTERNAL COMBUSTION ENGINES

Hidenobu Nagase; Shigeru Suzuki, and Shinichi Shimada, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1982, Ser. No. 438,919
Claims priority, application Japan, Nov. 4, 1981, 56-176616; Nov. 4, 1981, 56-163803[U]
Int. Cl.³ F02M 55/00
U.S. Cl. 123—470
10 Claims



1. A device for mounting fuel injection nozzles and a fuel supply manifold for the nozzles to an engine, the nozzles each being of a type having upper and lower mounting surfaces perpendicular to the axis of the nozzle, comprising

a mounting structure of unitary construction having first and second coaxial, rigidly spaced holes for receipt of one fuel injection nozzle therein;

first attachment means for fixing said mounting structure to the engine;

second attachment means for fixing the fuel supply manifold to said mounting structure;

first and second seals positioned in said first and second holes respectively on the lower and upper mounting surfaces of the nozzle, said mounting structure being sized to compress said seals between the fuel supply manifold and the engine when assembled therewith, said first hole including a first shoulder in a plane perpendicular to the axis of said first hole facing away from said second hole, said first seal being resilient and extending from said first shoulder to beyond the end of said hole for compression of said first seal when said mounting structure is assembled with the engine and said first shoulder including a step in the surface of said first hole and a washer positioned at and retained by said step, said first seal abutting against said washer.

4,519,372
GAS INJECTION VALVE

James E. Hoffman, 6000 Linwood, Odessa, Tex. 79763

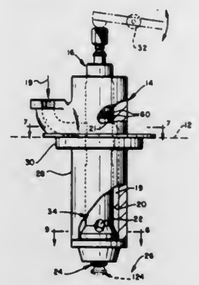
Filed Aug. 12, 1983, Ser. No. 522,862
Int. Cl.³ F02M 61/14
U.S. Cl. 123—470
13 Claims

1. In a gas engine having a cylinder head to which there is attached a valve cage, and a valve cartridge supported within the cage, wherein gaseous fuel can be connected to flow into the cage and through the cartridge, the combination with the cage of a valve cartridge for controlling fuel flow from the cage into a combustion chamber associated with the cylinder head;

said valve cartridge includes a main housing for support of said cartridge respective to a cage, a valve stem reciprocatingly received within said main housing, a valve seat affixed to the lower end of said main housing, seal means between said main housing and said stem;

said main housing has an axial passageway formed therethrough with said stem and seal means and seat being axially aligned therewith;

said main housing being separable into upper and lower members, with said seat being formed at the lower terminal end of the lower member, and with there being a valve element at one end of the valve stem which sealingly engages said seat when the valve stem is reciprocated to the open position; means attaching the confronting ends of said upper and lower members together, a seal chamber



formed in the marginal confronting ends of said upper and lower members, a unitized seal assembly removably received within said seal chamber;

said seal assembly has an internal seal means which sealingly engages a medial length of said valve stem, and an external seal means which sealingly engages a circumferentially extending wall formed on the interior of said seal chamber;

the axial passageway through said upper members form a valve stem guide; said axial passageway enlarges so it passes through the lower marginal end of said lower member and forms an annular gas passageway;

means forming a gas inlet port which extends through said main body and into said annular gas passageway;

said valve seat is in communication with said annular gas passageway; whereby,

said main housing can be separated into said upper and lower members to enable said seal assembly to be removed from the cartridge.

4,519,373
INTERNAL COMBUSTION ENGINE HAVING A VARIABLY ENGAGABLE SLIPPING WET CLUTCH FOR DRIVING A SUPERCHARGER

James A. Hardy, Playa del Rey, and David L. Alfano, Redondo Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 30, 1982, Ser. No. 432,056
Int. Cl.³ F02B 39/12
U.S. Cl. 123—559
3 Claims

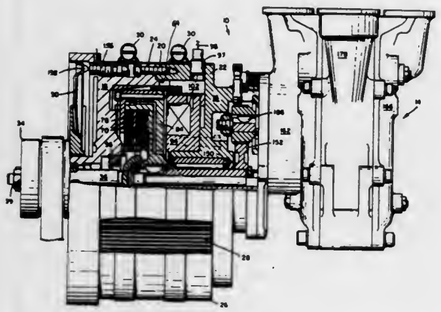
1. A supercharger of the type which converts engine torque into boost energy for delivery to the engine in the form of compressed air comprising:

compressor means communicated with a source of air to the engine and rotatably drivable for compressing the air and directing the same towards the engine;

a variably engagable slipping wet clutch means communi-

cated with the engine in torque receiving relationship thereto and with the compressor means to be capable of transmitting said torque to the compressor means and drive the same;

modulating means for variably controlling the amount of engine torque transmitted through said clutch means and to said compressor means to control the speed of the compressor;

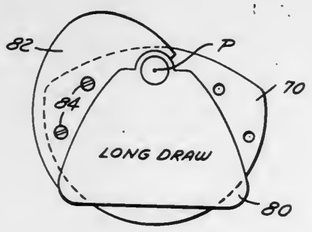


lubricant distribution means for passing a lubricant about said clutch means to cool and lubricate the latter and to further enhance the ability of said clutch means to vary the amount of torque transmitted to said compressor means;

fan means for cooling said clutch means, said fan means in torque receiving relationship to said engine; and

means, mounted to said fan means for relaying an engine parameter to said modulating means.

4,519,374
COMPOUND ARCHERY BOW
Larry D. Miller, 852 Dressler La., Rochester, Mich. 48063
Filed Jul. 6, 1982, Ser. No. 395,728
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—23 R **11 Claims**

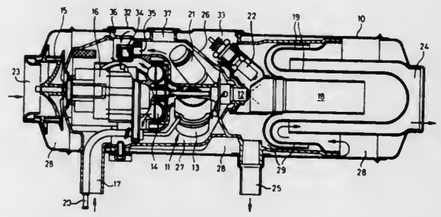


1. In a compound shooting bow having a handle section and flexing limbs extending in opposite directions from said handle, each limb having a tip-mounted set of compound pulleys pivoted about a pivot axis, a draw string extending between said pulleys, and cables anchored respectively at each limb tip and passing to pulleys at the other limb tip, that improvement in which each set of compound pulleys comprises:

(a) a primary bow string pulley rotatable on said pivot axis, and

(b) a second base cable pulley juxtaposed with said primary pulley rotatable with and on the same axis as said primary pulley, and a plurality of add-on plates mountable on said primary pulley in the plane of said secondary pulley to alter the draw lengths of said bow string.

4,519,375
HOT-AIR HEATER
Rüdiger Galtz, Munich, Fed. Rep. of Germany, assignor to Webasto-Werke W. Baier GmbH & Co., Gauting, Fed. Rep. of Germany
Filed Feb. 14, 1984, Ser. No. 579,942
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310501
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 B **10 Claims**



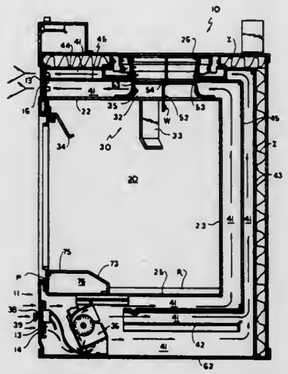
1. A hot-air heater, especially for vehicles, having a burner secured in a housing, a fuel supply means for delivering fuel to said burner and a combustion-air fan for feeding combustion-air to said burner; combustion-air, exhaust-gas and heating-air ducts being constructed within said housing; a glow plug, said housing having an opening providing access to at least one space that is connected to at least one of the combustion-air and exhaust gas ducts and in which at least said glow plug is situated, a housing cover for closing said space relative to the outside of the heater and which also encloses said plug relative to the exterior of said heater; wherein, on the pressure side of the combustion-air fan, a combustion-air exhaust opening is provided which communicates with said combustion air duct and is blocked from communication with the outside of the heater only when the housing cover is fastened in place closing said space, and which is dimensioned in such a say that, when the combustion-air exhaust opening is not blocked, sufficient combustion air is exhausted therethrough exteriorly of the heater so that operation of the heater is not possible.

4,519,376
FIREPLACE ASSEMBLY
Terry G. Schoeff, Andrews, Ind., and Raymond A. Hemmert, deceased, late of Huntington, Ind. (by First National Bank, executor), assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 252,656, Apr. 9, 1981, abandoned. This application Oct. 4, 1983, Ser. No. 528,194
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **6 Claims**

1. A fireplace assembly having a combustion chamber including an open front end, a hearth, a rear wall, left and right side walls, a top wall substantially parallel to said hearth, a flue outlet opening in said top wall and a flue assembly; said flue assembly comprising:

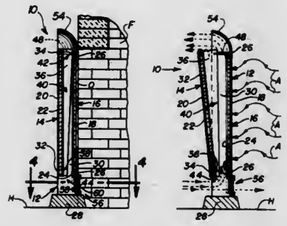
a flue operatively mounted to said flue outlet opening and means mounted in said combustion chamber for diverting flow of combustion air and gases toward said flue outlet opening to reduce the pressure drop of the combustion air and gases exiting said combustion chamber; said flow diverting means including a pair of L-shaped, generally rectangular diverter plates mounted in said combustion chamber and being symmetrically arranged with respect to said flue outlet opening, one end and an adjacent side of each diverter plate being, respectively, positioned in abutting relation to at least a side wall and said top wall of said combustion chamber, said L-shaped end extending toward and terminating adjacent said flue outlet opening; and

said flue including an inwardly curved base defining a converging nozzle whereby the velocity and turbulence of the combustion air and gases are reduced and are diverted



toward said flue outlet opening to prevent spillage of smoke and other combustion air and gases into the room.

4,519,377
FIREPLACE HEAT TRANSFER APPARATUS
Thomas E. Taylor, 610 Highland Ave., Cheswick, Pa. 15204
Filed Jun. 1, 1984, Ser. No. 616,094
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **11 Claims**



1. Fireplace heat transfer apparatus, comprising:

(a) a main inner panel assembly supported across an opening of a fireplace so as to be heated by a fire in said fireplace to a temperature elevated above the temperature of ambient air outside of said fireplace, said main inner panel assembly including

(i) a main frame structure adapted to be mounted across said fireplace opening, and

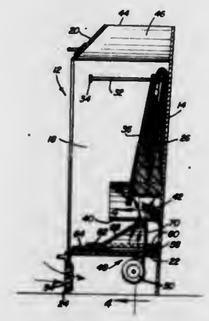
(ii) at least one inner panel supported by said main frame structure across said fireplace opening, said inner panel being a first transparent plate of glass; and

(b) an auxiliary outer panel assembly supported by said inner panel assembly across said fireplace opening and spaced forwardly of said inner panel assembly so as to define a heat transfer chamber therebetween having top and bottom openings for communicating said chamber with said ambient air, said auxiliary panel assembly being movable relative to said main panel assembly between a first position in which said heat transfer chamber has a first volume supporting a first rate of convective thermosiphon flow of heated ambient air upwardly therethrough from said bottom opening to said top opening and a second position in which said heat transfer chamber has a second volume greater than said first volume and supporting a second rate of convective thermosiphon flow of heated ambient air greater than said first rate, said auxiliary outer panel assembly including

(i) an auxiliary frame structure pivotally mounted at its bottom end to a lower portion of said main frame structure, and

(ii) at least one outer panel supported by said auxiliary frame structure adjacent said inner panel being supported by said main frame structure, said outer panel being a second transparent plate of glass and being located more remote from said inner panel of said main inner panel assembly at said top opening when said auxiliary panel assembly is disposed in said second position than when disposed in said first position, whereby said heat transfer chamber has a generally uniform cross-section when said auxiliary panel assembly is disposed in said first position and a generally upwardly diverging cross-section when said auxiliary panel assembly is disposed in said second position.

4,519,378
HEATING DEVICE
Philip B. Mims, P.O. Box 36, Lorton, Va. 22079
Filed Aug. 13, 1981, Ser. No. 292,539
Int. Cl.³ F23G *3/00*
U.S. Cl. 126—225 **6 Claims**



1. A heating device for consuming newspapers by converting them to a carbon-like material and burning this material at a controlled rate comprising a housing having an open top and an open front defined by wall members, support means for suspending folded newspapers in the housing, a screen means engaging the front surface of the newspapers to control combustion thereof and to retain the newspapers in assembled relationship in order to assure complete combustion of the newspapers and to utilize the heat produced thereby, a forced draft device associated with the lower portion of the housing and newspapers supported thereon, a screen means extending below the newspapers supported in the housing and above the forced draft device, said forced draft device including a movable diffuser located below the screen means below the newspapers to supply air along a horizontally elongated area under the supported newspapers, said means supporting folded newspapers including a pair of generally horizontally disposed support rods supported in the housing and including free forward ends, said support rods engaging and deforming the side edges of a folded newspaper disposed between the support rods with the free lower edges thereof adjacent the screen means.

4,519,379
CONTROL SYSTEM FOR SOLAR HEATERS
Robert T. Schultz, P.O. Box 633, Wrightwood, Calif. 92397
Filed Jun. 24, 1983, Ser. No. 507,337
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **6 Claims**

1. A solar-heating system including:

solar-energy collecting means for collecting energy from a solar-energy source;

transferring means for transferring elsewhere solar-generated heat energy from said solar-energy collecting means; and,

control means for controlling said transferring means, said control means including:

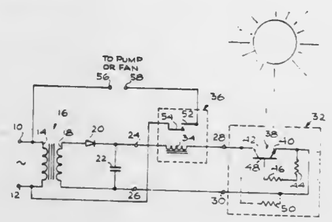
terminal means adapted to receive operating power for said transferring means;

a source of D.C. operating power for said control means;

a relay having a solenoid and at least one pair of normally-open contacts;

a sensor module including a phototransistor having a collector, an emitter and a base;

said sensor module also including a temperature-sensitive resistor coupled between said emitter and said base of said phototransistor;



said collector being coupled through said solenoid to said source of D.C. operating power;

said phototransistor being responsive to solar energy incident thereon to become conductive at a solar energy level dependent upon the magnitude of said temperature-sensitive resistor;

said relay being responsive to conduction by said phototransistor to close said normally open contacts;

said normally open contacts being adapted for serial connection between at least one of said terminal means and said transferring means;

said sensor module being located remotely with respect to said solar-energy collecting means but facing said solar-energy source.

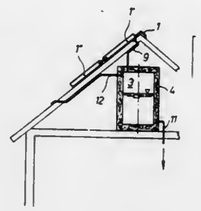
4,519,380

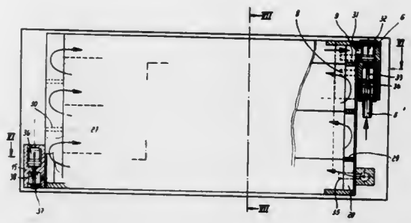
INTERMITTENT THROUGH-FLOW COLLECTOR

Karsten Laing, Herrenstrasse 57, 7500 Karlsruhe, Fed. Rep. of Germany

Division of Ser. No. 469,081, Mar. 1, 1983, abandoned, which is a continuation of Ser. No. 123,408, Feb. 20, 1980, abandoned. This application Jun. 21, 1984, Ser. No. 623,532
Claims priority, application Austria, Feb. 27, 1979, 1498/79
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **3 Claims**

1. A solar collector system having an absorber element including fluid flow channels therein, a cold water inlet positioned at the vertically lowest point in the absorber and adapted to be connected to a pressurized source of cold water through a cold water inlet valve, and a hot water outlet positioned at the vertically highest point in the absorber and connected with a hot water holding tank leading to a hot water utility circuit positioned vertically lower than said tank whereby said tank maintains operating pressure in said circuit; characterized in that said hot water outlet is in unrestricted communication with said hot water holding tank, in having a temperature sensor in the hot water outlet which opens said inlet valve upon the water temperature in the hot water outlet reaching a predetermined value and which closes said inlet valve when said temperature is below said predetermined value whereby hot water in said channels is intermittently displaced by cold water from said cold water inlet and whereby water pressure within the fluid flow channels of the absorber is independent of the pressure of the cold water of the cold water inlet, and in that said cold water inlet valve includes a valve body positioned at the top of the absorber having a cold water inlet socket connected to said pressurized source, a cold water outlet socket, a movable valve plate separating the cold water outlet socket and the cold water inlet socket, a hot water outlet region connected to the absorber, a hot water





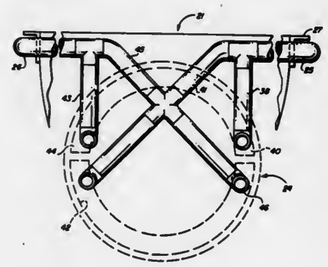
outlet socket connecting said outlet region with said holding tank, a thermal expansion element in said outlet region operatively connected to said valve plate and a hose connecting said cold water outlet socket with said lowest point of the absorber element.

4,519,381

SOLAR HEATING APPARATUS AND METHOD

Gerald J. Tremblay, 7015 Leighton Way, Orlando, Fla. 32807

Filed Feb. 7, 1984, Ser. No. 577,787
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **6 Claims**



1. A solar heating apparatus comprising in combination:

a frame;

a solar collector for collecting and concentrating solar energy, said solar collector being movably mounted to said frame;

solar tracking means for moving said solar collector on said frame during daylight hours responsive to differential heating of a plurality of fluid filled containers located on said solar collector, said solar tracking means having:

a solar collector rotating means attached between said frame and said solar collector and being attached to said solar tracking means plurality of fluid filled containers for rotating said solar collector on said frame; and

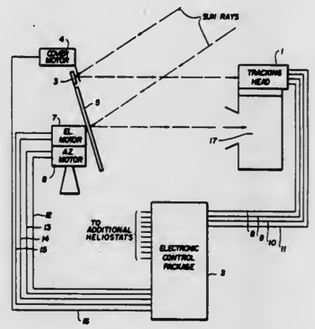
a pair of arcuate cylinders and a pair of pistons located in said solar collector rotating means with each said fluid filled container operatively connected to each said cylinder to apply fluid pressure in each said arcuate cylinder and against each said piston, each piston dividing one arcuate cylinder into two pressure cylinder areas, so that each said piston has a portion of one of said arcuate cylinder's on each side thereof to rotate said solar collector on said frame responsive to a fluid pressure differential.

4,519,382

CONTROL SYSTEM FOR HELIOSTATS AND METHOD

Harry L. Gerwin, 14305 Ansted Rd., Silver Spring, Md. 20904

Filed Jun. 14, 1983, Ser. No. 504,350
Int. Cl.³ F24J *3/02*; G01J *1/20*
U.S. Cl. 126—425 **7 Claims**



1. A control system for sequentially controlling the movement of a plurality of heliostats employed in combination with a solar receiver, comprising:

means for controlling the elevational rotational orientation of each heliostat;

means for controlling the azimuthal rotational orientation of each heliostat;

a tracking mirror operatively associated with each heliostat;

tracking means operatively associated with the solar receiver and arranged to receive reflected sun rays from each tracking mirror sequentially, said tracking means including transducer means for generating signals indicative of both the relative elevational and azimuthal rotational orientation of the heliostat being sequenced; and

control means connected sequentially to the means for controlling the elevational rotational orientation of each heliostat, the means for controlling the azimuthal rotational orientation of each heliostat, and the tracking means, said control means receiving the signals generated by the transducer means and generating control signals for activating the means for controlling the elevation rotational orientation of each heliostat, and the means for controlling the azimuthal rotational orientation of each heliostat, to thereby adjust the relative elevational rotational and relative azimuthal rotational position of each heliostat, so that sun rays reflected by the heliostat are received by the solar receiver, wherein:

(i) the transducer means comprises four solar sensors arranged in any array on the perimeter of the image of a sun ray received by the tracking means, such that two of said sensors are displaced along a horizontal axis to generate a signal related to aximuth orientation of the heliostat being sequenced and the other two of said sensors are displaced along a vertical axis to generate a signal related to elevational orientation of the heliostat being sequenced;

(ii) said control means including:

a tracking generator board connected to the tracking means;

a power board connected to the tracking generator board, to the means for controlling the elevational rotational orientation of each heliostat, and to the means for controlling the azimuthal rotational orientation of each heliostat;

a commutator board connected to the tracking generator board and to the power board; and

a system clock connected to the tracking generator board and to the commutator board;

(iii) the tracking generator board when activated by the system clock generates tracking drive activation signals from the transducer generator signals, said tracking drive activation signal being applied to said power board which generates the control signal for activating the means for controlling the elevational rotational orientation of each heliostat and the means for controlling the aximuthal rotational orientation of each heliostat; and

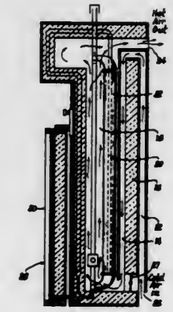
(iv) the commutator board controls the generation of said tracking drive activation signal by the tracking generator board in sequence among the heliostats.

4,519,383

ANTI-REVERSE SIPHON SOLAR HEATING SYSTEM

William J. Larkin, 432 Begonia, Corona del Mar, Calif. 92625

Filed Mar. 30, 1984, Ser. No. 595,485
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **7 Claims**



1. An anti-reverse siphon fluid heating system for heating a fluid mass comprising:

(a) a continuous fluid flow passageway, comprising, in downstream order,

(i) an ascending passageway having at the bottom thereof an inlet from said fluid mass;

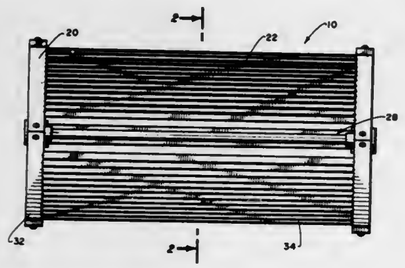
(ii) a descending passageway communicating at its top to the top of said ascending passageway through an inversion loop, an insulation positioned between said ascending and descending passageways for thermallly insulating said descending passageway from said ascending passageway;

(iii) an ascending heating chamber communicating with the bottom of said loop, and having a hot fluid outlet at the top thereof for communicating with said fluid mass to deliver hot fluid thereinto;

(b) a heating element heated by energy derived from the sun and disposed in said heating chamber, whereby while said heating element heats fluid in said chamber, natural convection forces hot fluid through said outlet, and when said heating element is dormant, pressure heads in said ascending and descending passageways block reverse circulation of the system.

4,519,384
CONCENTRATING SOLAR BEAM COLLECTOR
R. Michael Murtha, 10965 Del Norte #210, Ventura, Calif. 93004

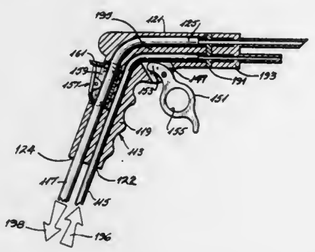
Filed May 14, 1984, Ser. No. 609,701
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **9 Claims**



1. A concentrating solar beam collector comprising:
a frame;
a louvered panel assembly including a louvered panel forming an upper surface and a louvered panel forming an under surface mounted on said frame and defining an interior enclosed area, said louvered panels including a plurality of spaced louvers having light reflective surfaces; and
an energy converting device mounted on said frame, said energy converting device being located within said enclosed area, said louvered panels being situated so that some light rays are reflected from the surface of said louvers of the upper surface of the energy converting device while other light rays pass between the spacing of the louvers forming the upper surface and are reflected by the louvers forming the under surface of the energy converting device.

4,519,385
LAVAGE HANDPIECE
Robert W. Atkinson, Dover; Joseph W. Elliott, and Donald W. Johnson, both of Minerva, all of Ohio, assignors to Snyder Laboratories, Inc., Dover, Ohio

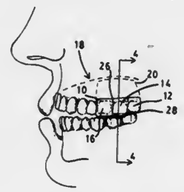
Filed Dec. 1, 1982, Ser. No. 445,807
Int. Cl.³ A61H *9/00*; A61M *1/00*
U.S. Cl. 128—66 **21 Claims**



1. A medical lavage handpiece having a suction line, the handpiece comprising:
(a) a housing having a depending grip portion and an extending forward facing portion;
(b) a compressible irrigation tube having a first end for connecting to an external irrigant liquid source and a second end in fluid communication with said first end for providing an outlet means for the irrigant liquid;
(c) a chamber means within the housing for receiving the irrigation tube;
(d) a slot in the housing extending from an outer surface of the housing and communicating with said chamber; and
(e) a manually operable trigger means for pivoting in said slot and for engaging said tube for controlling the flow of fluid in said irrigation tube,
wherein said handpiece further includes a compressible suction tube having a first end for connecting to an outside suction source, and a second end in fluid communication with said first end for providing an inlet means for the flow of suction, said suction tube including a clamping means for controlling the suction flow through the suction tube, and wherein the irrigation control trigger includes a finger gripping portion, said handpiece being operable by an operator holding the grip portion with one hand, said irrigation control trigger being operable with a finger of the one hand and said clamping means for the suction tube being operable with the thumb of the one hand, said trigger and clamping means being positioned on the handpiece to facilitate operation of both simultaneously or independently with one hand, and wherein said housing includes an external means for selectively attaching and detaching the suction tube to the outside of the housing, comprising at least one support member attached externally to said housing, the support member having a slot therein to receive the suction tube.

4,519,386
MOUTH SPLINT
Ashley H. Sullivan, 401 Gallaher View Rd., Apt. #46, Knoxville, Tenn. 37923

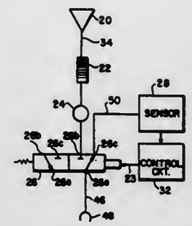
Filed Jul. 29, 1983, Ser. No. 518,617
Int. Cl.³ A61F *5/56*
U.S. Cl. 128—136 **15 Claims**



1. A concealed resilient and flexible mouth splint for placing in the mouth of an individual around the upper maxillary posterior teeth to effect the tonus of the masticator muscles of the individual comprising:
a left channel shaped member and a right channel shaped member made of a resilient and flexible non-toxic material, said left and right channel members for fitting over the left first molar and the right first molar, respectively, each of said left and right channel members having a biting member with a top and bottom side, said top side being molded to conform with the biting surface of said first molars, each of said left and right channel members having an inner wall integrally joined with said biting portion and molded to conform to the interior lateral surface of said first molars, and each of said left and right channel members having an outer wall intrigally joined with said biting portion and molded to conform to the exterior lateral surface of said first molar; and
a palate member made of said resilient and flexible material arching between and integrally joined with said inner wall of said left channel member and said inner wall of said right channel member, said palate member being molded to conform with the roof of the mouth of an individual wearing said mouth splint, said biting portion of said left and right channel member including a sufficient amount of said flexible and resilient material to maintain said top and bottom sides of said biting portion spaced a selected distance by said biting portion of said left and right channel members, and such that an air way is maintained through the mouth of the wearer.

4,519,387
RESPIRATING GAS SUPPLY METHOD AND APPARATUS THEREFOR
Gerald Durkan, Altoona, Pa., and Leonard M. Sieracki, Columbia, Md., assignors to Kircaldie, Randall and McNab, trustee, Wethersfield, Conn.

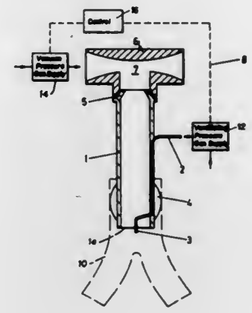
Division of Ser. No. 446,542, Dec. 3, 1982, Pat. No. 4,462,398. This application Jun. 22, 1984, Ser. No. 623,594
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.23 **6 Claims**



1. A method of supplying a fixed volume of supplemental respirating gas per unit time to an in vivo respiratory system comprising the steps of:
(a) predetermining a volumetric flow rate R_1 of said supplemental respirating gas;
(b) predetermining the time duration T_1 of each application of said supplemental respirating gas to said to vivo respiratory system, said time duration T_1 being less than an inspiration period having a duration T_2 during which negative pressure relative to ambient pressure exists in said in vivo respiratory system at the location whereat respirating gas is introduced to said system; said rate R_1 being set at a value such that it produces at least as great a rise in the partial pressure of said gas in blood interfacing with said respiratory system as a continuous application of said gas at a lower rate R_2 for the duration T_2;
(c) predetermining said required minimum delay interval between successive applications of said gas at the rate R_1 to said in vivo respiratory system;
(d) connecting said in vivo respiratory system to sensing means;
(e) using said sensing means to sense negative pressure at the beginning of inspiration in said in vivo respiratory system;
(f) determining if said sensing of negative pressure in said vivo respiratory system occurs within said delay interval preceding the next application of said gas to said in vivo respiratory system;
(g) connecting said in vivo respiratory system to a supply of gas for the time duration T_1 only if said sensing of negative pressure in said in vivo respiratory system does not occur within said delay interval, said connection facilitating an application of said gas to said in vivo respiratory system;
(h) reconnecting said in vivo respiratory system to said sensing means after an application of said gas to said in vivo respiratory system; and,
(i) repeating steps (e) through (h) for a plurality of consecutive inspiration periods, whereby no greater volume of supplemental respirating gas than said fixed volume is supplied to said in vivo respiratory system during a unit of time.

4,519,388
RESPIRATOR APPARATUS AND METHOD OF OPERATION THEREOF
Erik Schwanbom, Lübeck; Horst Frankenberger, Bad Schwartau, both of Fed. Rep. of Germany, and Marcel Baum, Vienna, Austria, assignors to Drägerwerk A.G., Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,386
Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119814
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.25 **3 Claims**



1. A respirator device for use in a patient's trachea comprising:
a tracheal tube (1) having one open end (1*a*) adapted for insertion into a person's trachea, and an opposite open end (5);
a line (2) for ventilating gas extending into said tracheal tube and terminating in a jet nozzle (3) directed out of said tube one open end (1*a*) into the person's trachea;
ventilating gas supply means (12) connected to said jet nozzle via said line (2) for supplying ventilating gas in gas jet pulses having a frequency above 300 cycles per minute during an inspiration phase of said respirator device;
an extension piece (6) defining a through passage therethrough having an input end, an output end and an intermediate necked down portion (7), said output end communicating with the atmosphere, said opposite open end of said tracheal tube connected to said extension piece between the input and output ends and substantially perpendicular thereto and said extension piece defining a connecting passageway extending between the interior of said trachea tube at said opposite open end (5) and said necked down portion (7) of said extension piece through passage, said through passage shaped so that when pressurized gas is applied to said input end a vacuum appears in the interior of said opposite open end (5) of said trachea tube (1);
vacuum pressure gas supply means connected to said extension piece and communicating with said input end of said through passage for supplying gas pulses for producing vacuum pulses in the interior of said opposite open end of said tracheal tube (5); and
control means connected to said vacuum pressure gas supply means and to said ventilating gas pressure means for synchronizing vacuum pulses with jet gas pulses through said jet nozzle in such a way that a jet gas pulse or a series of jet gas pulses is followed by a vacuum pulse, and for controlling said vacuum pressure gas supply means for producing vacuum pulses with frequencies ranging from 10 to 1,000 cycles per minute.

4,519,389

THERMOELECTRIC CRYOPROBE

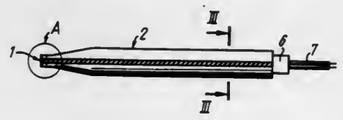
Timofei S. Gudkin, ulitsa Dibenko, 23, korpus 5, kv. 92; Evgeny K. Iordanishvili, prospekt Morisa Toreza, 40, korpus 4, kv. 35, both of Leningrad; Nikolai S. Lidorenko, ulitsa Kibalchicha, 2, korpus 1, kv. 217, Moscow; Bella E. Malkovich, prospekt Morisa Toreza, 102, korpus 2, kv. 13; Mikhail I. Razumovsky, prospekt Smirnova, 71, kv. 15, both of Leningrad, and Igor B. Rubashov, ulitsa Novo-Alexeevskaya, 1, kv. 151, Moscow, all of U.S.S.R.

PCT No. PCT/SU81/00028, § 371 Date Nov. 8, 1982, § 102(e) Date Nov. 8, 1982, PCT Pub. No. WO82/03169, PCT Pub. Date Sep. 30, 1982

PCT Filed Mar. 23, 1981, Ser. No. 442,223

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **20 Claims**



1. A thermoelectric cryoprobe, comprising:

a handle comprising two electrically separated longitudinal half-cylinders made of a high heat conduction material;

a semiconductor cooling thermoelement having a hot junction in contact with said two half-cylinders, said thermoelement including a commutation plate mounted on one end of said handle and in direct contact with the latter by said hot junction, the height of said thermoelement does not exceed its radius, and said commutation plate having a functional surface which is a working surface of said thermoelectric cryoprobe;

a heat sink for removal of heat from said semiconductor cooling thermoelement, said heat sink comprising said two electrically separated longitudinal half-cylinders forming part of said handle; and

means for feeding current to the longitudinal half-cylinders of said handle.

4,519,390

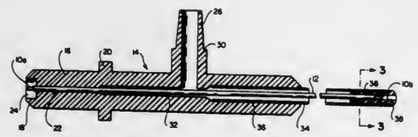
FIBER OPTIC LASER CATHETER

Kenneth J. Horne, Kaysville, Utah, assignor to HGM, Inc., Salt Lake City, Utah

Filed Oct. 15, 1982, Ser. No. 438,041

Int. Cl.³ A61N *5/06*; A61B *17/36*

U.S. Cl. 128—303.1 **1 Claim**



1. In a laser system having a laser providing in a cylindrical female connector fitting a focused laser beam, apparatus for communicating said beam from its source in said fitting to a medical treatment site, comprising:

(a) an optical fiber assembly, comprising:

(i) a continuous length of optical fiber of at least 600 microns in diameter extending between a proximal input end and a distal output end;

(ii) continuous cladding surrounding said fiber between substantially short unclad end portions at the proximal input and distal output ends thereof; and

(iii) a continuous flexible tube providing a sheath over a major portion of the length of said fiber and cladding;

(b) an integral plastic molded connector having;

(i) a cylindrical body with one cylindrical end, designated the proximal end, formed to fit within said cylindrical female laser connector fitting with the opposite end of said body being designated as its distal end;

(ii) an annular collar formed around said body and spaced from its proximal end a first distance corresponding to the proper depth of insertion of said cylindrical body proximal end into said cylindrical female laser connector fitting;

(iii) a cylindrical open-ended, inwardly-extending cavity formed in said body proximal end concentric with the axis of said body;

(iv) a first bore concentric with the axis of said body extending from a base portion of said cavity for a second distance substantially equal to the said first distance, said proximal end of said fiber and cladding being snugly fitted and secured within said first bore with the proximal unclad end portion of said fiber extending into said cavity for a third distance less than the depth of said cavity selected to allow said unclad fiber to be self-supporting therein along a fixed axis substantially coinciding with the axis of said first bore;

(v) a second bore of greater diameter than said first bore forming an extension of said first bore and extending toward the distal end of said body for a fourth distance equal to the length of a selected central portion of said body, said optical fiber and its cladding being loosely mounted therein with said greater diameter providing coolant gas flow space surrounding said optical fiber and cladding;

(vi) a formed cylindrical tubular port structure concentric with an axis perpendicular to the axis of said body and extending outwardly from said central portion thereof, said port structure forming an outlet communicating with said second bore and adapted for receiving a tubular connection to a source of coolant gas for flowing said gas into said second bore to cool the said optical fiber and cladding mounted therein;

(vii) a third bore forming a continuation of said second bore and concentric with the axis of said body, said third bore being of greater diameter than said second bore and having a length of the proximal end of said tube sheath secured therein and another portion of said optical fiber and cladding loosely mounted therein whereby coolant gas introduced into said second bore may flow into said third bore and within said tube sheath to cool the remaining portion of said optical fiber and cladding enclosed by said sheath and extending to the distal end thereof; and

(c) an integral plastic molded cylindrical collet secured in the said distal end of said sheath, said collet having a bore extending therethrough and being slotted to permit flow of coolant gas therethrough, the distal end of said optical fiber and cladding being secured in said outlet with the unclad distal end of said optical fiber being mounted and self-supported at a position recessed within the bore of said collet.

4,519,391

ENDOSCOPE WITH SIGNAL TRANSMISSION SYSTEM AND METHOD OF OPERATING SAME

Makoto Murakoshi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 28, 1982, Ser. No. 425,463

Claims priority, application Japan, Oct. 20, 1981, 56-167568

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.15 **16 Claims**

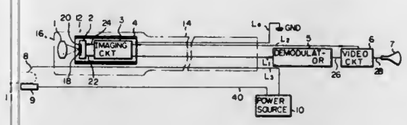
1. An endoscope system having a viewing head connected to an elongated sheath comprising:

an electrical instrument;

a high frequency current source electrically connected to said electrical instrument to drive said instrument;

imaging means provided in said viewing head for picking up an image to produce a video signal representative of the image;

frequency modulator means interconnected to said imaging means for generating a carrier wave having a frequency band substantially different from a frequency band of the current produced from said current source, said modulator means frequency modulating the carrier wave with the video signal to produce a frequency modulated signal;



visualizing means responsive to the frequency modulated signal developed by said frequency modulator means for visualizing the video signal by reproducing the picked up image on a display; and

transmission means provided in said sheath for transmitting the frequency modulated signal from said frequency modulator means to said visualizing means.

4,519,392

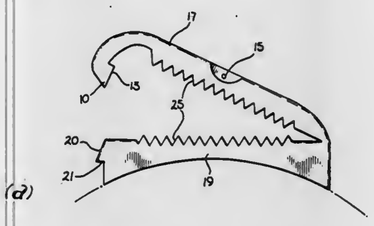
HEMOSTASING MUSCLE CLIPS FOR NEEDLELESS SURGERY

Robert W. Lingua, 3246 Alabama St., La Crescenta, Calif. 91412

Filed Oct. 12, 1982, Ser. No. 433,800

Int. Cl.³ A61B *17/12*

U.S. Cl. 128—325 **16 Claims**



1. An extraocular muscle clip system comprising:

(i) a first and second elongated clip, each clip comprising:

(a) a hinge means at one end;

(b) a pair of oppositely facing jaws, said jaws being interconnected at said hinge means and having opposed faces surfaced with a muscle grabbing means, at least one of said jaws having an exterior surface adjacent the eye in use, said exterior surface being arcuately shaped to substantially conform to the curvature of the eye; and

(c) an open end with a locking means whereby said jaws may be closed thereby securely clamping onto said muscle; and,

(ii) a connecting means for connecting said first and second clips together.

4,519,393

FITTING FOR CORRUGATED TUBE

Roger J. Elgas, Littleton, and Timothy M. Gordon, Morrison, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Apr. 26, 1982, Ser. No. 371,979

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—400 **2 Claims**

1. A blood heater comprising

a casing having blood inlet means and blood outlet means and a hole through it, said casing providing a blood flow path from said inlet means to said outlet means,

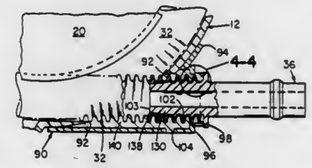
a helically corrugated tube made of heat conductive material within said casing, and having an end passing through said hole,

a tubular member having an end adapted for connection to a source of heated fluid and an end with external helical threads formed on it connected to an end of said tube,

said threads being sized to provide a small clearance with the interior surface of said corrugated tube,

first potting material filling the voids between said threads and said interior surface,

a seal cover means having a flange conforming to the outside



surface of said casing surrounding said hole and an extending portion that ends near said end of said tube and has a hole through which said helically corrugated tube and tubular member pass, and

second potting material sealing said outside surface surrounding said hole, said exterior surface of said tube, and the interior surface of said cover means to each other,

said end of said helically corrugated tube being positioned outside of said blood flow path to direct any heated liquid leaking between said corrugated tube and tubular member outside of said casing.

4,519,394

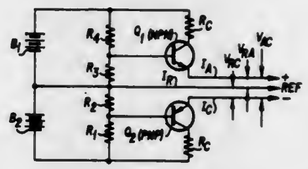
METHOD AND APPARATUS FOR CATHODIC POTENTIAL CONTROL IN ELECTRICALLY INDUCED OSTEOGENESIS

Jonathan Black, King of Prussia, and Thomas J. Baranowski, Jr., Philadelphia, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Mar. 7, 1983, Ser. No. 472,567

Int. Cl.³ A61N *1/20*

U.S. Cl. 128—419 F **10 Claims**



1. A method of stimulating osteogenesis at a tissue site in living tissue internal to a skin surface, said method comprising the steps of:

providing an anode, a cathode, and a reference electrode;

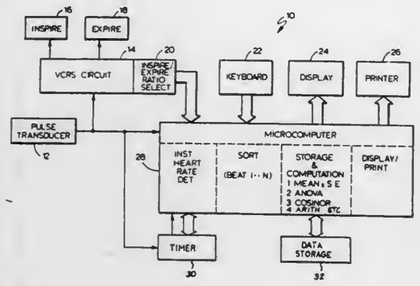
locating said cathode at said tissue site, said anode in contact with said living tissue and said reference electrode in contact with said living tissue remote from said tissue site; and

applying a direct current from said cathode to said anode and maintaining a potential between said cathode and said reference electrode substantially constant.

4,519,395
MEDICAL INSTRUMENT FOR NONINVASIVE MEASUREMENT OF CARDIOVASCULAR CHARACTERISTICS

William J. M. Hrushesky, 5049 Colfax Ave. South, Minneapolis, Minn. 55419

Filed Dec. 15, 1982, Ser. No. 450,066
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—671 35 Claims



1. An apparatus for noninvasive quantitative measurement of characteristics of a cardiovascular system of a human object, the instrument comprising:

noninvasive pulse transducer means for providing signal pulses representative of sensed heart beats of the human subject;

voluntary cardiorespiratory synchronization means responsive to the signal pulses for providing stimulae which permit the human subject to voluntarily synchronize the subject's respiratory cycles with the subject's heart beats;

instantaneous heart rate measurement means responsive to the signal pulses for providing digital data representative of instantaneous heart rate at each heart beat of a plurality of N-beat voluntarily synchronized respiratory cycles;

data sorting means for sorting the digital data by each of N-beat categories;

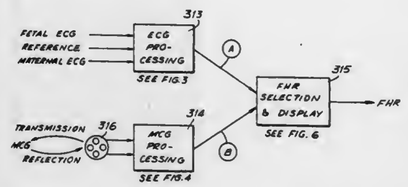
data analysis means for analyzing the sorted digital data to derive a digital value indicative of a characteristic of the subject's cardiovascular system; and

output means for providing a human perceivable output as a function of the derived digital value.

4,519,396
FETAL HEART RATE MONITOR APPARATUS AND METHOD FOR COMBINING ELECTRICALLY AND MECHANICALLY DERIVED CARDIOGRAPHIC SIGNALS

Paul Epstein, Brookline; John S. Ballas, Jr., Newton; John J. Mandler, Jr., Allston, and Joseph M. Van Horn, Cambridge, all of Mass., assignors to American Home Products Corporation (Del.), New York, N.Y.

Division of Ser. No. 25,720, Mar. 30, 1979, Pat. No. 4,299,234. This application Nov. 5, 1981, Ser. No. 318,338
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—698 4 Claims



1. The method of generating an output signal indicative of the rate of fluctuation of a human fetal heart, comprising the steps of:

(A) coupling an input electrocardiographic signal from a fetus-carrying female human;

(B) processing said electrocardiographic signal to produce a first electric signal indicative of the rate of fluctuation of the heart of said fetus;

(C) coupling an input mechanical cardiographic signal from said human;

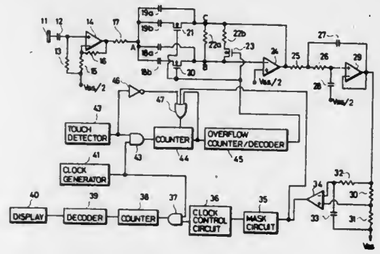
(D) processing said mechanical cardiographic signal to produce a second electric signal indicative of the rate of fluctuation of the heart of said fetus; and

(E) interdependently processing both said electric signals to produce an enhanced output signal, relative to at least one of said electric signals, indicative of said fetal heart rate.

4,519,397
PULSE DETECTOR

Junichi Tabata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,427
Claims priority, application Japan, Aug. 26, 1981, 56-133573
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—706 9 Claims

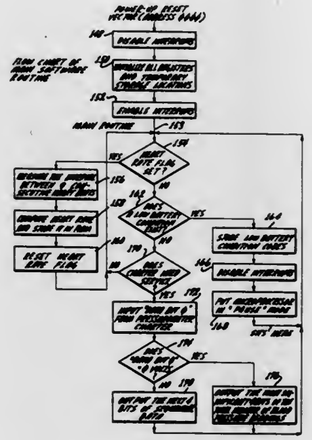


1. In a pulse detector of the type having a pulse detecting portion having an electrocardiac potential sensing electrode for sensing electrocardiac potentials, an amplifier for amplifying electrocardiac potential signals derived from said electrocardiac potential sensing electrode, a filter for eliminating noise and being connected to said amplifier, and a voltage comparator for detecting electrocardiac potentials higher than a predetermined potential level and producing corresponding output signals; a signal processing circuit connected to said voltage comparator for processing the output signals and producing processed output signals; and a display responsive to the processed output signals for indicating a pulse rate; the improvement comprising timer means connected to said voltage comparator and operable when enabled to effect a change of the filter characteristics of said filter if an electrocardiac potential higher than said predetermined potential level is not detected within a preselected given time, said timer means including a clock generator for producing a clock signal, and a counter for counting said clock signal and having a reset terminal connected to receive the output signals from said voltage comparator; and enabling means for enabling said timer means.

4,519,398
METHOD AND APPARATUS FOR LONG-TERM MONITORING OF PHYSIOLOGICAL ACTIVITY TO PROVIDE A COMPACT PORTABLE RECORD

Andrew I. Lisiecki, Irvine, and Alan S. Wong, Escondido, both of Calif., assignors to Del Mar Avionics, Irvine, Calif.

Continuation of Ser. No. 55,384, Jul. 9, 1979, abandoned. This application Jan. 21, 1982, Ser. No. 341,309
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—710 8 Claims



1. A method for creating a long term chronology of a physiological parameter of a patient comprising the steps of:

coupling a portable, lightweight apparatus to said patient;

coupling transducers to said patient;

intermittently sensing said physiological parameter through transducers coupled to said patient and to said apparatus;

intermittently storing said physiological parameter sensed in a solid state memory included in said apparatus; and

intermittently storing a time-of-day signal in said memory corresponding to each one of said stored physiological parameters;

selectively ceasing said storing of said physiological parameter upon a power reduction; and

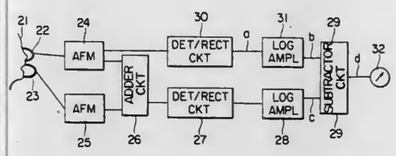
continuing said storing of said time-of-day signal during said power reduction,

whereby said chronology of patient's physiological parameters is created.

4,519,399
METHOD FOR MEASURING THE DEGREE OF NASALITY

Kiyoharu Hori, Hino, Japan, assignor to Rion Kabushiki Kaisha, Japan

Filed Dec. 2, 1983, Ser. No. 557,536
Claims priority, application Japan, Dec. 13, 1982, 57-218210
Int. Cl.[3] A61B 5/00
U.S. Cl. 128—724 8 Claims

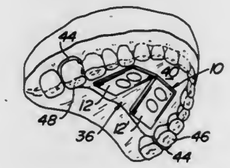


1. Apparatus for measuring the degree of nasality in human voice sounds comprising means for independently isolating and measuring without leakage the exhaled air flow rate through the nose and the exhaled air flow rate through the mouth of a person resulting from a phonation, and means for determining the degree of nasality by comparing the air flow rates.

4,519,400
METHOD FOR STIMULATING SALIVATION

Henry S. Brenman, Cinnaminson; Philip Katz, Princeton Junction, both of N.J., and Graydon E. Beatty, Philadelphia, Pa., assignors to Biosonics, Inc., Philadelphia, Pa.

Filed Apr. 1, 1983, Ser. No. 481,331
Int. Cl.[3] A61B 5/05; A61N 1/36
U.S. Cl. 128—741 4 Claims

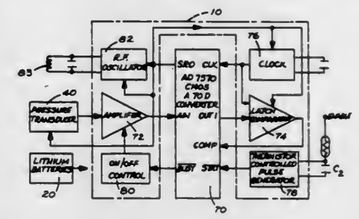


1. A method for stimulating salivation, comprising the steps of locating and stimulating the nerves of the oral cavity of a user to identify areas which are sensitive to neural stimulation by electrical means, placing in the oral cavity of the user means for generating and applying a stimulating signal directly to said areas, and applying said signal directly to at least one of said areas.

4,519,401
PRESSURE TELEMETRY IMPLANT

Wen H. Ko, Cleveland, Ohio, and Albert M. Leung, Kitchener, Canada, assignors to Case Western Reserve University, Cleveland Heights, Ohio

Filed Sep. 20, 1983, Ser. No. 534,094
Int. Cl.[3] A61B 5/00
U.S. Cl. 118—748 19 Claims



1. Apparatus for monitoring intacranial pressure in a subject, said apparatus comprising:

a pressure transducer for monitoring pressure variations and producing an analog electronic signal output related to said pressure variations;

means for coupling a fluid pressure from an intracranial cavity to said transducer;

transmitter means having an analog to digital converter for converting said analog electronic signal output from said transducer into a sequence of digitial data pulses to encode said pressure into a communication signal suitable for transmission to a remote receiver, said transmitter including switching means responsive to an external signal for switching said transmitter from a quiescent low power state to a higher power transmit state and circuitry coupled to said analog to digital converter for modulating the time between transmission of said sequence of digital data

pulses in response to variations in temperture in a region of said pressure transducer; and

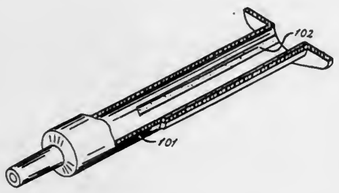
means for hermetically encapsulating said transducer and said transmitter means having a through passage to accommodate said means for coupling.

4,519,402

SYRINGE FOR COLLECTING A LIQUID SAMPLE

Jorgen Andersen, Herlev, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed Aug. 26, 1983, Ser. No. 526,899
Claims priority, application Denmark, Aug. 27, 1982, 3855/82
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—765 **8 Claims**



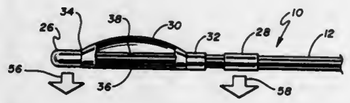
1. A syringe for collecting a liquid sample comprising a syringe cylinder having an end wall defining a sample inlet passage, and a piston having a peripheral contact surface sealingly engaged with the inner surface of the cylinder, the piston being displaceable between a sampling position in which the piston is axially spaced from the cylinder end wall so as to define a sample collecting chamber within the cylinder, and a position closer to said cylinder end wall, the inner cylinder surface including a surface part which comprises a material pervious to gas and impervious to liquid and which extends axially across the contact surface of the piston when the piston is in its sampling position, so as to define at least one venting passage for the sample collecting chamber at at least one axial position of the piston.

4,519,403

BALLOON LEAD AND INFLATOR

Eugene A. Dickhudt, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 29, 1983, Ser. No. 489,882
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **8 Claims**



1. A lead for insertion in the epidural space comprising:

an elongated lead body having a longitudinal axis;

a conductor mounted longitudinally within the leady body;

an electrode mounted on the lead body and conductively connected to the conductor;

inflatable means mounted on the lead body for expansion away from the lead body in a first direction so that contact with walls of the epidural space imparts a net force in a second direction transverse to the longitudinal axis, thereby urging the electrode in the second direction; and

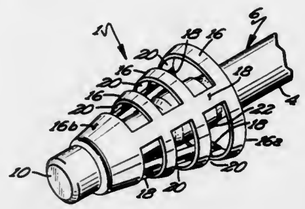
means for passing fluid through the lead body for inflating the inflatable means.

4,519,404

ENDOCARDIAL ELECTRODE LEAD WITH CONICAL FIXATION MECHANISM

John J. Fleischhacker, 16631 Meadowbrook La., Wayzata, Minn. 55391

Filed Sep. 28, 1983, Ser. No. 537,252
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **17 Claims**



1. A transvenous, endocardial pacemaker lead comprising:

an elongated electrical conductor;

an insulating sleeve covering said conductor;

an exposed, conductive electrode at the distal end of said lead electrically connected to said conductor;

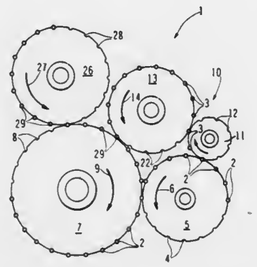
fixation means on the distal end of said lead for holding said lead within the heart with said electrode in conductive contact with heart tissue, comprising a conical shaped head attached to the lead around said insulating sleeve with the enlarged base end of said conical head being the portion of said head most proximally remote from said electrode, and said conical head being comprised of a plurality of rings of successively smaller diameter longitudinally spaced along the length of said lead with said rings decreasing in diameter in a direction from said base end towards said electrode, and a plurality of ribs circumferentially spaced around said rings and interconnected thereto, said ribs extending generally lengthwise of said conical head between said rings, whereby said conical head may be secured within the heart by the catching engagement of said rings with trabeculae of the heart.

4,519,405

SPACER DEVICE FOR FILTER FITTING MACHINE

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Jul. 15, 1982, Ser. No. 398,544
Claims priority, application Italy, Aug. 7, 1981, 49073 A/81
Int. Cl.³ A24C *5/32, 5/35*
U.S. Cl. 131—94 **9 Claims**



1. In a cigarette filter fitting machine, a spacer device comprising an input conveyor for pairs of cigarette pieces, each said pair comprising first and second axially aligned cigarette pieces arranged on the input conveyor transversely of a direction of advancement of said input conveyor and in substantially end-to-end contact with one another; an output conveyor for

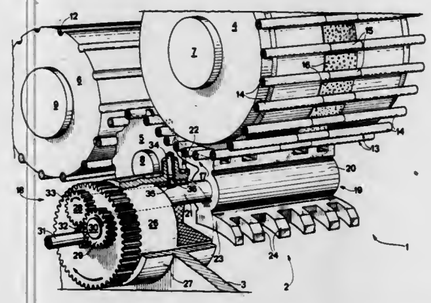
said pairs of aligned cigarette pieces, said output conveyor being tangential to said input conveyor and having means to support first and second cigarette pieces at a predetermined distance from one another axially aligned in pairs; a conveyor chain means extending from an input position on said input conveyor to a portion of said output conveyor adjacent to a zone on said output conveyor tangent to the input conveyor, with the input position bring upstream of said tangency zone; said conveyor chain defining a portion of an advancement path of said first cigarette pieces only between said input and output conveyors and comprising at least a first and a second conveyor substantially tangential to one another; said first conveyor being tangential to said input conveyor, and one of said first and second conveyors being a cigarette piece spacer conveyor; and cigarette piece translation means on said spacer conveyor to axially displace said cigarette pieces a predetermined distance relative to the spacer conveyor itself.

4,519,406

DEVICE FOR APPLYING FILTERS TO CIGARETTES

Riccardo Mattei, Bologna, Italy, assignor to G.D. Società per Azioni, Bologna, Italy

Filed Dec. 9, 1983, Ser. No. 559,826
Claims priority, application Italy, Dec. 22, 1982, 3630 A/82
Int. Cl.³ A24C *5/52*
U.S. Cl. 131—94 **9 Claims**



1. A device for applying filters to cigarettes, comprising a conveyor roller provided with a plurality of uniformly distributed peripheral axial seats arranged to each receive a respective group comprising at least one cigarette and a relative filter element which are axially aligned with each other, and a rolling device cooperating with each of said groups at a rolling station in order to cause the group to roll along a peripheral surface of said roller, characterised in that said rolling device comprises a support member rotatable about a first axis, a support element mounted on said support member and rotatable about a second axis parallel and eccentric to said first axis, a rolling element, extending from said support element and uniformly distributed about said second axis, comprising at least two rolling plates extending therefrom, whereby one rolling plate can retain the cigarette and filter groups against the conveyor roller at the rolling station while at least one other rolling plate may be cleaned, and transmission means interposed between said first and said second axis in order to rotate said support element about said second axis in response to a rotation of said support member about said first axis.

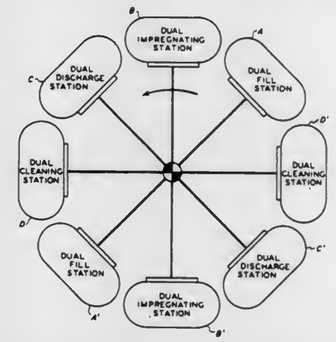
4,519,407

METHOD AND APPARATUS FOR TREATING TOBACCO

John A. Hellier, 20 Leslie La., Katonah, N.Y. 10563

Filed Jun. 13, 1983, Ser. No. 503,932
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **18 Claims**

1. Tobacco treating apparatus comprising a rotary structure, a series of tobacco containers mounted on said rotary structure in circumferentially spaced relation to each other, means for turning said rotary structure incrementally step by step, means forming a series of operating stations in locations spaced circumferentially around said rotary structure, said stations including in circumferential succession a filling station, an impregnating station, a discharge station, and a cleaning station, said stations being so located with respect to said containers on said rotary structure that as said rotary structure turns to carry one container from said filling station to said impregnating station another container will be carried from said impregnating station to said discharge station and another container will be carried from said discharge station to said cleaning station



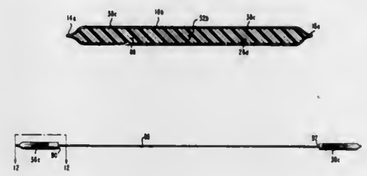
and so on, each of said containers being an open top container adapted to receive a load of tobacco when at said filling station, means for applying a pressure-tight cover to a container at said impregnating station, means for introducing an impregnating medium into said the covered container at said impregnating station, means for removing the cover from the container at said impregnating station after an interval of treatment by said impregnating medium, means for removing the treated tobacco from a container at said discharge station, and means for cleaning the empty container at said cleaning station to make it ready to receive a new load of tobacco.

4,519,408

ORAL HYGIENE DEVICE

Norman Charatan, 22 Varady Dr., Fords, N.J. 08863

Filed Jun. 24, 1983, Ser. No. 507,220
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—89 **8 Claims**



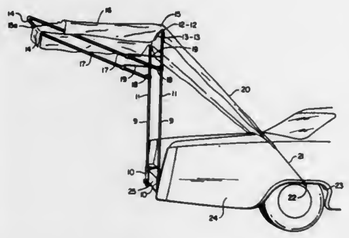
1. An oral hygiene device comprising a unitary housing, said housing defining a cavity therewithin, means to separate said housing into at least two portions, a flexible elongatable material, said material being permanently elongated once said material is stretched, said material completely filling said cavity when unelongated, said material having a pair of ends, one of said pair ends being secured within said cavity to one of said at least two portions of said housing, the other of said pair of ends being secured within said cavity to another of said at least two portions of said housing, said material being elongatable so as to have an exposed length equal to the distance separating said two portions when said housing is separated.

4,519,409

AWNING ADAPTED TO BE ATTACHED TO BUMPER OF AUTOMOBILE

Roger D. Kinney, Gahanna, and Raymond J. Federowicz, Reynoldsburg, both of Ohio, assignors to Topper International Enterprises, Gahanna, Ohio

Filed Jun. 13, 1983, Ser. No. 504,009
Int. Cl.³ A45F *1/14*
U.S. Cl. 135—88 **5 Claims**



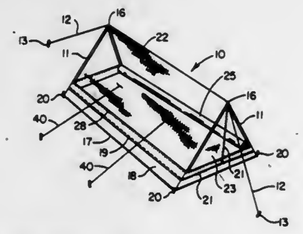
1. An awning adapted to be attached to the bumper of a motor vehicle, comprising first means fixedly attached to the bumper of said motor vehicle, vertical support posts removably attached to said first means, a first horizontal support rod attached to the upper ends of said vertical support posts, said support rod being removably attached to an awning, cantilevered vertically adjustable rods atached to said vertical support posts and extending at right angles to said bumper plane, a second horizontal support rod attached to the outer ends of said cantilevered vertically adjustable rods, said second horizontal support rod being removably attached to the outer end area of said awning, said awning's opposite end being provided with means for removable attachment to said motor vehicle's wheel wells.

4,519,410

TENT CONSTRUCTION

Steven R. Kubacki, 33 Mountain Rd., South Deerfield, Mass. 01373

Filed Oct. 14, 1983, Ser. No. 541,861
Int. Cl.³ A45F *1/00, 1/10*
U.S. Cl. 135—93 **7 Claims**



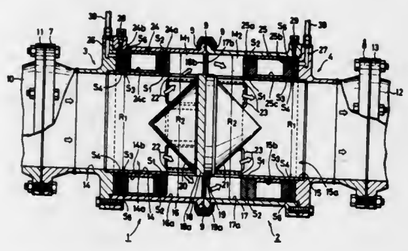
1. A tent comprising when erected:
a. an open mesh of screen-like material enclosure of interconnected side walls and end walls forming a tent, fastened at a first lower edge to a border element constructed to be fastened to a substrate, such as the ground;
b. a weather resistant enclosure of interconnected side walls, end walls, and having a second lower edge, said walls erectable as a tent within the open mesh enclosure by connection and support means within the open mesh enclosure, the second edge of the weather resistant enclosure being fastenable to the border element; and
c. a frame means for supporting the enclosures in erected position.

4,519,411

EMERGENCY DISCONNECTOR FOR FLUID LOADING AND UNLOADING LINES

Susumu Takahashi, Niigata, Japan, assignor to Niigata Engineering Co., Ltd., Japan

Filed Mar. 9, 1983, Ser. No. 473,409
Claims priority, application Japan, Oct. 20, 1982, 57-182700
Int. Cl.³ F16L *37/08*
U.S. Cl. 137—68 R **11 Claims**



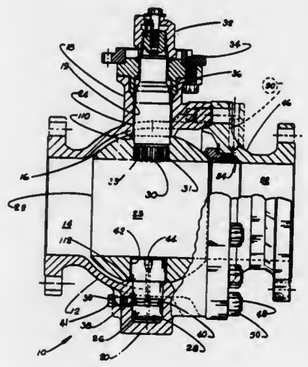
1. An emergency disconnector for disconnecting a pair of couplings in a fluid loading and unloading line, comprising; a pair of seal pistons mounted respectively in said couplings and slidable axially of said couplings under the pressure of a working fluid, said seal pistons being movable to cut off a flow passage for the fluid, said seal pistons including means allowing a fluid, which is a portion of the fluid being transported via said line and which becomes sealed between the seal pistons when cutting off said passage, to escape into lower-pressure fluid, and for sealing the fluid being transported in the couplings, an actuator system for supplying a working fluid to said seal pistons, clamp means actuatable under the operating pressure of said fluid supplied from said actuator system, said operating pressure being higher than that of said seal pistons, and external clamp means for releasing clamps from said couplings to separate the latter from each other in response to the closing off of said couplings and said passage by said seal pistons, respectively, and the actuation of said clamp means.

4,519,412

VALVE AND SEAL THEREFOR

Angal J. Grazioli, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 1, 1983, Ser. No. 500,082
Int. Cl.³ F16J *15/00*; F16K *43/00, 17/40*
U.S. Cl. 137—72 **13 Claims**



12. A sealing assembly for sealing in a ball valve having a body with a valve chamber therein, a ball positioned within said valve chamber and spaced from the interior of said body and a closure, comprising

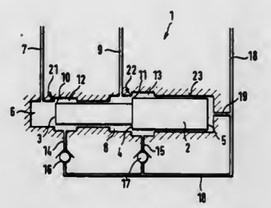
a metal seat ring having an annular sealing surface for engaging the exterior surface of the ball and a groove in said annular sealing surface,
a resilient seal ring in said groove, and
a two-way seal ring for sealing between the exterior of the ring and the walls of the body surrounding said ring,
said two-way ring including both a dual resilient seal for sealing against pressure from both directions and each of said resilient rings having a metal seal ring, said two-way seal further includes a first resilient seat ring for sealing against upstream pressure, a second resilient seal ring for sealing against downstream pressure, said first and second seal rings being disposed within an annular groove defined a shoulder within said valve body and a shoulder within said metal seat ring, a first metal seal ring embedded in said first resilient seal ring for sealing against upstream pressure when said first resilient seal ring has been destroyed, a second metal seal ring embedded in said second resilient seal ring for sealing against downstream pressure when said second resilient seal ring has been destroyed and said first and second metal seal rings being disposed on opposite sides of said first and second resilient seal rings.

4,519,413

PRESSURE AVERAGER

Ludwig Wagenseil, Vohringen, and Hermann Hoffmeister, Nersinger, both of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,617
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310791
Int. Cl.³ F15C *3/02*
U.S. Cl. 137—111 **4 Claims**



1. A pressure averager for providing an averaged working pressure from the operating pressure of at least two sources of pressure medium, more particularly hydraulic pumps, there being provided to average the operating pressures a differential piston of which the number of step faces which face in the same direction and which are of equal size corresponds to the number of operating pressures to be averaged, of which the oppositely directed working face is equal to the sum of the step faces, and which can be displaceably guided in a correspondingly stepped housing that is provided with supply lines for the operating pressures, characterized in that annular grooves in each case associated with a control edge of the respective step faces are provided in the housing, and in that leading away from the annular grooves there are discharge lines which are connected to a common line for the averaged pressure which is connected in turn to the working face.

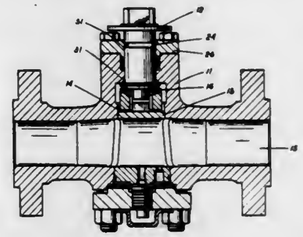
4,519,414

MECHANICALLY BALANCED TAPERED PLUG VALVE

Jose R. Anaya, Coacalco, Mexico, assignor to Industrial de Valvulas, S.A. de C.V., Tepotzotlan, Mexico

Filed Jan. 18, 1983, Ser. No. 458,983
Int. Cl.³ F16K *5/16, 5/22*
U.S. Cl. 137—246.22 **3 Claims**

1. A mechanically balanced tapered plug valve of a type used for fluid flow control, comprising a body with an interior chamber serving as a seat for a rotating tapered plug, which has a rotating fixed support at its lower end and a groove at an upper end for coupling with resilient elements for providing axial balance to the rotating plug and thereby preventing valve lockup produced by pressure and temperature variations of the fluid flowing through the plug valve, said resilient elements transmit axial rotating movement produced by an external driving of a valve stem, said resilient rotatihng movement transmission elements having a seat element having an upper circular face tapered toward the center of the seat element adapted to be received in said groove, a flexible plane washer that fits on the external and upper edge of the seat element



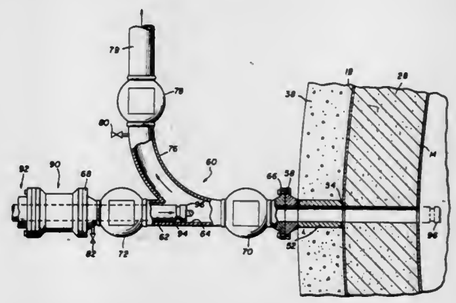
receiving a circular flange of the valve stem, said circular flange having an inverted conical plate with a lower circular surface contacting the flexible plane washer, and wherein the tapering of the plate provides a spring movement space at the immediate upper area of the flexible washer and wherein the sloping of the tapered seat provides a spring movement area immediately below said flexible washer to prevent the tightening caused by the effect of the rotating plug's weight when changing the position of the rotating plug, or by changes in volume caused by temperature variations of the fluid controlled by the balanced plug valve.

4,519,415

LIQUID STORAGE TANK WITH EMERGENCY PRODUCT REMOVAL APPARATUS

William R. Carn, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 7, 1982, Ser. No. 375,882
Int. Cl.³ B65D *17/16*
U.S. Cl. 137—318 **2 Claims**



1. A storage tank for a volatile inflammable liquid, liquefied gas or other liquid having properties which make it potentially dangerous comprising:
a primary liquid containment vessel capable of storing the liquid;
a secondary liquid containment vessel having a wall spaced outwardly from and surrounding a substantial portion of the primary vessel, thereby defining an annular space between the two vessels capable of containing liquid

which may escape from the primary vessel if it fails or is damaged;

the secondary vessel wall comprising an inner metal shell surrounded externally by a layer of reinforced concrete;

an attachment fitting having a tubular portion permanently laterally joined to the secondary containment vessel wall;

the fitting tubular portion being embedded in the concrete layer and joined to the inner shell by welding;

means structurally obstructing liquid communication between the annular space and the tubular portion, said means comprising at least continuity of the inner metal shell; and

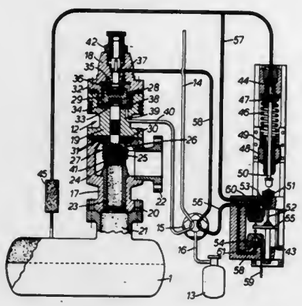
the tubular portion of the fitting being filled with concrete.

4,519,416

SAFETY CONNECTION CONNECTING A VESSEL CONTAINING A GAS UNDER PRESSURE TO A DISCHARGE SYSTEM

Michel Chaouloff, Paris; Michel Bernicot, St. Germain-en-Laye; Pierre Douineau, Coulans, and Roger Boret, Le Vesinet, all of France, assignors to Compagnie Francaise des Petroles, France

Filed Jul. 20, 1983, Ser. No. 515,430
Claims priority, application France, Jul. 22, 1982, 82 12774
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—488 **4 Claims**



1. A safety connection, located between a vessel containing a gas under pressure and a gas discharge system, and comprising:

a discharge pipe in series with a valve (**12**) movable in both an opening and a closing direction, said valve comprising:

an actuating rod (**26**) having an upper end and a lower end,

a closing flap (**24**) pivotally coupled to said lower end,

a piston (**28**) coupled to said upper end, said piston (**28**) having a first face which is directed away from said closing flap, which borders a first chamber (**36**), and a second face opposite said first face and which borders a second chamber (**38**), and

mechanical means (**35**) for biasing said actuating rod (**26**) in said closing direction;

switching means (**15**) for directing said gas under pressure;

an external source (**13**) for compressed gas coupled to said switching means for opening said valve (**12**) as a sluice;

a duct (**37**) having two ends, wherein one end is coupled to said first chamber (**36**) and wherein the other end is coupled to said switching means;

a vent tube (**14**) having two ends, wherein one end is coupled to the atmosphere and wherein the other end is coupled to said switching means;

a pilot valve (**43**) for coupling said duct (**37**) to either said vessel (**1**) during normal operation, or to the atmosphere in case of an overpressure in said vessel (**1**); and

a tubing (**40**) having two ends, wherein one end is connected to said second chamber (**38**) and the other end is connected to said switching means (**15**);

wherein, during a first state, said duct (**37**) is coupled to said pilot valve (**43**) through said switching means (**15**), and said tubing (**40**) is coupled to said vent (**14**) through said switching means (**15**); and wherein, during a second state, said duct (**37**) is coupled to said vent (**14**) through said switching means (**15**), and said tubing (**40**) is coupled to said external source of compressed gas (**13**) through said switching means (**15**),

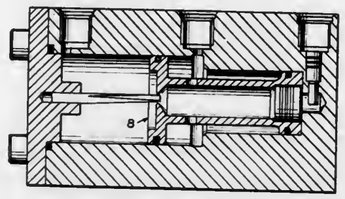
said valve (**12**) operating as a normal valve in said first state, and said valve operating as a sluice in said second state.

4,519,417

DEVICES FOR CONTROLLING FLOW OF FLUID UNDER PRESSURE

Byron A. T. Spencer, Hillsdale, N.J., assignor to Lucas Industries Inc., Troy, Mich.

Filed Jul. 6, 1981, Ser. No. 280,630
Int. Cl.³ F16K *31/124*
U.S. Cl. 137—501 **8 Claims**



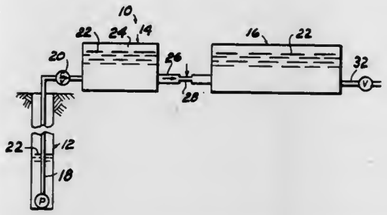
1. A system for controlling flow of fluid along a conduit from a source of fluid under pressure to a consumer device, comprising a primary throttle means and a secondary throttle means for connection in the conduit, said primary throttle means being controllable between a first condition in which the primary throttle means is at least partially closed and a second condition in which the primary throttle means is more fully open, piston means for detecting the pressure drop across the primary throttle means, piston means for detecting the pressure drop across the secondary throttle means, and servo means for controlling the secondary throttle means to establish a feedback relationship between the pressure drop across the secondary throttle means and the time integral of the pressure drop across the primary throttle means, the means for detecting the pressure drop across the primary throttle means and the means for detecting the pressure drop across the secondary throttle means comprise first, second and third lines for connection to the conduit upstream of the primary and secondary throttle means, between the primary throttle means and the secondary throttle means and downstream of the primary and secondary throttle means, respectively, and the servo means comprises a piston and cylinder device which includes a cylinder body defining first and second cylindrical bores, the first bore being of larger cross-sectional area than the second bore, and piston means having first and second piston portions fitted in the first and second bores respectively, thereby defining a first chamber of cross-sectional area equal to that of the first bore, a second chamber of cross-sectional area equal to that of the second bore, and a third chamber defined between an inside portion of the cylinder and an outside portion of the piston, the first chamber being connected to the second line, one of the second and third chambers being connected to the first line, and the other of the second and third chambers being connected to the third line, and means for controlling the secondary throttle means in dependence upon the position of the piston means.

4,519,418

WATER WELL PUMPING SYSTEM

L. B. Fowler, Rte. 1, Box 339, Sasakwa, Okla. 74867

Filed Feb. 17, 1984, Ser. No. 581,004
Int. Cl.³ E03B *11/00*
U.S. Cl. 137—571 **3 Claims**



1. In a water well system including a well containing and producing a limited volume of water and having a bottom hole pump submerged therein and connected by tubing with a primary reservoir at the surface of the earth, the improvement comprising:

a supply reservoir having a normally closed demand outlet disposed adjacent said primary reservoir; and,

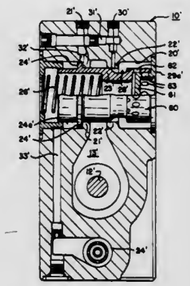
means including a flow restrictor means providing fluid communication between said reservoirs for limiting the volume of fluid flow from said primary reservoir when the demand outlet is open to the fluid producing volume of the well.

4,519,419

HYDRAULIC VALVES

John D. Petro, Hubbard, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Jun. 15, 1982, Ser. No. 388,723
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.
Int. Cl.³ F15B *13/04; 13/08*
U.S. Cl. 137—596 **12 Claims**



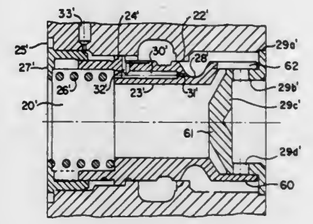
1. A hydraulic valve comprising a valve body having a fluid inlet chamber, a work chamber arranged to deliver fluid to a consumer of hydraulic fluid, an exhaust chamber receiving fluid from the consumer of hydraulic fluid, a longitudinal bore intersecting said chambers, a spool in said bore arranged so that in one position the work chamber is in communication with the inlet chamber and sealed from the exhaust chamber and in a second position the work chamber is in communciation with the exhaust chamber and sealed from the inlet chamber, a transverse bore in the valve housing communicating with said inlet chamber spaced from the longitudinal bore, a hollow valve spool movable in said transverse bore, a resilient biasing means urging said hollow spool to a position closing said inlet chamber from said transverse bore, an annular external radial pressure area intermediate the ends of said hollow spool, first signal passage means communicating from the area between said work chamber and exhaust chamber in said one position and one side of said radial pressure area whereby to supplement the pressure of said resilient biasing means, a second signal passage means communicating between the transverse bore and the opposite side of said radial pressure area acting to oppose said resilient biasing means and supplemental pressure and outlet sleeve means in the end of the transverse bore opposite the resilient biasing means.

4,519,420

HYDRAULIC VALVES

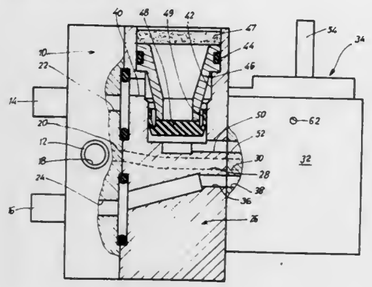
John D. Petro, Hubbard, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Sep. 29, 1982, Ser. No. 428,255
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.
Int. Cl.³ F15B *13/04, 13/08*
U.S. Cl. 137—596 **9 Claims**



1. A hydraulic valve comprising a valve body having a fluid inlet chamber, a fluid transfer chamber on one side of said inlet chamber, a pair of work chambers arranged on opposite sides of said inlet and transfer chambers to deliver fluid to a consumer of hydraulic fluid, a pair of exhaust chambers on opposite sides of said work chambers receiving fluid from the consumer of hydraulic fluid, a longitudinal bore in said valve body intersecting said chambers, a spool in said bore arranged so that in one position one work chamber is in communication with the inlet chamber and sealed from the adjacent exhaust chamber and the other work chamber is in communication with the adjacent exhaust chamber, in a second position the said one work chamber is in communication with the adjacent exhaust chamber and sealed from the inlet chamber and the other work chamber is in communication with the inlet chamber through the transfer chamber and in a third position in which the two work chambers are connected to their adjacent exhaust chambers, a transverse bore in the valve housing communicating with said inlet chamber spaced from the longitudinal bore, a hollow valve spool movable in said transverse bore, a resilient biasing means urging said hollow spool to a position closing said inlet chamber from said transverse bore, an annular external radial pressure area intermediate the ends of said hollow spool, first signal passage means communicating from the area between said at least one work chamber and the adjacent exhaust chamber in a work position of the spool and one side of said radial pressure area whereby to supplement the pressure of said resilient biasing means, a second signal passage means communicating between the transverse bore and the opposite side of said radial pressure area acting to oppose said resilient biasing means and supplemental pressure and outlet sleeve means in the end of the transverse bore opposite the resilient biasing means.

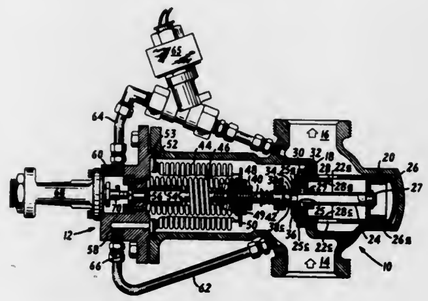
4,519,421
SOLENOID VALVE
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany
Filed Jun. 28, 1983, Ser. No. 508,961
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224937
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—596.16 **10 Claims**



1. A valve mechanism, comprising: a 4-way, 2-position solenoid valve having a supply duct, two working ducts, and an exhaust port; and an attachment plate secured to said solenoid valve and having a supply duct which communicates with said supply duct in said valve, a pilot duct and a through duct which each communicate with a respective one of said working ducts in said valve, an air outlet duct which extends into said attachment plate from an outer surface thereof and communicates with said pilot duct, and a load duct which communicates with said air outlet duct; and means defining a valve seat in said air outlet duct and a valve member which is located in said air outlet duct between said load duct and said pilot duct and is supported for movement between a closed position sealingly engaging said valve seat and an open position spaced from said valve seat; wherein in said closed position of said valve member said pilot duct communicates with said load duct and said valve member obstructs fluid flow from said pilot and load ducts into said air outlet duct; and wherein in said open position said valve member obstructs fluid flow between said pilot duct and said load and air outlet ducts and said air outlet duct communicates with said load duct.

4,519,422
DYNAMICALLY-STOPPED AND STATICALLY-BALANCED VALVE
Kenneth W. Cohen, Westwood, N.J., assignor to Aerco International, Inc., Northvale, N.J.
Filed Sep. 13, 1983, Ser. No. 531,925
Int. Cl.³ F16K *31/128*
U.S. Cl. 137—630.14 **7 Claims**

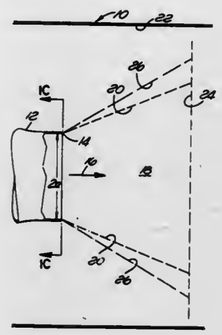
1. A dynamically-stopped and statically-balanced valve comprising:
- a valve structure defining an inlet opening and an outlet opening in fluid communication with each other through an orifice;
- a movable main valve plug for sealing said orifice when in a closed position and allowing full communication between said inlet and outlet openings when in an open position;
- a first pilot valve for permitting the flow of fluid from one side of the main valve plug to the other, said valve formed by an opening formed in the main valve plug through which inlet fluid passes to equalize the fluid pressure across the main valve plug and permit the valve plug to be lifted smoothly away from said orifice and a spring-biased valve plug stem attached to the main valve plug and having one end that is movable into and out of engagement with said opening;
- a bellows having one end attached to the valve structure and the other end attached to the valve plug stem so as to define an interior bellows space and an exterior bellows space communicating with the inlet opening;
- a spring mounted within the valve structure so as to urge said valve plug into sealing engagement with said orifice and the one end of the valve plug stem into engagement with the opening formed in the main plug;
- first conduit means for conducting fluid from said inlet opening to the interior bellows space;

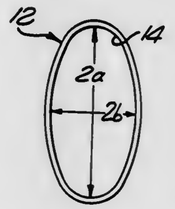


- second conduit means for conducting fluid from the interior bellows space to the outlet opening; and
- a second pilot valve controlling the flow of fluid in said second conduit means on command, wherein the other end of the valve plug stem functions to close off the second conduit when the valve plug is in the open position, whereby pressure in the interior bellows space is maintained at a level whereby the total collapse of the bellows is prevented.

4,519,423
MIXING APPARATUS USING A NONCIRCULAR JET OF SMALL ASPECT RATIO
Chih-Ming Ho, Rancho Palos Verdes, and Ephraim Gutmark, Arcadia, both of Calif., assignors to University of Southern California, Los Angeles, Calif.
Filed Jul. 8, 1983, Ser. No. 512,291
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—888 **23 Claims**

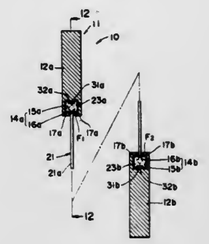
1. Apparatus for mixing fluids, comprising:
- first fluid conductive means terminating in at least one noncircular orifice for emitting a jet of a first fluid along a path in a preselected direction, the orifice having unequal major and minor axis dimensions with the major axis dimension being between two and three times the minor axis dimension;
- means for providing a second fluid, which is at least partially of the same phase as the first fluid, at a location immediately downstream of the orifice for mixing with the first fluid; and
- means for defining a mixing region which extends downstream of the orifice a distance at least equal to the minor axis dimension, and which either;
  - terminates in a wall in the path of the jet; or
  - continues downstream to a total distance from the orifice of at least three times the minor axis dimension;
- the mixing region having a lateral width of at least $2(a+0.4x)$ in a direction parallel to the major axis and a lateral width of at least $2(b+0.4x)$ in a direction parallel to the minor axis, where a and b are one-half the major and minor axis dimensions, respectively, and x is the distance downstream of the orifice; and





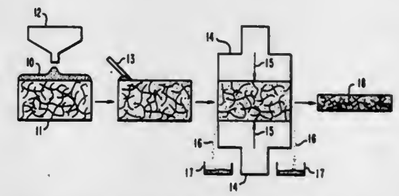
the orifice not diverging from the preselected direction by an angle of more than seven (7) degrees.

4,519,424
HEALD ASSEMBLY OF LOOM
Takao Ishido, Higashikurume; Masasi Nakao, Koganei; Takao Honya, Higashikurume, and Yukio Mizuno, Kodaira, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jul. 23, 1982, Ser. No. 401,212
Claims priority, application Japan, Aug. 19, 1981, 56-128696; Aug. 25, 1981, 56-132080; Aug. 25, 1981, 56-132079; Aug. 25, 1981, 56-132081; Aug. 28, 1981, 56-126470[U]; Sep. 2, 1981, 56-129516[U]; Sep. 2, 1981, 56-129517[U]
Int. Cl.³ D03C *9/06*
U.S. Cl. 139—91 **21 Claims**



1. A heald assembly of a loom comprising:
- a heald frame including first and second straight elongated beam members, said first beam member being located over said second beam member, said first and second beam members being respectively formed with first and second inner faces which face to each other;
- means defining first and second straight elongated openings in said first and second beam members, respectively, each elongated opening extending along the length of the corresponding beam member, said means forming part of said heald frame first and second beam members;
- means defining first and second straight elongated slits on said first and second inner faces, each elongated slit extending along the length of the corresponding beam member, said first and second elongated slits merging in said first and second elongated openings, respectively, each elongated slit being smaller in width than the corresponding elongated opening;
- a plurality of healds each including an elongated one-piece heald body, and first and second installation sections secured at the opposite end portions of said heald body to form each heald substantially into a one-piece structure, said first and second installation sections being disposed respectively within said first and second elongated openings so that a part of said heald body is located within each elongated slit, each heald installation section being larger in width than said elongated slit;
- means preventing metal-to-metal contact between said heald installation section and said heald frame beam member;
- means maintaining surface-to-surface contact between each heald installation section and said means defining first and second straight elongated openings, said surface-to-surface contact maintaining means including at least a flat inner wall surface of each heald frame beam member to define said straight elongated opening, and at least a flat peripheral surface of each heald installation section which peripheral surface is substantially parallel and contactable with said heald frame member inner wall surface; and
- means for preventing rotation of said heald around its axis under cooperation of said heald frame beam members and said heald installation sections.

4,519,425
CONTROL METHOD FOR LOADING BATTERY ELECTRODES
Joseph Seidel, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 28, 1983, Ser. No. 508,686
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1.1 **8 Claims**

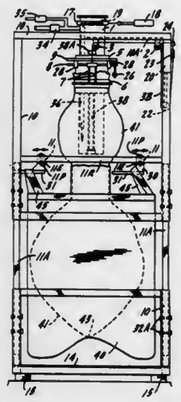


1. A method of loading a wet active material paste into a porous, fibrous plaque, comprising the steps of:
- (A) applying wet active material paste comprising water and active material solids to a porous, compressible, fibrous plaque, where an excess of paste is applied over the amount that will completely fill the plaque after sizing; and then
- (B) forcing the wet paste into the pore volume of the plaque; and then
- (C) pressing the pasted plaque to a sized thickness T, where the excess paste is squeezed from the plaque and collected; and then
- (D) drying the pasted, sized plaque to evaporate water and provide a loaded plaque; where the specific gravity of the paste is a known value of G grams/cubic centimeter, the fraction of solids in the paste is a known value of S, the unit plaque weight is a known value of W grams/square centimeter, the density of the plaque fibers is a known value of D grams/cubic centimeter, the amount of active material solids loading that is applied to give a required

capacity to the loaded plaque is a known value of M grams/square centimeter of plaque, and the final sized thickness necessary to leave the required active material solids to provide a designated electrode capacity is T centimeters, and where the following relationship exists:

$T=[M/(GS)]+[W/D]$.

4,519,426
APPARATUS FOR FILLING A LINED, SEMIBULK CONTAINER
Donald P. Hardy, Jr., 152 Parkway Ave., Lake Zurich, Ill. 60047
Filed Dec. 12, 1983, Ser. No. 560,609
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—5 **9 Claims**



1. Apparatus for filling a bulk-bag in which there is an outer bag and inner liner each with an open mouth at the top, which includes a filling chute supported by a main frame and a cone slidably mounted on the chute, said apparatus further including support elements on the frame enabling the outer bag to be suspended thereby so the bag and liner may be positioned with their open tops aligned to the chute and its cone, a clamp that can be opened and closed, said clamp having a complemental fit to the outside of the cone and means to close the clamp after extending the open top of the liner to fit the outside of the cone, means for sliding the cone upward on the chute after the mouth of the liner has been so clamped, thereby to support the liner independently of the outer bag, and means for supplying air under pressure to the interior of the liner after it has been independently supported as aforesaid so that the liner may be inflated sufficiently to remove wrinkles prior to adding bulk material to the independently supported liner.

4,519,427
DEVICE FOR RECOVERING CONTENTS IN CONTAINERS SUCH AS BEER BOTTLES
Motoji Ono; Masao Hirao, and Shigehisa Fukushima, all of Okayama, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 14, 1983, Ser. No. 504,295
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—65 **7 Claims**

1. A device for recovering the contents in containers such as beer bottles, comprising:

a case supporting means supporting at least one case containing a predetermined number of containers and movable upward and downward;

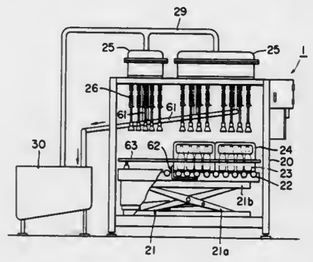
a plurality of recovery pipes provided vertically above said case supporting means, each of said plurality of recovery pipes being in opposed relationship with the opening of each of said containers in said case;

control valve means for controlling the charging of the compressed air into said containers in said case;

an air supply source for supplying the compressed air which is charged through said control valve means into said containers in said case; and

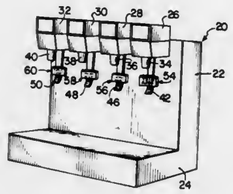
a recovery tank communicating with said plurality of recovery pipes for storing therein the liquid which is forced to be discharged out of said containers in said case through said recovery pipes,

each of said control valve means comprising a first valve member which is slidably fitted on a midportion of each recovery pipe, normally biased downwardly and has an air passage communicating with said air supply source; and a second valve member slidably fitted on the lower end of each recovery pipe, spaced apard downwardly of



said first valve member by a predetermined distance, having an air passage and adapted to be slidably moved upwardly by the opening of each of said containers when each of said containers is raised upward by the case supporting means with each recovery pipe inserted into each container, said air passage of said first valve member communicating with the air passage of the second valve member so that the compressed air from the air supply source is charged into the corresponding container when the first and second valve members abut against each other on each recovery pipe, each of said recovery pipes being liquid-tightly and slidably extended through the bottom plate of said recovery tank and being normally biased downwardly so that each recovery pipe can slide upwardly by a predetermined distance when the lower end of each recovery pipe strikes against the bottom of each container.

4,519,428
CUP MARKING ATTACHMENT FOR BEVERAGE DISPENSING MACHINES
Albert L. Moody, Lawrenceville, Ga., assignor to F. C. Brown Rentals, Inc., Atlanta, Ga.
Filed Jun. 30, 1982, Ser. No. 393,706
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **16 Claims**



11. A beverage dispensing machine attachment for applying indicia markings to the outer wall of a cup being filled from a

selected nozzle of the machine, to identify the contents of the cup, the attachment including

(a) a marking member comprising a receptacle

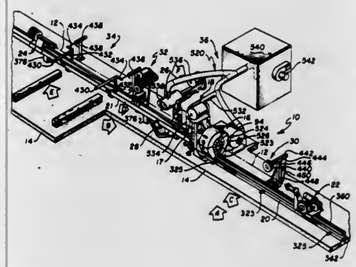
(b) an ink impregnated pad positioned in said receptacle

(c) indicia extending outwardly from the outer surface of said ink impregnated pad, the ink from the pad being transferred to the indicia

(d) mounting means for connecting said marking members to said beverage dispensing machine adjacent a nozzle which dispenses a beverage identified by the marking member indicia

(e) said marking member lying in the path of the cup when it is placed beneath the cup for filling, whereby the marking member engages the side wall of the cup to transfer the image of the indicia to the cup wall.

4,519,429
LOG SHAPER
Charles H. Dreese, NW. 124 Chief Looking Glass Rd., Florence, Mont. 59833
Filed Jul. 5, 1983, Ser. No. 510,962
Int. Cl.³ B27C *9/00*
U.S. Cl. 144—3 R **21 Claims**



1. Log shaping apparatus for shaping a wooden log workpiece into a finished log having a uniform diameter and a smooth surface finish, comprising:

a base;

support means attached to the base for supporting the log workpiece at opposite ends thereof;

annular cutter head means rotatably mounted with its axis of rotation substantially aligned with the longitudinal axis of the log workpiece, said annular cutter head means having an inner annular opening therein having a diameter larger than the diameter of said wooden log workpiece;

a plurality of shaper blades fixedly attached radially about the annular opening of said annular cutter head means, the innermost point of the shaper blades determining the diameter of the finished log;

planar blade means fixedly attached about the inner annular opening of said annular cutter head and set at an angle to the workpiece for finishing the peripheral surface of the log;

means for driving said cutter head about its axis; and

means for longitudinally moving said log relative to the cutter head means.

4,519,430
ENERGY SAVING TIRE WITH SILICA-RICH TREAD
Shamim Ahmad, Canal Fulton, and Ronald J. Schaefer, Medina, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Jul. 29, 1982, Ser. No. 403,222
Int. Cl.³ B60C *11/00, 9/04, 15/00*
U.S. Cl. 152—209 R **8 Claims**

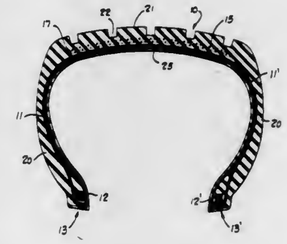
1. In a tubeless pneumatic tire comprising two spaced apart essentially inextensible beads, a ground contacting tread portion comprising a vulcanized rubber including at least two reinforcing fillers and an antioxidant, a pair of sidewalls extending radially inward from the axial outer edges of said tread portion to join the respective said beads, a carcass portion having at least one ply of rubberized cords wrapped around said beads, and a circumferential belt comprising at least two plies of essentially inextensible cords with the cords in each ply parallel to each other, the improvement consisting essentially of the tread being formed of

(i) a fine particle amorphous hydrated silica present in an amount in the range from 18 parts to about 50 parts by weight, based on the total weight of 100 parts of natural or synthetic rubber used in said tread, in combination with from about 0.333 parts to about 2 parts carbon black for each part of said silica, the combined total of said silica and carbon black fillers being in the range from about 50 parts to about 85 parts per 100 parts of said rubber, and,

(ii) a mercapto-substituted silane coupling agent for bonding said silica to said rubber of said tread, said mercapto-substituted silane having the reactivity of the mercapto group reversibly blocked by the presence of at least an equivalent quantity of an organic compound capable of a simple addition reaction to the mercapto compound,

so that the rolling resistance is less than that of an otherwise identical tire having less than 18 parts by weight of said silica present, based on 100 parts of said rubber, and the dry traction of said tire is substantially the same as that of said otherwise identical tire.

5. In a tubeless pneumatic radial tire comprising two spaced apart essentially inextensible beads, a ground contacting tread portion comprising a vulcanized rubber including at least two reinforcing fillers and an antioxidant, a pair of sidewalls ex-



tending radially inward from the axial outer edges of said tread portion to join the respective said beads, a carcass portion having at least one ply of rubberized cords lying essentially in radial planes wherein said cords are wrapped around said beads, an integral air impervious inner liner disposed inwardly of said carcass portion, and a circumferential belt comprising at least two plies of essentially inextensible cords with the cords in each ply parallel to each other and at an angle to the circumferential central plane of the tire and with the cords in one ply extending in a direction opposite to the cords in the other ply, the improvement consisting essentially of the tread being formed of

(i) a fine particle amorphous hydrated silica present in an amount in the range from 18 parts to about 50 parts by weight, based on the total weight of 100 parts of natural or synthetic rubber in said tread, in combination with from about 0.333 parts to about 2 parts carbon black for each part of said silica, the combined total of said silica and carbon black fillers being in the range from about 50 parts to about 85 parts per 100 parts of said rubber, and,

(ii) a mercapto-substituted silane coupling agent for bonding said silica to said rubber of said tread, said mercapto-substituted silane having the reactivity of the mercapto group reversibly blocked by the presence of at least an equivalent quantity of an organic compound capable of a simple addition reaction to the mercapto compound,

so that the rolling resistance is less than that of an otherwise identical tire having less than 18 parts by weight of said silica present, based on 100 parts of said rubber, and the dry traction

of said tire is substantially the same as that of said otherwise identical tire.

4,519,431
STYRENE-BUTADIENE COPOLYMERS WITH HIGH STYRENE CONTENT

Yoshito Yoshimura, Yokkaichi; Noboru Oshima, Suzuka; Isamu Shimizu, Kameyama; Shinsuke Yamaguchi, Tokyo; Tatsuo Fujimaki; Tomoharu Yamada, both of Higashimurayama, and Seisuke Tomita, Tokorozawa, all of Japan, assignors to Bridgestone Tire Company Limited and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 444,027, Nov. 3, 1982, abandoned. This application Jul. 19, 1984, Ser. No. 632,270
Claims priority, application Japan, Nov. 30, 1981, 56-190650
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R **9 Claims**

1. A styrene-butadiene copolymer prepared by the process comprising:

(1) polymerizing styrene and butadiene in a hydrocarbon solvent in the presence of an organolithium compound and

(2) coupling with a tin halide selected from the group consisting of tin tetrachloride, tin tetrabromide, tin methyl trichloride, tin butyl trichloride, tin dimethyl dichloride, tin dibutyl dichloride, tin dichloride and bis(trichlorostannyl)ethane, wherein said copolymer has the following characteristics: (a) at least 30% by weight of the copolymer has at least two tin-carbon bonds in its molecular chain between styrene-butadiene polymer chains; (b) a bound styrene content of more than 25% by weight but not more than 60% by weight; and (c) a vinyl content in the butadiene portion of not less than 30% but less than 50%.

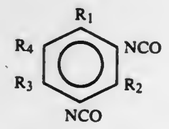
4,519,432
REINFORCED POLYURETHANE TIRES

Andreas R. Schmidt, Reinach, Switzerland; Herbert F. Strohmayer, Allentown, Pa.; Walter Sibral, Tulln, Austria, and Barton Milligan, Coplay, Pa., assignors to Lim International S.A., Luxembourg

Filed Feb. 8, 1984, Ser. No. 577,960
Int. Cl.³ B60C *9/00, 1/00*
U.S. Cl. 152—357 A **16 Claims**

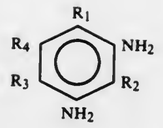
1. In a reinforced urethane tire formed by injecting a polyurea/polyurethane forming composition comprising a prepolymer having an excess of isocyanate groups and an aromatic diamine chain extender, into a tire mold, encapsulating a reinforcing cord in said tire and then curing said composition, the improvement for producing polyurea/polyurethane composition having low hysteresis which comprises reacting:

(a) a prepolymer formed by the reaction of (1) an aromatic polyisocyanate represented by the formula:



where R_1 R_2 R_3 R_4 represents H, alkyl from 1–4 carbon atoms, CN, halogen, CO_2R_5, $CONR_6R_7$ where R_5 represents alkyl of 1–6 carbon atoms and R_6R_7 represents alkyl of 1–6 carbon atoms and H, and mixtures thereof and (2) a polyol of about 500–5000 molecular weight of which at least 90% of the polyol is difunctional in a quantity sufficient to provide from about 2 to 12 weight % isocyanate groups in said prepolymer; with

(b) a chain extender mix comprising (1) an aromatic diamine represented by the formula:

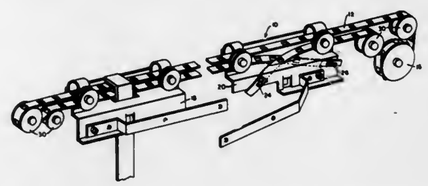


where R_1 R_2 R_3 R_4 represents H, alkyl from 1–4 carbon atoms, CN, halogen, CO_2R_5, $CONR_6R_7$ where R_5 represents alkyl of 1–6 carbon atoms and R_6R_7 represents alkyl of 1–6 carbon atoms and H, and mixtures thereof and (2) a polyol having a molecular weight of from 500–5,000 of which at least 90% of polyol is difunctional, said diamine being present in said chain extender mix to provide a proportion of from 0.5–5 equivalents amine per equivalent polyol.

4,519,433
DRIVE SPROCKET FOR TRAVERSE ROD

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Continuation of Ser. No. 460,646, Jan. 24, 1983,. This application Sep. 6, 1984, Ser. No. 648,054
Int. Cl.³ A47H *1/08, 5/02*
U.S. Cl. 160—126 **4 Claims**



1. A tape-drive, sprocket, and master carrier combination for traverse rods for curtains comprising:

(a) a pair of hollow telescoping longitudinally adjustable traverse rod sections;

(b) a pair of master carriers mounted to slide within said rod sections;

(c) a length of flexible relatively non-stretchable drive tape for moving said master carriers;

(d) uniformly spaced perforations through said tape forming weakened portions in said tape adjacent to said perforations whereby when said tape is bent in the absence of tension, it bends primarily at said weakened portions;

(e) pulley means at each end of said traverse rod, over which said drive tape passes;

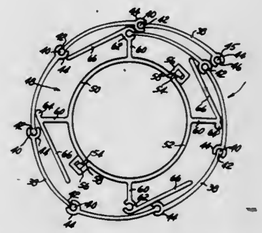
(f) means incrementally adjusting the length of said tape to conform substantially to the length of said rod comprising means for securing the ends of said length of tape to one said master carrier, including a detent at each end of said one master carrier fitting into one said perforation at each end of said tape, to form an endless loop within said traverse rod;

(g) a toothed drive sprocket for driving said tape with the teeth of said sprocket fitting in positive driving relation fully into at least two consecutive perforations in said tape, with said tape bending over said sprocket primarily at said weakened portions, with the tape resting on the surface of said sprocket therebetween, and at least a portion of the curved section of the outer circumference of the sprocket between each of the sprocket teeth being flat in the center of the curved section to conform to the natural bend of the drive tape as said tape passes over the sprocket under light tension, whereby said drive tape conforms to said sprocket and runs noiselessly despite varying degrees of tension on the tape.

4,519,434
WINDING MECHANISM FOR ROLLABLE SHUTTER CURTAIN

William F. Forquer, Venice, Fla., assignor to Security Shutter Corporation, Venice, Fla.

Filed Nov. 19, 1982, Ser. No. 443,047
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—133 **14 Claims**

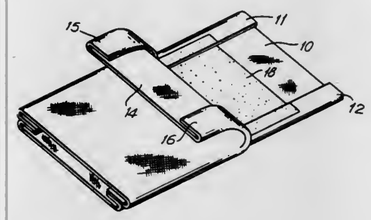


1. A winding mechanism for rolling and unrolling a curtain, said winding mechanism comprising at least a pair of elongated arcuate members slidably interengageable such as to form a tubular drum, at least one arm portion integrally protruding from and longitudinally disposed across the exterior surface of said tubular drum, connecting means for attaching an end of said curtain to an end of one of said arm portions and driving means for rotating said tubular drum and said integrally protruding arm portions about the longitudinal axis of said tubular drum.

4,519,435
SLATS FOR VERTICAL VENETIAN BLINDS

Kenneth Stier, 220-55 46th Ave., Bayside, N.Y. 11361

Filed Aug. 1, 1984, Ser. No. 636,829
Int. Cl.³ E06B *9/36, 9/386*
U.S. Cl. 160—166 A **15 Claims**



1. In a vertical blind construction comprised by:

an upper generally horizontal track;

slider members positioned within said track and moveable longitudinally thereof;

hanger members attached to said slider members; and,

vertical strip members attached to the respective hanger members;

the improvement comprising:

selected ones of said strip members being comprised of a laminate of a flexible textile fabric sheet material and including;

a backing of a flexible textile sheet material of one width having forwardly and inwardly inturned longitudinal edges;

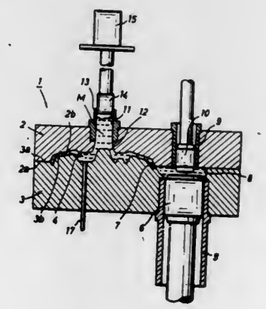
a facing of a flexible textile material of a width greater than the width of said backing, and having rearwardly and inwardly inturned longitudinal edges; and,

securing means interposed between said backing and said facing and extending at least partially over said inturned edgings of said backing, said securing means terminating within the confines of said inturned edges of said backing.

4,519,436
METHOD FOR INJECTING MOLTEN METAL IN VERTICAL DIECASTING MACHINE

Masuo Ebisawa; Akio Kawase, and Akiyoshi Nakamura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 226,715, Jan. 21, 1981, abandoned. This application Nov. 10, 1983, Ser. No. 550,907
Claims priority, application Japan, Jan. 21, 1980, 55-5442
Int. Cl.³ B22D *17/12, 17/20, 27/09*
U.S. Cl. 164—120 **4 Claims**



1. A method of injecting a molten metal in a vertical diecasting machine, wherein said diecasting machine includes upper and lower mold elements which define a mold cavity; said upper mold element having at least one opening adapted to communicate said mold cavity with the atmosphere; said opening being closable by a sealing member; and said molten metal being injected into said mold cavity from a cylindrical, vertical pouring basin provided in said mold elements, by a plunger slidably fitted in said pouring basin, said method comprising the steps of:

opening said opening by movement of said sealing member when said mold elements are closed;

injecting said molten metal into said mold cavity by the upward movement of said plunger while said opening is open to the atmosphere;

closing said opening by said sealing member immediately before completion of the injection of said molten metal into said mold cavity; and

thereafter completing the injection of said molten metal with pressure by further upward movement of said plunger.

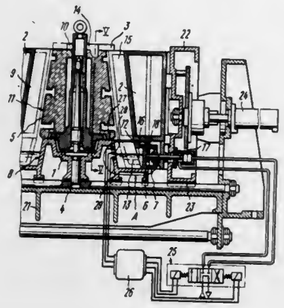
4,519,437
CASTING-BY-SQUEEZING MOLD

Anatoly A. Logvinov, 7-ya Parkovaya, 27, kv. 52; Vladimir N. Milov, Krivorozhskaya, 21, korpus 2, kv. 67; Nikolai S. Ostrenko, Kosinskaya ulitsa, 26, korpus 1, kv. 64; Nikolai A. Demyanovich, 1-y Goncharny pereulok, 7, kv. 108, all of Moscow; Vladimir A. Antonov, Moldavskaya SSR, ulitsa Sredko, 14, kv. 63, Tiraspol; Fen Z. Abdulin, ulitsa Kuznetsova, 6, kv. 35, Ulyanovsk, and Oleg S. Berdiev, ulitsa Sadovaya, 34, kv. 8, Arsenlev, Primorsky krai, all of U.S.S.R.

Filed Jul. 23, 1982, Ser. No. 391,123
Int. Cl.³ B22D *17/00*
U.S. Cl. 164—284 **3 Claims**

1. A squeeze-casting mold comprising a base, a pair of mold halves, a core at least one of said mold halves being movable toward and away from said other mold halve between a closed and open position, to form therewith when closed at least one molding chamber and when both open or closed at least one metal receiving chamber communicating with said molding chamber, at least two substantial longitudinal projections on

the walls of at least one of said mold halves, and at least one substantially transverse projection on one of said mold halves which connects the lower ends of said longitudinal projections, said projections dividing said molding chamber into a lower chamber between the base and the transverse projection serving as the metal receiving chamber, and an upper chamber on



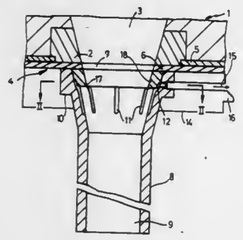
the internal side of the longitudinal projections and surrounding cheeks enclosing the side and upper edges of said mold, a cavity formed in at least one of said mold halves communicating with said metal receiving chamber, said cavity having means for adjusting the volume thereof when said metal receiving chamber is initially filled, to thereby enable adjustment of the level of metal in said metal receiving chamber.

4,519,438

OPENING FOR INJECTING A PROTECTIVE GAS INTO A CASTING TUBE

Roberto Grosso, Kraainem, and Tom P. Hamilton, Tervuren, both of Belgium, assignors to Vesuvius International Corporation, Wilmington, Del.

Filed May 13, 1983, Ser. No. 494,465
Claims priority, application Belgium, May 13, 1982, 208080
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—415 **5 Claims**



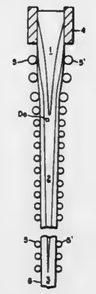
1. A casting tube (**8**) of a refractory material having an upper end with openings defined therein for the injection of a protective gas during casting into a stream of molten metal flowing through the tube to prevent oxidation of the metal and to cool the walls of the casting tube, the tube having a frustoconical part at said upper end whose outer surface defines a fixing collar (**10**) for mounting to a base plate (**2**) of a discharge opening (**3**) of a casting ladle (**1**), and in which injection grooves (**11**) are formed along circumferentially spaced generatrices of the frustum, said injection grooves being interconnected at their upper end by an annular passage (**12**) communicating through a supporting ring (**14**) with a source of protective gas.

4,519,439

METHOD OF PREVENTING FORMATION OF SEGREGATIONS DURING CONTINUOUS CASTING

Hasse Fredriksson, Stockholm, and Lars Tiberg, Fatersta, both of Sweden, assignors to Jernjontoret, Stockholm, Sweden

Continuation-in-part of Ser. No. 819,214, Jul. 26, 1977,. This application Feb. 23, 1983, Ser. No. 468,976
The portion of the term of this patent subsequent to Jan. 5, 2002, has been disclaimed.
Int. Cl.³ B22D *11/12*
U.S. Cl. 164—476 **8 Claims**



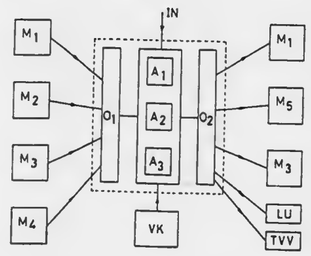
1. A method of preventing the formation of segregations in continuous casting of steel and metal alloys in a strand cast from molten metal, where the cast strand is formed from a molten metal introduced, through a casting chill and undergoing solidification to a solid strand, characterized by physically deforming the cast strand plastically, by action on its external surface, in successive steps from immediately below the chill prior to any other treatment of the strand to a point where the strand is fully solidified, controlling said deforming so that the cross-section area of the strand is reduced to an extent in each of said steps corresponding to the solidification shrinkage and cooling shrinkage of the strand at the position of said step, said deforming steps substantially avoiding upward and downward transport of melt in the strand from the chill to the point where the strand is fully solidified.

4,519,440

METHOD FOR HEAT RECOVERY

Jacob Weitman, Tryffelstigen 8, S-611 63 Nykoping, Sweden

PCT No. PCT/SE81/00257, § 371 Date May 12, 1982, § 102(e) Date May 12, 1982, PCT Pub. No. WO82/01059, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 11, 1981, Ser. No. 380,732
Claims priority, application Sweden, Sep. 12, 1980, 8006392
Int. Cl.³ F24H *7/04*; F28D *15/00*
U.S. Cl. 165—1 **6 Claims**



1. A method for the recovery of waste heat with a heat recovery system from a plurality of heat carrying fluids in a heat consuming plant having a plurality of waste heat sources and at least one heat consuming unit, each of said heat carrying fluids from each of said waste heat sources having a different temperature, comprising the steps of:

classifying said heat carrying fluids according to the temperatures thereof;

supplying said heat carrying fluids having approximately the same temperature to a heat exchanger for transferring the waste heat from said heat carrying fluids to a heat absorbing fluid associated with said heat exchanger;

storing said heat absorbing fluid associated with said heat exchanger in a heat accumulator at a temperature as high as possible and compatible with the thermodynamic characteristics of said heat recovery system; and

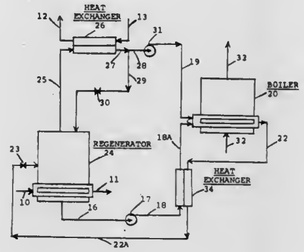
supplying said heat absorbing fluid from said heat accumulator to said heat consuming unit having a temperature requirement compatible with the temperature of said heat absorbing fluid.

4,519,441

HEAT CONVERSION SYSTEM

Jerome S. Spevack, 160 W. Pinebrook Dr., New Rochelle, N.Y. 10804

Filed Sep. 30, 1982, Ser. No. 428,652
Int. Cl.³ F25B *15/00*; F25D *21/00*
U.S. Cl. 165—1 **17 Claims**



1. A process for producing a heat source liquid at a high temperature from thermal energy contained in a flow of hot fluid at a hot temperature lower than said high temperature and for utilizing said heat source, which comprises:

(a) providing a branched circulation of two chemical substances, of which one is non-aqueous and capable of existing in liquid and gaseous states at a low temperature below said hot temperature and the other substance exists in liquid state at said low and high temperatures, and which two substances are capable of undergoing a reversible exothermic reaction of formation of a chemical combination of said two substances in liquid state at either said low temperature and a relatively low superatmospheric pressure corresponding to the vapor pressure of said one substance at said low temperature or said high temperature and a relatively high superatmospheric pressure corresponding to the vapor pressure of said liquid mixture at said high temperature in step (f);

(b) passing said hot fluid in indirect contact heat exchange relation with liquid containing a mixture of said two chemical substances at said low superatmospheric pressure and transferring thermal energy from said hot fluid to the liquid causing said one chemical substance to separate in gaseous state from said liquid while cooling said hot fluid;

(c) passing said one chemical substance separated in gaseous state in step (b) in indirect contact heat exchange relation with a coolant and condensing said separated gaseous substance to liquid state at substantially said low superatmospheric pressure;

(d) pumping liquid condensed in step (c) to said relatively high superatmospheric pressure;

(e) withdrawing liquid remaining after said separation in step (b) and pumping it to said relatively high superatmospheric pressure;

(f) mixing the condensed liquid pumped in step (d) with the liquid pumped in step (e), causing said two chemical substances to undergo said exothermic reaction forming said chemical combination in liquid state and to release thermal energy heating the liquid mixture to said high temperature and producing said heat source therewith;

(b) passing said heat source liquid produced in step (f) in indirect contact heat exchange relation with a heat utilizing fluid and transferring thermal energy to said heat utilizing fluid while cooling said heat source liquid; and

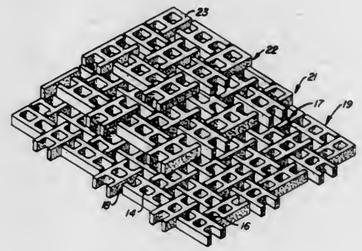
(h) passing said cooled liquid from step (g) through means for reducing the pressure thereof from said relatively high superatmospheric pressure to said relatively low superatmospheric pressure and delivering it to step (b) for recycling therein said liquid containing a mixture of said two chemical substances.

4,519,442

HEAT EXCHANGE STRUCTURE

Gordon L. Barna, Martinez, and James W. Lippert, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 14, 1984, Ser. No. 640,711
Int. Cl.³ F28D *17/04*
U.S. Cl. 165—9.2 **6 Claims**



1. In a heat exchange structure made of individual refractory shapes so as to define interconnected vertical flues extending from top to bottom of the structure, the structure being divided into horizontal levels defined by the vertical height of the individual refractory shapes, the improvement wherein the structure has at least two different type of flues, (1) a first type which has openings to each of the four contiguously adjacent flues at alternate levels and no connection to any other flue at the levels intermediate to the levels with openings and (2) a second type which has openings to two opposed contiguously adjacent flues at alternate levels and openings to the other two opposed contiguous adjacent flues at the intermediate levels.

4,519,443

WINDOW PANE DEFROSTER DEVICE WITH VEHICLE AIR CONDITIONING APPARATUS

Shinji Sutoh, Gunma; Toshizo Hara, and Akiyoshi Takahashi, both of Saitama, all of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1981, Ser. No. 312,619
Claims priority, application Japan, Oct. 31, 1980, 55-152059
Int. Cl.³ B60S *1/54*
U.S. Cl. 165—17 **14 Claims**

1. In combination in a vehicle air conditioning system including a rear window heater connected to a power source through a rear window heater control switch;

an evaporator at an upstream portion of said system, a compressor and a condenser coupled with said evaporator;

a heater core at a downstream portion of said system;

conduit means bringing air to said evaporator for cooling thereof and to said heater core for heating thereof;

an air mixing door upstream of said heater core for varying the amount of cold and warm air to said heater core;

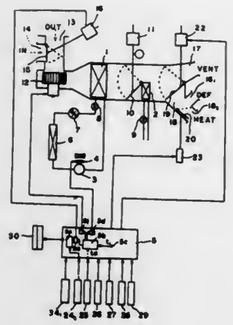
a changeover door and a blower fan in said system for selectively aspirating outdoor or indoor air from ports communicating with the inside or outside of said vehicle and feeding said air to said evaporator in response to the position of said door;

a defrosting device including a control circuit for controlling said compressor, said changeover door and said blower, said control circuit including an allowable operating temperature sensor, comprising:

a comparator discriminator circuit for comparing the outdoor air temperature with a predetermined operating temperature sensed by said allowable operating temperature sensor, and transmitting a first signal when the outdoor air temperature is higher than said operating temperature and transmitting a second signal when the outdoor air temperature is lower than said operating temperature;

a timer circuit;

said control circuit including:



a first sensor circuit for sensing an operating signal for said rear window heater control switch and for sensing the first signal transmitted for said comparative discriminator circuit; and

a second sensor circuit for transmitting a driving signal to said compressor driving means in response to the output from said first sensor circuit so as to operating said compressor and sensing both an operating signal for the rear window heater control switch and a second signal transmitted from said comparator discriminator circuit;

said second sensor circuit controlling the opening of said changeover door in response to the output from said second sensor circuit so as to either increase a feeding rate of outdoor air or increase the feeding volume of outdoor air by means of said blower fan, said timer circuit being operated to sense an operating signal of said rear window heater control switch, to deenergize said power supply for said rear window heater after a specified period of time upon sensing said operating signal; and

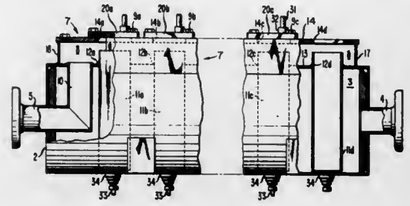
said allowable operating temperature sensor being operable to transmit a signal to said control means for said door when said compressor is operated.

4,519,444

MULTI-UNIT SAMPLE COOLER

Joseph F. Sebald, deceased, late of Bloomfield, N.J. (by Dorothy D. Sebald, executrix), assignor to Heat Power Products Corporation, Bloomfield, N.J.

Filed Jul. 27, 1983, Ser. No. 517,583
Int. Cl.³ F24H *3/00*
U.S. Cl. 165—47 **8 Claims**



1. In a multi-unit sample cooler,

a. an elongated casing defining, a cooling water inlet chamber extending end to end in the lengthwise, longitudinal direction of said elongated casing, a cooling water inlet at one end of said casing connected to a source of cooling water and communicating with the cooling water inlet chamber, and a cooling water outlet remote from and in axial alignment with the cooling water inlet at an opposite end,

b. a support housing connected to the exterior of the elongated casing and extending substantially end to end in the lengthwise direction of said elongated casing, to define therewith a cooling water outlet chamber,

c. means defining a connecting conduit positioned within said cooling water inlet chamber for fluidly connecting said cooling water outlet chamber and said cooling water outlet,

d. a plurality of serially disposed elongated cylindrical partitions mounted in fluid tight relationship extending in spaced relation along the longitudinal direction of said elongated casing transverse to the cooling water inlet and outlet axial alignment and disposed to extend within the cooling water inlet chamber and into the cooling water outlet chamber,

e. a plurality of serially disposed openings arranged in the longitudinal direction of the elongated casing, each respectively receiving a respective one of said cylindrical partitions, and

f. a plurality of sample cooler assemblies each including a sample coil, and each respectively mounted within a respective one of said cylindrical partitions and extending through a respective opening in the support housing in assembled position to form a fluid flow passage with the respective cylindrical partition to permit cooling water to flow about said coil from the cooling water inlet chamber to the cooling water outlet chamber.

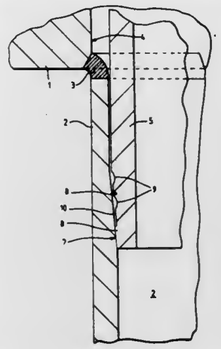
4,519,445

TUBE-IN-SHELL HEAT EXCHANGERS

Michael A. Norris, Preston, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 28, 1983, Ser. No. 555,507
Claims priority, application United Kingdom, Dec. 2, 1982, 8234382; Sep. 8, 1983, 8324106
Int. Cl.³ F28F *9/02*; F16L *41/08*
U.S. Cl. 165—76 **6 Claims**

1. A heat exchanger of the tube-in-shell type with joints between the tubes and each tube plate, having a tubular sleeve within each tube and bridging the joint between each tube and at least one tube plate and sealingly secured to the tube at one end and to the tube plate at its other end respectively, wherein the improvement comprises, each tube being tapered on its inner surface, each sleeve having a matching taper on its outer surface at or near said one end thereof, each sleeve having at least one land formed on, and at least one groove formed in, its tapered surface, each sleeve being fitted to the respective tube with the tapered surfaces in engagement, and a brazed joint



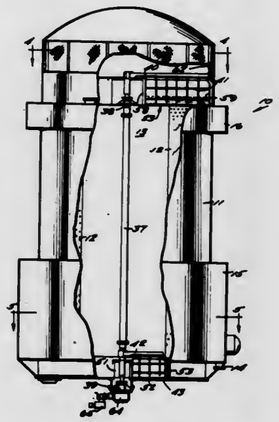
being made therebetween with the aid of braze material accommodated within the clearance provided between the surfaces defined by the groove or grooves and the tapered inner surface of the tube, whereby the joints between the tubes and the tube plate are individually protected.

4,519,446

SURFACE CONDENSER/WATER HEATING

Carl L. Elmore; Ted M. Poulin, and Mark D. Barrett, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,752
Int. Cl.³ F28F *27/02*
U.S. Cl. 165—101 **11 Claims**



1. A condenser assembly comprising:

a vertical substantially cylindrical vessel having an interior wall;

a plurality of pairs of vertical condenser plates, condensable gases passing between each pair of plates, and said pairs of plates being disposed in a ring around the interior of said vertical cylindrical vessel, and defining an interior passageway substantially circular in cross-section;

an inlet plate disposed above said pairs of vertical condenser plates in said vessel and having an outer annular perforated region coincident with said annular array of condenser plates;

a first condensing liquid inlet and condensing liquid outlet, said inlet disposed at the top of said vessel above said vertical condenser plates, and said outlet disposed at the bottom of the vessel below said vertical condenser plates;

a second condensing liquid inlet and a second condensing liquid outlet, said second inlet being disposed above said inlet plate and said second outlet disposed below said condensing plates, said second inlet being arcuately spaced from said first inlet, and said second outlet being arcuately spaced from said first outlet;

a central shaft extending vertically in the open central area of said vessel;

a top fixed baffle extending radially from adjacent said central shaft to the interior wall of said cylindrical vertical vessel and provided in sealing engagement with said inlet plate and said vessel interior wall to prevent arcuate liquid flow therepast;

a bottom fixed baffle extending radially from adjacent said central shaft and preventing liquid communication between said first and second condensing liquid outlets;

a movable baffle affixed to the top of said central shaft and extending radially therefrom to the interior wall of said vertical vessel, and in sealing engagement with said inlet plate and said vessel interior wall;

a movable bottom baffle operatively attached to said central shaft and preventing arcuate flow of liquid from one side thereof to the other; and

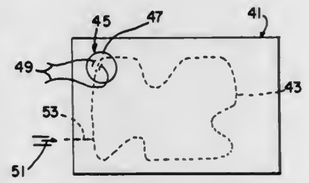
means for rotating said central shaft to change the arcuate positions of said top and bottom movable baffles with respect to said top and bottom fixed baffles.

4,519,447

SUBSTRATE COOLING

Raymond E. Wiech, Jr., San Diego, Calif., assignor to Fine Particle Technology Corporation, Camarillo, Calif.

Division of Ser. No. 468,665, Feb. 22, 1983, abandoned, which is a continuation-in-part of Ser. No. 174,929, Aug. 4, 1980, Pat. No. 4,374,457. This application Mar. 5, 1984, Ser. No. 584,309
Int. Cl.³ F28D *15/00*; H01L *23/46*
U.S. Cl. 165—104.33 **16 Claims**



1. A system for temperature maintenance of a substrate having heat producing components secured thereto or closely adjacent thereto, comprising:

(a) a molded substrate having a heat producing component receiving surface and an enclosed endless channel therein of predetermined configuration closely adjacent said surface;

(b) an electrically conductive liquid within said channel;

(c) a magnetohydrodynamic generator associated with said channel for moving said liquid around said channel; and

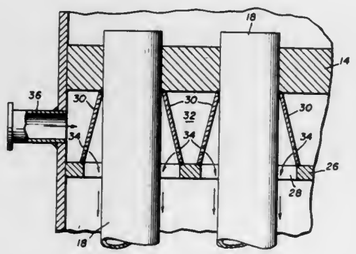
(d) means for removing heat from said liquid.

4,519,448

FALLING FILM HEAT EXCHANGER WITH MEMBER TO DISTRIBUTE LIQUID ON EXTERNAL SURFACES OF TUBES

Vincent F. Allo, Warrenville, and Donald C. Stafford, Hinsdale, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 16, 1983, Ser. No. 494,937
Int. Cl.³ F28D *3/04*
U.S. Cl. 165—118 **6 Claims**



1. A falling film heat exchanger comprising:
a shell connected to vertically spaced apart horizontally arranged circular upper and lower tube sheets;
a plurality of vertically positioned parallel tubes, with each tube extending through and sealingly connected to a hole in each tube sheet;
a circular distribution plate spaced below the upper tube sheet and sealingly connected to the shell defining a heat exchange liquid distribution space, with said parallel tubes extending through oversized holes in the distribution plate;
a heat exchange liquid distribution member surrounding each tube in the distribution space joined at a lower end to the distribution plate around said oversized hole and means preventing liquid from flowing between the member upper end and the tube, said member having means which directs liquid, in the distribution space, against the tube external wall and permits flow of liquid to the tube external wall only from said member;
means to feed a heat exchange liquid to the distribution space and means to withdraw the heat exchange liquid from the shell side of the heat exchanger above the lower tube sheet; and
a feed liquid distribution box positioned above the upper tube sheet and means to deliver a feed liquid to the liquid distribution box.

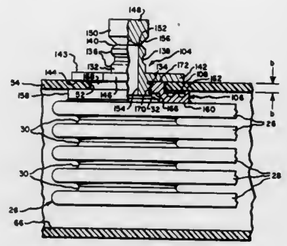
4,519,449

FLUID COUPLING AND METHOD OF ASSEMBLY

John T. Hoskins, 16 Cobblestone Ct., Orchard Park, N.Y. 14127, and Robert G. Zillig, 4401 Overlook Dr., Williamsville, N.Y. 14221

Filed Dec. 6, 1983, Ser. No. 558,501
Int. Cl.³ F28D *7/10*
U.S. Cl. 165—141 **32 Claims**

1. A fitting assembly for interconnecting an oil cooler disposed within a header to an oil line which terminates outside of said header, said oil cooler being provided with a port in one surface, and said header heaing provided with a wall having an aperture alignable with said port; said fitting assembly comprising:
a female fitting adapted to be connected to said oil cooler about said port, said female fitting having an aperture extending through its length, at least a portion of said aperture being threaded, and said female fitting further being provided with a neck portion disposable within the aperture of said header wall; and
a male fitting having a main body portion provided with a bore extending its full length, one end of the main body portion being an externally threaded end which is screwed into the threaded aperture of the female fitting, and the other end of the main body portion being provided with means capable of facilitating the interconnection of one end of an oil line to the male fitting in a fluid tight relation-



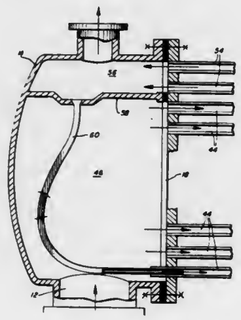
ship, and the male fitting further including a radially outwardly extending element disposed adjacent the threaded end, a surface of the radially outwardly extending element being capable of bearing against a surface of said header wall.

4,519,450

VACUUM PRODUCING CONDENSER

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Division of Ser. No. 491,594, May 4, 1983, , which is a continuation-in-part of Ser. No. 324,785, Nov. 25, 1981, abandoned. This application May 18, 1984, Ser. No. 611,966
Int. Cl.³ F28B *9/10*
U.S. Cl. 165—114 **2 Claims**



1. In a vacuum producing condenser for vapors containing non-condensible gases, a shell having a generally horizontal condenser chamber, a bundle of condenser tubes generally horizontally across said condenser chamber, an inlet header at the inlet end of said bundle of condenser tubes, a condensate outlet header at the outlet end of said bundle of condenser tubes, a bundle of gas devaporiation tubes across said condenser chamber and connecting said portion of said condensate outlet header above said bundle of condenser tubes with a portion of said inlet header, and a screen extending completely across the interior of said condensate outlet header through which the mixture of vapor and gas is required to pass before entering said bundle of gas devaporization tubes and through which water is removed from said mixture, said screen including a first screen portion extending generally horizontally from said condenser chamber at a location between said condenser tubes and said gas devaporization tubes and a second screen portion extending diagonally downwardly from a distal end of

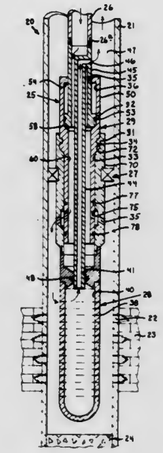
said first portion across the interior of said condensate outlet header.

4,519,451

WELL TREATING EQUIPMENT AND METHODS

Floyd R. Gray, Flower Mound, and Dennis D. Rood, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed May 9, 1983, Ser. No. 493,147
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—278 **35 Claims**



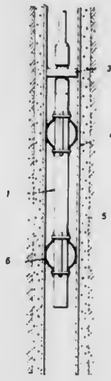
1. A service seal unit tool for setting a packer and screen in place in a well and establishing circuits for circulating fluids therethrough for treating the well therebelow with treating media and removing excess treating media from the well, including:
a. means for connecting the service seal unit tool to a pipe string and to the packer for setting the packer in the well, there being provided lateral port means between the packer and the screen;
b. means sealing between the service seal unit tool and the packer above and below the lateral port means;
c. lost motion means providing limited relative longitudinal movement between the pipe string and the packer while the two remain connected together and while said seal means remain substantially unmoved;
d. means establishing a first circuit for circulating fluids from the surface downward through the packer and the lateral port means to the exterior of the screen, thence through the screen, and upward through the packer to the surface; and
e. means establishing a second circuit in response to longitudinal movement of the pipe string relative to the packer for circulating fluids from the surface downward through the packer and upward therethrough to the surface.

4,519,452

METHOD OF DRILLING AND CEMENTING A WELL USING A DRILLING FLUID CONVERTIBLE IN PLACE INTO A SETTABLE CEMENT SLURRY AND COMPOSITION THEREFOR

Yuh-hwang Tsao, and George G. Binder, Jr., both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed May 31, 1984, Ser. No. 615,851
Int. Cl.³ E21B *33/14, 36/04*
U.S. Cl. 166—288 **12 Claims**



1. A method of drilling and cementing a well using a drilling fluid thermally convertible in place into a settable cement slurry, comprising:
drilling a well with a rotary bit through which an aqueous drilling fluid is circulated, said fluid comprising an aqueous drilling mud containing in intimate admixture therewith cement and a deflocculant which is deactivatable upon exposure to heat;
suspending a casing in said well;
removing said fluid from inside said casing; and
applying sufficient extrinsic heat to said fluid in place within the well annulus to deactivate said deflocculant, thereby converting said fluid in place into a settable cement slurry.

4,519,453

IGNITION SYSTEM

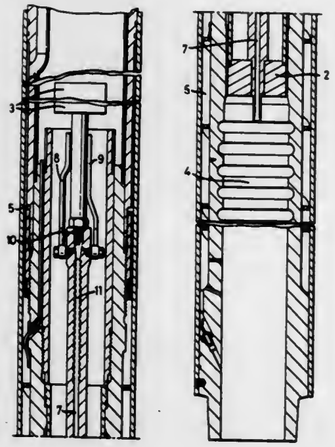
Frederick A. Riddiford, Chertsey, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Jul. 28, 1982, Ser. No. 402,540
Claims priority, application United Kingdom, Aug. 1, 1981, 8123620
Int. Cl.³ E21B *36/02*
U.S. Cl. 166—303 **15 Claims**

1. A method of igniting a burner having a combustion chamber and a further chamber comprising the steps of (a) continuously supplying successive separate charges of combustible gas to the combustion chamber of the burner (b) continuously supplying successive separate charges of combustible gas to the further chamber of the burner (c) periodically igniting the

combustible gas in the further chamber by actuation of the ignition source whereby fast moving combustion or detonation





waves pass from the further chamber to the combustion chamber and ignite the combustible fuel in the combustion chamber.

4,519,454

COMBINED THERMAL AND SOLVENT STIMULATION

James M. McMillen, Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 307,543, Oct. 1, 1981, abandoned. This application Dec. 21, 1983, Ser. No. 564,045

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—303 **10 Claims**

1. A combined thermal-and-solvent stimulation method for recovering heavy crude oil from an underground reservoir penetrated by a well, which comprises:

(a) heating the reservoir surrounding the well with steam at a temperature below coking temperature but sufficient to increase the temperature 40°-200° F. above the reservoir temperature;

(b) producing the formation substantially immediately after the reservoir is heated, and without a soak period separating step (a) from step (b) until some of the water injected as steam is produced;

(c) injecting a liquid solvent having a ratio of crude viscosity to solvent viscosity of at least about 10 and in an amount ranging from about 5 to about 25 barrels per foot of oil-bearing formation to provide adequate solvent fingering near the wellbore and significantly reduce the viscosity of the heavy crude oil; and

(d) producing a solvent-crude mixutre.

4,519,455

FRACTURING METHOD FOR STIMULATION OF WELLS UTILIZING CARBON DIOXIDE BASED FLUIDS

Marlin D. Holtmyer; Phillip C. Harris, and Charles V. Hunt, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 20, 1984, Ser. No. 572,732

Int. Cl.³ E21B *43/26*

U.S. Cl. 166—305 R **13 Claims**

1. A method of fracturing a subterranean formation penetrated by a well bore comprising:

admixing a substantially anhydrous liquid containing ethylene glycol and from about 0 to about 10 percent by weight aqueous fluid with a proppant material, liquid carbon dioxide and a selected surfactant to form a stabilized emulsion, said emulsion comprising from about 30 to in excess of about 95 percent by volume carbon dioxide and said surfactant being present in said emulsion in an amount sufficient to stabilize said emulsion;

introducing said stabilized emulsion into said well bore penetrating said subterranean formation at a temperature below the critical temperature of carbon dioxide and under sufficient pressure to maintain the carbon dioxide as a liquid;

maintaining said stabilized emulsion within said formation for a sufficient time to permit said emulsion to be heated to a temperature above the critical temperature of carbon dioxide to form a stabilized foam from said emulsion, said foam having a viscosity immediately after formation which is substantially the same as the viscosity of the emulsion;

contacting said formation with said foam at a pressure sufficient to create at least one fracture in said subterranean formation; and

depositing said proppant material in said fracture in said subterranean formation.

4,519,456

CONTINUOUS FLOW PERFORATION WASHING TOOL AND METHOD

Chudleigh B. Cochran, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 448,881, Dec. 10, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,535

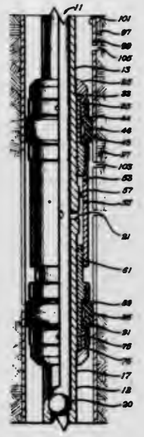
Int. Cl.³ E21B *37/00, 33/124*

U.S. Cl. 166—312 **8 Claims**

1. In a well bore perforation wash tool of the type having a tubular mandrel with sidewalls defining a flow passage, an upper end for connection in a pipe string and a lower end with means for blocking the flow of fluid from the pipe string through the mandrel, upper and lower pressure responsive, solid, compressible packer assemblies carried on opposite ends of the mandrel, and an outer setting sleeve surrounding the mandrel between the packer assemblies to define an annular chamber between the mandrel and setting sleeve, the improvement comprising:

a continuous flow passage communicating said mandrel interior, said annular chamber and said well bore prior to and after setting said packer assemblies, said continuous flow passage comprising port means in said mandrel sidewalls communicating said mandrel flow passage and said annular chamber and orifice means in said outer setting sleeve for communicating said annular chamber and said well bore; and

wherein said port means and said orifice means are selectively sized to cause a predetermined back pressure buildup in said annular chamber to set said packer assemblies as fluid is continuously flowed through said continuous flow passage.



4,519,457

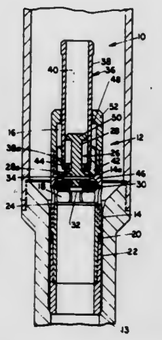
OIL WELL STANDING VALVE

Ronald A. Holland, Newport Beach; Harold L. Petrie, Sierra Madre; John R. Brennan, and Frederick C. Christ, both of Long Beach, all of Calif., assignors to Armco Inc., Middletown, Ohio

Filed Feb. 16, 1984, Ser. No. 580,684

Int. Cl.³ E21B *34/14*

U.S. Cl. 166—317 **10 Claims**



1. In a standing valve to be retrievably mounted in a well production tubing which will allow the maximum possible fluid flow and also still allow the valve to be easily drained and retrieved through the well production tubing:

(a) a valve body having a passage therethrough and at least one port extending from the passage to the outside body;

(b) sealing means on the outside of said body below said port for sealing engagement with said production tubing in the mounting position of said standing valve;

(c) a seat in said passage of said valve body between said port and said sealing means;

(d) a one-way valve associated with said seat and acting against downward fluid flow, said one-way valve comprising a stem and head, said head having a central aperture therethrough and the lower end of said stem being located in and in sealing engagement with said central aperture and being maintained therein by a break-away device to release when subjected to a predetermined force; and

(e) a puller assembly engagable by a pulling tool and captively mounted in the upper portion of said valve body and engagable with said stem to apply a pulling force thereto and pull said stem upwardly;

whereby if a pulling force applied to said puller assembly, and thus to said stem, does not retrieve said standing valve, then said break-away device will release and said stem will disengage and expose said central aperture in said head, permitting continued draining of well fluid above said standing valve, and additional force on said puller assembly will remove said standing valve because of the captive mounting of said puller assembly in said valve body.

4,519,458

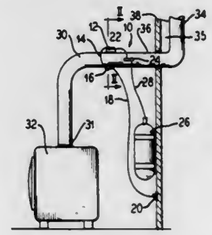
FLUE FIRE CONTROLLER

David W. Kroeter, Jonesboro, Ark., assignor to Kroeter, Inc., Jonesboro, Ark.

Filed Jun. 23, 1983, Ser. No. 507,093

Int. Cl.³ A62C *37/02*

U.S. Cl. 169—56 **10 Claims**



1. A flue fire controller for use in conjunction with a thermally conductive flue pipe used for exhausting combustion by-products from a combustion chamber comprising:

a normally open temperature responsive electrical switch mounted on the exterior of said flue pipe in a thermally conductive manner,

a source of fire retardant material under pressure connected by conduit means to a nozzle mounted on the exterior of said flue pipe and having an opening into said flue pipe,

an electrical solenoid operated normally closed valve means energizable through said temperature responsive electrical switch,

said normally closed valve means positioned in said conduit means between said nozzle opening and said source of fire retardant material,

whereby a high temperature in said flue pipe will cause said temperature responsive switch to close, thereby energizing said solenoid, opening said valve means, and discharging said fire retardant material into said flue pipe.

4,519,459

POWER DRIVE REAR TINE TILLER WITH REVERSING GEAR TRANSMISSION FOR THE TINES

Leonard V. Reaume, Natchez Trace Village, Miss., assignor to Magna American Corporation, Raymond, Miss.

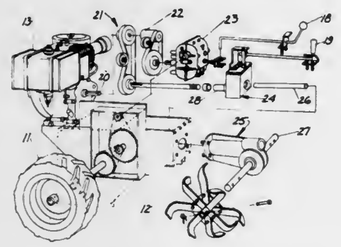
Filed Mar. 31, 1983, Ser. No. 480,709

Int. Cl.³ A01B *33/02*

U.S. Cl. 172—42 **3 Claims**

1. A garden tiller comprising a chassis, a pair of traction wheels supporting said chassis, guide handles attached to said chassis by which an operator may guide said tiller, a tine shaft rotatably mounted in said chassis, earth working tines secured on said tine shaft, said tines being located between the operator and said traction wheels, an engine mounted on said chassis, first transmission means for driving said traction wheels in a given direction via said engine, second transmission means, an

output shaft for said second transmission means, and a differential for driving said tines in said given direction via said second transmission means, said output shaft and said engine, said tiller being characterized by: said second transmission means including a reversing mechanism by means of which said tines may be driven in an opposite, reverse direction of said given direction while said traction wheels continue to be driven in said given direction; said second transmission means comprising a gear train including an output gear operatively connected to said output shaft, a slidable gear movable into rotational driving contact with said output gear to drive said output gear in said given direction, and gear means interposable between said slidable gear and said output gear to drive said output gear in said opposite, reverse direction; said gear train including a splined shaft on which said slidable gear is slidable and with which said slidable gear is rotatable, said splined shaft being



rotatably driven by said engine and constituting a part of said second transmission means, said gear means including a gear idler in meshing engagement with said output gear, and a gear cluster mounted on a common shaft, said gear cluster including a first gear in meshing engagement with said gear idler and free of direct driving contact with said output gear and a second gear spaced therefrom, and shift means to slide said slidable gear out of driving contact with said output gear and into meshing driving contact with said second gear whereby to drive said output gear and output shaft in said opposite, reverse direction via said splined shaft, said slidable gear, said second gear, said first gear and said gear idler; and said rotational driving contact between said slidable gear and said output gear being achieved by a plurality of pins fixed in one of said slidable gear and said output gear and adapted to be received in mating holes fixed in the other of said slidable gear and said output gear.

4,519,460

COMPACTION AND SUPPORT APPARATUS

Jacob N. Gust, West Fargo, N. Dak., assignor to Concord, Inc., Fargo, N. Dak.

Filed Sep. 23, 1982, Ser. No. 421,878
Int. Cl.³ A01B *49/02*
U.S. Cl. 172—176 **19 Claims**

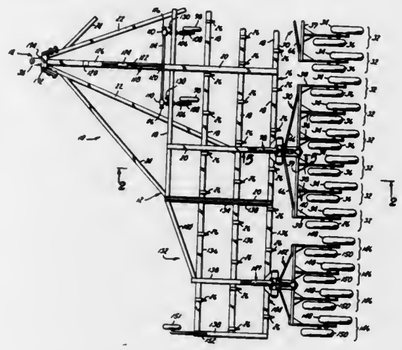
1. A compaction apparatus for packing the ground immediately after tillage, the apparatus comprising:

a frame having a plurality of tillers supported in spaced relation thereby;

a wheel support gang movably mounted on the frame adjacent a rearward end of the frame;

a plurality of compaction and support wheels, one of said wheels being provided per each and every tiller supported on said frame with the wheels being rotatably mounted on the wheel support gang parallel to each other and each wheel being longitudinally disposed behind its respective one of the tillers on the frame with adjacent wheels staggered longitudinally;

vertically movable means for mounting each wheel on the wheel support gang in such a manner that each wheel moves generally independently to substantially follow the contour of the ground while supporting the frame for transport and operation; and



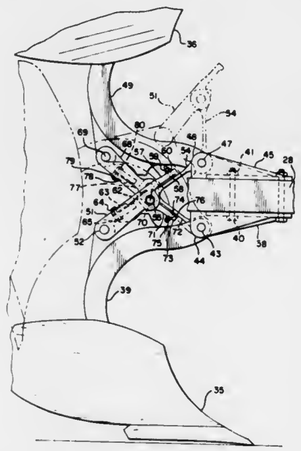
frame height control means for adjusting the height of the frame relative to the wheel support gang and thus controlling the extent of tiller penetration into the ground.

4,519,461

TWO-WAY PLOW WITH OFFSET TRIPS

Eldon A. Harden, Naperville, and Kent B. Randol, Oswego, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Sep. 20, 1982, Ser. No. 420,448
Int. Cl.³ A01B *3/42, 61/04*
U.S. Cl. 172—225 **4 Claims**



1. A two-way plow adapted to be connected to a mobile power source, said two-way plow comprising:

(a) a frame, said frame being adapted to be connected to the mobile power source for towing, said frame having a longitudinal center line;

(b) a support structure mounted for rotation on said frame, said support structure including a beam having an end located generally adjacent the right side of said frame and extending diagonally rearwardly so that the other end is generally directly rearward of said left side of said frame in one position of rotation;

(c) a plurality of equally spaced right hand plows mounted from said beam by support means for working the soil in one direction in said one position of rotation of said structure, and a plurality of equally spaced left hand plows mounted from said beam by support means upwardly of said right hand plows for working said soil in another direction upon rotation of said structure to another position;

(d) said support means each including trip linkages with the trip linkage of said right hand plow being offset from the trip linkage for said left hand plow to provide clearance for the tripping action between the plows;

(e) means for rotating said support structure from a rotational axis laterally fixed with respect to said frame at all times, the axis of rotation of said support structure on said frame being offset from the longitudinal center line of said frame, said offset of the axis of rotation being a predetermined amount of the offset between the trip linkages of said right and left hand plows such that, the right hand plow adjacent said frame is located the same distance from the longitudinal center line of said frame when working, as the left hand plow adjacent the frame is located with respect to the longitudinal center line of said frame when working; and

(f) means to prevent tripping action of the non-working plows.

4,519,462

CABLE FOLLOWING APPARATUS HAVING CABLE CLEANING CAPABILITIES AND METHOD

Douglas P. Kelley, Redmond, Wash., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 2, 1982, Ser. No. 414,485
Int. Cl.³ E21B *7/18*
U.S. Cl. 175—53 **13 Claims**

1. An apparatus for cutting through the soil around and along the length of an underground cable for removing the latter, said apparatus comprising: a tubular main body adapted for positioning around said cable, said main body including a front end and a back end; means for causing said main body to move in a forward direction along the length of said cable after said main body has been placed around the latter; means for cutting through the soil surrounding said cable in front of said main body as the latter moves along said cable; and means for directing a plurality of streams of gas toward said cable from points spaced circumferentially around the cable and radially outward therefrom and at sufficient pressure to substantially reduce the entry of particulate material into said circumferential area and possibly lodging between the cable and main body in a way which would prevent the latter from moving along the cable or otherwise damaging the cable and/or apparatus.

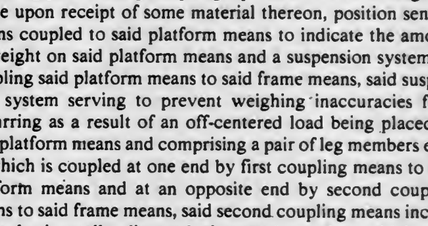
4,519,463

DRAINHOLE DRILLING

Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 19, 1984, Ser. No. 590,940
Int. Cl.³ E21B *7/06*
U.S. Cl. 175—61 **7 Claims**

1. In a method for drilling at least one well in the earth for the production of at least one mineral therefrom, the improvement comprising drilling a primary wellbore into the earth, said primary wellbore being a deviated wellbore having a radius of curvature in the range of from about 2.5 degrees per 100 feet of wellbore length to about 6 degrees per 100 feet of wellbore length, drilling from the deviated portion of said primary wellbore at least one drainhole wellbore, said drainhole wellbore extending into or near the subterranean area from which said mineral is to be produced, said drainhole wellbore having a radius of curvature in the range of from



about 0.2 degrees per 1 foot of wellbore length to about 3 degrees per 1 foot of wellbore length.

4,519,464

WEIGHING SCALE WITH ADJUSTABLE SUSPENSION AND THERMAL COMPENSATION

James M. Stuart, Malvern, Pa., assignor to Malvern Scale Company, Malvern, Pa.

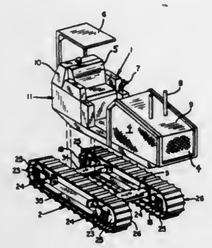
Filed Sep. 23, 1983, Ser. No. 535,450
Int. Cl.³ G01G *21/12, 21/28*
U.S. Cl. 177—244 **31 Claims**

1. A scale comprising frame means including a vertically extending plate having a top edge, platform means arranged to move upon receipt of some material thereon, position sensing means coupled to said platform means to indicate the amount of weight on said platform means and a suspension system for coupling said platform means to said frame means, said suspension system serving to prevent weighing inaccuracies from occurring as a result of an off-centered load being placed on said platform means and comprising a pair of leg members each of which is coupled at one end by first coupling means to said platform means and at an opposite end by second coupling means to said frame means, said second coupling means including a horizontally disposed elongated member which rests upon the top edge of said vertically extending plate and adjustable securement means, said elongated member being flexible in an up/down direction and including an intermediate portion and a pair of upwardly biased free ends, said intermediate portion being fixedly attached to said top edge of said plate and each respective free end being adjustably secured to said plate by said adjustable securement means, whereupon each of said leg members is connected to said elongated member adjacent a respective free end such that the vertical angle of each respective leg is readily adjusted using said adjustable securement means, whereby a respective leg member is lowered by manually positioning the adjustable securement means so as to urge the free end of the elongated member downward and is raised by manually positioning said adjustable securement means so as to permit said upwardly biased free end to move upward.

4,519,465
TRACK TYPE FOUR SPROCKET WHEEL DRIVE CRAWLER TRACTOR

Richard A. Triplett, Star Rte. 2 Box 234, Laytonville, Calif. 95454

Filed Mar. 26, 1982, Ser. No. 362,544
Int. Cl.³ B62D 11/04
U.S. Cl. 180—6.48 6 Claims

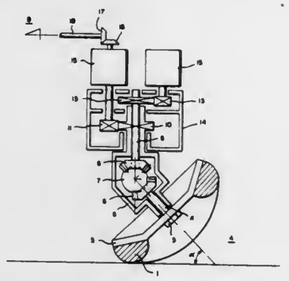


1. A four wheel sprocket drive crawler tractor comprising:
a. A cab;
b. an undercarriage;
c. cross members; and
d. means for propulsion with means for equalizing hydraulic fluid flow through a hydraulic pump and a fore and aft hydraulic motor, with one hydraulic pump connecting to fore and aft hydraulic motor on one side of the tractor, and with one other hydraulic pump connecting to another fore and aft hydraulic motor on the other side of the tractor.

4,519,466
OMNIDIRECTIONAL DRIVE SYSTEM

Yoshiro Shiraishi, Tokyo, Japan, assignor to Eiko Shiraishi, Los Angeles, Calif.

Filed Mar. 30, 1982, Ser. No. 363,615
Int. Cl.³ B62D 57/00
U.S. Cl. 180—7.1 4 Claims

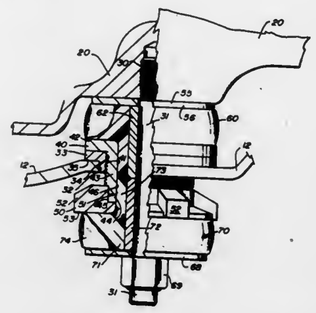


1. An omnidirectional drive system comprising a driven body, a drive unit mounted on said driven body obliquely with respect thereto, and a follower unit mounted on said driven body, said drive unit including a doughnut-shaped wheel which provides a substantially spherical surface, said drive unit having a tilt whose orientation relative to said driven body is changeable by a driving means for changing the direction of movement thereof.

4,519,467
LOWER RADIATOR MOUNT

James W. Saunders, Burlington, Wash., assignor to Paccar Inc., Bellevue, Wash.

Filed Nov. 1, 1982, Ser. No. 438,411
Int. Cl.³ B60K 11/04
U.S. Cl. 180—68.4 12 Claims



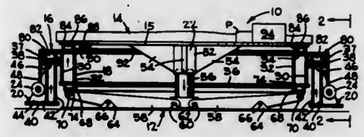
1. An easily adjustable lower radiator mount enabling adjustment from the front of the vehicle without having to remove the vehicle's bumper, for a radiator having a bottom member with a pair of vertical, upwardly extending blind threaded openings extending up thereinto, said bottom member being supported by a frame cross member spaced below said bottom member and provided with a threaded wide opening vertically in line with and of greater diameter than each said blind opening, said mount comprising:
a threaded stud extending up from below said frame cross member into and through each said wide opening and threaded into said blind opening and having a locking nut adjacent its lower end,
a flanged tubular adjusting member having an externally threaded portion threaded into said wide opening, a lower externally keyed portion, and an upper flange extending out radially from its upper end,
a lug nut internally keyed to and surrounding said lower keyed portion, and having a keyed exterior,
upper spacing means bearing against said radiator bottom member, with a rigid upper sleeve around said stud and a resilient portion bonded thereto and having a thick portion lying axially between said flange and said bottom member,
lower spacing means bearing against said locking nut at the lower end of said stud, with a rigid lower sleeve around said stud and a resilient portion bonded to said lower sleeve and having a thick portion lying axially between said lug nut and said locking nut,
whereby said locking nut can be loosened and a wrench applied to said lug nut to turn said adjusting member and thereby to change the spacing between said bottom member and said frame cross member, followed by tightening said locking nut.

4,519,468
STEERABLE CARROUSEL SUPPORTED WALKING BEAM VEHICLE

Jon L. Mick, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 24, 1983, Ser. No. 478,195
Int. Cl.³ B62D 57/02
U.S. Cl. 180—8.5 5 Claims

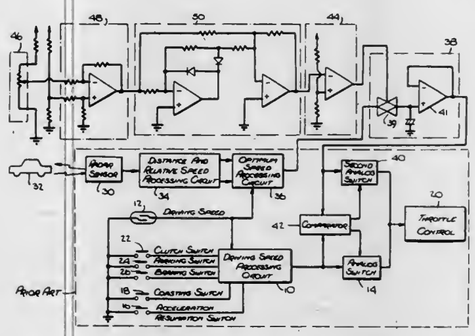
1. A ground supported multi-directional walking beam vehicle comprising: upper and lower frame means; means connecting said frame means together for relative pivotal movement about a vertical axis; means defining walking beams mounted on said lower frame on opposite sides of said axis for horizontal reciprocal movement; frame lifting means operatively connected to both of said frame means and movable between a first position supported on the ground and lifting the beams from the ground, and a second position lowering said beams onto the ground with the frame being supported by the beams and lifting said lifting means from the ground; means for pivoting one of said frame means relative to the ground when the frame means are supported by said beams, and for pivoting said other frame means relative to the ground when said frame means are supported by said lifting means; and means for moving said beams along parallel paths in one direction when spaced from the ground and in the opposite direction when supported on the ground for moving the frames along a linear path; said lifting means comprises a lift cylinder secured to said upper frame and being concentric with said axis, a piston projecting downwardly from said cylinder, a plurality of lift arms with one end of each arm movably connected to said piston and the other end of each arm movably connected to said lower frame, means defining a ground engaging lift pad, and means for movably connecting intermediate portions of said lift arms to said pad means for moving said pad means into vehicle supporting position in response to extension of said piston and for raising said pad means off the ground in response to retraction of said piston.



4,519,469
METHOD AND APPARATUS FOR AUTOMATIC CONTROL OF DRIVING SPEED

Kunihisa Hayashi, and Takahiro Nogami, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 7, 1982, Ser. No. 415,436
Claims priority, application Japan, Sep. 7, 1981, 56-140705
Int. Cl.³ B60T 7/12
U.S. Cl. 180—169 4 Claims



1. In a device for automatically controlling a driving speed of a first motor vehicle, the device including means for setting a desired fixed driving speed signal for the first vehicle, means for detecting a distance to a second vehicle driving ahead of the first vehicle and for generating a corresponding distance signal, means for generating an optimum driving speed signal in response to the distance signal for maintaining an optimum interval between the first and second vehicles, means for comparing the optimum and desired driving speed signals, and means for controlling the driving speed of the first vehicle in response to the lower of said compared signals, the improvement comprising:
means for detecting a deviation from straight course driving of the first vehicle;
means for generating a deviation signal corresponding to a detected deviation from straight course driving; and
a hold circuit connected between the means for generating the optimum driving speed signal and the means for comparing the optimum and desired driving speed signals, said hold circuit being responsive to said deviation signal for holding the value of the optimum driving speed signal delivered to the comparing means constant for the duration of the deviation signal at a value obtained at the beginning of the deviation signal.

4,519,470
SELF-PROPELLED UNIT FOR PROPELLING A PERSON WEARING SNOW SKIS ALONG A RISING SNOW PATH

Giovanni Allisio, Vicolo Lucinicco, 6, Rivoli, Torino, Italy

Filed Mar. 29, 1983, Ser. No. 480,135
Int. Cl.³ A63C 5/08
U.S. Cl. 180—180 9 Claims

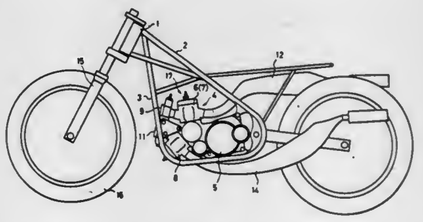


1. A self-propelled unit for propelling a person wearing snow skis along a rising snow path, comprising a frame (7), rolling means (12) for the movement of the self-propelled unit (3) along the snow, an engine (20) for driving the rolling means (12), a transmission (21 to 25) which connects the engine (20) to the rolling means (12), and control means (4) for the engine (20), characterised in that said self-propelled unit is of such dimensions and weight as to be portable, and is provided with rigid means for its releasable connection to the rear ends of the skier's skis (2) to push the skis forward with said unit disposed to the rear of the skis.

4,519,471
MULTI-CYLINDER ENGINE MOUNTED ON MOTORCYCLE

Shinichi Miyakoshi, and Kazuo Oyama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,610
Claims priority, application Japan, Sep. 28, 1981, 56-152029
Int. Cl.³ B62M 7/00; F02B 75/22
U.S. Cl. 180—219 6 Claims



4. In a motorcycle-mounted multicylinder engine, the improvement comprising; said engine having at least three cylinders arranged in a V-configuration, at least one of said cylinders comprising a lower cylinder extending downwardly and forwardly relative to another cylinder, said at least one lower

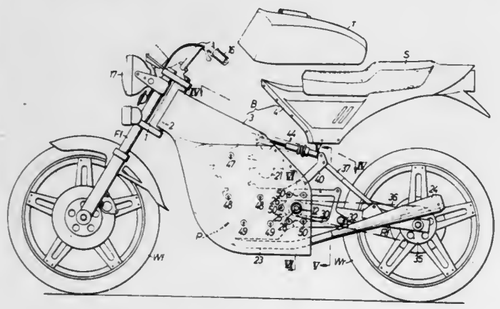
cylinder being provided at a position offset from and between planes defined by sides of a row of said remaining upper cylinders, and a plurality of carburetors in equal numbers to said cylinders and positioned in front thereof, each of said carburetors being provided with an air intake port directed generally frontwardly of said motorcycle.

4,519,472

MOTORCYCLE

Tadashi Kamiya, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 152,102, May 21, 1980, Pat. No. 4,356,877.
This application Aug. 13, 1982, Ser. No. 407,804
Claims priority, application Japan, May 26, 1979, 54-65236
The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.
Int. Cl.³ B62K *25/20*
U.S. Cl. 180—227 **3 Claims**



1. A two wheeled motorcycle, comprising
a frame member, and
a power unit mounted on said frame member for driving a rear wheel,
a rear fork pivotally mounted on said power unit and supporting said rear wheel in driving connection therewith,
a compression link having a basal end and a distal end and pivotally mounted at its basal end on said rear fork in staddling relation to said rear wheel,
a rocker link having opposite ends and pivotally mounted at one end thereof on said power unit and pivotally connected with the distal end of said compression link, and
a rear shock absorber connected at one end thereof to said power unit and at the other end thereof to the other end of said rocker link.

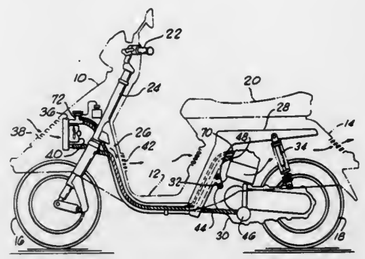
4,519,473

COOLING SYSTEM FOR A MOTORCYCLE

Hideo Ochiai, Tokyo; Masumi Haman., and Masahiko Kimoto, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 530,982
Claims priority, application Japan, Sep. 20, 1982, 57-163387
Int. Cl.³ B60K *11/04*; B62K *11/00*
U.S. Cl. 180—229 **10 Claims**

7. A cooling system for a motorcycle having a front leg shield, a step floor and an engine mounted behind the step floor, comprising
a radiator mounted at the front leg shield;
a cooling jacket at the engine;
a feedline extending below the step floor from said radiator to said cooling jacket;
a return line extending below the step floor from said cooling jacket to said radiator;
a thermostat selectively restricting flow through said return line;
a bypass line extending from said cooling jacket to forwardly of the step floor and being in communication with said radiator, said bypass line being substantially smaller than said return line; and



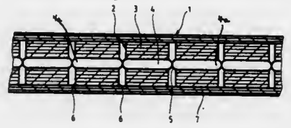
a pump inducing flow to said cooling jacket from said feedline.

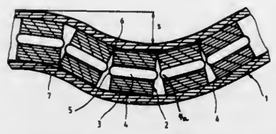
4,519,474

SAFETY BEADING

Jakob Iseli, Windisch, and Hans-Hermann Pribnow, Nussbaumen, both of Switzerland, assignors to Invento AG, Hergiswil, Switzerland

Filed Sep. 6, 1983, Ser. No. 529,492
Claims priority, application Switzerland, Sep. 13, 1982, 5417/82
Int. Cl.³ B60R *18/04*
U.S. Cl. 180—279 **10 Claims**





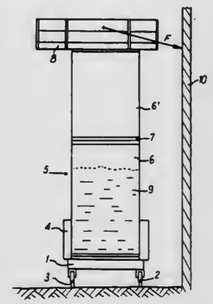
1. A safety beading which is arranged along the shock-absorbing edges or closing edges of an automatically movable contrivance comprising:
an electric switching arrangement;
said electric switching arrangement comprising a plurality of contact elements;
each of said contact elements possessing a contact point;
an elastic tube which is prestressed along its length;
said contact elements being disposed in series in said elastic tube, so that the contact elements are pressed together at said contact points thereof when in a normal inoperative position by the action of the pre-stressing of the tube; and
said contact elements comprise insulated edges which touch during the transition to an operative position under the action of an external force, whereby the contact elements perform a rocking movement against one another and contact is interrupted.

4,519,475

SCAFFOLDING

Karl Bollinger, Rueil Malmaison, France, assignor to Soletanche, Nanterre, France

Filed Dec. 28, 1982, Ser. No. 453,824
Claims priority, application France, Dec. 24, 1982, 82 21742
Int. Cl.³ E04G *1/15, 1/24*
U.S. Cl. 182—17 **7 Claims**



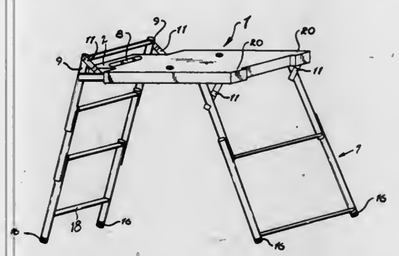
1. Scaffolding that is intended for operations carried out at a certain height and capable of resisting horizontal forces comprising a tower formed from at least one vertically immovable liquid-tight element of substantially constant cross-sectional area that can contain liquid ballast sufficient for resisting horizontal forces carried out at said certain height, means for supporting the tower on the ground, and an operations deck at a fixed height at the top of the tower at said certain height and supported directly by said at least one vertically immovable liquid-tight element for performing operations that result in said horizontal forces.

4,519,476

DETACHABLE WORKBENCH TOP

Salvador Alimbau Marques, Barcelona, Spain, and Giorgio Grasselli, Albinea, Italy, assignors to Andral Corporation, Williamsville, N.Y.

Continuation-in-part of Ser. No. 492,487, May 6, 1983, Pat. No. 4,448,283, which is a continuation-in-part of Ser. No. 537,276, Sep. 29, 1983,. This application May 29, 1984, Ser. No. 614,625
Int. Cl.³ E04G *1/30*; E06C *7/16, 1/383*
U.S. Cl. 182—28 **19 Claims**



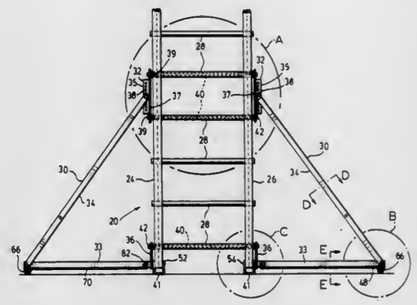
1. A detachable top adapted for use with a supporting structure comprising a substantially rectangular main portion having an extending section protruding therefrom, said extending section having a width less than that of said main rectangular portion and adjacent to and integral with one side of said main portion, a side wall extending downward from substantially the entire peripheral portion of said main rectangular portion and said extending section, and a cutout area located between said main portion and said extending section.

4,519,477

LADDER STABILIZING APPARATUS

Robert Ralston, 294 Silverstone Dr., Townhouse 71, Rexdale, Ontario, Canada (M9V 3J4)

Filed Nov. 15, 1983, Ser. No. 551,802
Claims priority, application Canada, Nov. 15, 1982, 415580
Int. Cl.³ E06C *5/36, 7/44, 1/08*
U.S. Cl. 182—107 **15 Claims**



1. Stabilising apparatus for use with a ladder having hollow rungs and comprising:
at least one stabilising device having first and second bracket means for securing the stabilising device at respective upper and lower positions along a side of the ladder;
each bracket means coupled to one end of at least one elongate rod which can be passed through a hollow rung and its other end secured to the other side of the ladder;
a first elongate member having one end adapted to be removably coupled to the upper bracket means, and its other end for acting as a foot of the stabilising device for effectively increasing the base width of the ladder;
a second elongate member shorter than the first elongate member having one end pivotably connected to the lower bracket means, and its other end pivotably connected to the first elongate member; the pivotal connections permitting pivotal movement in the plane of the ladder;
the stabiliser being movable between an in-use position and a stored position; whereby in the in-use position the first elongate member is displaced at an angle from the side of the ladder by said second elongate member which acts as a supporting strut, to locate the other end of the first elongate member at a distance from the foot of the ladder and effectively increase the base width of the ladder, and in the stored position said first and second elongate members can be folded along the side of the ladder and retained therein by retaining means.

4,519,478

LADDER EXTENSION COUPLING

James H. Hulme, Milton, and Stuart E. Shinn, Scarborough, both of Canada, assignors to Supreme Aluminum Industries Limited, Scarborough, Canada

Filed May 17, 1984, Ser. No. 611,206
Int. Cl.³ E06C *1/10, 1/28*
U.S. Cl. 182—178 **30 Claims**

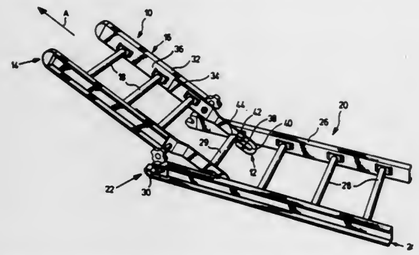
1. A ladder comprising two separable sections, a ladder extension section and a base ladder section to be coupled together in longitudinally overlapping relation to constitute an extension ladder;
each section comprising rails and rungs, portions of each rail of the extension section at the lower end thereof being spaced to be received between rails of the ladder section and having complementary primary slots formed therethrough to slidably receive one rung of said ladder section therein;
each primary slot having a blind end proximate the lower

end of the extension section, said primary slots extending from said blind end longitudinally away from the lower end of the extension section to an open end permitting entrance of said one rung therein; wherein with said one rung received in said primary slots at said blind ends, said extension section being rotatable with respect to said ladder section about said one rung;

first coupling means on said extension section spaced longitudinally from said slot on the remote side of the slot from the lower end of the extension section;

second coupling means on said ladder section spaced longitudinally from said one rung on the remote side of said one rung from the lower end of the ladder section;

stop means, on one of said extension section and ladder section, wherein with said one rung received in said slots at said blind ends, on rotation of said extension section about said one rung, said stop means stopping rotation of



said extension section about said one rung at a position wherein said first and second coupling means are in alignment for coupling,

said first and second coupling means engaging to couple together by sliding the extension section from said position in a substantially longitudinal direction with respect to the ladder section to slide said one rung in the primary slots away from said blind ends, said primary slots being of sufficient longitudinal extension that with said first and second coupling means coupled together said one rung being retained within said primary slot;

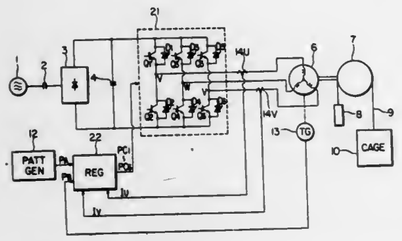
the first and second coupling means on coupling preventing further sliding of said extension section in said direction, and with said first and second coupling means coupled together and said one rung retained within said primary slots relative rotation of said extension section with respect to said ladder section is prevented.

4,519,479

SAFETY APPARATUS FOR ELEVATOR

Toru Tanahashi, Gifu, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,911
Claims priority, application Japan, Jun. 15, 1983, 58-107188
Int. Cl.³ B66B *5/06*
U.S. Cl. 187—29 R **8 Claims**



1. In an elevator having a converter which changes an A.C. output from an A.C. power source into a D.C. output, an inverter which changes the D.C. output of the converter into an A.C. output, a current detector which detects an output current of the inverter, and an inverter controller which controls the inverter on the basis of the detected current value of the current detector and a command current value, a hoist motor being driven by the A.C. output of the inverter; a safety apparatus for an elevator characterized by comprising decision means to decide whether or not a difference between the detect current value of said current detector and the command current value exceeds a preset value, and operation inhibition means to inhibit the operation of said inveter when said decision means has decided that the difference between the detected current value and the command current value exceeds the set value.

4,519,480

BRAKE LEVER RETAINING BRACKET

Thomas A. Nelson, Munster, Ind., assignor to Hadady Corporation, Lansing, Ill.

Filed Apr. 1, 1983, Ser. No. 481,295
Int. Cl.³ B61H *13/38*
U.S. Cl. 188—52 **2 Claims**

1. In a railroad tread brake rigging for a self aligning spring railway freight car truck, having side frames supported at their ends upon wheel and axle assemblies and a bolster resiliently supported at its ends for vertical movement upon spring groups seated on the side frames, and having brake power cylinders affixed to the lowermost end of brake levers connected to the bolster from brackets, the improvement comprising:

a lightweight brake lever retaining bracket comprising:

a base member adapted to be affixed to a bolster,

two arms extending horizontally from said base, said arms adapted to receive the head of a brake lever, said arms having openings to receive a brake lever retaining pin,

stiffener members affixed to each arm, said stiffener members having openings aligned with the openings coaxially in said arms and adapted to receive a brake lever retaining pin;

a safety bolt means connecting the extremities of said arms, and limiting the distance between the extremities of said arms, and safety platforms affixed to to the lowermost portion of said arms and extending inwardly, and limiting the lateral movement of said brake lever, said inwardly extending safety platforms adapted to engage the head of said brake lever in the event said retaining pin is removed or withdrawn.

4,519,481

SUSPENSION STRUT FOR VEHICLES

Lawrence G. Nicholls, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 267,535, May 29, 1981, abandoned.
This application Jul. 27, 1983, Ser. No. 517,562
Claims priority, application United Kingdom, Jun. 3, 1980, 8018066; Oct. 22, 1980, 8034082; Apr. 14, 1981, 8111747
Int. Cl.³ F16F *9/36*
U.S. Cl. 188—322.17 **4 Claims**



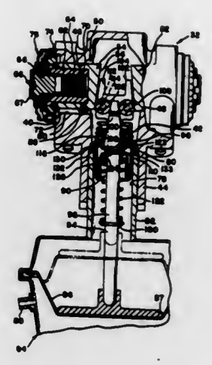
1. A suspension strut for a vehicle comprising a cylinder having an inner wall and an outer wall, a piston adapted to work in said cylinder in sliding engagement with said inner wall, a piston-rod carrying said piston, a closure for one end of said cylinder and through which said piston-rod passes into said cylinder, a volume of gas or air and a volume of hydraulic fluid retained within said cylinder, restrictor means in said piston to permit a limited flow of fluid past said piston in both directions in response to relative movement between said cylinder and said piston, and said volume of gas or air is adapted to support at least a part of the load on the vehicle and to accommodate hydraulic fluid displaced within said cylinder by volume of the entering piston-rod, wherein said closure through which said piston-rod extends comprises a plug of annular outline received in said cylinder at said one end, and a cylindrical extension separate from said plug, said plug having a cylindrical outer face co-operating with said inner wall of said cylinder, a cylindrical inner face openly spaced from said piston rod, and a planar radial end face interconnecting said cylindrical inner and outer faces at the inner ends thereof, means for retaining said plug in said cylinder at said one end, and said cylindrical extension depends axially into said cylinder, is spaced radially from said cylinder for the whole of the axial length of said extension between inner and outer ends thereof, and has an inner and an outer wall, and an annular space defined between said inner wall of said cylinder and said outer wall of said extension accommodates the whole of said volume of gas or air and a portion of said volume of hydraulic fluid, and wherein said outer end of said extension is adjacent to and axially located inwardly of said planar radial end face of said plug, and said extension is provided adjacent to said plug with an outwardly directed radial flange, a first seal through which said piston-rod works being carried by said extension at a position which is always below the level of said hydraulic fluid in said cylinder, irrespective of the position of said piston within said cylinder, and an annular second seal being disposed at the end of said annular space which is adjacent to said plug and being located adjacent to said plug, in engagement with said radial flange, said annular second seal being trapped between said inner wall of said cylinder and said outer wall of said extension and having sealing engagement with said inner wall of the cylinder and said outer wall of the extension, said second seal providing the sole sealing means between said extension and said cylinder.

4,519,482

WEDGE ACTUATED DRUM BRAKE ASSEMBLY

William E. Ott, and Edwin A. Krieg, both of Elyria, Ohio, assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 5, 1982, Ser. No. 345,970
Int. Cl.³ F16D *51/62*
U.S. Cl. 188—343 **7 Claims**



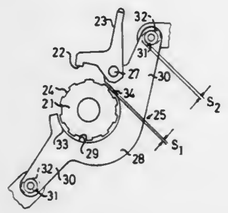
1. Drum brake assembly comprising a drum mounted for rotation with a member to be braked, a fixed support non-rotatably mounted adjacent said drum, a pair of friction elements slidably mounted on said fixed support presenting opposite pairs of contiguous ends, and an actuator assembly between at least one of said pairs of contiguous ends of said friction elements for urging the latter into braking engagement with said drum when a brake application is effected, said actuator assembly including a housing mounted on said fixed support, a pair of pistons slidable in said housing, each of said pistons being operably connected to a corresponding one of said friction elements for urging the latter toward said drum, a force transmitting assembly movable relative to said housing and including a force transmitting member and a camming member slidable on said force transmitting member, said force transmitting assembly being movable between brake applied and brake released conditions for forcing said pistons toward a position urging said friction elements against said drum when a brake application is effected, said camming member moving with clearance between said pistons during initial movement of said force transmitting assembly, and resilient means yieldably urging said force transmitting assembly toward the brake released condition, characterized in that said resilient means includes compression spring means carried between said force transmitting member and said camming member for urging the latter toward stop means defined on said force transmitting member and for maintaining the camming member in engagement with the stop means during said initial movement of the force transmitting member, said compression spring means being movable with said force transmitting assembly, and extension spring means between the force transmitting assembly and the wall of said housing for extending or elongating from its relaxed condition as the brake is applied so that the camming member and therefore the force transmitting means are returned to the brake released position as said extension spring returns from its extended condition to its relaxed condition, the forces generated on said camming member by extension of said extension spring being counterbalanced by the forces exerted on said camming member by said compression spring during said initial movement of the force transmitting member, the force of said compression spring overcoming the force of said extension spring when said clearance between said pistons and the camming assembly has been taken up.

4,519,483

PARKING BRAKE IN A VEHICLE TRANSMISSION

Heinrich A. Schlicker, Bengtsfors, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Nov. 18, 1982, Ser. No. 442,795
Claims priority, application Sweden, Nov. 24, 1981, 8106982
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **7 Claims**



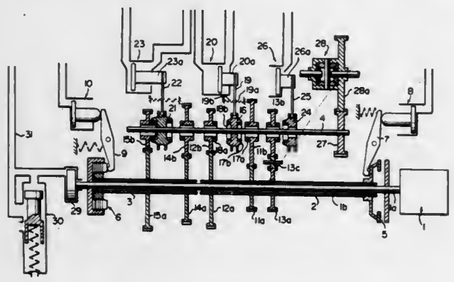
1. Parking brake in a motor vehicle transmission comprising a catch element non-rotatably joined to a rotatable shaft in the transmission and having at least one radially directed cavity, and a catch body movably joined to the transmission housing, said body being movable into and out of engagement with the cavity in the catch element and, when in the engaged position, locking the shaft against rotation in the housing, characterized in that the catch body is movably mounted in a yoke which partially encircles the shaft in the region of the catch element, said yoke having abutment surfaces on diametrically opposite sides of the shaft, and in that the yoke is mounted in the housing at a distance from said abutment surfaces, with play, to permit displacement of the yoke in a plane perpendicular to the shaft, the play between the yoke and the housing being greater than the difference between the distance between the abutment surfaces and the diameter of the circle circumscribing the catch element, so that one or the other of the abutment surfaces of the yoke can be displaced into contact with the catch element when said catch body is in engagement with said cavity, depending on the direction in which the catch element imposes force on the catch body.

4,519,484

MULTIPLE CLUTCH TRANSMISSION HAVING GEAR CONTROL DEVICE

Mitsuru Nagaoka; Kazuya Oda, and Shizuo Sumida, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 18, 1983, Ser. No. 467,846
Claims priority, application Japan, Feb. 22, 1982, 57-27127
Int. Cl.³ B60K *41/22*; F16H *5/42, 5/60*
U.S. Cl. 192—3.58 **9 Claims**



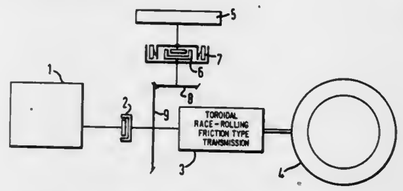
1. A multiple clutch type transmission including a plurality of input shafts, a plurality of clutch devices for releasably and alternately connecting respective ones of said input shafts with an engine output shaft, each of said input shafts being associated with at least one set of transmission gears for disengageably connecting the input shaft associated therewith to an output element of the transmission, means for controlling said clutch devices so that selected one of said input shafts is connected through selected one of said clutch devices with the engine output shaft, gear engaging means for engaging selected set of said transmission gears so that selected one of said input shaft is connected with the output elements, control means for producing a clutch engaging signal upon receipt of a gear engaging command to thereby engage disengaged one of said clutch devices to establish a substantially synchronizing condition in a selected set of said transmission gears, then a clutch disengaging signal for disengaging the clutch device and thereafter a gear engaging signal to operate said gear engaging means for the selected set of the transmission gears to engage the same gear set.

4,519,485

DRIVELINE FOR REGENERATIVE BRAKING

Christopher J. Greenwood, Preston, England, assignor to Leyland Vehicle Limited, England

Filed Mar. 18, 1982, Ser. No. 359,505
Int. Cl.³ B60K *41/02*
U.S. Cl. 192—0.033 **13 Claims**



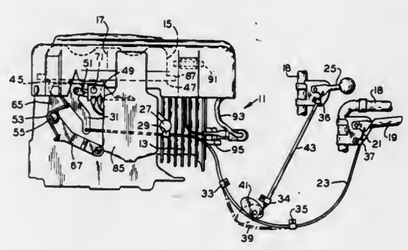
1. A vehicle driveline comprising a continuously-variable-ratio transmission having an input, an engine for driving said transmission, a flywheel, a first power-transmitting means connected between said engine and said transmission input, and a second power-transmitting means connected between said transmission input and said flywheel, said first power-transmitting means including first coupling means operable to drive said transmission by said engine and inoperable to drive said engine by said transmission, said second power-transmitting means including second coupling means operable to selectively drive said flywheel by said engine or said transmission and third coupling means operable to drive said transmission by said flywheel only while said first coupling means is inoperative to drive said transmission by said engine.

4,519,486

ENGINE FLYWHEEL BRAKE TOGGLE MECHANISM

William O. Hermanson, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 13, 1982, Ser. No. 417,411
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—3 S **15 Claims**



1. A safety device for an internal combustion engine powered implement including an engine ignition system, engine starting mechanism and having a deadman control normally biased toward a first position and actuable by an implement operator to a second position comprising:

a flywheel coupled to the engine crankshaft for rotation therewith;

a braking member having a friction surface normally biased into engagement with an annular surface of the flywheel;

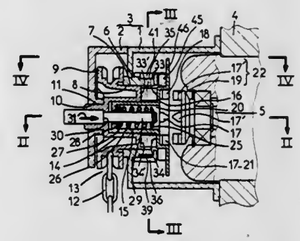
means biasingly coupling the braking member to the deadman control for retracting the friction surface out of engagement with the flywheel annular surface upon movement of the deadman control to the second position and including a pivotable linkage having first and second lever arms pivotably fastened to the engine and a third lever arm pivotably joining the first and second arms to cause the first and second arms to pivot in unison about their respective engine pivot points to move the braking member relative to the flywheel annular surface with substantially constant biasing force on said deadman control.

4,519,487

ALTERNATE MANUAL OR POWER AUXILIARY CONTROL DEVICE FOR CONTROLLING WINDING DOORS OR THE LIKE

Guy Florin, Cluses, France, assignor to Somfy, Cluses, France

Filed Dec. 2, 1982, Ser. No. 446,264
Claims priority, application France, Dec. 30, 1981, 81 24527
Int. Cl.³ E06B *9/204*; F16D *11/10*
U.S. Cl. 192—36 **2 Claims**



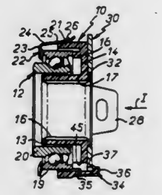
1. An auxiliary control device for winding doors or grilles, sectional doors, or the like, which comprises a rotary control member adapted to be actuated manually and rotatably for producing the axial translation of a sliding member coaxial to the control member against the force of a resilient means through the medium of a frontal cam device disposed transversely between said control member and said sliding member, said sliding member supporting a first half-coupling adapted, beyond a predetermined sliding movement, to engage a corresponding second half-coupling supported by a main drive shaft controlling the winding door or grille, sectional door or the like, a device being provided for producing an antagonistic torque counteracting the rotation of said sliding member, wherein said device capable of producing an antagonistic torque consists of a rotary braking member disposed coaxially to said sliding member and responsive to a friction element, said rotary braking member comprising at least one guiding projection extending towards said second half-coupling and adapted to be contacted and slidably engaged by a corresponding nose, extending in the direction opposed to the direction of said guiding projection, provided on said sliding member, so as to cause said sliding member to slide towards said second half-coupling, the heights of said guiding projection and nose respectively being such that the axial movement of said sliding member is shorter than the axial movement resulting from the action of said cam device.

4,519,488

CLUTCH RELEASE BEARING

Pierre Renaud, Le Plessis-Trevise, France, assignor to Valeo, Paris, France

Filed Feb. 25, 1983, Ser. No. 469,706
Claims priority, application France, Mar. 23, 1982, 82 04883
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 **18 Claims**



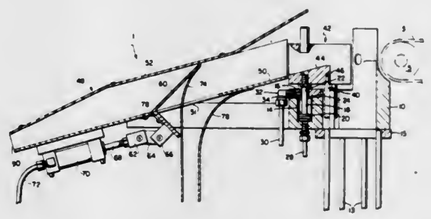
1. A clutch release bearing comprising a control member, an operating member, a transversely disposed flange on said operating member adapted to be acted on by said control member, a drive member adapted to cooperate with a release mechanism of a clutch, means axially linking said drive member to said operating member, a wear-resistant plate disposed on a surface of said flange facing away from said drive member, at least one elastically deformable snap-fastener lug linking said wear-resistant plate axially to said flange, said lug having a root section in one piece with said operating member, a retaining shoulder facing towards said flange and adapted to retain said wear-resistant plate, and the distance between said root portion and said shoulder being greater than the corresponding thickness of said wear-resistant plate, and indexing means for locating said wear-resistant plate relative to said operating member, said indexing means being separate from said lug and projecting from the same side of said flange as said lug and extending axially beyond at least that portion of said lug which first bears against said wear-resistant plate during its engagement therewith.

4,519,489

CAN END SAMPLER

Jack D. Dingus, Russell County, and Edward C. Gilliam, Washington County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 508,083, Jun. 27, 1983, abandoned.
This application Oct. 22, 1984, Ser. No. 662,805
Int. Cl.³ B65G *11/20*
U.S. Cl. 193—31 R **6 Claims**



1. Apparatus for controlling can end flow from a generally horizontal input path comprising a first deflector, means for vertically reciprocating said first deflector between an upward and a downward position, said first deflector having a generally horizontal surface over which said can ends pass without being affected in their movement by said first deflector when said deflector is in its downward position and said first deflector having a generally vertical deflecting surface against which said can ends impinge to stop their horizontal movement and to

guide said can ends in a vertical direction by gravity when said first deflector is in its upward position, said generally horizontal surface and said generally vertical surface each maintaining their respective attitudes between said upward and said downward position, a first chute for capturing said can ends which impinge against said generally vertical deflecting surface of said first defelctor, a conveying surface for said can ends which pass over said first deflector, a second deflector having a deflecting surface against which said can ends conveyed by said conveying surface impringe to stop their horizontal movement when said second deflector is in an open position and a surface over which said can ends pass without being affected in their movement by said second deflector when said second deflector is in a closed position, means for controlling said second deflector between said open and said closed positions and a second chute for capturing said can ends which are impinged against the deflecting surface of said second deflector.

4,519,490

METHOD AND APPARATUS FOR ENTRAPMENT PREVENTION AND LATERAL GUIDANCE IN PASSENGER CONVEYOR SYSTEMS

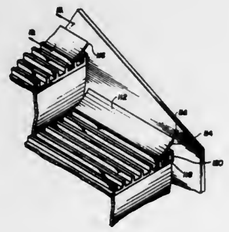
Carl J. White, 1869 Strum Ave., Walla Walla, Wash. 99372

Continuation of Ser. No. 268,022, May 28, 1981, Pat. No. 4,413,719. This application Jun. 24, 1983, Ser. No. 507,601

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.³ B66B *9/12*

U.S. Cl. 198—333 **3 Claims**



1. In an escalator for continuously conveying passengers along a path of travel extending between two landings at respective opposite ends of the escalator, which includes drive means, two spaced-apart skirt panels which extend between the two landings along said path, and an endless series of steps which are continuously moved in sequence between the two skirt panels along said path by the drive means, wherein each step includes an outer tread surface which extends rearwardly from a front edge of the step between opposite lateral sides of the step and an outer riser surface which extends downwardly from the step front edge between the opposite step lateral sides, an apparatus which comprises:

each said skirt panel comprising a plurality of panel sections, each including a smooth, planar, inwardly-facing, lateral surface of a first material which together extends between the two landings along said path and which lie in a vertical plane when in alignment; and

said series of steps, each lateral side of each step including bearing means defining a smooth, planar, outwardly-facing surface of a second material, which is disposed in a vertical plane extending along said path, each step lateral planar surface having top and front edges which comprise the entire exposed portions of the step lateral edges on one lateral side of the step;

wherein the lateral planar surfaces of each step moving along said path are disposed in close proximity to the respective adjacent skirt panel lateral planar surfaces, to create sliding contact between the full lateral planar surfaces defined by the bearing means of each step and respective adjacent skirt panel lateral planar surfaces aligned in said vertical plane, and a relatively zero running clearance gap between the full lateral planar surfaces defined by the bearing means of each step and respective adjacent skirt panel lateral planar surfaces not aligned in said vertical plane, and thus reduce the possibility of any object being inserted or drawn between one of the lateral sides by any step and the adjacent skirt panel.

4,519,491

APPARATUS FOR THE ASSEMBLY AND/OR MACHINING OF CIRCULATING AND IMMOBILIZABLE PARTS CARRIED BY PALLETS

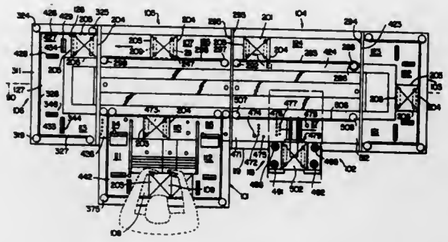
Maurice Prodel, 153, rue de Verdun, and Jacques Prodel, Rue de Cuts, both of Carlepont 60170 Ribecourt, France

Filed Oct. 14, 1981, Ser. No. 311,117

Claims priority, application France, Oct. 14, 1980, 80 21976; Apr. 8, 1981, 81 07088; Sep. 11, 1981, 81 17272; Oct. 9, 1981, 81 19109

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—349 **12 Claims**



1. Apparatus for the assembly and/or machining of parts, manually and/or automatically, comprising a multiplicity of work stations with means for the displacement of pallet part-carriers to the interior of a station and from one station to another by at least one carriage in continuous movement wherein the driving of a pallet by a carriage is done along one edge, the arrangement of the at least one carriage being such that the motor cables of the carriage are at a predetermined level for the driving of a pallet in one direction and at a different level for the driving of a pallet in a perpendicular direction, each station comprising a module mounted in a removable manner on a fixed frame, each module having a generally rectangular configuration, a pulley being provided at each corner of the configuration for the guiding of a said carriage, and the bores of each pulley being at different levels.

4,519,492

METHOD AND APPARATUS FOR TRANSPORTING PACKS FROM A FEED TRACK TO A DISCHARGE-CONVEYOR TRACK

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 370,423, Apr. 21, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 652,434

Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117859

Int. Cl.³ B65G *47/24*

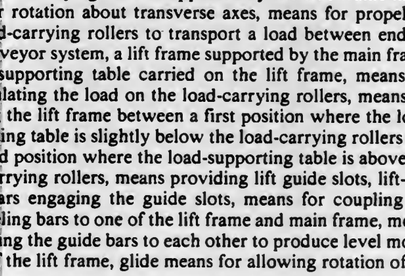
U.S. Cl. 198—408 **9 Claims**

1. A transport apparatus for cuboid packs (**10**) such as cigarette packs having relatively wide front and rear faces and relatively narrow tops, bottoms and sides, particularly adapted for use in conjunction with a packaging machine, comprising:

(a) an elongate feed conveyor (**11**) for serially supplying incoming packs in an upright position with their wide faces abutting at an outlet end thereof,

(b) a first intermediate conveyor (**15**) comprising a first continuously driven rotary wheel disposed adjoining the outlet end of the feed conveyor for individually withdrawing packs therefrom and for rotating such packs through 90° about an axis parallel to an axis of said wheel such that a narrow side of each pack is foremost in the direction of movement,

(c) a second intermediate conveyor (**16**) comprising a second rotary wheel continuously driven at the same speed as the first wheel and disposed adjoining the first wheel downstream from the outlet end of the feed conveyor for individually tangentially withdrawing packs carried by the first wheel and for rotating such packs through 90° about an axis parallel to an axis of said second wheel, the respective rotational axes of the first and second wheels being offset 90°, peripheral pack engaging zones of the second wheel having a greater radius than corresponding zones of the first wheel to thereby increase the spacing between successive packs, and a maximum radius of the first wheel being less than the shortest distance from the center thereof to a nearest face of the second wheel such that said wheels do not intersect or mesh with each other,



(d) a discharge conveyor (**17**) disposed adjoining an outlet zone of the second wheel for individually withdrawing packs carried thereby,

(e) the outer periphery of the first wheel defining a plurality of equally circumferentially spaced depressions (**25**) for individually receiving a pack for conveyance, and

(f) each depression being defined by a circular contour (**26**) of substantially constant radius smoothly merging, in a direction opposite the rotational direction of the wheel, into a spiral contour (**27**) of increasing radius, in turn smoothly merging into a straight portion (**28**) terminating at an outwardly extending abutment (**24**) disposed perpendicular to said straight portion, each depression thus presenting a gradually increasing depth to packs being supplied by the feed conveyor to thereby implement a mechanically "soft" transfer of the packs and minimize any stress impacts.

4,519,493

TURNTABLE FOR ROLLER CONVEYOR SYSTEM

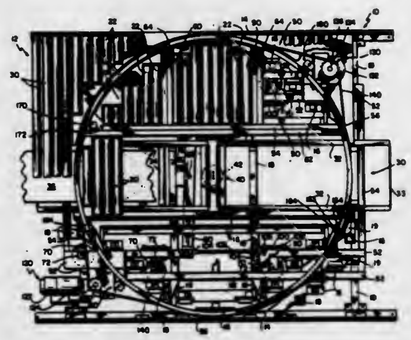
Thomas A. Dyer, Greenwood, Ind., assignor to Pentek Corporation, Indianapolis, Ind.

Filed Feb. 28, 1983, Ser. No. 470,205

Int. Cl.³ B65G *29/00, 47/24*

U.S. Cl. 198—414 **16 Claims**

12. A turntable for a conveyor system comprising a main frame, the main frame including side frame members, a plurality of load-carrying rollers supported by the side frame members for rotation about transverse axes, means for propelling the load-carrying rollers to transport a load between ends of the conveyor system, a lift frame supported by the main frame, a load-supporting table carried on the lift frame, means for accumulating the load on the load-carrying rollers, means for moving the lift frame between a first position where the load-supporting table is slightly below the load-carrying rollers and a second position where the load-supporting table is above the load-carrying rollers, means providing lift guide slots, lift-leveling bars engaging the guide slots, means for coupling the lift-leveling bars to one of the lift frame and main frame, means for linking the guide bars to each other to produce level movement of the lift frame, glide means for allowing rotation of the load-supporting table relative to the lift frame to change the position of the load on the load-carrying rollers, two-speed drive means for rotating the load-supporting table at first and second speeds, means for stopping the rotation of the load-supporting table at a predetermined position, and sensing means for reducing the speed of the drive means prior to stopping the rotation of the load supporting table at the predetermined position.



4,519,494

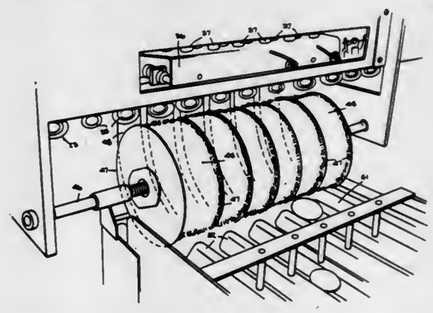
EGG HANDLING SYSTEM

John C. McEvoy, and Leslie P. Thomas, both of Canton, Mich., assignors to Diamond Automations, Inc., Framington, Mich.

Filed Jul. 1, 1982, Ser. No. 394,161

Int. Cl.³ B65G *47/19*

U.S. Cl. 198—448 **34 Claims**



1. An apparatus for transferring eggs continuously conveyed in spaced-apart, aligned relationship by a conveyor means to a receiving station in an egg grading apparatus at which the eggs are collected and packaged according to their physical characteristics, comprising,

conveyor means including carrier members coupled thereto for conveying adjacently spaced rows of eggs in a spaced-apart aligned relationship,

rotatable, resilient receiving means disposed at said receiving station below said conveyor means and having the peripheral edge thereof disposed at the approximate centerline of the adjacently spaced rows of eggs, said receiving means being adapted for rotational movement downwardly and away from said conveyor means for receiving eggs delivered by said conveyor means to said receiving station, said receiving means comprising rotatable, resilient cylinder means having a plurality of spaced-apart disk means forming a plurality of channels in said cylinder means for receiving said eggs, said carrier members being selectively actuated to release the eggs so that the eggs from both said adjacently spaced rows of eggs carried by

said conveyor means fall onto and are received by respective ones of the channels of said cylinder means, and

support means, disposed below said rotatable, resilient receiving means, for guiding eggs delivered to said receiving means downwardly and away from said receiving means.

4,519,495

APPARATUS FOR SEPARATING AND CONVEYING OBJECTS

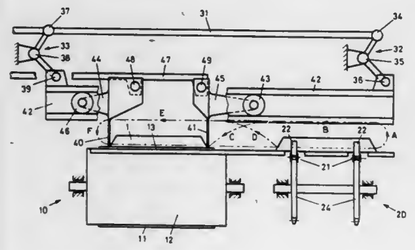
Hans-Ulrich Bolli, Schleitheim, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 5, 1982, Ser. No. 375,100

Claims priority, application Switzerland, May 6, 1981, 2945/81

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—486 **4 Claims**



1. An apparatus for separating and conveying substantially rectangular, plate-like objects comprising:

(a) a delivery conveyor for transporting the objects in a transporting direction;

(b) a removal conveyor situated adjacent said delivery conveyor and having a transporting direction substantially parallel to the transporting direction of said delivery conveyor; and

(c) fork gripper means for sequentially sliding the objects from said delivery conveyor onto said removal conveyor, said fork gripper means including

(1) two rotationally movably mounted gripper fingers arranged for gripping one object at a time on said delivery conveyor at two oppositely disposed sides of the object parallel to the transporting direction of said delivery conveyor, and

(2) drive means for moving said gripper fingers towards one another to grip an object at a height level on the delivery conveyor, for translating said gripper fingers with the object, at said height level, from said delivery conveyor to said removal conveyor at an obtuse angle with the transporting direction so that during the transfer of the object from said delivery conveyor to said removal conveyor the object is displaced by a given distance in the transporting direction, for moving said gripper fingers away from one another to release the object on the removal conveyor, and for lifting said gripper fingers on a return path over the objects on the removal conveyor and on the delivery conveyor, said drive means including guide rail means articulated to said gripper fingers; push rod means for moving said gripper fingers as a unit transversely between said delivery conveyor and said removal conveyor at said obtuse angle; said gripper fingers being articulated to said push rod means; and actuating rod means operatively connected to said guide rail means to displace said guide rail means in a direction having a component perpendicular to the direction of movement of said push rod means to pivot said gripper fingers on said push rod means towards or away from one another.

4,519,496

CONVEYOR SCREW WITH WEAR-RESISTANT MEMBERS ATTACHED TO ITS OPERATIVE SURFACE

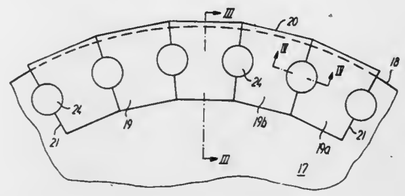
Erik Ludvigsen, Soborg, Denmark, assignor to Alfa-Laval Separation A/S, Soborg, Denmark

Filed Nov. 24, 1982, Ser. No. 444,177

Claims priority, application Denmark, Dec. 9, 1981, 5456/81

Int. Cl.³ B65G *33/26*

U.S. Cl. 198—676 **7 Claims**



1. A conveyor screw comprising:

a substantially continuous row of generally quadrilateral wear-resistant elements mounted on the operative surface of the conveyor screw along the outer contour thereof with their outer longitudinal edge faces following broadly said contour and protruding beyond the contour, and with their end faces extending generally in radial directions and in abutting relationship;

a plurality of element retaining members secured to the conveyor screw for retaining said wear-resistant elements on the operative screw surface;

each element retaining member having thereon an axially symmetric guide surface, the diameter of which decreases towards the operative surface of the screw, the symmetry axis of each guide surface intersecting said screw surface in a point of the radial dividing line between two juxtaposed wear-resistant elements;

each wear-resistant element having in each of its end faces a recess defining a guide surface which is complementary to one half of the guide surface on an element retaining member;

the recesses on said end faces of said juxtaposed wear-resistant elements forming a combined recess having a size exceeding that of the element retaining member received in said combined recess thereby providing a narrow gap between said element retaining member and said wear-resistant elements; and

said gap being filled with a resilient padding agent forming a bond between said element retaining member and said wear-resistant elements.

4,519,497

CONTAINER, IN PARTICULAR FOR A CODICIL OR SIMILAR PERSONAL DOCUMENT

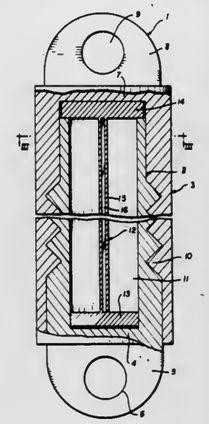
Edith L. C. Brinkers, Leidsegracht 2, Amsterdam, Netherlands

Filed Dec. 22, 1983, Ser. No. 564,389

Int. Cl.³ A45C *11/00*; B65D *83/00*

U.S. Cl. 206—37 **1 Claim**

1. A container for a personal document, which the relevant individual should carry substantially at all times, said container comprising a first, substantially cylindrical inner sleeve, open at one end and closed at one end, provided over at least part of its length with an external screw thread and a second substantially cylindrical outer sleeve open at one end and closed at one end, provided over at least part of its length with an internal screw thread and which can be screwed thereon from the open end of the inner sleeve such that a closed space can be formed within the two sleeves into which the personal document can be positioned, while at least one of the sleeves is provided with means to which a chain, string or the like may be attached, and further including a reel on which the personal document can be wrapped, the reel being sized to be shoved into the inner sleeve with a part thereof always protruding from the inner sleeve, and wherein the end of the reel extending from the inner sleeve includes a disk which is formed from a flexible material, said disk having a diameter greater than the inner



diameter of said inner sleeve and less than the inner diameter of said outer sleeve, said disk resting on the open end of said inner sleeve and being clamped between the open end of the inner sleeve and the closed off end of the outer sleeve when said outer sleeve is screwed onto said inner sleeve.

4,519,498

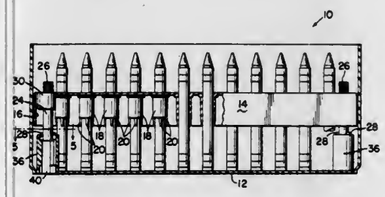
SECURING MECHANISM FOR CONTAINER COMPONENTS AND THE LIKE

Darcy L. Booth, 11750 E. Ranchito St., El Monte, Calif. 91732

Filed Mar. 13, 1984, Ser. No. 588,938

Int. Cl.³ B65D *85/28, 25/10*

U.S. Cl. 206—214 **21 Claims**



12. A container and organizer for crayons and the like, comprising:

a box having a bottom wall and normally upwardly extending side walls,

a removable tray configurated and sized to fit within said side walls and defining a plurality of orifices sized to receive said crayons,

a securing mechanism for the releasible securement of said tray at different positions relative to said side walls of the box with the crayons extending downwardly supported by the bottom wall and extending upwardly above the said holder tray,

an elongated latch member having a longitudinal axis,

biasing means mounting the latch member on the holder tray for limited angular movement about its said axis between first and second angular positions of the latch member,

said biasing means interconnecting the box and the latch member, and said biasing means biasing the latch member to said first angular position,

at least one projection on the latch member extending transversely of said latch member axis,

means defining at least one groove communicating with and extending along said bore and adapted to receive said latch member projection to allow relative axial movement between the holder tray and the box when the latch member is in its second angular position wherein said projection is in registration with said groove, and

means defining a first ledge adjacent to and extending radially of said bore and adjacent to and generally perpendicular to said groove for receiving the latch member projection to prevent relative axial movement between the holder tray and the box when the latch member is in its first angular positions and in a first axial position relative to said bore,

whereby the holder tray and the box are secured together when the latch member is in its said first position, and manual movement of the latch member from its said first to its said second angular position allows relative movement between the latch member and said bore for separation of the holder tray and the box.

4,519,499

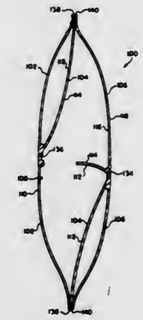
CONTAINER HAVING A SELECTIVELY OPENABLE SEAL LINE AND PEELABLE BARRIER MEANS

Albert Stone, Buffalo Grove; Edwin Pyde, Des Plaines, and Peter Carveth, Glen Ellyn, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 15, 1984, Ser. No. 619,647

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—219 **14 Claims**



1. A container having at least three chambers for the separate storage and selective mixing of at least two components, said container comprising:

(a) a first sheet;

(b) a second, diaphragm sheet sealed about at least a portion of its periphery to said first sheet and to a third sheet, said second, diaphragm sheet being intermediate said first sheet and said third sheet;

(c) said first sheet and said third sheet sealed about their entire peripheries and forming the exterior wall of said container;

(d) a first externally, manually breakable line of securement between said first sheet and said second, diaphragm sheet;

(e) a second externally, manually breakable line of securement between said first sheet and said second, diaphragm sheet, wherein said first and second breakable lines of securement extend entirely across said container;

(f) at least said first sheet, said first breakable line of securement and said second, diaphragm sheet defining a a first chamber for holding the first component;

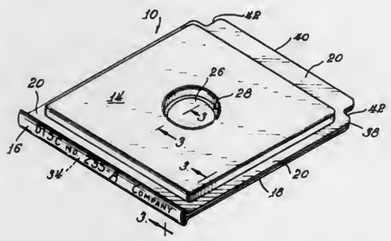
(g) at least said second sheet, said third sheet and said first and second breakable lines of securement defining a second chamber;

(h) at least said first sheet, said second breakable line of securement and said second, diaphragm sheet defining a third chamber;

(i) whereby manual separation of said first and second sheets

near said first and second breakable lines of securement will rupture said breakable lines of securement and said second sheet, placing said first, second and third chambers in open communication.

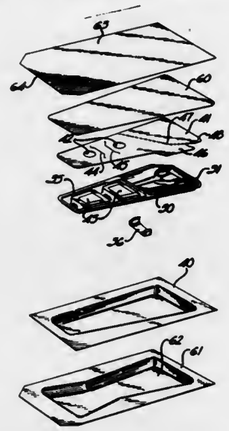
4,519,500
DISPLAY/STORAGE PACKAGE AND FILE THEREFOR
William C. Perchak, Chicago, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.
Filed Jan. 12, 1984, Ser. No. 570,226
Int. Cl.³ B65D *83/00, 85/30, 1/34*
U.S. Cl. 206—312 **13 Claims**



1. A display/storage package for flat articles, comprising
a. a bottom portion,
b. a top portion complementary to said bottom portion,
c. said top and bottom portions, when engaged to constitute a closed package, forming an internal compartment,
d. means for securing said top portion to said bottom portion to form a closed package,
e. means providing assistance for opening the package when closed, and
f. a peripheral planar flange of flexible material encircling said top portion and said bottom portion, each flange being located on the respective top and bottom portions so as to be in contact when said portions are closed,
g. a combination label retainer and handle constituting continuations of said flanges and forming a hinge for connecting said top and bottom portions at one edge thereof, said combination further including continuations of said flanges transverse to said planar flanges so as to define a handle and a longitudinal channel forming a guideway for retaining indicia identifying the contents of the package.

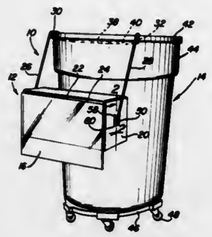
4,519,501
LIGATING CLIP AND CLIP APPLIER PACKAGE
Robert J. Cerwin, Pittstown, N.J., assignor to Ethicon, Inc., Somerville, N.J.
Continuation-in-part of Ser. No. 284,413, Jul. 20, 1981,. This application Apr. 21, 1983, Ser. No. 487,437
The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.
Int. Cl.³ B65D *85/24*
U.S. Cl. 206—339 **3 Claims**

1. A package comprising:
(a) a sterile instrument for applying a plurality of ligating clips;
(b) means disposed within said instrument for holding a plurality of said ligating clips in spaced apart relationship to facilitate dispensing of the clips sequentially;
(c) a plurality of sterile, dry, hydrolyzable surgical ligating clips disposed in spaced apart relationship in said holding means, each of said clips having a narrowed resilient hinge portion, said hinge portions being more sensitive to hydrolysis than the remainder of said clip;
(d) absorbing means adjacent to said holding means said absorbing means having a greater affinity for moisture than any portion of said clip whereby any moisture present in said package, including moisture in the area around each clip, is preferentially absorbed by said absorbing means, said absorbing means having sufficient absorbent capacity to maintain the clips dry and sterile while in the unopened package;
(e) and moisture impermeable outer wrap disposed in sealing relationship with respect to the instrument the holding



means, clips, and moisture absorbing means, whereby said initially dry and sterile clips are maintained dry and sterile until the package is opened to maintain the resiliency of the hinge portion of the clips for an extended shelf life period.

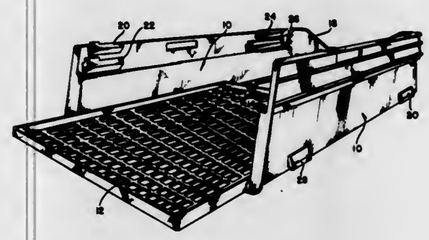
4,519,502
RACK FOR BOXED PLASTIC BAG ROLLS
John C. Jackson, II, and Robert N. Schendle, both of Monroe, La., assignors to Sunbelt Plastics, A Division Of Sunbelt Manufacturing, Inc., Monore, La.
Filed Feb. 16, 1984, Ser. No. 581,113
Int. Cl.³ B65D *83/00, 85/672;* **B65B** *67/04*
U.S. Cl. 206—390 **8 Claims**



5. In combination, a carton having a roll of plastic bags therein and a slot enabling the plastic bags to be dispensed from the roll, said roll of plastic bags including a hollow core with the roll of bags and core extending horizontally between vertical end walls of the carton with the end walls of the carton having apertures aligned with the core when oriented centrally of the carton, a supporting rack engaged with the carton and including means for engaging a supporting structure, said rack comprising a pair of spaced legs having free ends engaged with the carton, the free end of each leg including an inwardly extending extension having a reversely curved inner end portion and a resilient and outwardly diverging portion terminating in a laterally opening recess with the extension received through the aperture in the end wall of the carton and extending into the core when the outwardly diverging portion of the extension is moved toward the extension with release of the outwardly diverging portion of the extension engaging the

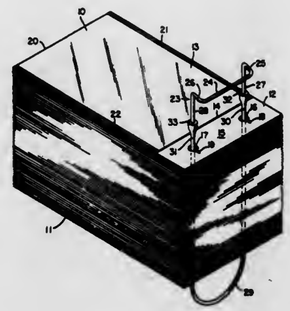
laterally opening recess into locking engagement with the periphery of the aperture in the end wall of the carton and the inner end portion of the extension in the core.

4,519,503
NESTABLE/STACKABLE BASKET/TRAY COMBINATION FOR USE IN BAKERY GOODS DISTRIBUTION SYSTEMS
James D. Wilson, 421 Vista Suerte, Newport Beach, Calif. 92660
Filed Aug. 15, 1983, Ser. No. 523,179
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—505 **5 Claims**



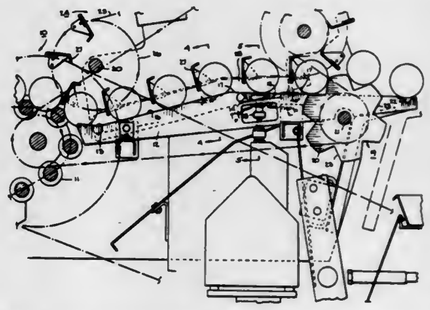
1. A container comprising a basket formed of molded plastic material and constructed to be stacked on like baskets to form a rack, said basket having a rear wall and first and second side walls integral with one another and with said rear wall, and said basket further having an open bottom and an open front; inwardly extending flanges integral with said side walls and extending along the bottom edges thereof; and a tray slidably supported on said flanges to form a bottom for said basket, said tray being adapted to be pulled out through the open front of the basket.

4,519,504
WICKET BAG PACKET
Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.
Continuation of Ser. No. 454,482, Dec. 29, 1982,. This application Sep. 11, 1984, Ser. No. 649,292
Int. Cl.³ B65D *71/00*
U.S. Cl. 206—554 **4 Claims**



1. A wicket bag packet comprising, in combination:
(a) a stack of flattened, flexible packaging bags, each of said bags having an open end and having a pair of wicket holes provided in a portion thereof adjacent to said open end; and
(b) a wicket including a substantially U-shaped rigid uper member having a pair of elongated leg sections adapted to pass through said pair of wicket holes provided in each bag and a substantially U-shaped flexible lower member having a pair of elongated leg sections extending through said pair of wicket holes provided in each bag and holding together the entire stack of packaging bags, said rigid upper member extending outwardly beyond said stack of packaging bags and having its elongated leg sections joined contiguously with the elongated leg sections of said flexible lower member forming a continuous loop whereby a selected number of bags may be taken from said stack of packaging bags and guided along said rigid upper member to a separate packaging location.

4,519,505
EGG TRANSFER SYSTEM
Leslie P. Thomas, Canton, Mich., assignor to Diamond Automations, Inc., Framington, Mich.
Continuation-in-part of Ser. No. 394,443, Jul. 1, 1982,. This application Dec. 23, 1982, Ser. No. 452,451
Int. Cl.³ A01K *43/08*
U.S. Cl. 209—513 **41 Claims**



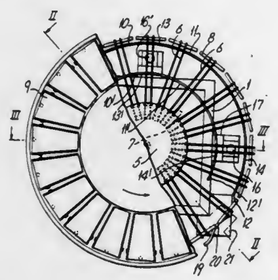
15. An apparatus for advancing eggs from a candling station through a plurality of weighing stations in an egg grading apparatus, said apparatus including conveying means for conveying eggs through said egg candling station, comprising,
elongated guide means for receiving eggs from said candling station and guiding said eggs to said weighing stations of said grading apparatus, said guide means being disposed adjacent one end of said conveyor means downstream of said candling station for receiving eggs from said conveyor means,
said guide means further including at least one first portion which is inclined upwardly in the direction of movement of said eggs on said guide means toward said weighing stations, and at least one second portion which is inclined downwardly in the direction of movement of said eggs on said guide means away from said egg weighing stations, the end of said first portion of said guide means and the beginning of said second portion of said guide means being located ahead of said weighing stations in the direction of movement of said eggs on said guide means, said second portion having an angle of inclination with respect to the horizontal which is less than that of said first upwardly inclined portion,
first advancing means, disposed vertically above said guide means and adjacent thereto, adapted to individually engage and advance said eggs along said guide means to said weighing stations, said weighing stations being disposed along said guide means so that eggs are advanced over said weighing stations by said advancing means,
a plurality of egg holding stations onto which said eggs are advanced by said advancing means, said holding stations being disposed in alignment with and downstream of said guide means and said egg weighing stations, and
lifting means, adapted to engage a plurality of said eggs from the underside thereof and lift said eggs from said holding stations, said lifting means being rotatably and reciprocally movable with respect to said egg holding stations, the rotational movement of said lifting means being about

an axis which is generally parallel to the longitudinal axis of said guide means so as to facilitate the engagement and lifting of said eggs by said lifting means during upwardly rotational movement thereof.

4,519,506
ROTARY WEIGH-SORTER

Spaanderman Cornelis, Vlaardingen, Netherlands, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Aug. 12, 1982, Ser. No. 407,541
Claims priority, application United Kingdom, Aug. 12, 1981, 8124701
Int. Cl.³ B07C 5/16
U.S. Cl. 209—592 **1 Claim**

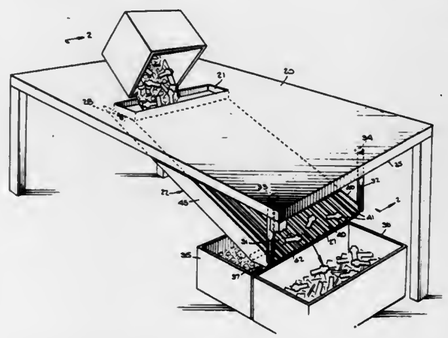


1. A device for weigh-sorting articles, such as fish, said device comprising:
a frame having a vertical axis means rotatably supported therein;
a driving turret attached to said vertical axis means for rotation therewith;
a plurality of containers for said articles and a respective plurality of arms;
each arm having a first, radially inner pivot connection pivotally connecting a respective said arm to said driving turret about a horizontal pivot axis so that the respective arm projects generally horizontally and radially outwards from said driving turret so that said arms radially outwardly of said driving turret require support from beneath in order to be kept from tilting downwards;
each arm further having a second, radially outer pivot connection pivotally connecting a respective said container to a respective said arm so that each said container is pivotable with respect to the respective said arm to which it is pivotally connected, between a first position wherein it is generally uprightly disposed to receive and contain at least one of said articles, and a second position wherein it is generally outwardly tilted for dumping therefrom at lest one of such of said articles as may be contained thereby;
at least two load cells mounted to said frame at angularly spaced locations about said driving turret;
a track means extending in a plurality of separate segments generally circumferentially about said driving turret including at least one such segment on said frame and at least another such segment respectively on each of said load cells, said track means being arranged in relation to said arms and in relation to said containers to at least indirectly support said containers as said driving turret is rotated, so that as the driving turret is rotated through a complete revolution, each said container is successively brought to bear successively upon each of said load cells;
a mechanism carried on said frame and constructed and arranged for successive interaction with said containers for temporarily tilting an article-containing said container from said first to said second position thereof for dumping at least one contained article therefrom, said mechanism being spaced angularly about said frame from said at least two load cells;
a computing means constructed and arranged for comparing container weight-related data from at least two of said load cells correlated with respective ones of sid containers in relation to successive weighings of that container by said at least two load cells in a same revolution of said power turret with data stored in said computing means relative to acceptable net weights for articles contained by said containers, and for causing said temporarily tilting mechanism to operate in regard to a weight-related determination made thereby;
said load cells being so angularly spaced from one another about said frame that a site is provided angularly therebetween at which articles may be directed into successive ones of said containers, so that as said power turret is rotated, each container is successively brought from being at least indirectly supported on said frame on said at least one segment of said track means, to being weighed in a possibly more empty condition by one of said load cells while being supported at least indirectly on a respective said other segment of said track means, to being weighed in a possibly more full condition by another of said load cells while being supported at least indirectly on another respective said other segment of said track means after passing said site, and to being brought into juxtaposition with said temporarily tilting mechanism for possible temporary tilting thereby after being weighed by said other said load cell.

4,519,507
APPARATUS FOR SEPARATING TACKS FROM SURVEILLANCE TAGS

Dennis Gillette, Ft. Lauderdale, and David Gentzler, Boynton, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Nov. 15, 1982, Ser. No. 441,657
Int. Cl.³ B07C 5/12
U.S. Cl. 209—682 **8 Claims**



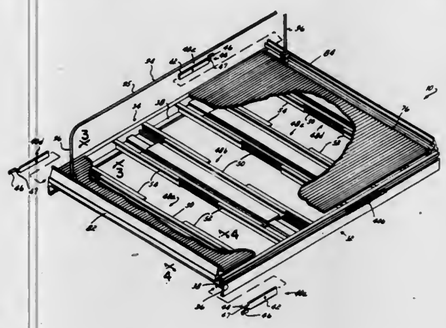
1. Apparatus for use with a quantity of article surveillance tags and unattached tacks in random mixture for separating said tacks from said tags where said tacks have a head and a shank and are used to fasten said tags to fabric, or the like, and said tags have at least one principal dimension that is larger than the largest dimension of said tacks, said apparatus comprising a bi-level ramp having an upper level a predetermined height above a lower level, means for suspending said ramp beneath a work surface having an opening for introducing said mixed quantity of tags and tacks to one end of said ramp, said one end of said ramp being elevated relative to its other end, said other end being supported above a support surface such that a pair of receptacles can be disposed beneath said other end in position to receive articles traversing the respective levels of said ramp, a plurality of apertures in the upper level of said bi-level ramp larger than the greatest dimension of said tacks for freely permitting a tack to pass through said upper

level of said ramp to the lower level of said ramp, said apertures being sized and shaped such that said tags can, for a selected orientation, and in the absence of any other impediment, pass therethrough, said predetermined height between said lower and upper level of said ramp being insufficient to permit complete ingress of a tag, said suspending means being constructed to support said ramp with a sufficient inclination to cause tacks to slide along the upper level until they pass through one of said apertures and to continue to slide along the lower level to an outlet from which they are guided into any receptacle underlying said outlet, and means for elevating above the surface of said upper level of said ramp a majority of those tags that are introduced to the top of said ramp while slidingly conveying said tags down the ramp to a second outlet for deposit in any receptacle underlying said second outlet, said tag elevating means being constructed to permit substantially unimpeded movement of said tacks along said upper level toward said apertures.

4,519,508
SHELF STRUCTURE FOR A DISPLAY RACK

Edwin P. Gullett, Fayetteville; Gerald B. Davis, Clarkston, and Rafael T. Bustos, Atlanta, all of Ga., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Jun. 8, 1983, Ser. No. 502,294
Int. Cl.³ A47F 5/00
U.S. Cl. 211—59.2 **19 Claims**



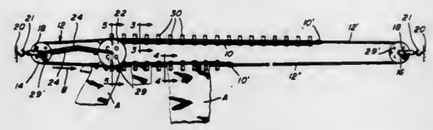
1. A shelf structure for supporting articles in a display rack having corner posts, comprising:
opposed, spaced shelf support arms each formed with an outwardly facing channel;
cross members extending between said shelf support arms and connected thereto, said cross members being adapted to telescope between an extended and retracted position for varying the space between said shelf support arms;
an article support carried by said adjustable cross members and shelf support arms, said article support including a top surface and a bottom surface each having different coefficients of friction, said article support being adapted to be turned over so as to dispose either of said surfaces upwardly for contacting said articles; and
latch elements movable within said outwardly facing channels of said shelf support arms, said latch elements being adapted to releasably connect to said corner posts for connecting said shelf structure to said display rack.

4,519,509
CLOTHES-LINE

Rexford Doyle, 135 Laurier St., North Alma, Quebec, Canada

Filed Jul. 9, 1984, Ser. No. 629,166
Claims priority, application Canada, Aug. 2, 1983, 433708
Int. Cl.³ B65G 25/00; D06F 53/00
U.S. Cl. 211—119.13 **4 Claims**

1. A clothes-line and clothes pin assembly comprising:
(a) a first and a second pulley each adapted to be supported at horizontally-spaced-apart points;
(b) an endless clothes-line stretched out and trained on said pulleys to form upper and lower runs;
(c) a sprocket wheel rotatably supported in the plane of said line and held nearer said first pulley than said second pulley;
(d) a cable secured at both its ends to said clothes-line, trained around said sprocket wheel and extending alongside said clothes-line, a horizontal portion of the lower run of said clothes-line extending between said first pulley and said sprocket wheel forming a cable-free loading and unloading zone, so that garments may be draped over said line and removed therefrom, said zone at one end forming a junction with said cable where the latter joins with said lower run;

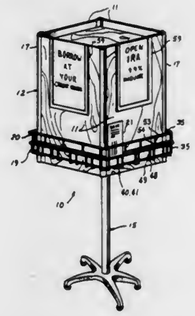


(e) a row of spaced-apart clothes pins, each fixedly connected to said cable and each carrying a line-gripping means movable relative to its clothes pin between a line-gripping and a line-releasing position, each clothes pin further carrying a biasing means biasing said line-gripping means to line-gripping position, said clothes pins successively engaging said sprocket wheel when travelling with said cable around said sprocket wheel, and the latter having a surface means contacting said gripping means and moving the latter to the line-releasing position when said clothes pin is engaging said sprocket wheel, whereby movement of said lower run of said line will impart rotation to the sprocket wheel to successively present clothes pins at said junction with their gripping means in line-releasing position for engaging the lower end of said line together with a garment draped thereon, said clothes pin automatically securing said garment on said line when said clothes pin leaves said sprocket wheel.

4,519,510
ROTATABLE DISPLAY STAND

Stanley J. Learnard, 12659 Willow Spring Ct., Herndon, Va. 22070

Filed Jun. 26, 1984, Ser. No. 624,778
Int. Cl.³ A47F 5/02
U.S. Cl. 211—131 **14 Claims**



1. A rotatable article display stand, comprising:
a pedestal base;

a generally horizontal frame plate rotatably supported on top of said pedestal base;

a plurality of substantially vertical, generally rectangular panels fixed to the peripheral edge of said frame plate and defining a generally box-like structure;

wire members secured to said panels around the outside thereof in the vicinity of said frame plate, defining a plurality of pockets for holding and displaying advertising brochures, pamphlets and the like, said wire members also reinforcing said structure; and

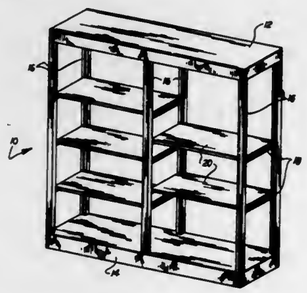
corner members extending vertically along the corners of said box-like structure, fixed to the adjacent edges of the panels and securing them together.

4,519,511

SHELF SUPPORTING BRACKET ARRANGEMENT

Walter M. Mendenhall, 512 Lillian Dr., Madeira Beach, Fla. 33708

Filed Jul. 6, 1982, Ser. No. 395,482
Int. Cl.³ A47F 5/00
U.S. Cl. 211—187 **8 Claims**



1. Apparatus for use in supporting a shelf or the like, comprising a pair of spaced apart longitudinally extending channel members having respective longitudinally extending slots disposed in facing relation with each other, a crosspiece extending between said pair of channel members, said crosspiece having integral end portions which extend through the facing slots and into said channel members, and a plurality of support means longitudinally spaced within each of said channel members for engaging and supporting the end portions of said crosspiece within the channel member to support the end portions of the crosspiece when the crosspiece is in a first orientation relative to the channel members, the crosspiece being turnable to a second orientation relative to the pair of channel members while its end portions are disposed within said pair of channel members, the end portions of the crosspiece being released from engagement with the support means in the pair of channel members when the crosspiece is in said second orientation, the end portions of the crosspiece being longitudinally movable in the pair of channel members while the crosspiece is in its second orientation to change the position of the crosspiece relative to the pair of channel members, each of said pair of channel members defining a longitudinally extending guideway, the support means in each channel member projecting into the guideway for engaging and supporting an end portion of a crosspiece disposed therein when the crosspiece is in said first orientation, the end portions of a crosspiece which extends within a guideway in a channel being dimensioned to

(i) slide in both longitudinal directions in the guideway when the crosspice is in its second orientation,

(ii) turn in the guideway as the crosspiece turns between its first and second orientations, and

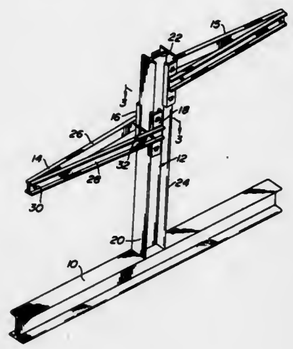
(iii) rest on a support means in the guideway when the crosspiece is in its first orientation, each of the facing slots in the channel member having a predetermined width, and the guideway in each channel member having a predetermined width which is greater than the width of the slot in the respective channel member, each of the end portions of the crosspiece including a relatively narrow neck portion which has a width which is less than the predetermined width of the slots in the channel members and a relatively wide support portion which has a width which is greater than the predetermined width of the slots in the channel members, and the support means in each channel member projecting into the guideway in the channel member at a location outside the width of the slot associated with that channel, the end portions of the crosspiece and the guideways in the channel members being dimensioned to allow relatively unobstructed longitudinal movement of an end portion of a crosspiece in the guideway in a channel member when the crosspiece is in its second orientation, each channel member including first and second coplanar front walls which are spaced apart from each other and define the longitudinal slot in the channel member, and each support means in the channel member comprising at least one support member projecting into the guideway in the channel member from at least one of said first and second front walls in the channel member.

4,519,512

CANTILEVER RACK CONSTRUCTION

Donald Frazier, Calderwoods, Farhills, N.J. 07931; J. Hartley Daniels, Bethlehem, Pa., and Daniel W. Clapp, Hackettstown, N.J., assignors to Donald Frazier, Farhills, N.J.

Filed Dec. 20, 1982, Ser. No. 450,511
Int. Cl.³ A47D 5/10
U.S. Cl. 211—193 **17 Claims**



1. A cantilever rack construction comprising:

a vertical column including a generally vertically extending web and flange, said flange having portions extending in both directions from said web, each flange portion having an outer face and an inner face,

a cantilever arm, and

a pair of connectors for mounting said cantilever arm on said flange of said column to extend generally perpendicularly from the outer faces of said flange portions,

each of said connectors being secured to said arm and adapted to be mounted on said column at one of said flange portions,

each of said connectors comprising a first rigid portion constructed and arranged to grip the outer face of an associated flange portion at a limited medial location between the tip of said flange portion and said web and away from said tip, and

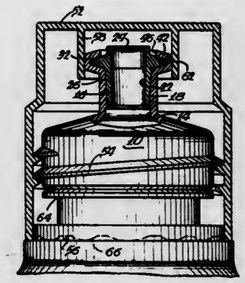
a second rigid portion constructed and arranged to grip the inner face of said associated flange portion at a limited medial location between the tip of said flange portion and said web and away from said tip.

4,519,513

CONTAINER HAVING PIERCEABLE INSERT

Gerhard H. Weiler, South Barrington, and Louis T. Pagels, Hanover Park, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Aug. 30, 1982, Ser. No. 412,608
Int. Cl.³ B65D 41/20
U.S. Cl. 215—32 **22 Claims**



1. A form, fill and seal container of a thermoplastic material, comprising:

(a) a body portion defining an opening at one end;

(b) an insert having a member defining a passageway and having a membrane sealing the passageway, said membrane having a thickness of about 0.010 inches or less; and

(c) a retaining structure unitary with the body portion about the defined opening, the insert being received by and sealing with the retaining structure such that the membrane can be pierced to provide access to the interior of the body portion;

said insert including an annular flange about the periphery of the insert member, spaced from the end of the insert, and having an upper surface and a lower surface, at least one of said surfaces being of a frustoconical configuration; and

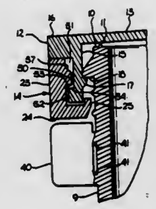
said retaining structure extending about the flange with a lip on the retaining structure extending over at least the peripheral portion of the upper surface of said flange from the outer periphery of said flange but spaced from the inner edge of said flange.

4,519,514

TAMPER RESISTANT AND TAMPER EVIDENT CLOSURES

Albert J. Agbay, Worcester, Mass., and Ralph H. Thomas, Sr., Clark, N.J., assignors to Robert Linkletter Associates, Inc., Westboro, Mass.

Filed Mar. 20, 1984, Ser. No. 591,541
Int. Cl.³ B65D 55/02
U.S. Cl. 215—225 **4 Claims**



1. A safety closure for a container having a rim defining a mouth, a neck located below said rim, and a peripheral lip around said rim, said closure comprising:

a snap cap having a top overlying said mouth and said rim and having a depending annular flange projecting below said top, said flange having an inwardly directed circumferential bead engaged below said lip, and a first outwardly directed circumferential bead located below said top and cooperating therewith to define a circumferential locking groove extending around the outer side of said flange;

a rotary safety ring having an annular sidewall surrounding said flange and overlying said locking groove and said first outwardly directed circumferential bead, said annular sidewall being closely spaced to said locking groove and said first outwardly directed circumferential bead so that said inwardly directed bead is held in engagement with said lip and prevents removal of said cap;

a plurality of angularly spaced fingers on the inner side of said sidewall projecting into said locking groove and overlying the bottom wall of said locking groove to prevent downward movement of said ring along said cap, said fingers being inclined inwardly and downwardly into said locking groove and having free inner ends positioned to be wedged against the bottom of the locking groove to prevent free flexing of the fingers as the ring is pulled downwardly relative to the cap, thereby normally preventing downward movement of said ring out of overlying relation with said locking groove;

a plurality of longitudinally extending release grooves in said first outwardly directed circumferential bead, spaced and sized to permit movement of said fingers through said first outwardly directed circumferential bead in one angular position of said ring about said cap, and thus allowing downward movement of said ring away from said cap for the removal of the latter from the container in said one angular position; and

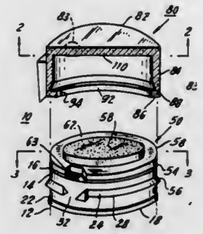
a tear tab attached to said neck below said safety ring, said tab being attached so that it can be broken off said neck, the upper portion of said tab being positioned closely below said safety ring preventing said ring from being unlocked as long as said tear tab is attached to said neck, whereby said closure cannot be opened without removing said tear tab.

4,519,515

DISC FOR INDICATOR FOR TAMPER-EVIDENT LID

Milton Schonberger, One Century Tower, Fort Lee, N.J. 07024

Continuation-in-part of Ser. No. 549,975, Nov. 9, 1983, which is a continuation-in-part of Ser. No. 484,636, Apr. 13, 1983, Pat. No. 4,480,760, which is a continuation-in-part of Ser. No. 451,794, Dec. 21, 1982, abandoned. This application Dec. 7, 1983, Ser. No. 558,807
Int. Cl.³ B65D 55/02
U.S. Cl. 215—230 **18 Claims**

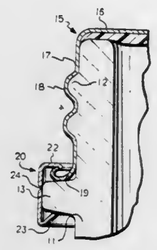


1. An indicator arrangement for a tamper-evident container lid, comprising:

a disc for being applied to the open neck of a container; the disc being comprised of a layer of resilient foam material which is adapted to deform when pressure is applied to it and which resiliently self biases to restore itself from being deformed; the disc having a bottom for being applied on the neck of a container; the disc having a top; an indicator

on the top of the disc and adapted for providing a visible indication when the indicator is rubbed;
a lid for being placed over the neck of the container and over the top of the disc; the lid having an underside above and opposed to the indicator; and
indicator rubbing means at the lid underside for being rubbed over the indicator as the lid is rotated around the neck of the container and with respect to the disc for activating the indicator on the disc; and the foam material being resilient for urging the indicator toward the rubbing means at the underside of the lid.

4,519,516
TAMPER INDICATING PACKAGE
Charles W. Amos, Bowling Green, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 26, 1984, Ser. No. 573,985
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **8 Claims**

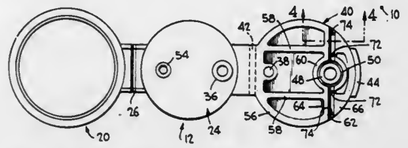


1. A tamper indicating package comprising
a container having a neck with external threads thereon,
a radial flange beneath the threads,
a closure having a top wall and a peripheral skirt with internal threads on the peripheral skirt complementary to the threads on the container,
said closure having a radially extending lip at the free end of the peripheral skirt,
and a tamper indicating band comprising a continuous annular wall, an upper radially inwardly extending flange for engaging the lip on the closure, and a lower generally radially inwardly and upwardly extending flange for engaging the flange on the container,
said lower flange being discontinuous such that the tamper indicating band can be applied to the closure and container after the closure has been applied to the container by moving the band axially downwardly and causing the lower flange to flex radially outwardly and then snap radially inwardly beneath the flange of the container,
said tamper indicating band including weakened portions such that when the closure is rotated to remove the closure from the container, the lift force of the threads causes the band to be severed.

4,519,517
TAMPER INDICATOR FOR CLOSURE
John Walter, Evergreen Park, Ill., assignor to Continental Can Company, Inc., Stamford, Conn.
Filed Nov. 9, 1982, Ser. No. 440,398
Int. Cl.³ B65D *55/06*
U.S. Cl. 215—253 **10 Claims**

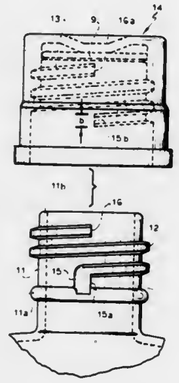
1. A closure of the type including a closure member having attached thereto a lever for applying a removing force to said closure member, said lever being normally generally planar; the improvement residing in providing said lever with deformable hinge means for causing a permanent displacement of a free end portion of said lever, said deformable hinge means extending transversely across said lever relative to the direction of force application by said lever whereby after said lever has been folded from its closed position and returned thereto said free end portion of said lever will unnaturally project out of said generally planar state to indicate tampering.

2. A closure of the type including a closure member having attached thereto a lever for applying a removing force to said closure member, said lever being normally generally planar; the improvement residing in providing said lever with deformable hinge means extending transversely across said lever relative to the direction of force application by said lever whereby after said lever has been folded a free end portion of said lever will unnaturally project out of said generally planar state to indicate tampering, said hinge means including a transverse hinge line and at least one stretchable web extending longitudinally of said lever and transversely of said hinge line for resisting return of said lever to said generally planar state.



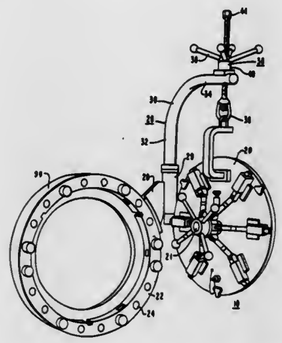
9. A closure of the type including a closure member having attached thereto a lever for applying a removing force to said closure member, said lever being normally generally planar; the improvement residing in providing said lever with deformable hinge means causing a permanent displacement of a free end portion of said lever, said deformable hinge means extending transversely across said lever relative to the direction of force application by said lever whereby after said lever has been folded said free end portion of said lever will unnaturally project out of said generally planar state to indicate tampering, said lever being initially held in said generally planar state by rupturable retaining means including a tear-out segment of said lever, said hinge line being on transversely opposite sides of and interrupted by said tear-out segment.

4,519,518
MEANS FOR MOUNTING A CLOSURE IN A PREDETERMINED POSITION
Laurence E. Wiles, Cheshire, and Frank C. Page, III, Watertown, both of Conn., assignors to Specialty Packaging Products, Inc., Bridgeport, Conn.
Filed May 31, 1984, Ser. No. 615,937
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—331 **10 Claims**



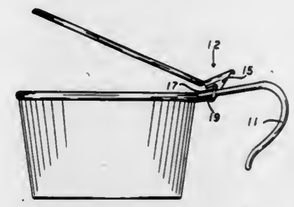
1. A container and closure assembly comprising
(a) a threaded neck portion on said container which includes at least one external helical thread having an upper non-helical stop surface and at least one external helical thread having a lower non-helical stop surface;
(b) a closure having at least one internal mating helical thread having an upper non-helical stop surface and at least one internal helical thread having a lower non-helical stop surface;
whereby said upper and lower stop surfaces of said external and internal helical threads respectively contact each other to stop the threading rotation of said closure on said neck portion at a predetermined position.

4,519,519
FUEL TRANSFER TUBE QUICK OPENING HATCH
Robert E. Meuschke, Penn Hills; Donald G. Sherwood, Monroeville, and Bernard L. Silverblatt, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 26, 1982, Ser. No. 352,601
Int. Cl.³ B65D *55/00*; G21C *19/00*
U.S. Cl. 220—211 **6 Claims**



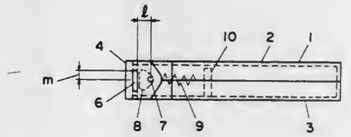
5. A quick operating hatch assembly for sealing and unsealing an opening at an outer peripheral end of a transfer tube located in a lower portion of a containment pit of a nuclear reactor building, wherein said opening is surrounded by a circumferential weldment, comprising:
a locking ring connected to said weldment;
a hatch cover fitably received within said locking ring and having a base portion seatable onto said weldment;
locking assembly means including latching means movably connected with said hatch cover, housing means in said locking ring, and latching means movable means connected with said hatch cover and said latching means for movement thereof into locking engagement with said housing means for locking said hatch cover to said locking ring and out of engagement with said housing means for releasing said hatch cover from said locking ring whereby to permit removal of said hatch cover from said locking ring to provide access to the transfer tube; and
external drive connection means normally not connected to, and remotely operable from a location above the containment pit to be remotely connected to and detached from said latching means movable means and operable when so connected to remotely and selectively drive said latching means movable means in a direction to affect correspondingly either closure or opening of said latching means from a location external of said pit; and
a davit assembly pivotally coupled with said weldment and means coupled to said hatch cover for pivotally moving said hatch cover away from the transfer tube after release therefrom and for initially aligning said hatch cover with the transfer tube prior to locking thereto, said coupling means including an acme threaded screw rotatably coupled to said davit assembly for raising and lowering the hatch cover, and means coupled to said acme threaded screw for rotation thereof and operable from a location above the containment pit substantially above the elevation of the davit assembly to affect such rotation.

4,519,520
VESSEL LID ATTACHMENT
Charles A. Hill, 4641 Mt. Forde Ave., San Diego, Calif. 92117
Filed Aug. 20, 1984, Ser. No. 642,096
Int. Cl.³ B65D *43/26*
U.S. Cl. 220—263 **3 Claims**



1. An improved lid attachment of the type used to attach a lid to a vessel formed from a metal stamping having a rim crimped around a length of wire, a bent U-shaped loop of which protrudes from two slots in the rim to form a handle, wherein the improvement comprises:
a hinge pin formed from a second length of wire which connects both sides of said wire handle near said rim;
a hinge-lever integral with said lid having two parallel slotted tabs which slide over said hinge pin;

4,519,521
TAPE CASSETTE
Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Aug. 31, 1984, Ser. No. 646,212
Claims priority, application Japan, Sep. 6, 1983, 58-164452; Oct. 13, 1983, 58-191165; Nov. 10, 1983, 58-211329; Dec. 9, 1983, 58-233057; Apr. 24, 1984, 59-82167; Apr. 24, 1984, 59-82168
Int. Cl.³ B65D *85/672*
U.S. Cl. 220—335 **21 Claims**



1. A tape cassette comprising a cassette body having an opening part on one side thereof and a -chape cover which makes opening-closing of said opening part, and including a pair of rotary shafts for said cover provided on the sides of the -shape cover, a pair of engaging holes being in the shape of a triangle which is tapering rearward, and a urging means for urging said rotary shaft toward rear of the cassette body.

4,519,522
APPARATUS AND METHOD FOR STORING AND RETRIEVING ARTICLES
J. Russell McElwee, Charlotte, N.C., assignor to Photo Vending Corporation, Charlotte, N.C.
Filed Jul. 6, 1981, Ser. No. 280,502
Int. Cl.³ G07F *11/00*
U.S. Cl. 221—13 **14 Claims**

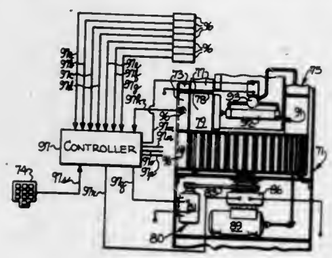
10. A method for storing articles of a unique nature in a storage device having a plurality of individual receptacles mounted for movement past a predetermined retrieval point

and for automatically retrieving any particular desired article, said method comprising

labeling each article which is to be stored with a label bearing an electronically readable identification code for that particular article which uniquely identifies that article and distinguishes it from all others and which has no pre-established correlation to any of the receptacles in the storage device,

selecting any unoccupied receptacle in the storage device and placing the article which is to be stored therein,

electronically reading directly from the label of the article which is to be stored the identification code for that article



and electronically storing in a programmable memory device the identification code of that article and the corresponding location of the particular receptacle in which the article is placed, and thereafter

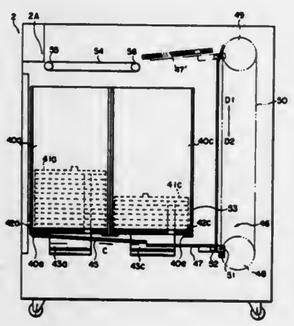
retrieving any selected article by electronically receiving input of the identification code for that article and electronically retrieving from the programmable memory device the stored receptacle location corresponding to the input identification code and in response thereto effecting movement of the receptacles past said predetermined retrieval point until the particular receptacle containing the desired article is positioned at the retrieval point.

4,519,523

SHEET PACKET DISCHARGING APPARATUS

Hiroshi Ohba, and Shigeo Horino, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 26, 1982, Ser. No. 411,960
Claims priority, application Japan, Aug. 28, 1981, 56-135047
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—129 **5 Claims**



1. A sheet packet discharging apparatus comprising:

at least one packet accommodating case accommodating a stack of packets each bound by a band and having an outlet provided at one end;

a sheet packet transport path;

sheet packet feed-out means disposed below said sheet packet accommodating case for feeding out a sheet packet in the stack in a longitudinal direction of the band from said sheet packet accommodating case to the sheet packet transport path, said sheet packet feed-out means including conveyor means movable in the direction of feeding out the sheet packet, said conveyor means including a conveyor belt movable in the direction of feeding out the sheet packet, a first portion of said conveyor belt having a plurality of protuberances projecting in a row therefrom and a second portion of said conveyor belt being without said protuberances, said conveyor means cooperating with said outlet so that said protuberances maintain said packets in said packet accommodating case and said second portion allows one packet to be released from said packet accommodating case, said second portion having a length greater than that of the stack of sheet packets in the direction of the band, the leading part of said protuberances pushing said one packet in said second portion to said sheet packet transport path; and

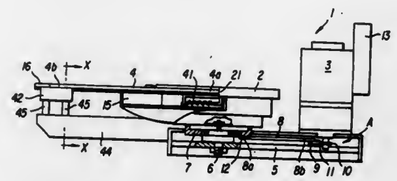
means provided on said sheet packet transport path for transporting and discharging a sheet packet fed out by said feed-out means on said transport path to a sheet packet discharging outlet.

4,519,524

PARTS FEEDER

Yoshiyuki Hirose, 7-24, Hirose 2-chome, Shimamoto-cho, Mishima-gun, Osaka, 618, Japan

Filed May 14, 1982, Ser. No. 378,171
Claims priority, application Japan, May 14, 1981, 56-073224
Int. Cl.³ B65H *9/00*
U.S. Cl. 221—167 **5 Claims**



1. A parts feeder comprising:

a horizontally rotatable bowl having a conveying track on an interior surface thereof;

a motor coupled to drive said bowl in a horizontal rotatable oscillatory vibration, wherein said bowl rotates in a first and second direction, the acceleration of said bowl in said first direction being greater than in said second direction; and

at least one in-line trough having a basal part slidingly coupled to an exit of said conveying track and being slidingly supported thereof so as to be longitudinally moveable;

wherein a portion of said in-line trough is formed into a linear article transfer section for formation in-line of articles therein.

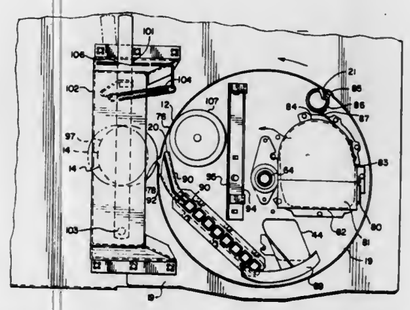
4,519,525

SEED DISPENSER FOR PLANTERS

Nicholas H. Wunschl, Bolingbrook, and Edward L. Robinson, Jr., Naperville, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 1, 1981, Ser. No. 268,966
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—211 **7 Claims**

1. In a seed dispenser for a planter of the type comprising a stationary, generally vertical wall, a seed selector drum rotatably mounted about a generally horizontal axis in a sealing relationship against said wall, said drum having a cylindrical periphery with a plurality of openings therein and an open end adjacent said wall, means for rotating the drum, means for supplying seeds to the drum, a seed release means disposed to contact the outer periphery of said drum, means for delivering air under pressure to the interior of said drum such that seeds are held in the interior sides of said openings by the air pressure differential thereacross until the seed release means is encountered by the openings during drum rotation, and seed receiving means within said drum periphery for gravitationally receiving seeds released from said drum openings, said seed receiving means having an outlet external of the drum such that received seeds are conveyed to said external outlet by the air flow



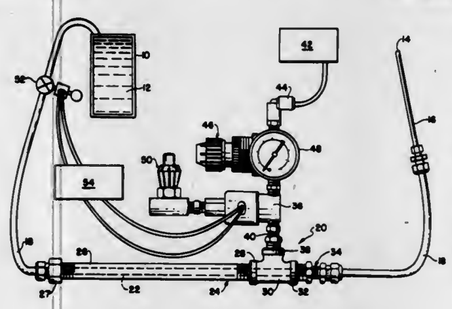
therethrough created by the air pressure differential between the exterior and interior of said drum, the improvement wherein said seed release means is disposed to release said seeds inwardly from said interior sides of said openings in said drum surface at substantially 90° after top center of the drum and said seed receiving means having an elongated inlet disposed adjacent to the inner periphery of said drum and starting in advance of the 90° position and extending to the 90° position and a passage extending downwardly from said inlet toward said outlet.

4,519,526

METHOD AND APPARATUS FOR DISPENSING LIQUID

Gary Hillman, Livingston, N.J., assignor to Machine Technology, Inc., Whippany, N.J.

Filed Mar. 25, 1982, Ser. No. 361,803
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—212 **20 Claims**



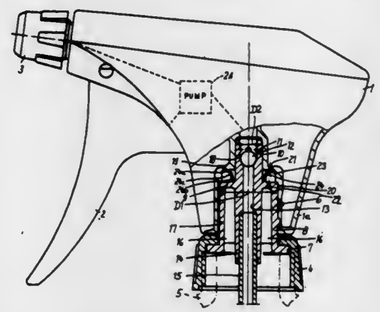
1. A suck-back assembly for use with liquid dispensers, comprising a housing; conveying means for conveying liquid to be dispensed, said conveying means including a resiliently deformable conduit passing through said housing and a constantly open dispensing tip; pressurizing means for pressurizing said housing; and regulating means for regulating the pressure within said housing between a first predetermined pressure at which said conduit is crimped solely by the forces applied directly to it as a result of said housing being at said first predetermined pressure and a second predetermined pressure at which said conduit is substantially uncrimped, whereby the volume of said conduit is increased when said conduit returns to its substantially uncrimped state from its crimped state to thereby create a vacuum in said conduit sufficient to suck back liquid which is being dispensed from said constantly open dispensing tip.

4,519,527

HAND POWERED LIQUID ATOMIZER

Karlheinz Kläeger, Portnerstr. 84, 8902 Neusaess, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,317
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227150; Dec. 9, 1982, 3245493
Int. Cl.³ B05B *9/043*
U.S. Cl. 222—383 **5 Claims**



1. In a hand powered liquid atomizer which includes a pistol-like housing; a union nut supported adjacent a lower end of a handle part of said housing, said nut being designed to be screwed onto a neck of a liquid vessel; a synthetic resin holding part which is generally cylindrical and has a flange at its lower end which supports said nut, said handle part of said housing having a generally cylindrical pocket in which said holding part is sealingly seated, said holding part further having therethrough a middle hole joined up with a length of flexible pipe adapted to extend into the vessel; a diaphragm which forms a check valve for letting air into the vessel, is provided on said holding part, and is made of an elastic material; a pump positioned within said housing; and a pump lever for operating said pump; the improvement comprising wherein said holding part is stepped and made of an elastic material, and has a first cylindrical part with a large diameter which is joined by way of an annular shoulder with a cylindrical headpiece having a diameter smaller than said large diameter, said headpiece having said middle hole extending therethrough and being located above said first cylindrical part; wherein said pocket in said housing has an annular step therein which separates a first part of said pocket which receives said first cylindrical part of said holding part from a second part of said pocket which has a small diameter and receives said headpiece; wherein said step of said pocket has at least one air inlet hole extending therethrough and communicating with a location outside said pocket; wherein said annular shoulder of said holding part is spaced from said step of said pocket and has an air hole extending therethrough and communicating with the inside of the vessel; and wherein said elastic diaphragm is located in a space between said shoulder of said holding part and said step of said pocket, said diaphragm being molded on and integral with one of said shoulder of said holding part and said headpiece thereof so that said diaphragm is seated elastically against said step and covers said air inlet hole therein.

4,519,528
LIQUID SPRAYING HEAD

Paul Comment, Courgenay, Switzerland, assignor to Guy Favrot, Oberengstringen, Switzerland

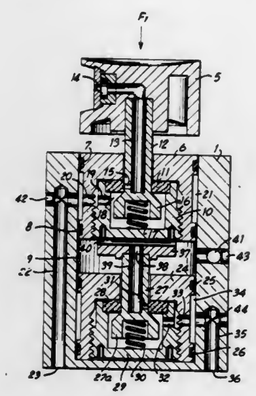
PCT No. PCT/CH80/00006, § 371 Date Sep. 19, 1980, § 102(e) Date Sep. 19, 1980, PCT Pub. No. WO80/01482, PCT Pub. Date Jul. 24, 1980

PCT Filed Jan. 15, 1980, Ser. No. 207,974

Claims priority, application Switzerland, Jan. 22, 1979, 606/79

Int. Cl.³ B05B *11/06*

U.S. Cl. 222—396 **9 Claims**



1. A liquid spray head connected to a compressed-gas reservoir and adapted to be secured to a vessel containing a liquid to be atomized, said spray head comprising a body, means for securing said body to said vessel and for connecting said spray head to said compressed-gas reservoir, two superposed and coupled valves, a pressure-reducing expansion device and a safety device in said body, said superposed valves comprising an upper valve having a movable valve member comprising a hollow upper shank with a pushbutton and spray nozzle at its upper end, and a lower valve having a movable valve member comprising a lower shank aligned with but separate from said upper shank, spring means urging said lower shank toward said upper shank, and spring means interposed between said lower shank of said lower valve and said upper shank of said upper valve, said lower valve having an inlet connected with said compressed gas reservoir and an outlet connected with said pressure reducing expansion device, said pressure reducing expansion device having an inlet connected with said lower valve and an outlet connected with the interior of said vessel, and said upper valve having an inlet connected with a lower region of said vessel and an outlet connected through said hollow shank of said upper valve with said spray nozzle.

4,519,529
DISPENSING STOPPER

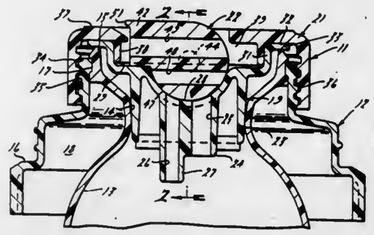
Charles L. Seltz, Gurnee, Ill., assignor to King-Seeley Thermos Co., Norwich, Conn.

Continuation of Ser. No. 087,421, Oct. 22, 1979, abandoned, and a continuation-in-part of Ser. No. 847,901, Nov. 2, 1977, abandoned. This application Apr. 14, 1981, Ser. No. 253,946

Int. Cl.³ B67D *3/00*

U.S. Cl. 222—484 **14 Claims**

1. A dispensing closure for a bottle or the like having an opening comprising a lower piece adapted to register with the bottle opening, said lower piece defining a curved bearing surface, a delivery passage extending through said bearing surface and terminating in registry with the bottle opening for delivery of the bottle contents through said delivery passage, an upper piece fixed relative to said lower piece, said upper piece having a curved surface facing said curved bearing surface of said lower piece, and a pouring spout positioned at least in part between said upper and lower pieces, said pouring spout having a bearing surface engaging said lower piece bearing surface for pivotally supporting said pouring spout relative to said pieces for movement between a closed position and a dispensing position, and a surface engaged by said upper piece surface for urging said bearing surfaces into engagement whereby said bearing surfaces define the pivot axis of said



pouring spout, a discharge passage extending through said pouring spout terminating at least in part in a portion of said pouring spout bearing surface, said discharge passage being aligned with said delivery passage when said pouring spout is in its dispensing position, said pouring spout bearing surface having a portion disposed in engagement with said delivery passage when said pouring spout is in its closed position for closing said delivery passage.

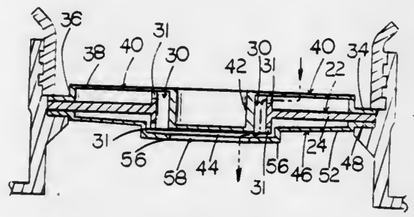
4,519,530
SELF-CLOSING DISPENSER

Gerhard S. E. Schmidt, 208 Duplex Ave., Toronto, Ontario, Canada

Filed Feb. 25, 1983, Ser. No. 469,945

Int. Cl.³ B05B *11/04*

U.S. Cl. 222—494 **6 Claims**



1. A self-closing dispenser device comprising;
a valve support formed of generally rigid material, and defining two-way passageway means for flow of material therethrough in one direction and return air flow in the other direction;
a resilient diaphragm member on one side of said valve support;
a resilient valve member on the other side of said valve support;
porting means in said diaphragm member, whereby said material may flow between said diaphragm member and said valve support;
a valve stem connected to said diaphragm member and extending through said two-way passageway means and having a valve closure surface;
a dispensing opening in said valve member, said opening being normally closed by contact with said valve closure surface and said valve member being movable outwardly away from said valve closure surface for ejection of material, and said valve stem and closure surface being movable inwardly away from said valve member to permit re-entry of air, and,

stop means on said valve support for limiting movement of said valve stem, and of said valve member as aforesaid.

4,519,531
PLEATING MACHINE FOR PLEATING CLOTH WITH MUTUALLY CONVERGING FOLDS

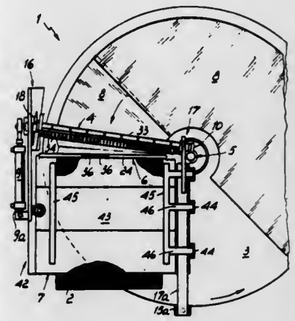
Giordano Clerici, Via Fernando Santi, 5, 20056 Trezzo Sull-'Adda, Milano, Italy

Filed Jun. 7, 1984, Ser. No. 618,246

Claims priority, application Italy, Jun. 29, 1983, 21848 A/83; Oct. 10, 1983, 23229 A/83

Int. Cl.³ A41H *43/00*

U.S. Cl. 223—30 **14 Claims**



1. A pleating machine for pleating cloth with mutually converging folds, comprising: a working platform, an angularly oscillating entrainment arm on said platform adapted to impart a cloth placed on said platform with a step-like forward movement, a lifting abutment wall adapted to contact said cloth adjacently a travel limit position of said arm, and guide members effective to guide pleated cloth and being located adjacent said wall on the opposite side to said arm, characterized in that said abutment wall and said arm are both configured comb-like at least in part so as to be mutually interleaved, and in that control and guiding devices are provided for said abutment wall to be subjected to cyclic oscillation along a path leading said abutment wall to an inserted position in said arm after moving over and past a cloth flap which has been folded over by said arm and effective to then press said flap against said guiding members for the pleated cloth.

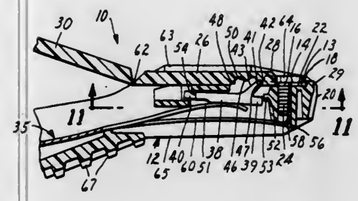
4,519,532
STAPLER INCLUDING RATCHET MEANS FOR PREVENTING DOUBLE FEEDING OF STAPLES

Floyd L. Foslien, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 28, 1983, Ser. No. 470,066

Int. Cl.³ A61B *17/04*; B25C *5/02*

U.S. Cl. 227—8 **7 Claims**



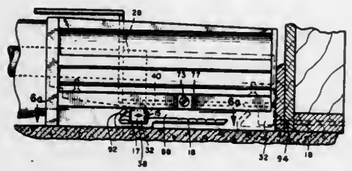
1. In a stapler comprising:
a housing having a passageway extending from an inlet opening to an outlet opening, said openings and passageway being adapted to guide a single open staple moved from the inlet to the outlet opening;
means for biasing a stack of staples into said inlet opening;
a ram having an end portion adapted to engage a said staple and being mounted on said housing for sliding movement between a load position with the ram spaced from the inlet opening to afford movement of one of the staples into the passageway, along said passageway with said end portion pushing the staple, to an eject position at which the end portion of the ram has pushed the staple to said outlet opening; said ram having a length adapted so that a portion thereof will be positioned adjacent said inlet opening during movement of said ram from said load to said eject position to prevent movement of a second staple into said passageway through said inlet opening;
drive means adapted for manual activation to move said ram along said passageway, thereby moving one of the staples from said inlet opening through said passageway and to said outlet opening; and
means for biasing said ram toward said load position, the improvement wherein:
said stapler includes antireverse means for preventing movement of said ram toward said load position from a position intermediate said load and eject positions until said ram has been moved fully to said eject position, said antireverse means comprising:
an elongate pawl including front and rear portions, and a tooth projecting from one side;
surfaces on said ram defining an elongate recess adapted to receive said tooth, said surfaces including a front surface adjacent the end portion of said ram and a rear surface defining the end of said recess opposite said front surface;
mounting means mounting said pawl on said housing generally parallel with said ram with said front portion adjacent said outlet opening and said tooth in said recess for longitudinal sliding movement relative to said housing, from (1) an engage position at which said pawl is positioned with the front surface of the recess contacting said tooth when said ram is in said load position and at which the pawl is positioned during movement of said ram a substantial portion of the distance toward said eject position until said rear surface of said recess contacts said tooth, (2) to a lockout position more closely adjacent said outlet opening than said initial position to which said pawl is moved by contact between said rear surface and said tooth during a final portion of the movement of said ram to said eject position and at which the pawl is maintained during a major portion of the movement of the ram back to the load position, and (3) back to said engage position to which said pawl is moved by contact between said front surface and said tooth during the final portion of movement of said ram from said eject back to said load position;
means for biasing said tooth toward said recess;
surface means including at least one abutment surface on said tooth and latching surfaces defining said recess between said front and rear surfaces for affording, when said abutment and latching surfaces are in engagement, movement of said ram toward said eject position while preventing movement of said ram toward said load position; and
means for affording engagement of the abutment surface of said tooth with the latching surface of said recess under the influence of said biasing means when said pawl is in said engage position, for moving said abutment and latching surfaces out of engagement as said pawl is moved from said engage to said lockout position, and for maintaining said abutment and latching surfaces out of engagement when said pawl is in said lockout position.

4,519,533

APPARATUS FOR DRIVING OFFSET FASTENERS

Andre Jirovetz, Sturgeon Bay, Wis., assignor to Fal-Kon Investment Group, Sturgeon Bay, Wis.

Filed Apr. 22, 1983, Ser. No. 487,684
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—109 **14 Claims**



1. An apparatus for driving offset fasteners of the type comprising an elongated shank, a head at one end of the shank, and a portion offset from the centerline of the shank being intermediate the head and the shank, the apparatus comprising:

a piston;

a piston housing enclosing the piston;

said piston housing also defining a staging position from which offset fasteners may be driven; and

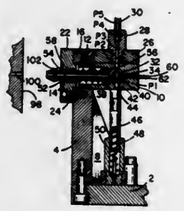
a striker bar attached to the piston for driving a fastener in said staging position, said striker bar including a striker member positioned such that the striker member contacts the offset of said offset fastener when the striker bar drives the offset fastener.

4,519,534

PIN INSERTING MACHINE

William P. White, c/o Mechanical Applications, Inc., Wiscasset, Me. 04578

Filed Aug. 1, 1983, Ser. No. 519,135
Int. Cl.³ B25C *5/02, 5/06*
U.S. Cl. 227—117 **4 Claims**



1. A machine for driving a pin into a horizontal hole in the vertical face of an adjacent work piece, said machine comprising

a supporting body,

a pin receiving rotor mounted for rotation on a horizontal axis in said body,

a hole extending dimetrically through said rotor,

means for feeding a succession of pins one at a time to said when in a vertical position,

means for rotating said rotor 90° to place said hole and pin therein in a horizontal position,

a horizontal pin guide slidingly mounted in said body at right angles to the axis of said rotor,

spring means constantly urging said pin guide toward said rotor,

said pin guide having a bore therethrough aligned with the hole in said rotor when said hole has been turned from the vertical position to the horizontal position with a pin therein,

a horizontal punch for driving said pin from said horizontally positioned rotor hole into said pin guide bore while said pin guide is stationary,

resilient stop means in said pin guide bore adapted to be engaged by and to temporarily stop movement of said pin through said bore as said pin is being advanced by said punch,

said pin guide adapted to be advanced by said punch acting against the said pin then in engagement with said resilient stop means and simultaneously compressing said spring means until the said pin guide engages said work piece and whereby

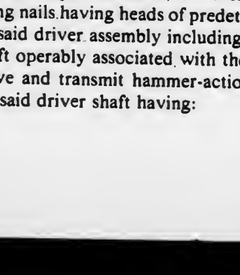
continued movement of said punch in said bore forces said pin past said resilient stop means and into said horizontal hole in said work piece.

4,519,535

FLYWHEEL FOR AN ELECTRO-MECHANICAL FASTENER DRIVING TOOL

John P. Crutcher, Cincinnati, Ohio, assignor to Sencorp, Cincinnati, Ohio

Filed Mar. 29, 1983, Ser. No. 479,964
Int. Cl.³ B25C *1/06*
U.S. Cl. 227—131 **19 Claims**



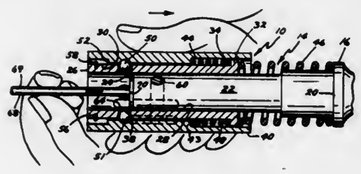
1. In an improved electro-mechanical fastener driving tool of the type having a driver and an electrically driven flywheel, together with a support element to engage said driver and move said driver through a working stroke, the improvement comprising a flywheel containing at least one circumferential groove formed about the periphery of said flywheel whereby to provide at least one void along the flywheel-driver contact line into which foreign material on said driver and said flywheel flows to prevent a build-up of said foreign material thereon and consequent loss of friction therebetween.

4,519,536

APPARATUS FOR DRIVING NAILS USING AN IMPACT HAMMER

William A. Steigauf, 400 - 7th S.W., Faribault, Minn. 55021

Filed Mar. 1, 1984, Ser. No. 585,203
Int. Cl.³ B25C *5/13, 7/00*
U.S. Cl. 227—147 **18 Claims**



1. For use with an impact hammer, a driver assembly for holding and driving nails having heads of predetermined transverse dimension, said driver assembly including:

A. a driver shaft operably associated with the impact hammer to receive and transmit hammer-action blows from the hammer, said driver shaft having:

(1) an elongated impact hammer-engaging shank having a rear end portion supported in said impact hammer,

(2) an elongated driver integrally connected to, extending forwardly from, and concentric with said shank and having a nail driving surface at a front end thereof, said nail driving surface lying in perpendicular relation to a longitudinal axis of the driver shaft;

B. an intermediate bolt keeper sleeve slidably mounted in encompassing relation to the driver, said bolt keeper sleeve being partially defined by elongated, mutually parallel inner and outer surfaces;

C. an outer sleeve slidably and concentrically mounted on the bolt keeper sleeve, said outer sleeve being partially defined by an elongated inner surface parallel to, and in sliding contact with the bolt keeper sleeve outer surface;

D. first bias means operative on the driver shaft and on the bolt keeper sleeve to bias the bolt keeper sleeve to tend to move along the driver in forward direction;

E. second bias means operative on the outer sleeve and on the bolt keeper sleeve to bias the outer sleeve to tend to move along the bolt keeper sleeve in forward direction;

F. said bolt keeper sleeve being provided with at least one detaining bolt receiving opening extending radially therethrough, on a radial axis lying in perpendicular relation to and passing through the longitudinal axis of the driver shaft;

G. at least one round ended nail head detaining bolt situated in said bolt receiving opening, the minimum dimension of said bolt receiving opening being at the bolt keeper sleeve inner surface and being less than the maximum transverse dimension of the bolt therein;

H. the dimensions and configuration of the bolt, the thickness of the bolt keeper sleeve and the minimum dimension of the keeper sleeve bolt receiving opening being such that the outermost surface of the bolt will be substantially flush with said bolt keeper sleeve outer surface and the innermost surface of the bolt will lie on the periphery of an imaginary circle, concentric with the driver shaft and of lesser diameter than the predetermined dimension of the heads of the nails to be held and driven when the bolt protrudes as far as possible through the inner surface of the bolt keeper sleeve;

I. the outer sleeve and the bolt keeper sleeve each being partially defined by annular front end surfaces lying in planes perpendicular to said driver shaft axis, said outer sleeve being provided with at least one detaining bolt receiving detent cavity open through its inner surface and positioned to be in alignment with said detent bolt receiving opening in said bolt keeper sleeve when said front end surfaces of said outer and intermediate sleeves lie in a common plane, the size and shape of said outer sleeve detent cavity being such that the detaining bolt, when aligned with its detent cavity, can be snugly fitted into said cavity to lie entirely outside of the bolt keeper sleeve inner surface.

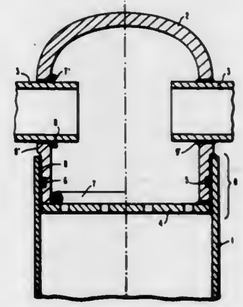
4,519,537

PROCESS FOR HYDROGEN-IMPERMEABLE BRAZING OF AUSTENITIC STRUCTURAL STEEL PARTS

Hans Heinrich, Eslingen, and Dieter Hedrich, Schwabisch Gmund, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,450
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216934
Int. Cl.³ B23K *1/04, 1/19*
U.S. Cl. 228—221 **10 Claims**

1. A process for the hydrogen-impermeable brazing of austenitic steel parts comprising loosely joining the steel parts at soldering points, with the addition of effective amounts of solder and soldering agents adapted to the soldering point, soldering the steel parts at a soldering temperature in a furnace under vacuum, using a vacuum of up to about 10^{-3} mbar in the furnace and using two different solders, applying these solders separately to the soldering point, one of the solders comprising a nickel-base solder with about 1–3% by weight of boron and 2–5% by weight of silicon, and the other solder comprising a



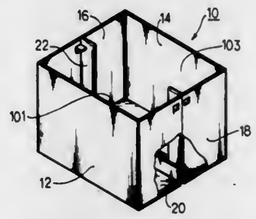
bronze solder with a copper-tin-base, wherein the nickel-base solder constitutes about 20 up to 30% by weight of the total amount of solder.

4,519,538

PACKING AND DISPLAYING CARTON, AND BLANK PLATE THEREFOR

Namio Omichi, 5-29-12, Hongo, Bunkyo-ku, Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,600
Claims priority, application Japan, Aug. 12, 1983, 58-124502[U].
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—27 **5 Claims**



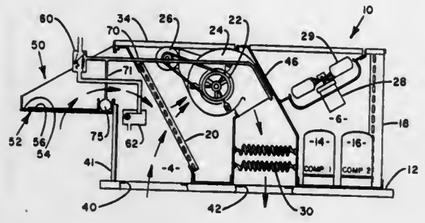
1. A packing and displaying carton with two neighboring compartments, which comprises a front panel connected to one side of a first bottom panel; a first pair of two side panels, each connected to remaining opposite sides of said front panel and connected to remaining opposite sides of said first bottom panel; a rear panel connected to one side of a second bottom panel; a second pair of two side panels, each connected to remaining opposite sides of said rear panel and connected to remaining opposite sides of said second bottom panel; a first reinforcing panel, one side thereof being connected to a remaining side of said first bottom panel and opposite sides being connected to remaining side of each side panel for said first pair; and a second reinforcing panel, one side thereof being connected to a remaining last side of said first reinforcing panel, another side opposing to the first side being connected to a remaining side of said second bottom panel, and remaining two sides being connected to remaining side of each side panel for said second pair; said reinforcing panels being connected each other with a weakened line and having an area surrounded by another weakened line.

4,519,539

METHOD AND APPARATUS FOR REGULATING AN ECONOMIZER DAMPER USING INDOOR FAN AIR PRESSURE

Rudy C. Bussjager, Chittenango, and James J. Del Toro, N. Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 427,405, Sep. 29, 1982, abandoned. This application May 23, 1984, Ser. No. 613,471
Int. Cl.³ G05D *23/13*
U.S. Cl. 236—13 **11 Claims**



4. An air conditioning unit including a refrigeration circuit and an economizer, said unit having an indoor section with an indoor fan for discharging air from the unit to the enclosure to be conditioned, said indoor section receiving air to be conditioned from the enclosure and from the economizer and a damper for regulating the volume of outdoor air flow into the unit through the economizer which comprises:

conduit means positioned to receive pressurized air being discharged from the indoor fan;

the damper including a bottom plate defining spaced openings and a top plate also defining spaced openings said bottom and top plates slidable relative to each other whereby when any portion of the openings in the bottom plate are in registration with any portion of the openings in the top plate outdoor ambient air will flow through the economizer, said top plate having a surface portion attached thereto and said bottom plate having a fixed surface portion attached thereto such that a space is defined between said surface portion and said fixed surface portion;

air pressure powered means including an inflatable bag connected to the conduit means and coacting with said space formed by said surface portion and said fixed surface portion of the damper for positioning the damper to control the flow of outdoor air into the unit; and

control means for regulating the supply of air to the air pressure powered means to regulate the relative position of said slidable plates whereby the volume of air passing through said slidable plates is controlled by their relative position.

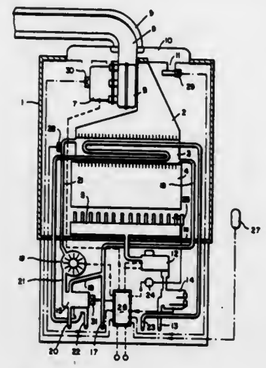
4,519,540

SEALED GAS HEATER WITH FORCED DRAFT AND REGULATION BY MICROPROCESSOR

Franck Boulle, Lagny sur Marne, and Michel Zveguintzoff, Chatenay-Malabry, both of France, assignors to Societe Anonyme Saunier Duval eau Chaude Chauffage - S.D.E.C.C., Montreuil, France

Filed Aug. 13, 1982, Ser. No. 408,126
Claims priority, application France, Aug. 27, 1981, 81 16373
Int. Cl.³ F24H *3/06*
U.S. Cl. 237—7 **11 Claims**

1. A control device for a simple or mixed gas boiler with forced draft in which a sealed enclosure encloses a burner, a heating body, an evacuation hood for the burned gases and an extraction fan, fresh air that is needed for the combustion of the burner being admitted from an air distribution box placed at the upper section of said enclosure, said boiler including a burner gas inlet, electrovalve that is connected to a disconnecting box, a reverse valve distributing primary water either towards a long circuit during the heating operation, or towards a short circuit during a drawing, a circulation pump and a lighter, the boiler being furthermore equipped with a plurality of sensors or detectors that are designed to collect temperature, output or operation data, characterized by the fact that the overall control, safety and uninterrupted dependency functions of air output to gas output are ensured by a control box (**26**) with a microprocessor which centralizes the data received from the various sensors, converts them into digital signals ready to operate the lighter (**24**), the circulation pump (**19**), the gas inlet electro valve (**12**) and the extraction fan (**6**), according to control data that are pre-programmed and memorized by the microprocessor.

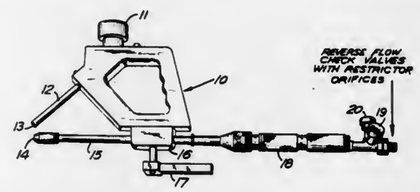


4,519,541

TORCH FLAME SPRAY SYSTEM

Anthony J. Rotolico, Hauppauge, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Filed Nov. 8, 1982, Ser. No. 439,813
Int. Cl.³ B05B *17/00*
U.S. Cl. 239—1 **2 Claims**



1. In a method for operating a flame spray system comprising a torch assembly having a gas mixing chamber and valve means for feeding fuel gas and valve means for feeding oxygen to said mixing chamber in a preselected proportion; the improvement which comprises,

providing each of said valve means with an orifice restrictor of size predetermined to pass through gas at a predetermined choked state,

passing fuel gas and oxygen, respectively, through said orifice restrictors at an oxygen/fuel-gas flow ratio and pressures corresponding to optimum BTU capacity for a particular flame characteristic calculated in terms of BTU's per hour with the pressures maintained in excess of minimum choking pressure for each of said restrictors,

said flame characteristic being one selected from the group consisting of (a) a slightly oxidizing flame, (b) a neutral flame and (c) a slightly reducing flame,

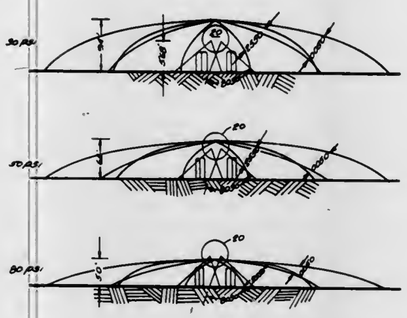
and maintaining the excess choking pressure of the gas flow through each of the orifice restrictors during thermal operation of said flame spray system in accordance with the flame conditions observed during operation of said flame spray system without substantially changing the predetermined flame chemistry of said flame spray system during operation thereof.

4,519,542

BOOMLESS, SPRAYER FOR FIELD APPLICATION FOR AGRICULTURAL LIQUIDS

Douglas Johnston, Decatur, Ala., assignor to John Blue Company, a Division of Burnley Corporation, New York, N.Y.

Continuation of Ser. No. 286,704, Jul. 24, 1981, abandoned. This application Mar. 27, 1984, Ser. No. 594,404
Int. Cl.³ B05B *9/06, 17/04*
U.S. Cl. 239—1 **27 Claims**



19. A boomless method of applying agricultural liquids to the ground at a predetermined rate, in amount per unit area, the steps comprising:

supplying nozzle means with the liquid under pressure at an adjustable rate, in amount per unit time, to generate a spray;

moving the nozzle means horizontally over the ground with moving vehicle means while confining the nozzle means within the lateral outlines of the vehicle means and directing the nozzle means to emit the spray generally laterally of the direction of the movement of the nozzle means so that the spray will impact the ground in a pattern generally in the shape of a narrow band moving transversely of its length, which length is the swath width of the pattern; the rate of the liquid supply being proportional to the speed of the movement;

the nozzle means being constructed so that the swath width of said pattern and the distance thereof from the nozzle means varies in accordance with (a) the pressure of the liquid supplied to the nozzle means over a predetermined range of such pressures and (b) the above-ground height of the nozzle means; and

adjusting the above-ground height of the nozzle means for correspondence with the pressure of the liquid supplied thereto in order to maintain substantially constant the swath width of said pattern and the distance thereof from the nozzle means.

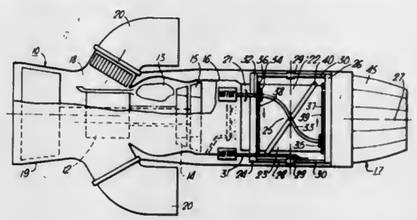
4,519,543

VECTORABLE NOZZLES FOR TURBOMACHINES

Gary F. Szuminski, Marietta, Ga., and Thomas J. Jones, Bristol, England, assignors to Rolls-Royce Inc., New York, N.Y. and Rolls-Royce Limited, London, England

Filed Apr. 7, 1982, Ser. No. 376,388
Int. Cl.³ B63H *11/10*
U.S. Cl. 239—265.19 **6 Claims**

1. A vectorable nozzle for a turbomachine comprising: a first duct; a second duct mounted in a first bearing for rotation about its longitudinal axis relative to the first duct, the second duct terminating at its downstream end in a plane that lies at an angle to the axis of rotation of the second duct; a third duct mounted in a second bearing for rotation about its longitudinal axis relative to the second duct, the third duct having its upstream end parallel to the downstream end of the second duct; a seal means for effecting a gs tight seal between the second and third ducts; constraining means for constraining the second bearing to swing bodily about an axis transverse to the length of the first duct; and means to rotate the second duct about its axis of rotation and operable to rotate the third duct in the opposite direction to that of the second duct in synchronism with the rotation of the second bearing bodily about the axis transverse to the first duct.



4,519,544

PORTABLE LAWN AND GARDEN SPRINKLER SYSTEM

Laszlo Szabo, Payne Ave., San Jose, Calif. 95130

Filed Apr. 29, 1983, Ser. No. 489,726
Int. Cl.³ B05B *15/06*
U.S. Cl. 239—279 **9 Claims**



1. A sprinkler comprising:

a base assembly including inlet means adapted to receive the end of a garden hose, a pair of outlet means, and primary manifold means for distributing water from said inlet means to said pair of outlet means, said pair of outlet means being pivotally attached to the remainder of said base assembly to permit independent pivotal motion; and

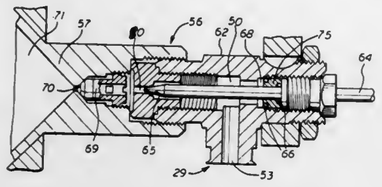
a pair of arm assemblies associated, one each, with respective ones of said pair of outlet means, each arm assembly including a first tubular member having a lower end coupled to one of said pair of outlet means, a second tubular member having a lower end portion telescopically engaged with an upper end portion of said first tubular member, and a first sprinkler means coupled to an upper end of said second tubular member.

4,519,545

SPRAY APPLICATOR FOR SPRAYING COATINGS AND OTHER FLUIDS IN SPACE

Jerome F. Kuminecz, and Merlyn F. Lausten, both of Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1982, Ser. No. 392,094
Int. Cl.³ B05B 9/047
U.S. Cl. 239—288 **8 Claims**



1. A totally self-contained spray gun for one handed use in a vacuum zero-gravity environment application of a coating material, comprising:

(a) an accumulator means including a rigid outer shell and a flexible bladder contained therein having an outlet port, pressurized propellant contained within the outer shell exteriorly of the bladder, whereby the constricting force exerted by the propellant on the bladder and the liquid coating material contained therein induces the coating material to be extruded through said outlet port under zero-gravity conditions;

(b) a conduit (passageway) having a first end connected to the outlet port of the accumulator, said conduit including an externally controllable shut off plug mounted therewithin for allowing or preventing the outflow of coating material, said conduit further including a removable strainer means sealed and mounted therewithin for filtering out large coagulated particles of coating material;

(c) spray gun means for controlling the explosion of coating material including a housing connected to a second end of the conduit, a handle for gripping and supporting the spray gun and accumulator, and a spring loaded self-locking trigger means having an open and closed position, so arranged with respect to the handle as to permit simultaneous one-hand gripping of the handle and operation of the trigger means;

(d) said trigger means including a lever having a first end pivotally mounted on the spray gun handle assembly, said lever being substantially parallel to the handle of the spray gun housing when the trigger means is in a closed position, and whereby the pivoting of the level toward the handle places the trigger means in an open position;

(e) said trigger means further including simultaneous locking and unlocking means for preventing accidental movement of the trigger means, the locking means including:

(i) a spindle mounted in the spray gun housing;

(ii) a trigger lock annularly mounted on the spindle;

(iii) a spring mounted on the spindle whereby said spring is torsionally resistant to rotational movement of the lock with respect to the spindle;

(iv) a recess formed in the lever so as to receive and engage the lock, said lock being capable of one-handed rotational movement with respect to the spindle, whereby pivotal movement of the lever towards the handle is only permitted when the lock is rotationally oriented so as to engage the recess;

(f) valve means mounted within the spray gun housing responsive to the position of the trigger means for controlling the outflow of the coating material from the accumulator;

(g) support means for rigidly connecting the spray gun handle and the accumulator; and

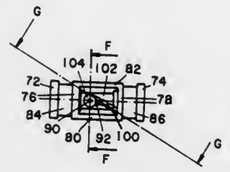
(h) spray shield means mounted on the spray gun means for restricting back spray of the liquid coating.

4,519,546

DRIP IRRIGATION APPARATUS

Moshe Gorney, and Eldad Dinur, both of Kibbutz Naan, Israel, assignors to Naan Mechanical Works, Israel

Filed Jul. 8, 1982, Ser. No. 396,409
Claims priority, application Israel, Jul. 15, 1981, 63341
Int. Cl.³ B05B 15/00
U.S. Cl. 239—542 **19 Claims**



1. Drip irrigation apparatus comprising:

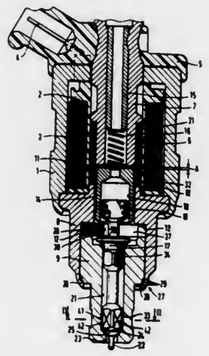
a continuous outer tube extending along longitudinal axis and a plurality of flow rate determining inserts fixedly joined to said outer tube at desired locations therealong interiorly of said outer tube, said flow rate determining inserts each defining a water inlet communicating with the interior of said outer tube, flow rate determining means, flow controlling means responsive to pressure within said outer tube and water outlet means extending over a significant portion of the circumference of said outer tube in engagement therewith, a water exit from said outlet means being defined by perforation of said outer tube at said water outlet means, said water outlet means being axially displaced from said flow controlling means, whereby accuracy of perforation location within said water outlet means cannot affect operation of said flow controlling means.

4,519,547

INJECTION VALVE

Hans Kubach, Korntal-Münchingen; Wolfgang Kienzle; Werner Paschke, both of Schwieberdingen, and Rudolf Sauer, Benningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 434,194
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225180
Int. Cl.³ F02M 51/06
U.S. Cl. 239—585 **8 Claims**



1. An injection valve for fuel injection devices for mixture-compressing internal combustion engines with externally supplied ignition comprising a valve body, a valve needle guide bore in said valve body, a valve seat in said valve body, an electromagnetically actuated valve needle, said valve needle including a sealing part cooperating with said valve seat and first and second guide sections on said valve needle upstream of said valve seat for guiding the valve needle in said guide bore, characterized in that said first guide section of the valve needle is disposed immediately upstream of and adjacent the sealing part, a metering section formed on said first guide section which serves to meter the quantity of fuel delivered by said injection valve, and an axially aligned injection port surrounding an end portion of said valve needle.

4,519,548

INSECTICIDE DUSTER

Norman L. Farmer, Rte. 1, Box 280, Abbeville, S.C. 29620

Filed Sep. 30, 1982, Ser. No. 429,075
Int. Cl.³ A01C 7/02
U.S. Cl. 239—652 **3 Claims**



1. An insecticide duster for dusting plants with an insecticide comprising:

an elongated plastic tubular member;

a woven bag-like member carried adjacent a lower end of said tubular member;

means for securing an open-end of said bag-like member adjacent said lower end of said tubular member;

said bag-like member being a loosely woven synthetic fabric, a vinyl coating provided on said fabric adding sufficient stiffness to said bag-like member causing said bag-like member to extend substantially straight out from said lower end of said tubular member when said tubular member is held in a substantially horizontal position and to be tucked in said tubular member when not in use, and sealing caps placed over the ends of said tubular member for storing said insecticide.

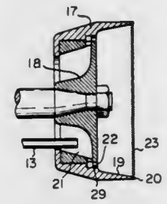
4,519,549

ELECTROSTATIC COATING PROCESS AND APPARATUS FOR USE THEREIN

Sadao Yokoe; Seimei Abe; Shoichi Wakata; Satosi Endou, all of Yokohama, and Kazuyoshi Onozawa, Sayama, all of Japan, assignors to Trinity Industrial Corporation, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,091
Claims priority, application Japan, Oct. 16, 1981, 56-164276
Int. Cl.³ B05B 5/00
U.S. Cl. 239—703 **3 Claims**

1. In a high-velocity rotating atomizing device for electrostatic coating, said device comprising a circumferential edge for atomizing and discharging a liquid paint, an inner circumferential surface for guiding the paint in thin film form to the circumferential edge, an annular paint reservoir for storing the paint and an annular paint flow passage connecting the annular paint reservoir to the inner circumferential surface; the improvement wherein the circumferential edge has a number of cuts regularly arranged radially at small intervals and comprised of alternating ridges and valleys, wherein the valleys of the cuts are each located within a plane substantially at right angles to the axis of the rotating member, the inner circumferential surface forms a smooth introducing surface inwardly of the valleys of the cuts, and the introducing surface approaches the valleys of the cuts at an inclination angle of within ±15° to the axial direction and wherein knurled grooves are formed on the entire outer circumferential surface of the annular paint flow passage, the knurled grooves having a pitch of 0.1 to 3 mm and a depth of 0.1 to 3 mm.

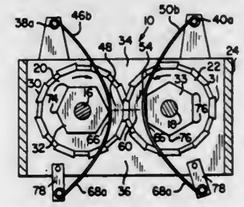


4,519,550

MATERIAL GUIDE AND CLEANER FOR COMMINUTING APPARATUS

Michael W. Rouse, West Linn, Oreg., assignor to Waste Recovery, Inc., Dallas, Tex.

Continuation of Ser. No. 356,317, Mar. 9, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 625,587
Int. Cl.³ B02L 7/04
U.S. Cl. 241—167 **7 Claims**



1. Apparatus for comminuting waste materials, comprising:

(a) a pair of rotatable rolls having parallel central axes of rotation, said pair of rolls having an infeed side and an outlet side, each roll having a central shaft and a plurality of cutter discs mounted on said shaft and axially spaced apart therealong, defining a plurality of spaces between the cutter discs of each of said rolls, the respective cutter discs of each roll of said pair extending into respective ones of said spaces defined between the cutter discs of the other of said pair of rolls;

(b) a plurality of elongate guide-clearer fingers associated with each of said rolls, each said guide-clearer finger extending through a respective one of said spaces defined between said cutter discs of a respective one of said rolls, between said central shaft of said one of said rolls and a respective cutter disc of the other of said pair of rolls, from said infeed side toward said outlet side; and

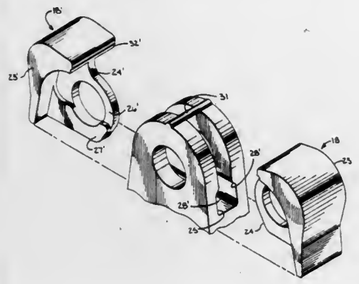
(c) a plurality of cams located respectively on said rolls, between said cutter discs, said cams including lobe means for periodically moving said guide-clearer fingers radially with respect to said rolls to help feed material to be comminuted from said infeed side into an area wherein said cutter discs of one roll extend into said spaces between said cutter discs of the other roll, while clearing communiuted material from between said cutter discs.

4,519,551

REPLACEABLE PROTECTIVE CAPS FOR SPIDER ARMS OF A REVERSIBLE HAMMER MILL

Kenneth Ceurvorst, LeClaire, Iowa, assignor to Sivyer Steel Corporation, Bettendorf, Iowa

Filed Jun. 7, 1983, Ser. No. 501,839
Int. Cl.³ B02C *13/26*
U.S. Cl. 241—194 **3 Claims**



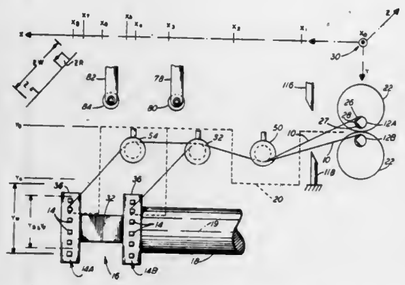
1. For use in a reversible hammer mill including a rotor with a spider arm, replaceable cap members for protecting the tip of a spider arm comprising:
(a) a pair of cap members;
(b) each cap member defining a body having an outer protective shroud for protecting a portion of said tip of said spider arm; and
(c) a relatively narrow web projecting inwardly from an interface of the shroud of each said cap, each said web sized to interfit with each other in an opposing manner within an open-ended slot in the spider arm; each said web including a pin receiving opening for cooperating with aligned openings in the spider arm to secure each said cap to the spider arm.

4,519,552

WIRE ROUTING, TENSION-CONTROLLING AND BREAKING MECHANISM

John G. Tucker, Lexington, N.C., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,435
Int. Cl.³ H01F *11/04, 5/02*
U.S. Cl. 242—7.17 **13 Claims**



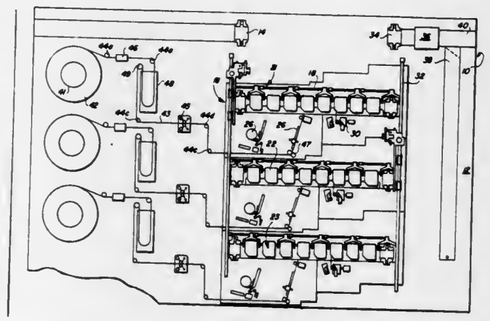
1. An apparatus for routing and controlling the tension in a wire extending from a distant point to a terminal pin on a bobbin, which comprises:
means for securing a trailing portion of the wire to hold the trailing portion at the distant point while leading portions of the wire are being routed toward the terminal pin;
first routing and tension-controlling means, stationary with respect to the securing means, for decoupling from one portion of the wire at least a portion of a tensile stress applied to another portion of the wire and for routing a first intermediate portion of the wire in a direction generally toward the terminal pin;
second routing and tension-controlling means, stationary with respect to the securing means, for decoupling from said one portion of the wire at least another portion of a tensile stress applied to said other portion of the wire and for routing a second intermediate portion of the wire directly toward the terminal pin; and
means for dispensing the trailing portion of the wire about the securing means for attachment thereto, the intermediate portions of the wire about at least portions of the first and second routing and tension-controlling means and a leading portion of the wire to a position adjacent and about the terminal pin for attachment thereto, whereby the first and second routing and tension-controlling means share in resisting the tensile stress in the wire between the securing means and the terminal pin.

4,519,553

MULTIPLE SPINDLE WINDING APPARATUS

Jesse L. Campbell; Alan A. Fennema; Robert B. Henderson, all of Tucson, Ariz.; William G. Rance, Jr., West Palm Beach, Fla.; Paul H. Whittington, and William O. Wightman, Jr., both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1984, Ser. No. 626,948
Int. Cl.³ B31F *5/04;* **B65C** *3/12;* **B65H** *19/28*
U.S. Cl. 242—56 R **10 Claims**



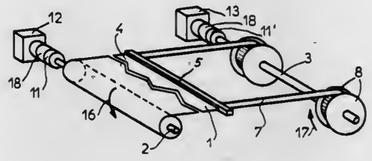
1. A winding apparatus for winding media successively upon a plurality of reels, each contained within a cartridge, comprising;
means for supplying cartridge in seriatim fashion through a series of in-line operating stations;
means for continuously supplying media to one of said stations for winding upon the reel;
extension means at an adhesive station for reaching through an opening in a cartridge positioned proximate thereto for applying an individual adhesive patch to the hub of the reel within the cartridge;
vacuum means at an attach station for bringing a leading section of the media into the cartridge positioned therein and pressing it to said adhesive patch, thereby attaching the media to the reel;
means for winding media upon the reel to one of a predetermine category of sizes;
means for severing the media from the wound reel, while maintaining control of the supply end for feeding the next cartridge; and
means at a following station for fastening a leader block to the trailing ends of the media associated with each wound reel.

4,519,554

DEVICE FOR DRIVING A PROTECTION AWNING

Jacques Dussoliet, Cluses, and Michel Dieupart, Sallanches, both of France, assignors to Somfy, France

Filed Apr. 13, 1984, Ser. No. 600,128
Claims priority, application France, May 19, 1983, 83 08285
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—67.4 **5 Claims**



1. A device for driving a protection awning adapted to be at least partially spread horizontally, having one end attached to a first winding shaft and the other free end connected through at least one flexible strap to a second winding shaft, each winding shaft being coupled angularly to rotary driving means, one of said rotary driving means being adapted to rotate in one direction permitting the winding up of the awning on said first winding shaft while unwinding said flexible strap from the other winding shaft, the other rotary driving means being adapted to rotate in one direction permitting of winding up said flexible strap on said second winding shaft while unrolling simultaneously said awning from the other winding shaft, wherein there is provided for each winding shaft eddy-current type rotation retarding means cooperating with a single unidirectional driving device, each said unidirectional devices being disposed between on the one hand a rotary nember forming part of a kinematic assembly connecting each rotary driving means to the corresponding winding shaft, and on the other hand a fixed support located in close vicinity of said rotary member, a rotary movable element common to both devices, coaxial to said rotary member, supporting one section of each one of said two devices and adapted to cooperate with another section of each device which is rigid the one with said rotary member and the other with said fixed support, each unidirectional driving device being so oriented as to provide the angular coupling between its two sections only when the corresponding winding shaft is being driven for rotation, through said awning and said flexible strap, from said means for rotatably driving said other winding shaft.

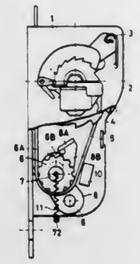
4,519,555

WEBBING LOCKING DEVICE FOR THE SEAT BELT OF AN AUTOMOTIVE VEHICLE

Masahiro Tukamoto, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,778
Claims priority, application Japan, May 7, 1981, 56-69192
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.2 **8 Claims**

1. A webbing device for the seat belt of a vehicle, comprising a retractor mounted on a base for receiving the webbing of the seat belt and including a webbing take-up reel, a speed change detector associated with said base, means including a brake responsive to said speed change detector for holding the reel upon a sudden change in the movement of the vehicle, a rotor having an outer peripheral surface for receiving the webbing partially therearound, rotor arms for supporting said rotor, means on said arms for supporting said rotor for movement relative said arms, means mounting said arms pivotally relative said base, and means including longitudinal latch teeth extending axially around said outer peripheral surface of said rotor and adapted to mesh with portions of said arms extending



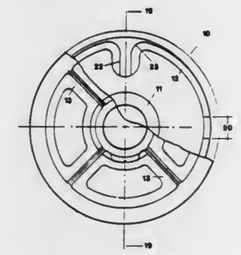
parallel thereto upon tension being created in said webbing during holding of the reel for preventing rotation of said rotor.

4,519,556

UNIVERSAL CABLE WINDING DRUM

Walter Timoschuk, 19 Place de Bohéme, Candiac, Quebec, Canada J5R 3N2

Filed Jul. 19, 1984, Ser. No. 632,430
Claims priority, application Canada, Jun. 19, 1984, 456935
Int. Cl.³ B66D *1/36*
U.S. Cl. 242—117 **9 Claims**



1. A universal cable winding drum for winding and unwinding a cable connected thereto, said drum having a hollow central hub for securement to a rod associated with winding means to impart rotation to said drum, and a cylindrical cable supporting wall connected to said hub and extending thereabout for supporting a plurality of windings of a cable thereon, said cable supporting wall having a plurality of cable guide channels formed therein in side-by-side relationship, said channels defining valleys and side peaks, said valleys diminishing in depth from diametrically opposed points on respective opposed half-sections of said drum to an intermediate mid-area on diametrically opposed sides of said cable supporting wall where said peaks of said channels of one of said half-sections are interspaced and overlap in length with said peaks of said other half-section and taper within said drum cable supporting wall surface, said channels constituting right and left hand cable guide channels, and means to secure an end of said cable to said drum,.

4,519,557

PLASTIC BOBBIN

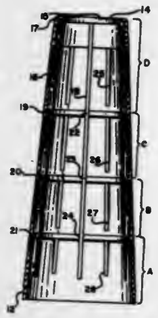
Arnold Newman, 4170 Cove La., Glenview, Ill. 60025

Filed Nov. 26, 1982, Ser. No. 444,618
Int. Cl.³ B65H *75/10, 75/20*
U.S. Cl. 242—118.31 **13 Claims**

11. A bobbin construction, said bobbin of the type having a configuration of a one-piece hollow cone having a central axis, sid cone molded of plastic, said cone having a tip end and a

base end, a thin-walled sheath having an inner surface and an outer surface, and an inner skeletal frame of longitudinally-spaced circumferential ribs and circumferentially-spaced longitudinal ribs supporting said sheath, said bobbin comprising:

a plurality of contiguous, frusto-conical segments and extending from said base end, with a portion of said inner surface included in each said segment inclined with respect to said outer surface to form sheath segments of varying thickness;



a plurality of partial ribs in each segment and having a substantially constant thickness with respect to said outer surface, thereby defining tapered partial ribs in each segment; and,

said outer surface formed at a constant taper with respect to said axis.

4,519,558

TAPE PLAYER

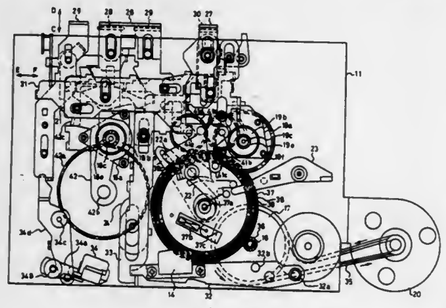
Hideo Yokoyama, Yokohama; Seiji Tomita, Yokosuka, and Shigeo Yamada, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1983, Ser. No. 546,120

Claims priority, application Japan, Nov. 19, 1982, 57-202953

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—186 **17 Claims**



1. A tape player having operating modes including normal speed and high speed and being connected to driving means, comprising:

a. a chassis;

b. a spindle mounted on said chassis;

c. a drive body rotatably mounted on said spindle, said drive body being responsive to said driving means and rotating continuously regardless of the operating mode of said tape player;

d. a fast speed body and a normal speed body both rotatably mounted on said spindle to rotate in a given direction together with said drive body;

e. first and second reels used, respectively, for take-up and supply of the tape;

f. fast speed transmission means for transmitting the rotation of said fast speed body to said first reel for take-up of the tape during high-speed running of the tape player; and

g. normal speed transmission means for transmitting the rotation of said normal speed body to said first reel for take-up of the tape during normal speed running of the tape player.

4,519,559

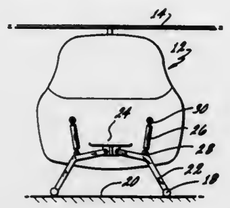
LANDING GEAR ENERGY DISTRIBUTION AND RIGHTING SYSTEM

Andrew H. Logan, Rancho Palos Verdes, Calif., and Robert A. Wagner, deceased, late of Redondo Beach, Calif. (by Jeanne M. Roireau, executrix), assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed Dec. 26, 1979, Ser. No. 107,144

Int. Cl.³ B64C *25/58*

U.S. Cl. 244—17.17 **13 Claims**



1. A landing apparatus for use in an aircraft to reduce angular motions of the aircraft in a non-level landing and to restore the aircraft to an equilibrium attitude with respect to the ground following such a landing, comprising:

an aft landing strut coupled to said aircraft;

a forward landing strut couple to said aircraft;

an aft damper coupled to said aft landing strut;

a forward damper coupled to said forward landing strut;

a restoring piston hydraulically coupled to said aft and forward dampers, compression of one of said forward and aft dampers forcing hydraulic fluid into said restoring piston and said restoring piston in response forcing hydraulic fluid into the other one of said aft and forward dampers, said restoring piston having a preferred configuration wherein hydraulic fluid is evenly distributed by said restoring device between said aft and forward dampers to restore said aircraft to said equilibrium attitude;

an aft surge reservoir hydraulically coupled to said aft damper and to said restoring piston to limit the magnitude of the hydraulic pressure communicated therebetween; and

a forward surge reservoir hydraulically coupled to said forward damper and to said restoring piston to limit the magnitude of pressure of said hydraulic fluid communicated therebetween.

10. A method for use on an aircraft to reduce angular motions of the aircraft in a non-level landing and to restore the aircraft to an equilibrium attitude with respect to ground following such a landing, comprising the steps of:

contacting said ground with a first landing strut;

compressing a first damper coupled to said first landing strut;

communicating said hydraulic fluid from said first damper to a restoring means;

communicating hydraulic fluid from said restoring means to a second damper;

expanding said second damper to extend a second landing strut coupled thereto;

contacting said ground with said second landing strut to reduce angular motion of said aircraft in said non-level landing; and

limiting the pressure of hydraulic fluid being communicated between said first and second dampers through said restoring means, said pressure being limited by surge means hydraulically communicating with said first and second dampers and said restoring means.

4,519,560

AIRFOIL FOR CONTROLLING REFUELING BOOM

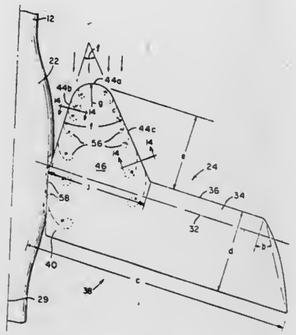
Kichio K. Ishimitsu, Mercer Island, and Edward N. Tinoco, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 840,589, Oct. 11, 1977, Pat. No. 4,231,536. This application Nov. 3, 1980, Ser. No. 203,452

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ B64C *3/10*

U.S. Cl. 244—45 R **24 Claims**



1. An airfoil assembly, comprising:

a. a body member,

b. a pair of airfoils on opposite sides of said body member, each airfoil having a spanwise axis and a chordwise axis, each airfoil comprising:

1. a first section at a first outboard spanwise location, having an airfoil configuration with a leading edge shaped to cause attached flow over said first section to create a lifting force caused by airflow over said first section;

2. a second section at a second inboard spanwise location, having an airfoil configuration to create a lifting force caused by airflow over said second section;

3. said second section having a forwardly extending strake-like member mounted to a forward portion of the second section at a location proximate said body, and having spanwise and chordwise axes generally aligned with the axes of the airfoil;

4. said strake-like member having a leading edge comprising:

(i) a first forward edge portion;

(ii) a second lateral edge portion extending from the forward edge portion to the leading edge of the first section, said second lateral edge portion having a sufficiently small cross-sectional radius of curvature and having a sweep angle sufficient to create a single discrete vortex of air passing over said second lateral edge portion, through a range from a very low angle of attack to a very high angle of attack;

(iii) a third lateral edge portion extending rearwardly from the first forward edge portion proximate said body member, said third lateral edge portion having a sufficiently small cross-sectional radius of curvature and having a sweep angle sufficient to create a single discrete vortex of air passing adjacent said body member and over said third lateral edge portion, through a range from a very low angle of attack to a very high angle of attack.

4,519,561

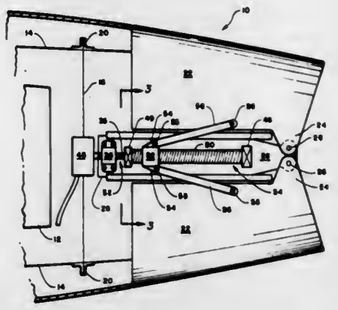
AIRCRAFT THRUST REVERSER MECHANISM

Richard H. Timms, San Diego County, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 23, 1983, Ser. No. 497,249

Int. Cl.³ F02K *1/00*

U.S. Cl. 244—110 B **7 Claims**



1. A thrust reverser nozzle through which a fluid stream is discharged as a jet, thrust reversal means surrounding said nozzle, a drive means comprising nested inner and outer jackscrews, said inner jackscrew is non-translatable and said outer jackscrew is translatable relative thereto, said inner jackscrew is rotated by a jackscrew drive motor and said outer jackscrew is inter-connected to said inner jackscrew for rotation therewith by a slidable mechanical connection therebetween, whereby said thrust reversal means moves rearwardly as a unit at a first speed of translation while moving said thrust reversal means into a position to reverse the flow of gas as it leaves the nozzle at a second speed of translation which is slower than said first speed of translation.

4,519,562

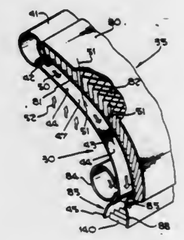
AIRCRAFT

William M. Willis, 19440 Citronia St., Northridge, Calif. 91324

Continuation-in-part of Ser. No. 287,229, Jul. 27, 1981, abandoned. This application Dec. 2, 1982, Ser. No. 446,279

Int. Cl.³ B64C *21/04*

U.S. Cl. 244—207 **38 Claims**



1. The method of creating a vertical lifting force on a lifting element which smoothly curves outwardly from horizontal to vertical comprising the steps of:

(a) flowing primary fluid in a thin sheet from a pneumatic plenum via a rectangular nozzle extending substantially the full length of the lifting element to cause said sheet to flow across the upper surface of the element from the horizontal side to the vertical side opposite thereof;

(b) divergently bounding said flowing primary fluid adjacent the entire length of the upper surface of the element from the horizontal to vertical by a porous surface which

smoothly curves in generally like manner but slightly divergently; and

(c) continuously adding sufficient augmenting fluid to said flowing primary fluid through the porous surface to maintain the combined flowing fluid stream in laminar flow adjacent the upper surface of the element whereby a differential pressure is created across the element tending to lift it vertically.

4,519,563

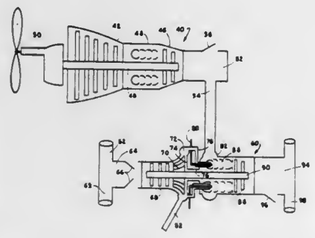
POLLUTION REDUCING AIRCRAFT PROPULSION

Raymond M. Tamura, 218 Lagoon Dr., Honolulu, Hi. 96819

Continuation of Ser. No. 265,732, May 21, 1981, abandoned, which is a continuation of Ser. No. 76,701, Sep. 18, 1979, abandoned, which is a division of Ser. No. 961,061, Nov. 15, 1978, Pat. No. 4,214,722, which is a continuation of Ser. No. 532,646, Dec. 13, 1974, abandoned, and a continuation of Ser. No. 788,526, Apr. 18, 1977, abandoned, and a continuation-in-part of Ser. No. 788,528, Apr. 18, 1977, Pat. No. 4,169,567. This application Feb. 17, 1983, Ser. No. 467,424

Int. Cl.³ B64C *21/04*

U.S. Cl. 244—208 **7 Claims**



1. Pollution reducing aircraft propulsion system apparatus comprising:

an aircraft with a fuselage and airfoil surfaces comprising forward upper airfoil surfaces with air suction ducts and remaining airfoil surfaces containing blower ducts,

a primary propulsion engine mounted on the aircraft, said primary propulsion engine comprising a compressor stage for forcing air into a burner stage, a burner stage for producing combustion products, a turbine stage driven by the combustion products, a shaft driven by the turbine stage, and propeller means driven by the shaft,

fuel and air inputs and a main exhaust outlet connected to the engine for feeding fuel and air into the engine and exhausting normally wasted combustion products from the engine,

collecting means enclosing the exhaust outlet for collecting normally wasted combustion exhaust matter therefrom,

an auxiliary engine comprising secondary combustion means for receiving said exhaust matter from said collection means,

boundary layer air intake means and fuel means connected to the secondary combustion means for adding combustion sustaining material to the secondary combustion means, said boundary layer intake means being connected to the air suction ducts for receiving air therefrom,

combustion initiating and maintaining means in the secondary combustion means for initiating and maintaining combustion therein,

secondary exhaust means connected to the secondary combustion means and the blower ducts for conducting exhaust from the secondary combustion means to the blower ducts,

turbine means connected to the secondary exhaust means and being operatively driven by exhaust passing through the secondary exhaust means,

blower means operatively connected to the turbine means and connected to the boundary layer air intake means,

conduit means connected to the blower means for conducting compressed air away from the blower means, and

distribution means connected to the conduit means and the blower ducts for distributing air from the blower and conduit means over airfoil surfaces of the aircraft, said collecting means comprising an exhaust plenum chamber formed by a closed chamber connected to the main exhaust outlet being vented out by an over pressure relief valve and conduit means for communicating exhaust matter from the plenum chamber into the secondary combustion means.

4,519,564

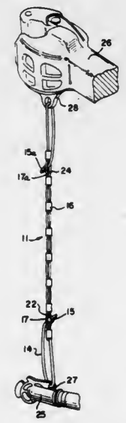
ADJUSTABLE SUPPORT ASSEMBLY

Rudolph E. Nadherny, Naperville, Ill., assignor to Ireco, Inc., Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 429,252

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—58 **29 Claims**



1. An adjustable support assembly comprising a plurality of inelastic, flexible and stiff cables and a plurality of retaining members spaced along and rigidly secured to said stiff cables, said cables and said retaining members forming, in combination, a series of stiff elongated eyes, said stiff cables of the elongated eyes being sufficiently resilient in their generally transverse dimension such that said elongated eyes will expand and snap back to a generally closed position, said stiff cables of the elongated eyes being biased toward a generally closed orientation to provide a wedging portion at which at least a section of each of said stiff cables is substantially juxtaposed with respect to the other, at least one of said inelastic, flexible and stiff cables extends beyond an outermost retaining member, said at least one cable having a free end, said free end includes one-way means, said one-way means having a leading end and a trailing end, said elongated eye and its wedging portion being sized and structured to permit passage of said one-way means through said elongated eye, said trailing end of the one-way means having an integral stop that is sized to provide a rigid abutment between said elongated eye and said trailing end of the one-way means, and said abutment restrains passage of the one-way means in a direction toward said abutment between the elongated eye and the integral stop.

4,519,565

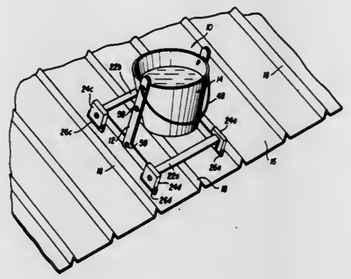
PAINT-BUCKET HOLDER

Richard L. Whitmore, Rte. 1, Box 292, Kenbridge, Va. 23944

Filed Nov. 22, 1982, Ser. No. 443,824

Int. Cl.³ A47G *29/02*

U.S. Cl. 248—237 **9 Claims**



1. A paint-bucket holder for painting inclined surfaces of housings made of a ferric material comprising:

a support frame, said support frame including a rectangularly-shaped base portion, which is sufficiently narrow that it can fit between standing seams of most tin roofs, said base portion forming four mounting areas approximately at the laterally-displaced corners of the rectangle thereby defining a mounting plane for supporting said frame on a facing of a ferric-material housing being painted, said support frame further including an upright portion rigidly attached to said base portion and extending laterally from said mounting plane, said upright portion having at a position opposite said mounting plane, approximately half way between lines respectively connecting said first and second adjacent mounting areas and said second and third mounting areas, two spaced swivel bucket attachment means for coupling said upright portion to opposite sides of the upper portion of a paint bucket thereby allowing the bucket to swivel so that when the paint bucket holder is placed on an inclined surface with said first and second mounting means being uphill and said third and fourth mounting means being downhill its bottom swings perpendicularly away from said line connecting said first and second mounting areas perpendicularly toward said line connecting said third and fourth mounting areas and said bucket thereby remains upright for various positions of the support frame; and,

at least two magnetic foot assemblies one being attached to said base portion at said first corner mounting area and the other being attached to said base portion at said second corner mounting area and each including a loosely held permanent magnet for contacting said facing of said ferric material housing and attaching thereto by means of magnetic attraction, said mounting areas being positioned sufficiently far apart such that when said mounting plane is arranged horizontally the magnetic foot assemblies lie far outside of a vertically-projected perimeter of the upright paint bucket with the bucket being approximately equidistant from said line connecting said first and second mounting areas and said line connecting said third and fourth monitoring areas.

4,519,566

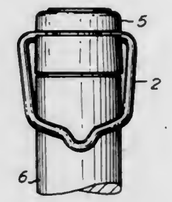
HANGER DEVICE FOR LONG HANDLED IMPLEMENTS

Joseph Manzi, Bronx, N.Y., assignor to Gossling Development Corporation, Bronx, N.Y.

Continuation of Ser. No. 428,279, Sep. 29, 1982, abandoned. This application Oct. 3, 1983, Ser. No. 538,534

Int. Cl.³ A47B *91/00*

U.S. Cl. 248—360 **1 Claim**



1. In a hanger device for long-handled implements, a first part of molded material having a bottom surface adapted to conform to the rounded end of implement handles and provided with a peripheral recessed area adapted to receive a rotating part and secured to a handle end by means of a screw, a second part of like manufacture rotatable around and below the cap portion of the secured part conforming to the round dimension of said part and the spherically shaped end of the top end of the implement handle, said second part being loosely held to allow rotation and having a groove traversing the upper surface thereof and a bail hanger conforming to and engaging upon the round shaft of a handle when the bail is in the lower position and having an outwardly projecting portion positioned at the apex to facilitate removal from engagement upon a handle and when upright to facilitate engagement upon a hook, said bail having portions at each end adapted to pivotally engage the groove of the rotating part, whereby the uppermost portions of the bail ends are always in contact with the rotating part and slidably engages the underside of the cap portion of the first part, a spring which seats within a circumferential depression of the rotating part, abuting the implement handle end providing an upward thrust to the rotating part which pressure maintains the bail in firm contact with the first part and the second part.

4,519,567

MOLD FOR MANUFACTURING AN ANNULAR OBJECT OF ELASTIC MATERIAL

Karl Rautenberg, Hyltebruk, Sweden, assignor to Forsheda AB, Forsheda, Sweden

Continuation of Ser. No. 432,763, Oct. 4, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,931

Claims priority, application Sweden, Feb. 10, 1982, 8105825

Int. Cl.³ B29B *1/14*

U.S. Cl. 249—57 **9 Claims**

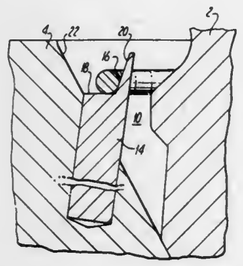
1. A mold having a cavity for manufacturing an annular object of elastic material with an annular reinforcing element embedded therein, wherein the reinforcing element is positioned in the cavity before the elastic material is injected into the cavity, comprising:

a plurality of pins supported by the mold and projecting into the cavity;

a support surface on each pin extending in a common plane for supporting the reinforcing element in position in the cavity;

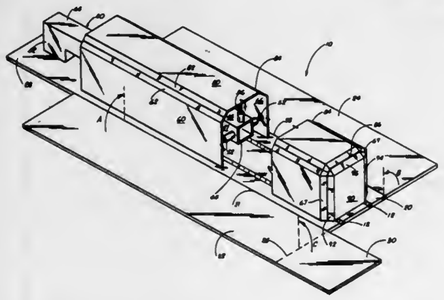
a guiding surface on each pin extending in a common truncated conical surface intersecting said common plane, the diameter of said truncated conical surface decreasing in the direction away from said common plane of said support surfaces and being substantially equal to the inner diameter of the reinforcing element at a plane passing

through said truncated conical surface and extending in parallel adjacent spaced relationship with respect to said common plane of said support surfaces, so that said guiding surfaces guide the reinforcing element into correct position and retain the reinforcing element in correct position on said support surfaces when introduced into the mold; and



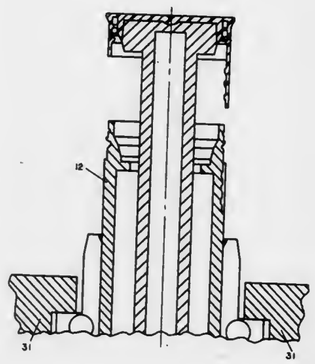
a sprue for injection of elastic material extending through said mold and communicating with said cavity at a position substantially opposite to the plane of said supporting surfaces so that material injected through said sprue will act on the reinforcing element to retain it against said support and guiding surfaces.

4,519,568
APPARATUS FOR CONSTRUCTING MODULAR PRE-CAST CONCRETE BUILDINGS
James D. Day, and James D. Day, II, both of 5001 S. Claiborne, New Orleans, La. 70125
Filed May 31, 1983, Ser. No. 499,650
Int. Cl.³ B28B *7/10*
U.S. Cl. 249—66 R **18 Claims**



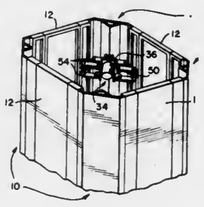
1. An apparatus for constructing a modular, pre-cast concrete building comprising:
- (a) outer and inner forms providing a mold for said building, said outer form being collapsible from its mold forming position and said inner form being retractable from its mold forming position;
- (b) means for extruding said inner form from said mold;
- (c) support means slidably engaging said building and said outer form for slidably supporting said building on said outer form; and
- (d) means attached to said building for slidably removing said building from said outer and inner forms.

4,519,569
MOLDING
Robert L. Nolan, New York, N.Y., assignor to Maxcap, Inc., New York, N.Y.
Filed Apr. 5, 1984, Ser. No. 597,189
Int. Cl.³ B29F *1/14*
U.S. Cl. 249—142 **10 Claims**



1. A mold for forming a plastic cap having a top and side wall comprising a core against which the inside of said cap is formed, mold means against which the outside of the top of said cap is formed and a sleeve surrounding said core and against which the outside of the side wall of the cap is formed said sleeve being in close contact with said core at the boundary of the zone where the bottom of said cap side wall is formed, said contact being sufficiently close to substantially prevent flow of plastic between said core and said sleeve at said boundary, said mold having means for effecting axial movement of said core relative to said sleeve on completion of the molding of a cap so as to remove the resulting molded cap from within said sleeve, the improvement wherein said sleeve comprises at least two separable portions each in close contact with said core along said boundary, means for maintaining said portions in said close contact with each other during the molding of said cap, the construction and arrangement being such that said portions are permitted to move away from each other and from said core at the beginning of said axial movement of said core.

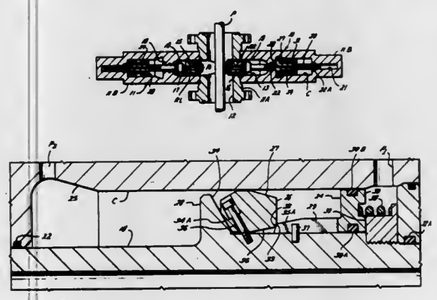
4,519,570
INSIDE CORNER CONCRETE FORM UNIT
James K. Strickland, and H. Grady Ivey, both of Jacksonville, Fla., assignors to Strickland Systems, Inc., Jacksonville, Fla.
Filed Sep. 22, 1983, Ser. No. 534,682
Int. Cl.³ B28B *7/30*
U.S. Cl. 249—194 **7 Claims**



1. A concrete form unit for inside corner casting comprises:

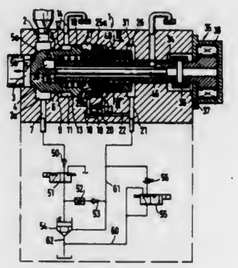
a pair of form panels disposed generally perpendicular to each other;
an elongated corner member disposed generally between adjoining edges of said panels;
actuator means having relatively moveable first and second parts interconnecting said panels and said corner member, said second part being connected to move said corner member;
parallelogram linkage means connecting each of said form panels to said first part of said actuator, said linkage means having respective collapsed and expanded conditions;
holding means having a retaining condition operable to cooperate between said corner member and said form panels to retain said corner member against displacement toward said panels while said linkage means is shifted to said expanded condition by said actuator to strip said panels from the hardened concrete;
latch means having a holding condition operable to hold said form panels against relative movement while said actuator strips said corner member; and
operating means effective to operate said holding means to and from said retaining condition and operate said latch means to and from said holding condition, said operating means including an operator connected to conjointly operate said holding means and said latch means.

4,519,571
FLUID OPERATED, AXIALLY RECIPROCATING ACTUATOR
Marvin R. Jones, and Roland M. Howard, Jr., both of Houston, Tex., assignors to Koomey Blowout Preventers, Inc., Houston, Tex.
Continuation of Ser. No. 461,761, Jan. 31, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,572
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 A **32 Claims**



22. A blowout preventer, comprising a housing having a bore therethrough and chambers therein intersecting opposite sides of the bore, a ram within each chamber, and an actuator for moving each ram between an outer position to open the bore and an inner position for engaging the other ram to close the bore, each actuator comprising a cylinder with a conical locking shoulder extending radially outwardly from its inner diameter and in an axial direction toward the inner end of the cylinder, a rod connected to a ram and extending sealably through the inner end of the cylinder for axial reciprocation between an inner position to close the bore and an outer position to open the bore, piston means axially reciprocable within the cylinder, means by which operating fluid may be supplied to or exhausted from opposite sides of the piston means, locking elements carried about the rod for radial expansion and contraction between inner positions in which they are free to move within the inner diameter of the cylinder and outer positions in which conical surfaces on their outer sides which are substantially complementary to the conical shoulder of the cylinder project outwardly from said diameter, means for transmitting to the rod via the locking elements a relatively large axial component of the axially inwardly directed force due to operating fluid supplied to the outer side of the piston means in order to move the rod axially inwardly with the locking elements until the conical surfaces of the locking elements are radially opposite the cylinder shoulder, and then transmitting to the rod via the locking elements a relatively large radial component of such force in order to cause the locking elements to move radially outwardly with respect to the rod and the conical surfaces thereof to slide radially outwardly and axially along the inwardly cylinder shoulder as the rod continues to move axially inwardly with the locking elements to its inner position, said rod being locked against return movement from its inner to its outer position, upon exhaustion of operating fluid from said outer side of the piston means, and means for transmitting to the rod the axially outwardly directed force due to the supply of operating fluid to the inner side of said piston means and to cause the locking elements to slide radially inwardly along the shoulder and then axially outwardly with the rod as the rod is returned to its outer position.

4,519,572
VALVE DEVICE, ESPECIALLY FOR DIE CASTING MACHINES
Hans-Jürgen Müller, and Hans-Gebhard Krines, both of Usingen, Fed. Rep. of Germany, assignors to Vickers, Incorporated, Troy, Mich.
Filed Aug. 18, 1982, Ser. No. 409,163
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—29 **14 Claims**



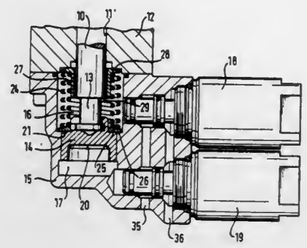
1. Valve arrangement, especially for pressure die casting machines, with the following features:
- arranged in a valve housing is a main valve with a valve cone, a control piston and a stroke-limiting stop;
- the stroke-limiting stop can be adjusted by means of a drive mechanism, which comprises a threaded bushing and a support thread arranged on the valve housing;
- a control valve device, which also contains throttle devices, is connected by at least one control line to the main valve, so that the valve cone of the latter can execute a delayed or a quick movement;
- characterized in that the threaded bushing has pressurized surfaces, on which counteracting displacement forces, in the support direction or in the release direction, develop onto the threaded bushing, the relative size of said displacement forces to one another changing with every switching cycle of the valve cone.

4,519,573

DEVICE FOR THE ACTUATION OF A SLIDE VALVE

Reiner Bartholomäus, Neuendorf, Fed. Rep. of Germany, and Michel Rivolier, Bron, France, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,316
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214845
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—30 **9 Claims**



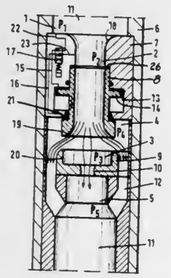
1. A device for positioning a slide valve displaceable in a bore of a housing and subject to the force of a restoring spring, in particular for actuation of the piston of a switching valve, the device comprising a first regulator, a second regulator and a regulating piston fixed to the slide valve and having a circular face directed away from the slide valve and acted upon by pressure from the first regulator, and an annular face directed towards the slide valve and acted upon by pressure from the second regulator, and an equaliser spring acting on the annular face of the regulating piston to equalise the unequal controlling forces acting on the different sized annular and circular faces of the regulating piston, said equaliser spring being mounted with one end engaging part of the housing and the other end engaging a spring abutment which is urged against the regulating piston and against a ledge on the housing.

4,519,574

AUXILIARY CONTROLLED VALVE DISPOSED IN A DRILLING STRING

Rudolf Röper, Dortmund, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 1, 1983, Ser. No. 519,422
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233982
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—31 **13 Claims**



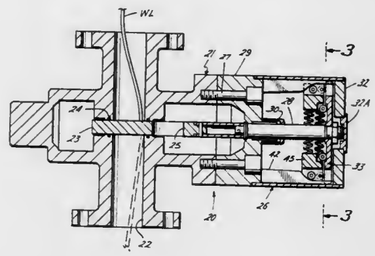
1. An auxiliary controlled valve disposed in a drilling string to produce pressure pulses in a flushing pressure fluid flowing downwards under pressure through a central passage of the string, the valve, a drill bit and upwards through an annular chamber, wherein the valve comprises: a main throttle section, a low-resistance transmission section including a chamber of constant cross section adjacent and connected in parallel to the main throttle section, a valve seat between the main throttle and low-resistance transmission sections, a longitudinally movable valve body adjacent to and displaceable downwardly against the valve seat to close off the low resistance transmission section, a piston guidedly mounted in a pressure chamber and connected to displace the valve body and be displaced by the pressure fluid in the central passage; and an auxiliary throttle section adjacent an inlet end of the valve adapted to obtain a pressure difference in the pressure fluid for actuating and displacing the piston and valve body, and wherein the auxiliary throttle section, the valve body, and the main throttle section each have a rectilinear passage about a common axis, the valve body and valve seat have surface means adjacent one another that form a continuous course so as to maintain a boundary layer of flow next to said surface means for ensuring a flow substantially free of flow separation and reduced valve flutter, and the valve body has compensating means responsive to the pressure of the fluid in the central passage and low resistance transmission section to compensate for dynamic flow forces.

4,519,575

VALVES AND VALVE ACTUATORS

Neil H. Akkerman, and Daniel O. Dewey, both of Houston, Tex., assignors to Ava International Corporation, Houston, Tex.

Filed Apr. 20, 1984, Ser. No. 602,511
Int. Cl.³ F16K *31/00*
U.S. Cl. 251—58 **15 Claims**



1. A valve, comprising a body having a flowway therethrough, a closure member movable within the body for opening and closing the flowway, a housing on the body having cam means thereon, a stem connected to the closure member and extending from the body and into the housing for longitudinal reciprocation therein, extendible and retractable, fluid-actuated means extending between the stem and housing for moving the closure member to open position in response to the supply of operating fluid thereto, and means for moving the closure member to closed position in response to the exhaust of operating fluid from said fluid-operated means, including follower means reciprocable with the stem, and spring means yieldably urging the follower means into engagement with the cam means, said cam means being so arranged that the spring means moves the closure member during the end of its closing movement with a force greater than the force with which the closure member is initially moved toward closed movement.

15. A valve, comprising a body having a flowway therethrough, a closure member movable within the body for opening and closing the flowway, a housing on the body, a stem connected to the closure member and extending from the body and into the housing for longitudinal reciprocation therein, extendible and retractable, fluid-actuated means extending between the stem and housing for moving the closure member to open position in response to the supply of operating fluid thereto, and means for moving the closure member to closed position in response to the exhaust of operating fluid from said fluid-operated means, said fluid-operated means comprising cylinder means mounted on the housing, inner piston means

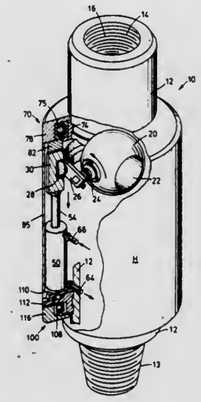
sealably slidable about the cylinder means between extended and retracted positions with respect to the cylinder means, and outer piston means mounted on the stem and sealably slidable about the inner piston means between extended and retracted positions with respect to the inner piston means, whereby operating fluid is effective over a large area as the outer piston means is first extended with respect to the cylinder means and the inner piston means, and operating fluid is then effective over a relatively small area as the inner and outer piston means are then extended with respect to the cylinder means to continue to move the closure member toward opening position.

4,519,576

OIL WELL SAFETY VALVE FOR USE WITH DRILL PIPE

Mitchell E. Winegeart, 4512 Hessmer Ave., Metairie, La. 70002

Filed Dec. 15, 1983, Ser. No. 561,647
Int. Cl.³ F16K *31/143*
U.S. Cl. 251—62 **8 Claims**



1. A drill string safety valve operator, comprising:

a. a rotatable tubular body having a longitudinal through bore for conveying fluids;

b. a valve member movably disposed within the body for valving fluid flow through the bore;

c. rotatable shaft means extending from and coupled to the valve member for moving the valve member to open or close the bore;

d. bearing means connected for rotation with the shaft means for transmitting an applied load into rotation of the shaft means;

e. upper and lower spaced apart annular surfaces positioned respectively above and below the bearing means and about the tubular body so that the respective surfaces can engage and move the bearing means in different respective directions; and

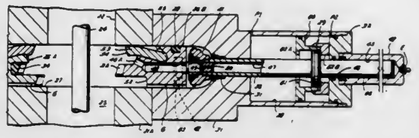
f. normally non-rotating powered means supporting the upper and lower annular surfaces in a position about the housing and respectively above and below the bearing means for powering the annular surface means to move linearly with respect to the housing and between upper and lower positions so that a respective annular surface can effect an opening or a closing of the valve member.

4,519,577

FLOW CONTROLLING APPARATUS

Marvin R. Jones, Houston, Tex., assignor to Koomey Blowout Preventers, Inc., Houston, Tex.

Division of Ser. No. 446,390, Dec. 2, 1982,. This application Jul. 25, 1984, Ser. No. 634,396
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—62 **1 Claim**



1. Flow controlling apparatus, comprising a body having a flow-way therethrough, a member reciprocable within the body between first and second positions in which it restricts with the flow to greater or lesser extents, respectively, means for reciprocating the member between its first and second positions, including a cylinder outside of the body, a piston reciprocable within the cylinder, a rod on the piston extending sealably into the body for connection to the member so as to move the member to its first position as the rod is moved inwardly and to move the member to its second position as the rod is moved outwardly, and another rod on the piston extending sealably into a chamber outwardly of the cylinder, a hole extending through the piston and both of the rods to connect the inside of the body with said chamber, a plug slidably mounted within the hole for reciprocation between inner and outer limited positions, and a fitting for injecting grease into said chamber and the hole outwardly of the plug, the volume displaced by the plug in moving between its inner and outer limited positions substantially equaling that displaced by the other rod upon movement within said chamber, and said plug having restricted port means therethrough to permit grease to bypass the plug when the plug is in its inner position and to permit line fluid to bypass the plug when the plug is in its outer position.

4,519,578

HIGH PRESSURE CAM SEAL VALVE

Paul A. Boeckman, Glenpool, and Dennis L. Young, Tulsa, both of Okla., assignors to Dover Corporation, Tulsa, Okla.

Filed Mar. 11, 1983, Ser. No. 474,504
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—163 **3 Claims**

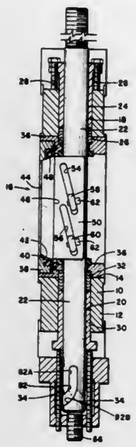
1. A valve comprising:

a body having a flow passageway therethrough defined in part by an annular valve seat and having upper and lower stem openings therein;

a circular valve disc member positioned in said flow passageway and movable between a closed and an opened position, the valve disc having a forward surface having a peripheral sealing surface and having a rearward surface having spaced apart rearwardly extending paralleled boss portions, each boss portion being substantially the full length of a cord of the disc circular rearward surface, each boss portion having an upper and a lower slot therein, the upper slots being in a first common plane and the lower slots being in a second common plane, the first and second planes being parallel to each other and intersecting the plane of the disc sealing surface at an acute angle;

a valve stem axially positionable and rotatably positioned in said stem openings in said body, the stem being received between said disc member boss portions, said disc being thereby securely supported to the stem relative to rotational movement of said disc about its circular axis, the stem having a slot in the cylindrical surface, the slot being displaced from the plane of the stem axis;

a first and a second spaced apart paralleled pin member extending to either side of said stem and received within said disc member boss portions first and second slots respectively providing four spaced apart contact areas between said pins and said disc boss portions, the pins securely supporting said disc to said stem against displacement of the plane of said disc away from a parallel relationship with said stem;



a drive gear having an internally threaded axial opening therein, said stem member having an externally threaded portion external of said body threadably receiving said drive gear;

housing means secured to said valve body and rotatably receiving said stem member, said housing means rotatably and nonaxially displaceably supporting said drive gear;

means of rotating said drive gear; and

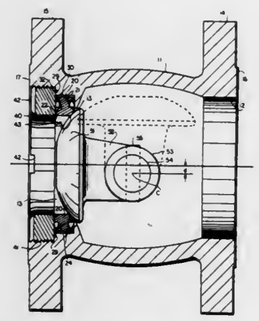
a guide pin extending slidably into said slot in said stem which causes said stem to rotate as it is axially displaced.

4,519,579

CAM VALVE SELF-CENTERING SEAT

Ronald R. Brestel, and Dale L. Meyer, both of Marshalltown, Iowa, assignors to Fisher Controls, International, Inc., Marshalltown, Iowa

Filed Feb. 14, 1983, Ser. No. 466,186
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—172 **19 Claims**



1. A fluid valve comprising:

a body including a valve chamber defining a flowpath;

a valve shaft extending into said body;

a valve plug, having a spherically convex sealing surface, rotatably mounted in said body for limited eccentric movement about an axis in response to the movement of said valve shaft;

an annular seat ring adapted for sealing engagement with the sealing surface of said valve plug to block said flowpath;

means mounting said seat ring in said body for limited movement of the center of said annular seat ring axially to and transversely of said valve plug such that said valve plug tends to center said seat ring during closure of said valve; and

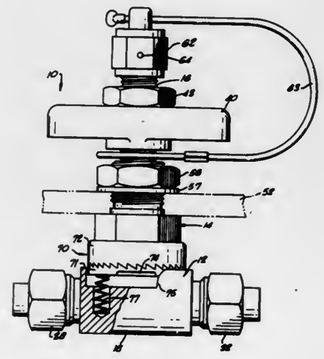
sealing means sealing the periphery of said seat ring and said body against fluid leakage.

4,519,580

SAFE HIGH PRESSURE INSTRUMENT VALVE

Francis Leighton, Woodland Hills, and Fred W. Trebes, Northbridge, both of Calif., assignors to Air Dry Corporation, Northridge, Calif.

Continuation-in-part of Ser. No. 494,657, May 16, 1983, abandoned. This application May 15, 1984, Ser. No. 610,424
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—223 **4 Claims**



1. A valve comprising:

a body having an inlet, an outlet, and a passage between said inlet and said outlet;

a bonnet threaded onto said body;

a stem rotatable within said bonnet such that said stem is capable of blocking said passage;

an integral locking means between said body and said bonnet wherein said locking means comprises a locking element nonrotatably attached to said body such that when said bonnet is detached from said body said locking element remains nonrotatably attached to said body;

a lock nonrotatably attached to said bonnet, such that when said bonnet is detached from said body said lock remains nonrotatably attached to said bonnet; and

a means for releasably engaging said lock and said locking element; said lock and said locking element each having at least one interengaging tooth.

4,519,581

FAUCET HANDLE

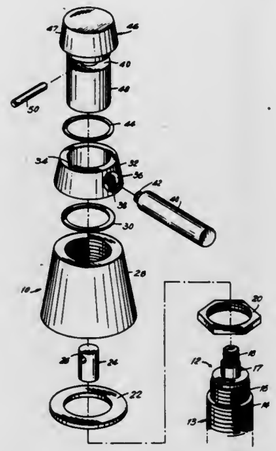
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.

Filed Mar. 8, 1984, Ser. No. 587,712
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—268 **15 Claims**

1. A faucet handle assembly for opening and closing a cartridge type non-rising valve assembly having an outer casing and a valve stem rotatable from one closed position to another open position, comprising:

lower anchoring means for securing the faucet handle assembly to the non-rising valve assembly;

rotation means rotatably mounted on the lower anchoring means and coupled to the valve stem for rotating the stem between the open position and the closed position wherein the rotation means comprises a valve stem cover having a hole formed therein, an aligning pin disposed in the hole, a circular member fitting around the valve stem, said circular member having an internal notch, said aligning pin extending from said valve stem cover into said notch,



whereby rotational displacement of the circular member rotates the valve stem for operating the cartridge valve; and

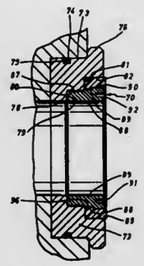
upper anchoring means journaled on the rotation means and coupled to the outer casing to secure the faucet handle assembly in place and maintain the rotation means in a fixed vertical orientation between the lower anchoring means and the upper anchoring means.

4,519,582

SEAL ASSEMBLY AND VALVE

John W. Freeman, Houston, Tex., assignor to Seaboard Wellhead Control, Inc., Houston, Tex.

Division of Ser. No. 174,821, Aug. 4, 1980, Pat. No. 4,376,526. This application Sep. 30, 1982, Ser. No. 428,669
Int. Cl.³ F16K *3/02*
U.S. Cl. 251—328 **7 Claims**



1. A seal assembly for use in a valve, comprising:

an annular collar having an essentially cylindrical outer surface section suited for fitting into an annular recess in a valve body, and an inner surface including (a) a first essentially cylindrical section, (b) a second essentially cylindrical section having an inner diameter greater than that of the first section and having threads thereon, (c) a third essentially cylindrical section having an inner diameter greater than that of the second section, and (d) an essentially radial, annular surface interconnecting said second and third sections;

an annular retainer gland having an essentially cylindrical inner surface with substantially the same diameter as that of the first section of the collar and an outer surface having (a) a first section threaded complementary to the second collar section to accommodate the gland being threaded into the collar, (b) a second, essentially cylindrical section adjacent said threaded section, (c) a third, essentially cylindrical section radially spaced from and facing the third section of the collar when the gland is threaded into the collar, and (d) a radial outward, annular step between the second and third sections thereof; and

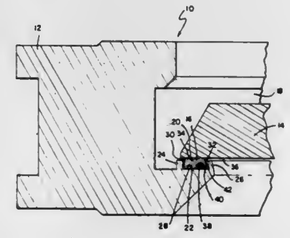
an essentially annular sealing member for placement between the collar and the gland and including an end face suited for engagement with a valve element and a radially inward flange at the opposite end thereof from said end face to fit within the undercut formed by the radial step on the gland when the gland is threaded onto the collar.

4,519,583

RETAINER FOR A REPLACEABLE VALVE SEAT

Lonnie L. Lapinoja, Sauk Rapids, Minn., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 6, 1983, Ser. No. 539,651
Int. Cl.³ F16K *3/02, 3/30*
U.S. Cl. 251—328 **15 Claims**



1. In a valve structure having a body, a flow passage through said body, a valve element movable in said body to control the flow through said flow passage, an annular recess about said flow passage and a valve seat secured in said annular recess engaging said valve element in the closed position of said valve element, the improvement comprising:

said annular recess having an opposed inner and outer annular wall extending traverse to a base wall;

said valve seat having at least a first and second lateral surface, a base surface and a seat surface; and being insertable into said recess without deformation of said valve seat

said first and base surfaces of said valve seat engaging respectively said outer and base walls of said annular recess; and

said inner wall of said recess being sufficiently thin to be deformed at portions thereof to engage at least portions of said second surface without deformation of said second surface and to thereby retain said valve seat in said annular recess.

4,519,584

FENCE POST DRIVER

William R. McCray, 917 W. Wade, El Reno, Okla. 73036

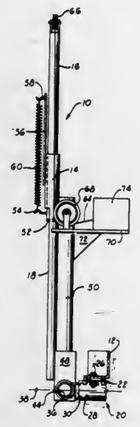
Filed Apr. 15, 1983, Ser. No. 485,314
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 R **8 Claims**

1. Apparatus for driving fence posts comprising:

a first pipe;

a second pipe, said first pipe being fixedly mounted on said second pipe with the longitudinal axis of said first pipe

being substantially parallel and spaced apart from the longitudinal axis of said second pipe;
means for mounting the lower end of said second pipe on a vehicle, said second pipe assuming a generally upright position when so mounted;
a third pipe slidably received within said first pipe for coaxial longitudinal movement relative to said first pipe;
a post-driving structure formed on the lower end of said third pipe adapted for abutting against the top of a fence post;
a platform fixedly mounted on said second pipe adjacent its



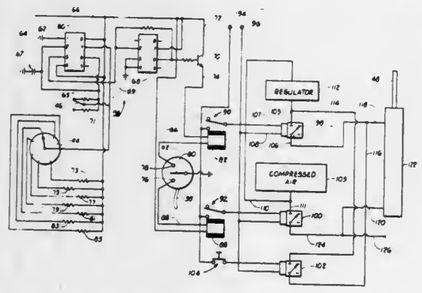
upper end, said platform being at a substantially right angle relative to the longitudinal axis of said second pipe;
a first pulley mounted on the top of said third pipe and having its rotational axis intersecting the axis of said third pipe substantially perpendicular thereto;
a second pulley mounted on said platform;
a winch mounted on said platform adjacent said second pulley; and
a cable journaled over said first pulley and having one end fixedly attached to said first pipe, said cable further being journaled around said second pulley and having its other end wound onto said winch.

4,519,585

DRAWWORKS BRAKE CONTROL

Robert E. Furrow, Enid, Okla., assignor to Cooper Industries, Houston, Tex.

Filed Oct. 12, 1982, Ser. No. 433,895
Int. Cl.³ B66D *1/50, 5/26*
U.S. Cl. 254—273 **6 Claims**



1. Apparatus for controlling a brake on a drawworks having a cable wound thereon, said apparatus comprising:
means for sensing the tension level in said cable;
a first relay having a set of normally open contacts;
a pulse generator constructed to provide periodic pulses to one side of said first relay;
means for connecting the other side of said first relay to ground when said tension level is at or above a selected level;
means for disconnecting the other side of said first relay from ground when said tension level is below a selected level;
a pneumatic ram operatively connected to said brake for activating and deactivating said brake responsive to ram pressurization and depressurization;
a source of compressed air;
a first pneumatic relay operatively connected to said contacts, to said ram, and to said air source to that closing said contacts pressurizes said ram for brake deactivation and opening said contacts depressurizes said ram to permit brake activation;
a second relay having a set of normally open contacts;
a constant voltage source operatively connected to one side of said second relay for maintaining said second relay in an energized condition when the other side of said second relay is grounded;
means for connecting the other side of said second relay to ground when said tension level is at or below a selected tension level;
means for disconnecting the other side of said second relay from ground when said tension level is above a selected level; and
a second pneumatic relay operatively connected to said second relay contacts, to said ram, and to said air source so that closing said second relay contacts pressurizes said ram to prevent brake deactivation and opening said second relay contacts depressurizes said ram to permit brake deactivation.

4,519,586

LIFETIME LIVESTOCK FENCE POST

Stanley R. Wilhelm, and George Spector, both of 233 Broadway Rm. 3615, New York, N.Y. 10007

Filed Mar. 28, 1984, Ser. No. 594,370
Int. Cl.³ E04H *17/02*
U.S. Cl. 256—51 **1 Claim**



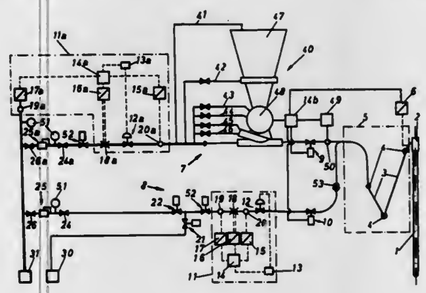
1. A fence post which comprises:
(a) an elongated concrete body portion having at least one curved face extending longitudinally thereof;
(b) means for reinforcing said body portion to increase strength of said body portion;
(c) a plurality of relatively short transverse pins longitudinally spaced and secured within said body portion to project from said curved face of said body portion, each said transverse pin having a head portion outside of said body portion defining a space therebetween for a fencing wire to sit upon; and
(d) means for securing said fencing wire to said body portion wherein said means for reinforcing said body portion comprises;
(a) an elongated galavanized wire cage longitudinally disposed in said body portion; and
(b) an elongated reinforcing bar longitudinally disposed in center of said body portion, wherein said means for securing said fencing wire to said body portion comprises a plurality of tie wires longitudinally spaced and encircling said body portion whereby each said tie wire engages one said fencing wire on opposite sides of said body portion, further comprising:
(a) said elongated reinforcing bar having a plurality of longitudinally spaced transverse threaded apertures; and
(b) each said transverse pin having a threaded shaft to engage one said threaded aperture of said reinforcing bar so that said transverse pins will be in proper position extending through said wire cage when said body portion is formed,
(c) each of said pin transversely engaging said cage thereby supporting said pin in desired position prior to pouring concrete to form said post.

4,519,587

APPARATUS FOR REGULATING THE DELIVERY OF SOLID MATERIALS BY A BLOWING LANCE

Jean Peckels, Esch/Alzette, and Antoine Schaaf, Soleuvre, both of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Oct. 21, 1983, Ser. No. 544,073
Claims priority, application Luxembourg, Oct. 27, 1982, 84444
Int. Cl.³ C21B *5/02*
U.S. Cl. 266—80 **24 Claims**



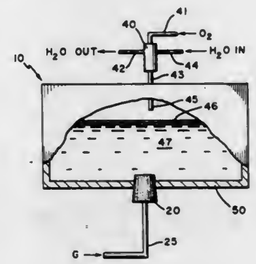
1. An apparatus for regulating the delivery of solid combustible material through a blowing lance above a pool of metal comprising:
a source of a carrier gas;
supply circuit means for delivering solid combustible material suspended in said carrier gas to a blowing lance;
flushing circuit means for delivering flushing gas to said blowing lance;
means for controlling the flow rate of said solid combustible material to vary said flow rate over a range of operation;
means for controlling the flow rates of said carrier gas and said flushing gas to vary said flow rates of said carrier gas and said flushing gas over a range of operation; and
means for connecting said supply circuit means and said flushing circuit means separately or concurrently to said blowing lance;
said means for controlling the flow rate of said solid combustible material including:
a fluidizing system, said fluidizing system having a rotating cellular regulator and a reservoir;
means for sensing conduit pressure downstream from said fluidizing system;
means for comparing said downstream pressure with a desired pressure and adjusting the speed of said rotating cellular regulator; and
a plurality of conduit means connected to said fluidizing system carrying pressurized gas thereto.

4,519,588

MOLTEN COPPER OXYGENATION APPARATUS

William G. Staib, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Division of Ser. No. 510,091, Jul. 1, 1983, Pat. No. 4,469,518.
This application Jul. 23, 1984, Ser. No. 633,330
Int. Cl.³ C21C *5/48*
U.S. Cl. 266—220 **4 Claims**



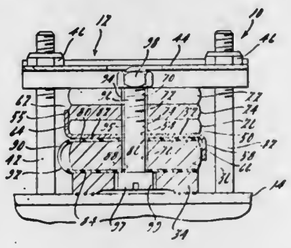
1. An improved vessel, for the oxygenation of a continuous stream of molten copper, of the type having an entrance launder for receiving a stream of molten metal from a furnace; top, bottom, and sides for containing the stream of the molten copper; and an exit launder for discharging treated molten copper to another vessel,
wherein the improvement comprises the combination of a gas permeable molten copper impervious plug mounted in the bottom of said oxygenation vessel and in communication with a source of gas,
and a lance mounted in said top directly above, and pointed toward, said plug and in communication with a source of oxygen.

4,519,589

ANTI-SPLAY SHIM FOR A TWO STAGE LEAF SPRING ASSEMBLY

Larry Skynar, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 22, 1982, Ser. No. 443,842
Int. Cl.³ B60G *19/02*
U.S. Cl. 267—52 **3 Claims**



1. A two stage leaf spring assembly for a vehicle, said leaf spring assembly characterized by:
a stack of leaves forming a first stage leaf spring assembly section;
means for fastening the stack of leaves together;
a second stage leaf interposed between said stack of leaves and a spring seat attached to an axle of the vehicle;
said second stage leaf having ends normally spaced from said stack of leaves when said vehicle is in an unloaded position;
a shim member interposed between an axial center portion of the stack of leaves and the center portion of the second stage leaf;

said shim member having an upturned flange abutting a side of the stack of leaves and a downturned flange abutting an opposite facing side of the second stage leaf;

a one-piece low friction liner being folded about both upper and lower faces of the second stage leaf spring such that an upper section of said liner is interposed between said shim and said second stage leaf spring and a lower section of said liner interposed between said spring seat and said second stage leaf spring;

each of said leaves in said stack, said second stage leaf, said shim, said upper section of said liner, and said lower section of said liner define an aperture;

said defined apertures being aligned to form a passage;

securing means passing through said passage for securing said stack of leaf springs, said second stage leaf spring, said shim, and said liner together; and

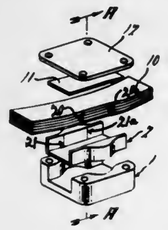
said shim constructed to have sufficient strength for resisting torque about a vertical axis transferred from said spring seat to said second stage spring and preventing relative rotation of said second stage leaf spring with respect to said stack of leaves whereby splaying of the second stage leaf is minimized.

4,519,590

AXLE CLAMP FOR FILAMENT REINFORCED SYNTHETIC MATERIAL LEAF SPRINGS

Wayne E. Wells, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 5, 1983, Ser. No. 455,695
Int. Cl.³ F16F *1/30*
U.S. Cl. 267—52 **10 Claims**



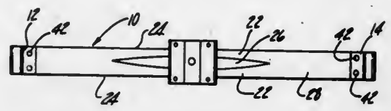
1. An axle clamp adapted to hold a synthetic material leaf spring in position relative to an axle, which leaf spring has upper, lower and side surfaces, which axle clamp comprises a rigid clamp base and a resilient wedge insert, said clamp base comprising a platform portion and two substantially parallel side walls extending from said platform portion to form a channel adapted to receive said wedge insert, the inner surface of at least one said side wall providing a channel-widening concavity, and said wedge insert comprising a wedge insert platform portion and two substantially parallel wedge insert side walls extending from said wedge insert platform portion to form an inner channel adapted to have planar surface contact with said side surfaces of said leaf spring at a mid-portion of said leaf spring for frictional engagement thereof to provide longitudinal positioning of said leaf spring, the outer surface of at least one said wedge insert side wall providing a convexity adapted to engage and substantially fill said channel-widening concavity; and means for clamping said leaf spring in said clamp base.

4,519,591

NON-METALLIC LEAF SPRING STRUCTURE

John W. Bush, 50740 Jefferson, New Baltimore, Mich. 48047, and Peter C. Bertelson, 30325 Ponds View Dr., Franklin, Mich. 48025

Filed Aug. 20, 1982, Ser. No. 410,171
Int. Cl.³ F16F *1/18*
U.S. Cl. 267—148 **11 Claims**



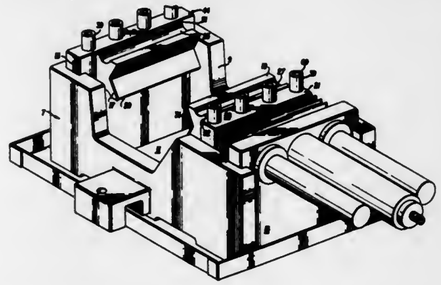
1. A leaf spring having a pair of identical elongated body members constructed of continuous strands in a matrix of polymerized plastic resin, each said body member varying in thickness and width in opposite directions from a midportion substantially midway of its length, each said body member having its greatest thickness and its minimum width at said midportion and diminishing in thickness and increasing in width toward opposite ends, each said body member having at least one straight side edge and a constant cross-sectional area throughout the remaining portion of said body member, said pair of identical body members being arranged with the straight side edge of each body member facing in opposite directions and disposed parallel to each other to form a spring having a uniform width throughout its length.

4,519,592

DEVICE FOR HOLDING FORMATION CORES FOR BORING

Gordon A. Russell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,623
Int. Cl.³ E21C *11/00*
U.S. Cl. 269—25 **14 Claims**



1. A device for holding objects for boring comprising:

a first vise jaw having an object holding face;

a second vise jaw having an object holding face;

first means for supporting said first vise jaw so that it is rotatable about a pivot axis thereof passing through its object holding face;

second means for supporting said second vise jaw so that it is rotatable about a pivot axis thereof passing through its object holding face;

means for respectively holding said first and second jaws in predetermined rotatable positions thereof;

said first and second supporting means each comprising a vise jaw support element, and said holding means comprises, for each vise jaw, at least one projection arranged radially of a respective vise jaw rotation axis and on one of said support element and its associated vise jaw and a plurality of bores arranged annularly and radially of said rotation axis and provided at the other of said support element and associated vise jaw, said bores engaging with said projection at different rotatable positions of said associated vise jaw to hold it at said predetermined rotatable positions, and means for respectively biasing each of said vise jaws to its respective support element, each said vise jaw being manually separable from a respective support element against said biasing means to disengage an associated projection from said bores and permit rotation of the vise jaw about its respective pivot axis; and

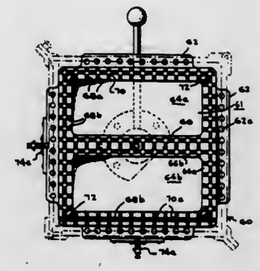
means for reciprocally moving at least one of said first and second supporting means to adjust the relative distance between said first and second vise jaws.

4,519,593

GRID ASSEMBLY FIXTURE, RETENTION STRAP

Richard M. Kobuck, Delmont, and Ralph W. Kalkbrenner, Irwin, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,198
Int. Cl.³ E04G *17/00*
U.S. Cl. 269—40 **13 Claims**



1. A grid assembly fixture for use in assembling mating, perpendicular inner straps and outer straps into a grid assembly comprising:

(a) a generally flat plate;

(b) first and second sets of spaced parallel grooves in a surface of said plate, said grooves of said sets being at right angles to each other, the bottom of said grooves lying in a common plane, and said grooves of said sets intersecting; and

(c) retention strap means for extending about the periphery of a grid assembled on said grid assembly fixture, with said retention strap means comprising first and second pairs of bars, the bars of each pair comprising hinge means for hingedly connecting the bars of each pair, with each said bar having a pair of end posts and a connecting cross member extending between them, and with said end posts having openings therethrough located above and below the connecting cross member.

4,519,594

FORMER FOR A FOLDER IN A WEB-FED ROTARY PRINTING PRESS

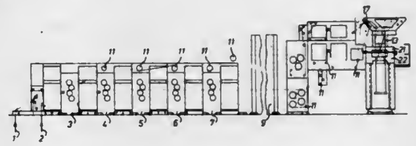
Otto T. Weschenfelder, and Günter K. Schmitt, both of Würzburg, Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany

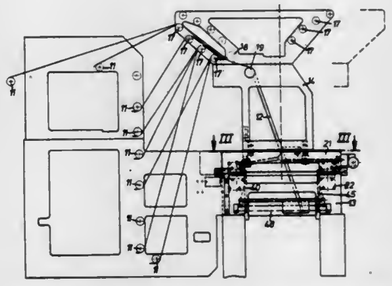
Filed Mar. 19, 1984, Ser. No. 591,081
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310746
Int. Cl.³ B41F *13/56*
U.S. Cl. 270—20.1 **4 Claims**

1. A former assembly for a folder in a web-fed rotary printing press, said former assembly comprising:

a pair of spaced side frames rotatably supported for rotation along a path about a generally vertical axis above a group of folder cylinders;

former means supported between said spaced side frames; and





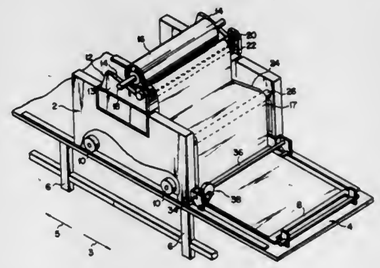
locking means for securing said spaced side frames at spaced points along said path of rotation.

4,519,595

APPARATUS FOR UNWINDING FABRIC FROM A ROLL

Shoichi Adachi, Oosaka, Japan, assignor to N.C.A. Co., Ltd., Oosaka, Japan

Filed Jul. 10, 1984, Ser. No. 629,514
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 **17 Claims**



1. An apparatus for unwinding a roll of a fabric taken up on a shaft which comprises:

a rectangular work table;

a travelling body mounted on the work table to be moved lengthwise back and forth;

a support table which is built on the travelling body and can be swung about an axis substantially perpendicular to the work table and which supports a fabric roll in such a manner that it can be rotated about its axis;

an unwinding roll rotatably supported on the support table so as to be contacted with the fabric roll; and

feed means for forwarding the fabric unwound from its roll by means of the unwinding roll to the work table lying ahead of the travelling body, and

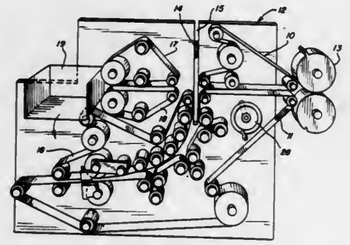
wherein, when the travelling body runs backward and the unwinding roll is rotated, the fabric is unfurled from its roll, the feed means forwards the unwound fabric to the work table, and, when the support table is swung, the fabric is conveyed to the work table in such a manner that the front and back sides of the fabric are alternately kept upward.

4,519,596

METHOD AND APPARATUS FOR FOLDING DIAPERS WITH SELECTIVE MOVEMENT OF ORBIT OF TUCKER BALDE

Gary E. Johnson, and Andrew M. Van Egeren, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Jul. 13, 1984, Ser. No. 630,647
Int. Cl.³ B41L *43/00*
U.S. Cl. 270—32 **14 Claims**



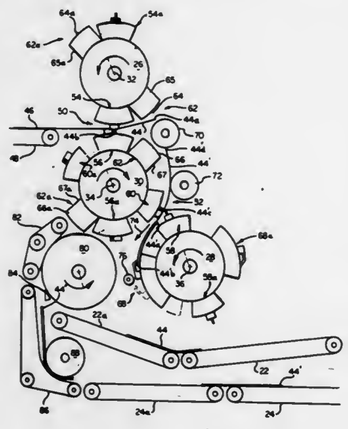
1. A method for operating a diaper-producing machine comprising advancing a series of unfolded diapers along a horizontal path, orbiting a tucker blade for each diaper through said horizontal path to fold the diaper and deliver the now-folded diaper to a vertical path, and displacing the orbit of said tucker blade upwardly out of said horizontal path whenever a defective diaper appears in said series.

4,519,597

FOLDING APPARATUS WITH COMPOUND TUCKER BLADE MOTION

Ronald F. DeSanto, Palos Hills, Ill., assignor to The Lehigh Press, Inc., Pennsauken, N.J.

Filed May 10, 1984, Ser. No. 608,950
Int. Cl.³ B41L *31/08*
U.S. Cl. 270—42 **16 Claims**



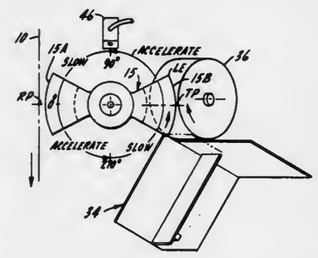
1. A folding apparatus for separating a web into individual signatures and producing two folds in each signature, comprising: an upper cylinder, a lower cylinder and an intermediate cylinder located between the upper and lower cylinders, each said cylinder being rotatable about an axis; the axes of said upper and said intermediate cylinders being parallel and spaced apart to define a given plane and the axis of said lower cylinder being parallel to the axes of the first and intermediate cylinders and offset from said given plane; means for rotating said upper and lower cylinders in the same direction and said intermediate cylinder in the opposite direction; first and second folding means for producing said two folds in each said signature; said first folding means comprising first tucker means carried on said upper cylinder and cooperating first jaw means carried on said intermediate cylinder; said second folding means comprising second tucker means carried on said lower cylinder and cooperating second jaw means carried on said intermediate cylinder; and means for cutting the web to produce the individual signatures.

4,519,598

SIGNATURE GATHERING MACHINE WITH SEGMENT WHEEL CALIBRATED TO MAIN DRIVE SHAFT

William B. McCain, Hinsdale, and Elmer Bewersdorf, Downers Grove, both of Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Filed Apr. 2, 1984, Ser. No. 596,233
Int. Cl.³ B42B *2/00*
U.S. Cl. 270—53 **5 Claims**



1. In a cyclically operable machine for gathering signatures fed by pocket feeders from individual supply pockets to a signature gatherer moving past the pockets at a predetermined lineal speed per machine cycle, in which separate insert sheets or the like delivered from an insert magazine are to be gathered individually with successive signatures, and in which each insert sheet so delivered is captured by a wheel rotated by an upright shaft on an axis at one side of the gatherer, is next moved by the wheel past a glue dabber to receive a spot of glue for adherence to the signature and finally is presented by the wheel for release to and adherence to a signature being advanced by the gatherer:

a main drive shaft for driving the gatherer at a predetermined lineal speed;

a second drive shaft and means for driving the second drive shaft from the main drive shaft;

said second drive shaft having a drive arm fixed thereto to rotate therewith;

a driven shaft immediately adjacent said second drive shaft and having its axis of rotation parallel to and offset from the second drive shaft;

said driven shaft having a driven arm connected thereto and said driven arm supporting one end of a drive pin, which drive pin has the opposite end disposed freely in a slot presented by said drive arm so that as the latter is rotated from 0° through 180° the pin traverses the slot in one direction and traverses the slot in the opposite direction as the drive arm rotates from 180° to 360°;

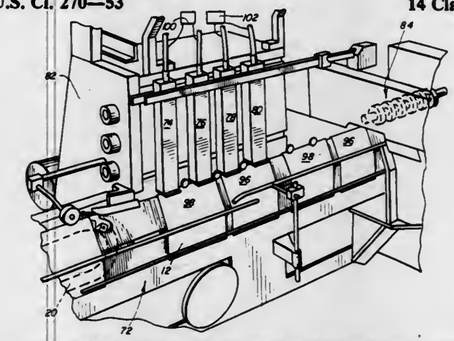
and a drive connection from said driven shaft to said upright shaft, the offset between the drive shaft and driven shaft and the effective length of the driven arm being selected to calibrate the lineal speed of the wheel to substantially that of the gatherer at the time of release

4,519,599

METHOD AND APPARATUS FOR TANDEM STITCHING OF BOOKS IN A BINDERY LINE

Theodore W. Mayer, Chicago, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed May 11, 1984, Ser. No. 610,657
Int. Cl.³ B42B *1/02*
U.S. Cl. 270—53 **14 Claims**



1. In apparatus for gathering and saddle stitching printed signatures each of which has a closed side, a head end and a tail end, to form books consisting of said signatures, said apparatus including a line of signature feeding stations, each of said stations having a signature supply hopper and means for feeding signatures seriatim from said supply hopper, and there being a cover means feeding station at a downstream end of said line, an endless saddle-type gathering conveyor moving in front of said feeding stations, said conveyor having signature carrying segments each of which gathers signatures fed successively from selected ones of said feeding stations to straddle the carrying segments in overlying relationship with their closed sides up and thus form unbound books each of which includes cover means and each said carrying segment having a pusher lug to bear against the tail ends of signatures in a forming unbound book, and a saddle stitcher that has stitcher head means and shuttle conveyor means to receive the unbound books and deliver them stepwise to and then through the stitcher head means, the improvement comprising, in combination:

the shuttle conveyor means includes a plurality of sets of gripper means to grip two successive unbound books for handling as a tandem set as they leave the gathering conveyor and move said unbound books in said tandem set to the stitcher head means simultaneously;

the stitcher head means has two sets of stitcher heads to simultaneously bind both books of a tandem set;

and the shuttle conveyor means is adapted to simultaneously remove a tandem set of bound books from the stitcher head means and deliver the next succeeding tandem set of unbound books to the stitcher head means.

4,519,600

CARD FEEDING, TRANSFER AND OUTPUT APPARATUS FOR AN AUTOMATIC EMBOSSING SYSTEM

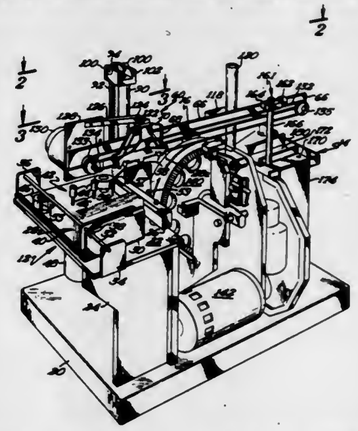
Dennis J. Warwick, Richfield; Richard C. Nubson, Eden Prairie, and Ronald B. Howes, Jr., Minneapolis, all of Minn., assignors to Data Card Corporation, Minnetonka, Minn.

Filed Sep. 21, 1983, Ser. No. 534,350
Int. Cl.³ B65H *5/22*
U.S. Cl. 271—4 **13 Claims**

1. Apparatus for receiving a stack of cards to be embossed and for individually feeding cards into a card transfer path of an embossing mechanism in an automatic embossing system, each of the cards in the stack of cards being vertically aligned and resting on an edge thereof, the stack of cards having a top, a bottom, first and second ends and first and second sides, said apparatus comprising:

(a) an input hopper for receiving a stack of cards to be embossed, said input hopper comprising:

1. a hopper plate supporting the bottom of the card stack;
2. a guide rail mounted on the hopper plate and engaging the first side of the card stack;
3. a card picker cam mounted for limited rotational movement on the hopper plate and positioned adjacent the first end of the card stack, the picker cam constructed and arranged with a projecting lobe portion for engaging the edge of the card and sliding the card across the end of the stack into the transfer path;
4. a backup plate slidably mounted on the hopper plate engaging the second end of the card stack and including



means for urging the stack of cards into engagement with the card picker cam;

(b) card guide means mounted adjacent the hopper plate and aligned with the transfer path for receiving a card stripped from the card stack in the input hopper and supporting the card in vertical alignment with the top edge thereof exposed;

(c) carriage means constructed and arranged for engaging the top edge of a card;

(d) first positioning means for moving the carriage means horizontally along the card transfer path between the card guide means and the embossing apparatus; and

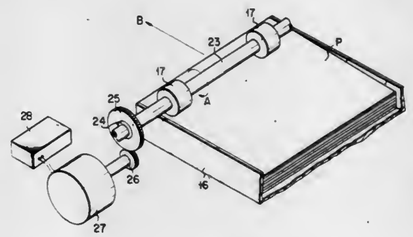
(e) second positioning means for moving the carriage means vertically to engage a card in the card guide means.

4,519,601

SHEET FEEDING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 2, 1982, Ser. No. 446,415
Int. Cl.³ B65H *3/06*
U.S. Cl. 271—114 **4 Claims**



1. A sheet feeding apparatus comprising:

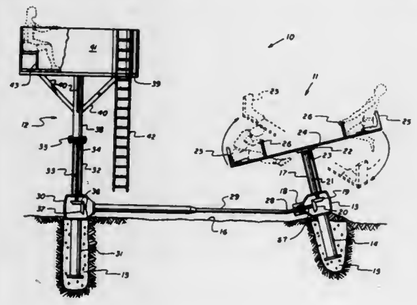
transfer roller means for conveying the sheet by utilizing rotation frictional force;

one-way clutch means, connected to said transfer roller means, for rotating said transfer roller means intermittently in one direction;

step motor means for rotating said transfer roller means via said one-way clutch means thereby conveying the sheet along a given path; and

motor control means for gradually decelerating said step motor means at a rate to cause a rotation angle of said transfer roller means during deceleration to be greater than an overdrive rotation angle determined by inherent inertia of said transfer roller means and said one-way clutch means.

4,519,602
PLAYGROUND CARROUSEL
Donald Sutherland, 6510 Micollet, Houston, Tex. 77016
Filed Jul. 11, 1983, Ser. No. 512,346
Int. Cl.³ A63G *1/12*
U.S. Cl. 272—33 R **13 Claims**



1. An amusement carrousel apparatus, comprising

a carrousel supporting structure extending from the ground at a small angle from the vertical for supporting a carrousel in an inclined position,

an occupant actuated and occupant supporting carrousel having a pivot supported angularly for rotary movement by said carrousel supporting structure,

an axle fixed to the carrousel at the pivot thereof for rotary movement with said carrousel and journaled in the carrousel supporting structure,

a first gear means mounted in said carrousel supporting structure and connecting to said axle,

a driving shaft extending horizontally from and operatively connected to said gear means,

a tub supporting structure extending vertically from the ground and having a supporting platform spaced from the carrousel supporting structure for supporting a tub thereon,

an axle journaled in said tub supporting structure for rotary movement with said supporting platform,

a second gear means mounted in said tub supporting structure and operatively connecting said axle to the other end of said driving shaft, and

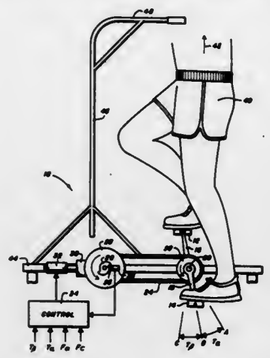
a hollow cylindrical tub secured atop said supporting platform,

whereby, rotation of said carrousel by the occupants thereof shifting their weights is effective to transmit rotary motion to rotate said tub.

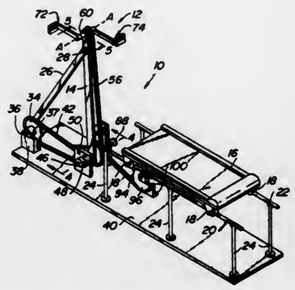
4,519,603
EXERCISE DEVICE
Richard J. DeCloux, 1485 Belmont St., Manchester, N.H. 03104
Filed Dec. 2, 1982, Ser. No. 446,479
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—73 **11 Claims**

1. A stationary leg-operated, pedal-driven, rotary pedal motion, stand-up, body-lifting exercising device having brake means including

means for controlling said brake means for applying a first braking force, and for cyclically applying an increased braking force twice during each pedalling cycle to simulate uphill stand-up pedalling of a bicycle such that an increased resistance is produced twice during each pedalling cycle, whereby the user with one foot on the lower pedal can move himself and can stand up onto the upper pedal aided by the increased braking force as in uphill pedalling.



4,519,604
EXERCISE MACHINE
Raymond Arzounian, 4332 Howland St., Philadelphia, Pa. 19124
Filed Jul. 29, 1983, Ser. No. 518,492
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—73 **11 Claims**



1. An exercise machine, comprising:

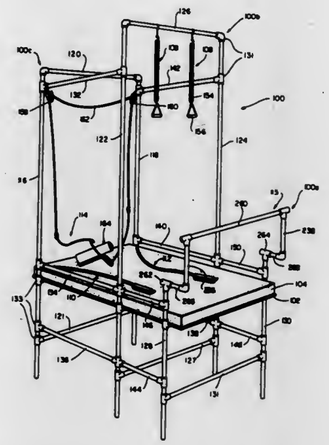
pedal means mounted for rotation about a longitudinal axis,

crib means for supporting a user and mounted for oscillating motion along a linear path,

means coupled to said pedal means for causing oscillating movement of said pedal assembly along a prescribed arc in response to rotation of said pedal assembly about said longitudinal axis, and

means for causing oscillating movement of said crib means along said linear path in synchronism with said oscillating movement of said pedal assembly along said prescribed arc.

4,519,605
COMBINATION EXERCISE AND MASSAGE APPARATUS
Ragnvald G. Leland, P.O. Box 4174, Palm Springs, Calif. 92263
Filed Oct. 19, 1982, Ser. No. 435,329
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—116 **10 Claims**



1. Apparatus comprising:

platform means for supporting a person; massage means for engaging the body of a user, said massage means comprising an elongate flexible element and a massage element;

first arm means extending upwardly from a first end of said platform means for securing said massage means, whereby a person standing adjacent said platform means may grasp and pull alternately in a to-and-fro movement said elongate element to cause said massage element to massage a user's body; and

removable gate means extending upwardly from a second end of said platform for slidably receiving said flexible element, whereby a person sitting upon said platform means and facing said gate means may, with the elongate flexible element passing over said gate means, grasp said elongate flexible element and alternately pull in a to-and-fro movement to cause massaging movement of said massage element on a user's body.

4,519,606
SPELLING GAME
Guy W. Lussiez, P.O. Box 110, Rte. 3, Golden, Colo. 80401
Filed Jul. 26, 1982, Ser. No. 401,619
Int. Cl.³ A63F *9/18*
U.S. Cl. 273—1 R **4 Claims**

1. A method of playing a spelling game for a plurality players comprising the steps of

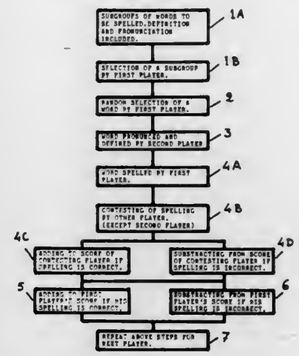
(A) Providing a group of words to be spelled, each word having associated therewith its definition and pronunciation,

(B) Randomly selecting a word from said group by a first player of said plurality,

(C) Giving the pronunciation and definition of said selected word to said first player by a second player,

(D) Spelling said word by said first player,

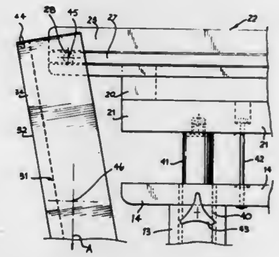
(E) Adding to a score for said first player if the spelling is correct,



(F) Substracting from a score for said first player if the spelling is incorrect, and

(G) Repeating the steps for each player.

4,519,607
GAME TABLE
Alfred G. Schill, Noble Park, Australia, assignor to Prestige Billiards Pty. Ltd., Victoria, Australia
Filed Jul. 21, 1982, Ser. No. 400,270
Claims priority, application Australia, Mar. 12, 1982, 81373/82
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—5 B **4 Claims**



1. A games table comprising:

a first table top for use as a game playing surface;

leg support means for supporting said first table top in an essentially horizontal position at a first predetermined height above ground level;

elevation means between said leg support means and said first table top to move said first table top to a second predetermined position, and fastening means to secure said first table top at said first predetermined position or at said second predetermined position;

at least two second table top elements which can be moved to form a second table top;

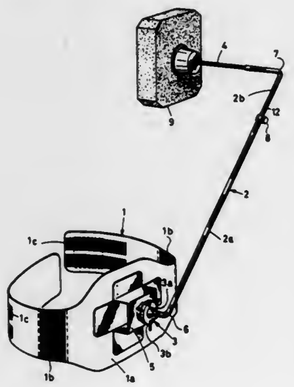
upright wall means extending from said first table top for supporting said second table top elements in a co-extensive arrangement forming said second table top above said first table top; and

means for providing rolled and pivoted movement of said second table top elements between either (i) positions essentially below said first table top, or (ii) said co-extensive arrangement forming said second table top, said means for providing rolled and pivoted movement including,

(a) channel guide tracks and rollers,

(b) each channel guide track having one roller arranged with respect thereto for rolling movement of said roller inside and along said channel guide track,
(c) said rollers being mounted either from said upright wall means or from said second table top elements, and said channel guide tracks being mounted from the other of said upright wall means or said second table top elements, and
(d) pivot axes, for each of said second table top elements, defined by said rollers so that each of said second table top elements can rotate to said positions essentially below said first table top, and the centers of gravity for each of said second table top elements being such that the top surfaces of each of said second table top elements are brought to non-vertical positions under said first table top when said second table top elements are in said positions essentially below said first table top.

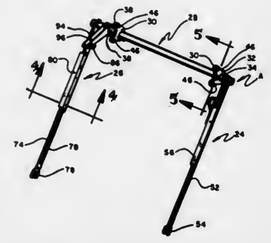
4,519,608
TENNIS RACKET STROKE TRAINING DEVICE
Pierre E. Gilly, 13 rue des Abondances, Boulogne (Hauts de Seine), France
Filed Sep. 3, 1982, Ser. No. 414,914
Claims priority, application France, Sep. 29, 1981, 81 18332
Int. Cl.³ A63B *69/38*
U.S. Cl. 273—29 A **7 Claims**



1. A training device for a tennis player, comprising a harness having a dorsal part and being adapted to be worn on the torso of the player, a telescopic rod having means at one end constituting an abstacle for the player's racket and being adjustably attached at its other end to the center of said dorsal part by a ball and socket joint, so that the obstacle means may be selectively arranged in a position close to that which the racket is required to assume at one end of its travel during the execution of a predetermined stroke.

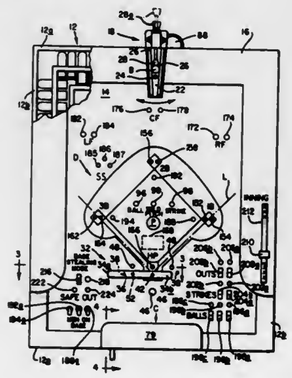
4,519,609
MODULAR RAKE SHAFT ASSEMBLY
Richard D. Lenhart, Arvada, and Roger D. Lindblad, Westminster, both of Colo., assignors to Zot Manufacturing Company, Arvada, Colo.
Filed Jan. 13, 1984, Ser. No. 570,640
Int. Cl.³ A63D *5/08*
U.S. Cl. 273—54 A **15 Claims**

1. A modular rake shaft assembly for an automatic bowling pin setting machine, said modular assembly comprising:
a pair of spaced parallel elongated rake arms, each arm being tubular and having a first end and a second end, a yoke connected to said first end of each arm for pivotal attachment to a rake board and a pivot means mounted on said second end of each arm along an axis transverse to said arms;
a removable shaft extending between said pivot means;
a flange plate at each end of said shaft;



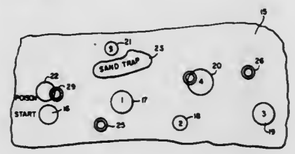
a flange plate mounted on each of said pivot means and corresponding in shape and size to said flange plates on said shaft; and
fastening means connecting said respective flange plates.

4,519,610
SIMULATED BASEBALL GAME
Leo W. Kallio, 71 Windsor St., Worcester, Mass. 01605
Filed Aug. 12, 1983, Ser. No. 522,481
Int. Cl.³ A63F *7/20, 7/30, 7/36*
U.S. Cl. 273—89 **4 Claims**



1. A simulated baseball game comprising:
A. a housing including a flat upper wall and a lower wall;
B. indicia on said upper wall representing a baseball field including the usual diamond and outfield locations;
C. ball pitching means mounted to said housing for pitching a small ball across said upper wall toward the home plate area thereon;
D. batting means movably mounted to said upper wall adjacent the home plate area for swinging at a pitched ball, said batting means including:
(1) a miniature bat,
(2) a pivot pin projecting at right angles from a location adjacent one end of said bat,
(3) first and second pin-receiving sockets formed in said upper wall at locations spaced on opposite sides of home plate so that the bat can be swung from left- and right-handed positions across home plate by inserting the pivot pin in one or the other of said sockets, and
(4) "broken wrist" signalling means for signalling when said bat has been swung through a selected minimum angle; and
E. a first set of pockets formed side by side in said upper wall behind home plate for receiving a pitched ball that is not hit by the batting means, at least one said pocket located directly behind home plate being a strike-designating pocket, and pockets on opposite sides of said strike-designating pocket being ball-designating pockets;
F. a second set of ball-receiving pockets formed in said upper wall around the perimeter of said outfield, different ones of said pockets in the various outfield sectors being designated for the usual hit and run situations that occur at the fielding positions within those sectors during an actual game of baseball; and
G. means for signalling when a pitched ball is received in one or another of said pockets.

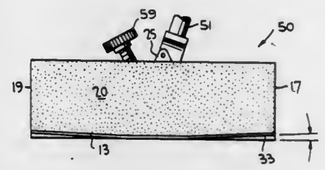
4,519,611
SLIDING RING GAME
Ned R. Sands, 2230 Holly Ave., Escondido, Calif. 92027
Filed Oct. 14, 1983, Ser. No. 542,141
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—126 R **1 Claim**





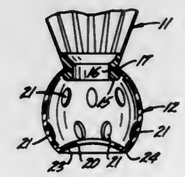
1. A game set for playing on a flat planar playing field surface, comprising in combination,
a set of rings each defining a central see-through aperture and carrying indicia differentiating certain of said rings from other rings and signifying individual movable playing members and presenting a surface for sliding over said planar surface in a direction and length dependent upon a player's skill when the ring is impacted by a blow delivered by a player parallel to the surface,
at least one mallet constructed to strike said blow when manually swung by a player's arm,
and a set of removable thin markers having indicia thereon designating a course sequence from marker to marker and each marker designating a scoring area of a size at least that of the ring aperture for visual exposure thereby when the rings are positioned thereover, said markers being constructed for removably adhering to the playing field surface in a plurality of positions designating a playing course and having a surface structure permitting the rings to slide thereover when in place on said surface without substantial interference for positioning at will on said surface in response to mallet strikes with the marker positions defining a plurality of scoring stations for dispersal throughout the playing course over which the rings are played by sequentially striking the rings toward scoring areas defined by the individual markers and made visible within the ring aperture when positioned in the scoring zone on the markers positioned on the surface, and the areas of said geometric markers in the set include different markers with smaller and larger scoring areas thereon making it more and less difficult to place a ring in some scoring areas.

4,519,612
GOLF PUTTER
Thomas K. Tsao, 441 Discovery Rd., Virginia Beach, Va. 23451
Filed May 17, 1983, Ser. No. 495,502
Int. Cl.³ A63B *69/36, 53/04*
U.S. Cl. 273—163 R **17 Claims**



12. A golf putter comprising a club head having a bottom surface intersecting a forward-facing putting face to define a bottom edge, said club head having a length dimension defined between a proximal end and a distal end, said bottom surface having a lowermost flat portion with different lengths along said bottom surface, the shortest of said lengths being disposed at a straight intermediate segment of said bottom edge, wherein said bottom edge includes first and second straight end segments which are coplanar with and flank said intermediate segment, said end segments each sloping upward and away from said intermediate segment in respective opposite lengthwise directions along said club head.

4,519,613
BADMINTON SHUTTLECOCK
Raymond G. Martin, 8160 W. State Street Rd., Winnebago, Ill.
Filed Feb. 27, 1984, Ser. No. 583,588
Int. Cl.³ A63B *67/18*
U.S. Cl. 273—417 **2 Claims**



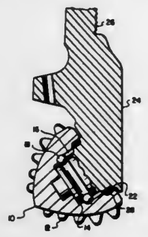
1. A badminton shuttlecock comprising a generally frustoconical skirt and a striking cap having an inner end attached to the smaller end of said skirt, said striking cap comprising a hollow member made of plastic, said striking cap being shaped generally as a sphere with truncated inner and outer ends, the outer end portion of said striking cap being defined by an inwardly tapered generally frustoconical depressed surface, an opening formed through the center of said surface and communicating with the interior of said cap, and a series of holes formed through the spherical portion of said cap to permit air to flow through said cap.

4,519,614
GENERALLY CYLINDRICAL ROTARY DRILL FACE SEAL HAVING IMPROVED RESISTANCE TO RADIAL DISTORTION
Lloyd L. Garner, Fort Worth, Tex., assignor to Rock Bit Industries U.S.A., Inc., Fort Worth, Tex.
Filed Apr. 9, 1984, Ser. No. 598,229
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—84 **14 Claims**

1. A rotary seal for utilization with an earth boring drill bit having a drill bit body with a shaft rigidly mounted on a face

surface thereof and a rolling cutter having a face surface rotatably mounted on said shaft, said seal comprising:

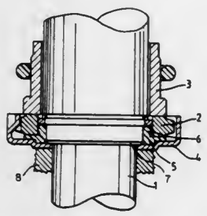
a generally cylindrical elastomeric seal having generally parallel sides and rounded ends and a longitudinal dimension which is greater than the thickness of said seal, said generally cylindrical elastomeric seal having a first rounded end in sealing and sliding engagement with said face surface of said drill bit body and a second rounded



end in sealing and sliding engagement with said face surface of said rolling cutter; and

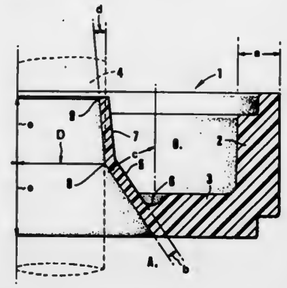
a rigid cylindrical ring entirely disposed within said generally cylindrical elastomeric seal for minimizing radial distortion of said generally cylindrical elastomeric seal in response to axial compression thereof wherein said generally cylindrical elastomeric seal and said shaft will remain separated despite compression of said generally cylindrical elastomeric seal.

4,519,615
SHAFT SEAL DEVICE
Bengt Björklund, Handen, Sweden, assignor to AB Grindex, Handen, Sweden
Filed Apr. 11, 1984, Ser. No. 599,094
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—92 **2 Claims**



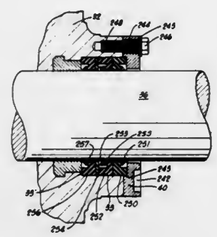
1. A mechanical seal device for a rotating shaft comprising:
stationary seal means mounted on the shaft;
rotating seal means sealingly engaging said stationary seal means;
a cup-shaped formation disposed in a predetermined axial position on the shaft and mounted for rotation therewith, said formation surrounding said rotating seal means and positively engaging the same for joint rotation therewith; and
a flexible element positioned in said cup between the shaft and said rotatable seal means to axially and radially position said rotatable seal means.

4,519,616
SHAFT SEAL
David E. Johnston, Gosforth, England, assignor to George Angus & Company Limited, Newcastle, England
Filed Oct. 21, 1983, Ser. No. 544,248
Claims priority, application United Kingdom, Oct. 25, 1982, 8230453
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—152 **6 Claims**



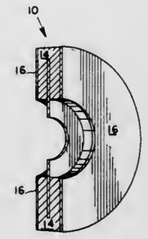
1. A shaft seal consisting only of a ring moulded in one piece from a rigid plastics material and having a relatively thick holding portion, comprising a peripheral wall and a transverse radial wall, and a relatively thin sealing head, comprising a frusto-conical leg, leading from the radial wall with an abrupt reduction in thickness in the ratio of about 4:1 at the junction with the radial wall, forming a hinge portion to enable the leg to flex, and a sealing bush comprising a frusto-conical extension of the leg but of smaller conical angle so that, for a given interference fit against a cylindrical sealed surface, the bush lies in use almost parallel to the sealed surface.

4,519,617
CUSHIONING UNIT SHAFT SEAL ARRANGEMENT
William S. Butler, Burleson, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Sep. 19, 1983, Ser. No. 533,839
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—153 **9 Claims**



1. A piston shaft seal assembly for an end-of-car hydraulic cushioning unit having a housing and a piston shaft extending therefrom, said piston shaft seal assembly comprising:
an annular seal retainer; a first continuous substantially elastomeric annular oil scraper seal having a scraper lip thereon sealingly engaging said piston shaft and extending in one direction therealong, the first annular oil scraper seal having a portion thereof abutting a portion of the annular seal retainer;
a reinforced continuous substantially elastomeric annular oil scraper seal having a scraper lip thereon sealingly engaging said piston shaft and extending in another direction therealong, the scraper lip including an annular coil spring biasing means to bias the scraper lip of the seal into sealing engagement with said piston shaft, the reinforced annular oil scraper seal having a portion thereof abutting a portion of the first annular oil scraper seal; and
a second continuous substantially elastomeric annular oil scraper seal having a scraper lip thereon sealingly said piston shaft and extending in said another direction therealong.

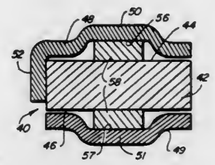
4,519,618
MULTI-CHARACTERISTICS SEAL MEMBER FOR TESTING UNCAPPED CONTAINER MEANS
Walter C. Klingel, Sr., 4773 58th Ave. N., St. Petersburg, Fla. 33714
Continuation of Ser. No. 530,117, Sep. 7, 1983, abandoned, which is a continuation of Ser. No. 310,908, Oct. 13, 1981, abandoned. This application Jun. 11, 1984, Ser. No. 619,725
Int. Cl.³ F16J *15/10*; G01M *3/04*
U.S. Cl. 277—228 **16 Claims**



1. A static seal member of the type designed to test uncapped container means for structural imperfections known as microsplits, comprising, in combination:
a first, flat skin portion having a first predetermined high hardness rating,
a second, flat skin portion having a first predetermined high hardness rating,
a core portion having a predetermined low hardness rating,
said first and second flat skin portions disposed in sandwiching relation to said core portion and formed integrally therewith,
said first and second flat skin portions having a thickness substantially less than the thickness of said core portion,
said first and second flat skin portions having a diameter greater than the diameter of a container to be tested for leaks,
said first or second flat skin portions adapted to be disposed in abutting relation to the open end of an uncapped container to be tested for leaks so that gaseous fluid attempting to escape said container will be constrained, by said first or second flat skin portions, to accomplish said escape through a defect in said container adjacent its open end.

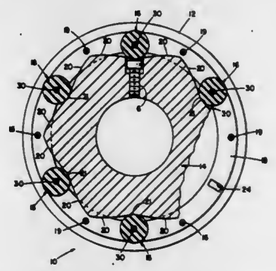
4,519,619
HIGH TEMPERATURE RESISTANT GASKET HAVING IMPROVED RECOVERY CHARACTERISTICS
William D. Doyle, Elmhurst, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.
Filed Sep. 25, 1984, Ser. No. 654,229
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—235 B **15 Claims**

1. A gasket of improved compressibility and recovery characteristics comprising
a central annular core having upper and lower generally flat face portions,
a first annular sheet member having an upwardly projecting annular embossment defining a concave recess facing said upper flat face portion,
a second annular sheet member having a downwardly projecting annular embossment defining a concave recess facing said lower flat face portion,
means securing said first and second sheet members to said core, and



high temperature resistant filler material of relatively high recovery characteristics in each of said recesses and trapped in said recesses in confronting relation to said respective flat face portions.

4,519,620
CORE CHUCK WITH RESILIENT ROLLERS
Robert D. Keith, Bridgewater, Mass., assignor to Double E Company Inc., Brockton, Mass.
Filed Mar. 16, 1983, Ser. No. 475,900
Int. Cl.³ B23B *31/40*
U.S. Cl. 279—2 R **16 Claims**



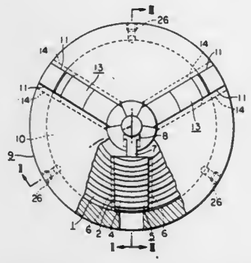
1. A torque-transmitting chuck comprising
an interior member having a longitudinal axis and a plurality of exterior circumferentially-spaced, longitudinally-extending camming surfaces, and,
a plurality of generally axially-extending, circular in cross-section rollers each of which engages one of said camming surfaces,
said rollers being arranged to engage the interior of a hollow core into which said chuck may be inserted and to move radially outwardly relative to the interior member and into engagement with the interior of said core in response to movement of said rollers circumferentially relative to said interior member,
said chuck being characterized in that each of said rollers includes a center rod extending axially the length of said roller and an axially-extending annular layer of elastomeric material circumferentially surrounding said rod and defining the surface of said roller that engages a said camming surface and is arranged to engage the interior of said core,
said layer having a hardness of not less than in the range of about 30 to about 90 durometer and a radial thickness of not less than about $\frac{1}{8}$ inch.

4,519,621

CHUCK FOR A MACHINE TOOL

Norifumi Okamoto, Fukui, Japan, assignor to Okamoto Seiki Kogyo Kabushiki Kaisha, Fukui, Japan

Filed Dec. 7, 1982, Ser. No. 447,641
Claims priority, application Japan, Dec. 12, 1981, 56-200593
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—116 **8 Claims**



1. A chuck for a machine tool comprising a scroll board of generally a cylindrical main body having a concentric bore therein with a scroll groove being formed on one end surface thereof and having a number of radial slots formed through said cylindrical main body so as to open in said end surface, a corresponding number of slider blocks each radially movably received within each of said radial slots and having a number of arcuate grooves on the exposed surface so as to be in communication with said scroll groove of said scroll board, each said slider block being provided on the radially inner end with a radial elongation which is formed on the radial inner end with an engaging element, a cup-shaped cover board having a cylindrical body and an annular cover plate closing one of open ends thereof so as to rotatively receive said scroll board within the space defined by said cylindrical body and said cover plate, whereby said annular cover plate confronts said scroll groove of said scroll board, said annular cover plate being formed with a corresponding number of radial slots therethrough, a corresponding number of claws each radially movably received within said slots, respectively, of said annular cover plate of said cover board and provided on the under surface with a number of arcuate projections so as to be in mesh with said scroll groove of scroll board, and a manipulating member having generally a cylindrical form and axially movably received within said bore of said scroll board and adapted to be moved by a suitable actuating means, said manipulating member being formed on its outer periphery with a corresponding number of engaging means each adapted to cooperate with said each of engaging elements of said slider blocks so as to move them radially when said manipulating member is moved axially.

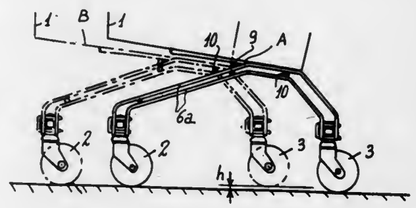
4,519,622

CARRIER TROLLEY, ESPECIALLY FOR CUSTOMERS OF SELF-SERVICE STORES

Marc Levy-Joseph, Strasbourg, France, assignor to Ateliers Reunis, Schiltigheim, France

Filed Dec. 1, 1983, Ser. No. 556,903
Claims priority, application France, Dec. 2, 1982, 82 20184
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—33.99 S **3 Claims**

1. A wheeled carrier trolley, especially for customers of self-service stores, comprising a merchandise carrier basket supported by a base frame and located at a predetermined height with respect to the wheels, wherein said base frame is constituted by two elbowed side members of wire joined together by horizontal cross-members formed including one rear cross-member located near the rear edge of the bottom of said carrier basket, said side members being provided on each side with a top portion which is fixed against the underside of the bottom of the carrier basket, a sloping front portion which is inclined upwardly at an angle within the range of 10 to 20 degrees, a downwardly elbowed front end which carries the front wheels, and a downwardly directed rear portion for carrying the rear wheels, said sloping front portion being capable of nesting beneath the carrier basket of a similar trolley



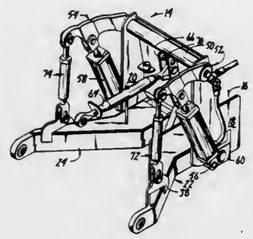
at the time of interengagement of two trolleys in order to slide against the rear cross-member of the base frame of the trolley located in front, thereby causing an upward displacement of the rear end of the front trolley at the end of the nesting movement, the rear wheels of which are lifted off the ground.

4,519,623

TRACTOR FRONT END HITCH

Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.

Filed May 9, 1983, Ser. No. 492,896
Int. Cl.³ A01B *59/043*
U.S. Cl. 280—461 A **25 Claims**



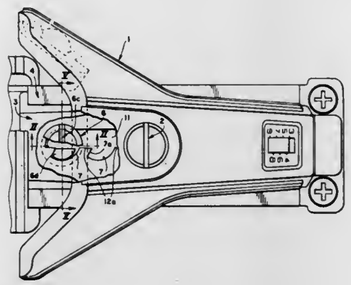
1. A front end hitch for a tractor, comprising,
a main frame means removably secured to the front end of the tractor having upper and lower ends and opposite sides,
a pair of lower lift arms having rearward and forward ends,
said lower lift arms being pivotally secured at their rearward ends to said main frame means at the lower end thereof and extending forwardly therefrom,
a pair of upper lift arms having rearward and forward ends,
said upper lift arms being pivotally secured at their rearward ends to said main frame means and extending forwardly therefrom above said lower lift arms,
a first hydraulic cylinder means pivotally connected at one end to said main frame means at one side thereof and pivotally connected at its other end to one of said upper lift arms,
a second hydraulic cylinder means pivotally connected at one end to said main frame means at the other side thereof and pivotally connected at its other end to the other of said upper lift arms,
a first elongated member having upper and lower ends pivotally connected at its upper end to the forward end of said one upper lift arm and pivotally connected at its lower end to one of said lower lift arms,
a second elongated member having upper and lower ends pivotally connected at its upper end to the forward end of the other upper lift arm and pivotally connected at its lower end to the other lower lift arm,
said lower lift arms comprising an outer tug arm extending forwardly and outwardly from said main frame means, an inner tug arm extending forwardly and outwardly from said main frame means, the rearward ends of said inner and outer tug arms being spaced-apart, the forward end of said inner and outer tug arms being secured together rearwardly of the forward end of said lower lift arm, said tug arms having upper and lower sides, and spaced-apart top and bottom plates secured to and extending between said inner and outer tug arms at the upper and lower sides thereof respectively, and
the forward ends of said lower lift arms being adapted for connection to the implement whereby actuation of said hydraulic cylinder means will cause the implement to be vertically moved with respect to the tractor.

4,519,624

DEVICE FOR ADJUSTING THE LONGITUDINAL POSITION OF A SAFETY BINDING FOR SKI

René Bressand, St-Jorioz, and Pierre Desarmaux, Pringy, both of France, assignors to Salomon S.A., Annecy, France

Filed Dec. 8, 1981, Ser. No. 328,521
Claims priority, application France, Oct. 12, 1980, 80 26213
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—633 **45 Claims**



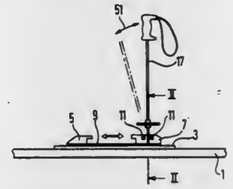
1. A device for adjusting the longitudinal position of a safety binding for a ski, comprising:
(a) a guide adapted to be fixed to said ski;
(b) a base plate adapted to be mounted for longitudinal movement in said guide; and
(c) a locking means for locking said base plate, with respect to said guide, in one of a plurality of predetermined longitudinal positions, said locking means comprising:
(i) a rotatable lock rotatable into a locked position wherein said rotatable lock cooperates with any one of a succession of lock notches spaced apart longitudinally from one another each lock notch comprising an end portion, and wherein said rotatable lock is rotatable into an unlocked position allowing said base plate to be displaced longitudinally in said guide, and wherein said lock is unbiased for movement into said locked position, wherein said lock comprises a substantially cylindrical body mounted to rotate in a housing around a vertical axis, said body having a lower face, wherein said lower face comprises a locking lug adapted to engage said lock notches; and
(ii) two stops for each predetermined longitudinal position of said binding, wherein said first stop comprises said end portion of said lock notch, wherein said first stop prevents rotation of said lock beyond a limiting position when said rotatable lock is in said locked position, and a second stop prevents rotation of said lock beyond a limiting position when said rotatable lock is in said unlocked position.

4,519,625

SKI BINDING

Max Luitz, Blaichach-Bihlerdorf, and Eugen Weiss, Burgberg, both of Fed. Rep. of Germany, assignors to Ess GmbH Skibindungen, Immenstadt, Fed. Rep. of Germany

Filed Apr. 15, 1983, Ser. No. 485,158
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214585
Int. Cl.³ A63C *9/00, 9/22*
U.S. Cl. 280—633 **7 Claims**



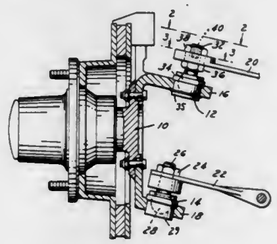
1. Ski binding having a toe unit and a heel unit of which at least one is guided slidably in the lengthwise ski direction upon a mounting attached to the ski and is latchable in several slide positions by means of a latching arrangement having a movable latching bracket portion which resiliently engages an opposing bracket of the mounting, the latching bracket portion capable of being disengaged from the opposing bracket by means of an actuating member which is accessible from outside the mounting, characterized in that the toe unit and the heel unit are connected together into a common assembly slidable upon the mounting attached to the ski lengthwise in the ski direction; that the mounting has at least one insertion aperture accessible from above for the point of a ski pole; that one of the units has spaced above the insertion aperture two bearng surfaces for the ski pole in the form of leg surfaces facing each other and extending transversely to the lengthwise direction of the ski to form a generally U-shaped recess open laterally of the unit when viewed from the top which permit a tilting movement of a ski pole, inserted with its point into the insertion aperture, about an axis parallel to the lengthwise ski direction; and that the actuating member has a bearing surface in the insertion-and/or tilt path of the ski pole which is capable of being displaced transverse to the lengthwise direction of the ski by means of the ski pole.

4,519,626

ADJUSTABLE MOUNTING FOR STEERABLE WHEELS

Richard D. Murphy, Birmingham, Mich., and Marvin N. Sokulsky, Windsor, Canada, assignors to Ford Motor Company, Dearborn, Mich.

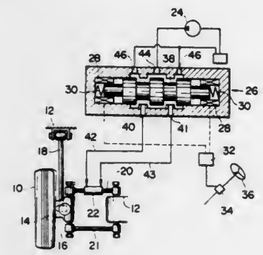
Continuation of Ser. No. 215,473, Dec. 11, 1980, abandoned. This application Apr. 26, 1983, Ser. No. 487,235
Int. Cl.³ B62D *17/00*
U.S. Cl. 280—661 **1 Claim**



1. An adjustable mounting assembly for a steerable vehicle wheel assembly comprising:
(i) a control arm;

(ii) a spindle member on which a wheel is mountable and including a spindle arm;
(iii) a ball joint comprising:
(a) a ball portion;
(b) a socket portion attached to one of said control or spindle arms and receiving said ball portion; and
(c) a plate rigidly secured to said ball portion and having a plurality of studs extending therefrom in a direction opposing said ball portion;
(iv) a plurality of slots in the other of said control or spindle arms with:
(a) said slots having a common longitudinal axis generally parallel to the longitudinal axis of the arm containing said slots; and
(b) said slots receiving said studs extending from said plate, thereby allowing adjustment of the camber of said spindle member as said studs are moved along said longitudinal axis of said slots; and
(v) means for locking said studs at any desired location along said slots.

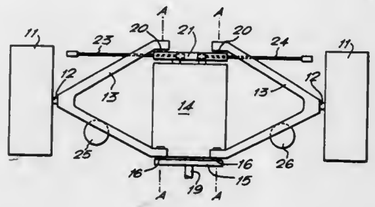
4,519,627
AUTOMATIVE COMPLIANCE STEERING CONTROL SUPENSION
Yasuji Shibahata; Namio Irie, both of Yokohama; Kazuo Ikawa, Tokorozawa, and Yohsuke Akatsu, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 6, 1983, Ser. No. 501,077
Claims priority, application Japan, Jun. 7, 1982, 57-97367
Int. Cl.³ B60G *21/00*; B62D *9/00*
U.S. Cl. 280—701 **12 Claims**



1. In a suspension for a vehicle having a chassis and a road wheel, comprising:
a first link operatively interconnecting said road wheel and said chassis, said first link extending from a location forward of the axis of rotation of said road wheel in a direction essentially toward said axis;
a second link operatively connecting said road wheel to said chassis, said second link extending from a location inboard of said road wheel toward said road wheel; and
a control arrangement associated with said second link for varying the length thereof in response to a sensed parameter.

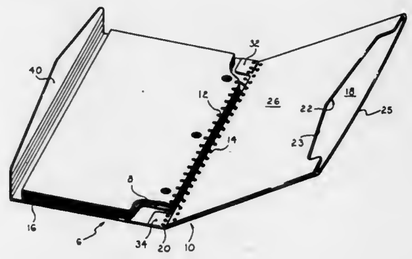
4,519,628
VEHICLE SUSPENSIONS
James N. Randle, Coventry, England, assignor to Austin Rover Group Limited, England
Filed Aug. 19, 1983, Ser. No. 524,568
Claims priority, application United Kingdom, Aug. 21, 1982, 8224126
Int. Cl.³ B60G *3/00*
U.S. Cl. 280—701 **14 Claims**

1. In a suspension for a road wheel of a vheicle:
a generally vertically extending link; 'a pivotal mounting for said link about an axis transverse of the vehicle whereby said link can move pivotally in a longitudinal direction but is constrained against lateral movement, said pivotal mounting including means for attachment to a vehicle body;
a wishbone;
a first inner mounting for said wishbone pivotally connecting said wishbone to said link at a position offset from said transverse axis;
a second inner mounting for said wishbone offset longitudinally from said first inner mounting and providing longitudinal compliance between said wishbone and said vehicle body;



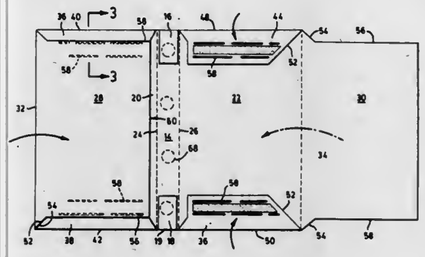
a mounting for said road wheel on an outer end of said wishbone;
said first and second inner mountings providing a longitudinal pivot axis for said wishbone whereby said road wheel is guided for generally vertical suspension movements, said longitudinally spaced inner mountings resisting inadvertent steering effects of the suspension and the compliance associated with the said second inner mounting providing longitudinal compliance between said road wheel and a vehicle body.

4,519,629
SPIRAL BOUND NOTEBOOK AND FOLDER CONSTRUCTION
Edward Podosek, Wilbraham, Mass., assignor to Dennison National Company, Holyoke, Mass.
Filed May 26, 1983, Ser. No. 498,533
Int. Cl.³ B42D *1/04, 3/18*; B42C *7/00*
U.S. Cl. 281—25 A **2 Claims**



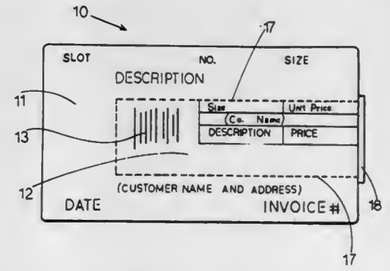
1. Spiral bound notebook comprising a cover formed of a blank of unitary sheet material having a front cover panel and a back cover panel, said cover panels being interconnected at their inner edges by a hinge line, at least one other panel pivotable about a fold line normal to said hinge line into superposed relation over a portion of at least one of said cover panels which is adjacent said hinge, means for securing the edge of said other panel opposite its fold line, a series of closely spaced perforations being formed in alignment along each side of said hinge, a binder wire disposed in helical configuration in said perforations, at least some of said perforations extending through the superposed portion of said one cover panel and said other panel to form a storage pocket in said notebook, the helical wire defining the inner portion of said pocket and adapted to bind a perforated pad of paper within said notebook.

4,519,630
BOOK COVER
Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada
Filed Apr. 16, 1982, Ser. No. 368,890
Int. Cl.³ B42D *3/00, 3/04*
U.S. Cl. 281—31 **6 Claims**



1. A book binder, comprising:
an elongate spine member having two longitudinal side edges and two cover members integrally joined to said spine member,
said integral join between said spine member and one of said cover members being effected by a first fold line formed at one of said longitudinal side edges of said spine member and said integral join between said spine member and the other of said cover members being effected by a second fold line formed at the other of said longitudinal side edges of said spine member,
each said cover member being formed of overlying layers of paperboard which are joined so as to define a pocket therebetween which is open to receive a book cover at an edge of the pocket adjacent the fold line join of the respective cover member to the spine member and which is enclosed at the other three edges by folded-over paperboard,
each said cover member having discontinuous embossings formed within said pocket to space said overlying layers from each other, thereby to assist in insertion of a book cover into the respective pocket and to permit ready sliding of the book cover in the respective pocket.
6. A blank for a book binder, comprising:
a central elongate panel having tabs integrally joined to the lateral ends thereof through first and second crease lines,
first and second rectangular panels joined at one longitudinal side edge thereof one to each longitudinal side edge of said central elongate panel through third and fourth crease lines,
third generally rectangular panel joined at one longitudinal side edge thereof to the first rectangular panel at the other longitudinal side edge thereof through fifth crease line,
fourth generally rectangular panel joined at one longitudinal side edge thereof to the second rectangular panel at the other longitudinal side edge thereof through sixth crease line,
first and second wing panels joined one to each of the lateral side edges of the first rectangular panel through seventh and eighth crease lines, and
third and fourth wing panels joined one to each of the lateral side edges of the second rectangular panel through ninth and tenth crease lines,
said first, seventh and ninth crease lines being in straight line alignment and said second, eighth and tenth crease lines being in straight line alignment,
each said wing panel having embossings extending laterally thereof,
each said wing panel having a side edge extending angularly at an approximate angle of 45° from the free lateral edge thereof to the point of join of the crease line joining the wing panel to the respective rectangular panel and the crease line joining the respective rectangular panel and generally rectangular panel,
each said generally rectangular panel including an angularly directed edge in straight line alignment with said angular side edge of said wing panel extending from said point of join to the respective lateral side edge of said generally rectangular panel.

4,519,631
SYSTEM FOR PROVIDING UPDATED PRODUCT AND PRICING INFORMATION FOR RETAILER
Joel R. Stone, and Gary H. Stone, both of 2141 Upper St. Dennis, both of St. Paul, Minn. 55116
Filed Jan. 6, 1983, Ser. No. 455,918
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—70 **3 Claims**



1. A method for providing product information and consumer pricing information on goods shipped by a supplier to a retailer for retail sale from store shelves, comprising the steps of:
the supplier placing computer generated retailer product information indicia on the face of a first section of a paper label, said product information including identification of the product, number of units of product, unit price and address of retailer;
the supplier also placing consumer intelligible pricing indicia on the face of an attached but separable section of said label;
the supplier attaching said marked label to a shipping container in which products are shipped by the supplier to the retailer with only the first section of said label fixedly attached to the shipping container; and
then the retailer detaching the separable label section from the first section of the label and placing the separated section on the display shelf for providing intelligible pricing information for the consumer when the retailer removes the products from the shipping container and places them on a display shelf for sale to the consumer.

4,519,632
IDENTIFICATION CARD WITH HEAT REACTIVE COATING
Dean B. Parkinson, Redwood City, and Orton D. Bergren, Menlo Park, both of Calif., assignors to Computer Identification Systems, Inc., Sacramento, Calif.
Filed Mar. 19, 1982, Ser. No. 359,961
Int. Cl.³ B42F *15/00*
U.S. Cl. 283—75 **15 Claims**

1. A method for making an identification card having a base and a color-changeable layer comprising the steps of:
providing a planar base made of a first compound and having a first color;
preparing a dispersion by intermixing:
a color-changeable heteropolymolbdate pigment;
a resin;
a plasticizer for modifying the first compound to enable bonding of the resin and the pigment thereto; and

a non-aqueous solvent in which both the resin and the first compound of the base are soluble;

engraving the base to form a plurality of engraved depressions; .

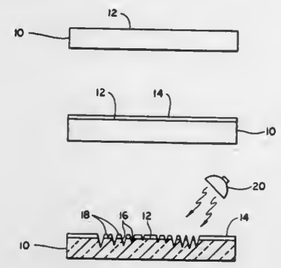
applying the dispersion to the non-engraved surface regions of the base adjacent to the engraved depression;

allowing the solvent to evaporate to form the color-changeable layer having a second color bonded to the non-engraved surface regions of the base adjacent to the engraved depression; and

heating the color-changeable layer to change the second color to a third color to generate an image defined by the contrast in color between the engraved regions having the first color and the color-changeable layer on the non-engraved surface regions of the base.

8. A multilayered identification card comprising:

a base layer having a first color, the base layer having a plurality of depressions of varying depths engraved thereunto to define an engraved image in the base;



a color-changeable layer disposed on and bonded to selected regions of the base layer, the color-changeable layer initially having a second color changeable to a third color contrasting with the first color upon heating to a first temperature for a specified period of time;

the color-changeable layer applied to the base layer as a liquid dispersion including a vinyl copolymer, a cross-linkable plasticizer reactive with the base layer to allow cross-linking of the resin thereto, a cross-linking agent for actuating said cross-linking, a heat-sensitive coloring agent capable of coloring the color-changeable layer in the absence of a co-reactant to change from the second to the third color when subjected to heating, and a non-aqueous solvent in which both the base layer and the vinyl copolymer are soluble; whereby the plasticizer and the cross-linking agent are selected to react with the base layer to effect molecular cross-linking between the color-changeable layer and the base layer for said bonding.

4,519,633

SUBSEA WELL CASING TIEBACK CONNECTOR

Randy P. Nichols, Humble, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 29, 1983, Ser. No. 509,127
Int. Cl.³ F16L *37/08*
U.S. Cl. 285—3 **16 Claims**

1. A pipe connector especially useful for tying back to a subsea wellhead with a casing riser, said connector comprising:

a. a tubular tieback sub;

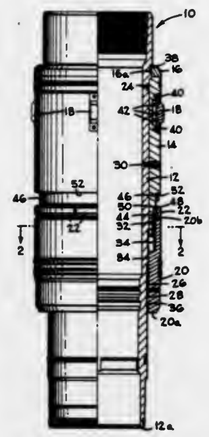
b. a sleeve-like collar surrounding the sub;

c. anti-rotation means for releasably securing the collar to a receptacle in which the connector is installed;

d. an actuator nut surrounding the sub;

e. means interconnecting the sub and the nut to facilitate relative axial movement between said sub and nut in response to rotation of said sub with respect to said nut;

f. means interconnecting the collar and the nut to facilitate relative axial movement and prevent relative rotational movement therebetween; and



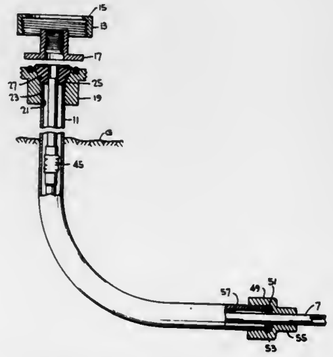
g. lock ring means surrounding the collar and expandable from a contracted condition by axial movement of the collar with respect to said nut.

4,519,634

TRANSITION PIPE FITTING

James D. Hand, Rte. #2, Box 29-C, Crestview, Fla. 32536

Filed Dec. 22, 1982, Ser. No. 452,315
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—55 **9 Claims**



1. A transition pipe fitting assembly for interconnecting a pliant gas conduit to a gas meter riser having gas flowing therethrough in a downstream direction, wherein said assembly comprises:

a first half of a standard pipe union serving as a coupling sleeve having an annular threaded shoulder portion extending radially outwardly therefrom, a threaded bore formed therein for threaded engagement with a downstream end portion of said gas meter riser, a recess formed in a downstream surface portion of said coupling sleeve concentric with said threaded bore so as to form a passage through said coupling sleeve, and an annular groove formed in said downstream surface portion of said coupling sleeve radially outwardly from and coaxial with said recess;

a compression seal disposed within said recess and having an axial channel formed therethrough;

an O-ring seal disposed within said annular groove;

a rigid pipe having a downstream end portion thereof inserted within said axial channel formed through said compression seal;

a flat washer concentrically secured to said downstream end portion of said rigid pipe for resisting withdrawal of said rigid pipe from said axial channel formed through said compression seal such that said flat washer abuts a downstream surface portion of said compression seal;

a second half of said standard pipe union operatively associated with said coupling sleeve; and

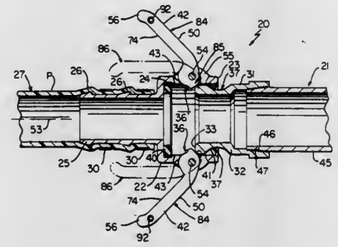
a coupling nut having threads formed therein and threadedly engaged with said annular threaded shoulder portion of said coupling sleeve to force said second half of said standard pipe union against said flat washer, against said O-ring seal and against said downstream surface portion of said coupling sleeve so as to form a first gas tight seal via compression of said O-ring and to form a second gas tight seal radially inwardly from said first gas tight seal via compression of said compression seal.

4,519,635

QUICK CONNECT-DISCONNECT COUPLING

Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 428,164
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—93 **24 Claims**



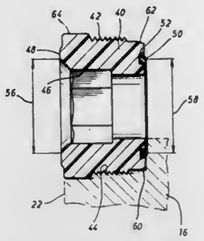
1. In a quick connect-disconnect coupling for fluid conduit means comprising, a coupler member adapted to be connected in said conduit means and having a first tubular outer end and a first sealing surface, an adapter member adapted to be connected in said conduit means and having a second tubular outer end and a second sealing surface, said second tubular end being adapted to be received within said first tubular end, cam means for connecting and disconnecting said members comprising first cam means carried by said first tubular end and second cam means carried by said second tubular end, and seal means disposed between said sealing surfaces for providing a fluid-tight seal between said members with said first and second cam means connected and with said members being in a first axial position thereof, said first and second cam means respectively having cam surfaces, one of said first and second cam means being movable relative to its respective tubular outer end in one direction of continuous opening movement thereof from a fully connected position of its said cam surface with said cam surface of the other of said first and second cam means with said members in said first axial position thereof to a fully disconnected position of said cam surfaces so that said members can be completely disconnected from each other, the improvement in which said cam surfaces of said first and second cam means act against each other during disconnection of said members as said one cam means is being continuously moved through said opening movement thereof to provide an axial disconnecting movement of said members from said first axial position thereof until a particular second axial position is reached at which second axial position the disconnecting movement of said members is reversed and becomes an incremental axial connecting movement for a predetermined increment to a third axial position of said members before allowing said members to be completely disconnected whereby in the event fluid under pressure is present in said conduit means having said members connected therein said incremental connecting movement of said members is subjected to resistance by said fluid under pressure, said resistance being transmitted through said members as an opposing force which serves to impede said incremental movement by resisting any opening force applied to said one cam means, said opposing force being detectable and once detected serves as a warning that the pressure of said fluid under pressure must be relieved before completely disconnecting said members.

4,519,636

SEAL FOR AN UNDERWATER CONNECTOR

Jerry B. Tomlin, Sugar Land; Gustave S. Levey, Houston, and Michael A. O'Neil, Dallas, all of Tex., assignors to Koomey, Inc., Brookshire, Tex.

Filed Oct. 20, 1982, Ser. No. 435,512
Int. Cl.³ F16L *33/16*
U.S. Cl. 285—95 **12 Claims**



1. In an underwater connector for interconnecting a plurality of fluid lines having first and second mating members, each member having a coacting mating surface with a plurality of fluid passageways for mating with the passageways of the other member, the improvement in seal means on the mating surface of one of the members for sealing between mating passageways of said members comprising,

said passageways of said one member having threads,

an annular resilient seal having a thread and threadably connected in each of the threaded passageways on said one member,

said annular resilient seal having a bore therethrough,

said seal including a raised sealing surface on its outer end for mating with the other member,

said seal including a raised fluid sealing surface on its inner end for sealing with said one member,

the center of the sealing surface on the outer end having a diameter at least as great as the diameter of the center of the sealing surface on the inner end whereby the fluid pressure in the passageways acts on the seals to prevent the fluid pressure from expelling the seals from said one member.

4,519,637

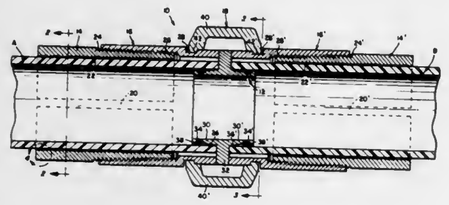
PIPE COUPLING

Joie L. Folkers, Wichita Falls, Tex., assignor to Ameron Inc., Monterey Park, Calif.

Filed Sep. 28, 1982, Ser. No. 425,709
Int. Cl.³ F16L *17/00*
U.S. Cl. 285—113 **10 Claims**

1. A pipe coupling comprising first and second sleeve means adapted to be secured around respective end portions of a pair of pipe sections to be coupled, sealing means for providing fluid seals around the interior surfaces of the respective pipe sections, and clamp means for holding the sleeve means together, wherein each of the sleeve means includes an axially slit inner sleeve with an external tapered thread and an outer

sleeve with an internal tapered thread complementary to the external thread on the inner sleeve, the inner sleeve having internal teeth adapted to grip the surface of a respective pipe



section for securing the inner sleeve thereto when the outer sleeve is threaded onto the inner sleeve, and wherein the clamp means and outer sleeves have cooperable portions for resisting separation of the respective sleeve means and pipe sections.

4,519,638

PIPE JOINT

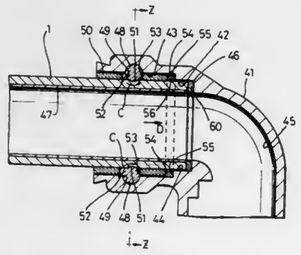
Tatsuo Yodoshi; Hiroyoshi Ohata, and Hiroshi Inoue, all of Kawachinagano, Japan, assignors to Higashio Pipe Fittings Mfg. Co., Ltd., Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 428,720

Claims priority, application Japan, Mar. 19, 1982, 57-39631[U]; Apr. 15, 1982, 57-55417[U]; Jun. 25, 1982, 57-96102[U]

Int. Cl.³ F16L *37/00*

U.S. Cl. 285—305 **5 Claims**



1. A pipe joint comprising, in combination with a pipe to be joined,:

a joint body provided with a pipe insertion bore, said pipe insertion bore having a large diameter portion open at one end to the outside of said joint body and having a diameter greater than the outer diameter of said pipe to be joined, and a small diameter portion inwardly of said large diameter portion communicating with a connecting bore of said joint body and having a diameter equal to the outer diameter of said pipe to be joined, a first annular step being formed between said large and small diameter portions, and a second annular step being formed between said small diameter portion and said connecting bore;

a hollow cylindrical body defined by cylindrical walls provided with means to allow communication through said walls and having an inner diameter equal to the diameter of said small diameter portion of said pipe insertion bore, inserted in said large diameter portion of said pipe insertion bore so as to define an annular groove between an inner end of said hollow cylindrical body and said first annular step;

an annular resilient sealing member interposed in said annular groove for tightly sealing between said pipe insertion bore and an outer periphery of said pipe to be joined when said pipe is joined therein;

annular packing means disposed in said small diameter portion of said pipe insertion bore between said second annular step and a distal end of said pipe to be joined when said pipe is inserted in said pipe insertion bore;

at least one fixing hole formed in said joint body tangentially of said large diameter portion of said pipe insertion bore, an inner side portion of said fixing hole opening into said large diameter portion; and

screw means adapted to engage with said fixing hole and to pass through said means in said wall to form recesses in an outer periphery of said pipe to be joined,

whereby said pipe to be joined may be inserted through said inner diameter of said hollow cylindrical body and into said small diameter portion of said pipe insertion bore and said screw means engaged in said fixing hole, means in said wall and said recesses thereby formed in said pipe in order to join said pipe to said joint body.

4,519,639

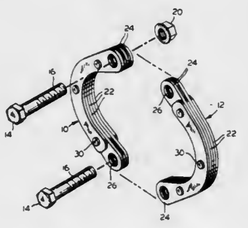
HINGED FLANGE FOR TAILPIPES AND THE LIKE

Roy S. Florian, Southington, Conn., assignor to Nickson Industries, Inc., Plainville, Conn.

Filed Jul. 1, 1983, Ser. No. 510,434

Int. Cl.³ F16L *23/00*

U.S. Cl. 285—415 **3 Claims**



1. A split flange for coupling flanged elements of an exhaust system or the like comprising:

a. a pair of laminated clamp members of generally arcuate configuration and each including at least five similarly configured and dimensioned sheet metal arcuate segments disposed in overlying relationship to provide a laminate comprised of at least five sheet metal laminae, alternating segments being arcuately displaced relative to the adjacent segments so as to project beyond one end of the adjacent segments and terminate inwardly from the end of the other end of the adjacent segments which project therebeyond to provide end portions comprised of at least two of said segments at each end of said clamp member, and a plurality of fastener means spaced along the length of said sheet metal segments between said end portions and securing the overlying segments in assembly, the pair of clamp members being disposed with the arcs circumscribed thereby disposed in opposition and with the laminae of the end portions of said clamp members interfitting to provide at least five interfitting segments, said end portions of said segments being of enlarged width relative to the center thereof, said interfitting end portions of each of said clamp members having aligned apertures therein spaced inwardly from the ends of the projecting end portions of the segments providing such end portions of the clamp members and outwardly from the ends of the other segments, the configuration and dimensioning of said end portions of said segments and the spacing of said apertures therein permitting pivoting of said clamp members relative to each other about the axis of said aligned apertures; and a pair of fastening means seated in said aligned apertures of said clamp members to secure the clamp members in assembly circumscribing a generally circular space, at least one of said fastening means being releasably engageable and removable to permit the clamp members to pivot about the other of said fastening means.

4,519,640

ELECTRONICALLY MOTORIZED LOCK WHOSE MOTOR SHAFT IS PARALLEL TO THE LONGITUDINAL AXIS OF THE BOLTS

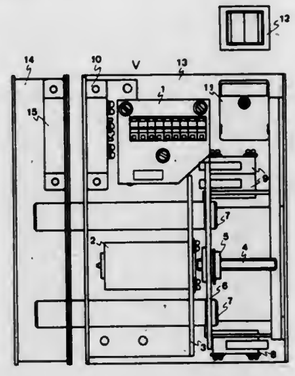
Paup Mombelli, Nice, France, assignor to I.C.B. France Industrie et Componsants du Batiment Société Anonyme, Yzeure, France

Filed Sep. 29, 1982, Ser. No. 432,103

Claims priority, application France, Oct. 7, 1981, 81 19276

Int. Cl.³ E05B *47/00*; E05C *1/06*

U.S. Cl. 292—33 **6 Claims**



1. An electronically motorized lock to be mounted on a door, said lock comprising, integrated in the lock, mechanical safety means, an electric motor, a control module, bolt means movable between a locking position and an unlocking position the mechanical safety means comprising an arrangement wherein the motor has an output shaft which is parallel to a longitudinal axis of the bolt means, along which axis the bolt means are movable, means for connecting the motor to the bolt means for shifting the bolt means between the unlocking position and the locking position, the bolt means comprising a plurality of bolts and the mechanical safety means comprising a U-shaped element defining apertures in branches of the U-shaped element, the bolts being guided in said apertures and a driving member which is part of said connecting means being drivingly engaged with the bolts, switch means for communicating the position of the bolt means, and detecting means for detecting an open or closed state of the door and for detecting impacts received by the door, and wherein the motor is a low-tension DC motor having an output shaft and is fixed to an inner wall of a U-shaped element which is rigid with a plate carrying all of the components of the lock, a lead-screw being secured to said output shaft, and a nut being screwthreadedly engaged with the lead-screw and being prevented from rotating by a driving member which drivingly engages the bolt means.

4,519,641

DOOR OPENING-CLOSING APPARATUS FOR LARGE-SIZED REFRIGERATOR OR THE LIKE

Toshimichi Fujiya, No. 4-22, Kounandai 6-chome, Kounan-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Mar. 2, 1983, Ser. No. 471,258

Int. Cl.³ E05C *19/12*

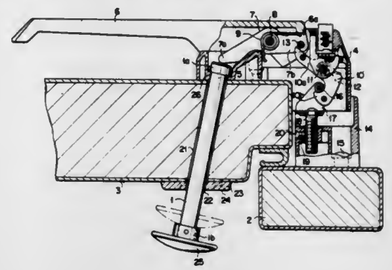
U.S. Cl. 292—127 **6 Claims**

1. A door opening-closing apparatus for large-sized compartments said apparatus comprising:

a grip seat adapted to be secured to a door; a grip and an actuating lever which are mutually pivotable about a pivot pin attached to said grip seat;

a latch support seat adapted to be secured to a side pillar of the compartment;

a push rod adapted for penetrating a door from inside to outside, the outer end of said push rod being brought into contact with one end of said actuating lever; and



a latch pivotably attached to said grip seat, one end of said latch being contacted by the other end of said actuating lever, whereby pivoting said actuating lever by pushing against the inner end of said push rod will undo the engagement between said latch support secured to the side pillar of the compartment and the other end of said latch, said push rod being inclined with respect to the door so as to be more remote from the side pillar as the rod extends from said outer end to said inner end thereof.

4,519,642

LOCKING DEVICE

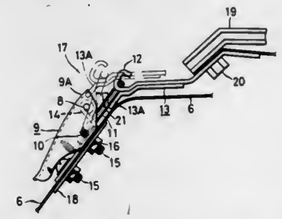
Eiichi Hamada, and Kouzou Hamada, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Aug. 16, 1983, Ser. No. 523,710

Claims priority, application Japan, Oct. 12, 1982, 57-154258[U]

Int. Cl.³ E05C *5/04*

U.S. Cl. 292—247 **16 Claims**



1. A locking device comprising a handle rotatably supported on a body through a support shaft, a catch hook rotatably supported by said handle through a rotary shaft, and a hook secured to a counterpart member to be fastened to or detached from said body and engageable with said catch hook at the time of locking, said rotary shaft for rotatably supporting the catch hook on the handle being provided at a position closer to the body than a straight line passing through the support shaft and a portion of engagement between the catch hook and the hook when the handle approaches the body to take a locking position, and the counterpart member being locked against the body through the catch hook through a turnover action of the catch hook, said action occurring when the handle rotates, wherein a retainer is secured to the hook to be projected to a position close to an opposite side portion of the handle during locking, said opposite side portion being substantially opposite to the rotary shaft with the support shaft interposed therebetween and including the support shaft, and to be disposed at a position where the retainer abuts against the opposite side

portion when the hook together with the counterpart member move relative to the handle in a direction of the handle.

4,519,643

HANDLE FOR EXTENDING THE REACH OF A ROPE

Warren R. Harris, 1960 Dolphin Blvd. S., St. Petersburg, Fla. 33707

Filed Mar. 9, 1984, Ser. No. 587,908
Int. Cl.³ B63B *21/04*
U.S. Cl. 294—19.1 **6 Claims**



1. A device for enlarging a rope loop and extending it a substantial distance from the holder to encircle an object comprising:

(a) a first tube having a Y or T shaped separator tubular yoke attached to one end thereof;

(b) a second tube having a diameter smaller than the exterior diameter of said first tube and adapted to fit into said first tube;

(c) a rope extending into said second tube while said second tube is inserted inside said first tube, and passing into said separator yoke with the end of said rope passed through one opening of said separator yoke, looped to pass through the other opening of said yoke and into the said first tube where it is attached to said rope to complete the loop which passes from and back into the interior of said first tube; and

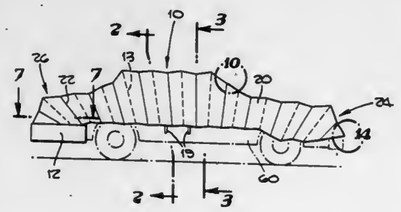
(d) a means for stiffening said loop, said stiffening means extending in the rope no further than the length of the said first tube.

4,519,644

FOLDABLE VEHICLE COVER STORABLE ON THE VEHICLE

Sung T. Song, 1911 Gardena Ave., Glendale, Calif. 91204

Filed Jun. 22, 1983, Ser. No. 506,640
Int. Cl.³ B60J *11/00*
U.S. Cl. 296—136 **1 Claim**



1. A vehicle cover unfoldably deployable and foldably storable, comprising:

a plurality of rigid C-frame members having top and bottom ends;

a storage case for containing said C-frame members, said storage case being C-shaped and comprising:

an outermost surface having a bottom portion;

a case top for covering the top of said outermost surface wherein said case top is C-shaped, comprising:

a central portion;

a first side portion;

a first flexible portion joining said central portion and said first side portion;

a second side portion;

a second flexible portion joining said central portion and said second side portion;

wherein said central portion, said first side portion, said first flexible portion, said second side portion and said second flexible portion each have a lip portion that fits over said outermost surface in an overlapping manner;

an innermost surface joining said outermost surface and said case top to make a closed container;

wherein said case top also includes an opening and closing mechanism comprising:

a first elongated shaft extending lengthwise of the length of said central portion and distal from said lip portion thereof and attached to the inside of said inner surface of said storage case by means of a fixed bearing block;

at least one pivoted bearing mounted upon said first shaft and fixedly secured to said central portion so that said central portion may rotate upwardly from said storage case;

a second elongated shaft extending lengthwise of the length of said first side portion and distal from said lip portion thereof and attached to the inside of said innermost surface of said storage case by means of a fixed bearing block;

at least one pivoted bearing mounted upon said second shaft and fixedly secured to said first side portion so that said first side portion may rotate upwardly from said storage case;

a third elongated shaft extending lengthwise of the length of said second side portion and distal from said lip portion thereof and attached to the inside of said innermost surface of said storage case by means of a fixed bearing block;

at least one pivoted bearing mounted upon said third shaft and fixedly secured to said second side portion so that said second side portion may rotate upwardly from said storage case;

a bevel gear at each end of said first elongated shaft;

a meshing bevel gear at the appropriate end of said second elongated shaft meshing with the bevel gear at one end of said first elongated shaft;

a meshing bevel gear at the appropriate end of said third elongated shaft meshing with the bevel gear at the other end of said first elongated shaft;

so that when said central portion is rotated upwardly from said storage case, the interaction of the meshing bevel gears constrains said first side portion and said second side portion to rotate upwardly from said storage case and said first flexible portion and said second flexible portion to flex so as to permit such motion;

a plurality of fold arms;

a first plurality of hinges connecting said ends to said fold arms;

a plurality of bottom fold arms;

a second plurality of hinges connecting said bottom ends to said bottom fold arms;

a plurality of C-shaped elastomeric tensioning members;

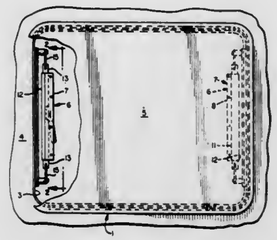
covering fabric alternately attached to said plurality of rigid C-frame members and said plurality of C-shaped elastomeric tensioning members so as to form panels therebetween.

4,519,645

VEHICLE ESCAPE HATCH AND VENTILATOR

Timothy A. Kelly, and Rueben M. Turbyfill, both of Salem, Va., assignors to Ventilator Associates, Salem, Va.

Filed Aug. 1, 1983, Ser. No. 518,960
Int. Cl.³ B60J *7/10*
U.S. Cl. 296—224 **6 Claims**



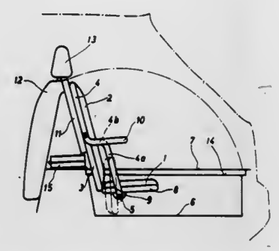
1. A combined escape hatch and ventilator for a vehicle roof, comprising a frame bounding an opening in the roof, a cover for opening and closing said opening, hinge means connecting said cover to opposite sides of said frame normally for limited opening movement relative to at least one of said sides, said hinge means at said one side being formed of separable interfittable cover and frame parts, lug means on one of said parts, latch means pivotally mounted on the other part, and cam means on said latch means and engageable with said lug means on interfitting of said parts for releasably interlocking said parts.

4,519,646

REARWARD FACING COLLAPSIBLE VEHICLE BACK SEAT

Wulf Leitermann, Bad Wimpfen, and Rolf Heneka, Bad Friedrichshall, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,450
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147656
Int. Cl.³ B60N *1/02*
U.S. Cl. 297—15 **7 Claims**



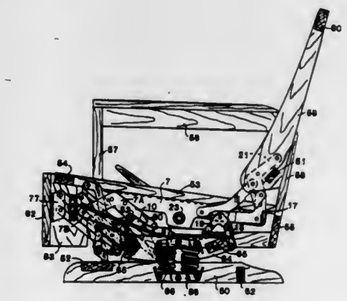
1. A rear facing vehicle back seat construction including a cavity in the floor of the vehicle having side walls provided with pivot bearings on a common transverse axis, and comprising a seat section and a back section which are arranged to pivot independently from an operative position to an out-of-use position in said cavity, a generally U-shaped frame which supports said back section and has limbs extending along and beyond opposite sides of said back section and said seat section; said limbs having, as seen in the operative position, upright upper portions defining a first plane and lower portions lying in a second plane which is substantially in parallel but offset from said first plane and connected to said upper portion by a substantially horizontal portion arranged to lie roughly on a level with the elbows of an occupant of the seat, the bottom ends of said lower portions of the limbs being mounted in said pivot bearings in said cavity, said seat section also being pivotally mounted on the transverse axis between a seat center and a seat edge disposed adjacent to the back section, said seat section abutting with said edge the bottom of the back section in the operative position, said back section forming a load-carrying surface by covering said cavity in said out-of-use position.

4,519,647

ROCKER-RECLINER CHAIR

Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Filed Jan. 11, 1983, Ser. No. 457,181
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—85 **20 Claims**



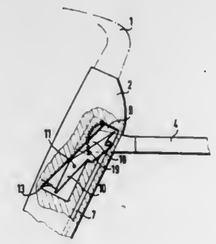
1. A rocker-recliner chair comprising in combination, a support base, a rocker cam assembly mounted on the base, a seat and armrest fixed to each other as a unitary structure, a footrest, footrest linkage means mounting the footrest to the seat for movement between retracted and extended positions, seat linkage means mounting the seat to the rocker cam assembly for movement relative to the rocker cam assembly in response to the weight of a chair occupant, linkage means interconnecting the seat linkage and the footrest linkage for driving the footrest linkage to place the footrest into extended position as the seat moves relative to the rocker cam assembly, and a release means preventing the seat from moving relative to the rocker cam assembly when the footrest is retracted.

4,519,648

ARRANGEMENT FOR ENABLING A PIVOTAL MOUNTING OF A TRAY TO A SEAT BACK OF A SEAT OF A PASSENGER MOTOR VEHICLE

Nenad Jovanovic, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,256
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130566
Int. Cl.³ B60N *3/00*
U.S. Cl. 297—146 **16 Claims**



1. An arrangement for enabling a pivotal mounting and

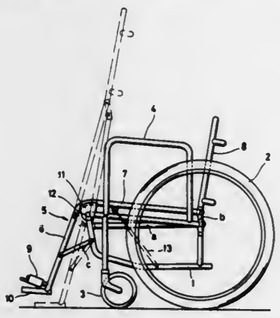
generally horizontal positioning of a tray relative to a back of a seat, the tray being operatively shiftable between a stowed position and an in-use position, the arrangement comprising a tray having a forward edge and adjustment means for enabling an effective adjustment of inclination of the tray when the tray is in the in-use position, said adjustment means including first means disposed proximate the forward edge of the tray and second means disposed on the back of the seat, the first means of the adjustment means including at least one toothed means mounted at the forward edge of the tray and the second means including a second toothed means fixedly disposed at a rear side of the back of the seat, said first and second toothed means being adapted to be brought into meshing engagement when the tray is in the in-use position, said seat back including an opening for accommodating the tray in the stowed position, said tray serving as a means for covering the opening when the tray is in the stowed position, guide means associated with said seat back for guiding the tray from the stowed position to the in-use position, said guide means operatively enabling the tray to be pivoted into the in-use position by being pulled upwardly and folded down, the guide means including a pair of vertically extending groove means provided on respective lateral sides of the opening and extending essentially over an entire length of the opening, guide elements disposed at respective lateral sides of the tray at a position spaced from the forward edge thereof, and a biased pawl means associated with the upper end of at least one of the groove means for engaging one of the guide elements when the tray is in the in-use position.

4,519,649

WHEELCHAIR

Osamu Tanaka, Sagamihara; Hiroshi Iijima, Isehara; Masayoshi Ito, Atsugi, and Etsumi Okigawa, Hadano, all of Japan, assignors to Kanagawa Rehabilitation Center, Kanagawa, Japan

Filed Mar. 28, 1983, Ser. No. 479,369
Claims priority, application Japan, Mar. 26, 1982, 57-47291
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—316 **5 Claims**



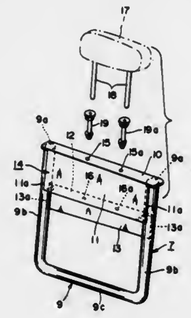
1. A wheelchair comprising:
- a main frame supporting driving wheels and auxiliary wheels;
- a body support frame including pivotally interconnected lower limb support member, waist support member and backrest member, said main frame and said body support frame being formed as independent structures, a front end portion of said waist support member of said body support frame being pivotally connected to a front end portion of said main frame by pivot means;
- a pair of elbow supports each fixed to an upper portion of said main frame at respective sides thereof, said waist support member of said body support frame being disposed between said pair of elbow supports in a seating position of said body support frame;
- a gas spring fitted, at one end thereof, to a gas spring receiver pivotally connected to said main frame, and pivotally connected at its other end by a piston rod thereof to said waist support member of said body support frame such that extension and retraction of said gas spring causes said waist support member to rotate about said pivot means with respect to said main frame; and
- locking means in operable connection with said gas spring for locking said gas spring in an arbitrary position between a fully extended and a fully retracted position so as to fix said waist support member at an arbitrary angle with respect to the horizontal within a prescribed angular range of its rotation about said pivot means, said fully extending and fully retracted positions of said gas spring corresponding to seating and standing positions of said body support frame, respectively.

4,519,650

SEAT BACK FRAME ASSEMBLY FOR AUTOMOBILE SEATS

Takami Terada; Hiroshi Nawa, and Reiki Kawamura, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Mar. 8, 1983, Ser. No. 473,678
Claims priority, application Japan, Mar. 9, 1982, 57-32699[U]
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—452 **2 Claims**



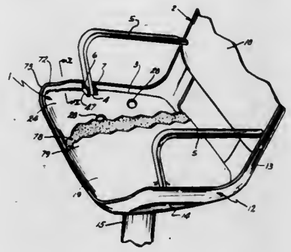
1. A seat back frame assembly for mounting a headrest, comprising:
- a substantially U-shaped pipe member having a horizontal base and a pair of vertical legs extending upwardly from the horizontal base and terminating at a pair of respective ends of said vertical legs, and
- a transverse member including:
  - first and second horizontal portions, said first horizontal portion welded at the top most ends of said vertical legs, said second horizontal portion extending between said vertical legs and beneath said first horizontal portion,
  - a first vertical portion depending from said first horizontal portion extending along the front surface of said pipe member and connecting said first and second horizontal portions,
  - a second vertical portion depending from said second horizontal portion and extending along the rear surface of said pipe member, each of the first and second vertical portions having opposite edge portions welded to the legs of said pipe member,
- said first horizontal portion having a pair of transversely spaced first apertures,
- said second horizontal portion having a pair of transversely spaced second apertures and said second apertures being aligned in the vertical direction with said pair of said first apertures, and
- a pair of receptacles, each of said receptacles being positioned within said first and second aperature allowing said headrest to be mounted on said transverse member.

4,519,651

CONVERTIBLE INNER SHELL FOR SEATING AND THE LIKE

Ronald L. Whitwam, Caledonia, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

Filed Oct. 14, 1982, Ser. No. 434,239
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—455 **32 Claims**



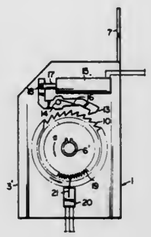
1. A convertible inner shell for constructing both armed seats and armless seats, comprising:
- a shell body having a perpheral edge with at least one notch therein shaped to form a pocket in which a portion of a seat arm is received, said notch having an open side at the peripheral edge of said shell body;
- a tab hingedly connected with said shell body adjacent said notch, and being pivotal between open and closed positions; said tab being shaped to substantially close the outer side of said notch in the closed position, whereby said peripheral edge extends generally continuously and uninterrupted about said shell body for constructing armless seats, and said tab opens the outer side of said notch in the open position for constructing armed seats; said tab pivoting vertically into the open position, and forming a generally vertically oriented sidewall for said pocket, and including an outer tip with means for extending said tab outer tip outwardly of the peripheral edge of said shell body when said tab is pivoted into the open position to facilitate constructing a cushion which mates closely with the seat arm.

4,519,652

STRAP RETRACTOR ASSEMBLY

Ken Kamijo, Zushi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 11, 1983, Ser. No. 457,128
Claims priority, application Japan, Feb. 3, 1982, 57-15958
Int. Cl.³ A62B *35/00*
U.S. Cl. 297—477 **12 Claims**



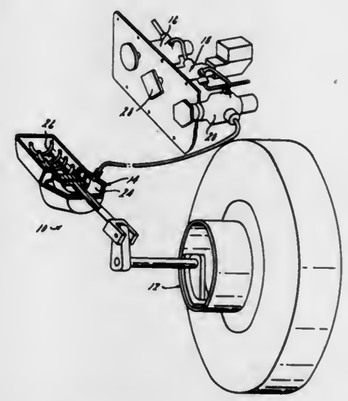
1. A strap retractor assembly for use in a vehicular seat belt arrangement including an elongated flexible retaining strap to be fitted to an occupant of a seat structure in a vehicle body, comprising:
- a reel shaft rotatable about an axis fixed with respect to the vehicle body and having said retaining strap anchored thereto at one end of the strap;
- biasing means urging the reel shaft to turn about said axis in a direction to have the retaining strap re-wound on the reel shaft;
- a ratchet wheel rotatable with the reel shaft about said axis;
- a pawl member movable into and out of a position engaging the ratchet wheel and prohibiting the ratchet wheel and the reel shaft from being turned in said direction about said axis;
- pulse generating means positioned in the vicinity of said ratchet wheel and operative to produce first pulses in response to rotation of the reel shaft in one direction about said axis and second pulses in response to rotation of the reel shaft in the opposite direction about said axis;
- resettable pulse counting means electrically connected to said pulse generating means and operative to count said first pulses forwardly and said second pulses backwardly;
- comparing means electrically connected to said pulse counting means and operative to compare the number of the pulses counted by said pulse counting means with a predetermined number of pulses and to produce a control signal when the number of the pulses counted by the counting means is in a predetermined relationship to the predetermined number of pulses; and
- electro-magnetically operated actuating means electrically connected to said comparing means and responsive to said control signal and operative to drive said pawl member into said position in response to the control signal.

4,519,653

ANTI-THEFT LOCK DEVICE

Paul B. Smith, Ann Arbor, Mich., assignor to Davco Manufacturing Corporation, Ann Arbor, Mich.

Filed Sep. 23, 1982, Ser. No. 421,991
Int. Cl.³ B60T *17/16*; B60R *25/08*
U.S. Cl. 303—89 **8 Claims**



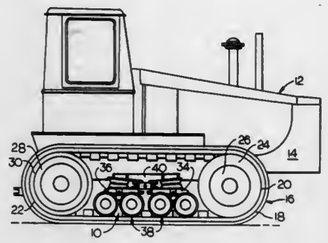
1. In an apparatus having an actuating member moveable between an actuating position and a de-actuating position, the improvement comprising a lock member moveable toward and away from said actuating member, biasing means for biasing said lock member toward said actuating member, said lock member non-interferringly engaging said actuating member when said actuating member is in its de-actuating position and interferringly engaging said actuating member when said actuating member is in its actuating position to prevent said actuating member from being moved to said de-actuating position, selectively energizable electric solenoid means for moving said lock member out of engagement with said actuating member to allow said actuating member to be moved from said actuating position to said de-actuating position and timing means for energizing said electric solenoid means for a predetermined

time period after said electric solenoid means is initially energized in order to hold said lock member out of engagement with said actuating member for said predetermined time period, thereby allowing said actuating member to be moved from said actuating position to said de-actuating position during said predetermined time period.

4,519,654
ROLLER SUSPENSION APPARATUS FOR A BELTED VEHICLE

Ronald L. Satzler, Princeville, and Samuel B. Stevens, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1983, Ser. No. 563,335
Int. Cl.³ B62D *55/16*
U.S. Cl. 305—27 **11 Claims**



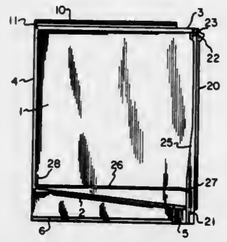
1. A roller suspension apparatus adapted for use on a belted vehicle having a frame comprising:
- a single pivot shaft adapted to be connected to the vehicle frame;
- a pair of arms each pivotally connected at one end to the pivot shaft and extending in opposite directions from the pivot shaft, each of said arms having a mounting surface at a distal end portion thereof;
- a pair of roller mechanisms individually connected to the distal end portions of said arms;
- a force transfer beam pivotally connected at its mid-portion to the pivot shaft and having first and second mounting surfaces individually generally facing a respective one of the mounting surfaces of said arms defining two pairs of facing mounting surfaces; and
- spring means positioned between each pair of facing mounting surfaces in load bearing and force transferring relation; and
- wherein said mounting surfaces are arranged relative to the pivot shaft so that substantially only compressive forces are tranmitted to the spring means upon movement of the mounting surfaces of each pair of facing mounting surfaces toward one another.

4,519,655
STORAGE CONTAINER

Charles F. Kamperman, 2596 Matterhorn Dr., Wexford, Pa. 15090

Filed Apr. 22, 1983, Ser. No. 487,746
Int. Cl.³ A47B *81/06*
U.S. Cl. 312—12 **9 Claims**

1. A storage container having a shell with an open front forming a storage compartment and a closure member adapted to close the front of said shell, said shell having a pair of spaced substantially parallel sidewalls, a top wall, a rear wall and a bottom wall extending between said spaced sidewalls, an elongated rigid slide at the bottom of said shell located above said bottom wall for supporting at least one item within said shell, said closure member being pivotally connected to the lower forward corners of said spaced sidewalls, a pivotal connection between the forward end of said rigid slide and said closure member, said pivotal connection between said rigid slide and said closure member being located above the pivotal connection between said closure member and said sidewalls when said closure member is in the closed position, and a contact leg on the rear end of said rigid slide, whereby when said closure member is pivoted into the open position, said rigid slide is moved forwardly by means of the pivotal connection between

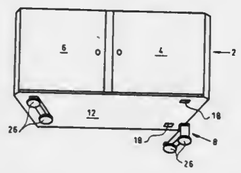


the forward end of said rigid slide and said closure member and said contact leg is adapted to contact an item resting on said rigid slide to move a portion of the item through the open front of said shell.

4,519,656
BATHROOM CABINET

Zeev Raz, 17 Keren Hayessod St., Beer-Sheva, Israel

Continuation-in-part of Ser. No. 44,096, May 31, 1979, Pat. No. 4,307,923. This application Sep. 21, 1981, Ser. No. 304,087
Claims priority, application Israel, Sep. 10, 1980, 61043; Spain, Feb. 17, 1981, 499.497; Israel, May 5, 1981, 62787
Int. Cl.³ A47B *91/16, 97/00*; E03D *1/00*
U.S. Cl. 312—256 **11 Claims**

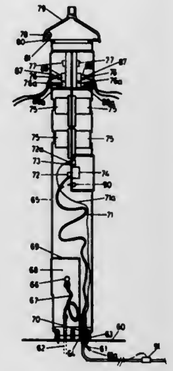


1. A cabinet especially for storing and dispensing sanitary commodities, characterized in that said cabinet is provided with at least one compartment and at least one access door thereto and wherein said cabinet is further provided with attachment means depending from a bottom surface thereof for attachment of said cabinet atop a cover of a bathroom flush tank as an integral unit with said cover, whereby said cabinet and cover are readily removable as a unit to allow access to a flushing mechanism within the flush tank in case of malfunction, and wherein said attachment means has at least one bottom surface which is substantially planar and includes means for displacing said bottom surface so as to be non-parallel with respect to the bottom of said cabinet, thereby rendering said cabinet compatibly attachable to bathroom flush tank covers of various sizes, configurations and curvatures, wherein said attachment means comprise a first member detachably attachable to the bottom surface of said cabinet, said member being provided with at least one protruding element extending downwardly from said first member when attached to said bottom of said cabinet, said member and said element being provided with interconnecting means enabling the adjustment of the distance of protrusion of said element from said member.

4,519,657
MULTIPLE SERVICE UNIT

Henning Jensen, Surfers Paradise, Australia, assignor to Common Sense Products Pty. Ltd., Surfers Paradise, Australia

PCT No. PCT/AU81/00019, § 371 Date Oct. 6, 1981, § 102(e) Date Oct. 6, 1981, PCT Pub. No. WO81/02495, PCT Pub. Date Sep. 3, 1981
Continuation-in-part of Ser. No. 204,830, Nov. 7, 1980, abandoned. This PCT application Feb. 19, 1981, Ser. No. 309,886
Claims priority, application Australia, Feb. 19, 1980, PE 2443
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—15 **15 Claims**



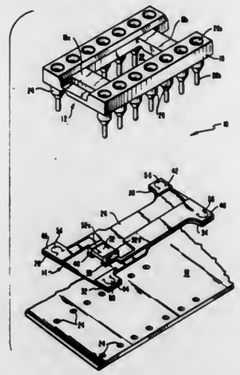
1. A service unit for controlled distribution through individually lockable doors, and for individual metering, of electrical services to a plurality of authorized users comprising:
- a weatherproof hollow body,
- transparent windows in the walls of said hollow body,
- power distribution means for distributing electrical power from a power conduit connected thereto to a plurality of electric power receptacles,
- a plurality of electrical meters for measuring the power consumed through the electrical power receptacles by each authorized user,
- said meters being readable through said windows, said electric power receptacles, said power distribution means, and said electric meters being located entirely within said hollow body,
- a plurality of openings in said hollow body, each opening being associated with at least one electrical power receptacle, each receptacle being accessible through an opening
- lockable access door means for lockably securing each opening so that only authorized users have access through said door to at least one electrical power receptacle located therebehind.

4,519,658
ELECTRONIC PACKAGE ASSEMBLY AND ACCESSORY COMPONENT THEREFOR

Ranjit Biswas, Plainsboro, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jan. 24, 1983, Ser. No. 460,434
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 CF **12 Claims**

1. An accessory circuit component for electrical connection to selected contacts of a plurality of contacts in an electrical package comprising:
- a flexible sheet of dielectric material;
- a plurality of spaced conductive traces secured to a surface of said flexible sheet; and
- a plurality of deflectable tabs each being in registry with selected ones of said conductive traces and defined by at least one cut through both a portion of said flexible sheet and a portion of a conductive trace and a hinge including an uncut extent of said flexible sheet portion and a conductive trace portion adjacent said cut, there being provided upon deflection of each tab an opening for receipt of a selected contact of said electrical package for connection of such contact to said conductive trace portion,

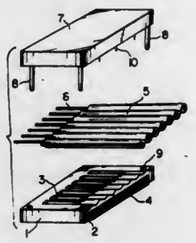


said flexible sheet being elongate, ear portions extending laterally from a side margin at longitudinally spaced locations defining therebetween a cutout of said flexible sheet for residence therebetween of contacts of said package to which connection is not to be made, a conductive trace being disposed on each said ear portion and a deflectable tab being in registry with each such ear portion.

4,519,659
SOCKET-TYPE CONNECTOR FOR FLAT CABLES

Mitsuo Shiino, and Akio Nakamura, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,839
Claims priority, application Japan, Dec. 7, 1982, 57-185496[U]
Int. Cl.³ H01R *9/07, 11/11*
U.S. Cl. 339—59 M **4 Claims**



1. A socket-type connector for flat cables which comprises a base plate made of an electrically insulating material and provided with a plurality of slots running in parallel with each other, an anisotropically electroconductive sheet applied or bonded to one surface of the base plate to cover the slots therein, the direction of the anisotropic electric conduction of the said sheet being substantially perpendicular to the surface of the sheet, and a cover member to fit the other surface of the base plate made of an electrically insulating material.

4,519,660
ELECTRICAL CONNECTORS WITH QUASI-TERMINAL PINS

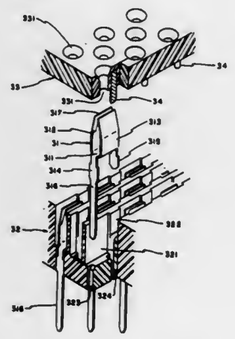
Yoshiaki Ichimura; Atsuhito Noda; Tetsuro Tokaichi, and Shoji Umesato, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited and NEC Corporation, both of Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 589,879

Claims priority, application Japan, Mar. 17, 1983, 58-37471[U]

Int. Cl.³ H01R *13/629*

U.S. Cl. 339—75 M **13 Claims**



1. In an electrical connector for electrically connecting a conductive terminal pin member to an electrical circuit, said electric connector including a contact element being made of a conductive and resilient material, said contact element having a mounting stem to be electrically connected to said electric circuit, at least one spring arm and a contact portion formed at a free end of said spring arm, said contact portion having a contact surface at one side thereof, said contact surface generally extending in lateral and longitudinal directions, a fixed insulator member being fixedly disposed in relation to said contact element, said fixed insulator member having a recess for embracing therein said contact portion, an insulator cover member overlying said fixed insulator member and having a penetrating hole for receiving therein said conductive terminal pin member and guiding said conductive terminal pin member to be positioned adjacent said contact portion, said insulator cover member permitting said conductive terminal pin member to laterally move towards said contact portion and in said lateral direction so as to effect frictional and electrical engagement of said conductive terminal pin member with said contact surface, the improvement which comprises said insulator cover member being slidable on said fixed insulator member so that said penetrating hole can move in said lateral direction from a first position offset from said contact portion to a second position right above said contact portion, and quasi-terminal pin means having a top end connected with a bottom surface of said cover member adjacent said penetrating hole, said quasi-terminal pin means being in press-contact with said contact surface in a condition that said penetrating hole is positioned offset from said contact portion.

4,519,661
CONNECTOR ASSEMBLY HAVING AN ANTI-DECOUPLING MECHANISM

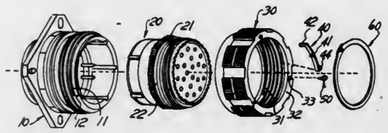
Robert W. Brush, Sr., Unadilla, and Eric F. Shepler, Bainbridge, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 9, 1983, Ser. No. 560,036

Int. Cl.³ H01R *13/623*

U.S. Cl. 339—89 M **4 Claims**

1. In combination with a connector assembly of the type having: a first tubular housing having around an outside portion thereof at least one thread, each thread having at its starting end an axially extending shoulder; a second tubular housing; a coupling ring having around the inside portion thereof at least one thread mated with a respective thread on said first housing; means for rotatably mounting said coupling ring to said second housing; and means for retarding rotation of said coupling ring including: a plurality of teeth annularly arranged on said second housing; at least one elongated spring having a projection thereon; and means for mounting each of said springs at one end to an inside portion of said coupling ring so



that the projection on each of said springs engages said teeth on said second housing, the improvement wherein the means for retarding rotation of said coupling ring further includes:

an axially extending portion at the free end of each of said springs adapted to engage a respective axially extending shoulder at the start of a thread on said first tubular housing and move said projection inwardly to increase the pressure between said projection and teeth during the final portion of coupling rotation of the coupling ring around said first tubular housing.

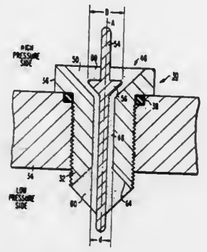
4,519,662
HIGH PRESSURE ELECTRICAL PENETRATOR

Robert F. Riley, Ellicott City; Thomas I. Meyer, Severna Park, and Wesley N. Jordan, Annapolis, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1982, Ser. No. 366,456

Int. Cl.³ H01R *4/00*

U.S. Cl. 339—94 R **8 Claims**



1. An electrical penetrator comprising:

(a) a metallic penetrator body;

(b) said penetrator body including an interior aperture extending therethrough and having a central longitudinal axis;

(c) said interior aperture including a cylindrical portion symmetrical about said axis and which flares out to define an enlarged aperture portion;

(d) an electrically conducting pin member lying substantially along said axis and having a bulbous portion positioned within said enlarged aperture portion;

(e) said bulbous portion being of such dimension so as to be unable to fit through said cylindrical portion;

(f) an encapsulating compound within said interior aperture to maintain said pin member in position displaced from the wall surface of said interior aperture, said compound comprising an epoxy having an inorganic filler of silica.

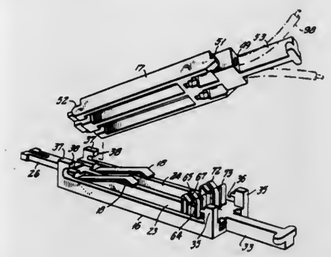
4,519,663
WIRE PLUG ASSEMBLY

Paul V. De Luca, Plandome Manor, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,935

Int. Cl.³ H01R *9/07*

U.S. Cl. 339—99 R **3 Claims**



1. An improved wire plug assembly for use in interconnecting a telephone subscriber pair between corresponding connecter blocks comprising: first and second elongate interconnectable housing members, means at first and second ends of said housing members for the interconnection of said housing members to define plural communicating recesses therein; a pair of resilient contact members disposed in two parallel recesses of said plural recesses, said housing member defining end openings for the insertion of electrically conductive pins therethrough to engage said resilient contact members substantially at one end thereof; said contact members having wire insulation displacement means substantially at a second end thereof, at least one of said housing members defining end openings therein for the insertion of an insulated conductor to be positioned opposite the insulation displacement means of one of said contact members, said insulation displacement means engaging an end of said conductor upon the closing of said pair of housing members to assemble said plug assembly; said housing element having a resilient detent projection on an end thereof adjacent said openings for said conductive pins for the engagement of a corresponding opening in a jack board, and a handle member on an opposite end of said housing element to permit disengagement of said plug assembly from said jack board.

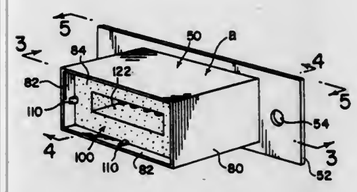
4,519,664
MULTIPIN CONNECTOR AND METHOD OF REDUCING EMI BY USE THEREOF

John D. Tillotson, Southfield, Mich., assignor to Elco Corporation, El Segundo, Calif.

Filed Feb. 16, 1983, Ser. No. 466,977

Int. Cl.³ H01R *13/658*

U.S. Cl. 339—143 R **43 Claims**



1. In a multipin connector to be fixedly mounted over a conductor access opening in a supporting wall of a digital device of the type operated by signals having frequency components capable of radiating electromagnetic waves above about 5–30 Megahertz, said connector comprising a header having a header wall with means for securing said header wall over said opening and on said supporting wall, means for fixedly supporting a plurality of conductor interconnecting pins on parallel axes passing through said access opening in a preselected pin layout pattern with said pins having first ends pointing away from said wall and second ends pointing in the direction opposite to said first ends, and means on said header for electrically isolating said pins one from the other, the improvement comprising: a pin encircling member formed of a blend of finely divided particles surrounded by an electrical non-conductive material, said blend of particles including at least a first material having a high magnetic permeability, low magnetic retentivity and a second, electrically conductive material, said encircling member having a central bore with an inwardly facing profile generally matching said pin pattern, a first end portion, and a second end portion surrounding said pins a selected distance therefrom; and means for fixedly mounting said pin encircling member of said header with said inwardly facing profile of said bore surrounding said pins and said first end portion spaced away from said header wall a distance greater than said first ends of said pins.

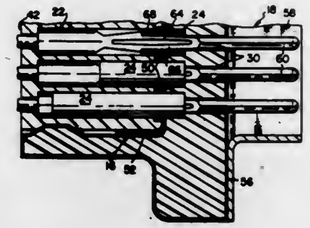
4,519,665
SOLDERLESS MOUNTED FILTERED CONNECTOR

Rickie M. Althouse, Harrisburg; Robert E. Beamenderfer, Palmyra; Roger Durbin, Lancaster; Robert D. Hollyday, Elizabethtown, and John P. Kling, Mt. Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 19, 1983, Ser. No. 562,638

Int. Cl.³ H01R *13/648, 13/66*

U.S. Cl. 339—147 R **4 Claims**



1. A solderless, filtered electrical connector comprising:

a first elongated housing of insulative material defining a forwardly directed mating face, a rearwardly directed cavity, a plurality of passages extending between said cavity and said mating face, and at least one lateral latching opening, said housing being plated with a conductive material except in and immediately adjacent said passages;

a second housing of insulative material dimensioned to be received in said cavity of said first housing and having a like plurality of passages extending between forward and rearwardly directed faces, at least one laterally directed latching lug positioned to engage a respective latching opening in said first housing;

a grounding member of conductive material interposed between said first and second housing members and having a plurality of apertures aligned with the respective passageways, each aperture being profiled by a plurality of inwardly directed tines; and

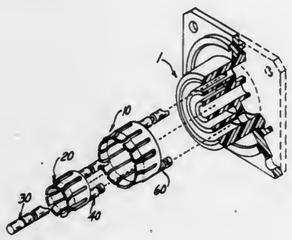
a plurality of filtered terminals each formed by a filter sleeve mounted on a compliant portion of a pin terminal.

4,519,666

TRIAXIAL ELECTRICAL CONNECTOR

Robert L. Williams, Bainbridge, and Christopher Marks, Guilford, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed Aug. 15, 1983, Ser. No. 523,481
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R **4 Claims**



1. In combination with a triaxial electrical connector of the type having an electrical nonconducting housing having a plurality of axially extending passages therein; a first tubular electrical conductor having a plurality of spring fingers at one end and a radially extending lip at the other end thereof, said lip having at least one notch; a second tubular electrical conductor located coaxially within and spaced from the first tubular electrical conductor; a center electrical conductor mounted coaxially of and spaced from said first and said second tubular electrical conductors; and a means for mounting said conductors within said housing, the improvement wherein said means for mounting said conductors within said housing comprises:

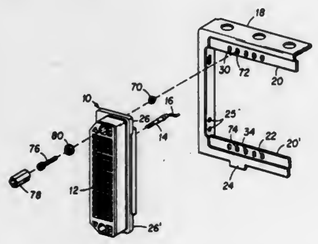
a plurality of electrically conductive terminals each having a forward end portion that includes an annular groove, a portion of each annular groove being located in a respective notch in one of said first and second tubular electrical conductors, each said terminal being plastically deformed locally of its groove and about its notch so as to be mechanically connected to the lip of a respective tubular electrical conductor, a rearward end portion of each said terminal extending through a respective axial passage in said housing; and a potting material comprised of an electrically non-conductive material being disposed in a rear portion of said housing for mechanically connecting the rearward end portion of each said terminal within the housing.

4,519,667

ELECTRICAL CONNECTOR

Terry D. Canning, Marion, and Francis E. Hovan, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 6, 1982, Ser. No. 375,787
Int. Cl.³ H01R *13/645*
U.S. Cl. 339—186 M **1 Claim**



1. In a system of electrically interconnected electronic and electrical equipment including a first structural element comprising a rack assembly and a second structural element comprising a modular electronic unit supported by said rack assembly and removable therefrom, an electrical connector comprising:

a first electrical-connector element attachable to one of said structural elements;

a second electrical-connector element attachable to the other one of said structural elements, said second electrical-connector element being mutually engageable with said first electrical-connector element, each of said first and said second electrical-connector elements being a unitary body of molded plastic material carrying a plurality of electrical contacts electrically connecting the modular electronic unit into the system when said first and said second electrical connector elements are mutually engaged;

means for attaching said first electrical-connector element to its associated said structural element, said attaching means including a threaded nut pressed in said one structural element, and further including at least two double-D shaped apertures for alignment, and a threaded screw carried in said one electrical-connector element; and

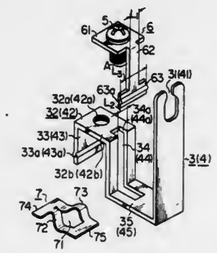
means for keying said first and said second electrical-connector elements whereby electrically compatible pairs of said first and said second electrical-connector elements are made mutually engageable and electrically non-compatible pairs of said first and said second electrical-connector elements are prevented by said keying means from being mutually engaged, said keying means including a keyway coaxial with said attaching means, the keyway being retained in said one electrical-connector element by the screw, said keying means including a key insertable in the keyway when said first and said second electrical-connector elements are mutually engaged, said key being attached to the other one of said first and said second electrical-connector elements.

4,519,668

WIRE TERMINAL CONNECTOR

Teizo Fujita, Ibaraki, and Yoshitaka Tsuji, Toyonaka, both of Japan, assignors to Idec Izumi Corporation, Osaka, Japan

Filed Nov. 28, 1983, Ser. No. 555,728
Claims priority, application Japan, Nov. 29, 1982, 57-210447; Nov. 29, 1982, 57-210448
Int. Cl.³ H01R *13/11*
U.S. Cl. 339—241 **13 Claims**



1. A wire terminal connector for use in an electric device, comprising an electrically conductive terminal plate formed with at least one screw hole, and at least one terminal screw to be screwed into said screw hole, for fixing a wire terminal between said terminal plate and said terminal screw, in which said terminal connector further comprises:

a movable member slidably supported for movement perpendicularly to said terminal plate, said movable member including a first portion extending parallell with said terminal plate and having means for supporting said terminal screw, and a second portion integrally formed with said first portion and extending perpendicularly to said first portion from one end of said first portion, said second portion having a stopper portion for limiting said first portion to a range of movement relative to said terminal plate, said first portion being movable between a first position in which a threaded end of said terminal screw is spaced a predetermined distance away from said terminal plate and opposed to said screw hole and a second position in which said threaded screw end is adjacent said terminal plate and opposed to said screw hole;

a compression spring with one end supported by said second portion of said movable member; and

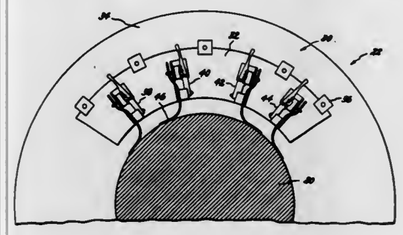
a fixed spring-support means for supporting said compression spring at the other end thereof so that said first portion is stably held in at least said first position with said threaded screw end spaced said predetermined distance away from said terminal plate by a restoration force of said compression spring.

4,519,669

BRAID CLAMP FOR GENERATOR SHAFT VOLTAGE AND CURRENT PICKUP

James B. Archibald, Schenectady, and James V. Eats, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,064
Int. Cl.³ H01R *4/50*
U.S. Cl. 339—274 **9 Claims**



1. Apparatus for clamping a strip of conductive material in trailing contact with a surface of a shaft, comprising:

a stationary member;

insulated means for affixing said stationary member a predetermined distance from said surface;

a first clamp portion on said stationary member;

said first clamp portion having a first clamping face;

a second clamp portion having a second clamping face;

a clamp base on said stationary member;

means for hinging said second clamp portion to said clamp base;

a handle having first and second positions;

a compound lever connected to said handle and said second clamp portion;

said compound lever including means responsive to said lever being placed in said first position for forcibly urging said second clamping face into locking contact with a portion of said strip of conductive material on said first clamping face whereby said strip of conductive material is firmly clamped between said first and second clamping faces; and

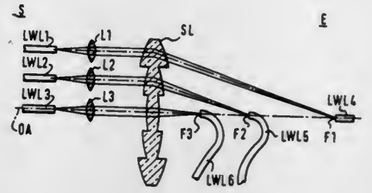
said compound lever further including means responsive to said lever being placed in said second position for hinging said second clamping face away from said strip of conductive material on said first clamping face whereby said strip of conductive material is released.

4,519,670

LIGHT-ROTATION COUPLING FOR A PLURALITY OF CHANNELS

Georg Spinner, Westerham; Manfred Lang, Taufkirchen, and Anton Pautz, Munich, all of Fed. Rep. of Germany, assignors to Spinner GmbH, Elektrotechnische Fabrik, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,913
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207469
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.15 **6 Claims**



1. Apparatus for transmitting a plurality of channels of light between two members where the members have rotational movement with respect to each other;

said plurality of channels of light having light receiving means individual to each channel on one of said members;

said light receiving means for each channel being spaced successively at different radial distances from the axis of said rotational movement;

the other of said members having light output means individual to each channel, the said light output means being spaced successively at different distances along the axis of relative rotation;

each light receiving means corresponding to a light output means; and

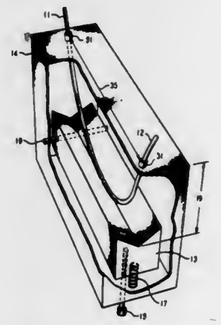
means for directing the light from each light output means to the light receiving means corresponding thereto.

4,519,671

OPTICAL ATTENUATOR

Lyn Curtis, Fair Haven, and William C. Young, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 1, 1983, Ser. No. 481,483
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.15 **7 Claims**



1. Apparatus for providing variable attenuation of an optical signal, said apparatus comprising

means adapted to receive at least one pair of signal conducting optical fibers each having a longitudinal axis wherein

the fibers in each pair are in series with one another and the fiber ends in each pair abut one another,

means for biasing the ends of any received pair of optical fibers against said receiving means, and

means for forming a variable angle between the the longitudinal axes of any received pair of optical fibers while maintaining contact between the ends of said pair of fibers, said optical signal attenuation being a function of said formed angle.

4,519,672

METHOD FOR OBTAINING AN ACCURATE CONCENTRIC FASTENING OF AN OPTICAL FIBRE IN A CONNECTOR

Ivan Rogstadius, Sidensvasvägen 6, S-125 31 Älvsjö , Sweden

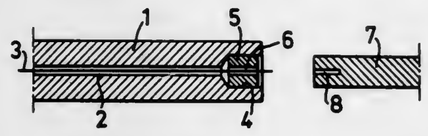
PCT No. PCT/SE81/00270, § 371 Date May 10, 1982, § 102(e) Date May 10, 1982, PCT Pub. No. WO82/01077, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 17, 1981, Ser. No. 380,870

Claims priority, application Sweden, Sep. 17, 1980, 8006532

Int. Cl.³ G02B *5/14, 7/26*

U.S. Cl. 350—96.20 **3 Claims**



1. The method of fastening an optical fiber to an end face of a connector so that said fiber, so fastened, passes from said end face axially through said connector, comprising the following steps performed in the order stated:

(a) providing an elongated connector which has an axial bore extending therethrough, said bore having a radially enlarged end portion at one end thereof which opens into an end face of said connector, the axial length of said radially enlarged end portion being substantially smaller than the length of said axial bore;

(b) inserting a solid rod of nonelastic ductile material into said radially enlarged end portion of said bore from said end face of said connector, said rod having an outer diameter that is slightly smaller than the inner diameter of said enlarged end portion of said bore;

(c) applying an axial force from the exterior of said end face of said connector to the end of said rod which faces said end face of said connector to deform said inserted rod radially outwardly into firm engagement with the inner walls of said enlarged end portion of said bore thereby to fix said deformed rod in position in said enlarged end portion of said bore;

(d) forming an axial hole in said rod which is in alignment with said axial bore in said connector and in accurate concentricity to the outer surface of said connector,

(e) inserting an optical fiber into the axial hole in said rod to extend through said axial hole into and along said axial bore in said connector,

(f) applying a further axial force from the exterior of said end face of said connector to the end of said rod which faces the end face of said connector thereby to further deform said rod radially inwardly so as to reduce the diameter of the axial hole in said rod thereby to fixedly attach said optical fiber to said radially deformed rod in accurate concentricity to the outer surface of said connector, and

(g) machining said end face of said connector so that said end face of said connector, the end of said deformed rod which faces said end face, and the end of said optical fiber adjacent said end face of said connector all lie in the same plane.

4,519,673

OPTICAL WAVEGUIDE SLIP RING ASSEMBLY

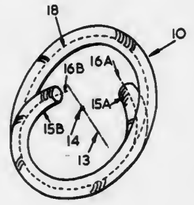
James G. Hamilton, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed Apr. 5, 1983, Ser. No. 482,971

Claims priority, application United Kingdom, Apr. 28, 1982, 8212254

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.32 **9 Claims**



1. An assembly for maintaining optical communication between relatively movable members, comprising a housing made of a low refractive index material and defining a chamber in the form of a hollow toroid, and first and second passageways leading from said toroid-shaped chamber such that there is substantially stepless transition from said toroid-shaped chamber in a clockwise direction into the first passageway and from the toroid-shaped chamber in a counter-clockwise direction into the second passageway, said passageways and toroid-shaped chamber being filled with a fluid of high refractive index whereby said assembly forms a light guide,

wherein said housing is formed in two portions mounted for relative rotation about an axis perpendicular to the equatorial plane of the toroid-shaped chamber and coincident with the centre of the toroid-shaped chamber, said portions having an interface lying on a surface of revolution generated about said axis, one portion incorporating said first passageway and the other portion incorporating said second passageway.

4,519,674

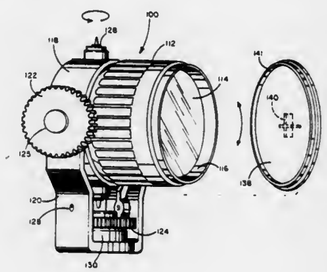
RETRO-REFLECTIVE PRISM ASSEMBLY

Galen L. Buckley, 40 Ashwood, Irvine, Calif. 92715, and Kenneth Panique, 19371 Lemon Hill Dr., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 473,782, Mar. 10, 1983, abandoned. This application Apr. 4, 1983, Ser. No. 481,920

Int. Cl.³ G01C *15/06;* **G02B** *7/18*

U.S. Cl. 350—102 **9 Claims**



1. An improved retro-reflective prism assembly comprising:

a retro-reflective prism,

a substantially cylindrical prism housing having an open end for receiving said prism and having a closed end of substantially conical shape,

a retaining ring threadably engaging said open end of said prism housing for securing said prism within said prism housing,

a pivoting housing of substantially cylindrical configuration and having an open end for receiving said closed end of said prism housing, and

a U-shaped yoke member, the opposing sides of said yoke member being rotatably attached to said pivoting housing at opposed locations thereon, and the bottom of said yoke member being configured for rotatable connection to a tripod,

said prism housing and said retaining ring each comprising a portion of an annular groove, said groove being completed upon threaded engagement of said retaining ring and said prism housing, and said assembly further comprising an O-ring contained within said completed groove in compressive engagement with said prism and in sealing engagement with the engaging surfaces of said prism housing and said retaining ring, whereby to provide a watertight seal of said prism housing without gluing said retaining ring to said prism housing.

4,519,675

SELECTIVELY LIGHT TRANSMITTING PANEL

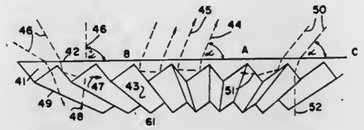
Yitzchak Bar-Yonah, 22 Rehov Tamar, Neve Monoson, Israel

Filed Mar. 29, 1983, Ser. No. 480,240

Claims priority, application Israel, Apr. 18, 1982, 65514

Int. Cl.³ G02B *17/00, 27/00*

U.S. Cl. 350—259 **16 Claims**



1. A generally vertically disposed window panel providing light transmissivity modulation as a function of the time of day and which selectively transmits rays of light incident at a range of angles of incidence while reflecting rays of light incident within a narrow range of angles of incidence comprising:

a prism array comprising a plurality of adjacent triangular prisms;

said prisms having one right angle, the other two angles being such as to result in the double total internal reflection of rays incident within said narrow range of angles of incidence;

said narrow range of angles of incidence being selected from angles greater or less than 90.

4,519,676

PASSIVE DISPLAY DEVICE

Ties S. te Velde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,420

Claims priority, application Netherlands, Feb. 1, 1982, 8200354

Int. Cl.³ G02D *25/00*

U.S. Cl. 350—269 **18 Claims**

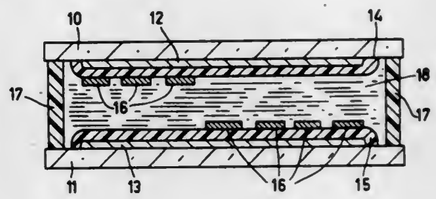
1. A passive display device comprising

first and second supporting plates with at least one of said supporting plates being transparent,

first and second electrodes on facing surfaces of said first and second supporting plates respectively, at least said first electrodes being transparent,

third electrodes movable between said first and second electrodes by electrostatic forces, said third electrodes including apertured display parts secured to one of said first and second supporting plates by a plurality of resilient elements,

wherein said resilient elements are located between said display parts of said third electrodes and said second of said supporting plates at a side remote from said first of said supporting plates, and



an opaque liquid between said supporting plates, said opaque liquid having a color contrasting with a color of said third electrodes facing said first supporting plate.

4,519,677

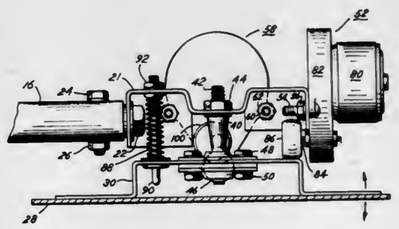
POWER-OPERATED VEHICLE MIRROR

Randall W. Weber, and Charles A. Weber, both of Elkhart, Ind., assignors to Bock Products, Inc., Elkhart, Ind.

Filed May 6, 1983, Ser. No. 492,055

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—637 **5 Claims**



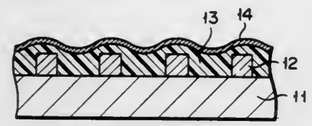
1. A power-operated mirror for mounting on a vehicle, comprising a housing, a bracket in said housing, a cam follower means having an outwardly facing mirror plate forming one side of said housing, a post secured to said bracket and extending outwardly substantially perpendicular to said bracket, a ball joint disposed on the end of said post opposite said bracket pivotally connecting said cam follower to said post, said cam follower means including a backing plate pivotally mounted on said ball joint and having said mirror plate secured to the outer surface thereof, a pair of cam means disposed at substantially right angles to one another around said post and abutting said cam follower means, a motor means for each of said cam means for changing the position of said mirror plate relative to said vehicle on at least two axes, and a resilient means disposed from both of said cam means at an angle greater than 90 degrees around said ball joint yieldably urging said cam follower means against said cam means, and including a pin secured to said bracket and extending toward said backing plate and a spring disposed around said pin between said bracket and said backing plate.

4,519,678

LIQUID CRYSTAL DISPLAY DEVICE

Yoshiaki Komatsubara, Yokohama; Kyozoh Ide, Fujisawa, and Eiko Munakata, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 30, 1982, Ser. No. 454,708
Claims priority, application Japan, Jan. 21, 1982, 57-7923
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—338 **11 Claims**



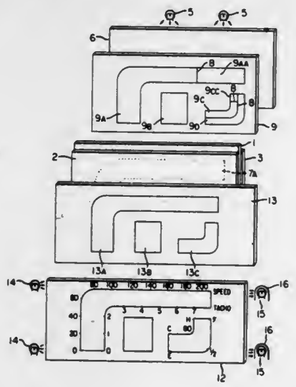
1. A method for manufacturing a reflective type liquid crystal display device, comprising the steps of:
forming a projection pattern on a substrate by selective etching using a mask pattern;
forming a polymer resin layer on the projection pattern, said polymer resin layer having small protrusions and depressions in one surface, said protrusions and depressions having a gently curved profile and conforming with the projection pattern; and
forming a reflective metal film on the polymer resin layer, said reflective metal film having small protrusions and depressions in one surface, said protrusions and depressions having a gently curved profile conforming with the surface profile of the polymer resin layer to produce a reflective part of the reflective type liquid crystal display device.

4,519,679

LIQUID CRYSTAL DISPLAY DEVICE

Kenji Horikiri; Fumio Ueda, and Hiroaki Ideno, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00032, § 371 Date Sep. 8, 1982, § 102(e) Date Sep. 8, 1982, PCT Pub. No. WO82/02973, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 3, 1982, Ser. No. 422,978
Claims priority, application Japan, Feb. 3, 1981, 56-15408; Feb. 27, 1981, 56-28892
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—339 R **5 Claims**



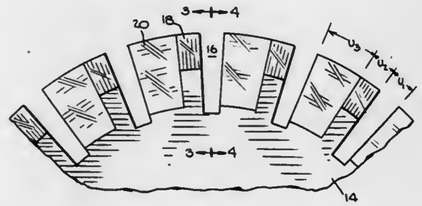
1. A liquid crystal display device comprising: a TN type liquid crystal display element having a plurality of liquid crystal display patterns formed thereon; a front panel having semi-transparent ink portions aiding the recognition of display contents and a plurality of transparent portions identical in shape to said liquid crystal display patterns on a surface of a transparent substrate respectively, said front panel being provided on the remaining portions with a light shielding print; a first polarizer and a second polarizer which are arranged such that said display element is between and in contact with said polarizers and which have their optical axes parallel to each other, said first polarizer being formed of a plurality of polarizing plates identical in shape to and somewhat larger in size than said liquid crystal display patterns respectively and disposed on one side of said display elements, said polarizing plates being identical to or somewhat larger in size than said transparent portions on said front panel, said second polarizer being disposed on the entire area of another side of said display element; a color filter disposed in contact with said second polarizer, said color filter including a plurality of color filter portions identical in shape to said liquid crystal display patterns respectively; a transflector disposed in contact with said color filter; and a light source disposed to effect the illumination through said transflector.

4,519,680

BEAM CHOPPER FOR PRODUCING MULTIPLE BEAMS

Everett C. Grollimund, Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,587
Int. Cl.³ B23K *27/00*; G02B *27/40*
U.S. Cl. 350—486 **6 Claims**



1. A beam chopper system comprising: a disc having an axis parallel to the path of an incident beam of radiation, said disc being rotatable about said axis; a circular locus on said disc for intercepting an incident beam of radiation and including a plurality of segments, each said segment comprising, in a predetermined order, a transmissive portion, a first reflective portion inclined at a first oblique angle to said axis for directing an incident beam in a first direction, and a second reflective portion inclined at a second oblique angle to said axis for directing an incident beam in a second direction distinct from said first direction.

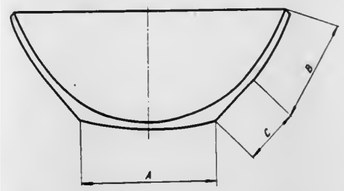
4,519,681

SOFT LENTICULAR CONTACT LENS WITH NEGATIVE REFRACTION

Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska Adademie Ved, Prague, Czechoslovakia

Filed Jan. 28, 1982, Ser. No. 343,510
Claims priority, application Czechoslovakia, Feb. 2, 1981, 764-81
Int. Cl.³ G02C *7/04*
U.S. Cl. 351—160 H **7 Claims**

1. A soft lenticular contact lens with negative refraction, wherein the outer convex surface comprises a central curved surface (A) and a circumferential curved ring (B), said central surface and said curved ring being linked together by a conic surface (C), tangentially passing into the circumferential curved ring (B).

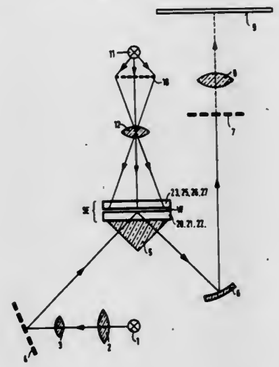


4,519,682

OPTICAL IMAGE AMPLIFIER

Fred Mast, Wil, and Rudolf Waser, Regensdorf, both of Switzerland, assignors to GRETAG Aktiengesellschaft, Regensdorf, Switzerland

Filed Nov. 5, 1980, Ser. No. 204,174
Claims priority, application Switzerland, Nov. 8, 1979, 10003/79
Int. Cl.³ G03B *21/00*
U.S. Cl. 353—122 **18 Claims**



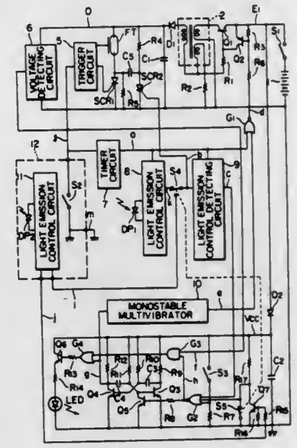
1. A device for amplifying the intensity of an optically created image, comprising:
a light source;
a first bar system for modulating light rays from said source;
a control element for reflecting modulated rays from said first bar system, including:
a control layer deformable by electrical field forces and having a reflecting surface thereon,
an electrode grid comprising a group of electrically conductive strips having regular spacing between them,
a photoelectric conducting layer on which an image to be amplified is imaged to modulate an electric field produced by said electrode grid, said photoelectric conducting layer being disposed between said electrode grid and said control layer,
a counterelectrode disposed on the side of said control layer opposite said photoelectric, conducting layer,
an alternating current power source connected between said electrode grid and said counterelectrode, and
means for applying the same electrical potential to each of the conductive strips of said electrode grid relative to said counter-electrode;
a projection surface;
means for imaging light reflected by said control element on said projection surface; and
a second bar system disposed between said imaging means and said projection surface.

4,519,683

ELECTRONIC FLASH APPARATUS

Nobuyoshi Hagyuda; Hiroshi Hasegawa, both of Tokyo; Yoshikazu Iida, Chigasaki, and Osamu Maida, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 417,202, Sep. 13, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 643,695
Claims priority, application Japan, Sep. 16, 1981, 56-144749
Int. Cl.³ G03B *15/02, 7/16*
U.S. Cl. 354—127.11 **4 Claims**



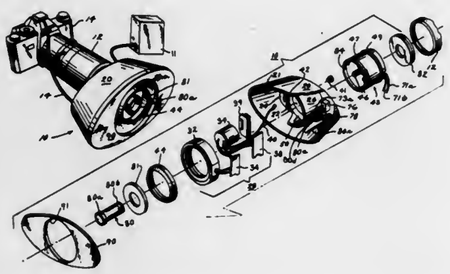
1. An electronic flash apparatus for use in combination with a camera for giving a light emission to an object for obtaining an appropriate exposure, comprising:
(a) flash means;
(b) capacitor means for accumulating electric charge for causing light emission from said flash means;
(c) charging means for charging said capacitor means to bring the voltage thereof to a level required for causing light emission from said flash means;
(d) light emission control means for controlling the quantity of light from said flash means;
(e) a light emission control detecting circuit for detecting that said control by said light emission control means is not effected within a determined period and releasing a detection signal;
(f) means for indicating, in response to said detection signal, that said control by said light emission control means has not been effected, said indicating means including means for generating an oscillation signal in response to said detection signal and means for emitting light in synchronization with said oscillation signal;
(g) power supply means for supplying power to said charging means, said light emission control means and said detecting means; and
(h) means for controlling said power supply means so that said power supply means may repeatedly stop power supply to said charging means in synchronization with oscillation of said oscillation signal.

4,519,684

PHOTO FLASH LAMP

Ralph M. Francis, Jr., 2937 Washington Ave., Racine, Wis. 53405, and Jerome C. Isaacson, 9033 Hulda Dr., Sturtevant, Wis. 53177

Filed Sep. 13, 1983, Ser. No. 531,935
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—145.1 **6 Claims**



1. An improved photo flash lamp especially suited for macro-photography comprising:
(a) a ring strobe lamp assembly;
(b) a housing having a viewing passage therethrough, said housing comprising:
a shell having an opening at one end thereof opposite to, but in communication with said housing viewing passage;
an annular wall circumscribing said viewing opening and extending toward said shell opening so as to be adjacent to, and concentric with said ring strobe lamp assembly;
a tubular light source carrier disposed in said housing viewing passage concentric within said housing annular wall and extending through said ring strobe lamp assembly for carrying said light source means;
collar means for engaging the forward end of said lamp carrier to retain said ring strobe lamp assembly against said annular wall; and
a cover having an opening therethrough for overlying the opening into said shell so that the viewing passage through said shell communicates with the opening through said cover;
(c) means for attaching said housing to the lens of a camera so that said housing viewing passage communicates with the camera lens;
(d) high intensity examination light source means held in said housing about said viewing passage for providing a source of constant illumination to enable the subject matter to be photographed to be brought into sharp focus by the lens prior to subject matter illumination by said ring strobe lamp assembly; and
power means for energizing both said ring strobe lamp assembly and said examination light source means.

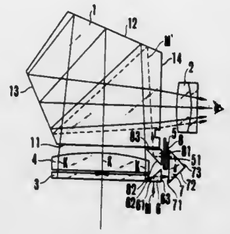
4,519,685

FINDER FOR SINGLE LENS REFLEX CAMERA

Kikuo Momiyama; Takashi Uchiyama; Ryoichi Suzuki, all of Kanagawa; Hiroyasu Murakami, Tokyo; Masaharu Kawamura, Kawasaki, and Shinji Sakai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 105,986, Dec. 21, 1979, abandoned.
This application Nov. 13, 1981, Ser. No. 321,098
Claims priority, application Japan, Dec. 26, 1978, 53-164149
Int. Cl.³ G03B *17/20, 19/12*
U.S. Cl. 354—154 **19 Claims**

16. A single lens reflex camera comprising:
an objective;
a finder optical system;
a mirror for reflecting the light passing through said objective in the direction of said finder optical system;
first optical means for directing a portion of light reflected at said mirror out of the optical path between said mirror and said finder optical system;
second optical means for returning the light directed out of



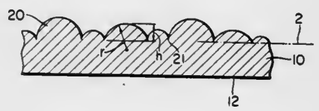
the optical path by said first optical means into said optical path; and
display means positioned in the optical path between said first optical means and said second optical means.

4,519,686

FOCUSING SCREEN OF A CAMERA

Yasutomo Seki, Kamakura; Toshio Akiyama, Fujisawa; Norio Nakabayashi, Yokohama, and Yutaka Iizuka, Fujisawa, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,201
Claims priority, application Japan, May 27, 1982, 57-90429
Int. Cl.³ G03B *13/24*
U.S. Cl. 354—200 **8 Claims**



1. A focusing screen capable of transmitting light therethrough and disposed between an objective lens and an eyepiece, said focusing screen comprising:
a surface formed with a large number of substantially hemispherical faces of irregular sizes disposed irregularly, the radius of curvature of said hemispherical faces being within the range of 8.5 to 52.8 μm and the height thereof along the screen thickness being within the range of 1.5 to 3.6 μm.

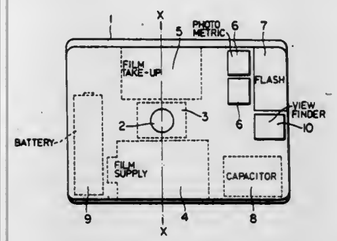
4,519,687

CAMERA WITH VERTICALLY ORIENTED FILM ADVANCE

Takao Kuge, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,180
Claims priority, application Japan, Sep. 21, 1982, 57-143658
Int. Cl.³ G03B *17/02*
U.S. Cl. 354—202 **7 Claims**

1. A camera comprising a camera body having a width that is longer than the height thereof; a photographing lens located at about the middle of the camera body both widthwise and heightwise; a film supply chamber and a film-take-up chamber arranged along a vertical axis in the direction of the height of the camera with one of said chambers positioned to one side of said photographing lens and the other of said chambers positioned to the other side thereof, said chambers being adapted to supply and take-up a roll of film having exposure frames thereon in the shape of a rectangle, such that the longer side of the rectangle is parallel to the width of the camera; and a plurality of functional elements within said camera body ar-



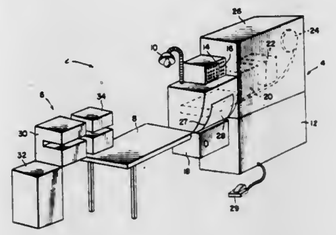
ranged for balance on both sides of said photographing lens in the widthwise direction of the camera body.

4,519,688

FILM SPLICING AND IDENTIFICATION SYSTEM

Paul E. Kitch, West Springfield; Raymond H. Crochetiere, Southampton; Gunnar G. Gudmundson, Longmeadow, and Walter R. Hadank, Springfield, all of Mass., assignors to Algorex, Inc., Chicopee, Mass.

Filed Sep. 1, 1982, Ser. No. 413,834
Int. Cl.³ G03D *13/01*
U.S. Cl. 354—297 **18 Claims**



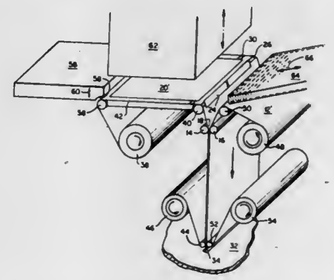
1. Apparatus for processing a cassette containing photosensitive film, said apparatus comprising:
a source of illumination;
switch means connected to said source of illumination for turning said source of illumination on to provide light suitable for visual inspection of the cassette and for turning said source of illumination off to prevent light from reaching the photosensitive film;
opening means for opening the cassette to permit extraction of the photosensitive film contained therein, said opening means including an actuation means for actuating said opening means to perform the cassette opening operation;
a light-tight enclosure surrounding a film preparation means for receiving photosensitive film extracted from the cassette after said opening means has opened the cassette, said light-tight enclosure including a shutter means movable between an open position in which access is provided to said film preparation means from outside said enclosure and a closed position in which no light can reach said film preparation means, said shutter means having a shutter actuating mechanism which actuates said shutter means and;
control means connected to said opening means, said switch means and said shutter actuating mechanism for extinguishing said source of illumination prior to the completion of said cassette opening operation and for moving said shutter means to said open position when said opening means is actuated but only after said source of illumination is extinguished.

4,519,689

METHOD AND APPARATUS FOR PROCESSING DISCRETE SHEETS OF FILM

Gordon F. Kinsman, Billerica; Ronald F. Lambert, Wayland, and David A. Morrison, Framingham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 30, 1984, Ser. No. 595,471
Int. Cl.³ G03D *9/02*
U.S. Cl. 354—304 **31 Claims**



1. The method for processing discrete sheets of rapid access type photographic films, said method comprising the steps of:
providing means to establish a processing gap;
feeding first and second webs through said gap so that a working surface on one of said webs is presented in mutually facing relationship to a working surface on the other of said webs;
releasably securing a rapid access film sheet to the working surface of at least one of said webs;
supplying a quantity of processing fluid to the working surfaces of said webs in advance of web passage through said gap and forwardly of the rapid access film sheet so that the processing fluid is spread uniformly over the area of said sheet as it passes with said webs through said gap; and
removing said sheet from said one web after passage thereof through said gap.

4,519,690

PROCESS FOR DEVELOPING OR PEELING ALKALI-TYPE PHOTOSENSITIVE FILM AND APPARATUS USED THEREIN

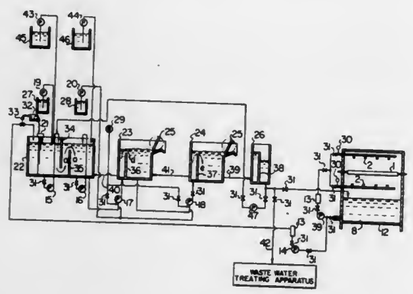
Yoshiaki Tomisawa; Toshio Takeuchi; Keijiro Honda, all of Hitachi; Susumu Takahashi, Ibaraki, and Seiji Kinoda, Fujisawa, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,911
Claims priority, application Japan, Aug. 6, 1982, 57-137822
Int. Cl.³ G03D *5/04*
U.S. Cl. 354—324 **6 Claims**

1. An apparatus for developing or imagewisely peeling an alkali-type photosensitive film comprising
a developing or peeling device for developing or imagewisely peeling an alkali-type photosensitive film with a developing or peeling solution,
a solution tank for receiving the developing or peeling solution containing a released photosensitive film suspension transported from the developing or peeling device,
means for transporting the developing or peeling solution from said developing or peeling device to said solution tank,
at least one reagent tank for storing separately at least one reagent for regenerating the developing or peeling solution,
means for transporting the at least one reagent to said solution tank from said at least one reagent tank,
a blower for supplying a gas to the developing or peeling solution,
at least one floating tank,
means for transporting an admixture of the developing or

peeling solution and said at least one reagent to the at least one floating tank,

means for directing the gas from said blower to said at least one floating tank, wherein the released photosensitive film suspension suspended in the developing or peeling solution transported from the solution tank in said admixture is flocculated with the at least one reagent from the at least one reagent tank and with the gas from the blower to produce a flocculated deposit,



means for removing the flocculated deposit in a floating state from the at least one tank,

means for discharging at least a portion of the resulting treated developing or peeling solution to a waste water treating apparatus, and

means for recycling the remaining portion of the treated developing or peeling solution to the developing or peeling device.

4,519,691

PHOTOGRAPHIC TAKING LENS DRIVING MEANS

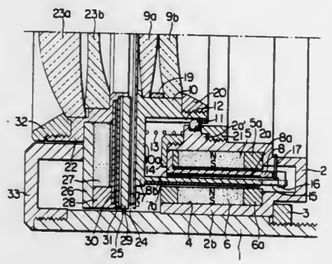
Minoru Yamada; Eiji Ito, and Masaru Nagai, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1984, Ser. No. 585,768

Claims priority, application Japan, Mar. 4, 1983, 58-35636; Mar. 4, 1983, 58-35637; Mar. 4, 1983, 58-35638; Mar. 4, 1983, 58-31289[U]; Mar. 4, 1983, 58-31290[U]

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—400 **8 Claims**



1. A taking lens driving means comprising permanent magnet means provided fixedly inside of a lens barrel,

a plurality of movable coil members arranged so as to traverse magnetic flux of a magnetic circuit formed of said permanent magnet means and to surround the circumference of the taking lens,

wherein at least one of the movable coil members is for driving the taking lens unit, and the rest thereof are for regulating the movable range of the movable coil member for driving the taking lens unit.

4,519,692

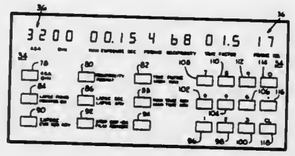
EXPOSURE AND CAMERA CONTROL

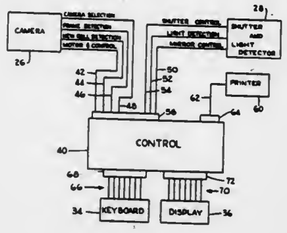
John K. Michalik, Sloan, N.Y., assignor to Warner-Lambert Technologies, Inc., Southbridge, Mass.

Filed Apr. 8, 1983, Ser. No. 483,455

Int. Cl.³ G03B *7/093*

U.S. Cl. 354—412 **15 Claims**





1. An exposure and camera control system comprising:

(a) means for providing information relating to film parameters and camera type;

(b) light to frequency converter means for providing pulse signals having a frequency proportional to the intensity of light to be used in exposing camera film; and

(c) control means operatively connected to said information providing means and to said light to frequency converter means for calculating exposure time and for providing signals for controlling film exposure to light and signals for controlling film transport when the exposure is complete.

4,519,693

DEVICE FOR TRANSFERRING PARTICULATE MATERIAL

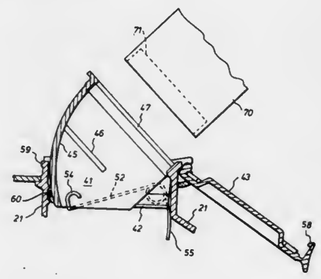
Anthony J. Skeels, Hitchin, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 19, 1983, Ser. No. 533,465

Claims priority, application United Kingdom, Sep. 21, 1982, 8226824

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DD **12 Claims**



1. An apparatus for transferring particles from a refill container into an open ended hopper, including:

means for closing the open end of the hopper; and

means for guiding particles from said refill container into said hopper, said guiding means being positioned interiorly of the hopper when said closing means closes the open end of the hopper and moving, in response to said closing means being moved to open the open end of the hopper, to an exterior position for receiving the refill container with the surface of said guiding means having a surface in engagement with the refill container and the surface being inclined to the horizontal so that the refill container does not have to be completely inverted when discharging particles into the hopper.

4,519,694

PROJECTION APPARATUS FOR AUTOMATIC CORRECTION OF NON-UNIFORM ILLUMINANCE DISTRIBUTION IN IMAGE AREA OF IMAGING PLANE

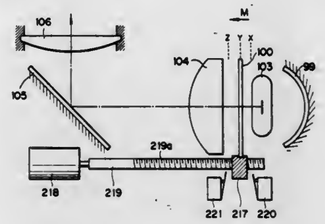
Kazuo Kashiwagi, Tokyo, and Takao Toda, Shinagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 507,581

Claims priority, application Japan, Jul. 2, 1982, 57-113984; May 23, 1983, 58-90200

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—5 **38 Claims**



1. A projection apparatus comprising:

a source of light for illuminating an original to be projected which is located at an illuminating position;

optical means for imaging the original illuminated by said source of light on a projection plane;

first measuring means for measuring, without the original at the illuminating position, the amount of light passing near the center of an optical path defined by said optical means;

second measuring means for measuring, without the original at the illuminating position, the amount of light passing near the marginal area of said optical path;

illuminance correcting means for changing a distribution of illuminance on said projection plane; and

control means for controlling said illuminance correcting means in accordance with the measurements of said first and second measuring means to correct non-uniform distribution of illuminance.

4,519,695

IMAGE DENSITY CONTROL METHOD FOR ELECTROPHOTOGRAPHY

Kazuo Murai, and Yutaka Hasegawa, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,455

Claims priority, application Japan, Feb. 12, 1982, 57-20731

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **4 Claims**

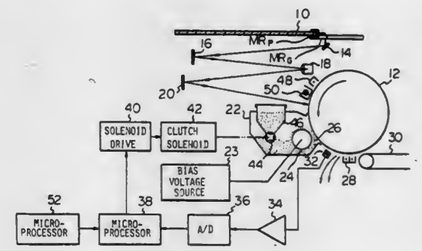
1. A method of controlling an image density in electrophotography by controlling at least one of various image density parameters in response to values detected from different pattern areas, the image density parameters including an amount of charge deposited on a photoconductive element by a charger, bias voltage for development, toner concentration in a developer, rate at which toner is supplied to the developing unit and image transfer potential, comprising the steps of:

(a) forming at least two pattern areas having different potentials on the surface of the photoconductive element by at least one of various means for forming charge patterns which include controlling the energization of the charger, controlling an illuminating lamp and projecting an image pattern;

(b) producing in digitized form in different ranges respectively assigned to the two pattern areas, at least one of values associated with an image density which include a surface potential of the pattern area before development, toner density of the pattern area after development, surface potential of the pattern area after development and image density of an area of a transferred image which corresponds to the pattern area;

(c) comparing the digitized data of the different patterns and, based on the result of the comparison, setting up correspondence of the values associated with image density to a relation in magnitude between the digitized data and;

(d) controlling said at least one image density parameter in accordance with a predetermined function based on the result of said comparison performed in step (c).



4,519,696

XEROGRAPHIC COPYING APPARATUS

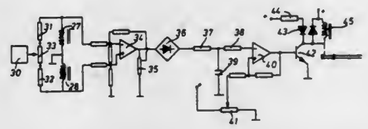
Jan J. Bruyndonckx, Hove, and Jacobus H. Bosschaerts, Mortsel, both of Belgium, assignors to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Feb. 9, 1983, Ser. No. 465,286

Claims priority, application United Kingdom, Feb. 11, 1982, 8204033

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 D **7 Claims**



1. Xerographic copying apparatus including an image development station having a developer applicator section in which a free-flowing xerographic developer mixture comprising ferromagnetic particles and non-ferromagnetic toner powder is contacted with the image to be developed for attraction of said toner powder to said image to render the same visible, a toner supply section containing a supply of toner powder, and toner feed means between said sections and operable to deliver additional toner powder from said supply section to said applicator section to replenish the toner powder in said developer mixture, and means for monitoring the concentration of toner powder in said mixture and operating said toner feed means upon significant changes in said concentration, said monitoring means comprising a first induction coil mounted on said applicator section so that the magnetic field of said coil traverses a portion of the developer mixture in said applicator section and its self-inductance changes with changes in the concentration

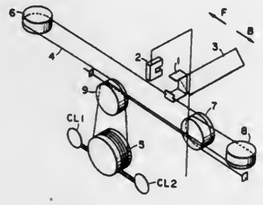
of ferromagnetic particles in said mixture, a second induction coil mounted at said development station so that it is exposed to the same environmental temperature conditions as the first coil but with its magnetic field prevented from traversing said developer mixture, an AC bridge circuit in which first and second induction coils are connected in a first and a second arm of the circuit, an AC source for feeding said bridge circuit, and detecting means for detecting and signalling relative variations in the AC voltages across said first and second induction coils.

4,519,697

IMAGE FORMING APPARATUS

Hiroaki Takeda; Kano Tanaka, both of Yokohama, and Shinji Murata, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 293,879, Aug. 18, 1981, abandoned.
This application Aug. 14, 1984, Ser. No. 641,403
Claims priority, application Japan, Aug. 25, 1980, 55-116850
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **23 Claims**



1. An image forming apparatus, comprising:
scanning means for scanning an original, and having a reciprocating member;
driving means for causing said reciprocating member to move in a forward direction for original scanning and in a reverse direction; and
control means for controlling said driving means to position said reciprocating member at a predetermined position, regardless of whether said reciprocating member is at the predetermined position, before the performance of an image forming operation, by a setting operation involving movement of the reciprocating member in both the forward and the reverse directions, said control means being arranged to determine, as an improper state of said apparatus, the failure of said reciprocating member to become positioned by the setting operation at the predetermined position.

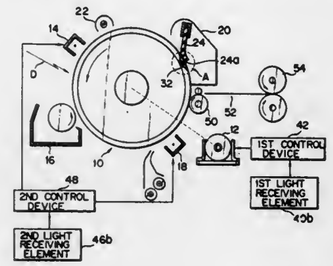
4,519,698

IMAGE FORMING APPARATUS INCLUDING A CLEANING BLADE AND DRUM LUBRICANT

Mitsuaki Kohyama, Tokyo, and Kenshi Toshimitsu, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,363
Claims priority, application Japan, Sep. 3, 1981, 56-138815
Int. Cl.³ G03G *21/00*; F16N *15/00*; B05C *11/105*; E21B *10/22*
U.S. Cl. 355—15 **13 Claims**

1. An image forming apparatus comprising:
a rotatable photosensitive body including an outer circumferential surface having a recess for holding a lubricant therein at a part thereof, said recess being formed to extend from one side to the other side of said outer circumferential surface;
driving means for rotating said photosensitive body;
a cleaning blade for removing a residual developer on said outer circumferential surface upon contact therewith, said cleaning blade having an edge portion which extends from said one side to said the other side of said outer circumferential surface, said edge portion being in contact with said outer circumferential surface of said photosensitive body, said cleaning blade being capable of falling into said recess; and
feeding means for feeding any lubricant held in the recess to



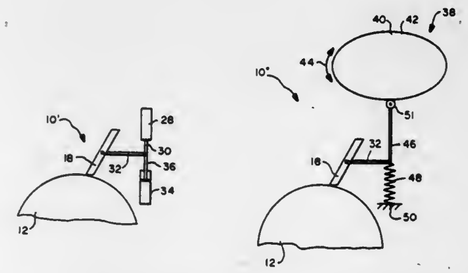
part of the outer circumferential surface of said photosensitive body which is brought into contact with said cleaning blade to form a thin film of lubricant upon contacting with any lubricant held in said recess as said photosensitive body is rotated.

4,519,699

ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING TONER CLEANING ARRANGEMENT

Edward F. Mayer, and Victor B. van Blerk, both of San Jose, Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,464
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **4 Claims**



1. In an electrophotographic copying apparatus including a rotating photoconductive drum, means for placing an electrostatic image corresponding to an original to be copied on the outer circumferential surface of the drum, means for applying toner to said image bearing surface in order to develop said image with said toner, and means for transferring the applied toner from said drum surface to a blank sheet of paper so as to transform the latter into a copy of said original, the improvement comprising an arrangement for cleaning residue toner from said drum surface immediately after said copy has been made, said arrangement including:
(a) means adapted to engage said drum surface directly as the latter rotates so as to wipe any residue toner from the engaged surface;
(b) means supporting said wiping means for movement between a first position in direct engagement with said drum surface and a second position out of engagement therewith; and
(c) means acting on said supporting means for moving said wiping means between said first and second positions at a controlled speed throughout its movement between these positions, whereby to be able to prevent the wiping means from moving too fast and possibly cause residue toner to

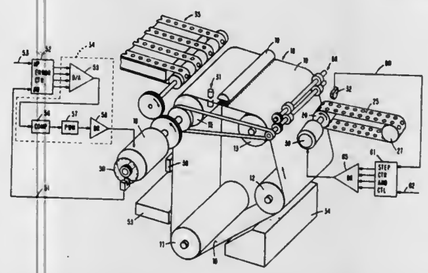
be thrown into the immediate surroundings inadvertently, said moving means including a piston type member, means for moving said member back and forth along a straight line path and means for damping the speed of movement of said member in a controlled way, said piston type member and said means for moving it together forming a solenoid and wherein said damping means is a dashpot connected with said member in a way which dampens its back and forth movement in said precontrolled way.

4,519,700

ELECTRONICALLY GATED PAPER ALIGNER SYSTEM

Robert B. Barker, Raleigh, N.C.; Ronald V. Davidge, Delray Beach, Fla.; David K. Gibson, and George W. Van Cleave, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1983, Ser. No. 566,236
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **14 Claims**



1. A sheet handling device adapted to feed sheets in synchronism with an image on the surface of a moving photoconductor comprising:
conveying means operable to transport sheets along a predetermined path toward the photoconductor;
sensing means disposed relative to said predetermined path for generating a first signal representative of the passing of a sheet along said path;
means operable for generating a second signal corresponding to the location of an image zone on the photoconductor; and
controller means responsive to said first and second signals for controlling the velocity of said conveying means for synchronously engaging the sheet with the photoconductor image zone as the sheet exits said predetermined path.

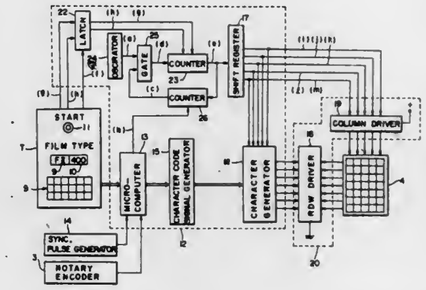
4,519,701

SIDE PRINTING APPARATUS

Takeshi Kanaoka, and Shigehisa Shimizu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1983, Ser. No. 558,517
Claims priority, application Japan, Dec. 10, 1982, 57-215432
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—39 **9 Claims**

1. A side printing apparatus for providing latent images of characters, numerals, symbols and the like on a photographic film moving in continuous motion by exposing it to light images produced by a light image forming device said apparatus comprising:
means for giving an indication of the film type of a photographic film to be provided with latent images thereon;
means for generating pulse signals having a pulse length in accordance with the film type indication from said means; and



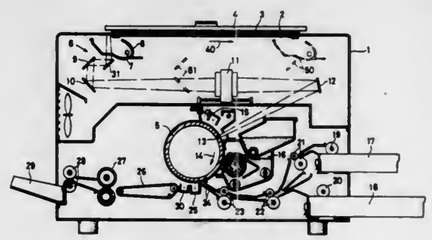
drive means for causing a light image forming device to be energized for a time defined corresponding to said pulse length so as to produce said latent images.

4,519,702

APPARATUS FOR REGULATING THE MOVEMENT OF A MOVABLE MEMBER

Yutaka Shigemura, Hyogo; Hiroshi Kimura, Osaka; Masahiko Hisajima, Osaka; Shinobu Satonaka, Osaka; Seiji Kaminaga, Chiba, and Mitsuya Ishito, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Oct. 21, 1983, Ser. No. 544,057
Claims priority, application Japan, Nov. 30, 1982, 57-210290
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **5 Claims**



1. An apparatus for regulating the movement of a movable member, said apparatus comprising:
drive means for moving the movable member in a first direction from a rest position to an operative position and for moving the movable member in a second direction, opposite to said first direction, from said operative position toward said rest position;
first detecting means for detecting the presence of the movable member at said rest position;
second detecting means for detecting the presence of the movable member at a location adjacent said rest position but upstream thereof with respect to said second direction; and
control means, operatively connected to said drive means, said first detecting means and said second detecting means, for operating said drive means to move the movable member in said first direction and then in said second direction, for stopping said drive means upon detection of the movable member, moving in said second direction, at said location by said second detecting means, whereafter the movable member continues movement by inertia in said second direction from said location to said rest position and is detected thereat by said first detecting means, and for, if the movable member is not detected at said rest

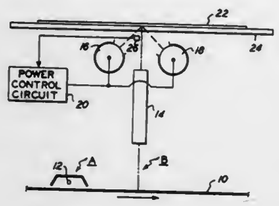
position by said first detecting means within a predetermined time period after said detection by said second detecting means, again starting said drive means to move the movable member in said second direction until detection thereof by said first detecting means.

4,519,703

DOCUMENT REPRODUCTION DEVICE UTILIZING A SELECTIVE COLOR ILLUMINATOR

Richard F. Lehman, Fairport; Roland W. Porth, Rochester, and Lawrence J. Mason, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 15, 1983, Ser. No. 514,372
Int. Cl.³ G03B *27/72*
U.S. Cl. 355—69 **4 Claims**



1. A document reproduction device including an illumination system for illuminating an original document lying in an object plane;

said illumination system comprising a first and second lamp placed on opposite sides of a scan strip on said object plane;

said first lamp adapted to direct a band of light of a first spectral emission to a linear scan strip, said second lamp adapted to direct a band of light of a second spectral emission, complementary to said first emission, to said scan strip;

means for projecting an image of said document onto a photosensitive image plane;

manually adjustable means for adjusting the ratio of said first and second lamp emissions so as to enhance the copyability of a document dominated by a specific color, said adjustment resulting in a change in illumination level at said object plane;

a photosensor for detecting the illumination level at said object plane and for generating an output signal representative of a change of said level; and

electrical means responsive to said photosensor output signal to adjust the power input to said lamps so as to maintain a desired illumination level.

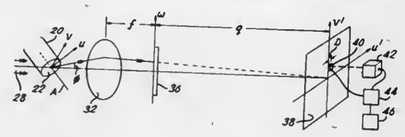
4,519,704

MEASUREMENT OF OPTICAL REFRACTIVE INDEX PROFILES

Robert J. Mansfield, Wallingford, Conn.; David N. Payne, Southampton, England, and Issei Sasaki, Sapporo, Japan, assignors to National Research Development Corporation, London, England

Filed Mar. 18, 1983, Ser. No. 476,465
Claims priority, application United Kingdom, Mar. 18, 1982, 8207968
Int. Cl.³ G01N *21/41*
U.S. Cl. 356—73.1 **13 Claims**

1. A method of measuring radial variations in the refractive index of an approximately cylindrical, translucent object having a substantially plane end face and a substantially invariant refractive index in a direction parallel to its axis, comprising illuminating the end face by means of a collimated beam of light incident at an angle to the cylindrical axis which differs substantially from 90 degrees and measuring at a plurality of



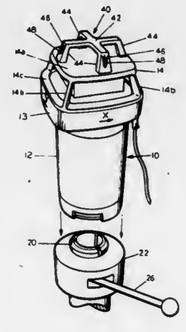
radial positions the refractive angle at which light leaves the end face.

4,519,705

SIGHTING CAP FOR ROTATING LASER BEAM TRANSMITTER

Robert J. P. Morrow, Huber Heights, Ohio, assignor to Spetra-Physics, Inc., Mountain View, Calif.

Filed Sep. 16, 1982, Ser. No. 418,650
Int. Cl.³ G01B *11/26*
U.S. Cl. 356—138 **7 Claims**



1. In a rotating laser beam transmitter having a housing unit angularly adjustable about a generally vertical axis of rotation of the laser beam and means for adjusting the vertical angular position of the axis of rotation of the laser beam relative to two fixed horizontal axes in the housing, the improvement comprising: a cap for said housing including a horizontal base plate portion having at least one pair of opposed, vertical legs; means for securing said cap to the top of the transmitter housing with said legs in diametrically opposed relationship to the axis of rotation and in parallel alignment to one of said fixed axes; each pair of said legs respectively defining diametrically aligned vertical sighting slots in parallel alignment with said fixed axis, whereby sighting through said slots at a remote sighting post facilitates angular adjustment of the housing so that said fixed axes are parallel to the surveyed axes of the work area.

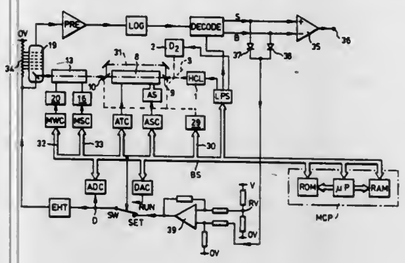
4,519,706

SPECTROPHOTOMETER HAVING WAVELENGTH SELECTING STRUCTURE

Peter Morley, Newmarket, and Peter J. Little, Malmesbury, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1983, Ser. No. 458,123
Claims priority, application United Kingdom, Jan. 19, 1982, 8201372
Int. Cl.³ G01J *1/42*; G01N *21/71*
U.S. Cl. 356—319 **12 Claims**

1. A spectrophotometer comprising a source of radiation, a monochromator arranged to receive radiation from the source, a detector for receiving a selected wavelength of radiation from the monochromator and producing a signal representative of the intensity of the radiation received, means for comparing the output of the detector with a reference value when the spectrophotometer is in a calibration mode and producing a control signal dependent on the comparison, means for feeding the control signal to a control input of the detector for controlling the gain thereof so as to cause its output to tend towards the reference value, means for storing said control signal, and means for applying the stored control signal to the control input of the detector when the spectrophotometer is in a measurement mode characterised in that the spectrophotometer is an atomic spectrophotometer and includes a source of



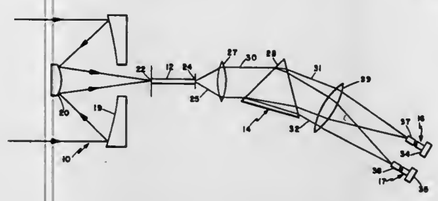
resonance line radiation, means for stepping the selected wavelength of the monochromator through the resonance line when the spectrophotometer is in the calibration mode, means for detecting the magnitude of the control signal when the gain of the detector is at a minimum value, means for detecting the wavelength setting of the monochromator when the gain of the detector is at a minimum value, means for storing the magnitude of the control signal and the wavelength setting which give the minimum detector gain, and means for applying the stored control signal to the detector and the stored wavelength setting to the monochromator when the spectrophotometer is in the measurement mode.

4,519,707

MULTI-SPECTRAL TARGET DETECTION SYSTEM WITH COMMON COLLECTING MEANS

Fernand B. Kuffer, Brea, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jan. 31, 1983, Ser. No. 462,249
Int. Cl.³ G01J *3/14*
U.S. Cl. 356—326 **4 Claims**



1. A multi-spectral detection system for detecting radiation from a single target feature within frequency bands that are in diverse portions of the electromagnetic spectrum, comprising

common radiant energy collection means for collecting radiant energy of different width wavelength bands from a single target feature in said diverse portions of the electromagnetic spectrum and focusing said collected energy to a common focal point,

imaging means for dispersing said collected energy into separate beams having spectral regions respectively corresponding to said diverse portions of the electromagnetic spectrum, with the beams being of uniform cross-sectional dimension notwithstanding said different widths, and for focusing the separate beams to a common plane for detection by separately positioned detections means; and

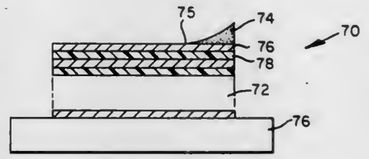
separate detection means of uniform cross-sectional area positioned in the common plane for respectively detecting energy in the separate spectral regions of the separate beams.

4,519,708

MODE DISCRIMINATION APPARATUS

Michael S. Perlmutter, Sherborn, and Kenneth H. Braun, North Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 20, 1981, Ser. No. 265,712
Int. Cl.³ G01C *19/64*; H01S *3/05*
U.S. Cl. 356—350 **28 Claims**



1. In combination:

an electromagnetic wave ring resonator for supporting an electromagnetic wave having a fundamental resonant mode disposed along an axis of said resonator and higher order resonant modes displaced from said axis;

means disposed in said resonator having absorptive material displaced from said axis for absorbing energy of said higher order resonant modes; and

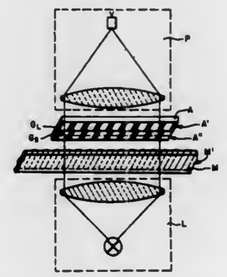
said absorptive material means comprising a dielectric mirror with an absorptive material deposited on at least a portion of said mirror for suppressing said unwanted resonant modes.

4,519,709

PHOTOELECTRIC INCREMENTAL LENGTH OR ANGLE MEASURING DEVICE

Gunther Nelle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 443,063
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148910
Int. Cl.³ G01B *11/00, 11/02*
U.S. Cl. 356—373 **13 Claims**



1. In a photoelectric, incremental path measuring device of the type comprising illuminating means for generating collimated illuminating light of wavelength λ; a measuring scale which defines a measurement grid having a predetermined grid constant g; a scanning plate which defines at least one scanning grid having the same grid constant as the measurement grid;

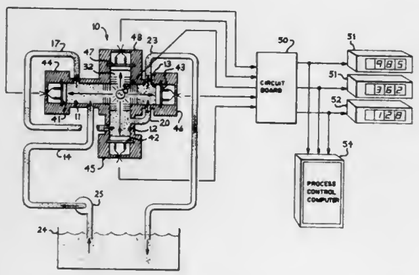
said measurement grid being separated from the at least one scanning grid by a distance $a=kg^2/\lambda$, the improvement comprising:

k is a number in the range between about 0.0 and about 0.3;

one of the measurement and scanning grids comprises alternating light grid lines and dark grid lines of selected widths in which the ratio between the light grid line width and the dark grid line width is greater than 2:1; and

said measurement grid oriented parallel to said scanning grid.

4,519,710
COLORIMETER
Robert S. Luce, Los Altos; Ross A. Quinn, Los Altos Hills, and Leroy S. Rowley, San Jose, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Mar. 21, 1983, Ser. No. 477,226
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—411 **13 Claims**



1. A colorimeter for continuously measuring concentration of an ionic species in an aqueous solution, said colorimeter comprising:

(a) a source of optical radiation;

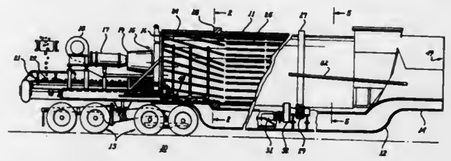
(b) a plurality of flow chambers through which a sample of said solution can pass, said flow chambers being interconnected so that said sample of said solution passes through each of said flow chambers in succession, each of said flow chambers admitting radiation from said source into said sample simultaneously, said flow chambers being configured so that said radiation from said source is transmitted through a different quantity of said sample in each flow chamber;

(c) a plurality of first photodetectors, each one of said first photodetectors being responsive to intensity of radiation from said source transmitted through said sample in a corresponding one of said flow chambers, each one of said first photodetectors generating an electrical output indicative of the concentration of said ionic species in said sample of said solution in said corresponding one of said flow chambers, electrical outputs from said plurality of first photodetectors being generated simultaneously;

(d) a second photodetector responsive to intensity of radiation emitted by said source; and

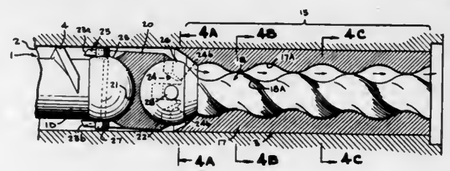
(e) electronic circuitry interconnecting said radiation source and said second photodetector, said circuitry maintaining the intensity of said radiation emitted by said source at a substantially constant value.

4,519,711
DRUM MIXER AND METHOD
Orval D. Gillen, Tempe, Ariz., and John G. Healey, Jr., Portland, Oreg., assignors to The Tanner Companies, Phoenix, Ariz.
Filed Mar. 27, 1980, Ser. No. 134,373
Int. Cl.³ B18C *5/46*
U.S. Cl. 366—4 **7 Claims**



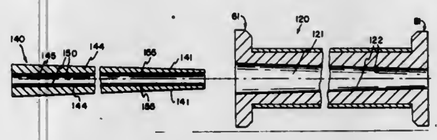
7. The method of processing re-cycled bituminous road surfacing materials comprising the steps of generating a current of high temperature gases at the receiving end of a rotatable mixing drum, conveying raw bituminous material into the receiving end of said drum, spraying a curtain of water into the path of said raw material prior to exposure thereof to the high temperature gases, spraying a curtain of water into the current of high temperature gases, exposing said raw bituminous material to the current of high temperature gases after subjection thereof to said water curtain, and conveying the heated and mixed raw material to the discharge of said drum.

4,519,712
POSITIVE DISPLACEMENT PUMP ASSEMBLY
Robert A. Barr, P.O. Box 4476, Virginia Beach, Va. 23454
Filed Sep. 6, 1984, Ser. No. 648,040
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—77 **8 Claims**



1. A screw extruder assembly for plasticating or melting solid plastic material or the like, comprising an elongated cylindrical barrel having an upstream end and an outlet end, a screw rotatably housed in an upstream portion of said barrel and having a feed end and a discharge end, said screw having a mixing section between the feed end and discharge end thereof comprising at least one pair of substantially parallel, helical, first and second threads integral with the core of said screw, said first thread of the pair originating at the feed end of said screw creating a helical channel and having a minimum clearance to said barrel, said second thread of the pair originating at a location about one-third to two-thirds of the length of said screw from the feed end of said screw by rising from the core of said screw and having a large clearance to said barrel comparable to or greater than the size of the components of said solid plastic material, said second thread of the pair dividing said helical channel created by said first thread into two sub-channels of substantially equal width, one located toward the feed end of said screw from said second thread and the other located toward the discharge end of said screw from said second thread, the depth of the sub-channel located toward the feed end gradually increasing to a maximum comparable to the depth of said helical channel at the feed end of said screw accompanied by gradual decrease of the depth of the other sub-channel to a minimum comparable to or greater than the size of the components of said solid plastic material, a positive displacement Moineau type pump in said barrel located between the discharge end of said screw and said outlet end, said pump having a stator member and a rotor member rotatable in the stator member, the stator member having a hollow cavity therethrough accommodating said rotor member and the stator cavity and rotor exterior having confronting surfaces of developed helical contours providing helical threads of wide rounded form, said confronting surfaces being always in contact with each other at any cross-section defining a series of pumping pockets which progress longitudinally through the pump, the number of threads on said rotor exterior being less than the number of 40 threads in the stator cavity surface, and coupling means interconnecting the discharge end of said-screw to said rotor member to drive the latter from said screw to provide reduced pressures at said discharge end and provide pumping force to increase downstream process restrictions to flow.

4,519,713
APPARATUS AND METHOD FOR RELINING EXTRUDER BARRELS
H. Dean Godsey, Palatine; Donald F. Schoen, Barrington, and Joseph F. Turek, Hanover Park, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Mar. 21, 1983, Ser. No. 477,187
Int. Cl.³ B01F *7/08*
U.S. Cl. 366—79 **6 Claims**



1. In an extruder of the screw type, having an elongated barrel and impeller means, said barrel having a feed end and a discharge end and a passageway therebetween, said impeller means comprising a drive means and an elongated screw snugly and rotatably residing within said passageway, the improvement wherein said barrel consists of a relinable assembly comprising:

a. an elongated rigid housing having an elongated tapered bore therethrough, wherein the cross-section diameter of the bore is larger toward the feed end of the barrel and tapers to a smaller cross-section diameter at the discharge end;

b. a rigid elongated sleeve liner, having a tapered exterior surface and a wear and/or corrosion resistant interior surface defining said passageway, wherein the exterior surface of the sleeve liner is shaped to fit closely within the tapered bore of the housing, and wherein the sleeve liner axially mates within the tapered bore of the housing to a substantially contiguous line-to-line fit at an interface between the interior tapered surface of the housing bore and the tapered exterior surface of the sleeve liner, and wherein, when the sleeve liner is mated within the tapered bore, the wear and/or corrosion resistant interior surface is uniformly centered around the screw; and

c. means for removably securing the sleeve liner within the housing.

4,519,714
WASTE MATERIAL AGITATOR
Warren K. Johnson, Alexandria; Michael R. Goettsch, Glenwood, and Archie H. Olson, Alexandria, all of Minn., assignors to Glenwood Manufacturing Corporation, Glenwood, Minn.
Filed Jun. 4, 1984, Ser. No. 617,114
Int. Cl.³ B01F *7/06*
U.S. Cl. 366—285 **10 Claims**

1. An apparatus for agitating a fluid containing a sludge-like material stored in an enclosure having a floor and side walls, the apparatus comprising:

an elongated frame having a longitudinal axis and a lower floor-engaging guard portion defining an enclosure and an upper end portion;

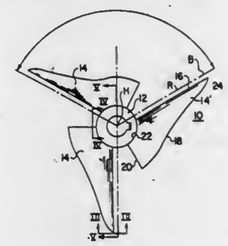
means for agitating the fluid containing the sludge-like material pivotally attached to the frame within the guard portion;

pivotal mounting means for mounting the means for agitating such that the means for agitating is positionable in a generally vertical direction between a first position substantially along the longitudinal axis of the elongated frame and a second upward position angularly spaced from the first position; and



control means for controlling the pivotal movement of the means for agitating attached to the frame and including a control mechanism situated proximate the upper end portion of the frame and a linkage assembly extending along the elongated frame and pivotally connected to the control mechanism at one end and pivotally attached to the agitating means at another other end so that the agitating means is positionable between the first and second position through manipulation of the control mechanism.

4,519,715
PROPELLER
Robert A. Golobic, and Michael H. Scott, both of Colorado Springs, Colo., assignors to Joy Manufacturing Company, Pittsburgh, Pa.
Continuation of Ser. No. 326,084, Nov. 30, 1981, abandoned.
This application Nov. 17, 1983, Ser. No. 552,857
Int. Cl.³ B01F *7/22*
U.S. Cl. 366—343 **10 Claims**



1. A propeller comprising a hub rotatable about a hub axis H and a plurality of blades affixed to said hub, each said blade including a straight leading edge and a concavo-convex trailing edge, each said blade being a portion of a cylindrical segment having an axis B, said axis B intersecting said axis H, said straight leading edge and lineal extensions thereof being parallel to said axis B and non-intersecting with said hub axis H and being spaced, with respect to the direction of rotation, behind a radius extending outwardly from said axis H which radius is parallel to and in the same plane as said straight leading edge.

4,519,716

DEVICE FOR TESTING COMBUSTABILITY

Shigeru Suga, 20-2 Yoyogi 5-chome, Shibuya-ku, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,456
Int. Cl.³ G01N *25/00*
U.S. Cl. 374—8 **15 Claims**





1. A device simulating the burning of an elongated smoking product for testing the combustability of an article, comprising:

a rod-shaped resistive heating element having a first end and a second end opposite said first end, the length and cross section of which are the same as those of a product whose burning characteristics are to be simulated; and

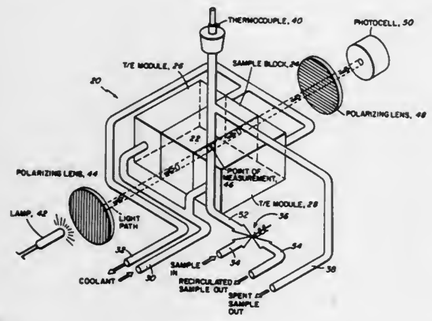
means for applying an electric current through successively adjacent portions of said heating element along the length thereof, one portion at a time, for respective predetermined periods of time, beginning at said first end and ending at said second and, such that the temperature of the portion to which the electric current is being applied is approximately equal to a normal burning temperature of the product whose burning characteristics are being simulated.

4,519,717

ON-STREAM CLOUD POINT ANALYZER

Hugh D. Jones, Chicago, and Steven J. Martinich, Wheaton, both of Ill., assignors to GCA Corporation, Bedford, Mass.

Filed Jun. 7, 1982, Ser. No. 385,936
Int. Cl.³ G01N *21/17, 25/12*
U.S. Cl. 374—17 **6 Claims**



1. Cloud point analyzer apparatus of the type having a cooling module for cooling a sample at variable cooling rates in accordance with a variable cooling power input, a sample cell for liquid hydrocarbons mounted in said cooling module, sensor means for producing an electrical sensor output indicative of the optical properties of the sample characteristic of cloud point, thermocouple means for producing an electrical output indicative of the temperature of said sample in said cell, and means for recording a value corresponding to said thermocouple means output, wherein the improvement comprises

means responsive to an change in the level of said sensor output for issuing a cloud point detection signal,

means responsive to said detection signal for automatically discharging a given liquid hydrocarbon sample and recharging the sample cell with a new sample, and

control means for automatically adjusting the cooling power input to a new fixed level after each sample if a time interval between initial charging of the previous sample and cloud point detection is outside a predetermined range so as to bring said time interval within said range,

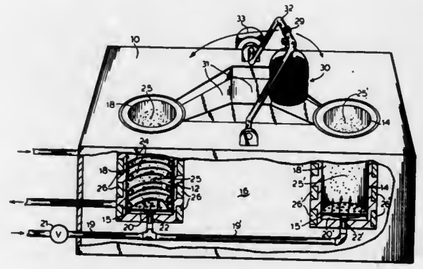
whereby said time interval is controlled by said control means adjusting a discrete power input level from sample to sample.

4,519,718

METHOD AND APPARATUS FOR THERMAL TESTING

H. Kenneth Staffin, Colonia; Robert B. Roaper, Martinsville, and Karin S. Bickford, Plainsboro, all of N.J., assignors to Procedyne Corp., New Brunswick, N.J.

Filed Jul. 23, 1982, Ser. No. 401,090
Int. Cl.³ F26B *17/10*
U.S. Cl. 374—45 **5 Claims**



1. A device for thermal testing, which comprises:

a first enclosure for an expanded mass of solid particles suspended in a fluidizing gas that behaves like a liquid;

a second enclosure for an expanded mass of solid particles suspended in a fluidizing gas that behaves like a liquid;

a least one temperature adjustment means provided for controlling the temperature of each enclosure;

a support means for supporting a workpiece in one of the first or second enclosures and adapted to transfer the workpiece from one enclosure to the other;

an agitating means affixed to the support means for agitating the support means in order to increase turbulence in the vicinity of the workpiece.

4,519,719

EARTH BORING BIT WITH PRESSURE COMPENSATING BEARING SEAL

Bruce H. Burr, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 9, 1983, Ser. No. 559,651
Int. Cl.³ F16C *33/74*
U.S. Cl. 384—94 **12 Claims**

1. An earth boring bit with an improved pressure compensating seal assembly, which comprises:

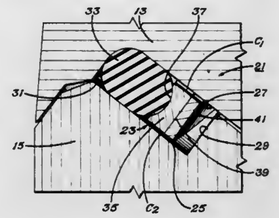
a body,

a cantilevered bearing shaft extending obliquely inwardly and downwardly from the body;

a cutter secured for rotation about the bearing shaft;

a seal groove between the cutter and the shaft to have generally circumferential walls, one on the cutter and the other on the shaft, and generally radial, inner and outer end walls;

a seal ring disposed in the seal groove opposing and sealingly enaging both the circumferential walls as well as opposing selected end wall;



an axially movable, rigid ring disposed in the seal groove between the seal ring and the other of said end walls;

spring means positioned between said other end wall and the rigid ring;

lubricant in passages and spaces in the bit, including those between the cutter and the shaft;

the axial displacement of the seal ring within the seal groove being resisted by the rigid ring to limit distortions of the seal ring.

4,519,720

PROCESS AND ARTICLES FOR REMOVING TYPEWRITER INKS

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 418,338, Sep. 15, 1982,. This application Jul. 20, 1984, Ser. No. 632,760
Int. Cl.³ B41J *33/00*
U.S. Cl. 400—241 **25 Claims**

1. A method for removing vertically cohesive ink from a substrate comprising the steps of:

(a) contacting a pressure sensitive adhesive side of an ink removing article comprising a silicone pressure sensitive adhesive composition applied to a backing material and cured thereon against a vertically cohesive ink disposed on a substrate, said pressure sensitive adhesive composition being the co-condensation reaction product of a mixture containing 100 parts by weight of a trimethyl chain-stopped MQ resin having an M to Q ratio ranging from 0.5 to 1.0:1 and 44 to 57 parts by weight of a dimethylpolysiloxane gum having a penetration ranging from 500 to 1,200 millimeters at 25° C.; and

(b) applying pressure to said backing material to effect transfer of the vertically cohesive ink from said substrate to said ink-removing article and wherein the adhesive has a greater affinity for the vertically cohesive ink than for the substrate and has a greater internal cohesion than external adhesion.

11. A method for making an ink-removing article comprising the steps:

(a) applying to a backing material a silicone pressure sensitive adhesive composition which is the co-condensation reaction product of a mixture containing 100 parts by weight of a trimethyl chain-stopped MQ silicone resin having an M to Q ratio ranging from 0.5 to 1.0:1 and 44 to 57 parts by weight of a dimethylpolysiloxane gum having a penetration ranging from 500 to 1,200 millimeters at 25° C.,

and

(b) curing said silicone pressure sensitive adhesive composition to said backing material in the presence of a catalyst and wherein the adhesive has a greater affinity for the vertically cohesive ink than for the substrate and has a greater internal cohesion than external adhesion.

4,519,721

TYPEWRITER KEYBOARD LAYOUT

Kathleen E. Gardner, 73 Macclesfield Old Rd., Burbage, Buxton, England

Filed Jul. 5, 1983, Ser. No. 510,880
Claims priority, application United Kingdom, Jul. 3, 1982, 8219299; Dec. 30, 1982, 8236975
Int. Cl.³ B41J *5/10*
U.S. Cl. 400—472 **2 Claims**



1. A typewriter comprising a keyboard having a plurality of keys divided into three substantially horizontal rows, between which keys letters of the alphabet are allocated, and means operative by the keys to write the letters of the alphabet, wherein the twenty six alphabet letter keys are divided into a middle row of ten keys and a top row and a bottom row each of eight keys, and wherein the first key, from left to right, of the middle row is the only alphabet letter key required to be operated by the little finger of the left hand of the operator, is allocated the letter A, and the last key, from left to right, of the middle row, is the only alphabet letter key required to be operated by the little finger of the right hand of the operator, is allocated the letter Z, with the keys being arranged in two group of thirteen with the keys in the left hand group being allocated the letters A to M and the keys in the right hand group being allocated the letters N to Z, and the middle eight keys of the middle row defining with the eight keys in each of the top and bottom rows eight groups of three keys arranged from left to right between the first and last keys of the middle row and with the first group adjacent the first key of the middle row allocated the letter A being allocated the first three letters of the alphabet following the letter A and each subsequent group of three keys, from left to right, being allocated the next three letters of the alphabet following the last letter of the alphabet in the immediately preceding group with the most frequently used letters E T A N H all being allocated to keys in the middle row and certain of the next most frequently used letters I O S R L being allocated to keys normally stroked by the right or the left index finger of the operator.

4,519,722

REGULATING WHEELHEAD DRIVE

William E. Shank, and Kenneth K. Bercaw, both of Waynesboro, Pa., assignors to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed Sep. 3, 1982, Ser. No. 414,846
Int. Cl.³ F16B *2/00;* F16D *3/04*
U.S. Cl. 403—26 **1 Claim**

1. A centerless grinder comprising

a machine frame including bearing means for supporting a shaft and a portion having a bore defined therein

a regulating wheelhead drive including

a main drive shaft including

a first shaft portion adapted to be supported by said bearing means,

a second threaded shaft portion axially adjacent said first shaft portion, and

a third shaft portion extending through said bore, said third portion axially adjacent said second threaded

portion and tapered inwardly toward said second shaft portion,

a clamping ring having

a threaded inner diameter for threadedly engaging with said second threaded shaft portion, and

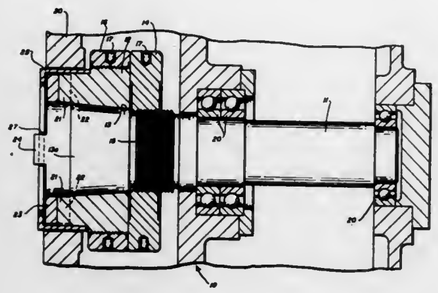
a plurality of holes defined in the outer diameter thereof for engagement by a suitable tool for rotating the clamping ring,

a drive coupling having

a tapered bore defining a surface for mating engagement with said tapered third shaft portion, and

a threaded outer diameter, and

drive lugs on the end remote from said first shaft portion, and



a locking ring having

a threaded inner diameter for threadedly engaging the threaded outer diameter of said drive coupling, and

a plurality of holes defined in the outer diameter thereof for engagement by a suitable tool for rotating the locking ring,

said locking ring being threadedly rotatable from a first position forcefully engaging and locking said clamping ring to a second position forcefully engaging the portion of the machine frame having said bore defined therein to break the frictional bond between said drive coupling and said tapered shaft portion.

4,519,723

CONNECTING DEVICE FOR RELEASABLY SECURING AN AXLE ON A SUPPORT PLATE

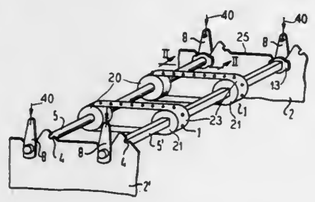
Hans Kusmierz, Gilching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,913

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210024

Int. Cl.³ F16C *11/00*; B41J *15/00*; G03B *1/30*

U.S. Cl. 403—33 **8 Claims**



1. A connecting device for releasably securing an axle on a support plate particularly for supporting an axle of a component of a printing device, said connecting device comprising a bushing member having a bore for receiving the axle and supporting it for rotation; retaining means for preventing axial displacement of the axle in the bore of the bushing; support means being disposed on the support plate for receiving and supporting said bushing member, said support means comprising a substantially circular aperture of a given diameter adjacent an edge of the plate and connected to the edge by a throat having a dimension less than the given diameter of said aperture, said bushing member having a cylindrical body of said given diameter, said cylindrical body having at least one portion removed to provide a flat surface; a retaining lever being connected to said bushing member and extending relative to the flat surface so that with the retaining lever in one position, said bushing member can be passed through the throat of the aperture to enable insertion and removal thereof, said lever having a second position rotating the bushing member to a second position to prevent removal of the bushing member from said aperture; means including the lever for maintaining the bushing member in a desired axial position in the aperture; and said lever and support plate having coacting latch means for holding the lever in said second position, said latch means including one of said lever and support plate having a projection being received in an opening on the other of said lever and support plate, said lever being deflectable in a direction toward said axle to enable insertion of the projection into the opening.

4,519,724

SYSTEM FOR ELASTICALLY ASSEMBLING TWO PIECES

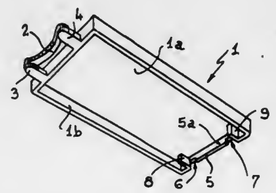
Jean L. Ribas, Lyons, France, assignor to Majorette, Caluire, France

Filed Jun. 20, 1983, Ser. No. 506,251

Claims priority, application France, Jun. 29, 1982, 82 11871

Int. Cl.³ B25G *3/00*

U.S. Cl. 403—345 **8 Claims**



1. A system for removably assembling two generally flat plate pieces having opposite ends having mutually opposed surfaces, comprising:

(a) on a first surface adjacent the end of the first piece, a first assembly element comprising a pair of lugs spaced apart transversely of the first surface and extending from the first surface toward the second piece, and a bar carried by the lugs and extending therebetween, the bar having an arcuate face which extends convexly toward the first surface and is spaced therefrom; and

(b) at the opposed end of the second piece, a second assembly element comprising a transverse flange extending at right angles from the plate and presenting an end surface to oppose said first surface of the first piece, the flange having a pair of transversely spaced notches extending therethrough and shaped to receive said lugs when the pieces are assembled with the flange located between said face of the bar and said first surface.

4,519,725

OFFSHORE STRUCTURE INCORPORATING A CONDUCTOR DEFLECTING SYSTEM

George E. Mott, Metairie, and Frederick J. Levert, Jr., Chalmette, both of La., assignors to Texaco Inc., White Plains, N.Y.

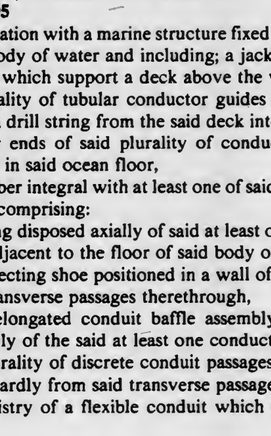
Filed Jun. 22, 1983, Ser. No. 506,734

Int. Cl.³ E02B *17/00*; E21B *43/01*

U.S. Cl. 405—195 **6 Claims**

1. In an offshore structure **10** for operating from an embedded position in a body of water to treat hydrocarbon fluids which are received from underwater pipelines, which structure includes; a deck holding hydrocarbon treating equipment, and at least one leg which extends between the floor of said body of water to the deck whereby to elevate the latter beyond the water's surface, the improvement therein of;

a multi-segment riser conductor means **20** depending from said structure embedded in the said floor, and including a plurality of riser guides **22** enclosed therein and vertically arranged to slidably register a downwardly moving riser **19**, in a substantially vertical dispostion, and



a riser deflector **26** forming an integral part of said riser conductor means and defining a plurality of multi-directional lateral openings for diverting risers outwardly from within the riser conductor means, and being spaced beneath said plurality of riser guides **22** and above said floor, whereby to engage the lower end of a downwardly moving riser **19** and to whereby urge the said lower end away from said vertical disposition, through a wall of said riser conductor and onto the said floor as the riser is progressively lowered.

4,519,726

FLOW LINE RISER FOR OFFSHORE STRUCTURE

John P. Knowles, Johnshaven; Steven A. Wheeler, Westhill, and Stewart D. Mitchell, Udny Green, all of Scotland, assignors to Texaco Limited, London, England

Filed Dec. 5, 1983, Ser. No. 557,786

Int. Cl.³ E02B *17/00*; E21B *7/12*

U.S. Cl. 405—195 **18 Claims**

1. The combination with a marine structure fixed to the floor of an offshore body of water and including; a jacket having a plurality of legs which support a deck above the water's surface, and a plurality of tubular conductor guides within said jacket to guide a drill string from the said deck into the ocean floor, the lower ends of said plurality of conductor guides being embedded in said ocean floor,

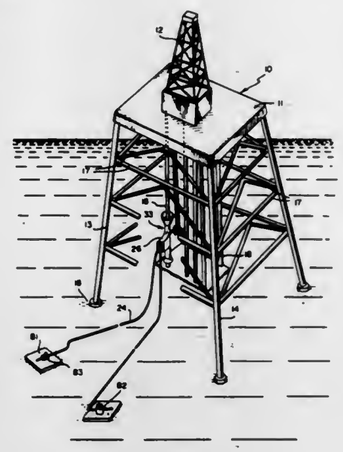
an insert member integral with at least one of said conductor guides and comprising:

a tubular casing disposed axially of said at least one conductor guide adjacent to the floor of said body of water,

a conduit deflecting shoe positioned in a wall of said casing to define transverse passages therethrough,

a compliant elongated conduit baffle assembly extending longitudinally of the said at least one conductor guide to define a plurality of discrete conduit passages which terminate upwardly from said transverse passages,

to permit registry of a flexible conduit which extends between the deck and the ocean floor into a discrete conduit passage,



whereby to register in the respective conduit passages, a conduit which extends between said deck and the floor of the body of water.

4,519,727

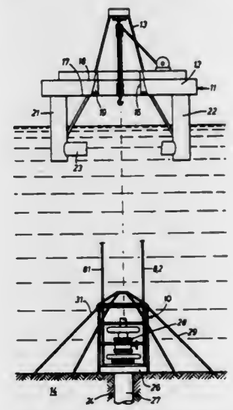
OFFSHORE WELL HEAD PROTECTOR AND METHOD OF INSTALLATION

Stewart D. Mitchell, Udny Green, and Steven A. Wheeler, Westhill, both of Scotland, assignors to Texaco Limited, London, England

Filed Sep. 14, 1983, Ser. No. 531,884

Int. Cl.³ E02B *17/02*; E21B *33/037*

U.S. Cl. 405—204 **24 Claims**



1. A protective structure for encompassing an upstanding well head located at the floor of a body of water to preclude encounter between the well head and submerged objects which might be brought into damaging contact therewith, which structure includes;

an elongated open framework of structural members which defines a quasi-enclosed area adapted to surround the well head,

said open framework including a foundation sub-assembly which is supported at the ocean floor and having connecting flanges thereon,

at least one intermediate sub-assembly in engagement with

the foundation sub-assembly at said connecting flanges, and

at least one deflector element extending laterally from the uppermost of said at least one intermediate sub-assembly to rest at the ocean floor a sufficient distance from the foundation member whereby to define an upward sloping deflector surface which terminates at the upper end of the protective structure.

4,519,728

FLOATING OFFSHORE STRUCTURE

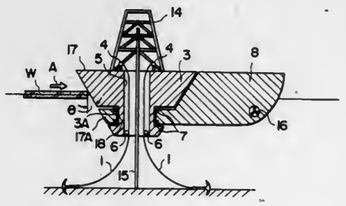
Masanao Oshima, Tokyo; Hitoshi Narita, Musashino; Nobuyoshi Yashima, Funabashi, and Hiroshi Tabuchi, Yokohama, all of Japan, assignors to Mitsui Engineering and Shipbuilding Company, Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,327

Claims priority, application Japan, Apr. 16, 1982, 57-63628; Apr. 16, 1982, 57-63629

Int. Cl.³ B63B *35/08*

U.S. Cl. 405—224 **10 Claims**



1. A floating offshore structure having a floating body with a deck on an upper surface of the floating body and adapted to float while being moored at a fixed position on the sea, comprising:

a fore draft part being a front portion of the floating body, having near its water plane a circular horizontal section, said fore draft part being moored to the sea bottom; and

an after draft part being a rear portion of the floating body, having near said water plane a substantially smaller width than said fore draft part, said after draft part being connected to said fore draft part so as to be rotatable within a horizontal plane about an axis located about at the center of said fore draft part.

4,519,729

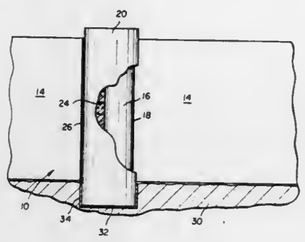
SEGMENTED MEMBRANE BARRIER

Robert T. Clarke, Jr., Katy, Tex., and Raymond Jasienski, Edison, N.J., assignors to Schlegel Corporation, Rochester, N.Y.

Filed May 10, 1983, Ser. No. 493,308

Int. Cl.³ E02D *5/20, 29/00*

U.S. Cl. 405—258 **14 Claims**



8. A barrier for underground fluid material flow control comprising:

a trench in the earth having a length extending across the expected polution path;

a segmented membrane barrier in said trench, said barrier comprising a plurality of membrane segments;

a first tubular joining member on one end of each of said segments, each of said first joining members comprising a tubular member attached to said segment along a continuous fluid impervious seam;

said tubular members characterized by a preselected inside dimension;

a second tubular joining member on the other end of each of said segments, each of said second joining members comprising a tubular member attached to said segment along a continuous fluid impervious seam;

a slot in a side wall of each of said first tubular joining members adapted to pass said membrane therethrough when said second tubular joining elrments are disposed within said first tubular joining members; at least said first tubular joining member having an end portion projecting beyond said membrane segments;

means in said trench for receiving said projecting portion for locating and supporting said second tubular joining member;

a fluid impervious sealing material disposed in the space between said first and second tubular joining members.

4,519,730

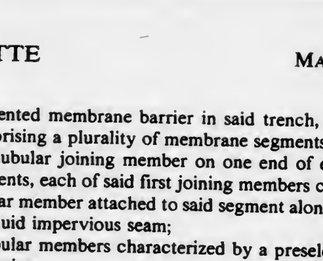
METHOD FOR CONSTRUCTING UNDERGROUND STRUCTURE

Kazuo Horimatsu, Funabashi, Japan, assignor to Tekken Construction Co., Ltd., Japan

Filed Jan. 20, 1984, Ser. No. 572,383

Int. Cl.³ E21D *9/00*

U.S. Cl. 405—258 **5 Claims**



1. A method of building a cavity structure in an embankment during its embanking work at a position corresponding to an existing road, water-way or the like in constructing a new road across said existing road or the like with said embankment, said method comprising the steps of forming at least slope layers of soil acting as side walls of an intended cavity to be later excavated for said structure, with a plurality of nets buried substantially horizontally in said layers as mutually vertically spaced and to intersect substantially sliding surfaces appearing in the layers when excavating said intended cavity, performing said embanking work with respect to peripheral portions of said slope layers, providing spaced supporting plates as opposed to each other respectively at each outer side position of a region right above the intended cavity when a required height for the cavity of the embankment is reached, providing prestressing wires between said plates, forming layers of at least crushed stone between the plates with a plurality of nets as spread therebetween and as mutually vertically spaced, tightening said prestressing wires to provide a prestress to said crushed stone layers between the plates, continuing the embanking work over said prestressed crushed stone layers and peripheral portions to complete the embankment, and excavating a zone defined by the slope layers and crushed layers to provide the cavity.

4,519,731

MILLING CUTTER

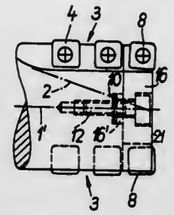
Willi Jester, Herten-Westerholt, and Heinrich Krüger, Essen, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft m.b.H., Essen, Fed. Rep. of Germany

Filed Mar. 15, 1983, Ser. No. 476,341

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211136

Int. Cl.³ B26D *1/00, 1/12;* **B23C** *5/22*

U.S. Cl. 407—46 **1 Claim**



1. A frontal face milling cutter comprising:

a supporting body having a longitudinal axis, a longitudinal direction parallel thereto, a frontal face and a circumferential side, said supporting body being provided with a radial recess which extends continuously across a diameter of said frontal face, has a rectangular cross section and is open toward said frontal face, said supporting body further being provided with a bore centered in said supporting body and opening at said frontal face, said bore defining a cylindrical abutment surface in said supporting body;

a plurality of cutting plates disposed on said circumferential side and arranged in rows each extending generally in said longitudinal direction, two of said cutting plates being frontal face cutting plates each having a cutting edge for cutting at both said circumferential side and at said frontal face;

a single frontal face cassette having a cross section corresponding to the rectangular cross section of said recess and being insertable into said recess from the direction of said frontal face, said cassette having a centering ledge for insertion into said bore and for cooperating with said cylindrical abutment surface to secure the position of said cassette in the radial direction of said supporting body, said two frontal face cutting plates having means to fasten said frontal face cutting plates to said cassette and being arranged diametrically opposite one another with respect to the longitudinal axis; and

a fastening element for releasably tightening said cassette in said recess in the direction of said supporting body, said fastening element passing through said cassette and engaging said supporting body from the direction of the frontal face of said supporting body.

4,519,732

METHOD FOR THE MACHINING OF COMPOSITE MATERIALS

John W. Sutcliffe, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

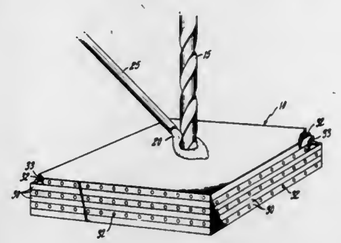
Filed Dec. 9, 1983, Ser. No. 559,996

Int. Cl.³ B23B *51/06, 35/00*

U.S. Cl. 408—1 R **5 Claims**

1. In a process of machining a composite by a machine tool, said composite comprising a disposition of fibrous material within a matrix of cured binder material, the improvement characterized by:

lubricating said machine tool with a fluid comprising said binder material in an uncured state for reducing tool wear



and enhancing the rate of removal of said composite material by said tool.

4,519,733

METHOD AND APPARATUS FOR AUTOMATICALLY EXCHANGING A WORKPIECE IN A MACHINE TOOL

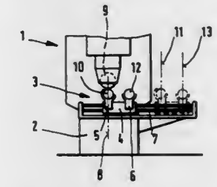
Hans Gregg, Steinebach, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 405,006

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3131016

Int. Cl.³ B23F *19/06, 23/04*

U.S. Cl. 409—7 **14 Claims**



1. A method for effecting an automatic workpiece exchange on a machine tool, comprising the steps of supporting a carriage for rectilinear feed and return movements between an initial position and a position in a machining region of the machine tool; supporting first and second gripping mechanisms on said carriage which each have gripping members movable relative to one another between gripping and release positions, which are supported for pivotal movement with respect to one another on said carriage at locations spaced in a direction of movement of said carriage, and which are respectively moved from unloading and loading positions to said machining region of the machine tool during said feed movement of said carriage and are returned to said unloading and loading positions during said return movement; supporting cam follower means on said first and second gripping mechanisms; providing cam means along the path of movement of said gripping mechanisms; moving said carriage from said initial position to said machining region, said cam means cooperating with said cam followers on said first and second gripping mechanisms for causing the initially empty first gripping mechanism, during said feed movement of said carriage, to move to its gripping position as it moves through said machining region so as to grip and remove a machined workpiece from a workpiece support mechanism in said machining region of the machine tool and for causing said second gripping mechanism, which is initially loaded with a blank workpiece, to grip the blank workpiece during said feed movement of said carriage and to transport it from said loading position to said machining region of the machine tool, and to thereafter be moved to its release position and to deliver the blank workpiece to said workpiece support mechanism; and thereafter moving said carriage from said

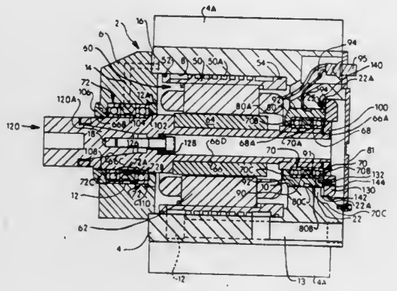
machining region back to said initial position, said cam means cooperating with said cam followers on said first gripping mechanism for causing said first gripping mechanism to be pivoted relative to said second gripping mechanism and to pass under said workpiece support mechanism as it transports the machined workpiece to said unloading position.

4,519,734

HIGH SPEED SPINDLE WITH PRELOADED BEARINGS

William A. Mitchell, Springfield; J. Brent Thompson, Shrewsbury, both of Vt., and John L. Freese, Charlestown, N.H., assignors to Ex-Cello-O Corporation, Troy, Mich.

Filed Jun. 22, 1982, Ser. No. 391,052
Int. Cl.³ B23Q *5/04;* F16C *13/00*
U.S. Cl. 409—231 **19 Claims**



1. In a spindle of the type having a housing and a tool-driving shaft rotatably disposed in the housing by journaling in anti-friction bearing means, the combination of means for axially preloading the bearing means, and bearing preload locking means for locking the preload against axial pull-out forces acting counter to the preload during machining, said preload locking means comprising hydraulic cylinder means associated with the housing, piston means in working hydraulic relation to said cylinder means and coupled to said preloaded bearing means such that axial pull-out forces on the shaft are transmitted to said piston means, first fluid pressure reservoir means in fluid communication with said cylinder means for supplying fluid thereto and means for preventing escape of fluid from said cylinder means to said first reservoir means during machining from expected axial pull-out forces on the shaft to thereby hydraulically lock the bearing preload against substantial diminution by expected axial pull-out forces exerted on the shaft and lock the shaft position and second reservoir means in fluid communication with said cylinder means and having biasing means opposing increases in fluid pressure in said cylinder means from expected axial pull-out forces to prevent fluid escape therefrom from said expected pull-out forces and operable in response to a fluid pressure increase in said cylinder means above a pre-selected level because of unexpectedly high axial pull-out forces during machining for permitting fluid escape from said cylinder means to said second reservoir means to release hydraulic lock on said bearing preload.

4,519,735

EXPANSION ANCHOR

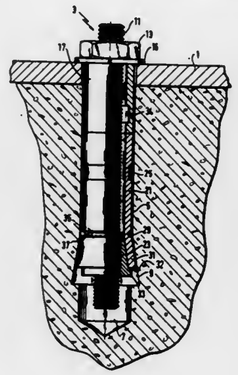
Roland Mächtle, Grunertshofen, Fed. Rep. of Germany, assignor to Werkzeugfabrik Fritz Machtes GmbH & Co. K.G., Munich, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,717
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137226
Int. Cl.³ E21D *20/00, 21/00*
U.S. Cl. 411—65 **11 Claims**

1. In an expansion anchor for retention in an approximately cylindrical well hole that is in a body and is provided at a distance from the well hole opening with a conical enlargement flaring toward the bottom of the well hole, sleeve means including a plurality of longitudinally separated shells defining at least two circumferentially spaced latches for insertion into said well hole, a threaded bolt that extends through said sleeve means and has an outer end portion projecting from the well hole opening, a cone screwed onto said bolt and retractable to deflect said latches into engagement with the conical enlargement by movement of the threaded bolt, and radially enlarged clamping means on the outer end portion of the threaded bolt, the improvement comprising, in combination:

a radially extending abutment surface on said cone facing toward the opening of the well hole;

radially extending abutment face means on said sleeve means



in facing relationship to said surface and projecting into the path of retraction of said cone to positively limit movement of the cone toward the well hole opening;

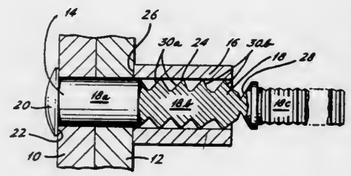
and an internal annular groove in said sleeve means, said groove reducing the wall thickness of said sleeve means an amount such that the sleeve means is capable of being deformed outwardly in the region of said groove to shorten the sleeve means by continued movement of the threaded bolt after the latches have initially engaged within said well hole and the abutment surface means is against the abutment face means, whereby the sleeve means is deformed without clamping onto the threaded bolt and the radially enlarged clamping means may clamp an element against said body.

4,519,736

PIN TYPE FASTENER USABLE WITH SWAGE COLLAR TO FORM A JOINT

Jerry A. Sigmund, 19 Rock Hill Rd., Bala Cynwyd, Pa. 19004

Filed May 7, 1982, Ser. No. 376,226
Int. Cl.³ F16B *19/05, 39/30*
U.S. Cl. 411—361 **17 Claims**



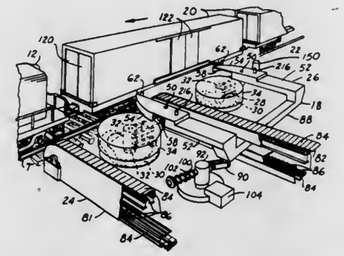
1. A pin member adapted to be used with a collar for fastening a joint, said pin member comprising a head and a shank extending therefrom, said shank including a locking portion formed with a plurality of ribs separated from each other by locking grooves, the major diameter of said ribs being substantially equal, at least one of said ribs being formed with a portion symmetrical about a line extending at a right angle to the axis of said shank and a portion asymmetrical about said line, said one rib including a load bearing flank and a non-load bearing flank, said flanks being joined by a radiused crest through which said line extends.

4,519,737

ROTARY LOADER AND SIDE-COUPLING TRANSFER SYSTEM

Leonard D. Barry, 19300 Pennington, Detroit, Mich. 48221

Filed Feb. 7, 1983, Ser. No. 464,567
Int. Cl.³ B61K *1/00;* B65G *67/22*
U.S. Cl. 414—337 **10 Claims**



1. In a rotary loading system having a vehicle way, at least one vehicle thereon having a berth for carrying a container, a rotary loader having a fork frame, two substantially parallel rotary arms, two pivot posts vertically positioned equal distance from said way to which said arms are mounted to rotate horizontally, said fork frame being pivotally mounted on each said arm an equal distance out to carry said fork frame over an arc over said way, and means for lifting and lowering said fork frame when extended over said way for transfer of the container, said fork frame having a fork arm at each end for engaging under the container and coupling with the vehicle: each said fork arm having a depending vertical wall or track running diagonally of the fork arm sloped toward the other said fork arm to the end of the fork arm facing said way, a side coupler on said vehicle for engaging said fork frame for transfer of said container, said coupler including an arm pivotally mounted to said vehicle and extending out side ways from the vehicle and having an upstanding hook for engaging behind said wall for engaging and pulling said fork into an opening in said car for aligning under said berth for transfer of said container, said wall ending with an opening for said hook to come out from behind the wall where said fork frame is engaged enough to move with said vehicle for transfer, and pivot means for supporting said hook to follow said wall and come out from under said fork arm, and load actuated means for raising and lowering said hook to correspond with the height of said fork arm.

4,519,738

BOAT TRAILER

David C. Wood, Rte. 9, Box 830, Franklinton, La. 70438

Filed Mar. 28, 1983, Ser. No. 479,553
Int. Cl.³ B60P *3/10*
U.S. Cl. 414—483 **11 Claims**

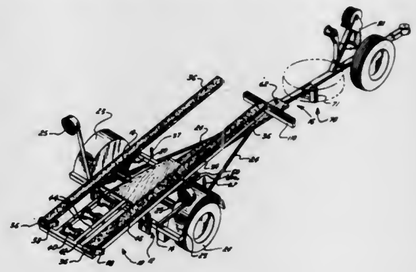
1. A boat trailer adapted for launching and retriving a boat without wetting the axle and bearings of the trailer, comprising:

a. frame means for supporting the boat;

b. tongue means rigidly connected to said frame means for connecting said frame means to a vehicle towing said trailer, said tongue means having a first bracket means connected thereto for storing a spare tire, said first bracket means having a vertical, cylindrical socket for receipt of an axle assembly connected to the spare tire, the axle assembly including an axle perpendicularly connected to a flange rigidly connectable to said spare tire, second bracket means connected to the front portion of said tongue, said second bracket means having a horizontal, cylindrical socket for receipt of said axle assembly connected to said spare tire, means for holding said axle in said first bracket means and in second bracket means, said vertical socket connected to said first bracket means being slightly longer than said axle connected to said flange and said horizontal socket connected to said second bracket means being slightly shorter than said axle connected to said flange;

c. an axle connected to said frame means by springs, said axle having wheels thereon;

d. ramp means pivotally connected to said frame means at the rear of said frame means for receiving said boat, said



rear of said frame means being located rearward of said axle, said ramp means being pivotally mounted on an axis perpendicular to the longitudinal axis of said tongue means, said ramp means being mounted independently of the wheels supporting said frame means and having the major portion of its length extending forwardly of said axis, said ramp means having a plurality of roller means mounted for aiding in loading a boat in the rear end thereof past said axis, said roller means being positioned in the center of said ramp means in alignment with said tongue of said trailer, said ramp means having two boat support means extending parallel to each other and perpendicular to said axis of said ramp means for contacting and supporting said boat, and

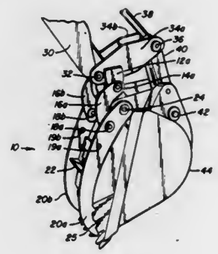
e. means connected to said ramp means and to said frame means for limiting the height to which the front portion of said ramp means may rise.

4,519,739

BACKHOE CLAMPING DEVICE

Joel V. Risch, 3275 Lucia Ave., Eureka, Calif. 95501

Filed May 25, 1984, Ser. No. 614,183
Int. Cl.³ B66F *9/18;* E07F *3/32*
U.S. Cl. 414—724 **11 Claims**



1. Apparatus for attachment to a backhoe for conversion

thereof to a clamping device, said backhoe having a bucket, a dipper arm and a bucket link, connected by a first pivot point between said bucket and said bucket link, a second pivot point between said bucket link and said dipper arm, and a third pivot point between said bucket and said dipper arm, said apparatus comprising:

at least one mounting bracket on said bucket link;

a clamp link pivotally mounted at one end thereof to said at least one mounting bracket at a fourth pivot point closer to said second pivot point than to said first pivot point; and

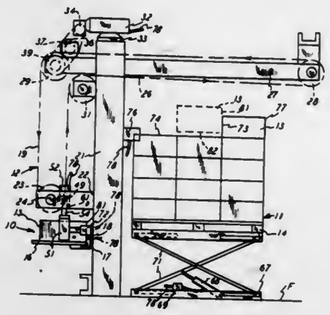
a clamp arm pivotally mounted to a second end of each said clamp link at a fifth pivot point, and pivotally mounted to said dipper arm at a sixth pivot point.

4,519,740

APPARATUS AND METHOD FOR PALLETIZING BUNDLES OF SHEETS

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Jun. 17, 1983, Ser. No. 505,455
Int. Cl.³ B65G *57/03*
U.S. Cl. 414—71 **13 Claims**



1. Apparatus for palletizing bundles of sheets, comprising a pallet, a gripper for engaging a bundle of sheets, an overhead endless conveyor on which said gripper is mounted and including a vertical section for elevating said bundle of sheets from a first position and including a horizontal section for moving said bundle of sheets to a second position vertically above said pallet, said conveyor sections being continuous relative to each other for movement between said first position and said second position, an electric drive operatively connected with said overhead endless conveyor for powering said overhead endless conveyor, electric elements at said first position and at said second position and being electrically interconnected with said electric drive for controlling the operation of said electric drive in the movement of said bundle of sheets, said gripper includes a powered elevator for lowering said bundle of sheets at said second position and independent of the movement by said endless conveyor, and an additional electric element operatively connected with said elevator for powering said elevator at said first position to raise said bundle of sheets prior to the raising by said conveyor.

4,519,741

MOBILE YARD CRANE FOR HANDLING CONTAINERS

Guido Testore, Ovada, Italy, assignor to ORMIG S.p.A., Ovada, Italy

Filed Jan. 4, 1982, Ser. No. 336,586
Int. Cl.³ B66C *1/10*
U.S. Cl. 414—738 **3 Claims**

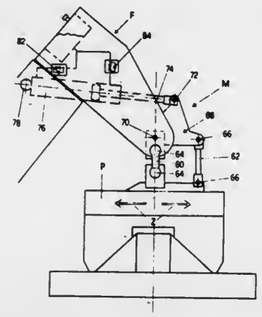
1. A mobile yard crane for handling large containers and the like, said crane comprising:

a mobile chassis;

at least two lifting jibs having respective first ends mounted on said chassis such that said jibs are movable with respect thereto in vertical planes which are parallel and fixed with respect to each other and respective second ends having fixed thereto respective jib heads;

spreader means supported by said jib heads of said jibs for engaging a container to be handled, said spreader means having a planar configuration;

separated attaching means for each said jib head for suspending said spreader means from said jib heads such that said spreader means is oscillatable with respect to said jib heads generally in a plane parallel to said vertical planes, each said attaching means comprising rigid and nonextendable articulated members including a plate pivotally connected to the respective said jib head, a first rod having opposite ends thereof swivelly connected to said respective jib head and to a first position on said spreader means, and a second rod having opposite ends thereof pivotally connected to the respective said plate and to a second position on said spreader means;



separate damping means for each said attaching means and the respective said jib head for damping oscillation of said spreader means;

separate hydraulic cylinder means connected to said chassis and to respective said jibs for moving said jibs independently in said respective vertical planes; and

hydraulic control circuit means, connected to said separate hydraulic cylinder means, selectively for operating said separate hydraulic cylinder means in unison, thereby synchronously moving said jibs in said respective vertical planes, or for operating a selected one only of said separate hydraulic cylinder means, thereby moving only the respective said jib in the respective said vertical plane, and thereby inclinind the plane of said spreader means, whereby said spreader means may be positioned to engage an inclined container.

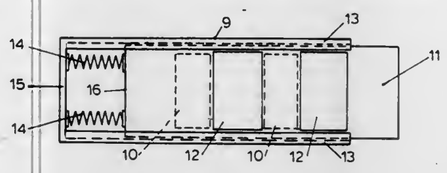
4,519,742

APPARATUS FOR UTILIZING THE ENERGY PRESENT IN FLOWING WATER

Arend Van Buytene, Burmanlaan 66, 2241 JH Wassenaar, Netherlands

PCT No. PCT/NL82/00010, § 371 Date Dec. 1, 1982, § 102(e) Date Dec. 1, 1982, PCT Pub. No. WO82/03425, PCT Pub. Date Oct. 14, 1982
PCT Filed Apr. 2, 1982, Ser. No. 451,148
Claims priority, application Netherlands, Apr. 2, 1981, 8101659
Int. Cl.³ F03B *7/00*
U.S. Cl. 415—7 **5 Claims**

1. Apparatus for converting the energy in flowing water comprising a support adapted to be located in association with the flowing water, at least one paddle wheel comprising a rotatable shaft journaled on said support, a plurality of blades each fixed at one end to said shaft and extending radially outwardly therefrom, each of said blades having at least one opening for the passage of fluid therethrough, and a slide substantially coextensive with said blade and secured thereto for movement between an inner position overlapping said blade and an outer position partially overlapping said blade and partially extending radially therefrom, said slide having at least one opening, said openings being arranged to be in registry with the openings in said blade in the inner position allowing passages of water and out of registry with the openings in said blade in the other position whereby said openings in said



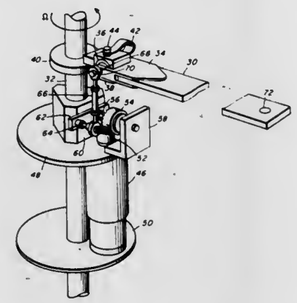
blade are occluded preventing passage of water, spring means interposed between the inner ends of said blade and slide for normally biasing the slide in the outer position, and an arcuate cam ring fixed to said support and circumferentially surrounding said blades, said arcuate member having an inner surface at least in part slidably engaged by the outer end of said slide causing said slide to move reciprocally against said spring means between said inner and outer positions during rotation of said blades.

4,519,743

HELICOPTER INDIVIDUAL BLADE CONTROL SYSTEM

Norman D. Ham, Brookline, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 132,705, Mar. 21, 1980, abandoned. This application Jul. 2, 1982, Ser. No. 394,832
Int. Cl.³ B64C *27/44, 27/70*
U.S. Cl. 416—1 **26 Claims**



1. An aircraft rotor assembly including lift control means for control of lift of aircraft blades, movement sensor means associated with each aircraft blade, and electrical feedback circuitry for controlling the lift control means in response to signals generated by the movement sensor means, that rotor assembly characterized by:

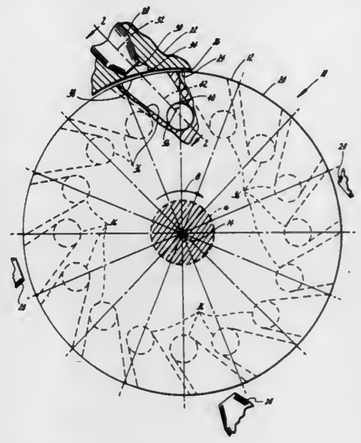
the sensor means associated with each rotor blade comprising at least one accelerometer oriented relative to a direction of blade movement, caused by characteristic disturbances of blade motion, to sense that blade movement.

4,519,744

TURBINE POWER PLANT

Frank G. Arold, 145 Hillcrest Blvd., Ypsilanti, Mich. 48197

Filed May 25, 1984, Ser. No. 614,422
Int. Cl.³ F01D *5/04*
U.S. Cl. 415—92 **20 Claims**



20. A power plant comprising a rotor journaled about an axis of rotation via a shaft through which useful power is delivered, a stator disposed adjacent a peripheral portion of said rotor, and means for operating said rotor comprising fluid delivery means on said stator for directing working fluid toward said peripheral portion of said rotor and chambers disposed at intervals around said peripheral portion of said rotor, each chamber having an intake opening through which working fluid from said fluid delivery means passes to impinge on a reaction surface, and an exhaust opening through which fluid passes from said rotor after impinging upon said reaction surface, and reaction surfaces on said stator against which working fluid exiting said exhaust opening impinges, said stator reaction surfaces being arranged relative to the rotor chambers' reaction surfaces such that fluid exiting said exhaust openings and impinging on said stator reaction surfaces augments the rotation of said rotor which is produced by the impingement of the fluid from said fluid delivery means on the rotor chambers' reaction surfaces.

4,519,745

ROTOR BLADE AND STATOR VANE USING CERAMIC SHELL

Irwin E. Rosman, Woodland Hills, Calif., and Hector S. Bourgeois, Monument Beach, Mass., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 188,646, Sep. 19, 1980, abandoned. This application Jul. 12, 1982, Ser. No. 397,267
Int. Cl.³ F01D *5/18*
U.S. Cl. 416—96 A **17 Claims**

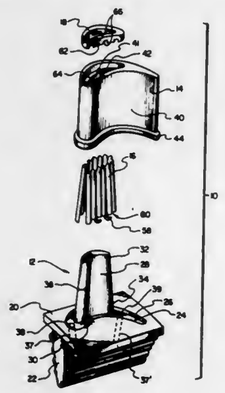
1. A ceramic blade assembly suitable for attachment to a turbine rotor hub comprising a disk having a plurality of shaped slots along the periphery of said disk for receiving individual turbine blades, said ceramic blade assembly comprising:

a base element comprising means for affixing said base element to said turbine rotor hub at said slots, a platform portion affixed to said engagement means, said platform portion having rim means for defining a recess in said platform for receiving the footing of a blade element, said defined recess having a floor, and a post member affixed to and extending from said floor of said platform portion,

said post member having a post-root, a tip and exterior surfaces;

a ceramic blade element comprising an airfoil shaped body having interior surfaces for defining an internal span-wise channel for receiving said post member and rim means for defining a footing for engagement with said rim means of said base element, said ceramic blade element being positioned about said post member so that said interior surfaces are at least partly set apart from said exterior surfaces of said post member and so that said ceramic blade element is set apart from said floor of said platform portion to define a peripheral channel about said post-root;

a cap means affixed to said tip of said post member, said cap having at least one bearing surface for retaining said ceramic blade element in position about said post member;



at least one resilient corrugated partition positioned between and in contact with said interior and exterior surfaces, said resilient corrugated partition defining contiguous sets of juxtaposed passages situated between said ceramic blade element and said post member, said sets of passages being in communication with said peripheral channel and said sets including a first set of passages open to said exterior surfaces of said post member and a second set of passages open to said interior surfaces of said ceramic blade element;

means for supplying cooling fluid to said first set of passages through said peripheral channel;

means for exiting said cooling fluid from said first set of passages at said tip; and

means for forming columns of stagnated fluid within said second set of passages to insulate said ceramic blade element.

4,519,746

AIRFOIL BLADE

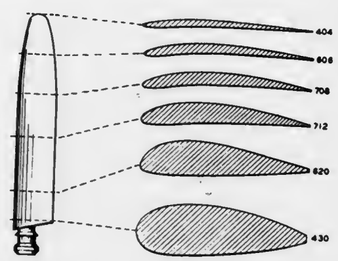
Harry S. Wainauski, Simsbury, and Carl Rohrbach, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 24, 1981, Ser. No. 286,484

Int. Cl.³ B64C *11/18*

U.S. Cl. 416—223 R **3 Claims**

1. An airfoil blade having along substantially the entire length thereof, a cross-sectional airfoil shape comprising a rounded, generally parabolic leading edge portion fairing into a pressure surface; said pressure surface having a leading convex portion fairing into a trailing portion; said leading edge portion also fairing into a convex suction surface; said pressure and suction surfaces merging into a blunt trailing edge; one of said airfoil shapes having a thickness ratio of 0.04, a maximum thickness at approximately 0.35 x/c and a maximum camber at approximately 0.5 x/c; another of said airfoil shapes having a thickness ratio of 0.06, a maximum thickness at approximately 0.34 x/c and a maximum camber at approximately 0.50 x/c; another of said airfoil shapes having a thickness ratio of 0.08, a maximum thickness at approximately 0.33 x/c and a maximum camber at approximately 0.50 x/c; another of said airfoil shapes having a thickness ratio of 0.12, a maximum thickness at approximately 0.32 x/c and a maximum camber at approximately 0.38 x/c; another of said airfoil shapes having a thickness ratio of 0.20, a maximum thickness at approximately 0.315 x/c and a



maximum camber at approximately 0.30 x/c and another of said airfoil shapes having a thickness ratio of 0.30, a maximum thickness at approximately 0.310 x/c and a maximum camber at approximately 0.29 x/c wherein x/c is the dimensionless chord length of said airfoil shapes; all of said airfoil shapes having a trailing edge portion of a thickness equal to approximately 10% of the maximum shape thickness.

4,519,747

METHOD FOR ASSEMBLING AN IMPELLER ONTO A TURBOSHAFT

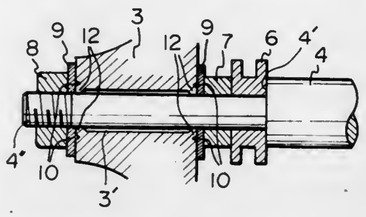
Masami Yamazaki, and Sueo Shibata, both of Okazaki, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 5, 1982, Ser. No. 375,213

Claims priority, application Japan, Jan. 20, 1982, 57-6119

Int. Cl.³ F04D *29/22*; F16B *4/00*

U.S. Cl. 416—244 A **6 Claims**



1. A turbocharger comprising a turbine, a turboshaft integrated with said turbine and having a free end extending from one side of the turbine, the free end including a straight cylindrical portion, and an impeller having opposite end faces and an axial hole therethrough, the impeller fitting in spaced relation to the one side of the turbine on the straight cylindrical portion of the free end of the turboshaft via said axial hole, wherein each end face of the impeller is plastically deformed axially inwardly in a circular pattern around said axial hole so as to create a circumferentially uniform, radially inward plastic deformation of the material of the impeller sufficient to eliminate any clearance between the inner surface of the axial hole adjacent to the end faces of the impeller and the outer surface of said straight cylindrical portion of the turboshaft.

4,519,748

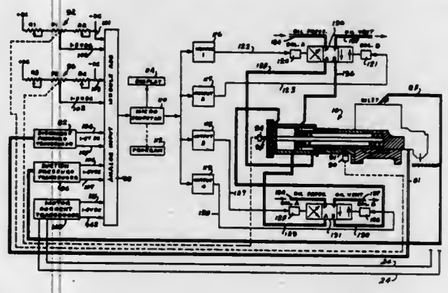
MICRO-PROCESSOR CONTROL OF COMPRESSION RATIO AT FULL LOAD IN A HELICAL SCREW ROTARY COMPRESSOR RESPONSIVE TO COMPRESSOR DRIVE MOTOR CURRENT

David A. Murphy, Chambersburg, Pa., and Peter C. Spellar, Hagerstown, Md., assignors to Frick Company, Waynesboro, Pa.

Continuation of Ser. No. 453,988, Dec. 28, 1982, abandoned, which is a continuation-in-part of Ser. No. 416,768, Sep. 10, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,039

Int. Cl.³ F04B *49/06*; F01C *1/16*

U.S. Cl. 417—45 **8 Claims**



1. In an electric motor driven screw compressor having meshing helical rotors on parallel axes and mounted in a housing having intersecting cylindrical bores, a high pressure end wall at one end of said housing and a low pressure end wall at the other end thereof, the low pressure end wall having an inlet opening and the high pressure end wall having a discharge opening, an axially extending recess in the housing in open communication with said bores, a slide member mounted for axial movement in the recess, said slide member having interfacial sealing relationship with said rotors, said slide member having a discharge face at one end thereof which is adjacent to the high pressure end wall whereby movement of the slide member is operative to change the compression ratio, the improvement comprising, means sensing the magnitude of current to said electric motor, means for sensing when the compressor is operating at full load, means for incrementally moving the slide member in each direction, and means responsive to full load operation for causing the slide member to move in one direction while the motor current is decreasing, to change to the other direction upon an increase in the motor current, to continue to move in said other direction while the motor current is decreasing, and to change back to said one direction upon an increase in the motor current.

4,519,749

WIND-SOLAR LIFT PUMP

Iosif Baumberg, Brooklyn, N.Y., assignor to B & H Technologies, Inc., New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,740

Int. Cl.³ F04F *9/00*

U.S. Cl. 417—158 **8 Claims**

1. A device for the raising of liquid by the use of solar and/or wind energy comprising:

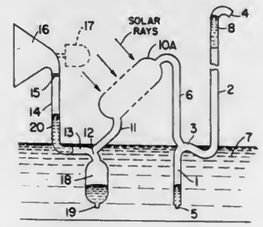
a first section of pipe to be immersed in the liquid, the section of pipe extending downwardly from the surface of the liquid upon immersion therein;

a second section of pipe to be directed upwardly from the surface of the liquid; and

a third section of pipe joining the top of said first section and the bottom of said second section of pipe, the interconnection of said third section with said first section of pipe being located higher than the interconnection of said third section with said second section of pipe to provide for entrapment of liquid within said third section upon immersion of said first section of pipe into the liquid up to said first-mentioned interconnection; and wherein

said first section includes a liquid inlet at a bottom end thereof and an air port at the top end thereof, there being a liquid discharge port at the the top end of said second section of pipe; said device further including

pressure means for appying a pressure differential between said air port and said discharge port, said pressure differential means being responsive to the presence of liquid in said third section of pipe such that pressure from said pressure differential means builds up when said third section is closed off with liquid and decreases upon the



voiding of said third section and said second section of liquid; and wherein

said air port forms a tee with said interconnection of said third section with said first section of pipe to set said pressure means away from a path of liquid flow between said first and said third sections of pipe, thereby to form a bead of liquid in said third section in response to said pressure differential, and to provide an air passage to said pressure means via said air port upon discharge of said bead of liquid at said discharge port, said pressure differential and said air passage being formed alternately and repetitively during the presence of solar and/or wind energy.

4,519,750

VARIABLE-DELIVERY REFRIGERANT COMPRESSOR

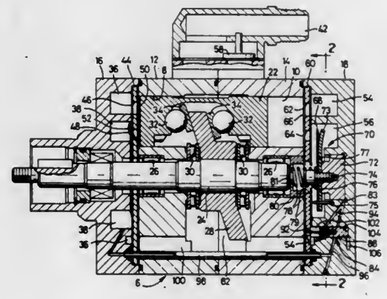
Masayuki Kurahashi, Nagoya; Hisao Kobayashi, and Hiroyuki Deguchi, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 29, 1983, Ser. No. 556,163

Claims priority, application Japan, Dec. 20, 1982, 57-224573

Int. Cl.³ F04B *1/26, 49/02*

U.S. Cl. 417—270 **16 Claims**



1. A variable-delivery refrigerant compressor, comprising:

a plurality of compression chambers in which a refrigerant gas is compressed for delivery thereof from the compressor;

discharge valves disposed corresponding to said compression chambers;

an actuator including a piston movable between a first position thereof at which all of said discharge valves are rendered operative to perform their normal valving function, and a second position thereof at which at least one of said discharge valve is rendered inoperative;

means for defining a first passage through which a discharge pressure of the compressor is applied to said piston of said actuator;

means for defining a second passage through which a suction-side pressure of the refrigerant gas on the suction side of the compressor is applied to said piston of said actuator;

a pilot switch valve disposed in association with said first and second passages, and including a valve spool which receives said suction-side pressure as a pilot pressure and is movable between two positions, to control a mode of application of said discharge pressure and said suction-side pressure to said piston of said actuator, and thereby operate said actuator between said first and second positions, such that said actuator is placed in said first position while a suction pressure of the compressor is relatively high, and in said second position while said suction pressure is relatively low; and

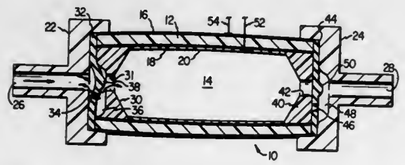
a check valve disposed between a discharge chamber associated with said at least one discharge valve and an outlet port of the compressor from which the compressed refrigerant gas is delivered, said check valve blocking a flow of said refrigerant gas in a direction from said outlet port toward said discharge chamber.

4,519,751

PIEZOELECTRIC PUMP WITH INTERNAL LOAD SENSOR

John B. Beckman, Cedartown, and Martin J. Blickstein, Austell, both of Ga., assignors to The Abet Group, Rome, Ga.

Filed Dec. 16, 1982, Ser. No. 450,338
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—322 **3 Claims**



1. A pump comprising:

piezoelectric pumping means for providing an expanding and contracting volume;

activating means for activating said pumping means to expand and contract;

first valving means disposed adjacent to said piezoelectric pumping means for allowing only afferent flow and second valving means disposed adjacent to said pumping means for allowing only efferent flow;

said first and second valving means comprising:

a supporting member having an inlet opening;

a resilient diaphragm attached around the periphery to said supporting member and having an orifice through the surface thereof, said orifice offset from the inlet opening of said supporting member, said orifice abutting the surface of said supporting member when said diaphragm is relaxed and said orifice distended from said supporting member when pressurized on the side of said diaphragm adjacent said supporting member, said resilient diaphragm also comprising a decreased area of elasticity on the surface of said diaphragm locally disposed adjacent said inlet opening in the relaxed state of said diaphragm; and

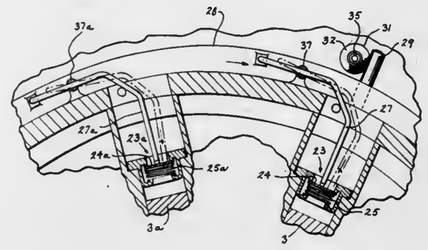
sensing means for piezoelectrically sensing the piezoelectric effect resulting from the internal load on said pumping means.

4,519,752

CONTROL SYSTEM FOR A VARIABLE DISPLACEMENT PUMP

Ingo Valentin, Brookfield, Wis., assignor to Applied Power Inc., Brookfield, Wis.

Division of Ser. No. 414,639, Sep. 3, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 625,571
Int. Cl.³ F04B *49/02, 49/08*
U.S. Cl. 417—298 **3 Claims**



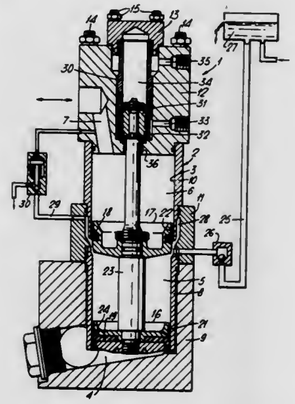
1. A hydraulic system, comprising a variable displacement hydraulic pump having a cylinder communicating with an inlet fluid supply line and an outlet fluid discharge line, a reciprocating main piston element disposed in said cylinder having a suction stroke wherein fluid enters the cylinder from the inlet line and a power stroke for pumping fluid from the cylinder into the discharge line; inlet check valve means for controlling the flow of fluid from the inlet line to the cylinder, said inlet check valve means includes a movable valve stop member biased toward a seated position to prevent the flow of fluid from the cylinder to the inlet line during said power stroke and movable from its seated position to an open position to permit the flow of fluid from the inlet line to the cylinder during said suction stroke; outlet check valve means for controlling the flow of fluid from the cylinder to the discharge line; and control means for varying the volume of fluid discharged, said control means includes a resilient actuator member movable in response to a preselected system variable between a first unflexed position wherein it permits the inlet check valve stop member to seat so that the main piston element develops working pressure in the cylinder, and a second flexed position wherein it applies a force against the inlet check valve stop member, said force being sufficient to hold the inlet valve stop member off its seat in its open position after said stop member is opened during the piston suction stroke to prevent the development of working pressure in the cylinder during the piston power stroke, said actuator member is mounted on a movable support means, and further including means for moving said support means whereby said actuator member is moved between its first and second positions, said moving means includes a pilot-operated plunger engageable with said support means and shiftable between a first position wherein said actuator member is in its first position, and a second position wherein said actuator member is in its second position; means for biasing the plunger toward its first position; and a pilot line between the pump discharge line and the plunger for applying discharge line pressure to the plunger opposite the biasing means to shift the plunger into its second position when the force exerted by the pilot line pressure exceeds the force exerted by the biasing means, and said pump is a radial piston pump having a plurality of radially disposed reciprocating piston elements and a plurality of inlet check valve means controlling the flow of fluid to each piston cylinder, and said support means includes a rotatable ring having a plurality of circumferentially spaced apart resilient members mounted thereto for controlling the position of each of said inlet check valves.

4,519,753

DISPLACEMENT PUMP SUITABLE FOR PUMPING SUSPENSIONS

Henrik M. Kitsnik, Segmon, Sweden, assignor to HK-Engineering Aktiebolag, Segmon, Sweden

Filed Sep. 14, 1982, Ser. No. 418,185
Claims priority, application Sweden, Oct. 9, 1981, 8105988
Int. Cl.³ F04B *15/02*
U.S. Cl. 417—403 **9 Claims**



1. A hydraulically driven pump of the displacement type suitable for pumping a pumping medium at high pumping pressures, said pump comprising:

(a) a pump housing;

(b) a pump chamber provided in said pump housing having an inlet conduit and an outlet conduit with associated respective inlet and outlet valves;

(c) a pump piston arranged in a pump cylinder in said pump chamber, said pump cylinder having a pump cylinder wall, said pump piston and said pump cylinder wall defining a comparatively large gap therebetween;

(d) an oil section arranged above said pump chamber;

(e) a working piston arranged in an oil section cylinder in said oil section, said oil section cylinder having an oil section cylinder wall, said working piston being connected to said pump piston through at least one mechanical connecting member;

(f) a first sealing means mounted on said working piston for sealing said working piston against said oil section cylinder wall;

(g) a second sealing means mounted on said pump piston for preventing flow of pumping medium into contact with said first sealing means on said working piston during a suction stroke of said pump;

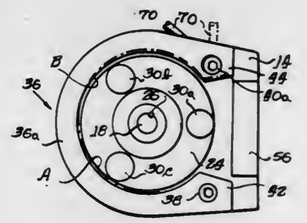
(h) a clean water section arranged between said oil section and said pump chamber, said clean water section extending between said working piston and said pump piston so that the same water pressure (Pv), which is approximately of the same magnitude as pressures in said section and in said pump chamber, is exerted on a front side of said working piston as on a rear side of said pump piston.

4,519,754

PERISTALTIC PUMP HAVING VARIABLE OCCLUSION RATES

Dale E. Minick, Rte. 2, Box 337, Rapid City, Mich. 49676

Continuation of Ser. No. 306,667, Sep. 29, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,760
Int. Cl.³ F04B *43/12*
U.S. Cl. 417—477 **5 Claims**



1. A peristaltic pump having a fixed variable occlusion path and adapted to selectively vary the occlusion rate to cause dissipation of heat due to tube deformation stresses comprising:

a housing;

a rotor mounted on said housing and adapted for rotation about its longitudinal axis, at least three compression rollers carried by said rotor for movement in a circular path during rotation of said rotor, a reaction member mounted on said housing and having a reaction surface of substantial uniform radius adapted to partially encircle about 270° of the circular path traveled by said at least three compression rollers, a compressible flow tube interposed between said rotor and said reaction surface and adapted to be occluded by said compression rollers during movement through said circular path, said tube having an inlet end and having an outlet end from which the fluid flows;

pivot means for pivotally mounting one terminal end of the reaction member to the housing at a fixed pivot axis for pivotal movement about the fixed axis adjacent the inlet end of the flow tube;

cam means connected to opposite reaction member terminal end and being adjustable to move the reaction surface of the reaction member about the pivot means toward the compression rollers to cause a progressively increasing occlusion of the tube from the beginning of the reaction surface in a first zone of approximately 90° to a fixed point of maximum occlusion, a second zone of decreasing occlusion extending from the fixed point of maximum occlusion through a central portion of the reaction member, and a third zone decreasing to substantially zero occlusion extending to the outlet end of the reaction member;

said cam means and said pivot means being releasably mounted on said housing to permit axial removal of the reaction member relative to the rotor to permit tube replacement.

4,519,755

GEROTOR VACUUM PUMP

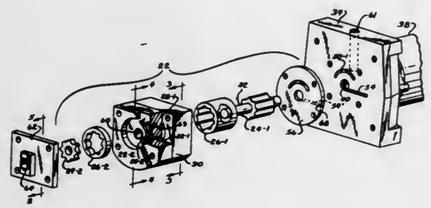
David E. Hanson, Hoffman Estates, Ill., assignor to Sargent-Welch Scientific Company, Skokie, Ill.

Continuation of Ser. No. 470,084, Mar. 3, 1983, abandoned, which is a continuation of Ser. No. 148,453, May 9, 1980, abandoned. This application Jan. 23, 1984, Ser. No. 572,140
Int. Cl.³ F04C *18/10, 25/02, 27/02*
U.S. Cl. 418—9 **18 Claims**

1. In a gerotor vacuum pump adapted for evacuating gases from a container or the like at relatively low pressure levels, wherein the gases are drawn from the container into said pump through a vacuum connection and into a pumping chamber, said pump including first and second walls defining a rotor chamber therebetween, an outer rotor having a plurality of

teeth disposed on the inner axial surface thereof, an inner rotor mounted on a shaft for rotation within said outer rotor and having one less tooth on its outer axial surface than said outer rotor, the inner axial surface of said outer rotor and the outer axial surface of said inner rotor defining at least one pumping chamber which expands and contracts as said inner rotor rotates relative to said outer rotor, the improvement comprising:

a gas inlet port in said first wall disposed between said vacuum connection and said pumping chamber, said gas inlet port communicating with said pumping chamber during a substantial portion of the time when said pumping chamber is expanding, a gas outlet port in said second wall axially disposed and angularly spaced from said inlet port, said gas inlet port communicating with said pumping chamber only just prior to complete contraction of the pumping chamber, and oil inlet means communicating an oil source with said gas inlet port, said oil communicating with said gas inlet port and following a generally spiral path through said pump, said oil source



having a pressure greater than the pressure within said gas inlet port and said pumping chamber during operation of said pump, whereby the expansion of said pumping chamber during operation of said pump creates a pressure differential between said oil source and said gas inlet port which draws oil from said oil inlet means through said gas inlet port with said gas being evacuated from said container into said pumping chamber and coating the contacting surfaces of said inner rotor and outer rotor upon communication of said gas inlet port with said pumping chamber to provide an oil coating between said contacting surfaces so as to seal the gas in said pumping chamber during the expansion and contraction of said pumping chamber and permit the pumping of relatively low pressure levels, the inner rotor minor root diameter being sufficiently larger than the diameter of said shaft to provide a relatively wide uninterrupted area which receives an oil film during operation of the pump which thereby effectively minimizes bypass of gas between an endface of said inner rotor and a surface of the first wall adjacent thereto.

4,519,756

CONSTANT DISPLACEMENT TURBINE WITH VANE WHICH PIVOTS AND ROTATES

John W. Fenton, 26 Shoreland Dr. - Angler's Park Shores, Key Largo, Fla. 33037

Filed Sep. 30, 1983, Ser. No. 537,934
Int. Cl.³ F01C *3/06*
U.S. Cl. 418—68 **21 Claims**

1. A turbine, comprising:

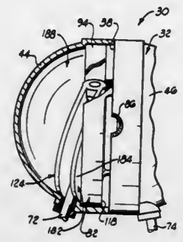
a housing including at least one lobe having a lobe inner surface symmetrically disposed about a lobe axis and conforming to a portion of a spherical surface centered on a lobe center disposed on the lobe axis, wherein a drive shaft aperture intersecting the lobe inner surface is formed through the housing along a drive shaft axis extending radially from the lobe center at an angle to the lobe axis;

a vane having a vane pivotation axis extending therethrough, wherein a sealing surface is formed on the vane to mate with the lobe inner surface, the sealing surface extending arcuately about the center of the vane pivotation axis between opposite ends of the vane pivotation axis;

means for mounting the vane within the housing for simultaneous pivotation of the vane about the vane pivotation axis and rotation of the vane about the lobe axis with the vane pivotation axis extending through the lobe center perpendicularly to the lobe axis;

a drive shaft passing through the drive shaft aperture and pivotally connected to the vane for pivotation relative thereto about an axis passing through the lobe center normally to the vane pivotation axis;

means for blocking fluid communication between opposite sides of the vane separated by the vane sealing surface so



as to form a turbine inlet chamber to one side of the vane and a turbine outlet chamber to the other side of the vane, the sides of the vane to which the inlet and outlet chambers are formed reversing for a selected position of the vane pivotation axis in the casing;

an inlet port providing fluid inlet means to the lobe interior, the inlet port positioned on the housing to provide fluid communication with the turbine inlet chamber; and

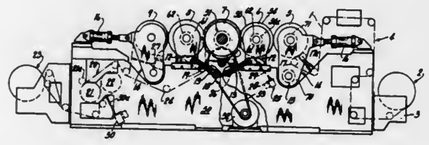
an outlet port providing fluid outlet means to the lobe interior, the inlet port positioned on the housing to provide fluid communication with the turbine outlet chamber.

4,519,757

WEB SURFACE TREATING APPARATUS

Eugene W. Wittkopf, Suamico; Allen R. Jorgensen, Abrams, and Robert A. Daane, Green Bay, all of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Jan. 17, 1984, Ser. No. 571,596
Int. Cl.³ B29D *7/14*; B29C *15/00*
U.S. Cl. 425—143 **23 Claims**



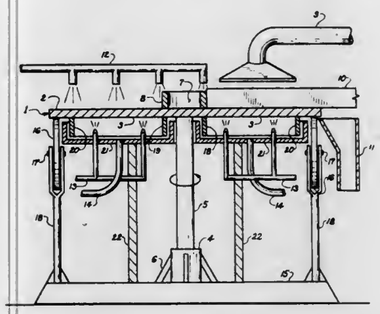
1. In a web treating apparatus for heat treating of the surface of a web drawn from a roll stock, comprising at least three surface treating rolls including a covered roll located between first and second heated rolls, said heated rolls including a rigid round base having end bearing supports for rotatably supporting the roll, said rigid base having a finished outer surface, a plurality of passageways extending axially through the base and located immediately inwardly of the outer surface, means for transferring a temperature controlled liquid through said passageways at an essentially controllable constant temperature for transfer of thermal energy through said outer wall, means for urging said rolls into engagement at a selected working pressure, said passageways and said outer wall and the portions of the roll located between said passageways being arranged and constructed to establish an outer wall strength sufficient to support said working load essentially without deflection of said outer wall into said passageways and simultaneously establishing transfer of thermal energy through said outer wall to maintain an operative constant temperature over the face of the heated roll with the temperature of the outer wall which is aligned with the passageways being essentially identical to the temperature of the outer wall which is aligned with the portions of the roll separating said passageways.

4,519,758

ROTARY COOLING TABLE

Edward J. Skach, Jr., Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 334,201, Dec. 24, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 518,773
Int. Cl.³ B01J *2/14*
U.S. Cl. 425—6 **10 Claims**



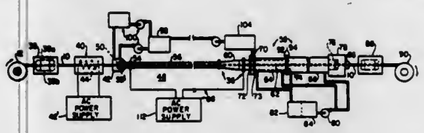
1. An apparatus consisting essentially of a flat, horizontal, planar, circular, rotatably mounted sheet or plate on a support means in operable combination with a fixated rotation means, a means for supplying an inert gas coolant to the upper surface of the sheet or plate, a means for cooling the underside surface of the said sheet or plate, a means for feeding a molten material to a non-central portion of the surface of the sheet or plate as it is rotated, and a means for scraping said material, in its cooled condition, from the surface of said sheet or plate at a point distal from said feed means, said rotation means being characterized as one which revolves the plate at a speed slow enough to prevent centrifugal forces from causing flow of the material toward the edge of the plate before it reaches the scraper means.

4,519,759

APPARATUS FOR MAKING SHRINKABLE TUBING

Carlos Katz, Edison, N.J., and Amicam C. Zidon, Yorktown, N.Y., assignors to Cable Technology Laboratories, Inc., New Brunswick, N.J.

Division of Ser. No. 410,443, Aug. 23, 1982, Pat. No. 4,446,095. This application Jan. 12, 1984, Ser. No. 570,218
Int. Cl.³ B29C *17/07*; B29D *23/03, 23/04*
U.S. Cl. 425—97 **9 Claims**



1. Apparatus for manufacturing long lengths of a heat-shrinkable sleeve for use in splicing electrical cables and the like, comprising

forming means for forming an elongated sleeve having a plurality of layers formed of a thermosettable material around an elongated core;

means for continuously advancing said core and said sleeve in a generally axial direction;

heating pipe means cooperating with said core and sleeve for surrounding, heating, and curing a portion of said sleeve, said heating pipe means being formed with an expansion section of progressively increasing interior diameter,

means for introducing a fluid under pressure into the core, thereby internally pressurizing the sleeve against said heating pipe means to effect a radial expansion of the heated, cured portion thereof within said expansion section, and

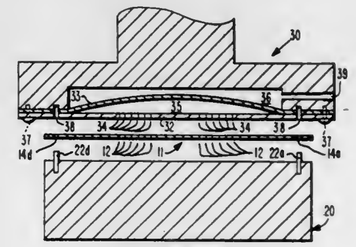
cooling means cooperating with said core and sleeve for cooling the expanded sleeve to stabilize it.

4,519,760

MACHINE FOR FILLING VIA HOLES IN AN INTEGRATED CIRCUIT PACKAGE WITH CONDUCTIVE INK

Ronald A. Norell, Carlsbad, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 2, 1984, Ser. No. 595,658
Int. Cl.³ B29C *3/00*; B29F *3/01*; B05C *1/00*
U.S. Cl. 425—113 **11 Claims**



1. A machine for filling a plurality of via holes in a flat workpiece, comprising:

a base member having a flat surface for supporting said flat workpiece such that said via holes are perpendicular to said surface;

a moveable hollow member having an open face that is parallel to said flat surface and surrounds said via holes;

a masking member attached across said open face and having a plurality of via holes that are arranged across said open face in correspondence with said via holes in said workpiece;

a diaphragm inside of said hollow member having a front surface that forms a first cavity with said masking member and having a back surface that forms a second cavity with said hollow member;

a high viscosity substance within said first cavity;

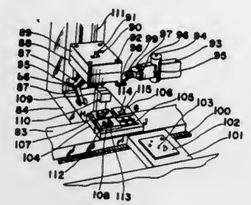
means for pressing said masking member against said base with said workpiece sandwiched therebetween such that said via holes in said masking member and said workpiece are aligned;

said hollow member having an orifice for introducing a fluid under pressure into said second cavity and against the back surface of said diaphragm to thereby squeeze a portion of said high viscosity substance through said via holes in said masking member and into said via holes of said part.

4,519,761
COMBINED MOLDING AND ASSEMBLING APPARATUS

Kazuei Kenmochi, Hirakata; Tadashi Sakairi, Katano; Yoshio Maruyama, Kyoto, and Eizi Itemadani, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 5, 1984, Ser. No. 647,825
Claims priority, application Japan, Sep. 8, 1983, 58-165543
Int. Cl.³ B29C *1/00*; B29D *3/00*
U.S. Cl. 425—135 **6 Claims**

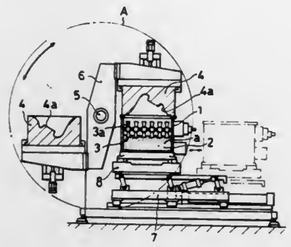


1. A combined molding and assembling apparatus which comprises a conveyor means movable from one position to another position spaced apart from such one position, a pallet frictionally engageable with the conveyor means for movement together therewith, a catch mechanism releaseably engageable with the pallet to hold the pallet at a working position, a molding machine fixedly mounted on a bench of the apparatus adjacent the conveyor means and including a movable plate movable in a direction perpendicular to the direction of movement of the conveyor means for selectively closing and opening a mold assembly, and a handling machine including a head capable of moving selectively into and away from the space, in which the mold assembly operates, during the opening of the mold assembly.

4,519,762
MULTI-MOLD MOLDING APPARATUS FOR PRODUCING A MOLDED SKIN PRODUCT

Tuneo Ishihara, Kawagoe, and Masayosi Uchida, Iruma, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1983, Ser. No. 521,539
Claims priority, application Japan, Feb. 21, 1983, 58-26203
Int. Cl.³ B29F *5/00*
U.S. Cl. 425—183 **1 Claim**

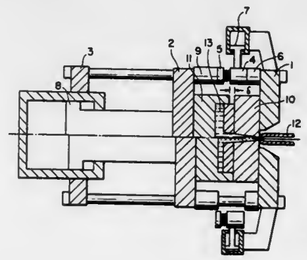


1. An apparatus for manufacturing of a molded skin material including a treating container having at its inner lower portion a space for containing a charged layer of synthetic resin powder, an agitator provided in the space having an agitation blade means for spattering upwards the charged layer of synthetic resin powder, and a metallic mold above the space closing an upper surface of the treating container, the metallic mold being provided with a downwardly directed molding mold surface facing the charged powder layer, the mold surface thereof having means for selectively heating and cooling said mold surface, characterized in that a rotary frame is provided on one side of the heating container, and at least two said metallic molds are disposed on the rotary frame to be at rotationally symmetrical positions, means are provided for rotating the frame and the treating container is so arranged as to be retreated outside a rotation loci of these metallic molds by means for advancing and retreating.

4,519,763
APPARATUS FOR INJECTION COMPRESSION MOLDING

Shunsuke Matsuda, Osaka; Katsuaki Mitani, Kyoto; Hironori Yoda, Ueda, and Kesaji Nishizawa, Nagano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Nissei Plastic Industrial Co., Ltd., Nagano, both of, Japan

Filed Mar. 25, 1983, Ser. No. 479,071
Claims priority, application Japan, Mar. 29, 1982, 57-51711; Mar. 29, 1982, 57-51715; Mar. 29, 1982, 57-51716; Mar. 29, 1982, 57-51719
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—192 R **30 Claims**

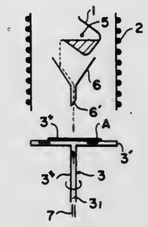


1. An injection compression molding apparatus comprising:
a mold unit having a stationary die plate, a mounting plate fixed to said stationary die plate and a mold plate on said mounting plate, a movable die plate movable toward and away from said stationary die plate and having a movable mold plate thereon and defining a mold cavity with said mold plate on said stationary die plate;
an injection nozzle directed into said mold cavity for injecting a resin to be molded into said cavity;
a fixed supporting plate;
main drive means having a main cylinder supported on said supporting plate and a main cylinder ram having the outer end connected to said movable die plate for moving said movable die plate between a position in which said mold plates are fully closed and a position in which said mold plates are open to permit discharge of a molded product; and
compression stroke setting means for blocking movement of said movable die plate in the direction toward said stationary die plate at a position spaced a distance away from the fully closed position corresponding to a desired compression stroke of said mold plate, and comprising adjustment means positioned between said stationary die plate and said movable die plate, at least part of said adjustment means which has a dimension in the direction of movement of said movable die plate greater than said compression stroke being movable laterally of the said direction of movement of said movable die plate for permitting said movable die plate to move to the fully closed position, and drive means connected to said adjusting means for moving at least said part of said adjusting means in the lateral direction.

4,519,764
APPARATUS FOR FABRICATING POLYCRYSTALLINE SILICON WAFER

Yasuhiro Maeda; Takashi Yokoyama, and Shinichi Yagihashi, all of Sapporo, Japan, assignors to Hoxan Corporation, Sapporo, Japan

Division of Ser. No. 373,039, Apr. 29, 1982,. This application Aug. 27, 1984, Ser. No. 644,548
Claims priority, application Japan, Apr. 30, 1981, 56-66021
Int. Cl.³ B29C *5/04*
U.S. Cl. 425—256 **2 Claims**

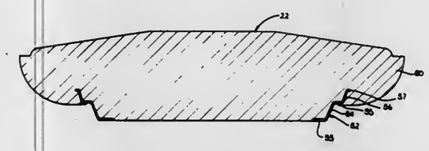


1. In an apparatus for fabricating a polycrystaline silicon wafer, said apparatus having:
(a) a centrifugal zone having a defined outer rising peripheral edge (15) which encloses said zone;
(b) a dispensing zone located over the centrifugal zone adapted for pouring a predetermined measured quantity of molten silicon at about the center of said centrifugal zone; and,
(c) means for cooling a silicon layer which is poured over the surface of said centrifugal zone;, the improvement in said apparatus, comprising, in combination:
(d) a turntable (3′) disposed in said centrifugal zone under said dispensing zone, said outer rising peripheral edge (15) being a wall around said centrifugal zone; and,
(e) a wafer tray (17) disposed on said turntable (3′) said wafer tray (17) having a second peripheral edge (8′), the zone wall being higher than said second peripheral edge (8′), said wafer tray (17) being somewhat smaller in size than the centrifugal zone, and having a bottom plate with a wafer-forming surface (3″), the space between the tray second peripheral edge (8′) and said wall defining a recovery zone (16), so that said molten silicon liquid from said dispensing zone is poured substantially onto the center of said wafer tray (17), and, the molten silicon liquid flows radially outwards by the centrifugal force created by the rotation of the turntable (3′) which also rotates the wafer tray (17), excess molten liquid overflowing the second peripheral edge (8′) and falls and solidifies in the recovery zone (16) so that the silicon base material can be recovered and reused.

4,519,765
MOLD

Charles F. Abrams, 4311 Lemp Ave., Studio City, Calif. 91604

Filed Oct. 27, 1983, Ser. No. 545,921
Int. Cl.³ B28B *1/02*; B28C *1/00*
U.S. Cl. 425—263 **18 Claims**

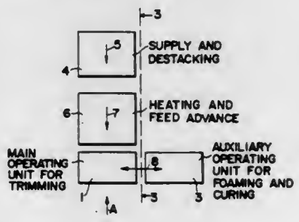


1. An improved plaster mold having an increased useful life, said mold having a top surface for forming ceramic ware and a bottom surface for frictional engagement with jigger rotating means having a substantially horizontal ring-like upper surface; the improvement comprising an abrasion resistant ring of reinforcing material affixed to the bottom surface of said mold at the junction between said mold and said surface of said rotating means whereby said reinforcing material protects said mold at said junction thereby reducing wear thereto.

4,519,766
APPARATUS FOR MANUFACTURING THREE-DIMENSIONAL WORK PIECES

Ernst M. Spengler, Heusenstamm, Fed. Rep. of Germany, assignor to Stanztechnik GmbH R+S, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 260,418, May 4, 1981, Pat. No. 4,405,537, which is a continuation-in-part of Ser. No. 965,745, Dec. 4, 1978, Pat. No. 4,273,738. This application Apr. 18, 1983, Ser. No. 485,739
Int. Cl.³ B29C *17/04*
U.S. Cl. 425—302.1 **20 Claims**



1. An apparatus for manufacturing a three-dimensional work piece, comprising a first station including primary mold means for holding an initially flat blank work piece, means movably supporting said primary mold means in said first station, first drive means operatively connected to said primary mold means for reciprocating said primary mold means in a given direction, said primary mold means shaping said flat blank work piece of plastics material into a molded blank work piece which assumes the form of the primary mold means, a second station arranged next to said first station, said first drive means moving said primary mold means back and forth between said first and second stations, said second station comprising first secondary mold means (75) movably mounted for cooperation with said primary mold means which still hold the molded blank work piece, second drive means operatively connected to said first secondary mold means for moving the first secondary mold means relative to said primary mold means, second secondary mold means movably supported in said first station, third drive means operatively connected to said second secondary mold means for moving the second secondary mold means in said first station relative to said primary mold means still holding the molded blank forming said three-dimensional work piece, trimming tool means operatively supported by said first or second secondary mold means for trimming the three-dimensional work piece while it is still held by said primary mold means, and fourth drive means operatively connected to said trimming tool means for moving the trimming tool means relative to a three-dimensional plane defined by at least one of said mold means, whereby a work piece remains on said primary mold means during all operational steps of the apparatus.

4,519,767
TRANSFER APPARATUS FOR A RECORD MOLDING PRESS

Harry H. Westerman, Jr., Danville, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 12, 1984, Ser. No. 619,986
Int. Cl.³ B29D *17/00*
U.S. Cl. 425—308 **7 Claims**

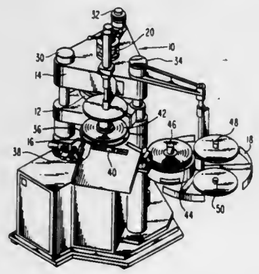
1. In a record molding press having (a) a record pressing

station for use with opposing molding platens on which record stampers are mountable for molding a charge of thermoplastic composition into a record having flash about the outer edge thereof and (b) a record trimming station having means for removing flash from the outer edge of a record; the apparatus for transferring a record with flash on its outer edge from the record pressing station to the record trimming station comprising in combination:

a clamp means having a closed and an opened position and an operating means for opening and closing the clamp means;

said clamp means in the closed position having an inside diameter capable of holding a molded record by flash formed on the outer edge of the record and in the open position having an opening larger than the diameter of the flash formed on the outer edge of the record;

said clamp means being positioned at a predetermined location for oscillation between the record pressing station



and the record trimming station and being comprised of first and second opposing pivotally connected clamp halves each having a semicircular inner ring portion which together form the inside diameter of the clamp means;

said clamp halves further being operatively connected to the operating means for opening and closing the clamp means whereby when the clamp means is located in the closed position about molding platens in the record pressing station and a charge of a thermoplastic composition is molded between stampers mounted on the molding platens, a record is molded having flash formed about the outer edge of the record in gripping engagement with the inner diameter of the clamp means and whereby after oscillating from the record pressing station to the record trimming station and the clamp means is moved to the open position by the operating means the record is released for trimming of the flash from the outer edge of the record at the record trimming station.

4,519,768

APPARATUS FOR HORIZONTALLY CASTING CONCRETE

Toshio Murai, Kashiwa; Hayao Aoyagi, Chiba; Masahiko Furukawa, Kashiwa; Hiromichi Yamada, Matsudo; Tateo Kawamura, Tokyo; Yoshihiro Ishikawa, Kashiwa; Akio Sakamoto, Iwatsuki; Toshiaki Tsuchiya, Yokohama; Takashi Shiozaki, Abiko; Hirokuni Kubota, Kashiwa; Isoji Okada, Yokohama; Jiro Ishii, Ibaragi; Fumio Fujii, Yotsukaido; Masakazu Nagao, Tokyo; Masamitsu Kikuchi, Tokyo; Morio Ishii, Tokyo; Yoshimasa Sasaki, Sapporo; Katsushi Tanaka, Kobe, and Tadashi Itakura, Miki, all of Japan, assignors to Takenaka Komuten Co., Ltd. and Kyokuto Kaihatsu Kogyo CO., Ltd., both of, Japan

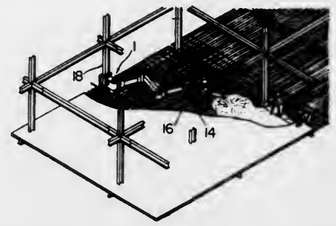
Filed Oct. 27, 1983, Ser. No. 545,913

Claims priority, application Japan, Oct. 29, 1982, 57-164433[U]; Apr. 25, 1983, 58-61783[U]; Jul. 27, 1983, 58-117058[U]; Jul. 27, 1983, 58-117059[U]

Int. Cl.³ B28B *21/14, 1/32*

U.S. Cl. 425—456 **8 Claims**

1. An apparatus for horizontally casting concrete comprising a horizontally foldable multilink support arm composed of an attachment frame, a proximal boom, intermediate booms, and a distal boom which are pivotally coupled by joint tubes, a drive mechanism composed of worm wheels mounted on said joint tubes and worm gears mounted on said booms and held in



mesh with said worm wheels for enabling said support arm to move in articulatory motion, a concrete pressure-feed pipe extending from a pump along said booms and through said joint tubes with swivel joints, and an attachment jig mounted on said attachment frame for being mounted on a column.

4,519,769

APPARATUS AND METHOD FOR THE COMBUSTION OF WATER-IN-OIL EMULSION FUELS

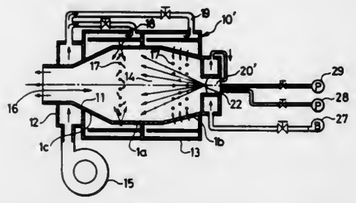
Akio Tanaka, No. 565, Tobori, Himeji-shi, Hyogo, Japan

Continuation-in-part of Ser. No. 376,048, May 7, 1982, abandoned. This application Nov. 15, 1983, Ser. No. 552,192

Claims priority, application Japan, Jun. 2, 1983, 58-98507

Int. Cl.³ F23J *7/00*

U.S. Cl. 431—4 **2 Claims**



1. A method for the combustion of a water-oil emulsion fuel having at least a water content of about forty percent comprising simultaneously and separately supplying water, oil and compressed air to a nozzle having a single outlet for mixture of said water and oil in said nozzle, jetting the water-oil emulsion fuel by means of said compressed air from said nozzle into a combustion chamber defined by an inner vessel attached to the nozzle, preheating compressed secondary air in a pre-heating chamber located between said inner vessel and an outer vessel and introducing said preheated compressed air into the combustion chamber through a plurality of apertures in said inner vessel to compress the flame of the jetted water-oil emulsion fuel and force it to swirl and remain in the combustion chamber for combustion at a temperature of 700° to 1000° C. thereby causing the micro-explosion of the water particles and at the same time the pyrolysis of the water-oil emulsion fuel.

4,519,770

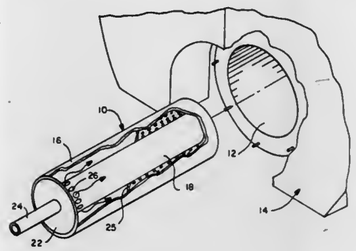
FIRETUBE BOILER HEATER SYSTEM

John P. Kesselring, Mountain View; Robert M. Kendall, and Wayne V. Krill, both of Sunnyvale, all of Calif., assignors to Alzeta Corp., Mountain View, Calif.

Continuation-in-part of Ser. No. 164,831, Jun. 30, 1980, abandoned. This application Apr. 21, 1983, Ser. No. 487,068

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—7 **11 Claims**



1. A burner for use in a heater having a combustion chamber with firetube walls, the burner including the comination of a burner shell comprised of a matrix of ceramic fibers having interstitial spaces between the fibers providing a flowpath for an air-fuel mixture with combustion of the mixture occurring in a reaction zone along a shallow outer layer of the shell whereby heat transfers primarily by radiation from the reaction zone outwardly to the firetube walls of the combustion chamber, mounting means for supporting the burner shell and for mounting the shell in the heater wherein said burner shell is separable and detachable from the combustion chamber, and with the reaction zone spaced from and in direct line of radiant view with the firetube walls of the combustion chamber, and means for directing a flow of the air-fuel mixture into the shell and outwardly through the fiber matrix.

4,519,771

FLAME DETECTION SYSTEM WITH ISOLATION BETWEEN BURNER AND ELECTRONIC CONTROL DEVICE

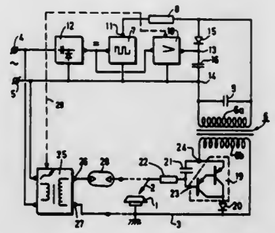
Jean-Claude G. Six, Versailles; Paul Claeys, Saint-Mande, and Michel Guillaume, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 481,002

Claims priority, application France, Apr. 2, 1982, 82 05773

Int. Cl.³ F23N *5/00;* **F23Q** *23/00*

U.S. Cl. 431—25 **17 Claims**



1. A method of detecting a burner flame using the rectifying effect of the flame which comprises: applying a signal from an a.c. generator between an electrode in contact with the flame and the burner which functions as a counter-electrode, electrically isolating a first part of the circuit which comprises the a.c. generator and a voltage detector from a second part of the circuit which includes the burner and the electrode by means of an isolating transformer, whose primary winding is coupled directly to the voltage detector and via a resistor to the a.c. generator and whose secondary winding is coupled to a secondary circuit, the presence of a flame producing a rectified current in the secondary circuit which provides damping of said secondary circuit, which damping is transferred to the primary of the transformer, and measuring the presence or absence of a flame by means of a variation of a rectified and smoothed voltage developed at the input of the voltage detector.

4,519,772

HEATING DEVICE FED WITH FREE-FLOWING FUEL

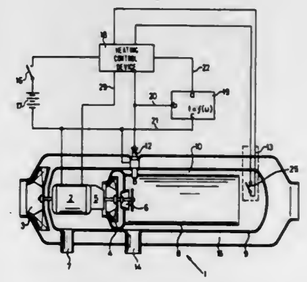
Bernd Mittmann, Munich, Fed. Rep. of Germany, assignor to Webasto-Werk. W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,540

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248412

Int. Cl.³ F23Q *9/08*

U.S. Cl. 431—45 **2 Claims**



1. In a heating device of the type fed with free-flowing fuel and connected to an on-board voltage source, in particular, a vehicle heating device with a burner assembly which includes a fuel supply, a combustion air fan and a heating element to ignite the fuel/air mixture after a preheating phase, during which at least the combustion air fan is shut off or is operated at less than the operating blower output, and with a switching device which automatically turns on or switches the combustion air fan to its operating blower output following completion of the preheating phase, the improvement wherein the switching device comprises a voltage-dependent, time-function element which presets a preheating time for the heating element based on the magnitude of on-board voltage applied thereto, and being operable to decrease preheating duration as the on-board voltage increases.

4,519,773

DUAL CANNISTER GAS HOUSING

Mark G. Parish, Brown Deer, and Roy M. Rulseh, Milwaukee, both of Wis., assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Feb. 25, 1983, Ser. No. 469,583

Int. Cl.³ F23C *5/28;* **F23N** *1/00*

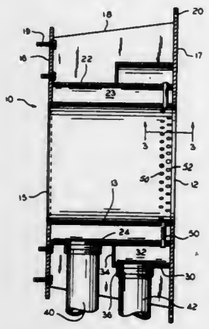
U.S. Cl. 431—176 **9 Claims**

1. A burner device comprising a combustion zone and means for introducing two gases having different heating values thereto, said introducing means comprising:

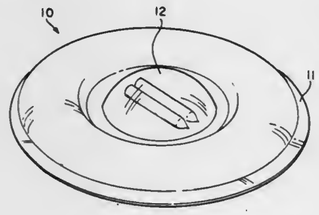
a first chamber associated with said burner and having means for receiving a first gas and a first plurality of orifice means coupling said first chamber to said combustion zone;

a second chamber associated with said burner and surrounding said first chamber and having means for receiving a second gas and a second plurality of orifice means coupling said second chamber to said combustion zone, said second plurality of orifice means comprising a plurality of

tubes passing through said first chamber and coupling said second chamber to said combustion zone thereby preventing mixing of said first gas and said second gas except in said combustion zone.



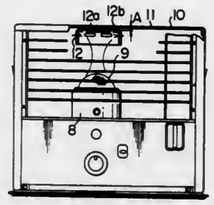
4,519,774
TEMPERATURE ACTUATED BURNER IGNITER
Clifford M. Shedd, 5109 Mortier Ave., Orlando, Fla. 32812
Filed Mar. 29, 1984, Ser. No. 594,811
Int. Cl.³ C06C *9/00*
U.S. Cl. 431—267 **20 Claims**



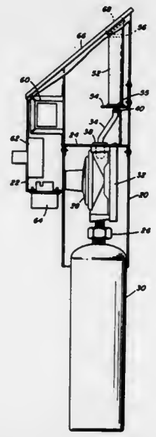
1. A low cost igniter comprising a multi capsule of low strength material, said capsule being divided into at least two separate compartments, with one of said compartments being filled with a freezable fluid, and another of said compartments containing a first ingredient that will function in the presence of a selected second ingredient to bring about combustion, said compartment containing said first ingredient being disposed in the immediate vicinity of a quantity of said selected second ingredient, so that on the occasion of a freezing temperature, the freezable fluid in said capsule will freeze and expand, fracturing the compartments of said capsule substantially simultaneously, thus leading to a combination of the first ingredient with the selected second ingredient, as will bring about immediate combustion.

4,519,775
BURNER APPARATUS
Muneo Tao, and Fumihiko Migaki, both of Yamatokoriyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodoma, Japan
Filed Feb. 4, 1983, Ser. No. 464,118
Claims priority, application Japan, Feb. 10, 1982, 57-20003
Int. Cl.³ F24C *5/04;* F23D *13/04*
U.S. Cl. 431—344 **3 Claims**

1. A burner apparatus comprising:
a cabinet;
a combustion cylinder disposed in said cabinet;
a top panel having a lower surface disposed above said combustion cylinder and exhaust holes formed in a peripheral portion thereof;
a flame-shielding member attached to a portion of the lower surface of said top panel facing said combustion cylinder; and
a discharge means associated with said flame-shielding member for horizontally discharging flames rising from said combustion chamber and streaming into said flame-shielding member, said flame-shielding member having an open bottom cylinderical shape and a peripheral wall and a top closed by a top wall which is spaced from said portion of the lower surface of said top panel by means providing a predetermined gap, said discharge means including at least one opening formed in said peripheral wall of said flame-shielding member.

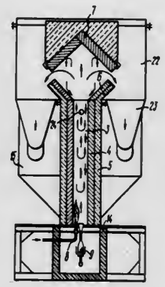


4,519,776
APPARATUS FOR ATTRACTING INSECTS
Sal G. DeYoreo, Andover, and David P. Stevens, Billerica, both of Mass., assignors to Armatron International, Inc., Melrose, Mass.
Filed Jul. 8, 1983, Ser. No. 511,971
Int. Cl.³ F23D *13/00*
U.S. Cl. 431—328 **6 Claims**



2. An apparatus for attracting insects to an insect trapping device, said apparatus comprising:
enclosure means defining an interior chamber with inlet and outlet openings communicating therewith;
a catalyst arranged in said chamber;
a source of pressurized combustible fluid;
means including a normally closed valve for connecting said source to said inlet opening;
a first electrically operable means for opening said valve to thereby permit combustible fluid to flow from said source via said inlet opening into said chamber;
a second electrically operable means for heating said catalyst to an elevated temperature at which said catalyst ignites the combustible fluid in said chamber and thereafter sustains an exothermic reaction, thereby producing a mixture of carbon dioxide and moisture which exits from said chamber via said outlet opening, said second electrically operable means comprising an electric heating element arranged in said chamber adjacent to said catalyst;
a normally closed electric switch connected in series with said electric heating element, said switch being of the type which opens at said elevated temperature; a transformer of the type adapted to be powered by an AC power source; and
means for connecting said first and second electrically operable means inparallel with said transformer.

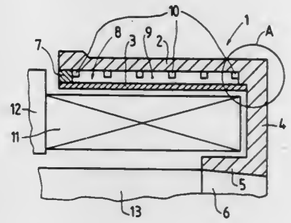
4,519,777
METHOD AND APPARATUS FOR BLOATING GRANULAR MATERIAL
Yakub A. Akhtyamov, ulitsa Lipetskaya, 17, kv. 16, Chelyabinsk, U.S.S.R.
Filed Sep. 8, 1982, Ser. No. 415,775
Int. Cl.³ F27B *14/00;* F27D *1/08;* C04B *31/22*
U.S. Cl. 432—13 **11 Claims**



1. A method of bloating granular material comprising the steps of:
forming a flow of rising gases heated to a temperature of 800°–1000° C.;
forming a flow of the raw granular material;
said flow of the raw granular material being introduced directly into said flow of the rising gases heated to a temperature of 800°–1000° C. at a velocity which is 1.5 to 9 times the velocity of said flow of gases;
roasting said raw granulated material to obtain bloated granules of said material, the resulting material comprising completely bloated and partially bloated granules;
carrying the thus obtained bloated granular material by the flow of exit gases away from the zone of roasting for separation; and
returning said partially bloated granules into the roasting zone for further roasting until they are completely bloated.

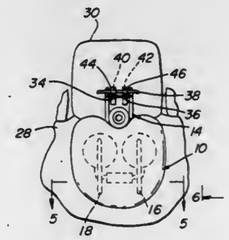
4,519,778
HEATABLE GODET
Paul von Burg, Winterthur; Armin Wirz, Ossingen, and Felix Graf, Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Nov. 18, 1983, Ser. No. 553,044
Claims priority, application Switzerland, Dec. 6, 1982, 7074/82
Int. Cl.³ F27D *21/00;* F22B *37/46, 37/42*
U.S. Cl. 432—35 **4 Claims**

1. A heatable godet comprising
means for defining an enclosed space for a heatable medium;
an exhaust path extending from said space to atmosphere;
a safety outflow device in said path for venting the heatable medium from said space, said safety outflow device including an outflow opening communicating with said space and fusible material within said opening to hermetically close off said opening, said material having a predetermined melting point for melting at a predetermined temperature in said space to open said opening for the exhaust of the medium; and



a narrowed throttle region in said path sized to exhaust a flow of the heatable medium from said space over a time period of from 0.5 seconds to 20 seconds.

4,519,779
ORTHODONTAL ELECTRICAL DEVICE AND METHOD OF EMPLOYING SAME
Nathaniel H. Lieb, Narberth, Pa., assignor to Penn-Med Technology, Inc., West Conshohocken, Pa.
Filed Mar. 30, 1984, Ser. No. 595,096
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—18 **5 Claims**



1. An orthodontal electrical device for assisting in the repositioning of a tooth in the mouth of a patient, said device being characterized by:
a. a housing attachable to a tooth to be repositioned and moveable with said tooth;
b. current generating means within said housing;
c. an anodic electrode connected to said current generating means and being moveable with said housing, said anodic electrode being located adjacent a surface of the housing facing the gingival tissue when said housing is attached to the tooth to be repositioned, said anodic electrode being positioned for engaging the gingival tissue adjacent the tooth to be repositioned for engaging the gingival tissue adjacent the tooth to be repositioned at a location substantially in a direction of desired tooth movement; and
d. a cathodic electrode connected to said circuit generating means and being moveable with said housing, said cathodic electrode being located adjacent the same surface of the housing as the anodic electrode and bing positioned for engaging the gingival tissue adjacent the tooth to be repositioned on the side of said tooth opposed to the anodic electrode.

4,519,780

DENTAL HANDPIECE

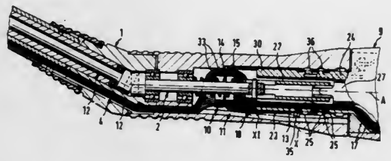
Ernst Strohmaier, Bad Schussenried; Heinrich Reich, Hochdorf, and Bernd Wagner, Biberach, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,213

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215210

Int. Cl.³ A61C *1/00*

U.S. Cl. 433—29 **29 Claims**



1. A dental handpiece comprising means provided at one end of the handpiece to mount a dental implement, drive means provided in the handpiece to operate the dental implement when the latter is mounted on the handpiece, a connection piece pivotally connected to a second end of the handpiece which is remote from said one end thereof so as to permit relative rotation between the handpiece and the connection piece, means provided in the connection piece to enable a handpiece-supply line to be coupled therewith, a light source, and a light guide having a light-receiving end arranged to receive light from said light source and a light-emitting end arranged to direct light to a treatment region adjacent to the dental implement, wherein:

(a) the light guide is arranged to extend within the handpiece and the connection piece;

(b) the light guide is transversely divided into separate first and second guide portions in the region of the connection between the handpiece and the connection piece;

(c) the first guide portion extends within the connection piece and has a first end which provides said light-receiving end of the light guide and a second end which is located in said connection region, and the second guide portion extends within the handpiece and has a first end which is located in said connection region and a second end which provides said light-emitting end of the light guide; and

(d) a pair of annular light-transmitting arrangements are provided one at each of said second end of the first guide portion and said first end of the second guide portion, said annular light arrangements providing for transmission of light therebetween whereby light admitted to said first end of the first guide portion is transmitted via the first guide portion, said pair of annular arrangements, and said second guide portion to be emitted from the second end thereof, and one of said annular arrangements being provided in the handpiece and the other of said annular arrangements being provided in the connection piece.

4,519,781

TEACHING TOOL

Jeanette D. Boyd, P.O. Box 404, Cross Rd., Kingston 5, Jamaica

Filed Feb. 29, 1984, Ser. No. 584,737

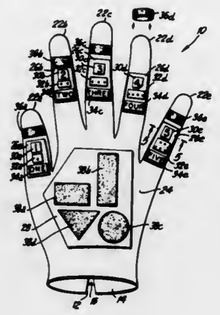
Int. Cl.³ G09B *1/06*

U.S. Cl. 434—156 **11 Claims**

1. A teaching tool comprising:

a glove adapted to be worn on the hand and formed from a flexible fabric material said glove including a plurality of glove fingers adapted to receive fingers of the hand and a glove palm adjacent and attached to each of said glove fingers; and

a plurality of tags releasably attached and readily reattachable to at least portions of said glove fingers and said glove palm, said plurality of tags including a first plurality of tags each of which defines a different shape, a second plurality, each of which displays a number and a third



plurality each of which displays at least one letter, whereby said tags can be selectively removed from and reattached to said glove as part of a teaching exercise.

4,519,782

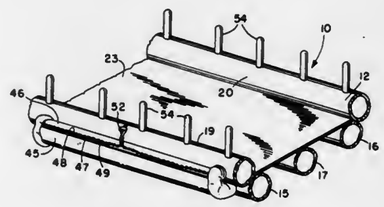
ESCAPE SLIDE AND LIFE RAFT

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation of Ser. No. 122,334, Feb. 19, 1980, abandoned. This application Mar. 10, 1982, Ser. No. 356,866

Int. Cl.³ B63C *9/04*; **B64D** *25/14*

U.S. Cl. 441—40 **2 Claims**



1. An escape slide and life raft assembly adapted to be inflated and extend from an elevated position to a lower surface, said assembly comprising a slide portion having a longitudinally extending inflatable side tube at each side thereof, an outrigger portion positioned adjacent said side tube, said outrigger portion having an inflatable support tube, in fluid communication with said side tube, a flexible passenger supporting sheet member extending between said support tube and said side tube, and a reefing means for retaining said outrigger portion against said slide portion, means for inflating said assembly to a first predetermined pressure while said outrigger portion is in the reefed condition, said reefing means including a continuous flap of sheet material having substantially the length of the support tube and extending around said support tube of said outrigger portion for urging said support tube against said side tube so that upon inflation of said assembly with said outrigger portion retained against said slide portion said support tube will only partially inflate and reinforce said side tube, said reefing means including a release means to release said reefing means to permit full inflation of said support tube so that during operation of said assembly as a raft said outrigger portion will provide space on said flexible sheet member for additional passengers and said assembly being inflated to a second predetermined pressure with said outrigger portion in the extended condition after release of said reefing means by said release means.

4,519,783

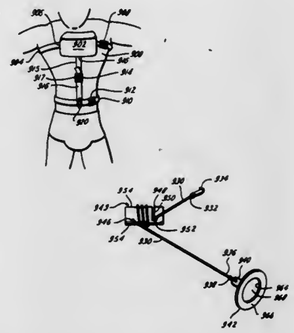
SWIMMER'S RESTRAINING APPARATUS

Earl P. Burke, Jr., c/o Peltex, 1100 Louisiana, 50th Floor, Houston, Tex. 77002

Filed Nov. 8, 1982, Ser. No. 439,927

Int. Cl.³ A63B *69/12*

U.S. Cl. 441—117 **1 Claim**



1. An apparatus for restricting the longitudinal movement of a swimmer in a body of water comprising:

a floatation mass of material of less density than water and of sufficient buoyancy to provide flotation along the longitudinal axis of said swimmer;

an adjustable strap attached to and connecting opposite sides of said flotation mass;

an adjustable belt for removably fastening about the waist of said swimmer;

a strip demountably coupling said flotation mass and said adjustable belt in fixed relationship, one end of said strip being attached to said flotation mass and the other end being attached to said belt;

a connection ring extending a fixed distance from said belt;

a flexible line having a snap fitting at one end, said snap fitting removably attached about said connection ring;

an anchor being equipped on one side with a raised eyelet and on the other side with a suction cup capable of removably affixing said anchor to a fixed object, said raised eyelet engaging other end of said flexible line;

adjustable means about said flexible line for varying the length of said flexible line in relation to the depth of said body of water; and

a suction mating plate, said plate having a generally flat disk on one side and a suction matig area on the other side, said suction mating area having an outer diameter generally matching the inner diameter of said suction cup, said suction mating plate being removably inserted into other side of said anchor.

4,519,784

METHOD OF INSERTING A CENTER ELECTRODE IN A SPARK PLUG INSULATOR

Rudolf Pollner, Bamberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,617

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3212770

Int. Cl.³ H01T *21/02*

U.S. Cl. 445—7 **22 Claims**

1. Method of inserting a center electrode (**23, 23'**) in an insulator body (**15, 15'**) of a spark plug having a terminal end portion and an ignition end portion,

in which the spark plug has a metal body (**11**) formed with a central opening, the insulator body (**15**) is secured in the central opening of the metal body, and the insulator body is formed with a central aperture or opening or bore (**21, 21'**);

a connection terminal post (**22, 25**) located in the central opening of the insulator body and extending outwardly thereof at the terminal end portion of the spark plug;

conductive means (**24**) positioned in the central bore, mechanically and electrically connected to the terminal post;

the center electrode (**23, 23'**) being located in the central opening of the insulator, adjacent the ignition end portion, in electrically conductive connection with the conductive means (**24**),

the center electrode including a body (**28, 28'**) having an outer surface;

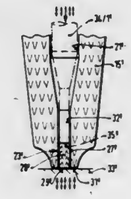
the insulator body (**15, 15'**) having an inner surface (**32, 32'**) adjacent said outer surface;

a heat-resistant, electrically conductive coating or layer (**27, 27'**) located on at least some of the surface areas of at least one of said surfaces, and in electrical connection with said conductive means (**24**),

said center electrode and said insulator body (**15**) consisting of elements of ceramic material, which materials, upon heating to sintering temperature, are subject to material shrinkage, and which materials have essentially similar temperature coefficients of expansion,

said method comprising the steps of

(a) providing a ceramic body (**28, 28'**) of the ceramic material of the center electrode, in unsintered condition, and including a heat-volatile additive therein which makes



said ceramic body form and shape retentive at room temperature, but permitting plastic deformation under application of external energy thereto;

(a-1) presintering the insulator body (**15, 15'**) to establish the shape thereof;

(a-2) applying said electrically conductive coating or layer to one of said surfaces;

(a-3) introducing said ceramic body (**28, 28'**) into the end portion (**32, 32'**) of the central bore (**21**) of the insulating body (**15**);

(b) applying external energy to said ceramic body (**28, 28'**) to render said ceramic body plastically deformable;

(c) deforming said ceramic body (**28, 28'**) while in plastically deformable condition and while positioned in the end portion (**32, 32'**) of the opening (**21, 21'**) of the insulator body, to completely fill said opening and to engage said surfaces, with the heat-resistant electrically conductive coating or layer interposed;

(d) heating the ceramic body (**28, 28'**) to render volatile said additive and thereby remove the additive from the ceramic body; and

(e) finish sintering, and sintering together said presintered insulating body (**15**) and the ceramic body (**28, 28'**) with the heat-resistant electrically conductive coating or layer (**27, 27'**) therebetween.

4,519,785

LIFE TUNGSTEN FILAMENT FOR INCANDESCENT LAMP

John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 580,273, Feb. 16, 1984, abandoned, which is a continuation of Ser. No. 368,543, Apr. 15, 1982, abandoned. This application Nov. 5, 1984, Ser. No. 667,407

Int. Cl.³ H01J *9/12*

U.S. Cl. 445—48 **6 Claims**

1. In a method of increasing the life of tungsten filaments employed as a light emitting element in a lamp, the steps comprising:

forming a filament from a length of tungsten wire;

placing said filament in a closed environment;

providing said closed environment with a non-hydrogen containing gas fill which includes tungsten fluoride;

applying sufficient electrical energy to said filament to cause hot spots on said filament to incandesce;

maintaining said hot spots on said filament at incandescence for a sufficient period of time to substantially remove said hot spots from said filament;

withdrawing said electrical energy and removing said filament from said closed environment; and

subsequently operatively sealing said filament in a lamp envelope having a fluoride-free atmosphere.

4,519,786

TOY-FIGURE

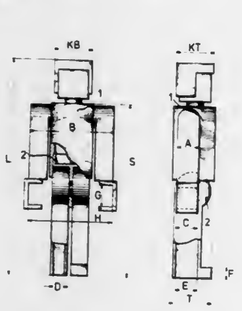
Peter Larws, Schlappmühler Pfad 13, D 6390 Usingen, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 506,976

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223358

Int. Cl.³ A63H *3/16*

U.S. Cl. 446—97 **17 Claims**



1. A toy-figure with legs, arms, hands and a head, for use in conjunction with modular toy-building block systems of the plug-in-type using modules which are provided with rectangular passage openings, wherein the toy-figure has the following measurements:

width across arms: $B=2a$

width of torso: $RB=a$

depth of torso: $RT=a$

depth of total figure: $T=a$,

a being the basic length unit of the modular building block system.

4,519,787

MECHANICAL TOY BULL

Lanny J. Williams, 1325 Peach Tree Ct., Frederick, Md. 21701

Filed Sep. 14, 1982, Ser. No. 418,025

Int. Cl.³ A63H *11/00*

U.S. Cl. 446—313 **17 Claims**

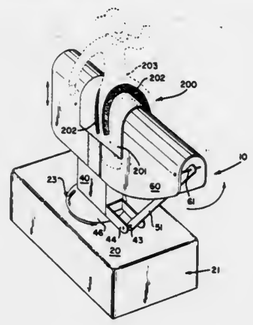
1. A toy mechanical animal designed to simulate the actions of a full size rodeo training device, commonly referred to as a "mechanical bull" wherein the toy comprises

a base member

a vertical support column rotatably disposed on an elongated vertically disposed conductive rod which is received within the base member;

a miniature animal body moveably attached to the vertical support column; and

motor means associated with the toy to impart rotary motion to the miniature animal body in the horizontal and vertical planes wherein the motor means comprises.



a first motor mounted in the base member, and operatively connected to the vertical support column, and

a second motor mounted on top of the vertical support column, and operatively connected to the miniature animal body, wherein the first and second motors are powered by electricity, and the vertically disposed conductive rod is provided with an electrically insulated jacket that leaves only the areas adjacent the ends of the tubular rod exposed, and the vertical support column is provided with a plurality of electrically insulated partitions, which engage the insulated jacket on the conductive rod.

4,519,788

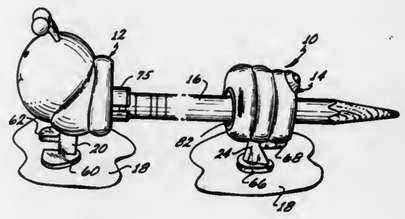
TOY HAVING TWO BODIES CAPABLE OF CONNECTING TO A THIRD BODY

Yutaka Ajiro, and Michihiro Kozuka, both of Tokyo, Japan, assignors to Tomy Kogyo Company, Incorporated, Japan

Filed Jul. 25, 1983, Ser. No. 516,552

Int. Cl.³ A63H *3/22, 3/16*

U.S. Cl. 446—356 **11 Claims**



1. A toy which comprises:

a front body, said front body including connecting means for connecting said front body to another body;

said front body further including motor means located in said front body;

a left and right front appendage member each pivotally mounted on said front body, each of said front appendage members being essentially vertically oriented and including a lower end, said lower ends of said front appendage members forming surface contact points for said front body whereby said front body is supported on a support surface by said front appendage members' lower ends contacting said surface;

said motor means operatively associated with each of said front appendage members to alternately move said front appendage members, said lower ends of said front appendage members moving in a circuit in response to movement of said front appendage members, the lower end of one of said front appendage members moving through said circuit one hundred and eighty degrees out of phase with respect to the movement of the lower end of the other of said front appendage members through said circuit, said circuit of movement of each of said lower ends of said front appendage members comprising said lower ends of said front appendage members moving forward, then downward, then backward and then upward to complete said circuit with the lower ends of said front appendage members contacting said surface as they respectively move backwardly;

a rear body, said rear body including connecting means for connecting said rear body to another body;

a left and right rear appendage member, each of said rear appendage members independently pivotally mounted to said rear body, each of said rear appendage members being essentially vertically oriented and including a lower end, the lower ends of said rear appendage members forming surface contact points for said rear body whereby said rear body is supported on said surface by said rear appendage members' lower ends contacting said surface;

each of said lower ends of said rear appendage members of a sufficient weight such that in the absence of any outside forces said rear appendage members' lower ends are biased downwardly by gravity to essentially vertically orient said rear appendage members, each of said rear appendage members' lower ends independently displaceable rearwardly if said lower ends of said rear appendage members are engaged against said surface and simultaneously said rear body is moved forward;

said front and rear bodies directly connectable to each other by said respective connecting means on said front and rear bodies and indirectly connectable to each other by connecting said respective connecting means on said front and rear bodies to a third body and when so connected to each other said front and rear bodies being moved forward in unison as each of said lower ends of said front appendage members moves rearwardly after said contact with said support surface and further when so connected to each other said front and said rear bodies rocking side to side in unison as said lower ends of said lower appendage members alternately contact said surface;

said lower ends of said rear appendage members alternately being moved rearwardly as said rear body is moved forward by said front body and after being so moved rearwardly, then forwardly under the bias of gravity as said front and rear bodies rock side to side.

4,519,789

COMBINED JUMP MEANS AND TOY VEHICLE WITH SIMULATED STUNT HOOP

Wayne R. Halford, Manhattan Beach; Larry H. Renger, Hawaiian Gardens, both of Calif., and James J. Dooley, Stanley, Hong Kong, assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 30, 1983, Ser. No. 538,007

Int. Cl.³ A63H *18/02*

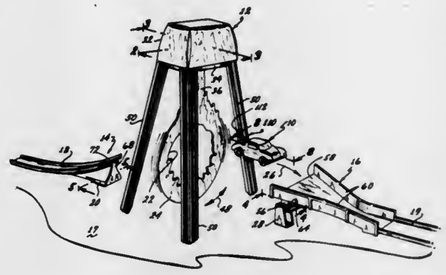
U.S. Cl. 446—444 **9 Claims**

1. In combination:

a toy vehicle having a spring wound motor to move said vehicle and a shift mechanism for locking and unlocking said motor;

an adjustable-height jump cooperating with said toy vehicle to direct its path when said vehicle is placed thereon with said motor wound and said shift mechanism is released to allow said vehicle to move along said jump; and

a tower having swingably mounted therein a pendulum-action hoop, said hoop having an opening therein spaced from said adjustable-height jump whereby said vehicle moving along and leaving said jump may pass through said opening when said hoop is swinging within said pendulum tower, provided that the speed of the toy vehicle, the height of the adjustable jump, and the swinging action of the pendulum hoop are properly timed and coordinated after the release of said shifting mechanism.



4,519,790

HYDRAULIC CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

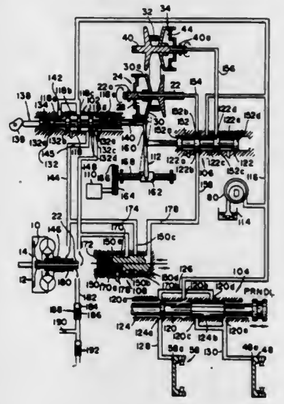
Sigeaki Yamamuro, Zushi; Hiroyuki Hirano; Yoshiro Morimoto, both of Yokosuka, and Yoshikazu Tanaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1982, Ser. No. 362,488

Claims priority, application Japan, Mar. 28, 1981, 56-44752

Int. Cl.³ F16H *11/06*

U.S. Cl. 474—18 **7 Claims**



1. A hydraulic control system for a continuously variable V-belt transmission having a V-belt running over a drive and a driven pulley, each having a cylinder chamber and two conical discs, one conical disc of the drive pulley being secured to a drive shaft adapted to be driven by an engine, one conical disc of the driven pulley being secured to a driven shaft, the other conical disc of the drive pulley being controllably movable in an axial direction of the drive shaft in response to a fluid pressure in the cylinder chamber thereof, the other conical disc of the driven pulley being controllably movable in an axial direction of the driven shaft in response to a fluid pressure in the cylinder chamber thereof,

said hydraulic control system comprising:

pumping means for the hydraulic fluid; and

a line pressure regulator valve means connected to said pumping means for regulating the output of the fluid supplied to said line pressure regulating valve means by said pumping means, said line pressure regulator valve means generating a variable output line pressure which is responsive to the position of a spool within the line pressure regulator valve means, wherein the position of said spool is dependent upon continuous inputs from both the output torque of the engine and the reduction ratio between the drive and driven pulleys.

4,519,791

SPROCKET FOR A BICYCLE

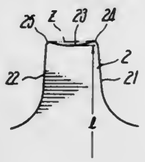
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

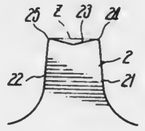
Filed Aug. 23, 1983, Ser. No. 525,694

Claims priority, application Japan, Sep. 3, 1982, 57-134430[U]; Oct. 18, 1982, 57-157732[U]

Int. Cl.³ F16H *55/30*

U.S. Cl. 474—152 **7 Claims**





1. A sprocket for a bicycle comprising: a sprocket body and a number of teeth provided circumferentially at the outer periphery of said sprocket body and engageable with a driving chain at the bicycle, each of said teeth having, with respect to a rotation direction of said sprocket, a front side, a rear side and a top side, and having a front edge between said front side and said top side and a rear edge between said rear side and said front side, and being shaped so that a length between said top side and the axis of rotation of said sprocket body is smaller than that between a phantom plane connecting said front edge and rear edge and said axis of rotation, said front and rear edges being acute-angled respectively.

4,519,792

INFUSION PUMP SYSTEM

Garfield A. Dawe, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 6, 1982, Ser. No. 447,377

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—152 **58 Claims**

1. A valved pumping chamber for use in an infusion delivery pump system including first and second magnetic means and a pump actuating means including a reciprocal operating member, said pumping chamber operating between an upstream portion and a downstream portion of the infusion delivery system comprising:

an inlet port;

an inlet fluid passage means interconnecting with said pumping chamber;

an inlet valve seat having a bore in said inlet fluid passage means;

magnetically permeable flow restricting means constructed and arranged to be biased against said inlet valve seat under the magnetomotive force of said magnetic means;

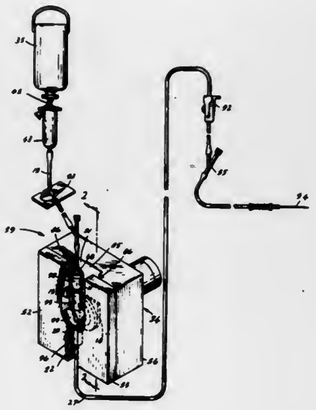
means for providing substantially constant and continuous magnetic force located outside of said inlet fluid passage means which maintain said magnetically permeable flow restricting means in proximity to said inlet valve seat;

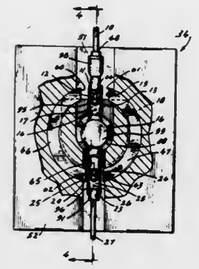
a pumping chamber defining a cavity and flexible means adapted to be engaged by said reciprocal operating member to change the internal volume of said pumping chamber;

an outlet port;

an outlet fluid passage means interconnecting with said pumping chamber;

an outlet valve seat having a central bore disposed in said outlet fluid passage means;





magnetically permeable flow restricting means constructed and arranged to be biased against said outlet valve seat under the magnetomotive force of said second magnetic means; and

means for providing a substantially constant and continuous magnetic force located outside of said outlet fluid passage means which maintain said magnetically permeable flow restricting means in proximity to said outlet valve seat.

4,519,793

CATHETER HOLDER

Eugene R. Galindo, 2926 Highridge Rd., La Cresenta, Calif. 91214

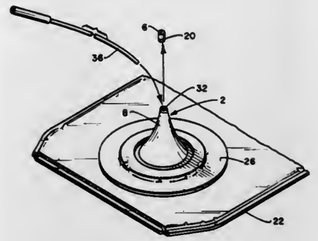
Filed Feb. 9, 1983, Ser. No. 465,302

Int. Cl.³ A61M *25/02*

U.S. Cl. 604—180 **6 Claims**

1. A medical tube holder or the like comprising an integral member having an upper funnel-like portion, an intermediate, conically-shaped portion, and a bottom annular portion, said member being of thin-walled, moldable and conformable material, said bottom annular portion having substantially planar surfaces and the bottom surface thereof being adapted for adhesive securement to a supporting surface or the like, said

funnel-like portion defining a substantially continuously tapered interior surface whereby said funnel-like portion is sev-



erable for accommodating differing diameter medical tubes or the like in frictional engagement therewith.

4,519,794

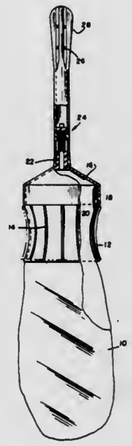
VALVE CONTROL OF NOZZLE FLOW FROM DISPOSABLE SYRINGE

Vincent R. Sneider, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319

Filed Oct. 11, 1983, Ser. No. 540,879

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—212 **20 Claims**



1. A syringe nozzle attachable to a flexible bag for fluid storage and discharge, this nozzle having a fluid flow control slide valve provided in the stem portion of the nozzle, this syringe and slide valve flow control including:

(a) a collapsible bag of thin flexible plastic and having a closed end and an open end;

(b) a collar member of generally tubular configuration and having securing means provided at and on the outer surface thereof;

(c) a hollow nozzle having a distal end adapted for insertion into a body opening, this distal end smoothly contoured and with discharge openings or apertures therein which are in flow communication with the interior of this hollow nozzle, and with this distal end of the nozzle becoming an integral hollow stem forming the exterior member portion of a telescoping section in which inner and outer members are sized so as to be slidable therealong;

(d) a slide valve means provided in said telescoping section and with the outer hollow stem portion slidable over an inner stem portion extending from an enlarged end member, said enlarged end member terminating with a skirt portion sized and adapted to mount and mate with the exterior surface of the collar member, said skirt having means to engage and retain said nozzle on the collar member, said inner stem portion having a fluid passageway therein and terminating with a fixed diameter closed disc-like end cap which is sized so as to be slidable within the inner diameter of the hollow stem portion forming the exterior wall member of the telescoping portion of the stem, this end cap having that end or surface facing the enlarged end member and particularly the outer edge portion of said end cap contoured and adapted to provide a sealing edge or surface;

(e) a plurality of longitudinal ribs extending from the end cap to said inner stem portion adjacent the enlarged end portion, these ribs interior of the outer telescoping stem portion and providing a fluid pathway from the interior passageway to the inner surface of the wall portion of the outer stem, this inner stem portion being tubular in structure and formed with a circumferential stop means provided intermediate the enlarged end member and said ribs;

(f) an outer wall portion of the telescoping stem portions said outer wall an integral extension of the distal end of the nozzle and with this stem portion including a ring-like portion extending inwardly of the nominal inner diameter of the stem wall and with said ring-like portion having a contoured end or edge providing a fluid stop when in engagement with the end cap this stop facing toward the distal end of the nozzle and adjacent to said ring-like portion and in that inner surface toward the distal end there is formed a plurality of fluid passageways or by-passes, and

(g) cooperating stop means formed on the inner surface on the outer stem portion of the telescoping section this stop means adapted to mate with and engage stop means formed on the outer surface of the extending stem portion of the inner member, said stop means establishing and maintaining a position of said valve so as to provide a fluid stop between the outer sealing edge of the end cap of the inner stem and the mating contoured edge of the ring-like portion of the outer telescoping portion,

whereas the open end of said collapsible bag is manipulated through the collar member and then reversed over and down the outside of the collar for a short selected distance, at this condition fluid may be placed in the bag through the open end after which the terminating skirt portion of the nozzle is mounted to and on the collar member to secure and retain the bag after which the nozzle is positioned with its distal end in said body opening and then the slide valve is manipulated so the stop means is overcome and the telescoping sections are moved relative to each other to permit fluid to flow from the bag through the stem, past the ribs through the fluid by-passes in the outer telescoping portion and then to and through the discharge holes.

4,519,795

DISPOSABLE SWAB

James R. Hitchcock, Jr., and Charles J. Nevens, both of Barrington, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 216,037, Dec. 15, 1980, Pat. No. 4,360,020, which is a continuation-in-part of Ser. No. 150,011, May 15, 1980, abandoned. This application Aug. 31, 1982, Ser. No. 413,397

The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.

Int. Cl.³ A61M *35/00*

U.S. Cl. 604—289 **7 Claims**

5. A plurality of disposable swabs joined together into a strip of separable swabs, comprising

a flat, generally stiff strip,

a plurality of spaced pad members centrally attached to at least one side of said strip,

means defining a first pair of fold lines extending in said strip

on opposite sides of each of said pad members by generally equal distances,

means defining lines of tearing weakness extending in said strip transversely of said fold lines for separating said strip into individual, flattened swabs, each of said swabs carrying at least one of said pad members and said associated first pair of fold lines permitting each of said swabs, when separated, to be folded rearwardly relative to said associated pad member to form a structure of generally triangular cross section which can be grasped by the fingers, the base of said triangular cross section carrying said associated pad member, and

a removable pouch sealingly enclosing each of said pad members and including



a main body portion sealed to said strip along a line which extends between said opposite pad member sides and each of said first pair of fold lines and remaining sealed to said strip along said line as said associated swab, when separated, is folded rearwardly about said pair of fold lines to form said triangular cross section structure, and

a tab portion extending outwardly from said main body portion and beyond one of said fold lines in an unsecured relationship with said strip to facilitate removal of said sealed main body portion from said associated swab after said swab, when separated, has been folded rearwardly about said one fold line.

4,519,796

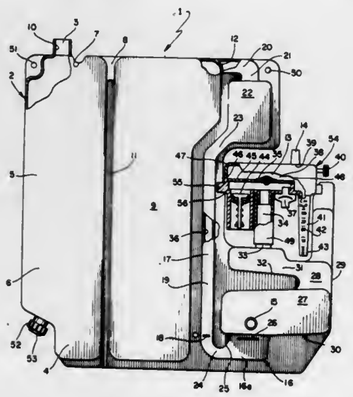
THORACIC DRAINAGE DEVICE

Ronald D. Russo, 8 Candleberry Rd., Barrington, R.I. 02806

Filed Jun. 17, 1983, Ser. No. 505,237

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—319 **19 Claims**



1. An apparatus for draining a patient's chest cavity comprising a body including a closed collection chamber having an inlet at the upper end thereof for connection to a patient drainage tube permitting chest cavity fluid and air to drain directly through said inlet to provide direct unobstructed flow of air and fluid into said collection chamber, an air space above the collection chamber, an outlet from the collection chamber in communication with the air space, said body further including a combination negative pressure indicator and air leak detector assembly in turn including a reservoir positioned downstream of said collection chamber and having a liquid trap portion for receipt of an indicator fluid, said reservoir connected to said collection chamber by an upright column positioned intermediate said collection chamber and said reservoir and in turn connected to said outlet at the upper end thereof and to said liquid trap portion at the lower end thereof, and one-way valve seal downstream of the negative pressure indicator and air leak detector assembly acting as a seal to prevent air from entering back into the air leak detector but permitting air from the air leak detector to flow out the valve seal.

4,519,797

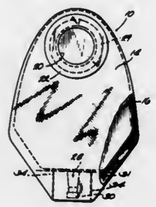
MEDICAL APPLIANCE POUCH WITH COVER

Lorna B. Hall, 1114 Glendale La., Madison, Wis. 53704

Filed Apr. 1, 1983, Ser. No. 481,496

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—332 **2 Claims**





1. A cover for an ostomy pouch of the type comprising a waterproof pouch having an opening engageable with a patient-worn fitting and having a depending integral drain fitting at the lower part of the pouch,

said cover comprising,

front and back fabric panels having their perimeters secured together with the exception of the lower portion of each panel whereby an access opening is provided at the lower portion of the cover,

an opening in the upper portion of said back panel to provide for said opening,

said cover having an upwardly open pocket wall means for receiving a major portion of said drain fitting in its fully extended depending condition to retain the drain fitting in the pocket during normal activities of the patient,

said pocket being formed on the rear panel by turning the lower part of the rear panel back on itself to form said pocket,

said front panel substantially overlapping the upper edge of said pocket.

4,519,798

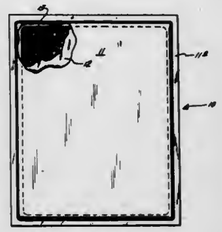
ABSORPTIVE STRUCTURE

Richard L. Dinius, Terre Haute, Ind., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 25, 1982, Ser. No. 411,555

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—358 **12 Claims**



1. An absorptive structure for absorbing and containing liquid bodily discharges comprising a liquid permeable topsheet of polyolefin film, a liquid permeable carrier sheet of polyolefin film, an absorbent element, and a liquid impermeable back sheet of polyolefin film, all of said sheets of polyolefin film having the edges thereof sealed to each other without the necessity of the addition of any glue or other adhesive composition, mixture or compound, and said absorbent element sealed within said sheets of polyolefin film.

4,519,799

SANITARY NAPKIN

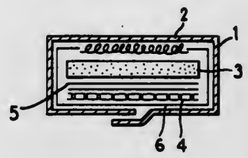
Akira Sakurai, Utsunomiya, and Hiroshi Mizutani, Yachiyo, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,692

Claims priority, application Japan, Feb. 19, 1982, 57-25671

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—366 **10 Claims**



1. In a sanitary napkin which is comprised of an internal absorbent medium adapted to absorb bodily discharges and a covering fabric covering at least one surface of said internal absorbent medium and adapted to contact the wearer's skin, the improvement which comprises: said covering fabric has an integrated, two-layer structure comprising an outer layer forming the surface that is adapted to contact the wearer's skin and an inner layer disposed inside of said outer layer, said covering fabric consisting essentially of from 30 to 80% by weight of heat-fusible fibers which are fusible at a temperature of from 90° to 140° C. and correspondingly from 70 to 20% by weight of hydrophobic fibers which are not fusible at a temperature below 140° C., said covering fabric having a thickness of from 0.5 to 1.2 mm under a load of 1 g/cm^2 and a thickness of from 0.2 to 0.6 mm under a load of 5 g/cm^2, the weight ratio of said heat-fusible fibers/said hydrophobic fibers in said outer layer being in the range of 50/50 to 100/0, and the weight ratio of said heat-fusible fibers/said hydrophobic fibers in said inner layer being in the range of 20/80 to 60/40.

4,519,800

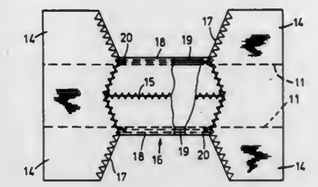
DIAPER AND METHOD OF MAKING THE SAME

Terri J. Merry, R.F.D. #1, Box 1780, Anson, Me. 04911

Filed Sep. 28, 1982, Ser. No. 425,272

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—385 A **5 Claims**



1. A reusable diaper, said diaper consisting of a blank of an absorbent fabric of predetermined length and width having central and marginal lengthwise sections, the central portion of the central section, the crotch engaging portion of the diaper, each marginal section divided to provide end portions and a central flap portion, said flap portions folded over the crotch portion and dimensioned and so disposed that they overlap in said crotch portion and are secured thereto by a line of stitching and thereby increase the moisture absorbing capacity of said crotch portion and from a leg recess and end tabs, the end tabs of each marginal section connectable about the body of a baby, and a length of elastic material extending lengthwise of each margin between the crotch portion and the overlapping flap portion with its ends anchored to the central section adjacent the ends of the central portion with the elastic material under tension thereby to yieldably shorten the margins of the central portion.

4,519,801

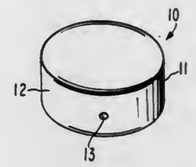
OSMOTIC DEVICE WITH WALL COMPRISING CELLULOSE ETHER AND PERMEABILITY ENHANCER

David Edgren, El Granada, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed Jul. 12, 1982, Ser. No. 397,517

Int. Cl.³ A61K *9/22*

U.S. Cl. 604—892 **9 Claims**



1. An osmotic delivery system for the controlled dispensing of a useful agent to an environment of use, wherein said system comprises:

(a) a shaped semipermeable wall permeable to the passage of fluid and substantially impermeable to the passage of an useful agent, said semipermeable wall consisting essentially of an organic solvent soluble cellulose ether and a permeability enhancer selected from the group consisting of an organic solvent soluble carboxypolymethylene, polyvinyl acetal, polyvinyl butyral, polyalkyds, polymethacrylonitrile, vinyl alcohol-vinyl acetate copolymer, and vinyl alcohol-vinyl butyral copolymer, the semipermeable wall surrounding and forming:

(b) a compartment containing a useful agent formulation that is soluble in an external fluid imbibed through the semipermeable wall into the compartment and exhibits an osmotic pressure gradient across the semipermeable wall against the external fluid; and,

(c) an osmotic passageway in the wall communicating with the compartment and the exterior of the system for dispensing the agent formulation through the osmotic passageway from the device to the environment of use.

4,519,802

USE OF 1:2 COBALT COMPLEX DYES FOR DYEING LEATHER OR FURS

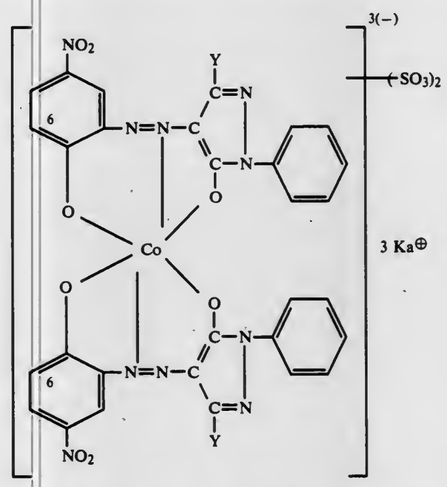
Alois Püntener, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 359,735, Mar. 19, 1982, abandoned. This application Feb. 8, 1984, Ser. No. 577,325

Int. Cl.³ D06P *1/10, 3/30, 3/32*

U.S. Cl. 8—404 **5 Claims**

1. A method of dyeing leather or furs, comprising the step of applying thereto a dye composition whose active dyeing ingredient consists essentially of a dye of the formula



in which $Ka^{\oplus}$ is a cation and Y is methyl, $-CONH_2$ or —CO—NH—R, R being an alkyl group having 1–4 carbon atoms, wherein at least one of the sulfo groups is located in a diazo component.

4,519,803

PRINTING ON PRETREATED SUBSTRATES

Kenneth Clare, San Diego, Calif. and Erle Hopkinson, Horely, England, assignors to KELCO/AIL International Limited, London, England

Filed Jun. 1, 1983, Ser. No. 499,934

Int. Cl.³ D06P *5/00*

U.S. Cl. 8—445 **11 Claims**

1. A process for printing substrates which comprises:

(A) applying to at least a portion of a substrate a first aqueous composition comprising (1) 0.025 to 0.275 wt. % of a soluble calcium, aluminum or chromium salt (2) 5 to 20 wt. % of the chloride, nitrate, or sulphate salts of sodium, potassium, or lithium, (3) 0.1 to 1.0 wt. % of polyhexamethylene biguanide hydrochloride, or (4) 0.35 to 1.0 wt % of citric acid so as to produce a treated substrate,

(B) then applying to at least a portion of said treated substrate a second aqueous composition comprising a dye and 0.2 to 6.0 wt. % alginate.

4,519,804

MELANGE-COLORED SHEET AND METHOD OF PRODUCING THE SAME

Hiroyasu Kato, Kyoto; Kenkichi Yagi, Otsu, and Miyoshi Okamoto, Takatsuki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,928

Claims priority, application Japan, Jul. 7, 1982, 57-116869

Int. Cl.³ D06N *3/04;* **D06P** *3/86, 3/87, 7/00*

U.S. Cl. 8—485 **13 Claims**

1. A novel melange-colored sheet having a body portion comprising (a) at least two types of fibers in a form selected from ultrafine fiber bundles, multi-core fibers and a mixture of ultrafine fiber bundles and multi-core fibers or comprising (b) multi-core fibers having at least two types of core components which are disposed on one side and the other side respectively, and a super-entangled surface portion on at least one of the surfaces of said body portion, said super-entangled surface portion having ultrafine fibers to fine bundles of ultrafine fibers branching from said ultrafine fiber bundles or said multi-core fibers of said body portion, said two types of ultrafine fiber bundles or said two types of core components of said body portion being different in color so that said super-entangled surface portion visually presents at least two colors.

8. A method of producing a novel melange-colored sheet having an inner portion comprising (a) fibers in a form selected from at least two types of ultrafine fiber bundles and multi-core fibers or comprising (b) multi-core fibers having at least two types of core components which are disposed on one side and the other side respectively, and a surface comprising super-entangled ultrafine fibers to fine bundles of ultrafine fibers branching from said fiber bundles or said multi-core fibers of the inner portion, said two types of ultrafine fiber bundles or said two types of core components being different in color so that said superentangled surface visually presents at least two colors, said method comprising the steps of:

(1) forming a fiber entangled sheet comprising multi-component fibers capable of converting into at least two types of bundles of ultrafine fibers having different dyeing properties,

(2) forming a superentangled layer of ultrafine fibers to fine bundles of ultrafine fibers on the surface of said sheet by applying to at least one side of the sheet a jet stream of high speed fluid, and

(3) dyeing the resulting surface with different types of dyestuffs.

4,519,805

VAT DYE AND SULFUR DYE COMPOSITIONS

Zdenek Koci, Binningen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

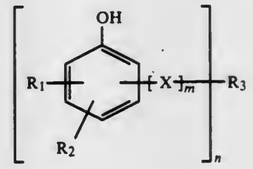
Filed Dec. 29, 1981, Ser. No. 335,428

Claims priority, application Switzerland, Dec. 30, 1980, 9644/80

Int. Cl.³ C09B *49/00, 57/00*

U.S. Cl. 8—650 **7 Claims**

1. A dyestuff composition containing an effective amount of a vat dye or a sulfur dye and 0.1 to 2.0 weight %, relative to the weight of dye, of a vatting accelerator of the formula



wherein R_1 and R_2 independently of one another are C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl, hydroxymethyl, hydrogen, halogen, hydroxy, C_1–C_4-alkoxy, phenyl, substituted phenyl, phenethyl, or benzyloxy; m is 0 or 1; R_3 is



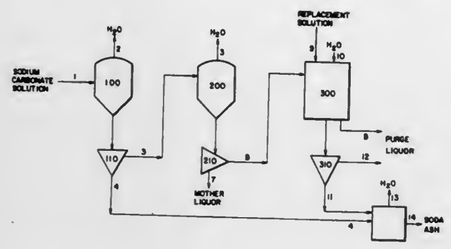
—S—, —S—S—, —O—, —CH=CH—, or $>CR_4R_4$, wherein each R_4 independently of the other is hydrogen or C_1–C_4-alkyl; n is a number from 2 to 4; and X is $-(CH_2)_2-COO-CH_2-$.

4,519,806

ENHANCED RECOVERY OF SODA ASH FROM AQUEOUS SODIUM CARBONATE SOLUTIONS CONTAINING NA_2SO_4- AND NACL

William C. Copenhafer, Yardley, Pa., and Michael L. Pinsky, Mount Holly, N.J., assignors to Intermountain Research & Development Corp., Green River, Wyo.

Filed Nov. 26, 1982, Ser. No. 444,640
Int. Cl.³ C01D *7/24;* C01B *31/24*
U.S. Cl. 23—302 T **13 Claims**



1. A continuous method for enhancing the recovery of dense soda ash from aqueous sodium carbonate solutions also containing sodium sulfate and sodium chloride which comprises

(i) co-crystallizing anhydrous sodium carbonate and burkeite, without precipitation of sodium chloride, by evaporative crystallization at a temperature above the anhydrous-monohydrate transition temperature, of an aqueous sodium carbonate feed solution also containing sodium sulfate and sodium chloride, such solution being unsaturated with respect to sodium chloride and having an $NaCl:Na_2SO_4$ weight ratio less than 37:1 and an $NaCl:Na_2CO_3$ weight ratio less than 2.2:1;

(ii) separating the crystallized solids from the crystallization slurry;

(iii) introducing the crystallized solids into a well-mixed aqueous medium, maintained at a temperature below the anhydrous-monohydrate transition temperature, that is substantially saturated with respect to sodium carbonate monohydrate, unsaturated with respect to burkeite, and contains less than that amount of sodium chloride which would result in crystallization of anhydrous sodium carbonate, so as to effect dissolution of the burkeite and reversion of the anhydrous sodium carbonate to crystalline sodium carbonate monohydrate;

(iv) separating the sodium carbonate monohydrate solids in the aqueous medium from its mother liquor to thereby recover a relatively pure soda ash; and

(v) purging mother liquor from the aqueous medium and replacing such purged liquor with water or other aqueous solution containing sodium carbonate in amounts sufficient to maintain the aqueous phase of the aqueous medium at a relatively constant composition.

4,519,807

CARBONACEOUS SOLID FUEL

Atsushi Nishino, Neyagawa; Kunio Kimura; Kazunori Sonetaka, both of Hirakata, and Yukiyoshi Iketani, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 359,082, Mar. 17, 1982, abandoned. This application Dec. 28, 1983, Ser. No. 565,525
Int. Cl.³ C10L *5/02, 9/02*
U.S. Cl. 44—15 R **4 Claims**

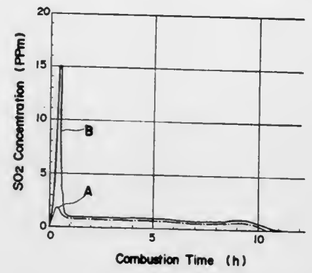
1. A molded solid fuel which comprises:

a carbonaceous fuel material;

at least one desulfurizing agent selected from the group consisting of $Ca(OH)_2$, $CaCO_3$ and dolomite, the amount of said desulfurizing agent being within the range of 3 to 20 parts by weight relative to the 100 parts by weight of the carbonaceous fuel material;

K_2CO_3 in an amount within the range of 1 to 20 parts by weight relative to the total amount of the carbonaceous fuel material,

wherein the ratio of parts by weight of desulfurizing agent to K_2CO_3 is within the range of 0.2 to 10; and



at least one member selected from the transition metal oxides consisting of manganese dioxide and copper oxide, the amount of said transition metal oxide being within the range of 1 to 10 parts by weight relative to 100 parts by weight of the carbonaceous fuel material.

4,519,808

STRAW FUEL BRIQUETTE PRESS

Borge Stisen, Kirseb rhaven 72, 3480 Fredensborg, Denmark

PCT No. PCT/DK82/00004, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/02995, PCT Pub. Date Sep. 16, 1982
PCT Filed Jan. 21, 1982, Ser. No. 433,210
Claims priority, application Denmark, Mar. 10, 1981, 1072/81
Int. Cl.³ C10L *5/44;* A01F *15/04;* B30B *11/16*
U.S. Cl. 44—10 A **5 Claims**

1. A process of producing in the field straw briquettes from straw fibers, comprising the steps of: in compaction means forming a sausage of straw fibers, and subjecting the straw fibers in said compaction means during conveyance therethrough to compaction impacts of a relatively high frequency at high pressure in a symmetrical manner on both longitudinal sides of said sausage of straw fibers.

2. A transportable apparatus for making straw briquettes comprising: briquette pressing means shaped as two rotatable blocks arranged side by side, fingers associated with said rotatable blocks, and a high speed mechanism for imparting synchronized, oppositely directed rotary oscillations to said fingers, the arrangement being such that said high speed mechanism reaches a dead center position in the most advanced end position of the fingers in engagement with straw fibers.

4,519,809

METHOD FOR REDUCING WATER SENSITIVITY OF ETHER CONTAINING GASOLINE COMPOSITIONS

Albert M. Hochhauser, Edison, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 23, 1984, Ser. No. 603,077
Int. Cl.³ C10L *1/02*
U.S. Cl. 44—53 **10 Claims**

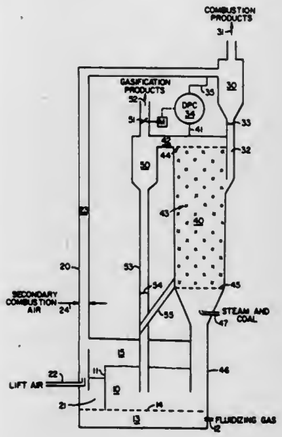
1. A method for reducing the water sensitivity of an ether containing gasoline composition which comprises mixing an alkyl ether component having alkyl groups of 1 to 7 carbon atoms after it is prepared and while it is essentially water free with at least 40% by volume of a branched chain paraffin component having up to 11 carbon atoms and derived from the alkylation of an isoparaffin and an olefin before it is added to the gasoline.

4,519,810

CIRCULATION LOOP FOR CARRYING OUT TWO-STAGE REACTIONS

John C. Haas, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 17, 1983, Ser. No. 505,529
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—202 **12 Claims**



1. A method of controlling the solids circulation between a downflow coal gasification reactor and an entrained bed combustion reactor comprising:

(a) transferring at least some of said solids from said downflow reactor to a crossflow fluidized bed through at least one seal leg, wherein said crossflow fluidized bed has a baffle separating the crossflow fluidized bed into two zones, wherein said two zones comprise a first zone and a second zone, and wherein said solids are transferred from said downflow reactor to the first zone of said crossflow fluidized bed;

(b) transferring said solids over said baffle from said first zone to said second zone;

(c) transferring said solids from said second zone of said crossflow fluidized bed to said entrained bed reactor; and

(d) transferring said solids from said entrained bed reactor to said downflow reactor through a second seal leg; controlling the solids circulation rate by adjusting the rate of fluidizing gas entering said crossflow fluidized bed.

4,519,811

CALCINED SERPENTINE USEFUL AS SANDBLASTING AGENT

Jean M. Lalancette; Jean P. Chevalier-Bultel, and Normand Labonte, all of Sherbrooke, Canada, assignors to Societe Nationale de l'Amiante, Quebec, Canada

Filed May 24, 1984, Ser. No. 613,403
Int. Cl.³ C09C *1/68*
U.S. Cl. 51—309 **1 Claim**

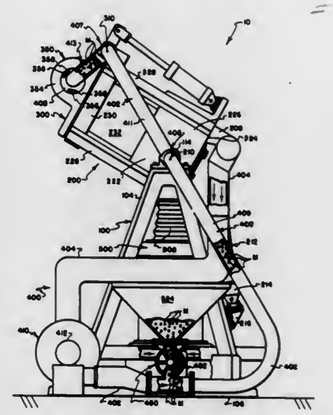
1. A sintered angular shape granular sandblasting material obtained by the calcination of asbestos tailings at a temperature of from 1300° C. to 1450° C., said asbestos tailings being characterized by having a $MgO:SiO_2$ ratio lower than 1.0, the granular sandblasting material being characterized by a cold compression mechanical strength of from 10 to 160 MPa, by a granulometry of −40 to +150 mesh (Tyler), and by being substantially free of dust.

4,519,812

CRYOGEN SHOT BLAST DEFLASHING SYSTEM WITH JOINTED SUPPLY CONDUIT

John J. Brull, Chagrin Falls, and Michael T. Carnahan, Bedford, both of Ohio, assignors to AGA AB, Cleveland, Ohio

Filed Oct. 28, 1983, Ser. No. 546,429
Int. Cl.³ E05D *13/02*
U.S. Cl. 51—422 **15 Claims**



1. A cryogen shot blast deflashing apparatus, comprising:

a. receptacle means defining a treatment chamber for receiving workpieces to be deflashed, frame means for supporting the receptacle means for movement relative to the frame means, and drive means for moving the receptacle means relative to the frame means to impart movement to workpieces contained within the treatment chamber;

b. first positioning means for moving the receptacle means about a first axis relative to the frame means;

c. throwing wheel means for receiving a supply of particulate media and a flow of cryogen gas, for propelling media into the treatment chamber to impact workpieces within the treatment chamber;

d. cryogen supply and recirculation means for supplying cryogen gas to the treatment chamber, and for ducting cryogen along a flow path for withdrawal from the treatment chamber and for redelivery to the throwing wheel;

e. the cryogen recirculation means including conduit means defining at least a portion of the flow path and having first conduit portions which are interconnected at a location along the first axis by first joint means for permitting relative movement of the first portions about the first axis to enable the supply conduit means to accommodate movement of the receptacle means relative to the frame means.

4,519,813

PROCESS FOR EXTRACTION OF HIGHLY PURIFIED OXYGEN

Zenzi Hagiwara; Tatuo Yamamoto, both of Kusatsu, and Hiroshi Kurozumi, Sakai, all of Japan, assignors to Osaka Oxygen Industries Ltd., Osaka, Japan

Continuation of Ser. No. 884,651, Oct. 25, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 106,474
Claims priority, application Japan, Feb. 10, 1977, 52-13672
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **8 Claims**

1. A process for separating oxygen of more than 90% purity from a raw material gas containing oxygen and nitrogen as main components, which comprises providing at least two adsorption zones, each of said at least two zones having an inlet end and a discharge end and containing therein a bed of at least one adsorbing agent, the at least one agent having sieving

action which is capable of selectively adsorbing nitrogen from said raw material gas, characterized by the following in the following steps cyclical sequence:

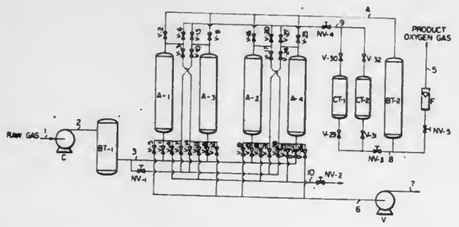
(i) contacting said raw material gas with said bed by passing said raw material gas through the one of said adsorption zones, in which a regenerating step was previously completed, to adsorb most of the nitrogen and part of the oxygen in the bed, and to discharge oxygen of more than 90%, purity from said zone discharge end;

(ii) connecting said one adsorption zone, in which the adsorption step was previously completed, to the other of said adsorption zones, in which a pressurizing step by product oxygen gas as mentioned below was previously completed, to carry out pressure equalization between said two zones, whereby the oxygen-rich gas is cocurrently discharged from the said one adsorption zone to depressurize said one adsorption zone;

(iii) countercurrently depressurizing to one atmosphere pressure said one adsorption zone, in which the step of discharging gas through the pressure equalization was previously completed;

(iv) countercurrently evacuating to less than 200 torr said one adsorption zone;

(v) pressurizing said one adsorption zone by countercurrently introducing into said one adsorption zone part of the product oxygen gas in the direction counter to the direction of the stream of raw material gas while closing one end thereof;



(vi) pressurizing said one adsorption zone, in which the pressurizing step by the product oxygen gas was previously completed, by cocurrently introducing into said one adsorption zone the gas discharged from said other adsorption zone in step (ii) of the cycle of said other adsorption zone; and

(vii) pressurizing said one adsorption zone, in which the pressurizing step through the pressure equalization was previously completed, by introducing a raw material gas into said one adsorption zone in the same direction as the direction of the stream of raw material gas in adsorption step (i) while closing one end of said one adsorption zone;

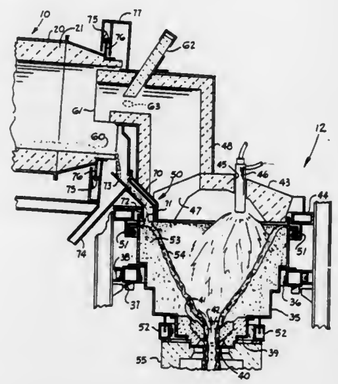
periodically switching the flow of gases between said adsorption zones so that the adsorption step takes place in the zone in which the regenerating step was previously completed, the step of discharging gas through the pressure equalization takes place in the zone in which the adsorption step was previously completed, the depressurizing step takes place in the zone in which the step of discharging gas was previously completed, the evacuating step takes place in the zone in which the depressurizing step was previously completed, the pressurizing step by product oxygen gas takes place in the zone in which the evacuating step was previously completed, the pressurizing step through the pressure equalization takes place in the zone in which the pressurizing step by product oxygen gas was previously completed, and the pressurizing step by a raw material gas takes place in the zone in which the pressurizing step through the pressure equalization was previously completed.

4,519,814

TWO STAGE BATCH LIQUEFACTION PROCESS AND APPARATUS

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 25, 1983, Ser. No. 516,817
Int. Cl.³ C03B *1/00, 3/00*
U.S. Cl. 65—27 **45 Claims**



1. A method of liquefying pulverulent batch materials comprising: passing pulverulent batch materials into a preheating vessel, in the preheating vessel exposing the batch materials to hot gas while agitating the batch materials so as to heat the batch materials, passing the heated batch materials from the preheating vessel into a liquefying vessel and depositing the heated, pulverulent batch materials onto a stable sloping layer of batch encircling a cavity within the liquefying vessel, providing combustion heat within the cavity to partially liquefy the deposited pulverulent batch materials and to permit the partially liquefied batch to flow over the stable batch layer to an exit opening from the liquefying vessel, balancing the rate of heating in the liquefying vessel and the rate at which the batch materials are fed into the liquefying vessel so as to maintain the stable batch layer substantially constant, and passing products of combustion from the liquefying vessel to the preheating vessel.

42. Apparatus for liquefying pulverulent batch materials comprising: rotary kiln means comprising an elongated inclined cylindrical vessel adapted for rotation about its cylindrical axis angled slightly from horizontal, means for feeding pulverulent batch materials to a first end of the rotary kiln, batch liquefying means at the opposite end of the rotary kiln, the liquefying means including a cavity extending along a substantially vertical axis to a bottom outlet opening and encircled by a lining of batch material having steeply sloped surface portions facing the cavity, means to heat the cavity, and an upper inlet opening for depositing batch from the rotary kiln onto the lining.

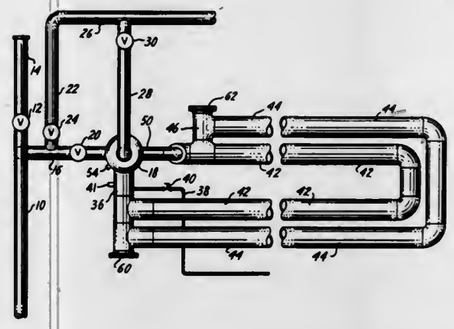
4,519,815

SLUG-CATCHING METHOD AND APPARATUS

Ronald L. Buls, Spring, and James P. Gilcrease, Katy, both of Tex., assignors to Texas Eastern Engineering Ltd., Houston, Tex.

Filed Dec. 15, 1983, Ser. No. 561,694
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—46 **12 Claims**

1. A method for separating and recovering liquid components from the effluent from a natural gas pipeline containing both gaseous and liquid components under the conditions existing in the pipeline, which comprises (a) introducing the effluent into an intermediate portion of a vertical separation zone wherein the gaseous components of the effluent are disengaged from the liquid components and move upwardly in the zone and the liquid components in the fluid stream, disengaged from the gaseous components, moved downwardly toward the bottom of the separation zone; (b) withdrawing the separated gaseous components from the upper portion of the separation zone and reintroducing them into the pipeline at a point downstream of the point of withdrawal; (c) gradually withdrawing on a substantially continuous basis a stream of the liquid components from a bottom portion of the separation zone for delivery to a point outside the separation zone; (d) diverting liquid components in excess of the quantity withdrawn in step



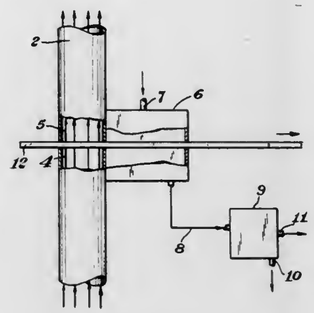
(c) into a substantially U-shaped accumulation zone extending entirely substantially horizontally from the bottom portion of the separation zone and having a continuous gradually rising slope extending from substantially the bottom of the separation zone to a point in the upper portion of the separation zone lying above the point of introduction of the fluid stream and below the point of withdrawal of the gaseous components, whereby the liquid components lie at or above the level at which they flow into the accumulation zone; and (e) withdrawing gas displaced by and disengaged from the liquid in the accumulation zone into the upper portion of the separation zone for introduction into the pipeline.

4,519,816

METHOD FOR THE RECOVERY OF SOLVENT VAPORS

Donald H. Clarke, Essexville, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 1, 1980, Ser. No. 193,340
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—59 **4 Claims**



1. A method for recovering vapor of a volatile, organic liquid in a liquid form from a gas containing the organic vapor, said method comprising the steps of

(a) contacting the gas containing the organic vapor with a gas permeable polyurethane foam at conditions sufficient to reduce the concentration of the vapor in the gas;

(b) desorbing the organic vapor from the foam; and

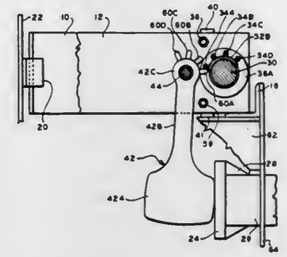
(c) condensing the desorbed vapor.

4,519,817

PRECIPITATOR RAPPER

Robert E. Gibbons, Rockaway, N.J., assignor to Belco Pollution Control Corporation, Parsippany, N.J.

Filed Apr. 22, 1983, Ser. No. 488,507
Int. Cl.³ B03C *3/76*
U.S. Cl. 55—112 **9 Claims**



1. A rapper for striking a target in a precipitator, comprising:

a frame;

a hammer having a hub pivotally attached to said frame; and

a drive sprocket means rotatably mounted in said frame and having a driving plurality of spaced teeth, said driving plurality of teeth comprising a plurality of peripherally spaced rods, each having clearance along at least a portion of its radially inward side, said driving plurality of teeth being distributed on said sprocket means along a given peripheral sector, the given peripheral sector being less than the entire periphery of said sprocket means;

a driven plurality of spaced teeth mounted on and radially extending from said hub, said driven plurality of spaced teeth being distributed along a fraction of the circumference of said hub and being sized to be engaged by said drive sprocket means and mesh with the driving plurality of teeth on said sprocket means, said rods of said sprocket means being arranged to mesh with said driven plurality of teeth transversely, all of said teeth of said sprocket means being distributed to mesh with an equivalent number of the teeth of said hub and then release said hub, more than one of said teeth of said sprocket means meshing with said hub for each release of said hammer.

9. A rapper for striking a target in a precipitator, comprising:

a frame;

a hammer having a hub pivotally attached to said frame; and

a drive sprocket means rotatably mounted in said frame and having a driving plurality of spaced teeth, said driving plurality of spaced teeth comprising a pair of circumferential ridges atop said sprocket means and a plurality of peripherally spaced, axially disposed rods mounted across said ridges, said driving plurality of spaced teeth being distributed on said sprocket means along a given peripheral sector, the given peripheral sector being less than the entire periphery of said sprocket means, all of said teeth of said sprocket means being distributed to mesh with an equivalent number of teeth on said hub and then release said hub, more than one of said teeth of said sprocket means meshing with said teeth on said hub for each release of said hammer.

4,519,818

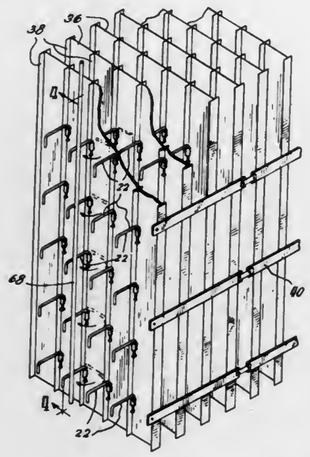
ELECTROSTATIC PRECIPITATOR CONSTRUCTION HAVING MOVABLE SPACERS

John A. Jonelis, 304 Lancaster Dr., Crystal Lake, Ill. 60014

Continuation-in-part of Ser. No. 446,775, Dec. 3, 1982, Pat. No. 4,478,614. This application Aug. 3, 1984, Ser. No. 637,431

Int. Cl.³ B03C *3/08, 3/47*

U.S. Cl. 55—130 **20 Claims**



1. In an electrostatic precipitator for collecting solid particles carried by a flue gas from a source of combustion, said precipitator including; a plurality of spaced parallel plates for collecting solid particles by electrostatic attraction of solid particles to the plates, a second plurality of elongated electrodes mounted between adjacent plates, the improvement comprising; a third plurality of spacers pivotally mounted on the plates, each of said spacers being selectively positionable substantially parallel to its respective plate, each of said spacers being selectively positionable to an attitude substantially perpendicular to its respective plate, each of said spacers extending from its respective plate to the adjacent plate to maintain adjacent surfaces of adjacent plates equidistantly spaced from one another, and a lock cooperative with each spacer, each lock being positioned on the respective plate upon which each spacer is pivotally mounted for holding the respective spacer in an attitude substantially perpendicular to the respective plate.

4,519,819

PRECOALESCER UNIT

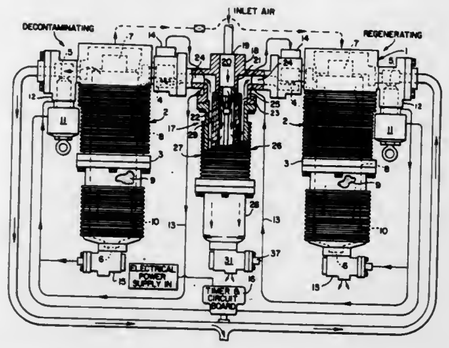
Virgil L. Frantz, Salem, Va., assignor to Roanoke College, Salem, Va.

Filed Aug. 23, 1984, Ser. No. 643,414

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—162 **6 Claims**

1. In apparatus for decontaminating compressed gas, the combination with twin towers each having a housing containing a desiccant and having inlet, outlet and drain valves and a solenoid valve connected by an actuating gas line to the inlet and drain valves, the towers under timer control of the solenoid valves alternately receiving gas from a source of contaminated gas and individually cycling between decontaminating and regenerating cycles, of a precoalescer unit comprising a casing containing a tubular coalescer interposed in the path of flow of gas from said source to inlet ports of said towers, and valve means on and in said casing and responsive to cycling of the towers for opening for an interval during each decontaminating and purge cycle of a tower for purging said unit of



contaminants accumulated in said casing inside and outside of said coalescer.

4,519,820

FITTER APPARATUS FOR PURIFYING EXHAUST GASES

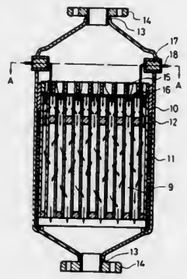
Kazuo Oyobe, Ohbu; Etsuji Nomura, Ichinomiya; Kazuma Matsui, Toyohashi; Masanori Fukutani, Nagoya; Kazuyuki Ito, Nishio; Naoto Miwa, Tsushima, and Keiji Ito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 3, 1983, Ser. No. 520,126

Claims priority, application Japan, Aug. 5, 1982, 57-137040

Int. Cl.³ B01D *39/20;* **F01N** *3/02, 3/16*

U.S. Cl. 55—284 **15 Claims**



1. Filter apparatus for purifying exhaust gases comprising:
a honeycomb structure having permeable partition walls forming generally parallel inlet and outlet passages for the gases, particulates in the gases being trapped on some of the surfaces of said inlet passages;
upstream packing plugs located in upstream portions of said outlet passages so as to close said passages, at least some of said upstream plugs being spaced downstream from the upstream end surface of said structure so as to define spaces between said upstream end surface of said structure and said upstream plugs for trapping and collecting exhaust gas particulates on at least some of the surfaces of said spaces;
downstream packing plugs located in the downstream ends of said inlet passages so as to close said inlet passages; and
at least one heater located at the upstream end of said honeycomb structure to heat and ignite the particulates trapped and collected in the upstream portions of said structure including the particulates trapped on said spaced surfaces.

4,519,821

MEANS FOR REMOVING A LAYER OF MATTED FIBERS FROM A FILTER DRUM

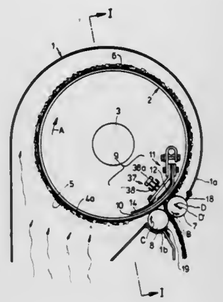
Kurt Weber, Elgg; Giancarlo Mondini, Winterthur, and Gerhard Mandl, Bruetten, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Oct. 18, 1982, Ser. No. 434,747

Claims priority, application Switzerland, Oct. 21, 1981, 6712/81

Int. Cl.³ B01D *46/04, 46/26*

U.S. Cl. 55—290 **10 Claims**



1. In combination,
a filter housing having an opening and an inlet for entry of fiber laden air;
a cylindrical filter drum rotatably mounted in said housing for receiving a layer of matted fibers on an outer perforated surface thereof;
means for generating a suction force within said drum;
means for stripping the layer of fibers from said filter drum at said opening, said means including a rotatable compressing roll and a rotatable take-off roll in said opening and forming a nip for removal of the matted fiber layer, said compressing roll being in tangential contact at a first point with said drum with a first plane extending through said point and an axis of rotation of said compressing roll and being in tangential contact at a second point with said take-off roll with a second plane extending through said second point and said axis of rotation to define a given angle with said first plane and a flexible sealing membrane engaging an internal wall of said filter drum to sealingly block off said wall at said opening from the interior of said drum;
means for pressing said sealing membrane against said internal wall of said drum entirely along the surface of contact of said membrane with said drum; and
said compressing roll being pivotally mounted to move in a plane corresponding to a bisector of said angle to move from said take-off roll and said drum.

4,519,822

CYCLONE

Hirofumi Hatano, and Yoji Hirota, both of Kitakyushu, Japan, assignors to Mitsubishi Mining and Cement Co. and Mitsubishi Jukogyo Kabushiki Kaisha, both of, Japan

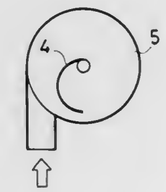
Continuation of Ser. No. 335,674, Dec. 30, 1981, abandoned. This application Jul. 12, 1983, Ser. No. 513,073

Claims priority, application Japan, Jan. 21, 1981, 56-2840

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—459 R **1 Claim**

1. A cyclone device comprising:
a cylindrical tubular body having a vertical central axis and a ceiling for defining a space, said sealing having a circular opening with a center at an eccentric location with respect to said central axis;
a tapered body portion connected to a lower edge of said cylindical tubular body, tapering inwardly and downwardly and having a lower central solid particle outlet opening;
a fluid inlet connected tangentially to said cylindrical tubular body for supplying fluid with particles to be separated, to said space in a tangential direction around said central axis, said fluid inlet connected to said body at a location to cause the fluid to rotate in said body around said central axis in a rotation direction;
a cylindrical fluid discharge pipe connected to said ceiling around said circular opening therein, said pipe opening into said space and terminating at said ceiling and before said pipe extends into space, no part of said fluid discharge pipe extending into said space; and
a vertical guide plate having a semi-circular horizontal cross-sectional shape, extending downwardly from said ceiling only part of the vertical distance of said cylindrical tubular body, said semi-circular guide plate having opposite vertical edges and extending from a part of said opening in said ceiling downwardly into said cyindrical tubular body, said semi-circular guide plate plate being the only structure extending downwardly into said space and being



asymmetrically positioned with respect to said semi-circular guide plate being the only structure extending downwardly into said space and being asymmetrically positioned with respect to said central axis, a radially inner one of said vertical edges being in the vicinity of said central axis and a radially outer one of said edges being near but spaced away from an inner surface of said cylindrical tubular body, said semi-circular guide plate being disposed approximately three-quarters of the way round said rotation direction and being convex in a direction facing said location where said fluid inlet is connected to said body, said semi-circular guide plate being concave in a direction facing oncoming fluid moving in the rotation direction;
whereby fluid entering through said fluid inlet and moving around said space defined by said cylindrical tubular body engages against said semi-circular guide plate which reduces an amount of rotation of fluid in said tubular body and advances a separation of particles from the fluid, the fluid moving upwardly through said discharge pipe and the particles moving downwardly through said solid particle opening.

4,519,823

AIR FILTER ASSEMBLY HAVING IMPROVED CLAMPING MEANS FOR FILTER MEDIA

William L. Kinney, Jr., and Richard E. Evans, Jr., both of Charlotte, N.C., assignors to United Air Filter Company, Charlotte, N.C.

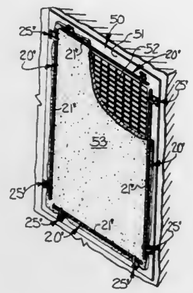
Filed Mar. 16, 1983, Ser. No. 475,764

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—493 **9 Claims**

1. A filter assembly comprising a supporting frame, a foraminous filter body support carried by said frame, a filter body formed of resilient filter media overlying said support, and clamping means mounted on said supporting frame and resiliently engaging marginal areas of said filter body for maintaining the filter body in overlying relation on said support, said clamping means comprising elongate members extending substantially parallel to marginal edge portions of the filter body

along a plurality of sides of the filter body and engaging marginal facial portions of the filter media forming the filter body, and clips supportingly carrying said elongate members along the marginal areas of said filter body, each clip having an arm connected to said elongate member for carrying the same, said arms being pivotally movable to first and second positions and



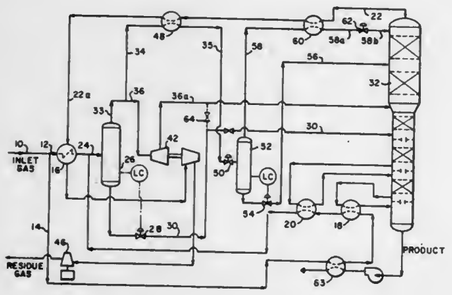
wherein in the first position said elongate members carried by the respective arms are in biased spring clamping engagement with said filter body and wherein in the second position said elongate members are away from and out of clamping engagement with said filter body to facilitate replacement of the filter body.

4,519,824

HYDROCARBON GAS SEPARATION

Robert R. Huebel, Houston, Tex., assignor to The Randall Corporation, Houston, Tex.

Filed Nov. 7, 1983, Ser. No. 549,044
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—26 **8 Claims**



1. In a process for the separation of a feed gas containing methane and ethane into a volatile residue gas containing a major portion of said methane and a relatively less volatile fraction containing a major portion of said ethane wherein methane and ethane together comprise a major portion of said feed gas and wherein said feed gas is cooled under relatively high pressure and then expanded to a relatively low pressure whereby it is further cooled and said further cooled feed stream is fractionated at said relatively low pressure in a fractionation column wherein the overhead temperature is maintained at a temperature whereby the major portion of said ethane is recovered in said less volatile fraction at the bottom of said fractionation column; the improvement comprising:

(a) dividing said feed gas into first and second cooled gaseous streams,

(b) expanding said first gaseous stream to said relatively low pressure,

(c) further cooling said second gaseous stream at said relatively high pressure and then expanding to an intermediate pressure such that a portion of said second gaseous stream is condensed,

(d) separating said condensed portion from the remaining gaseous portion of said second gaseous stream,

(e) expanding said separated condensed portion of said second gaseous steam to said relatively low pressure,

(f) further cooling said separated remaining gaseous portion of said second gaseous stream and then expanding to said relatively low pressure, and

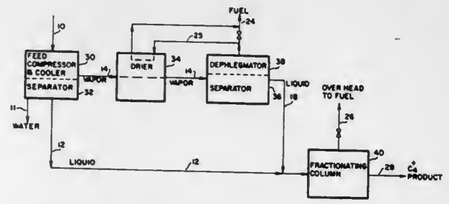
(g) feeding said expanded first gaseous stream (b), said expanded condensed portion of said second gaseous stream (e) and said expanded remaining gaseous portion of said second gaseous stream (f) to said fractionation column at first, second and third feed points, respectively, said third feed point being the top column feed and said second and third feed point being at lower column positions.

4,519,825

PROCESS FOR RECOVERING C_4+ HYDROCARBONS USING A DEPHLEGMATOR

Dennis P. Bernhard, Allentown; Howard C. Rowles, Center Valley, and Robert L. Teichman, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 25, 1983, Ser. No. 488,328
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—28 **8 Claims**



1. A process for separating C_4 and heavier hydrocarbons in high recovery and a purity of at least 60 mole %, from a feed gas comprising about 0–5 mole % C_5 and heavier hydrocarbons, 1–10% C_4 hydrocarbons, 0–10% C_3 hydrocarbons, 0–10% C_2 hydrocarbons, and the balance CH_4 and light inerts, which comprises:

(a) pressurizing the feed gas to a level from 10 to 40 atmospheres if not at said level;

(b) establishing and maintaining said feed gas at a temperature of from 2° to 38° C.;

(c) passing said feed gas, prior to fractionation, to a dephlegmator, thereby cooling said feed gas to a preselected overhead temperature, within the range from −52° to −76° C., for forming a liquid condensate containing C_4+ hydrocarbons of a purity of at least 60 mole % and an overhead vapor fraction;

(d) withdrawing said liquid condensate from the dephlegmator;

(e) withdrawing said overhead vapor fraction from said dephlegmator and warming by indirect heat exchange against the feed in said dephlegmator;

(f) work expanding the resulting warmed overhead vapor fraction in an expander to a pressure sufficient to generate a cold fraction having the required refrigeration value and having a temperature from about 2° to 15° C. below the preselected overhead temperature in said dephlegmator; and

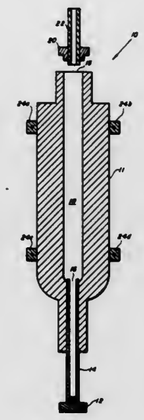
(g) withdrawing said cold fraction from the expander and again warming by indirect heat exchange against the feed in said dephlegmator.

4,519,826

OPTICAL FIBERS HAVING A FLUORIDE GLASS CLADDING AND METHOD OF MAKING

Danh C. Tran, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1983, Ser. No. 484,764
Int. Cl.³ C03B *37/075, 19/04*
U.S. Cl. 65—3.11 **9 Claims**



1. A method of forming an optical fiber having a core and fluoride glass cladding comprising the steps of:

axially rotating a vertically-disposed, thermally-conductive tubular mold containing a fluoride glass cladding melt until said cladding melt has coated essentially the entire bore surface of said mold;

rapidly tilting the mold, while continuing to axially rotate said mold, until said mold becomes horizontally disposed;

continuing to axially rotate said mold at least until said cladding melt has evenly coated the bore surface of said mold;

rapidly cooling said cladding melt until its temperature is about equal to that of said mold, thus forming a cladding tube;

introducing a glass core melt suitable for producing optical fibers into said cladding tube to form a preform;

removing said preform from said mold; and

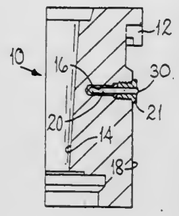
drawing said preform to form an optical fiber.

4,519,827

CONTROLLING THE TEMPERATURE OF A GLASS MOULD

Stanley P. Jones, Tickhill, England, assignor to Embart Industries, Inc., Farmington, Conn.

Filed Feb. 27, 1984, Ser. No. 584,026
Int. Cl.³ C03B *9/38*
U.S. Cl. 65—29 **8 Claims**



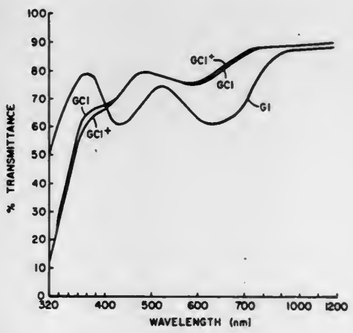
1. A method of controlling the temperature of a mould during the manufacture of moulded articles wherein a portion of the mould is moved between a mould open position thereof and a mould closed position thereof, wherein the method comprises forming a passage in the mould portion which extends from an external surface of the portion to a position adjacent a mould cavity defining surface of the portion, inserting an infra-red radiation transmitting device into the passage so that the device can transmit infra-red radiation along the passage to the external surface of the portion, mounting an infra-red radiation detecting device so that, when the mould portion is stationary, it can receive infra-red radiation transmitted to the external surface of the portion by the transmitting device and operating mould heating or mould cooling means in accordance with whether the radiation detected by the detecting device indicates that the mould temperature is too high or too low.

4,519,828

TRANSPARENT GLASS-CERAMICS CONTAINING MULLITE

George H. Beall, Big Flats; John F. MacDowell, and Mark P. Taylor, both of Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 395,617, Jul. 6, 1982, Pat. No. 4,396,720.
This application Mar. 28, 1983, Ser. No. 479,681
Int. Cl.³ C03C *3/22*
U.S. Cl. 65—33 **8 Claims**



1. A method for making a substantially transparent glass-ceramic article containing mullite as the predominant crystal phase comprising the steps of:

(a) melting a batch for a glass capable of being melted at temperatures no higher than 1650° C., capable of being crystallized in situ at high viscosities, i.e., about 10^9–10^{12} poises, and consisting essentially, expressed in terms of weight percent on the oxide basis, of 40–60% SiO_2, 12–30% B_2O_3, 17.5–27.5% Al_2O_3, and 3–13% Na_2O and/or K_2O, the glass having a mole ratio Al_2O_3:R_2O > 1.75.

(b) cooling said melt to a temperature at least below the transformation range of the glass and simultaneously shaping a glass article of a desired geometry therefrom;

(c) exposing said glass article to a temperature between about 700°–950° C. for a period of time sufficient to cause the generation of crystallization in situ at a viscosity of about 10^9–10^{12} poises and to provide a crystallized glass article which is substantially transparent and contains mullite as the predominant crystalline phase; and then

(d) cooling said crystallized article to room temperature.

5. A method for making a substantially transparent glass-ceramic article containing mullite as the predominant crystal phase comprising the steps of:

(a) melting a batch for a glass capable of being melted at temperatures no higher than 1650° C., capable of being crystallized in situ at high viscosities, i.e., about 10^9–10^{12} poises, and consisting essentially, expressed in terms of weight percent on the oxide basis, of 15–45% $SiO_2$2-

0–30% B_2O_3, 20–40% Al_2O_3, and 5–30% RO, wherein RO consists of at least one member of the group in the indicated proportions of 0–15% MgO, 0–20% CaO, 0–30% SrO, 0–30% BaO, the glass having a mole ratio $Al_2O_3:R_2O > 1.75$;

(b) cooling said melt to a temperature at least below the transformation range of the glass and simultaneously shaping a glass article of a desired geometry therefrom;

(c) exposing said glass article to a temperature between about 700°–950° C. for a period of time sufficient to cause the generation of crystallization in situ at a viscosity of about 10^9–10^{12} poises and to provide a crystallized glass article which is substantially transparent and contains mullite as the predominant crystalline phase; and

(d) cooling said crystallized article to room temperature.

4,519,829

METHOD OF AND APPARATUS FOR QUENCH-TEMPERING SHAPED GLASS

Horst Spittka; Rudolf Eckardt, and Cristoph Neuendorf, all of Wesel, Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Fürth, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,683

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1982, 3238043

Int. Cl.³ C03B *27/04*

U.S. Cl. 65—114 **5 Claims**



1. A method of quench-tempering a hot shaped glass sheet, the method comprising the steps of:

transporting the sheet into a quenching station;

supporting the sheet in the quenching station underneath a downwardly directed upper nozzle array and above an upwardly directed lower nozzle array by engagement of only a portion of the lower surface of the sheet, the portion engaged for support being interrupted by a generally uniformly distributed array of unsupported regions;

directing an air stream from the lower nozzle array up toward the lower surface of the glass sheet while directing an opposite air stream down from the upper nozzle array toward the upper surface of the sheet;

shielding generally all of the lower surface of the sheet except the unsupported regions from the air stream of the lower nozzle array, whereby a prestress field is formed in the sheet which corresponds to the distribution of the unsupported regions; and

thereafter transporting the sheet out of the station, the sheet being held during one of the transporting steps by clipping the sheet outer periphery up against a holding ring having the same shape as the outer periphery of the sheet.

4. An apparatus for quench-tempering a hot shaped glass sheet having an outer periphery, the apparatus comprising:

a downwardly directed upper nozzle array;

an upwardly directed lower nozzle array below the upper array and forming a quenching station therewith;

a rigid plate having the same shape as the sheet but formed with an array of throughgoing holes and having an outer periphery shaped like the outer periphery of the sheet;

means for supporting the sheet on the plate with the lower face of the sheet being exposed to the lower nozzle array only at the holes in the plate;

means for directing an air stream from the lower nozzle array up toward the lower surface of the glass sheet, whereby a prestress field is formed in the sheet which corresponds to the distribution of the holes in the plate;

loading means for transporting the sheet into the station prior to quenching therein while supported on the plate;

unloading means for transporting the sheet out of the station after quenching therein while still supported on the plate; and

one of the means for transporting including an annular support ring engageable with the outer periphery of the upper surface of the sheet, the ring being provided with clips engageable underneath the outer periphery of the plate for pressing the outer peripheries both up against the support ring.

4,519,830

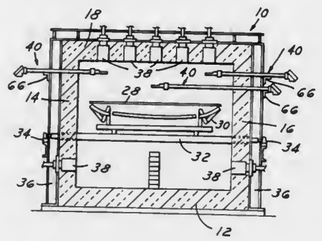
TEMPERATURE SENSING STRUCTURE FOR A FURNACE

Ronald G. Wolak, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 25, 1984, Ser. No. 603,866

Int. Cl.³ C03B *5/24*

U.S. Cl. 65—162 **3 Claims**



1. In a glass bending furnace having wall structures in which radiant heat generating devices passing therethrough are used to generate heat for heating the interior of the glass bending furnace, an improved temperature sensing structure which comprises:

a thermocouple element, said thermocouple element having a pair of thermocouple leads terminating in a junction end which defines a planar loop portion of said thermocouple element;

mounting means for mounting said pair of thermocouple leads with said planar loop portion of said thermocouple element projecting outwardly from a free end of said mounting structure;

a radiation reflective, heat shielding protection tube having (1) an elongated portion in surrounding relationship to said mounting means which mounts said pair of thermocouple leads, and (2) a free end portion which surrounds all but a facing portion of said planar loop portion of said thermocouple, said surrounding part of said free end portion of said protection tube being positioned so that said facing planar loop portion of said thermocouple element lies in a plane in facing relationship to an unsurrounding part of said free end portion of said protection tube;

quartz tube means for enclosing said planar loop portion of said thermocouple element; said quartz tube means being generally opaque to infrared wavelengths longer than about 7 microns and transparent to shorter wavelengths;

means for positioning said protection tube in a wall structure of the glass bending furnace so that said unsurrounding part of said free end portion of said protection tube is in facing relationship with a radiant heat generating device passing through a wall structure of the glass bending structure, whereby said planar portion of said thermocouple element, which is protected by said quartz tube means can give an accurate reading of the radiation being given off by the radiant heat generating device in facing relationship thereto.

4,519,831

METHOD OF CONVERTING SEWAGE SLUDGE TO FERTILIZER

William P. Moore, Hopewell, Va., assignor to Hawkeye Chemical Company, Clinton, Iowa

Filed Oct. 17, 1983, Ser. No. 542,431

Int. Cl.³ C05F *7/00*

U.S. Cl. 71—13 **15 Claims**

1. A method of converting sewage sludge solids in controlled release, attrition resistant fertilizer agglomerates comprising:

(a) forming a fertilizer premix by comingling sewage sludge solids containing 1 part of nitrogen with uncondensed liquid ureaform containing between 1 and 6 parts nitrogen and having a urea to formaldehyde mol ratio of between 1 and 2 and a nitrogen concentration between 20 and 32 percent; said ureaform being prepared by reaction of 1 mol of formaldehyde with between 1.5 and 1.8 mols urea at 80° to 95° C. for 60 to 120 minutes under the influence of an alkali catalyst, and contains between 0.8 and 2.0 percent free ammonia and between 24 and 32 percent total nitrogen;

(b) distributing sufficient acidic material throughout the fertilizer premix to acidify it to a pH of between 4 and 6;

(c) heating the acidified fertilizer premix to a temperature between 60° and 120° C. for between 5 and 60 minutes;

(d) compressing the heated fertilizer premix between solid surfaces at a pressure between about 500 and 10,000 pounds per square inch until controlled release, attrition resistant, fertilizer agglomerates are formed.

4,519,832

UNSYMMETRICAL AMINOSULFINAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINE TRIESTERS, HERBICIDAL COMPOSITIONS AND USE

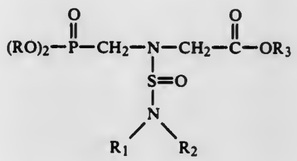
James A. Sikorski, Kirkwood, and Mary A. Hoobler, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1984, Ser. No. 605,003

Int. Cl.³ C07F *9/40*; A01N *57/20, 57/24*

U.S. Cl. 71—87 **30 Claims**

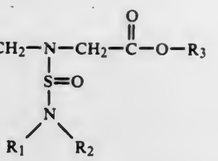
1. A compound represented by the formula



(I)

wherein R is selected from the group consisting of phenyl, or phenyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, nitro and halogen; and wherein R_1 and R_2 are independently selected from the group consisting of alkyl, cycloalkyl, alkenyl, alkynyl, aralkyl and R; or R_1 and R_2 are independently selected from the aforerecited groups and joined together through nitrogen to form a cyclic structure having 4–8 atoms; and R_3 is lower alkyl or aralower alkyl.

11. A herbicidal composition comprising an adjuvant and a herbicidally effective amount of a compound represented by the formula



(I)

wherein R is selected from the group consisting of phenyl, or phenyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, nitro and halogen; and wherein R_1 and R_2 are independently selected from the group consisting of alkyl, cycloalkyl, alkenyl, alkynyl, aralkyl and R; or R_1 and R_2 are independently selected from the aforerecited groups and joined together through nitrogen to form a cyclic structure having 4–8 atoms; and R_3 is lower alkyl or aralower alkyl.

4,519,833

HERBICIDE COMPOSITIONS

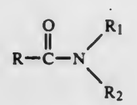
Ferenc M. Pallos, Walnut Creek; Mervin E. Brokke, Moraga, and Duane R. Arneklev, Sunnyvale, all of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 147,434, May 7, 1980, Pat. No. 4,392,884, which is a division of Ser. No. 930,967, Aug. 4, 1978, Pat. No. 4,269,618, which is a division of Ser. No. 208,041, Dec. 9, 1971, Pat. No. 4,137,070, which is a continuation-in-part of Ser. No. 134,868, Apr. 16, 1971, abandoned. This application Aug. 13, 1981, Ser. No. 292,330

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—100 **10 Claims**

1. A herbicidal composition comprising an active herbicidal thiocarbamate compound and a non-phytotoxic antidotally effective amount of an antidote therefor corresponding to the formula



wherein R is $CHCl_2$—, R_1 and R_2 can be the same or different and can be selected from C_2–C_{20} cyanoalkyl, hydrogen, C_2–C_{12} alkenyl and C_1–C_{12} alkyl, provided that at least one of R_1 or R_2 is C_2–C_{20} cyanoalkyl.

4,519,834

HERBICIDAL ETHYNYL-PHENYLUREAS

Henry Szczepanski, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

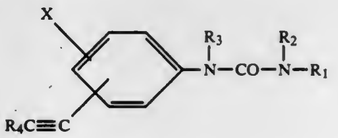
Division of Ser. No. 214,813, Dec. 9, 1980, Pat. No. 4,406,691. This application Jul. 11, 1983, Ser. No. 512,273

Claims priority, application Switzerland, Dec. 18, 1979, 11214/79

Int. Cl.³ A01N *37/00, 37/44, 47/30*; C07C *155/02*

U.S. Cl. 71—100 **17 Claims**

1. An ethynylphenylurea of the formula



wherein

R_1 is hydrogen; C_1–C_6-alkyl; C_1–C_6-alkoxy; C_2–C_6-alkenyl; phenyl optionally substituted by halogen; or benzyl optionally substituted by halogen;

R_2 is hydrogen; C_1-C_6-alkyl; C_3-C_6-cycloalkyl; C_2-C_6-alkenyl; or benzyl optionally substituted by halogen;

R_3 is hydrogen or C_1-C_4-alkyl;

R_4 is hydrogen; C_1-C_{12}-alkyl optionally substituted by hydroxy, halogen, C_1-C_4-alkoxy, C_2-C_8-alkoxyalkoxy, C_1-C_4-alkoxycarbonyl, $-N(R_1)(R_2)$, $-N(R_1)COOR_2$, $-N(R_1)COSR_2$ $-N(R_1)CON(R_1)(R_2)$; C_2-C_{12}-alkenyl optionally substituted by halogen, hydroxy, C_1-C_4-alkoxy, C_2-C_8-alkoxyalkoxy or C_1-C_4-alkoxycarbonyl; C_3-C_{12}-cycloalkyl or cycloalkenyl, which is mono-or bicyclic and which can be substituted by halogen, hydroxy or C_1-C_4-alkoxy; and

X is hydrogen; halogen; C_1-C_4-alkyl; C_1-C_4-alkoxy; or nitro.

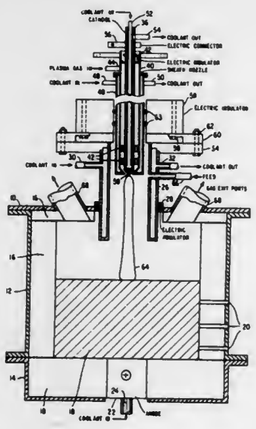
13. A method for combating undesirable plant growth which comprises applying thereto a herbicidally effective amount of an ethynylphenylurea of claim 1.

4,519,835

TRANSFERRED-ARC PLASMA REACTOR FOR CHEMICAL AND METALLURGICAL APPLICATIONS

William H. Gauvin, Beaconsfield, and George R. Kubanek, Baie d'Urfé, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Division of Ser. No. 382,415, May 26, 1982, Pat. No. 4,466,824. This application May 23, 1984, Ser. No. 613,387
Claims priority, application Canada, Jul. 30, 1981, 382889
Int. Cl.³ C22B *4/00*
U.S. Cl. 75—10 R **13 Claims**



1. A process for high temperature treatment of feed material using a plasma reactor comprising a bottom portion forming a crucible for receiving molten material, a sleeve mounted on top of the crucible, a cathode assembly including a cathode mounted on top of the said sleeve and electrically insulated therefrom, means for injecting a plasma forming gas into the reactor adjacent to the cathode, an anode, and gas exit ports in the bottom portion of the reactor, comprising the steps of:

(a) mounting said anode in the crucible in contact with the molten material in the crucible but electrically insulated from the sleeve;

(b) supplying feed material conveyed by a carrier gas near the top of said sleeve at a pressure such that the material is fed against the inner wall of the sleeve;

(c) establishing a plasma arc between the cathode and anode via the molten material in the crucible to melt the feed material and to form a falling film of molten material on the inside wall of the sleeve which drops in the crucible underneath; and

(d) tapping the molten material from the crucible.

4,519,836

METHOD OF PROCESSING LEAD SULPHIDE OR LEAD-ZINC SULPHIDE ORES, OR SULPHIDE CONCENTRATES, OR MIXTURES THEREOF

Anatoly P. Sychev; Jury I. Sannikov; Jury A. Grinin; Ivan P. Polyakov, and Jury M. Abdeev, all of Ust-Kamenogorsk, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Tsvetnoi Metallurgii, Ust-Kamenogorsk, U.S.S.R.

Filed Jul. 20, 1983, Ser. No. 515,939
Int. Cl.³ C22B *13/00*
U.S. Cl. 75—25 **7 Claims**

1. A method for the recovery of lead from a mixture comprising lead and iron sulphides optionally further containing one or both of zinc and copper sulphides which comprises (1) admixing said sulphides with fluxes, (2) oxidizing the sulphide in the presence of said fluxes to produce oxides of the metals present including ferrous oxide and lead oxide and (3) passing the oxidized product so obtained in the form of metal oxide droplets into a bed of solid carboniferrous material to effect selective reduction of lead oxide to lead leaving a slag containing other metals present in oxide form

wherein

(a) said fluxes are lime- and silicon dioxide-containing fluxes said fluxes may optionally contain aluminum oxide and magnesium oxide and are employed in amounts to result in the following ratios being present in the oxidized product: sum of silicon dioxide and any aluminum dioxide present:ferrous oxide of 0.67 to 1.22:1, sum of calcium oxide and any magnesium oxide present:ferrous oxide of 0.22 to 0.75:1

(b) dust is obtained in the oxidation and is recycled to be mixed with the fluxes and the sulphides

(c) the oxidation is effected by feeding said mixture of sulphides, fluxes and recycled dust in suspended state in an oxygen into a vertical flame to effect 85-100 percent desulfurization thereby producing droplets of oxides of the metals and

(d) the carboniferrous material into which said droplets are passed is selected from the group consisting of coke and coal.

4,519,837

METAL POWDERS AND PROCESSES FOR PRODUCTION FROM OXIDES

Michael G. Down, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 309,863, Oct. 8, 1981, abandoned. This application Apr. 26, 1984, Ser. No. 604,398
Int. Cl.³ B22F *9/00*
U.S. Cl. 75—0.5 B **15 Claims**



1. A process for reducing a metal oxide to a substantially unoxidized metal powder, comprising the steps of:

(a) forming a reaction mixture of said metal oxide in a quantity of a liquid metal reducing agent in excess of that stoichiometrically required to fully reduce said metal oxide wherein said liquid metal reducing agent is selected from the group consisting of lithium-magnesium solutions and lithium-calcium solutions;

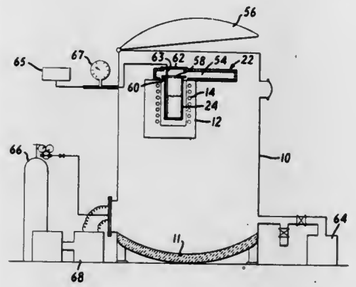
(b) reacting said metal oxide with said liquid metal reducing agent at a temperature below approximately 600° C. until said metal oxide has been substantially reduced to said unoxidized metal powder except for minor impurity levels of oxygen.

4,519,838

APPARATUS AND PROCESS FOR PRODUCING PREDOMINATELY IRON ALLOY CONTAINING MAGNESIUM

James E. Wells, III, Kenmore, N.Y., assignor to Elkem Metals Company, Pittsburgh, Pa.

Filed Sep. 15, 1982, Ser. No. 418,238
Int. Cl.³ C22C *33/00*
U.S. Cl. 75—129 **12 Claims**



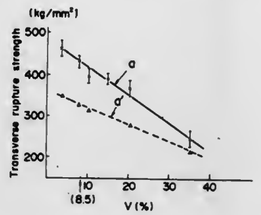
1. A process for producing a predominately iron alloy containing magnesium in a charge vessel and associated cooling medium which comprises the steps of forming an alloy charge in said vessel which is predominately iron and includes at least about 0.5% magnesium by weight, supplying a gas under pressure that is inert to magnesium vapor, maintaining the charge in said vessel in an atmosphere of such inert gas at a pressure greater than the vapor pressure of magnesium at the melt temperature, heating the charge to melt temperature in said atmosphere of inert gas to form an alloy melt, removing and transferring the molten alloy from said vessel into a cooling medium where the alloy melt is rapidly cooled and sclidified to produce a solid alloy ingot.

4,519,839

SINTERED HIGH VANADIUM HIGH SPEED STEEL AND METHOD OF MAKING SAME

Ishibachi Toyoaki; Yoshihara Minoru; Takuma Takashi; Fuke Yasunori, and Maeda Masayuki, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd.; Kanto Denka Kogyo Co., Ltd. and Fujidie Co., Ltd., all of Tokyo, Japan

PCT No. PCT/JP82/00113, § 371 Date Dec. 8, 1982, § 102(e) Date Dec. 8, 1982, PCT Pub. No. WO82/03412, PCT Pub. Date Oct. 14, 1982
Continuation of Ser. No. 448,855, Dec. 8, 1982, abandoned. This PCT application Apr. 8, 1982, Ser. No. 657,455
Claims priority, application Japan, Apr. 8, 1981, 56-52709
Int. Cl.³ C22C *33/02, 38/24, 38/36;* B22F *1/00*
U.S. Cl. 75—242 **3 Claims**



1. A sintered high vanadium high speed steel consisting essentially of C 1.4-6.2, W+2Mo 10.0-24.0, Cr 3.0-6.0, V 8.5-38, Co less than 17, all in weight%, the remainder Fe and inevitable impurities, characterized by a process of manufacture comprising the steps of preparing a powder mixture consisting of the oxides of the steel-forming metals and carbon, the amount of the carbon nearly equalling a sum of that for dissolution and carbide formation and half of that for reducing said metal oxides to carbon monoxide, pulverizing said mixture intimately down to below 10 microns, heating said finely pulverized mixture in a stream of hydrogen at a temperature between 900° and 1100° C. and for a sufficient time, whereby said mixture is reduced to an alloyed powder, pulverizing said alloyed powder again down to below 10 microns, with necessary carbon and/or composition adjustments made, preparing a compact from said pulverized alloyed powder, solid phase sintering said compact in a vacuum to a density of 95% or higher, and subjecting said sintered compact to a heat treatment, whereby a martensitic matrix is produced.

4,519,840

HIGH STRENGTH, WEAR AND CORROSION RESISTANT COATINGS

John E. Jackson, Brownsburg; Thomas A. Adler, Indianapolis; Jean M. Quets, Indianapolis, and Robert C. Tucker, Jr., Brownsburg, all of Ind., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 28, 1983, Ser. No. 546,480
Int. Cl.³ C09D *5/00*
U.S. Cl. 106—1.05 **12 Claims**

1. A coating composition applied to a substrate by a thermal spray process which consists essentially of from about 11.0 to about 18.0 weight percent cobalt, from about 2.0 to about 6.0 weight percent chromium, from about 3.0 to about 4.5 weight percent carbon and the balance tungsten.

4,519,841

OFFSET PRINTING INK

John T. Moynihan, Herndon, Va., assignor to American Newspaper Publishers Association, Washington, D.C.

Continuation-in-part of Ser. No. 337,220, Jan. 6, 1982, Pat. No. 4,419,132. This application Nov. 30, 1983, Ser. No. 556,471
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ C09D *11/06*
U.S. Cl. 106—27 **4 Claims**

1. An offset printing ink comprising:

a. Carbon black in the range 10% to 27.8%,

b. Gilsonite in the range 17.6% to 23.5%, and

c. Tall oil fatty acid in the range 50.1% to 54.9%.

4,519,842

ADMIXTURE AND METHOD FOR IMPROVING HYDRAULIC CEMENT MIXES

Arthur H. Gerber, Beachwood, Ohio, assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 352,626, Feb. 26, 1982, Pat. No. 4,401,472. This application Aug. 29, 1983, Ser. No. 527,533
The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 **29 Claims**

1. A hydraulic cement mix comprising a hydraulic cement, aggregate in an amount of up to 80 percent by weight based upon the total weight of said cement mix, sufficient water to effect hydraulic setting of the cement, and an additive selected from the group consisting of poly(hydroxyalkylated)polyamine, alkoxylated poly(hydroxyalkylated)polyamine hydroxyalkylated derivatives of the compounds hydrazine, 1,2-diaminopropane, and polyglycoldiamine, and mixtures thereof, said additive being present in an amount sufficient to increase the compressive strength of the hardened mix.

4,519,843

MODIFIED POLYALKYLENEPOLYAMINES

Stephen B. Willis, Lake Jackson, and Pamela J. Boyce, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 586,374, Mar. 5, 1984, Pat. No. 4,482,667, which is a continuation-in-part of Ser. No. 548,475, Nov. 3, 1983, Pat. No. 4,461,856. This application Aug. 8, 1984, Ser. No. 638,824

Int. Cl.³ C04B *7/35, 25/06;* **C08G** *59/00*

U.S. Cl. 106—90 **10 Claims**

1. In aqueous hydraulic cement slurry compositions comprising water, hydraulic cement, surfactant and polyalkylenepolyamine fluid loss additive; the improvement which comprises employing as said fluid loss additive, at least one composition prepared by reacting

(A) at least one alkylenediamine or polyalkylenepolyamine composition having an average molecular weight of from about 60 to about 500; with

(B)

(1) at least one epihalohydrin, dihalohydrin or mixture thereof; or

(2) a mixture of

(a) at least one epihalohydrin, dihalohydrin or mixture thereof; and

(b) at least one alkylene dihalide, and

(C) optionally, one or more adducts of

(1) at least one epihalohydrin, dihalohydrin or mixture thereof; and

(2) at least one alkylenediamine or polyalkylenepolyamine having an average molecular weight of from about 60 to about 500 or a mixture thereof; wherein components (A), (B) and (C) are employed in quantities which provide a non-gelled polyamine which gives a fluid loss of less than 60 ml, preferably less than about 45 according to the API RP 10B fluid loss test described in the examples.

4,519,844

WATER SOLUBLE BIOGUM COMPOSITIONS AND HYDROSOLS PREPARED THEREFROM

Jean-Bernard Chaux; Pierre Gagne, both of Tassin La Demi-Lune; Michel Garcia, Antony; Dominique Lespinasse, Jassans Riottier, and Josiane Roussos, Neuilly sur Seine, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 442,004, Nov. 16, 1982, abandoned. This application Jan. 25, 1983, Ser. No. 460,771

Claims priority, application France, Nov. 16, 1981, 81 21358

Int. Cl.³ C08L *5/00*

U.S. Cl. 106—209 **25 Claims**

1. A composition of matter adapted for ready dispersion/dissolution in an aqueous medium, comprising an intimate admixture of from 30 to 70% by weight of a water soluble biogum heteropolysaccharide, from 7 to 40% by weight of a dispersion/dissolution enhancing water donor material therefor, from 15 to 37% by weight of water and from 0–10% by weight of an anionic or nonionic surfactant.

7. The composition of matter as defined by claim 1, said water donor comprising a finely divided silica, a hydrated silica gel, a dehydrated silica gel, an alumina hydrate, an argilla, a natural or synthetic zeolite, or a hydrate of an inorganic or organic salt.

4,519,845

SEPARATION OF SUCROSE FROM MOLASSES

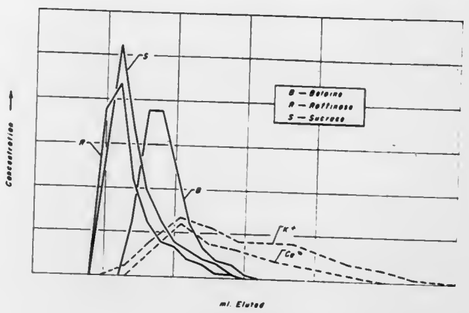
Di-Yi Ou, La Grange, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 9, 1984, Ser. No. 578,464

Int. Cl.³ C13D *3/12*

U.S. Cl. 127—46.2 **12 Claims**

1. A process for the separation of sucrose from molasses feedstock through a bed of adsorbent comprising a mixture of an ion retardation resin and a calcium and potassium ion exchanged nuclearly sulfonated styrene cation exchanged resin having about 8% crosslinkage, said adsorbent having a higher



relative selectivity for mineral salts and betaine components of said feedstock than for sucrose, adsorbing said mineral salts and betaine components in said adsorbent bed and removing a product stream comprising sucrose from said adsorbent bed.

4,519,846

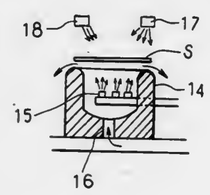
PROCESS FOR WASHING AND DRYING A SEMICONDUCTOR ELEMENT

Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,580

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—15 **6 Claims**



1. A process for washing and drying a semiconductor element wherein one surface of the element has been subjected to etching, which process comprises:

(a) holding the semiconductor element horizontally with the etched surface directed downwards over a water-washing tank having essentially vertical side walls and a dished bottom and pre-washing the etched surface of the semiconductor element with water jetted out from water nozzles provided in the tank;

(b) washing the etched surface with pure water by blowing the pure water upwardly against said etched surface from a port in the bottom of the tank;

(c) while washing the etched surface with pure water, simultaneously washing the other, upwardly-facing, surface of the semiconductor element by causing water to fall onto the upwardly-facing surface; and then

(d) spinning the semiconductor element to spin-dry the same.

4,519,847

PREVENTION AND REMOVAL OF STAINS IN POOLS AND SPAS

Aaron Milligan, 6797 Valinda Ave., Alta Loma, Calif. 91701

Filed Dec. 12, 1983, Ser. No. 560,418

Int. Cl.³ A45B *25/06*

U.S. Cl. 134—28 **2 Claims**

1. A method of removing cobalt stains from fiberglass comprising mixing a quantity of a mixture of benzalkonium chloride, EDTA Na4 and soft water in a quantity of muriatic acid and washing said fiberglass therewith.

4,519,848

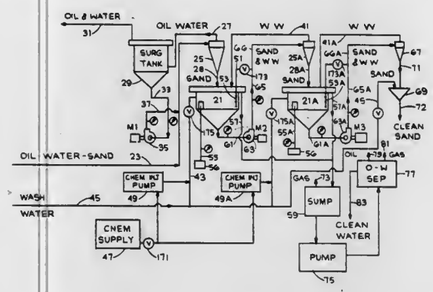
SEPARATOR

Gene E. Underwood, P.O. Box 2685, Conroe, Tex. 77305

Continuation of Ser. No. 387,503, Jun. 11, 1982, abandoned. This application May 8, 1984, Ser. No. 608,262

Int. Cl.³ B08B *3/00*

U.S. Cl. 134—34 **20 Claims**



1. A system for cleaning material from solid particles, comprising:

a container having a top end, a bottom end and side wall structure extending between said top end and said bottom end,

upper wall structure having an opening formed therethrough leading to an upper zone,

means for separating a liquid material and solid particles from a mixture of the solid particles and the liquid material, after separation, the solid particles having a film of the material thereon,

particle injecting means for injecting the separated solid particles to be cleaned into the top portion of said container radially outward from said opening,

means separate from said particle injecting means for injecting a liquid into said container in a direction to cause the solid particles to swirl around and against said side wall structure of said container for causing the material to be removed from the solid particles, whereby the material flows upward through said opening and into said upper zone and liquid and solid particles flow downward to the bottom end of said container,

an outlet coupled to said upper zone for removing the material from said upper zone, and

a lower outlet coupled to the bottom end of said container for removing the solid particles and liquid from the bottom end of said container.

20. A method of cleaning material from solid particles in a container having a top end, a bottom end, side wall structure extending between said top end and said bottom end, upper wall structure having an opening formed therethrough leading to an upper zone, an upper outlet coupled to said upper zone, and a lower outlet coupled to the bottom end of said container, comprising the steps of:

injecting the solid particles to be cleaned into the top portion of said container radially outward of said opening,

injecting a liquid into said container in a direction to cause the solid particles to swirl around and against said side wall structure of said container for causing the material to be separated from the solid particles,

flowing the separated material upward through said opening and into said upper zone and flowing said liquid and solid particles downward to the bottom end of said container,

flowing the separated material from said upper zone through said upper outlet, and

flowing the solid particles and liquid at the bottom end of said container through said lower outlet.

4,519,849

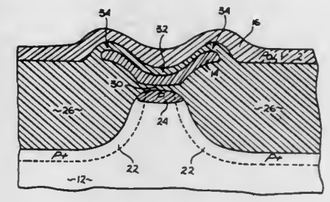
METHOD OF MAKING EPROM CELL WITH REDUCED PROGRAMMING VOLTAGE

George J. Korsh, Redwood City; Mark A. Holler, Milpitas; George Perlegos, Cupertino, and Paolo Gargini, Palo Alto, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 196,838, Oct. 14, 1980, Pat. No. 4,412,310. This application Jul. 22, 1983, Ser. No. 515,990

Int. Cl.³ H01L *21/22, 21/26*

U.S. Cl. 148—1.5 **3 Claims**



1. In the fabrication of an MOS electrically programmable read-only memory cell wherein a layer of polysilicon is formed insulated from a substrate, said layer being used to define a floating gate member for said cell, an improvement comprising the steps of:

forming an oxide layer of a predetermined thickness over said polysilicon layer;

forming a silicon nitride layer over said oxide layer;

etching said silicon nitride layer, oxide layer and polysilicon layer so as to define a dimension of said floating gate member;

subjecting said substrate to an elevated temperature so as to grow an oxide region at edges of said floating gate member such that a thicker oxide develops at said edges of said floating gate member when compared to said oxide layer at the central portion of said floating gate member;

whereby said edges of said floating gate are protected by a thicker oxide region thereby reducing undesirable loss of charge from said floating gate member to overlying structures.

4,519,850

PROCESS FOR THE THERMO-MIGRATION OF LIQUID PHASES

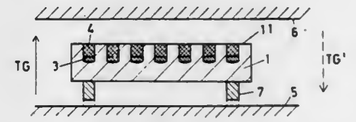
Petra Kluge-Weiss, Birmenstorf, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Aug. 18, 1983, Ser. No. 524,327

Claims priority, application 08241982, Aug. 24, 1982, 82201054

Int. Cl.³ H01L *21/225*

U.S. Cl. 148—1.5 **11 Claims**



1. A process for the thermo-migration of liquid phases comprising the steps of:

covering at least partially a plane surface of a semiconducting substrate with a layer of metal, the melting point of said metal being substantially lower than the melting point of said semiconducting substrate;

forming a molten zone from said metal and the material of

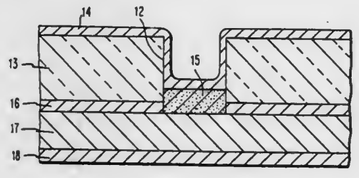
said semiconducting substrate at a temperature lying between said two melting points, and in an inert gas atmosphere;
pumping off said inert gas atmosphere after said formation of said molten zone;
establishing a first thermal gradient essentially perpendicular to said plane surface of said semiconducting substrate by means of two flat, parallel and uniformly heated faces;
migrating said molten zone into said semiconducting substrate under vacuum conditions until it reaches a predetermined depth;
establishing a second thermal gradient which is parallel to said first thermal gradient and has an opposite direction by lowering the temperature of the warmer of said two faces and raising the temperature of the cooler of said two faces; and
migrating said molten zone from said predetermined depth back to said plane surface of said semiconducting substrate under vacuum conditions.

4,519,851

METHOD FOR PROVIDING PINHOLE FREE DIELECTRIC LAYERS

Charles H. Perry, and Robert R. Shaw, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,335
Int. Cl.³ C23F *7/02*
U.S. Cl. 148—6.31 **6 Claims**



1. A method for forming a pinhole defect free dielectric layer over a substrate-supported conductive metallurgical pattern comprising the steps of:
forming said pattern with a top film of oxidizable metal, the metal oxide of which is nonconductive;
coating said pattern with a dielectric layer; and,
converting all of said oxidizable metal top film which is exposed by said pinholes to a nonconductive material by treating the entire substrate to an oxidation process, said process oxidizing the exposed metal while leaving said dielectric and said underlying pattern unchanged.

4,519,852

ANNEALING OF HIGH SPEED STEEL POWDER

Robert J. Causton, Delran, N.J., assignor to Davy McKee (Sheffield) Limited, Sheffield, England

Filed Jan. 20, 1983, Ser. No. 459,503
Claims priority, application United Kingdom, Jan. 21, 1982, 8201699
Int. Cl.³ B22F *0/1*
U.S. Cl. 148—16 **8 Claims**

1. A process for annealing a predetermined quantity of high speed steel powder having a hardness of the order of 550–600 Vickers and an oxygen content of 1500–2000 parts per million, comprising the steps of:
heating said predetermined quantity of said powder to a maximum temperature of approximately 1050° C.;
holding said predetermined quantity of powder at said maximum temperature for approximately one hour;
quenching said predetermined quantity of powder with a non-oxidizing gas so as to rapidly reduce the temperature of said predetermined quantity of powder to an intermediate temperature value of between 700°–780° C.;
holding said predetermined quantity of powder at said intermediate temperature value of between 700°–780° C. for approximately one hour; and
quenching said predetermined quantity of powder with a non-oxidizing gas so as to rapidly reduce the temperature of said predetermined quantity of powder to ambient.

4,519,853

METHOD OF CARBURIZING WORKPIECE

Michel Kostelitz, Versailles, and Philippe Queille, Viroflay, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed May 23, 1983, Ser. No. 496,934
Claims priority, application France, May 28, 1982, 82 09328
Int. Cl.³ C23C *11/10*
U.S. Cl. 148—16.5 **19 Claims**

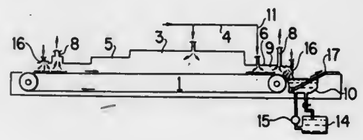
1. A method of carburizing metal workpieces, comprising the steps of:
loading workpieces to be carburized in a furnace;
maintaining the workpieces in a carbon enriching atmosphere containing carbon monoxide, hydrogen and nitrogen;
carrying out a first phase of the treatment at a first temperature from 850° to 1050° C.;
carrying out a second phase of the treatment directly thereafter at a second temperature, lower than said first temperature, from 700° C. to 950° C.;
using an atmosphere for the first phase containing at least 1% nitrogen, from about 20% to about 50% carbon monoxide by volume and from about 40% to about 75% hydrogen by volume and having a carbon potential of from about 1.1% to about 1.6% by weight; and
increasing the amount of nitrogen in said atmosphere for carrying out the second phase from two to thirty times the amount of nitrogen in the atmosphere used for the first phase so that the carbon potential for the second phase remains significant, but is reduced at least 0.5% by weight below the carbon potential for the first phase, such that the length of the combined first and second phases is less than for a conventional carburizing treatment.

4,519,854

PROCESS AND APPARATUS FOR HEAT TREATMENT OF STEEL MATERIAL SUCH AS OF SOFT STEEL OR THE LIKE

Yasuo Nakanishi, Iruma; Kazunori Sakamoto, Kawagoe; Giichi Ando, Kawagoe, and Teruoki Watanabe, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 925,690, Jul. 18, 1978, abandoned. This application Dec. 29, 1983, Ser. No. 585,877
Claims priority, application Japan, Jul. 21, 1977, 52-86602
Int. Cl.³ B23K *1/04*
U.S. Cl. 148—127 **5 Claims**



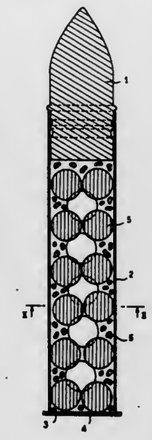
1. A process for preparing a brazed steel article from steel parts to be joined by solder which consists essentially of the steps of heating said parts with said solder to a brazing temperature of 1100°–1200° C., to effect joining thereof, followed by cooling the brazed steel article in a furnace to a temperature of about 570°–720° C. in 5–10 minutes and then rapidly cooling the brazed steel article, wherein said steel contains from 0.02 to 0.25% carbon.

4,519,855

MIXED CHARGES FOR AMMUNITIONS WITH A CASING CONSTITUTED BY AGGLOMERATED PROPELLANT POWDER AND PROPELLANT POWDER IN GRAIN FORM

Louis J. J. Leneveu, and Didier J. Treneules, both of Chateaulin, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 2, 1982, Ser. No. 446,476
Claims priority, application France, Dec. 17, 1981, 81 23560
Int. Cl.³ C06B *45/02*
U.S. Cl. 149—21 **4 Claims**



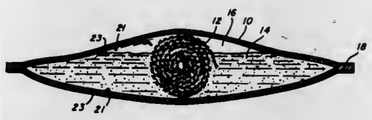
1. A mixed charge for ammunition with a casing constituted by a mixture of fragmentable propellant charges constituted by propellant powder in agglomerated form and propellant powder in the form of grains, characterized by the fact that said fragmentable charges are in the form of spheres of diameter smaller than the diameter of the orifice of the charge of said casing and the number of the spheres per layer is 1, 2, 3 or 4.

4,519,856

RESIN-CLOTH STRUCTURAL SYSTEM

Richard J. Lazzara, Lake Worth, Fla., assignor to Neptune Research, Inc., Palm Beach, Fla.

Filed Jun. 9, 1983, Ser. No. 502,644
Int. Cl.³ B29C *27/30*
U.S. Cl. 156—49 **11 Claims**



6. A method of applying a construction material to an article comprising impregnating a fabric with a resinous mastic which hardens upon exposure to aqueous moisture, isolating said mastic-impregnated fabric from moisture until application thereof to said article, removing said mastic-impregnated fabric from its isolation and applying said mastic-impregnated fabric directly to said article in the presence of aqueous moisture or water.

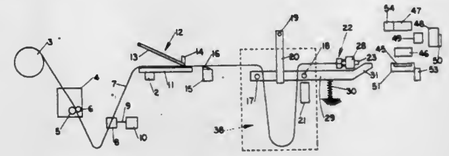
11. A method according to claim 6 in which said mastic-impregnated fabric is adhered directly to a joint of uninsulated electrical conductors.

4,519,857

ELASTIC BAND SEALER APPARATUS AND METHOD FOR FORMING A CONTINUOUS NON-OVERLAPPING BAND

Bobby J. Clay, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Filed Oct. 5, 1983, Ser. No. 538,817
Int. Cl.³ B29D *23/10*; B65H *69/08*
U.S. Cl. 156—64 **16 Claims**



1. An elastic band sealer comprising:
(a) means to feed elastic from a source of elastic;
(b) means to pull said elastic from said feed means;
(c) means to serrate said elastic into a strip after it is pulled said strip having ends; and
(d) means to fuse said strip into an elastic band including means to rotate said ends toward one another to form a continuous band without any overlapping of said strip.

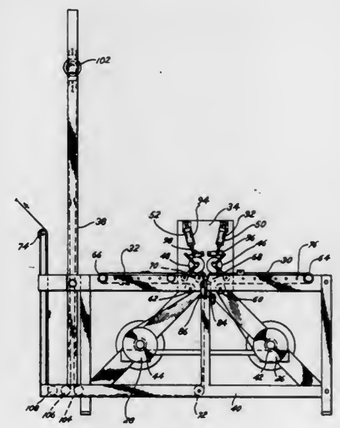
10. A method of forming a continuous non-overlapping band from a source of material comprising:
(a) extending a length of said material in one plane from said source;
(b) measuring said material in another plane substantially perpendicular to said one plane;
(c) cutting said material into a strip after said material is extended; and
(d) fusing said strip into a continuous non-overlapping band.

4,519,858

SPLICER

John R. Martin, Rockford, Ill., assignor to Martin Automatic, Inc., Rockford, Ill.

Filed Mar. 7, 1984, Ser. No. 587,243
Int. Cl.³ B65H *19/08*
U.S. Cl. 156—64 **18 Claims**



1. A web splicer comprising:
a frame;

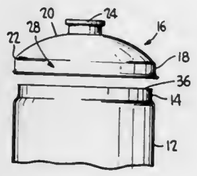
an anvil mounted to the frame;
a hammer mounted to the frame adapted to automatically hammer the anvil;
a first web guide mounted to the frame adjacent the hammer adapted to guide a first web between the hammer and anvil;
a second web guide mounted to the frame adjacent the anvil adapted to guide a second web between the hammer and anvil;
a web brake roller mounted to the frame adapted to be moved to and from a position of braking contact against the first web guide; and
a brake means mounted to the frame for moving the web brake roller to the position of braking contact and thereby brake the first web to a stop, and for releasing the web brake roller.

4,519,859

HEATING SYSTEM FOR AND METHOD OF FINALLY BONDING CONTAINER END UNIT TO BODY

Donald J. Roth, Westport; Charles S. Kubis, Weston, both of Conn.; John Walter, Evergreen Park, Ill., and Glenn R. Mohr, Linthicum, Md., assignors to Continental Can Company, Inc., Stamford, Conn.

Filed Jan. 11, 1984, Ser. No. 569,888
Int. Cl.³ B32B *31/20*
U.S. Cl. 156—69 **20 Claims**



1. An adhesive activator assembly, said assembly being particularly adapted for reheating an adhesive which is bonding an end unit to a container body and finally axially positioning such end unit on its respective container body while the previously applied adhesive is flowable, said adhesive activator assembly comprising a conveyor for conveying containers each including one of said container bodies having thereon in telescoped relation one of said end units along a preselected path, first elongated heater means fixedly disposed longitudinally along said path for gradually heating adhesive of containers while passing along said path to a selected temperature whereat the adhesive is sufficiently flowable, pressing means overlying said path downstream of said first heater means for pressing an end unit into final position, and longitudinally elongated second heater means fixed downstream of said first heater means for maintaining the adhesive at said selected temperature for a selected period of time as the respective container continues passing along said path.

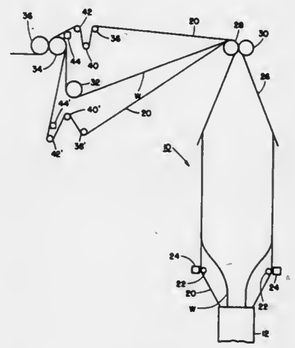
16. A method of forming containers including finally positioning an end unit on a container body wherein the end unit is initially telescoped axially relative to the container body and there is a layer of heat meltable adhesive between the end unit and the container body, said method comprising the steps of serially moving containers, gradually reheating the adhesive of each container body to a temperature whereat the adhesive is freely flowable, while continuing the serial movement of the containers maintaining the adhesive substantially at said temperature, and while the adhesive is substantially at said temperature applying a compressive force on each moving container in an axial direction to further telescope the end unit and the container body and thereby further distribute the adhesive.

4,519,860

METHOD AND APPARATUS FOR THE PRODUCTION OF A HIGH-STRENGTH, TEAR-RESISTANT POLYMER COMPOSITE

Gordon V. Sharps, Jr., Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,455
Int. Cl.³ B32B *7/04*
U.S. Cl. 156—161 **15 Claims**



1. A method of producing a continuous coextruded plastic composite material consisting of a thermoplastic film web and polymer filaments adhesively bonded thereto; comprising:
(a) extruding a continuous web of a thermoplastic film material from an extrusion die;
(b) concurrently extruding a plurality of oriented thermoplastic filaments from said extrusion die in spaced relationship with said film web, substantially immediately directing the filaments away from the film web to facilitate cooling of the filaments and prevent distortion of the film web and maintaining said film web and filaments apart for a predetermined time interval subsequent to the extrusion from said die to allow for cooling of the filaments and film web;
(c) contacting said film web with said filaments and conveying the superimposed film webs and filaments between first nip rolls after the filaments and film web have been sufficiently cooled to avoid adherence between the filaments and film web and deformation of the web subsequent cooling;
(d) separating said filaments from said film web and imparting tension to said filaments to maintain uniform filament tension and maintain the filaments under a predetermined tensile load;
(e) applying an adhesive to said filaments on at least the surfaces facing towards said film web;
(f) and contacting said film web and the adhesive-coated surfaces of said filaments; and conveying said contacted film web and filaments between second nip rolls to adhesively bond said filaments to said film web and form said composite material.

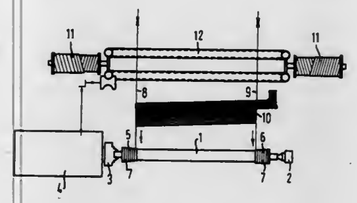
8. An apparatus for the production of a continuous coextruded plastic composite material consisting of a thermoplastic film web and polymer filaments adhesively bonded thereto; comprising:
(a) a coextrusion die for concurrently extruding a continuous web of thermoplastic material and a plurality of oriented polymer filaments in spaced relationship with said film web and means for substantially immediately directing the filaments away from the film web after extrusion thereof to facilitate cooling of the filaments and to prevent film web distortion
(b) means for orienting and cooling said filaments prior to contacting said film web to prevent adhesion between said film web and said filaments upon superposition therebetween and permitting the filaments and film web to be sufficiently cooled to facilitate avoiding adherence between the filaments and film web thereafter and distortion of the film during subsequent cooling;
(c) first nip rolls contacting said film web and said filaments, said film web and said filaments being separated after passing between said first nip rolls;
(d) means for imparting a predetermined tension to said filaments and maintaining the filaments under a predetermined tensile load;
(e) means for applying an adhesive to said filaments;
(f) and second nip rolls receiving said film web and adhesive-coated filaments and applying pressure thereto to form said adhesively bonded film web and filament composite material.

4,519,861

METHOD FOR MANUFACTURING A FIBER-REINFORCED PUSH OR PULL ROD

Hans-Günther Christopher, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,491
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3206088; Dec. 20, 1982, 3247889
Int. Cl.³ B29D *23/12*
U.S. Cl. 156—172 **8 Claims**



1. A method for producing a fiber-reinforced push or pull rod formed of electrically insulating plastic material, the push or pull rod being of the type provided with fittings fastened at respective ends thereof for transmitting compression and tension forces, and wherein the fibers are formed of threads which are oriented parallel to an axis of the rod and are impregnated with a hardenable plastic material, the method comprising the further steps of:
forming a pair of fittings each having a longitudinal axis of symmetry and, on an external surface, a groove with at least one portion disposed substantially in a plane oriented substantially transversely to the longitudinal axis of symmetry of the respective fitting;
winding the threads about a pair of wires arranged to be parallel and at a predetermined distance from one another so as to form a tape wherein the wires form the edges thereof;
inserting the wires at the edges of the tape into respective grooves of the fittings; and
securing the wires in the grooves in a form-locking manner.

4,519,862

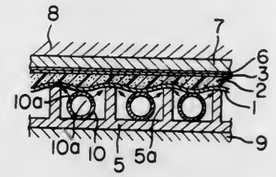
METHOD OF MANUFACTURING CUSHION MATERIALS

Muneharu Urai; Tadafumi Abe; Youichirou Haraguchi; Koji Hayashi, and Shigeki Kon, all of Tokyo, Japan, assignors to Tachikawa Spring Co., Tokyo, Japan

Continuation of Ser. No. 321,638, Nov. 16, 1981, abandoned.
This application Oct. 4, 1983, Ser. No. 538,939
Int. Cl.³ B31F *1/00*
U.S. Cl. 156—219 **6 Claims**

1. A method of manufacturing a cushion material by welding under heat a first layer to an adjoining second layer at necessary portions of the latter by use of a welding member having a plurality of spaced pressure applying projections engaging said first layer, said second layer being such that the deforming, melting and flowing temperatures of the material thereof under the influence of heat being higher than those of the material of said first layer, cooling pipes **10** with jet nozzles therein being disposed in the space formed between adjacent pressure applying projections and the surface of said first layer, the method comprising cooling the surface portions of said first layer in the vicinity of but not engaged by said welding member and lying close to said welding member by directing streams of cooling fluid toward portions of the surface of said first layer in the vicinity of the pressure applying projections of said welding member, thereby cooling such portions of said first layer but permitting thermal change on the surface of said first layer to the portions engaged by said welding member.

5. An apparatus for manufacturing a cushion material by welding under heat a first layer to an adjoining second layer at necessary portions of the latter by means comprising a welding member having a plurality of spaced pressure applying projections for engaging said first layer, said second layer being such



that the deforming, melting and flowing temperatures of the material thereof under the influence of heat are higher than those of the material of said first layer, cooling pipes **10** with jet nozzles therein being disposed in space formed between adjacent pressure applying projections and the surface of said first layer, said jet nozzles being directed toward portions of the surface of said first layer in the vicinity of the pressure applying projections of said welding member for primarily cooling such portions of said first layer only without giving rise to any appreciable thermal change on the surface areas of said first layer engaged by said welding member;
a main cooling gas conduit to which all of said cooling pipes for cooling said welding member and the surface of said first layer are connected, an external cooling gas supply conduit, said main cooling conduit automatically joining to said external cooling gas supply conduit during the step of cooling, said main cooling gas conduit being automatically separated from said external cooling gas supply conduit after the step of cooling, and an automatic valve in said external cooling gas supply conduit adapted to be automatically closed after the step of cooling.

4,519,863

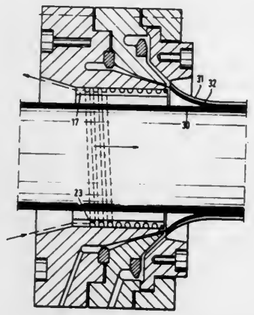
METHOD AND DEVICE FOR JACKETING A STEEL PIPE WITH SEVERAL PLASTIC MATERIALS

Helmut Landgraf, Duisburg, and Walter Stucke, Ratingen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,769
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121773
Int. Cl.³ B29D *23/04*
U.S. Cl. 156—244.12 **9 Claims**

1. A method of jacketing a preheated steel pipe, comprising the steps of heating the pipe to about 300° C.;
extruding a first foil of polyethylene and applying the same to the pipe;
extruding a second foil, of a thermoplastic ethylene polymer material and applying the same such that it lodges between the pipe and the first foil using an extrusion head for both of the concurring extrusion steps and maintaining the head at a temperature of about 170° C. and

feeding a gas toward the pipe to be effective on the second material as it is being applied, the gas including air and a



component reacting with the second foil material for rendering the second foil adhesive.

4,519,864

METHOD OF MAKING A PAPER PATTERN FOR DYEING

Mineo Isobe, No. 783, Sansho-cho, Suzuka, Mie, Japan

Filed Jul. 11, 1983, Ser. No. 512,815

Claims priority, application Japan, Jul. 14, 1982, 57-122369; Sep. 14, 1982, 57-160254

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—248 **2 Claims**



1. A method of making a paper pattern for dyeing by the use of a paper pattern material comprising a screen and a fusible sheet material bonded thereon, said sheet material being less resistant to heat than the screen, which comprises the steps of:

forming a profile of the pattern of a prototype on the sheet material;

applying the blunt edge of a blade heated to a temperature slightly lower than the fusing temperature of the sheet material to the surface of the sheet material along the profile of the pattern of the prototype;

cutting only the sheet material by the cooperation of pressing and softening with the blade edge; and

peeling off from the screen cut portion of the sheet material corresponding to the profile.

4,519,865

DEVICE FOR TWO-SIDED APPLICATION OF FOILS OR SIMILAR MATERIAL ONTO PLATE-SHAPED WORKPIECES, AND METHOD OF OPERATING THE SAME

Hans J. Bradler, Magstadt; Wilfried Brauner, Kuppingen; Manfred Deyhle, Hildrizhausen, and Karl H. Vogt, Herrenberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1983, Ser. No. 556,863

Claims priority, application European Pat. Off., Feb. 18, 1983, 83101541.7

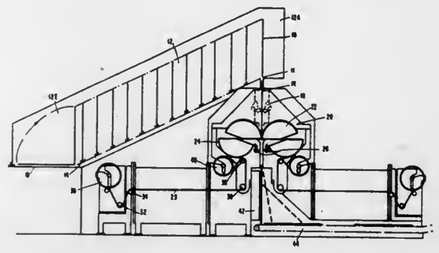
Int. Cl.³ B32B *31/10*

U.S. Cl. 156—256 **16 Claims**

1. An apparatus for laminating a substrate with a lamina, comprising:

a plurality of drums having the lamina disposed thereon, each one of said plurality of drums comprising a plurality of drum segments, said plurality of drum segments of each of said plurality of drums having a segment angle sum of less than 360°, each of said plurality of drum segments of each of said plurality of drums being rotatable about a central axis of each of said plurality of drums without inducing rotation of any other of said drum segments;

first means for cutting the lamina disposed on each of said plurality of drums into discrete lamina segments, each of said lamina segments being disposed on one of said plurality of drum segments of each of said plurality of drums;



second means for conveying the substrate to a position among said plurality of drums; and

third means for forcing one of said lamina segments from one of said plurality of drum segments of at least one of said plurality drums into adhesive abutment with the substrate, said forcing means controlling the angle of coincidence between said one of said lamina segments and the substrate.

4,519,866

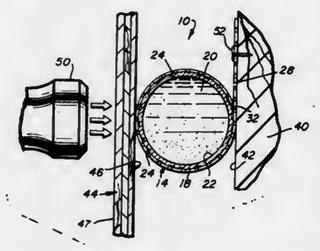
SURFACE-FASTENED FRANGIBLE ADHESIVE CAPSULE

Israel Stol, 639 Rocksprings Rd., Pittsburgh, Pa. 15228

Filed Sep. 21, 1983, Ser. No. 534,243

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—295 **8 Claims**



6. A method for adhering two objects together in a face-to-face manner, comprising:

providing a closed, frangible capsule constituted by a thin, brittle wall containing a filling of liquid adhesive capable of adhering to respective faces of both of the objects and which sets in a matter of seconds when exposed to air;

providing said thin brittle wall with a pattern of grooves constituting a widely distributed network of lines of weakness so that as the capsule is smashed it will comprehensively disintegrate;

providing a hanger constituted by a relatively narrow band of foraminous material through which some of said adhesive may flow as the capsule is smashed;

connecting said hanger to the adhesive containing capsule by wrapping the relatively narrow band externally convolutely about the capsule at least once, leaving an integral tail portion for use in temporarily fastening the capsule to one of said objects;

temporarily hangingly securing the adhesive-containing capsule onto a respective face of one of the objects using the hanger tail;

bringing the other object into face-to-face confronting relation with the one object; and

pressing the objects together so as to cause the adhesive-containing capsule to smash, and the adhesive to become released and spread between the two pressed-together objects, adhering the two objects together.

4,519,867

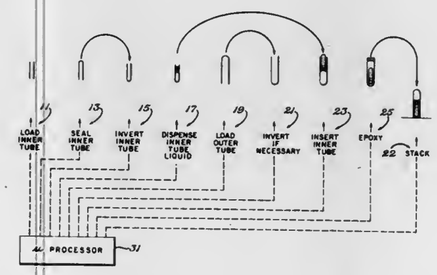
APPARATUS FOR AUTOMATED ASSEMBLY OF SHOCK DETECTORS

Ulyss R. Rubey, Lewisville, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed May 14, 1984, Ser. No. 609,815

Int. Cl.³ B31F *5/00*

U.S. Cl. 156—351 **13 Claims**



1. Apparatus for automated assembly of shock detectors having an indicator means within an inner tube sealingly disposed within an outer tube, the indicator means being adapted for indicating when a shock greater than a predetermined magnitude has been experienced; comprising:

a. an assembly line means for assembling the shock detectors, including a plurality of stations at which specific jobs are performed and moving means for moving a plurality of elements from station to successive station;

b. an inner tube loader means for loading the inner tube at an inner tube loader station;

c. sealer means for sealing a first end of inner tube when it is disposed at a sealer station;

d. inner tube inverter means for inverting said inner tube;

e. indicator emplacement means for emplacing the indicator means within the inner tube;

f. outer tube loader means for loading an outer tube at another station;

g. combining and sealing means for combining the inner tube within the outer tube so as to form the shock detector;

h. unloader means for unloading the shock detector from the assembly line means; and

i. control means for controlling the assembly line, inner tube loader means, sealer means, indicator emplacement means, outer tube loader means, combining and sealing means and unloader means with a predetermined degree of automation.

4,519,868

COMPUTER CONTROLLED LABELLING MACHINE

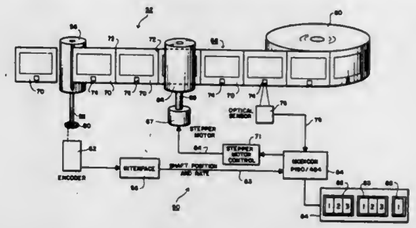
Wolfgang Hoffmann, 3420 Saginaw Ct., Modesto, Calif. 95355

Filed Nov. 12, 1982, Ser. No. 441,040

Int. Cl.³ G03D *15/04*; B26D *5/34*

U.S. Cl. 156—353 **4 Claims**

1. In combination, a digital data processing means, a labelling machine including a master shaft and a slave shaft, means for sensing position of said master shaft of said labelling machine operatively connected between said master shaft and said digital data processing means, an optical sensor for a registration mark for each label on a sheet of labels, said optical sensor being connected to said digital data processing means, a means for entering a length of labels on the sheet to be fed through said labelling machine, said length entering means being connected to said digital data processing means, a drive roller positioned to advance the sheet of labels in said labelling machine, a stepping motor connected between said drive roller and said digital data processing means, said digital data processing means including means responsive to inputs from said master shaft position sensing means, said registration mark optical sensor and said length entering means for providing actuating signals from the master shaft position, sensed registration mark and length inputs to said stepping motor to maintain alignment of each label in the sheet of labels relative to position of the master shaft as the sheet of labels is advanced in said labelling machine.



4,519,869

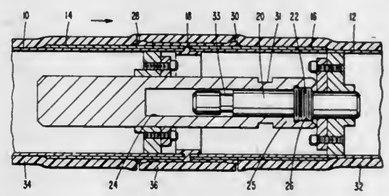
MANUFACTURE OF FILAMENTARY COMPOSITES

Dee R. Gill, Sandy, and Rex B. Marks, Roy, both of Utah, assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 396,536, Jul. 8, 1982,. This application Feb. 28, 1982, Ser. No. 567,444

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—428 **9 Claims**



1. In a machine for producing filament wound composite tubular members, the improvement which comprises a segmented mandrel having madrel segments joined together along a common central, longitudinal axis, each of said mandrel segments comprising:

a hollow tube dimensioned suitably for each of said composite tubular members;

first and second mounts secured within said tube and respectively carrying a threaded socket and a threaded plug that, in turn, thread respectively with any of the other threaded plugs and sockets carried by the other mandrel segments of said segmented mandrel, said threaded plug and threaded socket each being of lesser diameter than said tube and having center longitudinal socket and plug axes coincident with that of said segmented mandrel;

said threaded socket having an unthreaded socket portion of somewhat less diameter than the threaded socket portion thereof, said unthreaded socket portion extending along said socket axis from such threaded socket portion inward towards a center position of said mandrel segment between said threaded socket and threaded plug;

said threaded plug having an unthreaded plug portion extending along said plug axis away from the threaded por-

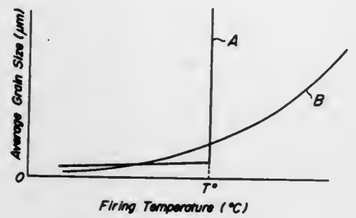
tion thereof and from said center position, said unthreaded plug portion comprising a diameter somewhat less than that of each of the unthreaded socket portions of said other mandrel segments for sliding engagment therewith during threading and unthreading engagements thereof.

4,519,870

METHOD FOR PRODUCING A SINGLE CRYSTAL

Soichiro Matsuzawa, Toyoake, and Syunzo Mase, Ama, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 151,605, May 20, 1980, Pat. No. 4,402,787.
This application Nov. 19, 1982, Ser. No. 443,030
Claims priority, application Japan, May 31, 1979, 54-67893; Aug. 2, 1979, 54-98055
Int. Cl.³ C30B *1/10*
U.S. Cl. 156—603 **17 Claims**



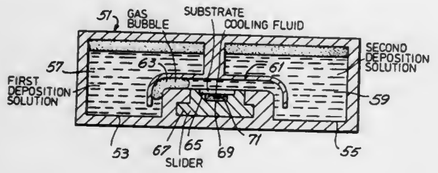
1. In a method for producing a single crystal which comprises contacting a seed single crystal to a fine grain polycrystal body having substantially the same crystal structure as the seed single crystal, and heating the contacted crystals to grow the single crystal towards the polycrystal, the improvement comprising the steps of: (a) using a polycrystal having the property which causes a discontinuous crystal grain growth in the course of heating, (b) heating the contacted crystals to grow the single crystal at a temperature (t°C.) which is lower than the temperature (T°C.) at which the discontinuous crystal grain growth is caused in the polycrystal, and (c) integrating a thickness of at least 0.25 mm of the polycrystal to the seed single crystal to grow the single crystal.

4,519,871

BUBBLE-MODE LIQUID PHASE EPITAXY

Melvin S. Cook, P.O. Box 38, Saddle River, N.J. 07458

Filed Nov. 25, 1983, Ser. No. 555,276
Int. Cl.³ C30B *19/00*
U.S. Cl. 156—622 **1 Claim**



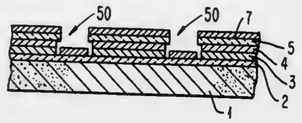
1. A method of growing epitaxial layers on a substrate located in a channel from solutions, said epitaxial layers including at least two epitaxial layers that differ in composition from each other, said solutions including at least two solutions that differ in composition from each other, comprising the steps of separating said at least two solutions by at least one gas bubble, growing said at least two epitaxial layers on said substrate in sequence by controlling sequential contact with said substrate of said at least two solutions, and moving a gas bubble across said substrate between said sequential contact with said substrate of said at least two solutions.

4,519,872

USE OF DEPOLYMERIZABLE POLYMERS IN THE FABRICATION OF LIFT-OFF STRUCTURE FOR MULTILEVEL METAL PROCESSES

Herbert R. Anderson, Jr., Patterson; Harbans S. Sachdev, and Krishna G. Sachdev, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,516
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 156—643 **24 Claims**



1. A process for forming a metal pattern on a substrate which comprises:
- forming a mask of at least one thermally depolymerizable polymer on the substrate with a pattern of openings complementary to the desired metal pattern;
- blanket coating the substrate and the mask with a metal;
- heating to thermally depolymerize the thermally depolymerizable polymer; and
- thereafter immersing the resulting assembly in a solvent to lift-off the depolymerized polymer and any metal thereover leaving metal in the desired pattern on the substrate.

4,519,873

PROCESS FOR PRODUCING FIBROUS SHEET

Masahiro Amano; Shunji Seino; Ryota Nishiyama, and Masaoki Nozaki, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 6,646, Jan. 26, 1979, abandoned. This application Feb. 9, 1983, Ser. No. 465,191
Claims priority, application Japan, Feb. 9, 1978, 53-13873
Int. Cl.³ D21H *5/12*
U.S. Cl. 162—138 **11 Claims**

1. A process for producing an electrical insulating thin paper consisting essentially of pulp-like particles of an aromatic polyamide or an aromatic polyamide-imide, said process comprising the steps of:
- (1) forming a web from an aqueous slurry of pulp-like particles of an aromatic polyamide or an aromatic polyamide-imide
  prepared by precipitating the polyamide or polyamide-imide from a solution thereof in a concentration of at most 20% in a single solvent therefore,

said particles having a freeness of 80 ml or less as expressed by Canadian Standard Freeness,
- (2) drying the said web, and then
- (3) pressing said web thereby densifying same to make the web's dielectric breakdown strength at least 60 KV/mm.

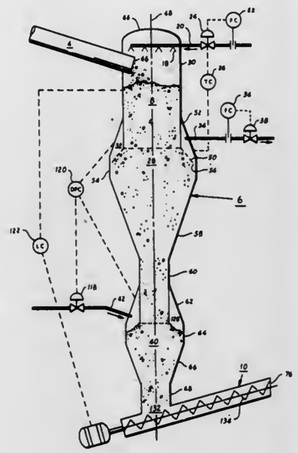
4,519,874

PROCESS FOR RECOVERING CARBONACEOUS AND SULFUR-CONTAINING PARTICLES FROM A RETORT

Rick V. Bertram, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 14, 1983, Ser. No. 484,982
Int. Cl.³ C10B *33/00, 39/04*; C10G *1/00*
U.S. Cl. 201—39 **18 Claims**

1. A process for depressurizing retorted particles removed from a retort, said process comprising:
- (1) removing said particles containing carbonaceous components and sulfur components from the retort and passing them as a particle bed through a cooling zone;
- (2) cooling the particles with water directed into said cooling zone so as to generate a produced gas comprising steam and hydrogen sulfide while cooling said particles;
- (3) recovering a first portion of said produced gas generated in step (2) from a gas disengaging zone while said particles pass through said gas disengaging zone;
- (4) transferring a second portion of said produced gas co-currently with said particles into a surge zone while undergoing accompanying substantial pressure drop, said particles during transfer being maintained as a continuous bed offering substantial pressure drop resistance;
- (5) removing from a surge zone said second portion of the produced gas together with a commingled first portion of a sealing gas from step (6) while said particle bed passes from the surge zone into a gas injection zone;



- (6) injecting sealing gas into the particles bed in said gas injection zone, said sealing gas dividing into at least a first and a second portion, the first portion passing countercurrently to the particles into said surge zone and commingling therein with the second portion of the produced gas, and the second portion passing co-currently with the particles out of the gas injection zone;
- (7) transferring the particles and the second portion of the sealing gas from said gas injection zone to a location for discharge while undergoing a pressure drop, said particles during transfer being maintained as a continuous bed offering pressure drop resistance; and
- (8) discharging the particles and said second portion of the sealing gas.

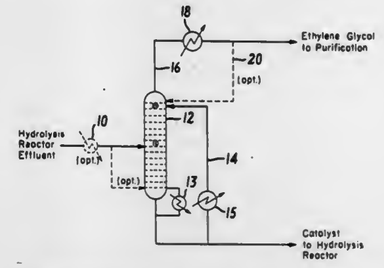
4,519,875

PURIFICATION OF ETHYLENE GLYCOL DERIVED FROM ETHYLENE CARBONATE

Mitchell Becker, Teaneck, N.J., and Howard M. Sachs, Riverdale, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed May 9, 1984, Ser. No. 608,639
Int. Cl.³ B01D *3/34*
U.S. Cl. 203—28 **5 Claims**

1. A process for reducing the ethylene carbonate content of ethylene glycol produced by hydrolysis of ethylene carbonate in the presence of a catalyst comprising:
- (a) distilling in a vapor-liquid contacting means the effluent of said hydrolysis comprising ethylene glycol, higher glycols, catalyst, unreacted water, and unreacted ethylene carbonate and withdrawing as a lower-boiling fraction a vapor stream comprising substantially only ethylene glycol and water and as a higher-boiling fraction a liquid stream comprising substantially only hydrolysis catalyst, ethylene glycol, and higher glycols;
- (b) recirculating a sufficient amount of said liquid higher-boiling fraction of (a) through said vapor-liquid contacting means as reflux against said vapor lower-boiling fraction of (a) to essentially complete the hydrolysis of ethylene carbonate to reduce the ethylene carbonate content of



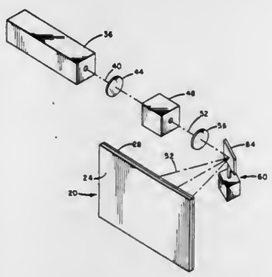
said withdrawn lower-boiling fraction to below about 0.05 wt. percent;
- (c) recirculating the remaining portion of said higher-boiling fraction to said hydrolysis reaction.

4,519,876

ELECTROLYTIC DEPOSITION OF METALS ON LASER-CONDITIONED SURFACES

Chung H. Lee, Reading; John Fronduto, Waltham, and Peter E. Oettinger, Acton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Jun. 28, 1984, Ser. No. 625,765
Int. Cl.³ C25D *5/02*
U.S. Cl. 204—15 **15 Claims**

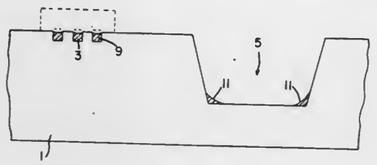


1. A method of depositing a metal on spatially selected regions of a workpiece comprising the following steps in the order given:
- providing a workpiece having an electrically conductive substrate and an electrically insulative surface layer,
- irradiating the surface layer in said selected regions of said workpiece with laser energy to fracture portions of said surface layer in said regions, thereby providing in said regions a path to the substrate along which electric current may flow upon immersion of the workpiece into an electrolyte; and
- immersing said workpiece in an electrolytic plating bath and applying a negative electrical bias to said substrate to electrolytically deposit a coating of said metal onto said selected regions.

4,519,877
FORMATION OF NARROW CONDUCTIVE PATHS ON A SUBSTRATE

Raymond E. Wiech, Jr., San Diego, Calif., assignor to Fine Particle Technology Corporation, Camarillo, Calif.

Division of Ser. No. 447,159, Dec. 6, 1982, Pat. No. 4,510,347. This application Oct. 26, 1984, Ser. No. 665,535
Int. Cl.³ C25D *5/02, 5/48, 5/50*
U.S. Cl. 204—15 **20 Claims**



1. A method of forming material paths in grooves of predetermined width formed in a substrate surface, comprising the steps of:

(a) providing a substrate with a surface and grooves of predetermined width in said surface having exposed walls,

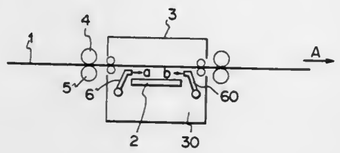
(b) building up on all exposed surfaces of said substrate including the exposed walls of said grooves, substantially uniformly, in directions substantially normal to said exposed surfaces, a layer of predetermined deplatable material having a thickness at least about one third the width of said grooves to fill said grooves with said deplatable material and form deplatable material over said grooves extending above said surface, and

(c) deplating said layer substantially uniformly in a direction normal to the exposed surface of said layer until substantially all of said layer is removed from said substrate surface whereby said layer is retained substantially only in said grooves.

4,519,878
METHOD OF FE-ZN ALLOY ELECTROPLATING

Tomihiro Hara; Takeshi Adaniya, both of Yokohama, and Akira Tonouchi, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,564
Claims priority, application Japan, Apr. 14, 1982, 57-61112
Int. Cl.³ C25D *7/06, 5/10*
U.S. Cl. 204—28 **1 Claim**



1. A method of electroplating a steel sheet surface with at least two Fe-Zn alloy layers of different compositions; wherein said steel sheet is continuously moved horizontally through two or more chambers having anodes and plating baths therein, the composition of the baths in the different chambers, being substantially the same and also having means for applying a jet flow of said plating baths against said sheet surface while concurrently moving said sheet; and wherein the relative speed between said jet flow of said plating baths and movement of said sheet is selectively controlled to be from 0.3 to 3.0 m/sec, and current applied to said anodes is selectively controlled to provide a current density of between 10 to 100 A/dm^2; whereby a first layer of Fe-Zn alloy is formed on said steel sheet surface having a Fe content of between 3 to 30 weight percent, and a second layer of Fe-Zn alloy is formed on said first layer having a Fe content of between 15 to 60 weight percent, the differences in compositions of said layers being achieved by the selective varying of said relative speed and said current density without substantially changing the composition of the plating baths.

4,519,879
METHOD OF PRODUCING TIN-FREE STEEL SHEETS

Toshio Ichida; Hideo Kobayashi; Hajime Ogata, and Shunichi Tsugawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed May 26, 1983, Ser. No. 498,548
Claims priority, application Japan, Jun. 1, 1982, 57-93414
Int. Cl.³ C25D *5/00, 5/48*
U.S. Cl. 204—35.1 **2 Claims**

1. A method of producing a tin-free steel sheet having improved retorting resistance, comprising:

chromium plating a steel sheet through cathodic electrolysis in a chromium ion-containing first aqueous solution that contains sulfur, to form a plating of metallic chromium with a superposed layer of hydrated chromium oxides,

reducing the sulfur in said layer of hydrated chromium oxides by reversely electrolyzing the chromium plated steel sheet by a successive anodizing treatment in the same said aqueous solution, and

subjecting the reversely electrolyzed steel sheet to cathodic electrolysis in a second aqueous solution of at least one member selected from the group consisting of chromic acid, chromates, and dichromates, said second aqueous solution containing substantially less sulfur than said first aqueous solution, until a layer of hydrated chromium oxides of substantial thickness has added to the layer of hydrated chromium oxides remaining after said reverse electrolyzing and the total quantity of hydrated chromium oxides is 5 to 30 mg in terms of metallic chromium per square meter of the surface,

said chromium plating and reverse electrolysis being carried out so as to satisfy the equations

$$x+1 \leqq y \leqq x+4$$

$$1 \leqq x \leqq 6$$

where y and x are the quantities of hydrated chromium oxides present on one surface of the steel sheet after the chromium plating step and after the reverse electrolysis step, respectively, as expressed in mg of metallic chromium per square meter of the surface.

4,519,880
PROCESSES FOR THE RECOVERY OF CYANIDE FROM AQUEOUS THIOCYANATE SOLUTIONS AND DETOXICATION OF AQUEOUS THIOCYANATE SOLUTIONS

John J. Byerley, 154 Chelford Crescent, Waterloo, Ontario, Canada (N2J 3T5), and Kurt Enns, 345 Dale Crescent, Waterloo, Ontario, Canada (N2J 3Y6)

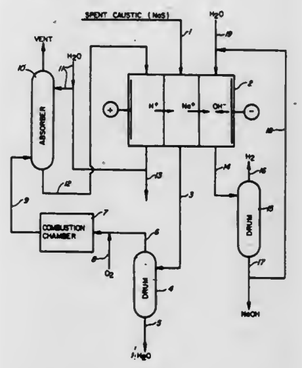
Division of Ser. No. 416,239, Sep. 9, 1982,. This application Oct. 7, 1983, Ser. No. 540,520
Int. Cl.³ C25B *1/00, 1/14, 1/22*
U.S. Cl. 204—91 **4 Claims**

1. A process for electrochemically oxidizing thiocyanate, said process comprising introducing an aqueous solution containing thiocyanate ions into a suitable electrochemical reactor, applying a direct current electrical potential to said reactor to convert the thiocyanate ions to relatively harmless reaction products while maintaining the pH of the solution in a range from 10 to 12.

4,519,881
REGENERATION OF ALKALINE TREATING AGENTS

Yuehsiung Chang, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 25, 1984, Ser. No. 623,944
Int. Cl.³ C02C *5/12;* **C25B** *1/20*
U.S. Cl. 204—149 **5 Claims**



1. A process for regenerating aqueous caustic from aqueous sulfidic waste liquor containing alkali metal sulfides which comprises: (a) feeding said aqueous waste liquor to a feed receiving compartment of a three compartment electrolysis cell comprising an anolyte compartment formed by an anode and a first cation permeable membrane in which said anolyte is an aqueous solution of sulfuric acid and sulfur dioxide, a feed receiving compartment formed by said first cation permeable membrane and a second cation permeable membrane, and a catholyte compartment formed by said second cation permeable membrane and a cathode in which the catholyte is an aqueous solution of sodium hydroxide, (b) subjecting said aqueous sulfidic waste liquor to electrolysis whereby the effluent from said anolyte compartment is aqueous sulfuric acid, the effluent from said feed compartment is hydrogen sulfide and a spent aqueous solution of alkali metal sulfides, and the effluent from said catholyte compartment is hydrogen and regenerated sodium hydroxide in aqueous solution, and (c) oxidizing said hydrogen sulfide in a combustion zone in the presence of oxygen to sulfur dioxide, (d) absorbing said sulfur dioxide in aqueous sulfurous acid and sulfuric acid, and (e) oxidizing said sulfur dioxide and said sulfurous acid to sulfuric acid in said anolyte compartment.

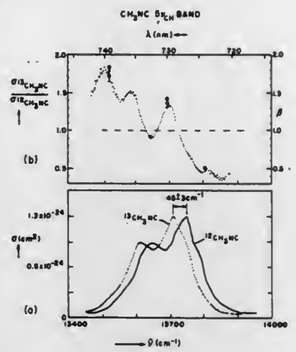
4,519,882
ISOTOPE SEPARATION BY LASER EXCITATION OF UNIMOLECULAR REACTANTS

Kammalathinna V. Reddy, Parsippany, and Michael J. Berry, Chatham, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 27, 1979, Ser. No. 52,384
Int. Cl.³ B01D *59/01*
U.S. Cl. 204—158 R **3 Claims**

1. A process for producing isotopically enriched material which comprises:

(a) exposing a gaseous composition comprising a particular isotope of an element and at least one other isotope of the same element, said isotopes being bound to hydrogen in a polyatomic molecule, to laser radiation of a predetermined wavelength in the range from about 400 nm to about 1000 nm, which radiation, by direct one-photon excitation, preferentially excites molecules containing said particular isotope of said element to an excited vibrational state of the ground electronic state, thereby converting said excited molecules by photofragmentation to a form in which they may be separated from the nonexcited molecules; and



(b) separating said converted molecules from said nonexcited molecules.

4,519,883
SENSITIZATION OF GLYOXYLATE PHOTOINITIATORS USING A TERPHENYL COMPOUND

Francis A. Via, Yorktown Heights, N.Y., assignor to Stauffer Chemical Company, Dobbs Ferry, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,470
Int. Cl.³ C08F *2/50*
U.S. Cl. 204—159.15 **14 Claims**

1. In the photopolymerization of monomeric and polymeric compositions of photopolymerizable substances wherein a photoinitiator is admixed with a photopolymerizable composition and the mixture exposed to actinic radiation, the improvement wherein photopolymerization is effectively initiated by a glyoxylate photoinitiator in the presence of a terphenyl compound sensitizer for said photoinitiator.

4,519,884
CATHODIC ELECTRODEPOSITION OF CHARGED AQUEOUS POWDER SLURRY

Robert J. Ritchie, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,478
Int. Cl.³ C25D *13/06, 13/10;* **B05D** *7/26*
U.S. Cl. 204—181 C **10 Claims**

1. A process for the preparation of an aqueous coating bath to be used in an electro-deposition process wherein aqueous powder slurry of particles of polymer powder having an average particle size measured optically of not more than about 20 μm is mixed with a solution of metal salt which can convert to amphoteric metal oxide or hydroxide at a pH and temperature at which said precipitation does not occur, and then the pH and/or temperature is raised to a level which causes precipitation of such amphoteric metal oxide or hydroxide onto said particles of polymer powder.

2. An electrocoating process for the deposition of paint on a cathodic surface wherein an aqueous coating bath prepared by the process of claim 1 containing said paint is provided with a positively charged anode and with a negatively charged cathode which is to be coated with said paint,

the solids content of said paint consisting essentially of particles of a polymer powder having an average particle size measured optically of not more than about 20 μm, said particles being coated with amphoteric metal oxide or hydroxide precipitated or absorbed thereon in an amount sufficient to cause said particles to migrate toward said cathode under the influence of said charge,

the pH of said bath being in a range below the isoelectric

point such that the zeta potential of said coated particles is at least about 35 millivolts,

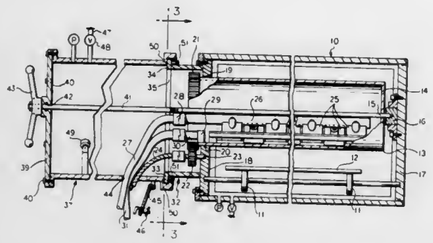
said electrocoating process comprising the steps of applying a voltage between said anode and said cathode to cause said paint to be deposited on the cathode, separating the cathode from the bath, and drying and curing the paint deposited on the cathode.

4,519,885

METHOD AND APPARATUS FOR CHANGING SPUTTERING TARGETS IN A MAGNETRON SPUTTERING SYSTEM

David T. Innis, Toledo, Ohio, assignor to Shatterproof Glass Corp., Detroit, Mich.

Filed Dec. 27, 1983, Ser. No. 565,322
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **7 Claims**



1. The method of changing sputtering targets in a magnetron sputtering system wherein a cylindrical magnetron having a closed end extends into a sputtering chamber through one wall thereof, comprising the steps of withdrawing the depleted or old target from the sputtering chamber into a first receiving chamber that is pumped down to a preselected vacuum and which overlays an opening in the sputtering chamber corresponding to the target location, moving the receiving chamber out of alignment with the target location while simultaneously moving a new target enclosed in a second evacuated receiving chamber into alignment with the target location and transferring the new target through the wall into sputtering position in the sputtering chamber.

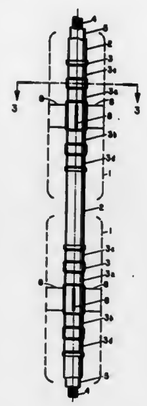
4,519,886

METHOD OF MAKING ELECTRICAL CONNECTION TO AN ANODE

Oronzio de Nora, and Giuseppe Bianchi, both of Milan, Italy, assignors to Oronzio de Nora, S.A., Lugano, Switzerland

Continuation of Ser. No. 452,268, Dec. 21, 1982. This application Jan. 25, 1984, Ser. No. 573,732
Claims priority, application Italy, Jan. 21, 1982, 19208 A/82
The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **3 Claims**

1. The method of making the electrical connection between a valve metal anode having a conductive core and a flexible power supply cable insulated by a sheath of elastomeric material and having a certain length of exposed conductive core which comprises introducing the supply cable into at least one valve metal cylindrical sleeve which forms part of the said anode, reducing the circumference of said sleeve by squeezing said valve metal sleeve a first time over the exposed conductive core of the power supply cable corresponding to said certain length to provide the electrical connection, and subsequently directed over the insulating sheath of elastomeric



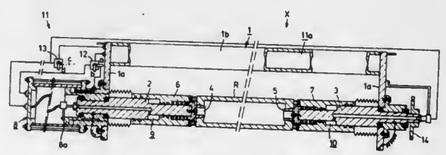
material of the cable to provide a leakproof sealing of the electrical connection.

4,519,887

APPARATUS FOR AUTOMATICALLY ATTACHING AND DETACHING CASSETTE-TYPE ROLLS

Tatsuo Shigeta, Nagareyama, Japan, assignor to Think Laboratory Co., Ltd., Chiba, Japan

Filed Jun. 13, 1983, Ser. No. 503,841
Int. Cl.³ C25D *17/06*
U.S. Cl. 204—212 **1 Claim**



1. In an apparatus for automatically attaching and detaching cassette-type rolls having a shaft, comprising:

a hanging frame;

a pair of rotatable spindles which are provided in an opposing manner on both sides of the hanging frame;

a pair of current-carrying means which are provided at the ends of the spindles to support a roll that is to be treated between the spindles, said current-carrying means being capable of flowing electric current;

a pair of leak-proof cups which are annularly provided on the outer side of the current-carrying means, and which so move as to come into contact with the end surfaces of the roll to prevent the processing liquid from entering into the side of the current-carrying supporters;

an air cylinder unit which is mounted on the hanging frame and which moves at least one of said spindles in the axial directions;

air cylinder chambers which are formed between said spindles and said leak-proof caps, and which drive, by the compressed air, the leak-proof caps to come into contact with the end surfaces of said roll; and

compressed air supply means which has a compressed air tank to supply the compressed air to said air cylinder unit and to said air cylinder chambers;

the improvement wherein;

said current-carrying means comprises replaceable current-carrying supporters which are selected depending upon the type of the roll and possess shaft-engaging portions which engage with and support the shaft portion of said roll, and spindle-engaging portions which are engaged with and supported by said spindles; and

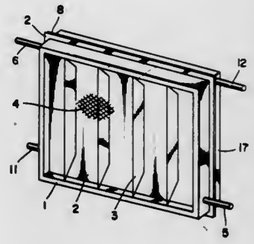
said leak-proof caps comprise moving caps fitted to the outer side of said spindles and moved by the compressed air supplied to said air cylinder chambers, and replaceable exchange caps which are selected depending upon the type of the roll and maintain air-tightness around the periphery of said spindles between the moving caps and the end surfaces of the roll when the roll is to be chucked.

4,519,888

ELECTROLYTIC CELL

Michihiro Akazawa, Shinnanyo, and Nobuhiro Kawasaki, Yamaguchi, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Jan. 18, 1984, Ser. No. 571,884
Claims priority, application Japan, Jan. 19, 1983, 58-5827
Int. Cl.³ C25B *9/00, 11/03, 11/10, 11/04*
U.S. Cl. 204—252 **3 Claims**



1. An electrolytic cell used to electrolyze an aqueous solution of alkali chloride which comprises an anode chamber and a cathode chamber divided by a partition, and employing a cation exchange membrane as a diaphragm, and

(a) an anode or a cathode in the anode chamber and cathode chamber respectively, each being a porous electrode having an opening ratio of 30 to 70% and a thickness of 0.1 to 1 mm, and the shortest distance from the circumference of a opening which forms one pore in the porous electrode, to that of a nearest adjacent pore opening, being less than 5 mm, and

(b) said partition having a thickness of less than 6 mm to separate the anode chamber from the cathode chamber, the portion of the partition on the side of the anode chamber and the portion on the side of the cathode chamber, being joined through a wavy seam weld, and the distance from the surface of said electrodes to the surface of said partition being within the range of 10 to 25 mm,

(c) and further comprising ribs joining the electrodes with the partition, and

(d) said porous electrode being partly divided in the neighborhood of the center between a rib and another rib, and the angle formed by the surface of the electrode, extended from the rib to both sides against the surface of the membrane, is less than 180° C.

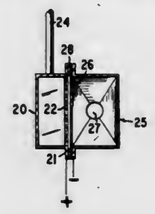
4,519,889

HALOGENATION APPARATUS

Alberto Pellegri, Luino, Italy, and Placido M. Spaziante, Lugaono, Switzerland, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation of Ser. No. 40,459, May 18, 1979, abandoned, which is a division of Ser. No. 929,494, Jul. 31, 1978, Pat. No. 4,172,773. This application May 24, 1983, Ser. No. 497,669
Claims priority, application Italy, May 11, 1978, 23283 A/78
Int. Cl.³ C25B *9/00, 11/03, 11/06, 11/10*
U.S. Cl. 204—275 **6 Claims**

1. A diaphragmless electrolysis cell comprising a first compartment containing both a porous, permeable anode and a cathode, said anode being electrochemically active over the surface directly opposing the cathode and forming an interelectrode gap therebetween, a second compartment separated from the first compartment by the porous permeable anode, means for circulating an electrolyte through the second compartment, means for circulating a second electrolyte through



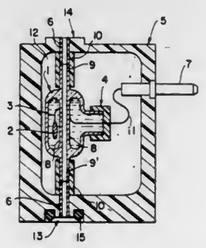
the interelectrodic gap of the first compartment, means for maintaining a constant hydrostatic pressure differential between the two compartments to effect flow of electrolyte from the second compartment to the anode through the said porous anode surface and means for impressing an electrolysis current between the said cathode and anode.

4,519,890

FLOW SYSTEM GLASS ELECTRODE

Hiroaki Uematsu; Junji Aoki, and Narihiro Oku, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed May 24, 1984, Ser. No. 614,225
Claims priority, application Japan, Jun. 7, 1983, 58-87294[U]
Int. Cl.³ G01N *27/36*
U.S. Cl. 204—409 **3 Claims**



1. A flow system glass electrode characterized in that the flow system glass electrode body, which is provided with a response film along an internal flow conduit and seals an internal electrode and an internal liquid by a packing, is contained in a resin block, sample flow tubes each equal in an inner diameter to said response film and at the entrance and exit sides are inserted into the walls of said resin walls respectively, said sample flow tubes are connected with a liquid inlet and a liquid outlet at the glass electrode body side by use of couplings respectively, and a space within said resin block except for said glass electrode body is filled with a filler of electrical insulating property.

4,519,891

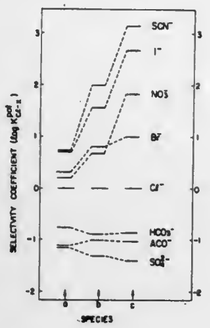
LIQUID FILM TYPE, ANION-SELECTIVE ELECTRODE

Kenshi Sugahara; Kazuo Yasuda, both of Katsuta, and Junji Mori, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,587
Claims priority, application Japan, Jan. 28, 1983, 58-13065
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—418 **28 Claims**

25. A liquid film type, anion-selective electrode comprising a sensitive film containing polymer resin as a support film

material, a quaternary ammonium salt or a quaternary phosphonium salt as an anion-sensitive substance, a linear alcohol having a low dielectric constant, and an organic compound having a dielectric constant higher than that of said linear alcohol, the linear alcohol and organic compound having



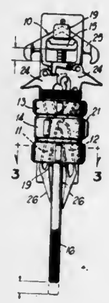
dielectric constants, and being contained in the film in amounts, effective such that deposition of proteins on said sensitive film is reduced, as compared to a film containing no linear alcohol, while providing for dissolving of the anion-sensitive substance.

4,519,892

FIREMEN'S TOOL MOUNTING ASSEMBLY

Gerald A. Blakeslee, Milton, Del., assignor to Gerald A. Blakeslee, Jr., Milton, Del.

Filed May 11, 1984, Ser. No. 609,138
Int. Cl.³ B65D *69/00, 85/02, 85/20*
U.S. Cl. 206—223 **6 Claims**



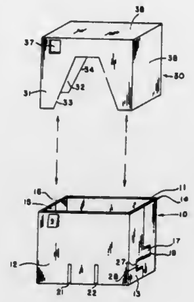
1. A firemen's tool assembly and mounting comprising a vertically disposed stationary mounting bracket having a pair of vertically aligned and spaced upturned support elements, and an assembly of essential firemen's tools bodily supportable on said mounting bracket and being readily liftable therefrom by hand, and said tool assembly comprising a substantially vertical axis sleeve formed by the interconnection of male and female threaded hose adapters, and a plurality of separate wrenches each having handles insertable downwardly through the bore of said sleeve and each having enlarged heads disposed above the upper end of said sleeve and being of sizes whereby said heads cannot pass downwardly through the bore of said sleeve, and the tool assembly being supportively engaged with the mounting bracket by having the lower upturned support element on the mounting bracket engaged upwardly through the bottom of the sleeve and the top upturned support element engaged with the head of one of said wrenches, whereby the tool assembly is supported at two points along its vertical length.

4,519,893

MAGNETIC DISC STORAGE CONTAINER

Richard J. Olas, Crystal Lake, Ill., assignor to KoMac Enterprises, Inc., Crystal Lake, Ill.

Filed Jul. 7, 1983, Ser. No. 511,408
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—311 **13 Claims**



1. A magnetic disc storage container comprising: a rectangular shaped disc receptacle open at the top and comprising a rectangular shaped front and back wall; two end walls joining the ends of said front and said back walls, said end walls each cut in a corresponding central region for the full height of each said end wall permitting separation of two portions of each end wall; and a rectangular bottom wall joining said front, said back, and said end walls;

a cover-holder open at the bottom and comprising a front wall and a back wall; two solid end walls joining the ends of said front and said back walls; and a solid rectangular top wall joining said front, said back and said end walls; each said front and back wall having an inverted truncated V-shaped cutout open to the bottom and the width of the central leg joining portion of said truncated V corresponding to the width of said disc receptacle end walls and spaced from the top of said cover holder, said inverted truncated V-shaped cutouts aligned with each other;

said disc receptacle front and back walls having open parallel slots extending perpendicularly upwardly from the bottom the distance said central leg portion of said inverted truncated V is spaced from said top of said cover-holder, said slots spaced apart the width of said cover-holder end walls; and

said disc receptacle bottom wall having open slots joining said front and back wall open slots and having a solid hinge means parallel to and in the region of each disc receptacle front and back wall providing a closed hingedly flexible bottom with only said slots open.

4,519,894

TREATMENT OF CARBONACEOUS SHALES OR SANDS TO RECOVER OIL AND PURE CARBON AS PRODUCTS

David G. Walker, 904 Fleetwood Dr., Baytown, Tex. 77520

Continuation-in-part of Ser. No. 554,066, Nov. 2, 1983, abandoned. This application Aug. 17, 1984, Ser. No. 641,875
Int. Cl.³ C10G *1/00, 1/04*
U.S. Cl. 208—11 R **2 Claims**

1. A process for the production of oil, pure carbon (tar, sulfur and ash-free) and producer gas from carbon-containing solids which comprises:

(a) passing the said solid from the top to the bottom of a vertical shaft which is divided into six stages;

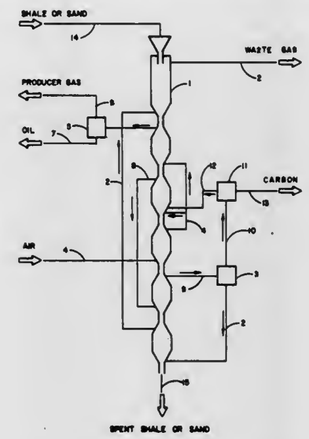
(b) passing an inert gas across the sixth stage (bottom) of the vertical shaft and then across the first stage (top);

(c) passing air across the fourth stage of the said shaft and then feeding the said air in part to the second stage and in part to the third stage of the said shaft;

(d) separating the gas product of the second stage into oil and a producer gas;

(e) feeding the gas product of the third stage through the fifth stage of the said shaft and then into a carbon monoxide separation unit;

(f) using the inert gas produced in the carbon monoxide separation unit as feed to the sixth stage of the said shaft;



(g) feeding the pure carbon monoxide product of the carbon monoxide separation unit to a Boudouard reactor;

(h) reacting carbon monoxide to carbon dioxide and carbon;

(i) separating the carbon from the carbon dioxide;

(j) feeding the carbon dioxide to the third stage of the said shaft; and

(k) discarding the treated solid from the bottom (sixth) stage of the said shaft.

4,519,895

PROCESS FOR CONVERTING A CARBONACEOUS MATERIAL TO LOWER PARAFFINIC HYDROCARBONS AND MONOCYCLIC AROMATIC HYDROCARBONS

André Deschamps, Noisy le Roi, and Sigismond Franckowiak, Rueil-Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 23, 1982, Ser. No. 444,016
Claims priority, application France, Nov. 23, 1981, 81 22018
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—8 LE **15 Claims**

1. A process for converting a solid carbonaceous material to lower paraffinic hydrocarbons and monocyclic aromatic hydrocarbons, comprising the steps of:

(a) admixing the carbonaceous material with a hydrogenated recycle oil, having an atomic ratio H/C of at least 1/1, obtained from step (e), and maintaining the resultant mixture in contact with a hydrogen-containing gas at a temperature from 350° to 470° C., for at least 5 minutes, under a hydrogen partial pressure of at least 20 bars;

(b) contacting the effluent from step (a) without separation with a hydrogen-containing reducing gas for 0.1 to 60 seconds, at a temperature from 600° to 1000° C., under a pressure of at least 20 bars, said reducing gas being produced at least partly in step (d) and being introduced at a temperature of at least 900° C.;

(c) fractionating the product of step (b), and separately recovering (i) at least one fraction of carbonaceous solid residue, (ii) at least one fraction of lower paraffinic hydrocarbons and monocyclic aromatic hydrocarbons normally distilling, at least in major part, below 150° C., and (iii) at least one hydrocarbon fraction normally distilling, at least in major part, above 150° C.;

(d) treating the carbonaceous solid residue fraction (i) with oxygen and steam, under conditions of carbon oxyvapogasification, to convert at least a portion thereof to a hydrogen containing reducing gas, and feeding at least a portion of said reducing gas to step (b);

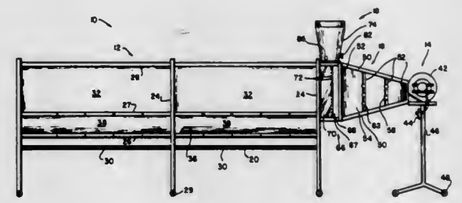
(e) contacting hydrocarbon fraction (iii) from step (c) with hydrogen, in the presence of a hydrogenation catalyst, under hydrogenation conditions, until an atomic ratio H/C of the hydrocarbons of said fraction of at least 1/1 is obtained, and feeding at least a portion of the resultant hydrogenated hydrocarbon fraction back to step (a) as said hydrogenated recycle oil.

4,519,896

DRY MATERIAL SORTING DEVICE

James D. Vickery, 531 Lindsey Rd., Golden, Colo. 80401

Filed Mar. 11, 1982, Ser. No. 357,142
Int. Cl.³ B07B *9/02*
U.S. Cl. 209—44.1 **17 Claims**



17. A granular material sorting device for sorting dry material mixtures including relatively low density particles and relatively high density particles, such as sand and gold of mixed particle sizes comprising:

granular material sizing means for segregating the granular material into batches wherein the maximum to minimum diameter of particles in any batch is a preselected ratio dependent on the ratio of specific gravities of the different materials to be sorted;

horizontally disposed transversely unrestricted wind tunnel means of substantially constant and uniform cross section throughout the length thereof for directing a horizontal airflow therethrough of relatively constant velocity from top to bottom and upstream end to downstream end of said wind tunnel means, said horizontally disposed wind tunnel having an open bottom portion;

air forcing means for inducing said relatively constant velocity horizontal airflow through said wind tunnel means;

granular material injection means for free fallingly injecting said sizingly sorted granular material mixture into said wind tunnel means proximate the upstream end thereof and proximate the top thereof in a stream extending across said wind tunnel means and having a stream dimension measured longitudinally of said horizontal airflow sufficiently small to prevent piggybacking of particles exposed to said horizontal airflow whereby substantially all said particles are directly acted on by said airflow during the period of vertical free fall of said granular particles from the top to the bottom opening of said wind tunnel means;

exit means operably mounted at the bottom of said tunnel means in fluid communication therewith, said exit means comprising a relatively narrow longitudinally extending opening therein for discharge of particles therefrom, said exit means comprising relatively low velocity airflow interface means between said wind tunnel horizontal airflow and the atmosphere;

collection means positioned below said exit means for collecting granular material falling from said exit means;

whereby said granular material is sorted into its different

component materials, the higher density particles such as gold particles falling into said collection means at a relatively upstream portion thereof, the lower density particles such as sand particles falling into said collection means at a relatively downstream portion thereof.

4,519,897

FLUID CRACKING PROCESS USING SEPIOLITE-CONTAINING CATALYST COMPOSITION

Jan I. De Jong, Blaricum, Netherlands, assignor to AKZO nv, Arnhem, Netherlands

Filed Dec. 20, 1983, Ser. No. 563,475

Claims priority, application Netherlands, Dec. 27, 1982, 8205007

Int. Cl.³ C10G *11/05, 55/06*

U.S. Cl. 208—74 **13 Claims**

1. A process for fluid catalytic cracking metal-containing petrolum feed in the presence of a fluid cracking catalyst comprising contacting the feed at fluid catalytic cracking conditions with a catalyst comprising a zeolitic crystalline aluminosilicate, sepiolite and a martix material, wherein the sepiolite is present in non-dispersed form.

4,519,898

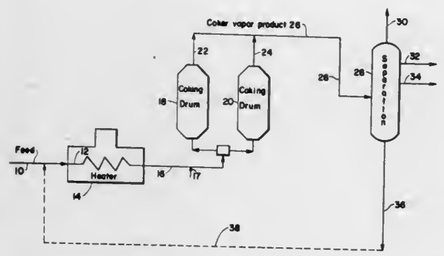
LOW SEVERITY DELAYED COKING

David E. Allan, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 20, 1983, Ser. No. 496,570

Int. Cl.³ C10G *9/14*

U.S. Cl. 208—131 **8 Claims**



1. In a delayed coking process which comprises the steps of:
(a) preheating a hydrocarbonaceous oil feed to a coking temperature, and
(b) introducing the resulting preheated oil into a coking drum operated at delayed coking conditions to form coke and a vapor phase product,
the improvement which comprises: said oil feed being preheated to a temperature ranging from about 775° to 920° F., and introducing a gas into said coking drum during step (b), in an amount ranging from about 10 to about 20 weight percent of said preheated oil to maintain the content of volatile matter of said coke in the range of about 5 to about 15 weight percent.

4,519,899

PURIFICATION OF OIL USING A JET PUMP MIXER

Jakob Oertle, Winterthur, and Bruno Mülhaupt, Schlieren, both of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zurich, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,453

Claims priority, application Switzerland, Dec. 13, 1982, 7232/82

Int. Cl.³ C10M *11/00*; B01D *21/01*

U.S. Cl. 208—179 **8 Claims**

1. A method of purifying oil containing metal particles comprising adding to the oil a coagulating agent which forms coagulates with the metal particles; mixing the oil and agent in a mixing means including a static dispersion device, a jet pump coupled to the outlet from the dispersing device, and a recycling loop which utilizes the suction of the jet pump itself to recirculate a portion of the mixture from the outlet to the suction inlet of the jet pump; and separating coagulates formed with the agent and metal particles from the mixture to thereby produce purified oil.

4,519,900

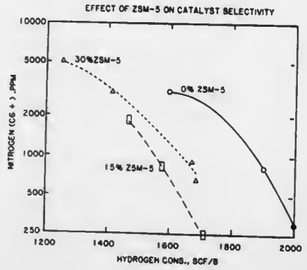
ZEOLITE CONTAINING CATALYST SUPPORT FOR DENITROGENATION OF OIL FEEDSTOCKS

Philip J. Angevine, West Deptford; Stephen M. Oleck, Moorestown; Robert C. Wilson, Jr., Woodbury, and Sadi Mizrahi, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 453,969, Dec. 28, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 583,807

Int. Cl.³ C10G *45/00, 45/12*

U.S. Cl. 208—254 H **13 Claims**



1. A process for the catalytic denitrogenation of shale oil, said process consisting essentially of contacting a mixture of hydrogen and said shale oil at a hydrogen pressure of from about 500 to 3000 psig., a temperature of from about 600° to 850° F. and a space velocity of from about 0.1 to 5.0 LHSV with a catalyst consisting essentially of 5–30 wt. % of a zeolite selected from group consisting of zeolite Beta, ZSM-5, ZSM-11, ZSM-12, ZSM-23, ZSM-35, ZSM-38 and ZSM-48, 95–70 wt. % of alumina, based on alumina plus zeolite, and an active hydrogenation component.

4,519,901

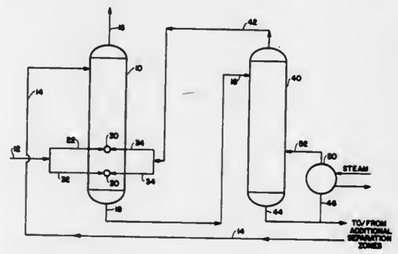
EXTRACTIVE SEPARATION PROCESS

Robert J. Fiocco, Summit, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 332,194, Dec. 18, 1981, abandoned. This application Oct. 5, 1983, Ser. No. 539,122

Int. Cl.³ C10G *21/00*

U.S. Cl. 208—321 **12 Claims**



1. In an extractive separation of the type wherein:
A. an inlet feed stream having an aromatic component selected from the group consisting of benzene, toluene, xylene, or mixtures thereof, component and a non-aromatic component is directed into an extraction zone;
B. a solvent selectively miscible with one of said aromatic components is directed into the extraction zone at a spaced apart location from the point of addition of the feed stream;
C. the feed stream and solvent stream pass substantially countercurrently through the extraction zone to produce an extract product stream relatively rich in the aromatic component and a raffinate product stream relatively rich in the non-aromatic component; and
D. a separate recycle stream produced by subsequent processing of at least one of the extraction zone product streams is returned to the extraction zone, the improvement comprising the addition of at least a fraction of the recycle stream containing substantially all of the non-aromatic component of the extract product stream to the extraction zone at a location above the location at which all the feed is added to the extraction zone.

4,519,902

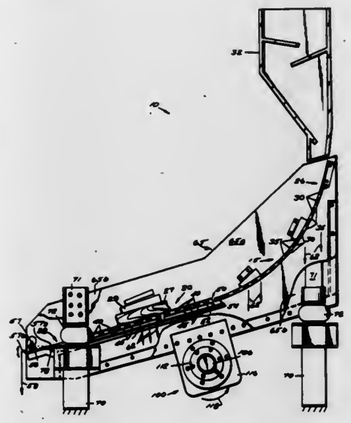
VIBRATING SCREENING APPARATUS

Greever C. Kinder, North Tazewell, Va., assignor to Clinch River Corporation, Tazewell, Va.

Continuation-in-part of Ser. No. 373,645, Apr. 30, 1982, abandoned. This application Apr. 4, 1983, Ser. No. 481,902

Int. Cl.³ B07B *9/00*

U.S. Cl. 209—234 **21 Claims**



1. A vibratory screening apparatus comprising:
feeding means for feeding a layer formation flow of a dilute slurry mixture of particles and liquid;
a screen deck defining a generally unitary surface having a feed end adapted for receiving said dilute slurry mixture and a discharge end for discharging a substantially concentrated slurry mixture thereover, said feed and discharge ends defining therebetween a vector flow path along which said slurry mixture will flow as it continuously moves from said feed end to said discharge end, said screen deck including downstream from said feed end an initial sieve bend portion and in a subsequent substantially contiguous downstream position an inclined screen portion wherein
said sieve bend portion includes plural first longitudinal separating bars fixedly attached with respect to one another, each of said first bars having (i) a supporting surface for engaging one surface of the layer formation flow of particles and liquid passing thereby to define a local direction of flow thereof along said vector flow path, the supporting surfaces of said first bars between said feed end and said inclined screen portion generally conforming to a relatively smooth cylindrically curved plane having a predetermined radius, each of said first bars also having (ii) a separating surface facing in a direction opposed to the local direction of flow and disposed in a transverse plane intersecting a plane of the associated supported surface along a line perpendicular to the local direction of flow, the separating surface of each first bar being spaced from the adjacent upstream first bar to define therewith a first separating aperture having a substantially constant width dimension as measured in the local direction of flow, and wherein
said feeding means feeds said particles and liquid in layer formation onto the feed end of said screen deck in a direction substantially tangential to said generally conforming plane of the supporting surface and perpendicular to said intersecting line of the separating surface of the first bars adjacent thereto, the flow of the slurry mixture across the supporting surface of each first bar along said vector flow path being such that the separating surface of a succeeding first bar which defines therewith an associated first separating aperture will block from the surface of the layer formation flow engaged by the supporting surface a thin layer of a thickness at most of the order of one-quarter of the width of the associated first separating aperture so that the liquid in successive blocked layer together with at least a portion of the particles entrained therein will pass through the associated first separating apertures and the remaining liquid and particles will pass on to the inclined screen portion of said screen deck; and wherein
said inclined screen portion includes plural second longitudinal separating bars fixedly attached with respect to one another and spaced apart relative to said vector flow thereby defining second separating apertures between successive said second bars, said second bars between said sieve bend portion and said discharge end defining a generally planar separation surface;
means for fixedly mounting said sieve bend and inclined screen portions with respect to each other and for mounting said combined screen deck to permit for vibratory movement thereof; and
vibratory means for imparting vibratory movement to said screen deck such that a major vector of said vibratory movement is generally upwards and backwards relative to said vector flow path to effect substantial separation of said liquid from said particles.

15. A vibratory screening apparatus for removing liquid from a feed of dilute slurry mixture so that a concentrated slurry mixture is discharged therefrom, said apparatus comprising:
feeding means for feeding a layer formation flow of a dilute slurry mixture of particles and liquid;
a screen deck defining a generally unitary surface having a feed end adapted for receiving said dilute slurry mixture and a discharge end of discharging a substantially concentrated slurry mixture thereover, said feed and discharge ends defining therebetween a vector flow path along which said slurry mixture will flow as it continuously moves from said feed end to said discharge end, said screen deck including downstream from said feed end an initial sieve bend portion and in a subsequent substantially contiguous downstream position an inclined screen portion wherein
said sieve bend portion includes plural first longitudinal separating bars fixedly attached to one another, each of said first bars having (i) a supporting surface for engaging one surface of the layer formation flow of particles and liquid passing thereby to define a local direction of flow thereof along said vector flow path, the supporting surfaces of said first bars between said feed end and said inclined screen portion generally conforming to a relatively smooth cylindrical curved plane having a predetermined radius, each of said first bars also having (ii) a separating surface facing in a direction opposed to the local direction of flow and disposed in a transverse plane intersecting a plane of the associated supporting surface

along a line perpendicular to the local direction of flow, the separating surface of each first bar being spaced from the adjacent upstream first bar to define therewith a first separating aperture having a substantially constant with dimension as measured in the local direction of flow, and wherein

said feeding means feeds said particles and liquid in layer formation onto the feed end of said screen deck in a direction substantially tangential to said generally conforming plane of the supporting surface and perpendicular to said intersecting line of the separating surface of the first bars adjacent thereto, the flow of the slurry mixture across the supporting surface of each first bar along said vector flow path being such that the separating surface of a succeeding first bar which defines therewith an associated first separating aperture will block from the surface of the layer formation flow engaged by the supporting surface a thin layer of a thickness at most of the order of one-quarter of the width of the associated first separating aperture so that the liquid in successive blocked layers together with at least a portion of the particles entrained therein will pass through the associated first separating apertures and the remaining liquid and particles will pass on to the inclined screen portion of said screen deck; and wherein

said inclined screen portion includes second longitudinal separating bars fixedly attached with respect to one another and spaced apart relative to said vector flow thereby defining second separating apertures between successive said second bars, said second bars between said sieve bend portion and said discharge end defining a generally planar separation surface;

means for fixedly mounting said sieve bond and inclined screen portions with respect to each other and for mounting said combined screen deck to permit for vibratory movement thereof; and

vibratory means operatively connected to said screen deck for imparting vibratory movement thereto such that a major vector of said vibratory movement is in a direction generally opposing said vector flow path to partially impede the flow of said slurry mixture across said inclined screen portion so as to establish a layer of concentrated slurry mixture thereon, which layer exhibits a predetermined maximum depth in the vicinity of said discharge end and gradually decreases in an upstream direction, whereby said vibratory means removes an additional amount of said liquid which remains in the slurry mixture as it initially flows onto said inclined screen portion after flowing across said sieve bend portion as said slurry mixture continues to flow along said vector flow path to said discharge end.

4,519,903

FILTER MACHINE

Willard L. Johnson, 12923 Lincoln Rd., Huntington Woods, Mich. 48070

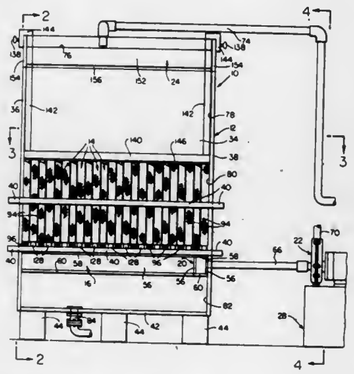
Filed Jan. 24, 1983, Ser. No. 460,288
Int. Cl.³ B01D *25/02*
U.S. Cl. 210—94 **20 Claims**

1. In a suction type filter machine having a tank to receive polluted liquids to be filtered or clarified and divided vertically into an upper open section, an intermediate filter leaves-containing section, and a lower solids-collection section, all sections being in free and open communication and connection with each other in a substantially vertical unitary chamber, the improvement in leaf-type filter units releasably connected to collecting manifolds, each unit comprising:

a core panel having transversely extending walls defining transverse liquid passageways therebetween, and openings through said walls defining means for communicating with and between said passageways;

a conduit permanently overlying and parallel to an edge and adjacent portions of said panel for collection, conduction and discharge of liquid filtrate from said core panel;

a filter medium enwrapping said core panel completely and said conduit substantially thereabout; and



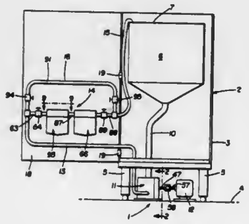
means for releasably connecting the conduit to a collecting manifold.

4,519,904

CONTINUOUS FILTERING SYSTEM FOR COOKING OIL

Timothy A. Helmick, 7465 Hills & Dales Rd., Massillon, Ohio 44646

Filed Feb. 10, 1984, Ser. No. 578,840
Int. Cl.³ B01D *35/00*
U.S. Cl. 210—167 **25 Claims**



1. Equipment in combination with a food fryer for continuously filtering and recirculating cooking oil contained in said fryer, said equipment including:

(a) a first conduit connected to an opening formed adjacent the bottom of the fryer;

(b) chopper pump means connected to the first conduit for chopping up food particles contained in the cooking oil flowing through the first conduit from the fryer and for pumping said cooking oil through said chopper pump means;

(c) a second conduit operatively connected to the chopper pump means for conveying the cooking oil and chopped food particles from the chopper pump means;

(d) filter means operatively connected to the second conduit for removing the chopped food particles from the cooking oil; and

(e) a third conduit connected to the filter means for conveying the filtered oil from the filter means back into the fryer.

18. A device in combination with a system for the continuous filtering and recirculating of cooking oil contained in a food dryer, said device including:

(a) a housing formed with a cylindrical-shaped chamber;

(b) inlet and outlet passages communicating with the chamber; and

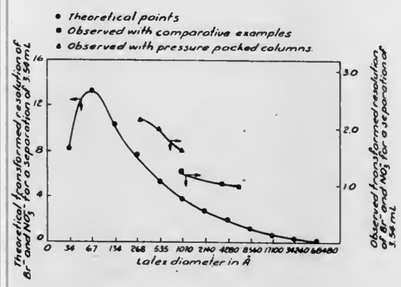
(c) a rotor rotatably mounted in the chamber and adapted to be operatively connected to a motor for rotatably driving said rotor, said rotor having a plurality of spaced outwardly extending vanes for chopping up food particles contained in the cooking oil and for moving the cooking oil and food particles from the inlet passage through a portion of the chamber and out of the outlet passage.

4,519,905

HIGH PERFORMANCE ANALYTICAL COLUMN FOR ANION DETERMINATION

Timothy S. Stevens, and Martin A. Langhorst, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 431,431, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 234,520, Feb. 17, 1981, abandoned. This application Jul. 2, 1984, Ser. No. 626,569
The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **58 Claims**



1. A chromatographic analytical column, the column containing a pellicular type (agglomerated) anion-exchange packing, comprising:

Component A, which comprises a pressure packed bed of substrate particles of insoluble synthetic resin, having cation-exchanging sites at least on their available surfaces, the Component A particles being of low porosity relative to Component B microparticles, described below, and

Component B, derived by agglomerating microparticles of insoluble synthetic resin onto the pressure packed bed of Component A particles, the microparticles having a volume average diameter of less than about 1000 Angstroms and greater than about 50 Angstroms and having anion-exchanging sites, at least on their outer surfaces, which attract available cation sites of Component A, wherein the microparticles of Component B are attached as a monolayer to the available surfaces of the Component A particles.

4,519,906

APPARATUS FOR THE SEPARATION OF MAGNETIC AND NONMAGNETIC SOLID PARTICLES FROM A LIQUID

Shinichi Hikosaka, Tokyo; Kosho Murayama, Kawasaki; Shinichi Fukuura, Kawaguchi, and Takaomi Yanase, Ichikawa; all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 380,871, May 21, 1982, abandoned. This application Sep. 15, 1983, Ser. No. 533,062
Claims priority, application Japan, May 25, 1981, 56-75414
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—223 **6 Claims**

1. Apparatus for the separation of solid particles from a liquid, comprising:

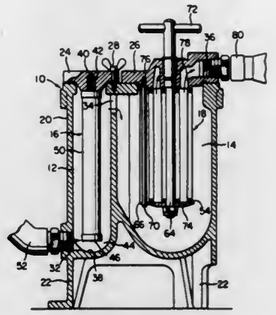
means defining a vertically extending first cylindrical liquid chamber having a top and a downwardly concave rounded bottom and means defining an inlet port for the liquid which is formed adjacent to the rounded bottom;

a magnet assembly disposed vertically and concentrically in the first liquid chamber for the removal of magnetic solid particles from the liquid, said magnet assembly including a cylindrical housing, suspended from the top of the first liquid chamber and extending downwardly defining a space between a lower extremity of said magnet assembly and the rounded bottom, and a plurality of magnets enclosed in a row in the housing;

a vertically extending second cylindrical liquid chamber disposed adjacent to the first liquid chamber and having a top and a downwardly concave bottom;

overflow port means provided between the top portions of the first and second liquid chambers for passing therethrough an overflow of the liquid from within the first liquid chamber into the second liquid chamber;

a vertically extending hollow cylindrical filter assembly for the removal of nonmagnetic particles, said filter assembly



being suspended from the top of the second liquid chamber and terminating short of the bottom of the second liquid chamber;

outlet port means communicating with the interior of said cylindrical filter assembly for the withdrawal of the liquid which has passed through the filter assembly;

means forming a discharge opening provided through a side wall of a lower end portion of the second liquid chamber and directed horizontally, said downwardly concave bottom of the second liquid chamber having a portion arcuately sloping downwardly and extending horizontally to the lower part of the discharge opening to expedite the discharge of accumulated solid in the second liquid chamber, the discharge opening being of a transverse size on the order of the diameter of the second liquid chamber;

a cover in the form of a plate screwed to the outer surface of said side wall of the second liquid chamber so as to close the discharge opening and having means defining a horizontal drain port in the lower part of said cover; and

a drain cock connected to said drain port.

4,519,907

GRIT SETTLING BASIN INCLUDING VANE PUMP

Thomas C. Rooney, Waukesha, Wis., assignor to Rexnord Inc., Brookfield, Wis.

Filed Dec. 19, 1983, Ser. No. 562,649
Int. Cl.³ B01D *21/18, 21/10;* **B03D** *1/14*
U.S. Cl. 210—257.1 **8 Claims**

1. Apparatus for separating grit from liquid sewage while retaining organic solids in suspension including inlet means for admitting liquid sewage into the apparatus, outlet means for removing liquid from which grit has been separated from the apparatus, and means for removing separated grit from the apparatus, the apparatus further comprising:

a cylindrical grit settling chamber,

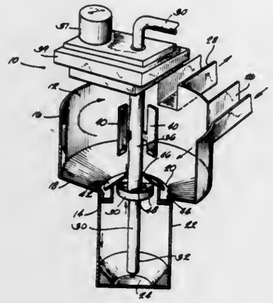
a cylindrical grit storage chamber positioned below the cylindrical grit settling chamber such that grit settling out of said liquid will settle into said grit storage chamber, said cylindrical grit storage chamber including a circular wall having an upper edge,

a vertical shaft positioned centrally in said cylindrical grit settling chamber and in said grit storage chamber, said shaft having a longitudinal axis,

means for causing rotation of said central shaft about said longitudinal axis,

a partition surrounding said shaft and separating said cylindrical grit settling chamber and said cylindrical grit storage chamber, said partition having a circular peripheral edge adjacent and spaced inwardly from said circular wall of said cylindrical grit storage chamber, said peripheral edge and said circular wall being spaced so as to define a first annular opening therebetween, and said partition including a circular central aperture housing said shaft, said circular aperture being spaced from said shaft to define a second annular opening between said shaft and said partition to provide for upward flow of liquid, and

mechanical means positioned within the storage chamber for causing vertical upward flow of liquid through said second annular opening and vertical downward flow of said liquid through said first annular opening.

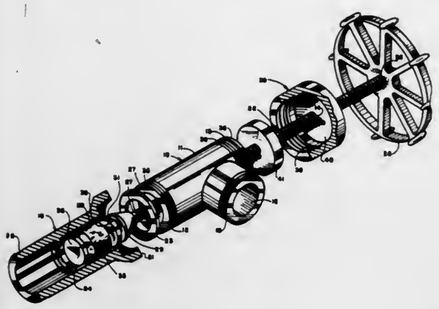


4,519,908

VALVE FOR CONTROL OF FLUID FLOW

Seth D. Woodruff, 4411 Via Amable, San Diego, Calif. 92122

Filed Mar. 12, 1984, Ser. No. 588,197
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—287 **4 Claims**



1. A valve for controlling fluid flow at low flow rates comprising:

(a) an upper housing comprising a main conduit of circular cylindrical configuration elongated about a center axis, and having an open lower threaded extremity and an upper extremity provided with closure means, and a side conduit of circular cylindrical configuration communicating with said main conduit and terminating in a threaded distal extremity,

(b) a lower housing having a circular cylindrical bore terminating in open upper and lower threaded extremities, the upper extremity of said lower housing being adpated to releasably join in a fluid impervious manner with the lower extremity of said main conduit with alignment of said upper and lower housings upon said center axis, and retaining means inwardly protruding into said cylindrical bore,

(c) a threaded shaft which extends through said closure means in threaded engagement therewith and in coaxial alignment with said center axis, having a first extremity disposed above said upper housing, and an opposed second extremity,

(d) a manipulating handle affixed to the first extremity of said threaded shaft,

(e) a foot is swiveled engagement with the second extremity of said threaded shaft and having a flat lower face of circular periphery perpendicularly disposed to said center axis,

(f) upper and lower rigid porous boundary means of circular periphery perpendicularly disposed to said center axis and positioned within the bore of said lower housing, said lower boundary means being supported by said retaining means, and said upper boundary means lying in abutment with the lower face of said foot and slideably positionable within said bore, and

(g) a resiliently compressable porous filtering medium disposed between said upper and lower boundary means, whereby

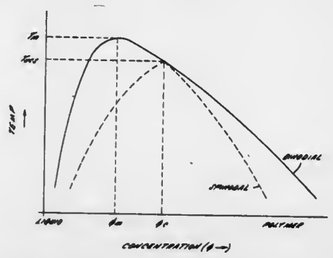
(h) downward urging of said foot by said threaded shaft causes compression of said filtering medium which results in controlled occlusion of said cylindrical bore.

4,519,909

MICROPOROUS PRODUCTS

Anthony J. Castro, Oak Park, Ill., assignor to Akzona Incorporated, Enka, N.C.

Continuation of Ser. No. 814,351, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 718,549, Aug. 30, 1976, abandoned. This application Nov. 23, 1979, Ser. No. 97,474
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—500.2 **63 Claims**



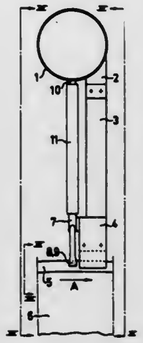
1. A relatively homogeneous, three-dimensional, microporous cellular polymer structure comprising a plurality of substantially spherical cells having an average diameter from about 0.5 to about 100 microns, distributed substantially uniformly throughout the structure, adjacent cells being interconnected by pores smaller in diameter than said microcells, the ratio of the average cell diameter to the average pore diameter being from about 2:1 to about 200:1, said pores and said cells being void and said polymer being a synthetic thermoplastic polymer selected from the group consisting of olefinic polymers, condensation polymers, oxidation polymers and blends thereof.

4,519,910

APPARATUS FOR REMOVING A FIBER LAYER FROM A ROTATING DISC FILTER

Samuel Ragnegard, Hedemora; Kent Strid, Gräingesberg, and Göran Sundkvist, Hedemora, all of Sweden, assignors to AB Hedemora Verkstalder, Hedemora, Sweden

Filed Jul. 8, 1983, Ser. No. 512,075
Int. Cl.³ B01D *25/34, 33/26*
U.S. Cl. 210—327 **8 Claims**



1. Apparatus for removing a fiber layer from a rotating disc filter consisting of a number of filter discs mounted side by side on a common shaft, each filter disc having a periphery, said apparatus comprising

gas and/or liquid spray means for removing the fiber layer and positioned close to each such periphery of the filter disc,

a slide shoe fixed in relation to said spray means, and

guide means positioned about the periphery of the filter disc for guiding said slide shoe,

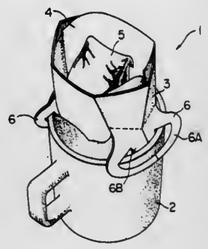
said slide shoe being arranged with play relative to said guide means and being suspended by a pendulum means that permits an oscillation to take place in the axial direction of the filter discs in response to axial movement of the filter discs.

4,519,911

PAPER EXTRACTOR

Kimiaki Shimizu, Tokyo, Japan, assignor to System Communications, Inc., Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 480,506
Claims priority, application Japan, Jun. 3, 1982, 57-82820[U]
Int. Cl.³ B01D *23/28*
U.S. Cl. 210—478 **3 Claims**



1. A paper extractor, comprising:

a thin walled, collar-shaped support member, having therein:

means defining an upper opening;

means defining a lower opening;

a plurality of substantially longitudinally first folds extending between said upper and lower openings, allowing said support member to be folded into a flat shape;

two V-shaped second folds, opening upwardly with respect to said lower opening, each second fold intersecting one of said longitudinal folds; and

support legs extending from said second folds, bendable at said second folds to extend outwardly from the support member;

a filter attached to an inner surface of said support member; and

a coffee pack comprising coffee powder sealed in a bag of filter material, for insertion into said support member in juxtaposed relationship to the filter attached thereto.

4,519,912

PROCESS FOR THE REMOVAL OF SULFATE AND METALS FROM AQUEOUS SOLUTIONS

Jim W. Kauffman; William C. Laughlin, both of Edmond, and Roger A. Baldwin, Oklahoma City, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jun. 1, 1984, Ser. No. 616,416
Int. Cl.³ C02F *3/34*
U.S. Cl. 210—611 **19 Claims**

1. A process for reducing the concentration of water soluble ionic selenium species, sulfate ions and ionic heavy metal species in an aqueous solution containing the same comprising:

providing an aqueous solution containing said water soluble ionic selenium species, sulfate ions and ionic heavy metal species, said aqueous solution having a pH of at least about 6.0;

providing a porous matrix containing a population of bacteria comprising at least one anaerobic bacteria of the genus Clostridium and at least one anaerobic bacteria selected from the group consisting of bacteria of the genera Desulfovibrio and Desulfotomaculum, said bacteria being capable of matabolically reducing said ionic selenium species to water insoluble metallic selenium and said sulfate ions to hydrogen sulfide, respectively, said matrix being under anaerobic conditions; and

passing said aqueous solution through said porous matrix in the presence of nutrients and at predetermined temperatures, said nutrients and said temperatures providing for the growth and steady state population density of said bacteria, to contact the ionic selenium species and the sulfate ions in said aqueous solution with the bacteria contained in the porous matrix whereby said bacteria metabolically reduce at least a portion of the ionic selenium species to water insoluble metallic selenium and at least a portion of the sulfate ions to hydrogen sulfide which, in turn, reacts with at least a portion of the water soluble ionic heavy metal species to form water insoluble heavy metal species, said water insoluble metallic selenium and water insoluble heavy metal species being substantially retained on the porous matrix, and to produce an aqueous effluent having a reduced concentration of said water soluble ionic selenium species, sulfate ion and ionic heavy metal species.

4,519,913

PROCESS FOR THE REMOVAL AND RECOVERY OF SELENIUM FROM AQUEOUS SOLUTIONS

Roger A. Baldwin, Oklahoma City; John C. Stauter, Edmond; Jim W. Kauffman, Edmond, and William C. Laughlin, Edmond, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jun. 1, 1984, Ser. No. 616,417
Int. Cl.³ C02F *3/34*
U.S. Cl. 210—611 **19 Claims**

1. A process for reducing the concentration of water soluble selenium ions in an aqueous solution containing the same comprising:

providing an aqeuous solution containing water soluble

selenium ions, said aqueous solution having a pH of at least about 6.0;

providing a porous matrix containing a population of bacteria comprising anaerobic bacteria of the genus Clostridium, said bacteria being capable of metabolizing said selenium ions to water insoluble selenium metal, said matrix being under anaerobic conditions; and

passing said aqueous solution through said porous matrix in the presence of nutrients and at predetermined temperatures, said nutrients and said temperatures providing for the growth and steady state population density of said bacteria, to contact the selenium ions in said aqueous solution with the bacteria contained in the porous matrix whereby said bacteria metabolically reduce at least a portion of the water soluble selenium ions to water insoluble selenium metal, which metal is substantially retained on the porous matrix, and to produce an aqueous effluent having a reduced concentration of said water soluble selenium ions.

4,519,914

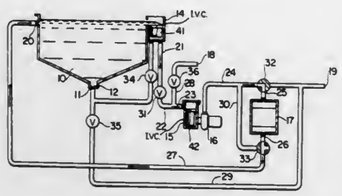
METHOD FOR TREATING SWIMMING POOL WATER

Kenji Etani, P.O. Box 206, West Townsend, Mass. 01474

Division of Ser. No. 040,302, May 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 934,425, Aug. 17, 1978, abandoned, which is a continuation of Ser. No. 717,514, Aug. 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,536, Jun. 30, 1975, abandoned. This application Mar. 31, 1980, Ser. No. 136,156

Int. Cl.³ E04H *3/20*

U.S. Cl. 210—633 **3 Claims**



1. The method of feeding water treatment chemicals into a swimming pool including

(a) a tank,

(b) a pump,

(c) an intermediate-velocity chamber,

(d) piping to interconnect said pump, tank, and chamber in a recirculating system, and

(e) a quantity of water within said tank, pump, chamber, and piping, which method comprises the steps of:

(1st) placing a feeder within said intermediate-velocity chamber of said system, and

(2nd) subjecting said feeder to flow of said water at intermediate velocity thereby to extract a dose of chemical contained in said feeder at a controlled rate, wherein

(i) said feeder is a compact container of volume between 0.1 and less than 24 cubic inches, resistant to attack by water and said chemical, perforated by a number of small holes each less than three square millimeters in cross section and greater than five thousandths of an inch (0.005") in diameter, and with an aggregate area of said holes less that 0.02% of the surface area of said feeder, and is close enough to spherical in shape and close enough to neutral in buoyancy dependant on said water velocity, that said flow causes said feeder randomly to move about freely and roll,

(ii) said chamber is of sufficient size to contain said feeder without substantial restriction of flow and to let said feeder move to stir its contents, and

(iii) said dose comprises a chemical from the group consisting of flocculants, coagulants, microbiocides, chelating agents, defoamers, germicides, evaporation retarders, and dyes.

4,519,915

CLARIFICATION OF BLACK WATER PRODUCED DURING RECOVERY OF BITUMENS AND HEAVY OILS

Albert E. George, Kanata, and Marc-Andre Poirier, Ottawa, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ottawa, Canada

Filed Jun. 14, 1984, Ser. No. 620,676

Claims priority, application Canada, Aug. 5, 1983, 433992

Int. Cl.³ C02F *1/28*

U.S. Cl. 210—663 **4 Claims**

1. In a process for the recovery or extraction of bituminous or heavy oil wherein emulsions of oil and water are formed and these emulsions are broken leaving a black water, the improvement which comprises clarifying the black water by contacting it with a particulate clarifying agent selected from high ash coal, high ash coal rejects, lignite ash, fly ash from coking gas and red mud.

4,519,916

PROCESS FOR INTERNAL REGENERATION OF ION EXCHANGER RESINS IN MIXED BED FILTERS, AND MIXED BED FILTERS FOR CARRYING OUT THE PROCESS

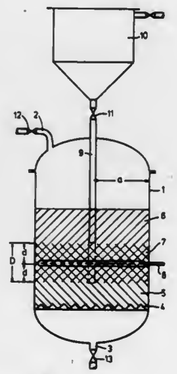
Friedrich Martinola, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,164

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313471

Int. Cl.³ B01J *49/00*

U.S. Cl. 210—678 **8 Claims**



1. In the internal regeneration of mixed bed filters wherein the exhausted ion exchanger mass of the mixed bed is separated into cation exchanger and anion exchanger by means of upward flowing liquid, the cation exchanger and anion exchanger are separately regenerated and washed out and then both components are mixed again to form the mixed bed for the next loading stage the improvement comprising the following steps:

(a) loading the mixed bed filter,

(b) adding to the loaded mixed exchangers the interface layer removed in step (f) hereinbelow,

(c) passing liquid upwardly to separate the mixed exchangers into anion exchanger and cation exchanger,

(d) separately regenerating the anion exchanger and the cation exchanger in the same vessel employed for filtration,

(e) washing the regenerated anion and cation exchangers,

(f) removing from the filter in the region of the cation exchanger/anion exchanger interface a layer of material

without substantial disruption of the bodies of ion exchanger adjacent said layer, and

(g) mixing the anion and cation exchangers remaining in the vessel to provide the mixed bed for the next loading stage.

4,519,917

COUNTER-CURRENT ADSORPTION FILTERS FOR THE TREATMENT OF LIQUIDS AND A METHOD OF OPERATING THE FILTER

Friedrich Martinola, Köln-Flittard, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

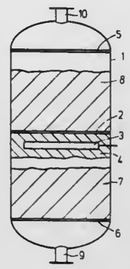
Continuation of Ser. No. 309,614, Oct. 1, 1981, Pat. No. 4,400,278. This application Apr. 6, 1983, Ser. No. 482,663

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040616

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.³ C02F *1/42*

U.S. Cl. 210—678 **3 Claims**



1. A method of operating a counter-current adsorption filter column or an ion exchange column wherein

(a) different adsorbents or ion exchangers are in each of two different chambers in the column defined by a horizontal subdivision;

(b) the adsorbents or ion exchangers of the two chambers are respectively regenerated with different regenerating agents;

(c) the lower chamber is equipped with a liquid drainage system which is located below the device which is permeable to liquid and forms the upper boundary of the chamber, and which is embedded in a layer of inert material; and

(d) the amount of adsorbent or ion exchanger (in % by volume) in the individual chambers is 50 to 98% of the free volume of the chamber, the method comprising

(i) in the loading phase passing stream of liquid to be treated from the bottom upwards through the chambers, and

(ii) in the regenerating phase, chamber by chamber introducing a regenerating agent and wash water into the top of each chamber to be regenerated, and removing the spent regenerating agent and washing water through the liquid drainage system of the chamber below simultaneously with a stream of water which flows in counter-current to the stream of the spent regenerating agent and washing water and which is being passed from the bottom upwards through the lower chamber.

4,519,918

PROCESS FOR THE ABSORPTION OF ORGANIC LIQUIDS BY USE OF A HYDROPHOBIC FIBROUS MATERIAL

Thomas Ericsson, Mölndal; Sten Gylfe, Krylbo, and Mats-Olov Hedblom, Avesta, all of Sweden, assignors to Papyrus Kopparfors AB, Mölndal, Sweden

Filed Jan. 24, 1983, Ser. No. 460,412

Claims priority, application Sweden, Jul. 27, 1981, 8104567; Fed. Rep. of Germany, Jul. 24, 1982, 3227949

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—680 **4 Claims**

1. A process for the absorption of surface layers of water-insoluble organic liquids floating on water which comprises contacting the surface layer with hydrophobic fibrous material prepared by impregnating cellulose pulp fibers with a liquid resinous material selected from the group consisting of acrylate prepolymers, alkyd prepolymers, and polyester prepolymers in an amount to provide in the impregnated fibrous material from about 0.5 to about 30% by weight polyacrylate, polyalkyd or polyester, and then hating the impregnated cellulose pulp fibers to convert the prepolymer by chemical reaction into a hydrophobic polymer rendering the cellulose pulp fibers hydrophobic.

4,519,919

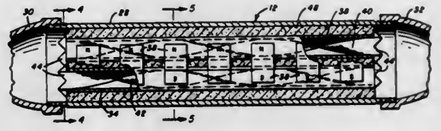
METHOD AND APPARATUS FOR MAGNETICALLY TREATING FLUIDS

Lance Whyte, 5307 Queensberry Ave., Springfield, Va. 22151, and Elliott E. Herweyer, P.O. Box 257, Goochland, Va. 23063

Filed May 19, 1983, Ser. No. 496,243

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—695 **19 Claims**



1. The method of subjecting a flowing fluid to an interrupted monopolar magnetic force field comprising the steps of:

(1) dividing the fluid into at least two separate independent non-paramagnetic flow paths;

(2) subjecting the fluid within each of the separate flow paths to an interrupted monopolar magnetic influence of opposite polarity; and

(3) recombining at least a portion of said fluids in said divided flow paths into a common flow path.

4,519,920

MALEIC ACID/(METH)ACRYLIC ACID COPOLYMERS USEFUL AS CALCIUM ION CAPTURING AGENTS

Yasuhisa Fukumoto, and Noboru Moriyama, both of Utsunomiya, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Division of Ser. No. 360,518, Mar. 22, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 597,814

Claims priority, application Japan, Apr. 13, 1981, 56-55351

Int. Cl.³ C08F *220/04*

U.S. Cl. 210—701 **6 Claims**

1. A process for treating water to inhibit formation of scale on surfaces contacted by the water, which comprises: mixing in the water an effective amount of a calcium ion capturing agent for chelating the calcium ions contained in the water to prevent deposition of scale on surfaces contacted by the water, said calcium ion capturing agent being an alkali metal salt of a copolymer of maleic acid (MA) and a monomer (AA) selected from the group consisting of acrylic acid and methacrylic acid, wherein the mol ratio (γ) of the monomer units MA/AA is

from 1.15 to 2.7, the number average molecular weight (MW) of the copolymer is from 1000 to 8000, and the product of (γ) multiplied by (MW) is at least 3000.

4,519,921

METHODS FOR REMOVING POLLUTANTS FROM WATER AND WASTE WATER AND FOR REDUCING SLUDGE RESISTANCE TO DEWATERING

James J. Russ, Lawrenceburg; John W. Smith, Germantown, both of Tenn., and Janet S. Condra, Vicksburg, Miss., assignors to Hydro Fuels, Inc., Wilmington, Del.

Filed Aug. 11, 1983, Ser. No. 523,033
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—716 **18 Claims**

1. A method for removing pollutants from water comprises reacting fly ash comprising silica, aluminum and iron with an aqueous base at a temperature of at least about 90° C., recovering a base-treated solid fly ash with aqueous mineral acid, and recovering an aqueous, acidic, solubilized fly ash leachate; and mixing water containing at least one pollutant selected from the group consisting of solubilized inorganic substances and suspended inorganic substances with an amount of said aqueous, acidic, solubilized fly ash leachate sufficient to reduce significantly the concentration of said pollutant in said water.

4,519,922

ENVIRONMENTALLY COMPATIBLE HIGH DENSITY DRILL MUD OR BLOW-OUT CONTROL FLUID

David L. Sutton, and Michael L. Walker, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1983, Ser. No. 477,049
Int. Cl.³ C09K *7/00*
U.S. Cl. 252—8.5 B **10 Claims**

1. A fluid suitable for use as a drilling fluid and a blow-out fluid comprising:

(a) water

(b) a gelling agent selected from the group consisting of oxides of antimony, zinc oxide, barium oxide, barium sulfate, barium carbonate, iron axide, hematite, other iron ores and mixtures thereof wherein said gelling agent has a physical make-up with regard to fine particle size, high density and intersurface attration properties sufficient to create a slurry with said water that has a gel strength of at least 10 pounds per 100 square feet and said gelling agent has an average particle diameter size in the range of from about 0.5 to about 10.0 micrometers; and,

(c) a weighting material selected from the group consisting of iron powder, hematite, other iron ores, steel shot, tungesten, tin, manganese, iron shot, and mixtures thereof wherein said weighting material has an average particle diameter size of from about 2 to about 20 times the average particle size of the gelling agent;

said fluid having a density of from 24 pounds per gallon to about 40 pounds per gallon.

4,519,923

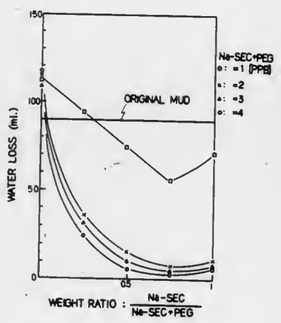
FLUID COMPOSITION FOR DRILLING

Yuji Hori, Otsu; Yoshichika Nishimura, and Fuminobu Takahashi, both of Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Apr. 3, 1984, Ser. No. 596,223
Claims priority, application Japan, Apr. 6, 1983, 58-60392; Apr. 19, 1983, 58-69810; Oct. 14, 1983, 58-193210
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 C **10 Claims**

1. A fluid composition for drilling comprising:

(a) a drilling fluid containing at least one of monovalent and polyvalent salts, and



(b) an alkali metal salt of sulfoethylcellulose which has a degree of substitution of 0.5 to 2.5 and of which a 1 % by weight aqueous solution has a viscosity of 5 to 5,000 cP.

4,519,924

LITHIUM STEARATE ALUMINATE AS LUBRICANT ADDITIVE

Kishore K. Kar, Midland, Mich., assignor to The Dow Chemical, Midland, Mich.

Filed Jun. 11, 1984, Ser. No. 619,442
Int. Cl.³ C10M *1/54, 5/14, 5/16*
U.S. Cl. 252—35 **13 Claims**

1. A method for improving the anti-friction properties of lubrication fluids subjected to intensive shearing or grinding forces, said method comprising

uniformly dispersing in said fluid, as small particles, crystalline lithium stearate aluminate comforming substantially to the empirical formula

$$Li(C_{17}H_{35}CO_2).2Al(OH)_3.nH_2O$$

where n represents zero or more for waters of hydration.

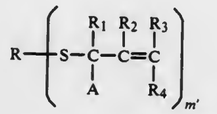
4,519,925

SULFUR-CONTAINING COMPOUNDS AND LUBRICANTS CONTAINING THEM

Donald M. Smith, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 943,430, Sep. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 681,107, Apr. 28, 1976, Pat. No. 4,129,510. This application Sep. 22, 1980, Ser. No. 189,465
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—48.6 **10 Claims**

1. A sulfur containing compound of formula



wherein R is a hydrocarbyl radical containing up to about 50 carbon atoms; each of R_1, R_2, R_3 and R_4 is independently hydrogen or a hydrocarbyl radical; m' is from 1 to about 5; and each A is a substituted alkyl radical wherein the substituent is at least one carboxyl group or functional derivative thereof.

10. A lubricant composition comprising, respectively, a major amount of an oil of lubricating viscosity and up to about 15% of at least one compound of claim 1.

4,519,926

POLYBORATE ESTERS AND THEIR USE IN LUBRICANTS

Robert J. Basalay; C. Thomas West, and Dennis G. Petrille, all of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 18, 1983, Ser. No. 467,951
Int. Cl.³ C10M *1/50, 1/10, 3/02, 7/48*
U.S. Cl. 252—49.6 **20 Claims**

16. A lubricant composition comprising a major portion of a lubricating oil in combination with a polyborate ester composition wherein the amount of said polyborate ester composition is from about 0.01 to about 15 weight percent of said lubricant composition and wherein said polyborate ester composition is prepared by the process which comprises:

(a) reacting ortho-boric acid with at least one hydroxyl-containing compound selected from the group consisting of monohydroxy alcohols of at least 3 carbon atoms and monohydroxy phenols in a substantially inert organic liquid at a temperature in the range from about 80° to about 300° C., wherein said organic liquid is immiscible with water and has a boiling point in the range from about 80° to about 300° C. at standard pressure, the ratio of equivalents of hydroxyl-containing compound to moles of ortho-boric acid is in the range from about 0.5 to about 1.5, and the water which is produced by said reaction is continuously removed; and

(b) removing substantially all of said organic liquid from the product of (a).

4,519,927

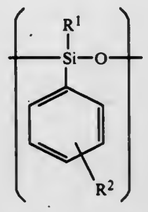
LUBRICANT FOR USE AT HIGH TEMPERATURE

Hiromichi Seiki, Ichihara, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Dec. 29, 1983, Ser. No. 566,497
Claims priority, application Japan, Jan. 17, 1983, 58-4225
Int. Cl.³ C10M *1/50, 3/44*
U.S. Cl. 252—49.6 **17 Claims**

1. A lubricating oil for lubricating bearing useful at high temperatures of 200° C. or higher, comprising:

(A) from 25 to 98% by weight of an arylalkyl silicone having a repeating unit represented by the general formula (I):



wherein R^1 is an alkyl group containing from 1 to 6 carbon atoms, and R^2 is an alkyl group containing from 1 to 3 carbon atoms or a hydrogen atom, and having a kinematic viscosity as determined at 100° C. of from 5 to 300 centistokes; and

(B) from 75 to 2% by weight of a fatty acid ester of a hindered alcohol.

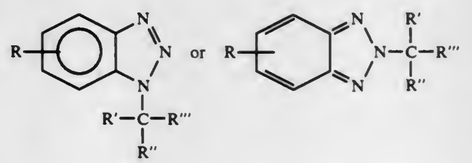
4,519,928

LUBRICANT COMPOSITIONS CONTAINING N-TERTIARY ALKYL BENZOTRIAZOLES

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 115,521, Jan. 25, 1980, abandoned, which is a continuation of Ser. No. 938,608, Aug. 31, 1978, abandoned. This application Aug. 24, 1981, Ser. No. 295,918
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—50 **6 Claims**

1. A lubricant composition which comprises a major amount of an oil of lubricating viscosity and a minor amount, of at least about 1 weight percent based on the total weight of the composition, effective to impart antioxidative and metal corrosion prevention properties thereto, of N-t-alkylated benzotriazoles, having the formula:



where R is hydrogen or a hydrocarbyl group containing from 1 to about 12 carbon atoms, R' and R'' are alkyl groups containing from 1 to about 4 carbon atoms, and R''' is an alkyl group containing from 1 to about 12 carbon atoms.

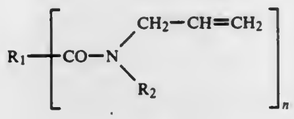
4,519,929

LUBRICATING OIL COMPOSITION CONTAINING N-ALLYL AMIDE GRAFT COPOLYMERS

Joseph P. O'Brien, Kirkwood, and Andrew G. Papay, Manchester, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

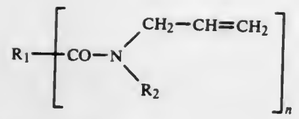
Filed Feb. 19, 1982, Ser. No. 350,205
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—51.5 A **31 Claims**

1. An ashless dispersant suitable for use in lubricating oils and liquid fuels, said dispersant being an oil-soluble product made by a process comprising reacting an olefinic hydrocarbon polymer having an average molecular weight of about 500–500,000 with an N-allyl amide having the structure



wherein R_1 is selected from hydrogen and saturated hydrocarbon groups containing 1 to about 30 carbon atoms or R_1 may be absent and R_2 is selected from the group consisting of hydrogen, alkyls containing 1–30 carbon atoms, cycloalkyls containing 6–10 carbon atoms, aryls containing 6–10 carbon atoms, and allyl and n is 1 or 2 such that when R_1 is hydrogen n is 1, and when R_1 is absent n is 2, said reaction being conducted in the presence of a free radical generating catalyst at a temperature high enough to generate free radicals up to a temperature of about 250° C.

27. A process for making an oil soluble dispersant for use in lubricating oil, said process comprising reacting an N-allyl amide having the structure



wherein R_1 is selected from hydrogen and saturated hydrocarbon groups containing 1 to about 30 carbon atoms or R_1 may be absent, and R_2 is selected from the group consisting of hydrogen alkyls containing 1–30 carbon atoms, cycloalkyls containing 6–10 carbon atoms, aryls containing 6–10 carbon atoms, and allyl and n is 1 or 2 such that when R_1 is hydrogen n is 1, and when R_1 is absent n is 2, with an olefinic hydrocarbon polymer having the average molecular weight of about 500–500,000 in the presence of a free radical-generating catalyst whereby said N-allyl amide is grafted onto said olefinic hydrocarbon polymer.

4,519,930

ELECTROCHROMIC DISPLAY DEVICE

Hiroshi Kakiuchi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,787

Claims priority, application Japan, Jan. 11, 1982, 57-2622; Sep. 7, 1982, 57-156065

Int. Cl.³ G02F *1/17*; C09K *3/00*

U.S. Cl. 252—62.2 **25 Claims**

1. An electrochromic display device comprising: at least two electrodes at least one of which is comprised of electrochromic material, and an electrolyte gel in contact with said electrodes and comprising an electrolytic solution absorbed and thereby gelated by a copolymer formed of a first monomer which when polymerized forms polymer soluble in the solvent of said electrolytic solution and a second monomer which when polymerized forms polymer insoluble in the solvent of said electrolytic solution in a proportion such that said copolymer is capable of absorbing an amount of said electrolytic solution sufficient to form a gel which is effective as an electrolyte.

4,519,931

MAGNETIC FLUID

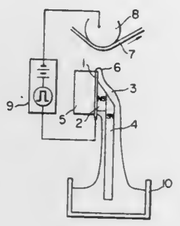
Mamoru Soga, Osaka; Keiichi Yubakami, Neyagawa; Nobuo Sonoda, Settsu, and Wataru Shimotsuma, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 26, 1982, Ser. No. 402,074

Claims priority, application Japan, Jul. 29, 1981, 56-119890

Int. Cl.³ H04B *35/00*; C09D *5/23*; H01F *1/00*

U.S. Cl. 252—62.51 **14 Claims**



1. A magnetic fluid suitable for use in image recording under the action of magnetic or electric force, comprising fine ferromagnetic particles dispersed in a liquid dispersing medium with the aid of a surfactant, and a suitable colorant dispersed or dissolved in said liquid dispersing medium, having the same charge as the liquid dispersing medium, said fluid being substantially free from colorant aggregation or separation in an electric field of 1 KV/mm.

4,519,932

LOW TEMPERATURE HYDRAULIC FLUIDS BASED ON TWO CENTISTOKE SYNTHETIC HYDROCARBONS

Nicholas E. Schnur, Cincinnati, Ohio, and Bruce J. Beimesch, Crescent Springs, Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 419,897, Sep. 20, 1982, abandoned. This application Sep. 16, 1983, Ser. No. 532,879

Int. Cl.³ C10M *3/12, 3/20*; C07C *2/74*

U.S. Cl. 252—73 **9 Claims**

1. An improved low temperature, fire resistant hydraulic fluid having a 210° F. viscosity ≧3.45 centistokes, −65° F. viscosity <3000 and flashpoint ≧320° F. comprising

(a) 30 to 90 percent by weight of a synthetic hydrocarbon obtained by the oligomerization of a C_{6-12} alpha-olefin or alpha-olefin mixture and having a 210° F. viscosity of 1.6 to 2.2 centistokes;

(b) 5 to 50 percent by weight of a monoester or diester containing from 13 to 30 carbon atoms and having a 210° F. viscosity of ≧3.5 centistokes and −65° F. viscosity of <8000 centistokes, said monoester derived from a C_{6-17} aliphatic monocarboxylic acid and aliphatic branched-chain alcohol having from 8 to 12 carbon atoms and said diester derived from a C_{6-9} aliphatic dicarboxylic acid and aliphatic branched-chain alcohol having from 6 to 10 carbon atoms; and

(c) 5 to 20 percent by weight of a polymethacrylate viscosity index improver having a weight average molecular weight in the range 40,000 to 65,000 and intrinsic viscosity of 0.040 to 0.065.

4,519,933

METHOD OF PRODUCING DETERGENTS WITH LOWER LEVELS OF INCRUSTATION OF SALTS ON FABRICS BY INCORPORATING THEREIN ONLY TYPE A ZEOLITE DETERGENT BUILDERS HAVING A CERTAIN DETERMINED RATE CONSTANT

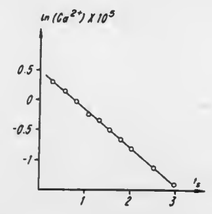
Robert Gresser, and Max Michel, both of Lyons, France, assignors to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Jun. 7, 1983, Ser. No. 501,915

Claims priority, application France, Jun. 18, 1982, 82 10638

Int. Cl.³ C11D *3/06, 3/12, 11/00*

U.S. Cl. 252—140 **9 Claims**



1. A method of producing a detergent including a surfactant and a zeolite detergent builder having improved detergent effect represented by lower levels of incrustation of salts on fabrics comprising the steps of:

providing a type A zeolite having a mean particle diameter ranging from 0.1–10 microns and a cation exchange capacity in excess of about 100 mg $CaCO_3$ per gram of anhydrous material;

determining a rate constant k_s relative to the surface area of zeolite per liter of solution;

incorporating only those zeolites having k_s values in excess of about 0.15 $s^{-1}lm^{-2}$ in said detergents.

4. The method of producing detergents as defined by claim 1, said rate constant ranging from about 0.4 to 4 $s^{-1}lm^{-2}$.

4,519,934

LIQUID ENZYME CONCENTRATES CONTAINING ALPHA-AMYLASE

Jens H. Eilertsen, Virum; Arne D. Fog, Ballerup, and Keith Gibson, Hvidovre, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Apr. 19, 1983, Ser. No. 486,306

Int. Cl.³ C11D *7/42, 3/386, 7/50*; C12N *9/96*

U.S. Cl. 252—174.12 **8 Claims**

1. A liquid enzyme concentrate containing alpha-amylase from *Bacillus licheniformis*, which consists essentially of

the alpha-amylase from *Bacillus licheniformis* in a concentrate corresponding to an activity of from between 250° and 1000 KNU/g of concentrate;

1,2 propylene glycol in an amount of about 40 to about 95% by weight of the concentrate; and

water in an amount of about 50 to about 5% by weight of the concentrate;

whereby the pH of the concentrate is 5–9.

4,519,935

LIQUID-CRYSTALLINE MATERIAL CONTAINING AZO DYESTUFFS

Uwe Claussen, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

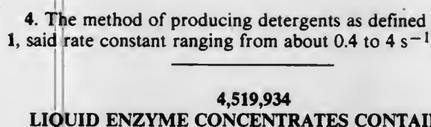
Continuation of Ser. No. 382,547, May 26, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 643,752

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123519

Int. Cl.³ C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299.1 **10 Claims**

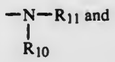
1. A liquid-crystal composition useful for displays comprising a liquid-crystal material having a positive dielectric antisotropy and 0.01 to 10% by weight of an azo dyestuff of the formula



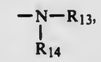
(II)

in which

R_1', R_2', R_4' and R_5' designate hydrogen, halogen, C_1–C_6-alkyl C_1–C_6-alkoxy, with the proviso that at least one of these radicals is different from hydrogen, R_7 and R_8 designate hydrogen, halogen, C_1–C_6-alkyl, or C_1–C_6-alkoxy and X represents —OR_9, —SR_9 or



Y represents —OR_{12}, —SR_{12} or



wherein R_9 and R_{12} designate hydrogen, C_1–C_6-alkyl, cyclopentyl, cyclohexyl, phenyl, naphthyl, benzyl, phenethyl, acyl, aminocarbonyl, or benzyl which is substituted by halogen, nitro, C_1–C_4-alkyl, or C_1–C_4-alkoxy and wherein R_{10}, R_{11}, R_{13} and R_{14} represent hydrogen, C_1–C_4-alkyl, C_1–C_4-alkyl which is substituted by hydroxyl, cyano, phenoxy, C_1–C_4-alkoxy or by (C_1–C_4-alkoxy)-carbonyloxy, or R_{10}, R_{11}, R_{13} and R_{14} represent cyclohexyl, phenyl, naphthyl, benzyl, phenethyl, (C_1–C_4-alkyl)-carbonyl, benzoyl, (C_1–C_4-alkyl)-aminocarbonyl or phenylaminocarbonyl, and wherein X and Y are in the para position relation to —N=N—.

4,519,936

NEMATIC LIQUID CRYSTALS AND METHOD OF PRODUCTION

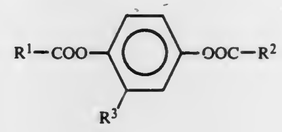
Dietrich Demus, Halle; Wolfgang Weissflog, Halle-Neustadt, and Horst Kresse, Halle, all of German Democratic Rep., assignors to VEB Werk fuer Fernsehelektronik im Kombinat Mikroelektronik, Berlin, German Democratic Rep.

Filed Jul. 20, 1982, Ser. No. 400,170

Int. Cl.³ G02F *1/13*; C09K *3/34*; C07C *231/119, 231/120*

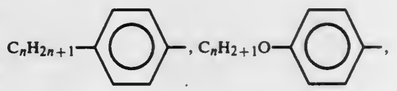
U.S. Cl. 252—299.63 **20 Claims**

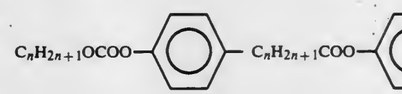
1. A nematic liquid crystal compound of the general formula

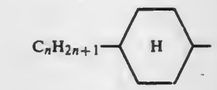


wherein

$R^1 = R^2$ and each is







with

n=1 to 16

R^3=n-C_mH_{2m+1} with

m=3 to 14.

4,519,937

ELECTROACTIVE POLYMERS

Yoram S. Papir, Emeryville, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 304,410, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 264,915, May 18, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 370,231

Int. Cl.³ H01B *1/00*

U.S. Cl. 252—500 **42 Claims**

1. A tractable electroactive polymer which comprises a charged polymer backbone of recurring units of a fused 6,6-membered nitrogen-containing unsaturated heterocyclic ring system and charge compensating ionic dopant associated therewith, wherein the polymer backbone is capable of undergoing a reversible oxidation or a reversible reduction or both to form said charged polymer backbone.

4,519,938

ELECTROACTIVE POLYMERS

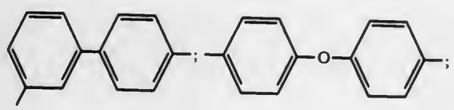
Yoram S. Papir, Emeryville, Calif., assignor to Chevron Research Company, San Francisco, Calif.

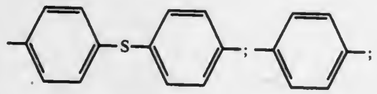
Filed Nov. 17, 1982, Ser. No. 442,531
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—500 **25 Claims**

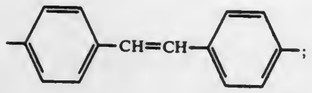
1. A tractable electroactive polymer comprising:

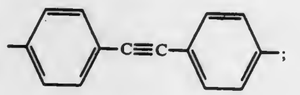
a linear charged polymer backbone and a sufficient concentration of charge compensating ionic dopant(s) associated therewith, wherein said linear polymer backbone is capable of undergoing reversible oxidation or reversible reduction or both to form said linear charged polymer backbone, said linear polymer backbone comprises diradical repeat units selected from the group consisting of a heterocyclic ring system including at least one Group 5B or Group 6B atom, wherein none of the ring carbon atoms is saturated, a heterocyclic ring system including at least one Group 5B or Group 6B atom wherein none of the ring carbon atoms is saturated and a connecting unit, and mixtures thereof, wherein said diradical repeat unit contains no exocyclic double bonds and said diradical unit in the form of a monomeric repeat unit is capable of undergoing reversible oxidation or reversible reduction or both to form a stable ionic species, wherein said ionic species is a charged atomic or molecular species in the condensed phase which maintains said ionic species chemical integrity throughout the course of the chemical process of undergoing reversible oxidation or reversible reduction or both, and wherein said connecting unit is a conjugated system or atom or group of atoms which maintain π orbital overlap with the heterocyclic ring system without adversely affecting the reversible oxidation or reversible reduction or both of said linear polymer backbone, said connecting unit is selected from the group consisting of:

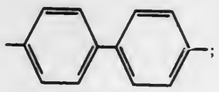
$-O-$; $-S-$; $-CH=CH-$; $-C\equiv C-$;

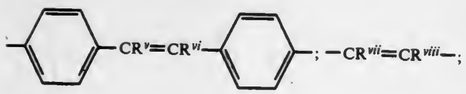




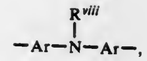








-continued



and atoms, groups of atoms and conjugated molecules which maintain π orbital overlap with said heterocyclic ring system wherein R^{v}, R^{vi} and R^{vii} are H or methyl and mixtures thereof and R^{viii} is lower alkyl C_1–C_4, or P-substituted phenyl, Ar is phenylene, or biphenylene, with the proviso that the heterocyclic ring system excludes fused 5,6-membered heterocyclic ring systems wherein two heteroatoms are in the 5-membered ring.

4,519,939

PARTICULATE DOPED POLYACETYLENE

Jürgen Hocker; Hans K. Müller, and Bruno Broich, all of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,100
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113330
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—500 **3 Claims**



1. A process for the production of a suspension suitable for forming films and coatings by spray-drying of doped polyacetylene particles, said process comprising introducing acetylene into an organic solvent which is a hydrocarbon or halogenated hydrocarbon and contains, as a Ziegler catalyst, a catalytic amount of a reaction product of (1) a metal compound of Groups IVb, Vb, VIb, VIIb, or VIII of the Periodic Table and (2) an aluminium alkyl or aluminum alkyl halide to thereby form shaped polyacetylene particles suspended in the organic solvent, deactivating the Ziegler catalyst, and p- or n-doping the polyacetylene particles by adding a dopant additive.

4,519,940

TRIAZOLE ELECTROACTIVE POLYMERS

Albert H. Schroeder, Richmond; Peter Denisevich, Jr., El Cerrito; Shigeto Suzuki, San Francisco, and Victor P. Kurkov, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 17, 1982, Ser. No. 442,398
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 **19 Claims**

1. A tractable electroactive polymer which comprises a charged polymer backbone of recurring units of a monocyclic N-substituted 1,3,4-triazole, wherein the 1-nitrogen atom is substituted with lower alkyl of 1–6 carbon atoms or phenyl, and a sufficient concentration of a charge-compensating ionic dopant associated therewith, wherein the polymer backbone is capable of undergoing reversible oxidation or reversible reduction or both to form the charged polymer backbone.

4,519,941

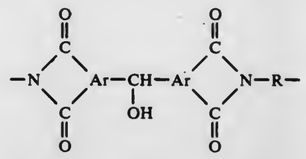
METAL-FILLED POLYIMIDE/POLYEPOXIDE BLENDS OF IMPROVED ELECTRICAL CONDUCTIVITY

Stephen P. Anderson, South Gate, Calif., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 521,791, Aug. 9, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 621,360
Int. Cl.³ A01B *1/06*
U.S. Cl. 252—514 **20 Claims**

1. A metal-filled polyimide/polyepoxide blend, characterized by its improved conductivity after curing over the blend without polyepoxide, which comprises:

(a) about 25–50% of a carbinol-containing polyimide consisting essentially of a repeat unit having the structure:



wherein Ar is the same or different aromatic radical with the two pairs of attached carbonyl groups situated on adjacent carbon atoms in the Ar radical and R is a divalent aliphatic, cycloaliphatic, aromatic, or heterocyclic radical;

(b) about 1–35% of a liquid substituted or unsubstituted alphatic, cycloaliphatic, aromatic, and/or heterocyclic polyepoxide containing at least two epoxy groups; and

(c) about 15–74% of an organic solvent for the polyimide; the percentages of (a), (b), and (c) being by weight and totaling 100%; and

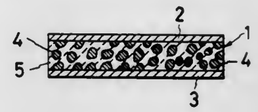
(d) about 45–90% by weight of an electrically conductive noble metal powder; the percentage of (d) being by weight based on the total weight of the polyimide and polyepoxide.

4,519,942

SEMICONDUCTIVE CERAMIC COMPOSITIONS WITH A NONLINEAR VOLT-AMPERE CHARACTERISTIC, AND PROCESS FOR PREPARING COHERENT BODIES OF SUCH COMPOSITIONS

Nobutatsu Yamaoka, Harunamachi; Akira Tsukada, Takasaki, and Kazuo Sasazawa, Maebashi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,801
Claims priority, application Japan, Jul. 30, 1980, 55-104713
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—520 **2 Claims**



1. A semiconductive ceramic composition with a nonlinear volt-ampere characteristic, particularly well suited for varistors, consisting essentially of:

(a) from about 90.000 to about 99.989% $SrTiO_3$;

(b) from about 0.001 to about 5.000% of at least one metal oxide, for making the composition semiconductive, selected from the group consisting of Nb_2O_5, Ta_2O_5, WO_3, La_2O_3, CeO_2, Nd_2O_3, Pr_6O_{11}, Dy_2O_3, Y_2O_3, and Sm_2O_3; and

(c) from about 0.010 to about 5.000% of at least one other metal oxide, for improving the nonlinear volt-ampere characteristic of the composition, selected from the group consisting of V_2O_5, Cr_2O_3, CuO, Cu_2O, MoO_3, and MnO_2.

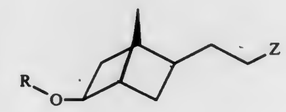
4,519,943

5-ALKOXYBICYCLO[2.2.1]HEPTANE-2-OXYPROPANE DERIVATIVES AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMAS OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

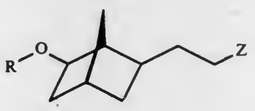
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean; William L. Schreiber, Jackson; Patrick Whelan, Matawan, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,794
Int. Cl.³ A61K *7/46*; C07C *47/34, 35/24*
U.S. Cl. 252—522 R **21 Claims**

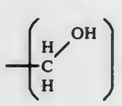
1. A compound having the structure selected from the group consisting of:



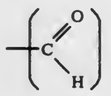
and



(wherein R represents C_1–C_3 alkyl and wherein Z represents one of the moieties, carbinol having the structure:



or carboxaldehyde having the structure:



2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one compound defined according to claim 1.

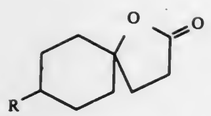
4,519,944

SPIROLACTONES AS ODORANTS

Robert T. Dahill, Holmdel; Kenneth L. Purzycki, Lake Parsippany, and Erlinda F. Golle, Passaic, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

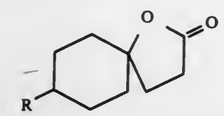
Continuation-in-part of Ser. No. 411,145, Aug. 25, 1982, abandoned. This application May 16, 1983, Ser. No. 495,212
Int. Cl.³ A61K *7/46*; C07D *307/94*
U.S. Cl. 252—522 R **27 Claims**

1. A method for improving the odor of a fragrance composition which comprises adding thereto a compound of the formula



wherein R represents an alkyl group of from one to four carbon atoms.

6. A compound having the formula



wherein R is selected from the group consisting of methyl, ethyl and sec-butyl.

4,519,945

PROCESS FOR THE PREPARATION OF A PRECIPITATE OF CASEIN AND WHEY PROTEIN

Henricus A. W. E. M. Ottenhof, Wageningen, Netherlands, assignor to Stichting Nederlands Instituut Voor Zuivelonderzoek, Netherlands

Filed Dec. 16, 1983, Ser. No. 562,102

Claims priority, application Netherlands, Dec. 21, 1982, 8204923

Int. Cl.³ A23J *1/20, 1/22*

U.S. Cl. 260—119 **13 Claims**

1. A process for the preparation of a precipitate of casein and whey protein from a milk product containing casein and whey protein, which comprises

(a) adjusting the pH of said milk product to a value above 6.8,

(b) heating the product obtained in step (a) at a temperature and for a time at least sufficient to denature the whey protein,

(c) cooling the product obtained in step (b) to a temperature below 65° C.,

(d) reducing the pH of the cooled solution to a value below 5.4 and

(e) isolating the resulting precipitate.

4,519,946

STEROIDS

Jean G. Teutsch, Pantin; Germain Costerousse, Saint-Maurice; Daniel Philibert, La Varenne Saint Hilaire, and Roger Deraedt, Pavillons sous Bois, all of France, assignors to Roussel Uclaf, Paris, France

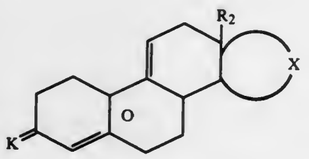
Division of Ser. No. 595,267, Mar. 30, 1984, abandoned, which is a divisIon of Ser. No. 386,967, Jun. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 338,077, Jan. 9, 1982, Pat. No. 4,386,085. This application May 25, 1984, Ser. No. 614,440

Claims priority, application France, Jan. 9, 1981, 81 00272

Int. Cl.³ C07J *53/00*

U.S. Cl. 260—239.55 R **7 Claims**

1. A compound selected from the group consisting of 19-nor steroids and 19-nor-D-homo-steroids of the formula



I

wherein R_2 is a hydrocarbon of 1 to 8 carbon atoms, X is selected from the group consisting of pentagonal ring and a hexagonal ring optionally substituted and optionally containing a double bond, and K is a ketone blocked in the form of a ketal, thioketal, oxime or methyloxime.

4,519,947

PROCESS FOR PRODUCING ANTHRAQUINONE COMPOUNDS

Makoto Hattori, Osaka; Akihiro Taguma, Hyogo; Toshihiko Morimitsu, and Akira Takeshita, both of Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Oct. 4, 1983, Ser. No. 539,031

Claims priority, application Japan, Oct. 4, 1982, 57-175173; Oct. 5, 1982, 57-175568

Int. Cl.³ C07C *97/24, 143/665*

U.S. Cl. 260—371 **28 Claims**

1. A process for producing 1,4-diaminoanthraquinone-2,3-disulfonic acid or an alkali metal salt or ammonium salt thereof which comprises reacting a 1,4-diamino-2,3-dihalogenoanthraquinone with a sulfonating agent selected from the group consisting of an alkali metal sulfite, an alkali metal hydrogensulfite, ammonium sulfite and ammonium hydrogensulfite in an aqueous medium at a temperature of 50° C. or above and at a pH of 4 to 11 in the presence of at least one of a quaternary ammonium compound and a quaternary phosphonium compound, said sulfonating agent being used in an amount of 2.0 to 5.0 moles per mole of the 1,4-diamino-2,3-dihalogenoanthraquinone.

4,519,948

PROCESS FOR OXIDIZING A PHENOL TO A P-BENZOQUINONE

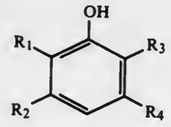
Chao-Yang Hsu, Media, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 423,985, Sep. 27, 1982, abandoned. This application Aug. 30, 1983, Ser. No. 527,891

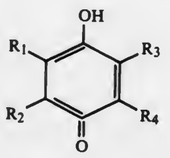
Int. Cl.³ C07C *45/16, 49/64*

U.S. Cl. 260—396 R **8 Claims**

1. In the process of oxidizing phenol or a substituted phenol of the formula



wherein R_1, R_2, R_3, and R_4 may be the same or different, and are selected from the group consisting of hydrogen, halo, cyano, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, phenyl, naphthyl, phenylalky, alkylphenyl, C_7–C_{16} phenoxy, or C_7–C_{16} phenalkoxy; and R_1 and R_2, or R_3 and R_4 may be joined to form an aliphatic, aryl, or hetero ring selected from the group consisting of naphthalene, quinoline, isoquinoline, chroman, and indole, to benzoquinone or a substituted benzoquinone of the formula



where R_1, R_2, R_3, and R_4 are as defined above, with a copper salt catalyst selected from the group of halides and nitrates, the improvement which comprises carrying out the reaction in a C_1 to C_6 nitroalkane as solvent and promoting the catalyst with a base selected from alkali metal phenoxides, and secondary or tertiary lower alkyl amines.

4,519,949

STEROID-20-CARBOXYLIC ACID COMPOUNDS AND A PROCESS FOR THEIR PRODUCTION

Wolfgang Preuss, Monheim, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

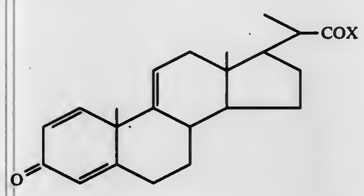
Continuation-in-part of Ser. No. 262,971, May 12, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,276

Claims priority, application Austria, May 16, 1980, 2629/80

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.1 **11 Claims**

1. Δ1,4,9(11)-pregnatrien-3-ohne-20-carboxylic acid compounds corresponding to formula I below:



(I)

in which X is selected from the group consisting of halogen and NH_2.

4,519,950

ACETAL GROUP-CONTAINING NON-IONIC SURFACTANTS

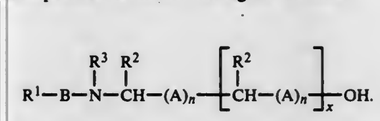
William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 16, 1981, Ser. No. 225,570

Int. Cl.³ C09F *1/00*

U.S. Cl. 260—404 **7 Claims**

1. A composition of matter having the formula:



wherein R^1 is the residue of a hydrophobic monofunctional aliphatic or aliphatic-aromatic compound selected from the group consisting of at least one of an alkyl, alykylaryl, arylalkyl, and alkylarylalkyl group; wherein each alkyl group has about 6 to about 30 carbon atoms: B is C═O; and wherein R^2 is hydrogen or alkyl of 1 to about 4 carbon atoms; R^3 is alkyl or substituted alkyl of 1 to about 4 carbon atoms; A is the residue of a hydrophilic oxyalkylene polymer which is derived from different alkylene oxides or different hydrophilic oxyalkylene polymers at least one of said polymers being derived from different alkylene oxides wherein said alkylene oxides have 2 to 4 carbon atoms and said polymers are the reaction product of said alkylene oxides with an active hydrogen compound having at least 2 active hydrogen atoms; x is an integer of 1 to 20; and n is individually selected from integers such that the molecular weight is up to about 1000.

4,519,951

SELECTIVE REDUCTION OF FATTY MATERIALS USING A SUPPORTED GROUP VIII METAL IN EGGSHELL DISTRIBUTION

Gail M. Qualeatti, Palatine, and Blaise J. Arena, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 5, 1983, Ser. No. 511,052

Int. Cl.³ C11C *3/12, 1/00*

U.S. Cl. 260—409 **16 Claims**

1. A method for the selective reduction of a fatty material comprising contacting under hydrogenation conditions the fatty material with hydrogen and a catalyst which comprises a zerovalent Group VIII metal dispersed with an eggshell distribution on a porous support selected from the group consisting of alumina, silica, thoria, magnesia, titania, and combinations thereof, and recovering the selectively reduced product.

4,519,952

PROCESS FOR SEPARATING FATTY ACIDS FROM UNSAPONIFIABLES

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 474,999, Mar. 14, 1983, , which is a continuation-in-part of Ser. No. 407,672, Aug. 12, 1982, Pat. No. 4,404,145, which is a continuation-in-part of Ser. No. 333,250, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 297,453, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 252,745, Apr. 10, 1981, Pat. No. 4,329,280. This application Sep. 19, 1983, Ser. No. 533,463

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.³ C11C *1/08*

U.S. Cl. 260—419 **8 Claims**

1. A process for separating a fatty acid from a feed mixture comprising a fatty acid and an unsaponifiable compound, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising a crystalline silica having a silica to alumina mole ratio of at least 12, thereby selectively retaining said fatty acid, and removing the remainder of the feed mixture from the molecular sieve, said fatty acid being recovered from said molecular sieve by displacement at displacement conditions with a displacement fluid soluble in said feed mixture and having a polarity index of at least 3.5.

4,519,953

PROCESS FOR PREPARING STILBENEDICARBONITRILES

Lorenz Heiss, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 29, 1984, Ser. No. 594,547

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3312164

Int. Cl.³ C07C *121/64*

U.S. Cl. 260—465 H **1 Claim**

1. A process for preparing stilbenedicarbonitriles which comprises dimerizing o- or p-cyanobenzyl chloride in a polar aprotic solvent in the presence of an excess of alkali metal hydroxide powder with loss of hydrogen chloride.

4,519,954

LEACH RESISTANT CATALYST USEFUL FOR THE DIMERIZATION OF ACRYLIC COMPOUNDS

James D. Burrington, Richmond Hts.; Fred A. Pesa, Aurora; Elizabeth A. Maher, University Hts., and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 29, 1982, Ser. No. 454,508

Int. Cl.³ C07C *121/20, 121/26, 55/14, 57, 13*

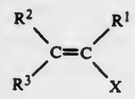
U.S. Cl. 260—465.8 D **22 Claims**

1. A process for the dimerization of an acrylic compound selected from the group consisting of acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, acrolein, methacrolein, acrylic acid, methacrylic acid, methyl acrylate, ethyl acrylate and methyl methacrylate, in the liquid phase comprising contacting an acrylic compound with a ruthenium based catalyst in the presence of hydrogen, at a pressure from about 1 psi to about 1500 psi and a temperature in the range of about 50° C. to about 400° C., wherein the catalyst comprises an inorganic oxide catalyst support, trivalent pendant atoms covalently bonded to the support and ruthenium complexed with the

trivalent pendant atoms, wherein the ruthenium is in the form of a complex represented by the formula:

$$RuL_a^1L_b^2L_c^3$$

wherein L^1 is a mono or bidentate ligand selected from F, Cl, Br, I, 2,4-pentanedionate, or mixtures thereof,
wherein L^2 is one or more of acetonitrile, propionitrile, benzonitrile, water and a group of the formula:



wherein X is CN, CO_2R^4, CHO or $CONR_2^4$ and R^1, R^2, R^3 and R^4 are independently selected from C_{1-16} alkyl, C_{6-16} aryl and H;
wherein L^3 is R_3^5P, R_3^5As, R_3^5Sb, R_3^6N, R_3^5Bi, R_2^6S and R_2^6O, or mixtures thereof wherein each R^5 is a C_{1-16} group independently selected from alkyl, aryl, alkoxy, aryloxy, dialkylamino and diarylamino and R^6 is independently selected from C_{1-16} alkyl, C_{6-16} aryl or H; and
wherein
a is 0 to 3;
b is 0 to 6;
c is 0 to 6; and
a+b+c is at least 2; and
wherein L^1, L^2 and L^3 are additively bonded to the Ru with 4 to 6 ligating bonds.

4,519,955

METHOD FOR OPTICAL RESOLUTION OF DL-α-AMINO ACID OR (±)-α-PHENYLETHANESULFONIC ACID

Ichiro Chibata, Suita; Shigeki Yamada, Toyonaka; Chikara Hongo, Osaka, and Ryuzo Yoshioka, Kaizuka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Mar. 2, 1984, Ser. No. 585,767
Claims priority, application Japan, Mar. 16, 1983, 58-43583
The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.
Int. Cl.³ C07C *143/26;* **C07B** *19/00;* **C07D** *207/16, 209/20*
U.S. Cl. 260—501.12 **35 Claims**

1. A compound comprising an α.(S)-amino acid and α-phenylethanesulfonic acid which is α-amino acid.α-phenylethanesulfonate, exclusive of p-hydroxyphenylglycine.α-phenylethanesulfonate.

3. The compound claimed in claim 1, in which the α-amino acid is selected from the group consisting of alanine, arginine, valine, leucine, isoleucine, phenylalanine, phenylglycine, tyrosine, trytophan, serine, threonine, proline, cysteine, glutamic acid, aspartic acid, histidine, ornithine, lysine and citrulline.

4,519,956

PROCESS FOR SELECTIVELY PREPARING ACETIC ANHYDRIDE BY CARBONYLATION OF METHYL ACETATE IN THE PRESENCE OF AN IODIDE-FREE CATALYST SYSTEM

Jiang-Jen Lin, Round Rock, and Roger G. Duranleau, Georgetown, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 21, 1983, Ser. No. 515,748
Int. Cl.³ C07C *51/56, 51/12*
U.S. Cl. 260—549 **8 Claims**

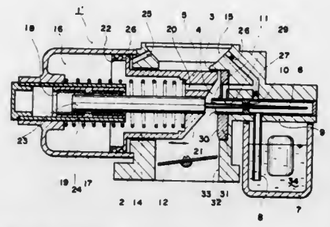
1. A process for the production of acetic anhydride which comprises reacting methyl acetate with carbon monoxide in the presence of an iodide-free bimetallic catalyst system comprising a ruthenium-containing compound from the group consisting of one or more oxides of ruthenium, ruthenium complexes with carbonyl-containing ligands and ruthenium carbonyl or hydrocarbonyl derivatives, a quaternary phosphonium salt and a cobalt-containing compound at a temperature of between 150° C. and 350° C. and a pressure of between 2000 psi and 7000 psi.

4,519,957

VARIABLE-VENTURI CARBURETOR

Takaaki Ito, and Takashi Kato, both of Mishima, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 429,431, Sep. 30, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,566
Claims priority, application Japan, Dec. 9, 1981, 56-196885
Int. Cl.³ F02M *9/06*
U.S. Cl. 261—44 C **3 Claims**



1. A variable-venturi carburetor comprising: a barrel; a throttle valve mounted in the interior, downstream poriton of said barrel; a bridge formed in the upstream poriton of said barrel and projecting outwardly into the interior of said barrel; a suction chamber provided on the side of said barrel adjacent to a venturi section formed in the interior of said barrel between said throttle valve and said bridge; a suction piston slidably fitted into said suction chamber and adapted to move back and forth in the venturi section; said suction piston having a piston head; said piston head designed at its upstream portion to be overlapped by said bridge in the idling condition; and metering neddle projecting outwardly from said suction piston head; a well; a main nozzle formed at the front end of said well and projecting outwardly a predetermined distance into the venturi section; a notch formed on the downstream side of said nozzle; a main jet formed in said well; said metering needle inserted through said main nozzle into said main jet; a float chamber; said well being connected to said float chamber; a fuel guide positioned in the venturi section adjacent to said nozzle and havnig a raised surface formed below said nozzle and offset inwardly from said notch, and having a tapered surface at its downstream portion which merges smoothly into the barrel wall to provide a smooth transition for the flow of fuel.

4,519,958

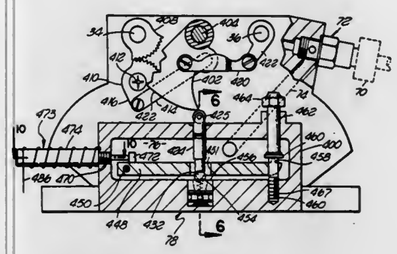
FUEL FLOW METERING APPARATUS

Willard Z. Kendig, Yettem, Calif., assignor to Kenna Research Corporation, Tustin, Calif.

Division of Ser. No. 387,901, Jun. 14, 1982, Pat. No. 4,482,507. This application Jun. 29, 1984, Ser. No. 626,367
Int. Cl.³ F02M *7/22*
U.S. Cl. 261—50 A **4 Claims**

1. A fuel flow metering apparatus for a carburetor responsive to activation of an operator controlled throttle for mixing a fuel from a storage tank with air for burning in an internal combustion engine, the carburetor defined by a carburetor housing having an air intake opening, an air-fuel discharge opening and an air-fuel mixing passageway extending through the housing between the air intake opening and the air discharge opening for drawing air in through the air intake opening in response to a partial vacuum created by the operation of the internal combustion engine and discharging a metered amount of the fuel in the air-fuel mixing passageway, the air-fuel mixture resulting therefrom being drawn through the air-fuel discharge opening into the engine in response to the partial vacuum, the direction of air flow through the housing

defining a flow direction; a fuel reservoir housing defining therein a fuel reservoir having a fuel input port and a fuel discharge port; a fuel dispersion assembly mounted to the housing for dispersing the fuel form the reservoir into the air passing through air-fuel mixing passageway;
a fuel flow metering means for variably regulating the flow of fuel from the fuel reservoir into the fuel dispersion assembly in response to the magnitude of the partial vacuum created by the operation of the internal combustion engine comprising;
a pivotal metering cam having a variable radius metering surface;
a metering rod extending through the fuel reservoir housing and having a first end postioned to bear against the metering surface and a second end positioned in the fuel reservoir;



a ball valve; and
a first spring positioned in the fuel discharge port to press against the ball valve whereby the ball valve is held against a second end of the reservoir metering rod, the first spring further pressing the reservoir meeting rod to bear against the metering surface, the fuel discharge port having therein a closure surface defined by a generally torus-like, inwardly narrowing, curved mouth transitioning to a frusto-conically tapered inner surface whereby pivotal movement of the metering disk causes longitudinal movement of the metering rod to variably increase and decrease the spacing between the ball valve and the closure surface whereby the flow of fuel through the fuel discharge port is increased or decreased respectively.

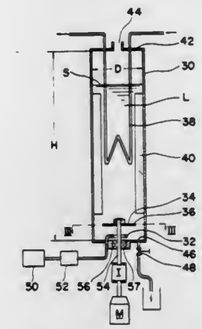
4,519,959

GAS-LIQUID CONTACTING APPARATUS

Tatsuro Takeuchi, 60-38, Miyake-cho, Moriyama, Shiga 524; Shohei Yoshida, 2-1, Aza-higashiyashiki, Yamada, Itami, Hyogo 664, and Kazuhiro Kawai, 201 Takeda Yakuhin Seiunryo, Mitsui-morigatao, Hikari, Yamaguchi 743, all of Japan

Filed Apr. 13, 1983, Ser. No. 484,552
Claims priority, application Japan, Apr. 14, 1982, 57-62917; Feb. 10, 1983, 58-20774
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—93 **20 Claims**

1. A gas-liquid contacting apparatus which comprises, in combination:
a generally cylindrical upright vessel for accommodating a quantity of liquid medium to be agitated by the action of bubbles of gaseous medium moving upwards within the vessel;
at least one perforated distributor in said vessel for supplying the gaseous medium under pressure into the vessel so as to disperse it into the liquid medium in the form of bubbles;
at least one generally disc-shaped rotary disintegrator rotatably mounted in said vessel immediately above said distributor for rotation in a plane perpendicular to the longitudinal axis of said vessel and concentric with the inner peripheral surface of said vessel and having a diameter for defining an annular clearance between the periphery of said disintegrator and the inner peripheral surface of said vessel, said disintegrator having a flat under surface facing the bottom of said vessel for, during the rotation of said disintegrator, causing bubbles of the gaseous medium emerging from said distributor to form a vortex below the flat under surface of said disintegrator, said distributor having a plurality of apertures therein in an annular area around the outer peripheral part of said disintegrator, the radial dimension of said annular area being less than half the radius of said disintegrator, and each of said apertures extending completely through the thickness of said disintegrator from said flat under surface to the upper surface thereof and being defined by peripheral edges of said



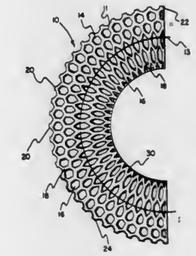
disintegrator around said apertures, whereby all the bubbles from said vortex pass upwards through the apertures and are sheared by the peripheral edges of said disintegrator for disintegrating the bubbles into fine bubbles;
a drive shaft extending coaxially into said vessel and having one end positioned exteriorly of said vessel and having said disintegrator mounted on the other end for rotation together with said shaft; and
a drive mechanism connected to said one end of said drive shaft.

4,519,960

EXPANDED METAL SADDLE TOWER PACKING

B. Layton Kitterman, and Donald L. Glaspie, both of Dallas, Tex., assignors to Glitsch, Inc., Dallas, Tex.

Filed Mar. 10, 1983, Ser. No. 474,534
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—94 **32 Claims**



21. An improved dump packing bed for vapor-liquid contact columns constructed of individual, semi-toroidal elements adapted for stacking one against another in random orientation for the flow of fluids thereacross and a turbulent interface therein, wherein the improvement comprises said semi-toroidal elements being constructed of expanded metal formed from a slotted material blank deformed across orthogonal notional axes to comprise an expanded metal body of varying lateral expansion and a variably expanded lattice of interconnected lands and segmented holes therebetween adapted for receiving

the flow of fluid therethrough and imparting turbulence thereto said interconnected lands of said curved lattice terminating in oppositely disposed arrays of perimeter teeth, and said teeth of said semi-toroidal elements matingly engaging segmented holes of adjacent semi-toroidal elements to secure said engagement during fluid flow through said variably expanded holes therein.

4,519,961

PRODUCTION OF DRY POWDERS OF SUBSTANCES WHICH ARE SENSITIVE TO OXIDATION

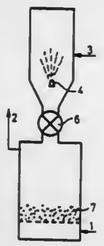
Horst Schumacher, Bobenheim, and Paul Grafen, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,085

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135329

Int. Cl.³ A61J *5/00;* **B01J** *13/02;* **B05D** *7/00*

U.S. Cl. 264—4.6 **6 Claims**



1. A process for converting an oxygen-sensitive, oil soluble substance into a dry, free-flowing, oxygen-insensitive powder, which comprises:

(a) dispersing said oxygen-sensitive, oil soluble substance in an aqueous solution which contains a film-forming colloid and one or more compounds selected from the group consisting of a mono-, di-, and poly-saccharide to form a dispersion wherein said colloid constitutes the continuous phase;

(b) atomizing said dispersion within the spraying zone of a spray tower to form discrete particles therefrom;

(c) causing said particles, as they form, to contact a hydrophobic spray assistant selected from the group consisting of silanized silica, a metal salt of a higher fatty acid and mixtures thereof in the absence of significant amounts of starch powder, with the newly formed particles being at a temperature during such contact which precludes solidification; said contact being effected by maintaining a uniform distribution of said spray assistant in the spraying zone of said spray tower during atomization of said dispersion therein to form said particles, with the spray assistant being supplied to the spraying zone in an amount of from about 0.02 to 0.15 parts by weight based on the weight of said dispersion;

(d) collecting said particles laden with said hydrophobic spray assistant in a fluidized bed downstream from the spraying zone of said spray tower with said bed being maintained in a fluidized state by an upwardly directed flow of dry air; and

(e) causing said particles to solidify and dry in said fluidized bed by means of the upward flow of dry air through the bed.

4,519,962

METHOD AND SYSTEM FOR SEALING THE EDGES OF INSULATING-GLASS PANELS

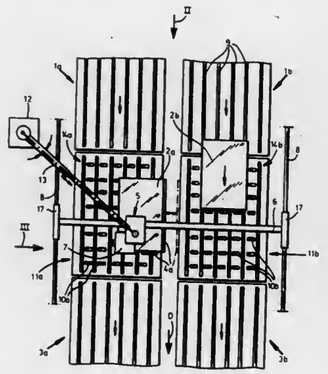
Hubert Schlienkamp, Witten, Fed. Rep. of Germany, assignor to Szabo Maschinenbau GmbH & Co. KG, Radevormwald, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 533,643

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234320

Int. Cl.³ B29C *23/00, 27/00;* **B29D** *31/00*

U.S. Cl. 264—40.7 **5 Claims**



1. A method for operating apparatus for sealing edges of assembled sandwiches of two sheets with a peripheral spacer therebetween, said apparatus comprising:

means including first and second conveyors extending longitudinally and horizontally parallel to each other, beneath sealing means, for displacing respective successions of sandwiches to said sealing means;

respective first and second means adjacent said conveyors for positioning the sandwiches longitudinally and transversely relative said conveyors;

said sealing means having a transverse support extending horizontally across both said conveyors and displaceable longitudinally of said conveyors; and a sealing device, including sensing means and an extrusion nozzle displaceable along said support and engageable with edges of the sandwiches on the conveyors for sealing said sandwiches, the method including the steps of:

moving two rows of said sandwiches along said first and second conveyors, positioning said sandwiches on said conveyors, with said means for positioning; and

displacing said device along said support and said support along said conveyors to move the sealing device first around a sandwich on the first conveyor and then around a sandwich on the second conveyor;

said positoning including replacing each sealed sandwich with an unsealed sandwich, while the sealing device seals another of said sandwiches, with alternate and sequential operation of said conveyors.

4,519,963

ELECTROCONDUCTIVE CROSS-LINKED POLYOLEFIN FOAM AND METHOD FOR MANUFACTURE THEREOF

Iwao Yoshida, Kyoto; Takeo Kasanami, Joyo, and Shuji Miura, Uji, all of Japan, assignors to Sanwa Kako Company Limited, Kyoto, Japan

Filed May 17, 1983, Ser. No. 495,406

Claims priority, application Japan, May 17, 1982, 57-81618

Int. Cl.³ B29J *1/02*

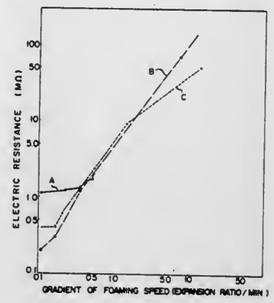
U.S. Cl. 264—45.3 **24 Claims**

1. A method for the manufacture of an electroconductive cross-linked polyolefin foam, which comprises:

kneading 100 parts by weight of a polyolefin, 10 to 30 parts by weight of particles of a conductive carbon black, and suitable amounts of a foaming agent and a cross-linking agent, and

heating the resultant cross-linkable and foamable composition under atmospheric pressure and at a temperature not more than 200° C. so that the gradient of foaming speed is maintained at 10 or less, thereby allowing the composition to be cross-linked and foamed without being abruptly foamed or expanded,

wherein the gradient of foaming speed is the change of the expansion ratio per one minute.



4,519,964

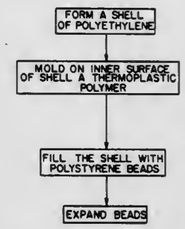
PROCESS FOR PREPARING PLASTIC ARTICLES HAVING AN OUTER SHELL AND INNER FOAM CORE

Haim Rosen, Tel-Aviv, Israel, assignor to Rotoplas, Ltd., Jerusalem, Israel

Filed Jan. 19, 1984, Ser. No. 572,044

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—45.4 **6 Claims**



1. A process for preparing plastic articles having a rigid outer shell filled with a core of foamed polystyrene, comprising:

(a) forming a shell of rigid polyethylene;

(b) molding into the inner surface of the shell a layer of a thermoplastic polymer selected from copolymers of ethylene and a member selected from the group consisting of alkylacrylates, alkylmethacrylates and vinyl esters;

(c) filling the shell with pre-expanded polystyrene beads and expanding the beads to fully occupy the hollow of the shell.

4,519,965

INTERNAL MOLD RELEASE AGENT FOR USE IN REACTION INJECTION MOLDING

Ronald P. Taylor, Coraopolis; Mark E. Cekoric, North Versailles; John E. Dewhurst, Oakdale, and Saad M. Abouzahr, Coraopolis, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1984, Ser. No. 643,612

Int. Cl.³ C08G *18/14*

U.S. Cl. 264—51 **34 Claims**

1. A process for the production of optionally cellular, polyurethane elastomer moldings by reacting a reaction mixture comprising

(I) a polyisocyanate,

(II) an isocyanate-reactive polymer having a molecular weight of about 1800 to 12,000,

(III) about 5 to 50% by weight, based on the weight of component (II) of a chain extender comprising a sterically hindered aromatic diamine and

(IV) an internal mold release agent mixture comprising

(a) about 0.5 to 10% by weight, based on the weight of components (II) and (III) of a zinc carboxylate containing 8 to 24 carbon atoms per carboxylate group and

(b) a compatibilizer comprising a member selected from the group consisting of nitrogen-containing, isocyanate-reactive, acyclic compounds and nitrogen-containing, isocyanate-reactive polymers in an amount sufficient to solubilize the zinc carboxylate so that when the internal mold release agent mixture is in admixture with components (II) and (III), the zinc carboxylate possesses improved resistance to precipitation,

said reaction mixture being processed as a one-shot system by the RIM process at an isocyanate index of about 70 to 130.

4,519,966

LOW-CONTAMINATION ALN CRUCIBLE FOR MONOCRYSTAL PULLING AND METHOD

Fritz Aldinger, Rodenbach; Richard Keilberth, Kleinheubach, and Waltraud Werdecker, Hanau, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,647

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248103

Int. Cl.³ C04B *35/58;* **C30B** *15/10, 35/00*

U.S. Cl. 264—56 **7 Claims**

1. A method of making a low-contamination crucible for pulling of monocrystals, particularly semiconductor compounds of Group III and Group V elements, consisting essentially of at least 97% by weight aluminum nitride and 0.5% to 3% by weight boron nitride, comprising the steps of:

(1) milling a particle mixture of aluminum nitride and hexagonal boron nitride to a powder with a maximum particle diameter of less than 200 micrometers;

(2) cold isostatically pressing said powder over a mandrel at a pressure of approximately 2400 bars to form a crucible shape;

(3) thereafter placing said crucible shape in a pressure-controlled sintering chamber;

(4) evacuating said sintering chamber to a pressure of less than 1 millibar;

(5) introducing nitrogen as a substantially inert gas atmosphere;

(6) raising the pressure of said substantially inert gas to at least 5 millibars;

(7) raising the temperature in said sintering chamber to 1300° C.;

(8) thereafter raising the substantially inert gas pressure to 140 millibars;

(9) further raising the temperature in said sintering chamber to 1800° C. within one hour and permitting the substantially inert gas pressure to rise to 190 millibars;

(10) holding said crucible at 1800° C. for two hours; and

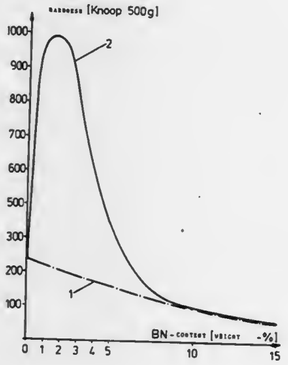
(11) allowing the crucible to cool to room temperature.

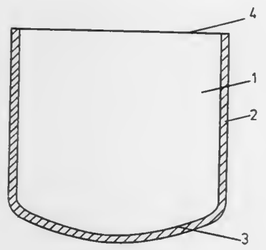
3. A method of making a low-contamination crucible for pulling of monocrystals, particularly semiconductor compounds of Group III and Group V elements, consisting essentially of at least 97% by weight aluminum nitride and 0.5% to 3% by weight of a rare earth oxide, comprising the steps of:

(1) milling a particle mixture of aluminum nitride and at least one rare earth oxide to a powder with a maximum particle diameter of less than 200 micrometers;

(2) cold isostatically pressing said powder over a mandrel at a pressure of approximately 2400 bars to form a crucible shape;

(3) thereafter placing said crucible shape in a pressure-controlled sintering chamber;





(4) evacuating said sintering chamber to a pressure of less than 1 millibar;

(5) introducing nitrogen as a substantially inert gas atmosphere;

(6) raising the pressure of said substantially inert gas to at least 5 millibars;

(7) raising the temperature in said sintering chamber to 1300° C.;

(8) thereafter raising the substantially inert gas pressure to 140 millibars;

(9) further raising the temperature in said sintering chamber to 1800° C. within one hour and permitting the substantially inert gas pressure to rise to 190 millibars;

(10) holding said crucible at 1800° C. for two hours; and

(11) allowing the crucible to cool to room temperature.

4,519,967

METHOD OF MAKING A SILICON METAL CONTAINING ARTICLE

Gary M. Crosbie, Dearborn, and Gregory T. Bretz, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 24, 1983, Ser. No. 544,942

Int. Cl.³ B28B *1/26, 1/38;* **C04B** *35/02*

U.S. Cl. 264—86 **5 Claims**

1. A method of making a silicon metal containing article characterized in the following steps:

forming a water vehicle first slurry which contains silicon metal particles, said first slurry being substantially free of ions which would cause a flocculation of said silicon metal particles;

forming an organic vehicle based second slurry which contains a compound which has an ion which would cause flocculation of silicon metal particles contained in a water vehicle slurry, said organic vehicle of said second slurry being effective to suppress formation of ions by said ion forming compound;

adding said first and said second slurries to form a castable silicon metal particle containing slurry in which said compound contained in said organic vehicle can form ions when in contact with said water vehicle, which ions cause flocculation of silicon metal particles;

introducing said castable silicon metal particle containing slurry into a casting mold;

permitting said castable silicon metal particle containing slurry to set up in said casting mold by flocculation of said silicon metal particles by said ions of said compound; and

removing said casting mold after said castable silicon metal particle containing slurry has set up, thereby to form the silicon metal containing article.

4,519,968

MANUFACTURING DIMENSIONALLY STABLE SHAPED HOLLOW SECTIONS FROM ALIPHATIC POLYAMIDES AND THEIR APPLICATIONS

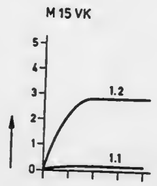
Klaus Michel, and Armin Gude, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,772

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206131; Nov. 25, 1982, 3243612

Int. Cl.³ B29D *23/04;* **B29C** *17/07*

U.S. Cl. 264—178 R **5 Claims**



1. A method for manufacturing shaped, hollow sections of polyamide plastics dimensionally stable under influence of fuels for internal combustion engines and having a given diameter consisting of:

(a) extruding a hot melt of aliphatic polyamides having at least 5 carbon atoms per carbon amide group or polyamides from an aliphatic dicarboxylic acid and an aliphatic diamine which together have at least 12 carbon atoms through a tube die;

(b) sizing said hot melt through a first gauging device having an inside diameter greater than said given diameter;

(c) cooling said shaped, hollow sections obtained in a cooling bath;

(d) removing the cooled, shaped hollow sections from the cooling bath; and

(e) sizing the cooled, shaped hollow sections adiabatically through a second gauging device having an inside diameter less than said given diameter whereby said given diameter is achieved.

4,519,969

STRETCHED FLUORINE TYPE FILM AND METHOD FOR MANUFACTURE THEREOF

Kunio Murakami, Kyoto, Japan, assignor to Unitika Ltd., Hyogo, Japan

Filed Sep. 10, 1984, Ser. No. 649,003

Claims priority, application Japan, Sep. 9, 1983, 58-166937

Int. Cl.³ C08J *5/18*

U.S. Cl. 264—210.7 **22 Claims**

1. A biaxially stretched film containing at least 90 mol % of ethylene-tetrafluoroethylene copolymer, having a value of crystallization property, ΔT, expressed by the equation

$$\Delta T = T_m - T_c$$

wherein T_m (melting point) stands for the peak melting temperature (°C.) found when a sample is heated at a temperature increase rate of 20° C./minute using differential scanning calorimeter (DSC), and

T_c (crystallizing temperature during fall of temperature) stands for the peak crystallizing temperature (°C.) found when the sample is cooled at a temperature decrease rate of 80° C./minute from the melting point plus 20° C. using said DSC,

of not less than 15° C. and not more than 60° C.,

prepared by a method comprising heating a thermoplastic resin containing at least 90 mol % of ethylene-tetrafluoroethylene copolymer to form a molten resin, extruding the molten resin through a die, and cooling the extruded molten resin at a cooling speed of at least 70° C./second in the range of the melting point minus 10° C. to the melting point minus 100° C. to thereby form a film while simultaneously biaxially stretching said film to at least two times the original size in each of the longitudinal and lateral directions.

4,519,970

METHOD FOR PRODUCING INSULATED PIPE JOINT

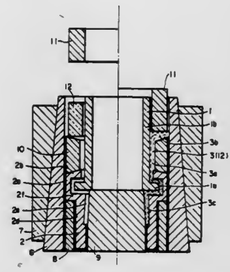
Takeo Inoue, and Takashi Shirazawa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 250,789, Apr. 3, 1981, Pat. No. 4,411,457. This application Aug. 4, 1983, Ser. No. 502,391

Claims priority, application Japan, Apr. 14, 1980, 55-51152

Int. Cl.³ B29C *17/00, 3/00*

U.S. Cl. 264—261 **1 Claim**



1. A method of producing an insulated pipe joint comprising the steps of: providing a first tubular member having a flange portion at one end thereof; providing a second tubular member having a cap portion at one end thereof adapted to receive said flange portion of the first tubular member with a gap therebetween; providing a mold comprising a molding flask, a split wall portion adapted to be received in said molding flask, a supporting member for supporting said second tubular member, a holding member for holding said first tubular member, an auxiliary wall portion for constructing an outer circumferential insulating portion and a flanged insulating portion, and a pressure member; heating said mold and said second tubular member; placing said second tubular member upon said supporting member; heating said first tubular member; disposing said flange portion of said first tubular member in said cap portion of said second tubular member; placing said first tubular member upon said holding member; placing said auxiliary wall portion upon said cover portion of said second tubular member; providing and heating a preliminary molded member formed of insulating material; placing said preliminary molded member upon said auxiliary wall portion; and placing said pressure member upon said preliminary molded member and applying a pressure to said preliminary molded member to cause said insulating material to flow into said gap.

4,519,971

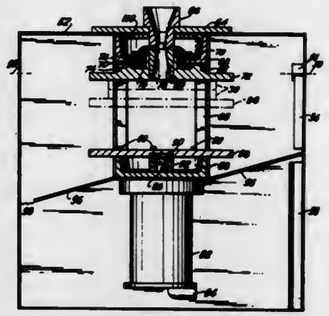
FRONT LOADING CENTRIFUGAL SPIN CASTER

Leonard S. Schaer, Greenwich, Conn., assignor to Tekcast Industries, Inc., New Rochelle, N.Y.

Division of Ser. No. 425,895, Sep. 28, 1982, Pat. No. 4,478,567. This application Mar. 26, 1984, Ser. No. 593,556

Int. Cl.³ B29C *5/04*

U.S. Cl. 264—311 **3 Claims**



1. A method of spin casting a mold in a spin caster, comprising:

loading a mold through a side of the spin caster housing onto a vertically movable bottom plate adapted to rotate about a substantially vertical axis, and underneath a vertically stationary top plate adapted to rotate about said substantially vertical axis;

moving the bottom plate vertically upward to cause the mold to contact the top plate;

applying a rotational force to the top plate which propagates through the mold to the bottom plate to thus cause the top plate, the bottom plate and the mold to rotate together;

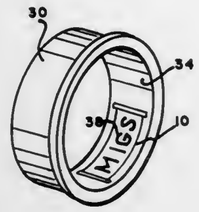
introducing a liquid material into the mold through an aperture in the top of the top plate;

terminating the rotational force;

moving the bottom plate vertically downward; and

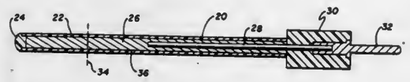
removing the mold through the side of the housing.

4,519,972
METHOD FOR USE OF PATTERN TRANSFERS IN ROTOMOLDING
Michael J. Stevenson, 1312 Say Rd., Santa Paula, Calif. 93060
Filed May 18, 1983, Ser. No. 495,754
Int. Cl.³ B29C 5/04
U.S. Cl. 264—245 6 Claims



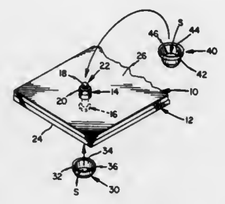
1. The method of decorating products formed by a rotational molding process which comprises;
(a) preparing a decorative pattern transfer by coating a sheet film carrier with a silicon release agent, and overcoating said release agent coating with a pattern coating comprising a mixture of from 5 to 85 weight percent of pigments dispersed in a hydrocarbon wax having a melting point from about 150 to about 280 degrees F. and distributed on said film carrier in a predetermined pattern;
(b) positioning said decorative pattern transfer against a preselected area of an inside wall of a rotation mold;
(c) burnishing said decorative pattern coating onto said inside wall of said rotational mold, and removing said sheet film carrier;
(d) charging said mold with particulate molding resin; heating said mold and conducting the rotational molding of the product with heating to coalesce the particulate molding resin; and
(e) recovering from the mold a product having a decorative or printed surface on a preselected area of its exterior surface.

4,519,973
ION SELECTIVE MEMBRANES FOR USE IN ION SENSING ELECTRODES
Patrick T. Cahalan, Maple Grove; Allan H. Jevne, Anoka, and Eric J. Fogt, Maple Grove, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 3, 1983, Ser. No. 519,937
Int. Cl.³ B29D 3/00; G01N 27/46; A61B 5/00
U.S. Cl. 264—267 21 Claims



1. A method of producing an ion-sensing electrode from a tube of solid swellable plastic having a proximal end, a distal end, an outer wall and a first lumen, comprising the following steps:
dissolving an ion-selective material in a solvent which is a swelling agent for said solid swellable plastic;
subsequently soaking at least a portion of said tube in said solvent in which said ion-selective material has been dissolved;
after said soaking step drying said tube until said solvent evaporates; and
after said drying step filling the first lumen of said tube with an electrolyte gel,
sealing the distal end of the first lumen of said tube and inserting a first electrode into the first lumen of said tube.

4,519,974
METHOD AND APPARATUS FOR APPLYING A SEALANT TO EXPOSED FASTENERS
Thomas H. Bravenec, Bedford; Roger L. Boyd, Mesquite, and Robert R. Ferenc, Dallas, all of Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.
Filed Aug. 12, 1983, Ser. No. 522,711
Int. Cl.³ B29C 1/00
U.S. Cl. 264—279 15 Claims



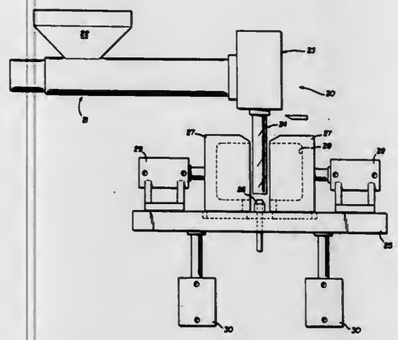
1. A method of applying a sealant over an object comprising: depositing in the interior cavity of a rigid sealant-retaining shell an amount of sealant substantially equal to the difference in the volume of the interior cavity of the shell and the volume of the object to be covered; applying the shell and sealant over the object rotating the shell with the boundary of the shell in contact with the object; while said shell is disposed adjacent said object allowing the sealant to cure; removing the shell after the sealant has cured said applying including gripping a flange extending radially from said shell and spaced from portions of said shell defining a mouth.

4,519,975
METHOD OF MANUFACTURE OF PLASTIC ARTICLE POSSESSING A WET APPEARANCE
Eberhard H. Neumann, Spartanburg, S.C., assignor to American Hoechst Corporation, Somerville, N.J.
Filed Jul. 25, 1983, Ser. No. 516,838
Int. Cl.³ B29C 17/07
U.S. Cl. 264—526 9 Claims



1. A process for the production of biaxially oriented plastic articles possessing a "wet" appearance comprising injecting a small amount of water effective to produce said "wet" appearance, at a temperature of at least 33° F. into a parison prior to or simultaneously with expansion of said parison in an otherwise conventional stretch blow molding process.

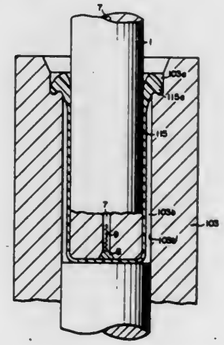
4,519,976
METHOD OF MAKING PLASTIC ARTICLES
Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 854,555, Nov. 25, 1977, Pat. No. 4,305,902, which is a continuation of Ser. No. 670,936, Mar. 26, 1976, abandoned, which is a continuation of Ser. No. 461,361, Apr. 16, 1984, abandoned. This application Jun. 30, 1980, Ser. No. 164,665
The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.
Int. Cl.³ B29C 17/07
U.S. Cl. 264—540 2 Claims



1. In a method of making a plastic article by known plastic forming techniques performed exteriorly of an orifice from which the material issues in a formable thermoplastic state, the improvements comprising:
(1) providing a body of non-oriented plasticized thermoplastic material which is at a first temperature lower than a desired second temperature which is conducive to orientation;
(2) applying a pressure of at least 20,000 psi to said body and thus
(3) advancing the body of material by progressively expressing it at said pressure of at least 20,000 psi toward said orifice while said body of material is initially at said first temperature
(4) repeatedly and progressively non-linearly shearing said body of material during the performance of step (3) to multidirectionally orient the same,
(5) the performance of steps (3) and (4) raising the temperature of the body of material to said second temperature conducive to orientation, and
(6) issuing said body of material, while still at a temperature conducive to orientation, from said orifice for further processing while it is still multi-directionally oriented as a result of the performance of step (4).

4,519,977
METHOD FOR MAKING A PLASTIC CONTAINER
Kiyoshi Kawaguchi, Yokohama, and Muneki Yamada, Ishikawa Fujisawa, both of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan
Filed Mar. 30, 1983, Ser. No. 480,308
Claims priority, application Japan, Sep. 27, 1982, 57-166640; Sep. 27, 1982, 57-166641; Sep. 27, 1982, 57-166642; Nov. 10, 1982, 57-196038
Int. Cl.³ B29C 17/03, 17/04; B29D 9/04
U.S. Cl. 264—550 6 Claims

1. A method of manufacturing a tubular plastic container having a flange portion, a sidewall portion and a bottom wall portion, at least said sidewall portion being molecularly oriented, comprising the steps of
bringing a peripheral edge portion, corresponding to said flange portion, of a flat blank of a molecularly orientable plastic into engagement with a shoulder portion of a die, said blank having a practically uniform thickness and having a temperature not higher than the molecularly orientable temperature range of said plastic, said engagement being effected by employing a die having a first cavity with an inside diameter practically equal to an outside diameter of said flange portion and a second cavity with an inside diameter practically equal to an outside diameter of said sidewall portion, said first cavity and said second cavity being connected to each other through a die shoulder portion comprising a step portion constituted by an annular groove connecting to an inner surface of said first cavity and an annular land located at an inner side of said annular groove, said blank having a diameter slightly larger than said inside diameter of said first cavity, and tightly placing said blank into said first cavity of said die, without applying axial pressure to said peripheral edge portion of said blank while forming said sidewall portion;

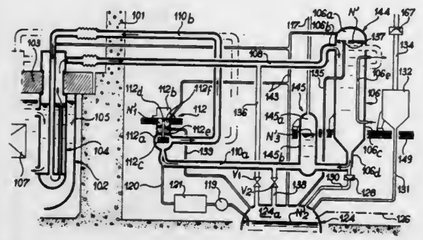


introducing said blank into said second cavity of said die while compressing a central portion of said blank substantially corresponding to said bottom wall portion by means of a first plunger and an opposing second plunger, a side surface of said first plunger being kept at a temperature substantially in the molecularly orientable temperature range of said plastic;
forming said sidewall portion from material of said blank extending out from between said first plunger and said second plunger by bringing said material into contact with said side surface of said first plunger, thereby forming a hollow molded piece; and
discharging a pressurized fluid to the inside of said hollow molded piece while withdrawing said first plunger in order to expand said sidewall portion until said sidewall portion is brought into contact with said inner surface of said second cavity held at a temperature not higher than the lower limit of said molecularly orientable temperature range, thereby cooling said sidewall portion to harden.

4,519,978
SECONDARY HEAT TRANSFER CIRCUIT FOR A NUCLEAR REACTOR
Alain Brachet, Orsay; Jacques Figuet, Aix en Provence; Joël Guidez, Connaux, and Noël Lions, Manosque, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Sep. 22, 1983, Ser. No. 534,280
Claims priority, application France, Sep. 22, 1982, 82 15958
Int. Cl.³ G21C 15/00; G21D 1/00
U.S. Cl. 376—307 7 Claims

1. In a liquid metal-cooled nuclear reactor having a reactor vessel containing liquid metal and at least one heat exchanger located in said vessel for extracting heat from said liquid metal, a secondary heat transfer circuit, said circuit comprising said heat exchanger and a vertical steam generator outside said

vessel, said steam generator having an exchange area therein, an outgoing pipe connecting an outlet tube of said heat exchanger to at least one intake tube of said steam generator, a return pipe connecting at least one outlet tube of said steam generator to an inlet tube of said heat exchanger, said circuit containing a secondary liquid metal, a pump for circulating said secondary liquid metal, said pump being positioned in said return pipe, an upstream buffer tank and a downstream buffer tank disposed in said circuit respectively upstream and downstream of said exchange are of said steam generator, and a storage tank for said secondary liquid metal which can be linked with the remainder of the circuit, wherein said downstream buffer tank is disposed in said return pipe between said



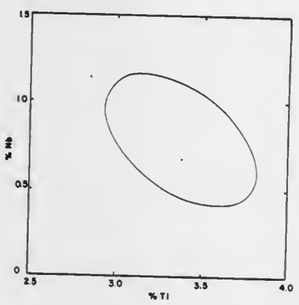
steam generator and said circulating pump, in said immediate vicinity of said outlet tube of said steam generator, each of downstream buffer tank, said upstream buffer tank and said storage tank being partially filled with said secondary liquid metal so as to define a free level of said secondary liquid metal therein, and a neutral gas in the space above said free level so as to provide a neutral gas covering, means being provided for establishing a first neutral gas pressure above the free level of said secondary liquid metal contained in said downstream buffer tank and means are also provided for simultaneously establishing a second neutral gas pressure above said free level of said secondary liquid metal contained in said storage tank and in said upstream buffer tank, said second pressure being lower than said first pressure.

4,519,979

NICKEL-CHROMIUM-COBALT BASE ALLOYS AND CASTINGS THEREOF

Stuart W. K. Shaw, Sutton Coldfield, England, assignor to INCO Europe Limited, London, England

Filed Jun. 6, 1983, Ser. No. 501,612
Int. Cl.³ C22C *19/05*
U.S. Cl. 420—448 **5 Claims**



1. A nickel-chromium-cobalt alloy, consisting essentially, in percent by weight, of about 20 to about 23% chromium, about 17 to about 23% cobalt, about 1 to 2.5% tungsten, about 0 to about 0.5% molybdenum, about 0.4 to about 1.2% niobium, about 0.6 to about 1.4% tantalum, about 2.95 to about 3.85% titanium, about 1.6 to about 2.8% aluminum, about 0.3 to about 1.3% hafnium, about 0.005 to about 1% zirconium, about 0.001 to about 0.05% boron, and about 0.01 to about 0.25% carbon, the balance, apart from impurities, being nickel, wherein the contents of niobium, hafnium, titanium and aluminum are so correlated that they satisfy the expression (the Correlation Factor):

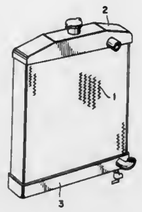
$$28327\ Nb + 804\ Hf + 36956\ Ti + 115057\ Al - 6676\ Nb^2 - 564\ Hf^2 - 4847\ Ti^2 - 54349\ Al^2 + 8392\ Al^3 - 5255\ (Nb \times Ti) \geqq 153\ 123.$$

4,519,980

FIN MATERIALS FOR AUTOMOBILE RADIATORS

Hajime Sasaki, and Shinichi Nishiyama, both of Tsuchiura, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,243
Int. Cl.³ C22C *9/02*
U.S. Cl. 420—474 **4 Claims**



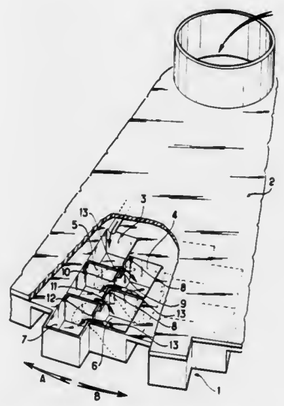
1. A fin material for automobile radiators consisting essentially of from 0.001 to 0.005% by weight of lead; from 0.03 to 0.08% by weight tin or cadmium; and the remainder of copper.

4,519,981

APPARATUS FOR BRINGING A LIQUID SAMPLE SUCCESSIVELY INTO CONTACT WITH A NUMBER OF REAGENTS

Jean Guigan, Paris, France, assignor to Inovelf, Paris, France

Division of Ser. No. 384,703, Jun. 3, 1982, Pat. No. 4,463,097.
This application May 16, 1984, Ser. No. 610,739
Claims priority, application France, Jun. 5, 1981, 81 11158
Int. Cl.³ G01N *35/00, 21/01*
U.S. Cl. 422—64 **4 Claims**



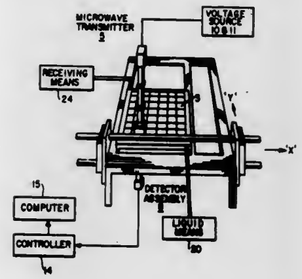
1. Apparatus for bringing a liquid sample successively into contact with a number of reagents, said apparatus comprising:
a rotor,
a series of intercommunicating cells carried by said rotor, the number of cells in said series being at least three and at least equal to the number of reagents, which are placed in said cells beforehand,
means for for rotating said rotor alternately in opposite directions, and
means for effecting flow from one cell circumferentially into another cell of said series when said rotor is rotating in a first direction but preventing reverse flow thereto from said another cell to said one cell of said series, such that a liquid sample successfully contacts the reagents in said at least three cells in sequence by rotating said rotor alternately in opposite directions.

4,519,982

TWO DIMENSIONAL MICROWAVE CHEMICAL FLOOD TESTING MEANS AND METHOD

Lorne A. Davis, Jr., and Helen K. Haskin, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 15, 1982, Ser. No. 357,922
Int. Cl.³ E21B *49/00*
U.S. Cl. 422—68 **5 Claims**



1. A microwave chemical flood scanner comprising:
a test cell having an entry port and an exit port and containing a porous medium, said test cell having side dimensions which are substantially greater than a thickness dimension of said test cell,
liquid source means for providing different liquids to said entry port,
means for receiving the different liquids from said exit port,
transmitter means for providing a beam of microwave energy when energized,
receiver means, spatially related to said transmitter means in a manner so that said test cell may be permitted to be interposed between said transmitting means and said receiving means, for receiving a beam of microwave energy after it has passed through said test cell and providing a signal corresponding to a characteristic of at least one liquid in said porous medium in said test cell,
means for energizing said transmitting means,
means for moving said transmitting means and said receiving means while maintaining their spatial relationship in a manner so that the beam of microwave energy will pass through said test cell at a plurality of predetermined locations that define a two dimensional pattern on said test cell,
calibration curve means for deriving and storing a calibration curve for each predetermined location, and
means for providing a graphical representation of the liquid content of said porous medium in said test cell in accordance with the signal from the receiving means, stored calibration curves, and the positioning of the transmitter means and receiver means in relation to the locations on the test cell;
said moving means includes
first mounting means for having said test cell mounted upon it for holding said test cell in a fixed position,
second and third mounting means, for having the transmitter means mounted on the second mounting means and for having the receiving means mounted on the third mounting means in a manner so that they are aligned with each other and having sufficient space between them so that said test cell may be interposed between said transmitter means and said receiver means,
first means for moving said second and third mounting means in unison along an X axis,
fourth and fifth mounting means having the first moving means mounted thereon,
second means for moving the fourth and fifth mounting means along a Y axis, which is perpendicular to the X axis,
and means for controlling the movement of the second and third mounting means and the fourth and fifth mounting means so that the transmitter means and the receiver means will stop temporarily at predetermined locations on the test cell for the microwave irradiation through the porous medium at that location; and
said liquid means includes:
pump means for pumping a non-corrosive liquid,
a crude oil, or a substitute, source, a surfactant source, a polymer source and a brine source,
first valve means connecting said pump means to said crude oil source, to said surfactant source, to said polymer source and to said brine source for controlling the liquid provided by said pump means to be provided to either the crude oil or substitute source, the surfactant source, the polymer source, or the brine source so as to displace crude oil from the crude oil source, surfactant from the surfactant source, polymer from the polymer source, or brine from the brine source;
second valve means connected to the crude oil source, to the surfactant source, to the polymer source, to the brine source and to the entry port of said test cell and cooperating with the first valve means for directing the brine, the polymer, the surfactant, or the crude oil or its substitute, into said test cell; and
the liquid receiving means includes:
third valve means for cooperating with said first and second valve means, and connected to the exit port of said test cell three for providing the liquid flowing from the sample cell to an appropriate container means or a plurality of container means.

4,519,983

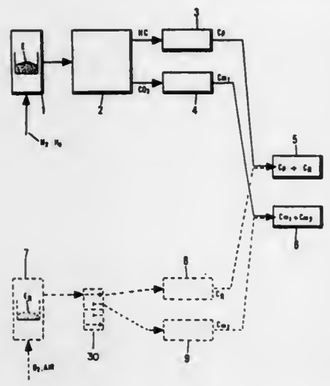
METHOD AND DEVICE FOR DETERMINING THE ORGANIC CARBON CONTENT OF A SAMPLE

Jean Espitalie, Le Vesinet; Marcel Madec, Suresnes, both of France; Paul Leplat, Leuven, and Jacques Paulet, Emines, both of Belgium, assignors to Institut Francais du Petrole, Rueil-Malmaison, France and Société Labofina S.A., Brussels, Belgium

Division of Ser. No. 219,616, Dec. 24, 1980, Pat. No. 4,352,673.
This application Jul. 26, 1982, Ser. No. 401,595
Claims priority, application France, Dec. 28, 1979, 79 32019
Int. Cl.³ G01N *31/12*
U.S. Cl. 422—78 **8 Claims**

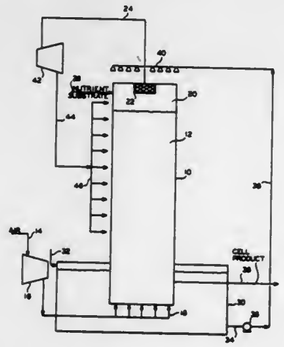
1. A device for determining the total amount of organic carbon contained in a sample of sediment, comprising:
first heating means for heating in an inert atmosphere, a sample to a first temperature wherein at least a fraction of carbon containing organic material is cracked therein;
first measuring means for measuring only the amount of organic carbon contained in at least a fraction of effluents produced in said first heating means during cracking;
second heating means for heating the sample in an oxidizing atmosphere to a second temperature at most equal to said first temperature wherein the residual organic material is oxidized;
second measuring means separate from said first measuring means for measuring the amount of organic carbon contained in the effluent resulting from the oxidation of the organic carbon containing material heated in said second heating means; and

processing means connected to said first and second measuring means for deriving the total organic carbon content of



the sample from the measurements performed by said first and second measuring means.

4,519,984
APPARATUS FOR CARRYING OUT SPARGED REACTION
Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 18, 1982, Ser. No. 340,147
Int. Cl.³ B01J *1/00*
U.S. Cl. 422—196 **21 Claims**

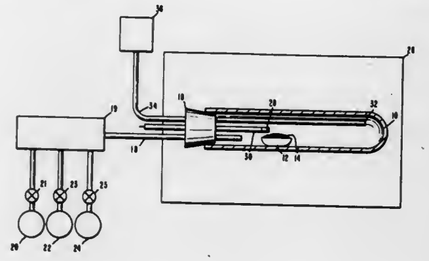


19. Apparatus for carrying out a sparged reaction, comprising:
(a) at least one vertically disposed reaction chamber having gas-impermeable walls;
(b) means for introducing a sparging gas under pressure into the bottom of said reaction chamber;
(c) means for separating and withdrawing said sparing gas from said reaction chamber adjacent the upper end thereof; and
(d) means for passing the thus separated sparging gas in indirect heat exchange with the outside surface of at least the upper portion of said reaction chamber.

4,519,985
USE OF ACTIVATED CARBON TO REMOVE DISSOLVED ORGANICS FROM URANIUM LEACHATE
Bruce D. Wells, Pittsburgh, Pa., and Du'Bois J. Ferguson, Houston, Tex., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.
Filed Mar. 12, 1980, Ser. No. 129,540
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—6 **1 Claim**

1. A process for selectively removing dissolved organic components from a uranium leachate solution which comprises passing said leachate solution through a bed of granular activated carbon wherein the activated carbon has a net pore volume of at least 0.40 cc/g for those pores having a pore diameter of from 35 to about 1000 Å.

4,519,986
PROCESS FOR PREPARATION OF ULTRAPURE THORIUM FLUORIDE
Ricardo C. Pastor, Manhattan Beach, and Remedios K. Chew, Long Beach, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.
Filed Jan. 28, 1982, Ser. No. 343,637
Int. Cl.³ C01F *15/00*
U.S. Cl. 423—19 **6 Claims**



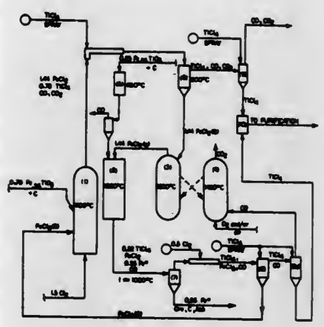
1. A process for preparing ultrapure thorium fluoride having minimized water and water-derived impurities, comprising the steps of:
(a) reacting thorium oxide with a predetermined amount of aqueous hydrofluoric acid to form a solid reaction product;
(b) drying said solid reaction product under controlled heating to form a hydrated thorium fluoride with a predetermined amount of hydration; and
(c) exposing said hydrated thorium fluoride to a reactive atmosphere comprising hydrofluoric acid vapor and a selected fluoride compound in the gas phase at a predetermined elevated temperature for a predetermined period of time to thereby remove substantially all of said water and water-derived impurities from said hydrated thorium fluoride and to thereby provide said ultrapure thorium fluoride.

4,519,987
TREATMENT OF OXIDIC MATERIALS
Michael Robinson, Wooton, England, assignor to Laporte Industries Limited, London, England
Filed Sep. 12, 1983, Ser. No. 531,265
Claims priority, application United Kingdom, Oct. 9, 1982, 8228932; Jan. 8, 1983, 8300473
Int. Cl.³ C01G *41/00, 33/00, 35/00;* C01F *7/56*
U.S. Cl. 423—60 **8 Claims**

1. A process for the treatment of a mineral containing metal oxides capable of reacting to form volatile chlorides at temperatures of from 450° C. to 1100° C., the Gibbs Free Energy of Chlorination of at least one of the metal oxides being at least 5×4184 Joules per mole of chlorine reacted different from at least one other of the metal oxides, to remove therefrom at least one metal oxide, comprising establishing a fluidised bed of

particles of the mineral in admixture with a quantity of particles of carbon in excess of that required to react with the oxygen present in the at least one metal oxide to be removed and as oxygen added to the bed, maintaining the temperature of the fluidised bed at from 450° C. to 1100° C. and such that the at least one metal oxide to be removed reacts to form a volatile chloride, passing a free chlorine containing gas having a concentration of chlorine of from 20% to 85% by volume into the fluidised bed, passing a feed of oxidic mineral into and through the fluidised bed and removing treated solids from the fluidised bed, maintaining an expanded bed depth greater than 2.75 m and an expanded bed height to diameter ratio of at least 4:1 and maintaining a zone of at least 0.25 m in depth, measured downwardly from the expanded bed surface, in which there is substantially no free chlorine and removing the volatile chloride formed from the fluidised bed.

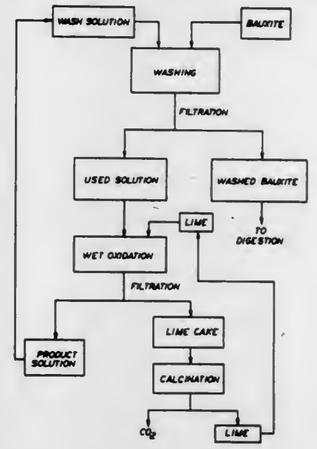
4,519,988
TWO STAGE CHLORINATION OF TITANIFEROUS ORE
Semyon D. Fridman, Randallstown, Md., assignor to SCM Corporation, New York, N.Y.
Filed Aug. 8, 1984, Ser. No. 638,854
Int. Cl.³ C01G *23/02*
U.S. Cl. 423—76 **4 Claims**



1. A process for chlorinating an iron-containing titaniferous ore to produce $TiCl_4$ which comprises:
(a) chlorinating from 70 to 80% by weight of said ore in a first chlorination zone with a carbonaceous reductant and with chlorine alone or in combination with $FeCl_3$ to yield a primary stream containing $TiCl_4$, $FeCl_2$ and oxides of carbon,
(b) separating $FeCl_2$ from said primary stream;
(c) chlorinating the balance of said ore in a second chlorination zone using said $FeCl_2$ as a chlorinating agent and a carbonaceous reductant under dilute phase conditions to yield a secondary stream containing $TiCl_4$, metallic iron, unused $FeCl_2$ and oxides of carbon;
(d) separating the metallic iron and $FeCl_2$ from said secondary stream; and,
(e) combining the product $TiCl_4$ from said primary and secondary streams.

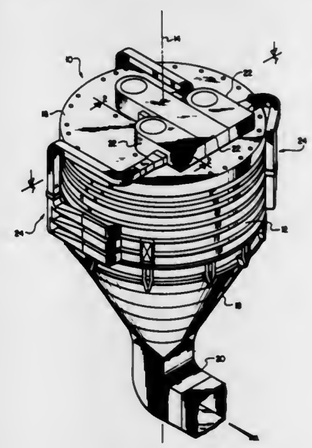
4,519,989
REMOVAL OF ORGANIC CONTAMINANTS FROM BAUXITE AND OTHER ORES
Alan Pearson, and Paul J. The, both of Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 22, 1983, Ser. No. 468,312
Int. Cl.³ C01F *7/06*
U.S. Cl. 423—121 **18 Claims**

1. A process for making a Bayer process liquor having a decreased concentration of organic contaminants, said process comprising
(a) washing bauxite in a slurry comprising the bauxite and an aqueous wash solution containing caustic soda, sodium carbonate or mixtures thereof in an amount up to about 80 g/l total alkali content (expressed as sodium carbonate equivalent), thereby to remove organic contaminants from said bauxite,
(b) separating from the slurry a used solution containing degradation products of said organic contaminants, and



(c) dissolving the washed bauxite in a caustic solution containing caustic soda or a mixture of caustic soda and sodium carbonate in a concentration of about 100–400 g/l total alkali content (expressed as sodium carbonate equivalent), thereby to produce Bayer process liquor.

4,519,990
SPRAY DRYER FOR THE PURIFICATION OF A GAS
Paul M. Bevilaqua, Dublin, Ohio, and Stanley J. Stachura, Woodland Hills, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed May 24, 1983, Ser. No. 497,617
Int. Cl.³ B01D *1/16*
U.S. Cl. 423—210 **20 Claims**



1. A spray dryer apparatus for contacting a hot gas stream containing gaseous impurities with an aqueous medium containing an absorbent for the impurities to produce a gas stream

of reduced impurity content and dry powder products, said apparatus comprising:

a chamber formed symmetrically about a vertical axis;

atomizer means located in an upper portion of said chamber for introducing a finely dispersed spray of said aqueous medium;

conduit means for delivering said hot gas stream to said chamber;

gas injection means for receiving a major portion of said hot gas stream from said conduit means and introducing it circumferentially about said atomizer means, said gas injection means imparting both axial and angular velocity components to said major portion of said hot gas stream whereby said hot gas stream swirls downwardly through said chamber;

bypass means for withdrawing a minor portion of said hot gas stream from said conduit means; and

duct means for introducing said withdrawn minor portion of said hot gas stream into said chamber at a tangent to a radius extending from said vertical axis, in a substantially horizontal plane and in a direction counter to the direction of swirl of said major portion of said hot gas stream passing downwardly through said chamber.

18. A method of treating a hot gas stream containing gaseous impurities with an aqueous medium containing an absorbent for the impurities to produce a gas stream of reduced impurity content and dry powder products comprising:

introducing said aqueous medium into a chamber formed symmetrically about a vertical axis, said aqueous medium being introduced as a finely dispersed spray into an upper portion of said chamber;

introducing a major portion of the hot gas stream containing gaseous impurities into said chamber and circumferentially about said finely dispersed spray, said major portion of hot gas being introduced in a downwardly descending swirl through said chamber; and

introducing a minor portion of the hot gas stream into said chamber about the periphery thereof, at a tangent to a radius extending from said vertical axis, in a substantially horizontal plane and in a direction counter to the direction of swirl of the major portion of hot gas passing through said chamber.

4,519,991

ENRICHMENT IN HYDROGEN SULPHIDE OF GASES CONTAINING IT

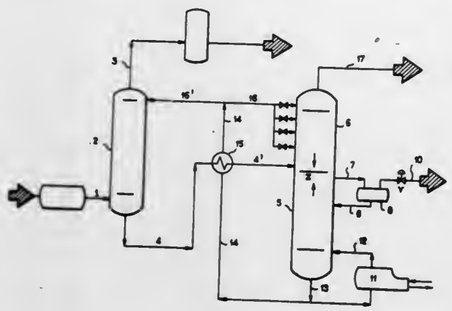
Olivier Oliveau, Lescar, and Claude Blanc, Pau, both of France, assignors to Societe Nationale Elf Anquitaine, France

Filed Dec. 21, 1983, Ser. No. 565,029

Claims priority, application France, Dec. 21, 1982, 82 21410

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—220 **10 Claims**



1. Improvement in the enrichment of a gas in hydrogen sulphide, comprising selective absorption by a liquid in a primary absorption zone by contacting gas containing H_2S with an absorbent liquid, regeneration of the liquid by heating and/or stripping by an inert gas with liberation of the gases absorbed and recovery of a fraction of the liberated gases, the remainder of the liberated gases being subjected to a second absorption in a secondary absorption zone by a new or regenerated absorbent liquid identical with that utilized in the primary absorption zone, characterized in that the steps of regeneration and secondary absorption are effected in a common operative zone in which there occur simultaneously: introduction of the liquid from the primary absorption, movement of the gases liberated during regeneration for said recovery and for contact with absorbent liquid, flow of the liquid derived from the secondary absorption and discharge from said operative zone of a fraction of the liberated gases enriched in H_2S.

4,519,992

PROCESS FOR PURIFYING GASES FROM HYDROGEN SULPHIDE

Tofik G. O. Alkhazov, prospekt Kirova, 40, kv. 39, Baku; Jury P. Korotaev, prospekt Lenina, 69, korpus 2, Moscow, and Albert A. Vartanov, ulitsa Michurina, 39, blok 4, kv. 25, Baku, all of U.S.S.R.

Filed May 24, 1984, Ser. No. 613,892

Claims priority, application U.S.S.R., May 26, 1983, 3591260

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—230 **1 Claim**

1. A process for purifying gases from hydrogen sulphide, comprising oxidizing of hydrogen sulphide with oxygen at a volume ratio of hydrogen sulphide to oxygen of 1:1–1.5 on a catalyst containing, % by weight: titanium dioxide—10–30, iron oxide—20–30, zinc oxide—20–25, chromium oxide—2-0–50 at a temperature ranging from 220° to 260° C. and at a space velocity of the gas mixture of 3,000 to 15,000 hr^{-1}.

4,519,993

PROCESS OF CONVERSION FOR DISPOSAL OF CHEMICALLY BOUND NITROGEN IN INDUSTRIAL WASTE GAS STREAMS

Eugene C. McGill, Skiatook, and Ronald D. Bell, Tulsa, both of Okla., assignors to McGill Incorporated, Tulsa, Okla.

Continuation-in-part of Ser. No. 348,840, Feb. 16, 1982, Pat. No. 4,405,587. This application Aug. 15, 1983, Ser. No. 523,644

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ C01B *21/00;* **B01D** *47/00*

U.S. Cl. 423—235 **22 Claims**

1. An improved process for disposing of an industrial waste stream containing chemically bound nitrogen compounds comprising:

burning the industrial waste stream containing chemically bound nitrogen compounds at a temperature greater than about 2000° F. in the presence of a stoichiometric excess of an amount of a reducing agent required for stoichiometric reduction of available oxygen to provide a combustion effluent substantially free of oxides of nitrogen; and

reacting the combustion effluent with an effective amount of a dilute oxygen containing gaseous stream to achieve oxidation of the combustibles present in the combustion effluent at a temperature of about 1600° F. to about 1800° F. and without effecting flame propagation within the dilute oxygen containing gaseous stream to produce an oxidation effluent substantially free of oxides of nitrogen.

4,519,994

PROCESS FOR ABSORPTION OF SO_2 INTO PHOSPHATE ABSORBENT

Lawrence A. Smalheiser, Spring Valley, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 27, 1984, Ser. No. 584,223

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **6 Claims**

1. A method of absorbing sulfur dioxide wherein sulfur dioxide is absorbed into an absorbent comprising an aqueous solution of an alkali metal phosphate, wherein said method comprises utilizing a pH for the phosphate of no less than about 4.5 and adjusting the molarity of the phosphate absorbent so as to yield an increased absorption of sulfur dioxide in the absorbent.

4,519,995

METHOD OF DESULFURIZING FLUE GASES OF COAL FIRINGS

Herbert Schröfelbauer, Klagenfurt, and Gernot Staudinger, Graz, both of Austria, assignors to Österreichische Draukraftwerke Aktiengesellschaft, Klagenfurt, Austria

PCT No. PCT/AT82/00034, § 371 Date Jul. 11, 1983, § 102(e) Date Jul. 11, 1983

PCT Filed Nov. 19, 1982, Ser. No. 519,775

Claims priority, application Austria, Nov. 19, 1981, 4992/81

Int. Cl.³ B01J *8/00;* **C01B** *17/00*

U.S. Cl. 423—244 **5 Claims**

1. A method of desulfurizing flue gas generated in a coal-combusting installation operating with dry additives selected from the group consisting of calcium oxide and calcium carbonate wherein coal is fired in a combustion chamber in the presence of the dry additives reacting with sulfur oxide components, then the stream of flue gas having normally a temperature of about 150° C. and being laden with ashes and residual additives is discharged from the combustion chamber and supplied to a dust filter where the flue gas is separated from the ashes and residual additives, comprising the step of increasing the relative moisture of the discharged stream before its entry in the filter by cooling the discharged stream to a lower temperature which exceeds the temperature of condensation point of water present in the stream, thus enhancing reaction of sulfur oxide components still present in the flue gas with the residual additives in the filter.

4,519,996

METHOD FOR ENRICHING AND SEPARATING HEAVY HYDROGEN ISOTOPES FROM SUBSTANCE STREAMS CONTAINING SUCH ISOTOPES BY MEANS OF ISOTOPE EXCHANGE

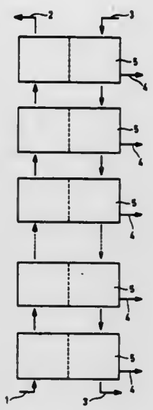
Arndt Knöchel; Ingo Eggers; Bernd Klatte, all of Hamburg, and Rolf-Dieter Wilken, Wentorf, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,171

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202776

Int. Cl.³ C01B *5/00*

U.S. Cl. 423—249 **48 Claims**



1. Process for enriching and separating heavy hydrogen isotopes having a heavy hydrogen cation of deuterium and/or tritium from substance streams containing them, wherein the respectively present hydrogen isotopes are exchanged in chemical equilibria, comprising:

(a) bringing a protic acid solution containing the deuterium and/or the tritium in contact with a value material selected from the group of open chained polyethers or aminopolyethers, macro-monocyclic or macro-polycyclic polyethers, or macro-monocyclic or macro-polycyclic aminopolyethers, or mixtures of these value materials, in free or proton salt form, to form a reaction product of the heavy hydrogen cation with the value or value salt and bring about enrichment of deuterium and/or tritium in the reaction product;

(b) separating the reaction product containing the value or value salt from the solution; and

(c) releasing from the separated reaction product in the form of deuterium oxide (HDO) and/or tritium oxide (HTO), the hydrogen isotope(s) to be enriched, by regenerating the value or its salt, respectively, and returning the value or its salt for reuse.

4,519,997

METHOD FOR IMPROVING THE INITIAL ACTIVITY OF ACTIVATED HYDRAZINE

Wilfried Fuchs, Halle-Neustadt; Horst Richter, Bad Dürrenberg; Roland Kober, Leuna; Vendelin Kaufmann, Leuna, and Christina Müller, Leuna, all of German Democratic Rep., assignors to VEB-Leuna-Werke "Walter Ulbricht", Leuna, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 473,850

Claims priority, application German Democratic Rep., Apr. 22, 1982, 2392177

Int. Cl.³ C02B *1/18;* **C23F** *11/14, 11/18*

U.S. Cl. 423—265 **10 Claims**

1. A composition for improving the initial activity of activated hydrazine with respect to oxygen dissolved in water, comprising a trivalent cobalt complex with inorganic ligands as complex constituents, and a component selected from the group consisting of 2-amino-4-nitrophenol, 2-acetamino-4-nitrophenol, and mixtures thereof.

4,519,998

PROCESS FOR THE PREPARATION OF A CRYSTALLINE TITANOBOROSILICATE

Kee K. Lam Shang Leen, Cap-Rouge, Canada, assignor to Centre de Recherche Industrielle du Quebec, Quebec, Canada

Filed Aug. 26, 1982, Ser. No. 411,621

Int. Cl.³ C01B *35/10*

U.S. Cl. 423—277 **4 Claims**

1. A method for preparing a crystalline titanoborosilicate molecular sieve material having a composition in terms of mole ratios of oxides as follows:

$$0.9\pm0.2[xR_2O+(1-x)M_{2/n}O]:TiO_2:B_2O_3:ySiO_2.z\text{-}H_2O$$

wherein R is an alkylammonium cation, M is at least one cation of valence n selected from the group consisting of alkali metal of alkaline earth metal, y is a value of at least 8 up to 500, z is between 0 and 100 and x is a value greater than zero but less than 1, said material being further characterized by an X-ray diffraction pattern comprising the following diffraction lines and their relative intensities:

Interplanar spacing d (A)	Relative intensity
11.1 ± 0.2	W-S
10.05 ± 0.2	W-MS
5.18 ± 0.05	VW-M
4.11 ± 0.05	M-VS
3.83 ± 0.05	M-VS
3.71 ± 0.05	MS-VS
3.64 ± 0.05	MS-S

-continued

Interplanar spacing d (A)	Relative intensity
3.31 ± 0.05	W-S
2.98 ± 0.02	VW-M
2.50 ± 0.02	VW-M
1.99 ± 0.02	VW-M

which method comprises:

(a) providing a reaction mixture comprising:

(1) a titanium-oxide containing material and an alkali metal tetrahydroborate,

(2) a compound of silicon selected from the group consisting of an oxide of silicon and sodium silicate,

(3) a hydroxide of an alkali or alkaline earth metal,

(4) an alkylammonium cation or a precursor thereof, and

(5) water; and

(b) maintaining said reaction mixture under alkaline pH, at a reaction temperature between 25° C. to about 300° C., and for a time sufficient to effect formation of said crystalline titanoborosilicate under autogeneous pressure at the reaction temperature, the composition of the reaction mixture in (a) being such as to provide mole ratios in the following ranges:

$OH^-:SiO_2$: 0.01–11

$R_2O/(R_2O+M_{2/n}O)$: 0.2–0.97

H_2O/OH^-: 10–4000

SiO_2/B_2O_3: 8–4000

SiO_2/TiO_2: 8–400.

4,519,999

WASTE TREATMENT IN SILICON PRODUCTION OPERATIONS

Larry M. Coleman, Tonawanda, N.Y., and William Tambo, Chelmsford, Mass., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 135,878, Mar. 31, 1980, abandoned. This application May 28, 1982, Ser. No. 383,234

Int. Cl.³ C01B *33/18*

U.S. Cl. 423—337 **5 Claims**

1. A process for the enhanced disposal of gaseous and liquid wastes formed during the hydrogenation of metallurgical grade silicon and silicon tetrachloride to produce chlorsilanes, primarily trichlorosilane, disproportionation of such chlorosilanes to produce high purity silane and silicon tetrachloride, and decomposition of said silane in a free space reactor or fluid bed reactor to produce high purity silicon and by-product hydrogen, wherein said wastes are present as a light gas waste including silane and hydrogen, a heavy gas waste including mono, di and trichlorosilane, and a liquid waste including silicon tetrachloride, said process comprising:

(a) separately collecting the light gas waste, heavy gas waste and liquid waste formed in such production operations;

(b) burning said light gas waste in a burner adapted to ensure essentially complete combustion thereof at a temperature not exceeding about 2,000° F. and sufficient to ensure that the silica particulates formed as a result of said combustion are of a size to facilitate subsequent filitration thereof from the resultant combustion product gases;

(c) burning said heavy gas waste with a hydrogen-containing fuel at a temperature not exceeding about 2,000° F. in a separate burner adapted to ensure essentially complete combustion of said waste to hydrogen chloride and silica of a particle size sufficient to facilitate subsequent filtration thereof from the combustion product gases;

(d) burning said liquid waste at a temperature not exceeding about 2,000° F. with a hydrogen-containing fuel in a separate burner adapted to ensure essentially complete combustion of such waste to hydrogen chloride and silica of a particle size sufficient to facilitate subsequent filtration thereof from the combustion product gases;

(e) passing the combustion product gases from said separate burners to two bag filters units in series for separation of silica therefrom;

(f) passing the combustion gases from said filter units to a liquid scrubbing zone for final cleanup ensuring that all particulate matter is removed therefrom, said zone having a stream of liquid withdrawn therefrom and recycled to said zone;

(g) contacting said filtered silica with a hot gas stream to a temperature of at least about 700° F. to ensure desorption of hydrogen chloride therefrom;

(h) passing the filtered silica in said hot gas stream through a cyclone separation zone for recovery of by-product silica;

(i) passing the combustion gases from said scrubbing zone to an absorption zone for contact with water therein thus producting dilute muriatic acid therein;

(j) recovering by-product muriatic acid from said absorption zone;

(k) withdrawing residual combustion product gas from said absorption zone, whereby all of the wastes produced are processed to form useful by-products and clean residual combustion product gas that can be vented to the atmosphere.

4,520,000

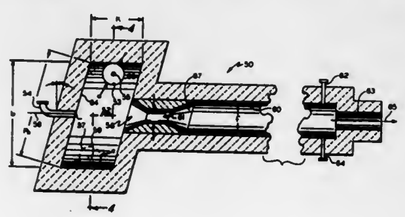
PROCESS FOR PRODUCTION OF CARBON BLACK

John R. Casperson, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 350,850, Feb. 22, 1982, Pat. No. 4,447,401. This application Feb. 17, 1984, Ser. No. 581,402

Int. Cl.³ C01B *31/02;* **C09C** *1/48*

U.S. Cl. 423—456 **31 Claims**



1. A method for producing carbon black in a carbon black reactor comprising a precombustion chamber defined by an upstream confining generally planar wall, a downstream confining generally planar wall substantially parallel thereto, and a cylindrical wall having a longitudinal axis, wherein said cylindrical wall connects said upstream and downstream confining generally planar walls, and wherein said upstream and downstream confining generally planar walls lie in planes which are skewed with respect to said longitudinal axis at an angle in the range of from about 30 to about 60 degrees, said method comprising the steps of:

(a) introducing a stream of hot combustion gases tangentially into said precombustion chamber through said cylindrical wall;

(b) introducing a stream of carbonaceous feedstock through said upstream confining generally planar wall into said precombustion chamber;

(c) contacting said carbonaceous feedstock and said hot combustion gases in a non-uniform manner under carbon black formation conditions to convert at least a portion of said carbonaceous feedstock into carbon black;

(d) withdrawing a carbon black-containing smoke from said carbon black reactor; and

(e) recovering carbon black from said smoke.

4,520,001

PROCESS FOR PRODUCING SOLUTIONS OF ALKALI METAL SILICATE IN A STATIC REACTOR

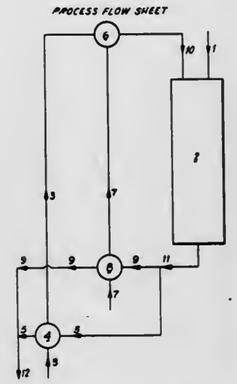
Jean Metzger, 16, allee Gay Lussac, Pierre Benite, France (69310); Henri Lecouls, 7, avenue Beauregard, St. Genis Laval, France (69230); Philippe Colombé , chemin des Vallons des Mourgues, Le Peyblanc, Aix en Provence, France (13090), and Jean Wojcik, 42, Chemin de la Tassine, St. Genis Laval, France (69230)

Filed Apr. 6, 1983, Ser. No. 482,465

Claims priority, application France, Apr. 16, 1982, 82 06563

Int. Cl.³ C01B *33/32*

U.S. Cl. 423—332 **14 Claims**



1. A process for producing a clear alkali metal silicate solution having an SiO_2/alkali metal oxide weight ratio of 2.5 or less which comprises:

(a) establishing a bed of crystallized silica in a tubular reactor, said silica having an average particle size of between about 0.1 and 2 mm;

(b) introducing an aqueous solution of an alkali metal hydroxide at the top of the reactor to react with a portion of said silica bed at a temperature between about 150° and 240° C. and at a pressure greater than the saturated vapor pressure of the liquid phase of the system at the reaction temperature, said alkali metal hydroxide solution traversing said silica bed at a rate between about 2 and 15 m/hr;

(c) introducing fresh silica at the top of the reactor in an amount to substantially replenish the portion of the silica bed which has reacted with the alkali metal hydroxide, the remaining unreacted part of said bed being sufficient to filter impurities from said silicate solution; and

(d) recovering the resulting clear alkali metal silicate solution from the bottom of the reactor.

4,520,002

METHOD FOR PREPARING ELEMENTAL SULFUR AS A DIFFUSION-RESISTANT GAS AND METHODS FOR ITS USE IN MAKING LIME, SULFUR DIOXIDE AND SULFURIC ACID FROM WASTE GYPSUM

Horace E. Willis, Jr., Houston, Tex., assignor to Merichem Company, Houston, Tex.

Filed Jan. 20, 1984, Ser. No. 572,301

Int. Cl.³ C01B *17/00, 17/42, 17/48, 17/74*

U.S. Cl. 423—522 **8 Claims**

1. A method for preparing elemental sulfur as a coherent diffusion resistant gas for reaction with solid reactants, comprising the steps of:

heating elemental sulfur to the boiling point of sulfur in an enclosed vessel which communicates with a delivery conduit to continuously supply sulfur vapor to said conduit;

super heating said sulfur vapor during transit through said delivery conduit to a temperature of at least about 1270° F.; and

debouching said super heated sulfur vapor from said conduit into a reaction zone to which solid reactant is continuously supplied, whereby said super heated sulfur vapor debouches in the form of a coherent diffusion resistant gas which flows into concentrated contact with said solid reactant.

2. A method for obtaining sulfur dioxide by reacting calcium sulfate with a coherent diffusion resistant gaseous reagent form of elemental sulfur, comprising the steps of:

continuously supplying calcium sulfate to a reaction zone maintained at a temperature of from about 1600° F. to about 2300° F.;

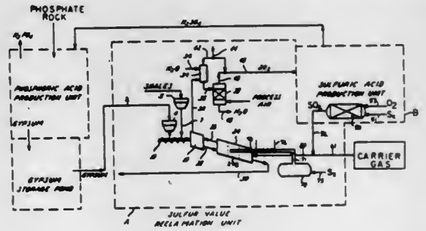
heating elemental sulfur to the boiling point of sulfur in an enclosed vessel which communicates with a delivery conduit to continuously supply sulfur vapor to said conduit;

super heating said sulfur vapor during transit through said delivery conduit to a temperature of at least about 1270° F.; and

debouching said super heated sulfur vapor from said conduit into said reaction zone as a coherent gas which resists diffusion within said reaction zone and thus flows into concentrated contact with said calcium sulfate whereby calcium sulfate is converted by reaction with said sulfur into calcium sulfide and sulfur dioxide.

4. A method for obtaining sulfur dioxide and lime from calcium sulfate, comprising the steps of:

continuously supplying calcium sulfate to a first reaction



zone maintained at a temperature of from about 1600° F. to about 2300° F.;

heating elemental sulfur to the boiling point of sulfur in an enclosed vessel which communicates with a delivery conduit to continuously supply sulfur vapor to said conduit;

super heating said sulfur vapor during transit through said delivery conduit to a temperature of at least about 1270° F.;

debouching said super heated sulfur vapor from said conduit into said first reaction zone as a coherent gas which resists diffusion in said first zone and thus flows into concentrated contact with said calcium sulfate whereby a portion of said calcium sulfate is converted into calcium sulfide and sulfur dioxide; and

supplying said calcium sulfide and said unreacted portion of calcium sulfate to a second reaction zone which is held at a temperature of at least about 1800° F. and maintaining said solids in said second zone for a time sufficient to permit essentially complete reaction between calcium sulfate and calcium sulfide to produce lime and sulfur dioxide.

7. A method for recovering sulfur values from waste by-product gypsum produced by the wet process production of phosphoric acid as sulfur dioxide, comprising the steps of:

dehydrating gypsum to convert gypsum to calcium sulfate;

supplying said calcium sulfate to a first reaction zone maintained at a temperature of from about 1600° F. to about 2300° F.;

heating elemental sulfur to the boiling point of sulfur in an enclosed vessel which communicates with a delivery

conduit to continuously supply sulfur vapor to said conduit;

super heating said sulfur vapor during transit through said delivery conduit to a temperature of from about 1300° F. to about 1800° F.;

debouching said super heated sulfur vapor from said conduit into said first reaction zone as a coherent gas which resists diffusion within said first zone and thus flows into concentrated contact with said calcium sulfate whereby a portion of said calcium sulfate is converted into calcium sulfide and sulfur dioxide; and

supplying said calcium sulfide and said unreacted portion of calcium sulfate to a second reaction zone which is held at a temperature of from about 1800° F. to about 2400° F. and maintaining said solids in said second zone for a time sufficient to permit essentially complete reaction between calcium sulfide and calcium sulfate to produce lime and sulfur dioxide.

8. A method for recovering sulfur values from waste by-product gypsum produced by the wet process production of phosphoric acid and recycling such sulfur values as sulfuric acid for utilization as a reagent in the wet process, comprising the steps of:

dehydrating said gypsum to convert gypsum to calcium sulfate;

supplying said calcium sulfate to a first reaction zone maintained at a temperature of from about 1600° F. to about 2300° F.;

heating elemental sulfur to the boiling point of sulfur in an enclosed vessel which communicates with a delivery conduit to continuously supply sulfur vapor to said conduit;

super heating said sulfur vapor during transit through said delivery conduit to a temperature of from about 1300° F. to about 1800° F.;

debouching said super heated sulfur vapor from said conduit into said first reaction zone as a coherent gas which resists diffusion within said first zone and thus flows into concentrated contact with said calcium sulfate whereby a portion of said calcium sulfate is converted into calcium sulfide and sulfur dioxide;

supplying said calcium sulfide and said unreacted portion of calcium sulfate to a second reaction zone which is held at a temperature of from about 1950° F. to about 2400° F. and maintaining said solids in said second zone for a time sufficient to permit essentially complete reaction between calcium sulfide and calcium sulfate to produce lime and sulfur dioxide;

passing a non-reacting gas in counter-current flow through said second and first zone to collect and remove the sulfur dioxide generated therein from said zones; and

converting said collected sulfur dioxide to sulfuric acid.

4,520,003

METHOD OF MANUFACTURING SULPHUR-TRIOXIDE FOR THE PRODUCTION OF SULPHURIC ACID

Stig A. Petersson, and Ulf C. Waara, both of Skelleftehamn, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

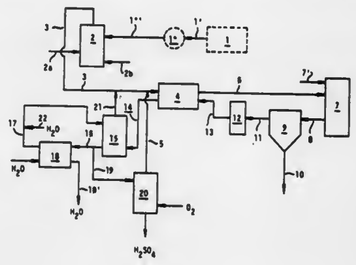
Continuation of Ser. No. 270,012, Jun. 3, 1981, abandoned. This application Sep. 14, 1982, Ser. No. 418,085

Claims priority, application Sweden, Jun. 19, 1980, 8004588

Int. Cl.³ C01B *17/98, 17/74*

U.S. Cl. 423—533 **6 Claims**

1. In a contact method under about atmospheric pressure for the manufacture of sulphur trioxide for the production of sulphuric acid from sulphur-dioxide containing gas, particularly furnace gas obtained from metallurgical processes, by oxidation of sulphur dioxide to sulphur trioxide in the presence of a catalyst and recovering the sulphur trioxide, the improvement comprising separating the sulphur dioxide from the gas and oxidizing to sulphur trioxide with oxygen supplied to the sulphur dioxide in a stoichiometric deficiency in at least one



catalyst bed, said deficiency being in a molar ratio SO_2/O_2 of at least 5.

4,520,004

METHOD OF MANUFACTURING METAL TITANATE FINE POWDER

Satoru Uedaira, Yokohama; Hiroshi Yamanoi, Hiratsuka, and Hidemasa Tamura, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,601

Claims priority, application Japan, Sep. 8, 1982, 57-156315

Int. Cl.³ C01G *23/00*

U.S. Cl. 423—598 **22 Claims**

1. A method for manufacturing a metal titanate fine powder having the formula $MTiO_3$ wherein M is Ba, Sr, or Ca comprising the steps of:

preparing a hydrolysis product of an inorganic titanium compound $TiO_2.xH_2O$ by dissolving said inorganic titanium compound in a neutral or alkaline aqueous solution,

reacting said hydrolysis product with a water soluble salt of Ba, Sr, or Ca in an aqueous alkaline solution having a pH not less than 13 to thereby obtain said metal titanate fine powder, and

filtering said fine powder from the remaining solution.

4,520,005

METHOD OF MAKING A COMPOUND

Yung-Fang Y. Yao, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 548,070, Nov. 2, 1983, abandoned. This application Nov. 5, 1984, Ser. No. 668,544

Int. Cl.³ C01G *45/12*

U.S. Cl. 423—599 **2 Claims**

1. A method of making a compound selected from the group consisting of birnessite compounds of the formula $Bi_xM-n_yO_{2y+1.5x}.zH_2O$, wherein the y/x ratio is in a range of from about 7 to about 18 and the z/y ratio is in a range of from about 0.5 to about 0.6, $Pb_xMn_yO_{2y+x}.zH_2O$, wherein the y/x ratio is in a range of from about 6 to about 10 and the z/y ratio is in a range of from about 0.5 to about 0.6, and manganese oxide compounds containing both of these compounds, characterized by the steps of:

forming a solution by mixing $Mn(NO_3)_2$ with a nitrate of bismith or lead or mixtures thereof;

maintaining said solution at a relatively constant temperature;

adding NaOH to said solution, whereby $Mn(OH)_2$ and a hydroxide of bismuth or lead or mixtures thereof form a suspension;

agitating said suspension;

passing oxygen through said suspension while said suspension is being agitated, whereby said $Mn(OH)_2$ and said hydroxide of bismuth or lead or mixtures thereof can react to form a compound selected from the group consisting of birnessite compounds of the formula $Bi_xMn_yO_{2y+1.5x}.z-H_2O$, wherein the y/x ratio is in a range of from about 7 to about 18 and the z/y ratio is in a range of from about 0.5 to about 0.6, $Pb_xMn_yO_{2y+x}.zH_2O$, wherein the y/x ratio is in a range of from about 6 to about 10 and the z/y ratio is in a range of from about 0.5 to about 0.6, and manganese oxide compounds containing both of these compounds;

filtering said suspension to recover said birnessite compound;

washing said recovered birnessite compound with water; and

drying said washed birnessite compound.

4,520,006

PROCESS FOR THE PURIFICATION OF SULFURIC ACID BY-PRODUCT FROM BORON TRIFLUORIDE SYNTHESIS

Charles Laviron, 27 A, rue Soeur Souvier, 69005 Lyons; Henri Lecouls, 7, avenue Beauregard, 69230 Saint Genis Laval, and Louis Mésaros, Avenue d'Auvergne, La Querencia, 13310 Saint Martin de Crau, all of France

Filed Nov. 17, 1983, Ser. No. 552,480

Claims priority, application France, Dec. 17, 1982, 82 21203

Int. Cl.³ C01B *17/90*

U.S. Cl. 423—531 **6 Claims**

1. A process for the purification of anhydrous by-product sulfuric acid which is contaminated with fluorine and boron from the synthesis of boron trifluoride, wherein the atomic ratio of fluorine to boron is three or more, which comprises diluting the anhydrous sulfuric acid with from one to ten percent water, based on the weight of sulfuric acid, and contacting the diluted acid with an inert entraining gas, the temperature of the process being greater than 90° C.

4,520,007

ANTI-COAGULANTS OF THE 4-HYDROXYCOUMARIN TYPE AND RODENTICIDAL COMPOSITIONS (BAITS) COMPRISING SUCH ANTI-COAGULANTS

Ian D. Entwistle, Sittingbourne, and Peter Boehm, Maidstone, both of England, assignors to Shell Oil Company, Houston, Tex.

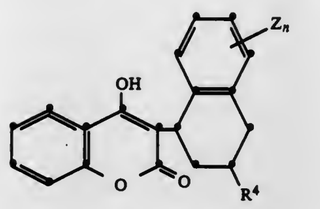
Filed Jun. 14, 1983, Ser. No. 504,348

Claims priority, application United Kingdom, Jun. 14, 1982, 8217219; Jan. 10, 1983, 8300549

Int. Cl.³ A01N *43/16, 25/08, 25/00;* C07D *311/56*

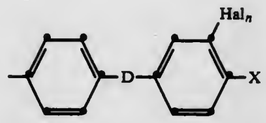
U.S. Cl. 424—17 **13 Claims**

1. A compound of the formula II



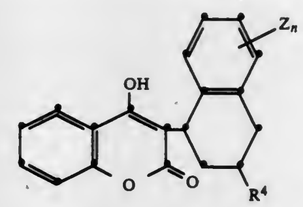
(II)

in which Z represents a chlorine atom, n is 0, 1 or 2 and R^4 represents



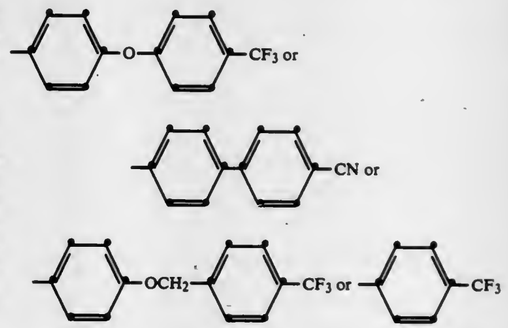
in which Hal is a fluorine or chlorine atom and n is 0 or 1, X is a fluorine, chlorine or bromine atom or a CN, CF_3 or OCF_3 group and D represents $—OCH_2—$ or $—(CH_2)_m—$, where m is 2 to 3.

7. A compound of the molecular formula II



(II)

in which Z represents a chlorine atom, n is 0, 1 or 2 and R^4 represents



the compound being in cis or trans or mixed cis/trans form.

12. A rodenticidal composition comprising a carrier in combination with, as active ingredient, a rodenticidally effective amount of a compound according to claims 1, 7, 8 or 10.

13. A method of exterminating rodents at a locus, or preventing or reducing loss or deterioration by rodent attack at said locus, by providing at said locus bait comprising a rodenticidal composition, as claimed in claim 12.

4,520,008

HAIR SETTING LOTION

Hiroshi Ando, Funabashi, and Takeo Okumura, Sakura, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,884

Claims priority, application Japan, Apr. 7, 1981, 56-51977

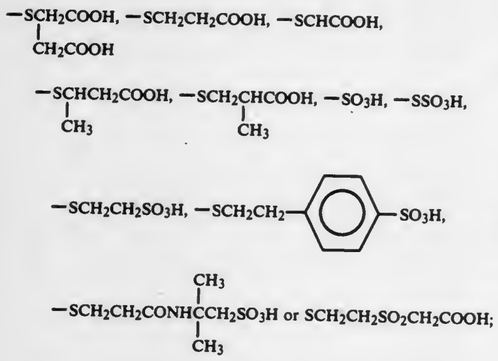
Int. Cl.³ A61K *7/11, 9/12*

U.S. Cl. 424—47 **8 Claims**

1. A hair setting lotion comprising the following ingredients (a) and (b):

(a) 0.2–10.0 wt% of a hair setting polymer compound selected from the group consisting of polyvinylpyrrolidone, copolymers of vinyl pyrrolidone and vinyl acetate, terpolymers of vinyl pyrrolidone, vinyl acetate and alkylaminoacrylates, lower alkyl esters of copolymers of methylvinyl ether and maleic anhydride, copolymers of vinyl acetate and crotonic acid copolymers of acrylic acid, arylic acid alkyl esters, acrylic acid alkyl esters, methacrylic alkylesters and acrylic acid, methacrylic acid, acrylic acid alkyl esters and acrylic acids methacrylic acid alkyl esters, methacrylic acid and acrylic acid alkyl esters, methacrylic acid and methacrylic acid alkyl esters and methacrylic acid, acrylic acid alkyl esters and methacrylic acid alkyl esters, copolymers of acrylic acid, acrylic acid alkyl esters and N-alkylacrylamides, amphoteric acrylic polymer compounds obtained by copolymerizing dialkylaminoethyl methacrylates, dialkylaminoethyl acrylates and diacetoneacrylamide and acrylic acid, methacrylic acid, acrylic acid alkyl esters and methacrylic acid alkyl esters and reacting the copolymers with acetic halides, and decomposition derivatives of keratin materials

wherein the thiol groups of the decomposition derivative are at least one of



and

(b) a propylene oxide and ethylene oxide adduct of a higher alcohol contained in an amount of 0.05–1.0 time the ingredient (a) on the weight basis and represented by the formula (I)

$$RO—(C_3H_6O)n(C_2H_4O)—_mH \quad (I)$$

in which R represents an aliphatic hydrocarbon group having 8–20 carbon atoms, n is a value of 10–50, and m is a value of 3–20,

the balance comprising a solvent selected from the group consisting of water, a lower alcohol and mixtures thereof.

4,520,009

SUSTAINED RELEASED ASPIRIN FORMULATION

James M. Dunn, Englewood, Colo., assignor to Verex Laboratories, Inc., Englewood, Colo.

Filed Nov. 28, 1983, Ser. No. 555,700
Int. Cl.³ A61K *31/60, 31/74*
U.S. Cl. 424—78 **12 Claims**

1. A constant release aspirin tablet comprising from 85–95 weight percent of aspirin, from 1.5–5 weight percent of microcrystalline cellulose, from 1–10 weight percent of cellulose acetate phthalate, from 0.75–4 weight percent of a plasticizer, from 0.75–5 weight percent of a pharmaceutically acceptable diluent, and from 0.5 to 2 percent of a lubricant.

4,520,010

PROCESS FOR MODIFYING THE ELECTRICAL PROPERTIES OF SELENIUM, AND SELENIUM ALLOYS

Santokh S. Badesha, Ontario, and Martin A. Abkowitz, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1983, Ser. No. 500,504
Int. Cl.³ B05D *7/14*
U.S. Cl. 427—83 **8 Claims**

1. A process for improving the electron transporting properties of selenium, consisting essentially of (1) providing a source of selenium, (2) treating the selenium, with hydrazine contained in an organic solvent in an amount of from about 0.1 percent by volume to about 15 percent by volume, (3) heating the resulting mixture to a temperature of from about 50 degrees centigrade to about 120 degrees centigrade, wherein there results selenium having homogeneously and permanently absorbed thereon water free hydrazine.

4,520,011

INACTIVATING PROTEIN SYNTHESIS BY INCUBATING ANTI-THY 1.1-RICIN A CHAIN MONOCLONAL ANTIBODY HYBRIDS WITH TARGET PROTEIN CELLS

David M. Neville, Jr., Bethesda, and Richard J. Youle, Kensington, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,222
Int. Cl.³ A61K *39/44, 39/395, 45/05*
U.S. Cl. 424—85 **2 Claims**

1. In a method of inactivating protein synthesis in mammalian cells containing Thy 1.1 antigen receptor sites by incubating anti-Thy 1.1-ricin A chain monoclonal antibody hybrids with target cells in solution, the improvement which consists of the step of separately adding ricin B chain to the mixture.

4,520,012

COMPOSITION OF MATTER FOR IMPROVING HAIR GROWTH

Marguerite Alfonsi, Batiment F-1-Allée des Glaieuls, 91130 Ris Orangis, France

Filed Feb. 3, 1982, Ser. No. 345,446
Claims priority, application France, Feb. 3, 1981, 81 02010
Int. Cl.³ A61K *35/12, 35/78*
U.S. Cl. 424—95 **12 Claims**

1. A complex for treating the scalp, comprising at least the second of the following two products:

(A) a lotion for preliminary use comprising substantially the same amount of non deodorized mineral oil and 70% ethyl alcohol, in which have soaked during about one month the following plants: rosemary, thyme, clove, sage, lavender and flowers and seeds of nasturtium and camomile;

(B) a cream comprising the following ingredients with a percentage given in weight:

Bergamot oil: 0.75 to 2
Vegetable alcohol: 1 to 4
Marrow: at least 90
Oil: 2 to 5
Flowers of sulphur: 1 to 3.

4,520,013

TOPICAL PREPARATION AND METHOD FOR USING SAME IN TREATING SKIN DISORDERS IN ANIMALS

Jerry W. Nezat, Kalispell, Mont., assignor to Creative Research and Development, Inc., Whitefish, Mont.

Filed Mar. 10, 1983, Ser. No. 474,165
Int. Cl.³ A61K *33/34*
U.S. Cl. 424—141 **31 Claims**

1. A topical preparation adapted for application to the skin of animals for treating mite infestation in animals including dogs, cats and sheep, said preparation comprising a solution having the following ingredients: between approximately three and approximately twelve gallons of water; between approximately 0.2 ounce and 5 ounces of malathion in an amount which is large enough to be effective in treating mite infestation but which is small enough so as to have little or no carcinogenic effect, and between approximately 0.5 ounce and approximately 10 ounces of copper sulfate in an amount which is large enough to be effective in treating mite infestation but which is small enough as not to cause burning of the skin.

4,520,014

TREATMENT OF DIARRHOEA

Peter M. Newsome, Worcester Park, and Noel A. Mullan, Cranleigh, both of England, assignors to Beecham Group p.l.c., England

Continuation-in-part of Ser. No. 177,365, Aug. 11, 1980, Pat. No. 4,332,814. This application Feb. 19, 1982, Ser. No. 350,403
Claims priority, application United Kingdom, Aug. 23, 1979, 7929434
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.
Int. Cl.³ A61K *33/14, 31/415, 31/165*
U.S. Cl. 424—153 **4 Claims**

1. A composition adapted to be administered to livestock for the treatment or prevention of diarrhoea which composition comprises an oral rehydration formulation and an amount effective to treat diarrhoea of a compound which is an α-adrenergic agonist and which has vasoconstrictor activity and is selected from formula (I).

$$A—B—C \quad (I)$$

wherein: A is an optionally substituted 2-imidazoline group or an optionally substituted guanidine group, said substituents, when present, being C_{1-4} alkyl, C_{1-4} alkoxy, halogen or hydroxy; B is a direct bond or $—CH_2—$, $—CH_2O—$, $—COCH_2—$ or —NH—; and C is a C_{6-10} mono- or bi-cyclic group which is either an aromatic group, benzothienyl, or a group containing an aromatic moiety; and which group C may be substituted by C_{1-4} alkyl, C_{1-4} alkoxy, halogen or hydroxyl; or a salt thereof.

2. A composition according to claim 1 wherein said oral rehydration formulation comprises a pharmacologically acceptable aqueous solution containing at least 0.5% w/v of an actively absorbed monosaccharide, at least 25 mM sodium ions and having an osmolarity less than 500 m Osmolar.

4,520,015

METHOD FOR MANUFACTURING A PRODUCT FOR DESTROYING HARMFUL ANIMALS

Bernard Pesche, 4 Boulevard Diderot, 75012 Paris, France

Filed Jun. 9, 1983, Ser. No. 502,684
Claims priority, application France, Jun. 14, 1982, 82 10326
Int. Cl.³ A01N *35/00, 43/16, 59/08;* B01J *13/00*
U.S. Cl. 424—153 **14 Claims**

1. A method for manufacturing a product which is useful for destroying harmful animals, and which has approximately the shape and consistency of a natural food for the animal, which comprises the successive steps of:

providing a fluid, aqueous paste containing nutritive constituents, at least one constituent which is toxic to the animal, and a gelable constituent;

shaping said paste into a desired shape of the final product;

gelling said shaped paste by contacting said paste with an aqueous solution of a metal salt capable of achieving ion exchange with said gelable constituent; and

preserving said gelled product in an acidic, aqueous, saline medium.

14. A method according to claim 1, wherein the preservation is effected in an aqueous brine containing 2 to 40% by weight of sodium chloride, 0.2 to 1% by weight of a gelling metal salt and a sufficient amount of a weak acid so that the brine has a pH of between 6.5 and 7.

4,520,016

BACTERIOLYTIC PROTEINS

Dan Hultmark, Nacka; Hakan Steiner, Vallenhuna; Torgny Rasmuson, Umeå , and Hans G. Boman, Stockholm, all of Sweden, assignors to KabiGen AB, Stockholm, Sweden

Division of Ser. No. 160,393, Jun. 17, 1980, Pat. No. 4,355,104. This application Aug. 2, 1982, Ser. No. 404,119
Int. Cl.³ A61K *37/02;* C12P *21/00, 21/02;* C07C *103/52*
U.S. Cl. 514—12 **1 Claim**

1. A process for inhibiting gram negative bacteria comprising contacting said bacteria with a bactericidally effective amount of a protein selected from the group consisting of P9A and P9B wherein:

(1) P9A comprises the following identifying characteristics:

(a) is capable of lysing *Escherichia coli;*

(b) loses essentially no activity in its action against *E. coli* after heating in boiling water for 30 minutes;

(c) separates from lysozyme by selective elution from a CM Sepharose column using a gradient of ammonium formate buffer;

(d) comprises the first 33 amino acid residues in the following sequence from the N terminal N-LYS-TRP-LYS-LEU-PHE-LYS-LYS-ILE- GLU-LYS-VAL-GLY-GLN-ASN-ILE-ARG-ASP-GLY-ILE-ILE-LYS-ALA-GLY-PRO-ALA-VAL-ALA-VAL-VAL-GLY-GLN-ALA-THR

(e) has a monomer molecular weight within 20% of 3564 daltons;

and

(2) P9B comprises the following identifying characteristics:

(a) is capable of lysing *Echerichia coli;*

(B) loses essentially no activity in its action against *E. coli* after heating in boiling water for 30 minutes;

(c) separates from lysozyme by selective elution from a CM Sepharose column using a gradient of ammonium formate buffer;

(d) the monomer has the N terminal sequence N-LYS-TRP-LYS-VAL-(MET)-ILE-(PHE)-LYS-LYS-ILE-(PHE)-GLU-LYS-GLY-ARG-ASN-ILE-(PHE)-ARG-ASN-(LYS)-GLY wherein the amino acid residue in parenthesis is an alternative to the immediately preceding amino acid residue;

(c) has a dimer molecular weight within 20% of 7000 daltons.

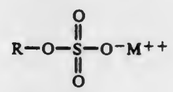
4,520,017

METHOD OF REDUCING NUTRIENT ABSORPTION

Deger C. Tunc, Springfield Rd., East Brunswick, N.J. 08816

Filed Feb. 4, 1983, Ser. No. 464,024
Int. Cl.³ A61K *31/715;* C08B *37/00, 37/08*
U.S. Cl. 514—54 **8 Claims**

1. A method of reducing the rate of nutrient absorption in the small intestine of a mammal by administering to said mammal an effective amount of a composition comprising: an anionic sulfated polysaccharide having the formula



wherein

R = kappa carrageenan: 3,6-anhydro-D-galactose (linked through C-4 to D-galactose);

lambde carrageenan: alpha-D-galactose units (1 3) linked;

iota carrageenan: D-galactose 3,6-anhydro-D-galactose;

agar-agar: D-galactose 3,6-anhydro-L-galactose;

furcellaran: D-galactose 3,6-anhydro-D-galactose;

laminaran sulfate: D-glucopyranose units linked through 1 and 3 positions by -linkages;

galactan sulfate: galactan;

chondroitin sulfate: galactosamino-glucuronan; and

M^{++}=Ca^{++}, Mg^{++}, Zn^{++}, Ba^{++} in a pharmaceutically acceptable carrier.

4,520,018

5-SUBSTITUTED-4-OXO-PGI$_1$ DERIVATIVES, PGI$_1$ COMPOUNDS OF SIMILAR STRUCTURE, THEIR PHARMACEUTICAL METHODS AND PROCESS FOR THE PREPARATION OF SAID COMPOUNDS

Vilmos Simonidesz; József Ivanics; Géza Galambos; Ágnes Pappneé Behr; Gábor Kovacs; Judit Skopál, and Ildikó Szilágyi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

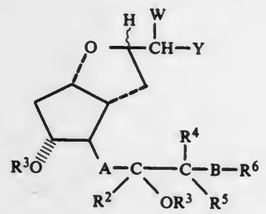
Filed Apr. 19, 1982, Ser. No. 369,543

Claims priority, application Hungary, Apr. 14, 1981, 965

Int. Cl.^{3} A61K *31/557, 31/335;* **C07D** *307/935*

U.S. Cl. 514—469 **56 Claims**

1. A process for the preparation of a racemic or optically active compound of the formula I



or a pharmaceutically acceptable salt thereof, wherein W is —COOR^1, —CN, —NO_2, C_1–C_4 alkanoyl, C_1–C_4 alkyl-sulfenyl, phenylsulfenyl, phenylsulfenyl where the phenyl is substituted by halogen, phenyl, C_1 to C_4 alkyl, or halo-C_1–C_4 alkyl, C_1–C_4 alkyl-sulfonyl, phenyl-sulfonyl, phenyl-sulfonyl where the phenyl is substituted by halogen, phenyl, C_1 to C_4 alkyl, or halo—C_1–C_4 alkyl, or W is phenyl-selenyl;

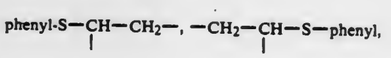
R^1 is hydrogen, C_1–C_6 straight or branched chain alkyl, C_3–C_{10} cycloalkyl, phenyl—C_1–C_4 alkyl, or phenyl; Y is —COOR^1, —COR^1, —CN, or



or when W is nitro, Y is also hydrogen;

Z is oxygen or when W is nitro Z represents two hydrogens;

X is —CH_2—CH_2—, —CH=CH—, —CH_2—C—$(CH_3)_2$—, —$(CH_3)_2$—C—CH_2—,



or cyclopropylene;

Q is —COOM, —COOR^1, —CH_2OH, or COL^1, wherein M is pharmacologically active cation;

L^1 is —NH_2, —NHR^1 or NR^{1}R^1;

A is trans—CH=CH—, —C≡C—, or —CH_2—CH_2—;

R^2 is hydrogen having a steric position of α or β or is methyl or ethyl;

R^4 and R^5 are independently hydrogen or C_1–C_4 alkyl;

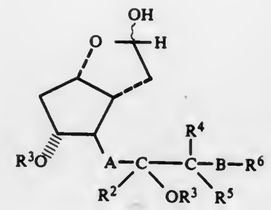
R^3 is hydrogen or a protecting group which is C_1–C_4 alkanoyl, benzoyl, benzoyl substituted by halogen, phenyl, C_1–C_4 alkyl, or halo—C_1–C_4 alkyl, or is tri—C_1–C_4 alkyl-silyl;

R^6 is C_1 to C_6 straight or branched chain alkyl, phenyl or phenyl substituted by halogen, phenyl, C_1 to C_4 alkyl or halo—C_1 to C_4 alkyl; and

B is methylene, oxygen or —NH—;

which comprises the step of:

reacting a compound of the formula II

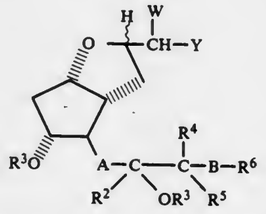


with a compound of the formula III



having an active methylene group, in the presence of a catalyst to obtain the desired product.

9. A compound of the formula I



or a pharmaceutically acceptable salt thereof, wherein W is —NO_2, C_1–C_4 alkyl-sulfenyl, phenyl-sulfenyl, phenyl-sulfenyl where the phenyl is substituted by halogen, phenyl, C_1–C_4alkyl, or halo—C_1–C_4 alkyl, C_1–C_4 alkyl-sulfonyl, phenyl-sulfonyl, phenyl-sulfonyl where the phenyl is substituted by halogen, phenyl, C_1–C_4 alkyl, or halo—C_1–C_4 alkyl, or W is phenyl-selenyl;

R^1 is hydrogen, C_1–C_6 straight or branched chain alkyl, C_3–C_{10} cycloalkyl, phenyl—C_1–C_4 alkyl or phenyl;

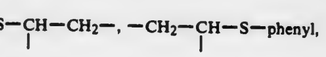
Y is —COOR^1, —COR^1, —CN, or



or when W is nitro, Y is also hydrogen;

Z is oxygen or when W is nitro Z represents two hydrogens;

X is —CH_2—CH_2, —CH=CH—, —CH_2—C—$(CH_3)_2$—, —$(CH_3)_2$—C—CH_2—,



—or cyclopropylene;

Q is —COOM, —COOR^1, —CH_2OH, or —COL^1, wherein M is a pharmacologically active cation;

L^1 is —NH_2, —NHR^1 or —NR^{1}R^1;

A is trans—CH=CH—, —C≡C—, or —CH_2—CH_2—;

R^2 is hydrogen having a steric position of α or β or is methyl or ethyl;

R^4 and R^5 are independently hydrogen or C_1–C_4 alkyl;

R^3 is hydrogen or a protecting group which is C_1–C_4 alkanoyl, benzoyl, benzoyl substituted by halogen, phenyl, C_1–C_4 alkyl, or halo—C_1–C_4 alkyl, or is tri—C_1–C_4 alkyl-silyl;

R^6 is C_1–C_6 straight or branched chain alkyl, phenyl or phenyl substituted by halogen, phenyl, C_1–C_4 alkyl or halo—C_1–C_4alkyl; and

B is methylene, oxygen, or —NH—.

4,520,019

STABLE COMPOSITION AND PREPARATION THEREOF

Edgar E. Ribi; John L. Cantrell, both of Hamilton, and Steven M. Schwartzman, Stevensville, all of Mont., assignors to Ribi ImmunoChem Research, Inc., Hamilton, Mont.

Continuation of Ser. No. 372,844, Apr. 29, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 591,230

Int. Cl.^{3} A61K *35/78, 39/02*

U.S. Cl. 424—195.1 **7 Claims**

1. A method for producing a stable composition containing cell wall skeleton (CWS) and trehalose dimycolate (TDM) comprising:

(a) mixing CWS and TDM useful for treating tumors selected from the group consisting of bovine fibrosarcoma, equine sarcoid, equine melanoma, canine melanoma and bovine ocular sarcoma in a weight ratio of CWS to TDM of between about 1.0:1 and 6:1;

(b) adding a light hydrocarbon non-biodegradable oil to the resulting mixture; wherein said light hydrocarbon non-biodegradable oil has a viscosity of between about 8 and 12 centistokes measured at 100° F. and is present in an amount between about 0.5 and 3.0 percent by volume based on the total volume of the composition;

(c) homogenizing the resulting oil containing mixture;

(d) adding a detergent in an amount of between about 0.02 and 0.20 percent by volume based on the total volume of the composition selected from the group consisting of polyoxyethylene sorbition mono oleates and non-ionic emulsifiers of fatty acid polyols and polyanhydrides to said homogenized oil containing mixture;

(e) homogenizing the resulting mixture to form an emulsion containing oil droplets coated with CWS and TDM;

(f) lyophilizing the resulting emulsion and subsequently reconstituting said emulsion with sterile distilled water.

4,520,020

METHOD OF PREVENTING VIRUS INCREASE IN PLANTS

Gad Loebenstein, Rehovot, and Abed Gera, Ramat Aviv, both of Israel, assignors to State of Israel, Ministry of Agriculture, Beit Dagan, Israel

Filed Jul. 15, 1982, Ser. No. 398,358

Claims priority, application Israel, May 13, 1982, 65765

Int. Cl.^{3} A61K *35/78;* **C12P** *21/06*

U.S. Cl. 424—197.1 **22 Claims**

1. A method of isolating a material which inhibits replication of TMV, CMV and PVX comprising the steps of:

isolating protoplasts of a plant of the genus *Nicotiana tabacum* L. having an N gene;

inoculating the protoplasts with Tobacco Mosaic Virus;

incubating the inoculated protoplasts under continuous illumination for between 24 and 96 hours;

removing the protoplasts from the incubation medium; and sterilizing the incubation medium.

13. A method of immunizing a plant susceptible to TMV, CMV and PVX against the replication of any of said viruses comprising the step of introducing material isolated according to the method of either claim 1 or claim 5 into the plant.

4,520,021

SUBSTITUTED CAPROLACTAM DERIVATIVES AS ANTIHYPERTENSIVES

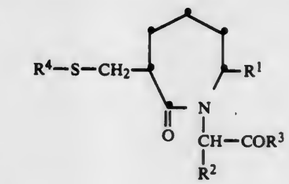
Elbert E. Harris, Westfield, and Eugene D. Thorsett, Fanwood, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 394,972, Jul. 2, 1982, Pat. No. 4,409,146, which is a continuation-in-part of Ser. No. 294,863, Aug. 25, 1981; abandoned, which is a continuation-in-part of Ser. No. 194,692, Oct. 6, 1980, abandoned. This application Jun. 16, 1983, Ser. No. 505,147

Int. Cl.^{3} A61K *31/33*

U.S. Cl. 514—212 **6 Claims**

1. A method of treating hypertension which comprises administering to a patient in need of said treatment an antihypertensively effective amount of a compound of the formula:



wherein

R^1 is hydrogen, loweralkyl, unsubstituted cycloalkyl having 3 to 10 carbon atoms, amino loweralkyl, alkylamino loweralkyl, hydroxyalkyl, dialkylamino loweralkyl, arlower-alkyl, aryl, substituted aryl wherein the substituent is halo, alkyl, aminoalkyl, or alkoxy;

R^2 is hydrogen or loweralkyl;

R^3 is hydroxyl, loweralkoxy, or aralkyloxy;

R^4 is hydrogen or loweralkanoyl; or the pharmaceutically acceptable salts thereof wherein in said R^1, R^2, R^3 and R^4 groups; said alkyl groups have 1 to 12 carbon atoms; said loweralkyl groups have 1 to 8 carbon atoms; said aryl and said ar prefix denote unsubstituted aromatic ring(s) having 6 to 12 carbon atoms.

4,520,022

SUBSTITUTED VINYL CEPHALOSPORINS

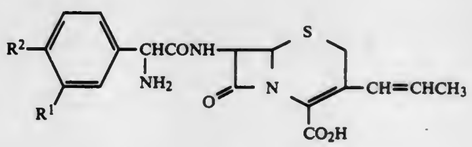
Hideaki Hoshi, Ichikawa; Jun Okumura, Yokohama; Takayuki Naito, Kawasaki; Yoshio Abe, and Shimpei Aburaki, both of Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 461,833, Jan. 28, 1983, abandoned. This application Dec. 28, 1983, Ser. No. 564,604

Int. Cl.^{3} C07D *501/22;* **A61K** *31/545*

U.S. Cl. 514—200 **7 Claims**

1. 7α-(D)-Phenylglycylamido-3-propenyl cephalosporin derivatives having the formula



wherein the 3-propenyl group has the Z-configuration, R^1 is hydrogen, chlorine, or methoxy, and R^2 is hydrogen, or hydroxy with the proviso that when R^2 is hydrogen R^1 is also hydrogen, and the pharmaceutically acceptable acid addition and metal salts thereof, said salts being antibacterially effective on oral or parenteral administration.

4,520,023

3-(3-IODOPROPARGYL)-BENZO-1,2,3-TRIAZIN-4-ONES, AND THEIR USE IN MICROBICIDAL AGENTS

Hans-Georg Schmitt, Leverkusen; Wilfried Palus, and Hermann Genth, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

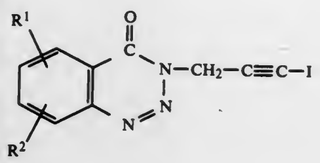
Filed Nov. 4, 1983, Ser. No. 549,338

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1982, 3241265

Int. Cl.³ C07D *253/08;* A61K *31/53*

U.S. Cl. 514—241 **16 Claims**

1. 3-(3-iodopropargyl)-benzo-1,2,3-triazin-4-one of the formula

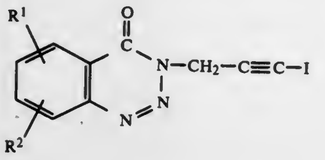


in which

R^1 is hydrogen, lower alkyl, halogen, cyano, nitro, lower alkoxy, aryloxy having 6–18 carbon atoms, lower alkylthio, arylthio having 6–18 carbon atoms, C_1–C_{10}-alkoxycarbonyl, lower alkylsulphonyl or arylsulphonyl having 6–18 carbon atoms, and

R^2 is hydrogen, lower alkyl or halogen.

14. A microbicidal composition comprising a microbicidally effective amount of 3-(3-iodopropargyl)-benzo-1,2,3-triazin-4-one of the formula



in which

R^1 is hydrogen, lower alkyl, halogen, cyano, nitro, lower alkoxy, aryloxy having 6–18 carbon atoms, lower alkylthio, arylthio having 6–18 carbon atoms, C_1–C_{10}-alkoxycarbonyl, lower alkylsulphonyl or arylsulphonyl having 6–18 carbon atoms, and

R^2 is hydrogen, lower alkyl or halogen and a microbiologically compatible diluent.

4,520,024

METHOD OF SELECTIVELY BLOCKING PERIPHERAL VASCULAR SEROTONERGIC RECEPTORS

Marlene L. Cohen, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 11, 1983, Ser. No. 465,745

Int. Cl.³ A61K *31/495*

U.S. Cl. 514—255 **1 Claim**

1. A process for blocking peripheral vascular serotonergic receptors in living mammals in need of such treatment without blocking alpha$_1$ receptors which comprises administration by the oral or parenteral route to said mammals of a serotonergic receptor blocking amount of 1-(1-naphthyl)piperazine.

4,520,025

BICYCLIC NITROGEN HETEROCYCLIC ETHERS AND THIOETHERS, AND THEIR PHARMACEUTICAL USES

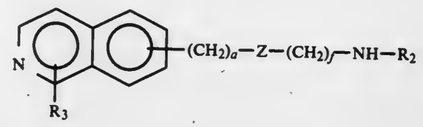
Henry F. Campbell, Lansdale; Donald E. Kuhla, Doylestown; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Jul. 21, 1982, Ser. No. 400,350

Int. Cl.³ C07D *217/24;* A61K *31/47*

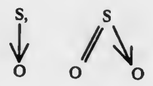
U.S. Cl. 514—275 **17 Claims**

1. A compound of the formula



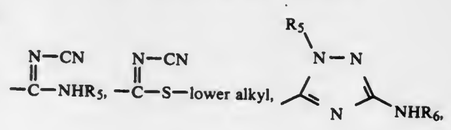
wherein:

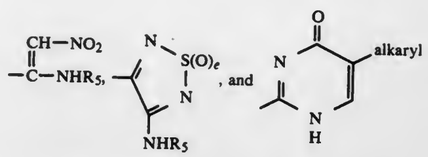
Z is O, S,



or CH_2;

R_2 is selected from the group consisting of





R_3 is hydrogen, lower alkyl, halo, lower alkoxy, hydroxy, hydroxy lower alkyl, halo lower alkyl, amino lower alkyl, mono- or di-loweralkylamino loweralkyl, amino, lower alkylamino, or diloweralkylamino;

R_5 is H or lower alkyl;

R_6 is H, lower alkyl or lower alkanoyl;

and wherein:

a is 0 or 1;

e is 1 or 2;

f is 1, 2, 3 or 4;

or a pharmaceutically acceptable salt thereof.

4,520,026

INDOLIZINE DERIVATIVES AND USE AS CARDIOVASCULAR AGENTS

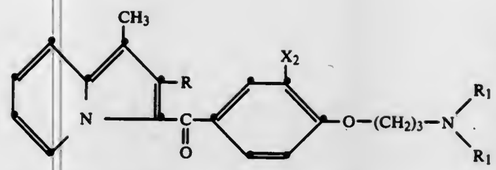
Gilbert Rosseels, and Henri Inion, both of Wemmel, Belgium, assignors to S. A. Labaz N.V., Belgium

Continuation-in-part of Ser. No. 232,138, Feb. 6, 1981, Pat. No. 4,378,362, which is a continuation-in-part of Ser. No. 207,270, Nov. 17, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 393,411

Int. Cl.³ A61K *31/44;* C07D *221/02*

U.S. Cl. 514—299 **26 Claims**

1. An indolizine derivative corresponding to the formula:



and pharmaceutically acceptable acid addition salts thereof wherein R represents n-butyl or phenyl, X_2 represents hydrogen, chlorine or bromine and R_1 represents n-propyl or n-butyl.

4,520,027

ANTI-INFLAMMATORY ESTERS OF 4-(1-HYDROXY-2-[(ACYLAMINO)ALKYLAMINO]ETHYL) PHENOLS

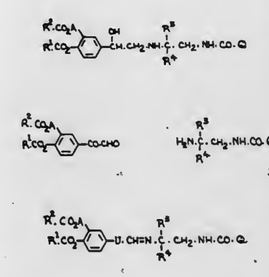
Peter R. Marsham, Poynton, and David S. Thomson, Holmes Chapel, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 23, 1982, Ser. No. 452,804

Claims priority, application United Kingdom, Dec. 23, 1981, 8138830

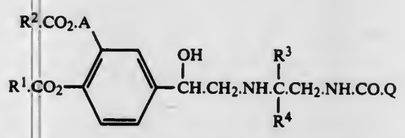
Int. Cl.³ C07D *213/56;* A61K *31/42*

U.S. Cl. 514—354 **8 Claims**



1. A diester of the formula:

[I]



wherein R^1 and R^2 are independently (3-5C)alkyl; and (i) A is a direct bond, R^3 and R^4 are hydrogen, and Q is 3-pyridyl, 4-pyridyl or 2-pyridylmethyl; or (ii) A is a direct bond, R^3 and R^4 are methyl, and Q is 3-pyridyl or 2-pyridylmethyl; or a pharmaceutically acceptable acid-addition salt thereof.

7. A method for the production of an anti-inflammatory effect in an area of skin of a warm-blooded animal requiring such treatment which comprises topical administration to said area of an effective amount of an ester of formula I or a pharmaceutically acceptable acid-addition salt thereof as claimed in claim 1.

4,520,028

α-AMINOBUTYRIC ACID TRANSAMINASE INHIBITORS

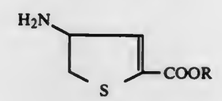
Jerry L. Adams, West Chester; Brian W. Metcalf, Mason, and Bruce J. Lippert, Cincinnati, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 597,786, Apr. 6, 1984, abandoned, which is a continuation of Ser. No. 540,744, Oct. 11, 1983, abandoned. This application Sep. 5, 1984, Ser. No. 647,867

Int. Cl.³ A61K *31/38;* C07D *333/00*

U.S. Cl. 514—447 **9 Claims**

1. A compound of the formula



inclusive of the individual enantiomers and racemic mixtures thereof, the pharmaceutically acceptable salts thereof, wherein R is hydrogen and $C_{1\text{-}6}$ lower alkyl.

4,520,029

FARNESENE DERIVATIVES, MUCOSAL STABILIZING COMPOSITIONS AND METHOD OF MANUFACTURING THE SAME

Tsuyoshi Tomiyama, Sakaki, Japan, assignor to Kotobuki Seiyaku Co., Ltd., Nagono, Japan

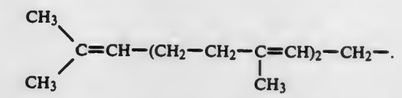
Continuation of Ser. No. 315,464, Oct. 27, 1981, abandoned. This application Jun. 27, 1983, Ser. No. 508,142

Claims priority, application Japan, Dec. 20, 1980, 55-180833

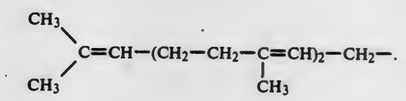
Int. Cl.³ C07C *125/065, 103/133;* A61K *31/27, 31/23*

U.S. Cl. 514—479 **10 Claims**

1. The compound N-farnesyl farnesylcarboxamide of the formula: R—CONH—R, wherein R represents the group



2. The compound N-farnesyl farnesylcarbamate of the formula: R—NHCOO—R, wherein R represents the group



5. A method of treating peptic ulcer which comprises administering to a patient having peptic ulcer a therapeutic amount of N-farnesyl farnesylcarboxamide.

6. A method of treating peptic ulcer which comprises administering to a patient having peptic ulcer a therapeutic amount of N-farnesyl farnesylcarbamate.

7. A method of treating inflammation which comprises administering to a patient having inflammation a therapeutically effective amount of a compound selected from the group consisting of farnesyl farnesylcarboxylate, N-farnesyl farnesylcarboxamide and N-farnesyl farnesylcarbamate.

4,520,030

ANTI-ULCER AGENTS

Icilio Cavero, Creteil, and Salomon Langer, Paris, both of France, assignors to Synthelabo, Paris, France

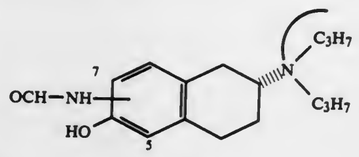
Filed Dec. 12, 1983, Ser. No. 560,250

Int. Cl.³ A61K *31/165*

U.S. Cl. 514—629 **4 Claims**

1. A method of treating gastric or duodenal ulcer or gastric hypersecretion in a patient, which comprises orally or paren-

terally administering to said patient a compound of the formula



wherein the formylamino group is in the 5— or —7—position, or a pharmaceutically acceptable salt thereof, in an amount effective to treat gastric or duodenal ulcer or gastric hypersecretion.

4,520,031

METHOD FOR REDUCING TOXIC EFFECTS OF METHYL-GLYOXAL BIS-GUANYLHYDRAZONE

William A. Knight, III, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 268,670, Jun. 1, 1981, abandoned, which is a continuation of Ser. No. 128,200, Mar. 7, 1980, abandoned. This application Aug. 24, 1982, Ser. No. 410,965

Int. Cl.³ A61K *31/155*

U.S. Cl. 514—632 **3 Claims**

1. A method for reducing the toxic effects of methyl-glyoxal bis-guanylhydrazone in a patient comprising:

administering to said patient at approximately weekly intervals a therapeutically effective dose ranging from about 250 mg/m² to about 1000 mg/m² of methyl-glyoxal bis-guanylhydrazone in its pharmaceutically acceptable salt form, dispersed in a suitable physiologically compatible vehicle.

4,520,032

USE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS OR CHEWING GUMS OF TETRAHYDRO-1,1,2,3,3-PENTAMETHYL-3A[4H]-INDANOL

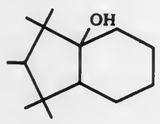
John B. Hall, Rumson, and Takao Yoshida, West Long Branch, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,662

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—3 **1 Claim**

1. A process for augmenting or enhancing the walnut aroma or taste of a walnut-flavored foodstuff or chewing gum comprising the step of adding to said foodstuff or chewing gum from about 0.05 ppm up to about 150 ppm based on the total food composition or chewing gum composition of the compound having the structure:



4,520,033

PROCESS FOR THE PREPARATION OF FOAMED AROMATIZATION CAPSULES AND THE CAPSULES PRODUCED THEREBY

James Tuot, Dublin, Ohio, assignor to Nestec, S.A., Vevey, Switzerland

Filed Aug. 10, 1983, Ser. No. 521,909

Int. Cl.³ A23L *1/22*

U.S. Cl. 426—96 **23 Claims**

1. A process for producing foamed aromatization capsules capable of floating at the surface of an aqueous medium comprising the steps of:

(a) mixing an aqueous essence containing aromatic constituents with a water-soluble powdered edible solid to form a core mixture;

(b) foaming the core mixture by the injection of gas into said mixture to provide a foam;

(c) adding the foamed mixture in the form of droplets to a wall material of water-soluble powdered edible solids while the said wall material is being agitated to cause a water flux from the foam droplets to the surrounding wall material and form coated particles, each such coated particle having a continuous layer of said wall material surrounding a foam droplet;

(d) curing the coated particles by continuing agitation of the wall material until the surrounding layer of wall material about the coated particles forms a continuous, hardened shell surrounding a honeycombed structure core containing the aromatic constituents; and then

(e) collecting the resulting capsules.

18. Aromatization capsules capable of floating at the surface of an aqueous medium comprising a hardened continuous shell of a water-soluble edible food material surrounding a core having a honeycombed hardened foam structure containing aromatic constituents.

4,520,034

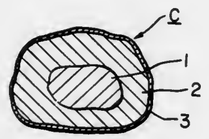
PASTY MASS OF A PROCESSED TUBER AND AN EDIBLE OUTER COVER AND METHOD FOR MAKING THE SAME

Mikio Ishii; Kazunobu Iiyama, and Tomoyoshi Yazaki, all of Tokyo, Japan, assignors to Nakamuraya Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 552,212

Int. Cl.³ A23L *1/216*

U.S. Cl. 426—96 **20 Claims**



1. A food product which comprises a pasty mass of a processed tuber of a desired form, and a continuous, tenacious, thin edible film consisting essentially of a milk protein-containing material covering the entirety of the pasty mass.

6. A method for making a food product which comprises the steps of applying an edible film-forming material consisting essentially of milk protein-containing material onto a pasty mass of a desired form made of a processed tuber, and drying or heating the applied material to thereby completely cover the pasty mass with a continuous, tenacious film of said edible film-forming material.

4,520,035

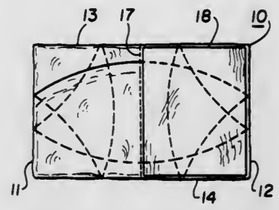
PIZZA DOUGH PACKAGE AND METHOD OF MAKING SAME

Mark A. Lamonica, 1533 85th St., Brooklyn, N.Y. 11228

Continuation of Ser. No. 379,469, May 18, 1982, abandoned. This application Sep. 2, 1983, Ser. No. 528,864

Int. Cl.³ A21D *10/02*

U.S. Cl. 426—128 **11 Claims**



1. A folded pizza dough package comprising:

an initially disk-shaped layer of uncooked pizza dough,

means including a first sheet of precut release material placed substantially centrally on said disk-shaped layer and having two spaced substantially straight peripheral edges defining first and second substantially parallel chord lines relative to the respective adjacent curved edge of said disk-shaped layer for folding said disk-shaped layer inwardly therealong, the corresponding chord heights of each chord lines being less than half the radius of said layer, said first sheet of precut release material defining a substantially arc shape at the peripheral portions thereof between said first and second chord lines and said arc-shaped peripheral portions extending substantially to the periphery of said initially disk-shaped layer of uncooked pizza dough between said first and second chord lines of said sheet of release material;

said disk-shaped layer being inwardly folded along and around said first and second chord lines of said first sheet of release material such that the juxtaposed portions of said disk-shaped layer produced by said inwardly folding of said disk-shaped layer along said first and second chord lines are separated by said first sheet of release material;

said inwardly folded portions of said disk-shaped layer not overlapping each other; and

a second precut sheet of release material extending between said two spaced edges of said first sheet of release material which define said first and second chord lines, said second sheet of release material having two spaced substantially straight peripheral edges which are substantially perpendicular to said first and second chord lines and which define third and fourth substantially parallel chord lines relative to the respective adjacent curved edge of said disk-shaped layer, the corresponding chord heights of said third and fourth chord lines being between 50% and 100% of the radius of said disk-shaped layer, said third and fourth chord lines defining fold lines for folding said disk-shaped layer inwardly therealong after said first-mentioned folding thereof, said second sheet of release material being placed on said pizza dough after folding of said disk-shaped layer inwardly along said first and second chord lines of said first sheet of release material, and said pizza dough being then folded inwardly along and around said third and fourth chord lines and over said second sheet of release material;

a third precut sheet of release material being placed over the portion of the pizza dough folded over one of the third and fourth chord lines before folding of the pizza dough over the other of said third and fourth chord lines so that layers of pizza dough do not directly contact each other;

whereby the resultant folded pizza dough has a substantially rectangular compact shape and is readily unfoldable and separable from said release sheets to assume said initial disk-shape.

4,520,036

PROCESS FOR TREATING MILK WITH A CATION-EXCHANGE RESIN FOR THE PREPARATION OF DECATIONIZED, ACIDIFIED MILK

Jean P. Rialland, Retiers, and Jean P. Barbier, Noyal sur Seiche, both of France, assignors to Laiteries E. Bridel, Retiers, France

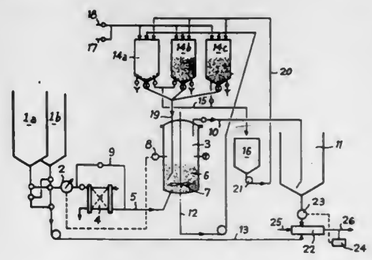
Filed Jun. 29, 1983, Ser. No. 509,035

Claims priority, application France, Jul. 9, 1982, 82 12126

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ A23C *9/146*

U.S. Cl. 426—271 **15 Claims**



1. Process for the preparation of decationised, acidified milk having a pH less than or equal to 3.8, having the same content of proteinaceous materials and lactose as ordinary milk, a very low content of mineral elements, less than 4 g/l, and a Ca/P ratio less than 0.5, the process comprising contacting ordinary milk with a cation-exchange resin in the acid form, at a temperature above 4° C., and in the presence of an excess of milk previously acidified to a pH equal to or less than 3.8, in which the rate of introduction of the ordinary milk is such that the mixture of acidified and ordinary milks in contact with the exchange resin is maintained at a pH equal to or less than 3.8.

4,520,037

EDIBLE EMULSION HAVING AN IMPROVED MICROBIOLOGICAL STABILITY

Grahame Gould, Bedford; Anthony Crossley, Letchworth, and David P. J. Moran, Covington, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 7, 1983, Ser. No. 511,406

Claims priority, application United Kingdom, Jul. 8, 1982, 8219846

Int. Cl.³ A23D *3/04, 5/04*

U.S. Cl. 426—330.6 **24 Claims**

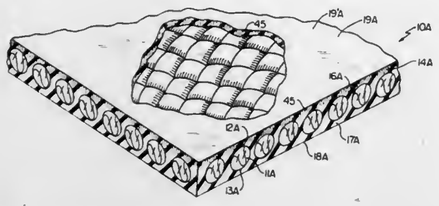
1. An edible emulsion comprising at least two differently formulated aqueous phases containing microbiologically labile nutrients and ingredients inhibiting bacterial growth, said aqueous phases being present in the form of discrete, differently formulated drops dispersed in a continuous plastic fat phase, wherein an effective amount of each ingredient inhibiting bacterial growth is concentrated along with a nutrient in at least part of the total aqueous phase and none of the nutrients is present unprotected.

4,520,038

POLYMERIC-COATED FABRIC LAYER, AND METHOD FOR MAKING THE SAME

Delmar D. Long, Rock Hill, S.C., and John F. Anderson, Jr., Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 5, 1983, Ser. No. 482,365
Int. Cl.³ B05D *1/04*
U.S. Cl. 427—26 **5 Claims**



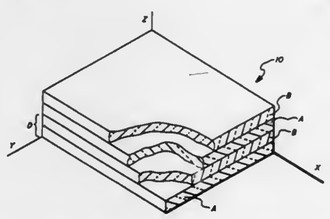
1. In a method of making a belt construction comprising a polymeric belt body having a surface and a polymeric-coated fabric layer means having an outer surface secured to said surface of said belt body, said method comprising the steps of providing a fabric layer having opposed sides, securing a main layer of polymeric material to one of said sides of said fabric layer, forming said main layer of polymeric material to have said outer surface facing away from said one side of said fabric layer, disposing said outer surface of said layer means against said surface of said belt body to provide an assembly thereof, and, thereafter, bonding said outer surface of said layer means to said surface of said belt body by a heat curing operation on said assembly, the improvement comprising the steps of securing a gauge building layer of fibers to said one side of said fabric layer with another layer of polymeric material that is disposed on said one side before said layer of fibers is disposed thereon whereby said gauge building layer of fibers has a plurality of voids therein, and then filling said voids of said gauge building layer of fibers with said polymeric material of said main layer in a liquid form thereof to form said main layer.

4,520,039

COMPOSITIONALLY VARIED MATERIALS AND METHOD FOR SYNTHESIZING THE MATERIALS

Stanford R. Ovshinsky, Oakland County, Mich., assignor to Sovonics Solar Systems, Solon, Ohio

Filed Sep. 23, 1982, Ser. No. 422,155
Int. Cl.³ C23C *11/00, 13/00, 17/00*
U.S. Cl. 427—35 **60 Claims**



1. A method of designing a compositionally varied material comprising:

forming a matrix from at least a first type of atom having at least one physical property, designing a spatial pattern in said matrix, incuding at least a second type of atom or atoms or groups of said second type of atom or atoms at predetermined locations in said spatial pattern to form the material, forming nonequilibrium disordered local environments with at least some of said second type of atom or atoms or groups thereof and coupling or decoupling at least a second physical property of said second type of atom or atoms and said locations with said matrix physical property to produce one or more functions of said material.

25. A method of designing a compositionally varied material comprising:

forming a matrix from at least a first type of atom having at least one physical property and a second type of atom having at least a second physical property, said matrix including a plurality of layers of at least said first and second types of atom, designing a spatial pattern in said matrix, including at least a third type of atom or atoms or groups of said third type of atom or atoms at predetermined locations in said spatial pattern to form the material, said locations being at least in some of said plurality of layers or between succeeding ones of some of said plurality of layers, forming nonequilibrium disordered local environments with at least some of said third type of atom or atoms or groups thereof and coupling or decoupling at least a third physical property of said third type of atom or atoms and said locations with said matrix physical property to produce one or more functions of said material.

48. A method of designing a compositionally varied material comprising:

forming a matrix from at least a first type of atom having at least one physical property, said matrix including a plurality of layers of at least said first type of atom, designing a spatial pattern in said matrix, including at least a second and a third type of atom interleaved in a plurality of layers of at least said second type of atom and a plurality of layers of at least said third type of atom at predetermined locations in said spatial pattern to form the material, forming nonequilibrium disordered local environments with at least some of said second or third type of atoms and coupling or decoupling at least a second physical property of said second type of atom or at least a third physical property of said third type of atom and said locations with said matrix physical property to produce one or more functions of said material.

4,520,040

FERROMAGNETIC FILMS FOR HIGH DENSITY RECORDING AND METHODS OF PRODUCTION

Bernhard F. Cordts, Topsfield, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 15, 1983, Ser. No. 561,692
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **12 Claims**

1. A method for fabricating a ferromagnetic film comprising the steps of:

providing a substrate of a material having low solubility for a selected ferromagnetic material;

implanting ions of the selected ferromagnetic material into a surface layer of said substrate; and

heating said substrate to permit growth of particles of said ferromagnetic material.

6. A method for fabricating a ferromagnetic film comprising the steps of:

providing a substrate of a material having low solubility for a selected ferromagnetic material;

depositing a thin layer of said selected ferromagnetic material on the surface of said substrate;

irradiating said layer of ferromagnetic material with an ion beam of an inert material so as to cause ion beam mixing of said ferromagnetic material into a surface layer of said substrate; and

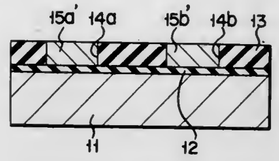
heating said substrate to permit growth of particles of said ferromagnetic material.

4,520,041

METHOD FOR FORMING METALLIZATION STRUCTURE HAVING FLAT SURFACE ON SEMICONDUCTOR SUBSTRATE

Masaharu Aoyama, Fujisawa; Masahiro Abe, Yokohama; Takashi Ajima, Kamakura, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 3, 1983, Ser. No. 548,440
Claims priority, application Japan, Nov. 4, 1982, 57-192491
Int. Cl.³ H01L *21/283, 21/302*
U.S. Cl. 427—88 **9 Claims**



1. A method for forming a metallization structure having a substantially flat surface on a semiconductor substrate, comprising the steps of:

forming a first insulating layer on said semiconductor substrate which has at least one semiconductor region formed therein, said first insulating layer having at least one contact hole through which said at least one semiconductor region is exposed;

forming a second insulating layer on said first insulating layer and in said contact hole;

selectively removing a predetermined portion of said second insulating layer including the portion in said contact hole formed in said first insulating layer, thereby forming at least one groove having a predetermined pattern corresponding to a desired interconnection pattern in said second insulating layer, said groove being formed to expose at a bottom thereof said contact hole formed in said first insulating layer;

forming a continuous metallic material layer on a remaining portion of said second insulating layer and in said groove formed in said second insulating layer and in said contact hole of said first insulating layer, said continuous metallic material layer having at least one groove corresponding to said groove in said second insulating layer;

applying an organic polymeric material having a predetermined flowability to said continuous metallic material layer, thereby covering said continuous metallic material layer with said polymeric material so as to form a layer of said polymeric material having a substantially flat surface; and

sequentially removing by ion etching said polymeric material layer and said metallic material layer along a direction of thickness thereof until said second insulating layer is exposed, thereby leaving said metallic material in said groove formed in said second insulating layer to provide at least one metallization layer comprising the remaining metallic material and having a surface level which is substantially the same as that of said second insulating layer, said metallization layer being connected to said semiconductor region through said contact hole.

4,520,042

HIGH-MODULUS, FLEXIBLE URETHANE COATING AND METHOD OF PREPARATION

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Continuation-in-part of Ser. No. 505,793, Jun. 20, 1983, Pat. No. 4,452,829. This application Jan. 31, 1984, Ser. No. 575,677
Int. Cl.³ C08G *18/14, 18/20;* **B05D** *1/00, 1/05*
U.S. Cl. 427—209 **19 Claims**

1. A method of preparing a high-modulus, solid urethane coating, which method comprises spraying onto a substrate substantially equal-volume amounts of an A-side and a B-side admixture together, to provide for the reaction of said mixture in about 5 seconds or less, to produce a high-modulus, solid coating, the A-side mixture comprising 100 parts of a prepolymer prepared by reacting about 25 to 35 parts of a polyether triol, having a hydroxyl number of about 50 or less, with from 65 to 75 parts of a low functionality MDI having a functionality of about 2.4 or less, and the B side comprising a polyol composition of from about 5 to 40 parts of a diol and from 60 to 95 parts of a polyether triol having a hydroxyl number of about 50 or less, and a catalytic amount of a catalyst composition comprising from about 0.01 to 1 part of the polyol composition and composed of a tetravalent tin salt catalyst in combination with a heat-activatable polyamine catalyst.

12. A method of preparing a high-modulus, solid, urethane coating composition, which method comprises spraying onto a substrate and reacting together substantial equal volumes of an A- and a B-side mixture, the A-side mixture comprising 100 parts by weight of a prepolymer prepared by reacting an ethylene-oxide-capped polypropylene oxide triol with a low-functionality MDI, the MDI having an average functionality of about 2.0, to provide a prepolymer having about 20% to 22% free NCO, and the B-side mixture comprising from about 2 to 40 parts of a diethylene diol and 60 to 95 parts of an ethylene-oxide-capped polypropylene oxide triol having a hydroxyl number of about 50 or less, and a catalytic amount of a tetravalent tin salt catalyst in combination with a heat-activatable, formic-acid-blocked triethylene diamine, and an antifoaming amount of a degassing agent, the reaction to cream carried out in about 5 seconds or less.

4,520,043

METHOD OF PREVENTING CORROSION OF A METAL CASKET

Michael Davidian, 826 W. 79th St., Darien, Ill. 60559, assignor to Michael Davidian, Darien, Ill.

Division of Ser. No. 402,955, Jul. 29, 1982, Pat. No. 4,448,826. This application Jan. 9, 1984, Ser. No. 569,307
Int. Cl.³ B05D *7/22, 3/02*
U.S. Cl. 427—239 **2 Claims**

1. A method of preventing corrosion of a metal casket containing in use organic acids, comprising the steps of mixing a film forming material selected from the group of resins and rubber and finely divided particles of an alkaline material with an evaporable carrier to form an emulsion, applying the emulsion to the interior surface of a metal casket in the form of a coating, evaporating the carrier to form a dried coating on the casket containing dispersed particles of said alkaline material, and contacting the coating on the interior surface of said casket with a finite amount of organic acids contained in said casket to affect neutralization of said acids by said dispersed particles of the alkaline material and provide a substantially neutral system in said casket.

4,520,044

PRODUCTION OF COMPOSITE MEMBRANES

Sherman A. Sundet, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 30, 1984, Ser. No. 635,746
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—244 **4 Claims**

1. A process for forming a thin film composite membrane comprising forming a membrane from a solution of a polysulfone in a polar, organic solvent containing from 10 to 20% by weight polysulfone, quenching the resulting membrane in an aqueous bath containing 0.1 to 10% weight/volume m-phenylenediamine, removing the resulting porous polysulfone film containing m-phenylenediamine from the aqueous bath, and immersing said porous polysulfone film in a water immiscible solution comprising 0.05 to 5% weight/volume trimesoyl chloride, cyclohexane-1,3,5-tricarbonyl chloride, or mixtures

thereof whereby the m-phenylene diamine reacts with the trimesoyl chloride or cyclohexane-1,3,5-tricarbonyl chloride to form a continuous layer supported by the porous polysulfone membrane.

4,520,045

METHOD FOR IMPREGNATING A DIE-CAST ARTICLE WITH A SEALANT AND AN IMPREGNATION APPARATUS THEREFOR

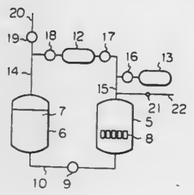
Tomoharu Kutsuna, Toyota; Shinzi Ohtani, Okazaki, and Kunimasa Kondo, Nagoya, all of Japan, assignors to Taiho Kogyo Co., Ltd. and Yugenkaisha Hakusui Sangyo, both of Aichi, Japan

Filed Dec. 20, 1983, Ser. No. 563,342

Claims priority, application Japan, Feb. 15, 1983, 58-22068; Apr. 14, 1983, 58-65885

Int. Cl.³ B05D *3/00;* **C23C** *13/08*

U.S. Cl. 427—294 **18 Claims**



1. A method for impregnating a die-cast article with a sealant, comprising the steps of:

preparing an impregnation vessel equipped with a first means for controlling the pressure therein, said means including a conduit and a pump;

preparing a sealant storage vessel equipped with a second means for controlling the pressure therein and being communicated with said impregnation vessel via a channel equipped with a valve;

locating said die-cast article within said impregnation vessel;

admitting said sealant into said sealant storage vessel while closing said valve of the channel;

operating said first pressure-controlling means so as to evacuate the air contained in said impregnation vessel and so as to degas the air contained in the cast defects of said die-cast article while said valve of the channel is closed;

operating said second pressure-controlling means so as to evacuate the air contained in said sealant storage vessel into which said sealant is admitted while said valve of the channel is closed;

while said valve of the channel is closed, operating at least one of said first and second pressure-controlling means so as to adjust the pressure in said impregnation vessel and the pressure in said sealant storage vessel to substantially the same level;

opening said valve, thereby permitting said sealant to flow solely by gravity from said sealant storage vessel into said impregnation vessel through said channel;

closing said valve of the channel so as to stop said flow of the sealant when said die-cast article is immersed in said sealant;

impregnating said sealant into said die-cast body;

creating a pressure difference between said sealant storage vessel and said impregnation vessel, said pressure difference being created, after said valve-opening step for the sealant to flow and, at the latest, before completion of the subsequent valve-opening and reflowing step; and

opening said valve of the channel and reflowing said sealant from said impregnation vessel into said sealant storage vessel through said channel, said reflowing being carried out essentially due to said pressure difference.

4,520,046

METAL PLATING ON PLASTICS

John E. McCaskie, North Merrick, and Chris Tsiamis, New York, both of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Filed Jun. 30, 1983, Ser. No. 510,428

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—304 **16 Claims**

1. A process for metal plating the surface of a plastic or elastomeric material comprising the steps of

(a) gas-etching the surface of said material with sulfur trioxide,

(b) treating the etched surface with a conditioning agent comprising a non-ionic surfactant to render the surface acceptable for activation with a catalytic metal colloid,

(c) depositing said activating colloid from a colloidal metal solution, and

(d) plating a metal coating upon the activated surface from an electroless metal bath.

10. A process for metal plating the surface of a plastic or elastomeric material comprising the steps of

(a) subjecting the surface of said material to the gas-etching atmosphere of sulfur trioxide,

(b) controlling the gas-etching reaction to a point wherein the surface will accept a uniform deposit of an activating colloid,

(c) depositing said activating colloid from a colloidal activating metal solution, and

(d) plating a metal coating upon the activated surface from an electroless metal bath.

4,520,047

METHOD AND APPARATUS FOR THE RECOVERY OF SPRAYING SUBSTANCE WHEN SPRAYING ELONGATED ROLLED STOCK

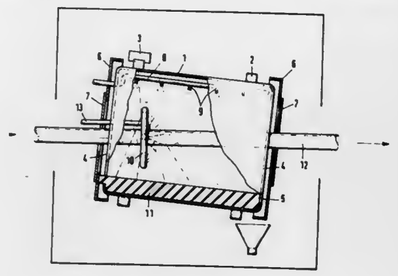
Herbert Hillemanns, Ratingen; Robert Samans, Düsseldorf, and Walter Meyer, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,531

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3116368

Int. Cl.³ A21D *4/60;* **B05D** *7/16;* **C10M** *11/00*

U.S. Cl. 427—331 **3 Claims**



1. Method for the recovery of spraying substance in the continuous spraying of elongated rolled stock, more particularly when spraying tubes with corrosion-inhibiting coating materials, including substantially a binder, pigments, tar substances, and water as solvent or dispersant, comprising spraying the stock in a water-vapor saturated atmosphere; collecting the excess spraying substance and providing for the collected substance for re-use.

4,520,048

METHOD AND APPARATUS FOR COATING PAPER AND THE LIKE

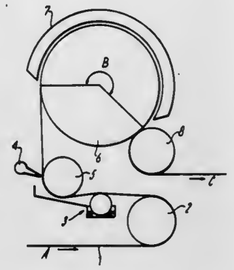
Alan E. Ranger, Kent, England, assignor to International Octrooi Maatschappij "Octropa" B.V., Netherlands

Filed Jan. 16, 1984, Ser. No. 571,278

Claims priority, application United Kingdom, Jan. 17, 1983, 8301189; Jan. 17, 1983, 8301191

Int. Cl.³ B05D *3/12, 1/28;* **C23C** *13/08;* **B05B** *5/00*

U.S. Cl. 427—350 **16 Claims**



1. A method of smooth coating permeable board comprising the steps of:

(a) applying to the face of the board a layer of coating composition comprising a coating material and aqueous carrier liquid;

(b) metering the composition over the face of the board;

(c) heating the coated board along a heating path to at least partially remove the water and dry the coating; and

(d) subjecting the opposite back surface of the board along the heating path to reduced pressure relative to the pressure at the face of the board simultaneously during the heating of the coated board according to step (c) to aid in the additional removal of water.

4,520,049

METHOD AND APPARATUS FOR COATING

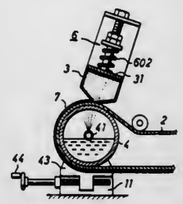
Takashi Nakanishi, Utsunomiya, Japan, assignor to Kao Corporation, Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 559,806

Claims priority, application Japan, Jan. 24, 1983, 58-9702; Mar. 24, 1983, 58-49415

Int. Cl.³ B05C *3/02;* **B05D** *3/12*

U.S. Cl. 427—356 **14 Claims**



1. A coating method comprising feeding base material into a gap defined between a coater die and a base material feeding roller and coating said base material with viscous material discharged from said coater die, the dimension of said gap between the coater die and the base material feeding roller being adjustably varied under action of a pressure at which said viscous material is discharged from the coater die in response to a variation in said pressure, wherein said coater die is located above and adjacent said base material feeding roller, is displaceable in a substantially vertical direction and is supported by a displacement control device, said displacement control device including a first upward adjustable biasing means for upwardly biasing said coater die away from said base material feeding roller and a second downward adjustable biasing means for downwardly biasing said coater die toward said base material feeding roller, whereby said coater die is vertically displaceable against the action of said displacement control device in accordance with the pressure at which viscous material is discharged from said coater die.

4,520,050

FINISH COMPOSITION FOR POLYESTER FIBER FOR RUBBER REINFORCEMENT

Shigemitsu Murase, Joyo, Japan, assignor to Unitika Limited, Osaka, Japan

Filed Sep. 16, 1983, Ser. No. 533,011

Claims priority, application Japan, Dec. 29, 1982, 57-234194

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—381 **3 Claims**

1. A method of producing polyester fiber with improved adhesion to rubber comprising:

(a) applying to the fiber a finish composition comprising an effective amount of lubricant and about 3 to 30 weight percent of the initial condensation product and its intermediate of a melamine resin;

(b) forming the treated fiber into cord;

(c) dipping the cord in a bath comprising a resorcinol-formaldehyde-latex;

(d) drying the cord; and

(e) curing the cord at a temperature of about 220° C.

4,520,051

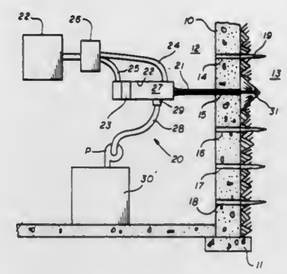
METHOD OF WATERPROOFING A POROUS WALL

George W. Harrison, Houston, Tex., assignor to Team, Inc., Houston, Tex.

Filed Jan. 3, 1984, Ser. No. 567,650

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—387 **2 Claims**



1. A method of waterproofing a porous wall of a subterranean vault, wherein one side of the said wall is adjacent porous earth, which comprises the steps of:

(a) propelling a moisture activated, room temperature curable porable, self-leveling dimethylpolysiloxane or dialkylpolysiloxane which are generally referred to as silicone or TV rubber through said earth onto said side of said wall, and

(b) subjecting said resin to moisturizing conditions whereby said resin is activated to cure and form a water impervious flexible barrier adherent to said wall.

4,520,052

METHOD FOR ELECTROLESS COPPER-PLATING AND A BATH FOR CARRYING OUT THE METHOD

Jerzy Skowronek, Boktryckaregatan 35, Norrokoping, and Jan O. Persson, Trestegsgatan 59, S 603 63 Norrkoping, both of Sweden

Continuation-in-part of Ser. No. 392,048, filed as PCT SE 81/00366, Dec. 9, 1981, published as WO 82/02063, Jun. 24, 1982 § 102(e) date Jun. 25, 1982, abandoned.
This application Dec. 15, 1983, Ser. No. 561,618
Claims priority, application Sweden, Dec. 9, 1980, 8008634
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—443.1 **8 Claims**

1. In a method for electroless copper plating comprising immersing the surface to be plated in a bath comprising an alkaline solution, having a pH of 11.5–13.5, of a cupric salt, a complexing agent for cupric (II) ions, a reduction agent of aldehyde type and additives to improve the stability of the bath and to lower its surface tension, the improvement wherein the bath additionally contains an oxide inclusion preventing agent of the formula

$$R'R''N—R_3—COOH$$

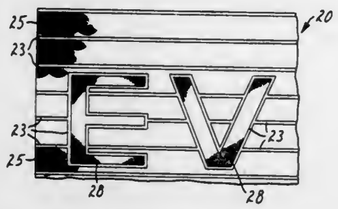
wherein R′ and R″ each is hydrogen or alkyl and R_3 is phenyl, the amino group and the carboxylic group being in para position with respect to each other whereby to provide high ductility of the deposited copper and resistance to heat shock.

4,520,053

LAYERED COMPOSITE FOR APPLYING GRAPHICS HAVING AREAS OR BOTH MIRROR-LIKE METAL AND PATTERNED APPEARANCE

Frank J. Marentic, Birmingham, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 10, 1983, Ser. No. 521,843
Int. Cl.³ B60R *13/0*
U.S. Cl. 428—31 **16 Claims**



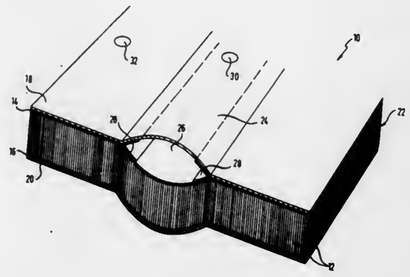
1. A flexible layered composite comprising a strong, tough, flexible, dimensionally stable, transparent plastic film having
(a) a mirror-like, thin-film metal layer covering the first face of the plastic film,
(b) an opaque patterned layer covering the entire second face of the plastic film, and
(c) an adhesive layer covering the opaque patterned layer, which mirror-like metal layer when selectively etched away, provides areas of both mirror-like metal and patterned appearance when the layered composite is mounted by its adhesive layer to a display surface.

4,520,054

FLEXIBLE HOLLOW BODY FILLABLE WITH FLUID MEDIUM

Claus-Peter Pfeiffer, Reinbek, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 535,874
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1982, 3235630
Int. Cl.³ B32B *1/02*
U.S. Cl. 428—35 **5 Claims**



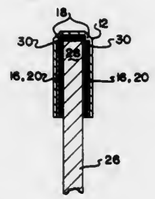
1. A flexible hollow body fillable with fluid medium for stiffening the body, comprising a double fabric having an upper web and a lower web and a multiplicity of pile filaments extending transversely to and mutually connecting sid upper and lower webs, said webs defining an inflatable chamber therebetween containing and limited in shape and size by said pile filaments, said webs respectively having an outer surface with a layer of elastomeric material disposed thereon, a coated cover fabric applied to one of said layers of elastomeric material, said cover fabric having strip-shaped regions detached from said layer of elastomeric material to which said cover fabric is applied so as to define therewith respective tubular chambers; angular strips disposed within said tubular chambers at respective edges thereof for joining said one layer of elastomeric material and said coated cover fabric to one another; said chambers being formed, respectively, with at least one inlet opening for inflating said chambers.

4,520,055

SPLIT LABEL INDEX TAB

Jack W. Jeter, Akron, Ohio, assignor to Jeter Systems Corporation, Akron, Ohio

Filed May 31, 1983, Ser. No. 499,339
Int. Cl.³ B32B *3/10*; G09F *3/04*
U.S. Cl. 428—55 **7 Claims**



1. A label, comprising:
a flexible film;
a face sheet adhesively secured on one surface to said flexible film, coextensive with said flexible film, and having a plurality of parallel cuts therethrough, said parallel cuts dividing said face sheet into at least three separate individual pieces, and said parallel cuts being spaced from about 0.012 to about 0.017 inches apart; and
a pressure sensitive adhesive positioned on the other surface of said face sheet;
wherein said label is adapted for flush application to the edge of a substrate, said parallel cuts being positionable about the corner of said edge.

5. A process for making a label, comprising:
adhering a sheet of paper face stock to a silicone coated paper backing with a pressure sensitive adhesive;
introducing parallel cuts through said paper face stock, said parallel cuts being spaced apart from about 0.012 to about 0.017 inches;
adhesively securing over said face stock a flexible film, producing a laminate; and
cutting labels from said laminate.

4,520,056

GAS PERMEABLE-LIQUID IMPERMEABLE MEMBRANES CONFINED WITHIN A RECESS

Donald Jackrel, 5 Maison Ct., Holbrook, N.Y. 11741

Division of Ser. No. 418,574, Sep. 15, 1982, Pat. No. 4,430,759.
This application Aug. 25, 1983, Ser. No. 526,472
Int. Cl.³ B32B *1/04, 3/00*
U.S. Cl. 428—68 **4 Claims**



1. An article of clothing designed to surround a portion of the body comprising an outer layer, an intermediate layer, and an inner layer, said inner layer being situated within said outer layer, means for joining said inner and outer layers to define a recess within which said intermediate layer is confined, without interrupting the integrity of the intermediate layer or bonding same to either of said inner or outer layers, said intermediate layer comprising first and second gas permeable liquid impermeable membranes sealed to form an insert having the general shape of the portion of the body which the article is designed to surround.

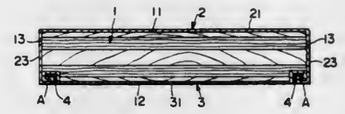
4,520,057

COMPOSITE PLATE

Hideichi Fujii, Kobe; Chiyoki Yamane, and Fumio Kawai, both of Osaka, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo and Koshii & Co., Ltd., Osaka, both of, Japan

Filed Dec. 22, 1983, Ser. No. 564,414
Claims priority, application Japan, Dec. 28, 1982, 57-234435
Int. Cl.³ B32B *1/04, 3/02, 15/10*
U.S. Cl. 428—68 **4 Claims**

1. A relatively light-weight structural member resistant to fire, generation of smoke and impervious to moisture comprising:
a substantially flat wood core defined by a top surface, a bottom surface and side surfaces;
top and bottom metallic plates covering said top and bottom surfaces of said wood core and metallic sides integral with said top and bottom plates covering said side surfaces of said wood core;
said top and bottom metallic plates being provided with integral overlapping-sealed joint portions to seal said metallic plates about said wood core; the overlapping parts of said joint portions being bent towards said wood core to form edges which abut one another, said edges being welded together to form a complete seal about said wood core.

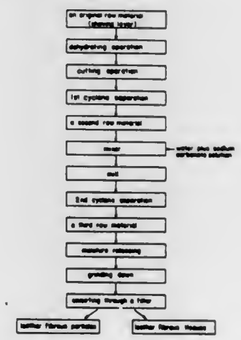


4,520,058

METHOD FOR PRODUCING LEATHER FIBROUS TISSUES PLANTED ON A BASIC CLOTHING SHEET AND SHEET PRODUCTS PRODUCED THEREBY

Yoshiro Okabe, 6-12-19, KamiHigashi, Hirano-ku, Osaka, Japan

Filed Apr. 18, 1983, Ser. No. 485,637
Int. Cl.³ B05D *1/16*
U.S. Cl. 428—90 **6 Claims**



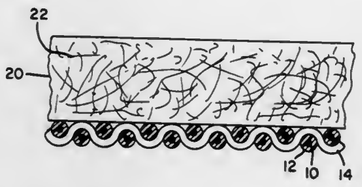
1. A method of producing a sheet having leather fibrous tissues adhered thereto, comprising the steps of
dehydrating animal leather scraps in the form of original first raw material until water content thereof is lowered to the range between 20 to 40 percent by weight;
cutting a dehydrated amount of said leather scraps into short lengths by means of a cutter having sharp blade edges, thereby to obtain a second raw material;
adding water to said second raw material while agitating said second material;
setting an agitated amount of said second raw material to a mill and milling said second raw material until said agitated second material is substantially completely turned into a fibrous state, thereby to obtain a third raw material;
dehydrating an amount of said third raw material until water content thereof is lowered to less than 40 percent by weight;
smashing a dehydrated amount of said third raw material into substantially shorter lengths;
filtering a smashed amount of said third raw material into assortment; and
adhering said filtered third raw material onto said sheet.

4,520,059

IONOMER-COATED YARNS AND THEIR USE IN PAPERMAKERS WET PRESS FELTS

James D. Worrall, East Greenwich, and Ronald E. Tefft, Rockville, both of R.I., assignors to Engineered Yarns, Inc., Coventry, R.I.

Filed Dec. 16, 1983, Ser. No. 562,076
Int. Cl.[3] B32B 5/12
U.S. Cl. 428—109 12 Claims



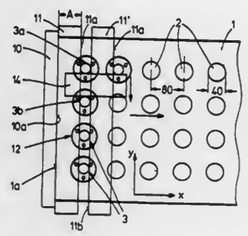
1. A papermakers' felt of the batt-on-mesh type having a mesh layer which comprises synthetic yarns coated with an ionomer resin so that said mesh layer is resistant to abrasion and compression.

4,520,060

METHOD FOR FABRICATING A MASTER PLATE AND A MASTER PLATE FABRICATED THEREBY HAVING FITTING BORES DISPOSED AT PRESPECIFIED COORDINATE INTERVALS

Rudi Blümle, Schwarzbachstr. 52, D-7000 Stuttgart 80, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 512,053
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1983, 3301178
Int. Cl.[3] B32B 3/10
U.S. Cl. 428—131 14 Claims



1. A method for producing a master plate having highly accurate fitting bores for fitting pins disposed at pre-specified coordinate intervals in order to form a grid system, for use as an initial template gauge plate for making clamping plates for grid-type clamping systems, comprising

drilling preliminary bores in a foundation plate at a specified dimension of grid intervals with normal accuracy and with a greater diameter than an outer diameter of said fitting bores,

forming a plurality of fitting sleeves each with an end flange having an outer diameter which is greater than said preliminary bores in precise coaxial alignment with an inner bore of said fitting sleeves with an outer diameter of said sleeves of lesser diameter than said preliminary bores in said foundation plate,

inserting said fitting sleeves into said previously drilled preliminary bores in said foundation plate thereby forming an annular interspace between the outer diameter of said fitting sleeves and said preliminary bores in said foundation plate,

accurately positioning the fitting sleeves in a given precise position in said preliminary bores by measurement and positioning said sleeves in both the X and Y directions with equal measurements between each of said sleeves in both the X and Y directions,

mechanically pre-fixing said sleeves in their given precise position which has been located by measurement in both the X and Y directions,

and introducing a settable plastic material into the annular interspace between the outer circumference of said fitting sleeves and said preliminary bores and permitting the plastic material to harden thereby fixing said sleeves in their precise position in both the X and Y direction.

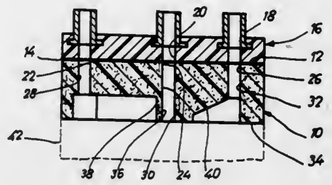
11. A master plate, produced by the method defined by claim 1, characterized in that insertable fitting sleeves held in rough preliminary bores by means of a hardened plastic material are disposed in it at the grid intervals, with each of said sleeves having a fitting bore for receiving a fitting pin and an annular flange on one end face, which annular flange rests with its outer rim on the contact face of the foundation plate.

4,520,061

ADAPTER BLOCK AND A MOLD FOR PRODUCING SUCH BLOCKS BY FOAM MOLDING

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany, and Hans-Heinrich Glättli, Seestrasse 252, Ch-8700 Küsnacht, Switzerland

Division of Ser. No. 385,254, Jun. 4, 1982,. This application Aug. 17, 1983, Ser. No. 524,042
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124020
Int. Cl.[3] F16L 47/00; B32B 3/10; B29C 1/06
U.S. Cl. 428—137 10 Claims



1. An adapter block for use in a fluid system, comprising first and second parts and adhesive means for securing said first and second parts together; wherein said first part is made of a plastic material, has a recess provided in a first surface thereof, and has a connecting bore which extends therethrough from a second surface thereon to said recess in said first surface, said plastic material being an integral skin foam material which includes a foam core and a solid exterior skin integral with said foam core; and wherein said first part has said second surface on a side thereof which has been mechanically roughened, said second part being secured by said adhesive means to said second surface of said first part.

4,520,062

TRANSFER COATING OF ABRASION-RESISTANT LAYERS

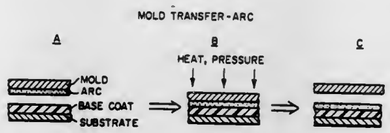
Israel S. Ungar; Herbert I. Scher, both of Randallstown, and Nelson L. O'Neill, Crofton, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Continuation-in-part of Ser. No. 442,070, Nov. 16, 1982,. This application Sep. 2, 1983, Ser. No. 529,187
Int. Cl.[3] D06N 7/04; B41C 1/06; B32C 3/00
U.S. Cl. 428—148 19 Claims

1. A process for providing an abrasion-resistant deposit on the surface of a substrate, comprising

providing a transfer carrier coated with an ultra-thin deposit consisting essentially of a non-resinous binder material, a small quantity of finely divided solid lubricant and mineral abrasive particles, which ultra-thin deposit has been dried on said transfer carrier at a temperature of at least 140° F.,

transferring said dried ultra-thin deposit from said transfer carrier to the surface of a substrate under conditions of heat and pressure whereby said deposit becomes adhered to said substrate, and



removing said transfer carrier.

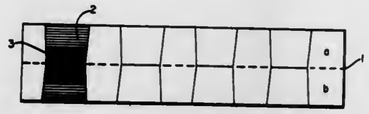
8. A process according to claim 1, wherein said surface of said substrate is a thermosettable material, a thermoplastic, paper or a wood product.

4,520,063

FORGERY-PROOF FLAT ARTICLE OF A SYNTHETIC RESIN, AND PROCESS FOR THE PRODUCTION THEREOF

Manfred Simon, Niederkassel; Karl-Heinz Spiess, Much-Schwellenbach, and Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,006
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129400
Int. Cl.[3] D06P 5/02
U.S. Cl. 428—195 8 Claims



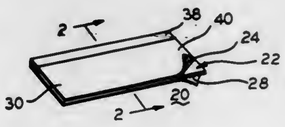
1. A process for the production of forgery-proof flat articles with security features analogous to watermarks from at least one synthetic resin transparent, translucent, or colored sheet, which comprises applying at least two different colorants, at least one of which is capable of quickly migrating, onto the surface of a sheet of the flat article formed of synthetic resin in the presence of a crosslinkable component in the flat article and/or in the colorant application, and subsequently crosslinking the crosslinkable component when the desired migration depth has been reached for the applied colorant in the flat article, the at least one migrating colorant penetrating at least a part of resin material of the flat article being fixed by crosslinking in corresponding with the selected security feature in the form of a pattern, motif, or lettering, said colorants providing a security feature in a congruent fashion on both sides of the flat article; said composite flat article being produced by laminating a first sheet with a second sheet made of the same synthetic resin material as the first sheet, and the colorants being applied to one of the sheets so that color application lies between the two sheets, a migration of the at least one migrating colorant taking place into both sheets; the faster migrating colorant being an organic luminescent dye, whereby the security feature selected can be discerned under normal light only when the article is held up to the light but, in case of UV light of specific wavelengths, the security feature can also be recognized in a top view of the article.

4,520,064

DECORATIVE PLAQUES AND PROCESS

James C. Kanzelberger, Riverside, Ill., assignor to Contemporary, Inc., Riverside, Ill.

Division of Ser. No. 770,797, Feb. 22, 1977, which is a continuation of Ser. No. 579,419, May 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,166, Mar. 25, 1974, Pat. No. 3,940,864. This application May 31, 1977, Ser. No. 801,863
The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.
Int. Cl.[3] B32B 23/00; B41M 3/12
U.S. Cl. 428—199 4 Claims



1. A material which simulates engraved metal and which may be engraved by a hot die of the type used in a hot stamping process, said material comprising a solid non-porous debossing layer of a self-supporting rigid thermoplastic material substantially free of any voids and having heat-deformable characteristics such that said material debosses under the heat and pressure of a hot stamping die, a first non-heat-conductive polyester film layer bonded to and covering the top of said self-supporting, solid, and rigid debossing material to contain and follow said thermoplastic material as it deforms responsive exclusively to dry heat and pressure of a hot die, and a second stabilizing layer bonded to and covering the bottom of said debossing self-supporting, solid, and rigid material to control displacement near the top of said thermoplastic material and to prevent displacement near the bottom of said thermoplastic material.

3. A product made by a process for engraving a laminate responsive to a hot stamping process, said process comprising the steps of:

(a) first forming a self-supported, separate, and independent solid layer of rigid thermoplastic material approximating the thickness of an engraved metal plate, said thermoplastic material having heat deformable characteristics such that said material debosses under the dry heat and pressure of a hot stamping die;

(b) laminating onto the upper side of said first formed self-supporting, solid, and rigid layer a first polyester film covering which withstands the dry heat and pressure of said hot stamping die, said film covering following and containing said thermoplastic material as it debosses responsive to the dry heat of said hot die to form an imprintable surface, said polyester film having a surface characteristic which receives ink from an overlying hot stamping foil when said hot stamping die is pressed against said foil;

(c) laminating onto the lower side of said first formed self-supporting, solid, and rigid layer a second covering material which stabilizes the back of said thermoplastic material while the upper side debosses as the thermoplastic material flows laterally under the dry heat and pressure of said hot die; and

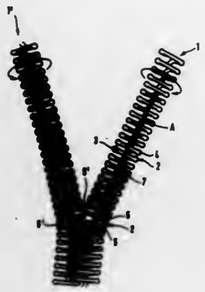
(d) locally applying the dry heat and pressure of said hot stamping die to said first covering film to deboss said first formed self-supporting, solid, and rigid thermoplastic material and generally supporting the second covering material to preclude deformation of said thermoplastic material, except where said dry heat and pressure are locally applied, said ink transferring from said hot stamping foil to said polyester film under the dry heat of said die simultaneously with said debossment.

4,520,065

FLAT LINK BAND OF WIRE COILS, WIRE COIL FOR THE PRODUCTION OF SUCH A LINK BAND AND PROCESS FOR THE PRODUCTION OF SUCH A WIRE COIL

Reinhard W. Leo, Giessener Strasse 38, 6057 Dietzenbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 328,119, Dec. 7, 1981, abandoned. This application Jul. 11, 1984, Ser. No. 629,988
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3047989
Int. Cl.[3] B21F *27/00;* D02G *3/00;* D03D *13/00*
U.S. Cl. 428—222 10 Claims



1. In a flat link band of wire coils fabricated from a plastic material, wherein each turn of each wire coil comprises a head part and a foot part so that adjacent wire coils are adapted to be detachably held together by an insert wire thrust into respective interengaging head and foot parts of adjacent wire coils, the head and foot parts being substantially identical to one another with each of the head and foot parts defining a reverse loop of each turn of each wire coil, each head and foot part extending over one side of their respective wire coil with a substantially straight first shank section which extends into a corresponding straight first shank section of a connecting turn of each respective wire coil, and each head and foot part extending over the opposite side of their respective wire coil with a substantially straight second shank section, an improvement comprising:

said head part and its associated first and second shank sections of said each turn of each wire coil being substantially disposed in a first plane substantially perpendicular to respective longitudinally extending wire coil axis;

said foot part and its associated first and second shank sections of said each turn of each wire coil being substantially disposed in a second plane substantially perpendicular to said respective longitudinally extending wire coil axis;

said first plane being spaced apart from and substantially parallel to said second plane;

a central winding section of said each turn of each wire coil connecting said second shank section of said head part to said second shank section of said foot part, said central winding section extending substantially in the same direction as said respective longitudinally extending wire coil axis, and said central winding section having a predetermined axial length which substantially determines the pitch of each wire coil respectively; and

said axial length of said central winding section having a minimum length at least slightly greater than the thickness of either of said head and foot parts thereby avoiding any longitudinal tension on said respective interengaging head and foot parts of said adjacent wire coils.

4,520,066

POLYESTER FIBREFILL BLEND

Graham Athey, Harrogate, England, assignor to Imperial Chemical Industries, PLC, London, England

Filed Jan. 14, 1983, Ser. No. 458,012
Claims priority, application United Kingdom, Mar. 8, 1982, 8206693
Int. Cl.[3] D04H *1/04, 1/54, 1/62, 1/72*
U.S. Cl. 428—288 2 Claims

1. A fibrefill blend comprising (a) from 90 to 50% by weight of slickened crimped hollow polyester fibre having a cavity volume of 10 to 30% and, complementally, to total 100% by weight, (b) from 10 to 50% by weight of slickened crimped conjugate fibre, the improvement being that the hollow polyester fibres and the conjugate binding fibres have substantially the same density and decitex (and so diameter) and that the conjugate fibre comprises a polyester core and a polyolefin sheath.

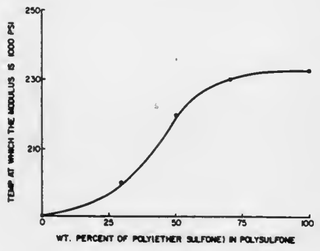
2. A thermally bonded batt formed from the fibrefill blend of claim 1.

4,520,067

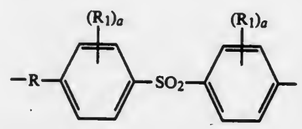
COMPOSITION USEFUL FOR MAKING CIRCUIT BOARD SUBSTRATES AND ELECTRICAL CONNECTORS

James E. Harris, Piscataway, and Lloyd M. Robeson, Whitehouse Station, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

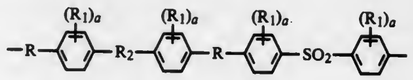
Continuation of Ser. No. 391,422, Jun. 23, 1982, abandoned. This application Jul. 25, 1983, Ser. No. 516,863
Int. Cl.[3] B32B *5/16, 27/06, 15/04*
U.S. Cl. 428—323 12 Claims



1. A circuit board substrate comprising from about 40 to about 90 weight percent of a poly(ether sulfone) of the following formula:



and from about 10 to about 60 weight percent of a polysulfone of the following formula:



wherein R is selected from O and S an each R_1 independently hydrogen, a halogen atom, an alkyl group of from 1 to 4 carbon atoms and an alkoxy group of from 1 to 4 carbon atoms, a is an integer of 0 to 4 and R_2 is a bond between aromatic carbon atoms or a divalent connecting radical.

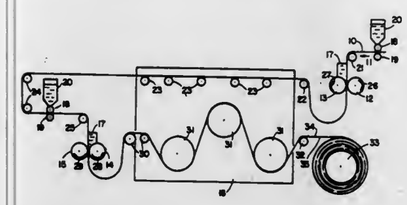
2. A circuit board substrate as defined in claim 1 wherein the substrate further contains a particulate inorganic filler.

4,520,068

REINFORCED SUPPORT SHEET AND METHOD FOR MAKING SAME

Horst Sommer, Musberg, and Hansgeorg Gronle, Filderstadt, both of Fed. Rep. of Germany, assignors to Elring Dichtungswerke GmbH, Fellbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 415,812, Sep. 8, 1982, Pat. No. 4,478,887. This application Oct. 3, 1983, Ser. No. 538,105
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136015; Oct. 21, 1982, 3239010
Int. Cl.[3] F16J *15/10;* C08L *1/00*
U.S. Cl. 428—324 11 Claims



1. A reinforced support sheet for use in making flat gaskets comprising:

a sheet-like, smooth support material; and

a layer of vulcanizable soft material covering each of the sides of said sheet-like support material, said soft material layers being comprised of 80% by weight of an asbestos-free, mineral base material in powder form, and also including up to a maximum of 14% by weight of abestos-free fiber-like base material, and about 6% by weight of synthetic rubber binder material.

4,520,069

MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 6, 1982, Ser. No. 375,691
Claims priority, application Japan, May 7, 1981, 56-67639
Int. Cl.[3] G11B *5/70;* B32B *5/30*
U.S. Cl. 428—328 7 Claims

1. A magnetic recording medium having a high signal-to-noise ratio in high density recording and a high output in short wavelength recording and comprising a non-magnetic support and a magnetic recording layer coated thereon in which ferromagnetic particles having an oval form are dispersed in a non-magnetic binder, characterized in that the ferromagnetic particles have a mean particle length of at most 0.3 micron with a length to width ratio of more than 1 but at most 3, and are subjected to an orientation treatment in the vertical direction to the recording surface.

4,520,070

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING SAME

Nobuyuki Yamamoto, Shizuoka; Yasuo Nishikawa, Kanagawa; Kyoichi Naruo, and Tsutomu Okita, both of Shizuoka, all of Japan, assignors to Fuji Photo Film Company Limited, Kanagawa, Japan

Filed Feb. 19, 1982, Ser. No. 350,509
Claims priority, application Japan, Mar. 24, 1981, 56-43388
Int. Cl.[3] H01F *10/02;* B05D *5/12*
U.S. Cl. 428—336 17 Claims

1. A magnetic recording medium consisting essentially of:

a non-magnetic support base;

a thin magnetic metal layer formed on a surface of said non-magnetic support base; and

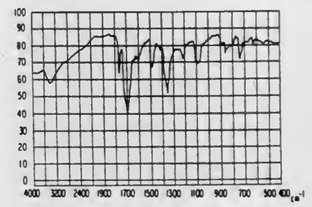
a layer consisting essentially of a compound containing at least two isocyanate groups formed on either said thin magnetic metal layer or the surface of said non-magnetic support base opposite said thin magnetic metal layer or both, in order to improve wear resistance and running properties.

4,520,071

SPHERICAL POROUS POLYIMIDE POWDER

Yuzuru Noda, and Toshio Nakajima, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 4, 1984, Ser. No. 616,760
Claims priority, application Japan, Apr. 18, 1984, 59-78936
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—402 10 Claims



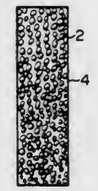
1. A spherical porous polyimide powder which is thermally infusible and is insoluble in an organic solvent, comprising spherical porous particles of a weight average particle diameter of 1 to 20 μm comprising an aromatic polyimide having an inherent viscosity measured in sulfuric acid at a concentration of 0.5 g/dl at temperature of 30±0.01° C. of 0.1 to 2.0, wherein a packed bulk density is 100 to 600 g/l and a specific surface area measured by a nitrogen absorption method is 1 m^2/g or more.

4,520,072

HETEROGENEOUS SYSTEM PHOTOSENSITIVE OXIDATION SENSITIZER

Akira Yoshino, Fujisawa, and Isamu Iwami, Zushi, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 121,586, Feb. 14, 1980, abandoned. This application Mar. 30, 1982, Ser. No. 363,607
Claims priority, application Japan, Feb. 28, 1979, 54-21829; Aug. 27, 1979, 54-108156; Nov. 7, 1979, 54-143241; Nov. 7, 1979, 54-143242
Int. Cl.[3] B01D *39/08;* B32B *5/16*
U.S. Cl. 428—403 6 Claims



1. A heterogeneous system photosensitive oxidation sensitizer prepared by the steps comprising:

(i) providing a coloring substance having a light resistance test value of from Rating No. 4 to No. 8 and a substance capable of serving as a solvent medium for said coloring substance;

(ii) allowing the coloring substance to dissolve or molecularly disperse completely in the solvent medium, the formation of the solution or the molecular dispersion result-

ing in the coloring substance becoming photosensitively active; and

(iii) allowing the photosensitively active coloring substance to be absorbed on a carrier therefor so that the resulting sensitizer has a photosensitivity as ΔDO value of at least 0.5, determined by dissolving a predetermined amount of the sensitizer in water having a predetermined oxygen concentration and applying a predetermined intensity of irradiation to the resulting solution.

2. A sensitizer according to claim 1, wherein the carrier is in the form of powders.

3. A sensitizer according to claim 1, wherein the carrier is in the form of granules.

4,520,073

PRESSURE COATING OF MINERAL FILLERS

Donald A. Randolph, and Kenneth R. Watkins, both of Wheaton, Ill., assignors to USG Corporation, Chicago, Ill.

Filed Dec. 23, 1983, Ser. No. 565,197
Int. Cl.³ B05D *3/02, 3/04, 7/00*
U.S. Cl. 428—405 **14 Claims**

13. A calcium sulfate filler material having enhanced water resistance and having a hydrophobic coating thereon penetrating, filling and sealing tissures, cracks, and interstices in the surface of the calcium sulfate, said coating comprising the dried solids steam carried and pressure impregnated onto the calcium sulfate by mixing the calcium sulfate and about 0.01% to about 5.0% by weight of hydrophobic coating material under low intensity agitation at a temperature between about 32°–275° C. and steam pressure between about 10–100 psig for at least about 1 minute and drying the wet coated calcium sulfate.

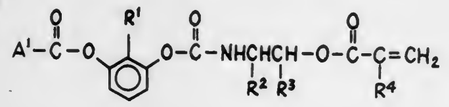
14. The filler of claim 13 in which the coating material comprises polydimethyl siloxane.

4,520,074

POLYMERIZABLE 3-AROYLOXYPHENYL CARBAMATES AND METHODS FOR THEIR PREPARATION AND USE

Timothy W. O'Donnell, and Daniel R. Olson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 20, 1984, Ser. No. 632,732
Int. Cl.³ B32B *27/36;* **C07C** *69/76*
U.S. Cl. 428—412 **21 Claims**



1. A polymerizable 3-aroyloxyphenyl carbamate having formula I in the drawings, wherein A^1 is an aromatic radical; each of R^1, R^2 and R^3 is independently hydrogen or an alkyl radical containing up to 4 carbon atoms; and R^4 is hydrogen or a lower alkyl radical.

14. A solid article of manufacture comprising:

(A) a resin base, and

(B) a surface coating on at least a part of

said resin base, said surface coating comprising an addition polymer containing structural units of formula IV, wherein Z is at least one moiety selected from the group consisting of those having formulas V and VI; A^1 is an aromatic radical; each of R^1, R^2 and R^3 is independently hydrogen or an alkyl radical containing up to 4 carbon atoms; and R^4 is hydrogen or a lower alkyl radical.

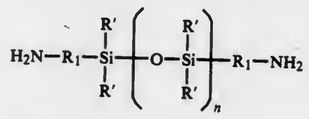
4,520,075

SILOXANE-MODIFIED POLYIMIDE PRECURSOR AND POLYIMIDE

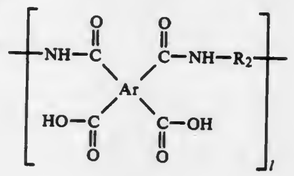
Kazumasa Igarashi; Katsuhiko Yamaguchi; Kazuo Iko, and Kazuyuki Miki, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

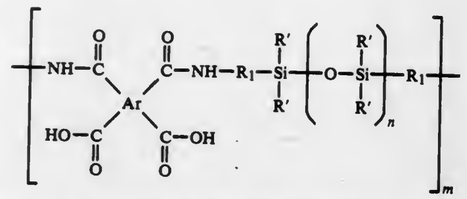
Continuation of Ser. No. 528,927, Sep. 2, 1983, abandoned. This application Sep. 25, 1984, Ser. No. 654,517
Int. Cl.³ C08G *73/10*
U.S. Cl. 428—435 **28 Claims**

1. A siloxane-modified polyimide precursor which can be converted into a polyimide having excellent adhesion and moisture resistance, the precursor being a reaction product prepared by simultaneously polymerizing (a) a diaminosiloxane represented by the formula



wherein R_1 is a divalent organic group, R′ is a monovalent organic group, and n is an integer of 1 to 1,000, and (b) a diamine containing no silicon atoms in its molecule with (c) 3,3′,4,4′-biphenyltetracarboxylic dianhydride in an inert organic solvent, wherein the diaminosiloxane is used in an amount of 1 to 4 mole % per mole of the total diamino compounds and such that the silicon content in the reaction product is 0.5 wt. % or less, the precursor having the formula





wherein R_1, R′ and n are the same as defined above; R_2 is a divalent organic group containing no silicon atoms; Ar is a tetravalent biphenyl organic group; and l and m are positive integers with the proviso that m/l+m=0.01 to 0.04.

4,520,076

MAGNETIC RECORDING MEDIUM

Seitoku Saito; Toshiaki Izumi; Takayoshi Kobuke, and Hiroshi Sugihara, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 14, 1981, Ser. No. 263,587
Claims priority, application Japan, Jun. 3, 1980, 55-73732
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—611 **5 Claims**

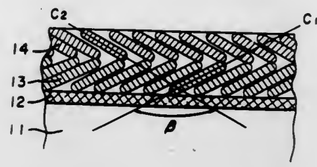
1. A magnetic recording medium comprising:

a non-magnetic substrate;

a plurality of magnetic layers deposited on said non-magnetic substrate;

said magnetic layers being formed of magnetic particles having a shape with a major axis, said major axis arranged at a tilt angle to the perpendicular of said substrate;

wherein the tilt angle of all particles in the same layer is the same and the tilt angle for particles in adjacent layers is equal in magnitude but in opposite directions from said



perpendicular, and wherein said major axes of said magnetic particles in the adjacent magnetic layers are crossed at an angle ranging from 20° to 160°.

4,520,077

PROCESS FOR THE PROTECTION OF GALVANIZED STEEL ROLLED SECTIONS WITH A TWO LAYER CHROMIUM-CHROMATE COATING

Carlo Lavezzari, Varzi, Italy, assignor to Zincroksid S.p.A., Turin, Italy

Filed Mar. 2, 1984, Ser. No. 585,856
Claims priority, application Italy, Mar. 3, 1983, 19880 A/83
Int. Cl.³ C25D *5/12, 11/38*
U.S. Cl. 428—632 **8 Claims**

1. A process for the protection of flat steel rolled sheets previously plated with zinc or zinc containing alloys comprising: depositing on the surface of the previous plating a layer of chromium metal having a thickness of at least about 0.55 g./m.² by electrodeposition; and then depositing on the surface of the layer of chromium metal a layer of chromium oxide by electrodeposition, wherein the chromium oxide layer has a thickness of at least about 0.035 g./m.² and the weight ratio of the chromium metal to the chromium contained in the chromium oxide in the respective deposits is from 25:1 to 4:1.

8. A product obtained by means of the process according to claim 1 in which the flat rolled sheet section is in the form of a roll, plate, or sheet up to 2500 mm. wide and up to 10 μm. thick, having at least one of its sides previously plated with a zinc or zinc alloy plating of a thickness of from 1 μm to 100 μm, and in which successive electrolytic treatments have been carried out on at least one previously plated side.

4,520,078

CORES FOR ELECTROMAGNETIC APPARATUS AND METHODS OF FABRICATION

Mario Rabinowitz, Redwood City, and E. Robert Perry, Portola Valley, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 8, 1981, Ser. No. 271,420
Int. Cl.³ H01F *41/02;* **B23K** *20/08*
U.S. Cl. 428—636 **4 Claims**



1. A method of making an amorphous metal core for use in an electrical induction device such as a transformer, said method comprising the steps of: initially providing appropriate amorphous metal material in the form of a continuous strip for use as said core; winding said continuous strip of material into an unsolidified, preliminary shape; and thereafter, while said unsolidified wound strip of material is in said preliminary shape, explosion bonding said material into a solidified final shape without causing the amorphous material to recrystallize, whereby to increase its density substantially and therefore improve its permeability and field saturation characteristics.

4,520,079

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima, Izumi, and Seiichi Miyai, Tagajyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP82/00410, § 371 Date Jun. 14, 1983, § 102(e) Date Jun. 14, 1983, PCT Pub. No. WO83/01528, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 15, 1982, Ser. No. 509,443
Claims priority, application Japan, Oct. 15, 1981, 56-164667
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—694 **4 Claims**

1. In a magnetic recording medium comprising a magnetic layer containing magnetic powder and a binder attached to a non-magnetic substrate, the improvement which comprises:

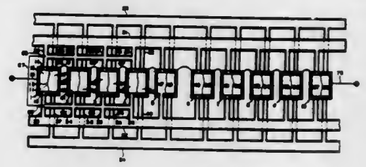
employing in the binder of at least 1% by weight of the total amount of binder of a graft polymer produced by reacting a graft polymerizable polymer with a polymerizable unsaturated compound containing a sulfonic group or a metal sulfonate under the influence of ionizing radiation, said polymerizable unsaturated compound is present in an amount of from 0.1 to 10 parts by weight per 100 parts by weight of said graft polymerizable polymer.

4,520,080

ELECTROLYTES CIRCULATION TYPE CELL STACK SECONDARY BATTERY

Takafumi Hashimoto, Tokyo, Japan, assignor to Meidensha Electric Mfg. Co., Ltd., Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,077
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ H01M *8/24*
U.S. Cl. 429—18 **14 Claims**



1. An electrolyte circulation type cell stack secondary battery comprising:

(a) a first common manifold means through which a cathode electrolyte is supplied into said cell stack;

(b) a second common manifold means through which said cathode electrolyte exits from said cells stack;

(c) a third common manifold means through which an anode electrolyte is supplied into said cell stack;

(d) a fourth common manifold means through which said anode electrolyte exits from said cell stack;

(e) a plurality of at least three cells electrically connected in series between an anode terminal and a cathode terminal of the battery and in fluid connection in parallel between said respective manifolds, said respective cells being composed of a cathode chamber and an anode chamber which are divided by ion transmission separation means, said cathode chambers each being in fluid communication with said first common manifold means through first inlet channels extending between respective ones of said cathode chambers and said first common manifold means, said cathode chambers each being in fluid communication with

said second common manifold means through first outlet channels extending between respective ones of said cathode chambers and said second common manifold means, said anode chambers each being in fluid communication with said third common manifold means through second inlet channels extending between respective ones of said anode chambers and said third common manifold means, said anode chambers each being in fluid communication with said fourth common manifold means through second outlet channels extending between respective ones of said anode chambers and said fourth common manifold means;

(f) shunt current preventing means located at the lowest-cathodic potential side of said cell stack and having first and second electrodes respectively disposed in a first inlet channel and in a first outlet channel, each of said inlet and outlet channels being in fluid communication with the lowest-cathodic potential cell in said cell stack, each of said electrodes connected electrically to said cathode terminal; and

(g) first passage means interconnecting said respective first inlet channels on a lower cathodic potential side of the cell stack and second passage means interconnecting said respective first outlet channels on said lower cathodic potential side of the cell stack, said lower cathodic potential side of the cell stack having a potential lower than an intermediate potential value between the cathode and anode terminals.

4,520,081

HYDROGEN/BROMINE CELL

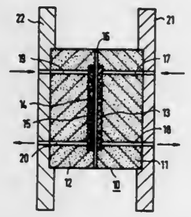
Karl Höhne, Erlangen, and Gerd Starbeck, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,447

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241801

Int. Cl.³ H01M *8/18*

U.S. Cl. 429—19 **13 Claims**



1. A hydrogen/bromine cell for storing and producing electricity comprising: two cell frame halves made of graphite, each half having a face surface with a recess and a back surfaces, and, the face surface of the cell frame halves being positioned so as to face each other;

an electrode mounted inside each recess, one electrode being a bromine electrode and the other being a hydrogen electrode;

a nonporous pyrographite layer covering at least the surface of the recess of the cell frame half surrounding the bromine electrode;

a cation exchanger diaphragm mounted between the two cell frame halves, said diaphragm separating the two electrodes from each other;

said cell frame halves further defining a plurality of tubular holes from said recesses to the outside of said cell for providing reactants and reaction products to and from the cell;

a clamping means for holding the cell together, positioned adjacent the frame back surfaces;

means for supplying electrical current to the cell and collecting electrical current from the cell.

4,520,082

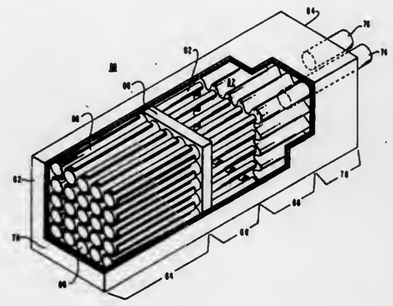
FUEL CELL GENERATOR

Joseph M. Makiel, Monroeville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 1, 1983, Ser. No. 510,451

Int. Cl.³ H01M *8/12*

U.S. Cl. 429—26 **7 Claims**



1. A high temperature solid electrolyte fuel cell generator comprising:

a housing means defining a plurality of chambers including a generator chamber and a combustion products chamber;

a porous barrier separating said generator and combustion products chambers;

a plurality of elongated annular fuel cells each having a closed end and an open end, said open end disposed within said combustion product chamber, said cells extending from said open end through said porous barrier and into said generator chamber;

a conduit for each said cell, each said conduit extending into a portion of each said cell disposed within said generator chamber, each said conduit having means for discharging a first gaseous reactant within said fuel cell;

exhaust means, for exhausting said combustion product chamber, said exhaust means penetrating said housing means;

manifolding means for supplying said first gaseous reactant to said conduits, said manifolding means disposed within said combustion product chamber between said porous barrier and said exhaust means, said manifolding means further comprising support and bypass means for providing support of said manifolding means within said housing while allowing combustion products from said first gaseous reactant and a second reactant to flow past said manifolding means to said exhaust means; and

means for flowing said second gaseous reactant into said generator chamber.

4,520,083

NON-AQUEOUS ELECTROCHEMICAL CELL AND ELECTROLYTE

Keith B. Prater, North Vancouver, Canada; Robert J. Thrash, Carol Stream, Ill., and John F. Connolly, Glen Ellyn, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 2, 1983, Ser. No. 471,429

Int. Cl.³ H01M *4/36, 6/14, 6/04*

U.S. Cl. 429—101 **12 Claims**

1. A non-aqueous, rechargeable electrochemical cell comprising:

(a) an active metal anode;

(b) a positive electrode current collector; and

(c) an electrolyte comprising a salt of said active metal, an ionizing solvent comprising sulfur dioxide, and a supporting electrolyte salt comprising at least one component of the general form R^+X^-, wherein R^+ is a cation different from the cation of said active metal, and X^- is an anion which forms a salt with the cation of said active metal which is less soluble in said cell than R^+X^-; wherein the saturated concentration of said active metal cation in said electrolyte is between about 10^{-9} eq/l and about 10^{-1} eq/l, and said electrolyte is substantially saturated with respect to the active metal cation, whereby an insoluble product is formed at the anode upon discharge of the cell.

4,520,084

ETCHED METAL ELECTRODES AND THEIR USE IN NONAQUEOUS ELECTROCHEMICAL CELLS

Lawrence A. Tinker, Lions Bay, and Allan C. Harkness, Vancouver, both of Canada, assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jnn. 7, 1984, Ser. No. 618,244

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—101 **20 Claims**

1. An electrochemical cell comprising in combination:

(a) a cathode;

(b) a nonaqueous, conductive, liquid electrolyte which comprises a cathode depolarizer; and

(c) a solid electrode comprising at least one metal selected from the group consisting of lithium, sodium, potassium and calcium, said electrode having a surface which has been modified by contact with a liquid etching agent comprising at least one alcohol selected from the group consisting of alcohols which contain up to about 30 carbon atoms.

4,520,085

GAS-TIGHT PRIMARY BATTERY

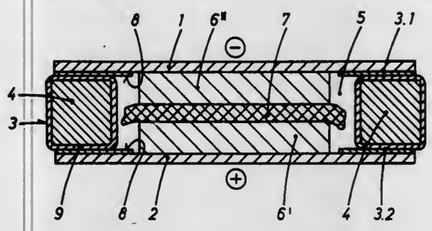
Paul-Julian Wyser, Itingen, Switzerland, assignor to Sonval S.A., Itingen, Switzerland

Filed Dec. 22, 1983, Ser. No. 564,315

Claims priority, application Switzerland, Jan. 7, 1983, 99/83

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—174 **4 Claims**



1. A gas-tight primary battery comprising one or more individual cells comprising

metallic housing elements,

negative and positive leads, wherein said leads are formed from said metallic housing elements, and

a connecting element between the outer rims of said negative and positive leads, wherein said connecting element comprises a metallic body with at least one surface adjacent to said lead comprising an inner layer of aluminum and an outer, electrically insulating, layer of aluminum oxide.

4,520,086

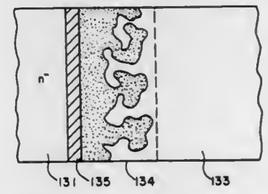
RECHARGEABLE SOLID POLYMER ELECTROLYTE BATTERY CELL

Terji Skotheim, East Patchoque, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 386,666, Sep. 6, 1982, Pat. No. 4,442,185, which is a continuation-in-part of Ser. No. 312,888, Oct. 19, 1981, Pat. No. 4,416,959, which is a continuation-in-part of Ser. No. 208,059, Nov. 18, 1980, Pat. No. 4,352,868. This application Feb. 1, 1984, Ser. No. 575,731

Int. Cl.³ H01M *6/18, 6/16*

U.S. Cl. 429—192 **7 Claims**



1. A rechargeable battery cell comprising a first electrode; a polymer blend of a highly conductive polymer and a solid polymer electrolyte adjacent said first electrode; a dry solid polymer electrolyte adjacent said polymer blend; and a second electrode adjacent to said dry solid polymer electrolyte.

4,520,087

DIVALENT SILVER OXIDE CELL INCLUDING CADMIUM AND TELLUNIUM

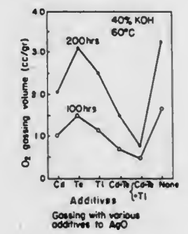
Nobuo Kamata; Takashi Sekiya; Kazutoshi Takeda; Toyoo Hayasaka, and Tomohisa Yoshida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Continuation of Ser. No. 421,794, Sep. 23, 1982,. This application Mar. 27, 1984, Ser. No. 593,196

Claims priority, application Japan, Mar. 5, 1982, 57-34950

Int. Cl.³ H01M *4/34*

U.S. Cl 429—219 **7 Claims**



1. A divalent silver oxide cell comprising: a negative electrode; a positive electrode comprised of an AgO mixture containing metal elements of cadmium and tellurium, the amount of said metal elements being more than 10 PPM and less than 500 PPM by weight of AgO in said AgO mixture, the amount of the cadmium element being more than 10 PPM and less than 300 PPM by weight of AgO and the amount of the tellurium element being more than 10 PPM and less than 100 PPM by weight of AgO, the AgO mixture also containing at least one component selected from the group consisting of lead, mercury, thallium, germanium, yttrium, tin, tungsten, lanthanum, a rare earth element, zinc, selenium, and aluminum, in an amount of more than 10 PPM and less than 100 PPM by weight of AgO, said positive electrode being surrounded by an Ag_2O layer which is free of metallic elements, and a silver layer on at least a part of the outer surface of the Ag_2O layer; a separator

between said negative electrode and said positive electrode; and an electrolyte.

4,520,088

METHOD FOR MAKING PRINTING PLATES

Takao Senga; Jun Yamada, and Shigeyoshi Suzuki, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jan. 11, 1983, Ser. No. 457,281
Claims priority, application Japan, Jan. 14, 1982, 57-4157; Jan. 26, 1982, 57-10325; Feb. 13, 1982, 57-21824
Int. Cl.³ G03G *13/28*
U.S. Cl. 430—49 **15 Claims**

1. A method for making a printing plate which comprises charging an original printing plate comprising an electroconductive base and, provided thereon, at least a layer containing an organic photoconductive compound, exposing the charged plate, developing the exposed element with a liquid developer containing a copolymer comprising 5 to 60% by weight of an acrylate ester or methacrylate ester having an alkyl group of 4 or more carbon atoms, 30 to 90% by weight of a styrene or a styrene derivative and 5 to 40% by weight of an acrylate ester or a methacrylate ester having an alkyl group of 3 or less carbon atoms to form a toner image, fixing the toner image and removing the layer of the non-image areas by etching it with an alkaline etching solution.

4,520,089

ELECTROPHOTOGRAPHIC OFFSET MASTERS

Shoji Tazuki, and Koji Toyama, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,814
Claims priority, application Japan, Sep. 21, 1982, 57-164282
Int. Cl.³ G03G *5/10*
U.S. Cl. 430—49 **7 Claims**

1. Electrophotographic offset master which comprises a support and at least a back coat layer, a precoat layer and a photoconductive layer on said support wherein said back coat layer contains as pigment component, sericite or a pigment containing at least 30% of sericite.

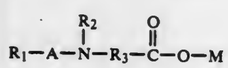
4,520,090

MAGNETIC TONER

Hiroshi Yamazaki, and Kiyoshi Tamaki, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,185
Claims priority, application Japan, Jun. 2, 1982, 57-93056
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—106.6 **19 Claims**

1. A magnetic toner which comprises a magnetic toner powder, a binder and a compound having the formula:



General formula I

wherein R_1 represents an alkyl group or an alkenyl group each having 4 to 30 carbon atoms; R_2 represents a hydrogen atom or a methyl group; R_3 represents an alkylene group having 1 to 4 carbon atoms; A represents a carbonyl group or a sulfonyl group; and M represents a hydrogen atom, an alkali metal, an alkali earth metal or an amine.

4,520,091

ENCAPSULATED ELECTROSTATOGRAPHIC TONER MATERIAL

Fujio Kakimi, and Takeshi Mikami, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,863
Claims priority, application Japan, Mar. 23, 1983, 58-48419
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—110 **6 Claims**

1. An encapsulated electrostatographic toner material comprising a core and a shell enclosing the core, in which said core comprises a colorant, a polymer, a solvent having a boiling point of not lower than 180° C. which is capable of dissolving the polymer or causing the polymer to swell, and an organic liquid having a boiling point in the range of 100° to 250° C. which is substantially incapable of dissolving the polymer or causing the polymer to swell.

4,520,092

PROCESS FOR PREVENTING DEPOSITION OF TONER PARTICLES IN AN IMAGING APPARATUS

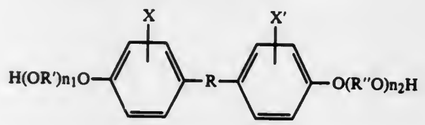
John F. Knapp, Fairport, and Robert J. Gruber, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 219,674, Dec. 24, 1980, abandoned. This application Dec. 27, 1983, Ser. No. 566,754
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—120 **7 Claims**

1. A process for obtaining smudge resistant images and for preventing the deposition of unwanted toner particles in an imaging apparatus consisting essentially of

(a) providing a xerographic imaging apparatus,

(b) adding an improved two component contamination free developer composition to said apparatus, which composition consists essentially of from about 50 percent to about 80 percent by weight of a resin comprised of the polymeric esterification product of a dicarboxylic acid and a diol comprising a diphenol of the following formula



wherein R is selected from substituted and unsubstituted alkylene radicals having from about 2 to about 12 carbon atoms, alkylidene radicals having from 1 to 12 carbon atoms and cycloalkylidene radicals having from 3 to 12 carbon atoms; R′ and R″ are selected from substituted and unsubstituted alkylene radicals having from 2 to 12 carbon atoms, alkylene arylene radicals having from 8 to 12 carbon atoms and arylene radicals; X and X′; are selected from hydrogen or any alkyl radical having from 1 to 4 carbon atoms; and each n is a number of from 0 (zero) to 4, about 20 percent to about 50 percent by weight of magnetite and a carrier material consisting of a steel core coated with a polymethyl methacrylate resin or a polyvinylidene fluoride resin,

(c) forming electrostatic latent images in the imaging apparatus, and

(d) developing the images formed.

4,520,093

PHOTOSENSITIVE COMPOSITION AND METHOD FOR FORMING A NEUTRAL BLACK IMAGE

William J. Chambers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1984, Ser. No. 575,062
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—292 **19 Claims**

1. In a photosensitive element for photoimaging applications comprising a substrate coated with a photosensitive layer containing dispersed silver halide particles in operative association with a continuous film-forming phase of polymeric coupler, the coupler characterized by a number average molecular weight of about 2,000 to 100,000, a content of about 10 to 100 milliequivalents of coupler groups per 100 g of polymeric coupler and about 15 to 175 milliequivalents per 100 g of polymeric coupler of at least one acid group selected from carboxylic, sulfonic, and phosphonic, and the ability to couple with an oxidized p-aminodialkylaniline to become insoluble in aqueous solvents;

the improvement which comprises said photosensitive element having compensating pigments dispersed therein, as well as silver halide, the pigments being of selected colors and concentrations to effect, upon photosensitization, a neutral black image characterized by an optical density imbalance of no more than about 0.5 and an optical density of at least about 2.0; the silver halide being sensitized to absorb radiation in the wave length region corresponding to that where the principal compensating pigment transmits radiation.

4,520,094

PROCESS FOR FORMING POWDER PATTERN ON LIGHT EXPOSED LAYER HAVING PHOTOSENSITIVE DIAZONIUM SALTS

Hajime Morishita; Motoo Akagi, both of Tokyo; Nobuaki Hayashi, Saitama; Saburo Nonogaki, Tokyo; Shoichi Uchino, Hachioji, and Takahiro Kohashi, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,272
Claims priority, application Japan, Oct. 21, 1981, 56-167211
Int. Cl.³ G03C *5/34, 5/18*
U.S. Cl. 430—144 **4 Claims**

1. A process for forming a pattern of powder on a coating layer, which comprises a step of applying a photosensitive composition comprising a 4-(dimethylamino)benzenediazonium salt and at least one salt of o- and m-aminobenzenediazonium compounds selected from the group consisting of 4-alkoxy-5-(dimethylamino)benzenediazonium salt, 4-alkyl-5-(dimethylamino)benzenediazonium salt, 3-alkoxy-6-(dimethylamino)benzenediazonium salt, 4-alkoxy-6-(dimethylamino)benzenediazonium salt and 4-alkyl-5-(methylamino)benzenediazonium salt wherein the carbon atom number in alkyl groups and alkoxy groups in said salts is 2 or less, said composition containing 1–200% by weight of at least one of the salts of the o- and m-aminobenzenediazonium compounds on the basis of the 4-(dimethylamino)benzenediazonium salt, to a substrate thereby forming a thin layer, a step of subjecting the thin layer to patternwise light exposure to make the exposed portions of the layer sticky, and a step of contacting the light-exposed thin layer with powder particles, thereby depositing the powder particles to light-exposed portions of said thin layer.

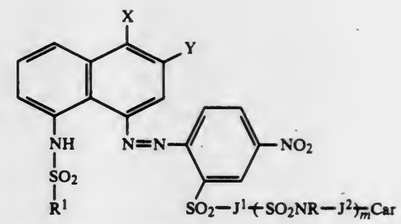
4,520,095

PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Tatsuhiko Kobayashi; Satoru Ikeuchi; Kazumasa Watanabe, and Shunji Suginaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Oct. 4, 1983, Ser. No. 538,798
Claims priority, application Japan, Oct. 12, 1982, 57-179237
Int. Cl.³ G03C *1/40, 5/54*
U.S. Cl. 430—223 **41 Claims**

1. A photographic light-sensitive element comprising a support having thereon at least one light-sensitive silver halide emulsion layer and a dye image forming non-diffusible material which releases a diffusible cyan dye or the precursor thereof wherein said dye image forming material is a compound of Formula I:



(I)

wherein Car represents a carrier component having at least one Ball ballasting group as a part thereof which alone or together with other such groups in said Car renders said compound non-diffusible during development in an alkaline processing solution, said Car being capable of releasing from said compound a diffusible dye or the precursor thereof as the result of a redox reaction under alkaline conditions;

R represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms;

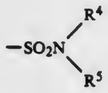
R^1 is



wherein R^2 and R^3 are independently selected from a hydrogen atom, or an alkyl having from 1 to 3 carbon atoms, a cycloalkyl or an aryl group, and R^2 and R^3 may be linked through an oxygen atom or nitrogen atom to each other to form a 5-membered or 6-membered ring;

X is hydroxyl group or a salt thereof or a group which can be hydrolyzed to a hydroxyl group;

Y is



wherein R^4 is selected from the group consisting of acyl, hydroxyalkyl, alkoxyalkyl, alkoxyalkyleneoxyalkyl, carboxyalkyl, carboxyphenyl, carboxyalkyl-phenyl, hydroxyalkyl-phenyl, and alkoxyphenyl group;

R^5 is selected from the group consisting of hydrogen, alkyl or aryl having from 1 to 8 carbon atoms, and the same group R^4 is selected from, provided the sum of the number of carbon atoms contained in R^4 and R^5 is not more than 10;

m is an integer of 0 or 1; and

J^1 and J^2 are independently selected from divalent groups having the formula; $—R^6—(O)_n—R_p^7—$ wherein R^6 and R^7 are independently selected from alkylene having from 1 to 8 carbon atoms, phenylene and phenylene substituted by a chlorine atom, a methoxy group, or a methyl group;

n is an integer of 0 or 1; p is 1 when n is 1, and p is 1 or 2 when n is 0, provided that when p is 1, the sum of the number of the carbon atoms contained in R^6 and R^7 is not more than 13.

31. A photographic film unit comprising:

(a) said photographic light-sensitive element of claim 1;

(b) a dye image receiving layer; and

(c) means to squeeze out said alkaline processing composition inside said film unit.

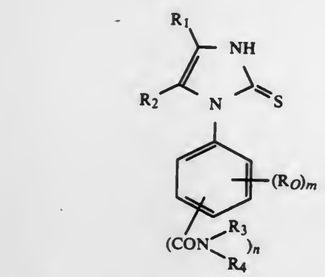
4,520,096

PHOTOGRAPHIC ELEMENTS FOR SILVER SALT DIFFUSION TRANSFER PROCESS CONTAINING MERCAPTO IMIDAZOLE STABILIZERS

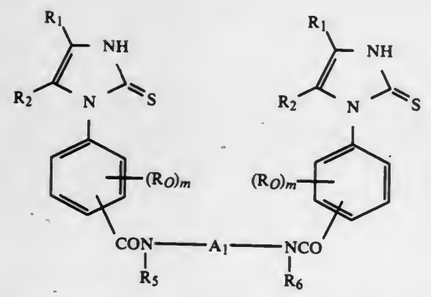
Katsusuke Endo, and Yoshio Inagaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jun. 13, 1984, Ser. No. 620,204
Claims priority, application Japan, Jun. 14, 1983, 58-106464
Int. Cl.³ G03C *5/54, 1/35*
U.S. Cl. 430—233 **20 Claims**

1. In a photographic element for a silver salt diffusion transfer process comprising a silver halide light-sensitive element, an image receiving element and a processing element, the improvement wherein said photographic element contains a compound represented by formula (I) or (II)



(I)



(II)

wherein the R_Os, which may be identical or different from one another, each represents hydrogen, a halogen atom, an alkyl group, a substituted alkyl group, a substituted or unsubstituted cycloalkyl group, an alkoxy group, a substituted alkoxy group, a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl group, a sulfamoyl group, an alkyl or arylsulfonamido group, a carbamoyl group, a carbonamido group, a heterocyclic group, a substituted or unsubstituted aryl group, an acyl group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted acyloxy group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted arylthio group, a primary amino group or the salt thereof, a secondary or tertiary amino group substituted by alkyl groups or aryl groups or the salt thereof, a nitro group, a hydroxyl group, a carboxyl group, a sulfonic acid group or a cyano group; R_1 and R_2 each represents hydrogen, an alkyl group, a substituted alkyl group or an aryl group; R_3 and R_4 each represents hydrogen, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a heterocyclic group; R_3 and R_4 may form a 5- or 6-membered ring together with the nitrogen atom, wherein the ring may further contain hetero atoms; R_5 and R_6 each represents hydrogen, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a heterocyclic group; A_1 represents a divalent group; m represents an integer of 1 to 4; and n represents 1 or 2.

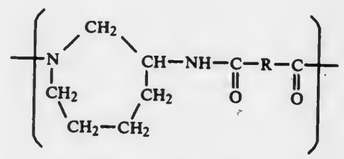
4,520,097

NEGATIVE-TYPE RESIST SENSITIVE TO IONIZING RADIATION

Kiyoshi Oguchi, 252-2, Mizuno, Sayama-Shi, Saitama-Ken, Japan

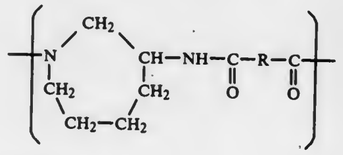
Filed Oct. 4, 1982, Ser. No. 432,448
Claims priority, application Japan, Oct. 9, 1981, 56-161431
Int. Cl.³ G03C *1/71, 1/70*
U.S. Cl. 430—280 **5 Claims**

1. A negative-type resist solution, which comprises (i) a polyamide polymer sensitive to ionizing radiation, said polyamide polymer having a molecular weight of from 10,000 to 1,000,000 and having recurring units represented by the formula:



wherein R represents at least one divalent organic group selected from the group consisting of olefinic hydrocarbon groups, divalent heterocyclic groups, and epoxidized hydrocarbon groups, and (ii) a solvent, wherein the concentration of said polyamide polymer in said resist solution is from 5 to 15 weight %.

3. A negative-type resist sensitive to ionizing radiation, which comprises a mixture of a polyamide polymer having the recurring units represented by the formula:



wherein R represents at least one divalent organic group with another polymer compatable therewith.

4. A negative-type resist solution according to claim 3, wherein said another polymer is an epoxidized aliphatic polyamide.

4,520,098

PHOTOGRAPHIC ELEMENT EXHIBITING REDUCED SENSITIZING DYE STAIN

Robert E. Dickerson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1984, Ser. No. 615,631
Int. Cl.³ G03C *1/00, 1/02*
U.S. Cl. 430—495 **16 Claims**

1. In a photographic element capable of producing a stable, viewable silver image on development in an aqueous alkaline processing solution and fixing out comprising

a support and

one or more image recording silver halide emulsion layers each comprised of a dispersing medium and latent image forming silver halide grains, said halide consisting essentially of chloride, bromide, or mixtures thereof,

at least one of said image recording silver halide emulsion layers being comprised of spectral sensitizing dye adsorbed to the surface of tabular latent image forming silver halide grains having a thickness of less than 0.5 μm and an average aspect ratio of at least 5:1 accounting for at least 35 percent of the total projected area of said latent image forming silver halide grains present in said silver halide emulsion layer,

the improvement comprising high iodide silver halide grains of less than 0.25 μm in mean diameter located in proximity to said tabular silver halide grains and limited to a concentration capable of being dissolved on fixing out.

4,520,099

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Yoshitaka Akimura; Hiroyuki Mifune, and Koki Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

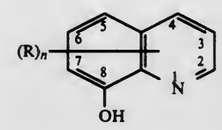
Filed Sep. 2, 1983, Ser. No. 528,928
Claims priority, application Japan, Sep. 2, 1982, 57-152913
Int. Cl.³ G03C *1/34*
U.S. Cl. 430—613 **16 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a support having positioned thereon;

a silver halide emulsion layer; and

a compound represented by the general formula (I):



(I)

wherein R is a halogen atom or an alkyl group and an n is 1, 2 or 3 and when n is 2 or 3 each R may be the same or different, said compound is present in an amount sufficient to restrain fog.

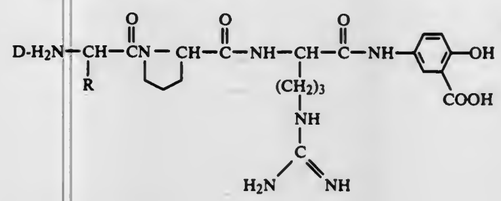
4,520,100

METHOD FOR MEASURING THROMBIN

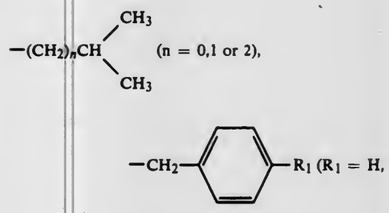
Takeshi Nagasawa; Katsumasa Kuroiwa, and Katsuyuki Takabayashi, all of Koriyama, Japan, assignors to Nitto Boseki Co. Ltd., Fukushima, Japan

Division of Ser. No. 406,025, Aug. 6, 1982, Pat. No. 4,450,105.
This application Feb. 10, 1984, Ser. No. 578,805
Claims priority, application Japan, Sep. 28, 1981, 56-153472
Int. Cl.³ C12Q *1/56, 1/38*
U.S. Cl. 435—13 **1 Claim**

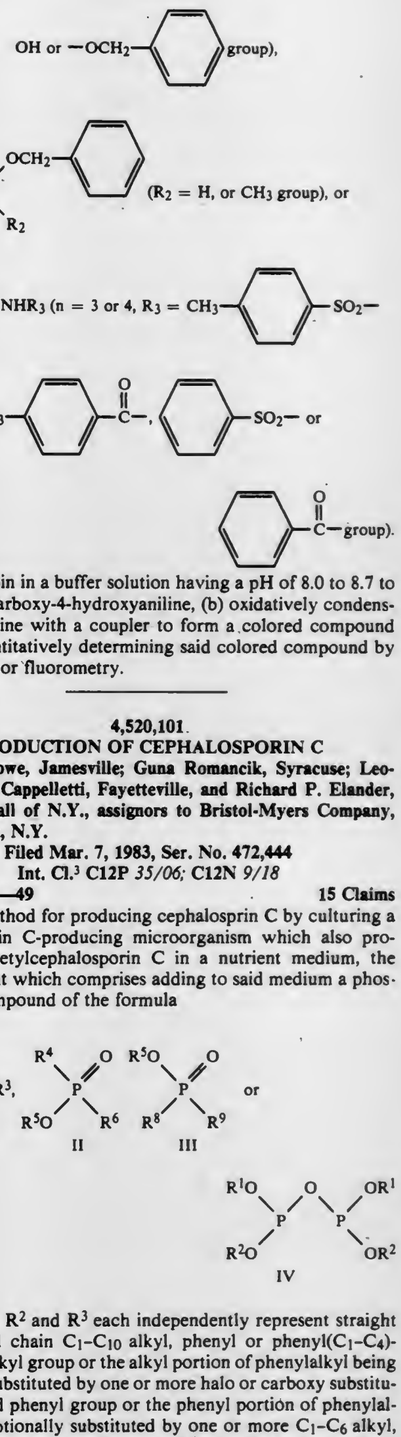
1. A method for measuring the activity of thrombin in plasma which comprises (a) reacting a compound of the following formula or a salt thereof



wherein R represents



-continued



with thrombin in a buffer solution having a pH of 8.0 to 8.7 to produce 3-carboxy-4-hydroxyaniline, (b) oxidatively condensing said aniline with a coupler to form a colored compound and (c) quantitatively determining said colored compound by colorimetry or fluorometry.

4,520,101

PRODUCTION OF CEPHALOSPORIN C

David A. Lowe, Jamesville; Guna Romancik, Syracuse; Leonardo M. Cappelletti, Fayetteville, and Richard P. Elander, Manlius, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,444
Int. Cl.³ C12P *35/06;* **C12N** *9/18*
U.S. Cl. 435—49 **15 Claims**

1. In a method for producing cephalosprin C by culturing a cephalosporin C-producing microorganism which also produces desacetylcephalosporin C in a nutrient medium, the improvement which comprises adding to said medium a phosphorous compound of the formula

wherein R^1, R^2 and R^3 each independently represent straight or branched chain C_1–C_{10} alkyl, phenyl or phenyl(C_1–C_4)-alkyl, said alkyl group or the alkyl portion of phenylalkyl being optionally substituted by one or more halo or carboxy substituents and said phenyl group or the phenyl portion of phenylalkyl being optionally substituted by one or more C_1–C_6 alkyl, C_1–C_6 alkoxy or halo substituents; R^4 is C_1–C_6 alkyl optionally substituted by one or more halo groups or is —OR^{10} in which R^{10} is hydrogen or is as defined above for R^1; R^5 is hydrogen or is as defined above for R^1; R^6 is hydrogen, C_2–C_6 alkenyl,

C_2–C_6 alkanoyl or C_1–C_6 alkyl, said alkyl group being optionally substituted by one or more cyano, C_2–C_6 alkanoyl or carbo (C_1–C_6) alkoxy radicals; and R^8 and R^9 are either both hydrogen or are both chloro, in a concentration of from about 100 to 3000 parts per million.

4,520,102

MICROBIAL PROCESS FOR PRODUCING 12α-HYDROXYPREGNA-1,4-DIEN-3-ONE-20α-CARBOXYLIC ACID

Masayasu Bunno, Nagareyama; Tsutomu Sugiura, Kurashiki; Masao Tsuji, Kurashiki; Hidemi Harada, Kurashiki, and Yoshihiro Ichihara, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Oct. 15, 1982, Ser. No. 434,560

Claims priority, application Japan, Oct. 20, 1981, 56-168276; Feb. 5, 1982, 57-17866

Int. Cl.³ C12P *33/02;* C12N *15/00;* C12R *1/05, 1/38*

U.S. Cl. 435—61 4 Claims

1. A microbial process for producing 12α-hydroxypregna-1,4-dien-3-one-20α-carboxylic acid or a salt thereof, which comprises cultivating a strain of *Pseudomonas arvilla* D-235 (FERM BP-181) or a strain of *Alcaligines faecalis* D4040 (FERM BP-182) or its mutant, capable of producing 12α-hydroxypregna-1,4-dien-3-one-20α-carboxylic acid or a salt thereof by utilizing deoxycholic acid or a salt thereof as a substrate, in a culture medium containing said substrate, and collecting the resulting compound.

4,520,103

MICROBIAL PRODUCTION OF INDIGO

Burt D. Ensley, Jr., Thousand Oaks, Calif., assignor to Amgen, Thousand Oaks, Calif.

Filed Oct. 27, 1982, Ser. No. 437,035

Int. Cl.³ C12N *15/00, 1/20, 1/00;* C12P *17/10*

U.S. Cl. 435—121 14 Claims

1. A process for microbial production of indigo in a selected microorganism having the metabolic capacity to produce and accumulate indole, said process comprising:

(1) stably genetically transforming the microorganism with an exogenous DNA sequence to incorporate the capacity to synthesize an aromatic dioxygenase enzyme capable of participating in the formation of indigo from indole;

(2) growing transformed microorganisms under conditions facilitative of dioxygenase enzyme catalyzed oxidative transformation of indole; and

(3) isolating indigo produced by said microorganisms.

4,520,104

PRODUCTION OF BUTANOL BY A CONTINUOUS FERMENTATION PROCESS

Robert E. Heady, Park Forest, and Jeffrey R. Frankiewicz, Lombard, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 18, 1982, Ser. No. 442,806

Int. Cl.³ C12P *7/16*

U.S. Cl. 435—160 9 Claims

1. A process for producing butanol by continuous fermentation of a carbohydrate with a strain of *C. acetobutylicum* wherein the improvement comprises:

continuously in a separate reactor producing inoculum of said strain at a dilution rate that minimizes butanol contact with said inoculum;

continuously supplying said inoculum to the fermentation medium;

continuously cycling a portion of the fermentation medium through a butanol-adsorbing material at a rate sufficient to maintain a less than about 1% by weight butanol concentration in the fermentation medium; and

isolating the butanol by desorbing it from the butanol-adsorbing material.

4,520,105

PROCESS FOR PRODUCTION OF SUGARS AND OPTIONALLY CELLULOSE AND LIGNIN FROM LIGNOCELLULOSIC RAW MATERIALS

Michael Sinner, Dassendorf; Hans-Hermann Dietrichs, Reinbek; Jürgen Puls, Pinneberg; Werner Schweers, Reinbek, and Karl-Heinz Brachthäuser, Ratingen, all of Fed. Rep. of Germany, assignors to Bau- und Forschungsgesellschaft Thermoform AG, Murten/Fribourg, Switzerland

Continuation of Ser. No. 257,256, Apr. 24, 1981, abandoned, which is a continuation of Ser. No. 116,207, Jan. 28, 1980, abandoned, which is a continuation of Ser. No. 933,623, Aug. 14, 1978, abandoned. This application Aug. 10, 1983, Ser. No. 521,657

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737118

Int. Cl.³ D21C *3/20;* C13K *1/02*

U.S. Cl. 435—163 11 Claims

1. A process for treating vegetable material essentially comprised of cellulose, lignin and hemicelluloses, comprising the steps of:

(a) treating said vegetable material under elevated pressure with a first solution comprising (i) water and acetone in a volume ratio between about 70:30 and 30:70, and (ii) at least one acid, said acid having a concentration, relative to the total volume of said first solution, of between about 0.001 and about 1N, at a temperature between about 170° and about 220° C., such that substantially all of said lignin and said hemicelluloses are dissolved in said first solution and a residue comprising microcrystalline cellulose is formed;

(b) separating said residue from said first solution; and

(c) after step (b), treating said residue with a second solution comprising (i) water and acetone in a volume ratio between about 70:30 and 30:70, and (ii) at least one acid, said acid having a concentration, relative to the total volume of said first solution, of between about 0.001 and about 1N, at a temperature between about 170° and about 220° C., such that said microcrystalline cellulose is substantially completely hydrolyzed to glucose, said glucose being dissolved in said second solution.

4,520,106

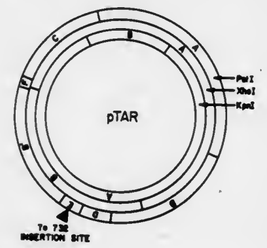
TARTRATE CATABOLISM GENE

Clarence I. Kado, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 221,114, Dec. 29, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 405,976

Int. Cl.³ C12N *15/00, 1/20, 1/00*

U.S. Cl. 435—172.3 3 Claims



1. A method for making an incompetent unicellular microorganism host competent to utilize L-tartrate as a carbon source, said method comprising introducing in vitro a plasmid conferring the ability to utilize L-tartrate into the host, said plasmid being capable of expressing a tartrate catabolism gene derived from plasmid pTAR.

4,520,107

TISSUE CULTURE AND CELL GROWTH-PROMOTING MATERIAL AND ITS METHOD OF MANUFACTURE

George M. Healy, Scarborough, and Kenneth D. Curry, Toronto, both of Canada, assignors to Polydex Chemicals Ltd., Nassau, The Bahamas

Filed Sep. 28, 1982, Ser. No. 424,862

Int. Cl.³ C12N *5/00, 1/38;* A61K *35/14;* C07G *7/00*

U.S. Cl. 435—240 15 Claims

1. A process for the production of a growth promoting supplement for tissue culture media providing improved cell and tissue growth which comprises comminuting bovine blood clot with cutting means having smoothly rounded edges to minimize disruption of red blood cells in the presence of a buffered aqueous saline solution to form a suspension of comminuted blood clot in said saline solution, allowing the resulting suspension to become thoroughly infused to allow clot occluded blood serum and clot intrinsic blood factors to pass into said saline solution, and separating said saline solution containing said growth promoting material from said suspension to provide said growth promoting supplement in saline solution.

4,520,108

METHOD FOR CONTINUOUS FLOW ANALYSIS OF LIQUID SAMPLE

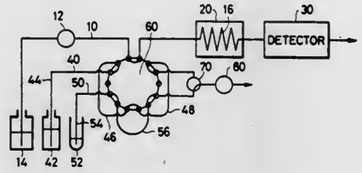
Kasumi Yoshida, Mito; Hideo Uchiki, and Tadafumi Kuroishi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,671

Claims priority, application Japan, Nov. 20, 1981, 56-185326

Int. Cl.³ G01N *1/18, 35/00*

U.S. Cl. 436—52 10 Claims



1. A method of flow analysis of a liquid sample, which comprises the steps of:

(a) forming a stream of a carrier liquid in a main conduit which leads towards a detection zone;

(b) introducing a predetermined volume of a reagent liquid into a reagent metering loop while isolating the reagent metering loop from the main conduit;

(c) introducing a predetermined volume of a sample liquid into a sample metering loop while isolating the sample metering loop from the main conduit;

(d) placing said reagent metering loop and said sample metering loop in a series communication with each other, thereby contacting the sample liquid in the sample metering loop with the reagent liquid in the reagent metering loop;

(e) simultaneously with step (d) diverting the stream of the carrier liquid from a portion of said main stream upstream of the detection zone to inject the stream of carrier liquid in series flow through the reagent metering loop and the sample metering loop while keeping the sample liquid and the reagent liquid in contact with each other thereby displacing the reagent liquid and the sample liquid from said metering loops into the main conduit leading to the detection zone; and

(f) measuring a reaction solution brought into the detection zone to detect the sample by the reaction conditions in said detection zone.

4,520,109

FLUOROCARBON TRACERS AND TRACING METHOD

Peter G. Simmonds, Ringwood, England, and Robert E. Moore, Wilmington, Del., assignors to Sun Tech, Inc., Philadelphia, Pa.

Filed Mar. 14, 1983, Ser. No. 475,001

Int. Cl.³ G01N *33/28, 31/08*

U.S. Cl. 436—56 10 Claims

1. A tracing method comprising the steps of (1) incorporating a tracer compound into a material or a fluid medium in order to identify the source or distribution of the material or to define the flow pattern of the medium, (2) permitting distribution of the material or flow of the fluid medium, (3) collecting a sample of the material or fluid medium, and (4) analyzing the sample for the presence of the tracer compound, wherein said tracer compound is a perfluorinated C_9–C_{18} polycyclic hydrocarbon containing at least two bridgehead carbon atoms linked through a bridge containing at least one carbon atom.

4,520,110

FLUORESCENT IMMUNOASSAY EMPLOYING A PHYCOBILIPROTEIN LABELED LIGAND OR RECEPTOR

Lubert Stryer, Stanford; Alexander N. Glazer, Orinda, and Vernon T. Oi, Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 309,169, Oct. 6, 1981, abandoned. This application Dec. 30, 1982, Ser. No. 454,768

Int. Cl.³ G01N *33/54, 31/00*

U.S. Cl. 436—501 4 Claims

1. In a fluorescent immunoassay employing as a reagent a fluorescent compound conjugated to a member of a specific binding pair where said pair consists of ligand and receptor, and said immunoassay is for the determination of a member, the binding of the conjugate to a member being indicative of the presence of said member, the improvement which comprises employing in said assay a fluorescent compound comprising a phycobiliprotein conjugated to a member of a specific binding pair consisting of ligand and receptor.

4,520,111

DIAGNOSTIC METHOD FOR DETERMINING CONTENT OF SIALIC ACID OR SIALOPROTEIN

Ronald L. Miller, Charleston, S.C., assignor to Research Corporation, New York, N.Y.

Division of Ser. No. 355,378, Mar. 8, 1982, Pat. No. 4,457,865. This application Jan. 26, 1984, Ser. No. 574,235

Int. Cl.³ G01N *1/00, 33/48;* C07G *7/00*

U.S. Cl. 436—501 6 Claims

1. A diagnostic method for determining the content of sialic acid or sialoprotein in a biological liquid comprising contacting the said biological liquid with a predetermined quantity of a substantially homogeneous lectin of the slug Limax flavus having a high degree of hemagglutinative inhibitory specificity and selectivity for sialic acid or sialoprotein having an approximate amino acid composition:

Amino Acid	Moles per 22,000 g of Lectin (Nearest integer)
Asx	26
Thr	13
Ser	13
Glx	14
Pro	4
Gly	22
Ala	16
Val	7
Met	2
Ile	7
Leu	15
Tyr	10
Phe	10

-continued

Amino Acid	Moles per 22,000 g of Lectin (Nearest integer)
His	7
Lys	17
Trp	6
Arg	8
Cys	6

and measuring the degree of hemagglutination effected by said lectin and comparing said measurement with the degree of hemagglutination effected with contacting an identical quantity of said lectin with a similar biological fluid containing a known amount of sialic acid or sialoprotein.

4,520,112

ASSAY METHOD FOR ORGANIC CALCIUM ANTAGONIST DRUGS AND A KIT FOR SUCH AN ASSAY

Solomon H. Snyder, and Robert J. Gould, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 9, 1983, Ser. No. 473,622
Int. Cl.³ G01N *33/60*; G01T *1/00*
U.S. Cl. 436—504 **16 Claims**

1. A method for measuring the level of an organic calcium antagonist drug including a pharmacologically active metabolite thereof in a body fluid comprising

(a) preparing a mixture of a radioactive calcium antagonist drug, a body fluid containing a calcium antagonist drug and a calcium antagonist receptor material having receptor sites whereby said calcium antagonist drug competes with the binding of said radioactive calcium antagonist drug to said receptor sites,

(b) measuring the radioactivity of the radioactive calcium antagonist drug bound to said calcium antagonist receptor material, and

(c) deriving the concentration of the calcium antagonist drug in said body fluid from a standard curve indicating the concentration of calcium antagonist drug versus inhibition of binding of said radioactive calcium antagonist drug to said receptor sites caused by the calcium antagonist drug in said body fluid.

4,520,113

SEROLOGICAL DETECTION OF ANTIBODIES TO HTLV-III IN SERA OF PATIENTS WITH AIDS AND PRE-AIDS CONDITIONS

Robert C. Gallo; Mikulas Popovic, both of Bethesda, Md., and Mangalasseril G. Sarngadharan, Vienna, Va., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Apr. 23, 1984, Ser. No. 602,945
Int. Cl.³ G01N *33/54, 33/56*
U.S. Cl. 436—504 **10 Claims**

1. A method for the detection of antibodies which specifically bind to antigenic sites of the Human T-cell Leukemia Virus-III (HTLV-III) virion in samples of the body fluids of patients with Acquired Immune Deficiency Syndrome (AIDS) or risk of AIDS (pre-AIDS) which comprises contacting HTLV-III or fractions thereof said sample with antibodies from human sera taken from AIDS patients and measuring the formation of antigen-antibody complexes by strip radioimmunoassay based on Western Blot technique or ELISA (an enzyme-linked immunosorbent assay) or indirect immunofluorescent assay.

4,520,114

PRODUCTION OF METASTABLE TETRAGONAL ZIRCONIA

Lawrence D. David, Wappingers Falls, N.Y., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 536,065, Sep. 26, 1983, abandoned. This application Aug. 22, 1984, Ser. No. 642,702
Int. Cl.³ C04B *35/48*
U.S. Cl. 501—12 **17 Claims**

1. A process for the production of fine grain metastable tetragonal zirconia which comprises (1) preparing a homogeneous solution by dissolving in a solvent medium zirconium β-diketonate and a metastabilizing quantity of metal β-diketonate selected from alkaline earth and yttrium metal β-diketonates, (2) removing the solvent medium to provide a residual mass of precursor solids, (3) pyrolyzing the precursor solids in an inert atmosphere at a temperature between about 300°–800° C. until the precursor solids have a carbon content between about 1–10 weight percent, based on the weight of precursor solids, and (4) calcining the precursor solids in the presence of molecular oxygen at a temperature between about 300°–800° C. to yield metastable tetragonal zirconia powder having an average particle size less than about 1000 angstroms.

10. A metastable tetragonal zirconia powder with a crystal structure which is a solid solution of zirconium dioxide and a metastabilizing quantity between about 1–30 mole percent of metal oxide selected from alkaline earth and yttrium metal oxides, and further characterized by:

(a) a crystallite size up to about 500 angstroms;

(b) an average particle size less than about 1000 angstroms;

(c) particles of equiaxed dimensions; and

(d) is substantially free of monoclinic and cubic phase crystal structures as determined by X-ray diffraction pattern analysis.

4,520,115

HIGH ABSORBANCE PB-CONTAINING GLASS FOR CATHODE RAY TUBE PICTURE SCREEN

Burkhard Speit, Mainz-Mombach; Karl Meunemann, Taunusstein, and Georg Gliemeroth, Mainz-Finthen, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,650
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1982, 3228826
Int. Cl.³ C03C *3/10*
U.S. Cl. 501—60 **14 Claims**

1. A highly absorbent lead-containing alkali metal silicate glass useful for cathode ray tube image screens, having a linear X-ray absorption coefficient μ of $>30\ cm^{-1}$ (0.6Å), and a high resistance to discoloration by X-ray and electron radiation, consisting essentially of, in weight percent:

SiO_2	30–60%	
$P_2O_5 + B_2O_3 + Al_2O_3$	0–15%	
Li_2O	0–5%	
Na_2O	1–2.9%	5–10.8%
K_2O	4–8.5%	
$MgO + CaO + ZnO$	0–8%	
$SrO + BaO$	0–40%	20–60%
PbO	5–50%	
ZrO_2	0–8%	
CeO_2	1.0–3.5%	
and 0–20% in total of		
$La_2O_3 + Y_2O_3 +$ $Bi_2O_3 + SnO$	0–15%	
$S + Se + Te$	0–5%	
$F + Cl + Br + SO_4$	0–3%	
TiO_2	0–5%	
rare earth metal oxides atomic numbers 58–91	0–3%	
$Fe_2O_3 + Cr_2O_3 +$ $MnO + NiO + CoO$ $As_2O_3 + Sb_2O_3$	0–1%	

-continued

$MnO + NiO + CoO$ $As_2O_3 + Sb_2O_3$	0–2%.

4,520,116

TRANSPARENT ALUMINUM OXYNITRIDE AND METHOD OF MANUFACTURE

Richard L. Gentilman, Acton; Edward A. Maguire, Ashland, and Leonard E. Dolhert, Malden, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 297,896, Aug. 31, 1981, abandoned. This application Jan. 13, 1984, Ser. No. 570,419
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—98 **9 Claims**

1. A body of polycrystalline cubic aluminum oxynitride having a density greater than 97.2% of theoretical density, a sample of said body having an in-line transmission of at least 20% in the wavelength range of 0.3–5 microns said sample having a thickness of 1.90 millimeters.

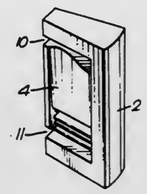
7. A body of polycrystalline doped cubic aluminum oxynitride having a density greater than 99% of theoretical density.

4,520,117

REFRACTORY ARTICLES AND THE METHOD FOR THE MANUFACTURE THEREOF

David Mills; Alan D. Kington, and Philip J. Lovell, all of Bristol, England, assignors to Rolls-Royce Limited, England

Filed Mar. 23, 1982, Ser. No. 360,952
Claims priority, application United Kingdom, Apr. 9, 1981, 8111223
Int. Cl.³ C04B *39/08*
U.S. Cl. 501—107 **37 Claims**



1. A method for producing a refractory article comprising:

filling at least one die with a refractory material consisting essentially of a refractory material selected from the group consisting of silica, alumina zircon and zirconium silicate;

forming a plurality of pre-forms having a shape corresponding to said at least one die;

curing the refractory material mixture pre-forms into their green state;

removing the green pre-forms from said at least one die;

assembling a plurality of the green pre-forms loosely in a closely-packed array resulting in contacting engagement between peripheral surfaces of adjacently located green pre-forms;

circumferentially clamping the array of pre-forms tightly together with one or more bands of flexible high temperature material, which shrinks on heating to a greater extent than the green refractory pre-forms, such that the pre-forms are provided with at least a limited degree of relative movement during firing to accomodate deformations in the pre-forms during firing;

firing the circumferentially clamped assembly of pre-forms such that the peripheral surfaces of adjacently located pre-forms achieve substantial contact therebetween and remain in substantial contact due only to peripheral confining pressure upon the assembly of pre-forms, without any sintering occurring between individual pre-forms, resulting from the relative greater shrinkage of the high temperature material.

4,520,118

CATALYTIC ACTIVITY OF ALUMINOSILICATE ZEOLITES

Brian R. Gane, Ottershaw, and Philip Howard, Teddington, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Feb. 16, 1984, Ser. No. 580,673
Claims priority, application United Kingdom, Mar. 9, 1983, 8306531
Int. Cl.³ B01J *25/04, 29/06*
U.S. Cl. 502—53 **17 Claims**

1. A process for activating an aluminosilicate zeolite loaded with a gallium compound as catalyst said process comprising bringing into contact the zeolite, before or after loading thereof with gallium, with steam and concurrently or separately with hydrogen, both stages being carried out at an elevated temperature.

3. A process according to claims 1 or 2 wherein the zeolite is subjected to a sequence of treatments comprising calcination (C), steaming (S), loading with a gallium compound (G), and binding (B) said sequence being selected from:

(a) C (s)* G B
(b) C (s)* B G
(c) C S G B
(d) C S B G
(e) C G S B
(f) C G B S
(g) C B G S
(h) C B S G
(i) B C (s)* G
(j) B C S G
(k) B C G S

wherein *C (s)-represents simultaneous calcination and steaming.

10. A process according to claim 1 wherein the steam and hydrogen treatments are carried out on a gallium loaded zeolite, which has been wholly or partially deactivated in use as a hydrocarbon conversion catalyst, as part of a regeneration procedure to restore and improve the activity thereof.

4,520,119

CRACKING CATALYST AND MANUFACTURE THEREOF

Robert W. Andrews, Toms River; Francis L. Himpsl, Matawan; Eugene B. Horvath, Freehold, and Barry K. Speronello, River Edge, all of N.J., assignors to Engelhard Corporation, Edison, N.J.

Filed Sep. 15, 1983, Ser. No. 532,346
Int. Cl.³ B01J *29/08*
U.S. Cl. 502—67 **17 Claims**

1. A process for producing an attrition-resistant zeolitic cracking catalyst which comprises providing a finely divided mixture comprising particles of sodium zeolite Y, sodium zeolite B and amorphous silica-alumina, mixing said mixture of particles with a solution of sodium silicate to form a slurry without milling, washing or drying said mixture prior to or subsequent to addition of sodium silicate, spray drying said slurry to form microspheres, forming an acidic slurry containing said microspheres and then subjecting the microspheres to ion-exchange treatment to reduce the sodium content thereof without an intermediate drying step.

2. The process of claim 1 wherein said mixture comprises about 20–40% sodium zeolite Y, about 20–40% sodium zeolite B and the balance being amorphous silica-alumina.

3. The process of claim 2 wherein said mixture is obtained as a by-product in the manufacture of a fluid cracking catalyst from microspheres of calcined clay and sodium hydroxide solution.

4,520,120

VANADIUM PASSIVATION IN A HYDROCARBON CATALYTIC CRACKING PROCESS

Bruce R. Mitchell, Lower Burrell, and Roger F. Vogel, Jefferson Township, Butler County, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 536,754, Sep. 28, 1983, Pat. No. 4,451,355.
This application Mar. 19, 1984, Ser. No. 590,944
Int. Cl.³ B01J 29/08
U.S. Cl. 502—68 3 Claims

1. A catalyst composition comprising a crystalline aluminosilicate zeolite, a matrix material, and from 5 to 40 weight percent, based on the total catalyst, of a calcium-containing non-perovskite additive selected from the group consisting of calcium-titanium, calcium-zirconium, calcium-titanium-zirconium oxides and mixtures thereof, said additive being present as a discrete component of said catalyst composition.

2. A catalyst composition comprising a crystalline aluminosilicate zeolite, a matrix material and from 11 to 40 weight percent, based on the total catalyst, of a calcium-containing perovskite additive selected from the group consisting of calcium titanate, calcium zirconate and mixtures thereof, said additive being present as a discrete component of said catalyst composition.

4,520,121

MAGNESIUM HALIDE HYDRATES AND POLYMERIZATION CATALYSTS PREPARED THEREFROM

Kenneth E. Inkrott, and Gil R. Hawley, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 28, 1983, Ser. No. 546,712
Int. Cl.³ C08F 4/63
U.S. Cl. 502—105 14 Claims

1. A process for preparing a catalyst useful for the polymerization of olefins comprising reacting a hydrous magnesium dihalide composition with reactants comprising a benzoic acid ester and an alkoxytitanium compound to form a first catalyst component, then reacting said first catalyst component with an organoaluminum halide to form a solid product, then reacting said solid product with a halogenating agent comprising a titanium halide, wherein the molar ratio of water to magnesium dihalide in said hydrous magnesium dihalide composition is in the range of about 0.5/1 to 2/1 and the hydrous magnesium dihalide composition is prepared by comminuting a mixture of an anhydrous magnesium dihalide and a hydrous magnesium dihalide at least until the amount of the most highly hydrated magnesium dihalide species in the comminuted product has become substantially stabilized.

4,520,122

IMMOBILIZATION OF ORGANIC SPECIES ON REFRACTORY INORGANIC OXIDES

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 5, 1983, Ser. No. 558,398
Int. Cl.³ B01J 20/22, 31/38, 31/36; B01D 15/08
U.S. Cl. 502—152 20 Claims

1. A method of preparing a modified refractory inorganic oxide comprising reacting the surface hydroxyl groups of a porous refractory inorganic oxide selected from the group consisting of alumina, silica, thoria, titania, magnesia, and combinations thereof with a tetrahalide of an element selected from the group consisting of titanium, zirconium, hafnium, vanadium, tantalum, niobium, germanium, tin, lead, and combinations thereof so as to produce a surface-metallated inorganic oxide, removing excess and unreacted metal tetrahalide, heating the metal inorganic oxide at a temperature from about 80° to about 200° C. in an inert atmosphere for a time sufficient to volatilize any remaining unreacted metal tetrahalide, reacting the resulting material with an organic reagent having at least one functional group selected from the group consisting of hydroxyl, amino, sulfhydryl, and phosphino moieties, or with RY where R is a hydrocarbyl moiety and Y is an alkali metal, removing excess adhering but unreacted reagent, and recovering the resulting modified refractory inorganic oxide.

8. The method fo claim 1 where the reagent has a hydroxyl group.

9. The method of claim 8 where the reagent is a hydroxy carboxylic acid or a hydroxy amine.

4,520,123

CATALYST SYSTEM AND PROCESS FOR POLYMERIZING CONJUGATED DIENES

James E. Hall, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 2, 1984, Ser. No. 627,246
Int. Cl.³ C08F 4/48
U.S. Cl. 502—153 12 Claims

1. A catalyst system comprising
(a) at least one anionic initiator based on lithium, and
(b) at least one cyclic acetal of a glyoxal.

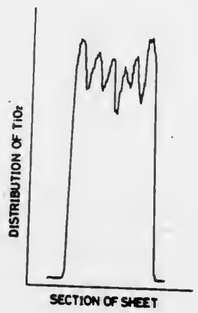
8. The catalyst system of claim 1 also containing
(c) at least one organomagnesium compound, organoaluminum compound or mixtures thereof.

4,520,124

METHOD FOR PRODUCING A CATALYTIC STRUCTURE FOR THE REDUCTION OF NITROGEN OXIDES

Kazunobu Abe, Izumi, and Tadao Nakatsuji, Matsubara, both of Japan, assignors to Sakai Chemical Industry Co., Ltd., Sakai, Japan

Continuation-in-part of Ser. No. 245,687, Mar. 19, 1981, Pat. No. 4,416,800, which is a division of Ser. No. 72,599, Sep. 5, 1979, Pat. No. 4,280,926. This application Sep. 12, 1983, Ser. No. 531,468
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ B01J 35/04, 31/28, 21/14, 21/12
U.S. Cl. 502—159 4 Claims



1. A method for producing a catalyst structure in the form of porous sheet or honeycomb for the gas phase reduction of nitrogen oxides in the presence of ammonia, which comprises:
(a) bearing at least one of inorganic fibers of about 1–20 mm in fiber length and of about 0.1–30 microns in average diameter selected from the group consisting of ceramic fiber, silica fiber, silica-alumina fiber, chrysotile fiber, asbestos fiber, rock wool, glass fiber, anthophyllite fiber, potassium titanate fiber and carbon fiber, in water, to form a stock material containing the solid components in an amount of 1–10% by weight;
(b) forming the stock material into a sheet by paper making means and drying to produce a sheet which has a void fraction of 65–80%;
(c) impregnating the sheet or a honeycomb structure manufactured therefrom with an impregnating slurry containing titanium dioxide as a carrier material or its precursor which will be converted into titanium dioxide when calcined in a concentration at least of 100 g/l and having a viscosity of 5–250 cps. at normal temperature, drying, and when necessary calcining the structure; and
(d) immersing the structure in a solution containing at least one catalytically active agent of an oxide selected from the group consisting of Cu, Fe, V, W and Mo or their precursors which will be converted into the oxides when calcined, drying and calcining the structure.

2. The method as claimed in claim 1 wherein titanium dioxide or its precursor which will be converted into titanium dioxide when calcined is admixed with the stock material so that the stock material contains the solid components in an amount of about 1–10% by weight which consist of not more than about 40% by weight of titanium dioxide or its precursor and not less than about 60% by weight of the fiber.

3. The method as claimed in claim 1 wherein the inorganic fiber is beaten together with a combustible organic fiber in amounts of about 1–30% by weight based on the inorganic fiber.

4. The composition of claim 1 wherein the inorganic potassium compound is potassium carbonate.

5. The composition of claim 1 wherein the molded article has a pore volume ratio of 22 to 38% and a compression strength of 1.5 to 15 kg/cm².G, and is obtained by compression-molding a mixture of an elemental carbon powder and a powder of the inorganic potassium compound, said inorganic potassium compound powder having such a particle size distribution that it has an average particle diameter in the range of 150 to 600 microns and contains 1 to 15% by weight of particles having a particle diameter of less than 100 microns and 1 to 20% by weight of particles having a particle diameter of more than 600 microns.

4,520,125

CATALYST FOR THE PREPARATION OF METHYL METHACRYLATE

Karl Baer, Weinheim; Peter Bassler, Hirschberg; Gerd Duembgen, Dannstadt-Schauernheim; Gerd Fouquet, Neustadt; Richard Krabetz, Kirchheim; Franz Merger, Frankenthal, and Friedbert Nees, Stutensee, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 23, 1984, Ser. No. 582,727
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306907
Int. Cl.³ B01J 31/04, 23/62; C07C 67/00, 69/54
U.S. Cl. 502—170 1 Claim

1. In a catalyst for the preparation of a carboxylate from an aldehyde and an alkanol in the presence of oxygen, which as active components consists essentially of palladium and lead, these being present on a carrier containing zinc oxide, and the palladium being applied as a palladium salt in a solution containing hydrochloric acid and then being liberated by reduction and the lead being applied as lead acetate, wherein said palladium is present in a range of 0.1–10% by weight and said lead is present in a range of 0.1–20% by weight, both calculated as metal as a percentage of the total weight of the catalyst and carrier, the improvement being that the carrier consists solely of zinc oxide.

4,520,126

CATALYST COMPOSITION SUITABLE FOR THE DIMERIZATION OR CODIMERIZATION OF ALPHA-OLEFINS

Keiji Kawamoto, Hiroshima; Keigo Kato, Yono, and Takahiro Aida, Niitsu, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,959
Claims priority, application Japan, Dec. 28, 1981, 56-209969; Dec. 28, 1981, 56-209971
Int. Cl.³ B01J 27/20, 23/04; C07C 11/10, 21/24
U.S. Cl. 502—184 9 Claims

1. A catalyst composition for dimerizing or codimerizing alpha-olefins consisting essentially of a molded article comprising an anhydrous inorganic potassium compound, and metallic sodium and metallic potassium dispersed on the surface of the molded article, said molded article further containing 0.7 to 3% by weight, based on the weight of the inorganic potassium compound, of elemental carbon, the atomic ratio of metallic sodium to metallic potassium being in the range of from 20:80 to 90:10 and the total proportion of metallic sodium and metallic potassium is 0.5–10% by weight based on the weight of the inorganic potassium compound.

4,520,127

OXIDATION CATALYST COMPOSITION

Masayuki Otake; Masayoshi Murayama, and Yuji Kawaragi, all of Yokohama, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 473,196, Mar. 8, 1983, Pat. No. 4,472,527. This application Mar. 21, 1984, Ser. No. 591,997
Claims priority, application Japan, Mar. 31, 1982, 57-52645; Apr. 1, 1982, 57-54502; May 4, 1982, 57-74920; Nov. 17, 1982, 57-201728; Nov. 19, 1982, 57-203370; Nov. 22, 1982, 57-205255
Int. Cl.³ B01J 27/14
U.S. Cl. 502—209 6 Claims

1. An oxidation catalyst composition consisting essentially of a uniformly dispersed mixture of (a) a crystalline composite oxide containing vanadium and phosphorus having the characteristic X-ray diffraction peaks as identified in the following Table B, (b) an amorphous composite oxide containing vanadium and phosphorus and (c) silica, wherein (i) the content of the crystalline composite oxide is from 15 to 80% by weight, (ii) the atomic ratio of phosphorus to vanadium is from 0.8 to 1.5, (iii) the pore volume of the pores having a pore radius within a range of from 37 to 2000 Å is from 0.03 to 0.3 ml/g, and (iv) the pore volume of the pores having a pore radius within a range of from 100 to 350 Å is at least 50% of the pore volume of the pores having a pore radius within a range of from 37 to 2000 Å;

TABLE B

X-ray diffraction peaks (Anticathode: Cu—K_α) 2θ (±0.2°)
14.2°
15.7°
18.5°
23.0°
28.4°
30.0°
33.7°
36.8°

4,520,128

CATALYST HAVING HIGH METAL RETENTION CAPACITY AND GOOD STABILITY FOR USE IN THE DEMETALLIZATION OF HEAVY CRUDES AND METHOD OF PREPARATION OF SAME

Alfredo L. Morales; Roberto E. Galiasso; Maria M. Agudelo; Jose A. Salazar, and Angel R. Carrasquel, all of Los Teques, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Dec. 19, 1983, Ser. No. 563,197
Int. Cl.³ B01J 27/18
U.S. Cl. 502—210 16 Claims

1. A method for producing a catalyst for use in the hydrotreatment of heavy crudes and residues containing high levels of metals, sulphur, asphaltenes and Conradson carbon comprising the steps of:
providing an alumina carrier; and
impregnating said alumina carrier with (1) at least one hydrogenation component selected from the metallic ele-

ments of Group VIB of the Periodic Table so as to obtain a concentration of from about 5 to 30 weight percent of said element on said catalyst, (2) at least one metallic component selected from the metallic elements of Group VIII of the Periodic Table so as to obtain a concentration of from about 0.1 to 8 weight percent of said element on said catalyst and (3) a phosphorus oxide component so as to obtain a concentration of between 5 to 30 weight percent of phosphorus oxide on said catalyst wherein said phosphorus oxide is added in substantially stoichiometric quantities with respect to the metallic elements of Group VIB of the Periodic Table such that the ratio of phosphorus oxide to the oxide of the metallic elements of Group VIB on the surface of the catalyst is substantially unity.

13. A catalyst for use in the hydrotreatment of heavy crudes and residues containing high levels of metals, sulphur, asphaltenes and Conradson carbon by impregnating an alumina carrier in an aqueous solution containing a component selected from the metallic elements of Group VIB of the Periodic Table, a component selected from the metallic elements of Group VIII of the Periodic Table and a phosphorus oxide component wherein said phosphorus oxide is added in substantially stoichiometric quantities with respect to the metallic elements of Group VIB of the Periodic Table such that the ratio of phosohorus oxide to the oxide of the metallic elements of Group VIB on the surface of the catalyst is substantially unity, said catalyst having a surface area of between 120 to 400 m^2/g and a total pore volume of between 0.5 to 1.2 cc/g wherein between 60 and 100% of the total pore volume comprises pores having a diameter of between 60 to 300 Å.

4,520,129
HYDROGENATION CATALYST

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 293,068, Aug. 17, 1981, Pat. No. 4,409,401. This application May 20, 1983, Ser. No. 496,783

Int. Cl.³ B01J *27/02, 31/02, 27/20*

U.S. Cl. 502—222 **10 Claims**

1. A process for the preparation of a hydrogenation catalyst consisting essentially of the steps of:

(1) contacting an inert support with a Group VIII metal substance chosen from nickel, platinum, and palladium,

(2) contacting the metal-containing support of (1) with an alkali metal promoter to form a catalyst composite,

(3) treating the composite with a compound of divalent sulfur, and

(4) heating the sulfided composite at an elevated temperature in the presence of an oxidizing gas and subsequently in the presence of a reducing gas to produce an active catalyst effective for the hydrogenation of unsaturated compounds.

4,520,130
HALOSILANE CATALYST AND PROCESS FOR MAKING SAME

Don H. Hashiguchi, University Heights; Erhard Klar, Beachwood, and Ronald J. Dietrich, Strongsville, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed May 8, 1984, Ser. No. 608,293

Int. Cl.³ B01J *23/14, 23/72*

U.S. Cl. 502—345 **8 Claims**

1. A pyrometallurgically-sourced particulate catalyst composition for organohalosilane production, said composition consisting essentially of a major proportion of cuprous and cupric oxides, a minor proportion of elemental copper, containing tin in a proportion of about 400–3000 ppm, having average particle size not substantially above about 20 microns, and exhibiting crystal lattice distortion.

4,520,131
ANTIHYPERTENSIVE N-SUBSTITUTED 1,4-DIHYDROPYRIDINES

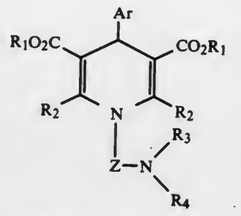
Bernard Loev, Scarsdale; Howard Jones, Ossining, both of N.Y., and John T. Suh, Greenwich, Conn., assignors to USV Pharmaceutical, Tuckahoe, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,957

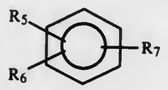
Int. Cl.³ C07D *211/90, 401/04, 405/04;* **A61K** *31/455*

U.S. Cl. 514—156 **4 Claims**

1. A compound of the formula



wherein Ar is heteroaryl and substituted heteroaryl selected from the group consisting of thiophene, furan, pyridine, thiazole, pyrimidine, pyrrole, benzofuran, quinoline, and benzothiophene, cycloalkyl having from 3 to 7 carbon atoms, naphthyl, indanyl, idenyl, tetrahydronaphthyl, or a radical of the formula



wherein each of R_5, R_6 and R_7 is independently H, alkyl, phenyl, tolyl, naphthyl, halo, lower alkoxy, nitro, amino, alkylmercapto, cyano, carboxy, carbalkoxy, sulfamyl, trifluoromethyl, hydroxy, methanesulfonyl, or alkylamino; and R_5 and R_6 when taken together, form a methylenedioxy; Z is alkylene containing 1 to about 5 carbon atoms in the principal chain; each R_1 is independently hydrogen, alkyl or alkoxyalkyl, with the proviso that only one R_1 may be hydrogen; R_2 is lower alkyl; R_3 is alkoxyalkyl containing 2 to 4 carbon atoms in the alkyl group and R_4 is hydroxyalkyl containing 2 to 4 carbon atoms in the alkyl group; wherein the alkyl, and alkoxy groups contain up to 10 carbon atoms, and pharmaceutically-acceptable salts thereof.

4. An anti-hypertensive composition comprising, as an active ingredient, an effective anti-hypertensive amount of a compound according to claim 1 in a pharmaceutically acceptable carrier.

4,520,132
USE OF UNDECYLENIC ACID TO TREAT HERPES LABIALIS

C. Richard Kinsolving, Monroe, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 27, 1982, Ser. No. 423,753

Int. Cl.³ A61K *31/20*

U.S. Cl. 514—560 **13 Claims**

1. A method of treating herpes I infection of the labial area in mammals comprising administrating to the mammals in need of said treatment by topical application in the area of said infection of an effective amount for treating said herpes I infection of undecylenic acid.

4,520,133
MONOHYDROXY-BENZOYL PEROXIDE AND COMPOSITIONS FOR TREATING ACNE

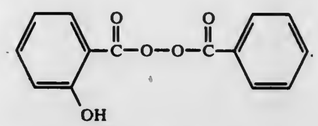
Allen I. Dines, Danbury; David Yeung, Stamford, and Sergio Nacht, Weston, all of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Aug. 11, 1983, Ser. No. 522,207

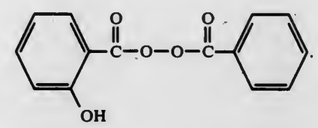
Int. Cl.³ A61K *31/075;* **C07C** *179/15*

U.S. Cl. 514—568 **5 Claims**

1. 2-Hydroxy benzoyl peroxide of the formula



2. A composition for the topical treatment of acne in the form of a lotion, cream, gel or solution containing from about 1 to about 20% by weight of 2-hydroxy benzoyl peroxide of the formula



4,520,134
N-ALKYL-4'-HYDROXYACETANILIDES, PHARMACEUTICAL COMPOSITIONS COMPRISING THEM AND THEIR USE

Gerald M. Rosen, 403 Knob Ct., Chapel Hill, N.C. 27514

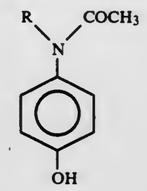
PCT No. PCT/US83/01311, § 371 Date Apr. 6, 1984, § 102(e) Date Apr. 6, 1984, PCT Pub. No. WO84/00886, PCT Pub. Date Mar. 15, 1984

Continuation-in-part of Ser. No. 412,313, Aug. 27, 1982, abandoned. This PCT application Aug. 26, 1983, Ser. No. 601,774

Int. Cl.³ A61Y *31/165;* **C07C** *103/38*

U.S. Cl. 514—625 **21 Claims**

1. A pharmaceutical composition comprising, in unit dosage form, an analgesic effective amount per unit dosage of an acetanilide compound of the formula



wherein R is methyl or branched or straight chain propyl, butyl, amyl, hexyl, heptyl, or octyl, in admixture with a pharmaceutically acceptable carrier.

4,520,135
PARTICULATE POLYSTYRENE CONTAINING BLOWING AGENT AND HAVING IMPROVED EXPANDABILITY

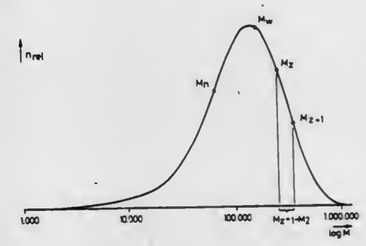
Klaus Hahn, Kirchheim; Paul Wittmer, Landau; Isidoor De Grave, Wachenheim; Rupert Schick, Limburgerhof, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,658

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3224660

Int. Cl.³ C08J *9/18, 9/20*

U.S. Cl. 521—56 **4 Claims**



1. In a process for the preparation of particulate polystyrene containing a blowing agent in which styrene is polymerized in an aqueous suspension and in which a volatile organic blowing agent is added before, during or after the polymerization has taken place, the improvement which comprises: the adding of from 0.01 to 0.5% by weight of a bromine-free organic chain transfer agent having a chain transfer constant K of from 0.1 to 50 during the polymerization, at a styrene monomer conversion of from 20–90%.

4,520,136
FOAMABLE POLYMERIC STYRENE PARTICLES

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Sep. 24, 1982, Ser. No. 422,766

Int. Cl.³ C08V *9/18*

U.S. Cl. 521—60 **3 Claims**

1. In a process for producing an expandable polymeric styrene particle wherein a polymeric styrene particle is impregnated with a blowing agent and the resultant expandable polymeric styrene particle recovered, the improvement which comprises impregnating the polymeric styrene particle with from about 0.2% to about 0.5% by weight of pentaerythritol tetrastearate and from about 1.0% to about 2.0% by weight of hexabromocyclododecane, all percentages being based on the weight of said polymeric styrene.

4,520,137
ONE-PART ACTIVATOR AND BLOWING AGENT FOR FOAMING PLASTICS

Roger G. Hamel, Methuen, and Susan B. Poulin, Woburn, both of Mass., assignors to Morton Thiokol Inc., Chicago, Ill.

Division of Ser. No. 536,332, Sep. 27, 1983,. This application Oct. 18, 1984, Ser. No. 635,016

Int. Cl.³ C08J *9/06;* **B29N** *7/20*

U.S. Cl. 521—79 **12 Claims**

1. A stable one-part borohydride activator concentrate which has been previously blended and melted consisting essentially an inert resinous polymer, an alkali metal borohydride and a salt hydrate.

4,520,138

DULL, SMOOTH UNIT SOLES

Glenn R. Himes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 23, 1984, Ser. No. 603,022
Int. Cl.³ C08J 9/12
U.S. Cl. 521—91 **14 Claims**

1. A non-delaminating polymeric composition having a smooth, dull appearance in molded unit soles, said composition comprising:
(a) 100 parts by weight of one or more radial $(AB\text{-})_x$ BA block copolymers where x is greater than 1, each block A being a monoalkenyl arene polymer having an average molecular weight between about 5,000 and 75,000, each block B being an elastomeric conjugated diene polymer having an average molecular weight between about 15,000 and about 300,000, and said blocks A comprise 8–90% by weight of each copolymer;
(b) about 5 to about 100 parts by weight of a syndiotactic 1,2-polybutadiene;
(c) about 5 to 100 parts by weight of polystyrene;
(d) about 0 to about 200 parts by weight of a hydrocarbon rubber extending oil;
(e) about 0 to about 250 parts by weight of a large particle porous filler; and
(f) about 0.01 to about 10 parts by weight of a blowing agent.

4,520,139

PECTIN AND RELATED CARBOHYDRATES FOR THE PREPARATION OF POLYURETHANE FOAMS

Richard B. Kennedy, Ridgefield, Conn., assignor to Patrick James Crehan and Richard J. Fricke, both of Ridgefield, Conn., a part interest to each

Filed Jul. 26, 1984, Ser. No. 635,212
Int. Cl.³ C08G 18/14
U.S. Cl. 521—109.1 **22 Claims**

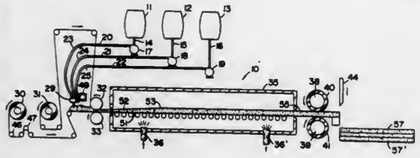
1. A polyurethane foam made by reacting a composition containing a polyisocyanate, a surfactant, an amine type polyurethane producing catalyst, a gel forming polysaccharide and water.

4,520,140

POLYOXYALKYLENE/UNSATURATED DIESTER REACTION PRODUCT FOR CELLULAR FOAM STABILIZATION

Richard L. Frentzel, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 544,301, Oct. 21, 1983, Pat. No. 4,481,307, which is a division of Ser. No. 426,581, Sep. 29, 1982, Pat. No. 4,418,158, which is a division of Ser. No. 282,322, Jul. 10, 1981, Pat. No. 4,365,024. This application Oct. 22, 1984, Ser. No. 663,627
Int. Cl.³ C08J 9/14
U.S. Cl. 521—115 **17 Claims**



1. A foam material comprising the reaction product of:
A. polyisocyanurate polymer forming reactants,
B. a blowing agent, and
C. a surfactant which comprises the reaction product of
(a) a polyoxyalkylene adduct having the formula

H—polyoxyalkylene chain)$_t$R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, and
(b) an esterified unsaturated dibasic acid having the formula

$$T^1O_2C—C_uH_{2u-2}—CO_2T^2$$

wherein u is 2 or 3 and T^1 and T^2 are identical or different and represent a straight or branched, saturated or unsaturated hydrocarbon chain, in the presence of an effective amount of a free-radical initiator, and wherein the polyoxyalkylene adduct optionally is capped by treatment either before or after the free-radical initiated reaction with a capping agent capable of reacting with the hydroxyl groups of said adduct, whereby the hydroxyl number of said adduct is reduced to less than 50.

4,520,141

METHOD FOR MANUFACTURING PHENOLIC RESIN FOAM

Sadao Kumasaka, and Satomi Tada, both of Tokyo, Japan, assignors to Toyo Rubber Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1982, Ser. No. 413,488
Claims priority, application Japan, Sep. 4, 1981, 56-139352
Int. Cl.³ C08J 9/08
U.S. Cl. 521—126 **18 Claims**

1. A method for manufacturing a phenolic resin foam, comprising the steps of mixing a composition consisting essentially of 100 parts by weight of a resol-type phenol-formaldehyde resin, 5 to 40 parts by weight of a curing agent consisting of an acid, and a foaming agent consisting of an isocyanate, and heating the composition to foam said composition and form said phenolic resin foam, the amount of the isocyanate being 5 to 30 parts by weight.

4,520,142

AEROSOL APPLICATION OF ENCAPSULATED MATERIALS

Roger W. Leinen, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 17, 1984, Ser. No. 581,334
Int. Cl.³ C09D 5/14; C09K 3/30
U.S. Cl. 523—205 **18 Claims**

1. An appliable composition comprising
(a) microcapsules having an average diameter between 5 and 75 microns containing a liquid within a shell,
(b) a film forming binder,
(c) a solvent for said film forming binder which is not an active solvent for the material comprising the shell of said microcapsule, and
(d) a propellant which is miscible with said solvent and which is not an active solvent for the material comprising the shell of said microcapsule.
9. An aerosol can containing the composition of claim 1.

4,520,143

COMPOSITIONS FOR THE TREATMENT OF TEXTILE MATERIALS

Thomas Jellinek, Plenty, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

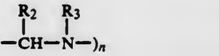
Continuation-in-part of Ser. No. 300,217, Aug. 9, 1981, abandoned, which is a continuation of Ser. No. 175,371, Aug. 5, 1980, abandoned, which is a continuation of Ser. No. 033,504, Apr. 26, 1979, abandoned. This application May 13, 1983, Ser. No. 494,290
Claims priority, application Australia, May 9, 1978, PD4334
Int. Cl.³ C08L 33/08
U.S. Cl. 523—410 **12 Claims**

1. Compositions for textile treatment comprising an admixture of:

(a) an aqueous emulsion of a copolymer of a monomeric mixture consisting essentially of an oxirane-containing monoethylenically-unsaturated material and at least one other monoethylenically-unsaturated material selected from the group characterised by the formula



wherein R is H or C_1 to C_4 alkyl and R′ is a straight chain or branched chain radical of a primary or secondary alkanol, alkoxyalkanol or alkylthiaalkanol having up to 14 carbon atoms, and
(b) a water soluble or water dispersible polyamine which is composed of at least 4 alkylenimine units (—CH—CH—N—) which occur in sequences of such alkylenimine units having the formula A



(A)

wherein R_1 and R_2 are independently selected from hydrogen, and lower alkyl radicals of 1 to 4 carbon atoms, R_3 is H or other alkylenimine sequences of formula A, and n is a number which has an average value of at least 2,
wherein the admixture (a) and (b) is further characterised in that it exists as a stable emulsion at a pH in the range 3 to 11 and wherein the proportion of polyamine (b) is such that the sequences of alkylenimine units of formula A represent from 0.5% to 25% by weight of the non-volatile material in the combined mass of the emulsion copolymer and polyamine.

4,520,144

POLYDIMETHYLSILOXANE-MODIFIED POLYEPOXIDES

Gerry K. Noren, Hoffman Estates, and Mary F. Clifton, Woodstock, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 6, 1984, Ser. No. 577,553
Int. Cl.³ C08L 63/02, 83/08
U.S. Cl. 523—435 **7 Claims**

1. A modified polyepoxide reaction product of a diurethane diisocyanate with a resinous polyepoxide having a molecular weight of from about 500 to about 1000 and a 1,2-epoxy equivalency of from about 1.5 to about 2.0, said diurethane diisocyanate being itself the reaction product of a dicarbinol-terminated polydimethyl polysiloxane having a molecular weight of from about 1000 to about 4000 with substantially a 2:1 stoichiometric excess of an organic diisocyanate, said diurethane diisocyanate being reacted with said resinous polyepoxide in an amount of from about 1.5 moles to about 16 moles per 100 moles of the polyepoxide.

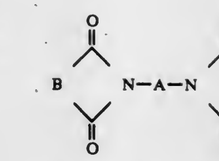
4,520,145

MODIFIED THERMOSETTING IMIDE RESINS WITH IMPROVED FRACTURE TOUGHNESS

Horst Stenzenberger, Schriesheim, Fed. Rep. of Germany, assignor to The Boots Company PLC, Nottingham, England

Filed Oct. 29, 1982, Ser. No. 437,794
Claims priority, application United Kingdom, Jul. 21, 1982, 8221116
Int. Cl.³ C08G 18/00
U.S. Cl. 523—500 **28 Claims**

1. Curable bisimide resins resistant to microcracking comprising a mixture of
(a) at least one bisimide of the general formula I



(I)

in which B represents a divalent radical containing a carbon-carbon double bond and A is a divalent radical containing at least two carbon atoms,
(b) a polyisocyanate of the general formula (II)

$$D(NCO)_x \qquad (II)$$

in which x has a value in the range 2 to 4 and D stands for an x-valent radical, and
(c) said bisimide being modified with compounds selected from the group consisting of polyamines, polyhydrazides, amino acid hydrazides, azomethines and mixtures thereof and an unsaturated polyester which is obtained by the poly condensation of polycarboxylic acids with polyglycols.

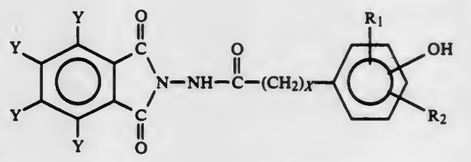
4,520,146

CHEMICAL COMPOUNDS AND USE

Ralph H. Hansen, Lincoln, Mass., assignor to Canusa Coating Systems Limited, Rexdale, Canada

Filed Sep. 27, 1983, Ser. No. 536,341
Int. Cl.³ C07D 209/48; C08K 5/34
U.S. Cl. 524—94 **12 Claims**

1. The compound of the formula I



(I)

where X is 1, 2 or 3; Y is Cl or Br; R_1 is tert-butyl and R_2 is H or lower alkyl of 1 to 4 carbons.

3. A composition comprising a polymer and the compound of claim 1 or 2 in an amount sufficient to impart flame retardant and antioxidant properties.

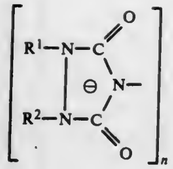
4,520,147

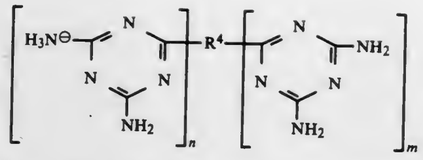
FLAME-PROOVED POLYAMIDE MOULDING MATERIALS

Rolf Dhein, Krefeld; Ludwig Rottmaier, Odenthal; Rudolf Merten, Leverkusen, all of Fed. Rep. of Germany, and Wolfgang Siebourg, Pittsburg, Pa., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 278,655, Jun. 29, 1981, Pat. No. 4,396,736. This application Mar. 25, 1983, Ser. No. 478,652
Int. Cl.³ C08K 5/34
U.S. Cl. 524—100 **5 Claims**

1. A self-extinguishing, optionally reinforced thermoplastic polyamide molding composition containing from 0.1 to 20% by weight of flame-proofing agents of the formula





wherein R^1 and R^2 are each hydrogen, a C_1–C_6 aliphatic group, a C_4–C_{10} cycloaliphatic group, a C_7–C_{10} araliphatic group, a C_6–C_{10} aromatic group, one of said groups substituted by halogen or hydroxy, a C_2–C_6 alkyl carbonyl group or said group substituted by halogen; R^4 is hydrogen, amino, a C_1–C_{20} aliphatic group, a C_4–C_{17} cycloaliphatic group, a C_7–C_{17} araliphatic group, a C_6–C_{15} aromatic group or one of said groups substituted by halogen; n is an integer from 1 to 4 and m is an integer from 0 to 3, m+n being a maximum of 4.

4,520,148

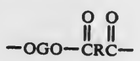
THERMOPLASTIC ELASTOMER COMPOSITIONS

Michael D. Golder, Allendale, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Dec. 1, 1983, Ser. No. 557,095
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—100 **11 Claims**

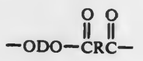
1. Thermoplastic elastomer composition consisting essentially of:

(a) segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



Formula I

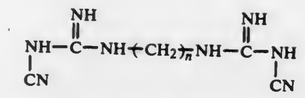
and said short chain units being represented by the formula



Formula II

where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a number average molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4-butanediol or 1,4-butenediol; provided, said short chain units amount to between about 30% and about 85% by weight of the copolyester; and

(b) between about 0.05 and about 5% by weight of said copolyester of guanidine stabilizer of the formula



Formula III

where n is an integer between 2 and about 20

4,520,149

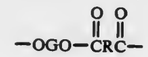
ELASTOMER COMPOSITIONS

Michael D. Golder, Allendale, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Dec. 1, 1983, Ser. No. 557,096
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—100 **13 Claims**

1. Thermoplastic elastomer composition consisting essentially of:

(a) segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



Formula I

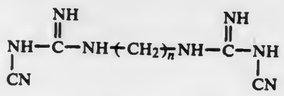
and said short chain units being represented by the formula



Formula II

where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a number average molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4-butanediol or 1,4-butenediol; provided, said short chain units amount to between about 30% and about 85% by weight of the copolyester;

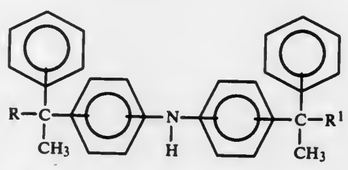
(b) between about 0.05 and about 5% by weight of said copolyester of guanidine stabilizer of the formula



Formula III

where n is an integer between 2 and about 20;

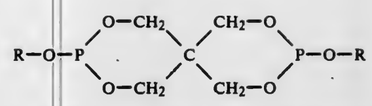
(c) between about 0.1 and about 5% by weight of said copolyester of diphenylamine derivative of the formula



Formula IV

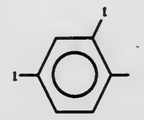
where R and R^1 are methyl or phenyl; and

(d) between about 0.05 and about 3% by weight of said copolyester of phosphorus compound of the formula



Formula V

where R represents an alkyl radical having from 6 to about 22 carbon atoms or a hydrocarbon radical of the structure



where t represents a tertiary butyl radical.

4,520,150

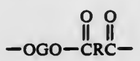
STABILIZED ELASTOMER COMPOSITIONS

Michael D. Golder, Allendale, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Dec. 1, 1983, Ser. No. 557,097
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—100 **10 Claims**

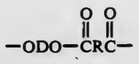
1. Thermoplastic elastomer composition consisting essentially of:

(a) segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



Formula I

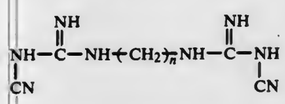
and said short chain units being represented by the formula



Formula II

where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a number average molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4-butanediol or 1,4-butenediol; provided, said short chain units amount to between about 30% and about 85% by weight of the copolyester;

(b) between about 0.05 and about 5% by weight of said copolyester of guanidine stabilizer of the formula



Formula III

where n is an integer between 2 and about 20;

(c) between about 0.1 and about 5% by weight of said copolyester of diphenylamine derivative of the formula



Formula IV

where R and R^1 are methyl or phenyl; and

(d) between about 0.05 and about 3% by weight of said copolyester of phosphorus compound of the formula



Formula V

where each of R and R_1 independently represents a hydrocarbon radical selected from the group consisting of alkyl, aryl and alkyl/aryl hydrocarbon radicals having from 1 to about 22 carbon atoms and R_3 represents hydrogen or a hydrocarbon radical selected from the group consisting of alkyl, aryl and alkyl/aryl hydrocarbon radicals having from 1 to about 22 carbon atoms.

4,520,151

TRIS (3,6-DI-T-BUTYL-2-NAPHTHYL) PHOSPHITE AND COMPOSITIONS THEREOF

Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 2, 1982, Ser. No. 364,593
Int. Cl.³ C08K *5/34, 5/52;* **C07F** *9/141*
U.S. Cl. 524—101 **12 Claims**

1. Tris(3,6-di-t-butyl-2-naphthyl)phosphite.

2. A composition comprising organic materials subject to degradation and a stabilizing amount of tris(3,6-di-t-butyl-2-naphthyl)phosphite.

4,520,152

FLAME RETARDANT COMPOSITION OF POLYPHENYLENE ETHER, STYRENE RESIN AND CYCLIC PHOSPHONATE

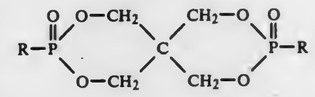
Robert J. Axelrod, Glenmont, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 831,056, Sep. 6, 1977, abandoned. This application Jun. 11, 1982, Ser. No. 387,499
Int. Cl.³ C08K *5/53*
U.S. Cl. 524—120 **17 Claims**

1. A flame retardant composition comprising

(a) a normally flammable composition comprising a polyphenylene ether resin and a styrene resin, and

(b) an effective, flame-retardant amount of a compound of the formula



wherein R is alkyl of from 1 to 18 carbon atoms, aryl or alkaryl.

4,520,153

PRODUCTION OF PAINT CONTAINING LECITHIN-TREATED METAL OXIDE

Max Kronstein, Riverdale, N.Y., and Joseph Eichberg, Atlanta, Ga., assignors to American Lecithin Company, Atlanta, Ga.

Filed Nov. 23, 1982, Ser. No. 443,899
Int. Cl.³ C08K *5/52, 5/56;* **C23F** *11/10*
U.S. Cl. 524—145 **24 Claims**

1. Process for the production of a paint containing a chemically-modified lecithin material, which is a reaction product between lecithin and metal oxide comprising mechanically treating lecithin material with metal oxide without any application of heat, thereby producing lecithin-treated metal oxide and metal oxide-treated lecithin, separating the lecithin-treated metal oxide and the metal oxide-treated lecithin, drying the lecithin-treated metal oxide, dispersing the lecithin-treated metal oxide by pressure or milling into a powder form, and using said powder as a pigment in the formulation of a solvent-based or water-based paint, such mechanically-with-lecithin-pretreated pigment being used either as the only pigment or together with another pigment, untreated or lecithin-pretreated, whereby such resultant paint has different properties than a paint of the same formulation but having the same pigment or pigments without any prior lecithin pretreatment.

4,520,154

ORGANIC THIOSULPHATES AND THIOSULPHONATES USEFUL AS STABILIZING AGENTS FOR RUBBER VULCANIZATES

Philippe G. Moniotte, Heron, Belgium, assignor to Monsanto Europe, S.A., Brussels, Belgium

Division of Ser. No. 393,950, Jun. 30, 1982, Pat. No. 4,417,012.
This application Aug. 25, 1983, Ser. No. 526,189
Claims priority, application United Kingdom, Jul. 8, 1981, 8121098; Aug. 13, 1981, 8124716
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ C08L *9/00*
U.S. Cl. 524—157 **21 Claims**

1. A vulcanisable rubber composition comprising a diene rubber, sulphur and a vulcanisation accelerator, characterised in that the composition also comprises a stabiliser material containing two or more groups of the formula

—S—SO_2R

where R represents (a) a radical OM where M is a monovalent metal, the equivalent of a multivalent metal, a monovalent ion derived by the addition of a proton to a nitrogenous base, or the equivalent of a multivalent ion derived by the addition of two or more protons to a nitrogenous base, or (b) an organic radical selected from aliphatic, cycloaliphatic, aromatic and heterocyclic radicals which are combinations of any two or more such radicals, the groups of the aforesaid formula being linked by an organic bridging broup or attached to an organic polymer chain.

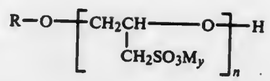
4,520,155

DYE-RECEPTIVE POLYOLEFINS AND POLYOLEFIN FIBERS

William A. Higgins, Gates Mills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 23, 1984, Ser. No. 603,066
Int. Cl.³ C08K *5/42*
U.S. Cl. 524—166 **23 Claims**

1. A dyeable polyolefin composition comprising a blend of (A) a polyolefin and (B) a dye-receptive amount of at least one metal sulfonate which is soluble in the polyolefin when melted, and which sulfonate is characterized by the formula



(1)

wherein
R is an aliphatic group,
M is an alkali or alkaline earth metal,
n is at least 1,
y is equal to 1 when M is an alkali metal and ½ when M is an alkaline earth metal.

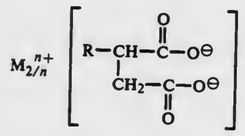
4,520,156

SCORCH INHIBITORS FOR CARBOXYLATED RUBBERS

Donald C. Grimm, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 7, 1984, Ser. No. 648,394
Int. Cl.³ C08K *5/09*
U.S. Cl. 524—397 **22 Claims**

1. An improved scorch resistant carboxylated rubber composition comprising: (1) a carboxylated rubber and (2) at least one salt of a succinic acid derivative having the structural formula:



wherein R is an alkyl or alkenyl moiety containing from 8 to 25 carbon atoms wherein M is a cation having a charge of positive one or positive two, and wherein n is 1 or 2 with the proviso that n is 1 if M has a charge of positive one and with the proviso that n is 2 if M has a charge of positive two; which is distributed throughout said carboxylated rubber composition to improve the scorch safety of said rubber composition.

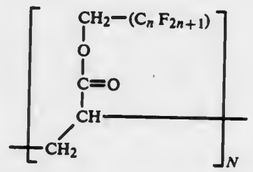
4,520,157

EARLY WARNING FIRE-DETECTION PAINT

Lymperios N. Yannopoulos, Penn Hills; Robert D. Straw, Murrysville, and D. Colin Philips, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1982, Ser. No. 452,264
Int. Cl.³ C08K *5/02*
U.S. Cl. 524—462 **3 Claims**

3. A latex paint mixture for producing, in its applied environment, an early warning of the presence of excessive heat from a painted surface, said latex paint mixture prior to application substantially comprising a mixture of pigment and vehicle and having admixed therewith a predetermined proportion of solution which includes a thermoparticulating agent, said solution which includes said thermoparticulating agent being present in an amount of from about 5% to about 21% by weight of said mixture and said thermoparticulating agent is a fluorinated polyacrylate comprising about 14% by weight of said solution, said fluorinated polyacrylate having the following structure;



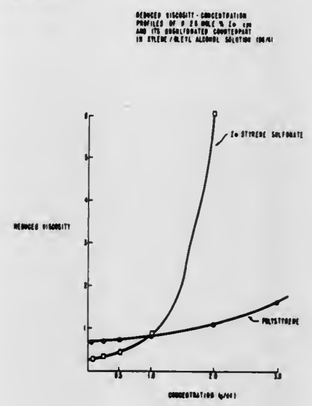
wherein n is 1 to 9 and N is 5 to 4,000.

4,520,158

NONAQUEOUS SOLVENT SOLUBLE POLYAMPHOLYTES-VISCOSIFIER AND SHEAR THICKENING ADDITIVE

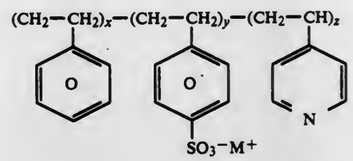
Dennis G. Peiffer, East Brunswick; Robert D. Lundberg, Bridgewater; Ilan Duvdevani, Leonia, and Warren A. Thaler, Flemington, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,362
Int. Cl.³ C08K *5/01;* **C08L** *39/00*
U.S. Cl. 524—481 **7 Claims**



1. A process for increasing the viscosity of a hydrocarbon organic liquid under increasing shear rate which includes the step of:

(a) forming a solution of said hydrocarbon organic liquid and a polyampholyte having about 1 to about 500 milliequivalents of sulfonate groups per 100 gms. of said polyampholyte, wherein the concentration of said polyampholyte is about 0.01 to about 20 wt.%, said polyampholyte having the formula:



wherein x is about 40 to about 98 mole %, y is about 1 to about 50 mole %, and z is about 1 to about 50 mole %, wherein y and z are less than 60 mole %, and M is an amine or a metal cation selected from the group consisting of aluminum, iron, lead, Groups IA, IIA, IB and IIB of the Periodic Table of Elements; and

(b) subjecting said solution to increasing shear rate to increase the viscosity of said solution by at least 10% as said shear rate increases.

4,520,159

PROCESS FOR PRODUCING POLYAMINOPOLYAMIDES CONTAINING HALOHYDRIN FUNCTIONALITY

William W. Maslanka, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 21, 1984, Ser. No. 591,734
Int. Cl.³ C08L *77/06*
U.S. Cl. 524—606 **8 Claims**

1. A process for producing an aqueous solution of a cationic resinous composition suitable as a wet strength agent for paper and containing a polyaminopolyamide having a major portion of halohydrin functionality as substituents on tertiary nitrogen atoms, which process comprises reacting in aqueous medium a water-soluble basic polyaminopolyamide derived from a polyalkylene polyamine having two primary amine groups and at least one secondary amine group and a saturated aliphatic dicarboxylic acid or its ester and having a basicity essentially due to secondary amine groups with from 1 mole to 1.5 moles of allyl halide per mole of secondary amine groups in said basic polyaminopolyamide to form allyl substituted tertiary amine groups, removing unreacted allyl halide, reacting the resulting allyl substituted polyaminopolyamide with hypohalous acid until substantially all of the allyl substituents are converted to the corresponding halohydrin moieties, adjusting the pH of the resulting aqueous solution to at least 7.0 and maintaining the solution at a pH of at least 7.0 until the viscosity of the polyaminopolyamide containing halohydrin functionality reaches at least B on the Gardner-Holdt scale when measured at 24% solids at 25° C.

4,520,160

ORGANOPOLYSILOXANE EMULSIFIER COMPOSITIONS AND METHOD THEREFOR

Paul L. Brown, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 27, 1983, Ser. No. 565,554
Int. Cl.³ C08K *5/05*
U.S. Cl. 524—765 **6 Claims**

1. In the method for preparing an organopolysiloxane-polyoxyalkylene copolymer composition, said method comprising reacting an organohydrogenpolysiloxane reactant with an olefinically substituted polyoxyalkylene reactant in the presence of a platinum-containing hydrosilylation catalyst, the improvement comprising conducting said reacting in the presence of a reaction-improving amount of an alcohol which has at least 8 carbon atoms and is free of aliphatic unsaturation and allowing said alcohol to remain with the composition after said reacting.

4,520,161

HIGH HOT BOND STRENGTH HIGH FLASH POINT LOW VISCOSITY POLYESTER INSULATING COMPOSITIONS

Daniel R. Sassano, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 14, 1984, Ser. No. 620,666
Int. Cl.³ C08G *63/76;* **C08L** *67/06*
U.S. Cl. 525—11 **12 Claims**

1. A fluid, high bond strength, high flash point, solventless, insulating composition, comprising:

(1) 100 parts by weight of a polyester composition consisting essentially of the admixture:

(A) from 9 mole % to 12 mole % of a dicarboxylic acid selected from the group consisting of isophthalic acid, endo methylene tetrahydrophthalic acid, their anhydrides, and their mixtures;

(B) from about 15 mole % to about 20 mole % of an unsaturated aliphatic dicarboxylic acid;

(C) from about 35 mole % to about 40 mole % of an aliphatic dihydric alcohol;

(D) from about 25 mole % to about 40 mole % of diallyl phthalate;

(E) an effective amount of an inhibiting agent;

(2) from 15 parts by weight to 30 parts by weight of hexamethoxy methyl melamine; and

(3) an effective amount of a free radical initiator catalyst.

4,520,162

POLYMERIC COMPOUNDS WITH SUSTAINED ANTI-TUMOR ACTIVITY AND A METHOD FOR THE PREPARATION THEREOF

Takashi Hirano; Shinichi Ohashi, both of Sakura; Satoshi Morimoto, Yatabe; Masaru Shiraki; Keishiro Tsuda, both of Sakura; Tomowo Kobayashi, and Shigeru Tsukagoshi, both of Tokyo, all of Japan, assignors to Director-General of the Agency of Industrial Science & Technology, Tokyo, Japan

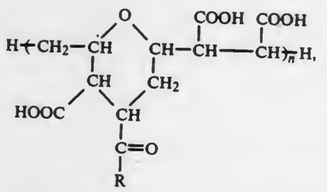
Filed Sep. 17, 1984, Ser. No. 651,343

Claims priority, application Japan, Sep. 24, 1983, 58-176833; Sep. 24, 1983, 58-176834

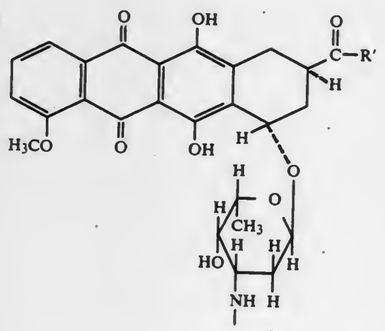
Int. Cl.³ C08F *8/32*

U.S. Cl. 525—327.6 **5 Claims**

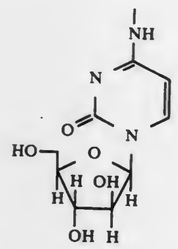
1. A polymeric compound having a polymeric backbone structure which is a copolymeric moiety of maleic anhydride and divinyl ether and at least one pendant moiety thereon selected from the class consisting of adriamycin, daunomycin and 1-β-D-arabinofuranosylcytosine bonded to the backbone structure through an amide linkage at the maleic anhydride unit thereof with the maleic anhydride units converted to carboxyl acid form comprising a unit represented by the structural formula



in which n is a positive integer and R is the pendant moiety expressed by the formula



R′ being a hydroxyl group or a methyl group, or the formula



or a pharmacologically acceptable salt thereof.

4,520,163

PROCESS OF SEQUENTIALLY COPOLYMERIZING PROPYLENE-ETHYLENE COPOLYMERS AND CATALYST THEREFOR

Brian L. Goodall, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 9, 1984, Ser. No. 569,366

Int. Cl.³ C08F *297/08*

U.S. Cl. 525—53 **11 Claims**

1. In the process for preparing impact resistant ethylene-propylene polymers having high impact properties combined with high stiffness, which process comprises:

(a) preparing a propylene prepolymer by polymerizing propylene in a liquid phase reaction zone in the presence of a catalyst system comprising:

(i) a highly active solid catalyst component comprising titanium tetrachloride, magnesium chloride, and an electron donor,

(ii) as cocatalyst a compound AlR_3 where R represents an alkyl group of from 2 to 8 carbon atoms, and

(iii) a selectivity control agent which may be partly or totally complexed with cocatalyst;

(b) separating the propylene prepolymer from volatile constituents; and

(c) introducing said separated propylene prepolymer, ethylene monomer

and propylene monomer into at least one vapor phase reaction zone; the improvement wherein an additional amount of said cocatalyst is introduced into said vapor phase reaction zone, wherein the additional amount of cocatalyst added to said vapor phase reaction zone is between two (2) and ten (10) times the amount of cocatalyst employed in step (a).

4,520,164

BLENDS OF AROMATIC POLYCARBONATE RESINS, POLYOLEFINS AND OLEFIN COPOLYMERS, AND ACRYLATE INTERPOLYMER RESINS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 22, 1982, Ser. No. 452,060

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—67 **16 Claims**

1. A thermoplastic composition, comprising an intimate blend of

(a) a major proportion of an aromatic polycarbonate resin;

(b) at least about 10.4 parts by weight of a polyolefin or an olefin copolymer resin per 100 parts by weight of (a) and (b) combined; and

(c) a third polymeric component comprising

(i) a polymerization product of acrylic comonomers, or an acrylic monomer with a diene rubber, alone, or including styrene or

(ii) a multiphase interpolymer of a first elastomeric phase comprising an acrylic rubber and a rigid thermoplastic final phase, or

(iii) a mixture of (i) and (ii), the amount of (c) being at least sufficient to impart to the blend a resistance to environmental stress cracking and crazing greater than that possessed by (a) and (b) together.

4,520,165

ABS-MOULDING COMPOSITIONS

Karl Zabrocki, Buettgen; Karl-Heinz Ott, Leverkusen; Adolf Schmidt, Cologne, and Alfred Pischtschan, Kuerten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 574,870

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304544

Int. Cl.³ C08L *55/02*

U.S. Cl. 525—84 **1 Claim**

1. Molding compositions based on ABS-polymers consisting of

from 10 to 65% by weight of a graft polymer obtained by the emulsion polymerization of styrene and acrylonitrile in a ratio by weight of from 90:10 to 50:50, the styrene being completely or partly replaceable by α-methyl styrene or methyl methacrylate, in the presence of at least 2 butadiene polymer latices of type (A) and type (B), each of which contains from 0 to 30% of another vinyl monomer in copolymerized form, the ratio by weight of the monomers used to the butadiene polymer used amounting to between 35:65 and 70:30, and

from 90 to 35% by weight of at least one copolymer of styrene and acrylonitrile in a ratio by weight of from 90:10 to 50:50, the styrene being completely or partly replaceable by α-methyl styrene or methyl methacrylate, characterized in that

the butadiene polymer latex (A) has a particle diameter d_{50} of ≧0.35 μm and a gel content of <85%, and

the butadiene polymer latex (B) used has a particle diameter d_{50} of ≦0.30 μm and

the average grafting site interval of the graft polymer produced therefrom amounts to between 4000 and 10,000 C_4-units.

4,520,166

VINYL CHLORIDE POLYMER COMPOSITION

Kazumasa Kamada; Norihisa Osaka, and Masahiro Kaneda, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 263,725, May 14, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,500

Claims priority, application Japan, May 20, 1980, 55-66893

Int. Cl.³ C08L *33/04*

U.S. Cl. 525—85 **14 Claims**

1. A vinyl chloride polymer composition having an excellent workability, comprising:

(1) from 80% to 99.95% by weight of a polymeric ingredient (I) consisting of at least one member selected from the group consisting of polyvinyl chloride and copolymers of at least 80% by weight of vinyl chloride and no more than 20% by weight of at least one other ethylenically unsaturated comonomer; and

(2) from 0.05% to 20% by weight of a polymeric ingredient (II) consisting of at least one three-stage emulsion polymerization product prepared by the steps of:

(A) first polymerizing from 40 to 70 parts by weight of a first monomeric component (b) in the presence of from 5 to 45 parts by weight of a polymeric component (a) obtaining a first polymerization product, said first polymerizing being conducted in a medium containing at least 0.1 parts by weight of a chain transfer agent per 100 parts by weight of said first monomeric component (b) under polymerization conditions which will cause a solution of 0.1 g of a polymerization product from said monomeric component (b) alone in 100 ml of chloroform to exhibit a reduced viscosity of 1 or less at a temperature of 25° C., said polymeric component (a) being prepared by polymerizing at least one monomeric material (a′) selected from the group consisting of methyl methacrylate and monomeric mixtures of at least 50% by weight of methyl methacrylate or no more than 50% by weight of at least one other ethylenically unsaturated comonomer in the presence of from 0 to 2.0 parts by weight of a chain transfer agent per 100 parts by weight of said monomeric material (a′), and said first monomeric component (b) consisting of a member selected from the group consisting of (1) alkyl acrylates in which the alkyl group has from 1 to 18 carbon atoms, (2) benzyl acrylate, (3) mixtures thereof and (4) monomeric mixtures of at least 30% by weight of at least one member selected from the group consisting of alkyl acrylates in which the alkyl group has from 1 to 18 carbon atoms and benzyl acrylate and no more than 70% by weight of at least one member selected from the group consisting of alkyl methacrylates in which the alkyl group has from 2 to 18 carbon atoms and benzyl methacrylate; and

(B) second polymerizing, in the presence of the first polymerization product, from 5 to 40 parts by weight of a second monomeric component (c) consisting of a member selected from the group consisting of methyl methacrylate and monomeric mixtures of at least 50% by weight of methyl methacrylate and no more than 50% by weight of at least one other ethylenically unsaturated comonomer copolymerizable with methyl methacrylate in the presence of from 0 to 1.0 part by weight of a chain transfer agent per 100 parts by weight of said second monomeric component (c), the sum of the polymeric component (a), the first monomeric component (b), and the second monomeric component (c) being 100 parts by weight, and the preparation of said polymeric component (a) and said first and second polymerization reactions being carried out at a temperature of below 100° C. in the presence of from 0.1 to 20 parts by weight of an emulsifying agent and from 0.05 to 10 parts by weight of an initiator per 100 parts by weight of the sum of said components (a), (b) and (c).

4,520,167

HYDROXYALKYL CARBAMATE DILUENT FOR COATING COMPOSITIONS AND COMPOSITIONS CONTAINING THE SAME

Werner J. Blank, Wilton, and Girish G. Parekh, Fairfield, both of Conn., assignors to American Cyanamid Co., Stamford, Conn.

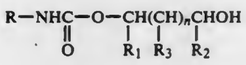
Filed Feb. 17, 1984, Ser. No. 581,007

Int. Cl.³ C08L *75/00*

U.S. Cl. 525—131 **14 Claims**

1. A coating composition comprising:

(a) a hydroxyalkyl carbamate compound of the formula



wherein n=0 or 1, R is a C_1 to C_{20} organic moiety which may contain one or more constituents selected from the class consisting of hetero-atoms and hydroxyl groups, and each of R_1, R_2 and R_3 is independently H or CH_3;

(b) an amide-aldehyde cross-linker; and

(c) a polymer containing active sites which, at elevated temperatures are reactive with the amide-aldehyde cross-linker (b);

the compound (a), the cross-linker (b) and the polymer (c) being stable relative to each other in the composition while at ambient temperature, and reactive at elevated temperature.

4,520,168

COLOR IMPROVED POLYARYLATE

James H. Kawakami, Piscataway; Benito See, Belle Mead; Thomas R. Jones, Lebanon, and Louis M. Maresca, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 393,556, Jun. 30, 1982, Pat. No. 4,439,586. This application Mar. 27, 1984, Ser. No. 593,743

Int. Cl.³ C08G *63/18*

U.S. Cl. 525—169 3 Claims

1. A color improved polyarylate polymer having a reduced viscosity of from about 0.1 to greater than 1.0 dl/g produced by the process which comprises the following steps:

(a) reacting an acid anhydride derived from an acid containing from 2 to 8 carbon atoms with at least one dihydric phenol to form the corresponding diether; and

(b) reacting said diester with at least one aromatic dicarboxylic acid at a temperature sufficient to form the polyarylate, wherein the improvement comprises carrying out said process in the presence of from about 0.2 to about 2.0 weight percent, based on the weight of the reaction mixture of an adsorbent selected from silica gel, activated charcoal or a molecular seive.

4,520,169

ELASTOMERIC SOL/GEL BLENDS

John F. Hagman, and Chi-Kai Shih, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 2, 1982, Ser. No. 414,451

Int. Cl.³ C08L *13/00, 23/34*

U.S. Cl. 525—185 26 Claims

1. A process for improving the processability of an uncured, soft elastomer (E), wherein elastomer (E), 30–99 parts by weight, is blended with a composition selected from the class of compositions (1) and (2), wherein

(1) is a mixture, which may be prepared in situ, of uncrosslinked polymer (T), which is a copolymer of ethylene with carbon monoxide and with at least one ethylenically unsaturated monomer X selected from the class consisting of C_3–C_{20} α,β-unsaturated mono- and dicarboxylic acids, C_1–C_{18} alkyl esters of α,β-unsaturated C_3–C_{20} mono- and dicarboxylic acids, vinyl esters of C_1–C_{18} saturated carboxylic acids, vinyl C_1–C_{18} alkyl ethers, acrylonitrile, and methacrylonitrile

with an effective amount of a crosslinking agent for polymer (T), which does not substantially cure elastomer (E);

the total amount of polymer (T) plus crosslinking agent being about 1–70 parts by weight; and

(2) is a blend of polymer (T) with an effective amount of a crosslinking agent for polymer (T) and with soft elastomer (E_1), which is not substantially curable by the crosslinking agent for polymer (T), and which may be the same as elastomer (E); the amount of elastomer (E_1) being about 30–99 weight percent of the blend, and the amount of polymer (T) plus crosslinking agent being about 1–70 weight percent, said blend having been prepared under shear conditions, the amount of shear and the temperature being such that the resulting blend has a gel content of about 1–70%, and the gel forms a dispersed phase in a sol matrix;

the amount of blend (2) being about 1–70 parts by weight;

with the proviso that blending of elastomer (E) with composition (1) is carried out under shear conditions, the amount of shear and the temperature being such that the resulting blend has a gel content of about 1–70%, and the gel forms a dispersed phase in a sol matrix.

4,520,170

METHOD FOR REINFORCING PERFLUOROELASTOMER COMPOSITIONS

David P. Kitto, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 20, 1982, Ser. No. 420,478

Int. Cl.³ C08L *27/16, 27/18, 27/20*

U.S. Cl. 525—200 10 Claims

1. A method for the preparation of perfluoroelastomer parts having high multidirectional tear strength comprising:

(a) preparing a blend of the perfluoroelastomer with 1 to 40 parts of fibrillated polytetrafluoroethylene,

(b) cryogenically pulverizing the blend produced from step (a) into a powder,

(c) placing the powder produced from step (b) into a mold and press-curing the powder into the desired shape for the perfluoroelastomer part.

4,520,171

POLYMERIC HINDERED AMINES

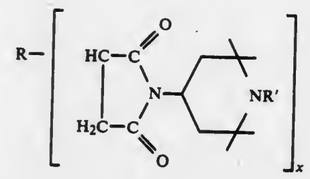
Diveley William R., and Anthony B. Clayton, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed May 5, 1982, Ser. No. 375,260

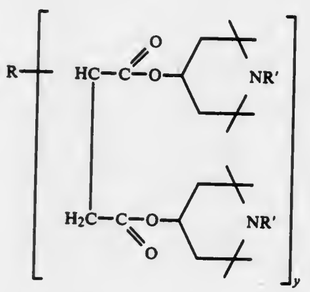
Int. Cl.³ C08F *29/12*; C07D *401/07*

U.S. Cl. 525—279 8 Claims

1. A hindered amine substituted, maleic anhydride modified olefin polymer having a general formula selected from the class consisting of



and



wherein R is an alpha-olefin polymer or copolymer residue and x and y are integers of a size relative to the molecular weight of R such that the total substitution of tetramethyl piperidine residue is between about 0.2 and 10% by weight, based on the total weight of the modified olefin polymer, and R′ is H, OH, O′, or O—R″, where R″ is a lower alkyl or substituted lower alkyl group having at least one hydrogen atom on the carbon attached to the nitrogen atom.

4,520,172

METHOD FOR COATING MEDICAMENTS

Klaus Lehmann, Rossdorf; Dieter Dreher, Darmstadt; Hubert Rauch, Welterstadt, and Werner Slol, Pfungstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,469

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208791

Int. Cl.³ C08F *8/28, 8/12, 8/44*

U.S. Cl. 525—369 9 Claims

1. A method for making an aqueous dispersion of a synthetic resin binder, said dispersion being adaptable to the coating of pharmaceutical dosage forms, which method comprises adding a powdered synthetic resin binder, capable of salt formation, to water and dispersing said resin in the presence of such an amount of a salt forming agent reacting with said resin that, after reaction from 0.1 to 10 percent of said resin, by weight, is present in salt form, said resin being prepared by the free radical emulsion polymerization of

(A) from 20 to 85 percent by weight of at least one alkyl acrylate or alkyl methacrylate,

(B) from 80 to 15 percent by weight of at least one vinyl or vinylidene monomer having an amino or carboxylic acid group capable of salt formation,

(C) from 0 to 30 percent by weight of at least one other vinyl or vinylidene monomer copolymerizable with (A) and (B).

8. A powdered mixture suitable for dispersion in water to form an aqueous dispersion adaptable to the coating of pharmaceutical dosage forms, said mixture comprising a powdered synthetic resin prepared by the free radical emulsion polymerization of

(A) from 20 to 85 percent by weight of at least one alkyl acrylate or alkyl methacrylate,

(B) from 80 to 15 percent by weight of at least one vinyl or vinylidene monomer having an amino or carboxylic acid group capable of salt formation,

(C) from 0 to 30 percent by weight of at least one other vinyl or vinylidene monomer copolymerizable with (A) and (B),

and such an amount of a powered agent capable of forming a salt with said resin as will salify from 0.1 to 10 percent of said resin, by weight, on reaction therewith.

4,520,173

MATERIAL FOR DEAERATING COATING SYSTEMS

Hans-Ferdi Fink; Otto Klocker; Koerner, Götz, all of Essen; Gert Künzel, Ratingen; Gerd Rossmy, Haltern-Lavesum, and Christian Weitemeyer, Esen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 7, 1983, Ser. No. 482,947

Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3218676

Int. Cl.³ C08L *71/02*

U.S. Cl. 525—403 6 Claims

1. In an aqueous phase coating composition which contains polymeric, organic film formers, the improvement which comprises said composition containing a deaerating effective amount of a linear polymer having at least five side groups, each of which contains a silicon atom which is linked by way of a divalent hydrocarbon group to the polymer, each silicon atom carrying at least one R^1 group of formula

$$O-[C_nH_{2n}O-]_xQ$$

in which

n is 2 to 8,

x is 1 to 10 and

Q is an alkyl radical with 1 to 10 carbon atoms, an aryl radical, an alkaryl radical, or an acyl radical with 2 to 18 carbon atoms,

and the sum of the carbon and oxygen atoms of R^1 is not less than 5.

4,520,174

METHOD OF MAKING HEAT-RESISTANT POLYESTER

Yoshihiro Arai, Joyo, and Takumi Tanaka, Uji, both of Japan, assignors to Unitika Ltd., Osaka, Japan

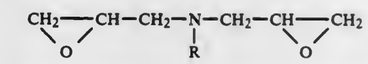
Filed Jun. 22, 1984, Ser. No. 623,062

Claims priority, application Japan, Jul. 8, 1983, 58-124912

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—438 4 Claims

1. In a method of making heat resistant polyester consisting of the reaction product of an aromatic dicarboxylic acid and a glycol containing 2 to 6 carbon atoms, the improvement comprising reacting the polyester with 0.1 to 5 weight percent of a bifunctional epoxy compound having the formula



wherein R is an organic group containing a benzene ring, so that the carboxyl end groups in the polyester are reduced to below about 15 g equivalents per 10^6 g of polymer.

4,520,175

METHOD OF MAKING HEAT-RESISTANT POLYESTER BY REACTING WITH A N,N,DIGLYCIDYL-ACIDAMIDE

Yoshihiro Arai, Joyo, and Takumi Tanaka, Uji, both of Japan, assignors to Unitika Ltd., Osaka, Japan

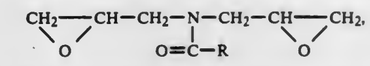
Filed Mar. 20, 1984, Ser. No. 591,642

Claims priority, application Japan, Apr. 14, 1983, 58-66439

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—438 2 Claims

1. The method of making heat-resistant polyester comprising reacting the polyester with from about 0.1 to about 5 percent by weight of the polyester, of the bifunctional epoxy compound,



wherein R is a hydrocarbon or substituted hydrocarbon, to reduce the end carboxyl groups of the polyester to less than 15 g equivalents per 10^6 g of polyester polymer, wherein said polyester consists of an aromatic dicarboxylic acid reacted with a glycol having 2 to 6 carbon atoms.

4,520,176

TEXTILE FINISHING COMPOSITIONS

Eugene R. Martin, Onsted, Mich.; David S. Ansel, Sylvania, Ohio, and Paul A. Manis, Adrian, Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 430,187, Sep. 30, 1982, abandoned. This application Dec. 12, 1983, Ser. No. 560,348

Int. Cl.³ C08L *61/28*

U.S. Cl. 524—598 15 Claims

1. A textile finishing composition comprising (1) a diluent and (2) a durable press resin composition containing (a) an aminoplast resin and (b) an aldehyde in excess of that present in the aminoplast resin in which the durable press resin composition is present in an amount of at least 0.18 percent by weight based on the weight of the diluent and aminoplast resin and the weight ratio of aldehyde to aminoplast resin is from 0.05 to 0.6.

4,520,177

POLYMERIZATION OF CONJUGATED DIENES

Derek K. Jenkins, 7, Lakewood Rd., Ashurst, Southampton, England

Filed May 22, 1984, Ser. No. 612,801
Claims priority, application United Kingdom, May 24, 1983, 8314382
Int. Cl.³ C08F *4/12*
U.S. Cl. 526—151 **21 Claims**

1. A process for the polymerisation of one or more conjugated diene monomers as the sole polymerizable monomers by means of a catalyst comprising
(a) a salt of a rare earth element or a complex of a rare earth element;
(b) an organo magnesium compound and
(c) a Lewis acid
wherein the catalyst is formed by mixing component (a) with component (c) before contact with component (b).

4,520,178

PROCESS FOR PRODUCING WATER-INSOLUBLE POLYMERS OF UNIFORM SHAPE FROM GELLED SALTS OF ALGINIC ACID

Ko Sakata, Kawasaki, and Hirosuke Imai, Yokohama, both of Japan, assignors to Nippon Oil Co. Ltd., Japan

Filed Jul. 15, 1982, Ser. No. 398,589
Claims priority, application Japan, Jul. 15, 1981, 56-109453; Sep. 14, 1981, 56-144013
Int. Cl.³ C08F *2/20*
U.S. Cl. 526—200 **1 Claim**

1. A process for producing a water-insoluble polymer of uniform shape, which comprises the steps of
(i) dissolving or partially suspending in water
(a) no more than 20% by weight, based on the aqueous solution or suspension, of a water-soluble salt of alginic acid,
(b) a hydrophilic, crosslinkable vinyl monomer having two or more radical-polymerizable vinyl groups per molecule, and
(c) a hydrophilic, radical-polymerizable vinyl monomer, the combined concentration of (b) and (c) not exceeding 50% by weight, based on the aqueous solution or suspension;
(ii) contacting the resulting aqueous solution or suspension with an aqueous gelling solution to gel the salt of alginic acid and thus form a water-insoluble gel of uniform shape; and
(iii) subjecting the gel to radical polymerization to produce a water-insoluble polymer.

4,520,179

PREPARATION OF VINYLPYRROLIDONE/VINYL ACETATE COPOLYMERS OF VARIOUS MOLECULAR WEIGHTS USING A SINGLE INITIATOR SYSTEM CONSISTING ESSENTIALLY OF T-BUTYLPEROXYPIVALATE

Eugene S. Barabas, Watchung, and James R. Cho, Oakland, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Sep. 20, 1982, Ser. No. 419,869
Int. Cl.³ C08F *218/08, 226/10*
U.S. Cl. 526—212 **12 Claims**

1. Process which comprises polymerizing a monomer mixture consisting essentially of N-vinylpyrrolidone and vinyl acetate monomers in a reaction zone in the presence of free radical initiator consisting essentially of t-Butylperoxypivalate to form vinylpyrrolidone/vinyl acetate copolymer.

2. Process according to claim 1 wherein the polymerization is carried out in solvent consisting essentially of water or isopropyl alcohol or sec. butyl alcohol or mixtures thereof.

4,520,180

POLYMERIZATION OF VINYLPYRROLIDONE TO VARIOUS MOLECULAR WEIGHTS USING A SINGLE INITIATOR SYSTEM CONSISTING ESSENTIALLY OF T-BUTYLPEROXYPIVALATE

Eugene S. Barabas, Watchung, and James R. Cho, Oakland, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Sep. 20, 1982, Ser. No. 419,870
Int. Cl.³ C08F *118/08, 126/10*
U.S. Cl. 526—212 **12 Claims**

1. Process for making polyvinylpyrrolidone homopolymer which comprises polymerizing N-vinylpyrrolidone monomer in a reaction zone in the presence of free radical initiator consisting essentially of t-Butylperoxypivalate.

2. Process according to claim 1 wherein the polymerization is carried out in solvent consisting essentially of water or isopropyl alcohol or sec. butyl alcohol or mixtures thereof.

4,520,181

METHOD FOR MAKING A DICYCLOPENTADIENE THERMOSET POLYMER CONTAINIG ELASTOMER

Daniel W. Klosiewicz, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 342,453, Jan. 25, 1982, Pat. No. 4,400,340. This application Mar. 7, 1983, Ser. No. 472,684
Int. Cl.³ C08F *2/00, 4/78*
U.S. Cl. 525—247 **2 Claims**

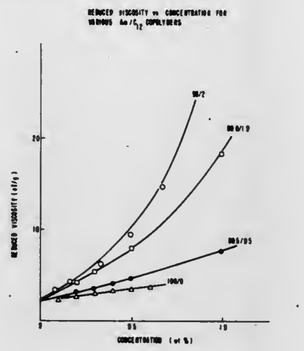
1. A method of making a thermoset homopolymer comprising:
(a) combining a plurality of reactant streams, one of said streams containing an activator of a metathesis-catalyst system, and another of said streams containing a catalyst of a metathesiscatalyst system, at least one of said streams containing dicyclopentadiene, at least one of said streams containing elastomer, whereby a reaction mixture is formed, said elastomer being sufficient in amount to make the viscosity of said reaction mixture between about 300 and about 1000 centipoises;
(b) immediately injecting said reaction mixture into a mold where polymerization occurs, forming a thermoset dicyclopentadiene homopolymer containing elastomer.

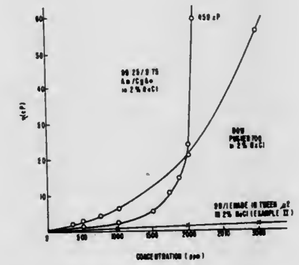
4,520,182

ACRYLAMIDE-ALKYLACRYLAMIDE COPOLYMERS

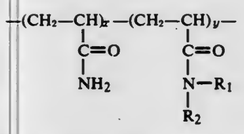
S. Richard Turner, Rochester, N.Y.; Donald B. Siano, Fanwood, and Jan Bock, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 454,239, Dec. 29, 1982, abandoned, and a continuation-in-part of Ser. No. 454,290, Dec. 29, 1982, abandoned. This application Aug. 29, 1983, Ser. No. 526,991
Int. Cl.³ C08F *20/56*
U.S. Cl. 526—307.2 **10 Claims**





1. A copolymer having the formula:



wherein R_1 having about 6 to 22 carbon atoms, is an alkyl group, straight chained or branched or cycloalkyl group, R_2 is the same or different alkyl group as R_1 or hydrogen, x is about 90.0 to about 99.9 mole %, and y is about 10 to about 0.1 mole %, wherein the intrinsic viscosity of said copolymer is about 1 to about 10 dl/g.

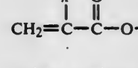
4,520,183

PROCESS FOR MAKING RANDOM ETHYLENE/ALKYL ACRYLATE COPOLYMERS

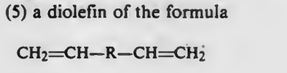
Narayanan S. Subramanian, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1982, Ser. No. 452,283
Int. Cl.³ C08F *210/02*
U.S. Cl. 526—318 **20 Claims**

11. An elastomeric copolymer derived from the addition polymerization in the presence of free radical initiator of component monomers consisting essentially of:
(a) 40–62 weight percent of a monomer selected from the group consisting of methyl acrylate and ethyl acrylate,
(b) 0.1–10.0 weight percent of a monoalkyl ester of 1,4-butenedioic acid, where the alkyl group has 1–6 carbon atoms,
(c) 0.1–5.0 weight percent of a polyfunctional monomer selected from the group consisting of:
(1) allyl and vinyl esters of C_2–C_{20} alkanoic, C_4–C_{20} alkenoic, C_8–C_{14} aromatic and C_9–C_{20} aralkanoic polycarboxylic acids, where the polycarboxylic acid is an acid having at least two —COOH groups, provided that at least two of the —COOH groups have been esterified,
(2) N-allyl and N-vinyl amides of C_2–C_{20} alkanoic, C_4–C_{20} alkenoic, C_8–C_{14} aromatic and C_9–C_{20} aralkanoic polycarboxylic acids, where the polycarboxylic acid is an acid having at least two —COOH groups, provided that at least two of the —COOH groups have been amidated,
(3) acrylic esters and acrylic amides of C_2–C_{20} alkyl, aryl and arylalkyl polyols and polyamines, where the polyols are alcohols having at least two hydroxyl groups and the polyamines are amines having at least two amine groups, provided that at least two of the hydroxyl groups have been esterified and at least two of the amine groups have been amidated with an acrylic group of the formula



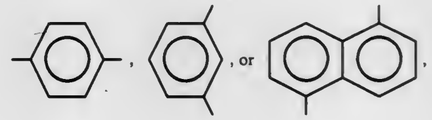
where X is H, C_1–C_{10} alkyl, C_6–C_{10} aryl, C_6–C_{10} aralkyl, F, Cl, or Br,
(4) an olefin-acrylate of the formula



where x=H or CH_3, n=0 or 1, R is H or C_6–C_{20} aryl, and
(5) a diolefin of the formula

$$CH_2=CH-R-CH=CH_2$$

where R is



(d) 23.0–59.8 weight percent of ethylene.

4,520,184

POLYETHERENE-POLYACRYLIC POLYMERIZABLE COMPOSITIONS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 3, 1983, Ser. No. 500,700
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ C08F *220/32*
U.S. Cl. 526—320 **31 Claims**

1. A composition of matter comprising:
A. a polyetherene represented by the structure:

$$R_1\text{-}(E)_m\text{-}R_2]_n$$

where R_1 is a radical of molecular weight less than about 2000 obtained by removal of active hydrogen from an active hydrogen compound selected from the group consisting of water, alcohols, thiols, carboxylic acids, carboxylic amides and amines, where the functionality of R_1 is n and is in the range of 1 to 10, where the E units are represented by the structure

$$CH_2\text{—}CH\text{—}O$$
$$|$$
$$CH_2\text{—}O\text{—}CH_2\text{—}CH{=}CH_2$$

and are derived from allyl glycidyl ether, where R_2 is selected from the group consisting of hydrogen and C_2 to C_{10} organic radicals, where the product of m and n is at least 4 and not more than about 60 and where the allyloxy equivalent of the polyetherene is less than about 250;

B. a non-air-curing polyacrylyl monomer represented by the structure:

$$(CH_2{=}C\text{—}C)_p\text{—}R_4$$
$$|\quad\quad\|$$
$$R_3\quad O$$

where R_3 is selected from the group consisting of H, methyl or ethyl, p is an integer in the range of 2 to 10, and R_4 is the residue of a polyol, a polycarboxylic acid, a polyamine, a polyepoxide or a polyisocyanate of molecular weight less than about 2000, containing a hydrocarbon, polyester, polyamide, polyether or polyurethane backbone; and

C. a metallic drier: wherein the weight ratio of polyetherene to non-air-curing polyacrylyl monomer is in the range of from 1:19 to 1:1.

4,520,185

ALKANOLAMINE LINKED EPOXY-URETHANES

Douglas J. Tosh, Brantford, Canada, assignor to Sternson Limited, Brantford, Canada

Filed Aug. 31, 1984, Ser. No. 646,702
Int. Cl.³ C08G *18/32*
U.S. Cl. 528—65 **16 Claims**

1. An epoxy-urethane curable with an epoxy curing agent, comprising the reaction product of

(a) an epoxy-alkanolamine adduct prepared by reacting

(i) a liquid epoxy resin comprising an epoxy compound having two or more reactive epoxy groups, with

(ii) an N-substituted ethanolamine selected from the group consisting of isopropyl ethanolamine and teritiary butyl ethanolamine

in a ratio providing an excess of epoxide equivalents from the epoxy resin over amine equivalents of the ethanolamine, and

(b) a urethane prepolymer of the kind formed by the condensation of low molecular weight, hydroxyl-terminated alkyl polyesters or polyethers with an aromatic di-isocyanate to produce a liquid, isocyanate-terminated polyurethane prepolymer,

the relative quantities of said urethane prepolymer and of said epoxy-alkanolamine adduct reacted together being such that the number of hydroxyl equivalenets from said ethanolamine is approximately equal to or greater than the number of isocyanate equivalents from said urethane prepolymer, so that substantially no residual isocyanate functionality remains in the reaction product.

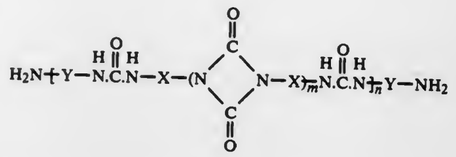
4,520,186

POLYURETHANES AND POLYURETHANE-UREAS BASED ON AROMATIC URET DIONE DIAMINE ADDUCTS

Heinrich Hess; Gerhard Grögler, both of Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,245
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232736
Int. Cl.³ C08G *18/32, 18/77;* C07D *1/00*
U.S. Cl. 528—73 **13 Claims**

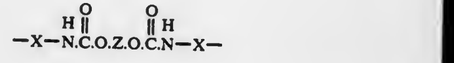
1. An aromatic uret dione diurea diamine corresponding to the formula



in which

X represents an aromatic radical having a molecular weight of from 76 to 499,

Y represents an aromatic radical having a molecular weight of from 76 to 10,000 or a radical derived from a high molecular weight diamine corresponding to the formula



in which

Z represents a radical derived from a dihydroxy compound HO—Z—OH,

provided that when Y represents a group derived from a diamine having a molecular weight ≧500 X does not represent a 2,4-diphenyl sulfide radical,

m represents a number of from 1 to 10 and

n represents a number of from 1 to 3.

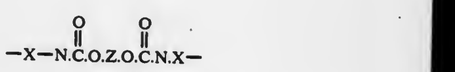
9. A process for the production of urea-group-containing high molecular weight polyaddition products comprising reacting

(a) the aromatic uret dione diurea diamine of claim 1 with

(b) an NCO-prepolymer of polyol and excess polyisocyanate and/or a polyisocyanate

at a temperature greater than 100° C. in quantities such that the equivalent ratio of NCO-groups to the sum of OH- and NH_2-groups is from 0.9 to 1.4.

13. A self-crosslinking one component system at temperatures above 140° C. comprising the reaction product of a (i) long chain diamine $H_2N\text{—}Y\text{—}NH_2$ having a molecular weight of at least 500 where Y represents a radical corresponding to the formula



in which

Z represents a radical derived from a dihydroxy compound HO—Z—OH

with (ii) a uret dione diisocyanate.

4,520,187

POLYCARBONATES AND POLYESTER CARBONATES EXHIBITING IMPROVED HEAT RESISTANCE

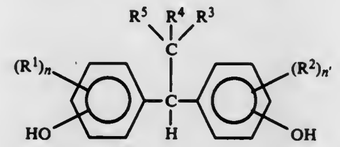
Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 17, 1982, Ser. No. 451,109
Int. Cl.³ C08G *63/62, 63/64*
U.S. Cl. 528—176 **40 Claims**

1. Thermoplastic polymeric compositions exhibiting improved heat resistance comprised of (i) at least one thermoplastic polymer containing the reaction products of:

(a) a carbonate precursor; and

(b) at least one dihydric phenol selected from dihydric phenols represented by the general formula



wherein

each R^1 is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals,

each R^2 is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals,

R^3, R^4 and R^5 are independently selected from monovalent hydrocarbon radicals, and

n and n' are independently selected from whole numbers having a value of from 0 to 4 inclusive.

4,520,188

POLYESTER-FORMING COMPOSITION FOR COIL COATINGS, IMPROVED POLYESTER RESIN AND METHOD OF MAKING SAME

Edward J. Holzrichter, Redlands, and Marc L. Smith, Highland, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Sep. 13, 1984, Ser. No. 650,156
Int. Cl.³ C08G *63/04, 63/22*
U.S. Cl. 528—274 **13 Claims**

1. An improved polyester-forming composition for coil coatings, said composition comprising:

about 43–31 mole % of neopentyl glycol;

about 10–21 mole % of 1,4-cyclohexanedimethanol;

about 10–21 mole % of aliphatic dicarboxylic acid selected from the group consisting of adipic acid, sebacic acid, azelaic acid, dodecanedioic acid and mixtures thereof;

about 22–16 mole % of aromatic acid selected from the group consisting of orthophthalic acid, isophthalic acid and mixtures thereof;

about 15–11 mole % of terephthalic acid; and, sufficient condensation catalyst to effect substantial esterification and polymerization of said composition at elevated temperature.

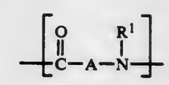
4,520,189

OPTICAL DEVICE INCLUDING BIREFRINGENT AROMATIC AMINO CARBOXYLIC ACID POLYMER

Howard G. Rogers, Weston; Ruth C. Bilofsky, Lexington, both of Mass.; Russell A. Gaudiana, Merrimack, N.H., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

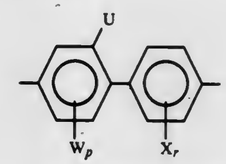
Division of Ser. No. 238,054, Mar. 2, 1981, Pat. No. 4,446,305. This application Apr. 18, 1984, Ser. No. 601,619
Int. Cl.³ C08G *69/12*
U.S. Cl. 528—331 **11 Claims**

1. An optical device including a transparent molecularly oriented highly birefringent polymer, said highly birefringent polymer comprising repeating molecular units exhibiting high electron density substantially cylindrically distributed about the long axes of the polymer and the repeating units thereof, said highly birefringent polymer being substantially optically uniaxial exhibiting only two indices of refraction, said molecularly oriented highly birefringent polymer comprising recurring units of the formula



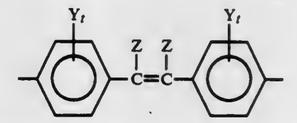
wherein R^1 is hydrogen, alkyl, aryl, alkaryl or aralkyl, and A is a divalent radical selected from the group consisting of

(1) a radical



where U is a substituent other than hydrogen, each W is hydrogen or a substituent other than hydrogen, p is an integer from 1 to 3, each X is hydrogen or a substituent other than hydrogen and r is an integer from 1 to 4, said U, W_p and X_r substitution being sufficient to provide said radical with a non-coplanar molecular configuration; and

(2) a radical



where each of Y and Z is hydrogen or a substituent other than hydrogen and each t is an integer from 1 to 4, with the proviso that when each said Z is hydrogen, at least one said Y substituent is a substituent other than hydrogen positioned on the corresponding nucleus ortho with respect to the



moiety of said radical, said Z and Y_t substitution being sufficient to provide said radical with a non-coplanar molecular configuration.

4,520,190

PREPARATION OF POLYAMIDE FROM DINITRILE, DIAMINE AND WATER WITH P CATALYST

Gerald P. Coffey, Lyndhurst; Benedict S. Curatolo, Maple Heights, and Rimvydas L. Cepulis, Euclid, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 439,975, Nov. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 370,228, Apr. 20, 1982, abandoned, which is a continuation of Ser. No. 335,905, Dec. 30, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,479
Int. Cl.³ C08G *69/00*
U.S. Cl. 528—336 **18 Claims**

1. A process for producing a fiber forming polyamide comprising contacting a dinitrile, water and a diamine wherein

(A) the diamine is added gradually to the nitrile during the course of polymerization;
(B) the dinitrile, water and diamine are contacted with an oxygenated phosphorus compound catalyst; and
(C) no ammonia is added to the reactants and the only ammonia which is present during polymerization is that which is generated in situ.

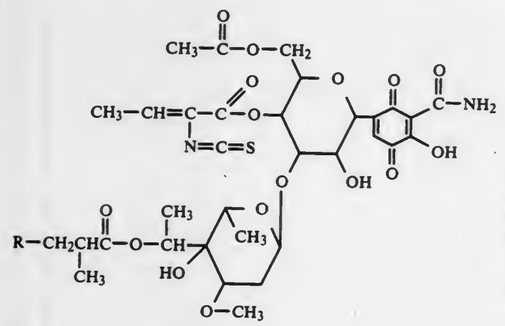
4,520,191

PAULOMYCIN DERIVATIVES

Paul F. Wiley, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 8, 1983, Ser. No. 549,939
Int. Cl.³ C07H *15/22*
U.S. Cl. 536—17.9 **4 Claims**

1. A compound of the formula



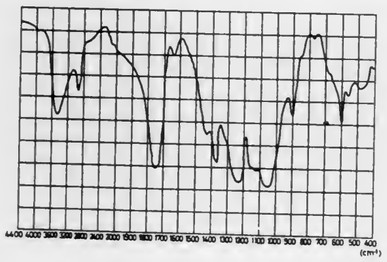
wherein R is H or CH_3.

4,520,192

CARBOXYALKYL ACETYL CELLULOSES, THEIR SALTS AND A PROCESS FOR THE PREPARATION OF THEM

Hajime Namikoshi, Himeji, Japan, assignor to Daicel Chemical Industries Ltd., Osaka, Japan

Filed Jul. 3, 1984, Ser. No. 627,418
Int. Cl.³ C08B *13/00*
U.S. Cl. 536—66 **7 Claims**



1. A process for the preparation of carboxyalkyl acetyl cellulose having a degree of substitution (DS) by the carboxyalkyl group per anhydroglucose unit of 0.2–2.5 and a degree of substitution (DS) by the acetyl group per anhydroglucose unit of 0.5–2.8 and a salt thereof, the alkyl in the carboxyalkyl group being a C_{1-3} alkyl, comprising converting an alkali metal salt of a carboxyalkyl cellulose having a degree of substitution by the carboxyalkyl group per anhydroglucose unit of 0.2–2.5 into its acid-form by treatment with an aqueous acid solution, and then acetylating the acid-form of the carboxyalkyl cellulose with acetic anhydride in the presence of a catalyst at 40°–60° C.

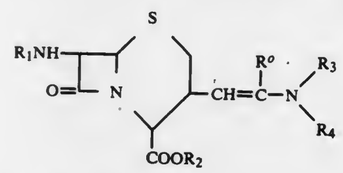
4,520,193

CEPHALOSPORIN DERIVATIVES

Christian Berger, Le Plessis Robinson; Daniel Farge, Thiais; Claude Moutonnier, Le Plessis Robinson, and Gerard Wolff, Thiais, all of France, assignors to Rhone-Poulenc Industries, Paris, France

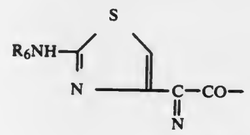
Filed Nov. 19, 1981, Ser. No. 322,961
Claims priority, application France, Nov. 20, 1980, 80 24638
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.³ C07D *501/38*; A61K *31/545*
U.S. Cl. 544—016 **13 Claims**

1. A cephalosporin derivative of the formula:

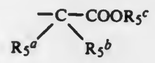


which is in the form of a bicyclooct-2-ene or bicyclooct-3-ene, in which formula the symbols R_3 and R_4, which are identical or different, represent alkyl (unsubstituted or substituted by alkoxy or dialkylamino) or phenyl, or together form, with the nitrogen atom to which they are attached, a 5- or 6-membered saturated heterocyclic ring or a said ring having another hetero-atom chosen from nitrogen, oxygen and sulphur, and unsubstituted or substituted by alkyl,

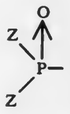
(a) the symbol R_1 represents a radical of the formula:



[[in which R_5 is hydrogen, alkyl, vinyl or cyanomethyl, an oxime-protecting group chosen from trityl, tetrahydropyranyl and 2-methoxy-prop-2-yl or a radical of the formula:



(in which $R^a{}_5$ and $R^b{}_5$, which are identical or different, are hydrogen or alkyl, or together form an alkylene having 2 or 3 carbon atoms, and $R^c{}_5$ is an acid-protecting radical chosen from methoxymethyl, t-butyl, benzhydryl, benzyl, nitrobenzyl or p-methoxybenzyl) and R_6 is an amino-protecting radical chosen from t-butoxycarbonyl, trityl, benzyl, dibenzyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, p-methoxybenzyloxycarbonyl or a radical of the formula:



in which the symbols Z represent phenyl or radicals —OZ′, in which Z′ represents an alkyl, 2,2,2-trichloroethyl, phenyl or benzyl (it being possible for the said phenyl or benzyl to be substituted by an alkyl, alkoxy or

nitro), or alternatively the symbols Z′ of the two substituents Z together form an alkylene having 2 or 3 carbon atoms]], benzhydryl or trityl, an acyl radical of the formula:

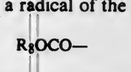
R_7CO—

[[in which R_7 is alkyl substituted by phenyl or phenoxy]], a radical of the formula:

R_8OCO—

[[in which R_8 is an unsubstituted branched alkyl or a linear or branched alkyl carrying one or more substituents [chosen from amongst phenyl and phenyl substituted by alkoxy, nitro or phenyl] or vinyl, or a radical $Z_2P(O)$— as hereinbefore defined, or alternatively R_1NH is replaced by methyleneamino in which the methylene is substituted by a dialkylamino or aryl group (which is itself unsubstituted or substituted by one or more methoxy or nitro groups), the symbol R_2 represents an acid-protecting radical chosen from methoxymethyl, t-butyl, benzhydryl, benzyl, nitrobenzyl or p-methoxybenzyl and the symbol R° represents a radical of a first group consisting of a phenyl unsubstituted or substituted by an alkyl, trifluoromethyl, dialkylaminomethyl, alkoxy, alkylthio or dialkylamino or by a halogen atom selected from fluorine or chlorine, or a 5- or 6-membered heterocyclic radical having a single hetero-atom, selected from pyrid-2-yl or pyrid-3-yl, thien-2-yl or thien-3-yl or furan-2-yl or furan-3-yl, and which is unsubstituted or substituted by alkyl, alkoxy or dimethylaminomethyl, or a radical of a second group designated as a radical $—CHR_9R_{10}$ consisting of an alkyl having 1 to 5 carbon atoms, benzyl substituted or substituted by a halogen atom or an alkyl, alkoxy, alkylthio, dialkylamino or trifluoromethyl, a methyl substituted by a 5- or 6-membered aromatic heterocyclic ring selected from pyrid-2-yl or pyrid-3-yl, thien-2-yl or thien-3-yl or furan-2-yl or furan-3-yl, a cycloalkyl having 3 to 6 ring members, or a radical $—CHR_9R_{10}$ in which R_9 and R_{10}, together with the carbon atom to which they are attached, form a 5- or 6-membered heterocyclic ring having an oxygen or sulphur atom, or alternatively

(b) the symbol R_1 represents trityl or silyl, alkoxycarbonyl, the alkyl part of which has 1 to 5 carbon atoms, and which is unsubstituted or substituted by one or more phenyls or furyls, 2-(biphenyl-4-yl)-propoxycarbonyl, or a radical of the formula:



in which R_a is an unsubstituted or substituted phenyl, thienyl, furyl, cyclohexadienyl or cyclohexenyl, R_b is a hydrogen atom and R_c is a hydrogen atom, an optionally protected hydroxyl, a protected amino or an optionally protected sulpho, or R_a is an unsubstituted or substituted phenoxy or a pyridylthio and R_b and R_c are hydrogen atoms, or alternatively R_a is phenyl, thienyl or furyl and R_b and R_c together form an alkoxyimino, cycloalkoxyimino or phenylalkoxyimino in the syn form, the symbol R_2 represents an acid-protective radical chosen from a phenyl group polysubstituted by aliphatic or aromatic radicals, an aromatic heterocyclic group having an oxygen or sulphur ring member, a t-alkyl, unsubstituted or substituted diphenylmethyl, alkoxyphenylalkyl, dimethoxybenzyl, nitrobenzyl, 4,5-dimethoxy-2-nitrobenzyl or furfuryl group, or a 2-oxa(or 2-thia)-cycloalkyl or 2-oxa(or 2-thia)-cycloalkenyl group having 5 to 7 ring members, or a nitrophenyl or 2,4-dinitrophenyl group, or silyl substituted by alkoxy, cycloalkyl, phenyl or phenylalkyl, and the symbol R° represents an alkyl (having 1 to 7 carbon atoms), a cycloalkyl (having 3 to 7 carbon atoms), a cycloalkyl-alkyl (having 4 to 7 carbon atoms), a phenyl or naphthyl radical, a phenylalkyl radical or a 5- or 6-membered heterocyclic radical having 1 to 4 hetero-atoms chosen from amongst nitrogen, oxygen or sulphur, or 5- or 6-membered heterocyclylalkyl radical in which the heterocyclic moiety has 1 to 4 heteroatoms chosen from amongst nitrogen, oxygen or sulphur, it being possible for these radicals R° to be unsubstituted or substituted by alkyl or alkoxy, and it being understood that (unless otherwise mentioned) the alkyl or acyl portions or radicals are linear or branched and have 1 to 4 carbon atoms.

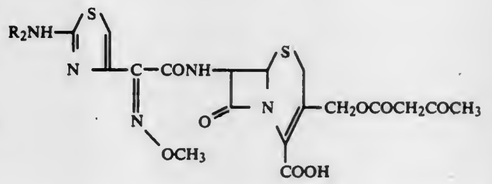
4,520,194

CEPHALOSPORINS

Michihiko Ochiai, Suita; Akira Morimoto, Ikeda, and Yoshihiro Matsushita, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 787,258, Apr. 13, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,423
Claims priority, application Japan, Apr. 14, 1976, 51-42885; Sep. 8, 1976, 51-108102
Int. Cl.³ C07D *501/34*
U.S. Cl. 544—22 **6 Claims**

1. A member selected from the group consisting of a 7-[2-(2-aminothiazol-4-yl)-2-(syn)-methoxyiminoacetamido]caphalosporin compound of the formula:



wherein R_2NH is amino or amino protected by a conventional protecting group, and a pharmaceutically acceptable salt or ester thereof.

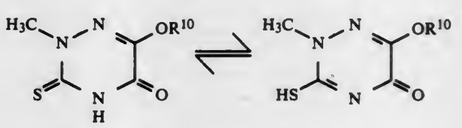
4,520,195

5-OXO-AS-TRIAZINES

Roland Reiner, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 306,053, Sep. 28, 1981, Pat. No. 4,412,070. This application Aug. 1, 1983, Ser. No. 519,453
Claims priority, application Switzerland, Oct. 6, 1980, 7450/80
Int. Cl.³ C07D *253/06*
U.S. Cl. 544—182 **2 Claims**

1. A compound of the tautomeric formulae



wherein R^{10} with the oxygen atom is selected from the group consisting of a lower alkanoyloxyalky, lower alkoxycarbonyloxyalkyl, lactonyl, lower alkoxymethyl or lower alkanoylaminomethyl ether group.

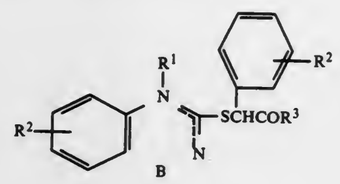
4,520,196

α-MERCAPTOPHENYLACETIC ACID DERIVATIVES OF IMIDAZOLE-CONTAINING COMPOUNDS AND ANALOGUES THEREOF

Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 18, 1983, Ser. No. 524,479
Int. Cl.³ C07D *239/95, 235/28*
U.S. Cl. 544—285 **9 Claims**

1. A compound having the formula:



wherein

B represents a single bond or the moiety



R^1 is hydrogen, lower alkyl or phenyl;

R^2 is hydrogen, halo, nitro, amino, lower alkylamino, lower alkyl, trifluoromethyl or lower alkanoylamino;

R^3 is hydroxy, lower alkoxy, amino, lower alkylamino, lower alkanoylamino, amino(lower)alkylamino, or hydroxy(lower)alkylamino; the dotted lines represent either a single or a double bond;

with the proviso that when R^1 is hydrogen, the R^2 substituent on the benzofused moiety is other than hydrogen;

or a pharmaceutically acceptable salt thereof.

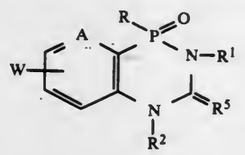
4,520,197

TETRAHYDROBENZODIAZAPHOSPHORINDIONES AND TETRAHYDROPYRIDODIAZAPHOSPHORINDIONES

Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 379,584, May 19, 1982, Pat. No. 4,433,129, and a continuation-in-part of Ser. No. 296,031, Aug. 25, 1981, abandoned. This application Feb. 1, 1984, Ser. No. 575,740
Int. Cl.³ C07F *9/58, 9/36*
U.S. Cl. 546—21 **7 Claims**

1. A compound of the following formula (A):



(A)

wherein,

A is CH or N;

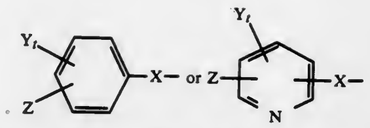
R is lower alkyl or phenyl;

R^1 is hydrogen, lower alkyl, lower cycloalkyl, phenyl or substituted phenyl;

R^2 is hydrogen, lower alkyl, lower haloalkyl, lower cyanoalkyl or lower alkoxyalkyl;

R^5 is oxygen or sulfur; and

W is hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, halogen or the group



where X is oxygen, sulfur, sulfinyl or sulfonyl; t is zero, one or two; and Y and Z is independently selected from hydrogen, lower alkyl, lower alkoxy, lower haloalkyl, lower haloalkoxy or halogen.

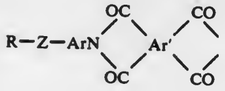
4,520,198

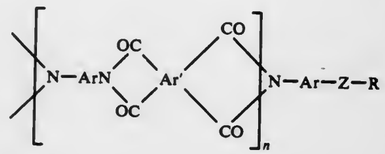
VINYLACETYLENE-TERMINATED POLYIMIDE DERIVATIVES

Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Division of Ser. No. 353,871, Mar. 2, 1982, Pat. No. 4,435,323, and a continuation-in-part of Ser. No. 199,616, Oct. 22, 1980, abandoned. This application Dec. 27, 1983, Ser. No. 565,393
Int. Cl.³ C07D *209/34, 471/00;* **C08F** *22/40*
U.S. Cl. 546—66 **24 Claims**

1. The Diels-Alder addition product of a polyimide of the formula:





wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthlaene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

n is zero or an integer having a value of one to 20;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

Z is the structure —CH=CH—C≡C— or —C≡C—CH=CH—;

and a dienophile of the formula:

$$C_6H_5—C≡C—C≡C—C_6H_5$$

or

$$Ar—CH=CH—C≡C—Ar$$

wherein the Ar in the dienophile is a monovalent aromatic radical, the addition being between the enyne groups of the said polyimide, between the enyne groups of the polyimide and the —C≡C—C≡C or the —CH=CH—C≡C— of the dienophile, and to a minor extent between the said enyne of the polyimide and any other unsaturation in an R group.

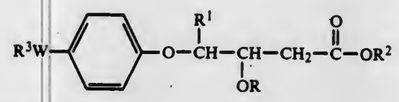
4,520,199

ALKOXY SUBSTITUTED PHENOXY ALKANOIC ACID ESTERS

Gustave K. Kohn, Palo Alto, and Joe T. Bamberg, Redwood City, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Aug. 13, 1982, Ser. No. 407,685
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.³ C07D *213/64;* **A01N** *43/40*
U.S. Cl. 546—302 **6 Claims**

1. A compound of the following formula (A):



(A)

wherein,

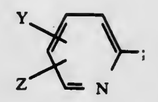
R is lower alkyl;

R^1 is methyl;

R^2 is lower alkyl, lower alkenyl or lower alkynyl;

W is oxygen; and

R^3 is



in which,

each of Y and Z is independently selected from hydrogen, trifluoromethyl, bromo, chloro, fluoro and nitro.

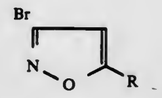
4,520,200

ISOXAZOLE DERIVATIVES

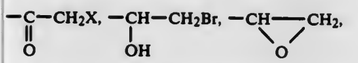
Davide Della Bella, and Dario Chiarino, both of Milan, Italy, assignors to Zambon S.p.A., Milan, Italy

Division of Ser. No. 104,740, Dec. 18, 1979, Pat. No. 4,276,299. This application Aug. 22, 1980, Ser. No. 180,422
Claims priority, application Italy, Dec. 22, 1978, 31198 A/78
Int. Cl.³ C07D *261/10*
U.S. Cl. 548—247 **5 Claims**

1. A compound having the formula:



wherein R is selected from the group consisting of



and X is selected from the group consisting of hydrogen and bromine.

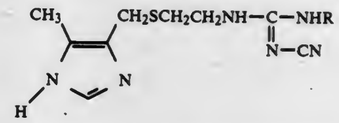
4,520,201

SYNTHESIS OF CIMETIDINE AND ANALOGS THEREOF

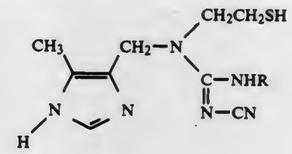
Michitaro Fujimoto, Tondabayashi; Hironori Ohde, Habikino; Hirokazu Seki, Nara; Shuhei Takamatsu, Sakai, and Takeshi Sakai, Nara, all of Japan, assignors to Fujimoto Pharmaceutical Corp., Japan

Filed Jun. 27, 1983, Ser. No. 508,182
Claims priority, application Japan, Aug. 19, 1982, 57-143568
Int. Cl.³ C07D *233/64*
U.S. Cl. 548—342 **10 Claims**

1. A process for producing a cyanoguanidine derivative of the formula:



wherein R is lower alkyl of 1–5 carbon atoms which comprises heating an alkali metal salt of a compound of the formula:



at between 40° and 100° C.

4,520,202

PROCESS FOR PREPARING 4,4′-DIBENZOYLAMINODIANTHRIMIDE CARBAZOLE

Josef Stawitz, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 29, 1982, Ser. No. 445,292
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148695
Int. Cl.³ C07D *209/80*
U.S. Cl. 548—416 **8 Claims**

1. Process for preparing 4,4′-dibenzoylaminoanthrimidecarbazole, characterised in that 4,4′-diaminodianthrimide is benzoylated and carbazolated, both steps being carried out in one-vessel fashion and the 4,4′-diaminodianthrimide having been obtained by oxidising a mixture of 1-aminoanthraquinone and 1,4-diaminoanthraquinone in a molar ratio of 0.9:1 to 1.4:1 in 40 to 60% strength H_2SO_4 and then reducing.

4,520,203

RESOLUTION OF (±)-1,8-DIETHYL-1,3,4,9-TETRAHYDROPYRANO[3,4-B]INDOLE-1-ACETIC ACID USING CINCHONINE

Nedumparambil A. Abraham, Doliard-des-Ormeaux, and Christopher A. Demerson, Montreal, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,987
Int. Cl.³ C07D *493/04*
U.S. Cl. 548—432 **3 Claims**

1. A process for preparing (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid, which comprises dissolving one part by weight of (±)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid and about 1.1 to 1.3 parts by weight of cinchonine in about 40 to 60 parts by weight of methanol at about 50° to 65° C.; cooling the solution to crystallize the corresponding salt of (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid with cinchonine; dissolving the latter salt in a mixture of water-immiscible organic

solvent and an aqueous mineral acid; separating the water-immiscible organic solvent; and isolating substantially pure (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid from the water-immiscible organic solvent.

4,520,204

METHOD FOR PREPARATION OF AROMATIC ETHER IMIDES AND FOR CATALYST RECOVERY THEREIN

Thomas L. Evans, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,461
Int. Cl.³ C07D *209/48*
U.S. Cl. 548—461 **13 Claims**

1. In a method for preparing an aromatic ether imide by the nucleophilic displacement reaction of at east one substituted phthalimide with at least one alkali metal salt of a hydroxyaromatic compound in an organic diluent in the presence of a phase transfer catalyst followed by aqueous extraction of the reaction mixture, the improvement which comprises: effecting said extraction with an aqueous phase containing a substantial proportion of inorganic salt dissolved therein, and subsequently recovering a substantial amount of said phase transfer catalyst from said aqueous phase by extraction with o-dichlorobenzene.

4,520,205

CHEMICAL RESOLUTION OF (+)-2,3-DIHYDROINDOLE-2-CARBOXYLIC ACID

George C. Buzby, Jr., Blue Bell, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 392,916, Jun. 28, 1982, abandoned.
This application Feb. 10, 1984, Ser. No. 578,320
Int. Cl.³ C07D *209/12*
U.S. Cl. 548—491 **4 Claims**

1. A process for separating the optical enantiomers of (+)-2,3-dihydroindole-2-carboxylic acid which comprises:

(a) combining the (+)-2,3-dihydroindole-2-carboxylic acid with (+) or (−)-ephedrine as the resolving agent in a resolution solvent;

(b) crystallizing out and isolating from said solution the (+)-ephedrine (+)-acid salt or the (−)-ephedrine (−)-acid salt; and

(c) regenerating the (+) or (−)-acid from the crystallized salt.

4,520,206

PROCESS FOR PREPARING MALEIMIDE

Stephen S. Hupp, Dublin, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 27, 1984, Ser. No. 583,924
Int. Cl.³ C07D *207/267*
U.S. Cl. 548—548 **4 Claims**

1. A process for the preparation of maleimide comprising subjecting a mixture of succinimide, air and water to oxidative dehydrogenation at a temperature in the range of from 300° to 550° C. over a catalyst having the formula $Cu_aP_bV_xMo_yO_z$ wherein a is 0.002 to 0.2, b is 0.01 to 1, x is 0.01 to 1, y is 1.2, and z is the value corresponding to average valances of the elements in the oxidation states in which they exist in the catalyst.

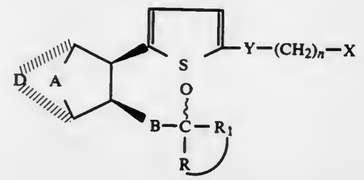
4,520,207

SYNTHESIS OF THIOPHENE-CONTAINING PROSTAGLANDIN ENDOPEROXIDE ANALOGS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

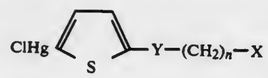
Filed Sep. 27, 1982, Ser. No. 423,789
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.
Int. Cl.³ C07D *333/24*
U.S. Cl. 549—79 **6 Claims**

1. A method of forming thiophene-containing prostaglandin endoperoxide analogs of the formula:

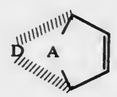


wherein n equals a whole integer of from 0 to 7, X is carboxylic acid, or C_1–C_8 ester, alcohol, ether or amide groups; Y is ethylene or cis or trans vinylene; A is methylene, ethylene, oxy, imino, or lower alkyl, phenyl or aryl substituted imino; D is methylene, ethylene, vinylene, methyleneoxy, alkylidenedioxy, iminooxy, dithio, or azo; B is ethylene, cis and trans vinylene, and ethynylene; R and R_1 are hydrogen, lower alkyl and lower aryl or $(CH_2)_Z$ with Z being 2 to 5, and Q is hydroxy, methoxy, acetoxy or hydrogen, or Q and R_1 are oxa, said method comprising:

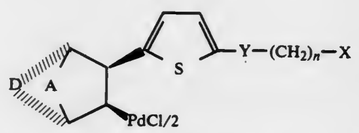
reacting an organomercurial of the formula:



wherein X and Y are as previously defined, with a bicyclic olefin of the formula:



wherein A and D are as previously defined, in the presence of a lithium palladium chloride complex to provide a bicyclic alkyl palladium compound of the formula:



wherein A, D, n and X are as previously defined; and displacing the palladium moiety of said alkyl palladium compound with a protected lithium acetylide to provide said thiophene-containing endoperoxide analog.

4,520,208

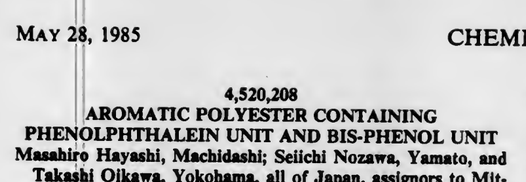
AROMATIC POLYESTER CONTAINING PHENOLPHTHALEIN UNIT AND BIS-PHENOL UNIT

Masahiro Hayashi, Machidashi; Seiichi Nozawa, Yamato, and Takashi Oikawa, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

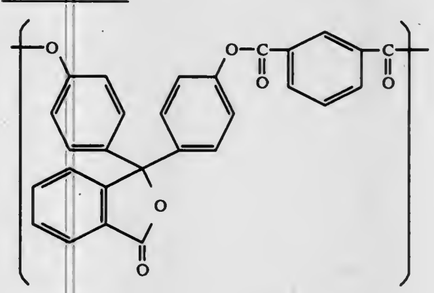
Filed Jun. 17, 1983, Ser. No. 505,494
Int. Cl.³ C07D *307/78*
U.S. Cl. 549—308 **6 Claims**

1. An aromatic polyester comprising two structural units represented by the following formulas A and B in a molar ratio of the structural unit A to the structural unit B being from 70:30 to 90:10 or four structural units represented by the following formulas A, B, C and D in a molar ratio of the total of the structural units A and C to the total of the structural units B and D being from 10:90 to B 95:5 and the total of the structural units C and D being less than 50 molar %, and having a reduced viscosity η sp/C of from 0.6 to 4 dl/g as measured at 30° C. at a concentration of 1.0 g/dl in a solution of a mixture comprising phenol and tetrachloroethane in a weight ratio of 1:1,

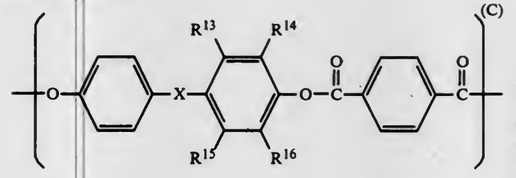
Structural unit A:



Structural unit B:

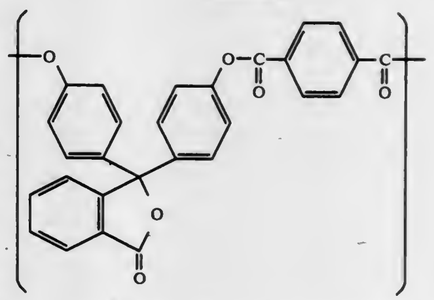


Structural unit C:



Structural unit D:

-continued



wherein the bisphenol component of structural units A and C is selected from the group consisting of 2,2-bis(4-hydroxyphenyl)propane, 2,2'-bis(4-hydroxy-3,5-dimethylphenyl)propane, 2,2'-bis(4-hydroxy-3,5-dichlorophenyl)propane, 2,2-bis(4-hydroxy-3-methylphenyl)propane, 2-2-bis(4-hydroxy-3-chlorophenyl)-propane, bis(4-hydroxyphenyl)-methane, bis(4-hydroxy-3,5-dimethylphenyl)-methane, bis(4-hydroxy-3,5-dichlorophenyl)-methane, bis(4-hydroxy-3,5-dibromophenyl)-methane, 1,1-bis(4-hydroxyphenyl)cyclohexane, 4,4'-dihydroxydiphenyl-bis(hydroxyphenyl)-ketone, bis(4-hydroxy-3,5-dimethylphenyl)-ketone, bis(4-hydroxy-3,5-dichlorophenyl)-ketone, bis(4-hydroxyphenyl)sulfide, bis(4-hydroxy-3-chlorophenyl)-sulfide, bis(4-hydroxy-3,5-dichlorophenyl)-sulfide, bis(4-hydroxyphenyl)-sulfone, and bis(4-hydroxy-3,5-dichlorophenyl)ether.

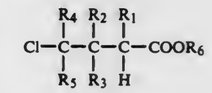
4,520,209

PROCESS FOR CYCLIZING UPSILON-CHLOROCARBOXYLIC ACIDS

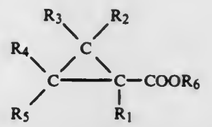
Werner Schwarze, Frankfurt; Axel Kleemann, Hanau; Hans Remmel, Freigericht, and Wolfgang Hohn, Gründau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 195,832, Oct. 10, 1980, abandoned.
This application Jun. 28, 1984, Ser. No. 625,188
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941211
Int. Cl.³ C07C *69/74*
U.S. Cl. 560—124 **10 Claims**

1. A process for the cyclization of a α-chlorocarboxylic acid ester of the formula



where each of R_1 to R_5 is hydrogen or the methyl group and R_6 is methyl or ethyl to cyclopropanecarboxylic acid ester of the formula



comprising carrying out the reaction employing as condensation agent sodium or potassium methylate and as solvent methyl alcohol or employing as condensation agent sodium or potassium ethylate and as solvent ethyl alcohol at a temperature above the boiling temperature of the alcohol used and between 90° and 200° C., said process including the steps of continuously feeding the reactants to a thin layer evaporator

and continuously evaporating them in the evaporator and continuously drawing off from the top of the evaporator the cyclopropanecarboxylic acid ester formed continuously drawing off at the lower end of the evaporator the salt formed.

4,520,210

PREPARATION OF CONCENTRATED AQUEOUS SOLUTIONS OF QUATERNIZATION PRODUCTS OF TERTIARY AMINOALKYL ESTERS OR TERTIARY AMINOALKYLAMIDES OF ACRYLIC OR METHACRYLIC ACID

Kurt Schneider, Bad Durkheim; Wilfried Heide, Erpolzheim; Juergen Hartmann, Ludwigshafen, and Heinrich Hartmann, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,409

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244274

Int. Cl.³ C07C *93/193, 103/70*

U.S. Cl. 560—222 **6 Claims**

1. A process for the preparation of a concentrated aqueous solution of a quaternization product of a tertiary aminoalkyl ester or tertiary aminoalkylamide of acrylic or methacrylic acid by reaction of the corresponding ester or amide with an alkylating agent in a water-soluble ketone as solvent, wherein, in order to isolate the quaternization product, an amount of water is added to the reaction mixture such that two phases form, and the lower aqueous phase, which contains the quaternization product in solution, is separated from the upper phase, which contains the ketone and residual alkylating agent.

4,520,211

PROCESS FOR THE CONTINUOUS PREPARATION OF POLYHYDRIC ALCOHOLS

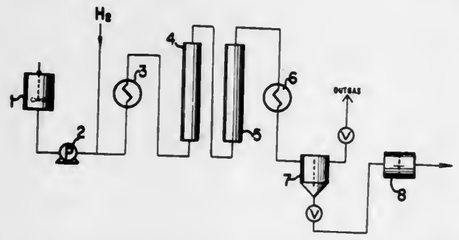
Herbert Lepper, Köln-Mühlheim, and Hartwig Schütt, Düsseldorf-Benrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 386,598, Jun. 9, 1982, abandoned. This application Feb. 24, 1984, Ser. No. 583,145

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144320

Int. Cl.³ C07C *31/26, 29/14*

U.S. Cl. 568—863 **11 Claims**



1. In a continuous process for preparing polyhydric alcohols by the hydrogenation of carbohydrates in the presence of ruthenium-containing catalysts at elevated temperature and elevated pressure, the improvement wherein the carbohydrates are in aqueous solution or in a colloidal solution or suspension in water and wherein the catalyst comprises a catalyst solid bed of ruthenium carrier catalyst in lumps.

4,520,212

PROCESS FOR PRODUCING MYRCENOL

Shigeru Mitsuhashi; Hidenori Kumobayashi, and Susumu Akutagawa, all of Kanagawa, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,810

Claims priority, application Japan, Dec. 27, 1982, 57-228479

Int. Cl.³ C07C *29/02, 33/02*

U.S. Cl. 568—875 **10 Claims**

1. A process for producing myrcenol which comprises:

(a) deaminating hydroxygeranyl dialkylamine or hydroxyneryl dialkylamine with a palladium-phosphine-cation complex catalyst of the formula:

$$(<\bullet : PdL)^{+}X^{-}$$

wherein

$<\bullet$ represents η-allyl,

L represents a tertiary phosphine, and

X represents a counter anion;

said deaminating being carried out at a temperature of about 100°-150° C. and under a reduced pressure of about 1-50 mmHg.

4,520,213

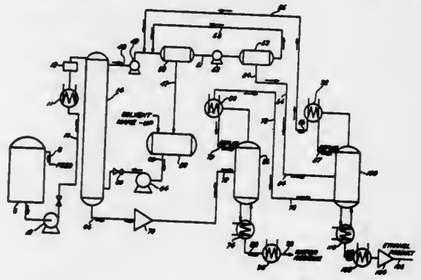
METHOD FOR SOLVENT RECOVERY IN SOLVENT SEPARATION OF ETHANOL FROM WATER

John G. Victor, Indian Head Park, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 374,402, May 3, 1982,. This application Jul. 14, 1983, Ser. No. 513,922

Int. Cl.³ C07C *29/76, 31/08, 29/86, 7/144*

U.S. Cl. 568—913 **5 Claims**



1. A process for the extraction of ethanol from a liquid mixture of ethanol and water comprising the steps of:

(a) combining the liquid mixture with liquid solvent selected from a group consisting of propylene (propene), allene (propadiene), methyl acetylene (propyne), and methyl allene (1, 2 - butadiene) at a pressure of less than 400 psia and a temperature of from 20° to 80° C. to produce two layers, one layer being solvent and ethanol-rich, and the other being water-rich;

(b) separating the ethanol and solvent-rich layer from the water-rich layer, thereby forming liquid streams, one stream being ethanol and solvent-rich, and the other being water-rich;

(c) pressurizing the ethanol and solvent-rich stream;

(d) separating the solvent from the ethanol by reverse osmosis means;

(e) maintaining said solvent at a pressure such that said solvent remains in a liquid state;

(f) recovering said solvent in a liquid state.

4,520,214

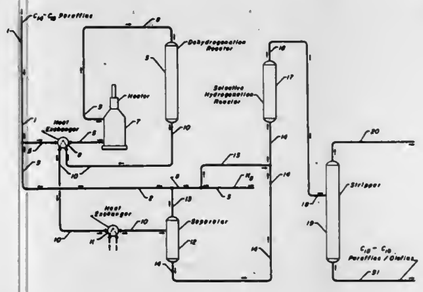
HIGH SELECTIVITY PROCESS FOR DEHYDROGENATION OF PARAFFINIC HYDROCARBONS

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 4, 1984, Ser. No. 596,867

Int. Cl.³ C07C *5/327, 5/00*

U.S. Cl. 585—254 **12 Claims**



1. In a process for the dehydrogenation of C_4-plus paraffinic hydrocarbons to monoolefinic hydrocarbons with a minimum presence of diolefinic hydrocarbons comprising the steps of:

(a) passing said C_4-plus paraffinic hydrocarbons and hydrogen as a feed stream through a dehydrogenation reaction zone maintained at dehydrogenation conditions to produce a vapor phase dehydrogenation reaction zone effluent stream comprising:

(i) hydrogen,

(ii) by-product light hydrocarbons having fewer than four carbon atoms per molecule,

(iii) undehydrogenated C_4-plus paraffinic hydrocarbons,

(iv) C_4-plus monoolefinic hydrocarbons, and

(v) C_4-plus diolefinic hydrocarbons;

(b) cooling said dehydrogenation reaction zone effluent stream to partially condense said dehydrogenation reaction zone effluent stream to a vapor-liquid phase stream;

(c) separating said cooled vapor-liquid phase dehydrogenation reaction zone effluent in a vapor-liquid separation zone maintained at vapor-liquid separation conditions into a separation zone overhead vapor stream comprising hydrogen and a separation zone bottoms liquid stream comprising:

(i) dissolved hydrogen,

(ii) by-product light hydrocarbons having fewer than four carbon atoms,

(iii) C_4-plus paraffinic hydrocarbons,

(iv) C_4-plus monoolefinic hydrocarbons, and

(v) C_4-plus diolefinic hydrocarbons;

the improvement which comprises passing said separation zone bottoms liquid stream and a controlled amount of a hydrogen feed stream to a selective hydrogenation reaction zone located downstream of said vapor-liquid separation zone and upstream of a stripping zone as hereinafter defined in step (d), said hydrogenation zone containing a selective hydrogenation catalyst and maintained at selective diolefin hydrogenation conversion conditions, said amount of hydrogen selected to be effective to selectively convert said diolefinic hydrocarbons to monoolefinic hydrocarbons and to produce a hydrogenation reaction zone effluent stream substantially free of C_4-plus diolefinic hydrocarbons; and

(d) stripping said hydrogenation reaction zone effluent stream in a stripping zone maintained at stripping conditions effective to result in the production of a stripping zone overhead stream containing substantially all hydrogen and light hydrocarbons present in said hydrogenation zone effluent and a stripping zone bottoms stream substantially free of diolefins and containing C_4-plus monoolefinic hydrocarbons as the product stream of said process.

4,520,215

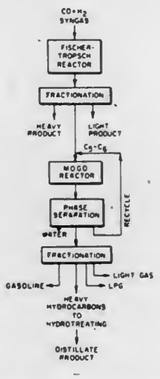
CATALYTIC CONVERSION OF OLEFINIC FISCHER-TROPSCH LIGHT OIL TO HEAVIER HYDROCARBONS

Hartley Owen, Belle Mead; Samuel A. Tabak, Wenonah, and Bernard S. Wright, East Windsor, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,642

Int. Cl.³ C07C *2/74*

U.S. Cl. 585—255 **9 Claims**



1. A continuous process for converting a feedstock mixture comprising a major amount of C_5-C_6 olefins and a minor amount of oxygenated hydrocarbons to higher hydrocarbons comprising distillate product comprising:

combining olefinic feedstock with a pressurized liquid recycle stream comprising a major fraction of C_5^+ olefins;

contacting the diluted feedstock with a shape selective medium pore oligomerization catalyst under reaction conditions at elevated temperature in a pressurized reactor zone to convert olefins to heavier hydrocarbons;

reducing pressure on effluent from the reactor zone to flash volatile components into a vapor phase and recover a heavy liquid stream from a phase separator;

condensing a major portion of the vapor phase by cooling under pressure to provide substantially all of a liquid olefinic recycle stream for combining with the feedstock, and recovering condensed water by-product from oxygenate conversion to hydrocarbons; and

fractionating the heavy liquid stream from the flashed reactor effluent to recover a heavy distillate hydrocarbon product stream.

2. The process of claim 1 comprising the further step of hydrotreating the distillate hydrocarbon product stream to obtain a distillate product having a viscosity of at least 1.8 centistokes, cetane number greater than 50, and bromine number less than 2.

4,520,216

PROCESS FOR THE PREPARATION OF SYNTHETIC HYDROCARBONS

Allan Skov, Lyngby, and Jens R. Rostrup-Nielsen, Virum, both of Denmark, assignors to Haldor Topsoe, Lyngby, Denmark

Filed May 10, 1984, Ser. No. 609,045

Claims priority, application Denmark, May 11, 1983, 2105/83

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—315 **3 Claims**

1. In a process for the preparation of synthetic hydrocarbons by catalytic conversion of a synthesis gas containing hydrogen and carbon oxides, comprising (a) converting in a first step a

feed stream containing the synthesis gas in the presence of a catalyst, at a pressure of 10–80 bar and a temperature of 200°–300° C. into an intermediate product containing methanol and/or dimethyl ether, and (b) converting in a second step the entire intermediate product from the first step, in the presence of a catalyst and at substantially the same pressure as in the first step, to form a raw product steam of hydrocarbons, cooling said raw product stream and thereby separating it into a a condensed product stream and a gaseous recycle stream, recycling said recycle stream without further separation to the inlet of the first step,

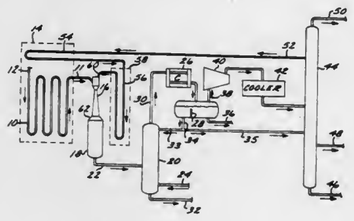
the improvement of carrying out the second conversion step at an inlet temperature of 300°–340° C., while supplying heat to obtain an outlet temperature of 410°–440° C., the difference between inlet temperature and outlet temperature being at the same time at least 30° C. higher than the temperature increase caused by the heat generated by the chemical reaction taking place in the second step.

4,520,217

PYROLYSIS OF NATURAL GAS LIQUIDS TO AROMATIC HYDROCARBONS USING A HOT RECYCLED GAS

Ronald G. Minet, Pasadena, Calif.; Mario Dente; Eliseo Ranzi, both of Milan, Italy, and Sunny H. K., Pasadena, Calif., assignors to Kinetics Technology International Corp., Monrovia, Calif.

Filed Dec. 10, 1981, Ser. No. 329,430
Int. Cl.³ C07C 2/54; C10G 35/02
U.S. Cl. 585—415 **4 Claims**



1. A process for the production of light aromatics from a feedstock comprising one or more of the natural gas liquid components which comprises:

(1) pyrolyzing said feedstock in a first pyrolysis zone from a temperature of about 620° C. to a temperature in excess of about 750° C. for a total residence time less than about one second;

(2) admixing the pyrolyzed feedstock with a pyrolyzed recycle stream comprising C_2–C_4 hydrocarbons such that the sensible heat of the admixture is sufficient to initiate the reaction of forming light aromatics;

(3) quenching the reacting admixture;

(4) separating said reacted admixture into a C_{8+} tar and an offgas;

(5) further separating the offgas into fractions comprising a light aromatic product and said recycle stream; and

(6) pyrolyzing said recycle stream in a second pyrolysis zone to form the pyrolyzed recycle stream of step (2).

4,520,218

PRODUCTION OF DIALKYLATED AROMATICS

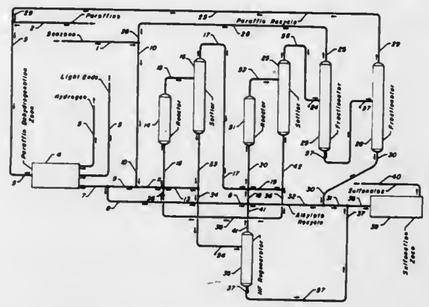
Roy C. Berg, Park Ridge; Thomas P. Malloy, Lake Zurich, and Bipin V. Vora, Elk Grove Village, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 23, 1984, Ser. No. 582,657
Int. Cl.³ C07C 2/64
U.S. Cl. 585—449 **16 Claims**

1. A process for the production of dialkylated aromatic hydrocarbons which comprises the steps of:

(a) alkylating a feed aromatic hydrocarbon with a first portion of a feed acyclic olefinic hydrocarbon in a first alkylation stage of a multi-stage alkylation zone maintained at alkylation-promoting conditions to produce a first alkylation stage effluent stream which comprises the feed aromatic hydrocarbon and a monoalkylated aromatic hydrocarbon;

(b) admixing the first alkylation stage effluent stream, a hereinafter characterized recycle stream and a second portion of the feed acyclic olefinic hydrocarbon to form a composite stream, said composite stream having a mole ratio of unalkylated aromatic hydrocarbon to monoalkylated aromatic hydrocarbon of less than about 1:1, and passing said composite stream into a subsequent second alkylation stage of the alkylation zone maintained at alkylation-promoting conditions to further alkylate said monoalkylated aromatic hydrocarbons and to produce a second alkylation stage effluent stream which comprises the feed



aromatic hydrocarbon, the monoalkylated hydrocarbon, and a dialkylated hydrocarbon;

(c) fractionating said alkylation zone effluent stream which comprises the feed aromatic hydrocarbon, the monoalkylated hydrocarbon, and the dialkylated hydrocarbon in a fractionation zone, to produce a first process stream which comprises the monoalkylated aromatic hydrocarbon and the aromatic dialkylated hydrocarbon; and,

(d) withdrawing a first portion of the first process stream as a product stream containing said dialkylated aromatic hydrocarbon and passing a second portion of the first process stream into the second alkylation stage of said alkylation zone as the previously referred to recycle stream to form said composite stream having a mole ratio of unalkylated feed aromatic hydrocarbon to monoalkylated aromatic hydrocarbon of less than about 1:1 to increase the production of dialkylated aromatic hydrocarbons.

4,520,219

PROCESS FOR THE PRODUCTION OF PSEUDOCUMENE OR DURENE

Haruhito Sato, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,261
Claims priority, application Japan, Sep. 24, 1982, 57-164999
Int. Cl.³ C07C 2/70
U.S. Cl. 585—462 **16 Claims**

1. A process for producing at least one of pseudocumene and durene comprising reacting xylene and a methylating agent in the presence of a catalyst, which is at least one crystalline silicate selected from the group consisting of crystalline borosilicate, fluorine-containing crystalline borosilicate, fluorine-containing crystalline aluminosilicate, and fluorine-containing crystalline boroaluminosilicate;

said fluorine-containing crystalline borosilicate being prepared by contacting crystalline borosilicate with at least one fluorine-containing compound selected from the group consisting of HF, NH_4F, NaF, BF_3, $CFCl_3$, CF_2Cl_2, CF_3Cl, $CHFCl_2$, CHF_2Cl, CHF_3, $CF_2ClCFCl_2$ and CF_2ClCF_2Cl,

said fluorine-containing crystalline aluminosilicate being prepared by contacting crystalline aluminosilicate with at least one fluorine-containing compound selected from the group consisting of HF, NH_4F, NaF, BF_3, $CFCl_3$, CF_2Cl_2, CF_3Cl, $CHFCl_2$, CHF_2Cl, CHF_3, $CF_2ClCFCl_2$ and CF_2ClCF_2Cl, and

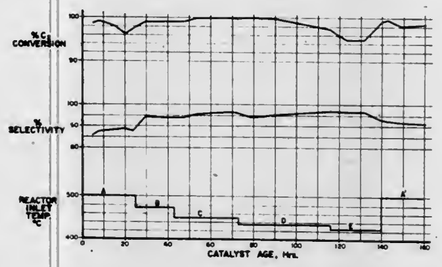
said fluorine-containing crystalline boroaluminosilicate being prepared by contacting crystalline boroaluminosilicate with at least one fluorine-containing compound selected from the group consisting of HF, NH_4F, NaF, BF_3, $CFCl_3$, CF_2Cl_2, CF_3Cl, $CHFCl_2$, CHF_2Cl, CHF_3, $CF_2ClCFCl_2$ and CF_2ClCF_2Cl.

4,520,220

ALKYLATION OF AROMATICS EMPLOYING SILICALITE CATALYSTS

James M. Watson; James R. Butler, and Cleve H. Forward, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,673
Int. Cl.³ C07C 2/68
U.S. Cl. 585—467 **11 Claims**



1. A process for alkylating aromatic substrates with alkylating agents comprising passing these reactants in the absence of steam cofeed through a reaction zone containing a crystalline silica polymorph silicalite catalyst under conversion conditions including reaction zone inlet temperatures of from about 350° C. to about 500° C.

4,520,221

PROCESS OF MAKING HIGH VI LUBES

Catherine S. Hsia Chen, Berkeley Heights, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 598,139
Int. Cl.³ C07C 2/02
U.S. Cl. 585—517 **12 Claims**

1. In a process for the production of high VI lubricating oils in high yields from lower olefins comprising contacting said olefins over a ZSM-5 type catalyst at elevated temperatures and pressures and obtaining a liquid product from which said lubricating oils are separated, wherein said catalyst is treated with a bulky alkylpyridine whereby its surface activity or acidity is removed or substantially eliminated.

4,520,222

POLYMERIZATION CATALYST AND DEODORIZING AGENT AND PROCESS OF USE

Robert E. Reusser; Joseph R. Kenton, and Elizabeth A. Todd, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 448,558, Dec. 10, 1982, Pat. No. 4,425,226.
This application Aug. 1, 1983, Ser. No. 518,857
Int. Cl.³ C07C 2/02
U.S. Cl. 585—526 **6 Claims**

1. A polymerization process comprising bringing an olefin-containing feed into contact with a catalyst under conditions sufficient to effect polymerization of at least a portion of the olefin content of the feed; wherein said catalyst comprises calcium silicate treated with at least one acid; wherein the treated calcium silicate is heated to a temperature of at least about 100° C. and contacted with nitrogen gas; and wherein said at least one acid is selected from sulfuric acid, phosphoric acid and nitric acid.

4,520,223

DEHYDROGENATION PROCESS

Roger N. McGinnis, Lewis E. Drehman, and Emory W. Pitzer, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 379,804, May 19, 1982, Pat. No. 4,431,750.
This application Oct. 11, 1983, Ser. No. 540,598
Int. Cl.³ C07C 5/333, 5/32, 5/02; C10G 35/04
U.S. Cl. 585—629 **28 Claims**

1. A process for dehydrogenation of alkanes which comprises contacting at least one alkane under dehydrogenation conditions with a supported platinum-group metal catalyst wherein said platinum-group metal is deposited substantially toward the surface of said support and prepared by the process which comprises:

(a) impregnating a porous support with an aqueous solution of a platinum-group metal sulfite and a rhenium compound wherein said platinum-group metal is at least one of platinum, iridium, osmium, palladium, rhodium, and ruthenium,

(b) drying the thus-prepared composite, and

(c) heating the thus-dried composite at a temperature sufficient to decompose said sulfite,

thereby producing said supported platinum-group metal catalyst.

4,520,224

THERMAL CRACKING METHOD FOR PRODUCING OLEFINS FROM HYDROCARBONS

Yoshihiko Kamimura; Toshiro Okamoto, both of Tokyo; Naoyuki Takahashi, Hiroshima; Hiroshi Makihara, Hiroshima, and Michio Oshima, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 9, 1983, Ser. No. 473,761
Claims priority, application Japan, Mar. 11, 1982, 57-38684
Int. Cl.³ C07C 4/02
U.S. Cl. 585—648 **4 Claims**

1. A thermal cracking method for producing olefins from hydrocarbons which comprises the steps of forming a mixed gas of methane and hydrogen in a methane/hydrogen mol ratio of 0.1 to 4 together with the hydrocarbons prior to the thermal cracking reaction; and reacting the mixture under conditions that the total concentration of said methane and hydrogen is at least 40 mol% at the outlet of a reactor, the partial pressure of said hydrogen is at least 3 bars, the temperature at the outlet of said reactor is from 800° to 1200° C., and the residence time in said reactor is from 5 to 300 milliseconds; and quenching the reaction product discharged through the outlet of said reactor.

4,520,225

PROCESS FOR THE PRETREATMENT OF LIGHT OLEFIN FRACTIONS

Claude Marty, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Nov. 14, 1983, Ser. No. 551,187
Claims priority, application France, Nov. 12, 1982, 82 19009
Int. Cl.³ C07C 3/18, 7/00
U.S. Cl. 585—832 **20 Claims**

1. A process for the pretreatment of a light olefin fraction to selectively remove isobutene and butadiene, comprising:

contacting the olefin fraction with boron trifluoride in a gas

phase at a temperature of from 0° to 100° C. and a pressure of from 0 to 50 bars to form polymers of isobutene and butadiene in an effluent; and

separating the boron trifluoride and the polymers of isobutene and butadiene from the effluent.

4,520,226

TREATMENT OF GRAFT VERSUS HOST DISEASE USING A MIXTURE OF T-LYMPHOCYTE SPECIFIC MONOCLONAL ANTIBODY: RICIN CONJUGATES

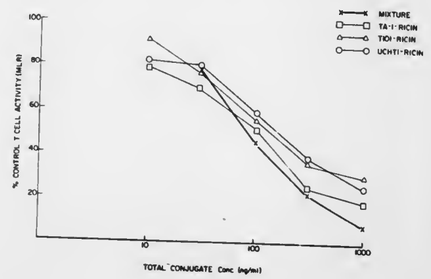
David M. Neville, Jr., Bethesda, Md., and Richard J. Youle, Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 399,257, Jul. 19, 1982,. This application Jan. 7, 1983, Ser. No. 456,401

Int. Cl.³ A61K *39/395;* **C12N** *15/00*

U.S. Cl. 424—85 **5 Claims**

5. A method for eliminating T-cells from human bone marrow grafts consisting essentially of separately convalently bonding monoclonal antibodies TA-1, T101, and UCHT1 to ricin toxins to form three human T-cell specific cytotoxic hybrids, forming a mixture by combining equal amounts of each hybrid, and incubating under standard biological conditions said mixture with human bone marrow cells in the presence of a suitable amount of lactose.



4,520,227

STRAIN RELIEF CONNECTION BETWEEN A HOUSING AND AN ELECTRIC CONDUCTOR ASSEMBLY

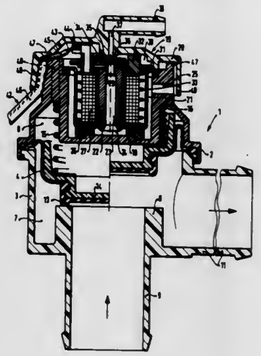
Erwin Krimmer, Plüderhausen, and Siegfried Fehrenbach, Markgröningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 411,052

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208108

Int. Cl.³ H02G *3/18, 15/007;* **F16K** *31/06*

U.S. Cl. 174—65 R **1 Claim**



1. A strain relief connection formed between a housing and an electric conductor assembly passing from the exterior of the housing to the interior thereof, comprising: a housing having two plastic housing parts, said housing parts meeting each other over a contact surface; an electric conductor assembly including stranded conductors extending through individual plastic jackets and a common insulating sheath surrounding said plastic jackets; said electric conductor assembly passing from the exterior of said housing to the interior thereof and having portions of said plastic jackets arranged over and contacting said contact surface between said housing parts; said housing parts being heat sealed together with said plastic jackets at said contact surface; and one of said housing parts having a collar-shaped attachment inclined with respect to said contact surface in the vicinity of said electric conductor assembly and partially overlapping said sheath and pressing said sheath against the other housing part.

4,520,228

MULTI-LAYER CONDUCTOR PLATE AND A METHOD OF MAKING

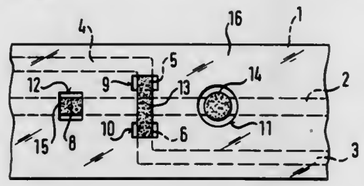
Horst Hoffmann, Glonn, Fed. Rep. of Germany, assignor to Wilhelm Ruf KG, Munich, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 410,983

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137279

Int. Cl.³ H05K *1/09*

U.S. Cl. 174—68.5 **3 Claims**



1. A multi-layer conductor plate, comprising:

a base plate means made of electrical insulation material, said base plate means being of substantial facial extent;

a first layer of copper provided on a face of said base plate means in the form of at least one conductor path which is continuous along at least a portion of said face, said one conductor path having laterally opposite edges, and in the form of at least another conductor path which would crossingly intersect said one conductor path if said other conductor path were to be continuous, but said other conductor path being discontinuous adjacent said lateral edges of said one conductor path so as to provide two respective piers;

a layer of etch-resistant, electrically conductive varnish superimposed upon at least some of said first layer of copper in said conductor paths;

a layer of electrical insulation material superimposed upon said face at least in said portion so as to cover all of said etch-resistant electrically conductive varnished copper layer conductor paths except for being apertured by aperture means at a plurality of conductor attachment sites, including ones coinciding with both of said piers;

a layer of galvanizable electrically conductive varnish, this layer being selectively applied upon said layer of electrical insulation material and upon selected ones of said sites so as to define a second layer of electrical conductor paths, this second layer including an electrical conductor path which electrically connects between said piers of said second conductor path while crossing-over but being electrically insulated from said first conductor path by said layer of electrical insulation material; and

a galvanically-applied metal layer provided upon said galvanizable electrically conductive varnish, thereby bridging said piers.

4,520,229

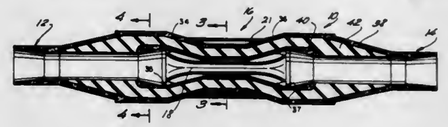
SPLICE CONNECTOR HOUSING AND ASSEMBLY OF CABLES EMPLOYING SAME

Glenn J. Luzzi, Mt. Bethel, Pa., and Andrew A. Kominiak, Flanders, N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,325

Int. Cl.³ H02G *15/184*

U.S. Cl. 174—73 R **17 Claims**



1. A housing for use in completing a splice connection between first and second electrical power cables, the cables each having an outside diameter and including an inner conductor and a cable jacket surrounding the inner conductor, the cable jacket including insulation around the conductor and a shield around the insulation, the splice connection including a connector element joining together bared portions of the inner conductors of the cables, the connector element having a diameter smaller than the outside diameter of each cable, the housing comprising:

a tubular elastomeric sleeve having opposite ends;

first and second coaxial end portions adjacent the corresponding ends of the sleeve, each end portion including an end portion bore extending axially through the respective end portion and having an inside diameter generally complementary to the outside diameter of a corresponding cable over which the end portion is to be placed;

a central portion located between the first and second end portions and coaxial therewith, the central portion including an axially-extending wall of essentially uniform wall thickness, said wall having an inside surface with circumferentially alternating inner and outer surface areas merg-

ing circumferentially smoothly with one another along said inside surface, each inner surface area extending radially inwardly to an inner position located radially inwardly of the inside diameter of each end portion bore, and each outer surface area extending radially outwardly to an outer position located radially outwardly of the inside diameter of each end portion bore; and

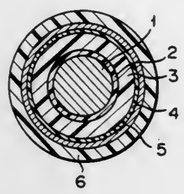
transition portions located between each end portion and the central portion for enabling resilient radial flexing of the wall of the central portion to move each inner surface area resiliently outwardly and inwardly relative to the end portions, between said inner and outer positions, in response to movement of the sleeve in axial directions along a cable such that each inner surface area is movable resiliently radially between engagement with the corresponding cable jacket and engagement with the connector element.

4,520,230

CROSS-LINKED POLYETHYLENE INSULATED POWER CABLE WITH IMPROVED ELECTRIC BREAKDOWN STRENGTH AND METHOD FOR MANUFACTURING THE SAME

Kenji Uesugi, Yotsukaido; Shin-ichi Irie, Ichihara; Yoshihisa Asada, Chiba; Masahiro Maeda, Yokohama; Nobuyuki Yamada, Chiba, and Hideaki Nakagawa, Suzuka, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Mitsubishi Petrochemical Company Limited, both of Tokyo, Japan

Continuation of Ser. No. 262,908, May 12, 1981, abandoned.
This application Aug. 15, 1983, Ser. No. 523,895
Claims priority, application Japan, May 21, 1980, 55-66371; May 23, 1980, 55-68643; May 26, 1980, 55-69008
Int. Cl.³ B32B *15/00, 27/00;* **H01B** *7/00*
U.S. Cl. 174—107 **7 Claims**



1. A cross-linked polyethylene insulated power cable with improved electric breakdown strength, comprising an elongated conductor and an insulating layer of cross-linked polyethylene surrounding said conductor, said cross-linked polyethylene having a density of 0.918 g/cm³ or more, a crystal thickness of 76 Å or more and a gel fraction of 60% or more, the ratio of the impulse breakdown strength of said cross-linked polyethylene at 90° C. to the impulse breakdown strength at room temperature being at least 80%.

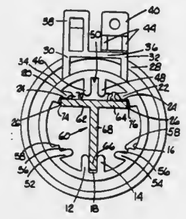
4,520,231

SAFETY CAP FOR FENCE POSTS

Leslie A. Hubbell, 40260 County Rd. 13, Elizabeth, Colo. 80107

Filed Dec. 15, 1983, Ser. No. 561,907
Int. Cl.³ H01B *17/14;* **A01K** *3/00*
U.S. Cl. 174—158 F **14 Claims**

1. A cap useable with a T-shaped fence post comprising:
an elongated generally hollow body having an opening at one end thereof;
a cover over the other end of said body;
means for providing the inner surface of said body with at least two longitudinally extending surfaces for resiliently contacting each arm of said T-shaped fence post adjacent the open end of each arm;
a first pair of spaced apart ribs extending radially inward from the inner surface of said body;
said first pair of ribs extending in a longitudinal direction and forming a generally U-shaped recess adapted to receive therebetween the stem of a T-shaped fence post; and



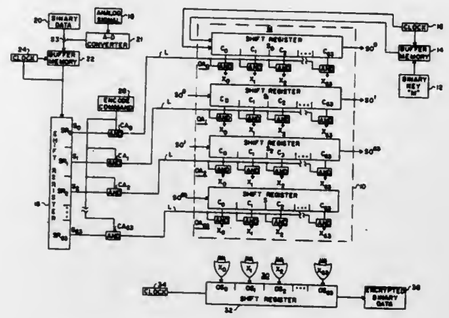
said first pair of ribs extending inwardly for only a relatively short distance so that only that portion of the stem of said T-shaped fence post adjacent the open end of said stem is located between said first pair of ribs.

4,520,232

POLYGRAPHIC ENCRYPTION-DECRYPTION SYSTEM

William J. Wilson, 1239 Blevins Gap Rd., Huntsville, Ala. 35802

Filed Apr. 30, 1982, Ser. No. 373,341
Int. Cl.³ H04L *9/04*
U.S. Cl. 178—22.05 **2 Claims**



2. A communications system comprising:
first and second communications stations;
communications signal transmission means for the transmission of first signals from said first station to said second station and for transmission of said second signals from said second station to said first station;
said first and second stations each comprising:
buffer storage means having a selected plurality of ordered binary storage locations, and responsive to a series of binary state input signals, including signals derived from said communications signal transmission means, for selectively and temporarily storing, in order of appearance, successive sets of said series of input signals in correspondingly ordered storage locations,
key storage means comprising:
a plurality of binary signal memory locations, and there being stored therein an invertible binary matrix of ordered rows and columns having a common row and column origin, and
readout means including a plurality of row oriented sets of electronic gating means, one set for each row of memory locations, each electronic gating means of a set being coupled to a separate memory location of the same row, and being responsive to a selected state of binary signal control input, for gating to an output

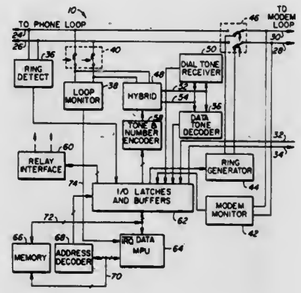
the binary state of the memory location to which the gate is coupled,
coupling means for supplying the signal state of each discretely ordered storage location of said buffer storage means, as a control input, to a row oriented discrete set of electronic gating means for a said row of said matrix, whereby, where said selected signal state is present in one of said ordered storage locations of said buffer storage means, the signal states of a coordinately ordered row of said matrix appears across outputs of a said set of electronic gating means, and, where a non-selected state exists, each gating means of a coordinate set of electronic gating means for a row of said matrix provides a like state output, and do not, together, gate out the signal states of a row of memory locations as outputs;
a set of row oriented exclusively OR logic circuit means, each said logic circuit means being responsive to a column oriented set of outputs of said electronic gating means for providing, in a selected order, an ordered set of modulo 2 character output signals, and
signal means responsive to successively following said ordered set of modulo 2 character output signals for providing said last-named output signals as a series of sets of binary output signals to said communication means; and
said invertible matrix of said key storage means of said first station is the inverse of said invertible matrix of said key storage means of said second station.

4,520,233

TELEPHONE LINE SECURITY APPARATUS

James W. Smith, San Jose, Calif., assignor to Omnicom Engineering, San Jose, Calif.

Filed Apr. 16, 1982, Ser. No. 369,289
Int. Cl.³ H04L *9/00;* **H04K** *1/00*
U.S. Cl. 179—1.5 R **7 Claims**



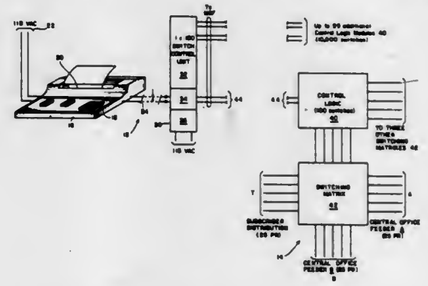
1. A telephone call-in security apparatus for controlling connections between a single telephone line and a telephone modulator-demodulator (modem) apparatus at a location remote from a telephone switching station and connected to a publically accessible switched telephone network, said security apparatus comprising:
means coupled to said telephone line for detecting ring signals;
means responsive to said ring signal detecting means for connecting said apparatus to said telephone line in a two-way telephone connection;
means coupled to said telephone line through said connection means for detecting tone encoded signals of an incoming telephone call;
means operative to check said detected tone encoded signal for an authorized access code for initiating a call-back sequence to a telephone terminal corresponding to said access code, said call-back sequence initiating means including means for detecting for a forward disconnect condition from the switched telephone network; and
means responsive to a two-way telephone line connection sequence subsequent to said call-back sequence for coupling said telephone line to said modem.

4,520,234

REMOTE CABLE SWITCHING SYSTEM

Gary C. Fields, Oakland, Calif., and Gary E. Long, Loveland, Colo., assignors to Remote Switch Systems, Inc., Loveland, Colo.

Filed Apr. 11, 1983, Ser. No. 483,501
Int. Cl.³ H04M *11/00, 3/00;* **H04Q** *1/28*
U.S. Cl. 179—2 A **12 Claims**



1. A remote cable switching system for selectively switching communications pairs of an incoming trunk to one or the other pairs of two available outgoing trunks, said system comprising:
a remote switch module having input terminals accommodating N input pairs and having output terminals accommodating 2N output pairs, and having N latching switches having terminals connecting said N input pairs and said 2N output pairs in accordance with a connection pattern established by switching commands generated and sent from a central location,
a normally quiescent remote control module at the location of said remote switch module and operatively connected thereto, said control module for receiving and accumulating electrical power and for receiving and decoding electrical switching commands from a central control location during a command sequence, for generating latch operating signals in response to said commands, and for applying said operating signals to operate the said latching switches to which they pertain,
a central controller at a central location remote from said remote switch and control modules, said controller including data input means for receiving switching information and means for converting said switching information into responsive electrical switching commands, said central controller being connected by a control circuit to said remote control module and providing constant current power thereto and electrical switching commands thereto during each command sequence.

4,520,235

ELECTRONIC KEY TELEPHONE SYSTEM

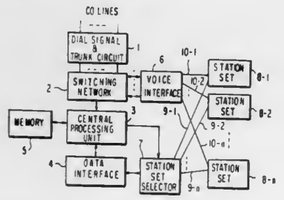
Kenichi Morikawa; Kazuyuki Nagatomi, and Mitsuo Katanuma, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,199
Claims priority, application Japan, May 10, 1982, 57-77902
Int. Cl.³ H04M *1/00, 1/72*
U.S. Cl. 179—99 LS **7 Claims**

1. A key telephone system for selectively connecting a plurality of telephone stations to a plurality of telephone lines, said key telephone system comprising:
central switching means;

central control means; and

a plurality of key telephone stations each being connected to the central switching means by a single communication path and also being connected to the central control means by a single data path, each of the key telephone stations including first to lth means for displaying service status, source means for generating various signals indicative of modes of service, a plurality of buttons for specifying service request, and means responsive to receipt of service status information sent from the central control means for transmitting over the data path to the central control means service request information of the buttons corresponding to the display means identified by the service status information; wherein



said central control means including means for scanning the key telephone stations in the first to lth display means, in such a manner that the telephone stations are successively accessed in each ith ($1 \leqq (\text{integer}) \leqq l-1$) display means of the key telephone stations, and then in each $(i+1)$th display means, to transmit over each of the data paths each service status information and to receive each service request information, each service status information being generated in response to receipt of each service request information sent from the key telephone stations;

each service status information is made up of data identifying one of the first to lth display means and specifying the modes of service; and

each of the telephone stations includes means responsive to the service status information for selecting any of the various signals to be supplied to identified display means.

4,520,236

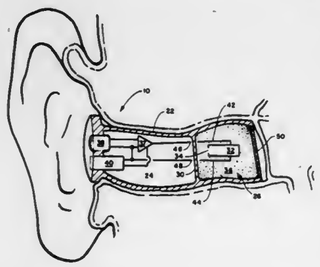
SOUND TRANSFER FROM A HEARING AID TO THE HUMAN EAR DRUM

Edouard A. Gauthier, El Cajon, Calif., assignor to Nu-Bar Electronics, San Diego, Calif.

Filed Nov. 30, 1983, Ser. No. 556,604

Int. Cl.³ H04M *1/04*

U.S. Cl. 179—107 E **16 Claims**



9. An improved receiver for a miniaturized hearing aid comprising:

a partially enclosed chamber open to the ear drum along one surface thereof;

a receiver having a good emitting aperture positioned within said chamber with said sound emitting aperture directed to the wall of said chamber opposite said surface adjacent said ear drum; and

isolation means surrounding the entire receiver.

4,520,237

ELECTRODYNAMIC SPEAKER

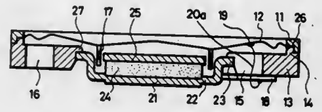
Fumikazu Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

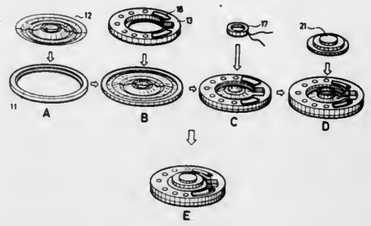
Filed Sep. 23, 1982, Ser. No. 421,799

Claims priority, application Japan, Sep. 25, 1981, 56-151765

Int. Cl.³ H04R *9/04*

U.S. Cl. 179—115.5 ES **13 Claims**





1. An electrodynamic speaker comprising: a vibrating plate; a voice coil having a terminal and being secured to said vibrating plate; a magnetic circuit portion comprising a yoke, a pole piece and a magnet and being arranged so as to define a magnetic gap between the pole piece and the yoke; a main frame having a ring-shaped projection for supporting the peripheral portion of said vibrating plate; a ring-shaped guard frame having a step portion and being disposed atop the main frame to sandwich the peripheral portion of the vibrating plate between the step portion of the guard frame and the projection of the main frame; a lead substrate for securing said terminal of said voice coil; said main frame having a center hole which mates with the magnetic circuit portion and a notch portion adjacent to and opening into the center hole; the terminal of said voice coil extending through the notch portion and being secured to the lead substrate at the lower surface of the main frame; and means disposed at the periphery of the center hole of the main frame coacting with means disposed at the peripheral portion of the magnetic circuit portion for mounting the magnetic circuit portion on the lower surface of the main frame to thereby fixedly secure the magnetic circuit portion to the main frame.

4,520,238

PICKUP DEVICE FOR PICKING UP VIBRATION TRANSMITTED THROUGH BONES

Yasuo Ikeda, Oiso, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,246

Claims priority, application Japan, Nov. 16, 1982, 57-172389[U]; Nov. 19, 1982, 57-174340[U]

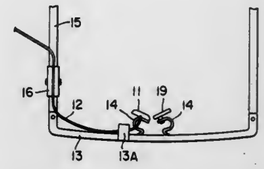
Int. Cl.³ H04R *1/46*

U.S. Cl. 179—121 C **18 Claims**

1. A pickup device for picking up vibration transmitted through bones comprising:

an eyeglass-like assembly having a face-opposing member which is placed in front of a human face, a pair of supporting members one end of each of which is connected to each end of said face-opposing member and at least one nosepiece which is made into intimate contact with at least one upper side portion of the nose;

a microphone which is mounted on said face-opposing member at a suitable position for directly picking up the audio



signal transmitted through bones as the solid vibration through said at least one nosepiece from said at least one upper side portion of the nose and for converting the picked up audio signal into an electrical signal; and

a flexible cord one end of which is connected electrically to said microphone and whose one portion is supported by said eyeglass-like assembly at least at one portion thereof.

4,520,239

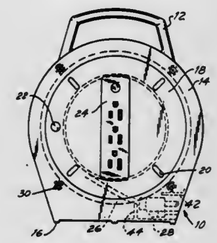
ELECTRICAL CORD REEL AND STORAGE SYSTEM

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Sep. 30, 1982, Ser. No. 430,893

Int. Cl.³ H02G *11/02;* **B65H** *75/40*

U.S. Cl. 191—12.4 **10 Claims**



1. A storage device for an electric cord, comprising:

two mating sections defining a housing, said housing having means defining a central opening;

an electric cord having a plug;

a reel for supporting and storing said electric cord, said reel being rotatable within said housing, said electric cord being wound upon said reel when said reel is caused to rotate;

a receptacle affixed to said reel having a plurality of electric plug element openings;

means for indicating the presence of an electric potential at said receptacle, when said plug is inserted into an electrical source;

a pair of reel flanges disposed upon said reel for supporting said electric cord; and

a plurality of spacer posts having the dual purpose of providing a given spacing between each section of said housing, and being in contact support of said reel flanges to provide extra support for winding said electric cord upon said reel.

4,520,240

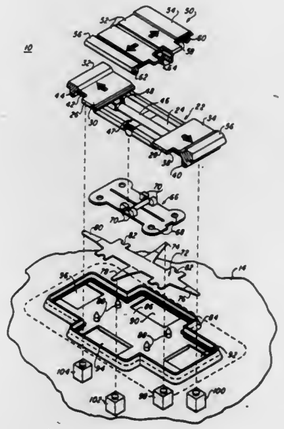
FOUR-WAY KEY SWITCH CONTROL MECHANISM

Dan E. Swindler, Round Rock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 1, 1983, Ser. No. 556,872

Int. Cl.³ G09F *9/30;* **H01H** *3/00, 19/00*

U.S. Cl. 200—5 R **6 Claims**



1. A four-way switch comprising:

a switch key having:

a first switch topper having an upper and lower surface and an opening centrally located therein, said first switch topper also having a first and second pivot element positioned underneath said lower surface, said first and second pivot elements mounted at 90° to one another;

a second switch topper having an upper and lower surface adapted to be positioned in the opening of said first switch topper so that the upper surfaces of said first and and second switch toppers are substantially flush with one another, said second switch topper having a pivot assembly on its lower surface adapted to engage said first pivot element in said first switch topper to thereby pivotably secure said second switch topper to said first switch topper to allow movement of said second switch topper along a first axis only, and

base means having a pivot assembly thereon adapted to engage said second pivot element on said first switch topper to thereby pivotably secure said first switch topper to said base to allow movement of said first switch topper along a second axis which is 90° from said first axis;

protuberances located on the bottom surfaces of said first and second switch toppers at the terminal ends thereof; and

spring means engaging each of the protuberances of said first and second switch toppers;

a housing for accommodating said switch key, said housing having four apertures located therein around the periphery of said housing, said housing also comprising alignment means for positioning said switch key within said housing so that each of said protuberances is located directly above one of said apertures; and

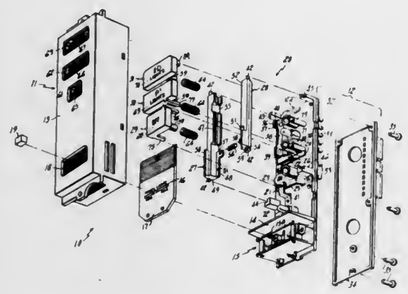
electrical switch means located below each of said apertures so that when an operator selectively pushes on the upper surface of either of the first and second switch toppers at the location of one of the protuberances, the electrical switch means located beneath the selected protuberance is activated.

4,520,241

MULTIPLE PUSH BUTTON SWITCH WITH LATCH MEMBERS

Floyd J. Sandi, Clawson, and Anthony Vultaggio, Warren, both of Mich., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Feb. 23, 1984, Ser. No. 583,061
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—5 B **6 Claims**



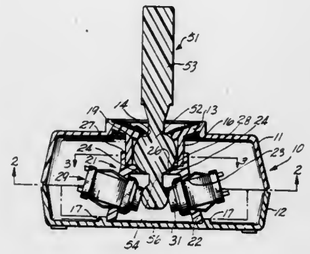
1. A multiple push-button switch comprising:
a housing;
first and second fixed contacts in said housing;
first and second leaf spring strips extending generally parallel to each other in side-by-side relation and mounted cantilever fashion in said housing with the free ends of said strips extending in opposite directions from respective fixed ends thereof; said first and second strips each being urged to a rest position by its natural resilience but adapted for flexing movement to an actuated position;
a movable contact carried by each of said strips intermediate its ends for engaging a respective one of said fixed contacts in one of said rest and actuated positions;
first latching means adapted to releasibly retain said first strip in its actuated position;
second latching means adapted to releasibly retain said second strip in its actuated position;
spring means for biasing each of said latching means to a normal latching position from which position said latching means is movable to an unlatching position for release of the respective one of said strips;
a first push-button actuator yieldably biased to an extended position in said housing, said first actuator being movable toward said first and second strips and being effective when depressed to deflect said strips from their rest positions to actuated positions in latched engagement respectively with said first and second latching means;
a second push-button actuator yieldably biased to an extended position in said housing, said second actuator being movable toward said first strip and said second latching means and being effective when depressed to deflect said first strip from its rest position to an actuated position in latched engagement with said first latching means and to concurrently move said second latching means from the normal latching position thereof to disengage said second latching means from said second strip when the latter is in its actuated position and thereby permit said second strip to return to its rest position; and
a third push-button actuator yieldably biased to an extended position in said housing, said third actuator being movable toward said first and second latching means from the normal latching positions thereof to disengage said first and second latching means respectively from said first and second strips when in the actuated positions thereof and thereby permit said strips to return to their rest positions.

4,520,242

JOYSTICK

Joseph D. Kopsho, Jr., San Marcos, Calif., assignor to Kraft Systems, Inc., Vista, Calif.

Filed Mar. 10, 1983, Ser. No. 473,781
Int. Cl.³ H01H *19/00*
U.S. Cl. 200—6 A **10 Claims**



1. A joystick comprising:
a switch holder having four side walls and an opening at its top, each side wall having a switch opening;
four panel-mounted switches for activating an electrical circuit associated with that switch, each switch being mounted in the switch opening of a side wall of the switch holder, and each switch comprising:
an activator button depressible from an extended position wherein the electrical circuit associated with the switch is not activated to a fully depressed position wherein the electrical circuit is activated, said activator button extending into the interior of the switch holder;
spring means for urging the activator button toward the extended position;
an actuator arm comprising:
a ball rotatably mounted at a position above the opening in the top of the switch holder;
a handle extending upwardly from the ball and movable from a generally vertical neutral position; and
a switch engaging member extending downwardly from the ball through the opening into the interior of the switch holder and wherein the switch engaging member is centered between and slightly depresses all of the activator buttons of the switches when the handle is in the neutral position.

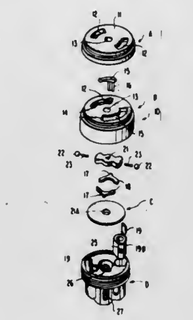
4,520,243

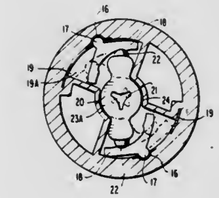
ELECTRICAL PLUG AND SOCKET CONNECTION DEVICE

Raymond E. McIntyre, 31 Southern Cross Dr., Cronin Island, Surfers Paradise, Queensland, Australia

Filed Sep. 10, 1982, Ser. No. 416,762
Claims priority, application Australia, Sep. 24, 1981, PF0906
Int. Cl.³ H01R *19/68*
U.S. Cl. 200—51.07 **6 Claims**

1. An electrical plug and socket connection device comprising a male component having a plurality of connection pins and a centrally located guide pin extending outwardly therefrom with the guide pin having a longer length than each connection pin and a female component having a plurality of connection pin recesses, a central aperture, an internal cavity, a plurality of contact members with each contact member located adjacent to and extending into an associated connection pin recess with a portion extending into said cavity and a plurality of connection terminals extending into said cavity, a switching means rotatably mounted in said cavity and having a socket in alignment with said central aperture which is engageable by said guide pin when said connection pins of said male component are engaged in said recesses of said female component whereby upon rotation of one component relative to the other each connection pin abuts an adjacent contact member and said switching means is pivoted by the engagement of said guide pin in said socket to simultaneously contact and thereby effect electrical connection between each contact member and a respective connection terminal.



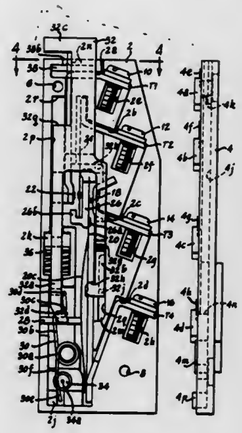


4,520,244

CONSTANT LOAD SNAP SWITCH WITH MANUAL OR AUTOMATIC RESET, STOP AND TEST SELECTION

Kenneth A. Forsell, Whitefish Bay, and Edward A. Mallonen, New Berlin, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 453,208
Int. Cl.³ H01H *5/22*
U.S. Cl. 200—67 DA **15 Claims**



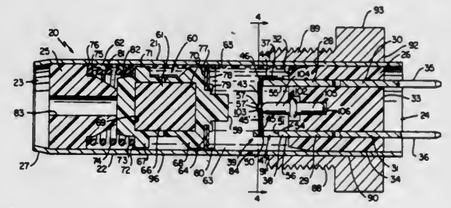
1. A constant load snap-action switch comprising:
an insulating housing;
normally-closed contacts in said housing comprising a stationary contact and a movable contact operable to open and closed states with respect to said stationary contact;
external terminals;
means connecting said stationary contact to one of said external terminals;
a snap-action flipper blade in said housing connecting said movable contact to another one of said external terminals and being operable in response to a force applied thereto for causing snap-action tripping of said movable contact at the trip point of said flipper blade from said normally-closed state to said open state;
trip means mounted to said housing and operable through a trip stroke to transmit a trip force to said flipper blade comprising:
means for maintaining the required trip force applied through said trip means substantially constant through a significant portion of said trip stroke to said trip point comprising:
a bias spring mounted in said housing for applying a bias force to said flipper blade which decreases with the trip stroke such that the required trip force remains substantially constant through a significant portion of said trip stroke.

4,520,245

DIFFERENTIAL PRESSURE OPERATED ELECTRICAL SWITCH CONSTRUCTION

Rolf H. Ochsner, Trumbull, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 27, 1983, Ser. No. 536,305
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—82 R **13 Claims**



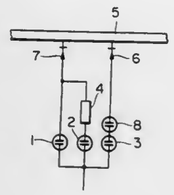
1. In a differential pressure operated electrical switch construction having a housing means carrying a pair of rigid substantially straight parallel terminals and an electrical switch means for electrically interconnecting said terminals together when said switch means is in one operating condition thereof and for electrically disconnecting said terminals from each other when said switch means is in another operating condition thereof, said housing means having actuator means responsive to differential pressures acting across the same and being operatively associated with said switch means to place said switch means in said one condition thereof when having a certain differential pressure acting across the same and to place said switch means in said other condition thereof when having another certain differential pressure acting across the same, the improvement wherein one of said terminals has an end provided with a substantially rectangular opening passing transversely and completely therethrough and defining a substantially straight interior edge means of said one terminal, said switch means comprising a movable switch blade having one end carried by the other of said terminals and having another end disposed in said opening for engaging against said edge means and thereby place said switch means in said one condition thereof and for being out of engagement with said edge means and thereby place said switch means in said other condition thereof.

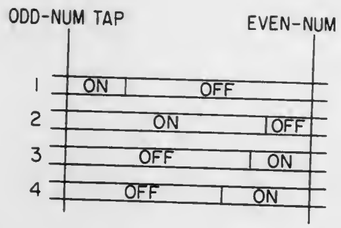
4,520,246

ON-LOAD TAP CHANGER OF THE TYPE OF VACUUM SWITCHES

Toshio Yoshii, Hyogo, and Shigeyoshi Furukawa, Kobe, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 18, 1983, Ser. No. 543,040
Claims priority, application Japan, Jan. 7, 1983, 58-1351
Int. Cl.³ H01N *33/66*
U.S. Cl. 200—144 B **3 Claims**





1. An on-load tap changer having vacuum type switches, comprising:

first vacuum switches for a main contact of which the ends on one side are connected to a plurality of tap selectors, and of which the ends on the other side are commonly connected; and

second vacuum switches for breaking an overload, which are inserted in at least one series circuit consisting of said tap selector and respective of said first vacuum switches for said main contact, which exhibit superior breaking performance to said first vacuum switches for said main contact in said series circuit, which close earlier than said vacuum switches for said main contact, and which open later than said vacuum switches for said main contact.

4,520,247

PENDANT TYPE ELECTRICAL SWITCHING DEVICE

James J. Pancook, Tonawanda, and Otmar M. Ulbing, Fairport, both of N.Y., assignors to Columbus McKinnon Corporation, Amherst, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,217
Int. Cl.³ H01H *9/04, 13/72*
U.S. Cl. 200—298 **11 Claims**

1. An electrical switch apparatus of the type adapted to be suspended by means of a cable comprising a load supporting carrying strand accompanied by electrical conductor members extending from an overhead hoist being controlled thereby, said apparatus comprising in combination:

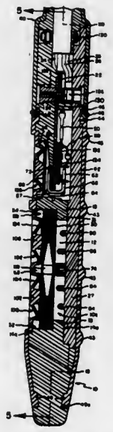
an elongated body member having upper and lower ends and defining an open cavity and apertures communicating with said cavity, said body member being formed of an electrically non-conductive and a relatively stiff resilient material;

a cover plate formed of an electrically non-conductive and relatively stiff resilient material detachably connected to said body member so as to cover said cavity opposite to said apertures, said body member and said cover plate cooperating to provide a peripherally extending mounting groove arranged intermediate said apertures and said upper end of said body member;

switching mechanisms positioned within said cavity in alignment with said apertures and detachably connected electrically to said conductor members;

means for detachably connecting said upper end of said body member to depend from said carrying strand; and

generally tubular shaped upper and lower sheath members formed of an electrically non-conductive and highly resilient material removably fitted over said upper and lower ends of said body member to cover said body member and said cover plate in a waterproof and electrically insulated manner with adjacent ends of said sheath members being arranged in a lapped relation above said mounting groove, said lower sheath member having portions thereof arranged in alignment with said apertures serving to define buttons adapted for manual depression for selectively operating said switching mechanisms, said lower sheath member having an internal flange portion removably received within said mounting groove and having an outwardly facing peripheral groove to provide a locking depression for receiving a lapped end of said upper sheath member retained in place by an elastic ring extending peripherally thereof, and said upper sheath member having an extended tubular shaped end portion slide-fitted



about said cable in moisture sealing relation therewith and operating to brace said cable against sharp bends adjacent to said body member.

6. An electrical switch apparatus of the type adapted to be suspended by means of a cable from an overhead hoist to be controlled thereby, said switch apparatus comprising in combination:

a body member formed of an electrically non-conductive and relatively stiff resilient material having a cavity and a pair of apertures opening into said cavity;

sheath means formed of an electrically non-conductive and highly resilient material enclosing said body member and defining push-operated buttons aligned one with each of said apertures;

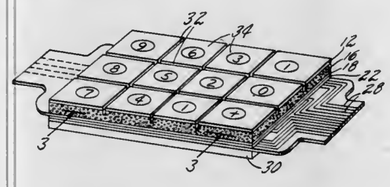
an elongated resiliently deformable electrical contact member supported by its opposite ends to extend lengthwise thereof within said cavity and transversely in alignment with said apertures; a current supply bar arranged in said cavity for engagement with said contact member adjacent a mid-point thereof, said supply bar being disposed intermediate said buttons and on a side of said contact member spaced from said buttons; and two pairs of electrical contacts supported within said cavity in alignment one pair with each of said buttons and on a side of said contact member spaced from said buttons, and each of said buttons when pressed upon to a first degree being operable to deform said contact member transversely thereof into engagement with a first contact of an aligned one of said pairs of contacts and when pressed upon to a further degree, further deforming said contact member into engagement with a second contact of said aligned one of said pairs of contacts.

4,520,248

KEYBOARD ASSEMBLY

Robert Woelfel, Palatine, Ill., assignor to Rogers Corporation, Rogers, Conn.

Filed Aug. 15, 1980, Ser. No. 178,471
Int. Cl.³ H01H *13/14*
U.S. Cl. 200—340 **28 Claims**



1. A membrane type keyboard comprising:

switch array means, said switch array means including means defining a plurality of pairs of cooperating electrical contacts, the contacts of each pair being in registration and spatially separated to define normally open switches, at least a first of said contacts of each pair being supported on the first surface of a common flexible insulating substrate whereby the switches of said array means may be selectively closed by urging contact supporting portion of the flexible insulating substrate in the direction of cooperating contacts in registration therewith;

a layer of resilient foam material overlying and having a first surface bonded to with the second side of said flexible insulating substrate, said layer of resilient material having a second surface with a pattern of cuts or slits formed therein to define a plurality of key regions, the key regions being areas of the full thickness of said layer of foam material bounded and spaced from one another by areas of partial thickness of said resilient foam, said areas of partial thickness defining the periphery of key regions which are in registration with the pairs of cooperating contacts of said switch array means; and

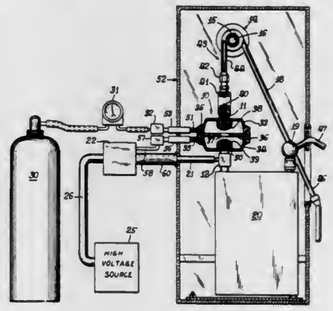
indicia providing means, said indicia providing means being adhered to the second surface of said layer of resilient material, said indicia providing means being sheet means having a pattern of cuts or slits commensurate, with the pattern of cuts or slits in said foam material, said indicia means forming labels for each of said key regions whereby the exertion of an actuating force having a component in a direction perpendicular to said second surface of said layer of resilient material will result in compression of said resilient material and the subsequent deformation of said flexible substrate to thereby close a switch of said array.

4,520,249

METHOD OF AND APPARATUS FOR SELECTIVE LOCALIZED DIFFERENTIAL HYPERTHERMIA OF A MEDIUM

George H. Czerlinski, Skokie, Ill., assignor to Submicron, Inc., Chicago, Ill.

Division of Ser. No. 86,262, Oct. 12, 1979, Pat. No. 4,369,345, which is a division of Ser. No. 853,269, Nov. 21, 1977, abandoned. This application Sep. 16, 1982, Ser. No. 418,644
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ H05B *6/10*
U.S. Cl. 219—10.49 R **5 Claims**



1. Apparatus for inducing a localized temperature rise in a medium comprising: means for generating an alternating magnetic field applied to at least a portion of said medium, said field having a predetermined frequency; a quantity of magnetizable particles dispersed in said portion of said medium at a known concentration, said particles being selected to have a Curie point approximately one-half the desired temperature rise above the ambient temperature of said medium, said portion of said medium being the region of desired temperature rise, said particles having a mean radius the square of which radius being inversely related to said frequency of said magnetic field, thereby to maximize the coupling of magnetocaloric heating of particles to the dissipative, irreversible heat loss from said particles to the neighboring local areas of said medium.

4,520,250

HEATING APPARATUS OF THAWING SENSOR CONTROLLED TYPE

Masahiro Ishihara; Mitsuru Watanabe; Shuji Ohkawa; Shunichi Taguchi, all of Yokohama, and Itsuo Kikuchi, Ibaraki, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan

Filed Feb. 18, 1983, Ser. No. 467,814
Claims priority, application Japan, Feb. 19, 1982, 57-25603; Jul. 7, 1982, 57-118007
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **29 Claims**

1. A heating apparatus of thawing sensor controlled type comprising:

a heating cavity;

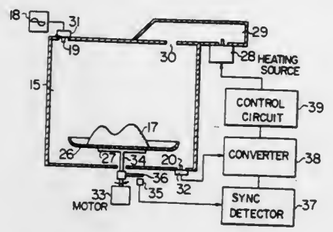
heating means for heating an object to be heated placed in said heating cavity;

transmitting antenna means disposed at a suitable position in said heating cavity for radiating a high-frequency wave signal;

means for supplying high-frequency energy to said transmitting antenna means;

receiving antenna means disposed in said heating cavity at a position suitably spaced apart from said transmitting antenna means for receiving the wave signal transmitted from said transmitting antenna means;

control means for controlling the operation of said heating means on the basis of the wave signal received by said receiving antenna means, said control means operating to control said heating means when the rate of variation of the level of the wave signal, which is received by said receiving antenna means and varies as said object being heated by said heating means is progressively thawed from its initial frozen state, satisfies a predetermined condition;



a turntable disposed in said heating cavity for rotation while carrying the object thereon; and

means for sensing the rotation of said turntable;

said control means measuring the wave signal received by said receiving antenna means each time said rotation sensing means senses a predetermined angular position of rotation of said turntable.

4,520,251

METHOD FOR OPERATING A PROGRAMMABLE MICROWAVE HEATING APPARATUS WITH FOOD DEFROSTING CONTROL

Seiki Yokozeki, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

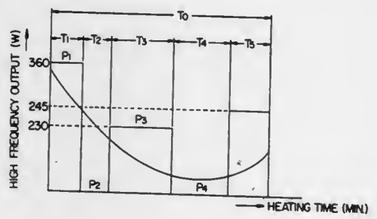
PCT No. PCT/JP81/00321, § 371 Date Jul. 9, 1982, § 102(e) Date Jul. 9, 1982, PCT Pub. No. WO82/01800, PCT Pub. Date May 27, 1982

Continuation of Ser. No. 403,589, Jul. 9, 1984, abandoned. This PCT application Nov. 6, 1981, Ser. No. 606,553

Claims priority, application Japan, Nov. 10, 1980, 55-158594

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 M **4 Claims**



1. A method for optimally defrosting food in a high frequency heating appliance, said appliance comprising:

a heating chammber for receiving food therein;

a high frequency oscillator for supplying a high frequency energy output to said heating chamber;

a microcomputer for storing information and for controlling said high frequency energy output of said high frequency oscillator in response thereto;

a plurality of keys for inputting information into said microcomputer;

a display operatively connected to said microcomputer for displaying information stored therein;

said method comprising the steps of:

storing a plurality of heating times in said microcomputer, each of said heating times corresponding to a weight of a particular food which has been previously stored by food type in said microcomputer, wherein each of said heating times is divided into five consecutive time slots T_1, T_2, T_3, T_4, and T_5;

storing in said microcomputer respective levels of the high frequency energy outputs of said high frequency oscillator P_1, P_2, P_3, P_4, and P_5, wherein said levels P_1–P_5 are arranged so as to respectively correspond to said slots T_1–T_5 and levels are arranged such that said levels P_1–P_5 are optimum for defrosting said particular food of said weight and such that $P_1 > P_5 \geqq P_3 > P_4 \geqq P_2$;

and, when an operator enters a weight of a particular food type into said microcomputer via said plurality of keys, controlling said high frequency energy oscillator with said microcomputer so as to operate in accordance with said corresponding heating times and high frequency energy level outputs which have been previously stored in said microcomputer so as to thereby optimize the defrosting of said food;

wherein said heating time and high frequency outputs are adjusted such that a surface temperature of said food does not exceed a predetermined final finishing temperature during its defrosting.

4,520,252

TRAVELING-WIRE EDM METHOD AND APPARATUS WITH A COOLED MACHINING FLUID

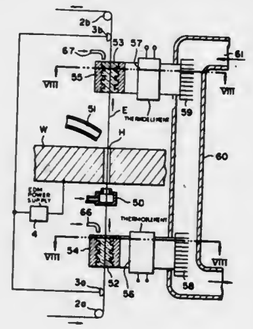
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jul. 6, 1982, Ser. No. 395,633

Claims priority, application Japan, Jul. 7, 1981, 56-106691; Sep. 3, 1981, 56-131880[U]; Apr. 6, 1982, 57-56839; Jun. 18, 1982, 57-104788

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **31 Claims**



1. A method of machining a workpiece by electroerosion with a continuous wire electrode wherein the wire electrode is axially displaced to traverse the workpiece between a pair of wire supporting members while defining a machining gap in an opening being developed in the workpiece, a machining fluid is injected into the workpiece opening from at least one nozzle means adjacent to the workpiece, and electrical discharges are effected between the traveling wire electrode and the workpiece across the machining gap to electroerosively remove material from the workpiece, the method comprising the steps of:

(a) providing a deionized water machining fluid in a liquid state having a specific resistance ranging between 5×10^3 and 5×10^5 ohm-cm in supply conduit means connected to said nozzle means;

(b) cooling, in said conduit means, said deionized water machining fluid to a cooled liquid state of less than a predetermined temperature; and

(c) pumping said deionized water machining fluid in the cooled liquid state to feed it without substantial temperature rise via said nozzle means into said workpiece opening.

4,520,253

WIRE-CUT ELECTRIC DISCHARGE MACHINE CONTROL SYSTEM TO COMPENSATE FOR WIRE FLEXURE DURING MACHINING

Gotaro Gamo; Mitsuo Kinoshita, both of Hachioji, and Haruki Obara, Sagamihara, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

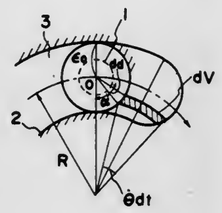
PCT No. PCT/JP81/00422, § 371 Date Aug. 26, 1982, § 102(e) Date Aug. 26, 1982, PCT Pub. No. WO82/02356, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 28, 1981, Ser. No. 414,364

Claims priority, application Japan, Dec. 30, 1980, 55-186737

Int. Cl.³ B23P *1/08*

U.S. Cl. 217—69 W **3 Claims**



1. A method of controlling a wire-cut electric discharge machine to apply a voltage between a wire electrode and a workpiece of relatively uniform thickness for cutting a corner of the workpiece with electric discharge energy while the wire electrode and the workpiece are being moved relative to each other based on cutting command data including commanded radius data to thereby cut the workpiece to a predetermined shape, said method comprising the steps of:

(a) storing data Do on an amount of flexing of the wire electrode as measured upon rectilinear cutting before the actual corner machining operation;

(b) calculating an amount of flexing D_T of the wire electrode in a tangential direction to the path along which the workpiece is cut by the wire and an amount of flexing D_R of the wire electrode in a radial direction to the path along which the workpiece is cut by the wire on the base of said data Do;

(c) calculating a corrected radius of curvature R_1 of a corner to be cut on the basis of said amount of flexing D_T and said amount of flexing D_R; and

(d) moving the wire electrode and workpiece with respect to each other along an arc determined by the corrected radius of curvature R_1 of the corner for electric discharge cutting of the workpiece.

4,520,254

METHOD AND APPARATUS FOR THE ADJUSTMENT OF CONTACT SPRINGS IN A RELAY

Erwin Steiger, and Bernhard Hering, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,454

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235714

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 L **26 Claims**

1. A method of adjusting contact springs in a relay by the localized application of metered heat from a laser pulse, to produce a specific change in the position of the contact springs, comprising the steps of:

(a) selecting individual points of a matrix field on the surface of a contact spring;

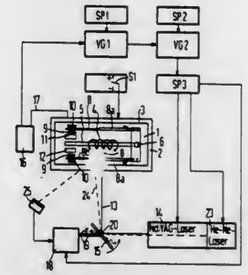
(b) irradiating said points with a heat pulse of predetermined energy, length and focus diameter;

(c) obtaining the correction values for the position of a contact spring when said points are irradiated;

(d) storing said correction values in a memory;

(e) measuring the position of said contact spring in comparison to a desired value;

(f) computing the deviation between said measured value and said desired value;



(g) comparing said deviation with said stored correction values;

(h) selecting those correction values whose resultant most closely corresponds to said deviation;

(i) controlling matrix points on said contact spring surface which correspond to said selected correction values; and

(j) irradiating said controlled matrix points with a predetermined heat pulse.

4,520,255

HIGH FREQUENCY SELF-OSCILLATING WELDING APPARATUS

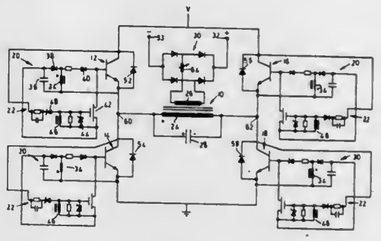
Gordon L. Bredenkamp, Roodepoort, and Pierre Van Rhyn, Florida Park, both of South Africa, assignors to Crucible Societe Anonyme, Luxembourg, Luxembourg

Filed Jun. 21, 1983, Ser. No. 506,347

Claims priority, application South Africa, Jun. 22, 1982, 82/4395

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—130.1 **4 Claims**



1. Welding apparatus which comprises first and second switching elements in series, third and fourth switching elements in series, the first and second switching elements, and the third and fourth switching elements, being respectively connected in parallel to a power supply in a circuit for operating in a load dependent self-oscillatory manner under the full supply voltage without voltage doubling effect, a transformer, the transformer having a primary winding, and a secondary winding from which welding current is drawn, the primary winding being connected between the connection points of the first and second switching elements, and the third and fourth switching elements, respectively, and self-oscillatory switching means arranged in the circuit for operating in such load

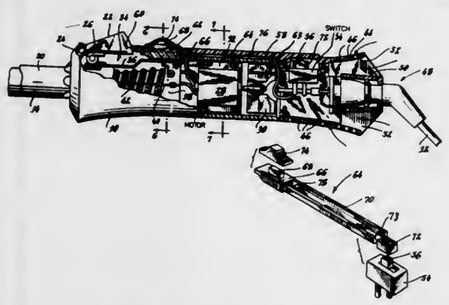
dependent manner and which includes means coupled to the primary winding for turning the switching elements on, and first, second, third and fourth sensing means associated respectively with the first, second, third and fourth switching elements, each sensing means sensig the voltage across at least part of the respective switching element while it is on, and including voltage regulator means and electronic switch means initiating the switching off of the said switching element if the voltage is above a predetermined level, whereby the first and fourth switching elements, and the second and third switching elements, are alternately turned on, thereby to cause current from the power supply to flow alternately in opposite directions through the primary winding without voltage doubling effect, and further including energy storage means which is connected across the primary winding and which establishes a circulating current in the primary winding and the energy storing means, and which thereafter returns energy to the power supply when the first and second switching elements, and the third and fourth switching elements, respectively, are turned off.

4,520,256

HOT AIR CURLER HAVING A REMOTE AIR INLET AND A SLIDE SWITCH AND ACTUATING ARM WITHIN ITS HANDLE

Edward J. Doyle, Hatboro, Pa., assignor to Conair Corporation, Edison, N.J.

Filed May 16, 1983, Ser. No. 494,997
Int. Cl.³ H05B *1/02;* **A45D** *2/36, 1/04;* **H01H** *15/00*
U.S. Cl. 219—225 **3 Claims**



1. In a hot air hair curling iron including a substantially cylindrical hollow handle having first and second ends and defining air inlet openings adjacent said second end, a substantially cylindrical hollow barrel extending outwardly from the first end of said handle having a proximal end defining an air passage with the interior of said handle, a closed distal end, and a sidewall defining air outlet openings therein, an electric air heater within said hollow handle at its first end, an electric motor and fan within said hollow handle at substantially its central portion, an electric slide switch within said hollow handle, said switch positioned so said slide moves longitudinally to said handle, and an electrical power supply cord terminating in the second end of said housing and electrically connected through said switch to said motor and air heater, the improvement which comprises:

said electric switch being positioned within the second end of said handle;

a switch actuating slide externally mounted on said hollow handle adjacent its first end; and

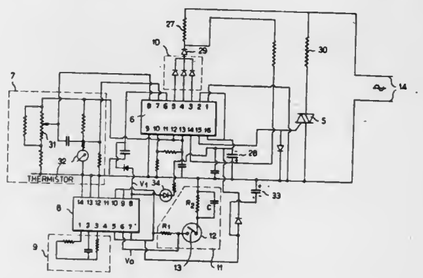
a rigid actuating arm positioned within said hollow handle for reciprocation parallel to its longitudinal axis, said handle including a longitudinal channel housing said actuating arm therein, and said arm having a first end engaging said slide for movement therewith and a second end in actuating relationship with said switch.

4,520,257

ELECTRONIC NON-USE POWER INTERRUPTION SAFETY DEVICE FOR AN ELECTRIC FLAT-IRON

Pierre Schwob, Lyons, and Christian Mieg, Meyzieu, both of France, assignors to SEB S.A., Selongey, France

Filed Jan. 26, 1984, Ser. No. 574,140
Claims priority, application France, Feb. 2, 1983, 83 01601
Int. Cl.³ H05B *1/02;* **D06F** *75/26;* **G08B** *21/00*
U.S. Cl. 219—250 **1 Claim**



1. An electronic safety device for automatically interrupting the supply of electric current to a heating resistor of an iron at the end of the predetermined interval of non-use, said device comprising a movable body which is capable of displacement within a housing of the iron when the iron is being moved, said movable body being adapted to control a position of contacts of an associated switch so that at least one opening-closing sequence of said switch contacts is obtained upon displacements of said movable body, means associated with said switch consisting of a resistor bridge supplied with a rectified voltage E and comprising a resistor R1 and a resistor R2 in series with said switch contacts, a capacitor connected to the terminals of said resistor R2, there being a voltage Vo at the terminals of said resistor R1, the respective values of said resistors R1 and R2 being such that said voltage Vo is lower than E/2 when said switch contacts are open or closed and higher than E/2 at the time of transition of said contacts from open to closed position, means to apply said voltage Vo to one input of a counter which is reset to zero each time said voltage Vo is higher than E/2, said counter being connected to an input of a comparator for transmitting a voltage V1 when said counter attains a predetermined counting threshold, said comparator being connected to a trigger of a triac having one terminal connected to a current supply and another terminal connected in series to said heating resistor, said comparator being adapted to deliver turn-on pulses to said trigger as long as no voltage V1 is applied and to stop said turn-on pulses as soon as a voltage V1 is applied to said one input of said comparator, thereby interrupting the current supply to the heating resistor.

4,520,258

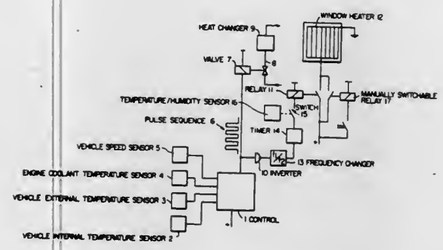
SYSTEM CONCOMITANTLY CONTROLLING PASSENGER COMPARTMENT AND ELECTRIC AUXILIARY HEATING IN AUTOMATIC VEHICLES

Kurt Grohmann, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,724
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215802
Int. Cl.³ H05B *1/02;* **B60H** *1/00*
U.S. Cl. 219—279 **13 Claims**

1. A heater arrangement for an automotive vehicle, comprising a heating means for heating a passenger compartment of a vehicle, an auxiliary heater means for heating a portion of said vehicle, sensor means for sensing at least one condition influencing the heating of the passenger compartment, and control means for controlling said heater arrangement in response to

said at least one sensed condition, said control means including means generating a pulse sequence in response to said at least one sensed condition and means responsive to said pulse se-



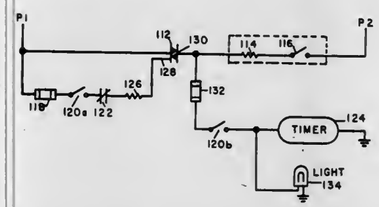
quence for controlling operation of said heating means, and means responsive to said pulse sequence for controlling operation of said auxiliary heater means.

4,520,259

ELECTRICAL ENERGY SAVER

Frederick Schoenberger, 175 Antioch Dr., Elyria, Ohio 44035

Filed Feb. 14, 1983, Ser. No. 454,275
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—501 **3 Claims**



1. An energy saving control circuit in an electrical clothes dryer having a rotating clothes tumbler and comprising:

first and second power supply lines;

a bidirectional electronic switch including gate means being connected to said first power supply line;

said bidirectional electronic switch connected in series to an electrical heating element, said electrical heating element terminating in said second power supply line;

said gate means connected to said first power supply line by a first electric switch and a normally open contact in a series connection, said first electric switch closed when a dryer on-off control button is on; and

a timer and electrical timer motor connected intermediate to said bidirectional electronic switch and said electrical heating element by a second electric switch and ground, said second electric switch closed when said dryer on-off control button is on, said timer motor being energized by said second power supply line whereby after a predetermined time, said normally open contact responsive to said timer motor closes resulting in a gating pulse applied to said bidirectional electronic switch rendering said bidirectional electronic switch into conduction, and said heating element being energized by said first and second power supply lines, for a predetermined period of time, thereafter, said timer motor causes said normally open contact to open thereby deenergizing said heating element.

4,520,260

SEMI-CONDUCTIVE HEATING CABLE

Vijayraj M. Kotian, Stow; Roger L. Blumer, Cortland, and William J. Herbert, Mantua, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 2, 1983, Ser. No. 548,189
Int. Cl.³ H05B *3/10*
U.S. Cl. 219—553 **34 Claims**

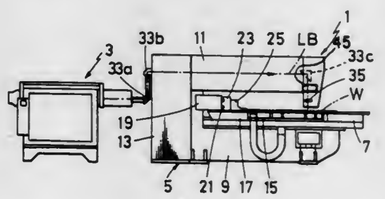
1. An improved, flexible, self-regulating heating cable of the type having at least one pair of spaced-apart elongate electrical conductors electrically interconnected by means of a semi-conductive composition that is enclosed by electrically insulating jacket wherein the improvement is characterized by said jacket being the radiation crosslinked product of a composition comprising a mixture of: (A) from about 50 parts to about 80 parts by weight to the total weight of the composition of at least one elastomer; (B) from about 20 parts to about 50 parts by weight to the total weight of the composition of a polymer selected from the group consisting of polyethylene polymer, polypropylene, polymer, and blend thereof and; (C) an effective amount by weight to the total weight of the composition of a heat stabilizer, said jacket having the ability to minimize changes in the ambient electrical resistance of the semi-conductive composition and having improved resistance to color change arising from exposure of the cable to radiation and elevated temperature up to and including the annealing temperature of the semi-conductive composition.

4,520,261

DETECTOR FOR THE DEVIATION OF THE OPTICAL AXIS IN LASER PROCESSING APPARATUS

Akira Tsutsumi, La Mirada, Calif., assignor to Amada Company, Limited, Japan

Continuation of Ser. No. 299,189, Sep. 2, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,568
Claims priority, application Japan, Sep. 2, 1980, 55-124058[U]
Int. Cl.³ G01J *1/20;* **B23K** *9/00*
U.S. Cl. 250—203 R **9 Claims**



1. A laser processing device for cutting a workpiece with a laser beam and detecting the amount of deviation of the optical axis of the laser beam from a predetermined point at which the workpiece is to be processed in said laser processing device, comprising:

(a) means for producing a laser beam capable of cutting a workpiece;

(b) an X-axis carriage and a Y-axis carriage, and X-axis carriage movable in the direction of the X-axis along the Y-axis carriage which is movable in the direction of the Y-axis.

(c) a work clamp provided on said X-axis carriage, said work clamp adapted to hold one of a workpiece and a deviation detecting means, said detecting means comprising a plurality of image sensing means disposed radially around the predetermined point located on an upper surface of a base plate for generating signals, and means for displaying said signals from the sensing means for indicating the optical axis of the laser beam irradiated from the laser beam producing means to at least three of the plurality of image sensors;

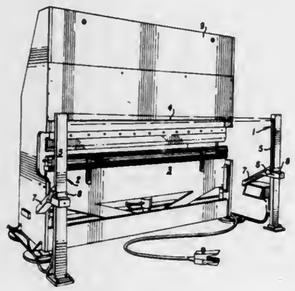
whereby the workpiece may be exchanged for the deviation

detecting means and said carriages may be adjusted so that the optical axis of the laser beam coincides with the predetermined point at which the workpiece is to be processed.

4,520,262
PHOTOELECTRIC SAFETY SCREEN WITH STRAY SOURCE DETECTION

Anthony D. Denton, Adelaide, Australia, assignor to Kenneth Ambler and Willy Raeder, both of Highbury, Australia

Continuation of Ser. No. 261,170, filed as PCT AU 80/00063, Sep. 10, 1980, published as WO 81/00750, Mar. 19, 1981, § 102(e) date Apr. 30, 1981 abandoned.
This application Dec. 6, 1983, Ser. No. 558,603
Claims priority, application Australia, Jun. 10, 1980, 0423/79
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—221 **3 Claims**



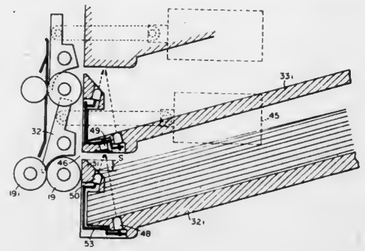
1. A method of detection of opaque members when within a detection space, comprising the steps of sequentially effecting a radiant energy transmission across a detection space from a plurality of spaced apart transmission sources and generating a detection observed signal when such transmission is not sufficiently detected by each of a plurality of correspondingly located and sequentially corresponding selected detection means; and interrogating said detection means at times other than when there is a selected transmission of radiant energy from said transmission source and generating a stray source signal if sufficient radiant energy is then detected, said stray source signal indicating the presence of extraneous radiation or a failure of said transmission sources or detection means.

4,520,263
COLLATOR WITH PHOTOELECTRIC BIN FILL DETECTION

Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,447
Claims priority, application Japan, Oct. 21, 1980, 55-147085; Oct. 22, 1980, 55-148657; Oct. 23, 1980, 55-149065; Dec. 22, 1980, 55-182468; Dec. 22, 1980, 55-182467; Dec. 27, 1980, 55-186522
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—223 R **10 Claims**

1. A collator comprising:
a plurality of bin members capable of stacking sheets;
a first light-emitting element for detecting an empty bin, which is disposed at a bottom of a sheet stacking section of each of said bin members;
a second light-emitting element for detecting a full bin, which is disposed near a sheet insertion inlet of each of said bin members; and
a common light-receiving element which is disposed at a bottom of an adjacent bin member and which receives light emitted from said first light-emitting element for detecting an empty bin and from said second light-emitting element for detecting a full bin, said light-receiving

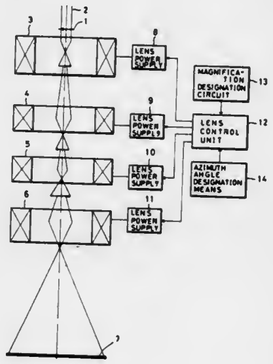


element being disposed obliquely to said second light-emitting element.

4,520,264
ELECTRON MICROSCOPE

Katsushige Tsuno, and Toshikazu Honda, both of Akishimashi, Japan, assignors to JEOL Ltd., Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,880
Claims priority, application Japan, Apr. 8, 1982, 57-59432; Apr. 23, 1982, 57-68258
Int. Cl.³ H01J *37/26, 37/141*
U.S. Cl. 250—311 **7 Claims**



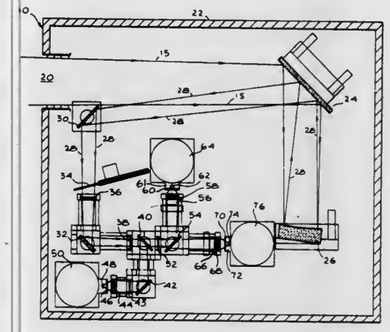
7. A method of rotating the image of a transmission electron microscope having an objective lens, at least two intermediate lenses and a projector lens comprising the steps for
(a) adjusting the magnetomotive forces in two intermediate lenses to oppose and
(b) adjusting the absolute value of the magnetomotive forces in the two intermediate lenses and the projector lens such that the image rotates without a substantial change in magnification.

4,520,265
METHOD AND APPARATUS FOR ACCURATE REMOTE MONITORING OF GASES

Michael Griggs, San Diego; Laurence L. Acton, La Jolla, assignor to Southern California Gas Co., Los Angeles, Calif. and Gordon D. Hall, San Diego, all of Calif.

Filed Sep. 6, 1983, Ser. No. 529,576
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—338 **14 Claims**

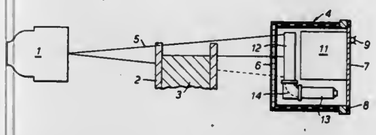
1. Apparatus for accurate remote monitoring of the concentration of a target gas, which includes;
first and second gas filter correlation channels both operating at a first spectral wavelength and each having an output terminal;
differential amplifier means having first and second input terminals coupled to respective ones of said output terminals of said first and second gas filter correlation channels for producing a first output signal which represents the target gas but requires correction for ambient conditions;
a corrective channel operating at a second spectral wavelength substantially different from said first spectral wavelength for producing a second output signal representative of said ambient conditions;
signal multiplying means coupled to said differential amplifier means and to said corrective channel for multiplying said first and second output signals to produce a target-gas concentration signal, said pair of gas filter correlation channels and said corrective channel being optically aligned to receive radiant energy from a common source region; and,
means to utilize said gas concentration signal.



4,520,266
RADIATION LEVEL DETECTORS

Edwin Fletcher, Rotherham; Gerald V. Beaton, and Charles R. Gomer, both of Sheffield, all of England, assignors to British Steel Corporation, London, England

Filed Sep. 15, 1982, Ser. No. 418,425
Claims priority, application United Kingdom, Sep. 18, 1981, 8128235; Feb. 19, 1982, 8204956
Int. Cl.³ G01F *23/00*
U.S. Cl. 250—357.1 **9 Claims**

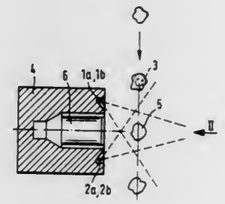


1. Apparatus for monitoring the free surface position of a fluid present within a container which is dense to particular ionising radiations, comprising a detector head adapted to be located to one side of the container and to receive ionising radiations from a compact radioactive source positioned on the other side of the container, the detector head including a casing which houses a radiation sensitive phosphor scintillator of sufficient length to span the range of fluid surface positions to be monitored, a photo-multiplier optically coupled to the scintillator, and an electronic module connected to receive pulsed high-impedance electrical signals from the photo-multiplier proportional to the intensity of the radiation incident on the phosphor scintillator and to transform such signals to produce at an outlet terminal of the detector head low tension electrical current which is linearly proportional to the level of radiation received by the scintillator and representative of the free surface position of the fluid within the container.

4,520,267
METHOD AND APPARATUS FOR ANALYZING ORE BY MEANS OF GAMMA RADIATION

Heikki Sipilä ; Erkki Kiuru, and Seppo Vaijärvi, all of Espoo, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Sep. 11, 1981, Ser. No. 301,196
Claims priority, application Finland, Sep. 15, 1980, 802882
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—358.1 **10 Claims**

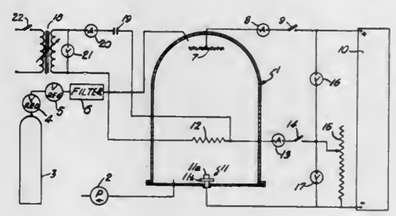


1. A method for analysing pieces of ore for the purpose of sorting, comprising
irradiating the pieces individually by means of two gamma radiation sources, each operating at a different energy level, the energy levels of the sources having been selected so that, as to scattering, in one the Compton effect is predominant and in the other the Compton effect and the photoelectric effect compete with each other, the photoelectric effect being strongly dependent on the ordinal number of each element present in the ore; and
detecting by means of at least one detector the intensities of the scatter produced from said piece by the said two sources of radiation and comparing the detected intensities with each other in order to determine the proportion of heavy elements present in the piece.

4,520,268
METHOD AND APPARATUS FOR INTRODUCING NORMALLY SOLID MATERIALS INTO SUBSTRATE SURFACES

Zhong Xu, Columbia, S.C., assignor to Pauline Y. Lau and Roland L. Lau, both of Columbia, S.C.

Filed May 26, 1983, Ser. No. 498,313
Int. Cl.³ G21K *5/00*
U.S. Cl. 250—492.1 **28 Claims**



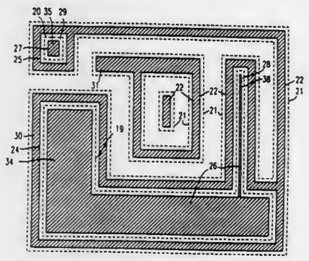
1. The method for introducing into an electrically conductive substrate at least one normally solid material selected from the group consisting of metals and metalloids, the method producing an alloy of the at least one normally solid material penetrating below the surface of the substrate, the method comprising the steps of:
providing a closed chamber in which the atmosphere and pressure can be controlled and which includes an anode;
positioning the substrate as a cathode with the surface of the

substrate exposed to the interior of the chamber and spaced from the anode;
providing a source electrode comprising a body of the material to be introduced into the substrate,
said body being exposed within the chamber in a location spaced from the anode and the substrate;
evacuating the chamber and establishing therein an atmosphere of inert gas at a pressure not exceeding 10 torr;
establishing a direct current potential difference between the anode and the cathode and a direct current potential difference between the anode and the source electrode to cause a double glow discharge with one glow discharge occurring between the anode and cathode and the other between the anode and the source electrode and maintaining the double glow discharge for a time period of at least 15 minutes; and
maintaining the surface portion of the substrate at an elevated temperature not exceeding the deformation point of the substrate and maintaining said body of material at a temperature equal to at least 40% of the melting point of the material but below the boiling point of the material,
said temperatures being maintained throughout said time period;
the double glow discharge causing said body of material to be bombarded by ions of the inert gas of the atmosphere with resultant heating of said body and ejection of positive ions of the material of said body from said body,
the positive ions so ejected travelling to the substrate and vigorously bombarding the exposed surface of the substrate as a result of the difference in charge between the positive ions and the substrate, such bombardment causing the metal ions to penetrate the exposed surface of the substrate and permeate a portion of the heated substrate below said surface to thereby form said alloy penetrating below the surface of said substrate.

4,520,269
ELECTRON BEAM LITHOGRAPHY PROXIMITY CORRECTION METHOD

Fletcher Jones, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1982, Ser. No. 439,241
Int. Cl.³ H01J *3/26*
U.S. Cl. 250—492.2 **19 Claims**

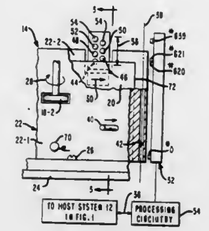


1. A method of modifying a lithographic exposure pattern so as to make the exposure pattern less sensitive to proximity effect, the exposure pattern consisting of a plurality of shapes, comprising the steps of:
subdividing the shapes of the lithographic exposure pattern into perimeter parts having a width on the order of the exposure pattern minimum linewidth and central parts, each central part being completely surrounded by a perimeter part; and modifying the exposure pattern by setting back the edges of each central part away from the perimeter part which surrounds it, thereby forming a nominally unexposed band inside of and immediately adjacent to each perimeter part having a central part, the nominally unexposed band acting to reduce electron scattering outside of the perimeter part adjacent thereto.

4,520,270
SELF-ADJUSTING SENSOR CONTROLLER

Rudolf Enter, Kitchener, and Michael P. Laverty, Waterloo, both of Canada, assignors to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Sep. 30, 1982, Ser. No. 431,922
Int. Cl.³ G01H *21/86*
U.S. Cl. 250—560 **7 Claims**

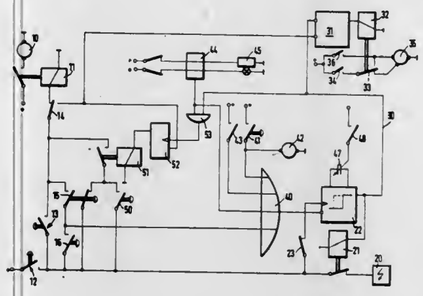


4. An apparatus comprising:
a plurality of photodetectors arranged in a dimension-detecting direction with reference to a selected dimension of an object, and a source of light for each said photodetector, which said source of light is positioned for light coupling relationship with its associated said photodetector when the associated source of light is energized to enable said source of light and associated said photodetector to function as a light-detector pair; and
a circuit for adjusting to the sensitivity of each said photodetector and for determining said selected dimension of an object positioned between said photodetectors and said sources of light and as measured along said dimension-detecting direction, comprising:
a sensor controller having means for selecting a said source of light to be energized to provide a light-coupling relationship with the associated said photodetector; each said photodetector having a terminal at which an open-condition voltage is developed for an open condition i.e. when no object is between said photodetector and the associated said source of light and at which a blocked condition voltage is developed for a blocked condition i.e. when an object is between a said photodetector and the associated said source of light;
a comparator having inverting and noninverting inputs thereto and an output therefrom and means for coupling said inverting input to said terminal of each said photodetector;
a digital to analog converter having its input coupled to said sensor controller and its output coupled to said non-inverting input of said comparator;
said sensor controller having means for ascertaining said open-condition voltage for each said photodetector in cooperation with said selecting means, said comparator and said converter; said sensor controller also having a memory in which a test value is stored for each said photodetector; each said test value corresponding to a predetermined fraction of said open condition voltage for the associated said photodetector;
said sensor controller in cooperation with said selected means, issuing sequentially a said test value to said converter which supplies a corresponding voltage to said non-inverting input of said comparator to enable said comparator to generate first and second signals corresponding to said open condition and to said blocked condition, respectively, for each said photodetector in said plurality of photodetectors, with the number of said photodetectors in said blocked condition being a measure of said selected dimension of said object.

4,520,271
STOP-START DEVICE FOR A MOTOR VEHICLE ENGINE

Horst Goertler, Sachsenheim, and Horst Rachner, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,728
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209794
Int. Cl.³ F02N *11/08*
U.S. Cl. 290—38 C **5 Claims**



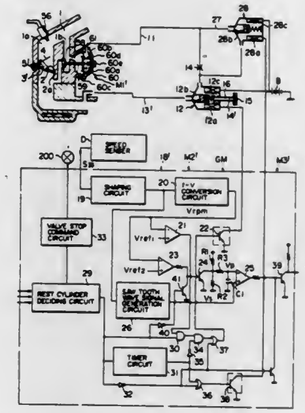
1. A stop-start device for a motor vehicle engine comprising a starting circuit for starting the engine, which comprises at least one start button bridging a starter switch, and comprising a switching member whose switching condition for switching off the engine is variable through a stop button and/or through a road-speed-dependent switch, characterized in that with the change of the switching condition of the switching member particular consumers in the motor vehicle are changed over to a mode of operation with a lower current consumption;
wherein the revolutional speed of the electric motor for a power-assisted braking system or steering system is reduced;
wherein upon switching on the engine again the mode of operation adjusted through the operating switch (**34**) of the consuming device (**35**) before switching off is again turned on;
wherein the switching condition of the switch member (**21**) may be affected by further switching elements (**41**, **43**, **44**) which are controlled in dependence on particular operating conditions on the motor vehicle and, when these particular operating conditions exist, prevent a change in the switching condition of the switching member (**21**) irrespective of the stop button and/or the road-dependent switch (**23**) being actuated;
wherein further switching elements are dependent on the operating conditions of the engine and especially in the case of a too high oil temperature and/or a too high cooling water temperature a switching-off of the engine is prevented; and,
in which the switching member is controlled via a delay circuit in dependence on a road-speed dependent switch, and wherein the delay time of the delay circuit (**22**) may be affected in dependence on the switching position of particular switch elements (**48**).

4,520,272
ENGINE SPEED REGULATING SYSTEM

Yoshiaki Danno; Hiroyuki Kobayashi, and Toyoaki Fukui, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,178
Claims priority, application Japan, Jan. 30, 1982, 57-13979; Dec. 3, 1982, 57-212188
Int. Cl.³ F02M *3/00;* **H02P** *9/04*
U.S. Cl. 290—40 A **28 Claims**

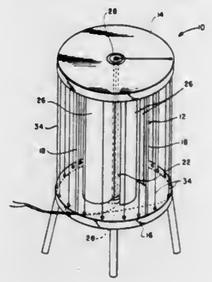
1. An engine speed regulating system for an engine having a plurality of cylinders comprising a generator driven by the engine for charging a battery, speed detecting means for detecting the speed of said engine, a generator control means which, when the speed of said engine becomes lower than a preset speed which is not higher than an idling speed of said engine, outputs a control signal for controlling power generation of said generator on the basis of a signal supplied from said speed detecting means, a cylinder stop means associated with part of said plural cylinders for stopping the operation of the associated said part of said cylinders, a cylinder number control means which provides to said cylinder stop means a control signal for switching between an engine operation with all of the cylinders of said engine working and an engine operation in which said part of the cylinders is not in operation while the remainder of the cylinders is in operation, and an operation control means for controlling the operation of said generator control means in response to the operation of said cylinder number control means, said operation control means being operable to make said generator control means operate when the engine operates with said part of the cylinders.



4,520,273
FLUID RESPONSIVE ROTOR GENERATOR

Raymond A. Rowe, Encinitas, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 19, 1983, Ser. No. 533,334
Int. Cl.³ F03B *13/10*
U.S. Cl. 290—54 **16 Claims**



1. A rotor generator which is adapted to be operated in a moving fluid environment comprising:
a rotor which has a plurality of blades;
each blade including magnetized means;
a plurality of conducting wires;

framework means arranging the conducting wires about the rotor, for location in the moving fluid environment with the wires extending substantially perpendicular to the prevailing direction of fluid flow;

the framework means also arranging the wires with spaces therebetween so that moving fluid will impinge on the blades;

means for rotatably mounting the rotor within the framework so that moving fluid will rotate the rotor and cause electrical current to be induced in the conducting wires; and

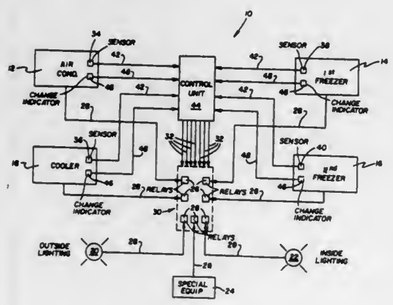
means for collecting the induced electrical current so that the electrical current can be provided for power purposes.

4,520,274

METHOD AND APPARATUS FOR CONTROLLING THE LOADS OR A PLURALITY OF UNITS ON A SHARED SOURCE

Richard O. Stants, 1508 Pontiac Dr., Kokomo, Ind. 46902

Filed Jul. 22, 1983, Ser. No. 516,388
Int. Cl.³ H02J *3/14*
U.S. Cl. 307—39 **17 Claims**



1. A method for controlling the loads of a plurality of units on a shared source, comprising the steps of: setting for each said unit a nominal value of an operating parameter responsive to said load, connecting each said unit to said source, keeping each connected said unit connected to said source for a connection period for that individual said unit, disconnecting each connected said unit from said source following said connection period, keeping each said unit disconnected from said source for a disconnection period for that individual said unit, determining for each said unit, while said unit is not connected to said source, an adjustment value of the approximate relative difference over time between said nominal value of said unit's said operating parameter and the actual value of said unit's said operating parameter, adjusting for each said unit the difference in relative lengths of said disconnection period and said connection period in proportion to said adjustment value for said unit, and sequentially repeating said connecting, connected keeping, disconnecting, disconnected keeping, determining, and adjusting steps.

4,520,275

MASTER AND SLAVE POWER SUPPLY CONTROL CIRCUITS

C. Lee Marusik, Allen, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

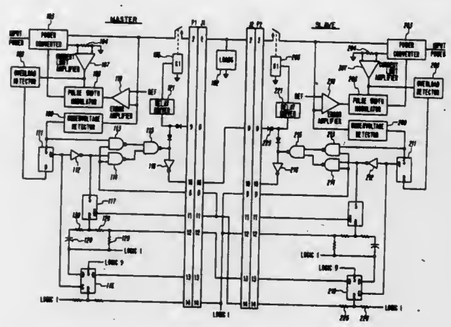
Filed Dec. 28, 1983, Ser. No. 566,358
Int. Cl.³ H02G *9/00*
U.S. Cl. 307—64 **3 Claims**

1. A circuit for controlling the connection of master and slave power supplies to a load, comprising:

means for connecting said master supply to said load and disconnecting said slave supply from said load, under no-fault conditions;

means for responding to an undervoltage condition at said master supply to disconnect said master supply from said load and connect said slave supply thereto, and further, upon cessation of said undervoltage condition, for connecting said master supply to said load and disconnecting the slave supply therefrom;

latching means, responsive to the occurrence of both overload and undervoltage conditions at said master supply, for disconnecting said master supply from said load and connecting said slave supply thereto, and preventing the connection of said master supply to said load and disconnection of said slave supply therefrom, upon the cessation



of said overload condition or said undervoltage condition at said master supply;

means for detecting the occurrence and cessation of a concurrent overload and undervoltage condition at said slave supply; and

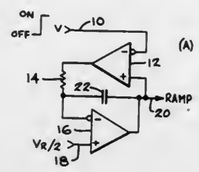
means for responding to the detection of the cessation of said concurrent overload and undervoltage condition at said slave supply to enable said latching means to connect said master supply to said load and disconnect said slave supply therefrom, provided that a concurrent overload and undervoltage condition is not present at said master supply.

4,520,276

ZERO-DELAY RAMP GENERATOR

Jay S. Baker, San Carlos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 16, 1982, Ser. No. 418,901
Int. Cl.³ H03K *4/08;* **G06G** *7/18*
U.S. Cl. 307—228 **12 Claims**



1. A circuit for generating a ramp output comprising:

means for supplying a ramp on/off signal; error amplifier means

receiving the ramp on/off signal for initiating and stabilizing the ramp output;

integrator means for generating ramp output coupled at its inverting input to the error amplifier means output, and at its ramp output back to the error amplifier means input; and

reference voltage means coupled to the non-inverting input

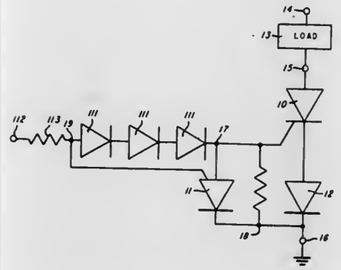
of the integrator means for determining the extent of the ramp output independently of the ramp on/off signal.

4,520,277

HIGH GAIN THYRISTOR SWITCHING CIRCUIT

Larry A. Hahn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 10, 1982, Ser. No. 376,461
Int. Cl.³ H03K *17/73*
U.S. Cl. 307—252 C **3 Claims**



1. A switch circuit having substantially equal gain for both turn-on and turn-off amplification for completing a current path from a source of power, through a load, to ground, comprising:

a. a first thyristor, having an anode connected to said load, a cathode, and a gate;

b. at least one diode connected in series between an input signal terminal and the gate of said first thyristor;

c. a second thyristor, having an anode connected to the gate terminal of said first thyristor, a cathode connected to ground, and a gate connected to receive an input signal on said input signal terminal; and

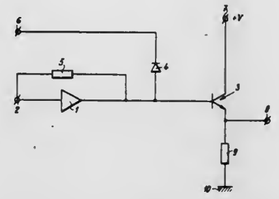
d. a junction diode connected as a load in series between the cathode of said first thyristor and ground to compensate for a voltage differential between the gate of said first thyristor and ground.

4,520,278

ELECTRONIC SWITCH

Minno De Roo, Delft, Netherlands, assignor to Deltakabel B.V., Gouda, Netherlands

PCT No. PCT/NL81/00027, § 371 Date Aug. 18, 1982, § 102(e) Date Aug. 18, 1982, PCT Pub. No. WO82/02301, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 21, 1981, Ser. No. 413,347
Int. Cl.³ H03K *17/74, 17/60, 19/21*
U.S. Cl. 307—253 **4 Claims**



1. An electronic switch controlled by a control signal for switching electrical signals comprising:

(a) an input buffer circuit comprising an input port, an output transistor, and an output port, said input port being excited by said control signal; said output transistor having an internal load resistance substantially equal to that of an open circuit;

(b) a load resistance having first and second electrodes, said first electrode being connected to said input port of said input buffer circuit, and said second electrode being connected to said output port of said input buffer circuit;

(c) diode means comprising first and second electrodes; the first electrode of said diode means functioning as an input terminal for said electronic switch, the second electrode of said diode means being connected to said second electrode of said load resistance and said output port of said buffer circuit, and

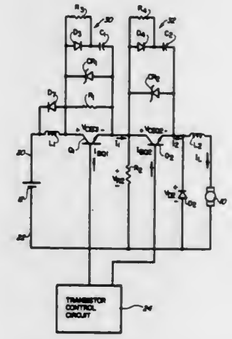
(d) an output buffer circuit comprising first, second and third ports, said first port being commonly connected to said output port of said input buffer, to said second electrode of said load resistance, and to the second electrode of said diode means, second port of said output buffer functioning as an output terminal for said electronic switch, said third port being connected to a voltage potential, said electronic switch being in a substantially open circuit condition when said control signal is at a potential level where the output port of said input buffer circuit has a potential, which reverse bias said diode means, said electronic switch being in a substantially closed circuit condition when said control signal is at a potential level where the output port of said input buffer circuit has a potential which forward biases said diode means.

4,520,279

SERIES TRANSISTOR CHOPPER

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 7, 1983, Ser. No. 549,280
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—254 **8 Claims**



1. A transistor chopper circuit for controlling the power delivered to a DC motor from a battery developing a voltage and current and having first and second terminals connected to first and second conductors, respectively, comprising:

first and second transistors each having collector and emitter electrodes, the transistors being connected in series between the battery and the motor, the first transistor being coupled to the first conductor and the second transistor being coupled to the motor, the transistors having turn-on and turn-off times which may differ from one another;

a transistor control connected to the transistors for developing a signal to switch all of the transistors between on and off states to control the power delivered to the motor;

a first resistor connected across the collector and emitter electrodes of the first transistor;

a second resistor connected between the second conductor and the junction between the first and second transistors, the first and second resistors providing a path for the DC current when the transistors are off; and

means connected across the collector and emitter electrodes of the transistors for controlling the voltage across one of

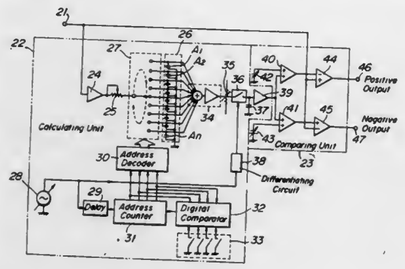
the transistors when the difference in turn-on and turn-off times results in the one transistor being in the off state while the other transistor is in the on state.

4,520,280

APPARATUS FOR DETECTING INPUT SIGNAL

Shozi Yoshikawa; Hiroshi Kodama; Ken Ohsima, all of Hachioji; Masaharu Sakamoto, Tokyo; Kiichi Kato, Hachioji, and Kunio Yamamiya, Tokyo, all of Japan, assignors to Olympus Optical Company Limited, Japan

Filed Aug. 9, 1982, Ser. No. 406,487
Claims priority, application Japan, Aug. 13, 1981, 56-126005
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—358 **12 Claims**



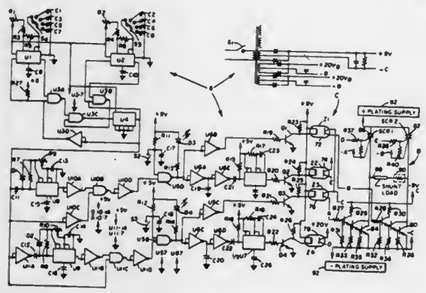
1. An apparatus for detecting an input signal comprising:
means for receiving the input signal and forming a profile signal which resembles a fluctuation of a base line of the input signal;
means for adding said profile signal to upper and lower threshold levels to form upper and lower reference levels; and
means for comparing the input signal with said reference levels to derive output signals when said input signal exceeds the reference levels.

4,520,281

WIDE PULSE RANGE PERIODIC REVERSE UNIT

Ralph R. Green, and Robert C. Green, both of Hiram, Ohio, assignors to Imperial Clevite Inc., Glenview, Ill.

Continuation of Ser. No. 067,971, Aug. 20, 1979, abandoned.
This application Feb. 16, 1982, Ser. No. 349,433
Int. Cl.³ H03K *15/082, 15/14*
U.S. Cl. 307—475 **11 Claims**



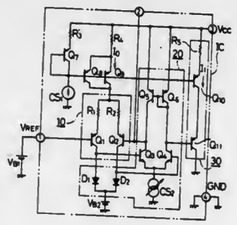
1. An electrical circuit for generating electrical pulses, said circuit comprising in combination:
a timing and control circuit including means for generating a plurality of wave pulses, said wave pulses including at least a first wave pulse having a first frequency and a second wave pulse having a second frequency, said first frequency being different from said second frequency, means for distinguishing and combining said wave pulses to generate a wave signal, including high side and low side durations in proportion to said first frequency and said second frequency, respectively, means for generating delays at alternations of said wave signal, and means for converting said wave signal to electrical pulses in parallel circuit path with said wave signal;
a power switching circuit including a plurality of high power switches; first means for coupling said high power switches with energization means and a second means for coupling a load to said high power switches; and,
a plurality of isolating means for interfacing said timing and control circuit with said power switching circuit, whereby the output signal of said timing and control circuit determines the application of energy to said load from said energization means.

4,520,282

ELECTRONIC IMPEDANCE CIRCUIT INCLUDING A COMPENSATION ARRANGEMENT FOR D.C. OFFSET

Kazuo Watanabe; Yuichi Ohkubo, both of Takasaki; Akira Haeno, Iruma, and Fumihiko Yokogawa, Tokorozawa, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electronic Corporation, both of Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 411,997
Claims priority, application Japan, Aug. 28, 1981, 56-134006
Int. Cl.³ H03K *3/023;* **H03H** *11/00*
U.S. Cl. 307—491 **7 Claims**



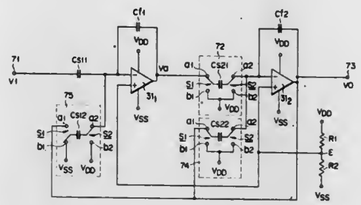
1. An electronic impedance circuit comprising:
a voltage-current converter which includes a first transistor and a second transistor which have their emitters differentially coupled, wherein a base of said first transistor is biased to a predetermined bias potential;
a first constant current source which is connected to said emitters of said first transistor and said second transistor;
a variable gain current amplifier which includes a third transistor and a fourth transistor which have their emitters differentially coupled, and which amplifier further includes a fifth transistor and a sixth transistor which have their bases connected in common, wherein a base of said third transistor and a base of said fourth transistor are respectively connected to a collector of said first transistor and a collector of said second transistor, wherein said first transistor is connected to a collector of said third transistor as a first load means, wherein said sixth transistor is connected to a collector of said fourth transistor as a second load means, and wherein said collector of said third transistor is connected to a base of said second transistor to feed a collector signal of said third transistor back to said base of said second transistor;
a variable constant current source which is connected to said emitters of said third transistor and said fourth transistor; and
a compensation circuit which is connected to said variable gain current amplifier to compensate a current flowing between said base of said second transistor and said collector of said third transistor, wherein said compensation circuit includes a compensation transistor whose base is connected to said collectors of said fourth and sixth transistors and which further includes a second constant current source which is connected in series with the collector-emitter path of said compensation transistor.

4,520,283

BAND PASS FILTER WITH A SWITCHED CAPACITOR

Itsuo Sasaki, c/o Katsunuma, 1315 Kamihirama, Nakahara-ku, Kawasaki-shi, and Hiroaki Suzuki, 2-11-1-514, Kaminagaya, Konan-ku, Yokohama-shi, both of Japan

Filed Jul. 2, 1982, Ser. No. 394,874
Claims priority, application Japan, Sep. 1, 1981, 56-137235; Sep. 1, 1981, 56-137236; Sep. 1, 1981, 56-137237
Int. Cl.³ H03H *11/12;* **H03K** *17/693*
U.S. Cl. 307—520 **6 Claims**



1. A band pass filter comprising:
a signal input terminal to which an input voltage signal is applied;
a signal output terminal from which an output voltage signal is taken out;
first and second power source terminals for connection to first and second power sources, respectively;
first operational amplifier means connected to said first and second power source terminals to be driven by said first and second power sources;
a first feedback capacitor connected between an inverting input terminal of said first amplifier means and an output terminal of said first amplifier means;
an input capacitor connected between said signal input terminal and said inverting terminal of said first amplifier means;
second operational amplifier means connected to said first and second power source terminals to be driven by said first and second power sources, an output terminal of the second amplifier means being connected to said signal output terminal;
a second feedback capacitor connected between an inverting input terminal of said second amplifier means and an output terminal of said second amplifier means;
a first switched capacitor connected, in a first switched mode, between said output terminal of said first amplifier means and said inverting input terminal of said second amplifier means, and, in a second switched mode, short-circuited and connected to said first power source terminal;
feedback circuit means for feeding an output voltage signal of said second amplifier means back to said inverting input terminals of said first and second amplifier means; and
bias means connected to said first and second power source terminals for applying a predetermined bias voltage to non-inverting input terminals of said first and second amplifier means.

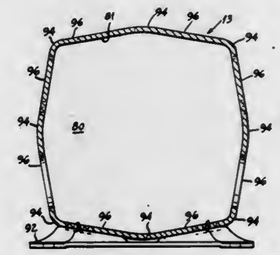
4,520,284

ROLLED HOUSING FOR EDDY CURRENT COUPLING

John H. Wolcott, Bristol, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 522,446, Aug. 12, 1983, abandoned.
This application May 23, 1984, Ser. No. 612,980
Int. Cl.³ H02K *15/00*
U.S. Cl. 310—42 **22 Claims**

1. An eddy current coupling comprising a housing, a rotor member disposed in said housing, inductor drum means disposed in said housing and rotatable about an axis of rotation relative to said rotor member, and coil means located in said housing for producing an electro-magnetic field for electro-magnetically coupling said rotor member and said inductor drum means, said housing including a central portion having a non-circular cross-sectional configuration and first and second end members, said central portion of said housing having an opening at both ends thereof and being expandable in a radial direction perpendicular to said axis of rotation, said central portion of said housing having first, second, third and fourth sides disposed parallel to said axis of rotation, each of said sides including first and second portions disposed parallel to said axis of rotation, said central portion of said housing defining a chamber which is adapted to receive said rotor member, said inductor drum means and said coil means therein, said rotor member and said inductor drum means being spaced apart



from said central portion of said housing said first and second end members including pilot surfaces thereon, one of said first and second end members being adapted to have the pilot surfaces thereon received in one end of said central portion of said housing and the other of said first and second end members being adapted to have the pilot surfaces thereon received in the other end of said central portion of said housing to thereby enclose said chamber in said central portion of said housing and to expand said central portion of said housing in a radial direction to a dimension controlled by the dimension of said pilot surfaces of said first and second end members, said first and second portions of each of said sides of said housing being interconnected by a flexible arcuate portion which allows said first and second portions to flex outwardly upon engagement therewith with said pilot surfaces of said first and second end members.

4,520,285

STARTING MOTOR ASSEMBLY HAVING AN INTEGRAL EPICYCLIC GEAR

Shuzoo Isozumi, and Kazuyoshi Hara, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1983, Ser. No. 469,750
Claims priority, application Japan, Mar. 1, 1982, 57-29806[U]
Int. Cl.³ H02K *7/116*
U.S. Cl. 310—83 **7 Claims**

1. A starting motor assembly for an internal combustion engine, said starting motor assembly comprising:
(a) a starting motor comprising a yoke surrounding an armature rotary shaft;
(b) an output shaft which is coaxial with said armature rotary shaft; and
(c) an epicyclic reduction gear assembly operatively connected to said starting motor, said epicyclic reduction gear assembly comprising a solar gear mounted on and rotatable with said armature rotary shaft, a planetary gear in engagement with said solar gear and operatively connected to said output shaft such that rotation of said planetary gear about said solar gear causes corresponding rotation of said output shaft, and an internal gear formed integrally in an inner circumferential surface of said yoke

as a part of said yoke, said internal gear being in engagement with said planetary gear,

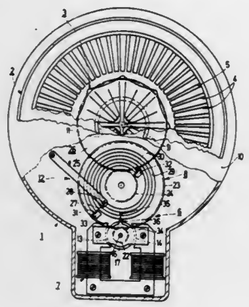
whereby the rotational speed of said armature rotary shaft is stepped down by said epicyclic reduction gear assembly and said output shaft consequently rotates more slowly than said armature rotary shaft.

4,520,286

APPLIANCE DRIVEN BY AN ELECTRIC MOTOR

Romuald L. Bukoschek, Klagenfurt, Austria, and Gerhard Diefenbach, Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 16, 1983, Ser. No. 505,018
Claims priority, application Austria, Sep. 7, 1982, 3346/82
Int. Cl.³ H02K *33/10, 7/118, 7/10*
U.S. Cl. 310—83 **3 Claims**



1. An electrically driven appliance such as a citrus press, which comprises a drivable tool; a self-starting single-phase synchronous motor including a diametrically magnetized permanent-magnet rotor forming a rotor field and positioned between two stator poles forming a stator field; a drive mechanism arranged between said motor and said tool for driving the latter, said mechanism including a plurality of drive elements each engaging the adjacent element or elements; and a stalling device coacting with one drive element, said one drive element having a pair of stops and being formed with a groove in a side face thereof, said groove being closed at both ends to provide said stops; said stalling device including a member alternately engageable with said stops after a specific number of revolutions of the rotor in either direction of rotation, such engagement effecting stalling of the rotor and automatic reversal of the direction of rotation of the rotor, said stalling device member comprising an arm pivotally connected at one end to the appliance and having its free end guided in said groove; the physical relationship of said stalling device member and said stops to each other being such that the rotor is stalled in positions wherein the angle between the rotor-field vector intersecting the rotor axis and a line intersecting the rotor axis perpendicularly to the stator field lies within an angular range of 60° in each direction of rotation of the rotor.

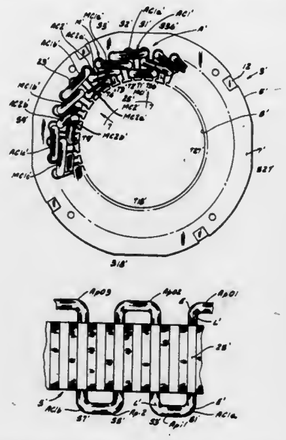
4,520,287

STATOR FOR A MULTIPLE-POLE DYNAMOELECTRIC MACHINE AND METHOD OF FABRICATING SAME

David C. Wang, Fort Wayne, Ind., and Harry W. Voepel, Moscow Mills, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 315,288, Oct. 27, 1981, Pat. No. 4,426,771. This application May 23, 1983, Ser. No. 497,085
Int. Cl.³ H02K *15/06*
U.S. Cl. 310—184 **5 Claims**

1. A stator for a multiple-pole dynamoelectric machine comprising a core of a stack of laminations of suitable ferromagnetic material, said core having a central bore extending therethrough and a plurality of blind slots extending radially outwardly from said bore, said slots being substantially equally angularly spaced about said bore, an auxiliary winding divided into a first auxiliary winding coil set and a second auxiliary winding coil set, and a main winding divided into a first main winding coil set and a second main winding coil set, each of said coil sets being constituted by a respective skein of a suitable magnet wire of petalled, serpentine shape defining a plurality of coils with each coil having a multiplicity of turns of said magnet wire therein and with each coil having a first and a second end turn and a pair of straight coil sections between each of the end turns, said core having a first straight coil section of a first coil of a first of said coil sets inserted in a first slot of said core and the next straight coil section of said first coil of said first coil set being inserted in the third slot of said core, the remainder of the straight coil sections of said first coil set being inserted in the fifth, seventh, . . . , and next to last slots of said core, said straight coil sections of a second coil set being inserted in said second, fourth, sixth, . . . , and last slots of said core, said straight coil sections of a third coil set being inserted in the third, fifth, seventh, . . . , and first slots of said core, and the coil sections of a fourth coil set being inserted in the fourth, sixth, eighth, . . . , and second slots of said core, said coil sets being electrically connected for operation of said dynamoelectric machine.

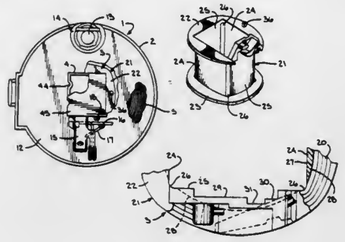


4,520,288

IGNITION MAGNETO HAVING AN IMPROVED PRIMARY WINDING CONSTRUCTION

John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Apr. 5, 1984, Ser. No. 596,860
Int. Cl.³ H02K *15/04*
U.S. Cl. 310—194 **10 Claims**



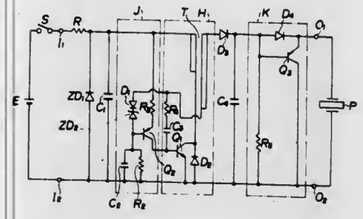
1. A primary winding assembly for an ignition magneto, comprising a bobbin composed of electrically insulating material and having a generally rectangular configuration, said bobbin comprising a pair of end flanges and a pair of opposed first walls connected to said end flanges and a pair of opposed second walls interconnecting said end flanges, the side edges of each wall being spaced from the side edges of adjacent walls to provide a longitudinally extending slot at each corner of said bobbin, and a wire wound in a plurality of turns around the walls and extending across said slots.

4,520,289

DRIVE CIRCUIT FOR A PIEZO-ELECTRIC ELEMENT

Ryuichi Sato; Tsutomu Taniguchi, both of Kyoto, and Masatoshi Ohba, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed May 31, 1984, Ser. No. 615,908
Claims priority, application Japan, Jun. 1, 1983, 58-84536[U]
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—316 **8 Claims**



1. For a piezo-electric element:

a drive circuit, comprising:

(a) a blocking oscillator circuit comprising a booster transformer with primary and secondary windings, an oscillation transistor the collector of which is connected to the primary winding of said booster transformer, and a feedback circuit via which a signal at the secondary winding of said booster transformer is fed back to the base of said oscillation transistor so as to produce oscillation;

(b) an electric current control circuit means for restricting electric current from flowing through said oscillation transistor when the voltage at the secondary winding of said booster transformer has become equal to or greater than a certain value;

and

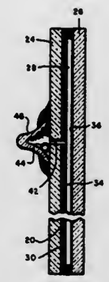
(c) a rectifying element through which said piezo-electric element is connected to the secondary winding of said booster transformer.

4,520,290

GAS DISCHARGE DISPLAY WITH BUILT-IN HEATER

Jon Cokefair, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Oct. 29, 1982, Ser. No. 437,557
Int. Cl.³ H01J *1/22, 61/60*
U.S. Cl. 313—15 **7 Claims**



1. In a gas discharge display device having a cathode terminal and an anode terminal separated from each other within a sealed gas chamber formed between two layers of glass, the gas in the chamber including a mixture of inert gases and mercury at subatmospheric pressure, the improvement comprising:

heater means on one of said layers of glass positioned proximate the cathode terminal and within the display device for maintaining an internal device temperature of at least 0° C. so that mercury is maintained in a gaseous state within the device; and

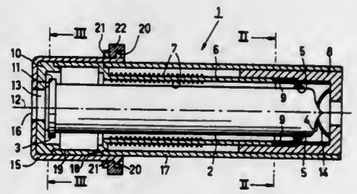
insulating means overlying said heater means for electrically insulating said heater means from said cathode and anode terminals to facilitate the conduction of heat from the heater means to the gas in said chamber, and for electrically insulating said heater means from the gas in said chamber so that the heater means does not affect the light discharge between said anode and cathode terminals.

4,520,291

PICK-UP UNIT COMPRISING A CAMERA TUBE

Henricus J. Van Rooy, and Martinus J. Tops, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 312,478, Oct. 19, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 535,550
Claims priority, application Netherlands, Nov. 12, 1980, 8006166
Int. Cl.³ H01J *31/00, 31/26*
U.S. Cl. 313—365 **10 Claims**



1. A pickup unit comprising:

a camera tube having two ends with a window portion at one end and a bottom portion at the other end, said camera tube having contact strips laterally led through the bottom portion of the tube; and

a coil former having an axis and two ends, said coil former surrounding the camera tube, said camera tube being radially centered relative to the ends of the coil former near the window and bottom portions of the tube, said coil former being provided with coils;

characterized in that:

the pickup unit further comprises a sealing cap connected to the end of the coil former at the window portion of the tube, said sealing cap having an abuting face which extends perpendicular to the axis of the coil former and an aperture in the abuting face, said sealing cap comprising means for radially centering the window portion of the camera tube relative to the coil former; and

the coil former further comprises a tube base at the bottom portion of the tube, said tube base comprising:

means for radially centering the bottom portion of the camera tube relative to the coil former;

resilient means for urging the camera tube axially against the abuting face of the sealing cap; and

means for contacting the contact strips of the camera tube.

4,520,292

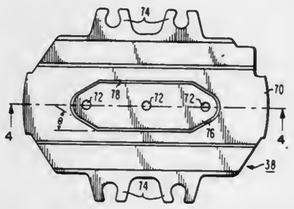
CATHODE-RAY TUBE HAVING AN ASYMMETRIC SLOT FORMED IN A SCREEN GRID ELECTRODE OF AN INLINE ELECTRON GUN

Frans van Hekken, Lancaster, and Hsing-Yeo Chen, Landisville, both of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed May 6, 1983, Ser. No. 492,437

Int. Cl.³ H01J *29/51, 29/54*

U.S. Cl. 313—412 **4 Claims**



1. In a cathode-ray tube comprising an image screen and an inline electron gun for projecting three electron beams along beam paths onto said screen, said gun comprising:

three cathodes for generating said electron beams,

a control grid, a screen grid, and a main electron lens arranged successively in alignment with said cathodes for focusing said electron beams, said control grid and said main electron lens having three apertures disposed in a plane for passing said electron beams, said screen grid having a functional grid area with a given thickness, said screen grid having three apertures formed within said functional grid area and aligned with said apertures in said control grid, the improvement wherein

said screen grid includes a transversely disposed recessed portion having a substantially rectangularly-shaped central part and substantially triangularly-shaped end parts, the apex of each of the triangularly-shaped end parts being smoothly-curved, said recessed portion having said apertures therein, said recessed portion being surrounded by a peripheral rim which conforms to the shape of said recessed portion, the substantially rectangularly-shaped central part of the rim is remote from the central aperture and the triangularly-shaped end parts of the rim are in proximity to the outer apertures thereby affecting the electrostatic field in the vicinity of the outer beam paths by tilting the field lines within said recessed portion causing the electron beams passing through the outer apertures to converge toward the center electron beam.

4,520,293

HIGH FREQUENCY AMPLIFIER

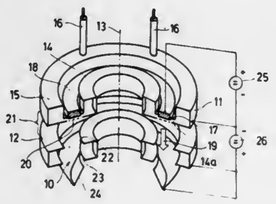
Klaus-Rainer Müller, Mannheim-Vogelstang, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Feb. 10, 1983, Ser. No. 465,639

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204833

Int. Cl.³ H01J *25/22*

U.S. Cl. 315—5.25 **10 Claims**



1. A high frequency amplifier for a frequency range from 300 MHz to 3 GHz and having an output power in the megawatt range, said amplifier having an axial axis and comprising:

(a) means for generating a rotating electron beam including

(1) a ring shaped input resonator which is rotationally symmetric with respect to the amplifier axis, said input resonator being formed to present an input gap concentric to the amplifier axis,

(2) means for generating a high frequency electrical field in said input resonator, and

(3) a cathode ring disposed in front of said input gap for generating the rotating electron beam in response to the high frequency electrical field;

(b) a ring shaped output resonator constructed for passage therethrough of the beam and for converting the kinetic energy of the electrons in the beam into high frequency power, said output resonator being rotationally symmetric with respect to the amplifier axis, axially spaced from said input resonator and electrically biased by a direct voltage potential difference with respect to said input resonator, wherein the axial space between said input resonator and said output resonator constitutes a direct voltage acceleration path for the electrons emitted from said beam generating means, the electron beam traverses the acceleration path within an annular cylindrical region coaxial with the amplifier axis, the electrons of the beam enter said output resonator with substantially identical velocities, and the kinetic energy of the electrons is converted in said output resonator to high frequency power in dependence on the azimuthal angle width of said beam;

(c) a grid ring disposed at the side of said input resonator between said cathode ring and said output resonator, the electron beam exiting said beam generating means through said grid ring and said grid ring restricting the passage of an electrical field from into said input resonator; and

(d) a collector disposed on the side of said output resonator remote from said input resonator;

(e) wherein said beam generating means, said acceleration path, said output resonator and said collector are axially disposed one behind the other in the direction of the amplifier axis.

4,520,294

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP

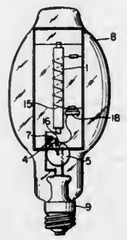
Takenobu Iida, Urawa, and Shunichi Sasaki, Tokyo, both of Japan, assignors to Iwasaki Electric Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1983, Ser. No. 522,344

Claims priority, application Japan, Aug. 23, 1982, 57-144795

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—50 **28 Claims**



1. A high pressure metal vapor discharge lamp comprising:

a starting circuit connected in parallel with a light emitting tube having at least one pair of main electrodes;

said starting circuit including a serial circuit of at least;

(i) a thermo-sensitive switch which is closed at a room temperature and opened at a high temperature,

(ii) a voltage-sensitive semiconductor switching device surrounded by a glass material, and

(iii) a ceramic capacitor surrounded by a glass material and exhibiting a non-linear voltage charge characteristic,

said starting circuit and said light emitting tube being accommodated in an outer bulb having an appropriate amount of inert gas filled therein or essentially evacuated; and

said starting circuit being connected to an AC power supply through an inductive stabilizer.

4,520,295

STEP-WISE DIMMER CONTROL CIRCUIT FOR A DISCHARGE LAMP

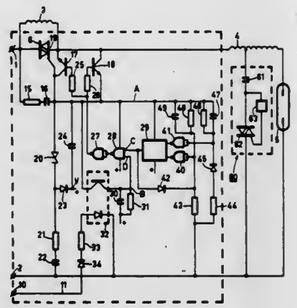
Pieter J. Bolhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,538

Claims priority, application Netherlands, Nov. 9, 1981, 8105046

Int. Cl.³ H05B *37/02, 41/38*

U.S. Cl. 315—291 **10 Claims**



1. An electric arrangement for step-wise controlling the luminance of a discharge lamp comprising, two input terminals adapted to be connected to an a.c. voltage source, means connecting a series arrangement of the lamp and at least two electric coils across said input terminals, a first controlled semiconductor switching element having a thyristor characteristic connected in parallel with one of said coils, a control circuit coupled to the semiconductor switching element so as to make the semiconductor switching element conductive after a periodic zero-crossing of the current through the lamp in the least dimmed state of the lamp, and an auxiliary arrangement coupled to the control circuit so as to inhibit the operation thereof by means of which the semiconductor switching element is made conductive, the control circuit of the semiconductor switching element comprising a connection from a control electrode to a main electrode of the semiconductor switching element that is free of a voltage-increasing circuit element, the inductance of said one coil having a value such that on reignition of the lamp after said zero crossing of the current, the one coil produces a voltage on the control electrode of the semiconductor switching element sufficient to make said switching element conductive.

4,520,296

ELECTRIC MOTOR DRIVE ARRANGEMENT

Eberhard Lepper, and Karl-Heinz Lust, both of Lahnau, Fed. Rep. of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,224

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210352

Int. Cl.³ H02P *5/06;* **H02K** *37/00*

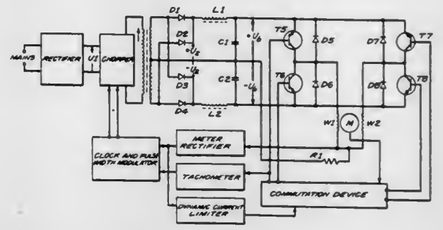
U.S. Cl. 318—254 **7 Claims**

1. An electric drive arrangement for a motor with two phase windings connected to a common connection point comprising:

a motor supply having a chopper circuit and a voltage source having a neutral point,

a pulse width modulator for producing control pulses, said pulse width modulator being connected to said chopper circuit and to the common connection point of the two phase windings,

a current measuring resistor connecting said common connection point to said neutral point of the voltage source for forming voltage drop proportional to the current through said motor and influencing the width of said control pulses of said pulse width modulator,



said pulse width modulator being connected to said resistor to vary the widths of the pulses on the basis of the voltage drop across the resistor, said chopper being connected to said pulse width modulator so that said pulse width modulator controls the chopping time on the basis of the voltage drop across the resistor and said chopper being connected to said voltage source to vary the voltage of the voltage source in a direction to keep the current through the resistor constant.

4,520,297

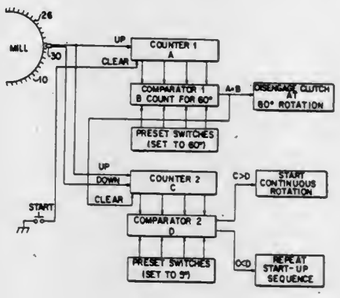
SOLIDIFIED CHARGE PROTECTION CONTROL FOR ROTATING APPARATUS

John S. League, IV, Baltimore, Md., assignor to Mineral Processing Systems, Inc., York, Pa.

Filed Sep. 3, 1982, Ser. No. 414,632

Int. Cl.³ F27B *7/00*

U.S. Cl. 318—490 **4 Claims**



1. An electrical control apparatus for determining if a charge has solidified in a rotating apparatus comprising:

(a) means for sensing the angular position of the rotating apparatus;

(b) means for sensing an initial rest position of the rotating apparatus;

(c) means for rotating said apparatus a pre-set amount;

(d) means to cause said apparatus to oscillate in a free manner;

(e) means to evaluate the oscillation and sense a final rest position of said apparatus; and

(f) means to restart the rotation of said apparatus if said final

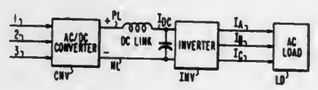
rest position is moved from said initial rest position by more than a pre-set angular amount.

4,520,298

METHOD AND APPARATUS FOR SAMPLING OUTPUT AC CURRENTS IN A VOLTAGE-FED INVERTER POWER SUPPLY

Alberto Abbondanti, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1984, Ser. No. 596,332
Int. Cl.³ G01R *19/00;* **H02P** *5/40*
U.S. Cl. 318—490 **23 Claims**



1. In a voltage-source inverter AC power supply including a voltage-source, an inverter and a DC link passing DC current from said voltage-source to said inverter, said inverter having a plurality of power switches controlled in accordance with a modulation pattern for outputting AC currents on polyphase AC lines, the method of deriving a signal representative of at least one of said AC currents comprising the steps of:

deriving from said DC link sample representative of said DC current during successive sampling instants;

deriving a logic representation of the actual switching status of said power switches between an ON and an OFF status in accordance with said pattern for each said sampling instant;

correlating a succession of said DC current samples with a corresponding one of said AC currents in accordance with said actual switching status logic representation; and

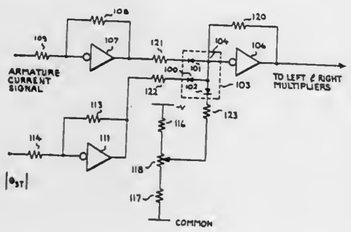
deriving said representative signal in relation to said succession of DC current samples.

4,520,299

TURNING SPEED CONTROLLER FOR ELECTRIC VEHICLES HAVING DUAL DRIVE MOTORS

Charles E. Konrad, Roanoke, Va., assignor to General Electric Company, Charlottesville, Va.

Filed Dec. 22, 1983, Ser. No. 564,573
Int. Cl.³ B62D *11/04;* **H02P** *7/68*
U.S. Cl. 318—587 **5 Claims**



1. In a control system for an electrically powered vehicle of the type having dual drive motors with series connected armature windings and separately excited field windings, said dual motors being arranged such that one motor thereof is provided for each of two driven wheels on a common axle line, apparatus for automatically limiting the vehicle speed as a function of its turning angle during a turning maneuver, comprising:

field regulating means for regulating the excitation of said field windings in accordance with a field regulating signal;

means providing a first signal representative of the current flowing in said armature windings;

means providing a turning angle signal having a value which is a function of the selected turning angle for said vehicle;

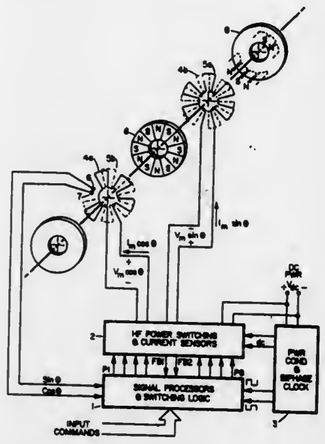
a field excitation selector having first and second inputs receiving said first signal and said turning cycle signal thereat, respectively, said selector being operative to select as said field regulating signal said first signal or said turning angle signal, depending on which one of said signals provides the greatest field excitation, whereby said field excitation is increased with sharper turning angles and said vehicle is thereby automatically operated at a reduced speed.

4,520,300

BRUSHLESS ULTRA-EFFICIENT REGENERATIVE SERVOMECHANISM

Richard B. Fradella, 33872 Calle Conejo, San Juan Capistrano, Calif. 92675

Filed Dec. 6, 1982, Ser. No. 433,170
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—603 **27 Claims**



1. Cooperative with a polyphase synchronous motor in a servomechanism for providing regenerative motion control, a switching controller, responsive to various input commands and to polyphase transducer signals that vary sinusoidally with rotor angle and correspond to respective stator phases, for synchronously controlling polyphase stator current; including in combination:

means for deriving, from the transducer signals, the instantaneous magnitudes, polarities, and frequency thereof;

signal interface means, responsive to various input command signals, and variously, to the instantaneous magnitudes, polarities, and frequency, for providing a torque amplitude signal, and variously, binary forward drive, reverse drive, and brake commands;

multiplier means, responsive to the instantaneous magnitudes and to the torque amplitude signal, for providing respective synchronized amplitude control signals;

a high-frequency power switching circuit, having power switching transistors which are selectively switched at a variable duty-cycle, for effecting controlled alternating stator currents;

current sensors, having current transformers with primary windings in series with respective power switching transistors, for providing inductively coupled current feedback pulses proportional to instantaneous current thru the respective transistors;

oscillator means, that provide a high-frequency squarewave signal;

pulse control means, for initiating, from the squarewave signal, staggered pulses each having a restricted duty-cycle, and each having a variable duration dictated by the respective synchronized amplitude control signal and the corresponding current feedback pulse;

switching logic, responsive to the staggered pulses, to said polarities, and to the binary commands, for controlling the selection and duty-cycle of said transistors;

means for sourcing and sinking dc power and high-frequency current.

24. Cooperative with a switching controller in a servomechanism for providing regenerative motion control, a polyphase synchronous motor, which provides polyphase transducer signals that each vary sinusoidally with rotor angle in synchronism with the emf of a corresponding stator winding, for producing bidirectional torque proportional to synchronously controlled polyphase stator current and polyphase emf proportional to rotor speed; including in combination:

two permanent-magnet rotor end-disks, each providing at one face a pattern of evenly distributed alternating poles from merged looping tangential magnetized paths therein;

permanent-magnet rotor disks, each providing at both faces a like number of evenly distributed alternating poles from axially magnetized paths therethru;

rotatable means for holding a coaxial stack of the rotor disks and end-disks, each affixed to every other with axial spaces therebetween having an aligned axial magnetic field pattern that rotates therewith;

a stator ring, containing polyphase stator windings, and corresponding polyphase transducers which each provide a sinusoidal signal that varies with the axial magnetic field thereat, cemented together in a molded non-ferromagnetic matrix;

stator rings, each containing polyphase stator windings cemented together in a molded non-ferromagnetic matrix;

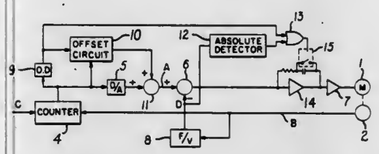
means for holding a coaxial stack of the stator rings, each fixed to a motor mount, such that corresponding phases are in alignment, and the stator windings and transducers juxtaposed to the rotor disks and end-disks in respective alternation therewith in the axial spaces therebetween.

4,520,301

CONTROLLING APPARATUS FOR POSITIONING

Hayao Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 505,057
Int. Cl.³ G05B *11/36*
U.S. Cl. 318—609 **7 Claims**



1. A positioning control apparatus for controlling a positioning device of the type having a motor, a digital type position detector, a speed detector and a feedback control device and which operates in response to input pulses in accordance with the speed and the number of the pulses; said apparatus comprising:

a first means for comparing the pulse number of the input pulses with that of the feedback pulses from said digital type position detector;

a second means for converting the output signal from said first means into an analog form;

a third means for subtracting the signal from said speed detector from the output signal from said second means;

a fourth means for detecting the absolute value of the signal of said speed detector to obtain a corresponding binary code thereof;

a PI amplifier for amplifying the output signal from said third means; and

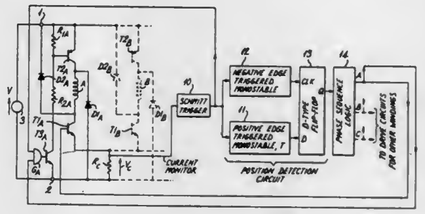
a switching means for changing said PI amplifier so as to act as a P amplifier, the switching means having an input terminal connected to said fourth means and an output terminal connected to said PI amplifier, said switching means being rendered operative to effect the changing of the PI amplifier when the detected result of said fourth means shows that the speed is larger than a given value.

4,520,302

STEPPING MOTORS AND DRIVE CIRCUITS THEREFOR

Roland J. Hill, Cambridge, and Paul P. Acarnley, Weston Colville, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 12, 1984, Ser. No. 588,225
Claims priority, application United Kingdom, Mar. 15, 1983, 8307047
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **6 Claims**



1. A drive circuit for a stepping motor having at least one stator phase winding comprising:

phase switching means associated with said at least one phase winding for switchably connecting said at least one phase winding to supply terminals;

phase control means for operating the phase switching means;

means for repeatedly chopping the electrical connection from the supply terminals to said at least one phase winding when current flow in such phase winding has risen to a predetermined value;

a by-pass circuit associated with each of said at least one phase winding for allowing current flow through the winding to decay when the chopping means operates;

means for restoring the electrical connection from the supply terminals to said at least one phase winding after a delay time;

means for measuring a characteristic of current flow in the motor to derive an indication of rotor position, said characteristic being selected from the group of characteristics comprising current rise time, current decay time and chopping frequency; and

means for utilizing the value of the characteristic measured in said measuring means to operate the phase control means.

4,520,303

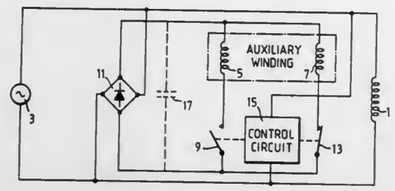
INDUCTION MOTORS

Philip A. Ward, Staffordshire, England, assignor to Associated Electrical Industries Limited, England

Filed Feb. 15, 1984, Ser. No. 580,558
Claims priority, application United Kingdom, Feb. 21, 1983, 8304714
Int. Cl.³ H02P *1/42*
U.S. Cl. 318—778 **5 Claims**

1. A single phase induction motor comprising: a first winding arranged for energization from a single phase supply; an electronic switching arrangement; a second winding arranged

for energization from said supply via said electronic switching arrangement; and control means arranged to control the operation of said switching arrangement in synchronism with the supply so that the phases of the voltages across said first and second windings differ by an amount sufficient to provide a starting torque, and wherein said second winding comprises two portions, said switching arrangement comprises two



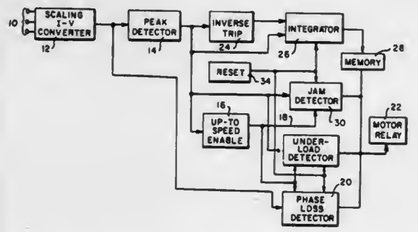
switches each connected in series with a respective one of said second winding portions across said supply and said control means is responsive to the supply to render said switches conducting alternately with a changeover from conduction of one switch to conduction of the other switch occurring during each half cycle of the supply voltage, said two portions of the second winding providing, when energized, magnetic fields of opposite sense.

4,520,304

THREE PHASE SCALING CURRENT-TO-VOLTAGE CONVERTOR

Earl J. Curran, Jr., South Milwaukee, Wis., assignor to Square D Company, Palatine, Ill.

Filed Sep. 30, 1982, Ser. No. 431,920
Int. Cl.³ H02P *5/00*
U.S. Cl. 318—800 **1 Claim**



1. In an induction motor controller for a three-phase motor, the controller including means responsive to a voltage control signal for disconnecting power for a motor being controlled, a converter for producing the voltage control signal comprising:

a plurality of current transformers (**56**, **58**, and **60**), one of each of the plurality connected to monitor current in one phase of the motor being controlled;

a plurality of diodes (**62**, **64**, and **66**) one of each of the diodes connected across one of each of the current transformers and one of each of the diodes connected to one of each of the current transformers to constitute with the others a half-wave rectifier;

a capacitor (**68**) connected to each of the rectifying diodes and to each of the current transformers to comprise with the diodes a peak current detector;

an operational amplifier (**70**) connected to the capacitor and receiving from it a voltage that is proportional to the rectified current that is detected by the current transformers;

a plurality of resistors (**72**), selected individually by a switch (**74**) so that one of the resistors is selectable to adjust gain of operational amplifier (**70**); and

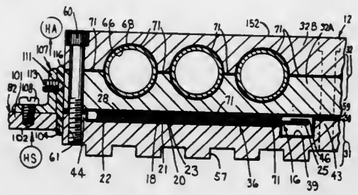
a drive transistor (**76**) connected to receive as an input the output of operational amplifier (**70**) and connected to produce as an output the voltage control signal.

4,520,305

THERMOELECTRIC GENERATING SYSTEM

Charles J. Cauchy, 935 Lincoln St., Traverse City, Mich. 49684

Filed Aug. 17, 1983, Ser. No. 524,041
Int. Cl.³ H02N *0/00*
U.S. Cl. 322—2 R **21 Claims**



1. A thermoelectric electricity generating system for connection with a heat source and a heat acceptor comprising a source of fluid at a temperature less than that of the heat source, said system comprising:

first and second elongate plates of substantially constant cross section and of high heat and electrical conductivity metal, said first and second plates being releasably connected in facing relation with opposing inner surfaces, at least one said opposing inner surface being formed with an elongate recess extending lengthwise of the corresponding said plate;

a plurality of flat, platelike thermoelectric members disposed edge by edge along said recess and snugly sandwiched between said first and second plates, said thermoelectric members each comprising a plurality of heatable junctions on one side facing said first plate and a plurality of coolable junctions on the other side facing said second plate;

a surface layer which is very thin compared to the thickness of said plates and has a conductivity relatively high as to heat and relatively low as to electricity, said surface layer establishing wide area contact of said heatable and coolable junctions with the opposed first and second plates, respectively, so as to transfer heat from said first plate to one side of said thermoelectric member and from the other side of said thermoelectric member to said second plate without electrically shorting adjacent junctions on either side of said thermoelectric member, each said thermoelectric member having a pair of electrical output terminals, the output terminals of said thermoelectric members being aligned along said recess and connected to electric output lines, said first and second plates being respectively thermally coupleable to said heat source and said source of lower temperature fluid.

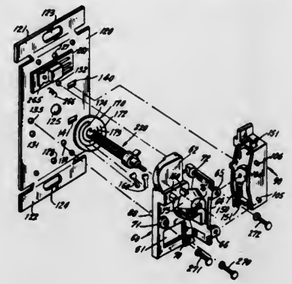
4,520,306

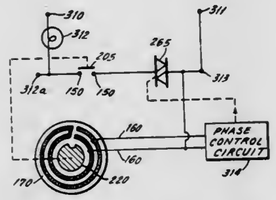
WALL MOUNTED ELECTRICAL VOLTAGE CONTROL SWITCH

David Kirby, Emmaus, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Aug. 22, 1983, Ser. No. 525,129
Int. Cl.³ H05B *39/04*
U.S. Cl. 323—324 **23 Claims**

1. A voltage control switch capable of being mounted in a wall box comprising, in combination; a molded plastic switch housing containing the first and second cooperable contacts of an air gap switch; a molded plastic potentiometer housing containing a rotatable and axially movable operating shaft and a variable resistor structure coupled to said shaft, whereby the resistance of said variable resistor structure is varied in response to the rotation of said shaft; a conductive generally flat yoke; power semiconductor means connected in thermal exchange relation relative to said yoke; said power semiconductor means having leads extending therefrom connected in series with said air gap switch to define the main terminals of said voltage control switch; said variable resistor structure being electrically coupled to said power semiconductor means to vary the conduction time of said power semiconductor means in response to rotation of said shaft; said shaft being





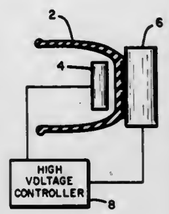
mechanically coupled to said air gap switch to change the condition of said switch between an open and closed position each time said shaft is moved in a given axial direction; and connection means connecting said potentiometer housing and said switch housing to one side of said yoke with said shaft extending through an opening in said yoke and being accessible for operation from the side of said yoke opposite to said one side.

4,520,307

HIGH-VOLTAGE TIRE TESTING APPARATUS

Arnold A. Weiss, 1225 LaSalle, #1008, Minneapolis, Minn. 55403, and Dale A. Gustafson, Minneapolis, Minn., assignors to Arnold A. Weiss, Minneapolis, Minn.

Continuation of Ser. No. 368,357, Apr. 14, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 587,670
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **23 Claims**



23. Non-destructive, flaw detecting apparatus comprising:

a first head mounted inside the carcass of a metal containing tire under test;

means for moving said tire under test relative to said first head and/or said first head relative to said tire;

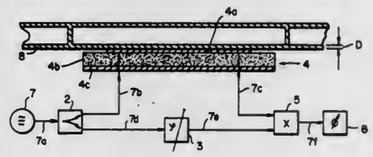
means coupled to said first head for establishing a voltage potential and a high electric field thereat whereby an arc is produced between said first head and said metal upon the presence of a flaw in said test tire in the vicinity of said first head.

4,520,308

PROCESS AND DEVICE FOR THE NONDESTRUCTIVE MEASUREMENT OF MATERIAL ACCUMULATIONS OR COATING THICKNESSES ON DIELECTRIC MATERIALS, IN PARTICULAR PLASTIC

Thomas Rohde, Meinerzhagen, and Friedhelm Caspers, Bochum, both of Fed. Rep. of Germany, assignors to Elektro Physik Hans Nix & Dr. Erich Steingroever, Cologne, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,384
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135263
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 R **15 Claims**



10. Apparatus for measuring thickness or material accumulation of a sheet of dielectric material such as plastic, comprising:

a microwave strip line; and

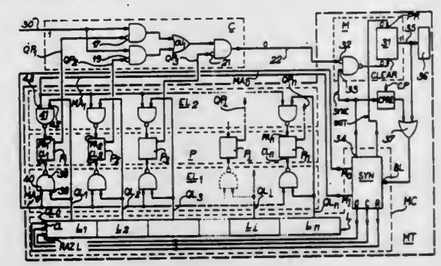
means to determine the change in propagation time of a signal supplied to said strip line as a function of said characteristic being measured.

4,520,309

SYSTEM FOR TESTING THE MALFUNCTIONING OR CORRECT OPERATION OF A CIRCUIT WITH LOGIC COMPONENTS

André Laviron, Fontaine les Dijon, and Claude Berard, Is-sur-Tille, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 5, 1982, Ser. No. 355,094
Claims priority, application France, Mar. 11, 1981, 81 04868
Int. Cl.³ G01R *31/28*
U.S. Cl. 324—73 R **1 Claim**



1. A system for testing the operation of a circuit having n components and an output, said system comprising:

storage means having a first input connected to the output of said circuit, a second input and an output;

a set of at least n flip flops, each having an output and at least one input, each of said ouputs being connected as an input to a corresponding one of said n components;

a logic assembly for selection and control of the flip-flops having at least n segments each of said segments corresponding to one of said n flip flops, each of said segments

having an output connected to the input of the corresponding flip flop, a first input and two control inputs;

a shift register containing at least n stages connected in series, each of said stages corresponding to one of said flip flops and one of said segments and having an output connected to the first input of the corresponding segment, said shift register having a return to zero input, a signal input and a shift input; a logic synchronization means having first and second outputs connected to said two control inputs of each segment of said logic assembly, third, fourth and fifth outputs connected to said return to zero input, said signal input and said shift input of first stage of said shift register, a sixth output connected to the second input of said storage means and an input connected to the output of said storage means;

wherein a signal to said input to said component causes said component to malfunction and

wherein said synchronization means produces a logic pattern within said shift register through said signal input, causing selected ones of said segments and said flip flops to receive an input signal, and selected ones of said components to malfunction, said synchronization means changing the output of one segment at a time through said two control inputs so that the state of malfunctioning of the corresponding component is changed, the storage means producing a signal on said output to indicate a change in the output of the circuit in response thereto.

4,520,310

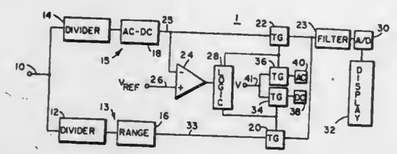
AUTOFUNCTION VOLTMETER

Austin T. Kelly, Morris Plains; Alan H. Stolpen, Union, and Philip Emile, Jr., Roseland, all of N.J., assignors to Sycon Corporation, Marion, Ohio

Filed Jun. 18, 1982, Ser. No. 389,723

Int. Cl.³ G01R *15/08, 17/02*

U.S. Cl. 324—115 **15 Claims**



1. In a measuring device for an input voltage, which device has an input voltage means for receiving the input voltage, an AC to DC converter means for providing a DC output voltage, and a measurement and display means; a circuit structure for changing operating function between AC and DC measuring and display modes, which circuit structure is operatively connected with the input voltage means, the AC to DC converter means, and the measurement and display means, the circuit structure comprising:

comparing means connected for comparing a portion of the input voltage with a first reference voltage and for providing an output signal having states indicative of the result of the comparison,

controlled switching means responsive to the output signal of said comparing means for connecting and disconnecting the output voltage of the AC to DC converter means to and from, while at substantially the same time disconnecting and connecting the input voltage from and to, the measurement and display means,

whereby input voltages are automatically measured and displayed as AC voltages with AC to DC conversion whenever the input voltages have an AC component of a particular relation to the first reference voltage.

4,520,311

CURRENT TO PULSE-SEQUENCE TRANSDUCER

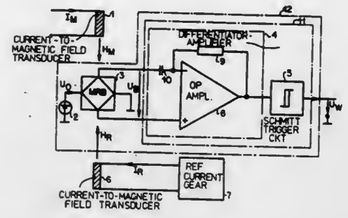
Jan Petr, Oberwil, and Benedikt Steinle, Zug, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed May 4, 1982, Ser. No. 374,797

Claims priority, application Switzerland, May 19, 1981, 3259/81

Int. Cl.³ G01R *19/00, 19/26*

U.S. Cl. 324—117 R **8 Claims**



1. A current to pulse-sequence transducer for transforming an alternating current to be measured into a sequence of pulses having a certain mark-to-space ratio,

comprising in combination,

transforming means for transforming the current to be measured into a measurement magnetic field having a strength substantially linearly proportional to the current to be measured,

means for generating an alternating reference magnetic field magnetically coupled to said transforming means, said alternating reference magnetic field having a frequency considerably higher than that of said alternating current, and

magnetic field comparison means, including

magnetoresistive thin film means magnetically coupled to said transforming means, and normally providing a zero output when said fields are equal, but generating an impulse at a moment in time when the strength of one magnetic field exceeds the strength of the other magnetic field, and

impulse processing means, including

a differentiator amplifier connected to the output of said magnetoresistive thin film means, and

a Schmitt trigger circuit, changing its state upon receiving an input having at least a predetermined threshold value, and postcoupled to said differentiator amplifier;

whereby there will be generated said sequence of pulses having said mark-to-space ratio in dependence of said alternating current to be measured, and there will be minimized the influence of any external electromagnetic disturbance picked up by said transducer having a magnitude below said threshold value on reaching said Schmitt trigger circuit.

4,520,312

METHOD FOR DETERMINING THE INTEGRITY OF PASSIVANT COVERAGE OVER RECTIFYING JUNCTIONS IN SEMICONDUCTOR DEVICES

Ming L. Tarng, San Diego, Calif., and William S. Romito, Somerset, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 3, 1982, Ser. No. 438,931

Int. Cl.³ G01R *31/21, 31/02*

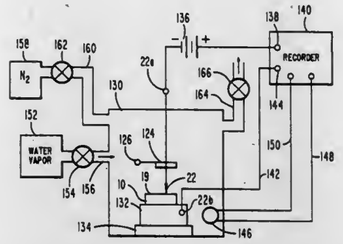
U.S. Cl. 324—158 D **8 Claims**

1. A method for determining the integrity of passivant coverage over a rectifying junction in a semiconductor device as manifested by humidity-induced leakage current, said device having passed a test of operability prior to passivation, comprising the steps of:

passivating the junction of said device with at least one layer of passivant material,

providing a reverse bias voltage at a predetermined value across said junction,

exposing the passivated device initially to a dry environment of substantially zero percent humidity while determining in said dry environment the reverse biased current flow through said device at said zero percent humidity,



thereafter exposing the device to a humid environment of predetermined relative humidity while determining in said humid environment the reverse biased current flow through said device and said junction; and

comparing the value of the respective currents to determine the integrity of the passivant, a defective passivant being manifested by a larger reverse biased current flow for said humid environment than the reverse biased current flow for said dry environment.

4,520,313

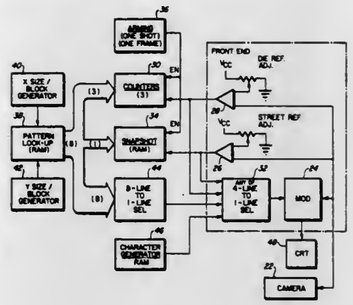
SEMICONDUCTOR TESTING AND APPARATUS THEREFOR

Laurence L. Allred, Jr., and Bradley N. Lange, both of Chandler, Ariz., assignors to Advanced Semiconductor Materials America, Inc., Phoenix, Ariz.

Filed Mar. 30, 1982, Ser. No. 363,641

Int. Cl.³ G01R *31/00*

U.S. Cl. 324—158 R **9 Claims**



1. A method of locating and testing a semiconductor die surrounded by a border region comprising:

scanning preselected regions of said die and said border region to generate a video signal corresponding thereto;

digitizing said video signal such that a light region of said die represented by a first potential and a dark region of said die is represented by a second potential;

storing said digitized video signal of said preselected regions; and

comparing said stored digitized video signal with a stored digitized video signal which corresponds to an acceptable semiconductor die.

4,520,314

PROBE HEAD ARRANGEMENT FOR CONDUCTOR LINE TESTING WITH AT LEAST ONE PROBE HEAD COMPRISING A PLURALITY OF RESILIENT CONTACTS

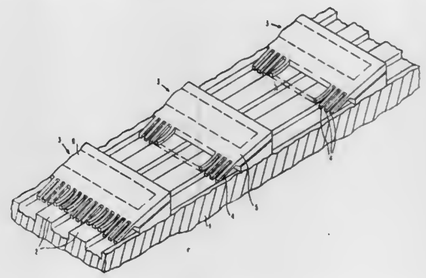
Karl Asch, Guelstein; Johann Greschner, Pliezhausen; Michael Kallmeyer, and Werner Kulcke, both of Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1982, Ser. No. 433,341

Claims priority, application European Pat. Off., Oct. 30, 1981, 81109373.1

Int. Cl.³ G01R *1/06, 31/02*

U.S. Cl. 324—158 P **11 Claims**



6. In a test apparatus for contacting and testing a plurality of exposed closely spaced electrically conductive members of very small dimensions, the subcombination of a probe head adapted to provide electrical contact with said electrical conductive members, comprising

a monolithic monocrystalline silicon comb-shaped structure having a spine portion and plurality of elongated teeth depending therefrom to provide a plurality of miniature resilient cantilever beams,

the said teeth having been selectively processed so as to have a substantially lower resistance than similarly configured teeth of pure silicon, and

individual electrical connections to each of said teeth for performing electrical testing of any of the electrical conducting members contacted by the said teeth when the probe head is deployed in physical contact with the electrical conductor assembly.

4,520,315

NUCLEAR SPIN TOMOGRAPHY METHOD

Wilfried Loeffler, Herzogenaurach; Arnulf Oppelt, Buckenhof, and Horst Siebold, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,962

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135335

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **18 Claims**

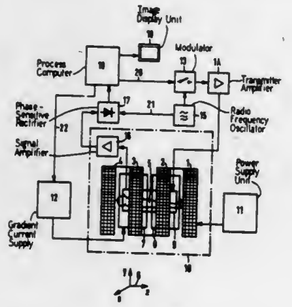
1. A nuclear spin tomography method comprising effecting a mensuration of all two-dimensional Fourier components of a desired nuclear spin density in a selected layer with the use of three gradient fields disposed in three mutually orthogonal directions x, y, z, and effecting an image reconstruction with respect to the desired nuclear spin property in said layer, characterized in that, employing an optimally brief pulse train, said mensuration is effected by the steps comprising:

(1) applying in conjunction with a first field gradient G_z with respect to a first axis z a shaped 90° high frequency pulse 90°-Hf-P to excite a layer with a given location with respect to the first axis z=const for a 90° pulse time duration T_z,

(2) following termination of the 90° high frequency pulse of

said 90° pulse time duration T_z, applying orthogonally related second and third field gradients G_x and G_y with respect to second and third axes x and y, the second field gradient G_x having a timing $T_{x/2}$ and T_x related to the scanning of the layer relative to said second axis, and the third field gradient G_y having a variable timing characteristic to provide a variable gradient effect in successive measurement cycles so as to provide for scanning of different regions of the excited layer in successive measurement cycles,

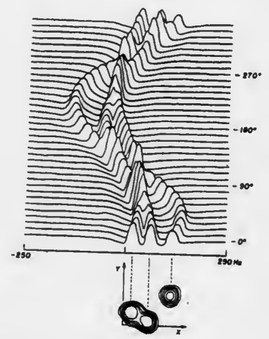
(3) applying at a constant time $t_{\pi 1}$ after the 90° high frequency pulse a 180° high frequency pulse 180°-Hf-P and subjecting the layer to a field gradient G_z with respect to said first axis z for a time interval $T_{z/2}$ where T_z after the application of the 180° high frequency pulse which time interval is less than said 90° pulse time duration T_z, and



(4) with the presence of a field gradient with respect to said second axis G_x during a further time duration T_x, measuring the resulting nuclear spin echo having a symmetry center at a fixed time t_{E1};

said mensuration being effected by repeating steps one through four above to effect successive measurement cycles, and by varying the timing of the third field gradient G_y in relation to the constant time $t_{\pi 1}$ in successive measurement cycles so as to vary the difference between the third field gradient effect $\int G_y(t)\,dt$ before and after said 180° high frequency pulse in increments of a size $T_x G_x \cdot 1/N$ proportionate to the product of the second field gradient G_x, the further time duration T_x and the reciprocal 1/N of the number of said measurement cycles.

(b) shifting the projections Δf for a point in the specimen slice; and



(c) summing the shifted projections so as to produce a point spectrum for the point.

4,520,316

NMR IMAGING TECHNIQUE

Laurance D. Hall, and Subramaniam Sukumar, both of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Apr. 25, 1983, Ser. No. 488,415
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **27 Claims**

1. A method of obtaining an NMR spectrum for at least a portion of a specimen slice, comprising:

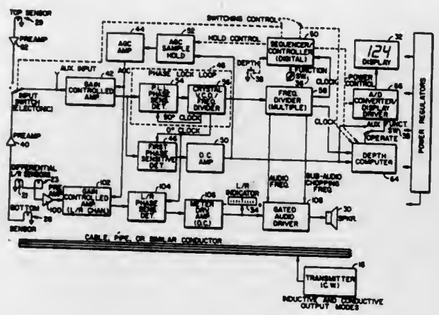
(a) acquiring n projections of the specimen slice, where $n >> 1$;

4,520,317

APPARATUS INCLUDING A PAIR OF AUTOMATIC GAIN CONTROLLED AMPLIFIERS FOR DETERMINING THE LATERAL DIRECTION TO A CONCEALED CONDUCTIVE OBJECT

Earl J. Peterman, Philo, Calif., assignor to Metrotech, Inc., Mountain View, Calif.

Division of Ser. No. 174,185, Jul. 31, 1980, Pat. No. 4,387,340.
This application Jun. 3, 1983, Ser. No. 500,634
Int. Cl.³ G01V *3/11, 3/165*
U.S. Cl. 324—326 **7 Claims**



1. An apparatus for determining the lateral direction to a concealed conductive object in order to determine its depth, wherein the object is radiating an alternating current signal, said apparatus comprising:

first signal receptor coil means for receiving said signal and for providing a first output voltage in proportion to the strength of said signal received, said first coil means having a first axis;

second signal receptor coil means for receiving said signal and for providing a second output voltage in proportion to the strength of said signal received, said second coil means having a second axis;

support means for positioning said first and second signal receptors a selected and fixed horizontal distance apart and with said first axis and said second axis coaxially aligned;

signal combining means for combining said first output voltage and said second output voltage in a subtractive mode to produce a combined output voltage;

third signal receptor positioned along a line which is substantially perpendicular to and which bisects a line defined

by the first and second coil means; said third signal receptor for receiving said signal and for providing a third output voltage in proportion to the strength of said signal received and having a reference phase;

first amplifier means with an input, an output and a gain for receiving said third output voltage at the input and for providing an amplified third output voltage at the output;

second amplifier means with an input, an output and a gain for receiving said combined output voltage at the input and for providing an amplified combined output voltage at the output;

automatic gain control means responsive to said third output voltage for automatically controlling the gain of said first and second amplifier means such that the gain of said first and second amplifier means is the same;

phase detecting means responsive to said amplified combined output voltage and to said amplified third output voltage for converting said amplified combined output voltage to a direct current voltage with polarity determined by said reference phase; and

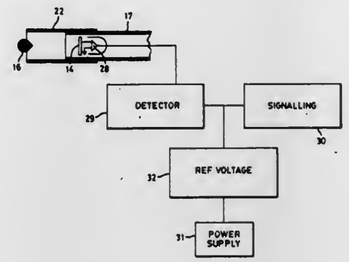
indicating means responsive to said direct current voltage for indicating direction to said object.

4,520,318

ELECTRIC FIELD STRENGTH INDICATOR

Marcel Hascal, 183 Robert Hicks Dr., Willowdale, Ontario, Canada M4R 3R3; Donald A. Watson, R.R. #1, Claremont, Ontario, Canada L0H 1E0; Andrew Danielski, 180 Sherwood Ave., Oshawa, Ontario, Canada L1G 3L8, and Sergio Lopez, 580 Mary St. East, Apt. #113, Whitby, Ontario, Canada L1N 2R3

Filed Feb. 17, 1983, Ser. No. 467,267
Int. Cl.³ G01R *29/12*
U.S. Cl. 324—457 **12 Claims**



1. An electric field strength indicating device for use in association with high voltage conductors, comprising:

an elongate probe carrier,

a probe electrode mounted on said carrier adjacent one end thereof,

electrical signalling means coupled to the probe electrode for responding to electrostatically induced voltages thereon, said signalling means being responsive to induced voltages above a predetermined threshold level,

a tubular shielding plate surrounding the probe carrier and extending beyond said one end thereof,

an insulating spacer fixedly mounted on the tubular shielding plate and extending axially from one end thereof, the spacer having a free end configured to engage a conductor under test for locating the shielding plate with respect to the conductor,

means for moving the probe carrier axially within the tubular shielding plate whereby to vary the distance between the probe electrode and the conductor and so position the probe electrode with respect to the conductor to obtain a threshold response, and

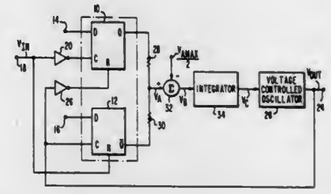
means for indicating the axial position of the probe electrode within the tubular shielding plate.

4,520,319

ELECTRONIC PHASE DETECTOR HAVING AN OUTPUT WHICH IS PROPORTIONAL TO THE PHASE DIFFERENCE BETWEEN TWO DATA SIGNALS

Donal E. Baker, American Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,576
Int. Cl.³ H03L *7/10*
U.S. Cl. 328—133 **9 Claims**



1. A phase detecting circuit comprising:

a first bistable circuit having a data input, a clock input, a reset input and a NOT Q output, wherein said first circuit data input is connected to a logic high signal and wherein said NOT Q output goes to a logic low state when a logic high signal is received at said first circuit clock input and said first circuit reset input is receiving a logic low signal, and said NOT Q output goes to a logic high state when a logic high signal is received at said first circuit reset input;

a second bistable circuit having a data input, a clock input, a reset input, and a Q output, wherein said second circuit data input is connected to a logic high signal and wherein said Q output goes to a logic high state when a logic high signal is received at said second circuit clock input and said second circuit reset input is receiving a logic low signal, and said Q output goes to a logic low state when a logic high signal is received at said second circuit reset input;

a first terminal for receiving a reference data signal;

a second terminal for receiving a second data signal;

means for connecting said first terminal to said first circuit reset input;

means for connecting said second terminal to said first circuit clock input;

a first inverting means connected between said first terminal and said second circuit clock input; and

a second inverting means connected between said second terminal and said second circuit reset input;

wherein the average value of the sum of voltages appearing on said Q and NOT Q outputs is proportional to the phase difference between the reference signal and the second signal.

4,520,320

SYNCHRONOUS PHASE MARKER AND AMPLITUDE DETECTOR

James E. Potzick, Potomac, and Baldwin Robertson, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Division of Ser. No. 300,830, Sep. 10, 1981, Pat. No. 4,445,389.
This application Feb. 22, 1984, Ser. No. 571,288
Int. Cl.³ H03K *9/06, 5/22, 5/24*
U.S. Cl. 328—133 **3 Claims**

1. A synchronous phase marker and amplitude detector for determining the relative amplitude and phase of a periodic signal obscured by noise with respect to a known reference signal, said detector comprising:

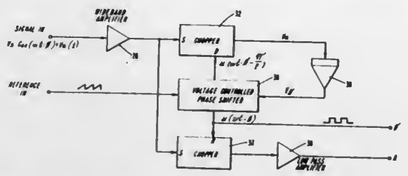
a first chopper having a signal input connected to the signal obscured by noise, a reference input and an output;

means for integrating the output of said first chopper;

variable phase shifting means, responsive to said integrating means output, for shifting the phase of said reference

signal, and phase shifted reference signal connected to said first chopper reference input; and

a second chopper having a signal input connected to said signal obscured by noise, a reference input and an output, said variable phase shifting means having a further output



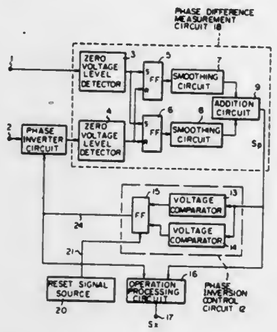
with the phase shifted reference signal shifted an additional (n×90) degrees, where n is equal to any odd integer, said further output connected to said second chopper reference input, said further output comprising said required phase information and said second chopper output providing said obscured signal amplitude information.

4,520,321

PHASE DIFFERENCE DETECTOR WITH PHASE INVERSION OF ONE INPUT SIGNAL WHEN PHASE DIFFERENCE IS SMALL

Kenji Nakatsugawa, and Hiroshi Itaya, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,643
Claims priority, application Japan, Nov. 30, 1981, 56-191972
Int. Cl.³ G01R *25/00;* H03K *5/22*
U.S. Cl. 328—133 **5 Claims**



1. A phase detector for measuring a phase difference between a first AC signal and a second AC signal, comprising:

phase inverter circuit means coupled to receive said second AC signal, for producing an output signal;

phase difference measurement circuit means coupled to receive said first AC signal and said output signal from said phase inverter circuit means, for producing an output signal representing the phase difference between said first AC signal and said output signal from said phase inverter circuit means;

phase inversion control circuit means coupled to receive said output signal from said phase difference measurement circuit means, for producing a first phase inversion control signal if said output signal represents a phase difference which lies within a predetermined range of phase differences which includes a phase difference of zero, and for producing a second phase inversion control signal if said output signal from said phase difference measurement circuit means represents a phase difference which lies outside said predetermined range, said first and second output signals from said phase inversion control circuit means being applied to control the operation of said phase inverter circuit means, said phase inverter circuit means being responsive to said first phase inversion contrl signal for performing phase inversion of said second AC signal and transferring the resultant inverted signal to be produced as said output signal therefrom, and being responsive to said second phase inversion control signal for transferring said second AC signal directly without change in phase to be produced as said output signal therefrom; and

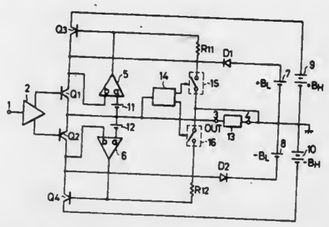
operation processing circuit means coupled to receive said first and second phase inversion control signals from said phase inversion control circuit means and said output signal from said phase difference measurement circuit means, and responsive to said second phase inversion control signal for producing an output signal corresponding to said phase difference measurement circuit means output signal, representing the phase difference between said first and second output signals, and responsive to said first phase inversion control signal for modifying said phase difference measurement circuit means output signal in a manner such as to compensate for said phase inversion produced by said phase inverter circuit means, to thereby produce an output signal correctly representing the phase difference between said first and second AC signals.

4,520,322

POWER AMPLIFIER HAVING IMPROVED POWER SUPPLY CIRCUIT

Satoshi Ishii, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,077
Claims priority, application Japan, Jan. 20, 1982, 57-6216[U]
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—263 **5 Claims**



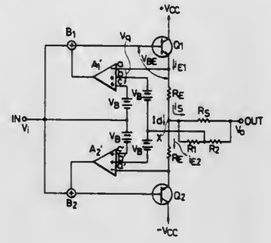
1. A power amplifier having an improved power supply circuit, comprising: a power amplifying stage with an output terminal; two first voltage supplies; two second voltage supplies having output voltages greater than output voltages of said first supplies; first and second differential amplifiers, said first differential amplifier having a first input terminal coupled to said power amplifying stage and said second differential amplifier having a first input terminal coupled to said power amplifying stage; first and second bias voltage supplies E connected between said output terminal and second input terminals of respective ones of said first and second differential amplifiers; first and second diodes coupling said first supplies to said power amplifying stage, respectively; first and second transistors having curent-carrying paths coupled between said power amplifying stage and said second supplies for coupling said second supplies to said power amplifying stage, bases of said first and second transistors being coupled to outputs of said first and second differential amplifiers, respectively; means for sensing a magnitude of a high frequency component of an output signal at said output terminal; and switching means for grounding said bases of said first and second transistors when an output signal of said high frequency component sensing means exceeds a predetermined level indicative of a predetermined magnitude of said high frequency component.

4,520,323

EMITTER FOLLOWER TYPE SEPP CIRCUIT

Kazuaki Nakayama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 524,174
Claims priority, application Japan, Aug. 20, 1982, 57-143388
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—268 **5 Claims**



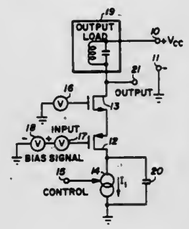
1. An emitter follower type SEPP current, comprising: first and second amplifier elements each configured in the emitter follower SEPP class "B" form; first and second error amplifiers provided corresponding to said first and second amplifiers and each having at least three input terminals; a first of the input terminals of said first and second error amplifiers is connected to a signal detector terminal for detecting a signal output current of a resistance network, a second of the input terminals of said first and second error amplifiers is connected to an input signal, and a third of the input terminals of said first and second error amplifiers is connected to an emitter of said output transistors; first and second voltage generator means incorporated between a circuit input and input terminals of said first and second amplifier elements for generating a voltage with the outputs of said corresponding error amplifier; and said resistance network including first and second idle detector terminals incorporated between output electrodes of said first and second amplifier elements and a circuit output end for detecting idle currents from said first and second amplifier elements, said error amplifiers being arranged in a feedback loop such that idle currents are made independent of the input signals applied to said circuit.

4,520,324

MOS GAIN CONTROLLED AMPLIFIER

William B. Jett, Jr., San Jose, and Milton E. Wilcox, Saratoga, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 11, 1983, Ser. No. 474,628
Int. Cl.³ H03F *3/16;* H03G *3/10*
U.S. Cl. 330—285 **6 Claims**



1. An MOS transistor variable gain amplifier circuit comprising:

a first MOS transistor having source, drain and gate electrodes;

supply rails connectable to a source of operating power for providing source and sink rails for the current carriers in said circuit;

a second MOS transistor complementary to said first MOS transistor and having source, drain and gate electrodes;

means for connecting said source of said second MOS transistor to said source of said first transistor;

means for connecting said gate of said second transistor to a source of potential which is selected to control the biasing of said source of said first MOS transistor;

means, responsive to a control potential, for varying the voltage between said source and said drain of said first MOS transistor;

signal input means coupled to said first MOS transistor to modulate the current therein; and

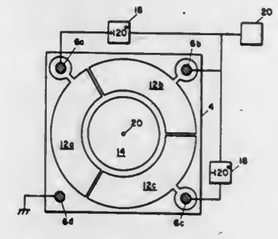
load means coupled in series with the source-drain electrodes of said second MOS transistor for developing a signal output; whereby said first MOS transistor is operated in its resistive region below saturation and said circuit displays a gain between said signal input and said signal output that varies as a function of said control potential.

4,520,325

PHASE SHIFTERS

Gilbert A. Hoffman, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,793
Int. Cl.³ G01R *27/26;* H03F *3/191*
U.S. Cl. 330—302 **9 Claims**



1. A capacitive goniometer which comprises:

(A) a plurality of like conductive annular sectors;

(B) first means supporting said sectors in mutually substantially coplanar relationship, whereby said sectors define an axis which extends through the center of the annulus and is substantially perpendicular to the common plane of the sectors;

(C) a conductive member having a generally arcuate outer periphery;

(D) second means supporting said conductive member in spaced confronting relationship with said sectors with the outer periphery of the conductive member not extending substantially farther radially of said axis than the sectors, whereby an electrical signal applied to one of said sectors is capacitively coupled to said conductive member, said second means permitting relative angular movement of said conductive member and said first means about said axis; and

(E) output means coupled to said conductive member for making said electrical signal available.

4,520,326

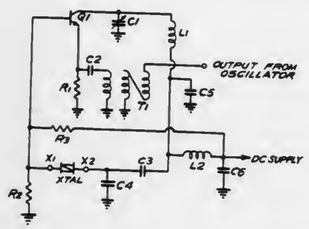
SINGLE-STAGE OSCILLATOR HAVING LOW-IMPEDANCE FEEDBACK PORT

Thomas G. Clemens, Glassboro, N.J., assignor to General Instrument Corporation, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,883
Int. Cl.³ H03B *5/36;* H03C *3/22*
U.S. Cl. 331—116 R **12 Claims**

9. An oscillator circuit comprising an amplifying stage hav-

ing an input and an output, an input port and an output port across which a frequency-determining element is connected, the input of said amplifying stage being operatively connected to said output port, and means for establishing a low impedance at said input port, said last-mentioned means including a capacitive divider comprising a first capacitor operatively connected between the output of said amplifying stage and said input port and a second capacitor connected between said first



capacitor and a reference potential, the values of said first and second capacitors being selected such that the voltage division provided by said first and second capacitors is substantially the same over the frequency range of the oscillator, the impedance of said first capacitor being less than 5 ohms at the lowest oscillator operating frequency, and the impedance of said second capacitor being approximately 50 ohms at the lowest operating frequency.

4,520,327

OSCILLATOR HAVING MANUAL AND AUTOMATIC FREQUENCY CONTROL

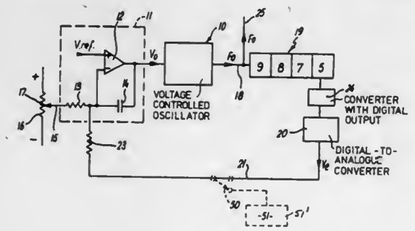
Roland Myers, 33 Withenfield Rd., Manchester M23 9BT, England

Filed Jun. 15, 1982, Ser. No. 388,630

Claims priority, application United Kingdom, Jun. 16, 1981, 8118398; Dec. 14, 1981, 8137591

Int. Cl.³ H03L *7/00*

U.S. Cl. 331—177 R **15 Claims**



1. An oscillator system comprising an oscillator having an input for receiving an input voltage, the oscillator providing an output signal whose frequency is responsive to the input voltage, means for deriving from the output signal, the frequency of which is considered as represented in digital form, a control voltage dependent on the difference between only a lower part of the output signal and a predetermined lower part, said predetermined lower part comprising the lowermost digit represented by the output signal, said control voltage arranged for varying said input voltage, and means for varying the input voltage.

4,520,328

AMPLITUDE MODULATION CIRCUIT HAVING STABLE MODULATION CHARACTERISTICS

Yoshihiro Murakami, Daito, and Nobukazu Hosoya, Ikoma, both of Japan, assignors to Sanyo Electric Co. Ltd., Osaka, Japan

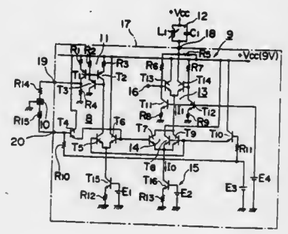
PCT No. PCT/JP82/00280, § 371 Date Mar. 21, 1983, § 102(e) Date Mar. 21, 1983, PCT Pub. No. WO83/00411, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 20, 1982, Ser. No. 479,069

Claims priority, application Japan, Jul. 20, 1981, 56-113848

Int. Cl.³ H03C *1/02*

U.S. Cl. 332—31 T **5 Claims**



1. An amplitude modulation circuit comprising a resonant circuit for the determination of a carrier wave frequency connected to the collector of one transistor of a differential pair of transistors forming a differential amplifier, said differential amplifier having its ground terminal connected to a constant current source; an output terminal of said resonant circuit being coupled to the base of the other transistor forming the differential pair so as to supply positive feedback to said other transistor thereby forming a carrier wave oscillator; and constant current adjusting means connected between said differential amplifier and said constant current source and also coupled to a modulating signal generating means so as to receive a modulating signal, said constant current adjusting means being operable to set two different current levels to be supplied to said differential pair, said two different current levels being set at respective positive and negative half-wave periods of said modulating signal.

4,520,329

CIRCUIT COMPONENT FOR SEPARATING AND/OR COMBINING TWO ISOFREQUENTIAL BUT DIFFERENTLY POLARIZED PAIRS OF SIGNAL WAVES LYING IN DIFFERENT HIGH-FREQUENCY BANDS

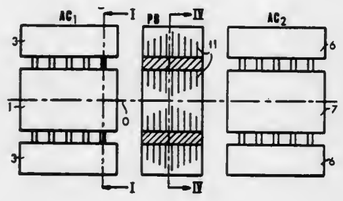
Enzo Cavalieri D'Oro, Monza, and Piero Vita, Barcellona Pozzo Di Gotto, both of Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Feb. 23, 1983, Ser. No. 469,141

Claims priority, application Italy, Feb. 25, 1982, 19845 A/82

Int. Cl.³ H01P *1/213*

U.S. Cl. 333—135 **5 Claims**



1. A circuit component enabling the separation of four different high frequency signal waves constituting two signal

pairs, each signal pair having signals in different planes of polarization and each signal pair lying in a different frequency band,

comprising:

a first and a second 3 dB coupler of substantially identical structure aligned with each other and centered on a common axis; and

filter means axially aligned with and bracketed between said couplers;

each of said couplers including a central guide and four collateral guides symmetrically disposed with reference to said axis, said central guide of said first coupler enabling propagation of all four signal waves applied to a free end thereof, each of said couplers including said central guide being coupled with said collateral guides by way of respective pairs of coupling guides, a first pair of said coupling guides giving passage to signal waves in either frequency band polarized in a first plane in which said first pair of coupling guides are oriented, a second pair of said coupling guides giving passage to signal waves in either frequency band polarized in a second plane in which said second pair of coupling guides are oriented, said filter means being a wave-reflecting body with a central cutout and four collateral cutouts, respectively aligned with the central and collateral guides of said first and second couplers, said cutouts being occupied by filtering elements of band-pass character passing only signal waves of one of said bands while reflecting the others toward the coupler through which they have been applied.

4,520,330

ELECTRONIC COMPONENT FUNCTIONING WITH REFLECTED ACOUSTIC WAVES

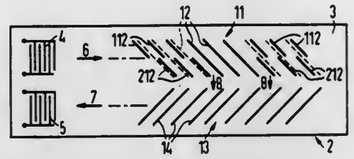
Gerd Riha, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 4, 1983, Ser. No. 520,418

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3230038

Int. Cl.³ H03H *9/64, 9/145*

U.S. Cl. 333—195 **6 Claims**



1. An electronic component functioning with reflected acoustic waves on a substrate and which has a reflector structure, input means for transmitting a primary wave, and output means for receiving a reflected wave, and wherein the reflector structure has finger weighting by means of displacing a position of strip-like fingers to be weighted, wherein the improvement comprises: the strip-like fingers to be weighted are functionally divided at least once in their longitudinal direction so as to create sub-fingers; and the sub-fingers are offset relative to one another in a primary wave propagation direction by a dimension corresponding to a prescribed weighting.

4,520,331

ROTARY ACTUATOR FOR A MICROWAVE SWITCH

Clinton F. Steidel, La Mirada, Calif., assignor to Transco Products, Inc., Marina Del Rey, Calif.

Filed Dec. 27, 1983, Ser. No. 565,880

Int. Cl.³ H01H *67/02*

U.S. Cl. 335—125 **22 Claims**

12. A rotary actuator for a microwave switch, including,

a stationary armature including at least one core positioned along a particular axis and with a coil means wound around the core to form at least one electromagnet and with the polarity at the end of the core in accordance with the direction of current flow through the coil means upon the application of electrical energy to the coil means,

a rotor positioned adjacent to one end of the core and with the rotor supported for rotation in a plane perpendicular to the particular axis of the core,

the rotor including a plurality of spaced permanent magnets located axially relative to the one end of the one core and



with the application of electrical energy to the coil means providing axial excitation to produce magnetic interaction between the permanent magnets and the core and provide rotary travel of the rotor in one of two opposite directions in accordance with the direction of current flow through the coil means, and

stop means located in the path of rotation of the rotor to engage a portion of the rotor to limit the travel of the rotor between fixed positions.

4,520,332

SOLENOID WITH INTERNALLY LOCATED SWITCH CONTACTS

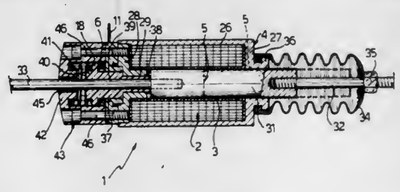
Carlo Tagliafico, Rivoli, Italy, assignor to Costruzioni Elettromagnetiche Industriali di Tagliafico Carlo, Turin, Italy

Filed Jul. 25, 1983, Ser. No. 517,072

Claims priority, application Italy, Jul. 29, 1982, 53584/82[U]

Int. Cl.³ H01H *67/02*

U.S. Cl. 335—126 **7 Claims**



1. An electromagnet of the type comprising an excitation coil wound as a solenoid and having at least two windings which can be supplied selectively, a fixed core fixedly mounted with respect to said coil, a movable core movable axially with respect to said coil and an electrical switch which can be actuated by said movable core for selectively supplying said two windings, said electromagnet being characterised by first and second shafts extending from opposite axial ends of said movable core;

a piston having an axial through hole surrounding said second shaft and axially slidable relative to said fixed core under the action of said movable core;

an annular flange on said piston;

said switch including a plurality of movable contacts riveted to an annular conductive plate fixed to said flange; and

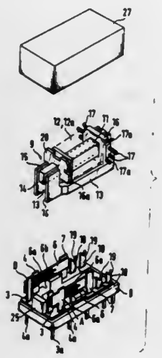
said switch further including a plurality of fixed contacts mounted rigidly with respect to said fixed core.

4,520,333

M.B.B. TYPE CONTACT ARRANGEMENT FOR AN ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, Kadoma, Japan, assignor to Matsushita Electric Works, Ltd., Japan and SDS-Elektro GmbH, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,695
Claims priority, application Japan, Apr. 30, 1982, 57-73633
Int. Cl.³ H01H *67/02, 1/28*
U.S. Cl. 335—129 **6 Claims**



1. An M.B.B. type contact arrangement comprising

first and second contact spring means having contact portions juxtaposed in a first direction and movable in a second direction extending transversely to said first direction,

a first fixed contact member forming a first contact couple with the contact portion of said first spring means, and a second fixed contact member forming a second contact couple with the contact portion of said second spring means, said first and second fixed contact members being disposed on opposite sides of said juxtaposed contact spring means and spaced apart along said second direction,

an actuating member movable along said second direction and having an edge with a step separating a first section of said edge from a second section thereof, said first and second edge sections being adapted to move said first and second contact spring means, respectively, into and out of engagement with said first and second fixed contact members,

the height of said step being so dimensioned in relation to the spacing between said fixed contact members that, in either direction of movement of said actuating member, one contact couple is closed before the other is opened.

4,520,334

PUSHBUTTON SWITCH WITH REMOTELY CONTROLLED OPERATING ATTACHMENT

John W. Stearley, Smithfield, and Tony O. Woodard, Pine Level, both of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 28, 1983, Ser. No. 546,704
Int. Cl.³ H01H *3/02, 45/02*
U.S. Cl. 335—186 **16 Claims**

1. An electric switch comprising, in combination:

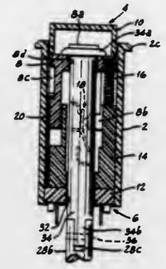
a switch housing;

switch contact means in said housing;

pushbutton operator means movably mounted to said housing;

means biasing said pushbutton operator means to a first position;

said pushbutton operator means being manually depressible to a second position for actuating said switch contact means and for operating a latch means for latching said pushbutton operator means in said second position, said pushbutton operator means being manually depressible from said second position for releasing said latch means to permit said biasing means to return said pushbutton operator means to said first position, thereby deactuating said switch contact means;



an opening in said switch housing;

auxiliary means mounted proximate said housing for effecting depression of said pushbutton operator means in response to a control signal, comprising:

electromagnetic means fixedly positioned with respect to said housing and having armature means movable in response to energization of said electromagnetic means by said control signal; and

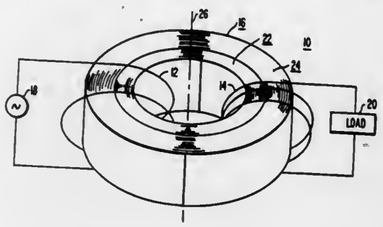
coupling means extending through said opening having connection with said pushbutton operator means and said armature means.

4,520,335

TRANSFORMER WITH FERROMAGNETIC CIRCUITS OF UNEQUAL SATURATION INDUCTIONS

Gary C. Rauch, and Robert F. Krause, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 6, 1983, Ser. No. 482,681
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—212 **18 Claims**



1. A ferromagnetic core, for use in a power transformer having an operation induction, B, wherein said core comprises:

a plurality of ferromagnetic circuits;

said plurality of ferromagnetic circuits being constructed of at least two ferromagnetic materials having different saturation limited inductions;

a first ferromagnetic circuit of said plurality of ferromagnetic circuits being constructed of an iron base amorphous material having a saturation limited induction, B_1;

a second ferromagnetic circuit of said plurality of ferromagnetic circuits being constructed of a grain oriented electrical steel having a saturation limited induction, B_2;

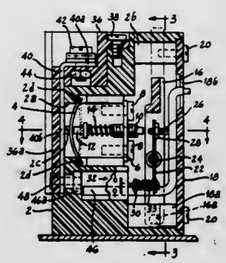
and wherein said operating induction, B is between B_1 and B_2.

4,520,336

ELECTROTHERMALLY ACTUATED SWITCH

Jerome K. Hastings, Sussex; John R. Brubaker, Milwaukee, and John W. Kroll, Greendale, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 1, 1983, Ser. No. 557,130
Int. Cl.³ H01H *61/06, 71/18*
U.S. Cl. 337—140 **15 Claims**



1. An electrothermally actuated switch comprising, in combination:

switch means;

a heater for receiving current flow therein producing heat levels indicative of the current levels flowing therein;

thermally responsive means having an initial position in heat conducting proximity to said heater establishing a coefficient of heat transfer from said heater to said thermally responsive means, said thermally responsive means being temperature actuated for progressive movement away from said heater and operable upon a predetermined amount of said movement for actuating said switch means;

and wherein said progressive movement of said thermally responsive means within said predetermined amount of said movement progressively decreases said coefficient of heat transfer thereby requiring increased current levels and resulting heat levels for maintaining said progressive movement of said thermally responsive means, thereby to extend a range of current levels at which switch actuation occurs.

4,520,337

BORIC ACID EXPULSION FUSE

Frank L. Cameron, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 23, 1984, Ser. No. 633,813
Int. Cl.³ H01H *85/38*
U.S. Cl. 337—275 **6 Claims**

1. A high voltage circuit interrupter comprising:

(a) tubular means of insulating material capable of providing an arc-extinguishing gas when in proximity to an electric arc;

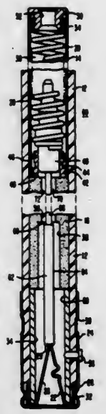
(b) the tubular means including an arc passage having one end portion larger than the other end portion;

(c) terminal means at each end of the tubular means;

(d) a conductor within the passage and having one end portion larger than the other end portion and forming a clearance space with the walls forming the passage;

(e) the conductor being connected to the terminal at one end of the tubular means;

(f) fusible means extending between the terminal means at the other end of the tubular means and the conductor; and



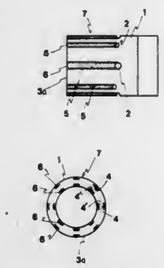
(g) moving means at one end of the conductor for moving the conductor in the direction of the smaller end portion upon fusion of the fusible means.

4,520,338

CYLINDRICAL FUSE

Yukinobu Watanabe, 14-13 Nakamachi 3-chome, Kiryu-shi Gumma-ken, Japan

Filed Jul. 7, 1983, Ser. No. 511,647
Claims priority, application Japan, Jul. 7, 1982, 57-117910; Feb. 2, 1983, 58-25927
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—297 **2 Claims**



1. A cylindrical fuse comprising:

(a) a tubular cylindrical electrical insulator member formed of glass, porcelain, ceramic or plastic and containing a plurality of longitudinally extending, circumferentially spaced grooves on the inner and outer surfaces thereof, each corresponding inner and outer grooves being connected at one end by a through-hole aperture;

(b) fuse portions arranged in the grooves and extending through the through-hole apertures to connect the corresponding inner and outer groove fuse portions, said fuse portions comprising a metal having a low melting point, the outer surfaces of said groove fuse portions being flush with the cylindrical surface of said insulator member, and

(c) a plurality of fuse terminals formed in the end of said insulator member adjacent the ends of said groove fuse portions, the outer surfaces of said fuse terminals being flush with the end and cylindrical surfaces of said insulator member.

4,520,339

LOAD CELL WITH ADJUSTABLE BRIDGE CIRCUIT

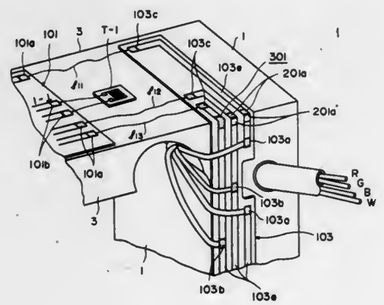
Michito Utsunomiya, Kusatsu, Japan, assignor to Kabushiki Kaish Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 25, 1983, Ser. No. 487,971

Claims priority, application Japan, Apr. 26, 1982, 57-60942[U]; Apr. 26, 1982, 57-60943[U]

Int. Cl.³ G01L *1/22;* **G01G** *3/14;* **H05K** *1/00, 3/22*

U.S. Cl. 338—5 **4 Claims**



1. A load cell for converting the magnitude of an applied load into an electrical signal, comprising:

a load cell body including

a stationary mounting portion,

a portion for receiving an applied load, and

a pair of parallel, flexible beams joining said stationary mounting portion and said load-receiving portion, each of said flexible beams having portions of reduced thickness;

a respective pair of strain gauges provided on each said flexible beam, each at a respective one of said portions of reduced thickness; and

a flexible external lead circuit board which is bent at two respective bending portions thereof and attached to three respective sides of said stationary mounting portion of said load cell body, said flexible external lead circuit board having a wiring pattern formed thereon, with soldering portions on either side of said bending portions, and a plurality of terminals;

a respective intermediate terminal board located on each of said flexible beams between the respective pair of strain gauges and having wiring patterns and terminals for connection to the respective strain gauges, for connection to respective terminals of said external lead circuit board and further for selective connection of compensation elements thereto,

lead wires for connecting said strain gauges with respective ones of said terminals of the respective intermediate terminal boards, and respective terminals of the intermediate terminal boards with respective terminals of the external lead circuit board, to form a bridge circuit.

4,520,340

CAMERA WITH PRINTED CIRCUIT BOARDS COMPRISING RESISTANCE-CONDUCTOR LAMINATED CONSTRUCTIONS

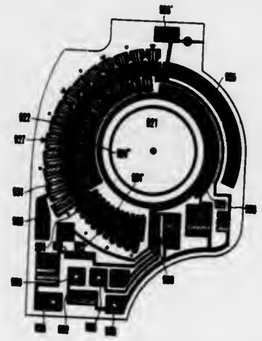
Masami Shimizu; Junji Omi, both of Tokyo; Kunio Watanabe, Kanagawa; Masanori Uchidoi, Kanagawa, and Hiroshi Aizawa, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 171,329, Jul. 23, 1980, Pat. No. 4,359,277, which is a continuation of Ser. No. 898,147, Apr. 20, 1978, abandoned, which is a continuation of Ser. No. 795,609, May 10, 1977, abandoned. This application Jun. 11, 1982, Ser. No. 387,450

Claims priority, application Japan, May 24, 1976, 51-59894; May 24, 1976, 51-59895; Jul. 7, 1976, 51-80540; Feb. 1, 1977, 52-10013

Int. Cl.³ H01C *10/00, 10/46*

U.S. Cl. 338—195 **3 Claims**



1. An electrical component for a variable resistor comprising:

(a) an electrically insulated baseboard member;

(b) a resistor layer constituting resistance elements laminated on the baseboard member;

(c) a plurality of fixed electrodes laminated on the resistor layer at a certain determined distance between each other, said plurality of fixed electrodes being arranged concentrically; and

(d) movable contact electrode means slidable on the fixed electrodes, the resistance element including fixed resistance portions positioned between adjacent electrodes and having a predetermined resistance value, and adjustable resistance portions which can be selectively removed so as to adjust the resistance value, and said adjustable resistance portions being ladder shaped so as to adjust the resistance value by trimming operation of each ladder portion.

4,520,341

MOISTURE RESPONSIVE ELEMENT WITH CROSSLINKED ORGANIC MEMBRANE AND PROTECTIVE LAYERING

Shuji Miyoshi, Osaka; Takashi Sugihara, Tenri; Akihito Jinda, Nara, and Masaya Hijikigawa, Yamatokouriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1982, Ser. No. 446,405

Claims priority, application Japan, Dec. 8, 1981, 56-198027; Apr. 14, 1982, 57-62791

Int. Cl.³ H01C *3/00;* **G01N** *27/12;* **H01C** *7/00*

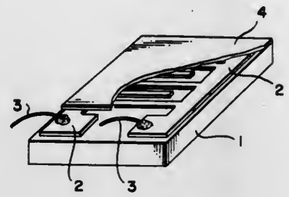
U.S. Cl. 338—35 **7 Claims**

1. A moisture responsive element consisting essentially of:

an electrically non-conductive base plate;

a pair of spaced electrodes fixed on said base plate;

a moisture responsive organic membrane comprising an organic monomer and crosslinking agent consisting essentially of material selected from the group consisting of crosslinked polystyrene sulfonic acid and salt of polystyrene sulfonic acid extending over said pair of electrodes; and



a protective layer consisting essentially of material selected from the group consisting of cellulose acetate and polyvinyl acetate coated on said moisture responsive organic membrane.

4,520,342

RESISTOR

Ludovicus Vugts, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 25, 1983, Ser. No. 516,822

Claims priority, application Netherlands, Aug. 24, 1982, 8203297

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—308 **3 Claims**

1. A resistor comprising an insulating substrate on which a thin layer of a chromium silicon alloy is attached, said layer having the composition $CrSi_x$, where $1 \leqq x \leqq 5$, said layer being doped by nitrogen, characterized in that:

said substrate has two superimposed layers, one of said layers consisting of said doped chromium silicon alloy containing nitrogen in a quantity of at least 1 at.% and at most 10 at.%; and the other layer consisting of said chromium silicon alloy in the non-doped state.

4,520,343

LIFT CONTROL SYSTEM

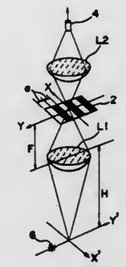
Hiroshi Koh, 207, Ōi-cho, Tanaka, Sakyo-ku, Kyoto-shi, Kyoto-fu, and Junichi Hirota, Tonda-Danchi #69-303, Makita-cho, Takatsuki-shi, Osaka-fu, both of Japan

Filed Dec. 15, 1981, Ser. No. 331,087

Claims priority, application Japan, Dec. 16, 1980, 55-178524; Jun. 27, 1981, 56-100241

Int. Cl.³ B66B *3/00*

U.S. Cl. 340—19 R **12 Claims**



1. In a lift system including a cage for carrying passengers up and down in a shaft and a mechanically-driven door at each floor the cage is to stop to allow ingress and egress of passengers, a control system for at least controlling operation of the mechanical door in response to passengers desiring to load on the lift, said control system comprising:

a spatial filter inside the cage of the lift, said spatial filter including a fence reticle with the reticle stripes oriented in a parallel relationship to the movement of the mechanical door;

discriminating means for discriminating between signals below and above a predetermined level as received from said spatial filter, and for producing a control signal when the signals are above the predetermined level; and

active means connected to said discriminating means for controlling closure of said door.

4,520,344

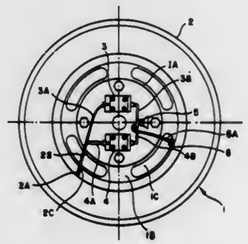
WHEEL TROUBLE DETECTING AND WARNING DEVICE

Si-Yan Shu, and Shing-Wu P. Tzeng, both of No. 124, Long Tong Rd., Chung Li, Taiwan

Filed Aug. 10, 1982, Ser. No. 406,953

Int. Cl.³ B60C *23/02*

U.S. Cl. 340—58 **4 Claims**



1. A wheel trouble detecting and warning device for wheeled motor vehicles provided with air-inflated tires, comprising:

an air horn mounted onto a wheel hub of a wheel of the vehicle;

a first valve unit mounted on the wheel hub, to which first valve unit air from the tire is supplied, said first valve unit being adapted to allow air from the tire to be admitted to said air horn when the pressure of the air decreases below a pre-determined lower limit, said first valve unit including a first bore having a first end and a second end, a first check valve adapted to allow air from the tire to flow one way into said first bore from said first end, a by-pass having an inlet port open to said first end of said first bore and an outlet port open to said first bore, said outlet port being disposed at a suitable distance from said inlet port, a first piston slidably inserted in said first bore, a spring adapted to urge said piston towards said first end, a second check valve adapted to allow air to flow one way from said second end of said first bore to said air horn, a needle valve adapted to selectively open and close said outlet port of said by-pass, said first piston and spring being so arranged that said first piston is disposed to allow said outlet port to communicate with said second end to form a passage when the pressure of air from the tire decreases below said predetermined lower limit; and

a second valve unit mounted on the wheel hub, to which second valve unit air from the tire is supplied, said second valve unit being adapted to allow air from the tire to be admitted to said air horn when the pressure of the air from the tire increases beyond a predetermined upper limit, said second valve unit including a second bore having a first end and a second end, a third check valve adapted to allow air from the tire to flow one way into said second bore from said first end of said second bore, a second by-pass having an inlet port open to said second bore and an outlet provided with a fourth check value which is adapted to allow air from said second by-pass to flow one way to said air horn, a second piston slidably inserted in said second bore, a second spring adapted to urge said

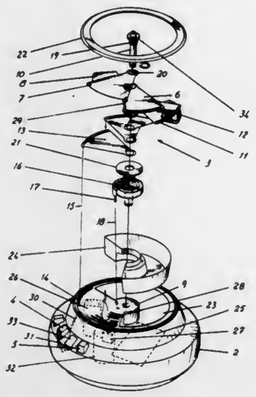
second piston toward said first end of said second bore, a restriction means adapted to restrict the movement of said second piston when the pressure of the air from the tire increases suddenly, said second piston and second spring being so arranged to communicate said first end of said second bore with said inlet port of said second by-pass to form a passage when the pressure of air from the tire increases beyond the pre-determined upper limit and to close said inlet port of said second by-pass when the pressure of air from the tire is below the predetermined upper limit.

4,520,345

ASH TRAY HAVING FIRE PROTECTING ACTIVITY

Karlo Smit, Nybrogatan 76, S-114 41 Stockholm, Sweden

Filed Apr. 27, 1982, Ser. No. 372,439
Claims priority, application Sweden, Apr. 27, 1981, 8102668
Int. Cl.³ F23N *5/26;* **G08B** *1/00*
U.S. Cl. 340—309.2 **6 Claims**



1. An ash tray whereby a smoker is alerted to possible fire danger due to lighted smoking material that has been forgotton or misplaced, comprising a tray body wherein there is an upwardly opening ash receptacle, an electrically operated alarm device for producing a perceptible alarm signal, and current supply means for energizing said alarm device, said ash tray being characterized by:

A. time delay circuit means energizable from said current supply means and connected with said alarm device to provide for energizing the same after the time delay circuit means has been connected with said current supply means continuously through a predetermined period of time;

B. a normally open switch in said tray body, connected between said current supply means and said time delay circuit means and closure of which connects the time delay circuit means with the current supply means;

C. a lid on said tray body, movable relative thereto in opposite directions to and from a closed position overlying said ash receptacle to prevent deposit of ashes into the same; and

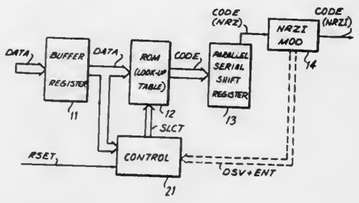
D. cooperating actuating means on said switch and on said lid whereby movement of said lid away from its closed position closes said switch and thus initiates a period of energization of the time delay circuit means and whereby movement of said lid back to its closed position reopens the switch and terminates energization of the time delay circuit means.

4,520,346

METHOD AND APPARATUS FOR ENCODING AN NRZI DIGITAL SIGNAL WITH LOW DC COMPONENT

Toshiyuki Shimada, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,284
Claims priority, application Japan, Apr. 24, 1981, 56-62726
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **29 Claims**



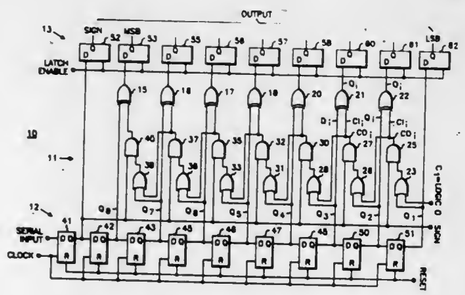
1. A method of converting successive n-bit information words into successive m-bit NRZI code words, with m>n, comprising the steps of assigning to each n-bit information word at least one m-bit code word having a respective NRZI disparity such that at least some of said n-bit information words are assigned with respective pairs of m-bit code words, each said respective pair of m-bit code words having a positive NRZI disparity code word and a negative NRZI disparity code word, the absolute values of the disparaties of the code words in each said respective pair being unequal; determining the digital sum variation of the preceding successive m-bit NRZI code words; detecting the polarity of the conclusion of the immediately preceding m-bit NRZI code word; selecting an assigned m-bit code word to represent the next n-bit information word as a function of the NRZI disparity of the selected code word and the determined digital sum variation; and modulating a code signal in NRZI format in accordance with said selected m-bit code word such that the modulated code signal has the same initial polarity as said detected polarity, and the NRZI disparity of said selected m-bit code word, when combined with said determined digital sum variation, tends to prevent the digital sum variation from increasing.

4,520,347

CODE CONVERSION CIRCUIT

Jules D. Campbell, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 22, 1982, Ser. No. 443,352
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **8 Claims**



1. A code conversion circuit, for converting an n-bit binary number having a sign bit and n−1 magnitude bits in two's complement code to sign-magnitude code, where n is an integer, comprising:

coupling means for directly outputting a least significant bit and the sign bit of the binary number in two's complement code; and

a rank ordered plurality of logic gates for providing a plurality of rank ordered magnitude bit by outputting the remainder of said n−1 magnitude bits if said binary number is positive, and otherwise identifying the least significant bit of said n−1 magnitude bits having a logic one value and inverting only the remainder of said n−1 magnitude bits of higher significance before outputting the remainder of said n−1 magnitude bits, each of said plurality of logic gates comprising:

first logic means having a first input coupled to a carry in signal indicative of the logic state of the magnitude bit of next lower significance, a second input coupled to a respective one of the n−1 magnitude bits of said binary number, and an output;

second logic means having a first input coupled to the output of the first logic means, a second input coupled to the sign bit of the n-bit number, and an output; and

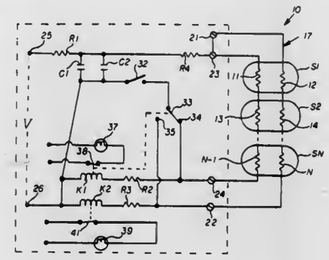
third logic means having a first input coupled to the output of the second logic means, a second input coupled to the magnitude bit of next higher significance than the magnitude bit which the second input of the first logic means is coupled to, and an output, for providing a predetermined bit of the binary number in sign-magnitude code.

4,520,348

MULTIPLE REDUNDANT SUPPRESSION DEVICES WITH PROVISION OF SUPERVISION AND FAULT CORRECTION

Carl I. Swanson, Boylston, Mass., assignor to Kidde, Inc., Saddle Brook, N.J.

Filed Jul. 13, 1983, Ser. No. 513,327
Int. Cl.³ G08B *29/00;* **A62C** *37/18*
U.S. Cl. 340—508 **16 Claims**



1. An electrical protection system comprising:

a plurality of suppressor units activatable to suppress an abnormal condition;

first and second electrical current responsive activators associated with each of said suppressor units and each energizable to induce activation thereof;

a first connector circuit connecting all of said first activators in series;

a second connector circuit connecting all of said second activators in series;

a supervisory electrical current source means;

an activation electrical current source means; and

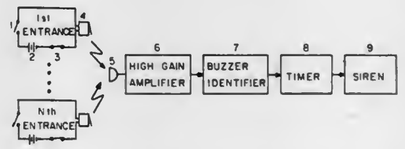
control circuit means connected between said supervisory and activation source and said first and second connector circuits, said control circuit means connecting said supervisory source means in parallel with said first and second connector circuits so as to provide a predetermined supervisory current flow therethrough, said supervisory current being insufficient to energize said activators, said control circuit means comprising an initiator means for selectively connecting said activation source means to said first and second connector circuits so as to provide therethrough an activation current flow greater than said supervisory current flow and sufficient to energize said activators to activate said suppressor units, and wherein said control circuit means further comprises monitor means for monitoring said supervisory current flow through said first and second connector circuits.

4,520,349

ALARM SYSTEM ACTIVATED BY BUZZERS

Vincent Varano, 5816 Claude St., Montreal North, Quebec, Canada H1G 1V2

Filed Apr. 12, 1982, Ser. No. 367,547
Claims priority, application Canada, Apr. 24, 1981, 376178
Int. Cl.³ G08B *13/00, 25/00*
U.S. Cl. 340—531 **4 Claims**



1. An alarm system to be activated by an intruder at any protected entrance of a premise having a plurality of protected entrances and producing an alarm sound at the intruded upon protected entrance and subsequently an alarm sound at a central location in the premise, wherein:

each protected entrance has a sensor switch attached thereto, the sensor switch attached to any intruded upon protected entrance being switched by the entrance of the intruder threat, each protected entrance having a buzzer thereat, the buzzer at any intruded upon protected entrance activated with power from a battery switched by the sensor switch attached to the intruded upon protected entrance, whereby the buzzer associated with the intruded upon entrance is activated and emits said alarm sound at the intruded upon protected entrance, the sound produced by different buzzers in the alarm system being substantially identical, and wherein said alarm system further comprises;

a microphone proximate said central location to receive sound from any activated buzzer and convert said sound into a varying electrical signal,

a front-end comparator means whereby said varying electrical signal is compared to a threshold level, simultaneously amplified when beyond said threshold level, and converted to a pulse sequence signal of two states as given by the output of said comparator means,

a capacitor means post said front-end comparator means whereby charging of said capacitor means is altered by said pulse sequence signal,

and a comparator means post said capacitor means whereby an alarm at said central location is activated when the charging of said capacitor means reaches a voltage threshold level.

4,520,350

MAIL BOX WITH REMOTE INDICATOR

Henry C. Huang, 12 Traymore St., Cambridge, Mass. 02140

Filed Sep. 20, 1982, Ser. No. 419,961
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—569 **3 Claims**

1. A mail box alarm system comprising

a mail box having

a door manually movable between open and closed positions and a signal flag manually movable between first and second positions, said signal flag being positioned substantially vertically in an alert position when in its said first position and in a substantially horizontal posi-

tion in a non-alert position when in its said second position,

a transmitter associated with said mail box,

a power source having a connection to said transmitter,

an antenna coupled to said transmitter,

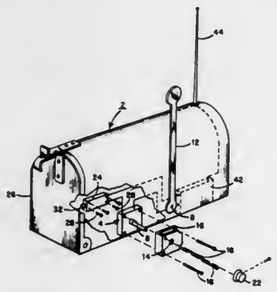
an interrupt switch operated by movement of said signal flag and arranged to prevent radiation by said transmitter when said signal flag is in its first position,

transmitter control means responsive to the movement of said door arranged to cause said transmitter to radiate a signal each time said door is moved between its said open and closed positions when said flag is in its said second position, said transmitter control means including an impulse switch connected in series with said interrupt switch between said power source and said transmitter and arranged to interrupt said connection between said power source and said transmitter when said door is in either its closed or open position and to complete said connection when said door is at a position between its said open and closed positions,

a receiver remotely positioned from said transmitter arranged to respond to signals radiated by said transmitter,

alarm means including a visual alarm and an audible alarm coupled to said receiver, and

a multiple-position stepping switch coupled to said receiver and said alarm means, wherein said stepping switch is arranged to be advanced through a repeating succession of positions by the received signals, and said alarm means are selectively energized in accordance with the position of said stepping switch.



4,520,351

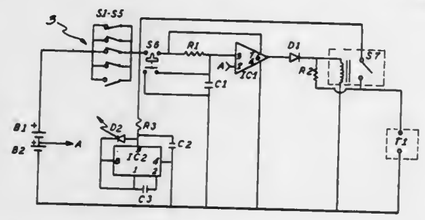
PASSIVE PERSONAL ALARM DEVICE

Sidney Altman, 71 Blake Rd., Hamden, Conn. 06517, and Dan Kasha, 84 Bayard Ave., North Haven, Conn. 06473

Filed Mar. 8, 1982, Ser. No. 356,044

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—574 **12 Claims**



1. A personal alarm device of the type comprising:

a. a housing;

b. a warning device and a battery both disposed in said housing; and

c. first switch means nonremovably connected to said housing and biased toward a closed setting;

d. said warning device, said battery and said first switch means being connected in series; the improvement comprising: second switch means, connected in series in said first circuit, having a plurality of settings of which a relatively small number are open settings and the remainder are closed settings, the ones of said open settings being indistinguishable from the ones of said closed settings by mere external examination of said alarm device.

4,520,352

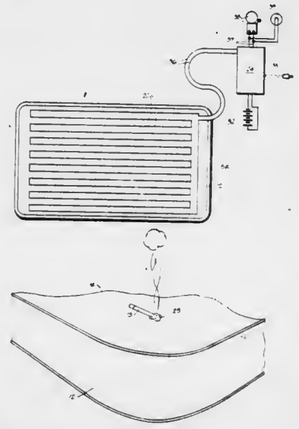
FIRE ALARM SYSTEM AND METHOD

Willard A. Domingue, Houston, Tex., assignor to Fire Trumpet of America, Inc., Houston, Tex.

Filed Jun. 20, 1983, Ser. No. 506,206

Int. Cl.³ G08B *17/02*

U.S. Cl. 340—590 **6 Claims**



1. A fire alarm system comprising:

(a) a pair of flexible sheets of heat-shrinkable plastic film each having a uniform thickness of the order of about 0.030" and having a heat shrinking temperature in the range from about 140°-250° F.,

(b) a conductor comprising a wire foil having a thickness of the order of about 0.002"-0.004" forming a series circuit sandwiched between said sheets to form a laminate of substantially uniform thickness and configured such that migration of said sheet will interrupt the continuity of said conductor when said sheet is subjected to sufficient heat to cause such heat migration, said sandwich of plastic film sheets and said conductor foil having sufficient physical strength to permit use under conditions of physical stress,

(c) circuit continuity monitoring means connected to said conductor to detect interruption thereof, thereby detecting application of a level of heat to said substrate gerat enough to cause such migration, and

(d) an alarm connected to said circuit monitoring means generating an alarm signal upon detection of the interruption of the continuity of said conductor.

4,520,353

STATE OF CHARGE INDICATOR

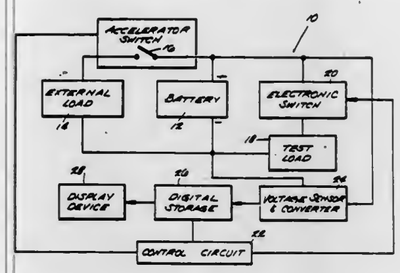
Robert E. McAuliffe, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 26, 1982, Ser. No. 362,548

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—636 **25 Claims**

1. A state of charge indicator for testing the state of charge of a battery selectively connected to an operating load, said state of charge indicator comprising means for sensing if the battery is connected to the operating load, timing means for sensing how long the battery is connected to the operating load, a test load, means for connecting said test load to the battery in response to indication from said load connection sensing means of disconnection of the battery from the operating load after indication from said timing means that the battery was connected to the operating load for a predetermined period of time, and means for producing in response to said test load being connected to the battery a signal indicating the state of charge of the battery.



4,520,354

DISPLAY DEVICE FOR COPYING APPARATUS

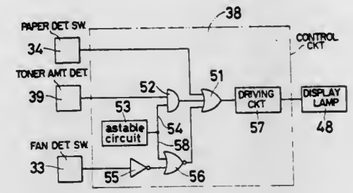
Tadashi Umeda; Hideo Miyoshi; Keiichi Kishimoto; Kazumi Iida; Kazunori Akiyama; Yuji Abe, and Masato Taniguchi, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jun. 30, 1982, Ser. No. 393,872

Claims priority, application Japan, Jun. 30, 1981, 56-102943

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—679 **2 Claims**



1. A display device for a copying apparatus comprising:

first and second and third detecting means for detecting a plurality of operating conditions of said apparatus, each of said detecting means generating a high level output signal corresponding to a first predetermined operating condition and a low level signal corresponding to a second predetermined operating condition;

a display element for indicating said operating conditions detected by said first and second and third detecting means;

an astable multivibrator means for generating an output signal comprising a train of pulses whose ON period is unequal to its OFF period;

an AND gate means operatively connected to said second detector means and said astable multivibrator means;

an inverter means operatively connected to said third detector means for providing an output which is inverted with respect to said output of said third detecting means;

a NOR gate means operatively connected to said astable multivibrator means and said inverter means;

an OR gate means operatively connected to said first detecting means and said AND gate means and said NOR gate means;

a driving circuit means operatively connected between an output of said OR gate means and said display means for driving said display means in response to an output from said OR gate means;

wherein said display means indicates said operating condition detected by said first and second and third detecting means by respectively providing a steady light output and a blinking light output of a first duty cycle and a blinking light output of a second duty cycle, said first and second duty cycles corresponding to a duty cycle of said output of said astable multivibrator means and a duty cycle of an inverted output of said output of said astable multivibrator means.

4,520,355

JOYSTICK APPARATUS

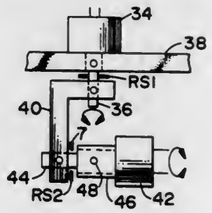
John H. Mitch, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 16, 1982, Ser. No. 399,022

Claims priority, application Japan, Oct. 31, 1981, 56-163676[U]

Int. Cl.³ G09G *1/00*; G06F *3/14*

U.S. Cl. 340—709 **5 Claims**



1. A joystick apparatus comprising:

first means including a rotatable shaft disposed therethrough for developing an electrical signal in accordance with the degree of rotation of said shaft, said first means being rigidly mounted on a frame;

second means including a rotatable shaft disposed therethrough for developing an electrical signal in accordance with the degree of rotation of said shaft, said second means having a base extending from and rigidly affixed thereto;

means for connecting said shaft of said first means to said shaft of said second means; and

means connected to said base for rotating said second means about said shaft thereof and for rotating said shaft of said first means within said first means via said connecting means.

4,520,356

DISPLAY VIDEO GENERATION SYSTEM FOR MODIFYING THE DISPLAY OF CHARACTER INFORMATION AS A FUNCTION OF VIDEO ATTRIBUTES

David B. O'Keefe, Westford, and Robert C. Miller, Braintree, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 159,417, Jun. 16, 1980, abandoned. This application Aug. 20, 1982, Ser. No. 409,774

Int. Cl.³ G09G *1/00*

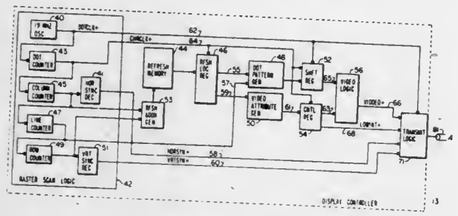
U.S. Cl. 340—750 **11 Claims**

1. A video character generation system in a display controller for producing a video signal to be used by a display monitor to produce video information on a display screen of said display monitor in response to a plurality of information words stored in a refresh memory of said display controller, wherein said display controller includes raster scan logic having a column counter for producing a character clocking signal and a line counter for producing a line count indicative of the scan line being refreshed on said display screen, said video character generation system comprising:

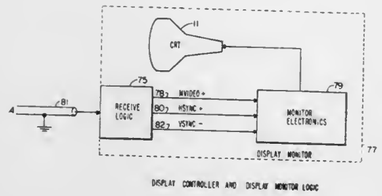
a. a character dot pattern generation means, coupled to said refresh memory, for producing a serial dot pattern signal

corresponding to a raster scan line of one character of said video information in response to a unit of encoded character information contained in each of said plurality of information words retrieved from said refresh memory and said line count from said line counter;

b. an attribute generation means, coupled to said refresh memory, for receiving a plurality of attribute signals encoded in each of said plurality of information words, said plurality of attribute signals for controlling how one or



DISPLAY CONTROLLER AND DISPLAY MONITOR LOGIC



DISPLAY CONTROLLER AND DISPLAY MONITOR LOGIC

more associated characters of video information is to be displayed on said display screen, said attribute generation means for generating a plurality of video control signals;

c. a control register for storing said plurality of video control signals, said control register being clocked by said character clocking signal; and

d. video logic for combining said serial dot pattern signal with some of said video control signals from said control register to produce said video signal for each of said plurality of information words.

4,520,357

ELECTROSCOPIC INFORMATION DISPLAY AND ENTRY SYSTEM WITH WRITING STYLUS

Donald E. Castleberry, Schenectady, and Charles A. Becker, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,191
Int. Cl.³ G09G *3/34*
U.S. Cl. 340—783 **7 Claims**

1. An information display and energy system, comprising:

an electroscopic display having a multiplicity of individually-actuatable display cells arranged in a matrix, each cell including a flat plate electrode of magnetically-attractable material and moveable between first and second positions substantially parallel, and with respect, to a fixed planar electrode to provide first and second respective display conditions;

means for actuating the plate electrode of each individual one of said cells between said first and second display positions responsive to display data;

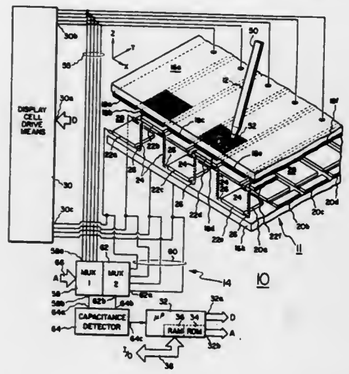
means connectable between the cell plate electrode and the associated fixed electrode of an individual one of said display cells for measuring a change in the capacitance between the plate and fixed electrodes of said cell;

means for sequentially connecting said measuring means to each of the cells of said display;

a magnetic member completely external to said display and manually positionable adjacent to a selected cell to cause movement only of the plate electrode of that selected cell only from the first position to the second position;

means for storing the display data determining the state of each display cell; and

means connected to said storing means and separately con-



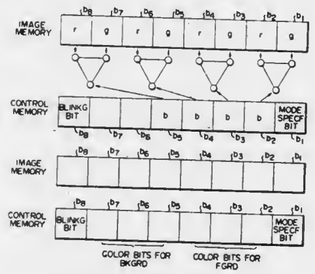
nected to both said connecting means and said measuring means for determining, by comparison of matrix location data for each display cell with a relatively large total capacitance with the display data in said storing means, which of said cells, if any, has been acted upon by said external magnetic member to cause the total cell capacitance to increase responsive to data input to said system.

4,520,358

OPTIMIZED DISPLAY DEVICE MEMORY UTILIZATION

Tomoaki Makino, Fujisawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,243
Claims priority, application Japan, May 20, 1981, 56-76065
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—799 **2 Claims**



1. In a display indicating system having a memory device including a parallel combination of an image memory and a control memory and further including a decoder which is connected to said parallel combination of said image and control memory, a method of utilizing said memory device to selectively store both color images and characters comprising the steps of:

for a pixel of a color image, storing color information in a selected address in said image memory and in selected portions of a selected address in said control memory;

for a pixel of a character, storing dot brilliance information in a selected address in said image memory;

storing a mode specifying bit in a selected portion of a selected address in said control memory, said mode specifying bit being indicative of whether its corresponding pixel is part of a color image or characters;

for a pixel of a character, storing color information in selected portions of a selected address in said control memory;

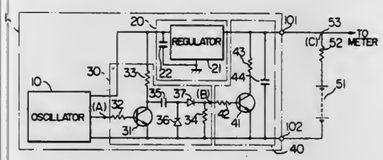
reading out data stored in a selected address in both said image and control memories and feeding said data to said decoder, said decoder decoding said data into red and green and blue data for feeding a display of said systems in accordance with the state of the mode specifying bit, wherein, for a fixed word size at a selected address in said image and control memories, said display displays a preset degree of color resolution for a color image and a preset degree of brilliance resolution for a character and further enables a variable dot resolution within a single picture displayed by said display.

4,520,359

CURRENT FREQUENCY WAVEFORM TRANSMITTING ON D.C. POWER LINES

Junji Kitagawa; Shigeyuki Akita, both of Okazaki, and Sotoo Kitamura, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 9, 1982, Ser. No. 386,511
Claims priority, application Japan, Jun. 12, 1981, 56-86994[U]
Int. Cl.³ G08C *19/16, 19/20, 19/12*
U.S. Cl. 340—870.19 **3 Claims**



1. A frequency transmission system for transmitting a frequency signal, comprising:

a d.c. battery;

a pair of power supply lines connected to said d.c. battery;

an oscillator connected to said battery through said power supply lines for generating a first train of pulse signals having a varying frequency;

a pulse generator for generating a second train of pulse signals in synchronism with said first train of pulse signals, each of said second train of pulse signals having a pulse duration shorter than that of each of said first train of pulse signals;

a switching element connected across said power supply lines for varying an electric current flowing through said power supply lines in synchronism with said second train of pulses; and

a capacitor connected across said power supply lines in parallel relation to said switching element for blunting variations in said electric current.

4,520,360

SENSING VERTICAL AND HORIZONTAL VISIBILITY

Carl E. Schwab, Huntington Station, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 419,885
Int. Cl.³ G08G *5/00*
U.S. Cl. 340—947 **14 Claims**

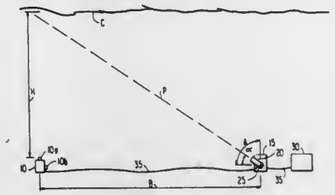
1. An information sensing device particularly suited for unattended airports for sensing vertical and horizontal visibility, comprising:

a light source emitting optical energy in at least two directions,

a light detector spaced from said light source by a distance B, in a generally horizontal direction,

means rotating said light detector about a generally horizontal axis for altering a field of view of said light detector as a function of time, and

control means responsive to said light detector for determ-



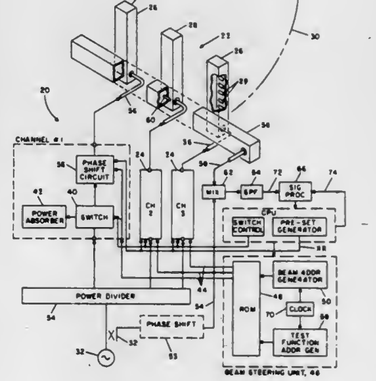
ing horizontal visibility and vertical visibility by sampling a response of said light detector to said light source at different times and fields of view and producing representations thereof.

4,520,361

CALIBRATION OF A SYSTEM HAVING PLURAL SIGNAL-CARRYING CHANNELS

Richard F. Frazita, St. James, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed May 23, 1983, Ser. No. 497,348
Int. Cl.³ G01R *17/04;* **G01S** *7/40*
U.S. Cl. 343—372 **26 Claims**



1. A method for calibrating phase-shifts in a system having multiple signal-carrying channels comprising the steps of:

terminating the propagation of signals in each of the channels except for a selected channel which is to be calibrated;

inserting a test signal into a first end of said selected channel;

extracting a portion of said test signal prior to said inserting for use as a reference signal;

imparting a variable phase-shift between said reference signal and said test signal by phase-shifting apparatus responsive to a command signal, said command signal directing a monotonic continuing pattern of phase variation, the resulting variation in phase producing a frequency shift between said test signal and said reference signal;

sampling said test signal after processing through the selected channel via a second end of said selected channel;

combining the sampled test signal with the reference signal to obtain a beat frequency signal;

measuring the phase-shift between said beat frequency signal and a reference pattern signal; and

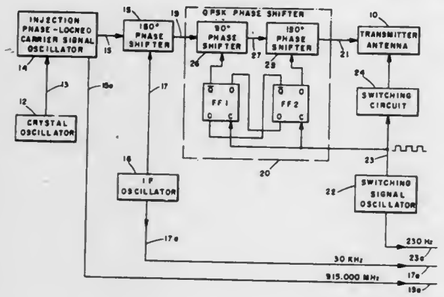
adjusting the starting phase-shift of the selected channel in response to the measured phase-shift.

4,520,362

POLARIZATION RATIOMETRY OBJECT DETECTION SYSTEM AND METHOD

Lincoln H. Charlot, Tampa, Fla., assignor to Elint Corporation, St. Petersburg, Fla.

Continuation of Ser. No. 140,868, Apr. 16, 1980, abandoned.
This application Sep. 30, 1982, Ser. No. 428,547
Int. Cl.³ G01S *13/00*; H04B *7/10*
U.S. Cl. 343—361 **8 Claims**



1. A method for detecting objects having preferential polarization plane reflection characteristics, comprising the steps of:
(a) transmitting from a first given location, a first plane-polarized electromagnetic wave that is oriented in a predetermined reference plane;
(b) transmitting from the first given location, a second electromagnetic wave having the same frequency and intensity as the first wave and not being oriented in the predetermined reference plane;
(c) receiving at a second given location, reflections of the first transmitted wave to provide a first received signal;
(d) receiving at the second given location, reflections of the second transmitted wave to provide a second received signal;
(e) comparing the first received signal to the second received signal for detecting an object that preferentially reflects said transmitted electromagnetic waves in a distinct plane so as to distinguish such object from other objects not having such characteristics;
(f) shifting the phase of the first electromagnetic wave;
(g) shifting the phase of the second electromagnetic wave to be in phase with the first electromagnetic wave; and
(h) periodically varying the degree of said phase shift of the first and second waves to avoid consistent multipath wave cancellations and reinforcements.

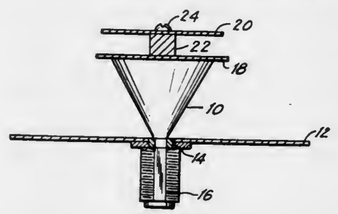
4,520,363

OMNIDIRECTIONAL VERTICAL ANTENNA WITH IMPROVED HIGH-ANGLE COVERAGE

Melvin H. Wachspress, Syosset, and Walter Abramowitz, Jamaica, both of N.Y., assignors to General Instrument Corporation, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,921
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—828 **5 Claims**

1. An antenna structure comprising an inverted conical monopole, a ground plane secured to one end of said monopole, a first conducting plate having a diameter greater than that of the largest diameter of said monopole secured to the other end of said monopole, a second conducting plate, and a



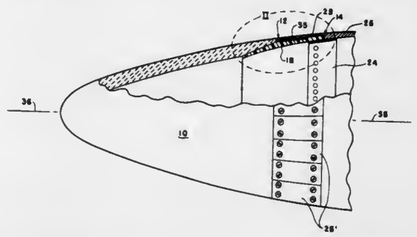
spacer interposed between and secured to said first and second plates and axially aligned therewith and with said monopole.

4,520,364

ATTACHMENT METHOD-CERAMIC RADOME TO METAL BODY

John S. Perry, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 19, 1983, Ser. No. 486,603
Int. Cl.³ H01Q *1/28, 1/42*
U.S. Cl. 343—872 **6 Claims**



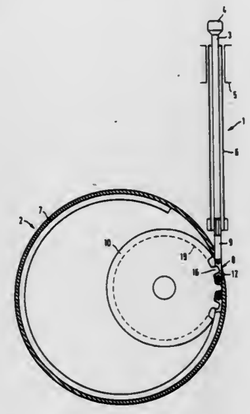
1. A radome assembly comprising a conical ceramic shell, a polymeric transition section, a layer of insulating material and a metal fairing adapted for mounting on a substantially cylindrical supporting structure, said supporting structure having an outer diameter and a support flange for receiving said assembly, said flange having a lesser outer diameter;
wherein said conical ceramic shell has a base edge and an inner face adapted for joining to said transition section;
wherein said transition section has a first end portion, an aft portion and a middle portion therebetween, said first end portion having an outer surface complementary to said inner face of said shell, said middle portion having a circumferential recess in the outer surface thereof for receiving therein a layer of said insulating material, and said aft portion having an inside diameter adapted for mounting over said support flange; and
wherein said metal fairing circumferentially surrounds said transition section including said layer of insulating material, between said supporting structure and said base edge of said ceramic shell.

4,520,365

TELESCOPING ANTENNA WITH ACTUATING GEAR DRIVEN CABLE

Richard Langheck, Neubärental, Fed. Rep. of Germany, assignor to Wilhelm Sihn Jr. KG., Niefern-Oschelbronn, Fed. Rep. of Germany

Filed Dec. 29, 1982, Ser. No. 454,342
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1982, 3200444
Int. Cl.³ H01Q *1/10, 1/32*
U.S. Cl. 343—903 **7 Claims**



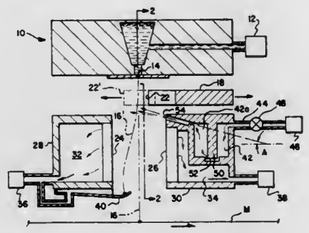
1. Telescoping antenna with actuating device for motor vehicles, extendable and retractable by means of a long flexible element which runs inside the telescope and is fitted with apertures spaced in longitudinal direction at regular intervals behind one another, which mesh with the teeth of a driven toothed gear, characterized in that the flexible element is a plastic wire with a nearly round cross-section, wherein the apertures are slots which are interspersed along the wire along a plane containing a longitudinal center line of the extended wire, each slot having a pair of spaced opposed parallel areas and a pair of angular surfaces terminating in spaced opposed cusps which lie along said longitudinal center line, the spacing L between the opposed cusps increases from the longitudinal center line, along said angular surfaces, towards the wire surface.

4,520,366

METHOD AND APPARATUS FOR AIR START/STOP OF AN INK JET PRINTING DEVICE

Glynn P. Cragin, Jr., Irving, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 9, 1984, Ser. No. 569,138
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **27 Claims**



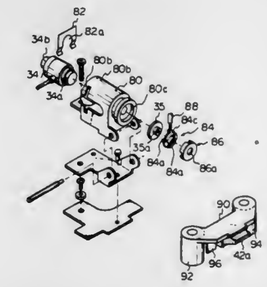
1. A method of starting and stopping the flow of ink from an ink jet printer on to a printing media from a plurality of ink jet orifices through which streams of droplets of ink continuously issue and having charge electrodes, deflection electrodes and a drop catcher, the steps comprising:
(a) starting up the flow of ink on to said media by
(i) directing a flow of air across the orifices transverse to the normal direction of issuance of said droplets from said orifices;
(ii) applying a deflection voltage to the deflection electrodes,
(iii) initiating the flow of ink from said orifices,
(iv) applying a charge voltage to the charge electrodes,
(v) directing all of the issued droplets from said orifices into said catcher by use of said air flow,
(vi) terminating said air flow to begin normal printing operation on said media;
(b) stopping the flow of ink on to said media by
(i) directing a flow of air across the orifices transverse to the normal direction of issuance of droplets from said orifices so as to cause all of said droplets to be caught by said catcher,
(ii) stopping the flow of ink from said orifices,
(iii) turning the charge and deflection electrodes off,
(iv) turning the air off.

4,520,367

INK JET HEAD ASSEMBLY

Chuji Ishikawa, Kawasaki; Kyuhachiro Iwasaki, Fujisawa; Masanori Horike, Tokyo, and Hiromichi Komai, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,133
Claims priority, application Japan, Apr. 11, 1983, 58-63294
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



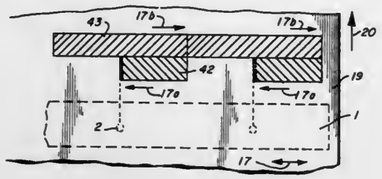
1. A mechanism for supporting a head, a charging electrode and a deflection electrode of an ink jet printer on a carriage, comprising:
first holder means having a front opening and a rear opening for detachably fixing the head and the charging electrode, the charging electrode being inserted into said first holder means through said front opening and the head being inserted into said first holder means through said rear opening; and
second holder means located in front of the first holder means for detachably fixing the deflection electrode;
the first holder means comprising a holder body having a first stepped portion with which an end portion of the head is engagable to fix the head in place and a second stepped portion for receiving the charging electrode to fix the charging electrode in place;
the first holder means further comprising spring means mounted in a rear portion of the holder body for biasing a rear end portion of the inserted head;
the spring means comprising a leaf spring formed with an opening for engagement with the head, the holder body comprising slots which are formed through a rear wall portion of the holder body to receive said leaf spring.

4,520,368

INK JET PRINTING METHOD AND APPARATUS

Dale R. Ims, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 10, 1983, Ser. No. 521,851
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **8 Claims**



6. An ink jet printer of the type having an elongated, oscillating printing bar with a plurality of nozzles linearly disposed therealong and having continuous streams of ink droplets expelled from the nozzles, the printed bar being adapted for printing across the full width of a recording medium which travels a single-pass straight-through path by the printing bar with a constant velocity, the ink jet printer comprising:

(a) means for supplying ink under pressure to the nozzles so that streams of ink injected therefrom;

(b) means for perturbing the ink streams to cause them to break up and form into droplets of a predetermined distance from the nozzles;

(c) means for charging the droplets at the point of formation by a controller;

(d) means for deflecting the charged droplets as they move towards the recording medium to direct them to a specific location on the recording medium or to a gutter for recirculation and reuse, the deflecting means being adapted to scan the droplets from each nozzle in the same direction as the movement of the recording medium and for a predetermined distance in that direction;

(e) means for oscillating the printing bar in a direction along its length and in a direction transverse to that of the path of travel by the recording medium, the distance of movement in one direction of oscillation or half cycle being that of spacing between nozzles; and

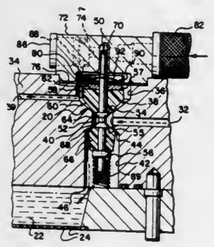
(f) means for adjusting the charge placed on the droplets by said charging means to compensate for the movement of the recording medium, so that the full width of said recording medium may be printed without overlapping and without voids.

4,520,369

AIR PILOTED VALVE FOR CONTROLLING START/STOP OF AN INK JET DROP GENERATOR

Craig R. Shackleton, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed May 21, 1984, Ser. No. 612,525
Int. Cl.³ G01D *15/18*; **F16K** *31/128*
U.S. Cl. 346—75 **6 Claims**



1. In an ink jet printing apparatus having an ink supply source connected to an ink reservoir from which ink is expelled for printing, the improvement comprising:

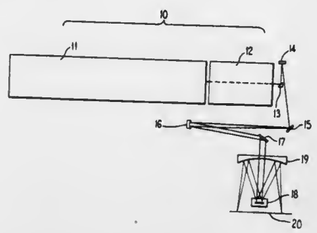
a housing defining an ink flow chamber, an inlet opening for admitting ink from said source to said chamber, an outlet opening for introducing ink to said reservoir from said chamber and a bypass opening for diverting ink from said chamber; first and second valve seats disposed on opposite sides of said chamber, said first seat disposed between said chamber and said bypass opening and said second seat disposed between said chamber and said outlet opening; a valve stem axially movably mounted in said housing and extending through said chamber and said first and second valve seats; spaced first and second sealing members fixedly mounted on said valve stem in spaced relation and separately engageable respectively with said first and second valve seats through movement of said stem; spring means engaging said stem for urging said second sealing member into engagement with said second seat to thereby seal off ink flow from said inlet opening to said outlet opening; air actuated diaphragm means engaging said stem for urging said first sealing member into engagement with said first valve seat upon actuation thereof to thereby seal off said inlet opening from said bypass opening.

4,520,370

LASER THERMAL PRINTER

Yoshihiko Fujii; Osamu Tomita, both of Osaka; Itaru Taniguchi, Motomachi, and Kazuhiko Saiwai, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1983, Ser. No. 468,905
Claims priority, application Japan, Feb. 27, 1982, 57-30988
Int. Cl.³ G01G *13/02, 13/16*
U.S. Cl. 346—76 L **10 Claims**



1. A laser thermal printer comprising a CO_2 gas laser source,

a CdTe electro-optic modulator for the laser beam from said laser source,

an optical scanning system for scanning the laser beam, which is passed through said modulator, transversely of a predetermined recording surface while focusing it on said surface, and

a web feed mechanism for feeding a heat-sensitive recording web, which presents said recording surface, in a direction at right angles with the direction of said beam scanning.

4,520,371

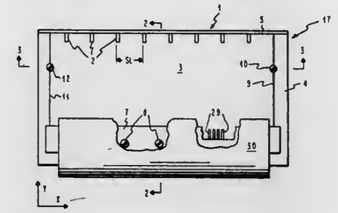
MULTI-ZONE THERMAL PRINT HEAD

Rowland V. D. Firth, III; Willie Goff, Jr.; Ta C. Ku, all of Austin, and James M. Rakes, Leander, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,917
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **14 Claims**

1. A heat applying print head in a thermal print apparatus for color transferring from a thermal ribbon onto a media, the head being arranged transverse (X) to the media transport direction (Y) and comprising selectively controllable heating elements, said print head comprising:

a plurality of arrays of heating elements each one of said plurality of arrays forming a printing zone, said plurality of arrays thereby forming a plurality of printing zones, said plurality of arrays arranged on a substrate substantially parallel to the media transport direction (Y), each of said plurality of arrays of heating elements having a height (CH) at least equal to the height of one complete character



to be printed, said plurality of printing zones separated from each other a distance (SL) along a line (X) transverse to said media transport direction (Y); and,

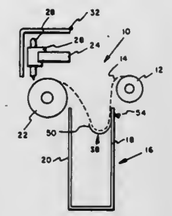
means for moving said substrate back and forth over said predetermined distance (SL) in the direction (X) transverse to the media transport direction (Y), whereby one or more complete characters are printed along said line (X) during each movement of said substrate over said predetermined distance (SL).

4,520,372

PLOTTER PAPER LOADING ASSIST APPARATUS

Dean-Yuan Liu, Canoga Park, Calif., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 4, 1983, Ser. No. 538,875
Int. Cl.³ G01D *15/28*
U.S. Cl. 346—136 **4 Claims**



1. In a graphics drum plotter having a vacuum column with front and rear walls disposed vertically between a paper supply roller adjacent and parallel to the rear wall and a drum adjacent and parallel to the front wall having a beam and writing head above and parallel thereto, the improvement for guiding strip paper from the supply roller across the vacuum column and to a point between the drum and beam/writing head during loading comprising:

(a) retractable guide means hingedly attached to the rear wall of the vacuum column adjacent the top thereof for movement between a first position wherein said guide means spans a portion of the space between the front and rear walls and a second position retracted from said first position to allow the paper to loop down into the vacuum column, said guide means being shaped for guiding paper rolling off the supply roller across the space between the front and rear walls of the vacuum column and for directing it into a position between the drum and the beam/writing head where it can be grasped; and,

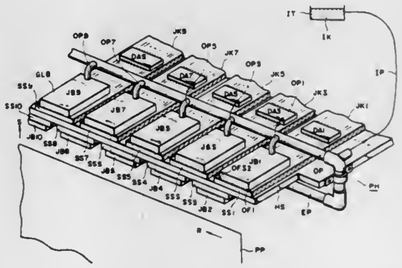
(b) bias means for urging said guide means towards said first position with a force less than that exerted against it by paper being drawn into the vacuum column.

4,520,373

DROPLET GENERATING METHOD AND APPARATUS THEREFOR

Naoki Ayata; Yoshiaki Shirato, both of Yokohama; Yasushi Takatori, Sagamihara, and Mitsuaki Seki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 133,327, Mar. 24, 1980,. This application Mar. 3, 1983, Ser. No. 471,842
Claims priority, application Japan, Apr. 2, 1979, 54-39467; Apr. 2, 1979, 54-39468; Apr. 2, 1979, 54-39469; Apr. 2, 1979, 54-39470; Apr. 2, 1979, 54-39471; Apr. 11, 1979, 54-39472; Feb. 22, 1980, 55-21348
Int. Cl.³ G01D *15/16*; **H05B** *3/00*
U.S. Cl. 346—140 R **23 Claims**



1. A recording apparatus utilizing heating elements for thermal recording on a recording sheet, comprising:

a plurality of heating elements arranged with such a high density as to enable recording with a resolving power of at least 8 dots/mm;

a plurality of transistors divided into groups each containing at least 32 transistors for driving said heating elements;

at least 32 gates for driving said transistors;

a latch circuit of at least 32 bits;

a serial-in-parallel-out shift register of at least 32 bits for loading pixel signals into said latch circuit; and

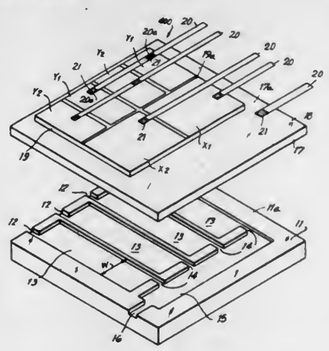
input means for entering pixel signals into said shift register.

4,520,374

INK JET PRINTING APPARATUS

Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan.

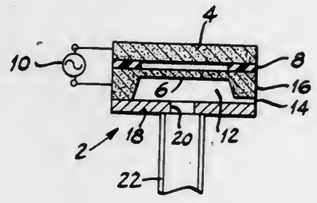
Filed Oct. 6, 1982, Ser. No. 433,191
Claims priority, application Japan, Oct. 7, 1981, 56-159896; Oct. 8, 1981, 56-160685; Oct. 8, 1981, 56-160686
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **31 Claims**



1. An ink jet printing apparatus for ejecting ink for printing comprising a plurality of nozzles and pressurization chambers

equal in number to the number of said nozzles, each nozzle being in fluid communication with a different one of said pressurization chambers, ink supply means for supplying ink to said pressurization chambers, each said pressurization chamber having first and second transducer means corresponding thereto for selectively deforming said pressurization chambers for ejecting ink out of said respective nozzles, and multiplex driver means for independently driving said first and second transducer means.

4,520,375
FLUID JET EJECTOR
John W. Kroll, Greendale, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed May 13, 1983, Ser. No. 494,246
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **13 Claims**



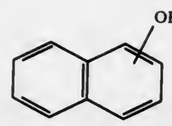
1. A fluid jet ejector comprising a pair of spaced capacitor plates, one of which is a thin diaphragm of semiconductor material, responsive to a time varying voltage causing a varying electric field between said plates to set said diaphragm into mechanical motion, and reservoir means containing fluid contiguous said diaphragm and including a nozzle through which fluid exits responsive to said diaphragm motion.

4,520,376
HEAT-SENSITIVE RECORDING SHEET
Sadao Morishita, Ibaraki, and Toshihiko Matsushita, Funabashi, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed Jul. 20, 1983, Ser. No. 515,528
Claims priority, application Japan, Jul. 22, 1982, 57-126730
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—204 **6 Claims**

1. A heat-sensitive recording sheet consisting of a support and a coating layer comprising microcapsules which are unbreakable when heated for heat-sensitive recording, said microcapsules each containing therein at least a colorless dye precursor as color former, a color developer and a waxy substance being solid at the normal temperature and melting when heated.

4,520,377
HEAT-SENSITIVE RECORDING MATERIALS
Ken Iwakura, Kanagawa, and Akira Igarashi, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 7, 1983, Ser. No. 539,901
Claims priority, application Japan, Oct. 7, 1982, 57-176747
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—208 **18 Claims**

1. A heat-sensitive recording material, comprising a substrate coated with:
an electron donating colorless dye;
an electron accepting compound;
a naphthol derivative represented by the general formula (V)



(V)

wherein R' represents an alkyl group, an aralkylene group, an aryl group, an alkylcarbonyl group, an arylcarbonyl group, an aryloxyalkylcarbonyl group, an alkylsulfonyl group or an arylsulfonyl group; and
at least one compound selected from the group consisting of urea derivatives containing 7 or more carbon atoms and a urethane derivatives containing 8 or more carbon atoms.

4,520,378
HEAT-SENSITIVE RECORDING PAPER AND A PROCESS FOR PRODUCTION THEREOF
Toshihiko Matsushita, Funabashi, and Sadao Morishita, Ibaraki, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed May 18, 1984, Ser. No. 611,757
Claims priority, application Japan, May 21, 1983, 58-89641; May 21, 1983, 58-89642; May 21, 1983, 58-89643
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—209 **21 Claims**

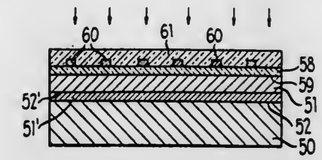
1. A heat-sensitive recording paper comprising a support having provided thereon a heat-sensitive coated layer containing as main components two components of a normally colorless or light colored dye precursor and a color developer capable of forming a color when reacted with the dye precursor upon heating characterized in that at least one of the two components (the dye precursor and the color developer) is dispersed in an organic solvent inert to the two components and microencapsulated.

4,520,379
THERMALLY-RESPONSIVE RECORD MATERIAL
Kenneth D. Glanz, and Troy E. Hoover, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.
Filed Jun. 15, 1984, Ser. No. 620,997
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—214 **12 Claims**

1. A thermally-responsive record material comprising a support member bearing a thermally-sensitive color-forming composition comprising chromogenic material and acidic developer material selected from the group consisting of allyl-4,4-bis(4-hydroxyphenyl)pentanoate and propargyl-4,4-bis(4-hydroxyphenyl)pentanoate in contiguous relationship, whereby the melting or sublimation of either material produces a change in color by reaction between the two, and a suitable binder therefor.

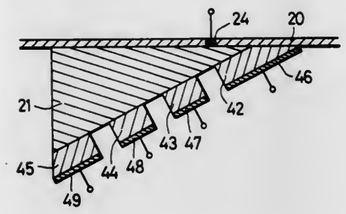
4,520,380
AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS
Stanford R. Ovshinsky, Bloomfield Hills, and Arun Madan, Birmingham, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio
Continuation of Ser. No. 427,688, Sep. 29, 1982, Pat. No. 4,409,605, which is a continuation of Ser. No. 222,489, Jan. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,284, Dec. 17, 1979, abandoned, which is a division of Ser. No. 887,353, Mar. 16, 1978, Pat. No. 4,226,898. This application Oct. 7, 1983, Ser. No. 540,153
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 **54 Claims**

1. A semiconductor film comprising a solid amorphous semiconductor host matrix including silicon and having electronic configurations which have an energy gap and a density of localized defect states therein, said amorphous semiconductor host matrix including at least two compensating or alterant elements, wherein said compensating or alterant elements are incorporated in said amorphous semiconductor host matrix,



yielding an amorphous semiconductor material having electronic configurations with a reduced density of localized defect states in the energy gap, said density of states reducing elements being fluorine and hydrogen.

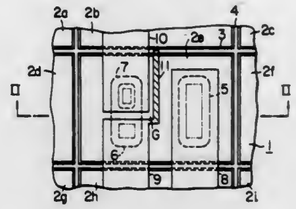
4,520,381
POLYCHROMATIC IMAGE SENSOR
Haruhiko Moriguchi, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1983, Ser. No. 455,635
Claims priority, application Japan, Jan. 13, 1982, 57-2684
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



1. A polychromatic semiconductor image sensor for converting an optical signal into an electrical signal comprising a light incident surface, a region of a first semiconductor type formed below said light incident surface and positioned away from the direction in which light becomes incident on said light incident surface, a plurality of second regions of a second semiconductor type adjoining said first region to define at least two PN-junctions with the depth of the PN-junctions from said light incident surface continuously varying, and output electrodes.

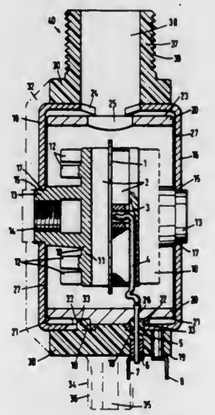
4,520,382
SEMICONDUCTOR INTEGRATED CIRCUIT WITH INVERSION PREVENTING ELECTRODE
Tastuo Shimura, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 17, 1981, Ser. No. 303,134
Claims priority, application Japan, Sep. 17, 1980, 55-127993
Int. Cl.³ H01L *29/40, 27/04, 27/12, 25/04*
U.S. Cl. 357—53 **32 Claims**

1. A semiconductor integrated circuit device comprising:
(a) a monolithic semiconductor chip including a plurality of island regions carried in a carrier region, each of said island regions being isolated from said carrier region and from other island regions by an associated island barrier;
(b) at least one of said island regions being of a first conductivity type and having at least two diffused regions of a second conductivity type opposite to said first conductivity type formed therein and isolated from each other;
(c) respective electrodes connected to said diffused regions with low resistance through an insulator film provided on said island region; and
(d) an inversion preventing electrode connected with one of said electrodes, and disposed relative to said island barrier



and said electrode so that said inversion preventing electrode, said island barrier and said one electrode enclose the associated diffused region to which said one electrode is formed from the other diffused region when viewed in the plane of said semiconductor chip.

4,520,383
POWER SEMICONDUCTOR COMPONENT FOR BOILING COOLING
Erwin Klein, Heddesheim, Fed. Rep. of Germany, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland
Filed Sep. 17, 1982, Ser. No. 419,831
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137407
Int. Cl.³ H01L *23/34, 23/46*
U.S. Cl. 357—81 **9 Claims**



1. Power semiconductor component for boiling cooling of a power semiconductor crystal disc having two main electrodes, comprising two multicontacts each being electrically connected to a respective one of the main electrodes for thermal and mechanical relief, two heat sinks each being in electrical and thermal contact with a respective one of said multicontacts, connecting eyes integral with said heat sinks for electrically connecting said main electrodes, a liquid and gas-tight housing surrounding the semiconductor crystal disc, said housing including a ceramic sleeve having a boiling liquid space formed therein and metallic covers disposed laterally on said ceramic sleeve, said connecting eyes protruding through and connected to said metallic covers, and an insulating sleeve molded around said housing, said insulating sleeve having at least one stub formed thereon having a hole formed therein for conducting an electrically-insulating refrigerant flow through said housing directly contacting the semiconductor disc, said

metallic covers having partially circular cutouts formed therein and said ceramic sleeve having a hole formed therein for said refrigerant flow.

4,520,384

POWER SEMICONDUCTOR COMPONENT FOR COOLING BY BOILING OR LIQUIDS

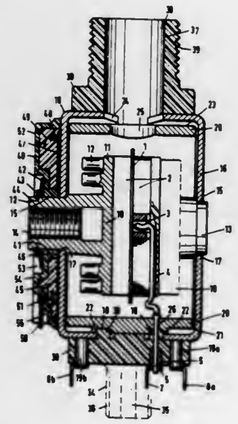
Erwin Klein, Heddesheim, Fed. Rep. of Germany, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Filed Sep. 17, 1982, Ser. No. 419,398

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137408

Int. Cl.³ H01L *23/34, 23/46*

U.S. Cl. 357—82 **11 Claims**



1. Power semiconductor component for boiling cooling or liquid cooling, comprising a semiconductor crystal disc having two main electrodes and, optionally, one or more control electrodes, a liquid and gas-tight housing through which an electrically insulating coolant can flow, the housing including a ceramic sleeve with metallic covers disposed on both sides thereof, the housing completely surrounding said disc and the metallic covers being acted upon by the coolant directly, and electric circuitry with high dissipation heat, especially resistors and diodes, integrated in a circuitry module (**40**) which is in force-locking thermal contact with the outside of the metallic cover (**16**) of the power semiconductor component for cooling.

4,520,385

TELEVISION TRANSMISSION SYSTEM

Richard N. Jackson, Horley, Great Britain, and Sing L. Tan, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

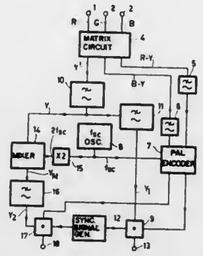
Filed Dec. 6, 1982, Ser. No. 447,083

Claims priority, application United Kingdom, Jun. 11, 1982, 8217099

Int. Cl.³ H04N *9/32*

U.S. Cl. 358—12 **14 Claims**

1. A method of transmitting a high definition color television signal including a wide-band luminance information signal having lower, middle and upper frequency components, said method comprising the steps: forming a first luminance portion containing the lower frequency components of said luminance information signal; forming a second luminance portion containing the higher frequency components of said luminance information signal; transmitting said first luminance portion by way of a first transmission path; frequency shifting said second luminance portion such that the resulting frequency shifted second luminance portion lies within the bandwidth of a second transmission path, which band width is substantially equal to that of the first transmission path; and transmitting the frequency shifted second luminance portion by way of the second transmission path, characterized in that both said first and second luminance portions additionally contain the middle frequency components of said luminance information signal such that said middle frequency components are transmitted by both said first and second transmission paths; and said method further comprises transmitting a color subcarrier modulated by



color information by way of said first transmission path which modulated subcarrier is located substantially within the frequency spectrum occupied by said middle frequency components, whereby the transmissions from the first and second transmission paths may be received together and the first and second luminance portions of the luminance information recombined for re-production as a high definition color television display or the transmission from the first transmission path may be received alone for reproduction as a color television display of normal quality.

4,520,386

COLOR VIDEO SIGNAL PROCESSING APPARATUS

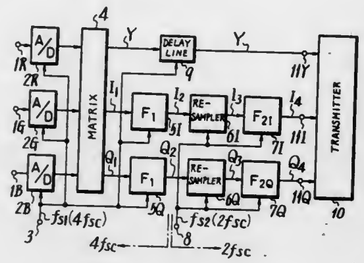
Takashi Asaida, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 391,992

Claims priority, application Japan, Jun. 30, 1981, 56-101689

Int. Cl.³ H04N *9/32*

U.S. Cl. 358—13 **7 Claims**



1. A color video signal processing apparatus which is supplied with a luminance data signal and first and second color difference data signals which are digitized at a first sampling frequency and are formed by a matrix, characterized in that at least one of said first and second color difference data signals is sampled in a resampler at a second sampling frequency divided by an integer of said first sampling frequency, a digital filter for limiting the band width of the sampled output of said resampler to a predetermined band width, and said means combining said luminance data signal and said first and second color difference data signals whose band widths have been limited, wherein said color difference signal which is sampled at said second sampling frequency includes at least a Q signal component, wherein prior to being sampled at said second sampling frequency, a prefilter receives said color difference signal so as to prevent aliasing noise from being caused during the sampling operation.

4,520,387

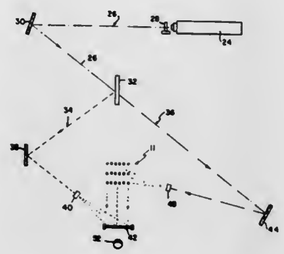
HOLOGRAPHIC IMAGER

Conrad Cortellini, Indianapolis, Ind., assignor to Moorfeed Corporation, Indianapolis, Ind.

Filed Aug. 6, 1980, Ser. No. 175,654

Int. Cl.³ G03H *1/30;* H04N *9/54*

U.S. Cl. 358—90 **12 Claims**



1. A holographic imager, comprising

a holographic screen having a plurality of angularly multiplexed holograms, each hologram comprising a pixel array formed by making a hologram of a planar matrix of substantially identical objects;

a light source; and

a modulator for receiving an image signal and modulating said light source to illuminate particular pixels of particular holograms of said holographic screen in response to the image signal.

4,520,388

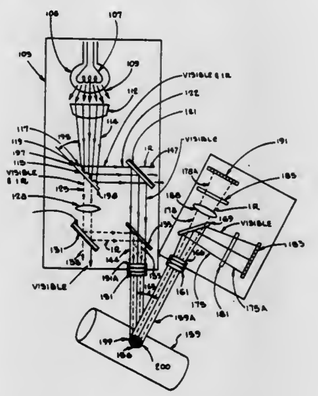
OPTICAL SIGNAL PROJECTOR

Truman F. Kellie, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 1, 1982, Ser. No. 438,141

Int. Cl.³ G01B *11/00;* H04N *7/18*

U.S. Cl. 358—107 **22 Claims**



1. An optical projector comprising:

(a) means for providing light beams of different wavelengths from light provided by at least one light source and

(b) means for projecting the light beams of different wavelengths to an object at substantially the same degree of focus and at substantially the same magnification.

4,520,389

METHOD OF MOUNTING PRINTING BLOCKS IN CORRECT POSITIONS ON FORM CYLINDERS OF FLEXOGRAPHIC PRINTING MACHINES FOR MULTICOLOR PRINTING

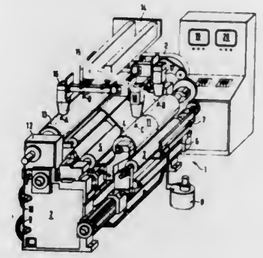
Manfred Hornschuh, Hilter, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 473,277

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209484

Int. Cl.³ H04N *7/18, 7/00*

U.S. Cl. 358—107 **6 Claims**



1. A method of mounting a printing block on a form cylinder of a flexographic printing machine for multicolor printing in phase with a mounting pattern secured to a mounting cylinder, said method comprising:

converting into electronic signals an image of each of two spaced apart points located on the mounting pattern and of each of two spaced apart points located on the printing block mounted on the form cylinder, viewed from fixed and mutually corresponding locations relative to the mounting cylinder and relative to the form cylinder,

transmitting said electronic signals to a remote location,

reconverting said electronic signals into images at said remote location,

adjusting the location of the printing block on the form cylinder until the reconverted images of the corresponding points for each spaced apart point on the mounting pattern and on the printing block are in register, and

securing the printing block to the form cylinder at the adjusted location.

4,520,390

BURNER MONITORING SYSTEM

Candelario Paredes, Dallas, Tex., and William D. Stevens, North Caldwell, N.J., assignors to Forney Engineering Company, Carrollton, Tex.

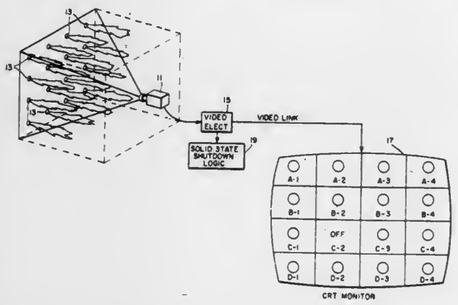
Filed Aug. 25, 1982, Ser. No. 411,224

Int. Cl.³ H04H *7/18*

U.S. Cl. 358—108 **10 Claims**

1. A burner monitoring system comprising an array of burners, each of said burners when lit producing a flame with a hot spot having a characteristic brightness in alignment with such burner different than the brightness of the remainder of said flame and smaller than said flame, video camera means positioned to view said array of burners and generate a video signal representing an image of the lit ot unlit condition of each of said burners, means responsive to said video signal to determine whether a hot spot having said characteristic brightness is in alignment with each of said burners and generate a first predetermined signal indication for each of said burners to indicate that such burner is lit when a hot spot with said char-

acteristic brightness is present in aligment with such burner and a second predetermined signal indication to indicate that



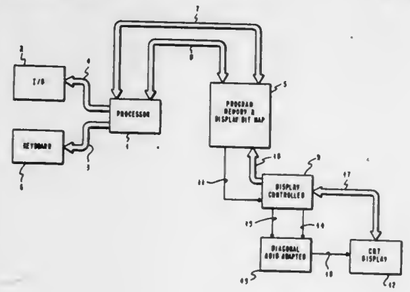
such burner is unlit when a hot spot with a said characteristic brightness is not present in alignment with such burner.

4,520,391

DIAGONAL GRID IMAGE COMMUNICATION AND DISPLAY

Albert D. Edgar, and Neil D. Lubart, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,892
Int. Cl.³ H04N *3/00*
U.S. Cl. 358—133 **8 Claims**



1. A method of displaying image data on an image display device comprising:

converting the image data pels in the image to be displayed from a square grid matrix to a diagonal grid matrix; and

directly displaying said image data after conversion to a diagonal grid matrix on an image display device so that alternate columns or rows of pels in the displayed image are displaced from each other by one-half the distance between pels in the displayed image.

4,520,392

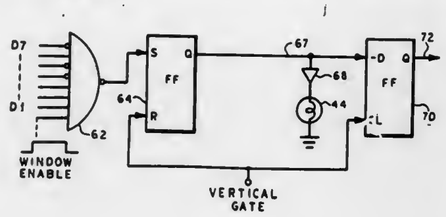
TELETEXT RECEPTION INDICATOR

Charles M. Cox, Buffalo Grove, and Charles Heuer, Glencoe, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 323,530, Nov. 23, 1981, abandoned. This application Mar. 4, 1983, Ser. No. 471,978
Int. Cl.³ H04N *7/04*
U.S. Cl. 358—147 **7 Claims**

1. For use with a teletext decoder which decodes teletext signals having a framing code, a teletext indicator, comprising:

control means associated with the teletext decoder and responsive to the decoder's detection of a framing code for generating a control signal, said control means being responsive to vertical rate gate pulses for resetting the control signal; and



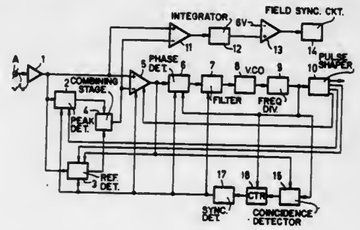
indicating means responsive to the control signal for indicating the receipt of a valid teletext signal.

4,520,393

SYNCHRONIZING CIRCUIT ARRANGEMENT FOR DERIVING AND PROCESSING A SYNCHRONIZING SIGNAL CONTAINED IN AN INCOMING VIDEO SIGNAL

Wilhelmus A. J. M. Zwijsen; Cornelis P. J. Duijndam, and Wouter Smeulers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,056
Claims priority, application Netherlands, Oct. 6, 1981, 8104533
Int. Cl.³ H04N *5/04*
U.S. Cl. 358—149 **16 Claims**



1. A synchronizing circuit arrangement for deriving and processing a synchronizing signal contained in an incoming composite video signal, the synchronizing signal comprising at least line and field synchronizing pulses whose amplitude extends between a reference and a peak level, the circuit arrangement comprising a peak level detector coupled to a signal input of the circuit arrangement for detecting the peak level of the synchronizing pulses, a reference level detector coupled to the signal input of the circuit arrangement for detecting the reference level of the synchronizing pulses, means coupled to said reference and said peak level detectors for determining a clipping level located between the peak and reference levels, a first comparator stage having a first input terminal coupled to the signal input, a second input terminal for receiving said clipping level, and an output terminal for applying the synchronizing signal separated from the composite video signal to a line synchronizing circuit for generating a locally generated signal of the line frequency, the circuit arrangement further comprising a synchronization detector stage for establishing a synchronized state in which the phase difference between the line synchronizing pulses in the synchronizing signal and pulses in the locally generated signal is less than a predetermined value and for changing the mode of operation of portions of the circuit arrangement, characterized in that the peak level detector is active only during the occurrence of first line frequency keying pulses applied thereto and is controlled by said synchronization detector stage whereby in the synchronized state, said peak level detector operates as a mean-value detector, and

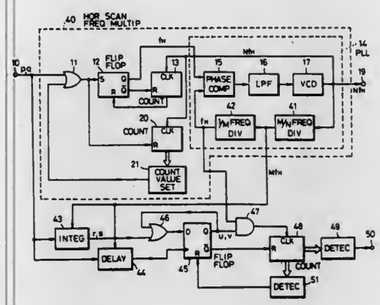
in a non-synchronized state, said peak level detector operates as a peak detector.

4,520,394

HORIZONTAL SCANNING FREQUENCY MULTIPLYING CIRCUIT

Kenji Kaneko, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 2, 1983, Ser. No. 490,667
Claims priority, application Japan, May 6, 1982, 57-75784
Int. Cl.³ H04N *5/06, 7/04, 5/04*
U.S. Cl. 358—150 **5 Claims**



1. A horizontal scanning frequency multiplying circuit comprising:

a flip-flop supplied with an input horizontal synchronizing signal having a horizontal scanning frequency f_H of a television signal, which is set by this input horizontal synchronizing signal;

a phase-locked-loop comprising a voltage controlled oscillator for producing a signal having a frequency Nf_H which is N times the horizontal scanning frequency f_H, where N is an integer over one, a frequency divider for frequency-dividing an output signal frequency of said voltage controlled oscillator, and a phase comparator supplied with one output signal of said flip-flop and an output signal of said frequency divider, for comparing phases of these signals and applying an output error signal to said voltage controlled oscillator to control the oscillation frequency of said voltage controlled oscillator, said phase-locked-loop producing the signal having the frequency Nf_H through its voltage controlled oscillator;

a first counter supplied with and reset by the other output signal of said flip-flop, and supplied with the output signal of the voltage controlled oscillator within said phase-locked-loop as a clock signal, for producing a counted output every time the clock signal is counted for a predetermined counting time T1 and supplying this counted output to said flip-flop to reset said flip-flop;

a second counter supplied with said input horizontal synchronizing signal and reset by said input horizontal synchronizing signal, and supplied with the output signal of the voltage controlled oscillator within said phase-locked-loop as a clock signal, for counting this clock signal;

counted value setting means for producing a high-level output according to an output of said second counter when said second counter counts for a predetermined counting time T2, where T2>T1; and

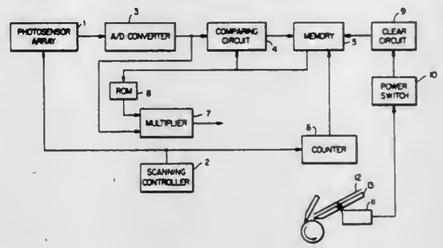
an OR-gate supplied with said input horizontal synchronizing signal and an output signal of said counted value setting means, for obtaining a logical sum of these signals supplied thereto, said OR-gate supplying its output to said flip-flop to set said flip-flop and supplying its output to said second counter to reset said second counter.

4,520,395

SYSTEM FOR CORRECTING SHADING OR NON-UNIFORMITY IN A PHOTOSENSITIVE ELEMENT ARRAY

Takahiko Abe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 9, 1983, Ser. No. 502,627
Claims priority, application Japan, Aug. 4, 1982, 57-136680
Int. Cl.³ H04N *5/14, 1/40*
U.S. Cl. 358—163 **7 Claims**



1. A system for correcting non-uniformities in the output of a photosensor system comprising:

an array of photosensitive elements for reading a pattern image on a document and for producing a series of output signals corresponding to said image;

a storage means, coupled to said array and having a number of memory cells each corresponding to a respective photosensitive element, for storing data representing the non-uniformity characteristics of the photosensor system;

a comparing means for successively comparing the signal from each element with the data stored in a corresponding memory cell and updating the data stored in said storage means in accordance with the results of said comparison; and

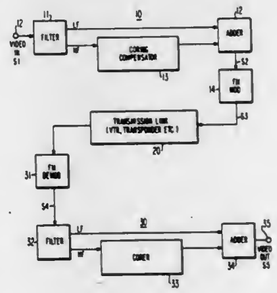
correcting means, coupled to the storage means and said photosensor array, for correcting the output signals of said photoelements by producing sensor output response signals that are compensated for said non-uniformities.

4,520,396

FM VIDEO TRANSMISSION SYSTEM HAVING CORING AND CORING COMPENSATION FOR REDUCING EFFECTS OF TRIANGULAR NOISE

Robert A. Dischert, Burlington, and Robert L. Libbey, Cherry Hill, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 25, 1983, Ser. No. 517,028
Int. Cl.³ H04N *5/21*; H04B *1/10*
U.S. Cl. 358—167 **5 Claims**



1. In a transmission system of the type including input means for receiving an input signal to be transmitted, modulator means responsive to said input signal for imparting angle mod-

ulation to a carrier wave, a transmission path for coupling said angle modulated carrier wave to a receiver means, said receiver means including means for demodulating said carrier wave and for separating the demodulated carrier wave into high frequency and low frequency portions, means for coring said high frequency portion and means for adding the cored high frequency portion to said low frequency portion to form a output signal, the improvement for enhancing the signal-to-noise ratio of said cored high frequency portion of said demodulated carrier wave, characterized in that said input means comprises:

(a) filter means for separating said input signal into high frequency portions and low frequency portions;

(b) first circuit means for effectively amplifying a central portion of said high frequency portion and for imparting a predetermined offset to the remaining portions of said high frequency portion to form a modified high frequency portion;

(c) second circuit means for combining said low frequency portion with said modified high frequency portion to form a resultant signal; and

(d) modulator means responsive to said resultant signal for forming said angle modulated carrier wave.

4,520,397

AUTO BRIGHTNESS LIMITER CIRCUIT FOR TELEVISION

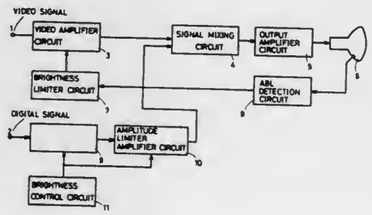
Hitoshi Hibi, Yaita, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1982, Ser. No. 450,475

Claims priority, application Japan, Nov. 11, 1982, 57-198420

Int. Cl.³ H04N *5/14, 5/68*

U.S. Cl. 358—168 **1 Claim**



1. An automatic brightness limiter circuit for use in a television receiver in which simultaneous display of broadcast signals and superimposed separate digital signals is made on a cathode ray tube comprising:

means for amplifying the broadcast signals supplied to said television receiver;

means for pulse amplifying the digital signals supplied to said television receiver;

means for amplitude limiting said digital signals;

means for mixing the broadcast signals amplified by the aforementioned means for amplifying broadcast signals and the digital signals amplitude limited by said means for amplitude limiting to develop a mixed signal;

means for supplying the cathode ray tube with the mixed signal obtained from said means for mixing to develop beam currents;

means for developing an automatic brightness limiter output when beam currents of said cathode ray tube exceed a prescribed value; and

means for controlling amplifier gain of said means for amplifying the video signals in response to said automatic brightness limiter output.

4,520,398

DIGITAL TELEVISION SPECIAL EFFECT WAVEFORM GENERATOR

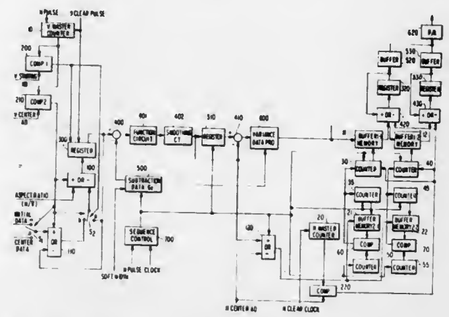
Hiroshi Takahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 420,215

Claims priority, application Japan, Sep. 18, 1981, 56-147393

Int. Cl.³ H04N *5/22, 9/535*

U.S. Cl. 358—183 **7 Claims**



1. A digital television special effect waveform generator for generating a gate signal used for composing two video signals through a special effect shape on a video screen having a plurality of scanning lines, comprising:

first producing means (**300**), responsive to position data with respect to said special effect shape, for producing basic data corresponding to each scanning line;

second producing means (**400**) responsive to said basic data for producing at least one subtracted basic data by subtracting a predetermined data from said basic data;

means (**401**) for converting said basic data and said at least one subtracted basic data into data indicating said special effect shape on a television screen, respectively; and

means (**600, 11, 30, 420, 320**) for generating an interpolated data sample between two adjacent data derived from said converting means so as to generate said gate signal.

4,520,399

PICTURE INFORMATION DISPLAY DEVICE

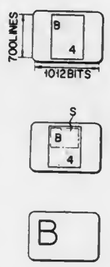
Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Kenki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 18, 1983, Ser. No. 458,877

Claims priority, application Japan, Jan. 29, 1982, 57-13166; Jan. 29, 1982, 57-13167

Int. Cl.³ H04N *1/04, 1/40*

U.S. Cl. 358—287 **9 Claims**



1. A picture information display device, comprising:

display means for displaying picture information;

scanning means for scanning the picture information on an original and detecting a size of the original;

control circuit means connected to said scanning means and having a page buffer memory, said control circuit means being adapted to store the picture information in said page buffer memory, to determine a reductive ratio of the picture information read out from said page buffer memory in accordance with a relationship between a detected size of the original and a size of a display area, and to produce control signals;

size reduction circuit means connected to said control circuit means, for reducing, in accordance with the reductive ratio, a size of the picture information read out from said page buffer memory; and

display interface means connected to said size reduction circuit means and having a refresh memory for storing size-reduced picture information which corresponds to at least one page of the original, said display interface means being adapted to store the size-reduced picture information in said refresh memory, and to produce a display signal to said display means in accordance with a storage content of said refresh memory, whereby said display means displays with a constant size regardless of the original size the picture information which is produced by reducing the contents of said page buffer memory.

4,520,400

IMAGE RECORDING DEVICE

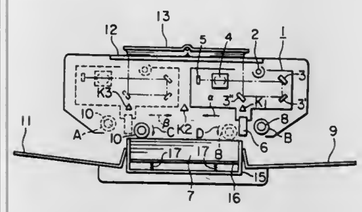
Noboru Koumura, Narashino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,726

Claims priority, application Japan, Apr. 17, 1981, 56-58172; Dec. 22, 1981, 56-206144; Dec. 22, 1981, 56-206145

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—296 **20 Claims**



1. An image recording device comprising:

means for housing a plurality of sheets of recording medium;

means for recording an image on a sheet of the recording medium while the sheet is housed in said housing means; and

means for exhausting from said housing means the recording medium which has been subjected to image recording by said recording means;

wherein said recording means performs recording during reciprocal movement relative to the recording medium.

4,520,401

DIGITAL VIDEO SIGNAL RECORDING SYSTEM AND REPRODUCING APPARATUS

Nobuaki Takahashi, Yamato; Seiichi Takashima, Ayase; Takeshi Shibamoto, Sagamihara; Fujio Suzuki, Machida; Koji Tanaka, Tokyo; Mitsuo Kubo, Yamato; Hiroyuki Sugiyama, Isehara; Yoshiaki Amano, Fujisawa, and Mitsuru Kikuchi, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 14, 1983, Ser. No. 485,054

Claims priority, application Japan, Apr. 16, 1982, 57-63670; Apr. 22, 1982, 57-67817; Apr. 22, 1982, 57-67818; Apr. 22, 1982, 57-67820; Apr. 23, 1982, 57-68089; Apr. 26, 1982, 57-69785

Int. Cl.³ H04N *5/76*

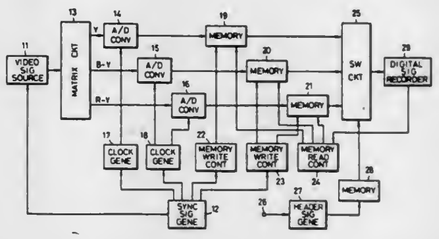
U.S. Cl. 358—310 **22 Claims**

1. A digital video signal recording system comprising:

first producing means for independently subjecting a luminance signal and two kinds of color difference signals of a color picture information to be recorded to digital pulse modulation, to produce a digital luminance signal and two kinds of digital color difference signals;

second producing means for dividing said digital luminance signal and said two kinds of digital color difference signals into picture element data groups, in terms of specific number of rows or specific number of columns which are adjacent on a screen, and adding a header signal at least comprising a synchronizing signal, a picture mode identification code, and a picture information quantity identification code to a beginning position of each of said divided picture element groups comprising said digital luminance signal and said two kinds of digital color difference signals, to produce a digital video signal having a signal format in which said digital luminance signal, said two kinds of digital color difference signals, and said header signal are time-sequentially multiplexed; and

recording means for recording said digital video signal onto a recording medium.



4,520,402

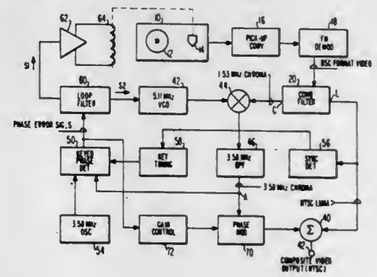
VIDEO APPARATUS WITH BURST LOCKED HETERODYNE CHROMA CONVERTER AND RESIDUAL TIME BASE ERROR CORRECTION

Robert N. Hurst, Jr., Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 15, 1982, Ser. No. 441,626

Int. Cl.³ H04N *9/44*

U.S. Cl. 358—324 **5 Claims**



1. In video apparatus of the type including a PLL heterodyne converter means for providing frequency translation and time base correction of the chrominance component of a composite video signal supplied to said converter means, said converter means including phase detector means for providing a phase error signal representative of a phase difference between a subcarrier reference frequency signal provided by a fixed frequency oscillator and the burst component of the converter chrominance output signal, said chrominance output signal tending to include residual time-base errors not corrected by said converter means, said apparatus including chrominance signal demodulator means having a first input terminal connected to receive said chrominance output signal, an output terminal for providing a demodulated chrominance output signal and a second input terminal for receiving said

subcarrier reference frequency signal, the improvement, comprising:

phase modulator means coupled to said fixed frequency oscillator for supplying said subcarrier reference frequency signal to said second input terminal of said demodulator means; and

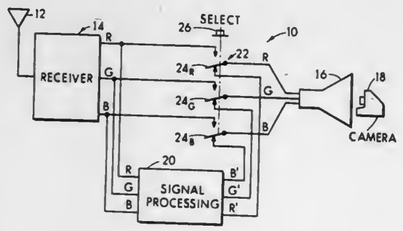
circuit means coupled to said phase detector means for aplying said phase error signal to a modulation control terminal of said phase modulator means for imparting phase modulation to said subcarrier reference frequency signal to correct color shifts in said demodulated chrominance output signal caused by said residual time-base errors of said chrominance output signal of said heterodyne converter means.

4,520,403

PROCESSOR FOR ENHANCING VIDEO SIGNALS FOR PHOTOGRAPHIC REPRODUCTION

James L. Burkhardt, Watertown, and John J. McCann, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 360,468, Mar. 22, 1982.
Int. Cl.³ H04N *5/84, 5/92*
U.S. Cl. 358—332 **14 Claims**



1. A signal processor for use with a color television receiver of the type having a colored display screen, comprising:

circuit means for receiving the luminance components of color video signals from the color television receiver in order to impose a select transfer function to the received luminance component which function generally approximates the inverse of the transfer function of a selected photographic reproduction process so as to produce a modified luminance component which when transmitted to the color television receiver operates to produce an image on the display screen of the television receiver in accordance with said select transfer function such that a photographic image of the display screen made by said selected photographic process will substantially visually correspond to the video image which would otherwise be displayed on the display screen if the luminance component had not been modified by said circuit means;

network means for modifying the chrominance component of the color video signals so that the saturation of the imaged colors on the display screen is enhanced to at least partly compensate for a mismatch in the spectral emission properties of the display screen and the spectral sensitivities in the photosensitive layers of a photosensitive material selected for the photographic reproduction process; and

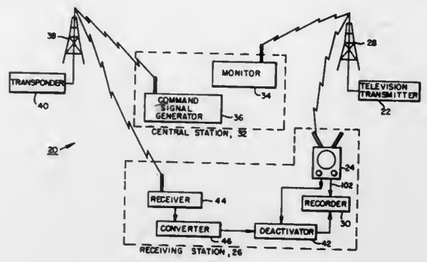
means for connecting said circuit means to receive said luminance component from the receiver and to transmit said modified luminance component back to the colored display source.

4,520,404

SYSTEM, APPARATUS AND METHOD FOR RECORDING AND EDITING BROADCAST TRANSMISSIONS

Henry Von Kohorn, 22 Perkins Rd., Greenwich, Conn. 06830

Filed Aug. 23, 1982, Ser. No. 410,464
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—335 **34 Claims**



1. A remote editing system for broadcast transmissions comprising:

(a) monitoring system means for monitoring broadcast transmissions from a plurality of sources of such transmissions to determine the program content of each of said broadcast transmissions;

(b) means for signaling an editorial message based on said program content of individual ones of said broadcast transmissions;

(c) means coupled to said signaling means for transmitting said message to subscriber stations of said system;

(d) first receiving means in each of said subscriber stations for receiving said broadcast transmissions;

(e) second receiving means in each of said subscriber stations for receiving said message;

(f) means coupled between said first and said second receiving means for operating said first receiving means in accordance with the message received by said second receiving means; and wherein

(g) said operating means includes means responsive to said identity of a source for selectively controlling said first receiving means in accordance with a source selection.

4,520,405

INSERT RECORDING SYSTEM FOR A VIDEO SIGNAL

Akihiko Sasaki, Hiratsuka; Kouji Arai, Tokyo; Takano Takashi, and Yasuomi Namiki, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

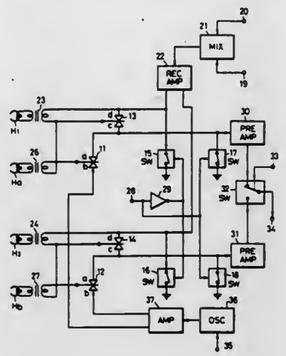
Filed Jun. 18, 1982, Ser. No. 389,998
Claims priority, application Japan, Jun. 22, 1981, 56-96351; Jun. 22, 1981, 56-96352
Int. Cl.³ H04N *5/783*
U.S. Cl. 360—10.3 **13 Claims**

1. An insert recording system for scanning over a magnetic tape which is pre-recorded with a video signal on tracks formed obliquely to the longitudinal direction of the magnetic tape having a track pitch TP, for erasing parts of the pre-recorded tracks, and for recording a different video signal on the erased parts of the pre-recorded tracks, said pre-recorded tracks being successively formed in contiguous contact with each other with essentially no guard band between two adjacent tracks by two video heads having gaps of mutually different azimuth angles, said insert recording system comprising:

first and second video head (**H1, H2, 47***a*, **48***a*) mounted at mutually opposing positions on a rotary body so that lower ends of the first and second video heads lie on the same plane, said first and second video heads having gaps of mutually different azimuth angles and recording said different video signal with the track pitch TP on the erased parts of the pre-recorded tracks;

a single flying erase head (H_c) mounted at a position on the rotary body leading said first video head by θ radians in a rotating direction of the rotary body so that a lower end of said flying erase head is higher than the lower end of said first video head by a distance h which is described by an equation $h=TP\ (\theta/\pi)$, said flying erase head having a track width which is two times the track widths of the first and second video heads and having a gap of the same azimuth angle as the gap of said second video head;

erasing current generating means (**36, 19**) for generating an erasing current;



first control means (**11, 12, 35, 41, 44, 51, 54, 56, 57, 58,** C_3, R_2, D_3, **61**) for controlling supply of said erasing current to said flying erase head; and

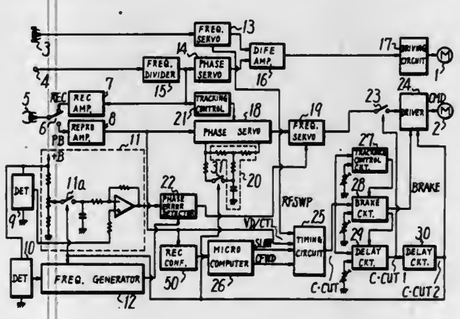
second control means (**13–16, 42, 43 52,** D_1, D_2, C_2, **55, 58, 59,** C_4, C_5, D_4, D_5, R_3, R_4, **60, 62**) for controlling supply of said different video signal to said first and second video heads, so that said first and second video heads successively record said different video signal without a guard-band on the erased parts of the pre-recorded tracks erased by said flying erase head.

4,520,406

VIDEO TAPE RECORDER WITH RECORD REVIEW MODE FOR EDITING SIGNALS RECORDED ON MAGNETIC TAPE

Toshinori Suzuki, c/o Sony Corporation, 7-35 Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, and Minoru Ozawa, c/o Aiwa Co., Ltd., 209, Kandasuda-cho, Chiyoda-ku, Tokyo, both of Japan

Filed Mar. 24, 1982, Ser. No. 361,149
Claims priority, application Japan, Mar. 25, 1981, 56-43581
Int. Cl.³ H04N *5/782*
U.S. Cl. 360—14.2 **6 Claims**



1. A method for controlling advancement of tape in forward or reverse direction in a video tape recorder for use in editing information signals recorded on the tape, including a tape drive for advancing a tape in a forward direction and a reverse direction, said video tape recorder having a record mode in which an information signal including control signals is recorded on said tape such that the tape has said control signals recorded thereon at regularly spaced intervals along a longitudinal track, a playback mode, and an edit mode in which a second information signal may be recorded on said tape beginning at a selected edit point to follow a first information signal, and further having a pause mode wherein, when said video tape recorder enters said pause mode at a selected edit point on said tape, said tape drive means advances said tape in said reverse direction by a first length corresponding to a first predetermined number of said control signals, so that a portion of said first information signal recorded immediately preceding said edit point may be monitored prior to said video tape recorder entering said edit mode, said method comprising the steps of:

entering said pause mode to advance said tape in said reverse direction by said first predetermined number of control signals,

advancing said tape in said reverse direction by a second length corresponding to a second predetermined number of said control signals,

advancing said tape in said forward direction in said playback mode by a length of the tape substantially corresponding to the total of said first and second predetermined numbers of said control signals, and

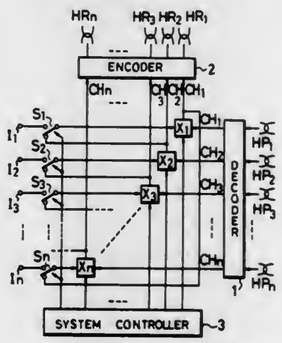
reentering said pause mode for further reversing said tape by said first length corresponding to said first predetermined number of control signals after the finish of said forwarding operation.

4,520,407

RECORDING AND/OR REPRODUCING APPARATUS FOR A MULTI-CHANNEL DIGITAL SIGNAL

Masato Tanaka, Tokyo, and Takenori Sonoda, Zama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,464
Claims priority, application Japan, Feb. 13, 1982, 57-21895
Int. Cl.³ G11B *5/00, 27/02*
U.S. Cl. 360—32 **11 Claims**



1. An apparatus for recording and/or reproducing a digital signal made up of a plurality of channel signals digitally recorded in respective tracks on a magnetic record medium, said apparatus comprising:

reproducing means for reproducing said channel signals recorded in said respective tracks;

recording means associated with said tracks for recording digital signals in said tracks; and

selector means for selectively supplying the reproduced channel signals to said recording means for digital recording by the latter in at least a selected one of said tracks on said magnetic record medium, said selector means includ-

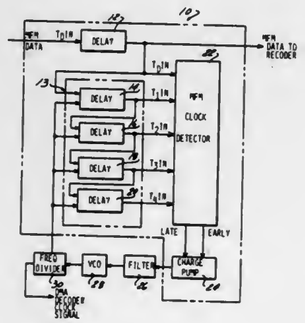
ing fader means with a fader element associated with each of said channel signals and having first and second input terminals and an output terminal, means connected to said reproducing means for supplying an associated reproduced channel signal to said first input terminal, and means for connecting said second input terminal to said output terminal of said fader element associated with another channel signal.

4,520,408

CLOCK SIGNAL SYNCHRONIZATION APPARATUS AND METHOD FOR DECODING SELF-CLOCKING ENCODED DATA

Juan F. Velasquez, Saline, Mich., assignor to VSP Labs, Inc., Ann Arbor, Mich.

Filed Feb. 22, 1983, Ser. No. 468,645
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—51 **8 Claims**



1. An apparatus for synchronizing a clock signal generating means with self-clocking encoded data output from a moving storage medium comprising:

means for receiving the self-clocking encoded data from the storage medium;

means, responsive to the received encoded data and the clock signal generating means, for generating a plurality of separate delayed data signals, each identical in frequency to the received encoded data but progressively delayed in time with respect to the received encoded data;

means for continuously sampling the encoded data and the plurality of delayed data signals in parallel to detect one of a plurality of predetermined trigger sequences of binary states of the encoded data and the plurality of delayed data signals;

means for sampling the encoded data and the plurality of delayed data signals after one of the predetermined trigger sequences of signals has been detected to detect a correct following sequence of signals for the detected trigger signal;

means for sampling the encoded data and the plurality of delayed data signals after one of the predetermined trigger codes has been detected to detect one of a third and fourth sequence of binary states of the encoded data and the plurality of delayed data signals, the third and fourth sequences of signals corresponding to a delayed or advanced clock rate of the clock signal generating means with respect to the self-clocking encoded data for each detected trigger sequence; and

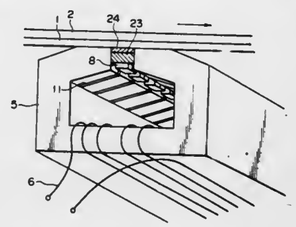
means for synchronizing the clock signal generating means with respect to the self-clocking encoded data in proportion to the amount of time between the occurrence of one of the third and fourth binary sequences and the occurrence of the second sequence of binary codes after one of the trigger sequences has been detected.

4,520,409

THERMAL AND MAGNETIC RECORDING HEAD

Toshifumi Kimoto; Teruhiko Itami; Nobuo Nishimura, and Koichi Saitoh, all of Kanagawa, Japan, assignors to Fuji Xerox Corporation, Limited, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,504
Claims priority, application Japan, Jul. 10, 1981, 56-106966; Jul. 10, 1981, 56-106967; Jul. 20, 1981, 56-113280
Int. Cl.³ G11B *5/02*
U.S. Cl. 360—59 **10 Claims**



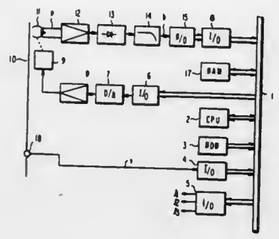
1. A magnetic recording head, comprising: a high permeability element having a relatively low magnetic transformation point; a non-magnetic element in the form of a layer formed on said high permeability element, said non-magnetic element being in close contact with a magnetic recording medium; and heat generating means divided for selectively applying a voltage to said high permeability element to thereby heat the latter, said high permeability element, non-magnetic element and heat generating means being provided in an air gap formed in a magnetic head core; said heat generating means comprising an array of selectively energizable resistors collectively forming a thermal head.

4,520,410

SCAN TRACKING APPARATUS FOR HELICAL SCAN VIDEO TAPE RECORDER

Toru Sekiguchi, and Isao Sanguu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,667
Claims priority, application Japan, Feb. 26, 1982, 57-30314
Int. Cl.³ G11B *5/58*
U.S. Cl. 360—77 **3 Claims**



1. A scan tracking apparatus for a helical scan video tape recorder comprising:

head means for scanning video tracks on a magnetic tape to produce a reproduced signal;

means responsive to a tape for producing a first control signal having a sawtooth shape;

means responsive to said reproduced signal for producing a second control signal by utilizing a correlation between reproduced signals delivered from the previously scanned tracks; and

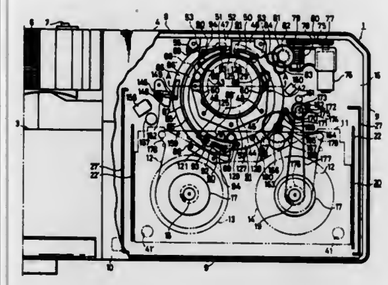
means responsive to said first and second control signals for deflecting said head means.

4,520,411

MAGNETIC TAPE RECORDING DEVICE

Eiji Ohshima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 18, 1984, Ser. No. 611,727
Claims priority, application Japan, May 25, 1983, 58-92037
Int. Cl.³ G11B *15/66, 15/60*
U.S. Cl. 360—85 **5 Claims**



1. A magnetic tape loading device comprising a head drum having magnetic heads, a drum base supporting said head drum, a chassis, two loading rings supported on an upper surface of said chassis and rotatable in opposite directions, two tape guide blocks having guide posts for pulling out a magnetic tape from a tape cassette and winding it on said head drum, and guide block guide members for guiding one of said two tape guide blocks, said two loading rings being vertically spaced in coaxial relation at the outside of said drum base, said one of said two tape guide blocks being supported on said guide block guide members to be movable along a path slanted with respect to said two loading rings and being coupled to the lower loading ring by a connector mechanism, and the other of said tape guide blocks being coupled to the upper loading ring, so that said two tape guide blocks are movable in opposite directions around a periphery of said head drum in response to rotation of said two loading rings for winding said magnetic tape helically on said periphery of said head drum over an angle of contact with said head drum of at least 300° and with a spacing between the beginning and end of a portion of said magnetic tape that contacts said head drum corresponding substantially to the width of said magnetic tape.

4,520,412

AUTOSTOP MECHANISM FOR TAPE RECORDER

Kobun Yoshida, Saitama, Japan, assignor to Pioneer Electronic Corporation, Japan

Filed Sep. 1, 1982, Ser. No. 413,659
Claims priority, application Japan, Sep. 2, 1981, 56-130483; Sep. 2, 1981, 56-130484
Int. Cl.³ G11B *15/02, 17/02*
U.S. Cl. 360—96.1 **14 Claims**

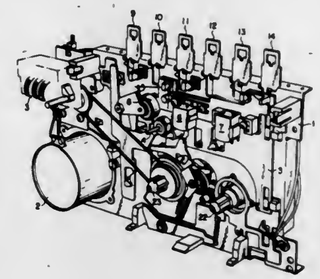
1. An autostop mechanism for a tape recorder, comprising;

a reel arm fixed on a reel shaft of a take-up reel of said tape recorder so as to be rotatable therewith,

engagement means formed on said reel arm,

first means for engaging said reel arm engagement means, an autostop arm pivoted about a pivot point located at an intermediate portion of said autostop arm and means biasing said autostop arm in one direction,

second means for releasing a mode switching operation apparatus,



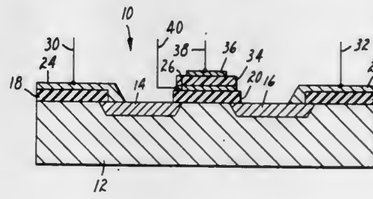
third means disposed between said first and second means, and provided with a cam mechanism for effecting said releasing operation.

4,520,413

INTEGRATED MAGNETOSTRICTIVE-PIEZOELECTRIC-METAL OXIDE SEMICONDUCTOR MAGNETIC PLAYBACK HEAD

Chester Piotrowski, White Bear Lake; Steven A. Bendson, Edina; Neil W. Loeding, Mounds View, and William M. Mularie, Grant Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 13, 1982, Ser. No. 368,025
Int. Cl.³ G11B *5/12, 5/30*
U.S. Cl. 360—113 **16 Claims**



1. A thin-film playback head for use with magnetic recording media comprising

(a) a semiconductive substrate having fabricated as an integral part thereof a solid state amplifier having contacts immovably secured thereto and to which appropriate electrical potentials and signals may be coupled,

(b) overlying said substrate, a thin-film of a magnetostrictive material and a thin-film of a piezoelectric material mechanically coupled to said magnetostrictive thin-film, wherein external magnetic fields induce strain in said magnetostrictive thin-film to in turn induce in said piezoelectric thin-film a corresponding electrical polarization and thereby result in a non-equilibrium charge density on at least one surface of said piezoelectric film which is directly proportional to the intensity of the external magnetic field, and

(c) at least two electrodes, each extending over at least a portion of a surface of said piezoelectric thin-film, for coupling an electrical potential corresponding to said charge density from said electrodes to said contacts of said amplifier,

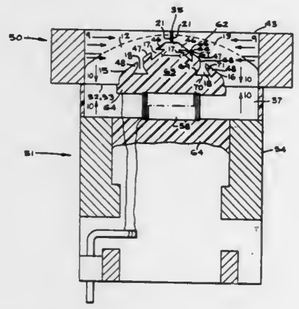
whereby localized magnetic field patterns in a record track on a magnetic recording medium positoned adjacent said magnetostrictive thin-film may be directly sensed independently of the speed or changes in the speed at which the head is moved relative to the medium, as the stress induced in said

magnetostrictive thin-film due to such field patterns is coupled to said piezoelectric thin-film and resuls in said polarization and non-equilibrium charge density, and the corresponding potential coupled to said amplifier results in an output signal from said amplifier which is directly representative of said localized field patterns and which has low impedance, low noise characteristics, in contrast to the high impedance signal associated with the non-equilibrium charge density.

4,520,414
MAGNETIC TRANSDUCER STRUCTURE WITH IMPROVED MECHANICAL COUPLING AND METHOD OF MANUFACTURING

Stanley M. Latimer, San Jose, and Gregory A. Orton, Fremont, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Sep. 30, 1982, Ser. No. 429,909
Int. Cl.³ G11B *5/12*
U.S. Cl. 360—125 **47 Claims**



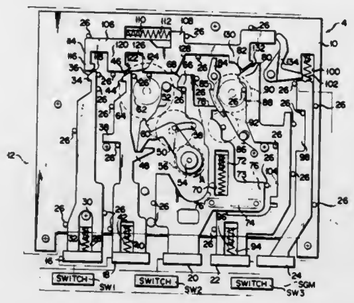
2. A magnetic transducer assembly having at least one transducing channel comprising:
each said channel having at least two separate magnetic core portions assembled with confronting magnetic poles abutting to define a transducing gap therebetween, said assembled core portions forming a substantially closed magnetic transducing circuit forming inner space;
at least two said separate magnetic core portions having respective keyways provided therein, said keyways forming recesses contiguous with said inner space; and
a nonmagnetic bond provided in at least a portion of said inner space including said recesses for joining said separate magnetic core portions together.

4,520,415
OPERATING LEVER APPARATUS

Minoru Kobayashi, and Shigeru Nemoto, both of Tokyo, Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 359,121
Claims priority, application Japan, Mar. 30, 1981, 56-44767[U]; Mar. 30, 1981, 56-44768[U]; Mar. 30, 1981, 56-44769[U]; Mar. 30, 1981, 56-44771[U]
Int. Cl.³ G11B *15/18, 17/00, 15/48;* **G05G** *11/00*
U.S. Cl. 360—137 **18 Claims**

1. An operating lever apparatus, comprising:
a first base plate;
a second base plate separated from the first base plate in parallel therewith; and
a plurality of operating levers disposed between the first and second base plates and being slideably movable between respective first and second positions of said levers along and between said first and second base plates, the distance

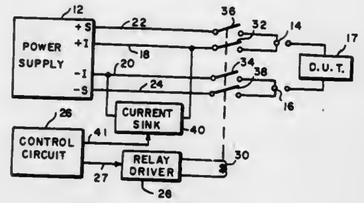


between said base plates being substantially equal to the thickness of said levers.

4,520,416
SHUNT-FOLDBACK VOLTAGE SOURCE

Karl Karash, Sudbury, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Mar. 1, 1984, Ser. No. 585,153
Int. Cl.³ H02H *7/22*
U.S. Cl. 361—11 **1 Claim**

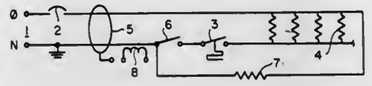


1. A programmable power supply having an output terminal adapted for connection to a device under test, the programmable power supply comprising:
A. a foldback power supply, having an output port, for providing a predetermined output voltage at its output port until the current drawn by its load reaches a predetermined maximum, the foldback supply reducing both its output voltage and its output current when the predetermined maximum current is exceeded;
B. switch means connected between the output port and the output terminal and operable by application of control signals thereto selectively to complete and interrupt electrical connection between the output port and the output terminal;
C. a shunt circuit connected in parallel with the power supply and operable by application of control signals thereto to tend to draw more than the predetermined maximum current from the current-limited power supply; and
D. a control circuit, connected for application of control signals to the switch means and the shunt circuit, for first applying signals to operate the shunt circuit to tend to draw more than the rated current from the foldback power supply to cause the supply voltage to drop to a low value and for then applying control signals to the switch means to open it to disconnect the foldback supply from any device under test connected to the output terminal.

4,520,417
ELECTRICAL MONITORING SYSTEMS

Louis M. Frank, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 14, 1983, Ser. No. 466,265
Int. Cl.³ H02H *3/33*
U.S. Cl. 361—45 **8 Claims**

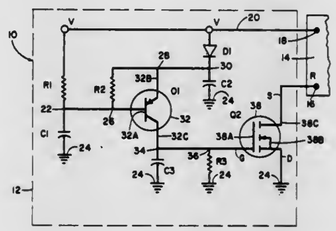


1. An electrical system which comprises
(i) a source of electrical power having a first and a second live terminal;
(ii) a circuit breaker connected to each live terminal of the power source;
(iii) an electrical load;
(iv) a first electrical connection means which is live and which connects the power source to the electrical load;
(v) a second electrical connection means which connects the power source to the electrical load;
(vi) an electrical switching device which has a low impedance when it is closed and a high impedance when it is open and which lies in the second electrical connection means; and
(vii) a ground fault indicator which signals a difference between the current flowing in the first connection means and the current flowing in the second connection means;
whereby the load is live when the circuit breaker is closed, both when the switching device is closed and when it is open, and the ground fault indicator will signal a leakage from the electrical load to ground both when the switching device is closed and when it is open.

4,520,418
RESET CIRCUIT

Roger E. Susi, 7006 E. 89th Pl., Tulsa, Okla. 74133

Filed Apr. 25, 1983, Ser. No. 488,213
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **4 Claims**

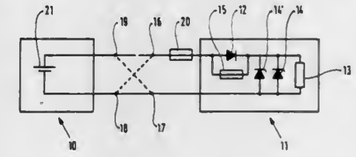


1. A reset circuit for monitoring the power supply voltage of a microprocessor, and for disabling the action of said microprocessor for a selected time period, at the times of power supply voltage change, such as at times of power on and power off of the microprocessor, comprising:
(a) a bridge network having four terminals, a first terminal A, a second terminal B, a third terminal C and a fourth terminal D, a first arm comprising a first diode D1 connected from terminal A to terminal B, a second arm comprising a first capacitor C2 connected from terminal B to terminal C, a third arm comprising a second capacitor C1 connected from terminal C to terminal D, and a fourth arm comprising a first resistor connected from terminal A to terminal D;
(b) a power supply with voltage terminal V connected to terminal A and a ground terminal connected to terminal C;
(c) the output terminals of said bridge are terminals B and D, with a load resistance R2 connected between them;
(d) amplifier means connected across the output terminals B and D, said amplifier means having no direct connection to said power supply and receiving operating power only from said bridge when said bridge is unbalanced;
(e) a reset terminal; and
(f) an electronic switch means controlled by said amplifier means and being connected to said reset terminal, the switch means supplying a high voltage which serves as a reset voltage, when said amplifier means is turned off.

4,520,419
POLARITY AND OVERLOAD PROTECTIVE CIRCUIT FOR ELECTRIC CONSUMERS

Johannes Locher, Stuttgart, and Wolfgang Schmidt, Vaihingen/-Enz, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,844
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231143
Int. Cl.³ H02H *3/18, 3/20*
U.S. Cl. 361—104 **8 Claims**



1. A polarity and overload protecting circuit for use in connection with an electric current consumer operating at a prescribed operational voltage and having at least two power supply conduits, the circuit comprising a fuse connected in series with one power supply conduit, a zener diode bridging the two power supply conduits and having its breakdown voltage adjusted to the prescribed operational voltage of the consumer, and a diode connected parallel to said fuse.

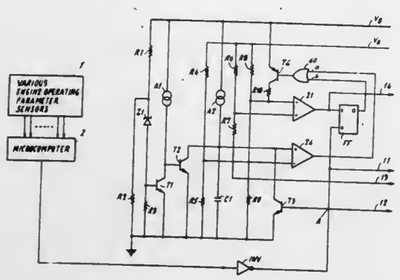
4,520,420
CURRENT CONTROL METHOD AND APPARATUS FOR ELECTROMAGNETIC VALVES

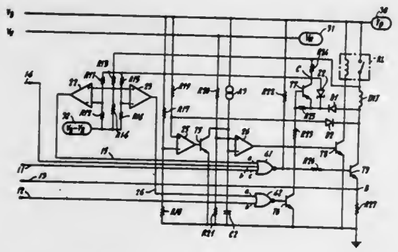
Hiromi Ariyoshi, and Iwao Yokomori, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 1, 1983, Ser. No. 556,779
Claims priority, application Japan, Dec. 1, 1982, 57-211848
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—154 **10 Claims**

1. A method for controlling the operating current of an electromagnetic valve in response to a variable duration pulse, comprising the steps of:
(a) coupling an energization voltage to an actuating coil of said electromagnetic valve in response to a leading edge of said pulse to initiate an energization current in said coil;
(b) detecting when said energization current reaches a predetermined peak value;
(c) decoupling said energization voltage from said coil to allow a circulating current to flow through a first path to decrease said circulating current at a higher rate;
(d) detecting when said circulating current decreases to a medium current value;
(e) switching said circulating current to a low resistance path to decrease said circulating current at a lower rate;
(f) detecting when said circulating current reaches a lower holding current value necessary to hold said electromagnetic valve operated;

(g) coupling said energization voltage to said coil to reinitiate said energization current;
(h) detecting when said energization current reaches a higher holding current value lower than said medium current value;





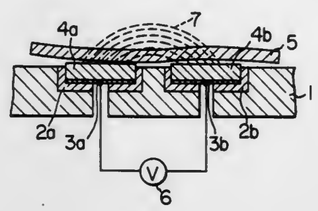
(i) decoupling said energization voltage from said coil to reinitiate said circulating current; and
(j) repeating the steps (f) to (i) until the occurrence of a trailing edge of said pulse.

4,520,421

SPECIMEN SUPPORTING DEVICE

Yoshio Sakitani, and Yoshihisa Minamikawa, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1983, Ser. No. 521,610
Claims priority, application Japan, Aug. 11, 1982, 57-138583
Int. Cl.³ H01T *20/00*
U.S. Cl. 361—234 **26 Claims**



1. A specimen supporting device comprising means for supporting a specimen, said means including first and second specimen attracting portions arranged in opposed relation to one side of said specimen, and made of semiconductive dielectric material, and means for applying a voltage between said first and second specimen attracting portions in a manner to electrostatically attract said specimen to said first and second specimen attracting portions.

4,520,422

CERAMIC MULTILAYER ELECTRICAL CAPACITORS

William Borland, Gloucester, England, assignor to Engelhard Corporation, Iselin, N.J.

Filed Sep. 6, 1983, Ser. No. 529,417
Claims priority, application United Kingdom, Dec. 20, 1982, 8236210
Int. Cl.³ H01G *1/01*
U.S. Cl. 361—305 **19 Claims**

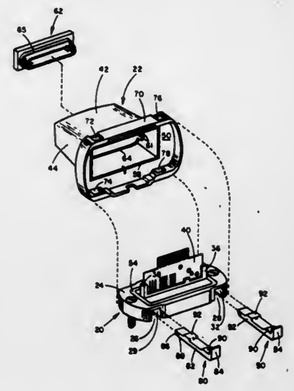
6. A multilayer capacitor having two or more electrodes of metals selected from the group consisting essentially of silver, palladium, gold and platinum and alloys of two or more of said metals, and dielectric layers disposed between said electrodes, the improvement comprising reducing the metal content of each of said electrodes to less than about 12 milligrams per square inch.

4,520,423

TAMPERPROOF, MOISTURE PROOF READOUT ENCLOSURE

Ray Sutherland, Hopwood, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1982, Ser. No. 436,255
Int. Cl.³ H02B *1/00*
U.S. Cl. 361—380 **11 Claims**



1. A tamperproof enclosure for a data readout device comprised of a base having a front wall, spacer means projecting rearwardly from said front wall terminating in a plane spaced rearwardly from said front wall, a cover comprised of a main body portion and mounted on said base, peripheral wall means formed on said cover bridging at least a portion of the space between said plane and said front wall and terminating in a free edge, openings in said peripheral wall means communicating with the space between said plane and said front wall, locking pin means received through said openings into the space between said plane and said front wall to prevent removal of said cover from said base.

4,520,424

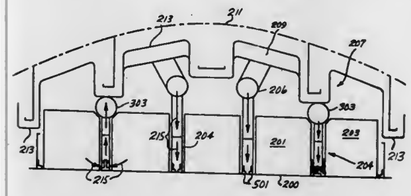
VENTILATED INSTRUMENT PANEL SUPPORT RAIL

Paul E. Carpenter, Snohomish; Charles B. Fisher, Seattle, and Douglas E. Peash, Enumclaw, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 315,838, Oct. 28, 1981, abandoned, and a continuation-in-part of Ser. No. 105,832, Dec. 20, 1979, abandoned. This application Jun. 13, 1983, Ser. No. 503,461
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **1 Claim**

1. In combination in the flight deck panel region of an aircraft:
an instrument panel;

a plurality of dripshields disposed between the aircraft skin and a plurality of instrument modules distributed in spaced apart relationship between said instrument panel and said plurality of dripshields;
a plurality of instrument panel support rail assemblies, each of said plurality of instrument panel support rail assemblies disposed between said instrument modules;
each of said plurality of instrument panel support rail assemblies including a distribution manifold, and a support rail



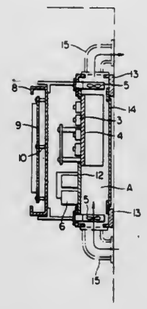
for retaining said instrument modules in said distributed spaced apart relationship;
said distribution manifold including coupling means disposed between air supply ducting and said support rail;
said coupling means comprising a plurality of air passages distributed along said manifold adjacent said support rail for dispersing cooling air to said instrument modules; and,
wherein said cooling air source manifold includes a pressurization valve assembly for providing flow-through cooling of cathode ray tube instruments.

4,520,425

CONTROL APPARATUS WITH IMPROVED STRUCTURE FOR COOLING CIRCUIT ELEMENTS

Eizi Ito, Komaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1983, Ser. No. 521,917
Claims priority, application Japan, Aug. 12, 1982, 57-122710; Aug. 12, 1982, 57-122712
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—384 **9 Claims**



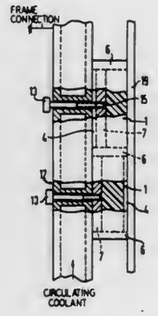
7. An apparatus as claimed in claim 6, wherein said electrical circuit members are mounted on said dissipating element.

4,520,426

COOLING SUBRACK FOR LOGIC CARDS

Herrmann Wessely, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,403
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247240
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **6 Claims**



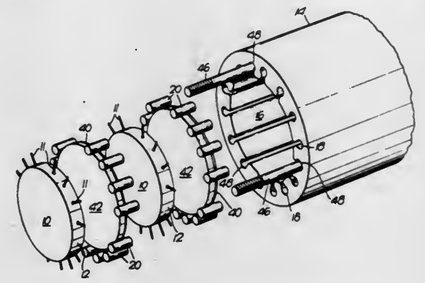
1. Subrack apparatus comprising:
a motherboard including a plurality of first contacts arranged in groups of contact arrays;
a plurality of grid elements connected to said motherboard and defining a grid including planar distributed chambers each containing a respective group of said first contacts;
a plurality of logic modules each disposed in a respective chamber and each including second contacts engaging respective first contacts, logic circuits connected to said second contacts and a first cooling plate in each chamber in thermal contact with said logic circuits; and
a common second cooling plate releasably mounted on said grid elements spaced from said motherboard a distance greater than the thickness of said logic modules and thermally connected to each of said first cooling plates.

4,520,427

ELECTRICAL CIRCUIT ASSEMBLIES

William A. Brotherton, Lothian, and Kenneth Street, Dunfermline, both of Scotland, assignors to Ferranti plc, Cheadle, England

Filed May 19, 1982, Ser. No. 379,768
Claims priority, application United Kingdom, May 29, 1981, 8116470
Int. Cl.³ H02B *1/00*; H05K *7/20*; H01R *13/00*
U.S. Cl. 361—389 **16 Claims**



1. An electrical circuit assembly comprising:

a housing including a hollow casing, and a bore extending through the casing;

a plurality of grooves provided in the internal surface of the hollow casing and extending longitudinally along the bore;

a stack of a plurality of modules secured within the casing bore, the modules having electrical connection leads extending in parallel planes from the modules into the grooves;

separate interconnection parts extending longitudinally along the grooves and at least partially residing in the grooves, at least some of the separate interconnection parts being electrically conductive;

the modules with connection leads and the separate interconnection parts being assembled in alternating fashion such that, within the grooves, there is a separate interconnection part on each side of at least those module connection leads which extend from intermediate modules of the stack; and

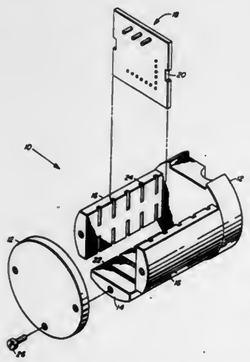
clamping means for developing longitudinal clamping force along the grooves for clamping the module leads and the separate interconnection parts together within the grooves, the module leads and the electrically conductive separate interconnection parts, when clamped, together comprising electrical interconnections.

4,520,428

DENSE PACKAGING SYSTEM FOR PRINTER WIRING BOARDS

Kenneth P. Lusk, Ridgecrest, Calif., assignor to The United State of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1983, Ser. No. 576,295
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—399 **1 Claim**



1. A packaging system for transversely mounting at least one printed wiring board within a cylindrical housing, comprising:

at least two parallel, spaced apart bulkheads having an outer circumference;

at least one support plate extending between said bulkheads, said support plate being removably attached to each of said bulkheads at the periphery of each of said bulkheads, and having a planar face oriented toward the volume between said bulkheads and defining at least one transversely extending uninterrupted groove;

two interlocking plates extending between said bulkheads, each of said interlocking plates being removably attached to each of said bulkheads, at the periphery of said bulkheads, each interlocking plate having a planar face oriented perpendicularly to the planar face of said support plate and parallel to the planar face of the other interlocking plate, and defining at least one transversely extending interrupted groove in said planar face, said interrerpted groove having solid material between spaced adjacent inner ends, said interrupted groove being coplanar with said groove in said support plate; and

at least one rectangular printed wiring board having a slot in each of two opposite edges corresponding to the space between said abutting ends of said interrupted grooves, in each of said interlocking plates, and uninterrupted edges on the other two edges of said printed wiring board, said rectangular printed wiring board being inserted edgewise in said groove in said support plate, and being inserted edgewise in said interrupted grooves in said interlocking plates;

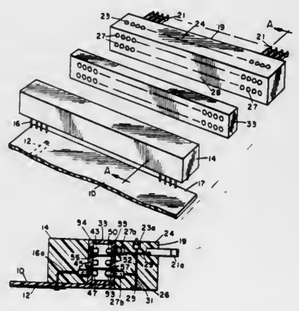
whereby removal of only one of said interlocking plates enables slidable removal of said rectangular printed wiring board.

4,520,429

DUAL-PATH CIRCUIT BOARD CONNECTOR WITH INTERNAL SWITCHING

Michael B. Hosking, Poway, Calif., assignor to General Dynamics Corporation, Electronics Division, San Diego, Calif.

Filed Dec. 19, 1983, Ser. No. 563,087
Int. Cl.³ H01R *23/68*; H05K *1/00*; H01H *9/26*
U.S. Cl. 361—413 **14 Claims**



1. A connector for selectively providing connections to a plurality of electrical circuits, comprising:

(a) a plurality of connector contacts for being engaged to form electrical connections;

(b) means for carrying said connector contacts; and

(c) switching means mounted in said carrying means and connected to said connector contacts and to associated electrical circuits for selectively providing connections between at least a pair of said connector contacts or between at least one of said electrical circuits and either contact of said pair.

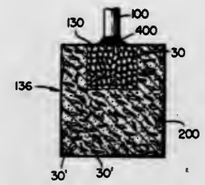
4,520,430

LEAD ATTACHMENT FOR TANTALUM ANODE BODIES

Noel V. Long, and Charles H. Mierke, both of Simpsonville, S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 28, 1983, Ser. No. 461,967
Int. Cl.³ H01G *9/00*
U.S. Cl. 361—433 **7 Claims**

1. A tantalum anode body comprising a relatively high density tantalum region having an exposed surface and having a density of about 7 g/cc or higher and being metallurgically bonded to a substantially larger relatively low density porous tantalum region formed of sintered tantalum powder having a



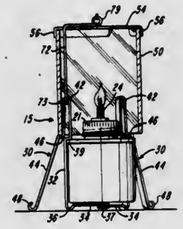
density of from about 3 to 5 g/cc and a tantalum wire attached to the high density tantalum region only at its exposed surface.

4,520,431

COLLAPSIBLE LANTERN

Michael W. Fanelli, and Edward R. Masters, both of 6099 Far Hills Ave., Dayton, Ohio 45459

Filed Jun. 11, 1984, Ser. No. 619,580
Int. Cl.³ F21L *19/00*
U.S. Cl. 362—180 **19 Claims**



1. A collapsible lantern comprising a container adapted to receive a liquid fuel and having means defining a top opening, a removable closure covering the top opening, a wick element extending from within the container upwardly through the opening, a fitting mounted on the closure and supporting the wick element, an annular transparent globe of sufficient size to surround the container, a plurality of peripherally spaced support members attached to the container and including leg portions movable between an inner retracted position and an outer supporting position to form a stabilized support for the container, the support members including means for supporting the globe in a lower collapsed position when the leg portion are in their retracted positions, and the support members including means for supporting the globe in an upper extended position surrounding the fitting and the wick element when the leg portions are in their supporting position.

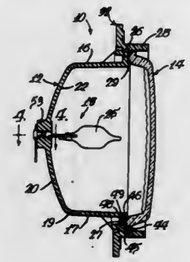
4,520,432

RECTANGULAR HALOGEN LAMP UNIT AND METHOD OF MANUFACTURE

William Mayer, and Alton E. Runlons, both of Rochester, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed May 10, 1982, Ser. No. 376,619
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **10 Claims**

1. A method of making a rectangular sealed beam lamp unit having a paraboloidal plastic reflector with a sealed vent hole therein with a generally rectangular lens enclosing the reflector, including the steps of applying an adhesive to either of the mating surfaces of the reflector and lens, pressing the lens into engagement with the reflector, heating the resulting reflector-lens assembly with the vent hole open for a predetermined time and a predetermined temperature sufficient to create a bond between the adhesive and the lens and reflector permitting evolved gases to escape through the vent hole, applying a heat curable adhesive seal material to a vent hole plug, and inserting the vent hole plug in the vent hole in the reflector immediately



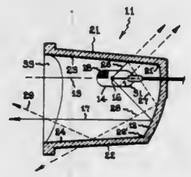
after the heating of the reflector while the reflector is still at an elevated temperature so that the residual heat in the reflector from the heating step cures the vent hole plug seal material.

4,520,433

MOTOR VEHICLE HEADLAMP

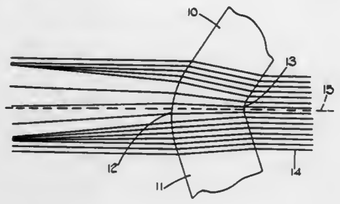
Walter J. Kosmatka, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 386,498, Jun. 9, 1982, abandoned. This application Aug. 30, 1984, Ser. No. 646,031
Int. Cl.³ F21V *7/00*; B60Q *1/00*
U.S. Cl. 362—296 **1 Claim**



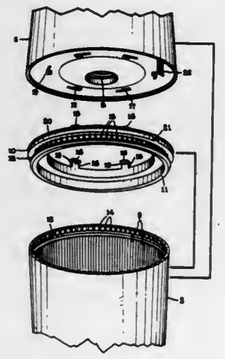
1. A vehicle headlamp for forward illumination substantially devoid of upwardly directed glare light, comprising a concave parabolic reflector member truncated at opposite side thereof to provide two generally flat top and bottom sections substantially parallel to each other and to the optical axis of a curved portion of the reflector member, and a light source contained within said reflector member, said light source being enclosed within a bulb and consisting of a single filament located adjacent the optical axis as well as the focal point of said reflector and further located frontwardly of the junction between said flat sections with said curved portion of the reflector member, said filament also being devoid of shield means blocking its light rays from being projected to the curved portion of the reflector member, both of said generally flat top and bottom sections being non-reflective and with said top section being substantially closer to said optical axis than said bottom section so as to substantially reduce the reflecting surface in said reflector member above said optical axis.

4,520,434
DIFFUSION COVER FOR A MOTOR VEHICLE HEADLAMP
David A. Birt, Cannock, England, assignor to Lucas Industries, Birmingham, England
Filed Jul. 28, 1983, Ser. No. 518,107
Claims priority, application United Kingdom, Aug. 20, 1982, 8224035
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—309 **2 Claims**



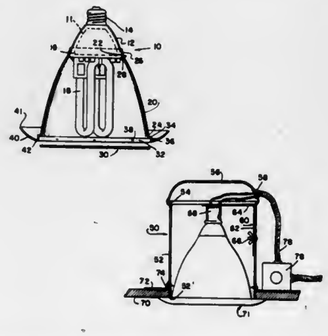
1. A diffusion cover for a motor vehicle headlamp, comprising:
upper and lower mutually inclined translucent cover portions which are integrally joined together to define therebetween a ridge on an outer surface of the cover and a trough on an inner surface of the cover, wherein the trough is disposed above the ridge;
concave means, comprising the inner surface of the upper cover portion in the region of the trough, for increasing the prismatic effect in said region in the direction of the trough;
convex means, integrally formed with said concave means and comprising the inner surface of the lower cover portion in the region of the trough, for increasing the prismatic effect in said region of the trough and in the direction of the trough, and the mutual disposition of the inner and outer surfaces of each cover portion in the respective regions of the ridge and the trough is such that light rays from a reflector of the headlamp which are incident upon the inner surface of the cover in use are not refracted upwardly upon passage through said regions of the upper and lower cover portions.

4,520,435
ORIENTABLE REFRACTOR MOUNTING
Samuel L. Baldwin, East Flatrock, N.C., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 4, 1983, Ser. No. 548,602
Int. Cl.³ F21V *3/00*
U.S. Cl. 362—311 **7 Claims**



1. An optical control appliance in the nature of a refractor or reflector adapted to surround at least in part the light source in a luminaire and mounting means therefor comprising:
a cylindrical neck portion on said appliance,
a mounting ring having a collar portion fitting said neck portion with matching diameters,
a mating ridge and groove, one on the collar portion and the other on the neck portion, said ridge causing diametric interference with the portion next to the groove to an extent allowing a snap fit,
and attachment means on said ring for engaging a luminaire housing.

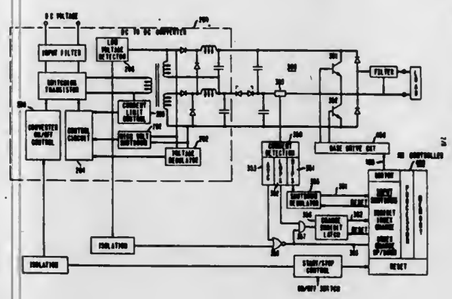
4,520,436
LAMP APPARATUS
Rhett McNair, Anaheim, and James Helling, Newport Beach, both of Calif., assignors to NRG Inc. MN, Edina, Minn.
Filed Mar. 25, 1983, Ser. No. 479,059
Int. Cl.³ F21S *1/02*; F21V *21/04*
U.S. Cl. 362—366 **20 Claims**



1. An apparatus for use in a fluorescent lamp assembly having a fluorescent lamp, a ballast housing and a screw connector for connecting to a conventional screw socket on a support in a recessed can fixture mounted in a ceiling opening, said apparatus comprising:
means defining a reflector, a trim ring means and a ballast housing connecting means,
said reflector having a first small end and a second large end,
said ballast housing connecting means for connecting the first small end of the reflector to the ballast housing,
said trim ring means extending generally radially outward from the second large end of the reflector and extending generally towards said screw connector, said trim ring means for being drawn aganist said ceiling opening when the screw connector is screwed into said socket concealing said ceiling opening.

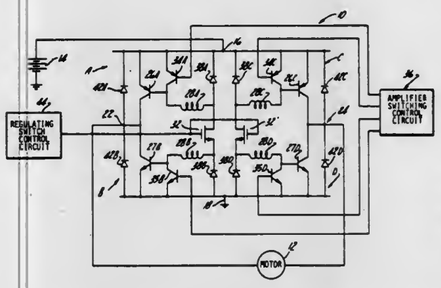
4,520,437
POWER CONVERSION CIRCUIT FOR SYNTHESIZING A SINEWAVE WITH PROGRAMMED AMPLITUDE CONTROL
Charles W. Boettcher, Jr., Chester; Billy H. Hamilton, Summit; William M. Slak, Convent Station, and Walter L. Zweig, Rockaway, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 14, 1983, Ser. No. 513,691
Int. Cl.³ H02M *1/12*; H02P *13/18*
U.S. Cl. 363—41 **8 Claims**

1. A power conversion circuit for synthesizing a low frequency sinewave signal;
input means for accepting a source of energy,
means for converting the energy at the input means into a pulse carrier signal,
means for modulating the pulse carrier signal by supplying timing signals to the means for converting, comprising:
means for generating timing signals, including: a data processor under stored program control, a memory including a stored program for controlling the processor and a plurality of tables including timing signal data, each table being responsible for producing a different output sinewave signal amplitude, whereby the stored program selects one of the plurality of tables and utilizes its timing signal data for generating timing signals operative for modulating the pulse carrier
output means for coupling to a load and including filtering means,



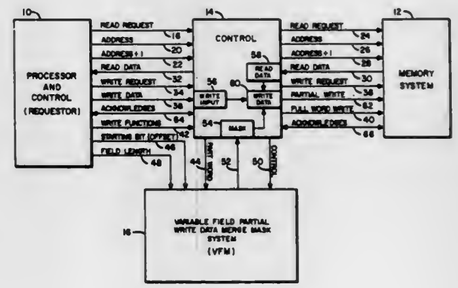
means for detecting an average current overload condition,
means for limiting average current output responsive to the means for detecting including:
instructions in the stored program for selecting a different one of the plurality of tables of timing signal data for reducing an amplitude of the output sinewave signal and continuing to select different ones of the plurality of tables to successively reduce amplitude of the output sinewave signal until the average current overload condition is corrected.

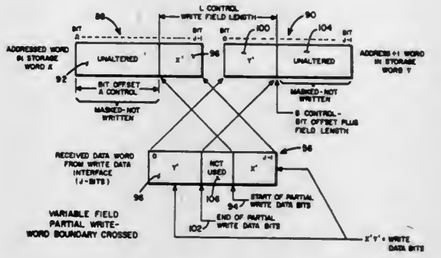
4,520,438
AMPLIFIER POWER STAGE
Peter Norton, 170 Beaver Brook, Lincoln Park, N.J. 07035
Filed Jul. 25, 1983, Ser. No. 516,574
Int. Cl.³ H02P *13/20*
U.S. Cl. 363—98 **13 Claims**



1. A switching amplifier comprising:
first, second, third and fourth high current transistors each having its emitter-to-collector circuit connected in a respective arm of a bridge circuit which has diagonally opposite supply voltage terminals and diagonally opposite output terminals,
first, second, third and fourth base current shunting means connected in shunt with the respective base-to-emitter circuits of the first, second, third and fourth high current transistors,
first and second inductors coupled respectively with the bases of the first and second high current transistors and in series with a first base current regulating switch,
third and fourth inductors coupled respectively with the bases of the third and fourth high current transistors and in series with a second base current regulating switch,
and first, second, third and fourth unidirectional conducting means connected respectively in series with the first, second, third and fourth inductor and the base-to-emitter circuit of the first, second, third and fourth high current transistor.

4,520,439
VARIABLE FIELD PARTIAL WRITE DATA MERGE
Arnolds E. Liepa, St. Paul, Minn., assignor to Sperry Corporation, New York, N.Y.
Filed Jan. 5, 1981, Ser. No. 222,340
Int. Cl.³ G06F *9/00, 9/12*
U.S. Cl. 364—200 **23 Claims**





1. In a memory system having an addressable main memory with reading and writing circuitry for reading and writing an even addressed data word and an odd addressed data word during the same memory reference cycle, wherein each stored data word is comprised of a predetermined number of bits, even address and odd address read registers for storing even and odd addressed data words read from the memory, even address and odd address write registers for storing even and odd addressed data words to be stored in memory, a write register for storing a field of data bits to be written, a variable field writing control system for merging a programmably selected field of data bits within a selected one of the even address or odd address data words, or both, while retaining all bits not within the selected variable bit field unaltered as read from the memory, the variable bit field writing control system comprising:
starting bit receiving means for receiving starting bit offset signals indicative of the selected bit position location of a starting bit in a variable bit field to be written in an addressed memory word;
field length receiving means for receiving field length signals indicative of the number of bit positions in a selected variable field that is to be written;
trailing bit determining means coupled to said starting bit receiving means and said field length receiving means for

providing trailing bit signals indicative of the last bit in said selected variable field length bit grouping that is to be written, wherein said trailing bit determining means includes

adder means for numerically adding said starting bit offset signals and said field length signals and providing sum signals indicative of the trailing bit plus one position and a carry signal for said selected variable field,

carry signal output means for providing said carry signal indicative that a selected variable field will extend beyond the bit position limits of the addressed data word and word boundary crossing to the data word stored in the next sequential address will occur,

trailing bit plus one output means coupled to said adder means for providing trailing bit plus one signal indicative of the bit location of the first bit position following said selected variable bit field to be written;

address means for receiving signals indicative of initial selection of an odd or an even address of a memory word to be accessed;

word selection means coupled to said field length receiving means and said carry signal output means and said address means for providing word select signals to said merging means for providing word select signals to said merging means for providing word boundary crossing when a variable bit field to be merged can not be written completely in the addressed data word;

mask bit generating means coupled to said starting bit receiving means and to said trailing bit determining means for providing mask signals for all bit positions that are to be retained and not to be altered in said data words; and

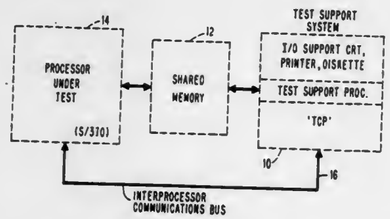
merging means coupled to said mask bit generating means for merging data bits to be written with data bits in said memory locations corresponding to said mask signals.

4,520,440

TEST VERIFICATION OF PROCESSOR ARCHITECTURE HAVING A PARTIAL INSTRUCTION SET

Joseph P. Buonomo, Endicott, and Wendell L. Perry, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,929
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **11 Claims**



1. A method for verifying the architectural integrity of a processor under test having a limited instruction set, said method comprising the steps of:

(a) providing a test support processor connected to communicate with the processor under test;

(b) providing input/output support, including at least the capability for a display terminal, a printer and a disk drive, connected to said test support processor for use in association with said processor under test;

(c) providing a minimally sized test control program to read test cases and initialize memory with data for an instruction to be tested, said test control program initializing the registers of said processor under test;

(d) providing storage means, connected between said processor under test and said test processor, that is accessible and is to be shared by both of the processors;

(e) loading said test control program into said shared memory and loading data sufficient to test one of the instructions of said limited instruction set of said processor under test into said shared memory, said test control program initiating execution of said one of the instructions by initiating execution of said data loaded into said shared memory;

(f) passing verification test control to said processor under test to thereby cause execution of said instruction thereof; and thereafter

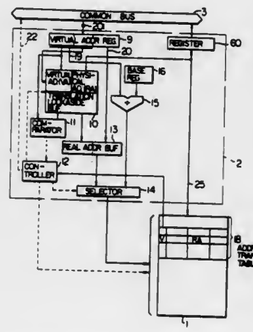
(g) said test control program capturing and storing the results of execution of said instruction in said shared memory for subsequent inspection and comparison to desired results.

4,520,441

DATA PROCESSING SYSTEM

Tadaaki Bandoh, Ibaraki; Hidekazu Matsumoto, Hitachi; Yasushi Fukunaga, Hitachi; Ryosei Hiraoka, Hitachi; Jushi Ide, Mito, and Tetsuya Kawakami, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Dec. 11, 1981, Ser. No. 329,949
Claims priority, application Japan, Dec. 15, 1980, 55-175863; Mar. 13, 1981, 56-35347
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **3 Claims**



1. A data processing system for supporting a virtual memory comprising:

(a) a main memory and an external memory for storing data by page;

(b) a processor including means for providing virtual addresses for reading and writing data from or into said main memory in the process of executing read and write instructions;

(c) means including a buffer connected to said processor and responsive to a memory write start signal therefrom for storing temporarily in said buffer both said virtual addresses specified by a write instruction being executed by said processor and data from said processor to be written into a page of said main memory at physical addresses corresponding to said specified virtual addresses and for writing successively said data from said buffer into said page of said main memory at said physical addresses;

(d) an address translator connected between said main memory and said buffer for translating said virtual addresses received from said buffer to said physical addresses and including means for producing a page fault signal to said processor when the desired page into which said data is to be written is not contained in said main memory at the time of said address translation; and

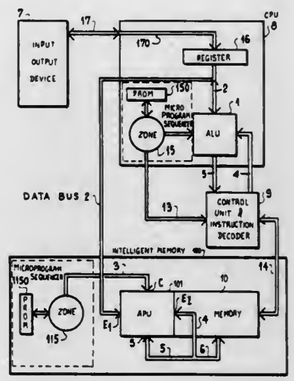
(e) wherein said processor includes means for temporarily sending all virtual addresses and data relating to the execution of a given write instruction to said buffer, means for temporarily writing said virtual addresses and data from said buffer into a work area of said main memory in response to a page fault signal, means for effecting the loading of said desired page into said main memory from said external memory in response to the page fault signal and means for loading said virtual addresses and data from said work area into said buffer to write that data in said page loaded in said main memory at the physical addresses corresponding to the virtual addresses also stored in said buffer.

4,520,442

DIGITAL DATA PROCESSING AND STORAGE SYSTEM ESPECIALLY FOR A TOMODENSITOMETER, AND A TOMODENSITOMETER EQUIPPED WITH SAID SYSTEM

Martine Grimberg, and Alain Berard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 1, 1981, Ser. No. 279,628
Claims priority, application France, Jul. 4, 1980, 80 14909
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—414 **5 Claims**



1. A digital data processing and storage system, for use in processing data for producing tomodensitometric images on an imaging device, comprising:

a central processing unit (8);

an input/output device (7) connected to said central processing unit (8) for transmitting input data thereto;

an arithmetic/logic unit (1) within said central processing unit (8) for receiving said data and having means for performing first arithmetic functions thereon to form, in a first step, intermediate periodic results in accordance with said data;

a first microprogram sequencer (15,150) within said central processing unit (8), connected to said arithmetic/logic unit (1) for controlling said functions;

an intelligent memory (100) connected with said central processing unit (8) for receiving therefrom said periodic results, and a control device (9) connected between said central processing unit (8) and said intelligent memory (100) for controlling and initializing said memory (100);

said intelligent memory (100) comprising a conventional storage memory (10), at least one auxiliary processing unit (101) connected with said central processing unit (8) to receive said intermediate periodic results therefrom and for performing, in a second step, arithmetic/logic functions with said periodic results so as to produce image reconstruction signals, whereby said central processing unit (8) is relieved of some of said functions, and a second microprogram sequencer (115,1150) connected to said auxiliary processing unit (101) to control the operations thereof;

whereby said auxiliary processing unit (101) operates on said periodic results and the contents of said memory (10); and

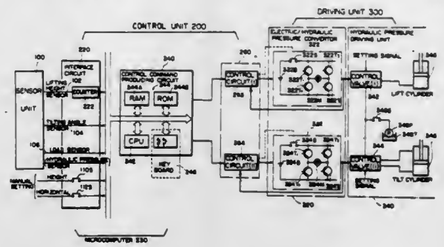
means for initializing said second microprogram sequencer (115,1150) and thereafter operating at a rate determined by the input to said intelligent memory (100) of said periodic results.

4,520,443

CONTROL DEVICE FOR LOADING AND UNLOADING MECHANISM

Katsumi Yuki, Toyota; Susumu Yoshida, Aichi; Mineo Ozeki, Ichinomiya; Yasuyuki Miyazaki, Aichi, and Masaru Kawamata, Numazu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho and Kabushiki Kaisha Meidensha, both of, Japan

Filed Mar. 31, 1982, Ser. No. 364,404
Claims priority, application Japan, Mar. 31, 1981, 56-47737; Mar. 31, 1981, 56-45960[U]
Int. Cl.³ B66F *9/06*
U.S. Cl. 364—424 **10 Claims**



1. In a control device for a loading and unloading mechanism adapted to a fork lift truck comprising:

(a) a sensor means (100) including a lifting height sensor means (102) for measuring the lifting height of a fork and providing an output signal indicative thereof, and an inclination sensor means (104) for measuring the inclination of an upright and producing an output signal indicative thereof;

(b) an interface circuit (220), provided in a control unit (200), including a lifting height counter means (222) for counting output signals from the sensor means;

(c) a control command producing circuit (240) provided in the control unit (200), said control command producing circuit (240) including a memory means (244) for storing data indicative of lifting height and inclination required for running attitude control, and data setting means (246) for setting data indicative of running attitude into memory, said control command producing circuit (240) producing a command signal indicative of valve opening based on a comparison between the output signals of the sensor means (100) and the data stored in the memory means;

(d) a servomotor driving circuit means (320) responsive to the command signal indicative of valve opening from the control unit for producing a drive control signal, and

(e) a hydraulic pressure driving circuit means (340) responsive to the drive control signal for producing a control signal for hydraulically controlling a lift cylinder (346) and a tilt cylinder (348),

the improvement wherein

said sensor means (100) further includes a load sensor (106) comprising at least one of means for detecting hydraulic pressure and means for decreasing air pressure in a front wheel of the fork lift truck,

said data setting means (246) includes a push-button switch means ($246S_1$) for generating a fork attitude control command,

said control command producing circuit (240) includes horizontal positioning means responsive to the push-button switch means after pick-up or stacking of a load is com-

pleted, to produce said command signal indicative of valve opening for controlling the tilt cylinder in accordance with an angle of inclination preselected by an output signal of said load sensor and in accordance with the output signal from said inclination sensor means, thereby effecting a horizontal positioning control, and

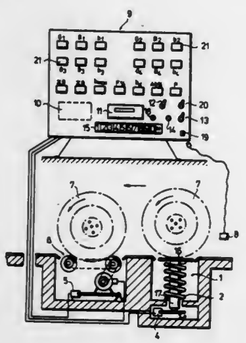
a control circuit (160) provided in said control unit (200) comprising adjusting means for adjusting a preset inclination of the fork in accordance with the nature or shape of a load and providing an output voltage, and comparing means for comparing the output voltage of said adjusting means with a voltage proportional to rearward inclination of the tilt cylinder, whereby when the former is equal to the latter under the condition that the fork is at a predetermined lifting height, said control circuit produces a control signal for stopping the operation of the tilt cylinder.

4,520,444

APPARATUS FOR MEASURING BRAKING ACTIONS OF AN AUTOMOTIVE VEHICLE

Rudolf Koos, Budapest, Hungary, assignor to Metripond Mereleggyar, Hodmezovasarhely, Hungary

Filed Jul. 8, 1982, Ser. No. 396,443
Claims priority, application Hungary, Jul. 22, 1981, 2135/81
Int. Cl.³ G01L *5/28;* G06F *15/20*
U.S. Cl. 364—426 **2 Claims**



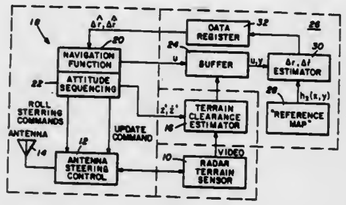
1. In apparatus for measuring braking actions of an automotive vehicle with a braking power test stand, a computing unit for computing braking characteristics, a storage unit for storing identifying data of the automotive vehicle, and an indicating or recording unit for indicating or recording braking characteristics; the improvement comprising a plurality of weight measuring units for respectively measuring the weight exerted on each wheel of said vehicle (1), the number of which weight measuring units corresponds to the number of wheels (7) present on one axle of the automotive vehicle to be tested; one output of the braking power test stand (6) and respectively one output of each of the weight measuring units (1) being connected to respective separate inputs of the computing unit (10) for computing the braking characteristics of each wheel on said one axle, and one output of the computing unit (10) and one output of the storage unit for identifying data of the automotive vehicle being connected to respective separate inputs of the indicating or recording unit (11) for separately indicating or recording the braking characteristics of each wheel of said one axle.

4,520,445

METHOD OF DETERMINING THE POSITION AND VELOCITY OF A VEHICLE

Larry R. Keearns, Dallas, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 248,803, Mar. 30, 1981, Pat. No. 4,495,580. This application Feb. 7, 1984, Ser. No. 577,761
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—450 **4 Claims**



1. A method of determining the position and velocity of a vehicle independent of the vehicle path over a given terrain, comprising the steps of:

generating by means of a navigation system and a terrain sensor position, altitude and vertical velocity signals representing an estimate of vehicle position and velocity while moving over the terrain,

in response to the altitude and vertical velocity signals, generating by means of a terrain clearance estimator vehicle terrain clearance signals representing the vehicle clearance above the terrain along the vehicle path,

generating in a computational processor a corrected vehicle position signal from the position and velocity signals of the navigation system, the terrain clearance signal of the clearance estimator and stored data of a terrain elevation map,

generating in the computational processor a corrected vehicle velocity signal from the velocity signals of the clearance estimator, the terrain clearance signals, and the stored data of the terrain elevation map; and

inputting the corrected position signal and the corrected velocity signal to the vehicle navigation system to generate steering commands to a vehicle control unit.

4,520,446

APPARATUS FOR CONTROLLING A PLURALITY OF STUD TENSIONING DEVICES

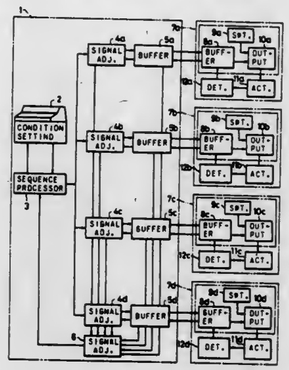
Yoshinori Sato, Kanagawa, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,699
Claims priority, application Japan, Dec. 25, 1981, 56-209362
Int. Cl.³ G06F *15/52;* B25B *29/02;* C23F *15/00*
U.S. Cl. 364—468 **5 Claims**

1. An apparatus for automatically controlling a plurality of stud tensioning devices by sequentially transmitting a plurality of control signals thereto, said plurality of control signals indicating a plurality of operative steps to be completed by each of said stud tensioning devices, said plurality of stud tensioning devices receiving each control signal simultaneously, each of said stud tensioning devices being disabled, upon completion of each of said operative steps, independently from the other said stud tensioning devices, said apparatus comprising:

a central control means for sequentially outputting a plurality of control signals;

a plurality of stud tensioning devices, each of said stud tensioning devices receiving each of said control signals, each of said stud tensioning devices producing a step completion signal upon the completion of any given operative step indicated by a given control signal;



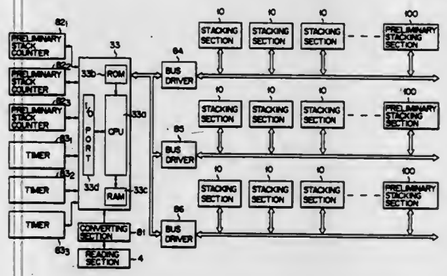
said central control means outputting a subsequent control signal only when it receives said step completion signal from each of said stud tensioning devices.

4,520,447

SORTER WITH AUTOMATIC DISCHARGING UNIT

Seietsu Nara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 23, 1983, Ser. No. 496,991
Claims priority, application Japan, May 29, 1982, 57-91698
Int. Cl.³ G06F *15/24;* B07C *5/00*
U.S. Cl. 364—478 **16 Claims**



1. A sorter with an automatic discharging unit, comprising:

(a) reading means for reading sorting information assigned to paper sheets;

(b) a plurality of stacking sections vertically disposed in a plurality of rows for stacking the paper sheets, each of said plurality of stacking sections being provided with a discharging mechanism;

(c) sorting/stacking means for sorting/stacking the paper sheets in said plurality of stacking sections in accordance with the sorting information from said reading means;

(d) transferring means, sequentially opposing said plurality of stacking sections, for receiving the paper sheets discharged by said discharging mechanism from each of said plurality of stacking sections;

(e) a preliminary stacking section with a discharging mechanism for stacking therein paper sheets intended to be stacked in a given one of said plurality of stacking sections while the paper sheets already stacked in said given one of said plurality of stacking sections are being discharged;

(f) timer means for counting a predetermined time interval during which said preliminary stacking section opposes said given one of said plurality of stacking sections, and for producing a timeout signal when the predetermined time interval has elapsed; and

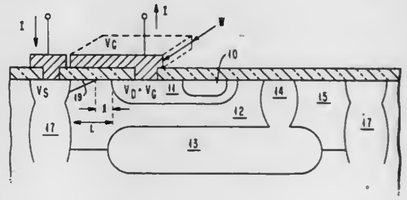
(g) controlling means for receiving the timeout signal from said timer means to drive said discharging mechanism of said preliminary stacking section.

4,520,448

METHOD OF CHARACTERIZING RELIABILITY IN BIPOLAR SEMICONDUCTOR DEVICES

Bernard Tremintin, Orvault, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1982, Ser. No. 435,139
Claims priority, application France, Oct. 28, 1981, 81 430036
Int. Cl.³ G01R *31/26, 31/02*
U.S. Cl. 364—488 **4 Claims**



1. A method of characterizing reliability in bipolar semiconductor devices manufactured in a selected line, by means of a determined technology, characterized in that it includes the steps of:

forming bipolar semiconductor devices comprising at least one test structure of the FET type, in said manufacturing line,

selecting a plurality of said devices, each having an interface charge density, an oxide charge density and an equivalent thickness of the oxide,

computing for each of the selected devices, from the test structure, a reliability function R substantially equal to product $N_{SS} \times N_{eff}$, wherein N_{SS}, is the interface charge density, and N_{eff}, is the oxide charge density,

determining the time-to-fail T after a selected time T_{50}, for said selected devices,

plotting curve $R = f(T)$, and

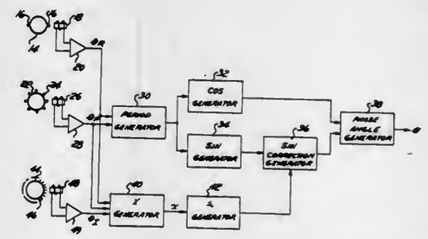
calculating, for any other device produced in the selected manufacturing line, its function R, and predicting its time-to-fail at time T_{50}, by means of curve $R = f(T_{50})$.

4,520,449

PHASE ANGLE DETECTOR

Edwin A. Johnson, Clarkston, and Chun K. Leung, Bloomfield Hills, both of Mich., assignors to Allied Corporation

Filed Jul. 19, 1982, Ser. No. 399,538
Int. Cl.³ G06F *15/20;* G01R *25/00*
U.S. Cl. 364—559 **9 Claims**



1. A method for generating a signal indicative of the phase angle ϕ of torque impulses imparted to a rotary member comprising the steps of:

sensing the rotation of the rotary member with a first sensor

to generate pulse reference signals indicative of at least one predetermined angular position of the rotary member with respect to each torque impulse;

sensing the rotation of the rotary member with a second sensor between said pulse reference signals to generate period signals indicative of the rotational velocity of the rotary member during predetermined equal angular intervals during each torque impulse;

sensing the rotation of the rotary member with a third sensor, immediately following each pulse reference signal to generate two sequential speed signals indicative of the instantaneous rotational velocity of the rotary member at said at least one predetermined angular position of the rotary member;

generating a correction factor having a value proportional to the difference between said two sequentially generated speed signals;

adding and subtracting said period signals corrresponding to each torque impulse in a predetermined sequence to generate function signals A sin ϕ and A cos ϕ where A is the amplitude of the torque impulse and ϕ is the phase angle of the torque impulse with reference to the reference signal and in the direction of rotation of the rotary member;

adding said correction factor to said function signal A sin ϕ to generate a corrected function signal A sin ϕ;

dividing said corrected function signal A sin ϕ and said function signal A cos ϕ, one by the other, to generate an address to a look-up table storing the value of the phase angle ϕ as a function of the arctangent (A sin ϕ/A cos ϕ); and

addressing said look-up table with said address to generate said phase angle ϕ corrected for the change in the rotational speed of the rotary member due to the torque impulse.

7. A circuit for generating a phase angle signal indicative the phase angle of the individual torque impulses produced by the individual pistons of an internal combustion engine on the engine's crankshaft comprising:

first sensor means responsive to the rotation of the engine's crankshaft to generate reference signals θ_R indicative of the beginning of each torque impulse;

second sensor means responsive to the rotation of the engine's crankshaft and said reference signal θ_R for sequentially generating speed signals having values indicative of the rotational speed of the engine's crankshaft at the beginning of each torque impulse;

means for generating a correction factor in response to said sequentially generated speed signals having a value proportional to the difference in the rotational speed of the engine's crankshaft at the beginning of successive torque impulses;

third sensor means for generating four period reference signals θ_P in response to the rotation of the engine's crankshaft, said period reference signals θ_P dividing each torque impulse into four equal angular intervals;

means for generating four sequential period signals, P_1, P_2, P_3 and P_4 indicative of the rotational velocity of the engine's crankshaft during each of said four equal angular intervals in response to said reference signal θ_R and period reference signals θ_P;

means for adding and subtracting said period signals in predetermined sequences to generate function signals A sin ϕ and A cos ϕ where ϕ is the phase angle of the torque impulse with reference to said reference signal θ_R and in the direction of rotation of the crankshaft and A is the amplitude of the torque impulse;

means for adding said correction factor to the value of said function signal A sin ϕ to generate a corrected function signal A sin ϕ; and

means for generating a value for the phase angle ϕ from the value of said corrected function signal A sin ϕ and the value of said function signal A cos ϕ.

4,520,450

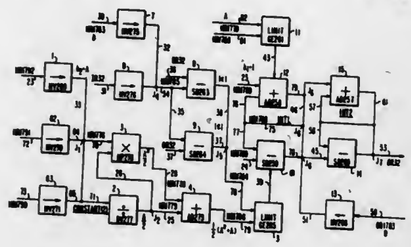
DIGITAL RAMP FUNCTION GENERATOR AND MOTOR DRIVE SYSTEM INCLUDING THE SAME

William H. Snedden, Newstead, and Mohammed Safiuddin, Williamsville, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 23, 1982, Ser. No. 401,287

Int. Cl.³ H03K *5/08;* **G06G** *7/18*

U.S. Cl. 364—607 **4 Claims**



2. In a DC motor drive system controlled by a speed control signal to assume a corresponding motor speed, with a ramp function generator being provided responsive to a speed reference signal related to an assigned motor speed for generating a corresponding control signal;

said ramp function generator being operative in relation to a change in said speed reference signal from an initial to a final value thereof for providing an instantaneous signal therebetween;

the combination of:

programmable controller means for selecting a rate k_2 for said ramp function generator;

first means associated with said ramp function generator for increasing the rate thereof in accordance with an arithmetic progression of root $k_1=1$;

second means associated with said ramp function generator for decreasing the rate thereof in accordance with an arithmetic progression of root $k_1=1$;

comparator means being provided responsive to said final and to said instantaneous values for providing an error signal representing the want in magnitude of said instantaneous ramp signal from said final value;

said first means beeing actuated by said error, whereby said first means is initiated when said speed reference is changed from said initial to said final value; said first means being deactivated when said rate has reached k_2;

said second means being initiated when said error signal is equal to $\frac{1}{2}k_2(k_2+1)$ whereby said second means brings said instantaneous ramp signal to said final value when the rate of said ramp function generator has been reduced to zero.

4,520,451

PROGRAMMABLE VENDING MACHINE ACCOUNTABILITY APPARATUS

Donald L. McLaughlin, Newton Square, Pa., assignor to Mars Incorporated, McLean, Va.

Filed Sep. 30, 1981, Ser. No. 307,183

Int. Cl.³ G06F *9/00, 13/00*

U.S. Cl. 364—900 **19 Claims**

1. A programmable accountability apparatus for installation and use with any of a plurality of particular types of vending machines for monitoring vending functions without rewiring the vending machine in which it is installed, comprising:

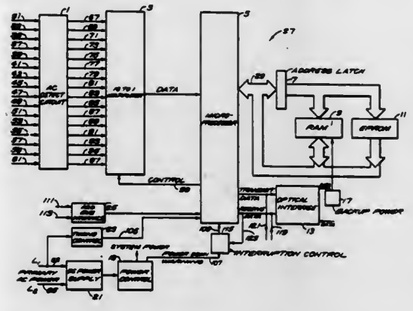
a plurality of monitoring wires attachable to a plurality of points within the vending machine which carry AC signals and which have been selected for monitoring,

means for converting the AC signals to digital signals,

a microprocessor programmed to monitor and collect data from the digital signals,

memory, operatively associated with the microprocessor, for storing data collected from the digital signals, a fixed operating program, and program data for programming the microprocessor,

said program data comprising a selected digital word comprising a plurality of bits for each of the plurality of monitoring wires, the bits of the word selected for each such wire determining the data to be collected and stored by the microprocessor upon the occurrence of the AC signal monitored by that wire, the program data serving to adapt the accountability apparatus for each particular type of vending machine.



4,520,452

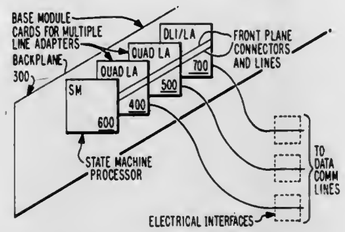
MEMORY SELECTION IN A MULTIPLE LINE ADAPTER ORGANIZATION

Richard A. Loskorn, Dana Point, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 358,651, Mar. 16, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,148

Int. Cl.³ G06F *15/16, 13/00, 3/00*

U.S. Cl. 364—900 **5 Claims**



1. In a line support processor for controlling data transfer operations between a host computer and a remote data terminal wherein said line support processor includes a plurality of line adapters, a data link interface unit and a microprocessor means, said microprocessor means including program data in an internal ROM and in external RAM storage means and having an I/O bus and output control registers providing control data and information data to said line adapters, a line adapter memory selection system comprising:

(a) a plurality of line adapters wherein each line adapter includes:

(a1) input/output circuit means connecting a data terminal to a first switching means;

(a2) first switching means, controlled by said microprocessor, for transferring data from said microprocessor means to said input/output circuit means, or transferring data from said input/output circuit means to a multiplexor means;

(a3) multiplexor means, having an output to said I/O bus, for conveying data bytes from a selected one of said input-/output circuit means;

(a4) line adapter memory means, connected to said I/O bus, for buffering data being transferred between said microprocessor means and said data terminal; said line adapter memory means including a plurality of RAM storage means, each one of said RAM storage means being dedicated to a set of first and second line adapters and having upper and lower memory areas dedicated respectively to said first and second line adapters;

(b) means for selecting a particular area of a line adapter memory means and addressing said area of line adapter memory means;

(c) said microprocessor means for transmitting identification signals to said means for selecting and for generating address data to said means for selecting.

4,520,453

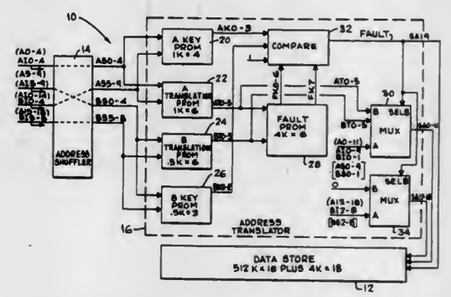
ADDRESS TRANSFORMATION SYSTEM HAVING AN ADDRESS SHUFFLER

Yechow T. Chow, Upper Estate Kowloon, Hong Kong, assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 1, 1982, Ser. No. 438,290

Int. Cl.³ G06F *9/32*

U.S. Cl. 364—900 **23 Claims**



1. An address transformation system for processing addresses for a data store having a plurality of addressable locations, some of which might be defective and some of which are nondefective, the address transformation system comprising:

an address shuffler coupled to receive a data store input address from a set of data store input addresses and output in response thereto a corresponding shuffled address from a set of shuffled addresses which is the same as the set of data store input addresses, with each shuffled address corresponding to exactly one data store input address and with a plurality of the shuffled addresses within the set of shuffled addresses each being different from its corresponding data store input address; and

an address translator coupled to receive a shuffled address and output in response thereto, a corresponding valid store address from a set of valid store addresses in which each valid store address identifies a nondefective addressable location within the data store.

4,520,454

MAKEREADY SYSTEM

Charles H. Dufour, and Jonathan G. Newman, both of Westerly, R.I., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 967,697, Dec. 8, 1979, abandoned. This application May 13, 1983, Ser. No. 494,671

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754941

Int. Cl.³ G06F *3/12, 3/14*

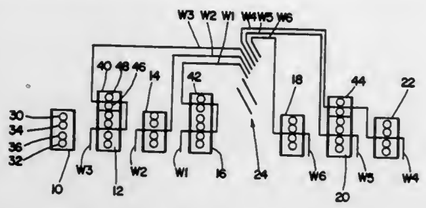
U.S. Cl. 364—900 **23 Claims**

1. In a method of making ready a multi-unit, multi-web

printing press for printing a publication and prior to operating the press, the steps of:

entering data into an electronic data processing apparatus, said data representative of the number of pages for each section and which pages of each section are to be printed in one or more colored inks;

determining and providing from the inputted data as well as



from previously stored layout information in said apparatus particular to said press and its configuration, output data representing acceptable page printing plate positions on the various plate cylinders of the press;

providing a readout in accordance with the outputted data providing information showing the correct page printing plate positions on the various plate cylinders of the press for producing the publication defined by said readout.

4,520,455

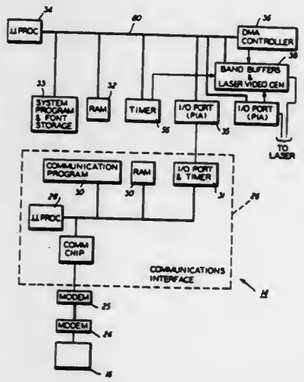
PRINTING SYSTEM

Peter A. Crean, Penfield; Remo J. D'Ortenzio, Rochester, and Carolyn P. Grow, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 376,884, May 10, 1982, Pat. No. 4,476,542. This application May 24, 1984, Ser. No. 613,484

Int. Cl.³ G06F *3/12*

U.S. Cl. 364—900 **5 Claims**



1. In character printing a method of formatting the characters to be printed into binary signals to act as control signals for an on/off print mechanism comprising the steps of

storing signals representing the characters to be printed in a signal storage member according to a scheme related to the desired appearance of those characters on a print media;

formatting and storing binary signals to control the printing of a portion of each character across a print width until the binary signals for an entire print width are stored, and

directing the on/off printing operation of a print medium's print width by serially accessing the stored binary signals for that print width and using those signals to control the on/off mechanism; and

repeating said steps of formatting, storing, and directing until all characters have been printed.

4,520,456

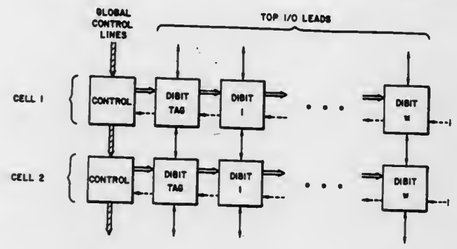
DUAL RECIPROCATING PIPELINED SORTER

Glen S. Miranker, San Francisco, Calif., and Chak-Kuen Wong, Mt. Kisco, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,975

Int. Cl.³ G06F *7/06*

U.S. Cl. 364—900 **8 Claims**



1. Sort mechanism, for stored digital data, having an array of cells in which data bits are stored, each cell having capability to store equivalent bits of each of a plurality of items, and having a comparator for determining the mutual relationship of the plurality of items according to a sort criterion, and gating means related to the comparison and criterion for establishing a semi-sort during data input to the sorter and for establishing a complementary semi-sort during subsequent data output from the sorter characterized by

(a) sorter stack means comprising an array of cells in a double-ended configuration with top and bottom ends, a top entry/exit cell at the top end and a bottom entry/exit cell at the bottom end;

(b) top input/output control means for distributing an unordered first group of items to said top entry/exit cell, one at a time, during a first semi-sort, and subsequently for distributing said first group of items, one at a time, from said top entry/exit cell during a complementary second semi-sort, to accomplish full sorting of the first group of items; and

(c) bottom input/output control means for distributing an unordered second group of items to said bottom entry/exit cell, one at a time, during a first semi-sort of the unordered second group of items and subsequently for distributing said second group of items, one at a time, from said bottom entry/exit cell during a complementary second semi-sort, to accomplish full sorting of said second group of items.

4,520,457

KEY-CONTROLLED METHOD FOR INVOKING AUTOMATIC ROW AND COLUMN ADDITION IN AN INTERACTIVE TEXT PROCESSING SYSTEM

Brenda J. Hagler, Georgetown, and James T. Repass, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1981, Ser. No. 311,085

Int. Cl.³ G06K *1/20;* **G06F** *3/023*

U.S. Cl. 364—900 **5 Claims**

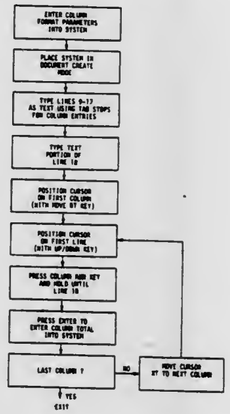
1. In an interactive text processing system having a display screen including a positionable cursor, a microprocessor including a memory, and an accumulator, and a keyboard to permit entry of data and control information into said system by an operator interactively, an improved method for assisting said operator in adding a plurality of numbers which are displayed in sequential positions on said display screen, said numbers being stored in said memory at memory locations which

can be determined in accordance with the displayed position of said cursor on said screen, said method comprising the steps of said operator:

a. positioning said cursor on said screen adjacent the first number of said plurality to be added;

b. positioning and holding one key which has been pre-programmed for a predetermined function to cause said processor to:

(1) add said first number to a number stored in said accumulator to define a subtotal which is stored in said accumulator,



(2) step said cursor to said next number in said sequential positions to cause said system to develop a new said subtotal, and

(3) repeat steps (1) and (2) for each said number in said sequence until said one key is released; and

c. releasing said one key when said cursor is moved adjacent to said last number of said plurality in said sequence whereby the typamatic operation of said one key causes said numbers in said sequence to be sequentially added to said accumulator as long as said one key is held depressed.

4,520,458

APPARATUS FOR CONTROLLING WRITING OF DATA INTO A MEMORY HAVING DIFFERENT READ AND WRITE TIMES

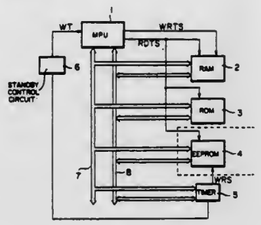
Seiichi Hattori, Hachioji, and Kunio Kanda, Kunitachi, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Filed Apr. 20, 1983, Ser. No. 486,892

Claims priority, application Japan, Apr. 22, 1982, 57-67720

Int. Cl.³ G06F *11/00*

U.S. Cl. 364—900 **3 Claims**



1. An apparatus for controlling the writing of data from a processor into a memory having different read and write times, and connected directly to the processor by address and data buses, the processor generating a timer start command signal when data is to be written into the memory in a current write cycle, comprising:

a timer circuit connected to the memory and to the address and data buses, said timer circuit responsive to the timer start command signal received from the processor via the data bus, for generating a write timing signal which is applied to the memory, and for generating an enable signal, said write timing signal having a duration commensurate with the write time of the memory, so that data from the processor is written into the memory via the data bus within the write time of the memory; and

a standby control circuit connected to the processor and to said timer circuit, said standby control circuit responsive to the enable signal from said timer circuit to generate a wait signal for holding the processor in the current write processing cycle long enough for the data from the processor to be written into the memory.

4,520,459

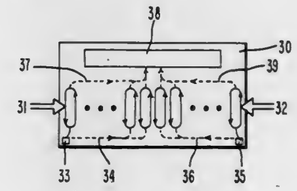
BUBBLE MEMORY WHICH TRANSFERS BUBBLES IN BOTH RIGHT-TO-LEFT AND LEFT-TO-RIGHT SPS LOOPS TO PROVIDE A SHORT ACCESS TIME

Sidney J. Schwartz, deceased, late of Vista, Calif. (by Marie A. Schwartz, executrix), assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 29, 1983, Ser. No. 508,945

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—15 **8 Claims**



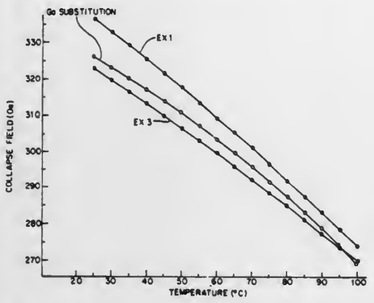
1. A bubble memory comprised of: a substrate with a major surface; a first storage means for storing bubbles on the left side of said surface having parallel inputs and parallel outputs; a second storage means for storing bubbles on the right side of said surface having parallel inputs and parallel outputs; a first input means on the left side of said surface including a serial-parallel track along which said bubbles move to the right immediately before they enter said parallel inputs of said first storage means; a second input means on the right side of said surface including a serial-parallel track along which said bubbles move to the left immediately before they enter said parallel inputs of said second storage means; a means for detecting bubbles disposed equally on the left side and the right side of said surface; a first output means on the left side of said surface including a parallel-serial track which receives bubbles from said parallel outputs of said first storage means and immediately moves them to the right to said detector; and a second output means on the right side of said surface including a parallel-serial track which receives bubbles from said parallel outputs of said second storage means and immediately moves them to the left to said detector.

4,520,460

TEMPERATURE STABLE MAGNETIC BUBBLE COMPOSITIONS

Devlin M. Gualtieri, Ledgewood, and Paul F. Tumelty, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 15, 1983, Ser. No. 523,245
Int. Cl.³ G11C *19/08*; C04B *35/40*
U.S. Cl. 365—33 **5 Claims**



1. An iron garnet layer that is capable of supporting magnetic bubble domains and that has a composition nominally represented by the formula

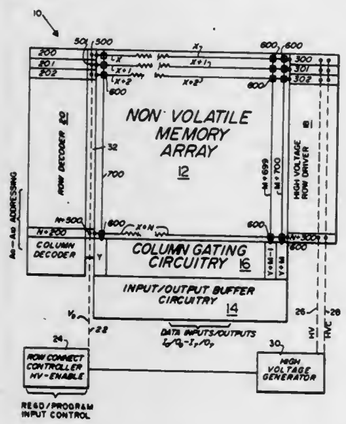
$$Tm_{0.50}Ca_{0.55}La_{0.05}Sm_{0.79}Lu_{1.56}Fe_{3.57}Ge_{0.48}O_{12.50}.$$

4,520,461

INTEGRATED HIGH VOLTAGE DISTRIBUTION AND CONTROL SYSTEMS

Richard T. Simko, Los Altos, Calif., assignor to Xicor, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 230,683, Feb. 2, 1981, which is a continuation-in-part of Ser. No. 6,026, Jan. 24, 1979, Pat. No. 4,314,265, and a continuation-in-part of Ser. No. 6,030, Jan. 24, 1979, Pat. No. 4,274,012. This application Apr. 12, 1982, Ser. No. 367,264
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—184 **12 Claims**



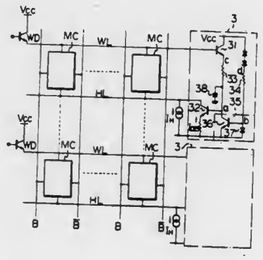
1. An integrated circuit for selectively applying high voltage to circuit elements utilizing such potentials comprising decoding means for charging one or more selected circuit elements nodes of a plurality of nodes to a first electrical potential and for charging other nodes of the plurality of nodes to a second potential, coupling/decoupling means for electrically isolating at least the selected one or more circuit element nodes which have been charged to the first potential, and selective high voltage charging means responsive to the potential on each said selected circuit element node for charging said electrically isolated circuit element nodes at said first potential to an electrical potential greater than the first potential, while preventing the charging of other nodes to such greater potential.

4,520,462

SEMICONDUCTOR MEMORY DEVICE

Katuyuki Yamada, Kawasaki, and Kazuhiro Toyoda, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 14, 1982, Ser. No. 449,768
Claims priority, application Japan, Dec. 18, 1981, 56-203364
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **9 Claims**



1. A static-type semiconductor memory device operatively connectable to a power source having a return line, in which a holding current continuously flows from word selection lines through memory cells to hold lines, said static-type semiconductor memory device comprising:

a first transistor, operatively connected to one of the word selection lines, for detecting the potential charge on said one of the word selection lines and for outputting an output signal;

a delay circuit, operatively connected to said first transistor, for delaying the output of said first transistor during a predetermined time and for outputting a delayed output signal;

a second transistor, having a base, operatively connected to said delay circuit and disposed between one of the hold lines and the return line of the power source, said second transistor turned on and off by the delayed output signal of said delay circuit to operate as an electric current switch;

a current mirror circuit operatively connected to the base of said second transistor and having an input; and

a first resistor operatively connected between the input of said current mirror circuit and the return line of the power source.

4,520,463

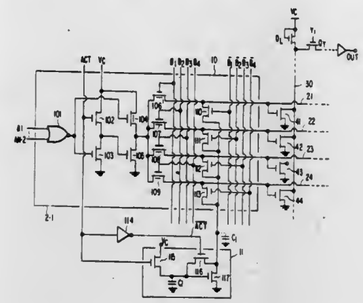
MEMORY CIRCUIT

Kohichiro Okumura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,898
Claims priority, application Japan, Oct. 27, 1981, 56-171679
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **11 Claims**

1. A memory circuit comprising a plurality of row lines, a plurality of column lines, a plurality of memory cells arranged at intersections of said row lines and column lines; said plurality of row lines being divided into a plurality of row groups, each of said row groups having the same number of row lines, means for receiving a set of row address signals, a plurality of row group selection circuits each provided for the associated row group, each of said row group selection circuits generating a selection signal when the associated row group is to be selected in accordance with a first part of said row address signals, a plurality of connection circuits each provided for the

associated row group, each of said circuits including a plurality of first field effect transistors each coupled between an output terminal of the row group selection circuit and the associated row line of the associated row group, a potential terminal, a plurality of second field effect transistors each coupled between the associated row line and said potential terminal,



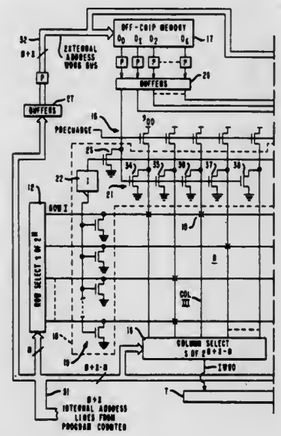
means responsive to a second part of said row address signals for conducting one of said first transistors, and means responsive to the second part of said row address signals for conducting said second transistors other than one associated to the conducted first transistor; and supply means for supplying said potential terminal with a reference potential.

4,520,464

TRANSPARENT INSTRUCTION WORD BUS MEMORY SYSTEM

John J. Hallauer, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 1, 1982, Ser. No. 383,869
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—189 **9 Claims**



1. A memory system, comprising:

a matrix memory array having a set of row lines and a set of column lines;

a source of instruction word signals;

a source of address word signals;

a row select coupled between the said source of address word signals and the row lines;

a column select coupled between the said source of address word signals and the column lines; and

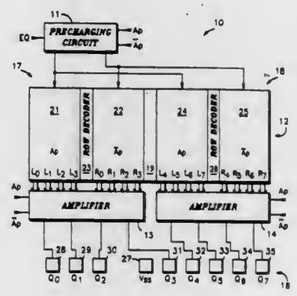
means for disabling the row select in time coincidence with the transmission of instruction word signals from said source of instruction word signals to the column lines.

4,520,465

METHOD AND APPARATUS FOR SELECTIVELY PRECHARGING COLUMN LINES OF A MEMORY

Lal C. Sood, Austin, Tex., assignor to Motorola, Inc., Schaumberg, Ill.

Filed May 5, 1983, Ser. No. 491,946
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **15 Claims**



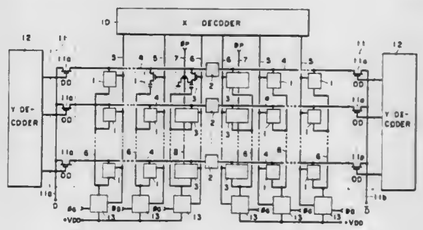
1. A memory array having a plurality of intersecting row lines and column lines in which data bits are output on selected column lines and in which a column line is precharged before an output is read on that column line, wherein the memory array is divided into at least four adjacent side-by-side portions, wherein a first portion is adjacent to a second portion, the second portion is between the first portion and a third portion, and the third portion is between the second portion and a fourth portion; and wherein the column lines of the first and third portions are precharged when a predetermined address signal is in a first logic state and column lines of the second and fourth portions are precharged when the predetermined address signal is in a second logic state.

4,520,466

DYNAMIC RANDOM ACCESS MEMORY

Koichiro Mashiko, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 432,385
Claims priority, application Japan, Oct. 9, 1981, 56-161608
Int. Cl.³ G11C *7/00, 11/40*
U.S. Cl. 365—210 **9 Claims**



1. A dynamic random access memory, comprising:

a first and second memory arrays, each including

a plurality of a word lines (5), a plurality of bit lines (4), and a single dummy word line (6),

a plurality of memory cells (1) provided at the intersections between said word lines (5) and said bit lines (4) for writing therein and reading therefrom the data, said

memory cells (1) coupled to each word line (5) constituting a column of memory cells,

a plurality of dummy cells (3) coupled at the intersections between said dummy word lines (6) and said bit lines (4) for supplying a reference potential, said dummy cells (3) coupled to each said dummy word line (6) constituting a column of dummy cells,

a first cell plate (8) coupled to each of said columns of memory cells (1) for supplying a source voltage ($+V_{DD}$) to said columns, and

a second cell plate (8) coupled to said columns of dummy cells (3) for supplying said source voltage ($+V_{DD}$) to said columns,

a plurality of sense amplifying circuits (2) each coupled to one end of each said bit line (4) in said first memory array and to one end of each said corresponding bit line (4) in said second memory array for detecting and amplifying a difference between the potential of each said bit line (4) of said first memory array and the potential of each said bit line (4) of said second memory array,

word line selecting means (10) coupled to said word lines (5) and said dummy word lines (6) in said first and second memory arrays at one end of each thereof for selecting simultaneously one of said word lines (5) in said first memory array and said dummy word line (6) in said second memory array,

bit line selecting means (11, 12) coupled to said bit lines (4) in said first and second memory arrays for simultaneously selecting one of said bit lines (4) in said first memory array and corresponding one out of said bit lines (4) in said second memory array,

first cell plate voltage control means (13) coupled to the end of each said word line (5) of said first and second memory arrays opposite to the end where said word line selecting means (10) is connected and also coupled to said first cell plate (8) and being supplied with a control signal (ϕ_G) having a level changing in a period when said word line (5) is selected and responsive to selection of the word line (5) for bringing the voltage of said first cell plate (8) to a first level and responsive to the change of the level of said control signal (ϕ_G) for bringing the voltage of said first cell plate (8) to a second level which is different from said first level, and

second cell plate voltage control means (13) coupled to the end of each said dummy word line (6) in said first and second memory array opposite to the end where said word line selecting means (10) is connected and also coupled to said second cell plate (8) and being supplied with said control signal (ϕG) and for controlling the voltage of said second cell plate (8) at the same timing in the same manner as the voltage level of said first cell plate (8) is controlled.

4,520,467

MARINE SEISMIC SYSTEM

Albert J. Berni, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 18, 1982, Ser. No. 359,322

Int. Cl.³ G01V *1/36, 1/38*

U.S. Cl. 367—24 **8 Claims**

1. A method for obtaining a ghost-free marine seismic signal, comprising:

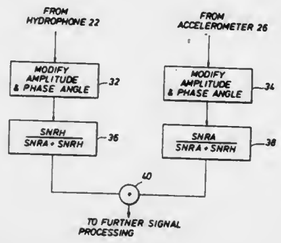
supplying acoustic energy to a body of water above substrata to be seismically explored;

detecting reflected seismic signals indicative of said substrata and corresponding ghost signals from the air-water interface with pressure sensors and with motion sensors;

filtering each of said detected seismic and corresponding ghost signals to produce band-limited spike waveforms having arrival times intermediate the arrival times of said seismic and ghost signals as a function of the depth of detection of said signals;

determining the signal-to-noise ratio for said pressure sensors and for said motion sensors;

filtering said spike waveforms with zero phase filters having a band-limited frequency dependent amplitude spectrum functionally related to the signal-to-noise ratios for said sensors; and



adding said filtered spike waveforms from said pressure sensors to said filtered spike waveforms from said motion sensors to form a filtered spike waveform having a maximum signal-to-noise ratio for each frequency component therein.

4,520,468

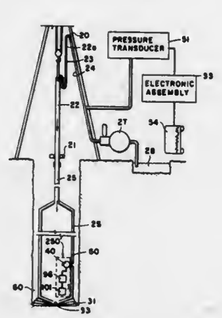
BOREHOLE MEASUREMENT WHILE DRILLING SYSTEMS AND METHODS

Serge A. Scherbatskoy, 1100 Everman Rd., Fort Worth, Tex. 76101

Continuation of Ser. No. 68,526, Aug. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 857,677, Dec. 5, 1977, abandoned. This application May 28, 1982, Ser. No. 383,269

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—83 **7 Claims**



1. Apparatus for use in making measurements in conjunction with a drilling system for drilling a borehole in the earth, the drilling system including a drill string suspended in a borehole, the drill string including a plurality of lengths of drill pipe some of which may be lengths of drill collars, a drilling means affixed to the lower end of the drill string, a mud pump connected to the upper end of the drill string for circulating drilling fluid therethrough, the apparatus comprising sensor means and instrumentation means for generating electric signals representative of the magnitude of one or more downhole parameters, pulser means for producing pressure pulses in the drilling fluid in response to the electric signals received from said instrumentation means, a pulser sub threadably secured at its upper and lower ends to length of drill pipe in the drill string, said pulser means being mounted within said pulser sub, an elongated housing supported by said pulser sub, said housing having an outside diameter less than the internal diameter of the adjacent drill pipe and being slideably received in the drill pipe adjacent in the drill string to said pulser sub, said pulser

and said housing permitting the flow of drilling fluid therepast, said housing containing at least a portion of said instrumentation means.

4,520,469

TRACKING SERVO SYSTEM FOR OPTICAL-DISC INFORMATION REPRODUCING APPARATUS

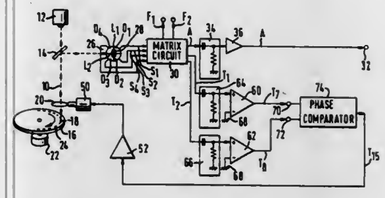
Shigeru Todokoro, Fujisawa; Hiroshi Nakane, and Satoru Maeda, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 3, 1983, Ser. No. 471,648

Claims priority, application Japan, Mar. 3, 1982, 57-33327

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—44 **8 Claims**



1. A tracking servo system for an optical-disc information reproducing apparatus in which information stored in an optical disc as a series of recesses arranged in predetermined tracks is scanned by a light beam defining a convergent spot on the optical-disc, said system comprising:

a light source for generating the light beam used for scanning a target track of the predetermined tracks of the optical-disc;

first and second photodetecting means for converting an image corresponding to said convergent spot on said target track into first and second electric signals, respectively, said image being formed by reflection of the light beam from the optical-disc;

means for comparing the phases of said first and second electric signals and for producing a tracking error signal varying in accordance with a difference between the phases of said electric signals; and

means for deflecting said light beam in response to said tracking error signal so as to move said convergent spot in a path on the optical-disc perpendicular to said target track, thereby causing the light beam to scan said target track accurately.

4,520,470

CLEANING DEVICE FOR DISCS

Stephane d'Alayer de Costemore d'Arc, Brussels, Belgium, assignor to Staar S. A., Brussels, Belgium

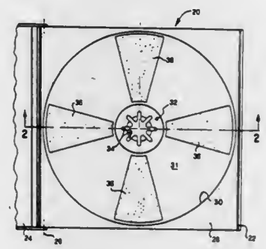
Filed Aug. 8, 1983, Ser. No. 521,260

Claims priority, application Belgium, Nov. 29, 1982, 0/209.596; Apr. 7, 1983, 0/210.503

Int. Cl.³ F11B *3/58*

U.S. Cl. 369—72 **21 Claims**

1. A cleaning device for discs or records having a center hole comprising, in combination, a disc storage container including a pair of box-halves providing a bottom section and a lid section, a support carried by and providing a support surface within said bottom section of said storage container, a cleaning member on said support surface within said bottom section adapted to engage the face of a disc placed on said cleaning member, and means carried by said bottom section of said storage container comprising a mandrel for engaging the periphery of the center hole of a disc placed on said member, said support and said mandrel being carried within said bottom section of said container for relative rotational movement, and said mandrel providing means for holding said disc in contact with said cleaning member while said disc and cleaning member are rotated relative to one another for cleaning the entire face of the disc by said cleaning member.



4,520,471

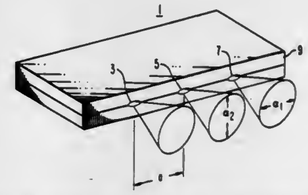
MULTI-CHANNEL RECORDING/PLAYBACK OPTICS FOR LASER DIODE ARRAYS

Donald B. Carlin, Robbinsville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 7, 1983, Ser. No. 464,559

Int. Cl.³ G11B *7/00, 7/14;* **G02B** *13/08*

U.S. Cl. 369—112 **7 Claims**



1. An optical system for processing information on the surface of a record medium, comprising:

an array of solid state elements emitting respective coherent light beams having generally elliptical cross-sectional shapes;

a first spherical lens, having a focal length f_1, for collecting said respective coherent light beams emitted by said array of solid state elements, said first spherical lens having a flat field over the extent of said array such that said first spherical lens collects the light emitted by each element of said array and forming said respective coherent light beams into collimated light beams, said first spherical lens being positioned at a one focal length distance, f_1, from said array of solid state elements;

a beam expander for anamorphically expanding said collimated light beams to reshape the cross-section thereof such that the cross-section is generally circular, said beam expander including a first cylindrical lens having a focal length f_2 and a second cylindrical lens having a focal length f_3, said first cylindrical lens being positioned from said first spherical lens by a distance equal to the sum of their respective focal lengths, f_1+f_2, and said second cylindrical lens being positioned from said first cylindrical lens by a distance equal to the sum of their respective focal lengths, f_2+f_3;

a second spherical lens, having a focal length f_4, for focusing said collimated light beams as respective diffraction limited spots onto said surface of said record medium, said second spherical lens being positioned from said second cylindrical lens by a distance equal to the focal length, f_3, of said second cylindrical lens and being positioned from

said record medium surface by a distance equal to the focal length of said second spherical lens, f_4; and

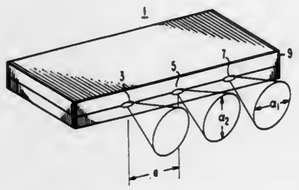
means for providing relative motion between said second spherical lens and said record medium surface for maintaining said collimated beams focused as respective diffraction limited spots on said record medium surface.

4,520,472

BEAM EXPANSION AND RELAY OPTICS FOR LASER DIODE ARRAY

Charles W. Reno, Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 7, 1983, Ser. No. 464,658
Int. Cl.³ G11B *7/00, 7/14;* G02B *13/08*
U.S. Cl. 369—112 **13 Claims**



1. An optical system for transducing information on the surface of a record medium, comprising:

an array of solid state elements emitting respective coherent light beams having generally elliptical cross-sectional shapes;

a first lens, having a focal length f_1, for collecting said respective coherent light beams emitted by said array of solid state elements, said first lens having a flat field over the extent of said array such that said first lens collects the light emitted by each element of said array and forming said respective coherent beams into collimated light beams, said first lens having an exit pupil at a distance f_1 from a principal plane of said first lens from which said collimated light beams diverge;

a beam expander for anamorphically expanding said collimated light beams to reshape the cross-section of said collimated light beams such that the cross-sectional shape of said collimated light beams is generally circular;

a lens system for focusing said collimated light beams as a diffraction limited spots on said surface of said record medium, said lens system having a finite conjugate and an entrance pupil from which said collimated beams are focused on said surface of said record medium; and

a second lens for relaying said exit pupil of said first lens into said entrance pupil of said lens system, said second lens forming an image of said array of solid state elements in the finite conjugate plane of said lens system.

4,520,473

SIGNAL PICKUP DEVICE IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Hiroyuki Sugiyama, Isehara; Ryozo Abe, Yokohama; Yasuhiro Yusa, Fujisawa; Masaki Sakurai, Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 17, 1981, Ser. No. 322,382
Claims priority, application Japan, Nov. 21, 1980, 55-167203[U]
Int. Cl.³ G11B *9/00, 3/10, 21/24*
U.S. Cl. 369—126 **5 Claims**

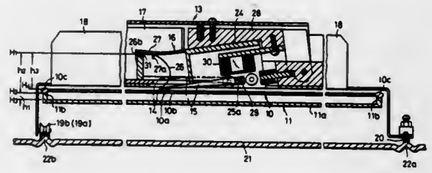
1. A signal pickup device in a rotary recording medium reproducing apparatus comprising:

a turntable for placement thereon of a rotary recording medium recorded with an information signal as variations in geometrical configuration, for rotating the rotary recording medium;

a cartridge including a cantilever having a tip end with a reproducing stylus at said tip end for making contact with and sliding against a recorded region of said rotary recording medium upon reproduction to reproduce the information signal;

a resonator having a resonance frequency which varies in accordance with the above variations in geometrical configuration;

a conductive ribbon having one end connected to said reproducing stylus and the other end connected to said resonator to electrically connect an electrode of said reproducing stylus with said resonator, said conductive ribbon being in a curved and bent state upon reproduction of said rotary recording medium, and



means for restricting said cartridge at a predetermined height position at the location where the other end of said conductive ribbon is electrically connected to said resonator,

said conductive ribbon having a length such that said conductive ribbon is put into an extended state from said curved and bent state when said reproducing stylus is lowered below the height position of said rotary recording medium, to restrict the lowering of said reproducing stylus at a height position higher than that of said turntable,

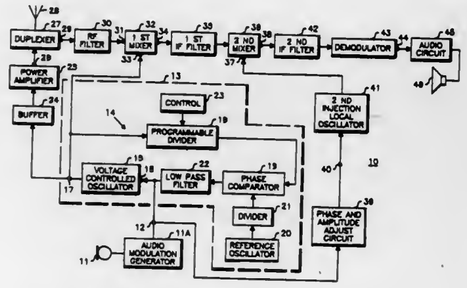
said turntable comprising a projecting wall for supporting an outer peripheral groove guard of said rotary recording medium at an outer periphery thereof, and a circular plate part opposing the recorded region of said rotary recording medium, said circular plate part having an upper surface which is lower than a vertex plane of said projecting wall.

4,520,474

DUPLEX COMMUNICATION TRANSCEIVER WITH MODULATION CANCELLATION

Richard J. Vilmur, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1983, Ser. No. 558,685
Int. Cl.³ H04B *3/20;* H04L *5/14*
U.S. Cl. 370—24 **10 Claims**



1. A duplex communication transceiver comprising:

transmitter means for providing for information transmission an output signal comprising a first carrier signal having a first predetermined frequency and modulated by a first information signal;

receiver means, coupled to and simultaneously operable with said transmitter means, for receiving an input signal comprising a second carrier signal having a second predetermined frequency different from said first frequency and modulated by a second information signal different from said first information signal, said receiver means effectively demodulating said input signal and providing said second information signal in response thereto;

said receiver means including;

a first mixer means coupled to said transmitter means for receiving said modulated first and second carrier signals and for providing, in response thereto, a first IF signal modulated with said first and second information signals, said first IF signal having an IF frequency comprising an arithmetic combination of the frequencies of said first and second carrier signals,

a first IF means fixed tuned to said IF frequency and coupled to said first mixer means for receiving and passing said first IF signal and rejecting signals at substantially different frequencies,

a second mixer means coupled to said first IF means for receiving said passed modulated first IF signal therefrom and also receiving, from a local oscillator means, a local oscillator carrier signal having a predetermined local oscillator frequency and modulated by a signal related to said first information signal, and for providing in response thereto a modulated second IF signal having a second IF frequency comprising the arithmetic combination of said first IF frequency and said local oscillator frequency,

signal adjustment means coupled to said transmitter means and said local oscillator means for receiving said first information signal from said transmitter means and adjusting it to provide said modulating related signal such that said second mixer means cancels said first information signal modulation contained in said first IF signal so that said second IF signal substantially comprises a carrier signal at said second IF frequency modulated by just said second information signal, and

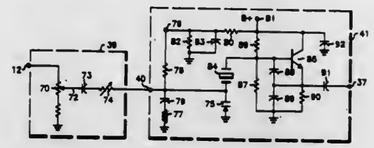
demodulator means coupled to said second mixer means for receiving said modulated second IF signal and providing said second information signal in response thereto.

4,520,475

DUPLEX COMMUNICATION TRANSCEIVER WITH MODULATION CANCELLATION

Daniel T. Berg, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1983, Ser. No. 558,739
Int. Cl.³ H04B *3/20;* H04L *5/14*
U.S. Cl. 370—24 **5 Claims**



1. A duplex communication transceiver comprising:

transmitter means for providing for information transmission an output signal comprising a first carrier signal having a first predetermined frequency and modulated by a first information signal;

receiver means, coupled to and simultaneously operable with said transmitter means, for receiving an input signal comprising a second carrier signal having a second predetermined frequency different from said first frequency and modulated by a second information signal different from said first information signal, said receiver means effectively demodulating said input signal and providing said second information signal in response thereto;

said receiver means including;

a first mixer means coupled to said transmitter means for receiving said modulated first and second carrier signals and for providing, in response thereto, a first IF signal modulated with said first and second information signals, said first IF signal having an IF frequency comprising an arithmetic combination of the frequencies of said first and second carrier signals,

a first IF means fixed tuned to said IF frequency and coupled to said first mixer means for receiving and passing said first IF signal and rejecting signals at substantially different frequencies,

a second mixer means coupled to said first IF means for receiving said passed modulated first IF signal therefrom and also receiving, from a local oscillator means, a local oscillator carrier signal having a predetermined local oscillator frequency and modulated by a signal related to said first information signal, and for providing in response thereto a modulated second IF signal having a second IF frequency comprising the arithmetic combination of said first IF frequency and said local oscillator frequency,

signal adjustment means coupled to said transmitter means and said local oscillator means for receiving said first information signal from said transmitter means and adjusting it to provide said modulating related signal such that said second mixer means cancels said first information signal modulation contained in said first IF signal so that said second IF signal substantially comprises a carrier signal at said second IF frequency modulated by just said second information signal, and

demodulator means coupled to said second mixer means for receiving said modulated second IF signal and providing said second information signal in response thereto,

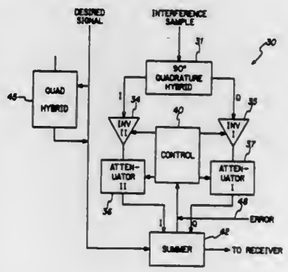
wherein the improvement comprises, said receiver means including a voltage controlled oscillator for providing said modulated local oscillator carrier signal wherein said oscillator includes a reactance element determining the frequency of said local oscillator carrier signal, and wherein said signal adjustment means comprises a selectable predetermined resistance element coupled between said first information signal and said reactance element wherein said resistance and reactance elements together provide a predetermined phase shift for said first information signal to provide said desired related signal.

4,520,476

APPARATUS FOR ENABLING THE DUPLEX OPERATION OF A TRANSMITTER AND RECEIVER

Eugene P. Searl, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 13, 1982, Ser. No. 449,055
Int. Cl.³ H04B *1/56*
U.S. Cl. 370—32 **6 Claims**



1. Apparatus for enabling full duplex operation of co-located transmitter and receiver on the same frequency, comprising:

means for deriving a sample of a transmit signal generated by the transmitter,

means for deriving a sample of a receive signal which is to be applied to the receiver, and

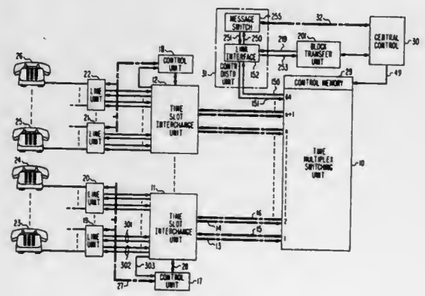
an adaptive combiner comprising a 90 degree quadrature hybrid, responsive to said transmit signal sample, to produce I and Q signals, first and second inverters to selectively invert said I and Q signals, respectively, first and second attenuators to controllably attenuate said respective I and Q signals, and a summer to sum said selectively inverted and attenuated I and Q signals with the receive signal sample, whereby portions of the receive signal sample representing the signal generated by the transmitter are cancelled.

4,520,477

CONTROL INFORMATION COMMUNICATION ARRANGEMENT FOR A TIME DIVISION SWITCHING SYSTEM

Wilson K. Wen, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 27, 1983, Ser. No. 507,779
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 **9 Claims**



1. A time division switching system comprising

a time-shared space division switch comprising input and output ports for completing communication paths between selected ones of said input ports and said output ports in time-slots of fixed duration;

a plurality of communication units each connected to a plurality of signal generating subscriber stations and each communication unit being connected to predetermined ones of said input and output ports for transmitting and receiving digitized representations of subscriber station signals in predetermined ones of said time-slots of fixed duration;

control information communication means for preempting predetermined ones of said time-slots of fixed duration from conveying digital representations of subscriber station signals and for transmitting first control information in said preempted time-slots; and wherein

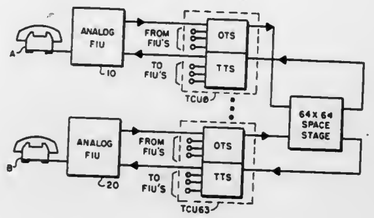
each of said communication units comprises control means, time-slot interchange means for receiving and storing digital representations of subscriber signals and said first control information from said time-shared space division switch in said time-slots of fixed duration and means for transmitting said digital representations of subscriber station signals from said time-slot interchange means to said subscriber stations and means for transmitting said first control information from said time-slot interchange means to said control unit.

4,520,478

SPACE STAGE ARRANGEMENT FOR A T-S-T DIGITAL SWITCHING SYSTEM

Nathaniel Simmons, Downers Grove, Ill.; Sergio E. Puccini, Scottsdale, Ariz.; Stig E. Magnusson, and Kamal I. Parikh, both of Phoenix, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,563
Int. Cl.³ H04J *11/04*
U.S. Cl. 370—63 **6 Claims**



1. In a time-space-time network including a first time group having a plurality of originating time stages and a plurality of terminating time stages and a second time group having a plurality of originating time stages and a plurality of terminating time stages, a space stage comprising:

first switching matrix means including a plurality of inputs and a plurality of outputs, each of said first switching matrix means inputs connected to a respective one of said first time group originating time stages and each of said plurality of first switching matrix means outputs connected to a respective one of said first time group terminating time stages, said first switching matrix means arranged to provide selectable interconnections between said originating time stages and said terminating time stages of said first group;

second switching matrix means including a plurality of inputs and a plurality of outputs, each of said second switching matrix means inputs connected to a respective one of said second time group originating time stages and each of said second switching matrix means outputs connected to a respective one of said second time group terminating time stages, said second switching matrix means arranged to provide selectable interconnections between said originating time stages and said terminating time stages of said second group;

third switching matrix means including a plurality of inputs and a plurality of outputs, each of said third switching matrix means inputs connected to a respective one of said first time group originating time stages and each of said third switching matrix means outputs connected to a respective one of said second group terminating time stages, said third switching matrix means arranged to provide selectable interconnections between said originating time stages of said first time group and said terminating time stages of said second time group; and

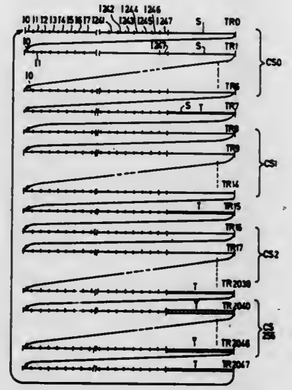
fourth switching matrix means including a plurality of inputs and a plurality of outputs, each of said fourth switching matrix means inputs connected to a respective one of said second time group originating time stages and each of said fourth switching matrix means outputs connected to a respective one of said first time group terminating time stages, said fourth switching matrix means arranged to provide selectable interconnections between said originating time stages of said second time group and said terminating time stages of said first time group.

4,520,479

ARRANGEMENT FOR RE-ARRANGING INFORMATION FOR TRANSMITTING OUTGOING TIME-DIVISION MULTIPLEXED INFORMATION OBTAINED FROM INCOMING TIME-DIVISION MULTIPLEXED INFORMATION

Jean-Claude Grima, Chatillon; Bernard Pando, Versailles, and Guy A. J. David, Thiais, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1983, Ser. No. 491,508
Claims priority, application France, May 5, 1982, 82 07788
Int. Cl.³ H04J *3/16*; H04Q *11/04*
U.S. Cl. 370—84 **3 Claims**



1. Apparatus for transmitting outgoing time division multiplexed information obtained from incoming time division multiplexed information, said time division multiplexed information being arranged to form recurring multiframes, each of said multiframes having a plurality of frames, each of said frames having a plurality of message time slots and a lesser plurality of nonmessage time slots, a fast rate channel being constituted by corresponding message time slot in each of said frames, a slow rate channel being constituted by corresponding nonmessage time slots in a multiplicity of consecutive frames less in number than said plurality of frames, said apparatus comprising:

a plurality of memory sets, each of said sets having a plurality of memory locations equal in number to the total number of time slots in one of said frames;

write means for writing message bits and nonmessage bits from said incoming message and nonmessage time slots associated with one of said frames into corresponding memory locations in one of said memory sets;

read circuit means for subsequently reading so stored message and nonmessage bits from said memory set, said read out means having a read output terminal for furnishing so-read out bits;

delay means having a delay input connected to said output terminal of said read circuit means and a delay output terminal, for delaying slow channel bits furnished at said read output terminal for a predetermined time period and furnishing so-delayed slow channel bits at said delay output terminal;

combining means having a first input connected to said delay output terminal, a second input, a control input, and a combining output for furnishing said outgoing multiplexed information;

means directly connecting said read output terminal to said second input of said combining means; and

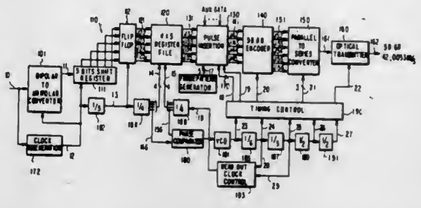
control means connected to said combining means for connecting said delay output to said combining output during nonmessage time slots of said outgoing multiplexed information, and to said second input during message time slots of said outgoing multiplexed information.

4,520,480

DIGITAL TRANSMISSION SYSTEM

Kiyoaki Kawai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 16, 1983, Ser. No. 495,230
Claims priority, application Japan, May 18, 1982, 57/84486
Int. Cl.³ H04J *3/06, 3/12*
U.S. Cl. 370—100 **9 Claims**



1. A digital transmission system adapted to a time division multiplex system comprising:

means for converting a serial input data bit stream into parallel n bit streams;

means for converting the bit rate of the parallel n bit streams to produce bit rate converted parallel n bit streams to produce an additional time slot in each of said parallel n bit streams per every predetermined number of data bits;

means for inserting service bits in the additional time slots of respective ones of the bit rate converted parallel n bit streams to produce parallel n service-bit-inserted bit streams at the converted bit rate, said service bits including framing bits which appear for every preselected number of bits in each of said n bit streams;

means for converting mutually corresponding parallel n-bits of the parallel n service-bit-inserted bit streams into parallel m-bits to produce parallel m bit streams; and

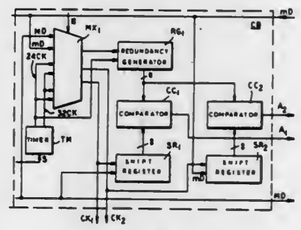
means for multiplexing the parallel m bit streams into a signal output bit stream having a framing-bit pattern made-up of m bits which correspond to m framing bits taken out in the same timing of the n service-bit-inserted bit streams.

4,520,481

DATA-HANDLING SYSTEM FOR THE EXCHANGE OF DIGITAL MESSAGES BETWEEN TWO INTERCOMMUNICATING FUNCTIONAL UNITS

John W. Israel, Dallas, Tex., assignor to Italtel—Societa Italiana Telecomunicazioni S.P.A., Milan, Italy

Filed Sep. 13, 1982, Ser. No. 417,370
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **7 Claims**



1. In a data-handling system including a first functional unit and a second functional unit each provided with a transmitting section for emitting digital messages to the other functional unit and a receiving section for accepting digital messages emitted by the other functional unit, each digital message

consisting of a predetermined number of k information bits followed by a predetermined number of h cyclic redundancy bits where h is an aliquot fraction of k,

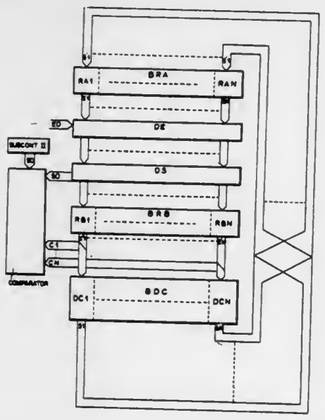
the combination therewith of a control unit interposed in a signal path linking said functional units with each other, said signal path having a first line for the transmission of messages from said first functional unit to said second functional unit and a second line for the transmission of messages from said second functional unit to said first functional unit, the receiving section of each functional unit including storage means for registering the information bits of an incoming message and algebraic means connected to said storage means for recalculating the associated redundancy bits according to a predetermined polynomial code, said control unit including timing means communicating with each functional unit for activating said storage means of a message-receiving functional unit and switching said algebraic means to the transmitting section thereof to command the forwarding of the recalculated redundancy bits to said control unit via the respective line of said signal path, said control unit further comprising a redundancy generator coupled with said signal path for recalculating the redundancy bits of a throughgoing message from the information bits thereof, first comparison means connected to receive the locally recalculated redundancy bits from said generator concurrently with redundancy bits arriving from said first functional unit over said first line for emitting a first alarm signal upon detecting a discrepancy therebetween, and second comparison means connected to receive the locally recalculated redundancy bits from said generator concurrently with redundancy bits arriving from said second functional unit over said second line for emitting a second alarm signal upon detecting a discrepancy therebetween.

4,520,482

SAFETY CONTROLLER

Rémy Fourré, Les Ulis, and Bruno de Langre, Paris, both of France, assignors to Societe d'Etudes Et Conseils A E R O, France

Filed Sep. 10, 1982, Ser. No. 416,620
Claims priority, application France, Sep. 14, 1981, 81 17338
Int. Cl.³ G06F *11/16*
U.S. Cl. 371—68 **4 Claims**



1. A controller of the type including a pair of sub-controllers and a comparator facility operating on outputs from the two subcontrollers, said controller comprising, in combination:

(I) a pair of said subcontrollers, each of said sub-controllers being identical when containing no faults and comprising:

(1) at least two blocks of parallel registers;

(2) at least one block of parallel combinational units for providing predetermined operations on signals transmitted to the inputs of said combinational units;

(3) an output device for providing an output signal;

(4) an input device, (a) having an input for receiving an input signal to said subcontroller and (b) coupled between the output of one of said blocks and devices and the input of another one of said blocks and devices, for selectively transmitting (i) the signal as received from said output of said one of said blocks and devices, unmodified by said input signal, to said input of said another one of said blocks and devices, and (ii) the signal received from said output of said one of said blocks and devices, modified by said input signal, to said input of said another one of said blocks and devices;

wherein (a) said blocks and devices of said subcontroller are coupled to one another so that the output of each of said blocks and devices is coupled in series to the input of another of said blocks and devices so as to form a shifting loop, (b) at least one set of test bits moves cyclically through said shifting loop, without being modified by said input signals, the values of the test bits being modified only by said combinational units, (c) said test bits dynamize all of said registers and combinational units successively and cyclically through a testing cycle so as to provide every possible logic value at the respective inputs of said registers and units and output signals from said output device such that a no-fault condition of said sub-controllers is indicated when output signals of said two sub-controllers are identical during a testing cycle; and

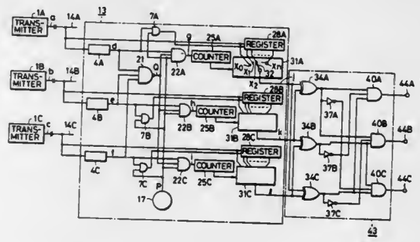
(II) comparator means for comparing said output signals from said subcontrollers so as to detect differences in said output signals representative of faults in one of said subcontrollers.

4,520,483

SIGNAL DIAGNOSTIC METHOD AND APPARATUS FOR MULTIPLE TRANSMISSION SYSTEM

Setsuo Arita, and Tetsuo Ito, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,375
Claims priority, application Japan, Sep. 28, 1981, 56-152211
Int. Cl.³ H04M *3/22*
U.S. Cl. 371—68 **9 Claims**



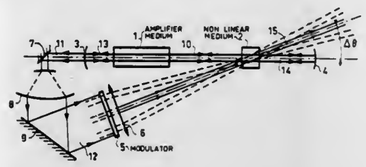
1. In a signal diagnostic apparatus for a multiple transmission system having first, second and third transmission means arranged in parallel to transmit transmission signals each having a synchronizing signal part and an information signal part; first, second and third reception means to receive the transmission signals provided from the first, second and third transmission means, respectively; and means to detect any error of the transmission signals by receiving the respective transmission signals provided from the first, second and third transmission means; a signal diagnostic apparatus for a multiple transmission system characterized by comprising means to receive said respective transmission signals provided from said first, second and third transmission means and to detect the transmission signal transmitted latest among these transmission signals; first means to detect the transmission time difference between said transmission signal provided from said first transmission means and said transmission signal transmitted latest; second means to detect the transmission time difference between said transmission signal provided from said second transmission means and said transmission signal transmitted latest; third means to detect the transmission time difference between said transmission signal provided from said third transmission means and said transmission signal transmitted latest; first means to delay said transmission signal provided from said first transmission means, on the basis of an output signal from the first transmission time difference detecting means; second means to delay said transmission signal provided from said second transmission means, on the basis of an output signal from the second transmission time difference detecting means; and third means to delay said transmission signal provided from said third transmission means, on the basis of an output signal from the third transmission time difference detecting means; the error detection means detecting the error by comparing said respective transmission signals provided from the first, second and third delay means.

4,520,484

COHERENT RADIATION SOURCE GENERATING A BEAM WITH A REGULATABLE PROPAGATION DIRECTION

Jean-Pierre Huignard, and Marcel Malard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 17, 1982, Ser. No. 379,048
Claims priority, application France, May 22, 1981, 81 10248
Int. Cl.³ H01S *3/101*
U.S. Cl. 372—24 **9 Claims**



1. A coherent radiation source producing a beam having a regulatable propagation direction, comprising:

a laser cavity defined by an amplifying medium positioned between first and second spherical mirrors and pumping means to permit generation of an oscillation wave in said cavity, said first mirror having a non-zero transmission coefficient to transmit a fraction of said oscillation wave; and

deflection means for providing said beam, comprising:

(a) an interaction medium placed within the cavity between said amplifying medium and said second mirror to tap an amount of said oscillation wave and to provide an output deflected laser beam in a desired direction upon reception of a signal wave, the center of curvature of said first and second mirrors coinciding and being located within said interaction medium; and

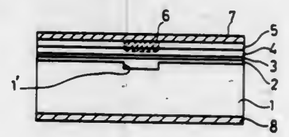
(b) means for generating said signal wave including means for deriving said fraction of said oscillation wave to illuminate the area of a selection matrix of X-Y modulating means, said matrix being X-Y controlled to provide a corresponding X-Y transparent window, and optical means to transmit said derived oscillation wave which passes through said selected window towards said center of curvature to constitute said signal wave, the direction of the output deflected beam being a function of the angle of incidence of said signal wave determined by the X-Y position of said selected window.

4,520,485

SEMICONDUCTOR DEVICE

Takashi Sugino, Takatsuki; Kunio Itoh, Uji; Masaru Wada, Takatsuki, and Hirokazu Shimizu, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 11, 1982, Ser. No. 357,086
Claims priority, application Japan, Mar. 17, 1981, 56-38957; Feb. 5, 1982, 57-17813
Int. Cl.³ H01S *3/19*; G02B *5/174*
U.S. Cl. 372—48 **7 Claims**



1. In a semiconductor device the improvement comprising:

a semiconductor substrate having a groove with widths differing at both ends on a principal surface, and

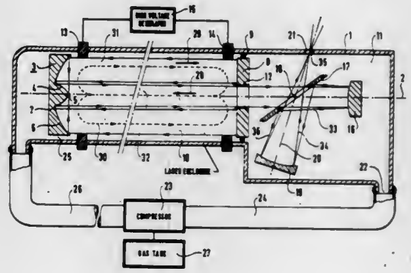
a semiconductor crystal layer which is to serve as a waveguide and formed on all of said principal surface filling said groove.

4,520,486

GAS FLOW LASER OSCILLATOR

Bernard Lavarini, Jouy en Josas, France, assignor to Compagnie General D'Electricite, Paris, France

Filed Jul. 28, 1983, Ser. No. 518,267
Claims priority, application France, Jul. 30, 1982, 82 13322
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—95 **6 Claims**



1. A gas flow laser oscillator comprising:

an elongate enclosure having an axis;

a first reflector disposed at one end of the inside of said enclosure;

a second reflector disposed inside the enclosure facing opposite the first reflector, the edges of the second reflector being fixed in a sealed manner to the walls of the enclosure to form therein a first chamber between the first and the second reflectors and a second chamber between the second reflector and the other end of the enclosure, the second reflector including an opening putting the first and second chambers into communication with each other;

means for inserting a laser active gas into the second chamber, the gas passing through the opening in the second reflector, the cross section of the opening and pressure of the gas being chosen to form turbulant flow in the first chamber;

means for extracting the gas from the first chamber; and

two electrodes disposed in the first chamber and connected to a source of electric current for establishing an electric discharge in the active gas in such a manner as to generate

a coherent light beam which is reflected on the first and second reflectors;

the improvement wherein:

the first reflector comprises first and second substantially conical reflecting surfaces, said surfaces being coaxial with said axis and oppositely inclined relative to a plane normal thereto, with the first conical reflecting surface being in the center of the first reflector and being immediately surrounded by the second conical reflecting surface, the second reflector being plane and centered on said axis, said opening being axial in such a manner that an annular first beam path of said coherent light radiation coming from the second reflector is reflected in succession on said second and first conical surfaces so as to constitute a second beam path about said axis which beam is cylindrical and which occupies substantially all the volume left free by the annular first beam path, the second beam path penetrating into said second chamber via the opening in said second reflector;

and wherein the oscillator further comprises:

a convex third reflector centered on the axis, and disposed in the second chamber in such a manner as to reflect the cylindrical second beam path along a divergent co-axial third beam path; and

a plane fourth reflector disposed on the axis between the second and third reflectors, said fourth reflector being provided with a central apperture and being inclined relative to a plane normal to the axis so that firstly; the second bearing path and an axial portion of the third beam path passes through the apperture; and secondly the remaining peripheral portion of the third beam path is reflected by the fouth reflector along a fourth beam path;

the first, second, third, and fourth reflectors constituting an unstable resonant cavity capable of amplifying coherent light radiation, a concave fifth reflector disposed to concentrate the energy of the laser radiation along a fifth beam path to a point on said enclosure means such that the laser radiation escapes.

4,520,487

HIGH TEMPERATURE ELECTRIC FURNACE WITH METALLIC RESISTANCES IN THE FORM OF HOLLOW VERTICAL HEATING TUBES

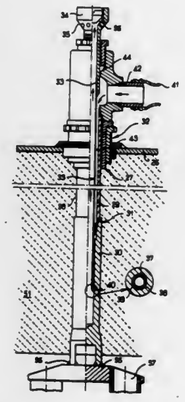
Louis Graniou, Villa Maeva, Chemin de l'Archet Superieur, 06200 Nice, France

Filed Mar. 10, 1983, Ser. No. 473,998

Claims priority, application France, Mar. 10, 1982, 82 04281; Jan. 31, 1983, 83 01585

Int. Cl.³ H65B *3/40*

U.S. Cl. 373—134 **10 Claims**



1. A high temperature electric furnace having electric resistances therein which are vertical hollow heating tubes, electrically conductive bridge plates interconnecting the upper ends of each adjacent pair of tubes, electrically conductive bridge plates interconnecting the lower ends of each adjacent pair of tubes so as to complete a sinuous electrical path along the tubes, and hangers secured to the upper bridge plates and suspending the tubes within the furnace, each of said bridge plates being an obtuse angled dihedral whose obtuse angle opens toward the tubes to which it is connected.

4,520,488

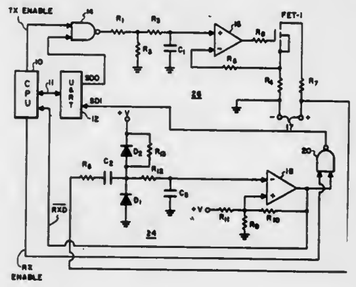
COMMUNICATION SYSTEM AND METHOD

Felix J. Houvig, Wayne, and Ronald H. Rowlands, Collegeville, both of Pa., assignors to Honeywell, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 239,244, Mar. 2, 1981, abandoned. This application Nov. 2, 1981, Ser. No. 317,083

Int. Cl.³ H04B *3/60*

U.S. Cl. 375—5 **20 Claims**



9. A method for alternate digital and analog data communication comprising the steps of introducing into a direct current power supply circuit first direct current variations having peak values representative of corresponding analog data, terminating the first current variations, introducing second direct current variations into the power supply circuit having a variation between pre-set current limits with each variation representing a digital bit, and terminating the second current variations by introducing a pre-set gap represented by a fixed pre-set current level.

4,520,489

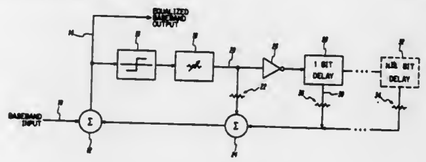
DECISION FEEDBACK EQUALIZING APPARATUS

Charles R. Hogge, Jr., Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 15, 1983, Ser. No. 523,203

Int. Cl.³ H04B *3/08*

U.S. Cl. 375—14 **7 Claims**



5. The method of equalizing a digital pulse bit stream signal comprising the steps of:

decision detecting logic level of bits in a bit stream first signal to generate a logic level second signal;

filterlessly time delaying said second signal by a time equivalent to the time between the commencement of adjacent data bits to produce a third signal whose rise and fall times are very short as compared to the time of the time delay;

combining said second and third signals to produce a feedback fourth signal; and

logically combining said fourth signal with a signal to be equalized to produce said first signal wherein the logically combined fourth signal includes positive feedback components of said second signal relative said first signal.

4,520,490

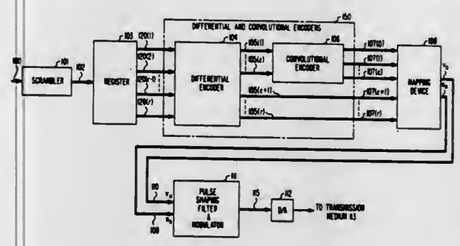
DIFFERENTIALLY NONLINEAR CONVOLUTIONAL CHANNEL CODING WITH EXPANDED SET OF SIGNALLING ALPHABETS

Lee-Fang Wei, Matawan, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Aug. 5, 1983, Ser. No. 520,691

Int. Cl.³ H04L *1/10, 5/12*

U.S. Cl. 375—27 **18 Claims**



15. A method for transmitting a bit sequence by modulating a carrier signal to sequentially assume one of a plurality of pairs of discrete signal values, comprising the steps of:

(a) expanding each current bit group into a group of r+1 bits by a finite state non-linear convolutional coding process utilizing p stored bits, the current values of said p stored bits affecting the current output of said convolutional encoder and being determined by both the previous r bit group input to said convolutional encoder and previous values of said p stored bits,

(b) selecting one of 2^{r+1} signalling alphabets from a signal constellation, each alphabet corresponding to a pair of discrete signal values, said selection being made as a function of the r+1 bit group so that 2^r signalling alphabets correspond to all permitted transitions from each current internal state of said convolutional coding process to all possible next states of said convolutional coding process, and so that the 2^r signalling alphabets have a larger minimum distance from each other than the minimum distance within the complete set of 2^{r+1} signalling alphabets, and

(c) transmitting the pairs of discrete signal values corresponding to the selected signalling alphabets in sequence,

wherein said signal constellation is arranged so that the same signal constellation is obtained when the original constellation is rotated by 90, 180 or 270 degrees, and

wherein rotation of said constellation by 90, 180 or 270 degrees produces the same effect on said transmitted discrete signal values as modification of only said current values of said p stored bits without modification of said values of said current r bit group.

4,520,491

TRANSMISSION SYSTEM USING DIFFERENTIAL PULSE CODE MODULATION WITH ADAPTIVE PREDICTION

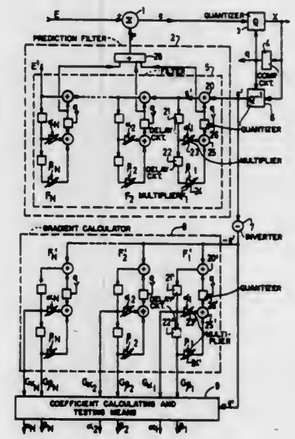
Jean M. Raulin, Noisy le Sec, and Georges Bonnerot, Les Ulis, both of France, assignors to Telecommunications Radioelectriques et Telephoniques T. R. T., Paris, France

Filed Nov. 4, 1982, Ser. No. 439,146

Claims priority, application France, Nov. 4, 1981, 81 20676

Int. Cl.³ H03K *13/22*

U.S. Cl. 375—27 **17 Claims**



1. A digital information transmission system using differential pulse code modulation and comprising an encoder for converting an incoming linear PCM signal into a differential PCM signal with a reduced number of bits, and a remote decoder for carrying out the inverse conversion, the encoder comprising a difference circuit forming a difference signal between the incoming linear PCM signal and a prediction signal, a first quantizer operating with a quantizing step and quantizing the difference signal to form the differential PCM signal and a local decoder receiving the differential PCM signal and forming the prediction signal, the local decoder and the remote decoder being constituted in the same manner and comprising each a second quantizer operating inversely to said first quantizer of the encoder and a filter constituted by a cascade arrangement of filtering sections, each section being provided with a round-off (or truncation) circuit operating with a step equal to the quantizing step of the first quantizer, characterized in that the filters of the local decoder and the remote decoder comprise several filtering sections of the second order having two coefficients, at least one of which is controllable, the controllable coefficients of corresponding sections of the filter of the local decoder and the filter of the remote decoder being controlled by identical control circuits receiving the same signal derived from the differential PCM signal and comprising means for calculating the controllable coefficients by successive iterations so as to minimize a predetermined function of the difference signal produced in the encoder, as well as means for testing, for each section and at each iteration, whether each controllable coefficient affected by a calculated modification term is larger than an upper limit value or smaller than a lower limit value, said means for testing determining that these limit values are such that the poles of the transfer function in Z of said section lie just inside a circle of unit radius, the modified value retained for said controllable coefficient being the nearest limit value when the test is positive and being the value affected by the calculated modification term when the test is negative.

4,520,492

METHOD FOR DETERMINING THE OPTIMUM SAMPLING TIMES FOR A QPSK OR QAM RECEIVED SIGNAL

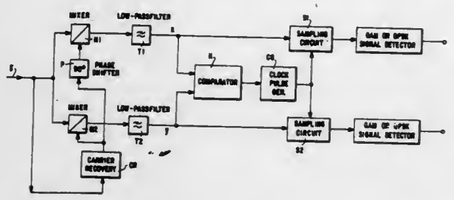
Herbert Weber, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,163

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146281

Int. Cl.³ H04B *15/02*

U.S. Cl. 375—86 **2 Claims**



1. A method of determining and setting the optimum sampling times for the demodulator of a receiver for a quadrature phase shift keyed (QPSK) or quadrature amplitude modulated (QAM) signal which has been influenced by interference in the radio link between a transmitter and the receiver, comprising the following steps in the receiver; separating the received signal into its two quadrature components; comparing the amplitudes of the two quadrature components; producing a synchronizing pulse whenever the amplitudes of the two quadrature components being compared have the same magnitude; and feeding said synchronizing pulses to the demodulator for the received signal to cause the demodulator to sample the received signal at points in time corresponding to said pulses.

4,520,493

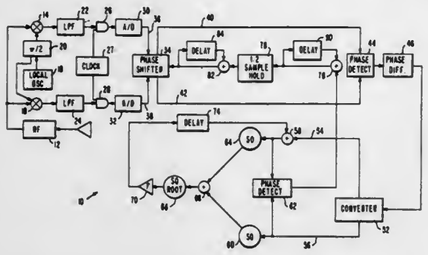
ADAPTIVE RECURSIVE FREQUENCY OFFSET TRACKING SYSTEM

Charles M. Heard, Venice, and Frank C. Yang, Anaheim, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 7, 1981, Ser. No. 327,667

Int. Cl.³ H04L *27/16*

U.S. Cl. 375—97 **14 Claims**



1. An adaptive recursive frequency offset tracking system for acquiring and tracking a received electromagnetic data signal comprising:

means for generating a complex baseband signal from the received signal;

means for sampling the complex baseband signal to derive a plurality of complex samples;

means for comparing the phase of successive samples to extract signals representing the phase difference between the two samples;

means for converting the phase difference signals to phasor signals;

first filter means for deriving a track quality indication from the phasor signals;

second filter means having a bandwidth controlled by the track quality indication for deriving from the phasor signals an estimate of the frequency offset of the received data signal; and

means for correcting the phase of the received data signal samples in response to the estimate of frequency offset to substantially compensate for the frequency offset.

4,520,494

X-RAY DIAGNOSTIC APPARATUS

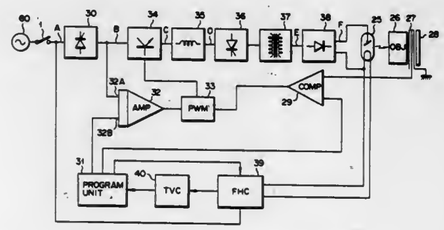
Masataka Arita, Tustin, Calif., and Mitsuyoshi Matsubara, Tochigi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 8, 1983, Ser. No. 502,117

Claims priority, application Japan, Jun. 11, 1982, 57-99143

Int. Cl.³ G03B *41/16*; H05G *1/30, 1/10*

U.S. Cl. 378—108 **5 Claims**



1. An X-ray diagnostic apparatus comprising:

a low voltage power source;

AC-DC converting means connected to the low voltage power source so as to apply a rectified low DC voltage;

chopping means connected to the AC-DC converting means and chopping said DC voltage into a low AC voltage;

high voltage applying means for transforming said low AC voltage into a high AC voltage, said high AC voltage being applied as a tube voltage to an X-ray tube from which X-rays are irradiated toward an object to be examined;

means for controlling a filament heating power of the X-ray tube;

programming means for supplying a control signal to said filament heating control means so as to reduce the emission current of said X-ray tube during the irradiation; and

chopper control means for controlling the chopping ratio of said chopping means by evaluating said rectified DC voltage with a preset tube voltage generated in said programming means; said programming means compensating said tube voltage by receiving said control signal in such a manner that said tube voltage is maintained substantially constant during the irradiation by varying said preset tube voltage so as to control the chopping ratio based upon the reduction of the filament heating power for the X-ray tube.

4,520,495

FAILURE DETECTION CIRCUIT FOR AN X-RAY TUBE

Shigeru Tanaka, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 26, 1982, Ser. No. 444,368

Claims priority, application Japan, Nov. 30, 1981, 56-192016

Int. Cl.³ H05G *1/26, 1/34, 1/54*

U.S. Cl. 378—117 **10 Claims**

1. A failure detection arrangement for an X-ray tube of the type having an anode, a cathode and a grounded center metal, comprising:

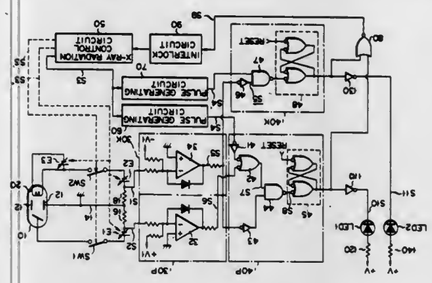
a first high voltage source for applying a positive high voltage between said anode and ground;

a first switch in the circuit of said first high voltage source and said anode;

a second high voltage source for applying a negative high voltage between said cathode and ground;

a second switch in the circuit of said second high voltage source and said cathode;

control circuit means for generating X-ray control signals for controlling said first and second switches for selectively closing and opening circuit paths of said anode and cathode;



failure detection means for detecting when a cathode current is flowing and substantially simultaneously therewith an absence of any anode current and generating in response to such detection a failure detection signal; and

means, responsive to said failure detection signal, for causing said control circuit means to interrupt power flow to said tube by controlling of said first and/or second switches.

4,520,496

ROTARY-ANODE X-RAY TUBE

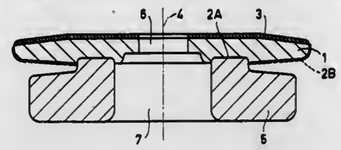
Peter Schreiber, Rellingen, and Klaus Huth, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,377

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226858

Int. Cl.³ H01J *35/10*

U.S. Cl. 378—128 **6 Claims**



1. A rotary-anode X-ray tube comprising an anode disc having a body which comprises first and second rotationally-symmetrical, interconnected parts which are adjacently situated in the direction of an axis of rotation, the first part bearing a focal path on a surface extending transversely of said axis and consisting essentially of molybdenum or a molybdenum alloy and the second part consisting essentially of graphite, the volume of the second part amounting to at least one half of the volume of the first part, characterized in that an outer diameter of a connection zone between the first and second parts is smaller than an inner diameter of the focal path.

4,520,497

ARRANGEMENT FOR PROJECTING DATA ONTO FILM

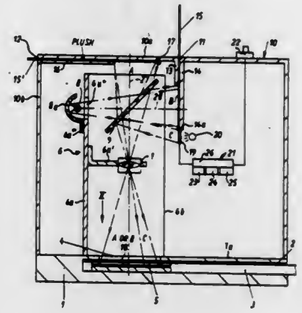
Reimund Kluge, Unterhaching, and Eberhard Werner, Peiting, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,762

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043068

Int. Cl.³ H05G *1/28*

U.S. Cl. 378—166 **16 Claims**



1. An arrangement for projecting data onto radiation-sensitive material comprising:

(a) receiving means for holding an interchangeable data carrier at either of a pair of locations having respective regions for the illumination of a data-carrying part of the interchangeable data carrier;

(b) supporting means for radiation-sensitive material, said supporting means including holding means for a cassette which accommodates a sheet of radiation-sensitive material and is provided with an aperture which is capable of being sealed against light and of being opened to expose a portion of the radiation-sensitive material to the image of the data-carrying part of the interchangeable data carrier; and

(c) projecting means for projecting an image of the data-carrying part of the interchangeable data carrier onto the radiation-sensitive material, said projecting means including a source of illumination which is positioned substantially on the optical axis of a first of said regions and is arranged to illuminate both said first region and the second of said regions, and said projecting means further including a member which transmits a portion of the light from said source to one of said regions and reflects light from said one region towards said supporting means, said member reflecting a portion of the light from said source to the other of said regions and transmitting light from said other region towards said supporting means, and said member being located between said source and said first region.

4,520,498

AM STEREO MODULATOR

David L. Hershberger, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 24, 1983, Ser. No. 507,563

Int. Cl.³ H04H *5/00*

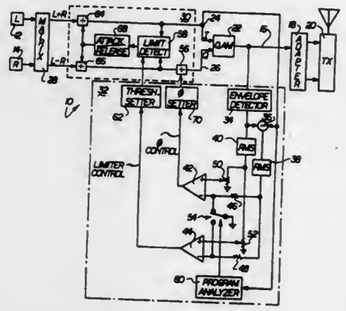
U.S. Cl. 381—16 **10 Claims**

1. An AM stereo modulator, comprising:

limiter means responsive to first and second audio frequency signals for providing first and second amplitude limited signals in response thereto, said first and second amplitude limited signals being substantially equally limited,

quadrature amplitude modulator means responsive to said first and second amplitude limited signals for providing an

amplitude modulated carrier signal having in-phase and quadrature-phase components modulated in accordance with said first and second amplitude limited signals, respectively, and

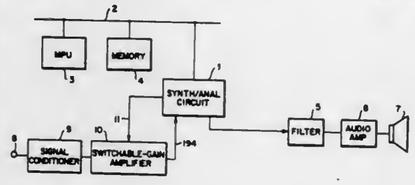


detector means for detecting the extent to which the envelope of said modulated carrier signal differs from said first amplitude limited signal and for controlling the amplitude limitations imposed on said first and second signals by said limiter means in accordance therewith.

4,520,499
COMBINATION SPEECH SYNTHESIS AND RECOGNITION APPARATUS

Terry Montlick, Somers; Klaus Skoge, Cromwell, both of Conn.; David C. Vetter, Greenfield, and Paul R. Ahrens, Longmeadow, both of Mass., assignors to Milton Bradley Company, Springfield, Mass.

Filed Jun. 25, 1982, Ser. No. 392,309
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—36 **14 Claims**



1. An apparatus for synthesizing speech from stored representations and for generating representations of speech for use in speech analysis, including but not limited to speech recognition, such apparatus being reconfigurable between the two functions and comprising:

A. a lattice filter including elements which are configurable selectively to provide an all-pole transfer function for synthesis and an all-zero transfer function for analysis, the lattice filter being responsive to coefficients supplied thereto;

B. an input converter for converting analog representations of acoustic waveforms to signals suitable for processing by said all-zero lattice filter;

C. an output converter coupled to said all-pole reconfigured lattice filter for coverting the output signals from said filter to analog signals suitable for conversion into acoustic waveforms;

D. an excitation source for supplying to the input of said all-pole filter signals representing vocal tract excitation;

E. a filter coefficient correction means for modifying lattice filter coefficients responsive to a speech signal being analyzed, to generate representations of such speech;

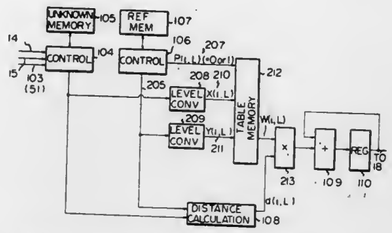
F. means for receiving filter coefficients for speech synthesis;

G. means for selectively interconnecting, for speech synthesis or analysis, the lattice filter, the input converter, the output converter, the excitation source, the filter coefficient correction means and the coefficient receiving means.

4,520,500
SPEECH RECOGNITION SYSTEM

Kaneyoshi Mizuno; Isamu Nose, and Hirosi Iizuka, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,147
Claims priority, application Japan, May 7, 1981, 56-67614; Jul. 15, 1981, 56-109265; Nov. 19, 1981, 56-184416
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—43 **7 Claims**



1. A speech recognition system comprising:

(a) an input terminal (**11**) for accepting an input speech signal to be recognized,

(b) a frequency analyzer (**12**) coupled with said input terminal (**11**), for providing the spectrum of the input speech signal,

(c) a spectrum converter (**16**) coupled with the output of the frequency analyzer (**12**), for converting the spectrum from said frequency analyzer (**12**) to the difference between said spectrum and the least square fit line of said spectrum and delivering a spectrum-converted output $\bar{x}^I(i,L)$,

(d) a speech detector (**13**) coupled with the output of said frequency analyzer (**12**) for detecting the start point and the end point of the input speech,

(e) a distance calculation means (**17**) for calculating the distance between the converted spectrum of input speech and the converted spectrum of each of a number of reference data, and

(f) a decision circuit (**18**) for recognizing an input speech by selecting the minimum distance among the outputs of said distance calculation means (**17**), CHARACTERIZED IN THAT

said distance calculation means (**17**) comprises:

(g) an input memory (**105**) for storing the output $\bar{x}^I(i,L)$ of said spectrum converter (**16**), the storing operation being started when the start point is detected by the speech detector (**13**) and being finished when the end point is detected by the speech detector (**13**),

(h) a reference memory (**107**) for storing the converted spectrum $\bar{x}^R(i,L)$ of the reference data and an original weight provided for particular portions of the reference data,

(i) a distance calculator (**108**) for calculating the distance $|\bar{x}^R(i,L)-\bar{x}^I(i,L)|$ between the output $\bar{x}^I(i,L)$ of said input memory (**105**) and the converted spectrum $\bar{x}^R(i,L)$ of the output of said reference memory (**107**),

(j) weight adjusting means (**208, 209, 212**; or **310, 320, 330, 340, 350**) for adjusting the original weight read out from the reference memory (**107**) according to the output $\bar{x}^I(i,L)$ from the input memory (**105**) and the converted spectrum $\bar{x}^R(i,L)$ of the reference data from the reference memory (**107**), and providing the weight w(i,L),

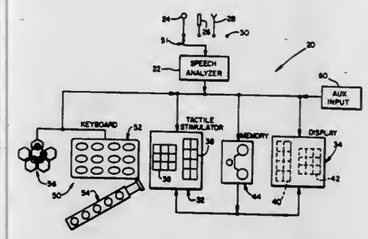
(k) a multiplier (**213**) for providing $w(i,L)x|\bar{x}^R(i,L)-\bar{x}^I(i,L)|$ by multiplying the output $|\bar{x}^R(i,L)-\bar{x}^I(i,L)|$ of said distance calculator (**108**) and the weight w(i,L) provided by said weight adjusting means (**208, 209, 212**; or **310, 320, 330, 340, 350**), and

(l) means for accumulating the output of said multiplier (**213**) to provide the resultant distance to said decision circuit (**18**).

4,520,501
SPEECH PRESENTATION SYSTEM AND METHOD

Denyse C. DuBrucq, Arlington, Va., assignor to Ear Three Systems Manufacturing Company, Arlington, Va.

Continuation of Ser. No. 435,345, Oct. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 365,772, Apr. 5, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,978
Int. Cl.³ G01L *1/00*
U.S. Cl. 381—48 **54 Claims**

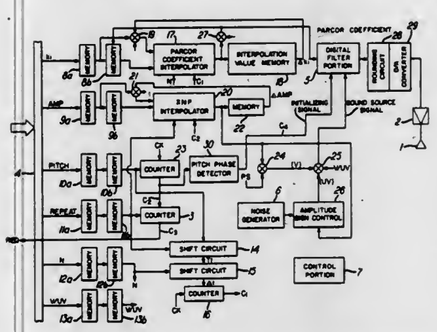


1. A method of presenting speech information comprising separating speech into a sequence of phonemes representative of the speech; transforming each phoneme into first and second grid patterns of points, the first pattern being a code which identifies the phoneme sound and the second pattern being another code which identifies a mouth form that produces the phoneme sound; and presenting the first and second patterns by activating presenters arranged in a multiple point grid matrix in accordance with said patterns of points.

4,520,502
SPEECH SYNTHESIZER

Sumio Fujita, Tokyo, Japan, assignor to Seiko Instruments & Electronics, Ltd., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,282
Claims priority, application Japan, Apr. 28, 1981, 56-64633
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—51 **2 Claims**

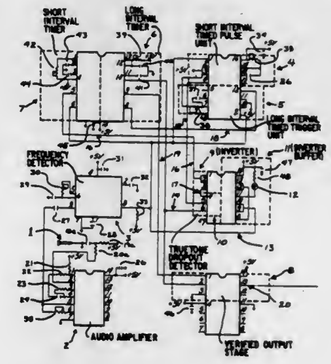


1. A speech synthesizer using variable frame lengths obtained by multiplication of a pitch period analyzed from original speech data by the number of repetitions of substantially the same waveform as that in the pitch period comprising: first circuit means for determining a frame interval from pitch data and repeat time data in the speech data and producing a corresponding frame interval signal; second circuit means responsive to the frame interval signal for generating a PARCOR coefficient interpolation timing signal for each PARCOR coefficient interpolation; pitch period generating means connected to receive the pitch data for generating an amplitude interpolation timing signal; third circuit means for interpolating a PARCOR coefficient in response to the PARCOR coefficient interpolation timing signal and for interpolating an amplitude value in response to the amplitude interpolation timing signal; digital filter means connected to receive the interpolated PARCOR coefficient data and the interpolated amplitude data for filtering the data, the digital filter means including resettable delay circuit means connected to the pitch period generating means for producing an initializing signal each pitch period to reset the delay circuit means; and acoustic means for producing a speech sound in response to the data output from the digital filter means.

4,520,503
TONE DISCRIMINATION CIRCUIT

John A. Kirst, and Daniel F. Kutz, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Oct. 14, 1983, Ser. No. 541,860
Int. Cl.³ G08B *17/00*; H04R *29/00*
U.S. Cl. 381—56 **6 Claims**



1. Circuit, comprising:

(a) a microphone means, having an audio input and an electrical output, for converting an audible tone of a given frequency received at said audio input, into an audio frequency electrical signal (hereinafter "audio signal") of the same frequency at said electrical output;

(b) an amplifier means, having an input and an output, said input being connected to said electrical output of said microphone means, for detecting only audio signals exceeding a desired amplitude level;

(c) a frequency detector means, having an input and an output, said input of said frequency detector means being connected to said output of said amplifier means, for passing through said frequency detector means only audio signals falling in a desired frequency passband;

(d) time discrimination circuit, comprising:

(1) a short interval timed pulse unit, having an input and an output, said input of said short interval timed pulse unit being connected to said output of said frequency detector means;

(2) a short interval timer, having an input and an output, said input of said short interval timer being connected in parallel with said short interval timed pulse unit to said output of said frequency detector means;

(3) a long interval timed trigger unit, having an input and an output, said input of said long interval timed trigger unit being connected in parallel with said short interval timed pulse unit and said short interval timer to said output of said frequency detector means;

(4) a long interval timer, having an input and an output, said input of said long interval timer being connected in series to said output of said long interval timed trigger unit;

(5) an inverter, having an input and an output, said input of said inverter being connected in series to said output of said short interval timer;

(6) a truetone dropout indicator, which is a NAND gate, having a first input, a second input and an output, said first input of said truetone dropout indicator being connected in series to said output of said inverter, said second input of said truetone dropout indicator being connected in series to said output of said short interval timed pulse unit;

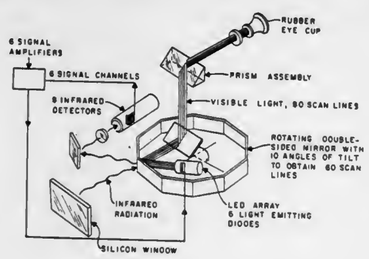
(7) a verified output stage, having a first input, a second input, and an alarm line as an output, said first input of said verified output stage being connected in series to said output of said truetone dropout indicator, said second input of said verified output stage being connected in series to said output of said long interval timer.

4,520,504

INFRARED SYSTEM WITH COMPUTERIZED IMAGE DISPLAY

Ronald P. Walker, Kirtland AFB, N. Mex.; John D. Rex, Chelmsford, and John H. Schummers, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,246
Int. Cl.³ G06K 9/00; H04N 7/18
U.S. Cl. 382—1 **16 Claims**



1. An infrared imaging system comprising:

an infrared scanner which receives infrared radiation from a scene and produces analog signals for a plurality of individual pixels in frames with a scanning raster, including sync signals;

a digitizer which receives said analog signals and sync signals and produces corresponding digital signals, providing a digital value for each pixel which is a function of the infrared intensity from said object;

processing means including memory means and a display generator for storing and processing a frame of the digital signals to create a display frame; and

means for displaying said display frame as an image of said scene;

wherein said processing means includes means to cause all pixel brightness values to be surveyed and the maximum and minimum values to be identified, means to cause said maximum and minimum values to be displayed at an operator's console and to permit entry of different values, and means to create a grey scale as part of the display frame;

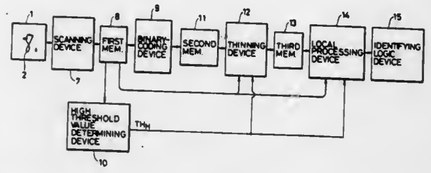
whereby the system is capable of generating calibrated quantitative imagery which may be utilized as a diagnostic tool for the analysis of heat flow from surfaces.

4,520,505

CHARACTER READING DEVICE

Katsuyoshi Yamamoto; Haruo Mizukami, and Hajime Nambu, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,828
Claims priority, application Japan, Dec. 23, 1981, 56-208599; Jan. 14, 1982, 57-4612
Int. Cl.³ G06K 9/44
U.S. Cl. 382—55 **7 Claims**



1. A character reading device comprising:

scanning means for scanning a character and subjecting said character to photo-electric conversion to form a multi-level character pattern having more than two density levels;

binary-coding means for binary-encoding said multi-level character pattern into picture elements of high and low levels according to a first threshold value, said binary-coding means thereby selecting picture elements of high levels;

means for determining a second threshold value higher than said first threshold value;

means for thinning those of the high level picture elements selected by said binary-coding means, the unencoded density levels of which are lower than said second threshold value, to form a thinned character pattern; and

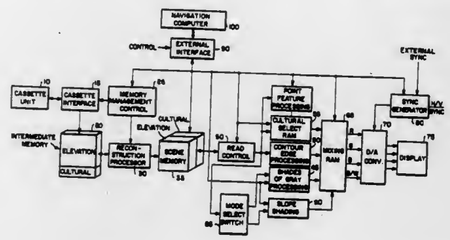
means for comparing the level of those picture elements of said thinned character pattern, the density levels of which are lower than said second threshold value, with the levels of the picture elements surrounding said picture element for contrast, to determine whether the level of said picture elements is to be maintained at said high level or changed to said low level.

4,520,506

METHOD AND SYSTEM FOR COMPRESSION AND RECONSTRUCTION OF CULTURAL DATA FOR USE IN A DIGITAL MOVING MAP DISPLAY

Luen C. Chan, Indian Harbor Beach; Paul B. Beckwith, Indialantic, and Jeffrey B. Pearce, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Oct. 20, 1981, Ser. No. 313,327
Int. Cl.³ G06K 9/36
U.S. Cl. 382—56 **43 Claims**



1. A method of compressing data which is to produce an area feature in a display which is to be scanned in a predetermined direction, comprising the steps of:

eliminating all points of the area feature except for those points which form the boundary thereof;

eliminating the points which form that part of the boundary of the area feature which faces opposite said predetermined scanning direction; and

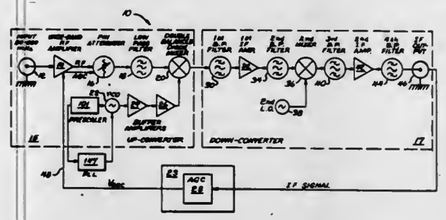
storing an address of an initial point at one end of the remaining part of the boundary of the area feature along with at least one delta code value which identifies a further point on the remaining part of the boundary with respect to the direction of the boundary at said initial point.

4,520,507

LOW NOISE CATV CONVERTER

Frederick H. Moon, Mt. Prospect, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 24, 1983, Ser. No. 544,947
Int. Cl.³ H04B 1/26; H04H 1/02
U.S. Cl. 455—3 **11 Claims**



9. A CATV frequency converter comprising:

a low noise wideband RF amplifier having a controllable operating point for amplifying a received CATV signal wherein the gain and terminal impedance of said amplifier are maintained substantially constant over a wide frequency band;

variable attenuation means coupled to said RF amplifier for the controlled attenuation of the amplified CATV signal;

an oscillator for generating a reference signal having a selected frequency;

a mixer coupled to said variable attenuation means and said oscillator for mixing said amplified CATV and reference signal to produce an IF signal;

an automatic gain control (AGC) system coupled to said mixer for developing an AGC control signal as a function of the level of the received CATV signal; and

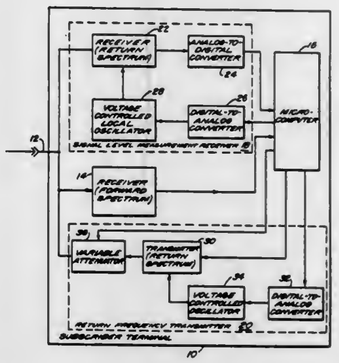
means coupling the AGC control signal to said RF amplifier for controlling the operating point thereof and to said variable attenuation means, the attenuation of said variable attenuation means being controlled in response to said AGC control signal and the output of said RF amplifier.

4,520,508

SUBSCRIBER TERMINAL FOR MONITORING RADIO-FREQUENCY SIGNAL INGRESS INTO CABLE TELEVISION SYSTEMS

Harry J. Reichert, Jr., Warminster, Pa., assignor to General Instrument Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 451,858, Dec. 21, 1982, abandoned. This application Jun. 26, 1984, Ser. No. 624,804
Int. Cl.³ H04H 1/02; H04N 7/18
U.S. Cl. 455—4 **8 Claims**



1. A subscriber terminal for connection to a headend by means of a cable, said terminal comprising means including first receiver means for monitoring and detecting the presence of at least one radio-frequency ingress signal on said cable, second receiver means connected to said cable for receiving coded signals from the headend, said coded signals including an ingress-frequency select signal and a return frequency command signal, means connected to the cable for transmitting a return signal to the headend at a specified return frequency, and control means operatively connected to said transmitting means and to said first and second receiver means and effective in response to said ingress-frequency select signal and return frequency command signal received from the headend, to select the frequency of said at least one ingress signal which said first receiver means is to monitor and detect, to code said return signal to represent information concerning the detected ingress signal and to control the transmitting means to transmit said return signal at said specified return frequency.

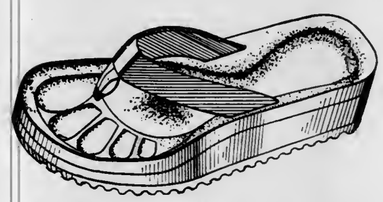
DESIGNS

MAY 28, 1985

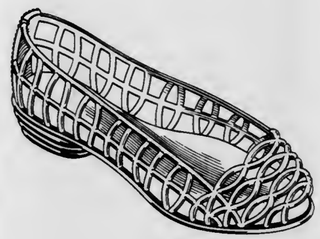
278,945
BRASSIERE
Harold Stern, Wyckoff, N.J., and Elisabeth Suleiman, Newark, Del., assignors to International Playtex, Inc., Stamford, Conn.
Filed Feb. 4, 1983, Ser. No. 464,072
Term of patent 14 years
U.S. Cl. D2—24



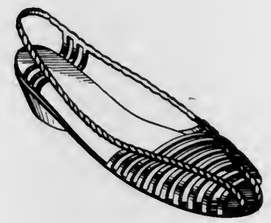
278,946
THONG SANDAL
James Chen, Taipei, Taiwan, assignor to Volta Industrial Co., Ltd., Taipei, Taiwan
Filed Sep. 9, 1982, Ser. No. 416,398
Term of patent 14 years
U.S. Cl. D2—270



278,947
SHOE AND THE LIKE
Steven M. Foldes, 56 Walnut Ave., Conyngham, Pa. 18219
Filed Nov. 15, 1984, Ser. No. 671,870
Term of patent 14 years
U.S. Cl. D2—282



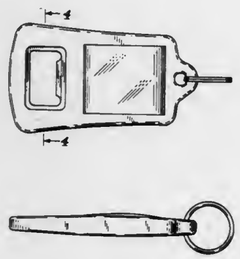
278,948
SHOE AND THE LIKE
Steven M. Foldes, Conyngham, Pa., assignor to Fun Footwear, Co., West Hazleton, Pa.
Filed Nov. 15, 1984, Ser. No. 671,868
Term of patent 14 years
U.S. Cl. D2—291



278,949
SLALOM SHOE SUITCASE
Jarmo A. Soininen, Helsinki, Finland, assignor to Asoma Oy, Helsinki, Finland
Filed Aug. 4, 1982, Ser. No. 405,208
Term of patent 14 years
U.S. Cl. D3—36



278,950
KEY TAG
Peter W. Vaughan, 33 Coronation St., Blackpool, England
Filed Dec. 16, 1982, Ser. No. 450,292
Claims priority, application United Kingdom, Jun. 24, 1982, 821007395
Term of patent 14 years
U.S. Cl. D3—62



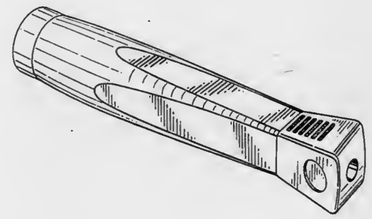
278,951
COSMETIC BRUSH
Stuart Kalinsky, 420 E. 80th St., New York, N.Y. 10021
Filed Apr. 4, 1984, Ser. No. 596,556
Term of patent 14 years
U.S. Cl. D4—135



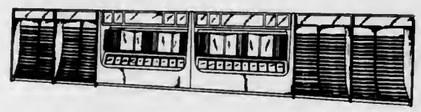
278,952
COSMETIC BRUSH
Stuart Kalinsky, 420 E. 80th St., New York, N.Y. 10021
Filed Apr. 4, 1984, Ser. No. 596,557
Term of patent 14 years
U.S. Cl. D4—135



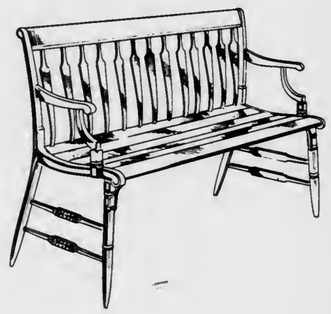
278,953
HANDLE FOR PAINT ROLLER FRAME
Morley L. Smith, Beaconsfield, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada
Filed Jun. 1, 1981, Ser. No. 269,429
Claims priority, application Canada, Apr. 30, 1981, 30-04-81-4
Term of patent 14 years
U.S. Cl. D4—138



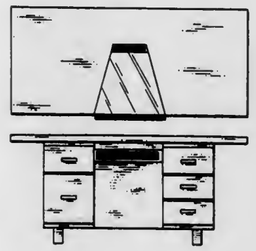
278,954
DISPLAY UNIT FOR SAMPLES OF FLOOR TILES, CARPETS OR SIMILAR ARTICLES
Anthony E. Bolyn, South Glens Falls, N.Y., assignor to Congoleum Corporation, Kearny, N.J.
Continuation of Ser. No. 217,362, Dec. 17, 1980, abandoned.
This application Apr. 25, 1983, Ser. No. 487,112
Term of patent 14 years
U.S. Cl. D6—409



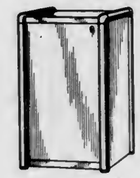
278,955
PARK BENCH
Duncan C. Syme, Chelsea; Vance R. Smith, Fish Hill, and Brian J. Tyrol, South Royalton, all of Vt., assignors to Vermont Castings, Inc., Randolph, Vt.
Filed Jun. 1, 1982, Ser. No. 383,776
Term of patent 14 years
U.S. Cl. D6—381

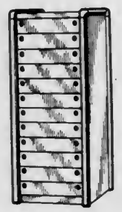


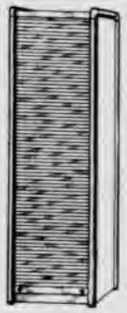
278,956
DESK WITH BUILT IN COMPUTER CONSOLE
Arnold Gordon, 685 Kirkglen Dr., San Jose, Calif. 95125
Filed Mar. 8, 1982, Ser. No. 356,057
Term of patent 14 years
U.S. Cl. D6—422



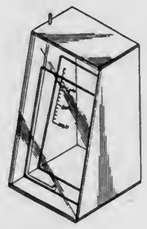
278,957
CABINET
Reinhard-Heinrich Flötotto, Bussardweg 3, D 4830 Gütersloh 11, Fed. Rep. of Germany
Filed Mar. 16, 1982, Ser. No. 358,712
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, MR1181
Term of patent 14 years
U.S. Cl. D6—432



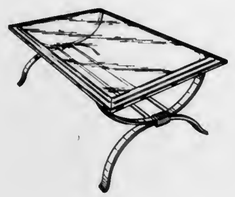




278,958
DISPLAY CASE FOR WATCHES OR THE LIKE
Mickey E. Novak, Corona Del Mar, Calif., assignor to Innovative Time Corporation, Carlsbad, Calif.
Filed Feb. 1, 1983, Ser. No. 482,956
Term of patent 14 years
U.S. Cl. D6—471



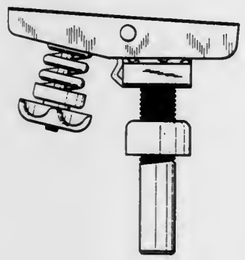
278,959
TABLE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Mar. 3, 1983, Ser. No. 471,813
Term of patent 14 years
U.S. Cl. D6—480



278,960
FOOT PROTECTING CUSHION FOR A BED LEG
Joseph B. Shields, 3466 Balfour, Detroit, Mich. 48224
Filed Jul. 20, 1981, Ser. No. 284,680
The portion of the term of this patent subsequent to Jul. 5, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—491



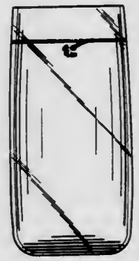
278,961
CHAIR CONTROL
Frank Doerner, 138 Aberdeen Rd., Kitchener, Ontario, Canada N2M 2Y7
Filed Apr. 21, 1983, Ser. No. 487,178
Claims priority, application Canada, Mar. 15, 1983, 15-03-83-8
Term of patent 14 years
U.S. Cl. D6—500

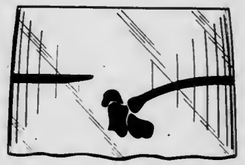


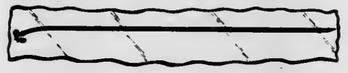
278,962
CHAMPAGNE GLASS
Ben Seibel, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 29, 1982, Ser. No. 403,221
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



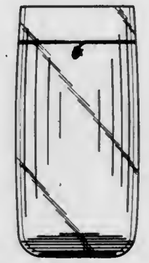
278,963
DRINKING GLASS OR THE LIKE
Thomas M. Dair; Davin B. Stowell, and Tucker L. Viemeister, all of New York, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Sep. 29, 1982, Ser. No. 427,750
Term of patent 14 years
U.S. Cl. D7—15

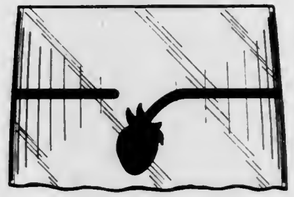




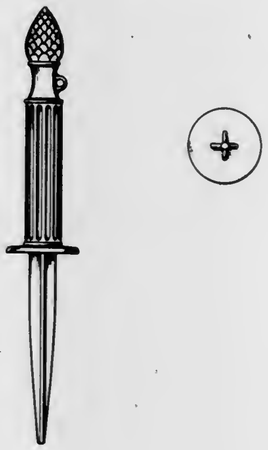


278,964
DRINKING GLASS OR THE LIKE
Thomas M. Dair; Davin B. Stowell, and Tucker L. Viemeister, all of New York, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Sep. 29, 1982, Ser. No. 428,881
Term of patent 14 years
U.S. Cl. D7—15

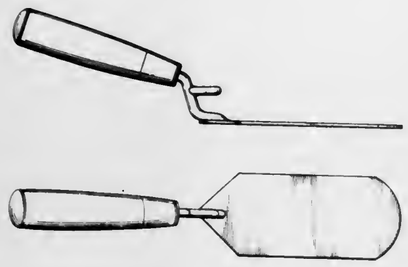




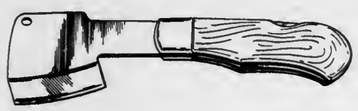
278,965
GARDEN MARKER-LAWN STANCHION
Walter D. Morton, 83 Homestead Dr., Millville, N.J. 08332
Filed Jan. 20, 1983, Ser. No. 459,384
Term of patent 14 years
U.S. Cl. D8—01



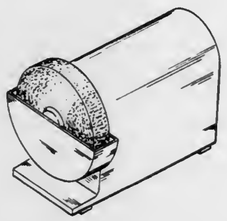
278,966
TROWEL
Randall C. Anaya, 3222 Ivar Ave., Rosemead, Calif. 91770
Filed Feb. 18, 1983, Ser. No. 467,493
Term of patent 14 years
U.S. Cl. D8—10



278,967
FOLDING HATCHET
Ronald Hewitt, Ludowici, Ga., assignor to Walter Webb, Metter, Ga.
Filed Jul. 6, 1982, Ser. No. 395,822
Term of patent 14 years
U.S. Cl. D8—76



278,968
CUTLERY SHARPENER
James E. Farmer, Sr., 1720 Commerce Rd., Athens, Ga. 30607
Filed Sep. 6, 1983, Ser. No. 529,331
Term of patent 14 years
U.S. Cl. D8—91



278,969
GLASS CUTTER
Conrad E. Johnson, 1163 Boylston St., Boston, Mass. 02115
Filed Dec. 23, 1982, Ser. No. 432,797
Term of patent 14 years
U.S. Cl. D8—98



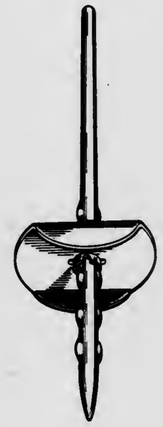
278,970
HANDLE FOR GARDENING TOOL OR THE LIKE
Walter Kolb, Betzdorf, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Filed May 14, 1982, Ser. No. 378,067
Term of patent 14 years
U.S. Cl. D8—107



278,971
HAND GRIP HANDLE FOR DETACHABLE TOOLS
Lloyd T. Smith; Harold F. Bauer, both of Newton, and Allen K. Roth, Whitewater, all of Kans., assignors to Fiskar Manufacturing Corporation, Wausau, Wis.
Filed Sep. 30, 1982, Ser. No. 429,563
Term of patent 14 years
U.S. Cl. D8—107



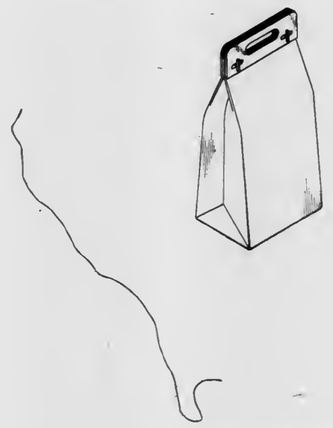
278,972
COMBINED FASTENING BOLT AND LOCKING WASHER THEREFOR
Rune Fredriksson, Myrgatan 36 B, Avesta, Sweden (S-774 00)
Filed Jul. 28, 1981, Ser. No. 287,566
Claims priority, application Sweden, Jan. 28, 1981, 81-0179
Term of patent 14 years
U.S. Cl. D8—388



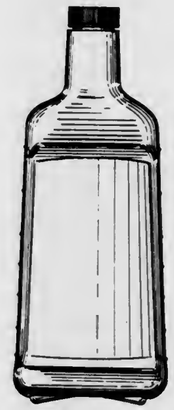
278,973
COMBINED BOTTLE AND CAP
Ned Harris, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 27, 1982, Ser. No. 423,886
Term of patent 14 years
U.S. Cl. D9—300



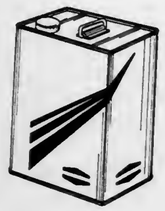
278,974
COMBINED BAG AND HANDLE
Sam W. Ray, Farmers Branch, Tex., assignor to Foam Tek, Inc., Dallas, Tex.
Filed Jan. 3, 1983, Ser. No. 455,052
Term of patent 14 years
U.S. Cl. D9—305



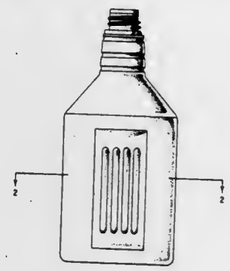
278,975
BOTTLE OR SIMILAR ARTICLE
William R. Gurolnick, Morton Grove, Ill., assignor to Gold Eagle Co., Chicago, Ill.
Filed Mar. 24, 1983, Ser. No. 478,380
Term of patent 14 years
U.S. Cl. D9—370



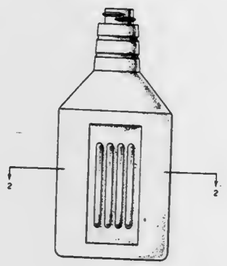
278,976
CAN
Iwao Morikawa, Mitaka, Japan, assignor to Kabushiki Kaisha KEM-O-PRO, Tokyo, Japan
Filed Sep. 29, 1982, Ser. No. 432,100
Claims priority, application Japan, Jun. 14, 1982, 57-26565
Term of patent 14 years
U.S. Cl. D9—376



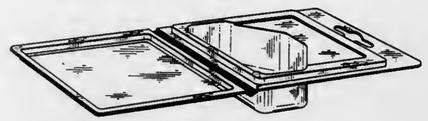
278,977
OIL CONTAINER
Thomas A. Franchi, Cobham, England, and Leslie B. Rogers, Red Bank, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jan. 3, 1983, Ser. No. 455,442
Term of patent 14 years
U.S. Cl. D9—383



278,978
OIL CONTAINER
Thomas A. Franchi, Cobham, England, and Leslie B. Rogers, Red Bank, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jan. 3, 1983, Ser. No. 455,357
Term of patent 14 years
U.S. Cl. D9—383

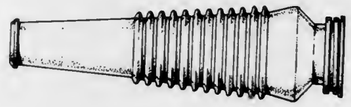


278,979
COMBINED PACKAGING AND DISPLAY CONTAINER
Kirk S. Anderson, Overland Park, Kans., and Scott D. Shane, Kansas City, Mo., assignors to Anderson Metals Corporation, Kansas City, Mo.
Filed Jan. 31, 1983, Ser. No. 462,607
Term of patent 14 years
U.S. Cl. D9—415



278,980
END CLOSURE FOR A CONTAINER
Omar L. Brown, Kettering; Don B. Peters, Dayton, and Jack L. Kalter, Kettering, all of Ohio, assignors to Ermal C. Fraze, Dayton, Ohio
Filed Sep. 17, 1982, Ser. No. 419,598
Term of patent 14 years
U.S. Cl. D9—438

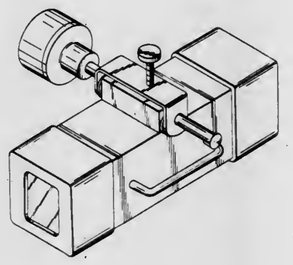
278,981
FLEXIBLE POURING SPOUT
P. J. Biermann, 14605 - 116 Ave., Edmonton, Alberta, Canada (T5M 3E8)
Filed May 17, 1983, Ser. No. 495,245
Term of patent 14 years
U.S. Cl. D9—447



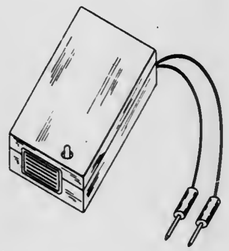
278,982
DISPLAY HOLDER FOR A CONTAINER OF LIPSTICK OR THE LIKE
John M. Van Zandt, 15932 Northfield, Pacific Palisades, Calif. 90272
Filed Jan. 20, 1983, Ser. No. 459,518
Term of patent 14 years
U.S. Cl. D9—457



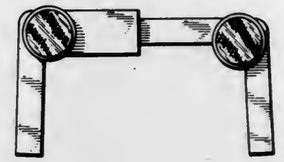
278,983
MODULE FOR LASER WHEEL ALIGNMENT SYSTEM
James L. Woodruff, 1790 Skyline Blvd., Reno, Nev. 89509
Filed Feb. 17, 1982, Ser. No. 349,523
Term of patent 14 years
U.S. Cl. D10—46



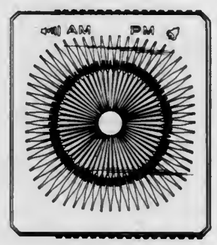
278,984
PORTABLE CIRCUIT TESTER
Joseph M. Roberts, Sr., P.O. Box 2383, Alameda, Calif. 94501
Filed Jul. 16, 1982, Ser. No. 398,819
Term of patent 14 years
U.S. Cl. D10—78



278,985
EXTENDIBLE AUTOMOTIVE ASHTRAY REFLECTOR
Judith A. Whitaker, 5563 Wedge La., Wescosville, Pa. 18106
Filed Jul. 1, 1982, Ser. No. 394,268
Term of patent 14 years
U.S. Cl. D10—111



278,986
ELECTRO-OPTIC DISPLAY FOR A TIMEPIECE
John T. Houlihan, Watertown, Conn., and Leonard M. Dorfman, Campbell, Calif., assignors to Timex Corporation, Waterbury, Conn.
Filed Mar. 30, 1983, Ser. No. 480,630
Term of patent 14 years
U.S. Cl. D10—125



278,987
EARRING NUT
Wilhelm Zauderer, New York, N.Y., assignor to William Findings Corporation, New York, N.Y.
Filed Apr. 22, 1983, Ser. No. 487,889
Term of patent 14 years
U.S. Cl. D11—88

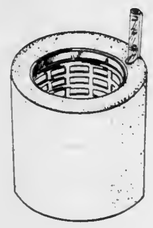




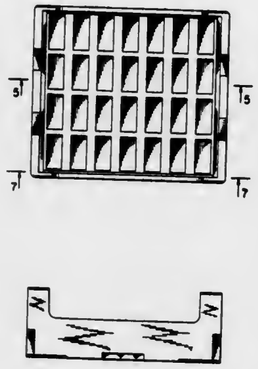
278,988
CHRISTMAS TREE ORNAMENT
Willa J. Steiner, 10311 Benson, Overland Park, Kans. 66212
Filed Aug. 15, 1983, Ser. No. 522,994
Term of patent 14 years
U.S. Cl. D11—125



278,989
RECEPTACLE FOR HYDROPONICS
Gerhard Baumann, Quellenrain 32, Ittigen, Switzerland (CH-3063)
Filed Dec. 9, 1983, Ser. No. 559,648
Claims priority, application Hague, Jun. 14, 1983, DM/002 591
Term of patent 14 years
U.S. Cl. D11—152



278,990
BOX FOR CULTIVATING VEGETABLES OR THE LIKE
Toshiro Kaneko, 20-3, Nakashinden, Yaizu-shi, Shizuoka-ken, Japan
Filed Nov. 29, 1983, Ser. No. 556,079
Term of patent 14 years
U.S. Cl. D11—155



278,991
FIGURINE OF A GOOSE
Jesus A. C. Santa-Eulalia, and Javier B. C. Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jun. 17, 1982, Ser. No. 389,548
Term of patent 14 years
U.S. Cl. D11—162



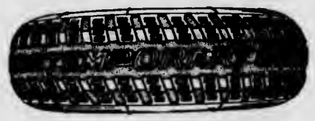
278,992
AUTOMOBILE
Werner Breitschwerdt, Stuttgart; Friedrich van Winsen, Kirchheim, and Bruno Sacco, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 13, 1982, Ser. No. 367,998
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 5376
Term of patent 14 years
U.S. Cl. D12—92



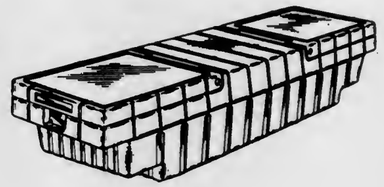
278,993
BABY CARRIAGE
Kenzou Kassai, Osaka, Japan
Division of Ser. No. 171,996, Jul. 24, 1980, Pat. No. D. 269,421.
This application Sep. 22, 1982, Ser. No. 421,029
Claims priority, application Japan, Jan. 29, 1980, 55-2658; Feb. 13, 1980, 55-5197; Feb. 13, 1980, 55-5199
Term of patent 14 years
U.S. Cl. D12—129



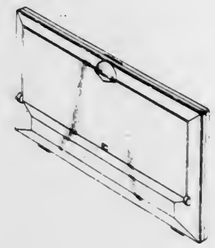
278,994
VEHICLE TIRE
Hideaki Nishio, Saitama, and Yuji Tateo, Tokyo, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Sep. 8, 1983, Ser. No. 530,438
Claims priority, application Japan, Mar. 11, 1983, 58-9746
Term of patent 14 years
U.S. Cl. D12—137



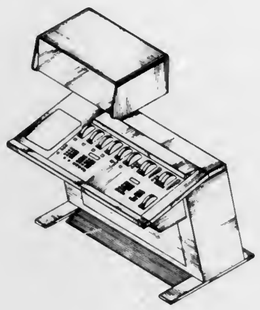
278,995
TRUCK TOOL BOX
John E. Waters, Waco, Tex., assignor to Advanced Plastics, Inc., Jonesboro, Ark.
Filed Jul. 25, 1983, Ser. No. 516,776
Term of patent 14 years
U.S. Cl. D12—157



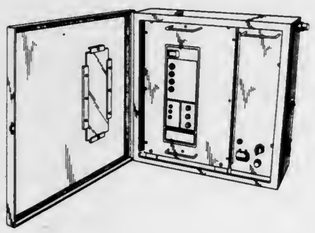
278,996
VANITY MIRROR WITH HINGED COVER FOR ATTACHMENT TO THE SUN VISOR OF AN AUTOMOBILE
Kwok K. Cheung, Kwai Chung, Hong Kong, assignor to Wai Hing Industrial Manufacturing Factory, Kwai Chung, Hong Kong
Filed Nov. 29, 1982, Ser. No. 445,172
Claims priority, application United Kingdom, May 28, 1982, 1006974
Term of patent 14 years
U.S. Cl. D12—191



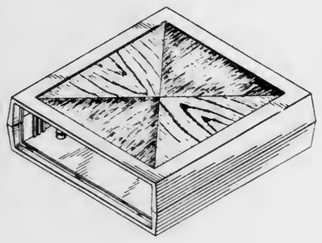
278,997
LIGHTING SYSTEM CONTROL CONSOLE
Denis G. Wolfe, Agoura; Thomas S. Young, Los Angeles, both of Calif.; Arnold S. Wasserman, Pittsford, N.Y., and Edward Lawing, Columbus, Ohio, assignors to Colortran, Inc., Burbank, Calif.
Filed Oct. 1, 1982, Ser. No. 432,268
Term of patent 14 years
U.S. Cl. D13—12



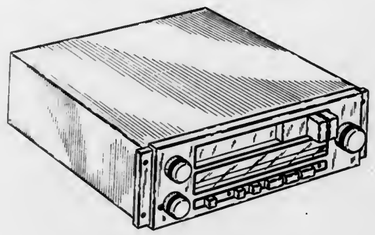
278,998
PUMP MONITOR
Paul D. Eckstedt, Campbell, and Robert W. Caton, Morgan Hill, both of Calif., assignors to FMC Corporation, Chicago, Ill.
Filed Mar. 14, 1983, Ser. No. 474,953
Term of patent 14 years
U.S. Cl. D13—35



278,999
CIRCUITRY COMPONENT CASING
Joseph Zimmerman, 21401 SW. 127 Ave., Miami, Fla. 33177
Filed Mar. 14, 1983, Ser. No. 475,092
Term of patent 14 years
U.S. Cl. D13—40



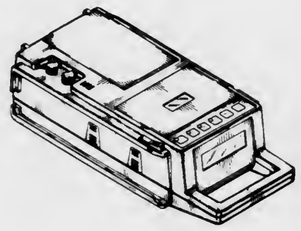
279,000
COMBINED AUTOMOBILE TAPE PLAYER AND RADIO RECEIVER
Karl A. Sarges, Wetzlar, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 20, 1982, Ser. No. 451,520
Claims priority, application Benelux, Jun. 29, 1982, 56968-01
Term of patent 14 years
U.S. Cl. D14—5



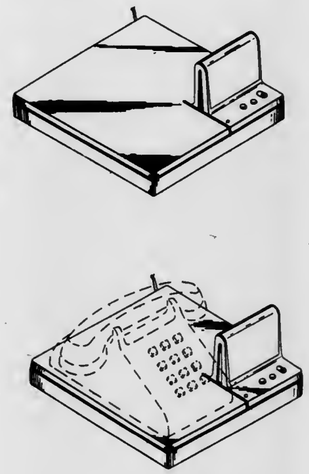
279,001
PORTABLE COMBINED MICRO-CASSETTE TAPE RECORDER, RADIO AND CALCULATOR
Minoru Nagasawa, Tokyo, Japan, assignor to Nippon Chemi-Con Corporation, Tokyo, Japan
Filed Feb. 28, 1983, Ser. No. 470,741
Claims priority, application Japan, Sep. 3, 1982, 57-40205
Term of patent 14 years
U.S. Cl. D14—5



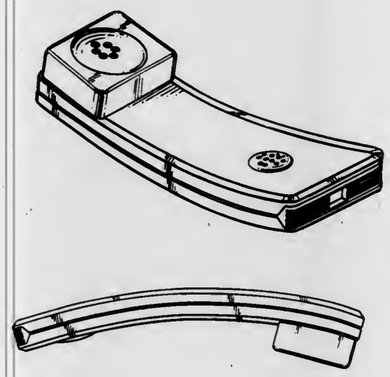
279,002
ECG AND VOICE CASSETTE RECORDER
Lawrence L. Labuda, Issaquah; Gregory A. Linstad, Woodinville; Paul W. Jones, Issaquah, and John C. Daynes, Monroe, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Filed Jul. 19, 1982, Ser. No. 399,776
Term of patent 14 years
U.S. Cl. D14—6



279,003
CODE ATTACHMENT HOUSING FOR A TELEPHONE STAND
Morison Cousins, New York, N.Y., assignor to International Mobile Machines Corp., Bala Cynwyd, Pa.
Filed Jul. 9, 1982, Ser. No. 396,874
Term of patent 14 years
U.S. Cl. D14—60



279,004
HOUSING FOR A TELECOMMUNICATIONS HANDSET
Desmond J. Ryan, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 18, 1982, Ser. No. 442,596
Claims priority, application Canada, Oct. 20, 1982, 20-10-82-1
Term of patent 14 years
U.S. Cl. D14—63

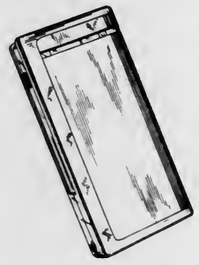


279,005
HOUSING FOR A TELEPHONE HANDSET OR SIMILAR ARTICLE
Donald M. Genaro, Haworth; Richard M. Joffe, Palisades Park, both of N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Aug. 29, 1984, Ser. No. 645,184
Term of patent 14 years
U.S. Cl. D14—63

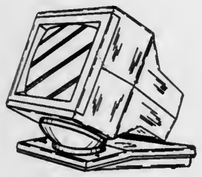




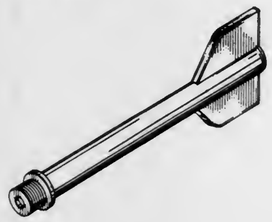
279,006
PORTABLE TELEVISION RECEIVER
Naoto Fukasawa; Susumu Suzuki, and Noritaka Uchihori, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Nov. 10, 1982, Ser. No. 440,693
Claims priority, application Japan, May 11, 1982, 57-20154
Term of patent 14 years
U.S. Cl. D14—77



279,007
ADJUSTABLE COMPUTER DISPLAY AND BASE
Edward H. Empson, San Jose; Robert D. Brunner, Oakland, and Gerard A. Fubershaw, Mountain View, all of Calif., assignors to Fortune Systems Corporation, Redwood City, Calif.
Filed Jun. 1, 1982, Ser. No. 383,747
Term of patent 14 years
U.S. Cl. D14—113



279,008
HOUSING FOR A WAVEGUIDE FEED FOR A PARABOLIC DISH ANTENNA
Robert G. Arcieri, 5919 E. Caron Cir., Scottsdale, Ariz. 85253
Filed Sep. 12, 1983, Ser. No. 531,205
Term of patent 14 years
U.S. Cl. D14—90



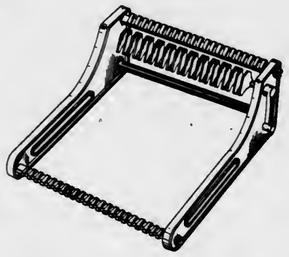
279,009
PERSONAL COMPUTER
Kunio Akiyama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 15, 1982, Ser. No. 434,591
Claims priority, application Japan, May 21, 1982, 57-22498
Term of patent 14 years
U.S. Cl. D14—106



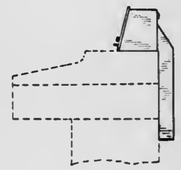
279,010
VIDEO MONITOR
Vittorio Ceradelli, Cascinette D'Ivrea, Italy; Donald M. Genaro, Haworth, and Thomas J. Kelly, Colts Neck, both of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.
Filed Jun. 22, 1984, Ser. No. 623,828
Term of patent 14 years
U.S. Cl. D14—113

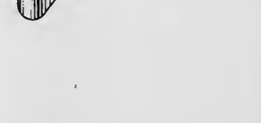


279,011
LOOM
Merry S. Riehm, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,657
Term of patent 14 years
U.S. Cl. D15—66

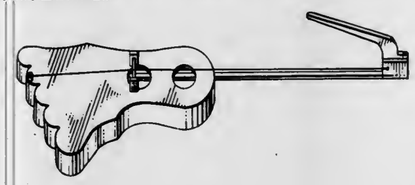


279,012
ORGAN PLAYER ATTACHMENT
Lee Von Gunten, 1515 Crabtree, Arlington Heights, Ill. 60004
Filed Oct. 2, 1978, Ser. No. 947,935
Term of patent 14 years
U.S. Cl. D17—9





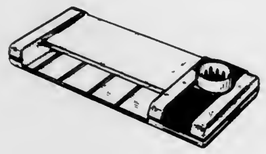
279,013
ORNAMENTAL DESIGN FOR A GUITAR OR SIMILAR INSTRUMENT
Harry A. Sowle, P.O. Box 633, Carrabelle, Fla. 32322
Filed Mar. 18, 1983, Ser. No. 476,545
Term of patent 14 years
U.S. Cl. D17—18



279,014
FONT FOR MUSICAL SYMBOLS
Richard A. Brodie, 2605 Guinevere Dr., Oceanside, Calif. 92054
Filed Aug. 22, 1983, Ser. No. 525,025
Term of patent 14 years
U.S. Cl. D18—32

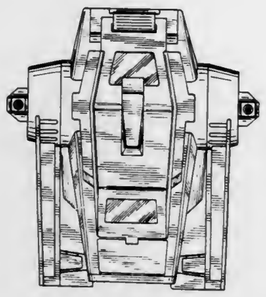


279,015
COMBINED HOLDER FOR WRITING INSTRUMENTS AND NOTE PAPER
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed May 4, 1983, Ser. No. 491,456
Claims priority, application Hague, Jan. 10, 1983, DM/002 125
Term of patent 14 years
U.S. Cl. D19—78

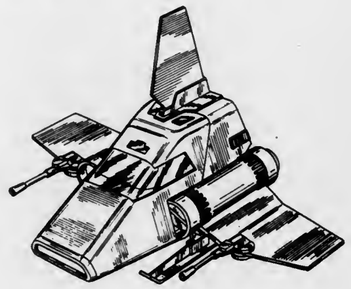




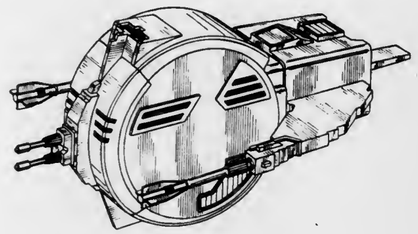
279,016
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.
Filed Mar. 25, 1983, Ser. No. 478,967
Term of patent 14 years
U.S. Cl. D21—87



279,017
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.
Filed Mar. 25, 1983, Ser. No. 478,968
Term of patent 14 years
U.S. Cl. D21—87



279,018
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.
Filed Dec. 19, 1983, Ser. No. 562,791
Term of patent 14 years
U.S. Cl. D21—87



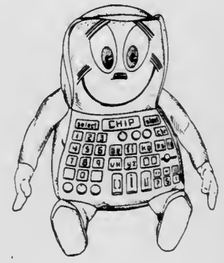
279,019
PLAYHOUSE
Loris Kyle, 697 Arlington Ave., Berkeley, Calif. 94707
Filed Nov. 22, 1982, Ser. No. 443,348
Term of patent 14 years
U.S. Cl. D21—114



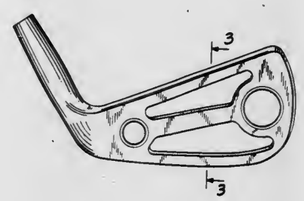
279,020
CLOWN DOLL
Don M. Jennings, P.O. Box 14059, Arlington, Tex. 76013
Filed Dec. 27, 1982, Ser. No. 453,459
Term of patent 14 years
U.S. Cl. D21—173



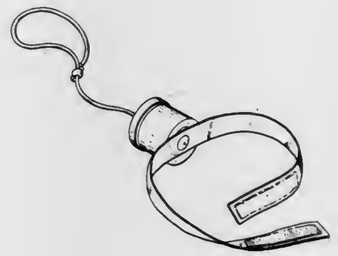
279,021
STUFFED DOLL
Samuel M. Cornell, N. Hollywood, Calif., and Robert B. Goldstein, 6950 Newgate Rd., Canoga Park, Calif. 91307, assignors to Robert B. Goldstein, Canoga Park, Calif.
Filed Dec. 7, 1982, Ser. No. 447,705
Term of patent 14 years
U.S. Cl. D21—184



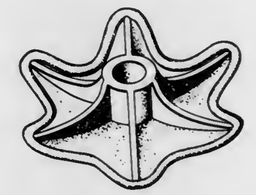
279,022
GOLF CLUB HEAD DESIGN
John A. Worster, Solano Beach; Herbert W. Lyon, Escondido; Charles D. Rambo, Escondido; Arthur F. Santy, Escondido, all of Calif., and M. Michael Foegen, New Seabury, Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Mar. 23, 1983, Ser. No. 478,143
Term of patent 14 years
U.S. Cl. D21—220



279,023
SNOW SKI TEATHER
William H. Wessels, Rt. 5, Caldwell, Id. 83605
Filed Jul. 16, 1982, Ser. No. 398,943
Term of patent 14 years
U.S. Cl. D21—230



279,024
SNOW PLATE
Peter Nordgren, and Hans Sjöholm, both of Stockholm, Sweden, assignors to Formelprodukter, Lulea, Sweden
Filed Mar. 26, 1982, Ser. No. 362,312
Claims priority, application Sweden, Oct. 5, 1981, 81-2189
Term of patent 14 years
U.S. Cl. D21—230



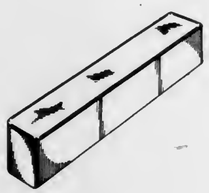
279,025
SNOW PLATE
Peter Nordgren, and Hans Sjöholm, both of Stockholm, Sweden, assignors to Formelprodukter, Lulea, Sweden
Filed Mar. 26, 1982, Ser. No. 362,314
Claims priority, application Sweden, Oct. 5, 1981, 81-2187
Term of patent 14 years
U.S. Cl. D21—230



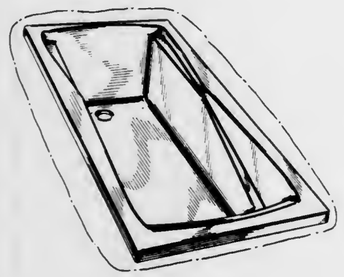
279,026
SKI POLE GRIP
Peter Nordgren, and Hans Sjöholm, both of Stockholm, Sweden, assignors to Formelprodukter, Lulea, Sweden
Filed Mar. 26, 1982, Ser. No. 362,315
Claims priority, application Sweden, Oct. 5, 1981, 81-2185
Term of patent 14 years
U.S. Cl. D21—230



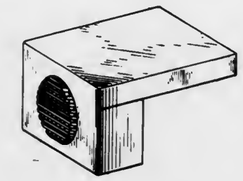
279,027
MAGNETIC FLUID CONDITIONER
Gale M. Weisenbarger, 217 E. Israel St., Eaton, Ohio 45320, and John C. Moran, 3124 Lake Ave., Fort Wayne, Ind. 46805
Filed Feb. 2, 1984, Ser. No. 576,358
Term of patent 14 years
U.S. Cl. D23—3



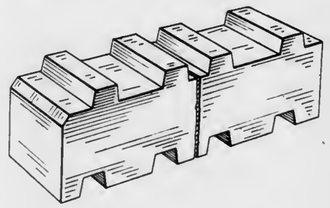
279,028
BATHTUB OR THE LIKE
Herbert V. Kohler, Jr., Kohler, and Donald W. Doman, Janesville, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jun. 22, 1983, Ser. No. 506,654
Term of patent 14 years
U.S. Cl. D23—55



279,029
BLOWER UNIT FOR PORTABLE HEATER
Wayne F. Sieverding, Marshalltown, Iowa, assignor to Western Manufacturing Corporation, Marshalltown, Iowa
Filed Sep. 30, 1982, Ser. No. 429,304
Term of patent 14 years
U.S. Cl. D23—155



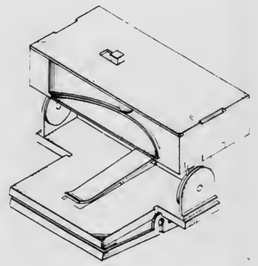
279,030
HEADER FOR CRIBBING
Angelo Risi, and Antonio Risi, both of P.O. Box 370, Gormley, Ontario, Canada L0H 1G0
Filed Sep. 8, 1982, Ser. No. 398,290
Claims priority, application Canada, Jun. 24, 1982, 24-06-82-2
Term of patent 14 years
U.S. Cl. D25—80



279,031
FLUORESCENT LAMP
Masumi Suzuki, Funabashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 29, 1982, Ser. No. 445,040
Term of patent 14 years
U.S. Cl. D26—3



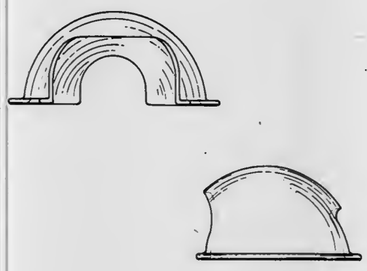
279,032
BOOKLIGHT
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Sep. 30, 1982, Ser. No. 431,199
Term of patent 14 years
U.S. Cl. D26—60



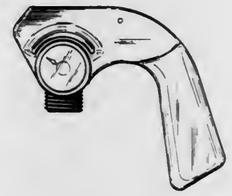
279,033
HANDLE FOR A CURLING IRON OR STYLER
Benjamin H. Stansbury, Jr., Beverly Hills, Calif., assignor to Redken Laboratories, Inc., Canoga Park, Calif.
Filed Jul. 30, 1982, Ser. No. 403,552
Term of patent 14 years
U.S. Cl. D28—35



279,034
MANICURIST'S FINGER NAIL CLIPPING SHIELD
Mark R. Putney, 5898 Fishburne Dr., San Jose, Calif. 95123
Filed May 6, 1983, Ser. No. 492,353
Term of patent 14 years
U.S. Cl. D28—56



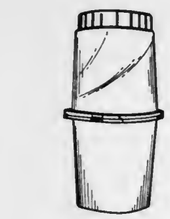
279,035
FIRE EXTINGUISHER HEAD ASSEMBLY
Ronald E. Braswell, P.O. Box 110008, Arlington, Tex. 76011
Filed Nov. 1, 1982, Ser. No. 438,022
Term of patent 14 years
U.S. Cl. D29—5

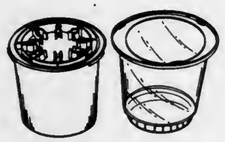


279,036
STIRRUP STRAP FOR MOUNTING A HORSE
Joseph B. Ludwig, Raytown, Mo., assignor to Gary D. Fletcher, Lee's Summit, Mo., a part interest
Filed Dec. 29, 1982, Ser. No. 454,437
Term of patent 14 years
U.S. Cl. D30—30

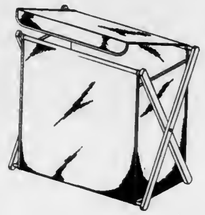


279,037
CONTAINER FOR STORING BRUSHES OR THE LIKE
Jacob P. Schuler, Kerkpad Noordzijde 43, AH Soest, Netherlands
Filed Sep. 30, 1982, Ser. No. 430,131
Claims priority, application Benelux, Jan. 4, 1982, 56739-00
Term of patent 14 years
U.S. Cl. D32—35

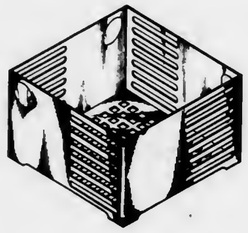




279,038
CLOTHES HAMPER
Cloud H. Thompson, Jr., Burlington, Iowa, assignor to Burlington Basket Company, Burlington, Iowa
Filed Dec. 27, 1983, Ser. No. 565,725
Term of patent 14 years
U.S. Cl. D32—37



279,039
STORAGE CONTAINER FOR SPORTS ACCESSORIES
Eddie R. Walden, 2601 Tiller, Pt. Hueneme, Calif. 93401
Filed Sep. 24, 1982, Ser. No. 422,896
Term of patent 14 years
U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.N.F. Industrie: *See—*
Vacher, Pierre, 4,519,329, Cl. 105-218.00A.
AB Grindex: *See—*
Bjorklund, Bengt, 4,519,615, Cl. 277-92.000.
AB Hedemora Verkstalder: *See—*
Ragnegard, Samuel; Strid, Kent; and Sundkvist, Goran, 4,519,910, Cl. 210-327.000.
AB Volvo: *See—*
Schlicker, Heinrich A., 4,519,483, Cl. 192-4.00A.
Abbondanti, Alberto, to Westinghouse Electric Corp. Method and apparatus for sampling output AC currents in a voltage-fed inverter power supply. 4,520,298, Cl. 318-490.000.
Abbott Laboratories: *See—*
Dawe, Garfield A., 4,519,792, Cl. 604-152.000.
Abdeev, Jury M.: *See—*
Sychev, Anatoly P.; Sannikov, Jury I.; Grinin, Jury A.; Polyakov, Ivan P.; and Abdeev, Jury M., 4,519,836, Cl. 75-25.000.
Abdulin, Fen Z.: *See—*
Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S., 4,519,437, Cl. 164-284.000.
Abe, Kazunobu; and Nakatsuji, Tadao, to Sakai Chemical Industry Co., Ltd. Method for producing a catalytic structure for the reduction of nitrogen oxides. 4,520,124, Cl. 502-159.000.
Abe, Masahiro: *See—*
Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,520,041, Cl. 427-88.000.
Abe, Ryozo: *See—*
Sugiyama, Hiroyuki; Abe, Ryozo; Yusa, Yasuhiro; Sakurai, Masaki; and Yoshihara, Kenji, 4,520,473, Cl. 369-126.000.
Abe, Seimei: *See—*
Yokoe, Sadao; Abe, Seimei; Wakata, Shoichi; Endou, Satosi; and Onozawa, Kazuyoshi, 4,519,549, Cl. 239-703.000.
Abe, Tadafumi: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichirou; Hayashi, Koji; and Kon, Shigeki, 4,519,862, Cl. 156-219.000.
Abe, Takahiko, to Tokyo Shibaura Denki Kabushiki Kaisha. System for correcting shading or non-uniformity in a photosensitive element array. 4,520,395, Cl. 358-163.000.
Abe, Yoshio: *See—*
Hoshi, Hideaki; Okumura, Jun; Naito, Takayuki; Abe, Yoshio; and Aburaki, Shimpei, 4,520,022, Cl. 514-200.000.
Abe, Yuji: *See—*
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., to Allied Corporation. Yarn texturing by moving cavity jet with fluid removal. 4,519,116, Cl. 28-257.000.
Abet Group, The: *See—*
Beckman, John B.; and Blickstein, Martin J., 4,519,751, Cl. 417-322.000.
Abkowitz, Martin A.: *See—*
Badesha, Santokh S.; and Abkowitz, Martin A., 4,520,010, Cl. 427-83.000.
Abouzahr, Saad M.: *See—*
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,519,965, Cl. 264-51.000.
Abraham, Nedumparambil A.; and Demerson, Christopher A., to American Home Products Corporation. Resolution of (±)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid using cinchonine. 4,520,203, Cl. 548-432.000.
Abramowitz, Walter: *See—*
Wachspress, Melvin H.; and Abramowitz, Walter, 4,520,363, Cl. 343-828.000.
Abrams, Charles F. Mold. 4,519,765, Cl. 425-263.000.
Aburaki, Shimpei: *See—*
Hoshi, Hideaki; Okumura, Jun; Naito, Takayuki; Abe, Yoshio; and Aburaki, Shimpei, 4,520,022, Cl. 514-200.000.
Acarnley, Paul P.: *See—*
Hill, Roland J.; and Acarnley, Paul P., 4,520,302, Cl. 318-696.000.
Acton, Laurence L.: *See—*
Griggs, Michael; Acton, Laurence L.; and Hall, Gordon D., 4,520,265, Cl. 250-338.000.
Adachi, Shoichi, to N.C.A. Co., Ltd. Apparatus for unwinding fabric from a roll. 4,519,595, Cl. 270-31.000.
Adams, Jerry L.; Metcalf, Brian W.; and Lippert, Bruce J., to Merrell Dow Pharmaceuticals Inc. α-Aminobutyric acid transaminase inhibitors. 4,520,028, Cl. 514-447.000.
Adaniya, Takeshi: *See—*
Hara, Tomihiro; Adaniya, Takeshi; and Tonouchi, Akira, 4,519,878, Cl. 204-28.000.
Adler, Thomas A.: *See—*
Jackson, John E.; Adler, Thomas A.; Quets, Jean M.; and Tucker, Robert C., Jr., 4,519,840, Cl. 106-1.050.
Adomis, Peter P., Jr.; and Martin, Millard J., to Caterpillar Tractor Co. Filled piston with central oil tube. 4,519,300, Cl. 92-158.000.
Advanced Semiconductor Materials America, Inc.: *See—*
Allred, Laurence L., Jr.; and Lange, Bradley N., 4,520,313, Cl. 324-158.00R.
Advanced Semiconductor Materials International, N.V.: *See—*
Hartemink, Gerrit A., 4,519,246, Cl. 73-204.000.
Aerco International, Inc.: *See—*
Cohen, Kenneth W., 4,519,422, Cl. 137-630.140.
AGA AB: *See—*
Brull, John J.; and Carnahan, Michael T., 4,519,812, Cl. 51-422.000.
Agbay, Albert J.; and Thomas, Ralph H., Sr., to Robert Linkletter Associates, Inc. Tamper resistant and tamper evident closures. 4,519,514, Cl. 215-225.000.
Agfa-Gevaert Aktiengesellschaft: *See—*
Kluge, Reimund; and Werner, Eberhard, 4,520,497, Cl. 378-166.000.
AGFA-Gevaert N. V.: *See—*
Bruyndonckx, Jan J.; and Bosschaerts, Jacobus H., 4,519,696, Cl. 355-14.00D.
Agudelo, Maria M.: *See—*
Morales, Alfredo L.; Galiasso, Roberto E.; Agudelo, Maria M.; Salazar, Jose A.; and Carrasquel, Angel R., 4,520,128, Cl. 502-210.000.
Ahmad, Shamim; and Schaefer, Ronald J., to B. F. Goodrich Company, The. Energy saving tire with silica-rich tread. 4,519,430, Cl. 152-209.00R.
Ahrens, Paul R.: *See—*
Montlick, Terry; Skoge, Klaus; Vetter, David C.; and Ahrens, Paul R., 4,520,499, Cl. 381-36.000.
Aida, Hideaki: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,274, Cl. 74-866.000.
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,275, Cl. 74-866.000.
Aida, Takahiro: *See—*
Kawamoto, Keiji; Kato, Keigo; and Aida, Takahiro, 4,520,126, Cl. 502-184.000.
Aigo, Seiichiro. Process for washing and drying a semiconductor element. 4,519,846, Cl. 134-15.000.
Air Dry Corporation: *See—*
Leighton, Francis; and Trebes, Fred W., 4,519,580, Cl. 251-223.000.
Air Products and Chemicals, Inc.: *See—*
Bernhard, Dennis P.; Rowles, Howard C.; and Teichman, Robert L., 4,519,825, Cl. 62-28.000.
Klee, David J., 4,519,171, Cl. 51-419.000.
Aisin Keiki Kabushiki Kaisha: *See—*
Kitamura, Kazuhiko, 4,519,369, Cl. 123-337.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Hayashi, Masaharu; Tsuchikawa, Syunzo; and Itakura, Masato, 4,519,343, Cl. 123-41.490.
Minakuchi, Fumio, 4,519,333, Cl. 112-311.000.
Nomura, Isshi, 4,519,367, Cl. 123-440.000.
Terada, Takami; Nawa, Hiroshi; and Kawamura, Reiki, 4,519,650, Cl. 297-452.000.
Aizawa, Hiroshi: *See—*
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,520,340, Cl. 338-195.000.
Ajima, Takashi: *See—*
Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,520,041, Cl. 427-88.000.
Ajiro, Yutaka; and Kozuka, Michihiro, to Tomy Kogyo Company, Incorporated. Toy having two bodies capable of connecting to a third body. 4,519,788, Cl. 446-356.000.
Akagi, Motoo: *See—*
Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, 4,520,094, Cl. 430-144.000.
Akashi, Goro: *See—*
Kitamoto, Tatsuji; and Akashi, Goro, 4,520,069, Cl. 428-328.000.
Akatsu, Yohsuke: *See—*
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,519,627, Cl. 280-701.000.
Akazawa, Michihiro; and Kawasaki, Nobuhiro, to Toyo Soda Manufacturing Co., Ltd. Electrolytic cell. 4,519,888, Cl. 204-252.000.

Akhtyamov, Yakub A. Method and apparatus for bloating granular material. 4,519,777, Cl. 432-13.000.

Akimura, Yoshitaka; Mifune, Hiroyuki; and Nakamura, Koki, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,520,099, Cl. 430-613.000.

Akita, Shigeyuki: *See—*
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, 4,520,359, Cl. 340-870.190.

Akiyama, Kazunori: *See—*
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.

Akiyama, Toshio: *See—*
Seki, Yasutomo; Akiyama, Toshio; Nakabayashi, Norio; and Iizuka, Yutaka, 4,519,686, Cl. 354-200.000.

Akkerman, Neil H.; and Dewey, Daniel O., to Ava International Corporation. Valves and valve actuators. 4,519,575, Cl. 251-58.000.

Akutagawa, Susumu: *See—*
Mitsuhashi, Shigeru; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,520,212, Cl. 568-875.000.

AKZO nv: *See—*
De Jong, Jan I., 4,519,897, Cl. 208-74.000.

Akzona Incorporated: *See—*
Castro, Anthony J., 4,519,909, Cl. 210-500.200.

Aldinger, Fritz; Keilberth, Richard; and Werdecker, Waltraud, to W. C. Heraeus GmbH. Low-contamination AlN crucible for monocrystal pulling and method. 4,519,966, Cl. 264-56.000.

Alfa-Laval Separation A/S: *See—*
Ludvigsen, Erik, 4,519,496, Cl. 198-676.000.

Alfa Romeo Auto S.p.A.: *See—*
Bernardoni, Luigi; and D'Angelo, Domenico, 4,519,363, Cl. 123-432.000.

Alfano, David L.: *See—*
Hardy, James A.; and Alfano, David L., 4,519,373, Cl. 123-559.000.

Alfonsi, Marguerite. Composition of matter for improving hair growth. 4,520,012, Cl. 424-95.000.

Algorex, Inc.: *See—*
Kitch, Paul E.; Crochetiere, Raymond H.; Gudmundson, Gunnar G.; and Hadank, Walter R., 4,519,688, Cl. 354-297.000.

Alimbau Marques, Salvador; and Grasselli, Giorgio, to Andral Corporation. Detachable workbench top. 4,519,476, Cl. 182-28.000.

Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A. Process for purifying gases from hydrogen sulphide. 4,519,992, Cl. 423-230.000.

Allan, David E., to Exxon Research & Engineering Co. Low severity delayed coking. 4,519,898, Cl. 208-131.000.

Allee, Frank O.: *See—*
Oppenhuisen, Fred H.; and Allee, Frank O., 4,519,192, Cl. 56-298.000.

Allied Corporation: *See—*
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., 4,519,116, Cl. 28-257.000.
Brush, Robert W., Sr.; and Shepler, Eric F., 4,519,661, Cl. 339-89.00M.
Fulmer, Keith H., 4,519,295, Cl. 91-376.00R.
Gualtieri, Devlin M.; and Tumelty, Paul F., 4,520,460, Cl. 365-33.000.
Johnson, Edwin A.; and Leung, Chun K., 4,520,449, Cl. 364-559.000.
Ott, William E.; and Krieg, Edwin A., 4,519,482, Cl. 188-343.000.
Reddy, Kammalathinna V.; and Berry, Michael J., 4,519,882, Cl. 204-158.00R.
Williams, Robert L.; and Marks, Christopher, 4,519,666, Cl. 339-177.00R.

Allisio, Giovanni. Self-propelled unit for propelling a person wearing snow skis along a rising snow path. 4,519,470, Cl. 180-180.000.

Allo, Vincent F.; and Stafford, Donald C., to Chicago Bridge & Iron Company. Falling film heat exchanger with member to distribute liquid on external surfaces of tubes. 4,519,448, Cl. 165-118.000.

Allred, Laurence L., Jr.; and Lange, Bradley N., to Advanced Semiconductor Materials America, Inc. Semiconductor testing and apparatus therefor. 4,520,313, Cl. 324-158.00R.

Alphacrete Construction Linings (UK) Limited: *See—*
Russell, Derek V., 4,519,177, Cl. 52-745.000.

Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., to AMP Incorporated. Solderless mounted filtered connector. 4,519,665, Cl. 339-147.00R.

Altman, Sidney; and Kasha, Dan. Passive personal alarm device. 4,520,351, Cl. 340-574.000.

Aluisi, Alan L. Drum baffle system. 4,519,288, Cl. 84-411.00M.

Aluminum Company of America: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.
Pearson, Alan; and The, Paul J., 4,519,989, Cl. 423-121.000.

ALZA Corporation: *See—*
Edgren, David, 4,519,801, Cl. 604-892.000.

Alzeta Corp.: *See—*
Kesselring, John P.; Kendall, Robert M.; and Krill, Wayne V., 4,519,770, Cl. 431-7.000.

Am-Air Limited Partnership: *See—*
McAllister, Don M., 4,519,357, Cl. 123-539.000.

Amada Company, Limited: *See—*
Tsutsumi, Akira, 4,520,261, Cl. 250-203.00R.

Amann, Ulrich: *See—*
Feirer, Egon; Amann, Ulrich; and Kuppinger, Gunter, 4,519,309, Cl. 100-229.00R.

Amano, Masahiro; Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, to Mitsubishi Paper Mills, Ltd. Process for producing fibrous sheet. 4,519,873, Cl. 162-138.000.

Amano, Yoshiaki: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.

Ambler, Kenneth: *See—*
Denton, Anthony D., 4,520,262, Cl. 250-221.000.

Amerace Corporation: *See—*
Luzzi, Glenn J.; and Kominiak, Andrew A., 4,520,229, Cl. 174-73.00R.

American Bank Note Company: *See—*
Gallagher, Terence J.; and LaCapria, Anthony, 4,519,155, Cl. 40-625.000.

American Cyanamid Co.: *See—*
Blank, Werner J.; and Parekh, Girish G., 4,520,167, Cl. 525-131.000.

American Hoechst Corporation: *See—*
Neumann, Eberhard H., 4,519,975, Cl. 264-526.000.

American Home Products Corporation: *See—*
Abraham, Nedumparambil A.; and Demerson, Christopher A., 4,520,203, Cl. 548-432.000.
Buzby, George C., Jr., 4,520,205, Cl. 548-491.000.
Wei, Peter H. L., 4,520,196, Cl. 544-285.000.

American Home Products Corporation (Del.): *See—*
Epstein, Paul; Ballas, John S., Jr.; Mandler, John J., Jr.; and Van Horn, Joseph M., 4,519,396, Cl. 128-698.000.

American Lecithin Company: *See—*
Kronstein, Max; and Eichberg, Joseph, 4,520,153, Cl. 524-145.000.

American Newspaper Publishers Association: *See—*
Moynihan, John T., 4,519,841, Cl. 106-27.000.

American Standard Inc.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.
Schoeff, Terry G.; and Hemmert, Raymond A., deceased, 4,519,376, Cl. 126-121.000.

Ameron Inc.: *See—*
Folkers, Joie L., 4,519,637, Cl. 285-113.000.

Amgen: *See—*
Ensley, Burt D., Jr., 4,520,103, Cl. 435-121.000.

Amos, Charles W., to Owens-Illinois, Inc. Tamper indicating package. 4,519,516, Cl. 215-252.000.

AMP Incorporated: *See—*
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,519,665, Cl. 339-147.00R.
Pansanel, Jean C., 4,519,133, Cl. 29-863.000.

Ampex Corporation: *See—*
Baker, Jay S., 4,520,276, Cl. 307-228.000.
Chow, Yechow T., 4,520,453, Cl. 364-900.000.
Latimer, Stanley M.; and Orton, Gregory A., 4,520,414, Cl. 360-125.000.

Anaya, Jose R., to Industrial de Valvulas, S.A. de C.V. Mechanically balanced tapered plug valve. 4,519,414, Cl. 137-246.220.

Andersen, Jorgen, to Radiometer A/S. Syringe for collecting a liquid sample. 4,519,402, Cl. 128-765.000.

Anderson, Herbert R., Jr.; Sachdev, Harbans S.; and Sachdev, Krishna G., to International Business Machines Corporation. Use of depolymerizable polymers in the fabrication of lift-off structure for multilevel metal processes. 4,519,872, Cl. 156-643.000.

Anderson, John F., Jr.: *See—*
Long, Delmar D.; and Anderson, John F., Jr., 4,520,038, Cl. 427-26.000.

Anderson, Stephen P., to National Starch and Chemical Corporation. Metal-filled polyimide/polyepoxide blends of improved electrical conductivity. 4,519,941, Cl. 252-514.000.

Ando, Giichi: *See—*
Nakanishi, Yasuo; Sakamoto, Kazunori; Ando, Giichi; and Watanabe, Teruoki, 4,519,854, Cl. 148-127.000.

Ando, Hiroshi; and Okumura, Takeo, to Kao Soap Co., Ltd. Hair setting lotion. 4,520,008, Cl. 424-47.000.

Andral Corporation: *See—*
Alimbau Marques, Salvador; and Grasselli, Giorgio, 4,519,476, Cl. 182-28.000.

Andrews, Robert W.; Himpsl, Francis L.; Horvath, Eugene B.; and Speronello, Barry K., to Engelhard Corporation. Cracking catalyst and manufacture thereof. 4,520,119, Cl. 502-67.000.

Anfusio, Mario. Reciprocating internal combustion engine with multiple-valve cylinders. 4,519,365, Cl. 123-432.000.

Angevine, Philip J.; Oleck, Stephen M.; Wilson, Robert C., Jr.; and Mizrahi, Sadi, to Mobil Oil Corporation. Zeolite containing catalyst support for denitrogenation of oil feedstocks. 4,519,900, Cl. 208-254.00H.

Anritsu Electric Company Limited: *See—*
Nakatsugawa, Kenji; and Itaya, Hiroshi, 4,520,321, Cl. 328-133.000.

Ansel, David S.: *See—*
Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., 4,520,176, Cl. 524-598.000.

Antonov, Vladimir A.: *See—*
Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S., 4,519,437, Cl. 164-284.000.

Aoki, Junji: *See—*
Uematsu, Hiroaki; Aoki, Junji; and Oku, Narihiro, 4,519,890, Cl. 204-409.000.

Aoyagi, Hayao: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for forming metallization structure having flat surface on semiconductor substrate. 4,520,041, Cl. 427-88.000.

Appleton Papers Inc.: *See—*
Glanz, Kenneth D.; and Hoover, Troy E., 4,520,379, Cl. 346-214.000.

Applied Power Inc.: *See—*
Valentin, Ingo, 4,519,752, Cl. 417-298.000.

Aqua-Chem, Inc.: *See—*
Parish, Mark G.; and Rulseh, Roy M., 4,519,773, Cl. 431-176.000.

Arai, Kazuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a MESFET by controlling implanted peak surface dopants. 4,519,127, Cl. 29-571.000.

Arai, Kouji: *See—*
Sasaki, Akihiko; Arai, Kouji; Takashi, Takano; and Namiki, Yasuomi, 4,520,405, Cl. 360-10.300.

Arai, Yoshihiro; and Tanaka, Takumi, to Unitika Ltd. Method of making heat-resistant polyester. 4,520,174, Cl. 525-438.000.

Arai, Yoshihiro; and Tanaka, Takumi, to Unitika Ltd. Method of making heat-resistant polyester by reacting with a N,N,diglycidyl-acidamide. 4,520,175, Cl. 525-438.000.

Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, to Nippondenso Co., Ltd. Rotational position detecting apparatus for internal combustion engines. 4,519,362, Cl. 123-414.000.

Arbed S.A.: *See—*
Peckels, Jean; and Schaaf, Antoine, 4,519,587, Cl. 266-80.000.

Archer, Michael A., to Lucas Industries, public limited company. Control system for a fuel supply system. 4,519,351, Cl. 123-357.000.

Archibald, James B.; and Eats, James V., to General Electric Company. Braid clamp for generator shaft voltage and current pickup. 4,519,669, Cl. 339-274.000.

Arena, Blaise J., to UOP Inc. Immobilization of organic species on refractory inorganic oxides. 4,520,122, Cl. 502-152.000.

Arena, Blaise J.: *See—*
Qualeatti, Gail M.; and Arena, Blaise J., 4,519,951, Cl. 260-409.000.

Arieh, Simon; and Courvoisier, Guy, to Battelle Memorial Institute. Ski boot. 4,519,150, Cl. 36-121.000.

Arita, Masataka; and Matsubara, Mitsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray diagnostic apparatus. 4,520,494, Cl. 378-108.000.

Arita, Setsuo; and Ito, Tetsuo, to Hitachi, Ltd. Signal diagnostic method and apparatus for multiple transmission system. 4,520,483, Cl. 371-68.000.

Ariyoshi, Hiromi; and Yokomori, Iwao, to Nippondenso Co., Ltd. Current control method and apparatus for electromagnetic valves. 4,520,420, Cl. 361-154.000.

Armatron International, Inc.: *See—*
DeYoreo, Sal G.; and Stevens, David P., 4,519,776, Cl. 431-328.000.

Armco Inc.: *See—*
Holland, Ronald A.; Petrie, Harold L.; Brennan, John R.; and Christ, Frederick C., 4,519,457, Cl. 166-317.000.

Arndt, Eric D.: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.

Arneklev, Duane R.: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,519,833, Cl. 71-100.000.

Arold, Frank G. Turbine power plant. 4,519,744, Cl. 415-92.000.

Aron, Jerome; and Quirin, Michel, to Belrecolt S.A. Hay harvesting machine. 4,519,194, Cl. 56-370.000.

Arszman, Jerrold H., to United States of America, Army. Fire and forget missiles system. 4,519,315, Cl. 102-377.000.

Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH: *See—*
Lepper, Eberhard; and Lust, Karl-Heinz, 4,520,296, Cl. 318-254.000.

Arzounian, Raymond. Exercise machine. 4,519,604, Cl. 272-73.000.

Asada, Yoshihisa: *See—*
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.

Asahi-Dow Limited: *See—*
Yoshino, Akira; and Iwami, Isamu, 4,520,072, Cl. 428-403.000.

Asaida, Takashi, to Sony Corporation. Color video signal processing apparatus. 4,520,386, Cl. 358-13.000.

Asch, Karl; Greschner, Johann; Kallmeyer, Michael; and Kulcke, Werner, to International Business Machines Corporation. Probe head arrangement for conductor line testing with at least one probe head comprising a plurality of resilient contacts. 4,520,314, Cl. 324-158.00P.

Ashland Oil, Inc.: *See—*
Hupp, Stephen S., 4,520,206, Cl. 548-548.000.

Associated Electrical Industries Limited: *See—*
Ward, Philip A., 4,520,303, Cl. 318-778.000.

AT&T Bell Laboratories: *See—*
Boettcher, Charles W., Jr.; Hamilton, Billy H.; Slak, William M.; and Zweig, Walter L., 4,520,437, Cl. 363-41.000.
Curtis, Lyn; and Young, William C., 4,519,671, Cl. 350-96.150.
Wen, Wilson K., 4,520,477, Cl. 370-58.000.

AT&T Information Systems Inc.: *See—*
Wei, Lee-Fang, 4,520,490, Cl. 375-27.000.

AT&T Technologies, Inc.: *See—*
Kleinedler, Gary E.; and Pohl, Herbert A., 4,519,132, Cl. 29-845.000.
Tucker, John G., 4,519,552, Cl. 242-7.170.

Ateliers Reunis: *See—*
Levy-Joseph, Marc, 4,519,622, Cl. 280-33.99S.

Athey, Graham, to Imperial Chemical Industries, PLC. Polyester fibrefill blend. 4,520,066, Cl. 428-288.000.

Athmer, F.: *See—*
Cronenberg, Dieter-Julius; and Faflek, Jeno , 4,519,165, Cl. 49-307.000.

Atkinson, Robert W.; Elliott, Joseph W.; and Johnson, Donald W., to Snyder Laboratories, Inc. Lavage handpiece. 4,519,385, Cl. 128-66.000.

Atlantic Richfield Company: *See—*
Schuh, Frank J., 4,519,463, Cl. 175-61.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Leitermann, Wulf; and Heneka, Rolf, 4,519,646, Cl. 297-15.000.

Austin Rover Group Limited: *See—*
Randle, James N., 4,519,628, Cl. 280-701.000.

Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,519,513, Cl. 215-32.000.

Automobiles Peugeot/Automobiles Citroen: *See—*
Sedille, Marcel; and Le Creurer, Maurice, 4,519,211, Cl. 60-602.000.

Ava International Corporation: *See—*
Akkerman, Neil H.; and Dewey, Daniel O., 4,519,575, Cl. 251-58.000.

Axelrod, Robert J., to General Electric Company. Flame retardant composition of polyphenylene ether, styrene resin and cyclic phosphonate. 4,520,152, Cl. 524-120.000.

Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, to Canon Kabushiki Kaisha. Droplet generating method and apparatus therefor. 4,520,373, Cl. 346-140.00R.

B. F. Goodrich Company, The: *See—*
Ahmad, Shamim; and Schaefer, Ronald J., 4,519,430, Cl. 152-209.00R.
Chasar, Dwight W., 4,520,151, Cl. 524-101.000.
Fisher, John M., 4,519,782, Cl. 441-40.000.

B & H Technologies, Inc.: *See—*
Baumberg, Iosif, 4,519,749, Cl. 417-158.000.

Babcock & Wilcox Company, The: *See—*
Lindstrom, Gerald D.; Eckhart, Clifford F.; Farthing, George A., Jr.; Muckley, James J.; and Taylor, Brian E., 4,519,322, Cl. 110-264.000.

Badesha, Santokh S.; and Abkowitz, Martin A., to Xerox Corporation. Process for modifying the electrical properties of selenium, and selenium alloys. 4,520,010, Cl. 427-83.000.

Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, to BASF Aktiengesellschaft. Catalyst for the preparation of methyl methacrylate. 4,520,125, Cl. 502-170.000.

Baker, Donal E., to Westinghouse Electric Corp. Electronic phase detector having an output which is proportional to the phase difference between two data signals. 4,520,319, Cl. 328-133.000.

Baker, Jay S., to Ampex Corporation. Zero-delay ramp generator. 4,520,276, Cl. 307-228.000.

Baker Oil Tools, Inc.: *See—*
Le, Tam D.; and Turner, Weems D., 4,519,262, Cl. 74-89.200.

Baldwin, Roger A.; Stauter, John C.; Kauffman, Jim W.; and Laughlin, William C., to Kerr-McGee Corporation. Process for the removal and recovery of selenium from aqueous solutions. 4,519,913, Cl. 210-611.000.

Baldwin, Roger A.: *See—*
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,519,912, Cl. 210-611.000.

Baldwin, Samuel L., to General Electric Company. Orientable refractor mounting. 4,520,435, Cl. 362-311.000.

Ballas, John S., Jr.: *See—*
Epstein, Paul; Ballas, John S., Jr.; Mandler, John J., Jr.; and Van Horn, Joseph M., 4,519,396, Cl. 128-698.000.

Bamberg, Joe T.: *See—*
Kohn, Gustave K.; and Bamberg, Joe T., 4,520,199, Cl. 546-302.000.

Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Data processing system. 4,520,441, Cl. 364-200.000.

Bar-Yonah, Yitzchak. Selectively light transmitting panel. 4,519,675, Cl. 350-259.000.

Barabas, Eugene S.; and Cho, James R., to GAF Corporation. Preparation of vinylpyrrolidone/vinyl acetate copolymers of various molecular weights using a single initiator system consisting essentially of t-Butylperoxypivalate. 4,520,179, Cl. 526-212.000.

Barabas, Eugene S.; and Cho, James R., to GAF Corporation. Polymerization of vinylpyrrolidone to various molecular weights using a single initiator system consisting essentially of t-Butylperoxypivalate. 4,520,180, Cl. 526-212.000.

Baranowski, Thomas J., Jr.: *See—*
Black, Jonathan; and Baranowski, Thomas J., Jr., 4,519,394, Cl. 128-419.00F.

Barauke, Norbert, to Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH. Device for interrupting the feed of a roving to the drawing frames of a spinning machine. 4,519,199, Cl. 57-87.000.

Barbier, Jean P.: *See—*
Rialland, Jean P.; and Barbier, Jean P., 4,520,036, Cl. 426-271.000.

Bardong, Helmut: *See—*
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, 4,519,120, Cl. 29-157.00R.

Barker, Robert B.; Davidge, Ronald V.; Gibson, David K.; and Van Cleave, George W., to International Business Machines Corporation. Electronically gated paper aligner system. 4,519,700, Cl. 355-3.0SH.

Barmag Barmer Maschinenfabrik AG: *See—*
Dammann, Peter; Lorenz, Hellmut; and Maier, Roland, 4,519,204, Cl. 57-340.000.
Schippers, Heinz, 4,519,203, Cl. 57-328.000.

Barna, Gordon L.; and Lippert, James W., to Kaiser Aluminum & Chemical Corporation. Heat exchange structure. 4,519,442, Cl. 165-9.200.

Barnett, Joe R., to Thermo King Corporation. Transport refrigeration system with top freezing avoidance. 4,519,215, Cl. 62-158.000.

Barr, Robert A. Positive displacement pump assembly. 4,519,712, Cl. 366-77.000.

Barr & Stroud Limited: *See—*
Hamilton, James G., 4,519,673, Cl. 350-96.320.

Barrett, Mark D.: *See—*
Elmore, Carl L.; Poulin, Ted M.; and Barrett, Mark D., 4,519,446, Cl. 165-101.000.

Barrett, Monroe C.: *See—*
Fachini, Robert M.; Orsborn, Jesse H.; and Barrett, Monroe C., 4,519,189, Cl. 56-16.600.

Barrois, Claus D., to Koenig & Bauer Aktiengesellschaft. Inking unit. 4,519,312, Cl. 101-349.000.

Barry, Leonard D. Rotary loader and side-coupling transfer system. 4,519,737, Cl. 414-337.000.

Bartholomaus, Reiner; and Rivolier, Michel, to Mannesmann Rexroth GmbH. Device for the actuation of a slide valve. 4,519,573, Cl. 251-30.000.

Basalay, Robert J.; West, C. Thomas; and Petrille, Dennis G., to Standard Oil Company (Indiana). Polyborate esters and their use in lubricants. 4,519,926, Cl. 252-49.600.

BASF Aktiengesellschaft: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,520,135, Cl. 521-56.000.
Schneider, Kurt; Heide, Wilfried; Hartmann, Juergen; and Hartmann, Heinrich, 4,520,210, Cl. 560-222.000.
Schumacher, Horst; and Grafen, Paul, 4,519,961, Cl. 264-4.600.

BASF Wyandotte Corporation: *See—*
Langdon, William K., 4,519,950, Cl. 260-404.000.

Bassler, Peter: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.

Batchelder, David N.: *See—*
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,519,259, Cl. 73-861.220.

Battelle Memorial Institute: *See—*
Arieh, Simon; and Courvoisier, Guy, 4,519,150, Cl. 36-121.000.

Bau- und Forschungsgesellschaft Thermoform AG: *See—*
Sinner, Michael; Dietrichs, Hans-Hermann; Puls, Jurgen; Schweers, Werner; and Brachthauser, Karl-Heinz, 4,520,105, Cl. 435-163.000.

Baum, Marcel: *See—*
Schwanbom, Erik; Frankenberger, Horst; and Baum, Marcel, 4,519,388, Cl. 128-204.250.

Baumberg, Iosif, to B & H Technologies, Inc. Wind-solar lift pump. 4,519,749, Cl. 417-158.000.

Baxter Travenol Laboratories, Inc.: *See—*
Hitchcock, James R., Jr.; and Nevens, Charles J., 4,519,795, Cl. 604-289.000.
Stone, Albert; Pyde, Edwin; and Carveth, Peter, 4,519,499, Cl. 206-219.000.

Bayer Aktiengesellschaft: *See—*
Claussen, Uwe, 4,519,935, Cl. 252-299.100.
Dhein, Rolf; Rottmaier, Ludwig; Merten, Rudolf; and Siebourg, Wolfgang, 4,520,147, Cl. 524-100.000.
Hess, Heinrich; Grogler, Gerhard; and Kopp, Richard, 4,520,186, Cl. 528-73.000.
Hocker, Jurgen; Muller, Hans K.; and Broich, Bruno, 4,519,939, Cl. 252-500.000.
Martinola, Friedrich, 4,519,916, Cl. 210-678.000.
Martinola, Friedrich, 4,519,917, Cl. 210-678.000.
Schmitt, Hans-Georg; Palus, Wilfried; and Genth, Hermann, 4,520,023, Cl. 514-241.000.
Stawitz, Josef, 4,520,202, Cl. 548-416.000.
Zabrocki, Karl; Ott, Karl-Heinz; Schmidt, Adolf; and Pischtschan, Alfred, 4,520,165, Cl. 525-84.000.

Bayerische Motoren Werke AG: *See—*
Jovanovic, Nenad, 4,519,648, Cl. 297-146.000.

Bayerische Motoren Werke A.G.: *See—*
Grohmann, Kurt, 4,520,258, Cl. 219-279.000.

BBC Aktiengesellschaft Brown, Boveri & Cie.: *See—*
Klein, Erwin, 4,520,383, Cl. 357-81.000.
Klein, Erwin, 4,520,384, Cl. 357-82.000.

BBC Brown, Boveri & Company, Limited: *See—*
Gubler, Hans-Rudolf, 4,519,205, Cl. 57-406.000.
Kluge-Weiss, Petra, 4,519,850, Cl. 148-1.500.

Beall, George H.; MacDowell, John F.; and Taylor, Mark P., to Corning Glass Works. Transparent glass-ceramics containing mullite. 4,519,828, Cl. 65-33.000.

Beamenderfer, Robert E.: *See—*
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,519,665, Cl. 339-147.00R.

Beasley, Max M.: *See—*
Green, Jerry T.; and Beasley, Max M., 4,519,326, Cl. 112-79.00R.

Beaton, Gerald V.: *See—*
Fletcher, Edwin; Beaton, Gerald V.; and Gomer, Charles R., 4,520,266, Cl. 250-357.100.

Beatty, Graydon E.: *See—*
Brenman, Henry S.; Katz, Philip; and Beatty, Graydon E., 4,519,400, Cl. 128-741.000.

Beck & Co., Packautomaten: *See—*
Horn, Roland; and Glausch, Erhardt, 4,519,185, Cl. 53-550.000.

Becker, Charles A.: *See—*
Castleberry, Donald E.; and Becker, Charles A., 4,520,357, Cl. 340-783.000.

Becker, Mitchell; and Sachs, Howard M., to Halcon SD Group, Inc., The. Purification of ethylene glycol derived from ethylene carbonate. 4,519,875, Cl. 203-28.000.

Beckman, John B.; and Blickstein, Martin J., to Abet Group, The. Piezoelectric pump with internal load sensor. 4,519,751, Cl. 417-322.000.

Beckwith, Paul B.: *See—*
Chan, Luen C.; Beckwith, Paul B.; and Pearce, Jeffrey B., 4,520,506, Cl. 382-56.000.

Becton, Dickinson and Company: *See—*
Dunmire, Robert W.; Miller, Drew J.; and Johnson, Michael D., 4,519,098, Cl. 2-161.00R.

Beecham Group p.l.c.: *See—*
Newsome, Peter M.; and Mullan, Noel A., 4,520,014, Cl. 424-153.000.

Beimesch, Bruce J.: *See—*
Schnur, Nicholas E.; and Beimesch, Bruce J., 4,519,932, Cl. 252-73.000.

Beisemann, Gerd: *See—*
Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, 4,519,233, Cl. 72-247.000.

Belco Pollution Control Corporation: *See—*
Gibbons, Robert E., 4,519,817, Cl. 55-112.000.

Belin, Rudolf E.; Boyce, William F.; and Feehan, John D., to Commonwealth Scientific and Industrial Research Organization. Helical wrapping of tape. 4,519,195, Cl. 57-3.000.

Bell, Ronald D.: *See—*
McGill, Eugene C.; and Bell, Ronald D., 4,519,993, Cl. 423-235.000.

Belrecolt S.A.: *See—*
Aron, Jerome; and Quirin, Michel, 4,519,194, Cl. 56-370.000.

Bendson, Steven A.: *See—*
Piotrowski, Chester; Bendson, Steven A.; Loeding, Neil W.; and Mularie, William M., 4,520,413, Cl. 360-113.000.

Berard, Alain: *See—*
Grimberg, Martine; and Berard, Alain, 4,520,442, Cl. 364-414.000.

Berard, Claude: *See—*
Laviron, Andre ; and Berard, Claude, 4,520,309, Cl. 324-73.00R.

Bercaw, Kenneth K.: *See—*
Shank, William E.; and Bercaw, Kenneth K., 4,519,722, Cl. 403-26.000.

Berdiev, Oleg S.: *See—*
Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S., 4,519,437, Cl. 164-284.000.

Berg, Daniel T., to Motorola, Inc. Duplex communication transceiver with modulation cancellation. 4,520,475, Cl. 370-24.000.

Berg, Roy C.; Malloy, Thomas P.; and Vora, Bipin V., to UOP Inc. Production of dialkylated aromatics. 4,520,218, Cl. 585-449.000.

Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, to Rhone-Poulenc Industries. Cephalosporin derivatives. 4,520,193, Cl. 544-016.000.

Bergren, Orton D.: *See—*
Parkinson, Dean B.; and Bergren, Orton D., 4,519,632, Cl. 283-75.000.

Bernardoni, Luigi; and D'Angelo, Domenico, to Alfa Romeo Auto S.p.A. Intake system for an internal combustion engine provided with several intake valves. 4,519,363, Cl. 123-432.000.

Bernhard, Dennis P.; Rowles, Howard C.; and Teichman, Robert L., to Air Products and Chemicals, Inc. Process for recovering C_4+ hydrocarbons using a dephlegmator. 4,519,825, Cl. 62-28.000.

Berni, Albert J., to Shell Oil Company. Marine seismic system. 4,520,467, Cl. 367-24.000.

Bernicot, Michel: *See—*
Chaouloff, Michel; Bernicot, Michel; Douineau, Pierre; and Boret, Roger, 4,519,416, Cl. 137-488.000.

Berry, Michael J.: *See—*
Reddy, Kammalathinna V.; and Berry, Michael J., 4,519,882, Cl. 204-158.00R.

Bertelson, Peter C.: *See—*
Bush, John W.; and Bertelson, Peter C., 4,519,591, Cl. 267-148.000.

Bertram, Rick V., to Union Oil Company of California. Process for recovering carbonaceous and sulfur-containing particles from a retort. 4,519,874, Cl. 201-39.000.

Bertz, Hans-Ulrich: *See—*
Meder, Willi; Bertz, Hans-Ulrich; and Golder, Peter, 4,519,141, Cl. 33-179.50R.

Bethmann, Karl W.; and Theis, Ulrich. Ammunition, preferably for machine cannons, including a projectile equipped with a tracer, with the lethal range of the projectile being limited if the target is missed. 4,519,316, Cl. 102-513.000.

Bevilaqua, Paul M.; and Stachura, Stanley J., to Rockwell International Corporation. Spray dryer for the purification of a gas. 4,519,990, Cl. 423-210.000.

Bevington, John F.; Meeker, Paul; and Savidge, Michael, to National Super Service Company, The. Muffled vacuum cleaner. 4,519,112, Cl. 15-326.000.

Bewersdorf, Elmer: *See—*
McCain, William B.; and Bewersdorf, Elmer, 4,519,598, Cl. 270-53.000.

Bianchi, Giuseppe: *See—*
de Nora, Oronzio; and Bianchi, Giuseppe, 4,519,886, Cl. 204-196.000.

Bickford, Karin S.: *See—*
Staffin, H. Kenneth; Roaper, Robert B.; and Bickford, Karin S., 4,519,718, Cl. 374-45.000.

Bilofsky, Ruth C.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,520,189, Cl. 528-331.000.

Binder, George G., Jr.: *See—*
Tsao, Yuh-hwang; and Binder, George G., Jr., 4,519,452, Cl. 166-288.000.

Biosonics, Inc.: *See—*
Brenman, Henry S.; Katz, Philip; and Beatty, Graydon E., 4,519,400, Cl. 128-741.000.

Birt, David A., to Lucas Industries. Diffusion cover for a motor vehicle headlamp. 4,520,434, Cl. 362-309.000.

Biswas, Ranjit, to Thomas & Betts Corporation. Electronic package assembly and accessory component therefor. 4,519,658, Cl. 339-17.0CF.

Bjorklund, Bengt, to AB Grindex. Shaft seal device. 4,519,615, Cl. 277-92.000.

Black, Jonathan; and Baranowski, Thomas J., Jr., to University of Pennsylvania, Trustees of the. Method and apparatus for cathodic potential control in electrically induced osteogenesis. 4,519,394, Cl. 128-419.00F.

Blakeslee, Edward A., to Sperry Corporation. Inter-trolley latch for draper header. 4,519,190, Cl. 56-181.000.

Blakeslee, Gerald A., to Blakeslee, Gerald A., Jr. Firemen's tool mounting assembly. 4,519,892, Cl. 206-223.000.

Blakeslee, Gerald A., Jr.: *See—*
Blakeslee, Gerald A., 4,519,892, Cl. 206-223.000.

Blanc, Claude: *See—*
Oliveau, Olivier; and Blanc, Claude, 4,519,991, Cl. 423-220.000.

Blanck, James R. Apparatus for closing toilet seat cover. 4,519,105, Cl. 4-661.000.

Blank, Werner J.; and Parekh, Girish G., to American Cyanamid Co. Hydroxyalkyl carbamate diluent for coating compositions and compositions containing the same. 4,520,167, Cl. 525-131.000.

Blickstein, Martin J.: *See—*
Beckman, John B.; and Blickstein, Martin J., 4,519,751, Cl. 417-322.000.

Blumer, Roger L.: *See—*
Kotian, Vijayraj M.; Blumer, Roger L.; and Herbert, William J., 4,520,260, Cl. 219-553.000.

Blumle, Rudi. Method for fabricating a master plate and a master plate fabricated thereby having fitting bores disposed at prespecified coordinate intervals. 4,520,060, Cl. 428-131.000.

Bocchini, William R.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.

Bock, Jan: *See—*
Turner, S. Richard; Siano, Donald B.; and Bock, Jan, 4,520,182, Cl. 526-307.200.

Bock Products, Inc.: *See—*
Weber, Randall W.; and Weber, Charles A., 4,519,677, Cl. 350-637.000.

Boden, Richard M.: *See—*
Fujioka, Futoshi; Boden, Richard M.; Schreiber, William L.; Whelan, Patrick; and Hanna, Marie R., 4,519,943, Cl. 252-522.00R.

Bodenseewerk Geratetechnik GmbH: *See—*
Seeger, G. Hans J.; Giesenberg, Peter; and Steimel, Johannes, 4,519,291, Cl. 89-1.806.

Boeckman, Paul A.; and Young, Dennis L., to Dover Corporation. High pressure cam seal valve. 4,519,578, Cl. 251-163.000.

Boehm, Peter: *See—*
Entwistle, Ian D.; and Boehm, Peter, 4,520,007, Cl. 424-17.000.

Boeing Company, The: *See—*
Carpenter, Paul E.; Fisher, Charles B.; and Peash, Douglas E., 4,520,424, Cl. 361-383.000.
Dontscheff, Helmut, 4,519,285, Cl. 83-880.000.
Ishimitsu, Kichio K.; and Tinoco, Edward N., 4,519,560, Cl. 244-45.00R.

Boettcher, Charles W., Jr.; Hamilton, Billy H.; Slak, William M.; and Zweig, Walter L., to AT&T Bell Laboratories. Power conversion circuit for synthesizing a sinewave with programmed amplitude control. 4,520,437, Cl. 363-41.000.

Bogossian, Armen: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.

Bolhuis, Pieter J., to U.S. Philips Corporation. Step-wise dimmer control circuit for a discharge lamp. 4,520,295, Cl. 315-291.000.

Boliden Aktiebolag: *See—*
Petersson, Stig A.; and Waara, Ulf C., 4,520,003, Cl. 423-533.000.

Bolli, Hans-Ulrich, to SIG - Schweizerische Industrie-Gesellschaft. Apparatus for separating and conveying objects. 4,519,495, Cl. 198-486.000.

Bollinger, Karl, to Soletanche. Scaffolding. 4,519,475, Cl. 182-17.000.

Boman, Hans G.: *See—*
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,520,016, Cl. 514-12.000.

Bonner, James F., to Phytogen. Controlled growth of mung bean sprouts. 4,519,163, Cl. 47-58.000.

Bonnerot, Georges: *See—*
Raulin, Jean M.; and Bonnerot, Georges, 4,520,491, Cl. 375-27.000.

Booth, Darcy L. Securing mechanism for container components and the like. 4,519,498, Cl. 206-214.000.

Boots Company PLC, The: *See—*
Stenzenberger, Horst, 4,520,145, Cl. 523-500.000.

Boret, Roger: *See—*
Chaouloff, Michel; Bernicot, Michel; Douineau, Pierre; and Boret, Roger, 4,519,416, Cl. 137-488.000.

Borland, William, to Engelhard Corporation. Ceramic multilayer electrical capacitors. 4,520,422, Cl. 361-305.000.

Borroni, Andrea, to Societa Cavi Pirelli S.p.A. Method and apparatus for laying-up cores of a multi-core electric cable. 4,519,197, Cl. 57-64.000.

Bosschaerts, Jacobus H.: *See—*
Bruyndonckx, Jan J.; and Bosschaerts, Jacobus H., 4,519,696, Cl. 355-14.00D.

Bottero S.p.A.: *See—*
Ghinamo, Leonardo, 4,519,139, Cl. 33-32.00C.

Botyan, Viktor V.: *See—*
Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; and Postnikov, Viktor M., 4,519,230, Cl. 72-56.000.

Boulle, Franck; and Zveguintzoff, Michel, to Societe Anonyme Saunier Duval eau Chaude Chauffage - S.D.E.C.C. Sealed gas heater with forced draft and regulation by microprocessor. 4,519,540, Cl. 237-7.000.

Bourgeois, Hector S.: *See—*
Rosman, Irwin E.; and Bourgeois, Hector S., 4,519,745, Cl. 416-96.00A.

Bower, Terry F.: *See—*
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,519,118, Cl. 29-121.500.

Boyce, Pamela J.: *See—*
Willis, Stephen B.; and Boyce, Pamela J., 4,519,843, Cl. 106-90.000.

Boyce, William F.: *See—*
Belin, Rudolf E.; Boyce, William F.; and Feehan, John D., 4,519,195, Cl. 57-3.000.

Boyd, Jeanette D. Teaching tool. 4,519,781, Cl. 434-156.000.

Boyd, Roger L.: *See—*
Bravenec, Thomas H.; Boyd, Roger L.; and Ferenc, Robert R., 4,519,974, Cl. 264-279.000.

Brachet, Alain; Figuet, Jacques; Guidez, Joel; and Lions, Noel, to Commissariat a l'Energie Atomique. Secondary heat transfer circuit for a nuclear reactor. 4,519,978, Cl. 376-307.000.

Brachthauser, Karl-Heinz: *See—*
Sinner, Michael; Dietrichs, Hans-Hermann; Puls, Jurgen; Schweers, Werner; and Brachthauser, Karl-Heinz, 4,520,105, Cl. 435-163.000.

Bradler, Hans J.; Brauner, Wilfried; Deyhle, Manfred; and Vogt, Karl H., to International Business Machines Corporation. Device for two-sided application of foils or similar material onto plate-shaped workpieces, and method of operating the same. 4,519,865, Cl. 156-256.000.

Braid, Milton, to Mobil Oil Corporation. Lubricant compositions containing N-tertiary alkyl benzotriazoles. 4,519,928, Cl. 252-50.000.

Braun, Kenneth H.: *See—*
Perlmutter, Michael S.; and Braun, Kenneth H., 4,519,708, Cl. 356-350.000.

Brauner, Wilfried: *See—*
Bradler, Hans J.; Brauner, Wilfried; Deyhle, Manfred; and Vogt, Karl H., 4,519,865, Cl. 156-256.000.

Bravenec, Thomas H.; Boyd, Roger L.; and Ferenc, Robert R., to LTV Aerospace and Defense Company. Method and apparatus for applying a sealant to exposed fasteners. 4,519,974, Cl. 264-279.000.

Bredenkamp, Gordon L.; and Van Rhyn, Pierre, to Crucible Societe Anonyme. High frequency self-oscillating welding apparatus. 4,520,255, Cl. 219-130.100.

Brenman, Henry S.; Katz, Philip; and Beatty, Graydon E., to Biosonics, Inc. Method for stimulating salivation. 4,519,400, Cl. 128-741.000.

Brennan, John R.: *See—*
Holland, Ronald A.; Petrie, Harold L.; Brennan, John R.; and Christ, Frederick C., 4,519,457, Cl. 166-317.000.

Bressand, Rene ; and Desarmaux, Pierre, to Salomon S.A. Device for adjusting the longitudinal position of a safety binding for ski. 4,519,624, Cl. 280-633.000.

Brestel, Ronald R.; and Meyer, Dale L., to Fisher Controls, International, Inc. Cam valve self-centering seat. 4,519,579, Cl. 251-172.000.

Bretz, Gregory T.: *See—*
Crosbie, Gary M.; and Bretz, Gregory T., 4,519,967, Cl. 264-86.000.

Bridgestone Tire Company Limited: *See—*
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.

Briggs & Stratton Corp.: *See—*
Santi, John D., 4,520,288, Cl. 310-194.000.

Brigham, William D.; and Dung, Nguyen D., to Zwick Energy Research Organization, Inc. Ambient air heated electrically assisted cryogen vaporizer. 4,519,213, Cl. 62-52.000.

Brinkers, Edith L. C. Container, in particular for a codicil or similar personal document. 4,519,497, Cl. 206-37.000.

Bristol-Myers Company: *See—*
Hoshi, Hideaki; Okumura, Jun; Naito, Takayuki; Abe, Yoshio; and Aburaki, Shimpei, 4,520,022, Cl. 514-200.000.
Lowe, David A.; Romancik, Guna; Cappelletti, Leonardo M.; and Elander, Richard P., 4,520,101, Cl. 435-49.000.

British Petroleum Company p.l.c., The: *See—*
Gane, Brian R.; and Howard, Philip, 4,520,118, Cl. 502-53.000.
Riddiford, Frederick A., 4,519,453, Cl. 166-303.000.

British Steel Corporation: *See—*
Fletcher, Edwin; Beaton, Gerald V.; and Gomer, Charles R., 4,520,266, Cl. 250-357.100.

Britz, Richard D., to Earthship Enterprise, Inc. Modular method of making a building structure. 4,519,176, Cl. 52-742.000.

Broich, Bruno: *See—*
Hocker, Jurgen; Muller, Hans K.; and Broich, Bruno, 4,519,939, Cl. 252-500.000.

Brokke, Mervin E.: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,519,833, Cl. 71-100.000.

Brooker, Andrew F.: *See—*
Wills, Robert P.; and Brooker, Andrew F., 4,519,100, Cl. 3-1.900.

Brotherton, William A.; and Street, Kenneth, to Ferranti plc. Electrical circuit assemblies. 4,520,427, Cl. 361-389.000.

Brown, Paul L., to Dow Corning Corporation. Organopolysiloxane emulsifier compositions and method therefor. 4,520,160, Cl. 524-765.000.

Brubaker, John R.: *See—*
Hastings, Jerome K.; Brubaker, John R.; and Kroll, John W., 4,520,336, Cl. 337-140.000.

Brull, John J.; and Carnahan, Michael T., to AGA AB. Cryogen shot blast deflashing system with jointed supply conduit. 4,519,812, Cl. 51-422.000.

Brunswick, Robert, to Wrightcel Limited. Liquid filling apparatus. 4,519,184, Cl. 53-503.000.

Brush, Robert W., Sr.; and Shepler, Eric F., to Allied Corporation. Connector assembly having an anti-decoupling mechanism. 4,519,661, Cl. 339-89.00M.

Bruyndonckx, Jan J.; and Bosschaerts, Jacobus H., to AGFA-Gevaert N. V. Xerographic copying apparatus. 4,519,696, Cl. 355-14.00D.

Buckley, Galen L.; and Panique, Kenneth. Retro-reflective prism assembly. 4,519,674, Cl. 350-102.000.

Bukoschek, Romuald L.; and Diefenbach, Gerhard, to U.S. Philips Corporation. Appliance driven by an electric motor. 4,520,286, Cl. 310-83.000.

Bulanda, John J.: *See—*
Caveney, Jack E.; Moody, Roy A.; Bulanda, John J.; and Wende, Russell E., 4,519,129, Cl. 29-749.000.

Buls, Ronald L.; and Gilcrease, James P., to Texas Eastern Engineering Ltd. Slug-catching method and apparatus. 4,519,815, Cl. 55-46.000.

Bumbera, John. Fingernail clipping device. 4,519,134, Cl. 30-28.000.

Bunno, Masayasu; Sugiura, Tsutomu; Tsuji, Masao; Harada, Hidemi; and Ichihara, Yoshihiro, to Kuraray Co., Ltd. Microbial process for producing 12α-hydroxypregna-1,4-dien-3-one-20α-carboxylic acid. 4,520,102, Cl. 435-61.000.

Buonomo, Joseph P.; and Perry, Wendell L., to International Business Machines Corporation. Test verification of processor architecture having a partial instruction set. 4,520,440, Cl. 364-200.000.

Burghardt, Stanley M. Method of positioning a U-bolt on a conduit. 4,519,124, Cl. 29-526.00R.

Burke, Earl P., Jr. Swimmer's restraining apparatus. 4,519,783, Cl. 441-117.000.

Burkhardt, James L.; and McCann, John J., to Polaroid Corporation. Processor for enhancing video signals for photographic reproduction. 4,520,403, Cl. 358-332.000.

Burr, Bruce H., to Hughes Tool Company. Earth boring bit with pressure compensating bearing seal. 4,519,719, Cl. 384-94.000.

Burrell, Lynn M. Interchangeable jewelry having securing means. 4,519,220, Cl. 63-29.00R.

Burrington, James D.; Pesa, Fred A.; Maher, Elizabeth A.; and Grasselli, Robert K., to Standard Oil Company, The. Leach resistant catalyst useful for the dimerization of acrylic compounds. 4,519,954, Cl. 260-465.80D.

Burroughs Corporation: *See—*
Loskorn, Richard A., 4,520,452, Cl. 364-900.000.
Norell, Ronald A., 4,519,760, Cl. 425-113.000.
Schwartz, Sidney J., deceased, 4,520,459, Cl. 365-15.000.

Bush, John W.; and Bertelson, Peter C. Non-metallic leaf spring structure. 4,519,591, Cl. 267-148.000.

Bussjager, Rudy C.; and Del Toro, James J., to Carrier Corporation. Method and apparatus for regulating an economizer damper using indoor fan air pressure. 4,519,539, Cl. 236-13.000.

Bustos, Rafael T.: *See—*
Gullett, Edwin P.; Davis, Gerald B.; and Bustos, Rafael T., 4,519,508, Cl. 211-59.200.

Butler, James R.: *See—*
Watson, James M.; Butler, James R.; and Forward, Cleve H., 4,520,220, Cl. 585-467.000.

Butler, William S., to Halliburton Company. Cushioning unit shaft seal arrangement. 4,519,617, Cl. 277-153.000.

Buzby, George C., Jr., to American Home Products Corporation. Chemical resolution of (+)-2,3-dihydroindole-2-carboxylic acid. 4,520,205, Cl. 548-491.000.

Byerley, John J.; and Enns, Kurt. Processes for the recovery of cyanide from aqueous thiocyanate solutions and detoxication of aqueous thiocyanate solutions. 4,519,880, Cl. 204-91.000.

C-I-L Inc.: *See—*
Jorgenson, Gordon K., 4,519,314, Cl. 102-313.000.

Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 4,520,239, Cl. 191-12.400.

Cable Technology Laboratories, Inc.: *See—*
Katz, Carlos; and Zidon, Amicam C., 4,519,759, Cl. 425-97.000.

Cahalan, Patrick T.; Jevne, Allan H.; and Fogt, Eric J., to Medtronic, Inc. Ion selective membranes for use in ion sensing electrodes. 4,519,973, Cl. 264-267.000.

Calgon Carbon Corporation: *See—*
Wells, Bruce D.; and Ferguson, Du'Bois J., 4,519,985, Cl. 423-6.000.

Cameron, Frank L., to Westinghouse Electric Corp. Boric acid expulsion fuse. 4,520,337, Cl. 337-275.000.

Cameron Iron Works, Inc.: *See—*
Grazioli, Angal J., 4,519,412, Cl. 137-72.000.

Campbell, Henry F.; Kuhla, Donald E.; Studt, William L.; and Dodson, Stuart A., to William H. Rorer, Inc. Bicyclic nitrogen heterocyclic ethers and thioethers, and their pharmaceutical uses. 4,520,025, Cl. 514-275.000.

Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., to International Business Machines Corporation. Multiple spindle winding apparatus. 4,519,553, Cl. 242-56.00R.

Campbell, Jules D., Jr., to Motorola, Inc. Code conversion circuit. 4,520,347, Cl. 340-347.0DD.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources: *See—*
George, Albert E.; and Poirier, Marc-Andre, 4,519,915, Cl. 210-663.000.

Cannella, Vincent D.: *See—*
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., 4,519,339, Cl. 118-718.000.

Canning, Terry D.; and Hovan, Francis E., to Rockwell International Corporation. Electrical connector. 4,519,667, Cl. 339-186.00M.

Canon Kabushiki Kaisha: *See—*
Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, 4,520,373, Cl. 346-140.00R.
Kashiwagi, Kazuo; and Toda, Takao, 4,519,694, Cl. 355-5.000.
Kitamura, Takashi, 4,520,263, Cl. 250-223.00R.
Koumura, Noboru, 4,520,400, Cl. 358-296.000.
Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, 4,519,685, Cl. 354-154.000.
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,520,340, Cl. 338-195.000.
Takeda, Hiroaki; Tanaka, Kano; and Murata, Shinji, 4,519,697, Cl. 355-14.00R.

Cantrell, John L.: *See—*
Ribi, Edgar E.; Cantrell, John L.; and Schwartzman, Steven M., 4,520,019, Cl. 424-195.100.

Canusa Coating Systems Limited: *See—*
Hansen, Ralph H., 4,520,146, Cl. 524-94.000.

Cappelletti, Leonardo M.: *See—*
Lowe, David A.; Romancik, Guna; Cappelletti, Leonardo M.; and Elander, Richard P., 4,520,101, Cl. 435-49.000.

Carden, Danny P.: *See—*
Starnes, Ralph E., Jr.; and Carden, Danny P., 4,519,131, Cl. 29-825.000.

Cargill Detroit Corp.: *See—*
Colonius, Ray E.; and Early, Edward, 4,519,125, Cl. 29-558.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Gregg, Hans, 4,519,733, Cl. 409-7.000.

Carle & Montanari S.p.A.: *See—*
Ripani, Sergio, 4,519,304, Cl. 99-489.000.

Carlin, Donald B., to RCA Corporation. Multi-channel recording/-playback optics for laser diode arrays. 4,520,471, Cl. 369-112.000.

Carlisle Corporation: *See—*
Resan, Stevan A., 4,519,175, Cl. 52-713.000.

Carlson, John H.: *See—*
Simmler, Lawrence W.; and Carlson, John H., 4,519,225, Cl. 70-34.000.

Carn, William R., to Chicago Bridge & Iron Company. Liquid storage tank with emergency product removal apparatus. 4,519,415, Cl. 137-318.000.

Carnahan, Michael T.: *See—*
Brull, John J.; and Carnahan, Michael T., 4,519,812, Cl. 51-422.000.

Carpenter, Paul E.; Fisher, Charles B.; and Peash, Douglas E., to Boeing Company, The. Ventilated instrument panel support rail. 4,520,424, Cl. 361-383.000.

Carrasquel, Angel R.: *See—*
Morales, Alfredo L.; Galiasso, Roberto E.; Agudelo, Maria M.; Salazar, Jose A.; and Carrasquel, Angel R., 4,520,128, Cl. 502-210.000.

Carrier Corporation: *See—*
Bussjager, Rudy C.; and Del Toro, James J., 4,519,539, Cl. 236-13.000.

Carveth, Peter: *See—*
Stone, Albert; Pyde, Edwin; and Carveth, Peter, 4,519,499, Cl. 206-219.000.

Case Western Reserve University: *See—*
Ko, Wen H.; and Leung, Albert M., 4,519,401, Cl. 118-748.000.

Caspers, Friedhelm: *See—*
Rohde, Thomas; and Caspers, Friedhelm, 4,520,308, Cl. 324-58.50R.

Casperson, John R.; and Hann, Paul D. Process for production of carbon black. 4,520,000, Cl. 423-456.000.

Castleberry, Donald E.; and Becker, Charles A., to General Electric Company. Electroscopic information display and entry system with writing stylus. 4,520,357, Cl. 340-783.000.

Castro, Anthony J., to Akzona Incorporated. Microporous products. 4,519,909, Cl. 210-500.200.

Caterpillar Tractor Co.: *See—*
Adomis, Peter P., Jr.; and Martin, Millard J.. 4,519,300, Cl. 92-158.000.
Satzler, Ronald L.; and Stevens, Samuel B., 4,519,654, Cl. 305-27.000.

Cauchy, Charles J. Thermoelectric generating system. 4,520,305, Cl. 322-2.00R.

Causton, Robert J., to Davy McKee (Sheffield) Limited. Annealing of high speed steel powder. 4,519,852, Cl. 148-16.000.

Cavalieri D'Oro, Enzo; and Vita, Piero, to Italtel Societa Italiana Telecomunicazioni S.p.A. Circuit component for separating and/or combining two isofrequential but differently polarized pairs of signal waves lying in different high-frequency bands. 4,520,329, Cl. 333-135.000.

Cavazza, Paolo. Toothbrush having series of bristles of different height. 4,519,111, Cl. 15-167.00R.

Caveney, Jack E.; Moody, Roy A.; Bulanda, John J.; and Wende, Russell E., to Panduit Corp. Mass termination connector tool assembly. 4,519,129, Cl. 29-749.000.

Cavero, Icilio; and Langer, Salomon, to Synthelabo. Anti-ulcer agents. 4,520,030, Cl. 514-629.000.

Cekoric, Mark E.: *See—*
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,519,965, Cl. 264-51.000.

Celanese Corporation: *See—*
David, Lawrence D., 4,520,114, Cl. 501-12.000.

Celette, Germain, to Celette, S.A. Clamping device to be mounted on a frame or bench jig for checking any deformations of a vehicle body. 4,519,236, Cl. 72-457.000.

Celette, S.A.: *See—*
Celette, Germain, 4,519,236, Cl. 72-457.000.

Celotex Corporation, The: *See—*
Frentzel, Richard L., 4,520,140, Cl. 521-115.000.

Centre de Recherche Industrielle du Quebec: *See—*
Lam Shang Leen, Kee K., 4,519,998, Cl. 423-277.000.

Cepulis, Rimvydas L.: *See—*
Coffey, Gerald P.; Curatolo, Benedict S.; and Cepulis, Rimvydas L., 4,520,190, Cl. 528-336.000.

Certipak Corporation: *See—*
Lever, John K.; and DiVecchio, Angelo N., 4,519,182, Cl. 53-461.000.

Cerwin, Robert J., to Ethicon, Inc. Ligating clip and clip applier package. 4,519,501, Cl. 206-339.000.

Ceskoslovenska Adademie Ved: *See—*
Wichterle, Otto, 4,519,681, Cl. 351-160.00H.

Cesna, Joseph V., to Speedfam Corporation. Liquid waxless fixturing of microsize wafers. 4,519,168, Cl. 51-216.0LP.

Ceurvorst, Kenneth, to Sivyer Steel Corporation. Replaceable protective caps for spider arms of a reversible hammer mill. 4,519,551, Cl. 241-194.000.

Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; and Postnikov, Viktor M., to Fiziko-Tekhnichesky Institut Akademii Nauk Belorusskoi SSR. Apparatus for sizing of tubes. 4,519,230, Cl. 72-56.000.

Chambers, William J., to Du Pont de Nemours, E. I., and Company. Photosensitive composition and method for forming a neutral black image. 4,520,093, Cl. 430-292.000.

Chan, Luen C.; Beckwith, Paul B.; and Pearce, Jeffrey B., to Harris Corporation. Method and system for compression and reconstruction of cultural data for use in a digital moving map display. 4,520,506, Cl. 382-56.000.

Chang, Yuehsiung, to Standard Oil Company (Indiana). Regeneration of alkaline treating agents. 4,519,881, Cl. 204-149.000.

Chaouloff, Michel; Bernicot, Michel; Douineau, Pierre; and Boret, Roger, to Compagnie Francaise des Petroles. Safety connection connecting a vessel containing a gas under pressure to a discharge system. 4,519,416, Cl. 137-488.000.

Chappell, Johnny L., Jr.; and Johnson, Charles. Video game protective glove. 4,519,097, Cl. 2-16.000.

Charatan, Norman. Oral hygiene device. 4,519,408, Cl. 132-89.000.

Charlot, Lincoln H., to Elint Corporation. Polarization ratiometry object detection system and method. 4,520,362, Cl. 343-361.000.

Chasar, Dwight W., to B. F. Goodrich Company, The. Tris (3,6-di-t-butyl-2-naphthyl) phosphite and compositions thereof. 4,520,151, Cl. 524-101.000.

Chattin, Jesse. Pedal telescoping device. 4,519,271, Cl. 74-594.300.

Chaux, Jean-Bernard; Gagne, Pierre; Garcia, Michel; Lespinasse, Dominique; and Roussos, Josiane, to Rhone-Poulenc Specialites Chimiques. Water soluble biogum compositions and hydrosols prepared therefrom. 4,519,844, Cl. 106-209.000.

Chemische Werke Huls AG: *See—*
Michel, Klaus; and Gude, Armin, 4,519,968, Cl. 264-178.00R.

Chen, Hsing-Yeo: *See—*
van Hekken, Frans; and Chen, Hsing-Yeo, 4,520,292, Cl. 313-412.000.

Cheney, Jack E., to Schmelzer Corporation. Water ejector fuel system. 4,519,349, Cl. 123-198.00R.

Cherry Electrical Products Corporation: *See—*
Cokefair, Jon, 4,520,290, Cl. 313-15.000.

Chesebro, Donald G.; and Soychak, Francis J., to International Business Machines Corporation. Method of making a trench isolated device. 4,519,128, Cl. 29-576.00W.

Chevalier-Bultel, Jean P.: *See—*
Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Labonte, Normand, 4,519,811, Cl. 51-309.000.

Chevron Research Company: *See—*
Haas, John C., 4,519,810, Cl. 48-202.000.
Papir, Yoram S., 4,519,937, Cl. 252-500.000.
Papir, Yoram S., 4,519,938, Cl. 252-500.000.
Schroeder, Albert H.; Denisevich, Peter, Jr.; Suzuki, Shigeto; and Kurkov, Victor P., 4,519,940, Cl. 252-500.000.

Chew, Remedios K.: *See—*
Pastor, Ricardo C.; and Chew, Remedios K., 4,519,986, Cl. 423-19.000.

Chiarino, Dario: *See—*
Della Bella, Davide; and Chiarino, Dario, 4,520,200, Cl. 548-247.000.

Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, to Tanabe Seiyaku Co., Ltd. Method for optical resolution of DL-α-amino acid or (±)-α-phenylethanesulfonic acid. 4,519,955, Cl. 260-501.120.

Chicago Bridge & Iron Company: *See—*
Allo, Vincent F.; and Stafford, Donald C., 4,519,448, Cl. 165-118.000.
Carn, William R., 4,519,415, Cl. 137-318.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , 4,520,018, Cl. 514-469.000.

Cho, James R.: *See—*
Barabas, Eugene S.; and Cho, James R., 4,520,179, Cl. 526-212.000.
Barabas, Eugene S.; and Cho, James R., 4,520,180, Cl. 526-212.000.

Chow, Yechow T., to Ampex Corporation. Address transformation system having an address shuffler. 4,520,453, Cl. 364-900.000.

Christ, Frederick C.: *See—*
Holland, Ronald A.; Petrie, Harold L.; Brennan, John R.; and Christ, Frederick C., 4,519,457, Cl. 166-317.000.

Christopher, Hans-Gunther, to Siemens Aktiengesellschaft. Method for manufacturing a fiber-reinforced push or pull rod. 4,519,861, Cl. 156-172.000.

Chrysler Corporation: *See—*
Dolan, Courtney F.; and Woodcock, Stewart J., 4,519,265, Cl. 74-443.000.

Ciba Geigy Corporation: *See—*
Koci, Zdenek, 4,519,805, Cl. 8-650.000.
Puntener, Alois, 4,519,802, Cl. 8-404.000.
Szczepanski, Henry, 4,519,834, Cl. 71-100.000.

Claeys, Paul: *See—*
Six, Jean-Claude G.; Claeys, Paul; and Guillaume, Michel, 4,519,771, Cl. 431-25.000.

Clapp, Daniel W.: *See—*
Frazier, Donald; Daniels, J. Hartley; and Clapp, Daniel W., 4,519,512, Cl. 211-193.000.

Clare, Kenneth; and Hopkinson, Erle, to KELCO/AIL International Limited. Printing on pretreated substrates. 4,519,803, Cl. 8-445.000.

Clarion Co., Ltd.: *See—*
Itoh, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,519,269, Cl. 74-483.00R.

Clarke, Donald H., to Dow Chemical Company, The. Method for the recovery of solvent vapors. 4,519,816, Cl. 55-59.000.

Clarke, Robert T., Jr.; and Jasienski, Raymond, to Schlegel Corporation. Segmented membrane barrier. 4,519,729, Cl. 405-258.000.

Claussen, Uwe, to Bayer Aktiengesellschaft. Liquid-crystalline material containing azo dyestuffs. 4,519,935, Cl. 252-299.100.

Clay, Bobby J., to Natmar, Inc. Elastic band sealer apparatus and method for forming a continuous non-overlapping band. 4,519,857, Cl. 156-64.000.

Clayton, Anthony B.: *See—*
Diveley William R.; and Clayton, Anthony B., 4,520,171, Cl. 525-279.000.

Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids from unsaponifiables. 4,519,952, Cl. 260-419.000.

Clemens, Thomas G., to General Instrument Corporation. Single-stage oscillator having low-impedance feedback port. 4,520,326, Cl. 331-116.00R.

Clerici, Giordano. Pleating machine for pleating cloth with mutually converging folds. 4,519,531, Cl. 223-30.000.

Clifton, Mary F.: *See—*
Noren, Gerry K.; and Clifton, Mary F., 4,520,144, Cl. 523-435.000.

Clinch River Corporation: *See—*
Kinder, Greever C., 4,519,902, Cl. 209-234.000.

Cobe Laboratories, Inc.: *See—*
Elgas, Roger J.; and Gordon, Timothy M., 4,519,393, Cl. 128-400.000.

Cochran, Chudleigh B., to Hughes Tool Company. Continuous flow perforation washing tool and method. 4,519,456, Cl. 166-312.000.

Coffey, Gerald P.; Curatolo, Benedict S.; and Cepulis, Rimvydas L., to Standard Oil Company, The. Preparation of polyamide from dinitrile, diamine and water with P catalyst. 4,520,190, Cl. 528-336.000.

Cohen, Kenneth W., to Aerco International, Inc. Dynamically-stopped and statically-balanced valve. 4,519,422, Cl. 137-630.140.

Cohen, Marlene L., to Eli Lilly and Company. Method of selectively blocking peripheral vascular serotonergic receptors. 4,520,024, Cl. 514-255.000.

Cokefair, Jon, to Cherry Electrical Products Corporation. Gas discharge display with built-in heater. 4,520,290, Cl. 313-15.000.

Coleman, Larry M.; and Tambo, William, to Union Carbide Corporation. Waste treatment in silicon production operations. 4,519,999, Cl. 423-337.000.

Colombe , Philippe: *See—*
Metzger, Jean; Lecouls, Henri; Colombe , Philippe; and Wojcik, Jean, 4,520,001, Cl. 423-332.000.

Colonius, Ray E.; and Early, Edward, to Cargill Detroit Corp. Sucker rod coupling manufacturing system. 4,519,125, Cl. 29-558.000.

Columbus McKinnon Corporation: *See—*
Pancook, James J.; and Ulbing, Otmar M., 4,520,247, Cl. 200-298.000.

Comeau, Paul E., to Kenney Manufacturing Company. Drive sprocket for traverse rod. 4,519,433, Cl. 160-126.000.

Comment, Paul, to Favrot, Guy. Liquid spraying head. 4,519,528, Cl. 222-396.000.

Commercial Shearing, Inc.: *See—*
Petro, John D., 4,519,419, Cl. 137-596.000.
Petro, John D., 4,519,420, Cl. 137-596.000.

Commissariat a l'Energie Atomique: *See—*
Brachet, Alain; Figuet, Jacques; Guidez, Joel; and Lions, Noel, 4,519,978, Cl. 376-307.000.
Laviron, Andre ; and Berard, Claude, 4,520,309, Cl. 324-73.00R.

Common Sense Products Pty. Ltd.: *See—*
Jensen, Henning, 4,519,657, Cl. 339-15.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Belin, Rudolf E.; Boyce, William F.; and Feehan, John D., 4,519,195, Cl. 57-3.000.
Jellinek, Thomas, 4,520,143, Cl. 523-410.000.

Compagnie Francaise de Raffinage: *See—*
Marty, Claude; and Engelhard, Philippe, 4,520,225, Cl. 585-832.000.

Compagnie Francaise des Petroles: *See—*
Chaouloff, Michel; Bernicot, Michel; Douineau, Pierre; and Boret, Roger, 4,519,416, Cl. 137-488.000.

Compagnie General D'Electricite: *See—*
Lavarini, Bernard, 4,520,486, Cl. 372-95.000.

Computer Identification Systems, Inc.: *See—*
Parkinson, Dean B.; and Bergren, Orton D., 4,519,632, Cl. 283-75.000.

Conair Corporation: *See—*
Doyle, Edward J., 4,520,256, Cl. 219-225.000.

Conco Inc.: *See—*
Yoon, Heeyoung, 4,519,342, Cl. 123-3.000.

Concord, Inc.: *See—*
Gust, Jacob N., 4,519,460, Cl. 172-176.000.

Condra, Janet S.: *See—*
Russ, James J.; Smith, John W.; and Condra, Janet S., 4,519,921, Cl. 210-716.000.

Connolly, John F.: *See—*
Prater, Keith B.; Thrash, Robert J.; and Connolly, John F., 4,520,083, Cl. 429-101.000.

Container Corporation of America: *See—*
Howlett, Robert J., 4,519,319, Cl. 108-111.000.

Contemporary, Inc.: *See—*
Kanzelberger, James C., 4,520,064, Cl. 428-199.000.

Continental Can Company, Inc.: *See—*
Roth, Donald J.; Kubis, Charles S.; Walter, John; and Mohr, Glenn R., 4,519,859, Cl. 156-69.000.
Walter, John, 4,519,517, Cl. 215-253.000.

Conzelmann, Gerhard: *See—*
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, 4,519,115, Cl. 28-255.000.

Cook, Carl E. Miter board and saw guide. 4,519,280, Cl. 83-34.000.

Cook, Melvin S. Bubble-mode liquid phase epitaxy. 4,519,871, Cl. 156-622.000.

Cookerly, Jack C.: *See—*
Hall, Robert J.; Hall, George R.; and Cookerly, Jack C., 4,519,286, Cl. 84-1.030.

Cooper Industries: *See—*
Furrow, Robert E., 4,519,585, Cl. 254-273.000.

Copenhafer, William C.; and Pinsky, Michael L., to Intermountain Research & Development Corp. Enhanced recovery of soda ash from aqueous sodium carbonate solutions containing Na_2SO_4- and NaCl. 4,519,806, Cl. 23-302.00T.

Cordts, Bernhard F., to Varian Associates, Inc. Ferromagnetic films for high density recording and methods of production. 4,520,040, Cl. 427-38.000.

Corning Glass Works: *See—*
Beall, George H.; MacDowell, John F.; and Taylor, Mark P., 4,519,828, Cl. 65-33.000.

Correlli, Antonino E. Sheet metal bending position marker system. 4,519,143, Cl. 33-189.000.

Cortellini, Conrad, to Moorfeed Corporation. Holographic imager. 4,520,387, Cl. 358-90.000.

Cosden Technology, Inc.: *See—*
Schwarz, Richard A., 4,520,136, Cl. 521-60.000.
Watson, James M.; Butler, James R.; and Forward, Cleve H., 4,520,220, Cl. 585-467.000.

Costerousse, Germain: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,519,946, Cl. 260-239.55R.

Costruzioni Elettromagnetiche Industriali di Tagliafico Carlo: *See—*
Tagliafico, Carlo, 4,520,332, Cl. 335-126.000.

Couch, Robert P.: *See—*
St. Jacques, John W.; and Couch, Robert P., 4,519,240, Cl. 73-116.000.

Courvoisier, Guy: *See—*
Arieh, Simon; and Courvoisier, Guy, 4,519,150, Cl. 36-121.000.

Cox, Charles M.; and Heuer, Charles, to Zenith Electronics Corporation. Teletext reception indicator. 4,520,392, Cl. 358-147.000.

CPC International Inc.: *See—*
Heady, Robert E.; and Frankiewicz, Jeffrey R., 4,520,104, Cl. 435-160.000.

Crabb, Richard V., Jr., to Salinas Valley Engineering & Manufacturing, Inc. Method and apparatus for placing tags on produce and the like. 4,519,178, Cl. 53-137.000.

Cragin, Glynn P., Jr., to Mead Corporation, The. Method and apparatus for air start/stop of an ink jet printing device. 4,520,366, Cl. 346-1.100.

Craig, Arthur T.: *See—*
Moon, Joseph C.; and Craig, Arthur T., 4,519,153, Cl. 40-591.000.

Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., to Xerox Corporation. Printing system. 4,520,455, Cl. 364-900.000.

Creative Research and Development, Inc.: *See—*
Nezat, Jerry W., 4,520,013, Cl. 424-141.000.

Crehan, Patrick James: *See—*
Kennedy, Richard B., 4,520,139, Cl. 521-109.100.

Crochetiere, Raymond H.: *See—*
Kitch, Paul E.; Crochetiere, Raymond H.; Gudmundson, Gunnar G.; and Hadank, Walter R., 4,519,688, Cl. 354-297.000.

Cronenberg, Dieter-Julius; and Faflek, Jeno , to Athmer, F. Sealing device for the bottom of a door. 4,519,165, Cl. 49-307.000.

Crosbie, Gary M.; and Bretz, Gregory T., to Ford Motor Company. Method of making a silicon metal containing article. 4,519,967, Cl. 264-86.000.

Crossley, Anthony: *See—*
Gould, Grahame; Crossley, Anthony; and Moran, David P. J., 4,520,037, Cl. 426-330.600.

Crown Union, Inc.: *See—*
Snook, Randolph W., 4,519,303, Cl. 98-58.000.

Crucible Societe Anonyme: *See—*
Bredenkamp, Gordon L.; and Van Rhyn, Pierre, 4,520,255, Cl. 219-130.100.

Crutcher, John P., to Sencorp. Flywheel for an electro-mechanical fastener driving tool. 4,519,535, Cl. 227-131.000.

Curatolo, Benedict S.: *See—*
Coffey, Gerald P.; Curatolo, Benedict S.; and Cepulis, Rimvydas L., 4,520,190, Cl. 528-336.000.

Curran, Earl J., Jr., to Square D Company. Three phase scaling current-to-voltage convertor. 4,520,304, Cl. 318-800.000.

Curry, Kenneth D.: *See—*
Healy, George M.; and Curry, Kenneth D., 4,520,107, Cl. 435-240.000.

Curtis, Lyn; and Young, William C., to AT&T Bell Laboratories. Optical attenuator. 4,519,671, Cl. 350-96.150.

Czerlinski, George H., to Submicron, Inc. Method of and apparatus for selective localized differential hyperthermia of a medium. 4,520,249, Cl. 219-10.49R.

Daane, Robert A.: *See—*
Wittkopf, Eugene W.; Jorgensen, Allen R.; and Daane, Robert A., 4,519,757, Cl. 425-143.000.

Dahill, Robert T.; Purzycki, Kenneth L.; and Golle, Erlinda F., to Givaudan Corporation. Spirolactones as odorants. 4,519,944, Cl. 252-522.00R.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Hori, Yuji; Nishimura, Yoshichika; and Takahashi, Fuminobu, 4,519,923, Cl. 252-8.50C.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Hikosaka, Shinichi; Murayama, Kosho; Fukuura, Shinichi; and Yanase, Takaomi, 4,519,906, Cl. 210-223.000.

Daicel Chemical Industries Ltd.: *See—*
Namikoshi, Hajime, 4,520,192, Cl. 536-66.000.

Daimler-Benz Aktiengesellschaft: *See—*
Heinrich, Hans; and Hedrich, Dieter, 4,519,537, Cl. 228-221.000.

Daiwa Can Company, Limited: *See—*
Shimizu, Hiromichi; Kuboshima, Akira; and Tanaka, Tadashi, 4,519,310, Cl. 101-35.000.

d'Alayer de Costemore d'Arc, Stephane, to Staar S. A. Cleaning device for discs. 4,520,470, Cl. 369-72.000.

D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Vinylacetylene-terminated polyimide derivatives. 4,520,198, Cl. 546-66.000.

Dammann, Peter; Lorenz, Hellmut; and Maier, Roland, to Barmag Barmer Maschinenfabrik AG. Yarn false twisting apparatus. 4,519,204, Cl. 57-340.000.

D'Angelo, Domenico: *See—*
Bernardoni, Luigi; and D'Angelo, Domenico, 4,519,363, Cl. 123-432.000.

Daniels, J. Hartley: *See—*
Frazier, Donald; Daniels, J. Hartley; and Clapp, Daniel W., 4,519,512, Cl. 211-193.000.

Daniels, Ted M., to Eldec Corporation. Pressure transducer including a proximity sensor. 4,519,256, Cl. 73-745.000.

Danielski, Andrew: *See—*
Hascal, Marcel; Watson, Donald A.; Danielski, Andrew; and Lopez, Sergio, 4,520,318, Cl. 324-457.000.

Danno, Yoshiaki; Kobayashi, Hiroyuki; and Fukui, Toyoaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Engine speed regulating system. 4,520,272, Cl. 290-40.00A.

Data Card Corporation: *See—*
Warwick, Dennis J.; Nubson, Richard C.; and Howes, Ronald B., Jr., 4,519,600, Cl. 271-4.000.

Davco Manufacturing Corporation: *See—*
Smith, Paul B., 4,519,653, Cl. 303-89.000.

David, Guy A. J.: *See—*
Grima, Jean-Claude; Pando, Bernard; and David, Guy A. J., 4,520,479, Cl. 370-84.000.

David, Lawrence D., to Celanese Corporation. Production of metastable tetragonal zirconia. 4,520,114, Cl. 501-12.000.

Davidge, Ronald V.: *See—*
Barker, Robert B.; Davidge, Ronald V.; Gibson, David K.; and Van Cleave, George W., 4,519,700, Cl. 355-3.0SH.

Davidian, Michael, to Davidian, Michael. Method of preventing corrosion of a metal casket. 4,520,043, Cl. 427-239.000.

Davis, Gerald B.: *See—*
Gullett, Edwin P.; Davis, Gerald B.; and Bustos, Rafael T., 4,519,508, Cl. 211-59.200.

Davis, Lorne A., Jr.; and Haskin, Helen K., to Texaco Inc. Two dimensional microwave chemical flood testing means and method. 4,519,982, Cl. 422-68.000.

Davy McKee (Sheffield) Limited: *See—*
Causton, Robert J., 4,519,852, Cl. 148-16.000.

Dawe, Garfield A., to Abbott Laboratories. Infusion pump system. 4,519,792, Cl. 604-152.000.

Day, James D.; and Day, James D., II. Apparatus for constructing modular pre-cast concrete buildings. 4,519,568, Cl. 249-66.00R.

Day, James D., II: *See—*
Day, James D.; and Day, James D., II, 4,519,568, Cl. 249-66.00R.

Dayco Corporation: *See—*
Long, Delmar D.; and Anderson, John F., Jr., 4,520,038, Cl. 427-26.000.

De la Rue Systems Limited: *See—*
Hunt, Steven A., 4,519,249, Cl. 73-596.000.

DeCloux, Richard J. Exercise device. 4,519,603, Cl. 272-73.000.

De Grave, Isidoor: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,520,135, Cl. 521-56.000.

De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogosian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., to American Standard Inc. Self-contained sewage waste disposal system. 4,519,103, Cl. 4-317.000.

Deguchi, Hiroyuki: *See—*
Kurahashi, Masayuki; Kobayashi, Hisao; and Deguchi, Hiroyuki, 4,519,750, Cl. 417-270.000.

Degussa Aktiengesellschaft: *See—*
Schwarze, Werner; Kleemann, Axel; Remmel, Hans; and Hohn, Wolfgang, 4,520,209, Cl. 560-124.000.

De Jong, Jan I., to AKZO nv. Fluid cracking process using sepiolite-containing catalyst composition. 4,519,897, Cl. 208-74.000.

Del Mar Avionics: *See—*
Lisiecki, Andrew I.; and Wong, Alan S., 4,519,398, Cl. 128-710.000.

de Langre, Bruno: *See—*
Fourre, Remy; and de Langre, Bruno, 4,520,482, Cl. 371-68.000.

Della Bella, Davide; and Chiarino, Dario, to Zambon S.p.A. Isoxazole derivatives. 4,520,200, Cl. 548-247.000.

Deltakabel B.V.: *See—*
De Roo, Minno, 4,520,278, Cl. 307-253.000.

Del Toro, James J.: *See—*
Bussjager, Rudy C.; and Del Toro, James J., 4,519,539, Cl. 236-13.000.

De Luca, Paul V., to Porta Systems Corp. Wire plug assembly. 4,519,663, Cl. 339-99.00R.

Demarest, Henry M., Jr., to PPG Industries, Inc. Two stage batch liquefaction process and apparatus. 4,519,814, Cl. 65-27.000.

Demerson, Christopher A.: *See—*
Abraham, Nedumparambil A.; and Demerson, Christopher A., 4,520,203, Cl. 548-432.000.

Demus, Dietrich; Weissflog, Wolfgang; and Kresse, Horst, to VEB Werk fuer Fernsehelektronik im Kombinat Mikroelektronik. Nematic liquid crystals and method of production. 4,519,936, Cl. 252-299.630.

Demyanovich, Nikolai A.: *See—*
Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S., 4,519,437, Cl. 164-284.000.

Deng, Shye-Yih. Boiler-driven power generator. 4,519,212, Cl. 60-669.000.

Denisevich, Peter, Jr.: *See—*
Schroeder, Albert H.; Denisevich, Peter, Jr.; Suzuki, Shigeto; and Kurkov, Victor P., 4,519,940, Cl. 252-500.000.

Dennison National Company: *See—*
Podosek, Edward, 4,519,629, Cl. 281-25.00A.

de Nora, Oronzio; and Bianchi, Giuseppe, to Oronzio de Nora, S.A. Method of making electrical connection to an anode. 4,519,886, Cl. 204-196.000.

Dente, Mario: *See—*
Minet, Ronald G.; Dente, Mario; Ranzi, Eliseo; and Sunny H. K., 4,520,217, Cl. 585-415.000.

Denton, Anthony D., to Ambler, Kenneth; and Raeder, Willy. Photoelectric safety screen with stray source detection. 4,520,262, Cl. 250-221.000.

Deraedt, Roger: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,519,946, Cl. 260-239.55R.

De Roo, Minno, to Deltakabel B.V. Electronic switch. 4,520,278, Cl. 307-253.000.

DeSanto, Ronald F., to Lehigh Press, Inc., The. Folding apparatus with compound tucker blade motion. 4,519,597, Cl. 270-42.000.

Desarmaux, Pierre: *See—*
Bressand, Rene ; and Desarmaux, Pierre, 4,519,624, Cl. 280-633.000.

Deschamps, Andre ; and Franckowiak, Sigismond, to Institut Francais du Petrole. Process for converting a carbonaceous material to lower paraffinic hydrocarbons and monocyclic aromatic hydrocarbons. 4,519,895, Cl. 208-8.0LE.

DeSoto, Inc.: *See—*
Noren, Gerry K.; and Clifton, Mary F., 4,520,144, Cl. 523-435.000.

Detectors, Inc.: *See—*
Rubey, Ulyss R., 4,519,867, Cl. 156-351.000.

Deutsche Babcock Anlagen Aktiengesellschaft: *See—*
Wischniewski, Martin, 4,519,320, Cl. 110-238.000.

Dewey, Daniel O.: *See—*
Akkerman, Neil H.; and Dewey, Daniel O., 4,519,575, Cl. 251-58.000.

DewEze Manufacturing, Inc.: *See—*
Miller, Larry C., 4,519,325, Cl. 111-85.000.

Dewhurst, John E.: *See—*
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,519,965, Cl. 264-51.000.

Deyhle, Manfred: *See—*
Bradler, Hans J.; Brauner, Wilfried; Deyhle, Manfred; and Vogt, Karl H., 4,519,865, Cl. 156-256.000.

DeYoreo, Sal G.; and Stevens, David P., to Armatron International, Inc. Apparatus for attracting insects. 4,519,776, Cl. 431-328.000.

Dhein, Rolf; Rottmaier, Ludwig; Merten, Rudolf; and Siebourg, Wolfgang, to Bayer Aktiengesellschaft. Flame-prooved polyamide moulding materials. 4,520,147, Cl. 524-100.000.

Diamond Automations, Inc.: *See—*
McEvoy, John C.; and Thomas, Leslie P., 4,519,494, Cl. 198-448.000.
Thomas, Leslie P., 4,519,505, Cl. 209-513.000.

Dickerson, Robert E., to Eastman Kodak Company. Photographic element exhibiting reduced sensitizing dye stain. 4,520,098, Cl. 430-495.000.

Dickey Natural Systems, Inc.: *See—*
Dickey, Patricia C., 4,519,340, Cl. 119-1.000.

Dickey, Patricia C., to Dickey Natural Systems, Inc. Absorbent composition for animal excreta and process for making and using same. 4,519,340, Cl. 119-1.000.

Dickhudt, Eugene A., to Medtronic, Inc. Balloon lead and inflator. 4,519,403, Cl. 128-785.000.

Dickson, John K., to Schlumberger Electronics (UK) Limited. Roller-type ultrasonic inspection device with acoustical isolation. 4,519,251, Cl. 73-639.000.

Diefenbach, Gerhard: *See—*
Bukoschek, Romuald L.; and Diefenbach, Gerhard, 4,520,286, Cl. 310-83.000.

Diesel Kiki Kabushiki Kaisha: *See—*
Sutoh, Shinji; Hara, Toshizo; and Takahashi, Akiyoshi, 4,519,443, Cl. 165-17.000.

Dietrich, Ronald J.: *See—*
Hashiguchi, Don H.; Klar, Erhard; and Dietrich, Ronald J., 4,520,130, Cl. 502-345.000.

Dietrichs, Hans-Hermann: *See—*
Sinner, Michael; Dietrichs, Hans-Hermann; Puls, Jurgen; Schweers, Werner; and Brachthauser, Karl-Heinz, 4,520,105, Cl. 435-163.000.

Dieupart, Michel: *See—*
Dussoliet, Jacques; and Dieupart, Michel, 4,519,554, Cl. 242-67.400.

Dillon, Paul J.; and Stumpf, Walter, to Simmons U.S.A. Corporation. Boxspring having coil compression stops. 4,519,107, Cl. 5-261.000.

Dines, Allen I.; Yeung, David; and Nacht, Sergio, to Richardson-Vicks Inc. Monohydroxy-benzoyl peroxide and compositions for treating acne. 4,520,133, Cl. 514-568.000.

Dingus, Jack D.; and Gilliam, Edward C., to Reynolds Metals Company. Can end sampler. 4,519,489, Cl. 193-31.00R.
Dinius, Richard L., to Ethyl Corporation. Absorptive structure. 4,519,798, Cl. 604-358.000.
Dinur, Eldad: *See—*
Gorney, Moshe; and Dinur, Eldad, 4,519,546, Cl. 239-542.000.
Director-General of the Agency of Industrial Science & Technology: *See—*
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.
Dischert, Robert A.; and Libbey, Robert L., to RCA Corporation. FM video transmission system having coring and coring compensation for reducing effects of triangular noise. 4,520,396, Cl. 358-167.000.
DiVecchio, Angelo N.: *See—*
Lever, John K.; and DiVecchio, Angelo N., 4,519,182, Cl. 53-461.000.
Diveley William R.; and Clayton, Anthony B., to Hercules Incorporated. Polymeric hindered amines. 4,520,171, Cl. 525-279.000.
Dr. Johannes Heidenhain GmbH: *See—*
Nelle, Gunther, 4,519,709, Cl. 356-373.000.
Schmitt, Walter, 4,519,140, Cl. 33-125.00C.
Dodson, Stuart A.: *See—*
Campbell, Henry F.; Kuhla, Donald E.; Studt, William L.; and Dodson, Stuart A., 4,520,025, Cl. 514-275.000.
Dolan, Courtney F.; and Woodcock, Stewart J., to Chrysler Corporation. Dampening shoes for synchronizer gears. 4,519,265, Cl. 74-443.000.
Dolhert, Leonard E.: *See—*
Gentilman, Richard L.; Maguire, Edward A.; and Dolhert, Leonard E., 4,520,116, Cl. 501-98.000.
Domingue, Willard A., to Fire Trumpet of America, Inc. Fire alarm system and method. 4,520,352, Cl. 340-590.000.
Dontscheff, Helmut, to Boeing Company, The. Cutting method and apparatus for tape laying machines. 4,519,285, Cl. 83-880.000.
Dooley, James J.: *See—*
Halford, Wayne R.; Renger, Larry H.; and Dooley, James J., 4,519,789, Cl. 446-444.000.
Dooling, Joe E. Oil well jack. 4,519,293, Cl. 91-178.000.
D'Ortenzio, Remo J.: *See—*
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., 4,520,455, Cl. 364-900.000.
Double E Company Inc.: *See—*
Keith, Robert D., 4,519,620, Cl. 279-2.00R.
Douineau, Pierre: *See—*
Chaouloff, Michel; Bernicot, Michel; Douineau, Pierre; and Boret, Roger, 4,519,416, Cl. 137-488.000.
Dover Corporation: *See—*
Boeckman, Paul A.; and Young, Dennis L., 4,519,578, Cl. 251-163.000.
McMath, Jack A., 4,519,635, Cl. 285-93.000.
Dow Chemical, The: *See—*
Kar, Kishore K., 4,519,924, Cl. 252-35.000.
Dow Chemical Company, The: *See—*
Clarke, Donald H., 4,519,816, Cl. 55-59.000.
Skach, Edward J., Jr., 4,519,758, Cl. 425-6.000.
Stevens, Timothy S.; and Langhorst, Martin A., 4,519,905, Cl. 210-198.200.
Willis, Stephen B.; and Boyce, Pamela J., 4,519,843, Cl. 106-90.000.
Dow Corning Corporation: *See—*
Brown, Paul L., 4,520,160, Cl. 524-765.000.
Down, Michael G., to Westinghouse Electric Corp. Metal powders and processes for production from oxides. 4,519,837, Cl. 75-0.50B.
Doyle, Edward J., to Conair Corporation. Hot air curler having a remote air inlet and a slide switch and actuating arm within its handle. 4,520,256, Cl. 219-225.000.
Doyle, Rexford. Clothes-line. 4,519,509, Cl. 211-119.130.
Doyle, William D., to Felt Products Mfg. Co. High temperature resistant gasket having improved recovery characteristics. 4,519,619, Cl. 277-235.00B.
Dragerwerk A.G.: *See—*
Schwanbom, Erik; Frankenberger, Horst; and Baum, Marcel, 4,519,388, Cl. 128-204.250.
Dreese, Charles H. Log shaper. 4,519,429, Cl. 144-3.00R.
Dreher, Dieter: *See—*
Lehmann, Klaus; Dreher, Dieter; Rauch, Hubert; and Siol, Werner, 4,520,172, Cl. 525-369.000.
Drehman, Lewis E.: *See—*
McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W., 4,520,223, Cl. 585-629.000.
Dreischmeier, Wilfried: *See—*
Kannegiesser, Martin; Mussiger, Klaus; and Dreischmeier, Wilfried, 4,519,222, Cl. 68-5.00C.
DuBrucq, Denyse C., to Ear Three Systems Manufacturing Company. Speech presentation system and method. 4,520,501, Cl. 381-48.000.
Duembgen, Gerd: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.
Dufour, Charles H.; and Newman, Jonathan G., to Harris Corporation. Makeready system. 4,520,454, Cl. 364-900.000.
Duijndam, Cornelis P. J.: *See—*
Zwijsen, Wilhelmus A. J. M.; Duijndam, Cornelis P. J.; and Smeulers, Wouter, 4,520,393, Cl. 358-149.000.
Dumbser, Gerhard; Lutz, Manfred; Fey, Rainer; and Weiss, Kurt, to Fichtel & Sachs AG. Control locking installation for motor vehicle doors. 4,519,227, Cl. 70-264.000.
Dung, Nguyen D.: *See—*
Brigham, William D.; and Dung, Nguyen D., 4,519,213, Cl. 62-52.000.
Dunmire, Robert W.; Miller, Drew J.; and Johnson, Michael D., to Becton, Dickinson and Company. Wearing apparel and methods for manufacturing of wearing apparel. 4,519,098, Cl. 2-161.00R.
Dunn, James M., to Verex Laboratories, Inc. Sustained released aspirin formulation. 4,520,009, Cl. 424-78.000.
Du Pont de Nemours, E. I., and Company: *See—*
Chambers, William J., 4,520,093, Cl. 430-292.000.
Hagman, John F.; and Shih, Chi-Kai, 4,520,169, Cl. 525-185.000.
Kitto, David P., 4,520,170, Cl. 525-200.000.
Ritchie, Robert J., 4,519,884, Cl. 204-181.00C.
Subramanian, Narayanan S., 4,520,183, Cl. 526-318.000.
Sundet, Sherman A., 4,520,044, Cl. 427-244.000.
Duranleau, Roger G.: *See—*
Lin, Jiang-Jen; and Duranleau, Roger G., 4,519,956, Cl. 260-549.000.
Durbin, Roger: *See—*
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,519,665, Cl. 339-147.00R.
Durkan, Gerald; and Sieracki, Leonard M., to Kircaldie, Randall and McNab, trustee. Respirating gas supply method and apparatus therefor. 4,519,387, Cl. 128-204.230.
Dussoliet, Jacques; and Dieupart, Michel, to Somfy. Device for driving a protection awning. 4,519,554, Cl. 242-67.400.
Duvdevani, Ilan: *See—*
Peiffer, Dennis G.; Lundberg, Robert D.; Duvdevani, Ilan; and Thaler, Warren A., 4,520,158, Cl. 524-481.000.
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., to Feldmuhle Aktiengesellschaft. Mullite plate. 4,519,359, Cl. 123-668.000.
Dyer, Thomas A., to Pentek Corporation. Turntable for roller conveyor system. 4,519,493, Cl. 198-414.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,520,063, Cl. 428-195.000.
E-Systems, Inc.: *See—*
Keearns, Larry R., 4,520,445, Cl. 364-450.000.
E. Th. Noack Verpackungsmaschinen: *See—*
Masino, Leo, 4,519,282, Cl. 83-85.000.
Ear Three Systems Manufacturing Company: *See—*
DuBrucq, Denyse C., 4,520,501, Cl. 381-48.000.
Early, Edward: *See—*
Colonius, Ray E.; and Early, Edward, 4,519,125, Cl. 29-558.000.
Earthship Enterprise, Inc.: *See—*
Britz, Richard D., 4,519,176, Cl. 52-742.000.
Eastman Kodak Company: *See—*
Dickerson, Robert E., 4,520,098, Cl. 430-495.000.
Jakubowicz, Raymond F., 4,519,258, Cl. 73-864.160.
Phillips, Bobby M., 4,519,200, Cl. 57-246.000.
Spaller, Albert E., 4,519,281, Cl. 83-37.000.
Eaton Corporation: *See—*
Forsell, Kenneth A.; and Mallonen, Edward A., 4,520,244, Cl. 200-67.0DA.
Hastings, Jerome K.; Brubaker, John R.; and Kroll, John W., 4,520,336, Cl. 337-140.000.
Kotian, Vijayraj M.; Blumer, Roger L.; and Herbert, William J., 4,520,260, Cl. 219-553.000.
Kroll, John W., 4,520,375, Cl. 346-140.00R.
Stearley, John W.; and Woodard, Tony O., 4,520,334, Cl. 335-186.000.
Wolcott, John H., 4,520,284, Cl. 310-42.000.
Eats, James V.: *See—*
Archibald, James B.; and Eats, James V., 4,519,669, Cl. 339-274.000.
Eberle, Kurt, to Heuchert, Johann K. Apparatus for dispensing and compacting paper towels. 4,519,308, Cl. 100-102.000.
Ebisawa, Masuo; Kawase, Akio; and Nakamura, Akiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Method for injecting molten metal in vertical diecasting machine. 4,519,436, Cl. 164-120.000.
Echte, Adolf: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,520,135, Cl. 521-56.000.
Eckardt, Rudolf: *See—*
Spittka, Horst; Eckardt, Rudolf; and Neuendorf, Cristoph, 4,519,829, Cl. 65-114.000.
Eckhart, Clifford F.: *See—*
Lindstrom, Gerald D.; Eckhart, Clifford F.; Farthing, George A., Jr.; Muckley, James J.; and Taylor, Brian E., 4,519,322, Cl. 110-264.000.
Eder, Erich: *See—*
Winter, Horst; and Eder, Erich, 4,519,186, Cl. 53-585.000.
Edgar, Albert D.; and Lubart, Neil D., to International Business Machines Corporation. Diagonal grid image communication and display. 4,520,391, Cl. 358-133.000.
Edgren, David, to ALZA Corporation. Osmotic device with wall comprising cellulose ether and permeability enhancer. 4,519,801, Cl. 604-892.000.
Edwin Cooper, Inc.: *See—*
O'Brien, Joseph P.; and Papay, Andrew G., 4,519,929, Cl. 252-51.50A.

Efstratis, Ernest. Garbage disposal guard. 4,519,102, Cl. 4-292.000.
Eggers, Ingo: *See—*
Knochel, Arndt; Eggers, Ingo; Klatte, Bernd; and Wilken, Rolf-Dieter, 4,519,996, Cl. 423-249.000.
Eheim, Franz; Hofer, Gerald; Konrath, Karl; and Straubel, Max, to Robert Bosch GmbH. Controlling device for a fuel-quantity adjusting member of a fuel injection pump. 4,519,352, Cl. 123-373.000.
Eichberg, Joseph: *See—*
Kronstein, Max; and Eichberg, Joseph, 4,520,153, Cl. 524-145.000.
Eiko Shiraishi: *See—*
Shiraishi, Yoshiro, 4,519,466, Cl. 180-7.100.
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, to Novo Industri A/S. Liquid enzyme concentrates containing alpha-amylase. 4,519,934, Cl. 252-174.120.
Elander, Richard P.: *See—*
Lowe, David A.; Romancik, Guna; Cappelletti, Leonardo M.; and Elander, Richard P., 4,520,101, Cl. 435-49.000.
Elco Corporation: *See—*
Tillotson, John D., 4,519,664, Cl. 339-143.00R.
Eldec Corporation: *See—*
Daniels, Ted M., 4,519,256, Cl. 73-745.000.
Electric Power Research Institute, Inc.: *See—*
Kelley, Douglas P., 4,519,462, Cl. 175-53.000.
Rabinowitz, Mario; and Perry, E. Robert, 4,520,078, Cl. 428-636.000.
Elektro Physik Hans Nix & Dr. Erich Steingroever: *See—*
Rohde, Thomas; and Caspers, Friedhelm, 4,520,308, Cl. 324-58.50R.
Elfverson, Sven E.: *See—*
Nilsson, Sten E.; and Elfverson, Sven E., 4,519,302, Cl. 98-2.080.
Elgas, Roger J.; and Gordon, Timothy M., to Cobe Laboratories, Inc. Fitting for corrugated tube. 4,519,393, Cl. 128-400.000.
Eli Lilly and Company: *See—*
Cohen, Marlene L., 4,520,024, Cl. 514-255.000.
Elint Corporation: *See—*
Charlot, Lincoln H., 4,520,362, Cl. 343-361.000.
Elkem Metals Company: *See—*
Wells, James E., III, 4,519,838, Cl. 75-129.000.
Elliott, Joseph W.: *See—*
Atkinson, Robert W.; Elliott, Joseph W.; and Johnson, Donald W., 4,519,385, Cl. 128-66.000.
Elmore, Carl L.; Poulin, Ted M.; and Barrett, Mark D., to Kamyr, Inc. Surface condenser/water heating. 4,519,446, Cl. 165-101.000.
Elring Dichtungswerke GmbH: *See—*
Sommer, Horst; and Gronle, Hansgeorg, 4,520,068, Cl. 428-324.000.
Emerson Electric Co.: *See—*
Wang, David C.; and Voepel, Harry W., 4,520,287, Cl. 310-184.000.
Emhart Industries, Inc.: *See—*
Jones, Stanley P., 4,519,827, Cl. 65-29.000.
Emile, Philip, Jr.: *See—*
Kelly, Austin T.; Stolpen, Alan H.; and Emile, Philip, Jr., 4,520,310, Cl. 324-115.000.
Endo, Katsusuke; and Inagaki, Yoshio, to Fuji Photo Film Co., Ltd. Photographic elements for silver salt diffusion transfer process containing mercapto imidazole stabilizers. 4,520,096, Cl. 430-233.000.
Endou, Satosi: *See—*
Yokoe, Sadao; Abe, Seimei; Wakata, Shoichi; Endou, Satosi; and Onozawa, Kazuyoshi, 4,519,549, Cl. 239-703.000.
Engelhard Corporation: *See—*
Andrews, Robert W.; Himpsl, Francis L.; Horvath, Eugene B.; and Speronello, Barry K., 4,520,119, Cl. 502-67.000.
Borland, William, 4,520,422, Cl. 361-305.000.
Engelhard, Philippe: *See—*
Marty, Claude; and Engelhard, Philippe, 4,520,225, Cl. 585-832.000.
Engineered Yarns, Inc.: *See—*
Worrall, James D.; and Tefft, Ronald E., 4,520,059, Cl. 428-109.000.
Enns, Kurt: *See—*
Byerley, John J.; and Enns, Kurt, 4,519,880, Cl. 204-91.000.
Enomoto, Masaru; Kimura, Kenji; and Kawada, Keiichi, to Honda Giken Kogyo Kabushiki Kaisha. Valve-actuating mechanism for three-valve internal-combustion engine. 4,519,364, Cl. 123-432.000.
Ensley, Burt D., Jr., to Amgen. Microbial production of indigo. 4,520,103, Cl. 435-121.000.
Enter, Rudolf; and Laverty, Michael P., to NCR Canada Ltd - NCR Canada Ltee. Self-adjusting sensor controller. 4,520,270, Cl. 250-560.000.
Entwistle, Ian D.; and Boehm, Peter, to Shell Oil Company. Anticoagulants of the 4-hydroxycoumarin type and rodenticidal compositions (baits) comprising such anti-coagulants. 4,520,007, Cl. 424-17.000.
Epson Corporation: *See—*
Koto, Haruhiko, 4,520,374, Cl. 346-140.00R.
Epstein, Paul; Ballas, John S., Jr.; Mandler, John J., Jr.; and Van Horn, Joseph M., to American Home Products Corporation (Del.). Fetal heart rate monitor apparatus and method for combining electrically and mechanically derived cardiographic signals. 4,519,396, Cl. 128-698.000.
Ericsson, Thomas; Gylfe, Sten; and Hedblom, Mats-Olov, to Papyrus Kopparfors AB. Process for the absorption of organic liquids by use of a hydrophobic fibrous material. 4,519,918, Cl. 210-680.000.
Ernst Thielenhaus KG: *See—*
Thielenhaus, Ernst, 4,519,170, Cl. 51-289.00R.
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, to Institut Francais du Petrole; and Societe Labofina S.A. Method and device for determining the organic carbon content of a sample. 4,519,983, Cl. 422-78.000.
Ess GmbH Skibindungen: *See—*
Luitz, Max; and Weiss, Eugen, 4,519,625, Cl. 280-633.000.
Essex Group, Inc.: *See—*
Sandi, Floyd J.; and Vultaggio, Anthony, 4,520,241, Cl. 200-5.00B.
Etani, Kenji. Method for treating swimming pool water. 4,519,914, Cl. 210-633.000.
Ethicon, Inc.: *See—*
Cerwin, Robert J., 4,519,501, Cl. 206-339.000.
Ethyl Corporation: *See—*
Dinius, Richard L., 4,519,798, Cl. 604-358.000.
Eutectic Corporation: *See—*
Rotolico, Anthony J., 4,519,541, Cl. 239-1.000.
Evans, Herbert M. Method and apparatus for the non-destructive testing of materials. 4,519,245, Cl. 73-579.000.
Evans, Richard E., Jr.: *See—*
Kinney, William L., Jr.; and Evans, Richard E., Jr., 4,519,823, Cl. 55-493.000.
Evans, Thomas L., to General Electric Company. Method for preparation of aromatic ether imides and for catalyst recovery therein. 4,520,204, Cl. 548-461.000.
Ex-Cello-O Corporation: *See—*
Mitchell, William A.; Thompson, J. Brent; and Freese, John L., 4,519,734, Cl. 409-231.000.
Exxon Production Research Co.: *See—*
Tsao, Yuh-hwang; and Binder, George G., Jr., 4,519,452, Cl. 166-288.000.
Exxon Research & Engineering Co.: *See—*
Allan, David E., 4,519,898, Cl. 208-131.000.
Fiocco, Robert J., 4,519,901, Cl. 208-321.000.
Hochhauser, Albert M., 4,519,809, Cl. 44-53.000.
Peiffer, Dennis G.; Lundberg, Robert D.; Duvdevani, Ilan; and Thaler, Warren A., 4,520,158, Cl. 524-481.000.
Turner, S. Richard; Siano, Donald B.; and Bock, Jan, 4,520,182, Cl. 526-307.200.
F. C. Brown Rentals, Inc.: *See—*
Moody, Albert L., 4,519,428, Cl. 141-98.000.
Fachini, Robert M.; Orsborn, Jesse H.; and Barrett, Monroe C., to J. I. Case Company. Telescoping basket cover. 4,519,189, Cl. 56-16.600.
Faflek, Jeno : *See—*
Cronenberg, Dieter-Julius; and Faflek, Jeno , 4,519,165, Cl. 49-307.000.
Fal-Kon Investment Group: *See—*
Jirovetz, Andre, 4,519,533, Cl. 227-109.000.
Fanelli, Michael W.; and Masters, Edward R. Collapsible lantern. 4,520,431, Cl. 362-180.000.
Fanuc Ltd: *See—*
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, 4,520,253, Cl. 217-69.00W.
Hattori, Seiichi; and Kanda, Kunio, 4,520,458, Cl. 364-900.000.
Farge, Daniel: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,520,193, Cl. 544-016.000.
Farmer, Norman L. Insecticide duster. 4,519,548, Cl. 239-652.000.
Farthing, George A., Jr.: *See—*
Lindstrom, Gerald D.; Eckhart, Clifford F.; Farthing, George A., Jr.; Muckley, James J.; and Taylor, Brian E., 4,519,322, Cl. 110-264.000.
Favrot, Guy: *See—*
Comment, Paul, 4,519,528, Cl. 222-396.000.
Fazio, Sebastian. Stabilizer strap. 4,519,159, Cl. 43-25.000.
Federowicz, Raymond J.: *See—*
Kinney, Roger D.; and Federowicz, Raymond J., 4,519,409, Cl. 135-88.000.
Feehan, John D.: *See—*
Belin, Rudolf E.; Boyce, William F.; and Feehan, John D., 4,519,195, Cl. 57-3.000.
Fehrenbach, Siegfried: *See—*
Krimmer, Erwin; and Fehrenbach, Siegfried, 4,520,227, Cl. 174-65.00R.
Feirer, Egon; Amann, Ulrich; and Kuppinger, Gunter, to Maschinenfabrik Muller-Weingarten AG. Sliding tool table intended for the exchange of tools in presses. 4,519,309, Cl. 100-229.00R.
Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, to SMS Schloemann-Siemag AG. Roll stand with noncylindrical rolls. 4,519,233, Cl. 72-247.000.
Feldmuhle Aktiengesellschaft: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,519,359, Cl. 123-668.000.
Felicetta, Joseph A. Self contained indirect refrigeration system. 4,519,216, Cl. 62-185.000.
Felt Products Mfg. Co.: *See—*
Doyle, William D., 4,519,619, Cl. 277-235.00B.
Fennema, Alan A.: *See—*
Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., 4,519,553, Cl. 242-56.00R.
Fenton, John W. Constant displacement turbine with vane which pivots and rotates. 4,519,756, Cl. 418-68.000.
Ferenc, Robert R.: *See—*
Bravenec, Thomas H.; Boyd, Roger L.; and Ferenc, Robert R., 4,519,974, Cl. 264-279.000.

Ferguson, Du'Bois J.: *See—*
Wells, Bruce D.; and Ferguson, Du'Bois J., 4,519,985, Cl. 423-6.000.
Ferranti plc: *See—*
Brotherton, William A.; and Street, Kenneth, 4,520,427, Cl. 361-389.000.
Fey, Rainer: *See—*
Dumbser, Gerhard; Lutz, Manfred; Fey, Rainer; and Weiss, Kurt, 4,519,227, Cl. 70-264.000.
Fichtel & Sachs AG: *See—*
Dumbser, Gerhard; Lutz, Manfred; Fey, Rainer; and Weiss, Kurt, 4,519,227, Cl. 70-264.000.
Fields, Gary C.; and Long, Gary E., to Remote Switch Systems, Inc. Remote cable switching system. 4,520,234, Cl. 179-2.00A.
Figuet, Jacques: *See—*
Brachet, Alain; Figuet, Jacques; Guidez, Joel; and Lions, Noel, 4,519,978, Cl. 376-307.000.
Fine Particle Technology Corporation: *See—*
Wiech, Raymond E., Jr., 4,519,447, Cl. 165-104.330.
Wiech, Raymond E., Jr., 4,519,877, Cl. 204-15.000.
Fingerle, Dieter: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,519,359, Cl. 123-668.000.
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, to Th. Goldschmidt AG. Material for deaerating coating systems. 4,520,173, Cl. 525-403.000.
Finn, Peter A.: *See—*
Prepodnik, Kay E.; Finn, Peter A.; and Manning, Daniel J., 4,519,219, Cl. 62-457.000.
Fiocco, Robert J., to Exxon Research & Engineering Co. Extractive separation process. 4,519,901, Cl. 208-321.000.
Fire Trumpet of America, Inc.: *See—*
Domingue, Willard A., 4,520,352, Cl. 340-590.000.
Firestone Tire & Rubber Company, The: *See—*
Hall, James E., 4,520,123, Cl. 502-153.000.
First National Bank, executor: *See—*
Schoeff, Terry G.; and Hemmert, Raymond A., deceased, 4,519,376, Cl. 126-121.000.
Firth, Rowland V. D., III; Goff, Willie, Jr.; Ku, Ta C.; and Rakes, James M., to International Business Machines Corporation. Multizone thermal print head. 4,520,371, Cl. 346-76.0PH.
Fisher, Charles B.: *See—*
Carpenter, Paul E.; Fisher, Charles B.; and Peash, Douglas E., 4,520,424, Cl. 361-383.000.
Fisher Controls, International, Inc.: *See—*
Brestel, Ronald R.; and Meyer, Dale L., 4,519,579, Cl. 251-172.000.
Fisher, John M., to B. F. Goodrich Company, The. Escape slide and life raft. 4,519,782, Cl. 441-40.000.
Fiziko-Tekhnichesky Institut Akademii Nauk Belorusskoi SSR: *See—*
Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; and Postnikov, Viktor M., 4,519,230, Cl. 72-56.000.
Flachglas Aktiengesellschaft: *See—*
Spittka, Horst; Eckardt, Rudolf; and Neuendorf, Cristoph, 4,519,829, Cl. 65-114.000.
Fleischhacker, John J. Endocardial electrode lead with conical fixation mechanism. 4,519,404, Cl. 128-785.000.
Fletcher, Edwin; Beaton, Gerald V.; and Gomer, Charles R., to British Steel Corporation. Radiation level detectors. 4,520,266, Cl. 250-357.100.
Florian, Roy S., to Nickson Industries, Inc. Hinged flange for tailpipes and the like. 4,519,639, Cl. 285-415.000.
Florin, Guy, to Somfy. Alternate manual or power auxiliary control device for controlling winding doors or the like. 4,519,487, Cl. 192-36.000.
FMC Corporation: *See—*
Mick, Jon L., 4,519,468, Cl. 180-8.500.
Milberger, Lionel J., 4,519,263, Cl. 74-128.000.
Nichols, Randy P., 4,519,633, Cl. 285-3.000.
Focke & Co.: *See—*
Focke, Heinz, 4,519,492, Cl. 198-408.000.
Focke, Heinz, to Focke & Co. Method and apparatus for transporting packs from a feed track to a discharge-conveyor track. 4,519,492, Cl. 198-408.000.
Fog, Arne D.: *See—*
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,519,934, Cl. 252-174.120.
Fogt, Eric J.: *See—*
Cahalan, Patrick T.; Jevne, Allan H.; and Fogt, Eric J., 4,519,973, Cl. 264-267.000.
Folkers, Joie L., to Ameron Inc. Pipe coupling. 4,519,637, Cl. 285-113.000.
Ford Motor Company: *See—*
Crosbie, Gary M.; and Bretz, Gregory T., 4,519,967, Cl. 264-86.000.
Murphy, Richard D.; and Sokulsky, Marvin N., 4,519,626, Cl. 280-661.000.
Skynar, Larry, 4,519,589, Cl. 267-52.000.
Wells, Wayne E., 4,519,590, Cl. 267-52.000.
Wolak, Ronald G., 4,519,830, Cl. 65-162.000.
Yao, Yung-Fang Y., 4,520,005, Cl. 423-599.000.
Forney Engineering Company: *See—*
Paredes, Candelario; and Stevens, William D., 4,520,390, Cl. 358-108.000.
Forquer, William F., to Security Shutter Corporation. Winding mechanism for rollable shutter curtain. 4,519,434, Cl. 160-133.000.
Forsell, Kenneth A.; and Mallonen, Edward A., to Eaton Corporation. Constant load snap switch with manual or automatic reset, stop and test selection. 4,520,244, Cl. 200-67.0DA.
Forsheda AB: *See—*
Rautenberg, Karl, 4,519,567, Cl. 249-57.000.
Forward, Cleve H.: *See—*
Watson, James M.; Butler, James R.; and Forward, Cleve H., 4,520,220, Cl. 585-467.000.
Foslien, Floyd L., to Minnesota Mining and Manufacturing Company. Stapler including ratchet means for preventing double feeding of staples. 4,519,532, Cl. 227-8.000.
Foster Wheeler Energy Corporation: *See—*
Toth, Dennis A., 4,519,324, Cl. 110-347.000.
Fouquet, Gerd: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.
Fourre, Remy; and de Langre, Bruno, to Societe d'Etudes Et Conseils A E R O. Safety controller. 4,520,482, Cl. 371-68.000.
Fowler, L. B. Water well pumping system. 4,519,418, Cl. 137-571.000.
Fradella, Richard B. Brushless ultra-efficient regenerative servomechanism. 4,520,300, Cl. 318-603.000.
Francis, Ralph M., Jr.; and Isaacson, Jerome C. Photo flash lamp. 4,519,684, Cl. 354-145.100.
Franckowiak, Sigismond: *See—*
Deschamps, Andre ; and Franckowiak, Sigismond, 4,519,895, Cl. 208-8.0LE.
Frank, Louis M., to Raychem Corporation. Electrical monitoring systems. 4,520,417, Cl. 361-45.000.
Frankenberger, Horst: *See—*
Schwanbom, Erik; Frankenberger, Horst; and Baum, Marcel, 4,519,388, Cl. 128-204.250.
Frankiewicz, Jeffrey R.: *See—*
Heady, Robert E.; and Frankiewicz, Jeffrey R., 4,520,104, Cl. 435-160.000.
Frantz, Virgil L., to Roanoke College. Precoalescer unit. 4,519,819, Cl. 55-162.000.
Frazier, Donald; Daniels, J. Hartley; and Clapp, Daniel W., to Frazier, Donald. Cantilever rack construction. 4,519,512, Cl. 211-193.000.
Frazita, Richard F., to Hazeltine Corporation. Calibration of a system having plural signal-carrying channels. 4,520,361, Cl. 343-372.000.
Fredriksson, Hasse; and Tiberg, Lars, to Jernjontoret. Method of preventing formation of segregations during continuous casting. 4,519,439, Cl. 164-476.000.
Freeman, John W., to Seaboard Wellhead Control, Inc. Seal assembly and valve. 4,519,582, Cl. 251-328.000.
Freese, John L.: *See—*
Mitchell, William A.; Thompson, J. Brent; and Freese, John L., 4,519,734, Cl. 409-231.000.
Frentzel, Richard L., to Celotex Corporation, The. Polyoxyalkylene/unsaturated diester reaction product for cellular foam stabilization. 4,520,140, Cl. 521-115.000.
Frick Company: *See—*
Murphy, David A.; and Spellar, Peter C., 4,519,748, Cl. 417-45.000.
Frick, Roger L., to Rosemount Inc. Reactance measurement circuit with enhanced linearity. 4,519,253, Cl. 73-718.000.
Fricke, Richard J.: *See—*
Kennedy, Richard B., 4,520,139, Cl. 521-109.100.
Fridman, Semyon D., to SCM Corporation. Two stage chlorination of titaniferous ore. 4,519,988, Cl. 423-76.000.
Fried. Krupp Gesellschaft m.b.H.: *See—*
Jester, Willi; and Kruger, Heinrich, 4,519,731, Cl. 407-46.000.
Fronduto, John: *See—*
Lee, Chung H.; Fronduto, John; and Oettinger, Peter E., 4,519,876, Cl. 204-15.000.
Fu, Chong-Cheng; and Gerzberg, Levy, to Leland Stanford Junior University, The Board of Trustees of the. Ultrasonic transducers and applications thereof. 4,519,260, Cl. 73-861.250.
Fuchs, Wilfried; Richter, Horst; Kober, Roland; Kaufmann, Vendelin; and Muller, Christina, to VEB-Leuna-Werke "Walter Ulbricht". Method for improving the initial activity of activated hydrazine. 4,519,997, Cl. 423-265.000.
Fuhrmann, Wolf-Dieter: *See—*
Zylbert, Thaddeus J.; Fuhrmann, Wolf-Dieter; Hammer, Hans; and Kappertz, Fritz, 4,519,330, Cl. 112-222.000.
Fuji Photo Film Co., Ltd.: *See—*
Akimura, Yoshitaka; Mifune, Hiroyuki; and Nakamura, Koki, 4,520,099, Cl. 430-613.000.
Endo, Katsusuke; and Inagaki, Yoshio, 4,520,096, Cl. 430-233.000.
Iwakura, Ken; and Igarashi, Akira, 4,520,377, Cl. 346-208.000.
Kakimi, Fujio; and Mikami, Takeshi, 4,520,091, Cl. 430-110.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,519,701, Cl. 355-39.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,520,069, Cl. 428-328.000.
Murakoshi, Makoto, 4,519,391, Cl. 128-303.150.
Yamamoto, Nobuyuki; Nishikawa, Yasuo; Naruo, Kyoichi; and Okita, Tsutomu, 4,520,070, Cl. 428-336.000.
Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Haruhiko; and Kurata, Masami, 4,520,381, Cl. 357-30.000.
Fuji Xerox Corporation, Limited: *See—*
Kimoto, Toshifumi; Itami, Teruhiko; Nishimura, Nobuo; and Saitoh, Koichi, 4,520,409, Cl. 360-59.000.
Fujidie Co., Ltd.: *See—*
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.

Fujii, Fumio: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Fujii, Hideichi; Yamane, Chiyoki; and Kawai, Fumio, to Kawasaki Jukogyo Kabushiki Kaisha; and Koshii & Co., Ltd. Composite plate. 4,520,057, Cl. 428-68.000.
Fujii, Yoshihiko; Tomita, Osamu; Taniguchi, Itaru; and Saiwai, Kazuhiko, to Kanzaki Paper Manufacturing Co., Ltd. Laser thermal printer. 4,520,370, Cl. 346-76.00L.
Fujimaki, Tatsuo: *See—*
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.
Fujimoto, Michitaro; Ohde, Hironori; Seki, Hirokazu; Takamatsu, Shuhei; and Sakai, Takeshi, to Fujimoto Pharmaceutical Corp. Synthesis of cimetidine and analogs thereof. 4,520,201, Cl. 548-342.000.
Fujimoto Pharmaceutical Corp.: *See—*
Fujimoto, Michitaro; Ohde, Hironori; Seki, Hirokazu; Takamatsu, Shuhei; and Sakai, Takeshi, 4,520,201, Cl. 548-342.000.
Fujimura, Kazushiro; and Ito, Toshimitsu, to Toyota Jidosha Kabushiki Kaisha. Method of control of internal combustion engine variable swirl air-fuel intake system with direct and helical intake passages. 4,519,355, Cl. 123-491.000.
Fujioka, Futoshi; Boden, Richard M.; Schreiber, William L.; Whelan, Patrick; and Hanna, Marie R., to International Flavors & Fragrances Inc. 5-Alkoxybicyclo[2.2.1]heptane-2-oxypropane derivatives and uses thereof in augmenting or enhancing the aromas of perfume compositions, colognes and perfumed articles. 4,519,943, Cl. 252-522.00R.
Fujita, Sumio, to Seiko Instruments & Electronics, Ltd. Speech synthesizer. 4,520,502, Cl. 381-51.000.
Fujita, Teizo; and Tsuji, Yoshitaka, to Idec Izumi Corporation. Wire terminal connector. 4,519,668, Cl. 339-241.000.
Fujitsu Limited: *See—*
Yamada, Katuyuki; and Toyoda, Kazuhiro, 4,520,462, Cl. 365-189.000.
Fujiwara, Koji: *See—*
Takano, Osamu; and Fujiwara, Koji, 4,519,323, Cl. 110-281.000.
Fujiya, Toshimichi. Door opening-closing apparatus for large-sized refrigerator or the like. 4,519,641, Cl. 292-127.000.
Fukuchi, Hiroshi: *See—*
Shimizu, Takeo; Hiramatsu, Takeo; Takamiya, Bonnosuke; and Fukuchi, Hiroshi, 4,519,273, Cl. 74-752.00A.
Fukuda, Tsutomu. Method for controlling a tufting machine. 4,519,332, Cl. 112-266.200.
Fukui, Toyoaki: *See—*
Danno, Yoshiaki; Kobayashi, Hiroyuki; and Fukui, Toyoaki, 4,520,272, Cl. 290-40.00A.
Fukumoto, Yasuhisa; and Moriyama, Noboru, to Kao Soap Co., Ltd. Maleic acid/(meth)acrylic acid copolymers useful as calcium ion capturing agents. 4,519,920, Cl. 210-701.000.
Fukunaga, Yasushi: *See—*
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.
Fukushima, Shigehisa: *See—*
Ono, Motoji; Hirao, Masao; and Fukushima, Shigehisa, 4,519,427, Cl. 141-65.000.
Fukutani, Masanori: *See—*
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.
Fukuura, Shinichi: *See—*
Hikosaka, Shinichi; Murayama, Kosho; Fukuura, Shinichi; and Yanase, Takaomi, 4,519,906, Cl. 210-223.000.
Fulmer, Keith H., to Allied Corporation. Vacuum brake boosters. 4,519,295, Cl. 91-376.00R.
Furrow, Robert E., to Cooper Industries. Drawworks brake control. 4,519,585, Cl. 254-273.000.
Furukawa Electric Co., Ltd., The: *See—*
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.
Furukawa, Masahiko: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Furukawa, Shigeyoshi: *See—*
Yoshii, Toshio; and Furukawa, Shigeyoshi, 4,520,246, Cl. 200-144.00B.
G.D. Societa per Azioni: *See—*
Mattei, Riccardo, 4,519,406, Cl. 131-94.000.
Seragnoli, Enzo, 4,519,405, Cl. 131-94.000.
G. L. Rexroth GmbH: *See—*
Schulte, Heinz, 4,519,296, Cl. 91-388.000.
GAF Corporation: *See—*
Barabas, Eugene S.; and Cho, James R., 4,520,179, Cl. 526-212.000.
Barabas, Eugene S.; and Cho, James R., 4,520,180, Cl. 526-212.000.
Golder, Michael D., 4,520,148, Cl. 524-100.000.
Golder, Michael D., 4,520,149, Cl. 524-100.000.
Golder, Michael D., 4,520,150, Cl. 524-100.000.
Gagne, Pierre: *See—*
Chaux, Jean-Bernard; Gagne, Pierre; Garcia, Michel; Lespinasse, Dominique; and Roussos, Josiane, 4,519,844, Cl. 106-209.000.
Galambos, Geza: *See—*
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , 4,520,018, Cl. 514-469.000.
Galiasso, Roberto E.: *See—*
Morales, Alfredo L.; Galiasso, Roberto E.; Agudelo, Maria M.; Salazar, Jose A.; and Carrasquel, Angel R., 4,520,128, Cl. 502-210.000.
Galindo, Eugene R. Catheter holder. 4,519,793, Cl. 604-180.000.
Gallagher, Terence J.; and LaCapria, Anthony, to American Bank Note Company. Identification card. 4,519,155, Cl. 40-625.000.
Gallaher Limited: *See—*
Sumner, Leslie, 4,519,298, Cl. 92-103.00F.
Gallo, Robert C.; Popovic, Mikulas; and Sarngadharan, Mangalasseril G., to United States of America, Health and Human Services. Serological detection of antibodies to HTLV-III in sera of patients with AIDS and pre-AIDS conditions. 4,520,113, Cl. 436-504.000.
Galtz, Rudiger, to Webasto-Werke W. Baier GmbH & Co. Hot-air heater. 4,519,375, Cl. 126-110.00B.
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, to Fanuc Ltd. Wire-cut electric discharge machine control system to compensate for wire flexure during machining. 4,520,253, Cl. 217-69.00W.
Gane, Brian R.; and Howard, Philip, to British Petroleum Company p.l.c., The. Catalytic activity of aluminosilicate zeolites. 4,520,118, Cl. 502-53.000.
Garcia, Michel: *See—*
Chaux, Jean-Bernard; Gagne, Pierre; Garcia, Michel; Lespinasse, Dominique; and Roussos, Josiane, 4,519,844, Cl. 106-209.000.
Gardner, Kathleen E. Typewriter keyboard layout. 4,519,721, Cl. 400-472.000.
Gargini, Paolo: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,519,849, Cl. 148-1.500.
Garner, Lloyd L., to Rock Bit Industries U.S.A., Inc. Generally cylindrical rotary drill face seal having improved resistance to radial distortion. 4,519,614, Cl. 277-84.000.
Garrett Corporation, The: *See—*
Hardy, James A.; and Alfano, David L., 4,519,373, Cl. 123-559.000.
Gartner, Horst: *See—*
Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, 4,519,233, Cl. 72-247.000.
Gauck, Donald A. Louver tool. 4,519,235, Cl. 72-414.000.
Gaudiana, Russell A.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,520,189, Cl. 528-331.000.
Gauger, Gary L. Adjustable circumference floor tom stand. 4,519,289, Cl. 84-421.000.
Gauthier, Edouard A., to Nu-Bar Electronics. Sound transfer from a hearing aid to the human ear drum. 4,520,236, Cl. 179-107.00E.
Gauvin, William H.; and Kubanek, George R., to Hydro-Quebec. Transferred-arc plasma reactor for chemical and metallurgical applications. 4,519,835, Cl. 75-10.00R.
GCA Corporation: *See—*
Jones, Hugh D.; and Martinich, Steven J., 4,519,717, Cl. 374-17.000.
Geissler, Helmut: *See—*
Seifert, Dieter; Muller, Harald; Muller, Lothar; Pestel, Karl; and Geissler, Helmut, 4,519,224, Cl. 69-30.000.
General Dynamics Corporation, Electronics Division: *See—*
Hosking, Michael B., 4,520,429, Cl. 361-413.000.
General Dynamics, Pomona Division: *See—*
Kuffer, Fernand B., 4,519,707, Cl. 356-326.000.
General Electric Company: *See—*
Archibald, James B.; and Eats, James V., 4,519,669, Cl. 339-274.000.
Axelrod, Robert J., 4,520,152, Cl. 524-120.000.
Baldwin, Samuel L., 4,520,435, Cl. 362-311.000.
Castleberry, Donald E.; and Becker, Charles A., 4,520,357, Cl. 340-783.000.
Evans, Thomas L., 4,520,204, Cl. 548-461.000.
Kellie, Truman F., 4,520,388, Cl. 358-107.000.
Konrad, Charles E., 4,520,299, Cl. 318-587.000.
Kosmatka, Walter J., 4,520,433, Cl. 362-296.000.
Liu, Ping Y., 4,520,164, Cl. 525-67.000.
Mark, Victor; and Hedges, Charles V., 4,520,187, Cl. 528-176.000.
Merrill, Duane F., 4,519,720, Cl. 400-241.000.
Molari, Richard E., Jr., 4,519,154, Cl. 40-615.000.
O'Donnell, Timothy W.; and Olson, Daniel R., 4,520,074, Cl. 428-412.000.
General Instrument Corporation: *See—*
Clemens, Thomas G., 4,520,326, Cl. 331-116.00R.
Reichert, Harry J., Jr., 4,520,508, Cl. 455-4.000.
Wachspress, Melvin H.; and Abramowitz, Walter, 4,520,363, Cl. 343-828.000.
General Signal Corporation: *See—*
Lapinoja, Lonnie L., 4,519,583, Cl. 251-328.000.
Schwab, Carl E., 4,520,360, Cl. 340-947.000.
GenRad, Inc.: *See—*
Karash, Karl, 4,520,416, Cl. 361-11.000.

Genth, Hermann: *See—*
Schmitt, Hans-Georg; Palus, Wilfried; and Genth, Hermann, 4,520,023, Cl. 514-241.000.
Gentilman, Richard L.; Maguire, Edward A.; and Dolhert, Leonard E., to Raytheon Company. Transparent aluminum oxynitride and method of manufacture. 4,520,116, Cl. 501-98.000.
Gentzler, David: *See—*
Gillette, Dennis; and Gentzler, David, 4,519,507, Cl. 209-682.000.
Georg Muller Kugellagen Fabrik K.G.: *See—*
Petermann, Harald; and Loesch, Karl G., 4,519,166, Cl. 51-103.0WH.
George, Albert E.; and Poirier, Marc-Andre, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources. Clarification of black water produced during recovery of bitumens and heavy oils. 4,519,915, Cl. 210-663.000.
George Angus & Company Limited: *See—*
Johnston, David E., 4,519,616, Cl. 277-152.000.
Gera, Abed: *See—*
Loebenstein, Gad; and Gera, Abed, 4,520,020, Cl. 424-197.100.
Gerber, Arthur H., to Martin Marietta Corporation. Admixture and method for improving hydraulic cement mixes. 4,519,842, Cl. 106-90.000.
Gerwin, Harry L. Control system for heliostats and method. 4,519,382, Cl. 126-425.000.
Gerzberg, Levy: *See—*
Fu, Chong-Cheng; and Gerzberg, Levy, 4,519,260, Cl. 73-861.250.
Ghinamo, Leonardo, to Bottero S.p.A. Device for automatic marking out and dividing up of a flat sheet of glass which can be positioned upstream of a sheet cutting line. 4,519,139, Cl. 33-32.00C.
Giangerelli, Frank. Black powder gun nipple. 4,519,157, Cl. 42-83.000.
Gibbons, Robert E., to Belco Pollution Control Corporation. Precipitator rapper. 4,519,817, Cl. 55-112.000.
Gibson, David K.: *See—*
Barker, Robert B.; Davidge, Ronald V.; Gibson, David K.; and Van Cleave, George W., 4,519,700, Cl. 355-3.0SH.
Gibson, Keith: *See—*
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,519,934, Cl. 252-174.120.
Giedt, Donald C.: *See—*
Inman, Frank S.; Giedt, Donald C.; and Lushis, Donald V., 4,519,290, Cl. 87-7.000.
Giesenberg, Peter: *See—*
Seeger, G. Hans J.; Giesenberg, Peter; and Steimel, Johannes, 4,519,291, Cl. 89-1.806.
Gilcrease, James P.: *See—*
Buls, Ronald L.; and Gilcrease, James P., 4,519,815, Cl. 55-46.000.
Gilead, Dan; and Scott, Gerald. Agricultural process using controllably degradable polymer composition film. 4,519,161, Cl. 47-9.000.
Gill, Dee R.; and Marks, Rex B., to Hercules Incorporated. Manufacture of filamentary composites. 4,519,869, Cl. 156-428.000.
Gillen, Orval D.; and Healey, John G., Jr., to Tanner Companies, The. Drum mixer and method. 4,519,711, Cl. 366-4.000.
Gillette, Dennis; and Gentzler, David, to Sensormatic Electronics Corporation. Apparatus for separating tacks from surveillance tags. 4,519,507, Cl. 209-682.000.
Gilliam, Edward C.: *See—*
Dingus, Jack D.; and Gilliam, Edward C., 4,519,489, Cl. 193-31.00R.
Gilly, Pierre E. Tennis racket stroke training device. 4,519,608, Cl. 273-29.00A.
Givaudan Corporation: *See—*
Dahill, Robert T.; Purzycki, Kenneth L.; and Golle, Erlinda F., 4,519,944, Cl. 252-522.00R.
Glanz, Kenneth D.; and Hoover, Troy E., to Appleton Papers Inc. Thermally-responsive record material. 4,520,379, Cl. 346-214.000.
Glaspie, Donald L.: *See—*
Kitterman, B. Layton; and Glaspie, Donald L., 4,519,960, Cl. 261-94.000.
Glattli, Hans-Heinrich: *See—*
Stoll, Kurt; and Glattli, Hans-Heinrich, 4,520,061, Cl. 428-137.000.
Glausch, Erhardt: *See—*
Horn, Roland; and Glausch, Erhardt, 4,519,185, Cl. 53-550.000.
Glazer, Alexander N.: *See—*
Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., 4,520,110, Cl. 436-501.000.
Gleichauf, Winfried: *See—*
Gotz, Udo; Gleichauf, Winfried; Gunther, Oswin; and Hoffmann, Dietrich, 4,519,117, Cl. 29-1.200.
Glennon, Timothy F., to Sundstrand Corporation. Series transistor chopper. 4,520,279, Cl. 307-254.000.
Glenwood Manufacturing Corporation: *See—*
Johnson, Warren K.; Goettsch, Michael R.; and Olson, Archie H., 4,519,714, Cl. 366-285.000.
Gliemeroth, Georg: *See—*
Speit, Burkhard; Mennemann, Karl; and Gliemeroth, Georg, 4,520,115, Cl. 501-60.000.
Glitsch, Inc.: *See—*
Kitterman, B. Layton; and Glaspie, Donald L., 4,519,960, Cl. 261-94.000.
Godsey, H. Dean; Schoen, Donald F.; and Turek, Joseph F., to Quaker Oats Company, The. Apparatus and method for relining extruder barrels. 4,519,713, Cl. 366-79.000.
Goertler, Horst; and Rachner, Horst, to ITT Industries, Inc. Stop-start device for a motor vehicle engine. 4,520,271, Cl. 290-38.00C.
Goettsch, Michael R.: *See—*
Johnson, Warren K.; Goettsch, Michael R.; and Olson, Archie H., 4,519,714, Cl. 366-285.000.
Goff, Willie, Jr.: *See—*
Firth, Rowland V. D., III; Goff, Willie, Jr.; Ku, Ta C.; and Rakes, James M., 4,520,371, Cl. 346-76.0PH.
Golder, Michael D., to GAF Corporation. Thermoplastic elastomer compositions. 4,520,148, Cl. 524-100.000.
Golder, Michael D., to GAF Corporation. Elastomer compositions. 4,520,149, Cl. 524-100.000.
Golder, Michael D., to GAF Corporation. Stabilized elastomer compositions. 4,520,150, Cl. 524-100.000.
Golder, Peter: *See—*
Hofler, Willy; and Golder, Peter, 4,519,242, Cl. 73-162.000.
Meder, Willi; Bertz, Hans-Ulrich; and Golder, Peter, 4,519,141, Cl. 33-179.50R.
Golle, Erlinda F.: *See—*
Dahill, Robert T.; Purzycki, Kenneth L.; and Golle, Erlinda F., 4,519,944, Cl. 252-522.00R.
Golobic, Robert A.; and Scott, Michael H., to Joy Manufacturing Company. Propeller. 4,519,715, Cl. 366-343.000.
Gomer, Charles R.: *See—*
Fletcher, Edwin; Beaton, Gerald V.; and Gomer, Charles R., 4,520,266, Cl. 250-357.100.
Goodall, Brian L., to Shell Oil Company. Process of sequentially copolymerizing propylene-ethylene copolymers and catalyst therefor. 4,520,163, Cl. 525-53.000.
Goodyear Tire & Rubber Company, The: *See—*
Grimm, Donald C., 4,520,156, Cl. 524-397.000.
Gordon, Timothy M.: *See—*
Elgas, Roger J.; and Gordon, Timothy M., 4,519,393, Cl. 128-400.000.
Gorney, Moshe; and Dinur, Eldad, to Naan Mechanical Works. Drip irrigation apparatus. 4,519,546, Cl. 239-542.000.
Gossling Development Corporation: *See—*
Manzi, Joseph, 4,519,566, Cl. 248-360.000.
Gotz, Udo; Gleichauf, Winfried; Gunther, Oswin; and Hoffmann, Dietrich, to Mauser-Werke Oberndorf GmbH. Method of making projectile. 4,519,117, Cl. 29-1.200.
Gould, Grahame; Crossley, Anthony; and Moran, David P. J., to Lever Brothers Company. Edible emulsion having an improved microbiological stability. 4,520,037, Cl. 426-330.600.
Gould, Robert J.: *See—*
Snyder, Solomon H.; and Gould, Robert J., 4,520,112, Cl. 436-504.000.
Grabarski, David L.; and Williams, Harvey A. Power driven bottle opener. 4,519,276, Cl. 81-3.200.
Graf, Felix: *See—*
von Burg, Paul; Wirz, Armin; and Graf, Felix, 4,519,778, Cl. 432-35.000.
Grafen, Paul: *See—*
Schumacher, Horst; and Grafen, Paul, 4,519,961, Cl. 264-4.600.
Graniou, Louis. High temperature electric furnace with metallic resistances in the form of hollow vertical heating tubes. 4,520,487, Cl. 373-134.000.
Grasselli, Giorgio: *See—*
Alimbau Marques, Salvador; and Grasselli, Giorgio, 4,519,476, Cl. 182-28.000.
Grasselli, Robert K.: *See—*
Burrington, James D.; Pesa, Fred A.; Maher, Elizabeth A.; and Grasselli, Robert K., 4,519,954, Cl. 260-465.80D.
Gray, Floyd R.; and Rood, Dennis D., to Otis Engineering Corporation. Well treating equipment and methods. 4,519,451, Cl. 166-278.000.
Grazioli, Angal J., to Cameron Iron Works, Inc. Valve and seal therefor. 4,519,412, Cl. 137-72.000.
Green, James B. P., Jr.: *See—*
Sherman, Earle C.; and Green, James B. P., Jr., 4,519,181, Cl. 53-374.000.
Green, Jerrold D.: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.
Green, Jerry T.; and Beasley, Max M., to Tuftco Corporation. Segmental needle bar for multiple needle tufting machine. 4,519,326, Cl. 112-79.00R.
Green, Ralph R.; and Green, Robert C., to Imperial Clevite Inc. Wide pulse range periodic reverse unit. 4,520,281, Cl. 307-475.000.
Green, Robert C.: *See—*
Green, Ralph R.; and Green, Robert C., 4,520,281, Cl. 307-475.000.
Greenwood, Christopher J., to Leyland Vehicle Limited. Driveline for regenerative braking. 4,519,485, Cl. 192-0.033.
Gregg, Hans, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Method and apparatus for automatically exchanging a workpiece in a machine tool. 4,519,733, Cl. 409-7.000.
Greschner, Johann: *See—*
Asch, Karl; Greschner, Johann; Kallmeyer, Michael; and Kulcke, Werner, 4,520,314, Cl. 324-158.00P.
Gresser, Robert; and Michel, Max, to Rhone-Poulenc Chimie de Base. Method of producing detergents with lower levels of incrustation of salts on fabrics by incorporating therein only type A zeolite detergent builders having a certain determined rate constant. 4,519,933, Cl. 252-140.000.
GRETAG Aktiengesellschaft: *See—*
Mast, Fred; and Waser, Rudolf, 4,519,682, Cl. 353-122.000.
Griggs, Michael; Acton, Laurence L.; and Hall, Gordon D. Method and apparatus for accurate remote monitoring of gases. 4,520,265, Cl. 250-338.000.
Grima, Jean-Claude; Pando, Bernard; and David, Guy A. J., to U.S. Philips Corporation. Arrangement for re-arranging information for transmitting outgoing time-division multiplexed information obtained from incoming time-division multiplexed information. 4,520,479, Cl. 370-84.000.
Grimberg, Martine; and Berard, Alain, to Thomson-CSF. Digital data processing and storage system especially for a tomodensitometer, and a tomodensitometer equipped with said system. 4,520,442, Cl. 364-414.000.
Grimm, Donald C., to Goodyear Tire & Rubber Company, The. Scorch inhibitors for carboxylated rubbers. 4,520,156, Cl. 524-397.000.
Grinin, Jury A.: *See—*
Sychev, Anatoly P.; Sannikov, Jury I.; Grinin, Jury A.; Polyakov, Ivan P.; and Abdeev, Jury M., 4,519,836, Cl. 75-25.000.
Grogler, Gerhard: *See—*
Hess, Heinrich; Grogler, Gerhard; and Kopp, Richard, 4,520,186, Cl. 528-73.000.
Grohmann, Kurt, to Bayerische Motoren Werke A.G. System concomitantly controlling passenger compartment and electric auxiliary heating in automatic vehicles. 4,520,258, Cl. 219-279.000.
Grollimund, Everett C., to Philip Morris Incorporated. Beam chopper for producing multiple beams. 4,519,680, Cl. 350-486.000.
Gronle, Hansgeorg: *See—*
Sommer, Horst; and Gronle, Hansgeorg, 4,520,068, Cl. 428-324.000.
Grosse, Joachim; Hassler, Heinrich; and Tiefel, Gunter, to Siemens Aktiengesellschaft. Device for manufacturing laminated semifinished material. 4,519,234, Cl. 72-258.000.
Grosso, Roberto; and Hamilton, Tom P., to Vesuvius International Corporation. Opening for injecting a protective gas into a casting tube. 4,519,438, Cl. 164-415.000.
Grow, Carolyn P.: *See—*
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., 4,520,455, Cl. 364-900.000.
Gruber, Robert J.: *See—*
Knapp, John F.; and Gruber, Robert J., 4,520,092, Cl. 430-120.000.
GTE Automatic Electric Inc.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,520,478, Cl. 370-63.000.
GTE Products Corporation: *See—*
Shaffer, John W., 4,519,785, Cl. 445-48.000.
Gualtieri, Devlin M.; and Tumelty, Paul F., to Allied Corporation. Temperature stable magnetic bubble compositions. 4,520,460, Cl. 365-33.000.
Gubler, Hans-Rudolf, to BBC Brown, Boveri & Company, Limited. Drive and mounting for an open-end spinning unit. 4,519,205, Cl. 57-406.000.
Gude, Armin: *See—*
Michel, Klaus; and Gude, Armin, 4,519,968, Cl. 264-178.00R.
Gudkin, Timofei S.; Iordanishvili, Evgeny K.; Lidorenko, Nikolai S.; Malkovich, Bella E.; Razumovsky, Mikhail I.; and Rubashov, Igor B. Thermoelectric cryoprobe. 4,519,389, Cl. 128-303.100.
Gudmundson, Gunnar G.: *See—*
Kitch, Paul E.; Crochetiere, Raymond H.; Gudmundson, Gunnar G.; and Hadank, Walter R., 4,519,688, Cl. 354-297.000.
Guidez, Joel: *See—*
Brachet, Alain; Figuet, Jacques; Guidez, Joel; and Lions, Noel, 4,519,978, Cl. 376-307.000.
Guigan, Jean, to Inovelf. Apparatus for bringing a liquid sample successively into contact with a number of reagents. 4,519,981, Cl. 422-64.000.
Guillaume, Michel: *See—*
Six, Jean-Claude G.; Claeys, Paul; and Guillaume, Michel, 4,519,771, Cl. 431-25.000.
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, to Rieter Machine Works, Ltd. Method of threading a thread into a texturing nozzle. 4,519,115, Cl. 28-255.000.
Guldenfels, Dieter: *See—*
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, 4,519,115, Cl. 28-255.000.
Gulf Research & Development Company: *See—*
Mitchell, Bruce R.; and Vogel, Roger F., 4,520,120, Cl. 502-68.000.
Gullett, Edwin P.; Davis, Gerald B.; and Bustos, Rafael T., to Leggett & Platt, Incorporated. Shelf structure for a display rack. 4,519,508, Cl. 211-59.200.
Gunther, Oswin: *See—*
Gotz, Udo; Gleichauf, Winfried; Gunther, Oswin; and Hoffmann, Dietrich, 4,519,117, Cl. 29-1.200.
Gust, Jacob N., to Concord, Inc. Compaction and support apparatus. 4,519,460, Cl. 172-176.000.
Gustafson, Dale A.: *See—*
Weiss, Arnold A.; and Gustafson, Dale A., 4,520,307, Cl. 324-54.000.
Gutmark, Ephraim: *See—*
Ho, Chih-Ming; and Gutmark, Ephraim, 4,519,423, Cl. 137-888.000.
Gylfe, Sten: *See—*
Ericsson, Thomas; Gylfe, Sten; and Hedblom, Mats-Olov, 4,519,918, Cl. 210-680.000.
Haas, John C., to Chevron Research Company. Circulation loop for carrying out two-stage reactions. 4,519,810, Cl. 48-202.000.
Hadady Corporation: *See—*
Nelson, Thomas A., 4,519,480, Cl. 188-52.000.
Hadank, Walter R.: *See—*
Kitch, Paul E.; Crochetiere, Raymond H.; Gudmundson, Gunnar G.; and Hadank, Walter R., 4,519,688, Cl. 354-297.000.
Hadaway, Robert J. Padlock. 4,519,226, Cl. 70-48.000.
Haeno, Akira: *See—*
Watanabe, Kazuo; Ohkubo, Yuichi; Haeno, Akira; and Yokogawa, Fumihiko, 4,520,282, Cl. 307-491.000.
Hagiwara, Zenzi; Yamamoto, Tatuo; and Kurozumi, Hiroshi, to Osaka Oxygen Industries Ltd. Process for extraction of highly purified oxygen. 4,519,813, Cl. 55-26.000.
Hagler, Brenda J.; and Repass, James T., to International Business Machines Corporation. Key-controlled method for invoking automatic row and column addition in an interactive text processing system. 4,520,457, Cl. 364-900.000.
Hagman, John F.; and Shih, Chi-Kai, to Du Pont de Nemours, E. I., and Company. Elastomeric sol/gel blends. 4,520,169, Cl. 525-185.000.
Hagyuda, Nobuyoshi; Hasegawa, Hiroshi; Iida, Yoshikazu; and Maida, Osamu, to Nippon Kogaku K.K. Electronic flash apparatus. 4,519,683, Cl. 354-127.110.
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Ruperi; and Echte, Adolf, to BASF Aktiengesellschaft. Particulate polystyrene containing blowing agent and having improved expandability. 4,520,135, Cl. 521-56.000.
Hahn, Larry A., to Texas Instruments Incorporated. High gain thyristor switching circuit. 4,520,277, Cl. 307-252.00C.
Hailey, Charles D. Apparatus for internally testing a plurality of interconnected pipe sections. 4,519,238, Cl. 73-40.50R.
Hakulinen, Martti J. A.: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,519,359, Cl. 123-668.000.
Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Schmitz, Alfred; and Mund, Heinz, to Saint-Gobain Vitrage. Process and apparatus for the automatic control of movement of an edge grinding machine. 4,519,167, Cl. 51-165.770.
Halcon SD Group, Inc., The: *See—*
Becker, Mitchell; and Sachs, Howard M., 4,519,875, Cl. 203-28.000.
Haldor Topsoe: *See—*
Skov, Allan; and Rostrup-Nielsen, Jens R., 4,520,216, Cl. 585-315.000.
Halford, Wayne R.; Renger, Larry H.; and Dooley, James J., to Mattel, Inc. Combined jump means and toy vehicle with simulated stunt hoop. 4,519,789, Cl. 446-444.000.
Hall, George R.: *See—*
Hall, Robert J.; Hall, George R.; and Cookerly, Jack C., 4,519,286, Cl. 84-1.030.
Hall, Gordon D.: *See—*
Griggs, Michael; Acton, Laurence L.; and Hall, Gordon D., 4,520,265, Cl. 250-338.000.
Hall, James E., to Firestone Tire & Rubber Company, The. Catalyst system and process for polymerizing conjugated dienes. 4,520,123, Cl. 502-153.000.
Hall, John B.; and Yoshida, Takao, to International Flavors & Fragrances Inc. Use in augmenting or enhancing the aroma or taste of foodstuffs or chewing gums of tetrahydro-1,1,2,3,3-pentamethyl-3A[4H]-indanol. 4,520,032, Cl. 426-3.000.
Hall, Laurance D.; and Sukumar, Subramaniam, to University of British Columbia, The. NMR imaging technique. 4,520,316, Cl. 324-309.000.
Hall, Lorna B. Medical appliance pouch with cover. 4,519,797, Cl. 604-332.000.
Hall, Robert J.; Hall, George R.; and Cookerly, Jack C., to Norlin Industries, Inc. Method and apparatus for animated harmonization. 4,519,286, Cl. 84-1.030.
Hallauer, John J., to NCR Corporation. Transparent instruction word bus memory system. 4,520,464, Cl. 365-189.000.
Haller, Klaus: *See—*
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, 4,519,120, Cl. 29-157.00R.
Halliburton Company: *See—*
Butler, William S., 4,519,617, Cl. 277-153.000.
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,519,455, Cl. 166-305.00R.
Sutton, David L.; and Walker, Michael L., 4,519,922, Cl. 252-8.50B.
Ham, Norman D., to Massachusetts Institute of Technology. Helicopter individual blade control system. 4,519,743, Cl. 416-1.000.
Hamada, Eiichi; and Hamada, Kouzou, to Toyota Jidosha Kabushiki Kaisha. Locking device. 4,519,642, Cl. 292-247.000.
Hamada, Kouzou: *See—*
Hamada, Eiichi; and Hamada, Kouzou, 4,519,642, Cl. 292-247.000.
Hamane, Masumi: *See—*
Ochiai, Hideo; Hamane, Masumi; and Kimoto, Masahiko, 4,519,473, Cl. 180-229.000.
Hamano, Isao, to Mitsubishi Denki Kabushiki Kaisha. Starting motor with planetary gear reduction gears. 4,519,261, Cl. 74-7.00E.
Hamel, Roger G.; and Poulin, Susan B., to Morton Thiokol Inc. One-part activator and blowing agent for foaming plastics. 4,520,137, Cl. 521-79.000.

Hamilton, Billy H.: *See—*
Boettcher, Charles W., Jr.; Hamilton, Billy H.; Slak, William M.; and Zweig, Walter L., 4,520,437, Cl. 363-41.000.
Hamilton, Edward. Oil pan and windage tray for high performance engines. 4,519,348, Cl. 123-195.00C.
Hamilton, James G., to Barr & Stroud Limited. Optical waveguide slip ring assembly. 4,519,673, Cl. 350-96.320.
Hamilton, Tom P.: *See—*
Grosso, Roberto; and Hamilton, Tom P., 4,519,438, Cl. 164-415.000.
Hammer, Hans: *See—*
Zylbert, Thaddeus J.; Fuhrmann, Wolf-Dieter; Hammer, Hans; and Kappertz, Fritz, 4,519,330, Cl. 112-222.000.
Hand, James D. Transition pipe fitting. 4,519,634, Cl. 285-55.000.
Hann, Paul D.: *See—*
Casperson, John R.; and Hann, Paul D., 4,520,000, Cl. 423-456.000.
Hanna, Marie R.: *See—*
Fujioka, Futoshi; Boden, Richard M.; Schreiber, William L.; Whelan, Patrick; and Hanna, Marie R., 4,519,943, Cl. 252-522.00R.
Hansen, Clarence M.: *See—*
Ledebuhr, Richard L.; and Hansen, Clarence M., 4,519,191, Cl. 56-331.000.
Hansen, Ralph H., to Canusa Coating Systems Limited. Chemical compounds and use. 4,520,146, Cl. 524-94.000.
Hanson, David E., to Sargent-Welch Scientific Company. Gerotor vacuum pump. 4,519,755, Cl. 418-9.000.
Hara, Kazuyoshi: *See—*
Isozumi, Shuzoo; and Hara, Kazuyoshi, 4,520,285, Cl. 310-83.000.
Hara, Tomihiro; Adaniya, Takeshi; and Tonouchi, Akira, to Nippon Kokan Kabushiki Kaisha. Method of Fe-Zn alloy electroplating. 4,519,878, Cl. 204-28.000.
Hara, Toshizo: *See—*
Sutoh, Shinji; Hara, Toshizo; and Takahashi, Akiyoshi, 4,519,443, Cl. 165-17.000.
Harada, Hidemi: *See—*
Bunno, Masayasu; Sugiura, Tsutomu; Tsuji, Masao; Harada, Hidemi; and Ichihara, Yoshihiro, 4,520,102, Cl. 435-61.000.
Haraguchi, Youichirou: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichirou; Hayashi, Koji; and Kon, Shigeki, 4,519,862, Cl. 156-219.000.
Harden, Eldon A.; and Randol, Kent B., to J. I. Case Company. Two-way plow with offset trips. 4,519,461, Cl. 172-225.000.
Hardy, Donald P., Jr. Apparatus for filling a lined, semibulk container. 4,519,426, Cl. 141-5.000.
Hardy, James A.; and Alfano, David L., to Garrett Corporation, The. Internal combustion engine having a variably engagable slipping wet clutch for driving a supercharger. 4,519,373, Cl. 123-559.000.
Harel, Zahal: *See—*
Melamed, Avraham; and Harel, Zahal, 4,519,218, Cl. 62-271.000.
Harkness, Allan C.: *See—*
Tinker, Lawrence A.; and Harkness, Allan C., 4,520,084, Cl. 429-101.000.
Harris Corporation: *See—*
Chan, Luen C.; Beckwith, Paul B.; and Pearce, Jeffrey B., 4,520,506, Cl. 382-56.000.
Dufour, Charles H.; and Newman, Jonathan G., 4,520,454, Cl. 364-900.000.
Hershberger, David L., 4,520,498, Cl. 381-16.000.
Harris, Elbert E.; and Thorsett, Eugene D., to Merck & Co., Inc. Substituted caprolactam derivatives as antihypertensives. 4,520,021, Cl. 514-212.000.
Harris, James E.; and Robeson, Lloyd M., to Union Carbide Corporation. Composition useful for making circuit board substrates and electrical connectors. 4,520,067, Cl. 428-323.000.
Harris, Phillip C.: *See—*
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,519,455, Cl. 166-305.00R.
Harris, Warren R. Handle for extending the reach of a rope. 4,519,643, Cl. 294-19.100.
Harrison, George W., to Team, Inc. Method of waterproofing a porous wall. 4,520,051, Cl. 427-387.000.
Hartemink, Gerrit A., to Advanced Semiconductor Materials International, N.V. Improved flow meter. 4,519,246, Cl. 73-204.000.
Hartmann, Heinrich: *See—*
Schneider, Kurt; Heide, Wilfried; Hartmann, Juergen; and Hartmann, Heinrich, 4,520,210, Cl. 560-222.000.
Hartmann, Juergen: *See—*
Schneider, Kurt; Heide, Wilfried; Hartmann, Juergen; and Hartmann, Heinrich, 4,520,210, Cl. 560-222.000.
Hascal, Marcel; Watson, Donald A.; Danielski, Andrew; and Lopez, Sergio. Electric field strength indicator. 4,520,318, Cl. 324-457.000.
Hasegawa, Hiroshi: *See—*
Hagyuda, Nobuyoshi; Hasegawa, Hiroshi; Iida, Yoshikazu; and Maida, Osamu, 4,519,683, Cl. 354-127.110.
Hasegawa, Yutaka: *See—*
Murai, Kazuo; and Hasegawa, Yutaka, 4,519,695, Cl. 355-14.00R.
Hashiguchi, Don H.; Klar, Erhard; and Dietrich, Ronald J., to SCM Corporation. Halosilane catalyst and process for making same. 4,520,130, Cl. 502-345.000.
Hashimoto, Takafumi, to Meidensha Electric Mfg. Co., Ltd. Electrolytes circulation type cell stack secondary battery. 4,520,080, Cl. 429-18.000.
Haskin, Helen K.: *See—*
Davis, Lorne A., Jr.; and Haskin, Helen K., 4,519,982, Cl. 422-68.000.
Hassler, Heinrich: *See—*
Grosse, Joachim; Hassler, Heinrich; and Tiefel, Gunter, 4,519,234, Cl. 72-258.000.
Hastings, Jerome K.; Brubaker, John R.; and Kroll, John W., to Eaton Corporation. Electrothermally actuated switch. 4,520,336, Cl. 337-140.000.
Hatano, Hirofumi; and Hirota, Yoji, to Mitsubishi Mining and Cement Co.; and Mitsubishi Jukogyo Kabushiki Kaisha. Cyclone. 4,519,822, Cl. 55-459.00R.
Hatayama, Keiji: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,274, Cl. 74-866.000.
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,275, Cl. 74-866.000.
Hattori, Makoto; Taguma, Akihiro; Morimitsu, Toshihiko; and Takeshita, Akira, to Sumitomo Chemical Co., Ltd. Process for producing anthraquinone compounds. 4,519,947, Cl. 260-371.000.
Hattori, Seiichi; and Kanda, Kunio, to Fanuc Ltd. Apparatus for controlling writing of data into a memory having different read and write times. 4,520,458, Cl. 364-900.000.
Hausner, Gerd; and Semmelrodt, Rolf, to Zinser Textilmaschinen GmbH. Spinning or twisting machine, especially for glass-fiber threads. 4,519,202, Cl. 57-264.000.
Hawkeye Chemical Company: *See—*
Moore, William P., 4,519,831, Cl. 71-13.000.
Hawkeye Food Machinery, Inc.: *See—*
Vanosdall, Dennis L., 4,519,305, Cl. 99-625.000.
Hawkins, Ronald G.: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.
Hawley, Gil R.: *See—*
Inkrott, Kenneth E.; and Hawley, Gil R., 4,520,121, Cl. 502-105.000.
Hayasaka, Toyoo: *See—*
Kamata, Nobuo; Sekiya, Takashi; Takeda, Kazutoshi; Hayasaka, Toyoo; and Yoshida, Tomohisa, 4,520,087, Cl. 429-219.000.
Hayashi, Koji: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichirou; Hayashi, Koji; and Kon, Shigeki, 4,519,862, Cl. 156-219.000.
Hayashi, Kunihisa; and Nogami, Takahiro, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for automatic control of driving speed. 4,519,469, Cl. 180-169.000.
Hayashi, Masaharu; Tsuchikawa, Syunzo; and Itakura, Masato, to Aisin Seiki Kabushiki Kaisha. Engine cooling system. 4,519,343, Cl. 123-41.490.
Hayashi, Masahiro; Nozawa, Seiichi; and Oikawa, Takashi, to Mitsubishi Chemical Industries Ltd. Aromatic polyester containing phenolphthalein unit and bis-phenol unit. 4,520,208, Cl. 549-308.000.
Hayashi, Nobuaki: *See—*
Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, 4,520,094, Cl. 430-144.000.
Hazeltine Corporation: *See—*
Frazita, Richard F., 4,520,361, Cl. 343-372.000.
Heady, Robert E.; and Frankiewicz, Jeffrey R., to CPC International Inc. Production of butanol by a continuous fermentation process. 4,520,104, Cl. 435-160.000.
Healey, John G., Jr.: *See—*
Gillen, Orval D.; and Healey, John G., Jr., 4,519,711, Cl. 366-4.000.
Healy, George M.; and Curry, Kenneth D., to Polydex Chemicals Ltd. Tissue culture and cell growth-promoting material and its method of manufacture. 4,520,107, Cl. 435-240.000.
Heard, Charles M.; and Yang, Frank C., to Hughes Aircraft Company. Adaptive recursive frequency offset tracking system. 4,520,493, Cl. 375-97.000.
Heat Power Products Corporation: *See—*
Sebald, Joseph F., deceased, 4,519,444, Cl. 165-47.000.
Hedblom, Mats-Olov: *See—*
Ericsson, Thomas; Gylfe, Sten; and Hedblom, Mats-Olov, 4,519,918, Cl. 210-680.000.
Hedges, Charles V.: *See—*
Mark, Victor; and Hedges, Charles V., 4,520,187, Cl. 528-176.000.
Hedrich, Dieter: *See—*
Heinrich, Hans; and Hedrich, Dieter, 4,519,537, Cl. 228-221.000.
Heide, Wilfried: *See—*
Schneider, Kurt; Heide, Wilfried; Hartmann, Juergen; and Hartmann, Heinrich, 4,520,210, Cl. 560-222.000.
Heinrich, Hans; and Hedrich, Dieter, to Daimler-Benz Aktiengesellschaft. Process for hydrogen-impermeable brazing of austenitic structural steel parts. 4,519,537, Cl. 228-221.000.
Heiss, Lorenz, to Hoechst Aktiengesellschaft. Process for preparing stilbenedicarbonitriles. 4,519,953, Cl. 260-465.00H.
Held, Kurt. Automatic drafting device with adjusting aid. 4,519,138, Cl. 33-32.00R.
Heldt, Carl R. Brace extension for locking pliers. 4,519,278, Cl. 81-427.500.
Hellier, John A. Method and apparatus for treating tobacco. 4,519,407, Cl. 131-291.000.
Helling, James: *See—*
McNair, Rhett; and Helling, James, 4,520,436, Cl. 362-366.000.

Helmick, Timothy A. Continuous filtering system for cooking oil. 4,519,904, Cl. 210-167.000.
Hemens, James F., to Teleflex Morse Limited. Power assistance control device. 4,519,294, Cl. 91-374.000.
Hemmert, Raymond A., deceased: *See—*
Schoeff, Terry G.; and Hemmert, Raymond A., deceased, 4,519,376, Cl. 126-121.000.
Henderson, Robert B.: *See—*
Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., 4,519,553, Cl. 242-56.00R.
Heneka, Rolf: *See—*
Leitermann, Wulf; and Heneka, Rolf, 4,519,646, Cl. 297-15.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Lepper, Herbert; and Schutt, Hartwig, 4,520,211, Cl. 568-863.000.
Preuss, Wolfgang, 4,519,949, Cl. 260-397.100.
Herbert Kannegisser GmbH & Co.: *See—*
Kannegiesser, Martin; Mussiger, Klaus; and Dreischmeier, Wilfried, 4,519,222, Cl. 68-5.00C.
Herbert, William J.: *See—*
Kotian, Vijayraj M.; Blumer, Roger L.; and Herbert, William J., 4,520,260, Cl. 219-553.000.
Hercules Incorporated: *See—*
Diveley William R.; and Clayton, Anthony B., 4,520,171, Cl. 525-279.000.
Gill, Dee R.; and Marks, Rex B., 4,519,869, Cl. 156-428.000.
Klosiewicz, Daniel W., 4,520,181, Cl. 525-247.000.
Maslanka, William W., 4,520,159, Cl. 524-606.000.
Hering, Bernhard: *See—*
Steiger, Erwin; and Hering, Bernhard, 4,520,254, Cl. 219-121.00L.
Herion, Dieter: *See—*
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, 4,519,115, Cl. 28-255.000.
Hermanson, William O., to Tecumseh Products Company. Engine flywheel brake toggle mechanism. 4,519,486, Cl. 192-3.00S.
Herrington, F. John, to Mobil Oil Corporation. Air ring plenum with molded housing. 4,519,146, Cl. 34-104.000.
Hershberger, David L., to Harris Corporation. AM Stereo modulator. 4,520,498, Cl. 381-16.000.
Herweyer, Elliott E.: *See—*
Whyte, Lance; and Herweyer, Elliott E., 4,519,919, Cl. 210-695.000.
Hess, Heinrich; Grogler, Gerhard; and Kopp, Richard, to Bayer Aktiengesellschaft. Polyurethanes and polyurethane-ureas based on aromatic uret dione diamine adducts. 4,520,186, Cl. 528-73.000.
Hesse, Wolfgang: *See—*
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, 4,519,120, Cl. 29-157.00R.
Heuchert, Johann K.: *See—*
Eberle, Kurt, 4,519,308, Cl. 100-102.000.
Heuer, Charles: *See—*
Cox, Charles M.; and Heuer, Charles, 4,520,392, Cl. 358-147.000.
HGM, Inc.: *See—*
Horne, Kenneth J., 4,519,390, Cl. 128-303.100.
Hibi, Hitoshi, to Sharp Kabushiki Kaisha. Auto brightness limiter circuit for television. 4,520,397, Cl. 358-168.000.
Hidaka Seiki KK: *See—*
Yokosawa, Tomoo, 4,519,121, Cl. 29-157.30C.
Higashio Pipe Fittings Mfg. Co., Ltd.: *See—*
Yodoshi, Tatsuo; Ohata, Hiroyoshi; and Inoue, Hiroshi, 4,519,638, Cl. 285-305.000.
Higgins, William A., to Lubrizol Corporation, The. Dye-receptive polyolefins and polyolefin fibers. 4,520,155, Cl. 524-166.000.
Hijikigawa, Masaya: *See—*
Miyoshi, Shuji; Sugihara, Takashi; Jinda, Akihito; and Hijikigawa, Masaya, 4,520,341, Cl. 338-35.000.
Hikosaka, Shinichi; Murayama, Kosho; Fukuura, Shinichi; and Yanase, Takaomi, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for the separation of magnetic and nonmagnetic solid particles from a liquid. 4,519,906, Cl. 210-223.000.
Hilaire, Jacob: *See—*
Schreiber, Adam; and Hilaire, Jacob, 4,519,101, Cl. 3-1.912.
Hill, Charles A. Vessel lid attachment. 4,519,520, Cl. 220-263.000.
Hill, Roland J.; and Acarnley, Paul P., to National Research Development Corporation. Stepping motors and drive circuits therefor. 4,520,302, Cl. 318-696.000.
Hillemanns, Herbert; Samans, Robert; and Meyer, Walter, to Mannesmann Aktiengesellschaft. Method and apparatus for the recovery of spraying substance when spraying elongated rolled stock. 4,520,047, Cl. 427-331.000.
Hillman, Gary, to Machine Technology, Inc. Method and apparatus for dispensing liquid. 4,519,526, Cl. 222-212.000.
Himes, Glenn R., to Shell Oil Company. Dull, smooth unit soles. 4,520,138, Cl. 521-91.000.
Himpsl, Francis L.: *See—*
Andrews, Robert W.; Himpsl, Francis L.; Horvath, Eugene B.; and Speronello, Barry K., 4,520,119, Cl. 502-67.000.
Hipple, Robert J. Transforming the upright vacuum cleaner's own push-pull handle into a suction cleaning wand. 4,519,113, Cl. 15-335.000.
Hiramatsu, Takeo: *See—*
Shimizu, Takeo; Hiramatsu, Takeo; Takamiya, Bonnosuke; and Fukuchi, Hiroshi, 4,519,273, Cl. 74-752.00A.
Hirano, Hideo, to Okamoto & Co., Ltd. Knitting machine. 4,519,221, Cl. 66-107.000.
Hirano, Hiroyuki: *See—*
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,519,790, Cl. 474-18.000.
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, to Director-General of the Agency of Industrial Science & Technology. Polymeric compounds with sustained anti-tumor activity and a method for the preparation thereof. 4,520,162, Cl. 525-327.600.
Hirao, Masao: *See—*
Ono, Motoji; Hirao, Masao; and Fukushima, Shigehisa, 4,519,427, Cl. 141-65.000.
Hiraoka, Ryosei: *See—*
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.
Hirose, Yoshiyuki. Parts feeder. 4,519,524, Cl. 221-167.000.
Hirota, Junichi: *See—*
Koh, Hiroshi; and Hirota, Junichi, 4,520,343, Cl. 340-19.00R.
Hirota, Yoji: *See—*
Hatano, Hirofumi; and Hirota, Yoji, 4,519,822, Cl. 55-459.00R.
Hisajima, Masahiko: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, 4,519,702, Cl. 355-51.000.
Hitachi Cable, Ltd.: *See—*
Sasaki, Hajime; and Nishiyama, Shinichi, 4,519,980, Cl. 420-474.000.
Hitachi Chemical Company, Ltd.: *See—*
Tomisawa, Yoshiaki; Takeuchi, Toshio; Honda, Keijiro; Takahashi, Susumu; and Kinoda, Seiji, 4,519,690, Cl. 354-324.000.
Hitachi Engineering Co., Ltd.: *See—*
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.
Hitachi Heating Appliances Co., Ltd.: *See—*
Ishihara, Masahiro; Watanabe, Mitsuru; Ohkawa, Shuji; Taguchi, Shunichi; and Kikuchi, Itsuo, 4,520,250, Cl. 219-10.55B.
Hitachi, Ltd.: *See—*
Arita, Setsuo; and Ito, Tetsuo, 4,520,483, Cl. 371-68.000.
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.
Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, 4,520,094, Cl. 430-144.000.
Okabe, Akira; Urushidani, Haruo; and Kashiwahara, Katsuto, 4,519,207, Cl. 60-39.182.
Sakitani, Yoshio; and Minamikawa, Yoshihisa, 4,520,421, Cl. 361-234.000.
Shimura, Tastuo, 4,520,382, Cl. 357-53.000.
Sugahara, Kenshi; Yasuda, Kazuo; and Mori, Junji, 4,519,891, Cl. 204-418.000.
Watanabe, Kazuo; Ohkubo, Yuichi; Haeno, Akira; and Yokogawa, Fumihiko, 4,520,282, Cl. 307-491.000.
Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, 4,520,108, Cl. 436-52.000.
Hitchcock, James R., Jr.; and Nevens, Charles J., to Baxter Travenol Laboratories, Inc. Disposable swab. 4,519,795, Cl. 604-289.000.
Hitzman, Donald O. Apparatus for carrying out sparged reaction. 4,519,984, Cl. 422-196.000.
HK-Engineering Aktiebolag: *See—*
Kitsnik, Henrik M., 4,519,753, Cl. 417-403.000.
Ho, Chih-Ming; and Gutmark, Ephraim, to University of Southern California. Mixing apparatus using a noncircular jet of small aspect ratio. 4,519,423, Cl. 137-888.000.
Hochhauser, Albert M., to Exxon Research & Engineering Co. Method for reducing water sensitivity of ether containing gasoline compositions. 4,519,809, Cl. 44-53.000.
Hocker, Jurgen; Muller, Hans K.; and Broich, Bruno, to Bayer Aktiengesellschaft. Particulate doped polyacetylene. 4,519,939, Cl. 252-500.000.
Hodgson, Donald E. Combination tool. 4,519,108, Cl. 7-167.000.
Hoechst Aktiengesellschaft: *See—*
Heiss, Lorenz, 4,519,953, Cl. 260-465.00H.
Hofer, Gerald: *See—*
Eheim, Franz; Hofer, Gerald; Konrath, Karl; and Straubel, Max, 4,519,352, Cl. 123-373.000.
Hoffman, Gilbert A., to Tektronix, Inc. Phase shifters. 4,520,325, Cl. 330-302.000.
Hoffman, James E. Gas injection valve. 4,519,372, Cl. 123-470.000.
Hoffmann, Dietrich: *See—*
Gotz, Udo; Gleichauf, Winfried; Gunther, Oswin; and Hoffmann, Dietrich, 4,519,117, Cl. 29-1.200.
Hoffmann, Horst, to Wilhelm Ruf KG. Multi-layer conductor plate and a method of making. 4,520,228, Cl. 174-68.500.
Hoffmann-La Roche Inc.: *See—*
Reiner, Roland, 4,520,195, Cl. 544-182.000.
Hoffmann, Wolfgang. Computer controlled labelling machine. 4,519,868, Cl. 156-353.000.
Hoffmeister, Hermann: *See—*
Wagenseil, Ludwig; and Hoffmeister, Hermann, 4,519,413, Cl. 137-111.000.
Hofler, Willy. Automatic gear testing apparatus. 4,519,241, Cl. 73-162.000.
Hofler, Willy; and Golder, Peter, to Hofler, Willy. Automatic gear testing apparatus. 4,519,242, Cl. 73-162.000.

Hofler, Willy: *See—*
Meder, Willi; Bertz, Hans-Ulrich; and Golder, Peter, 4,519,141, Cl. 33-179.50R.
Hogge, Charles R., Jr., to Rockwell International Corporation. Decision feedback equalizing apparatus. 4,520,489, Cl. 375-14.000.
Hohn, Wolfgang: *See—*
Schwarze, Werner; Kleemann, Axel; Remmel, Hans; and Hohn, Wolfgang, 4,520,209, Cl. 560-124.000.
Hohne, Karl; and Starbeck, Gerd, to Siemens Aktiengesellschaft. Hydrogen/bromine cell. 4,520,081, Cl. 429-19.000.
Holland, Ronald A.; Petrie, Harold L.; Brennan, John R.; and Christ, Frederick C., to Armco Inc. Oil well standing valve. 4,519,457, Cl. 166-317.000.
Holler, Mark A.: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,519,849, Cl. 148-1.500.
Hollmann, Friedrich: *See—*
Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, 4,519,233, Cl. 72-247.000.
Hollyday, Robert D.: *See—*
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,519,665, Cl. 339-147.00R.
Holmes, Gordon W., to Professional Packaging Limited. Book cover. 4,519,630, Cl. 281-31.000.
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., to Halliburton Company. Fracturing method for stimulation of wells utilizing carbon dioxide based fluids. 4,519,455, Cl. 166-305.00R.
Holzrichter, Edward J.; and Smith, Marc L., to Whittaker Corporation. Polyester-forming composition for coil coatings, improved polyester resin and method of making same. 4,520,188, Cl. 528-274.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ebisawa, Masuo; Kawase, Akio; and Nakamura, Akiyoshi, 4,519,436, Cl. 164-120.000.
Enomoto, Masaru; Kimura, Kenji; and Kawada, Keiichi, 4,519,364, Cl. 123-432.000.
Ishihara, Tuneo; and Uchida, Masayosi, 4,519,762, Cl. 425-183.000.
Kamiya, Tadashi; Kawasaki, Kazuhiro; and Muranaka, Akio, 4,519,099, Cl. 2-424.000.
Kamiya, Tadashi, 4,519,472, Cl. 180-227.000.
Miyakoshi, Shinichi; and Oyama, Kazuo, 4,519,471, Cl. 180-219.000.
Nagase, Hidenobu; Suzuki, Shigeru; and Shimada, Shinichi, 4,519,371, Cl. 123-470.000.
Nakanishi, Yasuo; Sakamoto, Kazunori; Ando, Giichi; and Watanabe, Teruoki, 4,519,854, Cl. 148-127.000.
Ochiai, Hideo; Hamane, Masumi; and Kimoto, Masahiko, 4,519,473, Cl. 180-229.000.
Ohyama, Kazuo; and Kitami, Takashi, 4,519,344, Cl. 123-55.0VF.
Honda, Keijiro: *See—*
Tomisawa, Yoshiaki; Takeuchi, Toshio; Honda, Keijiro; Takahashi, Susumu; and Kinoda, Seiji, 4,519,690, Cl. 354-324.000.
Honda, Toshikazu: *See—*
Tsuno, Katsushige; and Honda, Toshikazu, 4,520,264, Cl. 250-311.000.
Honeywell, Inc.: *See—*
Houvig, Felix J.; and Rowlands, Ronald H., 4,520,488, Cl. 375-5.000.
Honeywell Information Systems Inc.: *See—*
O'Keefe, David B.; and Miller, Robert C., 4,520,356, Cl. 340-750.000.
Hongo, Chikara: *See—*
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,519,955, Cl. 260-501.120.
Honya, Takao: *See—*
Ishido, Takao; Nakao, Masasi; Honya, Takao; and Mizuno, Yukio, 4,519,424, Cl. 139-91.000.
Hoobler, Mary A.: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,519,832, Cl. 71-87.000.
Hoover, Troy E.: *See—*
Glanz, Kenneth D.; and Hoover, Troy E., 4,520,379, Cl. 346-214.000.
Hopkinson, Erle: *See—*
Clare, Kenneth; and Hopkinson, Erle, 4,519,803, Cl. 8-445.000.
Horansky, Frank J.: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.
Hori, Kiyoharu, to Rion Kabushiki Kaisha. Method for measuring the degree of nasality. 4,519,399, Cl. 128-724.000.
Hori, Yuji; Nishimura, Yoshichika; and Takahashi, Fuminobu, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Fluid composition for drilling. 4,519,923, Cl. 252-8.50C.
Horiba, Ltd.: *See—*
Uematsu, Hiroaki; Aoki, Junji; and Oku, Narihiro, 4,519,890, Cl. 204-409.000.
Horike, Masanori: *See—*
Ishikawa, Chuji; Iwasaki, Kyuhachiro; Horike, Masanori; and Komai, Hiromichi, 4,520,367, Cl. 346-75.000.
Horikiri, Kenji; Ueda, Fumio; and Ideno, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Liquid crystal display device. 4,519,679, Cl. 350-339.00R.
Horimatsu, Kazuo, to Tekken Construction Co., Ltd. Method for constructing underground structure. 4,519,730, Cl. 405-258.000.
Horino, Shigeo: *See—*
Ohba, Hiroshi; and Horino, Shigeo, 4,519,523, Cl. 221-129.000.
Horn, Roland; and Glausch, Erhardt, to Beck & Co., Packautomaten. Device for deflection of a continuous film web in a packaging machine. 4,519,185, Cl. 53-550.000.
Horne, Kenneth J., to HGM, Inc. Fiber optic laser catheter. 4,519,390, Cl. 128-303.100.
Hornschuh, Manfred, to Windmoller & Holscher. Method of mounting printing blocks in correct positions on form cylinders of flexographic printing machines for multicolor printing. 4,520,389, Cl. 358-107.000.
Horttonen, Kalevi, to O. Kytola ja Kumpp. Kommandiittiyhtio . Procedure for lubricating the bearings in equipment comprising a plurality of oil-lubricated bearings. 4,519,247, Cl. 73-198.000.
Horvath, Eugene B.: *See—*
Andrews, Robert W.; Himpsl, Francis L.; Horvath, Eugene B.; and Speronello, Barry K., 4,520,119, Cl. 502-67.000.
Hoshi, Hideaki; Okumura, Jun; Naito, Takayuki; Abe, Yoshio; and Aburaki, Shimpei, to Bristol-Myers Company. Substituted vinyl cephalosporins. 4,520,022, Cl. 514-200.000.
Hosking, Michael B., to General Dynamics Corporation, Electronics Division. Dual-path circuit board connector with internal switching. 4,520,429, Cl. 361-413.000.
Hoskins, John T.; and Zillig, Robert G. Fluid coupling and method of assembly. 4,519,449, Cl. 165-141.000.
Hosoya, Nobukazu: *See—*
Murakami, Yoshihiro; and Hosoya, Nobukazu, 4,520,328, Cl. 332-31.00T.
Houvig, Felix J.; and Rowlands, Ronald H., to Honeywell, Inc. Communication system and method. 4,520,488, Cl. 375-5.000.
Hovan, Francis E.: *See—*
Canning, Terry D.; and Hovan, Francis E., 4,519,667, Cl. 339-186.00M.
Howard, Philip: *See—*
Gane, Brian R.; and Howard, Philip, 4,520,118, Cl. 502-53.000.
Howard, Roland M., Jr.: *See—*
Jones, Marvin R.; and Howard, Roland M., Jr., 4,519,571, Cl. 251-1.00A.
Howes, Ronald B., Jr.: *See—*
Warwick, Dennis J.; Nubson, Richard C.; and Howes, Ronald B., Jr., 4,519,600, Cl. 271-4.000.
Howlett, Robert J., to Container Corporation of America. Tubular paperboard display stand. 4,519,319, Cl. 108-111.000.
Hoxan Corporation: *See—*
Maeda, Yasuhiro; Yokoyama, Takashi; and Yagihashi, Shinichi, 4,519,764, Cl. 425-256.000.
Hrushesky, William J. M. Medical instrument for noninvasive measurement of cardiovascular characteristics. 4,519,395, Cl. 128-671.000.
Hsia Chen, Catherine S., to Mobil Oil Corporation. Process of making high VI lubes. 4,520,221, Cl. 585-517.000.
Hsu, Chao-Yang; and Lyons, James E., to Sun Tech, Inc. Process for oxidizing a phenol to a p-benzoquinone. 4,519,948, Cl. 260-396.00R.
Hsu, Sheng T., to RCA Corporation. Method of fabricating high speed CMOS devices. 4,519,126, Cl. 29-571.000.
Huang, Henry C. Mail box with remote indicator. 4,520,350, Cl. 340-569.000.
Hubbell, Leslie A. Safety cap for fence posts. 4,520,231, Cl. 174-158.00F.
Hudson, Sharon J., Jr., to Sharon Manufacturing Company. Fuel injection rail assembly. 4,519,368, Cl. 123-468.000.
Huebel, Robert R., to Randall Corporation, The. Hydrocarbon gas separation. 4,519,824, Cl. 62-26.000.
Hughes Aircraft Company: *See—*
Heard, Charles M.; and Yang, Frank C., 4,520,493, Cl. 375-97.000.
Pastor, Ricardo C.; and Chew, Remedios K., 4,519,986, Cl. 423-19.000.
Hughes Helicopters, Inc.: *See—*
Logan, Andrew H.; and Wagner, Robert A., deceased, 4,519,559, Cl. 244-17.170.
Hughes Tool Company: *See—*
Burr, Bruce H., 4,519,719, Cl. 384-94.000.
Cochran, Chudleigh B., 4,519,456, Cl. 166-312.000.
Huignard, Jean-Pierre; and Malard, Marcel, to Thomson-CSF. Coherent radiation source generating a beam with a regulatable propagation direction. 4,520,484, Cl. 372-24.000.
Hulme, James H.; and Shinn, Stuart E., to Supreme Aluminum Industries Limited. Ladder extension coupling. 4,519,478, Cl. 182-178.000.
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., to KabiGen AB. Bacteriolytic proteins. 4,520,016, Cl. 514-12.000.
Hunt, Charles V.: *See—*
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,519,455, Cl. 166-305.00R.
Hunt, Steven A., to De la Rue Systems Limited. Apparatus for detecting the condition of a sheet or web. 4,519,249, Cl. 73-596.000.
Hunter, James R.; and Lazzarotti, S. James, to Warner & Swasey Company, The. Universal sheet metal holder. 4,519,284, Cl. 83-410.000.
Hupp, Stephen S., to Ashland Oil, Inc. Process for preparing maleimide. 4,520,206, Cl. 548-548.000.
Hurst, Robert N., Jr., to RCA Corporation. Video apparatus with burst locked heterodyne chroma converter and residual time base error correction. 4,520,402, Cl. 358-324.000.
Hussmann Corporation: *See—*
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,519,217, Cl. 62-256.000.

Hutchinson, Nancy K.: *See—*
Knudson, Giltner J., 4,519,334, Cl. 114-144.00R.
Huth, Klaus: *See—*
Schreiber, Peter; and Huth, Klaus, 4,520,496, Cl. 378-128.000.
Hydro Fuels, Inc.: *See—*
Russ, James J.; Smith, John W.; and Condra, Janet S., 4,519,921, Cl. 210-716.000.
Hydro-Quebec: *See—*
Gauvin, William H.; and Kubanek, George R., 4,519,835, Cl. 75-10.00R.
Hydromatik GmbH: *See—*
Wagenseil, Ludwig; and Hoffmeister, Hermann, 4,519,413, Cl. 137-111.000.
I.C.B. France Industrie et Componsants du Batiment Societe Anonyme: *See—*
Mombelli, Paup, 4,519,640, Cl. 292-33.000.
Ichida, Toshio; Kobayashi, Hideo; Ogata, Hajime; and Tsugawa, Shunichi, to Kawasaki Steel Corporation. Method of producing tin-free steel sheets. 4,519,879, Cl. 204-35.100.
Ichihara, Yoshihiro: *See—*
Bunno, Masayasu; Sugiura, Tsutomu; Tsuji, Masao; Harada, Hidemi; and Ichihara, Yoshihiro, 4,520,102, Cl. 435-61.000.
Ichimura, Yoshiaki; Noda, Atsuhito; Tokaichi, Tetsuro; and Umesato, Shoji, to Japan Aviation Electronics Industry, Limited; and NEC Corporation. Electrical connectors with quasi-terminal pins. 4,519,660, Cl. 339-75.00M.
Ide, Jushi: *See—*
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.
Ide, Kyozoh: *See—*
Komatsubara, Yoshiaki; Ide, Kyozoh; and Munakata, Eiko, 4,519,678, Cl. 350-338.000.
Idec Izumi Corporation: *See—*
Fujita, Teizo; and Tsuji, Yoshitaka, 4,519,668, Cl. 339-241.000.
Idemitsu Kosan Company Limited: *See—*
Sato, Haruhito, 4,520,219, Cl. 585-462.000.
Seiki, Hiromichi, 4,519,927, Cl. 252-49.600.
Ideno, Hiroaki: *See—*
Horikiri, Kenji; Ueda, Fumio; and Ideno, Hiroaki, 4,519,679, Cl. 350-339.00R.
Igarashi, Akira: *See—*
Iwakura, Ken; and Igarashi, Akira, 4,520,377, Cl. 346-208.000.
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; Iko, Kazuo; and Miki, Kazuyuki, to Nitto Electric Industrial Co., Ltd. Siloxane-modified polyimide precursor and polyimide. 4,520,075, Cl. 428-435.000.
Iida, Kazuhiko, to Tokyo Shibaura Kenki Kabushiki Kaisha. Picture information display device. 4,520,399, Cl. 358-287.000.
Iida, Kazumi: *See—*
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.
Iida, Takenobu; and Sasaki, Shunichi, to Iwasaki Electric Co., Ltd. High pressure metal vapor discharge lamp. 4,520,294, Cl. 315-50.000.
Iida, Yoshikazu: *See—*
Hagyuda, Nobuyoshi; Hasegawa, Hiroshi; Iida, Yoshikazu; and Maida, Osamu, 4,519,683, Cl. 354-127.110.
Iijima, Hiroshi: *See—*
Tanaka, Osamu; Iijima, Hiroshi; Ito, Masayoshi; and Okigawa, Etsumi, 4,519,649, Cl. 297-316.000.
Iiyama, Kazunobu: *See—*
Ishii, Mikio; Iiyama, Kazunobu; and Yazaki, Tomoyoshi, 4,520,034, Cl. 426-96.000.
Iizuka, Hirosi: *See—*
Mizuno, Kaneyoshi; Nose, Isamu; and Iizuka, Hirosi, 4,520,500, Cl. 381-43.000.
Iizuka, Yutaka: *See—*
Seki, Yasutomo; Akiyama, Toshio; Nakabayashi, Norio; and Iizuka, Yutaka, 4,519,686, Cl. 354-200.000.
Ikawa, Kazuo: *See—*
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,519,627, Cl. 280-701.000.
Ikeda, Yasuo, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Pickup device for picking up vibration transmitted through bones. 4,520,238, Cl. 179-121.00C.
Iketani, Yukiyoshi: *See—*
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Iketani, Yukiyoshi, 4,519,807, Cl. 44-15.00R.
Ikeuchi, Satoru: *See—*
Kobayashi, Tatsuhiko; Ikeuchi, Satoru; Watanabe, Kazumasa; and Suginaka, Shunji, 4,520,095, Cl. 430-223.000.
Iko, Kazuo: *See—*
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; Iko, Kazuo; and Miki, Kazuyuki, 4,520,075, Cl. 428-435.000.
Imai, Hirosuke: *See—*
Sakata, Ko; and Imai, Hirosuke, 4,520,178, Cl. 526-200.000.
Imayoshi, Kiyoyuki, to Toyota Jidosha Kabushiki Kaisha. Method of mounting vehicle wiper mechanism. 4,519,123, Cl. 29-434.000.
Imperial Chemical Industries, PLC: *See—*
Athey, Graham, 4,520,066, Cl. 428-288.000.
Marsham, Peter R.; and Thomson, David S., 4,520,027, Cl. 514-354.000.
Imperial Clevite Inc.: *See—*
Green, Ralph R.; and Green, Robert C., 4,520,281, Cl. 307-475.000.
Ims, Dale R., to Xerox Corporation. Ink jet printing method and apparatus. 4,520,368, Cl. 346-75.000.
Inagaki, Mitsukane: *See—*
Nakayama, Shozo; Mukai, Takamitsu; Ohno, Makoto; and Inagaki, Mitsukane, 4,519,119, Cl. 29-156.50R.
Inagaki, Yoshio: *See—*
Endo, Katsusuke; and Inagaki, Yoshio, 4,520,096, Cl. 430-233.000.
INCO Europe Limited: *See—*
Shaw, Stuart W. K., 4,519,979, Cl. 420-448.000.
Industrial de Valvulas, S.A. de C.V.: *See—*
Anaya, Jose R., 4,519,414, Cl. 137-246.220.
Inion, Henri: *See—*
Rosseels, Gilbert; and Inion, Henri, 4,520,026, Cl. 514-299.000.
Inkrott, Kenneth E.; and Hawley, Gil R. Magnesium halide hydrates and polymerization catalysts prepared therefrom. 4,520,121, Cl. 502-105.000.
Inman, Frank S.; Giedt, Donald C.; and Lushis, Donald V., to Thiokol Corporation. Braided preform for refractory articles and method of making. 4,519,290, Cl. 87-7.000.
Innis, David T., to Shatterproof Glass Corp. Method and apparatus for changing sputtering targets in a magnetron sputtering system. 4,519,885, Cl. 204-192.00R.
Inoue, Hiroshi: *See—*
Yodoshi, Tatsuo; Ohata, Hiroyoshi; and Inoue, Hiroshi, 4,519,638, Cl. 285-305.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,520,252, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Traveling-wire EDM method and apparatus with a cooled machining fluid. 4,520,252, Cl. 219-69.00M.
Inoue, Shingo: *See—*
Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, 4,519,362, Cl. 123-414.000.
Inoue, Takeo; and Shirazawa, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Method for producing insulated pipe joint. 4,519,970, Cl. 264-261.000.
Inovelf: *See—*
Guigan, Jean, 4,519,981, Cl. 422-64.000.
Institut Dr. Friedrich Forster Prufgeratebau GmbH & Co. KG.: *See—*
Trautmann, Wolfgang, 4,519,243, Cl. 73-432.00R.
Institut Francais du Petrole: *See—*
Deschamps, Andre ; and Franckowiak, Sigismond, 4,519,895, Cl. 208-8.0LE.
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,519,983, Cl. 422-78.000.
Institute of Gas Technology: *See—*
Victor, John G., 4,520,213, Cl. 568-913.000.
Intel Corporation: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,519,849, Cl. 148-1.500.
Intermountain Research & Development Corp.: *See—*
Copenhafer, William C.; and Pinsky, Michael L., 4,519,806, Cl. 23-302.00T.
International Business Machines Corporation: *See—*
Anderson, Herbert R., Jr.; Sachdev, Harbans S.; and Sachdev, Krishna G., 4,519,872, Cl. 156-643.000.
Asch, Karl; Greschner, Johann; Kallmeyer, Michael; and Kulcke, Werner, 4,520,314, Cl. 324-158.00P.
Barker, Robert B.; Davidge, Ronald V.; Gibson, David K.; and Van Cleave, George W., 4,519,700, Cl. 355-3.0SH.
Bradler, Hans J.; Brauner, Wilfried; Deyhle, Manfred; and Vogt, Karl H., 4,519,865, Cl. 156-256.000.
Buonomo, Joseph P.; and Perry, Wendell L., 4,520,440, Cl. 364-200.000.
Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., 4,519,553, Cl. 242-56.00R.
Chesebro, Donald G.; and Soychak, Francis J., 4,519,128, Cl. 29-576.00W.
Edgar, Albert D.; and Lubart, Neil D., 4,520,391, Cl. 358-133.000.
Firth, Rowland V. D., III; Goff, Willie, Jr.; Ku, Ta C.; and Rakes, James M., 4,520,371, Cl. 346-76.0PH.
Hagler, Brenda J.; and Repass, James T., 4,520,457, Cl. 364-900.000.
Jones, Fletcher, 4,520,269, Cl. 250-492.200.
Miranker, Glen S.; and Wong, Chak-Kuen, 4,520,456, Cl. 364-900.000.
Perry, Charles H.; and Shaw, Robert R., 4,519,851, Cl. 148-6.310.
Tremintin, Bernard, 4,520,448, Cl. 364-488.000.
International Flavors & Fragrances Inc.: *See—*
Fujioka, Futoshi; Boden, Richard M.; Schreiber, William L.; Whelan, Patrick; and Hanna, Marie R., 4,519,943, Cl. 252-522.00R.
Hall, John B.; and Yoshida, Takao, 4,520,032, Cl. 426-3.000.
International Octrooi Maatschappij "Octropa" B.V.: *See—*
Ranger, Alan E., 4,520,048, Cl. 427-350.000.
International Playtex, Inc.: *See—*
O'Boyle, Dolores; and Shonk, Phyllis, 4,519,137, Cl. 33-17.00R.
International Telephone & Telegraph Corp.: *See—*
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,519,259, Cl. 73-861.220.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Spaanderman Cornelis, 4,519,506, Cl. 209-592.000.
Intevep, S.A.: *See—*
Morales, Alfredo L.; Galiasso, Roberto E.; Agudelo, Maria M.; Salazar, Jose A.; and Carrasquel, Angel R., 4,520,128, Cl. 502-210.000.
Inui, Masaki, to Toyota Jidosha Kabushiki Kaisha. Gear assembly for eliminating knocking noises in transmission. 4,519,264, Cl. 74-409.000.

Invento AG: *See*—
Iseli, Jakob; and Pribnow, Hans-Hermann, 4,519,474, Cl. 180-279.000.

Iordanishvili, Evgeny K.: *See*—
Gudkin, Timofei S.; Iordanishvili, Evgeny K.; Lidorenko, Nikolai S.; Malkovich, Bella E.; Razumovsky, Mikhail I.; and Rubashov, Igor B., 4,519,389, Cl. 128-303.100.

Iowa State University Research Foundation, Inc.: *See*—
Larock, Richard C., 4,520,207, Cl. 549-79.000.

Ireco, Inc.: *See*—
Nadherny, Rudolph E., 4,519,564, Cl. 248-58.000.

Irie, Namio: *See*—
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,519,627, Cl. 280-701.000.

Irie, Shin-ichi: *See*—
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.

Isaacson, Jerome C.: *See*—
Francis, Ralph M., Jr.; and Isaacson, Jerome C., 4,519,684, Cl. 354-145.100.

Iseli, Jakob; and Pribnow, Hans-Hermann, to Invento AG. Safety beading. 4,519,474, Cl. 180-279.000.

Ishido, Takao; Nakao, Masasi; Honya, Takao; and Mizuno, Yukio, to Nissan Motor Company, Limited. Heald assembly of loom. 4,519,424, Cl. 139-91.000.

Ishihara, Masahiro; Watanabe, Mitsuru; Ohkawa, Shuji; Taguchi, Shunichi; and Kikuchi, Itsuo, to Hitachi Heating Appliances Co., Ltd. Heating apparatus of thawing sensor controlled type. 4,520,250, Cl. 219-10.55B.

Ishihara, Tuneo; and Uchida, Masayosi, to Honda Giken Kogyo Kabushiki Kaisha. Multi-mold molding apparatus for producing a molded skin product. 4,519,762, Cl. 425-183.000.

Ishii, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure transducer. 4,519,255, Cl. 73-727.000.

Ishii, Jiro: *See*—
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Ishii, Mikio; Iiyama, Kazunobu; and Yazaki, Tomoyoshi, to Nakamuraya Co., Ltd. Pasty mass of a processed tuber and an edible outer cover and method for making the same. 4,520,034, Cl. 426-96.000.

Ishii, Morio: *See*—
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Ishii, Satoshi, to Pioneer Electronic Corporation. Power amplifier having improved power supply circuit. 4,520,322, Cl. 330-263.000.

Ishikawa, Chuji; Iwasaki, Kyuhachiro; Horike, Masanori; and Komai, Hiromichi, to Ricoh Company, Ltd. Ink jet head assembly. 4,520,367, Cl. 346-75.000.

Ishikawa, Yoshihiro: *See*—
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Ishimitsu, Kichio K.; and Tinoco, Edward N., to Boeing Company, The. Airfoil for controlling refueling boom. 4,519,560, Cl. 244-45.00R.

Ishito, Mitsuya: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, 4,519,702, Cl. 355-51.000.

Isobe, Mineo. Method of making a paper pattern for dyeing. 4,519,864, Cl. 156-248.000.

Isozumi, Shuzoo; and Hara, Kazuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Starting motor assembly having an integral epicyclic gear. 4,520,285, Cl. 310-83.000.

Israel, John W., to Italtel—Societa Italiana Telecomunicazioni S.P.A. Data-handling system for the exchange of digital messages between two intercommunicating functional units. 4,520,481, Cl. 371-37.000.

Itakura, Masato: *See*—
Hayashi, Masaharu; Tsuchikawa, Syunzo; and Itakura, Masato, 4,519,343, Cl. 123-41.490.

Itakura, Tadashi: *See*—
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Italtel Societa Italiana Telecomunicazioni S.p.A.: *See*—
Cavalieri D'Oro, Enzo; and Vita, Piero, 4,520,329, Cl. 333-135.000.

Italtel—Societa Italiana Telecomunicazioni S.P.A.: *See*—
Israel, John W., 4,520,481, Cl. 371-37.000.

Itami, Teruhiko: *See*—
Kimoto, Toshifumi; Itami, Teruhiko; Nishimura, Nobuo; and Saitoh, Koichi, 4,520,409, Cl. 360-59.000.

Itaya, Hiroshi: *See*—
Nakatsugawa, Kenji; and Itaya, Hiroshi, 4,520,321, Cl. 328-133.000.

Itemadani, Eizi: *See*—
Kenmochi, Kazuei; Sakairi, Tadashi; Maruyama, Yoshio; and Itemadani, Eizi, 4,519,761, Cl. 425-135.000.

Ito, Eiji: *See*—
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, 4,519,691, Cl. 354-400.000.

Ito, Eizi, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus with improved structure for cooling circuit elements. 4,520,425, Cl. 361-384.000.

Ito, Kazuyuki: *See*—
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.

Ito, Keiji: *See*—
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.

Ito, Masayoshi: *See*—
Tanaka, Osamu; Iijima, Hiroshi; Ito, Masayoshi; and Okigawa, Etsumi, 4,519,649, Cl. 297-316.000.

Ito, Takaaki; and Kato, Takashi, to Toyota Jidosha Kabushiki Kaisha. Variable-venturi carburetor. 4,519,957, Cl. 261-44.00C.

Ito, Tetsuo: *See*—
Arita, Setsuo; and Ito, Tetsuo, 4,520,483, Cl. 371-68.000.

Ito, Toshimitsu: *See*—
Fujimura, Kazushiro; and Ito, Toshimitsu, 4,519,355, Cl. 123-491.000.

Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, to Toyota Jidosha Kabushiki Kaishi. Diesel fuel injection pump fuel injection cutoff upon detection of excessive actual fuel combustion time. 4,519,353, Cl. 123-359.000.

Itoh, Kunio: *See*—
Sugino, Takashi; Itoh, Kunio; Wada, Masaru; and Shimizu, Hirokazu, 4,520,485, Cl. 372-48.000.

Itoh, Yukio; Takai, Kazuki; and Takagi, Satoshi, to Clarion Co., Ltd. Transmission system in a cam mechanism. 4,519,269, Cl. 74-483.00R.

ITT Industries, Inc.: *See*—
Goertler, Horst; and Rachner, Horst, 4,520,271, Cl. 290-38.00C.

Ivanics, Jozsef: *See*—
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , 4,520,018, Cl. 514-469.000.

Ivey, H. Grady: *See*—
Strickland, James K.; and Ivey, H. Grady, 4,519,570, Cl. 249-194.000.

Iwakura, Ken; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Heat-sensitive recording materials. 4,520,377, Cl. 346-208.000.

Iwami, Isamu: *See*—
Yoshino, Akira; and Iwami, Isamu, 4,520,072, Cl. 428-403.000.

Iwamoto, Kenji; Moriguchi, Kouichi; and Matusiro, Ryuiti, to Nippon Soken, Inc. Turbocharged internal combustion engine with apparatus for controlling supercharging pressure. 4,519,210, Cl. 60-602.000.

Iwasaki Electric Co., Ltd.: *See*—
Iida, Takenobu; and Sasaki, Shunichi, 4,520,294, Cl. 315-50.000.

Iwasaki, Kyuhachiro: *See*—
Ishikawa, Chuji; Iwasaki, Kyuhachiro; Horike, Masanori; and Komai, Hiromichi, 4,520,367, Cl. 346-75.000.

Iwata, Minoru, to Toyota Jidosha Kabushiki Kaisha. Fuel injector electronically controlled engine. 4,519,370, Cl. 123-432.000.

Iwata, Minoru: *See*—
Katoh, Yuuichi; Matsuoka, Hiroki; and Iwata, Minoru, 4,519,354, Cl. 123-472.000.

Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., to Sovonics Solar Systems. Continuous amorphous solar cell production system. 4,519,339, Cl. 118-718.000.

Izumi, Toshiaki: *See*—
Saito, Seitoku; Izumi, Toshiaki; Kobuke, Takayoshi; and Sugihara, Hiroshi, 4,520,076, Cl. 428-611.000.

J. I. Case Company: *See*—
Fachini, Robert M.; Orsborn, Jesse H.; and Barrett, Monroe C., 4,519,189, Cl. 56-16.600.
Harden, Eldon A.; and Randol, Kent B., 4,519,461, Cl. 172-225.000.
Wunschl, Nicholas H.; and Robinson, Edward L., Jr., 4,519,525, Cl. 221-211.000.

Jackrel, Donald. Gas permeable-liquid impermeable membranes confined within a recess. 4,520,056, Cl. 428-68.000.

Jackson, John C., II; and Schendle, Robert N., to Sunbelt Plastics, A Division Of Sunbelt Manufacturing, Inc. Rack for boxed plastic bag rolls. 4,519,502, Cl. 206-390.000.

Jackson, John E.; Adler, Thomas A.; Quets, Jean M.; and Tucker, Robert C., Jr., to Union Carbide Corporation. High strength, wear and corrosion resistant coatings. 4,519,840, Cl. 106-1.050.

Jackson, Richard N.; and Tan, Sing L., to U.S. Philips Corporation. Television transmission system. 4,520,385, Cl. 358-12.000.

Jakubowicz, Raymond F., to Eastman Kodak Company. Motorized pipette. 4,519,258, Cl. 73-864.160.

Janome Sewing Machine Co., Ltd.: *See*—
Takenoya, Hideaki; and Shomura, Eiichi, 4,519,328, Cl. 112-158.00E.

Japan Aviation Electronics Industry, Limited: *See*—
Ichimura, Yoshiaki; Noda, Atsuhito; Tokaichi, Tetsuro; and Umesato, Shoji, 4,519,660, Cl. 339-75.00M.

Japan Steel Works, Ltd., The: *See*—
Sato, Yoshinori, 4,520,446, Cl. 364-468.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.

Jasienski, Raymond: *See*—
Clarke, Robert T., Jr.; and Jasienski, Raymond, 4,519,729, Cl. 405-258.000.

Jellinek, Thomas, to Commonwealth Scientific and Industrial Research Organization. Compositions for the treatment of textile materials. 4,520,143, Cl. 523-410.000.

Jenkins, Derek K. Polymerization of conjugated dienes. 4,520,177, Cl. 526-151.000.

Jensen, Henning, to Common Sense Products Pty. Ltd. Multiple service unit. 4,519,657, Cl. 339-15.000.

JEOL Ltd.: *See*—
Tsuno, Katsushige; and Honda, Toshikazu, 4,520,264, Cl. 250-311.000.

Jernjontoret: *See*—
Fredriksson, Hasse; and Tiberg, Lars, 4,519,439, Cl. 164-476.000.

Jester, Willi; and Kruger, Heinrich, to Fried. Krupp Gesellschaft m.b.H. Milling cutter. 4,519,731, Cl. 407-46.000.

Jet Research Center, Inc.: *See*—
Leidel, David J., 4,519,313, Cl. 102-310.000.

Jeter, Jack W., to Jeter Systems Corporation. Split label index tab. 4,520,055, Cl. 428-55.000.

Jeter Systems Corporation: *See*—
Jeter, Jack W., 4,520,055, Cl. 428-55.000.

Jett, William B., Jr.; and Wilcox, Milton E., to National Semiconductor Corporation. MOS Gain controlled amplifier. 4,520,324, Cl. 330-285.000.

Jevne, Allan H.: *See*—
Cahalan, Patrick T.; Jevne, Allan H.; and Fogt, Eric J., 4,519,973, Cl. 264-267.000.

Jinda, Akihito: *See*—
Miyoshi, Shuji; Sugihara, Takashi; Jinda, Akihito; and Hijikigawa, Masaya, 4,520,341, Cl. 338-35.000.

Jirovetz, Andre, to Fal-Kon Investment Group. Apparatus for driving offset fasteners. 4,519,533, Cl. 227-109.000.

John Blue Company, a Division of Burnley Corporation: *See*—
Johnston, Douglas, 4,519,542, Cl. 239-1.000.

Johns Hopkins University, The: *See*—
Snyder, Solomon H.; and Gould, Robert J., 4,520,112, Cl. 436-504.000.

Johns-Manville Corporation: *See*—
Sherman, Earle C.; and Green, James B. P., Jr., 4,519,181, Cl. 53-374.000.

Johnson, Charles: *See*—
Chappell, Johnny L., Jr.; and Johnson, Charles, 4,519,097, Cl. 2-16.000.

Johnson, Donald W.: *See*—
Atkinson, Robert W.; Elliott, Joseph W.; and Johnson, Donald W., 4,519,385, Cl. 128-66.000.

Johnson, Edwin A.; and Leung, Chun K., to Allied Corporation. Phase angle detector. 4,520,449, Cl. 364-559.000.

Johnson, Gary E.; and Van Egeren, Andrew M., to Paper Converting Machine Company. Method and apparatus for folding diapers with selective movement of orbit of tucker balde. 4,519,596, Cl. 270-32.000.

Johnson, Michael D.: *See*—
Dunmire, Robert W.; Miller, Drew J.; and Johnson, Michael D., 4,519,098, Cl. 2-161.00R.

Johnson, Robert C., to Metalogic, Inc. Expandable and contractible frame for stretching fabric material, and method. 4,519,151, Cl. 38-102.900.

Johnson, Warren K.; Goettsch, Michael R.; and Olson, Archie H., to Glenwood Manufacturing Corporation. Waste material agitator. 4,519,714, Cl. 366-285.000.

Johnson, Willard L. Filter machine. 4,519,903, Cl. 210-94.000.

Johnston, David E., to George Angus & Company Limited. Shaft seal. 4,519,616, Cl. 277-152.000.

Johnston, Douglas, to John Blue Company, a Division of Burnley Corporation. Boomless, sprayer for field application for agricultural liquids. 4,519,542, Cl. 239-1.000.

Jonelis, John A. Electrostatic precipitator construction having movable spacers. 4,519,818, Cl. 55-130.000.

Jones, Fletcher, to International Business Machines Corporation. Electron beam lithography proximity correction method. 4,520,269, Cl. 250-492.200.

Jones, Howard: *See*—
Loev, Bernard; Jones, Howard; and Suh, John T., 4,520,131, Cl. 514-156.000.

Jones, Hugh D.; and Martinich, Steven J., to GCA Corporation. On-stream cloud point analyzer. 4,519,717, Cl. 374-17.000.

Jones, Marvin R.; and Howard, Roland M., Jr., to Koomey Blowout Preventers, Inc. Fluid operated, axially reciprocating actuator. 4,519,571, Cl. 251-1.00A.

Jones, Marvin R., to Koomey Blowout Preventers, Inc. Flow controlling apparatus. 4,519,577, Cl. 251-62.000.

Jones, Paul, Jr., to Kayser-Roth Corporation. Footwear having cushion cavity. 4,519,147, Cl. 36-19.500.

Jones, Stanley P., to Emhart Industries, Inc. Controlling the temperature of a glass mould. 4,519,827, Cl. 65-29.000.

Jones, Thomas J.: *See*—
Szuminski, Gary F.; and Jones, Thomas J., 4,519,543, Cl. 239-265.190.

Jones, Thomas R.: *See*—
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,520,168, Cl. 525-169.000.

Jordan, Wesley N.: *See*—
Riley, Robert F.; Meyer, Thomas I.; and Jordan, Wesley N., 4,519,662, Cl. 339-94.00R.

Jorgensen, Allen R.: *See*—
Wittkopf, Eugene W.; Jorgensen, Allen R.; and Daane, Robert A., 4,519,757, Cl. 425-143.000.

Jorgenson, Gordon K., to C-I-L Inc. Borehole charging method including toroidal transformer cores. 4,519,314, Cl. 102-313.000.

Jovanovic, Nenad, to Bayerische Motoren Werke AG. Arrangement for enabling a pivotal mounting of a tray to a seat back of a seat of a passenger motor vehicle. 4,519,648, Cl. 297-146.000.

Joy Manufacturing Company: *See*—
Golobic, Robert A.; and Scott, Michael H., 4,519,715, Cl. 366-343.000.

Jung, Friedrich: *See*—
Kiesewetter, Holger; Jung, Friedrich; Radtke, Hartmut; and Witt, Reinhard, 4,519,239, Cl. 73-55.000.

KabiGen AB: *See*—
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,520,016, Cl. 514-12.000.

Kabushiki Kaish Ishida Koki Seisakusho: *See*—
Utsunomiya, Michito, 4,520,339, Cl. 338-5.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Kakiuchi, Hiroshi, 4,519,930, Cl. 252-62.200.
Kamata, Nobuo; Sekiya, Takashi; Takeda, Kazutoshi; Hayasaka, Toyoo; and Yoshida, Tomohisa, 4,520,087, Cl. 429-219.000.
Murakami, Fumikazu, 4,520,237, Cl. 179-115.5ES.
Suzuki, Hayao, 4,520,301, Cl. 318-609.000.
Tabata, Junichi, 4,519,397, Cl. 128-706.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,274, Cl. 74-866.000.
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,275, Cl. 74-866.000.

Kabushiki Kaisha Meidensha: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,520,443, Cl. 364-424.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Koto, Haruhiko, 4,520,374, Cl. 346-140.00R.

Kabushiki Kaisha Takuma: *See*—
Takano, Osamu; and Fujiwara, Koji, 4,519,323, Cl. 110-281.000.

Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,520,443, Cl. 364-424.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kurahashi, Masayuki; Kobayashi, Hisao; and Deguchi, Hiroyuki, 4,519,750, Cl. 417-270.000.
Nakayama, Shozo; Mukai, Takamitsu; Ohno, Makoto; and Inagaki, Mitsukane, 4,519,119, Cl. 29-156.50R.

Kabushiki Kaisha Vine: *See*—
Torii, Yoshihiko; and Tochikubo, Osamu, 4,519,248, Cl. 73-223.000.

Kado, Clarence I., to University of California, The Regents of the. Tartrate catabolism gene. 4,520,106, Cl. 435-172.300.

Kaiser Aluminum & Chemical Corporation: *See*—
Barna, Gordon L.; and Lippert, James W., 4,519,442, Cl. 165-9.200.

Kakimi, Fujio; and Mikami, Takeshi, to Fuji Photo Film Co., Ltd. Encapsulated electrostatographic toner material. 4,520,091, Cl. 430-110.000.

Kakiuchi, Hiroshi, to Kabushiki Kaisha Daini Seikosha. Electrochromic display device. 4,519,930, Cl. 252-62.200.

Kalkbrenner, Ralph W.: *See*—
Kobuck, Richard M.; and Kalkbrenner, Ralph W., 4,519,593, Cl. 269-40.000.

Kallio, Leo W. Simulated baseball game. 4,519,610, Cl. 273-89.000.

Kallmeyer, Michael: *See*—
Asch, Karl; Greschner, Johann; Kallmeyer, Michael; and Kulcke, Werner, 4,520,314, Cl. 324-158.00P.

Kals, Walter, to Niagara Blower Company. Vacuum producing condenser. 4,519,450, Cl. 165-114.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Strohmaier, Ernst; Reich, Heinrich; and Wagner, Bernd, 4,519,780, Cl. 433-29.000.

Kamada, Kazumasa; Osaka, Norihisa; and Kaneda, Masahiro, to Mitsubishi Rayon Company, Ltd. Vinyl chloride polymer composition. 4,520,166, Cl. 525-85.000.

Kamata, Nobuo; Sekiya, Takashi; Takeda, Kazutoshi; Hayasaka, Toyoo; and Yoshida, Tomohisa, to Kabushiki Kaisha Daini Seikosha. Divalent silver oxide cell including cadmium and tellunium. 4,520,087, Cl. 429-219.000.

Kamijo, Ken, to Nissan Motor Company, Limited. Strap retractor assembly. 4,519,652, Cl. 297-477.000.

Kamimura, Yoshihiko; Okamoto, Toshiro; Takahashi, Naoyuki; Makihara, Hiroshi; and Oshima, Michio, to Mitsubishi Jukogyo Kabushiki Kaisha. Thermal cracking method for producing olefins from hydrocarbons. 4,520,224 Cl. 585-648.000.

Kaminaga, Seiji: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, 4,519,702, Cl. 355-51.000.

Kamiya, Tadashi; Kawasaki, Kazuhiro; and Muranaka, Akio, to Honda Giken Kogyo Kabushiki Kaisha. Helmet. 4,519,099, Cl. 2-424.000.

Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,519,472, Cl. 180-227.000.

Kamperman, Charles F. Storage container. 4,519,655, Cl. 312-12.000.
Kamyr, Inc.: *See—*
Elmore, Carl L.; Poulin, Ted M.; and Barrett, Mark D., 4,519,446, Cl. 165-101.000.
Kanagawa Rehabilitation Center: *See—*
Tanaka, Osamu; Iijima, Hiroshi; Ito, Masayoshi; and Okigawa, Etsumi, 4,519,649, Cl. 297-316.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Side printing apparatus. 4,519,701, Cl. 355-39.000.
Kanda, Kunio: *See—*
Hattori, Seiichi; and Kanda, Kunio, 4,520,458, Cl. 364-900.000.
Kaneda, Masahiro: *See—*
Kamada, Kazumasa; Osaka, Norihisa; and Kaneda, Masahiro, 4,520,166, Cl. 525-85.000.
Kaneko, Kenji, to Victor Company of Japan, Ltd. Horizontal scanning frequency multiplying circuit. 4,520,394, Cl. 358-150.000.
Kannegiesser, Martin; Mussiger, Klaus; and Dreischmeier, Wilfried, to Herbert Kannegisser GmbH & Co. Device for smoothing garments. 4,519,222, Cl. 68-5.00C.
Kanto Denka Kogyo Co., Ltd.: *See—*
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Fujii, Yoshihiko; Tomita, Osamu; Taniguchi, Itaru; and Saiwai, Kazuhiko, 4,520,370, Cl. 346-76.00L.
Kanzelberger, James C., to Contemporary, Inc. Decorative plaques and process. 4,520,064, Cl. 428-199.000.
Kao Corporation: *See—*
Nakanishi, Takashi, 4,520,049, Cl. 427-356.000.
Sakurai, Akira; and Mizutani, Hiroshi, 4,519,799, Cl. 604-366.000.
Kao Soap Co., Ltd.: *See—*
Ando, Hiroshi; and Okumura, Takeo, 4,520,008, Cl. 424-47.000.
Fukumoto, Yasuhisa; and Moriyama, Noboru, 4,519,920, Cl. 210-701.000.
Kappertz, Fritz: *See—*
Zylbert, Thaddeus J.; Fuhrmann, Wolf-Dieter; Hammer, Hans; and Kappertz, Fritz, 4,519,330, Cl. 112-222.000.
Kar, Kishore K., to Dow Chemical, The. Lithium stearate aluminate as lubricant additive. 4,519,924, Cl. 252-35.000.
Karash, Karl, to GenRad, Inc. Shunt-foldback voltage source. 4,520,416, Cl. 361-11.000.
Kasanami, Takeo: *See—*
Yoshida, Iwao; Kasanami, Takeo; and Miura, Shuji, 4,519,963, Cl. 264-45.300.
Kasha, Dan: *See—*
Altman, Sidney; and Kasha, Dan, 4,520,351, Cl. 340-574.000.
Kashiwagi, Kazuo; and Toda, Takao, to Canon Kabushiki Kaisha. Projection apparatus for automatic correction of non-uniform illuminance distribution in image area of imaging plane. 4,519,694, Cl. 355-5.000.
Kashiwahara, Katsuto: *See—*
Okabe, Akira; Urushidani, Haruo; and Kashiwahara, Katsuto, 4,519,207, Cl. 60-39.182.
Katanuma, Mitsuo: *See—*
Morikawa, Kenichi; Nagatomi, Kazuyuki; and Katanuma, Mitsuo, 4,520,235, Cl. 179-99.0LS.
Kato, Hiroyasu; Yagi, Kenkichi; and Okamoto, Miyoshi, to Toray Industries, Inc. Melange-colored sheet and method of producing the same. 4,519,804, Cl. 8-485.000.
Kato, Keigo: *See—*
Kawamoto, Keiji; Kato, Keigo; and Aida, Takahiro, 4,520,126, Cl. 502-184.000.
Kato, Kiichi: *See—*
Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, 4,520,280, Cl. 307-358.000.
Kato, Takashi: *See—*
Ito, Takaaki; and Kato, Takashi, 4,519,957, Cl. 261-44.00C.
Katoh, Yuuichi; Matsuoka, Hiroki; and Iwata, Minoru, to Toyota Jidosha Kabushiki Kaisha. Fuel supply system in internal combustion engine. 4,519,354, Cl. 123-472.000.
Katz, Carlos; and Zidon, Amicam C., to Cable Technology Laboratories, Inc. Apparatus for making shrinkable tubing. 4,519,759, Cl. 425-97.000.
Katz, Philip: *See—*
Brenman, Henry S.; Katz, Philip; and Beatty, Graydon E., 4,519,400, Cl. 128-741.000.
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., to Kerr-McGee Corporation. Process for the removal of sulfate and metals from aqueous solutions. 4,519,912, Cl. 210-611.000.
Kauffman, Jim W.: *See—*
Baldwin, Roger A.; Stauter, John C.; Kauffman, Jim W.; and Laughlin, William C., 4,519,913, Cl. 210-611.000.
Kaufmann, Vendelin: *See—*
Fuchs, Wilfried; Richter, Horst; Kober, Roland; Kaufmann, Vendelin; and Muller, Christina, 4,519,997, Cl. 423-265.000.
Kaustrater, Gert, to KUKA Wehrtechnik GmbH. Turret assembly with articulated cover for access opening. 4,519,292, Cl. 89-36.130.
Kawada, Keiichi: *See—*
Enomoto, Masaru; Kimura, Kenji; and Kawada, Keiichi, 4,519,364, Cl. 123-432.000.
Kawaguchi, Hiroshi; and Nishina, Shuho, to Toyota Jidosha Kabushiki Kaisha. Foot-operated control device for parking brake. 4,519,270, Cl. 74-535.000.
Kawaguchi, Kiyoshi; and Yamada, Muneki, to Toyo Seikan Kaisha Limited. Method for making a plastic container. 4,519,977, Cl. 264-550.000.
Kawai, Fumio: *See—*
Fujii, Hideichi; Yamane, Chiyoki; and Kawai, Fumio, 4,520,057, Cl. 428-68.000.
Kawai, Kazuhiro: *See—*
Takeuchi, Tatsuro; Yoshida, Shohei; and Kawai, Kazuhiro, 4,519,959, Cl. 261-93.000.
Kawai, Kiyoaki, to NEC Corporation. Digital transmission system. 4,520,480, Cl. 370-100.000.
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., to Union Carbide Corporation. Color improved polyarylate. 4,520,168, Cl. 525-169.000.
Kawakami, Tetsuya: *See—*
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.
Kawamata, Masaru: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,520,443, Cl. 364-424.000.
Kawamoto, Keiji; Kato, Keigo; and Aida, Takahiro, to Mitsui Petrochemical Industries, Ltd. Catalyst composition suitable for the dimerization or codimerization of alpha-olefins. 4,520,126, Cl. 502-184.000.
Kawamura, Masaharu: *See—*
Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, 4,519,685, Cl. 354-154.000.
Kawamura, Reiki: *See—*
Terada, Takami; Nawa, Hiroshi; and Kawamura, Reiki, 4,519,650, Cl. 297-452.000.
Kawamura, Tateo: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Kawaragi, Yuji: *See—*
Otake, Masayuki; Murayama, Masayoshi; and Kawaragi, Yuji, 4,520,127, Cl. 502-209.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Fujii, Hideichi; Yamane, Chiyoki; and Kawai, Fumio, 4,520,057, Cl. 428-68.000.
Kawasaki, Kazuhiro: *See—*
Kamiya, Tadashi; Kawasaki, Kazuhiro; and Muranaka, Akio, 4,519,099, Cl. 2-424.000.
Kawasaki, Nobuhiro: *See—*
Akazawa, Michihiro; and Kawasaki, Nobuhiro, 4,519,888, Cl. 204-252.000.
Kawasaki Steel Corporation: *See—*
Ichida, Toshio; Kobayashi, Hideo; Ogata, Hajime; and Tsugawa, Shunichi, 4,519,879, Cl. 204-35.100.
Kawase, Akio: *See—*
Ebisawa, Masuo; Kawase, Akio; and Nakamura, Akiyoshi, 4,519,436, Cl. 164-120.000.
Kayser-Roth Corporation: *See—*
Jones, Paul, Jr., 4,519,147, Cl. 36-19.500.
Keearns, Larry R., to E-Systems, Inc. Method of determining the position and velocity of a vehicle. 4,520,445, Cl. 364-450.000.
Keilberth, Richard: *See—*
Aldinger, Fritz; Keilberth, Richard; and Werdecker, Waltraud, 4,519,966, Cl. 264-56.000.
Keith, Robert D., to Double E Company Inc. Core chuck with resilient rollers. 4,519,620, Cl. 279-2.00R.
Kelch Corp., The: *See—*
Prepodnik, Kay E.; Finn, Peter A.; and Manning, Daniel J., 4,519,219, Cl. 62-457.000.
KELCO/AIL International Limited: *See—*
Clare, Kenneth; and Hopkinson, Erle, 4,519,803, Cl. 8-445.000.
Kelley, Douglas P., to Electric Power Research Institute, Inc. Cable following apparatus having cable cleaning capabilities and method. 4,519,462, Cl. 175-53.000.
Kellie, Truman F., to General Electric Company. Optical signal projector. 4,520,388, Cl. 358-107.000.
Kelly, Austin T.; Stolpen, Alan H.; and Emile, Philip, Jr., to Sycon Corporation. Autofunction voltmeter. 4,520,310, Cl. 324-115.000.
Kelly, Timothy A.; and Turbyfill, Rueben M., to Ventilator Associates. Vehicle escape hatch and ventilator. 4,519,645, Cl. 296-224.000.
Kendall, Robert M.: *See—*
Kesselring, John P.; Kendall, Robert M.; and Krill, Wayne V., 4,519,770, Cl. 431-7.000.
Kendig, Willard Z., to Kenna Research Corporation. Fuel flow metering apparatus. 4,519,958, Cl. 261-50.00A.
Kenmochi, Kazuei; Sakairi, Tadashi; Maruyama, Yoshio; and Itemadani, Eizi, to Matsushita Electric Industrial Co., Ltd. Combined molding and assembling apparatus. 4,519,761, Cl. 425-135.000.
Kenna Research Corporation: *See—*
Kendig, Willard Z., 4,519,958, Cl. 261-50.00A.
Kennecott Corporation: *See—*
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,519,118, Cl. 29-121.500.
Kennedy, Richard B., to Crehan, Patrick James; and Fricke, Richard J., a part interest to each. Pectin and related carbohydrates for the preparation of polyurethane foams. 4,520,139, Cl. 521-109.100.

Kenney Manufacturing Company: *See—*
Comeau, Paul E., 4,519,433, Cl. 160-126.000.
Kenton, Joseph R.: *See—*
Reusser, Robert E.; Kenton, Joseph R.; and Todd, Elizabeth A., 4,520,222, Cl. 585-526.000.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Knochel, Arndt; Eggers, Ingo; Klatte, Bernd; and Wilken, Rolf-Dieter, 4,519,996, Cl. 423-249.000.
Muller, Klaus-Rainer, 4,520,293, Cl. 315-5.250.
Kerr-McGee Corporation: *See—*
Baldwin, Roger A.; Stauter, John C.; Kauffman, Jim W.; and Laughlin, William C., 4,519,913, Cl. 210-611.000.
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,519,912, Cl. 210-611.000.
Kesselring, John P.; Kendall, Robert M.; and Krill, Wayne V., to Alzeta Corp. Firetube boiler heater system. 4,519,770, Cl. 431-7.000.
Kidde, Inc.: *See—*
Swanson, Carl I., 4,520,348, Cl. 340-508.000.
Kienzle, Wolfgang: *See—*
Kubach, Hans; Kienzle, Wolfgang; Paschke, Werner; and Sauer, Rudolf, 4,519,547, Cl. 239-585.000.
Kiesewetter, Holger; Jung, Friedrich; Radtke, Hartmut; and Witt, Reinhard, to Kiesewetter, Holger. Apparatus for determining the flow shear stress of suspensions in particular blood. 4,519,239, Cl. 73-55.000.
Kikuchi, Itsuo: *See—*
Ishihara, Masahiro; Watanabe, Mitsuru; Ohkawa, Shuji; Taguchi, Shunichi; and Kikuchi, Itsuo, 4,520,250, Cl. 219-10.55B.
Kikuchi, Masamitsu: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Kikuchi, Mitsuru: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.
Kim, Dong W.: *See—*
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., 4,519,116, Cl. 28-257.000.
Kimoto, Masahiko: *See—*
Ochiai, Hideo; Hamane, Masumi; and Kimoto, Masahiko, 4,519,473, Cl. 180-229.000.
Kimoto, Toshifumi; Itami, Teruhiko; Nishimura, Nobuo; and Saitoh, Koichi, to Fuji Xerox Corporation, Limited. Thermal and magnetic recording head. 4,520,409, Cl. 360-59.000.
Kimura, Hiroshi: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, 4,519,702, Cl. 355-51.000.
Kimura, Kenji: *See—*
Enomoto, Masaru; Kimura, Kenji; and Kawada, Keiichi, 4,519,364, Cl. 123-432.000.
Kimura, Kunio: *See—*
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Iketani, Yukiyoshi, 4,519,807, Cl. 44-15.00R.
Kinder, Greever C., to Clinch River Corporation. Vibrating screening apparatus. 4,519,902, Cl. 209-234.000.
Kinetics Technology International Corp.: *See—*
Minet, Ronald G.; Dente, Mario; Ranzi, Eliseo; and Sunny H. K., 4,520,217, Cl. 585-415.000.
King-Seeley Thermos Co.: *See—*
Seltz, Charles L., 4,519,529, Cl. 222-484.000.
Kington, Alan D.: *See—*
Mills, David; Kington, Alan D.; and Lovell, Philip J., 4,520,117, Cl. 501-107.000.
Kinney, Roger D.; and Federowicz, Raymond J., to Topper International Enterprises. Awning adapted to be attached to bumper of automobile. 4,519,409, Cl. 135-88.000.
Kinney, William L., Jr.; and Evans, Richard E., Jr., to United Air Filter Company. Air filter assembly having improved clamping means for filter media. 4,519,823, Cl. 55-493.000.
Kinoda, Seiji: *See—*
Tomisawa, Yoshiaki; Takeuchi, Toshio; Honda, Keijiro; Takahashi, Susumu; and Kinoda, Seiji, 4,519,690, Cl. 354-324.000.
Kinoshita, Mitsuo: *See—*
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, 4,520,253, Cl. 217-69.00W.
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., to Polaroid Corporation. Method and apparatus for processing discrete sheets of film. 4,519,689, Cl. 354-304.000.
Kinsolving, C. Richard, to Pennwalt Corporation. Use of undecylenic acid to treat herpes labialis. 4,520,132, Cl. 514-560.000.
Kirby, David, to Lutron Electronics Co., Inc. Wall mounted electrical voltage control switch. 4,520,306, Cl. 323-324.000.
Kircaldie, Randall and McNab, trustee: *See—*
Durkan, Gerald; and Sieracki, Leonard M., 4,519,387, Cl. 128-204.230.
Kirin Beer Kabushiki Kaisha: *See—*
Ono, Motoji; Hirao, Masao; and Fukushima, Shigehisa, 4,519,427, Cl. 141-65.000.
Kirk, Johnie C., to Rodriguez, Carl R., a part interest. Fishing line activator indicator. 4,519,158, Cl. 43-17.000.
Kirst, John A.; and Kutz, Daniel F., to University of New Mexico. Tone discrimination circuit. 4,520,503, Cl. 381-56.000.
Kishimoto, Keiichi: *See—*
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.
Kissel, Thomas L. Yarn spinner. 4,519,198, Cl. 57-71.000.
Kistler Instrumente A.G.: *See—*
Sonderegger, Hans-Conrad; and Lutz, Eugen, 4,519,254, Cl. 73-726.000.
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, to Nippon Soken, Inc. Current frequency waveform transmitting on D.C. power lines. 4,520,359, Cl. 340-870.190.
Kitami, Takashi: *See—*
Ohyama, Kazuo; and Kitami, Takashi, 4,519,344, Cl. 123-55.0VF.
Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,520,069, Cl. 428-328.000.
Kitamura, Kazuhiko, to Aisin Keiki Kabushiki Kaisha. Air suction device for diesel engine. 4,519,369, Cl. 123-337.000.
Kitamura, Sotoo: *See—*
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, 4,520,359, Cl. 340-870.190.
Kitamura, Takashi, to Canon Kabushiki Kaisha. Collator with photoelectric bin fill detection. 4,520,263, Cl. 250-223.00R.
Kitch, Paul E.; Crochetiere, Raymond H.; Gudmundson, Gunnar G.; and Hadank, Walter R., to Algorex, Inc. Film splicing and identification system. 4,519,688, Cl. 354-297.000.
Kitsnik, Henrik M., to HK-Engineering Aktiebolag. Displacement pump suitable for pumping suspensions. 4,519,753, Cl. 417-403.000.
Kitterman, B. Layton; and Glaspie, Donald L., to Glitsch, Inc. Expanded metal saddle tower packing. 4,519,960, Cl. 261-94.000.
Kitto, David P., to Du Pont de Nemours, E. I., and Company. Method for reinforcing perfluoroelastomer compositions. 4,520,170, Cl. 525-200.000.
Kiuru, Erkki: *See—*
Sipila , Heikki; Kiuru, Erkki; and Vaijarvi, Seppo, 4,520,267, Cl. 250-358.100.
Klaeger, Karlheinz. Hand powered liquid atomizer. 4,519,527, Cl. 222-383.000.
Klar, Erhard: *See—*
Hashiguchi, Don H.; Klar, Erhard; and Dietrich, Ronald J., 4,520,130, Cl. 502-345.000.
Klatte, Bernd: *See—*
Knochel, Arndt; Eggers, Ingo; Klatte, Bernd; and Wilken, Rolf-Dieter, 4,519,996, Cl. 423-249.000.
Klee, David J., to Air Products and Chemicals, Inc. Work-holding fixture for cryogenic decoating. 4,519,171, Cl. 51-419.000.
Kleemann, Axel: *See—*
Schwarze, Werner; Kleemann, Axel; Remmel, Hans; and Hohn, Wolfgang, 4,520,209, Cl. 560-124.000.
Klein, Erwin, to BBC Aktiengesellschaft Brown, Boveri & Cie. Power semiconductor component for boiling cooling. 4,520,383, Cl. 357-81.000.
Klein, Erwin, to BBC Aktiengesellschaft Brown, Boveri & Cie. Power semiconductor component for cooling by boiling or liquids. 4,520,384, Cl. 357-82.000.
Kleinedler, Gary E.; and Pohl, Herbert A., to AT&T Technologies, Inc. High speed contact insertion facility. 4,519,132, Cl. 29-845.000.
Kline, Charles M., to Sperry Corporation. Hydraulic motor bypass apparatus. 4,519,209, Cl. 60-433.000.
Kling, John P.: *See—*
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,519,665, Cl. 339-147.00R.
Klingel, Walter C., Sr. Multi-characteristics seal member for testing uncapped container means. 4,519,618, Cl. 277-228.000.
Klintland: *See—*
Nilsson, Karl I., 4,519,104, Cl. 4-484.000.
Klocker, Otto: *See—*
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, 4,520,173, Cl. 525-403.000.
Klosiewicz, Daniel W., to Hercules Incorporated. Method for making a dicyclopentadiene thermoset polymer containig elastomer. 4,520,181, Cl. 525-247.000.
Kluge, Reimund; and Werner, Eberhard, to Agfa-Gevaert Aktiengesellschaft. Arrangement for projecting data onto film. 4,520,497, Cl. 378-166.000.
Kluge-Weiss, Petra, to BBC Brown, Boveri & Company Limited. Process for the thermo-migration of liquid phases. 4,519,850, Cl. 148-1.500.
Knapp, John F.; and Gruber, Robert J., to Xerox Corporation. Process for preventing deposition of toner particles in an imaging apparatus. 4,520,092, Cl. 430-120.000.
Knecht, Reinhold: *See—*
Krautkremer, Franz; Lais, Siegfried; Knecht, Reinhold; and Stache, Detlev, 4,519,335, Cl. 114-144.00R.
Knight, William A., III, to United States of America, Health and Human Services. Method for reducing toxic effects of methyl-glyoxal bis-guanylhydrazone. 4,520,031, Cl. 514-632.000.
Knochel, Arndt; Eggers, Ingo; Klatte, Bernd; and Wilken, Rolf-Dieter, to Kernforschungszentrum Karlsruhe GmbH. Method for enriching and separating heavy hydrogen isotopes from substance streams

containing such isotopes by means of isotope exchange. 4,519,996, Cl. 423-249.000.

Knopp, Hans: *See—*
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, 4,519,115, Cl. 28-255.000.

Knowles, John P.; Wheeler, Steven A.; and Mitchell, Stewart D., to Texaco Limited. Flow line riser for offshore structure. 4,519,726, Cl. 405-195.000.

Knudson, Giltner J., to Hutchinson, Nancy K. Steering controllers for boats. 4,519,334, Cl. 114-144.00R.

Ko, Wen H.; and Leung, Albert M., to Case Western Reserve University. Pressure telemetry implant. 4,519,401, Cl. 118-748.000.

Kobayashi, Fumiaki: *See—*
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,519,353, Cl. 123-359.000.

Kobayashi, Hideo: *See—*
Ichida, Toshio; Kobayashi, Hideo; Ogata, Hajime; and Tsugawa, Shunichi, 4,519,879, Cl. 204-35.100.

Kobayashi, Hiroyuki: *See—*
Danno, Yoshiaki; Kobayashi, Hiroyuki; and Fukui, Toyoaki, 4,520,272, Cl. 290-40.00A.

Kobayashi, Hisao: *See—*
Kurahashi, Masayuki; Kobayashi, Hisao; and Deguchi, Hiroyuki, 4,519,750, Cl. 417-270.000.

Kobayashi, Minoru; and Nemoto, Shigeru, to Olympus Optical Co. Ltd. Operating lever apparatus. 4,520,415, Cl. 360-137.000.

Kobayashi, Tatsuhiko; Ikeuchi, Satoru; Watanabe, Kazumasa; and Suginaka, Shunji, to Konishiroku Photo Industry Co., Ltd. Photographic light-sensitive element. 4,520,095, Cl. 430-223.000.

Kobayashi, Tomowo: *See—*
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.

Kober, Roland: *See—*
Fuchs, Wilfried; Richter, Horst; Kober, Roland; Kaufmann, Vendelin; and Muller, Christina, 4,519,997, Cl. 423-265.000.

Kobuck, Richard M.; and Kalkbrenner, Ralph W., to Westinghouse Electric Corp. Grid assembly fixture, retention strap. 4,519,593, Cl. 269-40.000.

Kobuke, Takayoshi: *See—*
Saito, Seitoku; Izumi, Toshiaki; Kobuke, Takayoshi; and Sugihara, Hiroshi, 4,520,076, Cl. 428-611.000.

Koci, Zdenek, to Ciba Geigy Corporation. Vat dye and sulfur dye compositions. 4,519,805, Cl. 8-650.000.

Kodama, Hiroshi: *See—*
Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, 4,520,280, Cl. 307-358.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Barrois, Claus D., 4,519,312, Cl. 101-349.000.
Weschenfelder, Otto T.; and Schmitt, Gunter K., 4,519,594, Cl. 270-20.100.

Koerner, Gotz: *See—*
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, 4,520,173, Cl. 525-403.000.

Koh, Hiroshi; and Hirota, Junichi. Lift control system. 4,520,343, Cl. 340-19.00R.

Kohashi, Takahiro: *See—*
Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, 4,520,094, Cl. 430-144.000.

Kohn, Gustave K.; and Bamberg, Joe T., to Zoecon Corporation. Alkoxy substituted phenoxy alkanoic acid esters. 4,520,199, Cl. 546-302.000.

Kohyama, Mitsuaki; and Toshimitsu, Kenshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Image forming apparatus including a cleaning blade and drum lubricant. 4,519,698, Cl. 355-15.000.

Kolos, Vladimir K.: *See—*
Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; and Postnikov, Viktor M., 4,519,230, Cl. 72-56.000.

KoMac Enterprises, Inc.: *See—*
Olas, Richard J., 4,519,893, Cl. 206-311.000.

Komai, Hiromichi: *See—*
Ishikawa, Chuji; Iwasaki, Kyuhachiro; Horike, Masanori; and Komai, Hiromichi, 4,520,367, Cl. 346-75.000.

Komatsubara, Yoshiaki; Ide, Kyozoh; and Munakata, Eiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid crystal display device. 4,519,678, Cl. 350-338.000.

Kominiak, Andrew A.: *See—*
Luzzi, Glenn J.; and Kominiak, Andrew A., 4,520,229, Cl. 174-73.00R.

Kon, Shigeki: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichirou; Hayashi, Koji; and Kon, Shigeki, 4,519,862, Cl. 156-219.000.

Kondo, Kunimasa: *See—*
Kutsuna, Tomoharu; Ohtani, Shinzi; and Kondo, Kunimasa, 4,520,045, Cl. 427-294.000.

Konishi, Hideyuki: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,274, Cl. 74-866.000.
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,275, Cl. 74-866.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kobayashi, Tatsuhiko; Ikeuchi, Satoru; Watanabe, Kazumasa; and Suginaka, Shunji, 4,520,095, Cl. 430-223.000.
Kuge, Takao, 4,519,687, Cl. 354-202.000.
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, 4,519,691, Cl. 354-400.000.
Yamazaki, Hiroshi; and Tamaki, Kiyoshi, 4,520,090, Cl. 430-106.600.

Konrad, Charles E., to General Electric Company. Turning speed controller for electric vehicles having dual drive motors. 4,520,299, Cl. 318-587.000.

Konrath, Karl: *See—*
Eheim, Franz; Hofer, Gerald; Konrath, Karl; and Straubel, Max, 4,519,352, Cl. 123-373.000.

Koomey Blowout Preventers, Inc.: *See—*
Jones, Marvin R.; and Howard, Roland M., Jr., 4,519,571, Cl. 251-1.00A.
Jones, Marvin R., 4,519,577, Cl. 251-62.000.

Koomey, Inc.: *See—*
Tomlin, Jerry B.; Levey, Gustave S.; and O'Neil, Michael A., 4,519,636, Cl. 285-95.000.

Koos, Rudolf, to Metripond Merleggyar. Apparatus for measuring braking actions of an automotive vehicle. 4,520,444, Cl. 364-426.000.

Kopp, Richard: *See—*
Hess, Heinrich; Grogler, Gerhard; and Kopp, Richard, 4,520,186, Cl. 528-73.000.

Kopsho, Joseph D., Jr., to Kraft Systems, Inc. Joystick. 4,520,242, Cl. 200-6.00A.

Korotaev, Jury P.: *See—*
Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A., 4,519,992, Cl. 423-230.000.

Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, to Intel Corporation. Method of making EPROM cell with reduced programming voltage. 4,519,849, Cl. 148-1.500.

Koshii & Co., Ltd.: *See—*
Fujii, Hideichi; Yamane, Chiyoki; and Kawai, Fumio, 4,520,057, Cl. 428-68.000.

Kosmatka, Walter J., to General Electric Company. Motor vehicle headlamp. 4,520,433, Cl. 362-296.000.

Kosrow, Robert L.; and Talsma, Robert C., to Union Special Corporation. Apparatus for transfering and stacking short workpiece panels. 4,519,331, Cl. 112-262.300.

Kostelitz, Michel; and Queille, Philippe, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Method of carburizing workpiece. 4,519,853, Cl. 148-16.500.

Kotian, Vijayraj M.; Blumer, Roger L.; and Herbert, William J., to Eaton Corporation. Semi-conductive heating cable. 4,520,260, Cl. 219-553.000.

Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Ink jet printing apparatus. 4,520,374, Cl. 346-140.00R.

Kotobuki Seiyaku Co., Ltd.: *See—*
Tomiyama, Tsuyoshi, 4,520,029, Cl. 514-479.000.

Koumura, Noboru, to Canon Kabushiki Kaisha. Image recording device. 4,520,400, Cl. 358-296.000.

Kovacs, Gabor: *See—*
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , 4,520,018, Cl. 514-469.000.

Kozuka, Michihiro: *See—*
Ajiro, Yutaka; and Kozuka, Michihiro, 4,519,788, Cl. 446-356.000.

Krabetz, Richard: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.

Kraft Systems, Inc.: *See—*
Kopsho, Joseph D., Jr., 4,520,242, Cl. 200-6.00A.

Kramer, Fritz; Skornscheck, Thomas E.; and Strauss, Ernest, to Sanifoam, Inc. Apparatus and method for applying a foam layer to cover and seal dumped waste. 4,519,338, Cl. 118-305.000.

Krause, Robert F.: *See—*
Rauch, Gary C.; and Krause, Robert F., 4,520,335, Cl. 336-212.000.

Krautkremer, Franz; Lais, Siegfried; Knecht, Reinhold; and Stache, Detlev, to Schottel-Werft Josef Becker GmbH & Co KG. Device for controlling the direction of movement and thrust force of a watercraft. 4,519,335, Cl. 114-144.00R.

Kresse, Horst: *See—*
Demus, Dietrich; Weissflog, Wolfgang; and Kresse, Horst, 4,519,936, Cl. 252-299.630.

Krieg, Edwin A.: *See—*
Ott, William E.; and Krieg, Edwin A., 4,519,482, Cl. 188-343.000.

Krill, Wayne V.: *See—*
Kesselring, John P.; Kendall, Robert M.; and Krill, Wayne V., 4,519,770, Cl. 431-7.000.

Krimmer, Erwin; and Fehrenbach, Siegfried, to Robert Bosch GmbH. Strain relief connection between a housing and an electric conductor assembly. 4,520,227, Cl. 174-65.00R.

Krines, Hans-Gebhard: *See—*
Muller, Hans-Jurgen; and Krines, Hans-Gebhard, 4,519,572, Cl. 251-29.000.

Kroeter, David W., to Kroeter, Inc. Flue fire controller. 4,519,458, Cl. 169-56.000.

Kroeter, Inc.: *See—*
Kroeter, David W., 4,519,458, Cl. 169-56.000.

Krohn, Ulrich: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,519,359, Cl. 123-668.000.

Kroll, John W., to Eaton Corporation. Fluid jet ejector. 4,520,375, Cl. 346-140.00R.

Kroll, John W.: *See—*
Hastings, Jerome K.; Brubaker, John R.; and Kroll, John W., 4,520,336, Cl. 337-140.000.

Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik: *See—*
Winter, Horst; and Eder, Erich, 4,519,186, Cl. 53-585.000.

Kronstein, Max; and Eichberg, Joseph, to American Lecithin Company. Production of paint containing lecithin-treated metal oxide. 4,520,153, Cl. 524-145.000.

Kruger, Heinrich: *See—*
Jester, Willi; and Kruger, Heinrich, 4,519,731, Cl. 407-46.000.

Ku, Ta C.: *See—*
Firth, Rowland V. D., III; Goff, Willie, Jr.; Ku, Ta C.; and Rakes, James M., 4,520,371, Cl. 346-76.0PH.

Kubach, Hans; Kienzle, Wolfgang; Paschke, Werner; and Sauer, Rudolf, to Robert Bosch GmbH. Injection valve. 4,519,547, Cl. 239-585.000.

Kubacki, Steven R. Tent construction. 4,519,410, Cl. 135-93.000.

Kubanek, George R.: *See—*
Gauvin, William H.; and Kubanek, George R., 4,519,835, Cl. 75-10.00R.

Kubis, Charles S.: *See—*
Roth, Donald J.; Kubis, Charles S.; Walter, John; and Mohr, Glenn R., 4,519,859, Cl. 156-69.000.

Kubo, Hiromasa, to Nissan Motor Company, Limited. Oxygen-sensing system. 4,519,237, Cl. 73-23.000.

Kubo, Mitsuo: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.

Kuboshima, Akira: *See—*
Shimizu, Hiromichi; Kuboshima, Akira; and Tanaka, Tadashi, 4,519,310, Cl. 101-35.000.

Kubota, Hirokuni: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Kubota, Ltd.: *See—*
Yoshida, Jituo; Okuyama, Shigeaki; and Suzuki, Hiroshi, 4,519,193, Cl. 56-328.00R.

Kuffer, Fernand B., to General Dynamics, Pomona Division. Multispectral target detection system with common collecting means. 4,519,707, Cl. 356-326.000.

Kuge, Takao, to Konishiroku Photo Industry Co., Ltd. Camera with vertically oriented film advance. 4,519,687, Cl. 354-202.000.

Kuhla, Donald E.: *See—*
Campbell, Henry F.; Kuhla, Donald E.; Studt, William L.; and Dodson, Stuart A., 4,520,025, Cl. 514-275.000.

KUKA Wehrtechnik GmbH: *See—*
Kaustrater, Gert, 4,519,292, Cl. 89-36.130.

Kulcke, Werner: *See—*
Asch, Karl; Greschner, Johann; Kallmeyer, Michael; and Kulcke, Werner, 4,520,314, Cl. 324-158.00P.

Kulprathipanja, Santi: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,519,952, Cl. 260-419.000.

Kumasaka, Sadao; and Tada, Satomi, to Toyo Rubber Chemical Industry Co., Ltd. Method for manufacturing phenolic resin foam. 4,520,141, Cl. 521-126.000.

Kuminecz, Jerome F.; and Lausten, Merlyn F., to United States of America, National Aeronautics and Space Administration. Spray applicator for spraying coatings and other fluids in space. 4,519,545, Cl. 239-288.000.

Kumobayashi, Hidenori: *See—*
Mitsuhashi, Shigeru; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,520,212, Cl. 568-875.000.

Kunzel, Gert: *See—*
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, 4,520,173, Cl. 525-403.000.

Kuppinger, Gunter: *See—*
Feirer, Egon; Amann, Ulrich; and Kuppinger, Gunter, 4,519,309, Cl. 100-229.00R.

Kurahashi, Masayuki; Kobayashi, Hisao; and Deguchi, Hiroyuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable-delivery refrigerant compressor. 4,519,750, Cl. 417-270.000.

Kuraray Co., Ltd.: *See—*
Bunno, Masayasu; Sugiura, Tsutomu; Tsuji, Masao; Harada, Hidemi; and Ichihara, Yoshihiro, 4,520,102, Cl. 435-61.000.

Kurata, Masami: *See—*
Moriguchi, Haruhiko; and Kurata, Masami, 4,520,381, Cl. 357-30.000.

Kurkov, Victor P.: *See—*
Schroeder, Albert H.; Denisevich, Peter, Jr.; Suzuki, Shigeto; and Kurkov, Victor P., 4,519,940, Cl. 252-500.000.

Kuroishi, Tadafumi: *See—*
Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, 4,520,108, Cl. 436-52.000.

Kuroiwa, Katsumasa: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, 4,520,100, Cl. 435-13.000.

Kurozumi, Hiroshi: *See—*
Hagiwara, Zenzi; Yamamoto, Tatuo; and Kurozumi, Hiroshi, 4,519,813, Cl. 55-26.000.

Kusmierz, Hans, to Siemens Aktiengesellschaft. Connecting device for releasably securing an axle on a support plate. 4,519,723, Cl. 403-33.000.

Kutsuna, Tomoharu; Ohtani, Shinzi; and Kondo, Kunimasa, to Taiho Kogyo Co., Ltd.; and Yugenkaisha Hakusui Sangyo. Method for impregnating a die-cast article with a sealant and an impregnation apparatus therefor. 4,520,045, Cl. 427-294.000.

Kutz, Daniel F.: *See—*
Kirst, John A.; and Kutz, Daniel F., 4,520,503, Cl. 381-56.000.

Kyokuto Kaihatsu Kogyo CO., Ltd.: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., to Aluminum Company of America. Process for recycling containers. 4,519,306, Cl. 100-35.000.

La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., to Aluminum Company of America. Container recycling apparatus using scanning means to read code markings on containers. 4,519,307, Cl. 100-99.000.

Labonte, Normand: *See—*
Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Labonte, Normand, 4,519,811, Cl. 51-309.000.

LaBounty, Roy E. Metal demolition shear. 4,519,135, Cl. 30-134.000.

LaCapria, Anthony: *See—*
Gallagher, Terence J.; and LaCapria, Anthony, 4,519,155, Cl. 40-625.000.

Laing, Karsten. Intermittent through-flow collector. 4,519,380, Cl. 126-422.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See—*
Kostelitz, Michel; and Queille, Philippe, 4,519,853, Cl. 148-16.500.

Lais, Siegfried: *See—*
Krautkremer, Franz; Lais, Siegfried; Knecht, Reinhold; and Stache, Detlev, 4,519,335, Cl. 114-144.00R.

Laiteries E. Bridel: *See—*
Rialland, Jean P.; and Barbier, Jean P., 4,520,036, Cl. 426-271.000.

Lakdawala, Ness: *See—*
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,519,217, Cl. 62-256.000.

Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Labonte, Normand, to Societe Nationale de l'Amiante. Calcined serpentine useful as sandblasting agent. 4,519,811, Cl. 51-309.000.

Lam Shang Leen, Kee K., to Centre de Recherche Industrielle du Quebec. Process for the preparation of a crystalline titanoborosilicate. 4,519,998, Cl. 423-277.000.

Lambert, Ronald F.: *See—*
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., 4,519,689, Cl. 354-304.000.

Lamonica, Mark A. Pizza dough package and method of making same. 4,520,035, Cl. 426-128.000.

Landgraf, Helmut; and Stucke, Walter, to Mannesmann Aktiengesellschaft. Method and device for jacketing a steel pipe with several plastic materials. 4,519,863, Cl. 156-244.120.

Lang, Manfred: *See—*
Spinner, Georg; Lang, Manfred; and Pautz, Anton, 4,519,670, Cl. 350-96.150.

Langdon, William K., to BASF Wyandotte Corporation. Acetal group-containing non-ionic surfactants. 4,519,950, Cl. 260-404.000.

Lange, Bradley N.: *See—*
Allred, Laurence L., Jr.; and Lange, Bradley N., 4,520,313, Cl. 324-158.00R.

Langer, Salomon: *See—*
Cavero, Icilio; and Langer, Salomon, 4,520,030, Cl. 514-629.000.

Langheck, Richard, to Wilhelm Sihn Jr. KG. Telescoping antenna with actuating gear driven cable. 4,520,365, Cl. 343-903.000.

Langhorst, Martin A.: *See—*
Stevens, Timothy S.; and Langhorst, Martin A., 4,519,905, Cl. 210-198.200.

Lapinoja, Lonnie L., to General Signal Corporation. Retainer for a replaceable valve seat. 4,519,583, Cl. 251-328.000.

Laporte Industries Limited: *See—*
Robinson, Michael, 4,519,987, Cl. 423-60.000.

Larkin, William J. Anti-reverse siphon solar heating system. 4,519,383, Cl. 126-430.000.

Larock, Richard C., to Iowa State University Research Foundation, Inc. Synthesis of thiophene-containing prostaglandin endoperoxide analogs. 4,520,207, Cl. 549-79.000.

Larsen, Leif G. Thread measuring tool. 4,519,144, Cl. 33-199.00R.

Larws, Peter. Toy-figure. 4,519,786, Cl. 446-97.000.

Latimer, Stanley M.; and Orton, Gregory A., to Ampex Corporation. Magnetic transducer structure with improved mechanical coupling and method of manufacturing. 4,520,414, Cl. 360-125.000.

Lau, Pauline Y.: *See—*
Xu, Zhong, 4,520,268, Cl. 250-492.100.

Lau, Roland L.: *See—*
Xu, Zhong, 4,520,268, Cl. 250-492.100.

Laughlin, William C.: *See—*
Baldwin, Roger A.; Stauter, John C.; Kauffman, Jim W.; and Laughlin, William C., 4,519,913, Cl. 210-611.000.
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,519,912, Cl. 210-611.000.

Lausten, Merlyn F.: *See—*
Kuminecz, Jerome F.; and Lausten, Merlyn F., 4,519,545, Cl. 239-288.000.

Lavarini, Bernard, to Compagnie General D'Electricite. Gas flow laser oscillator. 4,520,486, Cl. 372-95.000.

Laverty, Michael P.: *See—*
Enter, Rudolf; and Laverty, Michael P., 4,520,270, Cl. 250-560.000.

Lavezzari, Carlo, to Zincroksid S.p.A. Process for the protection of galvanized steel rolled sections with a two layer chromium-chromate coating. 4,520,077, Cl. 428-632.000.

Laviron, Andre ; and Berard, Claude, to Commissariat a l'Energie Atomique. System for testing the malfunctioning or correct operation of a circuit with logic components. 4,520,309, Cl. 324-73.00R.

Laviron, Charles; Lecouls, Henri; and Mesaros, Louis. Process for the purification of sulfuric acid by-product from boron trifluoride synthesis. 4,520,006, Cl. 423-531.000.

Lazzara, Richard J., to Neptune Research, Inc. Resin-cloth structural system. 4,519,856, Cl. 156-49.000.

Lazzarotti, S. James: *See—*
Hunter, James R.; and Lazzarotti, S. James, 4,519,284, Cl. 83-410.000.

Le, Tam D.; and Turner, Weems D., to Baker Oil Tools, Inc. Positive engagement safety mechanism and lift belt construction for long stroke, well pumping unit. 4,519,262, Cl. 74-89.200.

League, John S., IV, to Mineral Processing Systems, Inc. Solidified charge protection control for rotating apparatus. 4,520,297, Cl. 318-490.000.

Learnard, Stanley J. Rotatable display stand. 4,519,510, Cl. 211-131.000.

LeaRonal, Inc.: *See—*
McCaskie, John E.; and Tsiamis, Chris, 4,520,046, Cl. 427-304.000.

Lecompte, Michel: *See—*
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,519,217, Cl. 62-256.000.

Lecouls, Henri: *See—*
Laviron, Charles; Lecouls, Henri; and Mesaros, Louis, 4,520,006, Cl. 423-531.000.
Metzger, Jean; Lecouls, Henri; Colombe , Philippe; and Wojcik, Jean, 4,520,001, Cl. 423-332.000.

Le Creurer, Maurice: *See—*
Sedille, Marcel; and Le Creurer, Maurice, 4,519,211, Cl. 60-602.000.

Ledebuhr, Richard L.; and Hansen, Clarence M., to Michigan State Univ., Board of Trustees of. Strawberry harvester and procedures for growing and harvesting of such fruit. 4,519,191, Cl. 56-331.000.

Lee, Chung H.; Fronduto, John; and Oettinger, Peter E., to Thermo Electron Corporation. Electrolytic deposition of metals on laser-conditioned surfaces. 4,519,876, Cl. 204-15.000.

Lee, Shy-Fuh, to Zoecon Corporation. Tetrahydrobenzodiazaphosphorindiones and tetrahydropyridodiazaphosphorindiones. 4,520,197, Cl. 546-21.000.

Lees, Robert: *See—*
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., 4,519,116, Cl. 28-257.000.

Leftault, Charles J., Jr.: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.

Leggett & Platt, Incorporated: *See—*
Gullett, Edwin P.; Davis, Gerald B.; and Bustos, Rafael T., 4,519,508, Cl. 211-59.200.

Lehigh Press, Inc., The: *See—*
DeSanto, Ronald F., 4,519,597, Cl. 270-42.000.

Lehman, Richard F.; Porth, Roland W.; and Mason, Lawrence J., to Xerox Corporation. Document reproduction device utilizing a selective color illuminator. 4,519,703, Cl. 355-69.000.

Lehmann, Klaus; Dreher, Dieter; Rauch, Hubert; and Siol, Werner, to Rohm GmbH. Method for coating medicaments. 4,520,172, Cl. 525-369.000.

Leidel, David J., to Jet Research Center, Inc. Charge holder. 4,519,313, Cl. 102-310.000.

Leighton, Francis; and Trebes, Fred W., to Air Dry Corporation. Safe high pressure instrument valve. 4,519,580, Cl. 251-223.000.

Leinen, Roger W., to Minnesota Mining and Manufacturing Company. Aerosol application of encapsulated materials. 4,520,142, Cl. 523-205.000.

Leitermann, Wulf; and Heneka, Rolf, to Audi NSU Auto Union Aktiengesellschaft. Rearward facing collapsible vehicle back seat. 4,519,646, Cl. 297-15.000.

Leland, Ragnvald G. Combination exercise and massage apparatus. 4,519,605, Cl. 272-116.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Fu, Chong-Cheng; and Gerzberg, Levy, 4,519,260, Cl. 73-861.250.
Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., 4,520,110, Cl. 436-501.000.

Leneveu, Louis J. J.; and Treneules, Didier J., to Societe Nationale des Poudres et Explosifs. Mixed charges for ammunitions with a casing constituted by agglomerated propellant powder and propellant powder in grain form. 4,519,855, Cl. 149-21.000.

Lenhart, Richard D.; and Lindblad, Roger D., to Zot Manufacturing Company. Modular rake shaft assembly. 4,519,609, Cl. 273-54.00A.

Leo, Reinhard W. Flat link band of wire coils, wire coil for the production of such a link band and process for the production of such a wire coil. 4,520,065, Cl. 428-222.000.

Leplat, Paul: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,519,983, Cl. 422-78.000.

Lepper, Eberhard; and Lust, Karl-Heinz, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH. Electric motor drive arrangement. 4,520,296, Cl. 318-254.000.

Lepper, Herbert; and Schutt, Hartwig, to Henkel Kommanditgesellschaft auf Aktien. Process for the continuous preparation of polyhydric alcohols. 4,520,211, Cl. 568-863.000.

Lespinasse, Dominique: *See—*
Chaux, Jean-Bernard; Gagne, Pierre; Garcia, Michel; Lespinasse, Dominique; and Roussos, Josiane, 4,519,844, Cl. 106-209.000.

Leung, Albert M.: *See—*
Ko, Wen H.; and Leung, Albert M., 4,519,401, Cl. 118-748.000.

Leung, Chun K.: *See—*
Johnson, Edwin A.; and Leung, Chun K., 4,520,449, Cl. 364-559.000.

Lever Brothers Company: *See—*
Gould, Grahame; Crossley, Anthony; and Moran, David P. J., 4,520,037, Cl. 426-330.600.

Lever, John K.; and DiVecchio, Angelo N., to Certipak Corporation. Article wrapper and method of forming. 4,519,182, Cl. 53-461.000.

Levert, Frederick J., Jr.: *See—*
Mott, George E.; and Levert, Frederick J., Jr., 4,519,725, Cl. 405-195.000.

Levey, Gustave S.: *See—*
Tomlin, Jerry B.; Levey, Gustave S.; and O'Neil, Michael A., 4,519,636, Cl. 285-95.000.

Levy-Joseph, Marc, to Ateliers Reunis. Carrier trolley, especially for customers of self-service stores. 4,519,622, Cl. 280-33.99S.

Leyland Vehicle Limited: *See—*
Greenwood, Christopher J., 4,519,485, Cl. 192-0.033.

LGZ Landis & Gyr Zug AG: *See—*
Petr, Jan; and Steinle, Benedikt, 4,520,311, Cl. 324-117.00R.

Libbey, Robert L.: *See—*
Dischert, Robert A.; and Libbey, Robert L., 4,520,396, Cl. 358-167.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Weber, Herbert, 4,520,492, Cl. 375-86.000.

Lidorenko, Nikolai S.: *See—*
Gudkin, Timofei S.; Iordanishvili, Evgeny K.; Lidorenko, Nikolai S.; Malkovich, Bella E.; Razumovsky, Mikhail I.; and Rubashov, Igor B., 4,519,389, Cl. 128-303.100.

Lieb, Nathaniel H., to Penn-Med Technology, Inc. Orthodontal electrical device and method of employing same. 4,519,779, Cl. 433-18.000.

Liepa, Arnolds E., to Sperry Corporation. Variable field partial write data merge. 4,520,439, Cl. 364-200.000.

Lim International S.A.: *See—*
Schmidt, Andreas R.; Strohmayer, Herbert F.; Sibral, Walter; and Milligan, Barton, 4,519,432, Cl. 152-357.00A.

Lin, Jiang-Jen; and Duranleau, Roger G., to Texaco Inc. Process for selectively preparing acetic anhydride by carbonylation of methyl acetate in the presence of an iodide-free catalyst system. 4,519,956, Cl. 260-549.000.

Lindblad, Roger D.: *See—*
Lenhart, Richard D.; and Lindblad, Roger D., 4,519,609, Cl. 273-54.00A.

Lindstrom, Gerald D.; Eckhart, Clifford F.; Farthing, George A., Jr.; Muckley, James J.; and Taylor, Brian E., to Babcock & Wilcox Company, The. Low pressure loss burner for coal-water slurry or fuel oil. 4,519,322, Cl. 110-264.000.

Lingua, Robert W. Hemostasing muscle clips for needleless surgery. 4,519,392, Cl. 128-325.000.

Lions, Noel: *See—*
Brachet, Alain; Figuet, Jacques; Guidez, Joel; and Lions, Noel, 4,519,978, Cl. 376-307.000.

Lipinski, Reinhard, to PROMA Produkt-und Marketing Gesellschaft mbH. Sealed motion transfer apparatus utilizing a pressure fluid cylinder. 4,519,297, Cl. 92-88.000.

Lippert, Bruce J.: *See—*
Adams, Jerry L.; Metcalf, Brian W.; and Lippert, Bruce J., 4,520,028, Cl. 514-447.000.

Lippert, James W.: *See—*
Barna, Gordon L.; and Lippert, James W., 4,519,442, Cl. 165-9.200.

Lisiecki, Andrew I.; and Wong, Alan S., to Del Mar Avionics. Method and apparatus for long-term monitoring of physiological activity to provide a compact portable record. 4,519,398, Cl. 128-710.000.

Little, Peter J.: *See—*
Morley, Peter; and Little, Peter J., 4,519,706, Cl. 356-319.000.

Litton Industrial Products, Inc.: *See—*
Shank, William E.; and Bercaw, Kenneth K., 4,519,722, Cl. 403-26.000.

Liu, Dean-Yuan, to Sanders Associates, Inc. Plotter paper loading assist apparatus. 4,520,372, Cl. 346-136.000.

Liu, Ping Y., to General Electric Company. Blends of aromatic polycarbonate resins, polyolefins and olefin copolymers, and acrylate interpolymer resins. 4,520,164, Cl. 525-67.000.

Locher, Johannes; and Schmidt, Wolfgang, to Robert Bosch GmbH. Polarity and overload protective circuit for electric consumers. 4,520,419, Cl. 361-104.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Luce, Robert S.; Quinn, Ross A.; and Rowley, Leroy S., 4,519,710, Cl. 356-411.000.

Loebenstein, Gad; and Gera, Abed, to State of Israel, Ministry of Agriculture. Method of preventing virus increase in plants. 4,520,020, Cl. 424-197.100.

Loeding, Neil W.: *See—*
Piotrowski, Chester; Bendson, Steven A.; Loeding, Neil W.; and Mularie, William M., 4,520,413, Cl. 360-113.000.

Loeffler, Wilfried; Oppelt, Arnulf; and Siebold, Horst, to Siemens Aktiengesellschaft. Nuclear spin tomography method. 4,520,315, Cl. 324-309.000.

Loesch, Karl G.: *See—*
Petermann, Harald; and Loesch, Karl G., 4,519,166, Cl. 51-103.0WH.

Loev, Bernard; Jones, Howard; and Suh, John T., to USV Pharmaceutical. Antihypertensive N-substituted 1,4-dihydropyridines. 4,520,131, Cl. 514-156.000.

Logan, Andrew H.; and Wagner, Robert A., deceased (by Roireau, Jeanne M., executrix), to Hughes Helicopters, Inc. Landing gear energy distribution and righting system. 4,519,559, Cl. 244-17.170.

Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S. Casting-by-squeezing mold. 4,519,437, Cl. 164-284.000.

Loisy, Jean M.; and Menioux, Claude C. F., to S.N.E.C.M.A. Propulsion engine, particularly for supersonic aircraft. 4,519,208, Cl. 60-262.000.

Long, Delmar D.; and Anderson, John F., Jr., to Dayco Corporation. Polymeric-coated fabric layer, and method for making the same. 4,520,038, Cl. 427-26.000.

Long, Gary E.: *See—*
Fields, Gary C.; and Long, Gary E., 4,520,234, Cl. 179-2.00A.

Long, Noel V.; and Mierke, Charles H., to Union Carbide Corporation. Lead attachment for tantalum anode bodies. 4,520,430, Cl. 361-433.000.

Lopez, Sergio: *See—*
Hascal, Marcel; Watson, Donald A.; Danielski, Andrew; and Lopez, Sergio, 4,520,318, Cl. 324-457.000.

Lorenz, Hellmut: *See—*
Dammann, Peter; Lorenz, Hellmut; and Maier, Roland, 4,519,204, Cl. 57-340.000.

Loskorn, Richard A., to Burroughs Corporation. Memory selection in a multiple line adapter organization. 4,520,452, Cl. 364-900.000.

Lovell, Philip J.: *See—*
Mills, David; Kington, Alan D.; and Lovell, Philip J., 4,520,117, Cl. 501-107.000.

Lowe, David A.; Romancik, Guna; Cappelletti, Leonardo M.; and Elander, Richard P., to Bristol-Myers Company. Production of cephalosporin C. 4,520,101, Cl. 435-49.000.

Lowe, Lynnwood, to Pitney Bowes Inc. Auxiliary printing device for a postage meter. 4,519,311, Cl. 101-109.000.

LTV Aerospace and Defense Company: *See—*
Bravenec, Thomas H.; Boyd, Roger L.; and Ferenc, Robert R., 4,519,974, Cl. 264-279.000.

Lubart, Neil D.: *See—*
Edgar, Albert D.; and Lubart, Neil D., 4,520,391, Cl. 358-133.000.

Lubrizol Corporation, The: *See—*
Higgins, William A., 4,520,155, Cl. 524-166.000.
Smith, Donald M., 4,519,925, Cl. 252-48.600.

Lucas Industries: *See—*
Birt, David A., 4,520,434, Cl. 362-309.000.

Lucas Industries Inc.: *See—*
Spencer, Byron A. T., 4,519,417, Cl. 137-501.000.

Lucas Industries Limited: *See—*
Nicholls, Lawrence G., 4,519,481, Cl. 188-322.170.

Lucas Industries, public limited company: *See—*
Archer, Michael A., 4,519,351, Cl. 123-357.000.
Moloney, Kieron J., 4,519,299, Cl. 92-129.000.

Luce, Robert S.; Quinn, Ross A.; and Rowley, Leroy S., to Lockheed Missiles & Space Company, Inc. Colorimeter. 4,519,710, Cl. 356-411.000.

Ludvigsen, Erik, to Alfa-Laval Separation A/S. Conveyor screw with wear-resistant members attached to its operative surface. 4,519,496, Cl. 198-676.000.

Luitz, Max; and Weiss, Eugen, to Ess GmbH Skibindungen. Ski binding. 4,519,625, Cl. 280-633.000.

Lundberg, Robert D.: *See—*
Peiffer, Dennis G.; Lundberg, Robert D.; Duvdevani, Ilan; and Thaler, Warren A., 4,520,158, Cl. 524-481.000.

Lushis, Donald V.: *See—*
Inman, Frank S.; Giedt, Donald C.; and Lushis, Donald V., 4,519,290, Cl. 87-7.000.

Lusk, Kenneth P., to United States of America, Navy. Dense packaging system for printer wiring boards. 4,520,428, Cl. 361-399.000.

Lussiez, Guy W. Spelling game. 4,519,606, Cl. 273-1.00R.

Lust, Karl-Heinz: *See—*
Lepper, Eberhard; and Lust, Karl-Heinz, 4,520,296, Cl. 318-254.000.

Lutron Electronics Co., Inc.: *See—*
Kirby, David, 4,520,306, Cl. 323-324.000.

Lutz, Eugen: *See—*
Sonderegger, Hans-Conrad; and Lutz, Eugen, 4,519,254, Cl. 73-726.000.

Lutz, Manfred: *See—*
Dumbser, Gerhard; Lutz, Manfred; Fey, Rainer; and Weiss, Kurt, 4,519,227, Cl. 70-264.000.

Luzzi, Glenn J.; and Kominiak, Andrew A., to Amerace Corporation. Splice connector housing and assembly of cables employing same. 4,520,229, Cl. 174-73.00R.

Lyons, James E.: *See—*
Hsu, Chao-Yang; and Lyons, James E., 4,519,948, Cl. 260-396.00R.

MacDowell, John F.: *See—*
Beall, George H.; MacDowell, John F.; and Taylor, Mark P., 4,519,828, Cl. 65-33.000.

Machine Technology, Inc.: *See—*
Hillman, Gary, 4,519,526, Cl. 222-212.000.

Machtle, Roland, to Werkzeugfabrik Fritz Machtes GmbH & Co. K.G. Expansion anchor. 4,519,735, Cl. 411-65.000.

Madan, Arun: *See—*
Ovshinsky, Stanford R.; and Madan, Arun, 4,520,380, Cl. 357-2.000.

Madec, Marcel: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,519,983, Cl. 422-78.000.

Maeda, Masahiro: *See—*
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.

Maeda, Satoru: *See—*
Todokoro, Shigeru; Nakane, Hiroshi; and Maeda, Satoru, 4,520,469, Cl. 369-44.000.

Maeda, Yasuhiro; Yokoyama, Takashi; and Yagihashi, Shinichi, to Hoxan Corporation. Apparatus for fabricating polycrystalline silicon wafer. 4,519,764, Cl. 425-256.000.

Magic Chef, Inc.: *See—*
Mandel, Sheldon W., 4,519,145, Cl. 34-27.000.

Magna American Corporation: *See—*
Reaume, Leonard V., 4,519,459, Cl. 172-42.000.

Magna-Graphics Corporation: *See—*
Wittkopf, Eugene W.; Jorgensen, Allen R.; and Daane, Robert A., 4,519,757, Cl. 425-143.000.

Magnusson, Stig E.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,520,478, Cl. 370-63.000.

Maguire, Edward A.: *See—*
Gentilman, Richard L.; Maguire, Edward A.; and Dolhert, Leonard E., 4,520,116, Cl. 501-98.000.

Maher, Elizabeth A.: *See—*
Burrington, James D.; Pesa, Fred A.; Maher, Elizabeth A.; and Grasselli, Robert K., 4,519,954, Cl. 260-465.80D.

Maida, Osamu: *See—*
Hagyuda, Nobuyoshi; Hasegawa, Hiroshi; Iida, Yoshikazu; and Maida, Osamu, 4,519,683, Cl. 354-127.110.

Maier, Roland: *See—*
Dammann, Peter; Lorenz, Hellmut; and Maier, Roland, 4,519,204, Cl. 57-340.000.

Majorette: *See—*
Ribas, Jean L., 4,519,724, Cl. 403-345.000.

Makiel, Joseph M., to United States of America, Energy. Fuel cell generator. 4,520,082, Cl. 429-26.000.

Makihara, Hiroshi: *See—*
Kamimura, Yoshihiko; Okamoto, Toshiro; Takahashi, Naoyuki; Makihara, Hiroshi; and Oshima, Michio, 4,520,224, Cl. 585-648.000.

Makino, Tomoaki, to Mitsubishi Denki Kabushiki Kaisha. Optimized display device memory utilization. 4,520,358, Cl. 340-799.000.

Malard, Marcel: *See—*
Huignard, Jean-Pierre; and Malard, Marcel, 4,520,484, Cl. 372-24.000.

Malkovich, Bella E.: *See—*
Gudkin, Timofei S.; Iordanishvili, Evgeny K.; Lidorenko, Nikolai S.; Malkovich, Bella E.; Razumovsky, Mikhail I.; and Rubashov, Igor B., 4,519,389, Cl. 128-303.100.

Mallonen, Edward A.: *See—*
Forsell, Kenneth A.; and Mallonen, Edward A., 4,520,244, Cl. 200-67.0DA.

Malloy, Thomas P.: *See—*
Berg, Roy C.; Malloy, Thomas P.; and Vora, Bipin V., 4,520,218, Cl. 585-449.000.

Malvern Scale Company: *See—*
Stuart, James M., 4,519,464, Cl. 177-244.000.

Mandel, Sheldon W., to Magic Chef, Inc. Electrostatic and moisture control system for automatic clothes dryers. 4,519,145, Cl. 34-27.000.

Mandl, Gerhard: *See—*
Weber, Kurt; Mondini, Giancarlo; and Mandl, Gerhard, 4,519,821, Cl. 55-290.000.

Mandler, John J., Jr.: *See—*
Epstein, Paul; Ballas, John S., Jr.; Mandler, John J., Jr.; and Van Horn, Joseph M., 4,519,396, Cl. 128-698.000.

Manis, Paul A.: *See—*
Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., 4,520,176, Cl. 524-598.000.

Mannesmann Aktiengesellschaft: *See—*
Hillemanns, Herbert; Samans, Robert; and Meyer, Walter, 4,520,047, Cl. 427-331.000.
Landgraf, Helmut; and Stucke, Walter, 4,519,863, Cl. 156-244.120.

Mannesmann Rexroth GmbH: *See—*
Bartholomaus, Reiner; and Rivolier, Michel, 4,519,573, Cl. 251-30.000.

Manning, Daniel J.: *See—*
Prepodnik, Kay E.; Finn, Peter A.; and Manning, Daniel J., 4,519,219, Cl. 62-457.000.

Mansfield, Robert J.; Payne, David N.; and Sasaki, Issei, to National Research Development Corporation. Measurement of optical refractive index profiles. 4,519,704, Cl. 356-73.100.

Manzi, Joseph, to Gossling Development Corporation. Hanger device for long handled implements. 4,519,566, Cl. 248-360.000.

Marentic, Frank J., to Minnesota Mining and Manufacturing Company. Layered composite for applying graphics having areas or both mirror-like metal and patterned appearance. 4,520,053, Cl. 428-31.000.

Maresca, Louis M.: *See—*
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,520,168, Cl. 525-169.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Polycarbonates and polyester carbonates exhibiting improved heat resistance. 4,520,187, Cl. 528-176.000.

Marketing Displays, Inc.: *See—*
Seely, James R.; and Sarkisian, Robert, 4,519,152, Cl. 40-156.000.

Marks, Christopher: *See—*
Williams, Robert L.; and Marks, Christopher, 4,519,666, Cl. 339-177.00R.

Marks, Rex B.: *See—*
Gill, Dee R.; and Marks, Rex B., 4,519,869, Cl. 156-428.000.

Mars Incorporated: *See—*
McLaughlin, Donald L., 4,520,451, Cl. 364-900.000.

Marsham, Peter R.; and Thomson, David S., to Imperial Chemical Industries PLC. Anti-inflammatory esters of 4-(1-hydroxy-2-[(acylamino)alkylamino]ethyl) phenols. 4,520,027, Cl. 514-354.000.

Martin Automatic, Inc.: *See—*
Martin, John R., 4,519,858, Cl. 156-64.000.

Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., to SWS Silicones Corporation. Textile finishing compositions. 4,520,176, Cl. 524-598.000.

Martin, John R., to Martin Automatic, Inc. Splicer. 4,519,858, Cl. 156-64.000.

Martin Marietta Corporation: *See—*
Gerber, Arthur H., 4,519,842, Cl. 106-90.000.

Martin, Millard J.: *See—*
Adomis, Peter P., Jr.; and Martin, Millard J., 4,519,300, Cl. 92-158.000.

Martin, Raymond G. Badminton shuttlecock. 4,519,613, Cl. 273-417.000.

Martinich, Steven J.: *See—*
Jones, Hugh D.; and Martinich, Steven J., 4,519,717, Cl. 374-17.000.

Martinola, Friedrich, to Bayer Aktiengesellschaft. Process for internal regeneration of ion exchanger resins in mixed bed filters, and mixed bed filters for carrying out the process. 4,519,916, Cl. 210-678.000.

Martinola, Friedrich, to Bayer Aktiengesellschaft. Counter-current adsorption filters for the treatment of liquids and a method of operating the filter. 4,519,917, Cl. 210-678.000.

Marty, Claude; and Engelhard, Philippe, to Compagnie Francaise de Raffinage. Process for the pretreatment of light olefin fractions. 4,520,225, Cl. 585-832.000.

Marusik, C. Lee, to Rockwell International Corporation. Master and slave power supply control circuits. 4,520,275, Cl. 307-64.000.

Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, to Kabushiki Kaisha Komatsu Seisakusho. Automatic speed range change-over system for a hydro-mechanical transmission. 4,519,274, Cl. 74-866.000.

Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, to Kabushiki Kaisha Komatsu Seisakusho. Turning control system for a hydro-mechanical transmission. 4,519,275, Cl. 74-866.000.

Maruyama, Yoshio: *See—*
Kenmochi, Kazuei; Sakairi, Tadashi; Maruyama, Yoshio; and Itemadani, Eizi, 4,519,761, Cl. 425-135.000.

Masayuki, Maeda: *See—*
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.

Maschinenfabrik Muller-Weingarten AG: *See—*
Feirer, Egon; Amann, Ulrich; and Kuppinger, Gunter, 4,519,309, Cl. 100-229.00R.

Mase, Syunzo: *See—*
Matsuzawa, Soichiro; and Mase, Syunzo, 4,519,870, Cl. 156-603.000.

Mashiko, Koichiro, to Mitsubishi Denki Kabushiki Kaisha. Dynamic random access memory. 4,520,466, Cl. 365-210.000.

Masino, Leo, to E. Th. Noack Verpackungsmaschinen. Method for boxing bubble strips. 4,519,282, Cl. 83-85.000.

Maslanka, William W., to Hercules Incorporated. Process for producing polyaminopolyamides containing halohydrin functionality. 4,520,159, Cl. 524-606.000.

Mason, David A. Rear extension for boat hull. 4,519,336, Cl. 114-286.000.

Mason, Lawrence J.: *See—*
Lehman, Richard F.; Porth, Roland W.; and Mason, Lawrence J., 4,519,703, Cl. 355-69.000.

Massachusetts Institute of Technology: *See—*
Ham, Norman D., 4,519,743, Cl. 416-1.000.

Mast, Fred; and Waser, Rudolf, to GRETAG Aktiengesellschaft. Optical image amplifier. 4,519,682, Cl. 353-122.000.

Masters, Edward R.: *See—*
Fanelli, Michael W.; and Masters, Edward R., 4,520,431, Cl. 362-180.000.

Matsubara, Mitsuyoshi: *See—*
Arita, Masataka; and Matsubara, Mitsuyoshi, 4,520,494, Cl. 378-108.000.

Matsuda, Shunsuke; Mitani, Katsuaki; Yoda, Hironori; and Nishizawa, Kesaji, to Matsushita Electric Industrial Co., Ltd.; and Nissei Plastic Industrial Co., Ltd. Apparatus for injection compression molding. 4,519,763, Cl. 425-192.00R.

Matsui, Kazuma: *See—*
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.

Matsumoto, Hidekazu: *See—*
Bandoh, Tadaaki; Matsumoto, Hidekazu; Fukunaga, Yasushi; Hiraoka, Ryosei; Ide, Jushi; and Kawakami, Tetsuya, 4,520,441, Cl. 364-200.000.

Matsuoka, Hiroki: *See—*
Katoh, Yuuichi; Matsuoka, Hiroki; and Iwata, Minoru, 4,519,354, Cl. 123-472.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kenmochi, Kazuei; Sakairi, Tadashi; Maruyama, Yoshio; and Itemadani, Eizi, 4,519,761, Cl. 425-135.000.
Matsuda, Shunsuke; Mitani, Katsuaki; Yoda, Hironori; and Nishizawa, Kesaji, 4,519,763, Cl. 425-192.00R.
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Iketani, Yukiyoshi, 4,519,807, Cl. 44-15.00R.
Soga, Mamoru; Yubakami, Keiichi; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,519,931, Cl. 252-62.510.
Sugino, Takashi; Itoh, Kunio; Wada, Masaru; and Shimizu, Hirokazu, 4,520,485, Cl. 372-48.000.
Tao, Muneo; and Migaki, Fumihiko, 4,519,775, Cl. 431-344.000.
Yokozeki, Seiki, 4,520,251, Cl. 219-10.55M.
Yoshii, Tetsuji, 4,519,521, Cl. 220-335.000.

Matsushita Electric Works, Ltd.: *See—*
Nagamoto, Mitsuki, 4,520,333, Cl. 335-129.000.

Matsushita, Toshihiko; and Morishita, Sadao, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording paper and a process for production thereof. 4,520,378, Cl. 346-209.000.

Matsushita, Toshihiko: *See—*
Morishita, Sadao; and Matsushita, Toshihiko, 4,520,376, Cl. 346-204.000.

Matsushita, Yoshihiro: *See—*
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,520,194, Cl. 544-22.000.

Matsuzawa, Soichiro; and Mase, Syunzo, to NGK Insulators, Ltd. Method for producing a single crystal. 4,519,870, Cl. 156-603.000.

Mattei, Riccardo, to G.D. Societa per Azioni. Device for applying filters to cigarettes. 4,519,406, Cl. 131-94.000.

Mattel, Inc.: *See—*
Halford, Wayne R.; Renger, Larry H.; and Dooley, James J., 4,519,789, Cl. 446-444.000.

Matusiro, Ryuiti: *See—*
Iwamoto, Kenji; Moriguchi, Kouichi; and Matusiro, Ryuiti, 4,519,210, Cl. 60-602.000.

Maure, Jean, to Societe Anonyme des Plieuses Automatiques. Wrapping machine. 4,519,180, Cl. 53-234.000.

Mauser-Werke Oberndorf GmbH: *See—*
Gotz, Udo; Gleichauf, Winfried; Gunther, Oswin; and Hoffmann, Dietrich, 4,519,117, Cl. 29-1.200.

Maxcap, Inc.: *See—*
Nolan, Robert L., 4,519,569, Cl. 249-142.000.

May, Michael G. Method and apparatus for controlling the composition of the combustion charge in internal combustion engines. 4,519,366, Cl. 123-435.000.

Mayer, Edward F.; and van Blerk, Victor B., to Ricoh Company, Ltd. Electrophotographic copying apparatus including toner cleaning arrangement. 4,519,699, Cl. 355-15.000.

Mayer, Theodore W., to R. R. Donnelley & Sons Company. Method and apparatus for tandem stitching of books in a bindery line. 4,519,599, Cl. 270-53.000.

Mayer, William; and Runions, Alton E., to Stewart-Warner Corporation. Rectangular halogen lamp unit and method of manufacture. 4,520,432, Cl. 362-267.000.

Mazda Motor Corporation: *See—*
Nagaoka, Mitsuru; Oda, Kazuya; and Sumida, Shizuo, 4,519,484, Cl. 192-3.580.
Oda, Hiroyuki; Morita, Yasuyuki; and Nagao, Akihito, 4,519,350, Cl. 123-308.000.

McAllister, Don M., to Am-Air Limited Partnership. Air ionizer for internal combustion engines. 4,519,357, Cl. 123-539.000.

McAuliffe, Robert E., to Outboard Marine Corporation. State of charge indicator. 4,520,353, Cl. 340-636.000.

McBrayer, Carl L. Means for killing flying insects and for discharging an attractant therefrom. 4,519,160, Cl. 43-113.000.

McCain, William B.; and McCann, John J., 4,520,403, Cl. 358-332.000.

McCann, John J.: *See—*
Burkhardt, James L.; and McCann, John J., 4,520,403, Cl. 358-332.000.

McCaskie, John E.; and Tsiamis, Chris, to LeaRonal, Inc. Metal plating on plastics. 4,520,046, Cl. 427-304.000.

McCian Manufacturing Corporation: *See—*
McCain, William B.; and Bewersdorf, Elmer, 4,519,598, Cl. 270-53.000.

McCray, William R. Fence post driver. 4,519,584, Cl. 254-29.00R.

McElwee, J. Russell, to Photo Vending Corporation. Apparatus and method for storing and retrieving articles. 4,519,522, Cl. 221-13.000.

McEvoy, John C.; and Thomas, Leslie P., to Diamond Automations, Inc. Egg handling system. 4,519,494, Cl. 198-448.000.

McGarr, Clarence D. Heated water-alcohol injection system for carbureted internal combustion engines. 4,519,341, Cl. 123-1.00A.

McGill, Eugene C.; and Bell, Ronald D., to McGill Incorporated. Process of conversion for disposal of chemically bound nitrogen in industrial waste gas streams. 4,519,993, Cl. 423-235.000.

McGill Incorporated: *See—*
McGill, Eugene C.; and Bell, Ronald D., 4,519,993, Cl. 423-235.000.

McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W. Dehydrogenation process. 4,520,223, Cl. 585-629.000.

McIntyre, Raymond E. Electrical plug and socket connection device. 4,520,243, Cl. 200-51.070.

McLaughlin, Donald L., to Mars Incorporated. Programmable vending machine accountability apparatus. 4,520,451, Cl. 364-900.000.

McLean, Kenneth W.: *See—*
Webster, Emmett G.; and McLean, Kenneth W., 4,519,188, Cl. 56-16.400.

McMahon, Donald H., to Sperry Corporation. Pressure and temperature compensated photoelastic hydrophone. 4,519,252, Cl. 73-655.000.

McMath, Jack A., to Dover Corporation. Quick connect-disconnect coupling. 4,519,635, Cl. 285-93.000.

McMillen, James M., to Mobil Oil Corporation. Combined thermal and solvent stimulation. 4,519,454, Cl. 166-303.000.

McNair, Rhett; and Helling, James, to NRG Inc. MN. Lamp apparatus. 4,520,436, Cl. 362-366.000.

Mead Corporation, The: *See—*
Cragin, Glynn P., Jr., 4,520,366, Cl. 346-1.100.
Shackleton, Craig R., 4,520,369, Cl. 346-75.000.

Meder, Willi; Bertz, Hans-Ulrich; and Golder, Peter, to Hofler, Willy. Gear probe. 4,519,141, Cl. 33-179.50R.

Medtronic, Inc.: *See—*
Cahalan, Patrick T.; Jevne, Allan H.; and Fogt, Eric J., 4,519,973, Cl. 264-267.000.
Dickhudt, Eugene A., 4,519,403, Cl. 128-785.000.

Meeker, Paul: *See—*
Bevington, John F.; Meeker, Paul; and Savidge, Michael, 4,519,112, Cl. 15-326.000.

Meidensha Electric Mfg. Co., Ltd.: *See—*
Hashimoto, Takafumi, 4,520,080, Cl. 429-18.000.

Meier, Bruno, to Sulzer Brothers Limited. Transmission having a constant torque ratio output at a variable speed ratio output. 4,519,272, Cl. 74-752.00R.

Meier, Siegfried, to SIG - Schweizerische Industrie-Gesellschaft. Apparatus for aligning and boxing flat angular items. 4,519,179, Cl. 53-236.000.

Melamed, Avraham; and Harel, Zahal. Heating system operating on stored energy. 4,519,218, Cl. 62-271.000.

Meloy, Thomas P. Casecadeograph and method of use. 4,519,244, Cl. 73-432.00R.

Mendenhall, Walter M. Shelf supporting bracket arrangement. 4,519,511, Cl. 211-187.000.

Menioux, Claude C. F.: *See—*
Loisy, Jean M.; and Menioux, Claude C. F., 4,519,208, Cl. 60-262.000.

Mennemann, Karl: *See—*
Speit, Burkhard; Mennemann, Karl; and Gliemeroth, Georg, 4,520,115, Cl. 501-60.000.

Merck & Co., Inc.: *See—*
Harris, Elbert E.; and Thorsett, Eugene D., 4,520,021, Cl. 514-212.000.

Mercury Development Corp.: *See—*
Roberts, Lewis L., 4,519,173, Cl. 52-235.000.

Merger, Franz: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.

Merichem Company: *See—*
Willis, Horace E., Jr., 4,520,002, Cl. 423-522.000.

Merrell Dow Pharmaceuticals Inc.: *See—*
Adams, Jerry L.; Metcalf, Brian W.; and Lippert, Bruce J., 4,520,028, Cl. 514-447.000.

Merrill, Duane F., to General Electric Company. Process and articles for removing typewriter inks. 4,519,720, Cl. 400-241.000.

Merry, Terri J. Diaper and method of making the same. 4,519,800, Cl. 604-385.00A.

Merten, Rudolf: *See—*
Dhein, Rolf; Rottmaier, Ludwig; Merten, Rudolf; and Siebourg, Wolfgang, 4,520,147, Cl. 524-100.000.

Mesaros, Louis: *See—*
Laviron, Charles; Lecouls, Henri; and Mesaros, Louis, 4,520,006, Cl. 423-531.000.

Metalogic, Inc.: *See—*
Johnson, Robert C., 4,519,151, Cl. 38-102.900.

Metcalf, Brian W.: *See—*
Adams, Jerry L.; Metcalf, Brian W.; and Lippert, Bruce J., 4,520,028, Cl. 514-447.000.

Metripond Merleggyar: *See—*
Koos, Rudolf, 4,520,444, Cl. 364-426.000.

Metrotech, Inc.: *See—*
Peterman, Earl J., 4,520,317, Cl. 324-326.000.

Metzeler Kautschuk GmbH: *See—*
Pfeiffer, Claus-Peter, 4,520,054, Cl. 428-35.000.

Metzger, Jean; Lecouls, Henri; Colombe , Philippe; and Wojcik, Jean. Process for producing solutions of alkali metal silicate in a static reactor. 4,520,001, Cl. 423-332.000.

Meuschke, Robert E.; Sherwood, Donald G.; and Silverblatt, Bernard L., to Westinghouse Electric Corp. Fuel transfer tube quick opening hatch. 4,519,519, Cl. 220-211.000.

Meyer, Dale L.: *See—*
Brestel, Ronald R.; and Meyer, Dale L., 4,519,579, Cl. 251-172.000.

Meyer, Thomas I.: *See—*
Riley, Robert F.; Meyer, Thomas I.; and Jordan, Wesley N., 4,519,662, Cl. 339-94.00R.

Meyer, Walter: *See—*
Hillemanns, Herbert; Samans, Robert; and Meyer, Walter, 4,520,047, Cl. 427-331.000.

Michalik, John K., to Warner-Lambert Technologies, Inc. Exposure and camera control. 4,519,692, Cl. 354-412.000.

Michel, Klaus; and Gude, Armin, to Chemische Werke Huls AG. Manufacturing dimensionally stable shaped hollow sections from aliphatic polyamides and their applications. 4,519,968, Cl. 264-178.00R.

Michel, Max: *See—*
Gresser, Robert; and Michel, Max, 4,519,933, Cl. 252-140.000.

Michigan State Univ., Board of Trustees of: *See—*
Ledebuhr, Richard L.; and Hansen, Clarence M., 4,519,191, Cl. 56-331.000.

Mick, Jon L., to FMC Corporation. Steerable carrousel supported walking beam vehicle. 4,519,468, Cl. 180-8.500.

Mieg, Christian: *See—*
Schwob, Pierre; and Mieg, Christian, 4,520,257, Cl. 219-250.000.

Mierke, Charles H.: *See—*
Long, Noel V.; and Mierke, Charles H., 4,520,430, Cl. 361-433.000.

Mifune, Hiroyuki: *See—*
Akimura, Yoshitaka; Mifune, Hiroyuki; and Nakamura, Koki, 4,520,099, Cl. 430-613.000.

Migaki, Fumihiko: *See—*
Tao, Muneo; and Migaki, Fumihiko, 4,519,775, Cl. 431-344.000.

Mikami, Takeshi: *See—*
Kakimi, Fujio; and Mikami, Takeshi, 4,520,091, Cl. 430-110.000.

Miki, Kazuyuki: *See—*
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; Iko, Kazuo; and Miki, Kazuyuki, 4,520,075, Cl. 428-435.000.

Milberger, Lionel J., to FMC Corporation. Matrix switching control of subsea production systems. 4,519,263, Cl. 74-128.000.

Miller, Drew J.: *See—*
Dunmire, Robert W.; Miller, Drew J.; and Johnson, Michael D., 4,519,098, Cl. 2-161.00R.

Miller, Larry C., to DewEze Manufacturing, Inc. Grain drill suspension system. 4,519,325, Cl. 111-85.000.

Miller, Larry D. Compound archery bow. 4,519,374, Cl. 124-23.00R.

Miller, Robert C.: *See—*
O'Keefe, David B.; and Miller, Robert C., 4,520,356, Cl. 340-750.000.

Miller, Ronald L., to Research Corporation. Diagnostic method for determining content of sialic acid or sialoprotein. 4,520,111, Cl. 436-501.000.

Miller, Thomas P. Puller mechanism for assembling pipelines. 4,519,122, Cl. 29-237.000.

Milligan, Aaron. Prevention and removal of stains in pools and spas. 4,519,847, Cl. 134-28.000.

Milligan, Barton: *See—*
Schmidt, Andreas R.; Strohmayer, Herbert F.; Sibral, Walter; and Milligan, Barton, 4,519,432, Cl. 152-357.00A.

Mills, David; Kington, Alan D.; and Lovell, Philip J., to Rolls-Royce Limited. Refractory articles and the method for the manufacture thereof. 4,520,117, Cl. 501-107.000.

Milov, Vladimir N.: *See—*
Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S., 4,519,437, Cl. 164-284.000.

Milton Bradley Company: *See—*
Montlick, Terry; Skoge, Klaus; Vetter, David C.; and Ahrens, Paul R., 4,520,499, Cl. 381-36.000.

Mims, Philip B. Heating device. 4,519,378, Cl. 126-225.000.

Minakuchi, Fumio, to Aisin Seiki Kabushiki Kaisha. Auxiliary presser foot for engaging a previously formed stitch. 4,519,333, Cl. 112-311.000.

Minamikawa, Yoshihisa: *See—*
Sakitani, Yoshio; and Minamikawa, Yoshihisa, 4,520,421, Cl. 361-234.000.

Mineral Processing Systems, Inc.: *See—*
League, John S., IV, 4,520,297, Cl. 318-490.000.

Minet, Ronald G.; Dente, Mario; Ranzi, Eliseo; and Sunny H. K., to Kinetics Technology International Corp. Pyrolysis of natural gas liquids to aromatic hydrocarbons using a hot recycled gas. 4,520,217, Cl. 585-415.000.

Minick, Dale E. Peristaltic pump having variable occlusion rates. 4,519,754, Cl. 417-477.000.

Minnesota Mining and Manufacturing Company: *See—*
Foslien, Floyd L., 4,519,532, Cl. 227-8.000.
Leinen, Roger W., 4,520,142, Cl. 523-205.000.
Marentic, Frank J., 4,520,053, Cl. 428-31.000.
Piotrowski, Chester; Bendson, Steven A.; Loeding, Neil W.; and Mularie, William M., 4,520,413, Cl. 360-113.000.

Minoru, Yoshihara: *See—*
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.

Miranker, Glen S.; and Wong, Chak-Kuen, to International Business Machines Corporation. Dual reciprocating pipelined sorter. 4,520,456, Cl. 364-900.000.

Mita Industrial Company Limited: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, 4,519,702, Cl. 355-51.000.
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.

Mitani, Katsuaki: *See—*
Matsuda, Shunsuke; Mitani, Katsuaki; Yoda, Hironori; and Nishizawa, Kesaji, 4,519,763, Cl. 425-192.00R.

Mitch, John H., to Tektronix, Inc. Joystick apparatus. 4,520,355, Cl. 340-709.000.

Mitchell, Bruce R.; and Vogel, Roger F., to Gulf Research & Development Company. Vanadium passivation in a hydrocarbon catalytic cracking process. 4,520,120, Cl. 502-68.000.

Mitchell, Stewart D.; and Wheeler, Steven A., to Texaco Limited. Offshore well head protector and method of installation. 4,519,727, Cl. 405-204.000.

Mitchell, Stewart D.: *See—*
Knowles, John P.; Wheeler, Steven A.; and Mitchell, Stewart D., 4,519,726, Cl. 405-195.000.

Mitchell, William A.; Thompson, J. Brent; and Freese, John L., to Ex-Cello-O Corporation. High speed spindle with preloaded bearings. 4,519,734, Cl. 409-231.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Hayashi, Masahiro; Nozawa, Seiichi; and Oikawa, Takashi, 4,520,208, Cl. 549-308.000.
Otake, Masayuki; Murayama, Masayoshi; and Kawaragi, Yuji, 4,520,127, Cl. 502-209.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Hamano, Isao, 4,519,261, Cl. 74-7.00E.
Horikiri, Kenji; Ueda, Fumio; and Ideno, Hiroaki, 4,519,679, Cl. 350-339.00R.
Inoue, Takeo; and Shirazawa, Takashi, 4,519,970, Cl. 264-261.000.
Isozumi, Shuzoo; and Hara, Kazuyoshi, 4,520,285, Cl. 310-83.000.
Ito, Eizi, 4,520,425, Cl. 361-384.000.
Makino, Tomoaki, 4,520,358, Cl. 340-799.000.
Mashiko, Koichiro, 4,520,466, Cl. 365-210.000.
Tanahashi, Toru, 4,519,479, Cl. 187-29.00R.
Yamamoto, Katsuyoshi; Mizukami, Haruo; and Nambu, Hajime, 4,520,505, Cl. 382-55.000.
Yoshii, Toshio; and Furukawa, Shigeyoshi, 4,520,246, Cl. 200-144.00B.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Danno, Yoshiaki; Kobayashi, Hiroyuki; and Fukui, Toyoaki, 4,520,272, Cl. 290-40.00A.
Shimizu, Takeo; Hiramatsu, Takeo; Takamiya, Bonnosuke; and Fukuchi, Hiroshi, 4,519,273, Cl. 74-752.00A.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hatano, Hirofumi; and Hirota, Yoji, 4,519,822, Cl. 55-459.00R.
Kamimura, Yoshihiko; Okamoto, Toshiro; Takahashi, Naoyuki; Makihara, Hiroshi; and Oshima, Michio, 4,520,224, Cl. 585-648.000.

Mitsubishi Mining and Cement Co.: *See—*
Hatano, Hirofumi; and Hirota, Yoji, 4,519,822, Cl. 55-459.00R.

Mitsubishi Paper Mills, Ltd.: *See—*
Amano, Masahiro; Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,519,873, Cl. 162-138.000.
Matsushita, Toshihiko; and Morishita, Sadao, 4,520,378, Cl. 346-209.000.
Morishita, Sadao; and Matsushita, Toshihiko, 4,520,376, Cl. 346-204.000.
Senga, Takao; Yamada, Jun; and Suzuki, Shigeyoshi, 4,520,088, Cl. 430-49.000.
Tazuki, Shoji; and Toyama, Koji, 4,520,089, Cl. 430-49.000.

Mitsubishi Petrochemical Company Limited: *See—*
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.

Mitsubishi Rayon Company, Ltd.: *See—*
Kamada, Kazumasa; Osaka, Norihisa; and Kaneda, Masahiro, 4,520,166, Cl. 525-85.000.

Mitsuhashi, Shigeru; Kumobayashi, Hidenori; and Akutagawa, Susumu, to Takasago Perfumery Co., Ltd. Process for producing myrcenol. 4,520,212, Cl. 568-875.000.

Mitsui Engineering and Shipbuilding Company, Ltd.: *See—*
Oshima, Masanao; Narita, Hitoshi; Yashima, Nobuyoshi; and Tabuchi, Hiroshi, 4,519,728, Cl. 405-224.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Kawamoto, Keiji; Kato, Keigo; and Aida, Takahiro, 4,520,126, Cl. 502-184.000.

Mittmann, Bernd, to Webasto-Werk. W. Baier GmbH & Co. Heating device fed with free-flowing fuel. 4,519,772, Cl. 431-45.000.

Miura, Shuji: *See—*
Yoshida, Iwao; Kasanami, Takeo; and Miura, Shuji, 4,519,963, Cl. 264-45.300.

Miwa, Naoto: *See—*
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki: Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.

Miyagi, Hideo: *See—*
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,519,353, Cl. 123-359.000.

Miyai, Seiichi: *See—*
Nakajima, Kaoru; and Miyai, Seiichi, 4,520,079, Cl. 428-694.000.

Miyakoshi, Shinichi; and Oyama, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Multi-cylinder engine mounted on motorcycle. 4,519,471, Cl. 180-219.000.

Miyazaki, Yasuyuki: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,520,443, Cl. 364-424.000.

Miyoshi, Hideo: *See—*
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.

Miyoshi, Shuji; Sugihara, Takashi; Jinda, Akihito; and Hijikigawa, Masaya, to Sharp Kabushiki Kaisha. Moisture responsive element with crosslinked organic membrane and protective layering. 4,520,341, Cl. 338-35.000.

Mizrahi, Sadi: *See—*
Angevine, Philip J.; Oleck, Stephen M.; Wilson, Robert C., Jr.; and Mizrahi, Sadi, 4,519,900, Cl. 208-254.00H.

Mizukami, Haruo: *See—*
Yamamoto, Katsuyoshi; Mizukami, Haruo; and Nambu, Hajime, 4,520,505, Cl. 382-55.000.

Mizuno, Kaneyoshi; Nose, Isamu; and Iizuka, Hirosi, to Oki Electric Industry Co., Ltd. Speech recognition system. 4,520,500, Cl. 381-43.000.

Mizuno, Yukio: *See—*
Ishido, Takao, Nakao, Masasi; Honya, Takao; and Mizuno, Yukio, 4,519,424, Cl. 139-91.000.

Mizutani, Hiroshi: *See—*
Sakurai, Akira; and Mizutani, Hiroshi, 4,519,799, Cl. 604-366.000.

Mobay Chemical Corporation: *See—*
Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., 4,519,965, Cl. 264-51.000.

Mobil Oil Corporation: *See—*
Angevine, Philip J.; Oleck, Stephen M.; Wilson, Robert C., Jr.; and Mizrahi, Sadi, 4,519,900, Cl. 208-254.00H.
Braid, Milton, 4,519,928, Cl. 252-50.000.
Herrington, F. John, 4,519,146, Cl. 34-104.000.
Hsia Chen, Catherine S., 4,520,221, Cl. 585-517.000.
McMillen, James M., 4,519,454, Cl. 166-303.000.
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., 4,520,215, Cl. 585-255.000.
Russell, Gordon A., 4,519,592, Cl. 269-25.000.
Sharps, Gordon V., Jr., 4,519,860, Cl. 156-161.000.

Mohr, Glenn R.: *See—*
Roth, Donald J.; Kubis, Charles S.; Walter, John; and Mohr, Glenn R., 4,519,859, Cl. 156-69.000.

Molari, Richard E., Jr., to General Electric Company. Laminar structure of polycarbonate. 4,519,154, Cl. 40-615.000.

Moloney, Kieron J., to Lucas Industries Public Limited Company. Reciprocable plunger fuel injection pump. 4,519,299, Cl. 92-129.000.

Mombelli, Paup, to I.C.B. France Industrie et Componsants du Batiment Societe Anonyme. Electronically motorized lock whose motor shaft is parallel to the longitudinal axis of the bolts. 4,519,640, Cl. 292-33.000.

Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, to Canon Kabushiki Kaisha. Finder for single lens reflex camera. 4,519,685, Cl. 354-154.000.

Mondini, Giancarlo: *See—*
Weber, Kurt; Mondini, Giancarlo; and Mandl, Gerhard, 4,519,821, Cl. 55-290.000.

Moniotte, Philippe G., to Monsanto Europe, S.A. Organic thiosulphates and thiosulphonates useful as stabilizing agents for rubber vulcanizates. 4,520,154, Cl. 524-157.000.

Monsanto Company: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,519,832, Cl. 71-87.000.
Van Eenam, Donald N., 4,520,184, Cl. 526-320.000.

Monsanto Europe, S.A.: *See—*
Moniotte, Philippe G., 4,520,154, Cl. 524-157.000.

Montlick, Terry; Skoge, Klaus; Vetter, David C.; and Ahrens, Paul R., to Milton Bradley Company. Combination speech synthesis and recognition apparatus. 4,520,499, Cl. 381-36.000.

Moody, Albert L., to F. C. Brown Rentals, Inc. Cup marking attachment for beverage dispensing machines. 4,519,428, Cl. 141-98.000.

Moody, Roy A.: *See—*
Caveney, Jack E.; Moody, Roy A.; Bulanda, John J.; and Wende, Russell E., 4,519,129, Cl. 29-749.000.

Moon, Frederick H., to Zenith Electronics Corporation. Low noise CATV converter. 4,520,507, Cl. 455-3.000.

Moon, Joseph C.; and Craig, Arthur T. Display device. 4,519,153, Cl. 40-591.000.

Moore, Robert E.: *See—*
Simmonds, Peter G.; and Moore, Robert E., 4,520,109, Cl. 436-56.000.

Moore, William P., to Hawkeye Chemical Company. Method of converting sewage sludge to fertilizer. 4,519,831, Cl. 71-13.000.

Moorfeed Corporation: *See—*
Cortellini, Conrad, 4,520,387, Cl. 358-90.000.

Morales, Alfredo L.; Galiasso, Roberto E.; Agudelo, Maria M.; Salazar, Jose A.; and Carrasquel, Angel R., to Intevep, S.A. Catalyst having high metal retention capacity and good stability for use in the demetallization of heavy crudes and method of preparation of same. 4,520,128, Cl. 502-210.000.

Moran, David P. J.: *See—*
Gould, Grahame; Crossley, Anthony; and Moran, David P. J., 4,520,037, Cl. 426-330.600.

Mori, Junji: *See—*
Sugahara, Kenshi; Yasuda, Kazuo; and Mori, Junji, 4,519,891, Cl. 204-418.000.

Moriguchi, Haruhiko; and Kurata, Masami, to Fuji Xerox Co., Ltd. Polychromatic image sensor. 4,520,381, Cl. 357-30.000.

Moriguchi, Kouichi: *See—*
Iwamoto, Kenji; Moriguchi, Kouichi; and Matusiro, Ryuiti, 4,519,210, Cl. 60-602.000.

Morikawa, Kenichi; Nagatomi, Kazuyuki; and Katanuma, Mitsuo, to NEC Corporation. Electronic key telephone system. 4,520,235, Cl. 179-99.0LS.

Morimitsu, Toshihiko: *See—*
Hattori, Makoto; Taguma, Akihiro; Morimitsu, Toshihiko; and Takeshita, Akira, 4,519,947, Cl. 260-371.000.

Morimoto, Akira: *See—*
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,520,194, Cl. 544-22.000.

Morimoto, Satoshi: *See—*
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.

Morimoto, Yoshiro: *See—*
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,519,790, Cl. 474-18.000.

Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, to Hitachi, Ltd. Process for forming powder pattern on light exposed layer having photosensitive diazonium salts. 4,520,094, Cl. 430-144.000.

Morishita, Sadao; and Matsushita, Toshihiko, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording sheet. 4,520,376, Cl. 346-204.000.

Morishita, Sadao: *See—*
Matsushita, Toshihiko; and Morishita, Sadao, 4,520,378, Cl. 346-209.000.

Morita, Yasuyuki: *See—*
Oda, Hiroyuki; Morita, Yasuyuki; and Nagao, Akihito, 4,519,350, Cl. 123-308.000.

Moriyama, Kazuhiro: *See—*
Sano, Tetsuo; Orita, Susumu; Yamazaki, Masaya; and Moriyama, Kazuhiro, 4,519,214, Cl. 62-156.000.

Moriyama, Noboru: *See—*
Fukumoto, Yasuhisa; and Moriyama, Noboru, 4,519,920, Cl. 210-701.000.

Morley, Peter; and Little, Peter J., to U.S. Philips Corporation. Spectrophotometer having wavelength selecting structure. 4,519,706, Cl. 356-319.000.

Morrison, David A.: *See—*
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., 4,519,689, Cl. 354-304.000.

Morrow, Robert J. P., to Spetra-Physics, Inc. Sighting cap for rotating laser beam transmitter. 4,519,705, Cl. 356-138.000.

Morton Thiokol Inc.: *See—*
Hamel, Roger G.; and Poulin, Susan B., 4,520,137, Cl. 521-79.000.

Motorola, Inc.: *See—*
Berg, Daniel T., 4,520,475, Cl. 370-24.000.
Campbell, Jules D., Jr., 4,520,347, Cl. 340-347.0DD.
Sood, Lal C., 4,520,465, Cl. 365-203.000.
Vilmur, Richard J., 4,520,474, Cl. 370-24.000.

Mott, George E.; and Levert, Frederick J., Jr., to Texaco Inc. Offshore structure incorporating a conductor deflecting system. 4,519,725, Cl. 405-195.000.

Moutonnier, Claude: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,520,193, Cl. 544-016.000.

Moynihan, John T., to American Newspaper Publishers Association. Offset printing ink. 4,519,841, Cl. 106-27.000.

Muckley, James J.: *See—*
Lindstrom, Gerald D.; Eckhart, Clifford F.; Farthing, George A., Jr.; Muckley, James J.; and Taylor, Brian E., 4,519,322, Cl. 110-264.000.

Mukai, Takamitsu: *See—*
Nakayama, Shozo; Mukai, Takamitsu; Ohno, Makoto; and Inagaki, Mitsukane, 4,519,119, Cl. 29-156.50R.

Mularie, William M.: *See—*
Piotrowski, Chester; Bendson, Steven A.; Loeding, Neil W.; and Mularie, William M., 4,520,413, Cl. 360-113.000.

Mulhaupt, Bruno: *See—*
Oertle, Jakob; and Mulhaupt, Bruno, 4,519,899, Cl. 208-179.000.

Mullan, Noel A.: *See—*
Newsome, Peter M.; and Mullan, Noel A., 4,520,014, Cl. 424-153.000.

Muller, Christina: *See—*
Fuchs, Wilfried; Richter, Horst; Kober, Roland; Kaufmann, Vendelin; and Muller, Christina, 4,519,997, Cl. 423-265.000.

Muller, Hans-Jurgen; and Krines, Hans-Gebhard, to Vickers, Incorporated. Valve device, especially for die casting machines. 4,519,572, Cl. 251-29.000.

Muller, Hans K.: *See—*
Hocker, Jurgen; Muller, Hans K.; and Broich, Bruno, 4,519,939, Cl. 252-500.000.

Muller, Harald: *See—*
Seifert, Dieter; Muller, Harald; Muller, Lothar; Pestel, Karl; and Geissler, Helmut, 4,519,224, Cl. 69-30.000.

Muller, Klaus-Rainer, to Kernforschungszentrum Karlsruhe GmbH. High frequency amplifier. 4,520,293, Cl. 315-5.250.

Muller, Lothar: *See—*
Seifert, Dieter; Muller, Harald; Muller, Lothar; Pestel, Karl; and Geissler, Helmut, 4,519,224, Cl. 69-30.000.

Munakata, Eiko: *See—*
Komatsubara, Yoshiaki; Ide, Kyozoh; and Munakata, Eiko, 4,519,678, Cl. 350-338.000.

Mund, Heinz: *See—*
Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Schmitz, Alfred; and Mund, Heinz, 4,519,167, Cl. 51-165.770.

Murai, Kazuo; and Hasegawa, Yutaka, to Ricoh Company, Ltd. Image density control method for electrophotography. 4,519,695, Cl. 355-14.00R.

Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, to Takenaka Komuten Co., Ltd.; and Kyokuto Kaihatsu Kogyo CO., Ltd. Apparatus for horizontally casting concrete. 4,519,768, Cl. 425-456.000.

Murakami, Fumikazu, to Kabushiki Kaisha Daini Seikosha. Electrodynamic speaker. 4,520,237, Cl. 179-115.5ES.

Murakami, Hiroyasu: *See—*
Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, 4,519,685, Cl. 354-154.000.

Murakami, Kunio, to Unitika Ltd. Stretched fluorine type film and method for manufacture thereof. 4,519,969, Cl. 264-210.700.

Murakami, Terukiyo, to Nissan Motor Company, Limited. Accelerator pedal control system for automotive vehicle. 4,519,360, Cl. 123-399.000.

Murakami, Terukiyo, to Nissan Motor Company, Limited. Throttle control system for automotive vehicle. 4,519,361, Cl. 123-399.000.

Murakami, Yoshihiro; and Hosoya, Nobukazu, to Sanyo Electric Co. Ltd. Amplitude modulation circuit having stable modulation characteristics. 4,520,328, Cl. 332-31.00T.

Murakoshi, Makoto, to Fuji Photo Film Co., Ltd. Endoscope with signal transmission system and method of operating same. 4,519,391, Cl. 128-303.150.

Muranaka, Akio: *See—*
Kamiya, Tadashi; Kawasaki, Kazuhiro; and Muranaka, Akio, 4,519,099, Cl. 2-424.000.

Murase, Shigemitsu, to Unitika Limited. Finish composition for polyester fiber for rubber reinforcement. 4,520,050, Cl. 427-381.000.

Murata, Shinji: *See—*
Takeda, Hiroaki; Tanaka, Kano; and Murata, Shinji, 4,519,697, Cl. 355-14.00R.

Murayama, Kosho: *See—*
Hikosaka, Shinichi; Murayama, Kosho; Fukuura, Shinichi; and Yanase, Takaomi, 4,519,906, Cl. 210-223.000.

Murayama, Masayoshi: *See—*
Otake, Masayuki; Murayama, Masayoshi; and Kawaragi, Yuji, 4,520,127, Cl. 502-209.000.

Murphy, David A.; and Spellar, Peter C., to Frick Company. Microprocessor control of compression ratio at full load in a helical screw rotary compressor responsive to compressor drive motor current. 4,519,748, Cl. 417-45.000.

Murphy, Richard D.; and Sokulsky, Marvin N., to Ford Motor Compny. Adjustable mounting for steerable wheels. 4,519,626, Cl. 280-661.000.

Murtha, R. Michael. Concentrating solar beam collector. 4,519,384, Cl. 126-438.000.

Murtha, Timothy P. Hydrogenation catalyst. 4,520,129, Cl. 502-222.000.

Mussiger, Klaus: *See—*
Kannegiesser, Martin; Mussiger, Klaus; and Dreischmeier, Wilfried, 4,519,222, Cl. 68-5.00C.

Myers, Roland. Oscillator having manual and automatic frequency control. 4,520,327, Cl. 331-177.00R.

N.C.A. Co., Ltd.: *See—*
Adachi, Shoichi, 4,519,595, Cl. 270-31.000.

Naan Mechanical Works: *See—*
Gorney, Moshe; and Dinur, Eldad, 4,519,546, Cl. 239-542.000.

Nacht, Sergio: *See—*
Dines, Allen I.; Yeung, David; and Nacht, Sergio, 4,520,133, Cl. 514-568.000.

Nadherny, Rudolph E., to Ireco, Inc. Adjustable support assembly. 4,519,564, Cl. 248-58.000.

Nagai, Masaru: *See—*
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, 4,519,691, Cl. 354-400.000.

Nagamoto, Mitsuki, to Matsushita Electric Works, Ltd.; and SDS-Elektro GmbH. M.B.B. type contact arrangement for an electromagnetic relay. 4,520,333, Cl. 335-129.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Sprocket for a bicycle. 4,519,791, Cl. 474-152.000.

Nagao, Akihito: *See—*
Oda, Hiroyuki; Morita, Yasuyuki; and Nagao, Akihito, 4,519,350, Cl. 123-308.000.

Nagao, Masakazu: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Nagaoka, Mitsuru; Oda, Kazuya; and Sumida, Shizuo, to Mazda Motor Corporation. Multiple clutch transmission having gear control device. 4,519,484, Cl. 192-3.580.

Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, to Nitto Boseki Co. Ltd. Method for measuring thrombin. 4,520,100, Cl. 435-13.000.

Nagase, Hidenobu; Suzuki, Shigeru; and Shimada, Shinichi, to Honda Giken Kogyo Kabushiki Kaisha. Mounting device for fuel injection nozzles for internal combustion engines. 4,519,371, Cl. 123-470.000.

Nagatomi, Kazuyuki: *See—*
Morikawa, Kenichi; Nagatomi, Kazuyuki; and Katanuma, Mitsuo, 4,520,235, Cl. 179-99.0LS.

Naito, Takayuki: *See—*
Hoshi, Hideaki; Okumura, Jun; Naito, Takayuki; Abe, Yoshio; and Aburaki, Shimpei, 4,520,022, Cl. 514-200.000.

Nakabayashi, Norio: *See—*
Seki, Yasutomo; Akiyama, Toshio; Nakabayashi, Norio; and Iizuka, Yutaka, 4,519,686, Cl. 354-200.000.

Nakagawa, Hideaki: *See—*
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.

Nakajima, Kaoru; and Miyai, Seiichi, to Sony Corporation. Magnetic recording medium. 4,520,079, Cl. 428-694.000.

Nakajima, Toshio: *See—*
Noda, Yuzuru; and Nakajima, Toshio, 4,520,071, Cl. 428-402.000.

Nakamura, Akio: *See—*
Shiino, Mitsuo; and Nakamura, Akio, 4,519,659, Cl. 339-59.00M.

Nakamura, Akiyoshi: *See—*
Ebisawa, Masuo; Kawase, Akio; and Nakamura, Akiyoshi, 4,519,436, Cl. 164-120.000.

Nakamura, Koki: *See—*
Akimura, Yoshitaka; Mifune, Hiroyuki; and Nakamura, Koki, 4,520,099, Cl. 430-613.000.

Nakamuraya Co., Ltd.: *See—*
Ishii, Mikio; Iiyama, Kazunobu; and Yazaki, Tomoyoshi, 4,520,034, Cl. 426-96.000.

Nakane, Hiroshi: *See—*
Todokoro, Shigeru; Nakane, Hiroshi; and Maeda, Satoru, 4,520,469, Cl. 369-44.000.

Nakanishi, Kiyoshi; and Okumura, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Helically-shaped intake port of an internal combustion engine. 4,519,346, Cl. 123-188.00M.

Nakanishi, Takashi, to Kao Corporation. Method and apparatus for coating. 4,520,049, Cl. 427-356.000.

Nakanishi, Yasuo; Sakamoto, Kazunori; Ando, Giichi; and Watanabe, Teruoki, to Honda Giken Kogyo Kabushiki Kaisha. Process and apparatus for heat treatment of steel material such as of soft steel or the like. 4,519,854, Cl. 148-127.000.

Nakao, Masasi: *See—*
Ishido, Takao; Nakao, Masasi; Honya, Takao; and Mizuno, Yukio, 4,519,424, Cl. 139-91.000.

Nakatsugawa, Kenji; and Itaya, Hiroshi, to Anritsu Electric Company Limited. Phase difference detector with phase inversion of one input signal when phase difference is small. 4,520,321, Cl. 328-133.000.

Nakatsuji, Tadao: *See—*
Abe, Kazunobu; and Nakatsuji, Tadao, 4,520,124, Cl. 502-159.000.

Nakayama, Kazuaki, to Pioneer Electronic Corporation. Emitter follower type SEPP circuit. 4,520,323, Cl. 330-268.000.

Nakayama, Shozo; Mukai, Takamitsu; Ohno, Makoto; and Inagaki, Mitsukane, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of manufacturing a piston for a swash plate type compressor. 4,519,119, Cl. 29-156.50R.

Nambu, Hajime: *See—*
Yamamoto, Katsuyoshi; Mizukami, Haruo; and Nambu, Hajime, 4,520,505, Cl. 382-55.000.

Namiki, Yasuomi: *See—*
Sasaki, Akihiko; Arai, Kouji; Takashi, Takano; and Namiki, Yasuomi, 4,520,405, Cl. 360-10.300.

Namikoshi, Hajime, to Daicel Chemical Industries Ltd. Carboxyalkyl acetyl celluloses, their salts and a process for the preparation of them. 4,520,192, Cl. 536-66.000.

Nara, Seietsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Sorter with automatic discharging unit. 4,520,447, Cl. 364-478.000.

Narita, Hitoshi: *See—*
Oshima, Masanao; Narita, Hitoshi; Yashima, Nobuyoshi; and Tabuchi, Hiroshi, 4,519,728, Cl. 405-224.000.

Naruo, Kyoichi: *See—*
Yamamoto, Nobuyuki; Nishikawa, Yasuo; Naruo, Kyoichi; and Okita, Tsutomu, 4,520,070, Cl. 428-336.000.

Naruse, Fumio, to Nippon Gakki Seizo Kabushiki Kaisha. Output jack for electric guitar. 4,519,287, Cl. 84-1.160.

National Can Corporation: *See—*
Traczyk, Edward S.; and Shulski, Michael M., 4,519,232, Cl. 72-133.000.

National Distillers and Chemical Corporation: *See—*
Schnur, Nicholas E.; and Beimesch, Bruce J., 4,519,932, Cl. 252-73.000.

National Research Development Corporation: *See—*
Hill, Roland J.; and Acarnley, Paul P., 4,520,302, Cl. 318-696.000.
Mansfield, Robert J.; Payne, David N.; and Sasaki, Issei, 4,519,704, Cl. 356-73.100.

National Semiconductor Corporation: *See—*
Jett, William B., Jr.; and Wilcox, Milton E., 4,520,324, Cl. 330-285.000.

National-Standard Company: *See—*
Oppenhuisen, Fred H.; and Allee, Frank O., 4,519,192, Cl. 56-298.000.

National Starch and Chemical Corporation: *See—*
Anderson, Stephen P., 4,519,941, Cl. 252-514.000.

National Super Service Company, The: *See—*
Bevington, John F.; Meeker, Paul; and Savidge, Michael, 4,519,112, Cl. 15-326.000.

Natmar, Inc.: *See—*
Clay, Bobby J., 4,519,857, Cl. 156-64.000.

Nause, Earl E.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.

Nausedas, Joseph A., to Union Carbide Corporation. Wicket bag packet. 4,519,504, Cl. 206-554.000.

Nawa, Hiroshi: *See—*
Terada, Takami; Nawa, Hiroshi; and Kawamura, Reiki, 4,519,650, Cl. 297-452.000.

NCR Canada Ltd - NCR Canada Ltee: *See—*
Enter, Rudolf; and Laverty, Michael P., 4,520,270, Cl. 250-560.000.

NCR Corporation: *See—*
Hallauer, John J., 4,520,464, Cl. 365-189.000.

NEC Corporation: *See—*
Ichimura, Yoshiaki; Noda, Atsuhito; Tokaichi, Tetsuro; and Umesato, Shoji, 4,519,660, Cl. 339-75.00M.
Kawai, Kiyoaki, 4,520,480, Cl. 370-100.000.
Morikawa, Kenichi; Nagatomi, Kazuyuki; and Katanuma, Mitsuo, 4,520,235, Cl. 179-99.0LS.

Nees, Friedbert: *See—*
Baer, Karl; Bassler, Peter; Duembgen, Gerd; Fouquet, Gerd; Krabetz, Richard; Merger, Franz; and Nees, Friedbert, 4,520,125, Cl. 502-170.000.

Nelle, Gunther, to Dr. Johannes Heidenhain GmbH. Photoelectric incremental length or angle measuring device. 4,519,709, Cl. 356-373.000.

Nelson, Thomas A., to Hadady Corporation. Brake lever retaining bracket. 4,519,480, Cl. 188-52.000.

Nemoto, Shigeru: *See—*
Kobayashi, Minoru; and Nemoto, Shigeru, 4,520,415, Cl. 360-137.000.

Neptune Research, Inc.: *See—*
Lazzara, Richard J., 4,519,856, Cl. 156-49.000.

Nestec, S.A.: *See—*
Tuot, James, 4,520,033, Cl. 426-96.000.

Neuendorf, Cristoph: *See—*
Spittka, Horst; Eckardt, Rudolf; and Neuendorf, Cristoph, 4,519,829, Cl. 65-114.000.

Neumann, Eberhard H., to American Hoechst Corporation. Method of manufacture of plastic article possessing a wet appearance. 4,519,975, Cl. 264-526.000.

Neuzil, Richard W.: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,519,952, Cl. 260-419.000.

Nevamar Corporation: *See—*
Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., 4,520,062, Cl. 428-148.000.

Nevens, Charles J.: *See—*
Hitchcock, James R., Jr.; and Nevens, Charles J., 4,519,795, Cl. 604-289.000.

Neville, David M., Jr.; and Youle, Richard J., to United States of America, Health and Human Services. Inactivating protein synthesis by incubating anti-Thy 1.1-ricin a chain monoclonal antibody hybrids with target protein cells. 4,520,011, Cl. 424-85.000.

Neville, David M., Jr.; and Youle, Richard J., to United States of America, Health and Human Services. Treatment of graft versus host disease using a mixture of T-lymphocyte specific monoclonal antibody: ricin conjugates. 4,520,226, Cl. 424-85.000.

Newman, Arnold. Plastic bobbin. 4,519,557, Cl. 242-118.310.

Newman, Jonathan G.: *See—*
Dufour, Charles H.; and Newman, Jonathan G., 4,520,454, Cl. 364-900.000.

Newsome, Peter M.; and Mullan, Noel A., to Beecham Group p.l.c. Treatment of diarrhoea. 4,520,014, Cl. 424-153.000.

Nezat, Jerry W., to Creative Research and Development, Inc. Topical preparation and method for using same in treating skin disorders in animals. 4,520,013, Cl. 424-141.000.

NGK Insulators, Ltd.: *See—*
Matsuzawa, Soichiro; and Mase, Syunzo, 4,519,870, Cl. 156-603.000.

Niagara Blower Company: *See—*
Kals, Walter, 4,519,450, Cl. 165-114.000.

Nicholls, Lawrence G., to Lucas Industries Limited. Suspension strut for vehicles. 4,519,481, Cl. 188-322.170.

Nichols, Randy P., to FMC Corporation. Subsea well casing tieback connector. 4,519,633, Cl. 285-3.000.

Nickson Industries, Inc.: *See—*
Florian, Roy S., 4,519,639, Cl. 285-415.000.

Niigata Engineering Co., Ltd.: *See—*
Takahashi, Susumu, 4,519,411, Cl. 137-68.00R.

Nilsson, Karl I., to Klintland. Device for collecting solid or fluid waste. 4,519,104, Cl. 4-484.000.

Nilsson, Sten E.; and Elfverson, Sven E., to Saab-Scania Aktiebolag. Arrangement for distributing ventilation air in vehicles. 4,519,302, Cl. 98-2.080.

Nippon Electric Co., Ltd.: *See—*
Okumura, Kohichiro, 4,520,463, Cl. 365-189.000.
Sekiguchi, Toru; and Sanguu, Isao, 4,520,410, Cl. 360-77.000.
Takahashi, Hiroshi, 4,520,398, Cl. 358-183.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Naruse, Fumio, 4,519,287, Cl. 84-1.160.

Nippon Kogaku K.K.: *See—*
Hagyuda, Nobuyoshi; Hasegawa, Hiroshi; Iida, Yoshikazu; and Maida, Osamu, 4,519,683, Cl. 354-127.110.
Seki, Yasutomo; Akiyama, Toshio; Nakabayashi, Norio; and Iizuka, Yutaka, 4,519,686, Cl. 354-200.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Hara, Tomihiro; Adaniya, Takeshi; and Tonouchi, Akira, 4,519,878, Cl. 204-28.000.

Nippon Oil Co. Ltd.: *See—*
Sakata, Ko; and Imai, Hirosuke, 4,520,178, Cl. 526-200.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Tukamoto, Masahiro, 4,519,555, Cl. 242-107.200.

Nippon Soken, Inc.: *See—*
Iwamoto, Kenji; Moriguchi, Kouichi; and Matusiro, Ryuiti, 4,519,210, Cl. 60-602.000.
Kitagawa, Junji; Akita, Shigeyuki; and Kitamura, Sotoo, 4,520,359, Cl. 340-870.190.

Nippondenso Co., Ltd.: *See—*
Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, 4,519,362, Cl. 123-414.000.
Ariyoshi, Hiromi; and Yokomori, Iwao, 4,520,420, Cl. 361-154.000.
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.

Nishijima, Takayoshi: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,274, Cl. 74-866.000.
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuki; and Hatayama, Keiji, 4,519,275, Cl. 74-866.000.

Nishikawa, Yasuo: *See—*
Yamamoto, Nobuyuki; Nishikawa, Yasuo; Naruo, Kyoichi; and Okita, Tsutomu, 4,520,070, Cl. 428-336.000.

Nishimura, Nobuo: *See—*
Kimoto, Toshifumi; Itami, Teruhiko; Nishimura, Nobuo; and Saitoh, Koichi, 4,520,409, Cl. 360-59.000.

Nishimura, Yoshichika: *See—*
Hori, Yuji; Nishimura, Yoshichika; and Takahashi, Fuminobu, 4,519,923, Cl. 252-8.50C.

Nishina, Shuho: *See—*
Kawaguchi, Hiroshi; and Nishina, Shuho, 4,519,270, Cl. 74-535.000.

Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Iketani, Yukiyoshi, to Matsushita Electric Industrial Co., Ltd. Carbonaceous solid fuel. 4,519,807, Cl. 44-15.00R.

Nishiyama, Ryota: *See—*
Amano, Masahiro; Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,519,873, Cl. 162-138.000.

Nishiyama, Shinichi: *See—*
Sasaki, Hajime; and Nishiyama, Shinichi, 4,519,980, Cl. 420-474.000.

Nishizawa, Kesaji: *See—*
Matsuda, Shunsuke; Mitani, Katsuaki; Yoda, Hironori; and Nishizawa, Kesaji, 4,519,763, Cl. 425-192.00R.

Nissan Motor Company, Limited: *See—*
Ishido, Takao; Nakao, Masasi; Honya, Takao; and Mizuno, Yukio, 4,519,424, Cl. 139-91.000.
Kamijo, Ken, 4,519,652, Cl. 297-477.000.
Kubo, Hiromasa, 4,519,237, Cl. 73-23.000.
Murakami, Terukiyo, 4,519,360, Cl. 123-399.000.
Murakami, Terukiyo, 4,519,361, Cl. 123-399.000.
Oda, Masatoshi, 4,519,268, Cl. 74-473.00P.
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,519,627, Cl. 280-701.000.
Takahashi, Kotei, 4,519,267, Cl. 74-473.00R.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,519,790, Cl. 474-18.000.

Nissei Plastic Industrial Co., Ltd.: *See—*
Matsuda, Shunsuke; Mitani, Katsuaki; Yoda, Hironori; and Nishizawa, Kesaji, 4,519,763, Cl. 425-192.00R.

Nisshin Steel Co., Ltd.: *See—*
Ono, Yoshio; and Tanaka, Takashi, 4,519,337, Cl. 118-33.000.

Nitto Boseki Co. Ltd.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, 4,520,100, Cl. 435-13.000.

Nitto Electric Industrial Co., Ltd.: *See—*
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; Iko, Kazuo; and Miki, Kazuyuki, 4,520,075, Cl. 428-435.000.
Noda, Yuzuru; and Nakajima, Toshio, 4,520,071, Cl. 428-402.000.

Noda, Atsuhito: *See—*
Ichimura, Yoshiaki; Noda, Atsuhito; Tokaichi, Tetsuro; and Umesato, Shoji, 4,519,660, Cl. 339-75.00M.

Noda, Yuzuru; and Nakajima, Toshio, to Nitto Electric Industrial Co., Ltd. Spherical porous polyimide powder. 4,520,071, Cl. 428-402.000.

Nogami, Takahiro: *See—*
Hayashi, Kunihisa; and Nogami, Takahiro, 4,519,469, Cl. 180-169.000.

Nolan, Robert L., to Maxcap, Inc. Molding. 4,519,569, Cl. 249-142.000.

Nolff, Robert L., to Propane Carburetion Company, Inc. Bracket for supporting low pressure gas carburetor and components. 4,519,347, Cl. 123-195.00A.

Nomura, Etsuji: *See—*
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, 4,519,820, Cl. 55-284.000.

Nomura, Isshi, to Aisin Seiki Kabushiki Kaisha. Carburetor. 4,519,367, Cl. 123-440.000.

Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. Process for manufacturing a cartridge for purifying exhaust gas. 4,519,120, Cl. 29-157.00R.

Nonogaki, Saburo: *See—*
Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, 4,520,094, Cl. 430-144.000.

Nordica S.p.A.: *See—*
Pozzobon, Alessandro, 4,519,149, Cl. 36-121.000.

Norell, Ronald A., to Burroughs Corporation. Machine for filling via holes in an integrated circuit package with conductive ink. 4,519,760, Cl. 425-113.000.

Noren, Gerry K.; and Clifton, Mary F., to DeSoto, Inc. Polydimethylsiloxane-modified polyepoxides. 4,520,144, Cl. 523-435.000.

Norlin Industries, Inc.: *See—*
Hall, Robert J.; Hall, George R.; and Cookerly, Jack C., 4,519,286, Cl. 84-1.030.

Norris, Michael A., to United Kingdom Atomic Energy Authority. Tube-in-shell heat exchangers. 4,519,445, Cl. 165-76.000.

Norton Christensen, Inc.: *See—*
Roper, Rudolf, 4,519,574, Cl. 251-31.000.

Norton, Peter. Amplifier power stage. 4,520,438, Cl. 363-98.000.

Nose, Isamu: *See—*
Mizuno, Kaneyoshi; Nose, Isamu; and Iizuka, Hirosi, 4,520,500, Cl. 381-43.000.

Novo Industri A/S: *See—*
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,519,934, Cl. 252-174.120.

Nozaki, Masaoki: *See—*
Amano, Masahiro; Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,519,873, Cl. 162-138.000.

Nozawa, Seiichi: *See—*
Hayashi, Masahiro; Nozawa, Seiichi; and Oikawa, Takashi, 4,520,208, Cl. 549-308.000.

NRG Inc. MN: *See—*
McNair, Rhett; and Helling, James, 4,520,436, Cl. 362-366.000.

Nu-Bar Electronics: *See—*
Gauthier, Edouard A., 4,520,236, Cl. 179-107.00E.

Nubson, Richard C.: *See—*
Warwick, Dennis J.; Nubson, Richard C.; and Howes, Ronald B., Jr., 4,519,600, Cl. 271-4.000.

O. Kytola ja Kumpp. Kommandiittiyhtio : *See—*
Horttonen, Kalevi, 4,519,247, Cl. 73-198.000.

Obara, Haruki: *See—*
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, 4,520,253, Cl. 217-69.00W.

O'Boyle, Dolores; and Shonk, Phyllis, to International Playtex, Inc. Brassiere. 4,519,137, Cl. 33-17.00R.

O'Brien, Joseph P.; and Papay, Andrew G., to Edwin Cooper, Inc. Lubricating oil composition containing N-allyl amide graft copolymers. 4,519,929, Cl. 252-51.50A.

Ochiai, Hideo; Hamane, Masumi; and Kimoto, Masahiko, to Honda Giken Kogyo Kabushiki Kaisha. Cooling system for a motorcycle. 4,519,473, Cl. 180-229.000.

Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. Cephalosporins. 4,520,194, Cl. 544-22.000.

Ochsner, Rolf H., to Robertshaw Controls Company. Differential pressure operated electrical switch construction. 4,520,245, Cl. 200-82.00R.

Oda, Hiroyuki; Morita, Yasuyuki; and Nagao, Akihito, to Mazda Motor Corporation. Intake system for an internal combustion engine. 4,519,350, Cl. 123-308.000.

Oda, Kazuya: *See—*
Nagaoka, Mitsuru; Oda, Kazuya; and Sumida, Shizuo, 4,519,484, Cl. 192-3.580.

Oda, Masatoshi, to Nissan Motor Co., Ltd. Gear shift apparatus for manual transmission. 4,519,268, Cl. 74-473.00P.

O'Donnell, Timothy W.; and Olson, Daniel R., to General Electric Company. Polymerizable 3-aroyloxyphenyl carbamates and methods for their preparation and use. 4,520,074, Cl. 428-412.000.

Oertle, Jakob; and Mulhaupt, Bruno, to Sulzer-Escher Wyss Ltd. Purification of oil using a jet pump mixer. 4,519,899, Cl. 208-179.000.

Oettinger, Peter E.: *See—*
Lee, Chung H.; Fronduto, John; and Oettinger, Peter E., 4,519,876, Cl. 204-15.000.

Ogata, Hajime: *See—*
Ichida, Toshio; Kobayashi, Hideo; Ogata, Hajime; and Tsugawa, Shunichi, 4,519,879, Cl. 204-35.100.
Oguchi, Kiyoshi. Negative-type resist sensitive to ionizing radiation. 4,520,097, Cl. 430-280.000.
Ohashi, Shinichi: *See—*
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.
Ohata, Hiroyoshi: *See—*
Yodoshi, Tatsuo; Ohata, Hiroyoshi; and Inoue, Hiroshi, 4,519,638, Cl. 285-305.000.
Ohba, Hiroshi; and Horino, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet packet discharging apparatus. 4,519,523, Cl. 221-129.000.
Ohba, Masatoshi: *See—*
Sato, Ryuichi; Taniguchi, Tsutomu; and Ohba, Masatoshi, 4,520,289, Cl. 310-316.000.
Ohde, Hironori: *See—*
Fujimoto, Michitaro; Ohde, Hironori; Seki, Hirokazu; Takamatsu, Shuhei; and Sakai, Takeshi, 4,520,201, Cl. 548-342.000.
Ohkawa, Shuji: *See—*
Ishihara, Masahiro; Watanabe, Mitsuru; Ohkawa, Shuji; Taguchi, Shunichi; and Kikuchi, Itsuo, 4,520,250, Cl. 219-10.55B.
Ohkubo, Yuichi: *See—*
Watanabe, Kazuo; Ohkubo, Yuichi; Haeno, Akira; and Yokogawa, Fumihiko, 4,520,282, Cl. 307-491.000.
Ohno, Makoto: *See—*
Nakayama, Shozo; Mukai, Takamitsu; Ohno, Makoto; and Inagaki, Mitsukane, 4,519,119, Cl. 29-156.50R.
Ohshima, Eiji, to Sony Corporation. Magnetic tape recording device. 4,520,411, Cl. 360-85.000.
Ohsima, Ken: *See—*
Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, 4,520,280, Cl. 307-358.000.
Ohtani, Shinzi: *See—*
Kutsuna, Tomoharu; Ohtani, Shinzi; and Kondo, Kunimasa, 4,520,045, Cl. 427-294.000.
Ohyama, Hideo: *See—*
Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, 4,519,362, Cl. 123-414.000.
Ohyama, Kazuo; and Kitami, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. V-type internal combustion engine. 4,519,344, Cl. 123-55.0VF.
Oi, Vernon T.: *See—*
Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., 4,520,110, Cl. 436-501.000.
Oikawa, Takashi: *See—*
Hayashi, Masahiro; Nozawa, Seiichi; and Oikawa, Takashi, 4,520,208, Cl. 549-308.000.
Okabe, Akira; Urushidani, Haruo; and Kashiwahara, Katsuto, to Hitachi, Ltd. Combined plant having steam turbine and gas turbine connected by single shaft. 4,519,207, Cl. 60-39.182.
Okabe, Yoshiro. Method for producing leather fibrous tissues planted on a basic clothing sheet and sheet products produced thereby. 4,520,058, Cl. 428-90.000.
Okada, Isoji: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Okamoto & Co., Ltd.: *See—*
Hirano, Hideo, 4,519,221, Cl. 66-107.000.
Okamoto, Miyoshi: *See—*
Kato, Hiroyasu; Yagi, Kenkichi; and Okamoto, Miyoshi, 4,519,804, Cl. 8-485.000.
Okamoto, Norifumi, to Okamoto Seiki Kogyo Kabushiki Kaisha. Chuck for a machine tool. 4,519,621, Cl. 279-116.000.
Okamoto Seiki Kogyo Kabushiki Kaisha: *See—*
Okamoto, Norifumi, 4,519,621, Cl. 279-116.000.
Okamoto, Toshiro: *See—*
Kamimura, Yoshihiko; Okamoto, Toshiro; Takahashi, Naoyuki; Makihara, Hiroshi; and Oshima, Michio, 4,520,224, Cl. 585-648.000.
O'Keefe, David B.; and Miller, Robert C., to Honeywell Information Systems Inc. Display video generation system for modifying the display of character information as a function of video attributes. 4,520,356, Cl. 340-750.000.
Oki Electric Industry Co., Ltd.: *See—*
Mizuno, Kaneyoshi; Nose, Isamu; and Iizuka, Hirosi, 4,520,500, Cl. 381-43.000.
Okigawa, Etsumi: *See—*
Tanaka, Osamu; Iijima, Hiroshi; Ito, Masayoshi; and Okigawa, Etsumi, 4,519,649, Cl. 297-316.000.
Okita, Tsutomu: *See—*
Yamamoto, Nobuyuki; Nishikawa, Yasuo; Naruo, Kyoichi; and Okita, Tsutomu, 4,520,070, Cl. 428-336.000.
Oku, Narihiro: *See—*
Uematsu, Hiroaki; Aoki, Junji; and Oku, Narihiro, 4,519,890, Cl. 204-409.000.
Okumura, Jun: *See—*
Hoshi, Hideaki; Okumura, Jun; Naito, Takayuki; Abe, Yoshio; and Aburaki, Shimpei, 4,520,022, Cl. 514-200.000.
Okumura, Kohichiro, to Nippon Electric Co., Ltd. Memory circuit. 4,520,463, Cl. 365-189.000.
Okumura, Takeo: *See—*
Ando, Hiroshi; and Okumura, Takeo, 4,520,008, Cl. 424-47.000.
Okumura, Takeshi: *See—*
Nakanishi, Kiyoshi; and Okumura, Takeshi, 4,519,346, Cl. 123-188.00M.
Okuyama, Shigeaki: *See—*
Yoshida, Jituo; Okuyama, Shigeaki; and Suzuki, Hiroshi, 4,519,193, Cl. 56-328.00R.
Olapinski, Hans: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,519,359, Cl. 123-668.000.
Olas, Richard J., to KoMac Enterprises, Inc. Magnetic disc storage container. 4,519,893, Cl. 206-311.000.
Oleck, Stephen M.: *See—*
Angevine, Philip J.; Oleck, Stephen M.; Wilson, Robert C., Jr.; and Mizrahi, Sadi, 4,519,900, Cl. 208-254.00H.
Oliveau, Olivier; and Blanc, Claude, to Societe Nationale Elf Aquitaine. Enrichment in hydrogen sulphide of gases containing it. 4,519,991, Cl. 423-220.000.
Olson, Archie H.: *See—*
Johnson, Warren K.; Goettsch, Michael R.; and Olson, Archie H., 4,519,714, Cl. 366-285.000.
Olson, Daniel R.: *See—*
O'Donnell, Timothy W.; and Olson, Daniel R., 4,520,074, Cl. 428-412.000.
Olympus Optical Co. Ltd.: *See—*
Kobayashi, Minoru; and Nemoto, Shigeru, 4,520,415, Cl. 360-137.000.
Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, 4,520,280, Cl. 307-358.000.
Omco Inc.: *See—*
Simmler, Lawrence W.; and Carlson, John H., 4,519,225, Cl. 70-34.000.
Omi, Junji: *See—*
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,520,340, Cl. 338-195.000.
Omichi, Namio. Packing and displaying carton, and blank plate therefor. 4,519,538, Cl. 229-27.000.
Omnicom Engineering: *See—*
Smith, James W., 4,520,233, Cl. 179-1.50R.
Omron Tateisi Electronics Co.: *See—*
Sato, Ryuichi; Taniguchi, Tsutomu; and Ohba, Masatoshi, 4,520,289, Cl. 310-316.000.
O'Neil, Michael A.: *See—*
Tomlin, Jerry B.; Levey, Gustave S.; and O'Neil, Michael A., 4,519,636, Cl. 285-95.000.
O'Neill, Nelson L.: *See—*
Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., 4,520,062, Cl. 428-148.000.
Ono, Motoji; Hirao, Masao; and Fukushima, Shigehisa, to Kirin Beer Kabushiki Kaisha. Device for recovering contents in containers such as beer bottles. 4,519,427, Cl. 141-65.000.
Ono, Yoshio; and Tanaka, Takashi, to Nisshin Steel Co., Ltd. Apparatus for continuous hot dipping of metal strip. 4,519,337, Cl. 118-33.000.
Onozawa, Kazuyoshi: *See—*
Yokoe, Sadao; Abe, Seimei; Wakata, Shoichi; Endou, Satosi; and Onozawa, Kazuyoshi, 4,519,549, Cl. 239-703.000.
Oppelt, Arnulf: *See—*
Loeffler, Wilfried; Oppelt, Arnulf; and Siebold, Horst, 4,520,315, Cl. 324-309.000.
Oppenhuisen, Fred H.; and Allee, Frank O., to National-Standard Company. Hold-down sickle guard. 4,519,192, Cl. 56-298.000.
Orbital Engine Company Proprietary Limited: *See—*
Sarich, Tony R., 4,519,356, Cl. 123-533.000.
Orita, Susumu: *See—*
Sano, Tetsuo; Orita, Susumu; Yamazaki, Masaya; and Moriyama, Kazuhiro, 4,519,214, Cl. 62-156.000.
ORMIG S.p.A.: *See—*
Testore, Guido, 4,519,741, Cl. 414-738.000.
Oronzio de Nora, S.A.: *See—*
de Nora, Oronzio; and Bianchi, Giuseppe, 4,519,886, Cl. 204-196.000.
Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
Pellegri, Alberto; and Spaziante, Placido M., 4,519,889, Cl. 204-275.000.
Orsborn, Jesse H.: *See—*
Fachini, Robert M.; Orsborn, Jesse H.; and Barrett, Monroe C., 4,519,189, Cl. 56-16.600.
Orthman, Henry K., to Orthman Manufacturing, Inc. Tractor front end hitch. 4,519,623, Cl. 280-461.00A.
Orthman Manufacturing, Inc.: *See—*
Orthman, Henry K., 4,519,623, Cl. 280-461.00A.
Orthopedic Equipment Co. Inc.: *See—*
Wills, Robert P.; and Brooker, Andrew F., 4,519,100, Cl. 3-1.900.
Orton, Gregory A.: *See—*
Latimer, Stanley M.; and Orton, Gregory A., 4,520,414, Cl. 360-125.000.

Osaka, Norihisa: *See—*
Kamada, Kazumasa; Osaka, Norihisa; and Kaneda, Masahiro, 4,520,166, Cl. 525-85.000.
Osaka Oxygen Industries Ltd.: *See—*
Hagiwara, Zenzi; Yamamoto, Tatuo; and Kurozumi, Hiroshi, 4,519,813, Cl. 55-26.000.
Oshima, Masanao; Narita, Hitoshi; Yashima, Nobuyoshi; and Tabuchi, Hiroshi, to Mitsui Engineering and Shipbuilding Company, Ltd. Floating offshore structure. 4,519,728, Cl. 405-224.000.
Oshima, Michio: *See—*
Kamimura, Yoshihiko; Okamoto, Toshiro; Takahashi, Naoyuki; Makihara, Hiroshi; and Oshima, Michio, 4,520,224, Cl. 585-648.000.
Oshima, Noboru: *See—*
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.
Osterreichische Draukraftwerke Aktiengesellschaft: *See—*
Schrofelbauer, Herbert; and Staudinger, Gernot, 4,519,995, Cl. 423-244.000.
Ostrenko, Nikolai S.: *See—*
Logvinov, Anatoly A.; Milov, Vladimir N.; Ostrenko, Nikolai S.; Demyanovich, Nikolai A.; Antonov, Vladimir A.; Abdulin, Fen Z.; and Berdiev, Oleg S., 4,519,437, Cl. 164-284.000.
Otake, Masayuki; Murayama, Masayoshi; and Kawaragi, Yuji, to Mitsubishi Chemical Industries Ltd. Oxidation catalyst composition. 4,520,127, Cl. 502-209.000.
Otis Engineering Corporation: *See—*
Gray, Floyd R.; and Rood, Dennis D., 4,519,451, Cl. 166-278.000.
Ott, Karl-Heinz: *See—*
Zabrocki, Karl; Ott, Karl-Heinz; Schmidt, Adolf; and Pischtschan, Alfred, 4,520,165, Cl. 525-84.000.
Ott, William E.; and Krieg, Edwin A., to Allied Corporation. Wedge actuated drum brake assembly. 4,519,482, Cl. 188-343.000.
Ottenhof, Henricus A. W. E. M., to Stichting Nederlands Instituut Voor Zuivelonderzoek. Process for the preparation of a precipitate of casein and whey protein. 4,519,945, Cl. 260-119.000.
Ou, Di-Yi, to UOP Inc. Separation of sucrose from molasses. 4,519,845, Cl. 127-46.200.
Outboard Marine Corporation: *See—*
McAuliffe, Robert E., 4,520,353, Cl. 340-636.000.
Outokumpu Oy: *See—*
Sipila, Heikki; Kiuru, Erkki; and Vaijarvi, Seppo, 4,520,267, Cl. 250-358.100.
Ovshinsky, Stanford R., to Sovonics Solar Systems. Compositionally varied materials and method for synthesizing the materials. 4,520,039, Cl. 427-35.000.
Ovshinsky, Stanford R.; and Madan, Arun, to Sovonics Solar Systems. Amorphous semiconductors equivalent to crystalline semiconductors. 4,520,380, Cl. 357-2.000.
Ovshinsky, Stanford R.: *See—*
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., 4,519,339, Cl. 118-718.000.
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., to Mobil Oil Corporation. Catalytic conversion of olefinic Fischer-Tropsch light oil to heavier hydrocarbons. 4,520,215, Cl. 585-255.000.
Owens-Illinois, Inc.: *See—*
Amos, Charles W., 4,519,516, Cl. 215-252.000.
Uhlig, Albert R., 4,519,976, Cl. 264-540.000.
Oyama, Kazuo: *See—*
Miyakoshi, Shinichi; and Oyama, Kazuo, 4,519,471, Cl. 180-219.000.
Oyobe, Kazuo; Nomura, Etsuji; Matsui, Kazuma; Fukutani, Masanori; Ito, Kazuyuki; Miwa, Naoto; and Ito, Keiji, to Nippondenso Co., Ltd. Fitter apparatus for purifying exhaust gases. 4,519,820, Cl. 55-284.000.
Ozawa, Minoru: *See—*
Suzuki, Toshinori; and Ozawa, Minoru, 4,520,406, Cl. 360-14.200.
Ozeki, Mineo: *See—*
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,520,443, Cl. 364-424.000.
Paccar Inc.: *See—*
Saunders, James W., 4,519,467, Cl. 180-68.400.
Page, Frank C., III: *See—*
Wiles, Laurence E.; and Page, Frank C., III, 4,519,518, Cl. 215-331.000.
Pagels, Louis T.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,519,513, Cl. 215-32.000.
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., to Stauffer Chemical Co. Herbicide compositions. 4,519,833, Cl. 71-100.000.
Palm, Bengt N. J.: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,519,359, Cl. 123-668.000.
Palus, Wilfried: *See—*
Schmitt, Hans-Georg; Palus, Wilfried; and Genth, Hermann, 4,520,023, Cl. 514-241.000.
Pancook, James J.; and Ulbing, Otmar M., to Columbus McKinnon Corporation. Pendant type electrical switching device. 4,520,247, Cl. 200-298.000.
Pando, Bernard: *See—*
Grima, Jean-Claude; Pando, Bernard; and David, Guy A. J., 4,520,479, Cl. 370-84.000.
Panduit Corp.: *See—*
Caveney, Jack E.; Moody, Roy A.; Bulanda, John J.; and Wende, Russell E., 4,519,129, Cl. 29-749.000.
Panique, Kenneth: *See—*
Buckley, Galen L.; and Panique, Kenneth, 4,519,674, Cl. 350-102.000.
Pansanel, Jean C., to AMP Incorporated. Method of, and apparatus for, terminating a conductor of a flat flexible cable. 4,519,133, Cl. 29-863.000.
Papay, Andrew G.: *See—*
O'Brien, Joseph P.; and Papay, Andrew G., 4,519,929, Cl. 252-51.50A.
Paper Converting Machine Company: *See—*
Johnson, Gary E.; and Van Egeren, Andrew M., 4,519,596, Cl. 270-32.000.
Papir, Yoram S., to Chevron Research Company. Electroactive polymers. 4,519,937, Cl. 252-500.000.
Papir, Yoram S., to Chevron Research Company. Electroactive polymers. 4,519,938, Cl. 252-500.000.
Papp nee Behr, Agnes: *See—*
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko, 4,520,018, Cl. 514-469.000.
Papyrus Kopparfors AB: *See—*
Ericsson, Thomas; Gylfe, Sten; and Hedblom, Mats-Olov, 4,519,918, Cl. 210-680.000.
Paredes, Candelario; and Stevens, William D., to Forney Engineering Company. Burner monitoring system. 4,520,390, Cl. 358-108.000.
Parekh, Girish G.: *See—*
Blank, Werner J.; and Parekh, Girish G., 4,520,167, Cl. 525-131.000.
Parikh, Kamal I.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,520,478, Cl. 370-63.000.
Parish, Mark G.; and Rulseh, Roy M., to Aqua-Chem, Inc. Dual cannister gas housing. 4,519,773, Cl. 431-176.000.
Parker, Eli H. Blade height calibration device. 4,519,142, Cl. 33-185.00R.
Parkinson, Dean B.; and Bergren, Orton D., to Computer Identification Systems, Inc. Identification card with heat reactive coating. 4,519,632, Cl. 283-75.000.
Parma Corporation: *See—*
Rogers, Walter C., Jr., 4,519,647, Cl. 297-85.000.
Parody, Ross. Method and means of bagging loose trash. 4,519,183, Cl. 53-461.000.
Paschke, Werner: *See—*
Kubach, Hans; Kienzle, Wolfgang; Paschke, Werner; and Sauer, Rudolf, 4,519,547, Cl. 239-585.000.
Pastor, Ricardo C.; and Chew, Remedios K., to Hughes Aircraft Company. Process for preparation of ultrapure thorium fluoride. 4,519,986, Cl. 423-19.000.
Paul Associates, Inc.: *See—*
Paul, Stanley M., 4,519,581, Cl. 251-268.000.
Paul, Stanley M., to Paul Associates, Inc. Faucet handle. 4,519,581, Cl. 251-268.000.
Paulet, Jacques: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,519,983, Cl. 422-78.000.
Pautz, Anton: *See—*
Spinner, Georg; Lang, Manfred; and Pautz, Anton, 4,519,670, Cl. 350-96.150.
Payne, David N.: *See—*
Mansfield, Robert J.; Payne, David N.; and Sasaki, Issei, 4,519,704, Cl. 356-73.100.
Pearce, Jeffrey B.: *See—*
Chan, Luen C.; Beckwith, Paul B.; and Pearce, Jeffrey B., 4,520,506, Cl. 382-56.000.
Pearson, Alan; and The, Paul J., to Aluminum Company of America. Removal of organic contaminants from bauxite and other ores. 4,519,989, Cl. 423-121.000.
Peash, Douglas E.: *See—*
Carpenter, Paul E.; Fisher, Charles B.; and Peash, Douglas E., 4,520,424, Cl. 361-383.000.
Peckels, Jean; and Schaaf, Antoine, to Arbed S.A. Apparatus for regulating the delivery of solid materials by a blowing lance. 4,519,587, Cl. 266-80.000.
Peiffer, Dennis G.; Lundberg, Robert D.; Duvdevani, Ilan; and Thaler, Warren A., to Exxon Research & Engineering Co. Nonaqueous solvent soluble polyampholytes-viscosifier and shear thickening additive. 4,520,158, Cl. 524-481.000.
Pellegri, Alberto; and Spaziante, Placido M., to Oronzio deNora Impianti Elettrochimici S.p.A. Halogenation apparatus. 4,519,889, Cl. 204-275.000.
Penn-Med Technology, Inc.: *See—*
Lieb, Nathaniel H., 4,519,779, Cl. 433-18.000.
Pennwalt Corporation: *See—*
Kinsolving, C. Richard, 4,520,132, Cl. 514-560.000.
Pentek Corporation: *See—*
Dyer, Thomas A., 4,519,493, Cl. 198-414.000.
Perchak, William C., to Plastofilm Industries, Inc. Display/storage package and file therefor. 4,519,500, Cl. 206-312.000.
Perlegos, George: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,519,849, Cl. 148-1.500.
Perlmutter, Michael S.; and Braun, Kenneth H., to Raytheon Company. Mode discrimination apparatus. 4,519,708, Cl. 356-350.000.
PermaGrain Products, Inc.: *See—*
Witt, Alvin E., 4,519,174, Cl. 52-389.000.

Perry, Charles H.; and Shaw, Robert R., to International Business Machines Corporation. Method for providing pinhole free dielectric layers. 4,519,851, Cl. 148-6.310.

Perry, E. Robert: *See—*
Rabinowitz, Mario; and Perry, E. Robert, 4,520,078, Cl. 428-636.000.

Perry, John S., to United States of America, Air Force. Attachment method-ceramic radome to metal body. 4,520,364, Cl. 343-872.000.

Perry, Wendell L.: *See—*
Buonomo, Joseph P.; and Perry, Wendell L., 4,520,440, Cl. 364-200.000.

Persson, Jan O.: *See—*
Skowronek, Jerzy; and Persson, Jan O., 4,520,052, Cl. 427-443.100.

Pesa, Fred A.: *See—*
Burrington, James D.; Pesa, Fred A.; Maher, Elizabeth A.; and Grasselli, Robert K., 4,519,954, Cl. 260-465.80D.

Pesche, Bernard. Method for manufacturing a product for destroying harmful animals. 4,520,015, Cl. 424-153.000.

Pestel, Karl: *See—*
Seifert, Dieter; Muller, Harald; Muller, Lothar; Pestel, Karl; and Geissler, Helmut, 4,519,224, Cl. 69-30.000.

Peterman, Earl J., to Metrotech, Inc. Apparatus including a pair of automatic gain controlled amplifiers for determining the lateral direction to a concealed conductive object. 4,520,317, Cl. 324-326.000.

Petermann, Harald; and Loesch, Karl G., to Georg Muller Kugellagen Fabrik K.G. Workpiece handling apparatus for grinding machines. 4,519,166, Cl. 51-103.0WH.

Petersson, Stig A.; and Waara, Ulf C., to Boliden Aktiebolag. Method of manufacturing sulphur-trioxide for the production of sulphuric acid. 4,520,003, Cl. 423-533.000.

Petr, Jan; and Steinle, Benedikt, to LGZ Landis & Gyr Zug AG. Current to pulse-sequence transducer. 4,520,311, Cl. 324-117.00R.

Petrie, Harold L.: *See—*
Holland, Ronald A.; Petrie, Harold L.; Brennan, John R.; and Christ, Frederick C., 4,519,457, Cl. 166-317.000.

Petrille, Dennis G.: *See—*
Basalay, Robert J.; West, C. Thomas; and Petrille, Dennis G., 4,519,926, Cl. 252-49.600.

Petro, John D., to Commercial Shearing, Inc. Hydraulic valves. 4,519,419, Cl. 137-596.000.

Petro, John D., to Commercial Shearing, Inc. Hydraulic valves. 4,519,420, Cl. 137-596.000.

Pfeiffer, Claus-Peter, to Metzeler Kautschuk GmbH. Flexible hollow body fillable with fluid medium. 4,520,054, Cl. 428-35.000.

Philibert, Daniel: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,519,946, Cl. 260-239.55R.

Philip Morris Incorporated: *See—*
Grollimund, Everett C., 4,519,680, Cl. 350-486.000.

Philips, D. Colin: *See—*
Yannopoulos, Lymperios N.; Straw, Robert D.; and Philips, D. Colin, 4,520,157, Cl. 524-462.000.

Phillips, Bobby M., to Eastman Kodak Company. Textile yarns with loops and free protruding ends. 4,519,200, Cl. 57-246.000.

Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, to Hussmann Corporation. Supermarket environmental control system. 4,519,217, Cl. 62-256.000.

Photo Vending Corporation: *See—*
McElwee, J. Russell, 4,519,522, Cl. 221-13.000.

Phytogen: *See—*
Bonner, James F., 4,519,163, Cl. 47-58.000.

Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Ikeda, Yasuo, 4,520,238, Cl. 179-121.00C.

Pinsky, Michael L.: *See—*
Copenhafer, William C.; and Pinsky, Michael L., 4,519,806, Cl. 23-302.00T.

Pioneer Electronic Corporation: *See—*
Ishii, Satoshi, 4,520,322, Cl. 330-263.000.
Nakayama, Kazuaki, 4,520,323, Cl. 330-268.000.
Watanabe, Kazuo; Ohkubo, Yuichi; Haeno, Akira; and Yokogawa, Fumihiko, 4,520,282, Cl. 307-491.000.
Yoshida, Kobun, 4,520,412, Cl. 360-96.100.

Piotrowski, Chester; Bendson, Steven A.; Loeding, Neil W.; and Mularie, William M., to Minnesota Mining and Manufacturing Company. Integrated magnetostrictive-piezoelectric-metal oxide semiconductor magnetic playback head. 4,520,413, Cl. 360-113.000.

Pischtschan, Alfred: *See—*
Zabrocki, Karl; Ott, Karl-Heinz; Schmidt, Adolf; and Pischtschan, Alfred, 4,520,165, Cl. 525-84.000.

Pitney Bowes Inc.: *See—*
Lowe, Lynnwood, 4,519,311, Cl. 101-109.000.

Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., to International Telephone & Telegraph Corp. Vortex shedding fluid flowmeter. 4,519,259, Cl. 73-861.220.

Pitzer, Emory W.: *See—*
McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W., 4,520,223, Cl. 585-629.000.

Plastics Engineering Company: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,520,198, Cl. 546-66.000.

Plastofilm Industries, Inc.: *See—*
Perchak, William C., 4,519,500, Cl. 206-312.000.

Podosek, Edward, to Dennison National Company. Spiral bound notebook and folder construction. 4,519,629, Cl. 281-25.00A.

Pohl, Herbert A.: *See—*
Kleinedler, Gary E.; and Pohl, Herbert A., 4,519,132, Cl. 29-845.000.

Pohlenz, Elmer E.: *See—*
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.

Poirier, Marc-Andre: *See—*
George, Albert E.; and Poirier, Marc-Andre, 4,519,915, Cl. 210-663.000.

Polaroid Corporation: *See—*
Burkhardt, James L.; and McCann, John J., 4,520,403, Cl. 358-332.000.
Kinsman, Gordon F.; Lambert, Ronald F.; and Morrison, David A., 4,519,689, Cl. 354-304.000.
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,520,189, Cl. 528-331.000.

Poll, Ian; and Smit, Jacobus A. J., to Shell Oil Company. Burner for the partial combustion of solid fuel. 4,519,321, Cl. 110-263.000.

Pollner, Rudolf, to Robert Bosch GmbH. Method of inserting a center electrode in a spark plug insulator. 4,519,784, Cl. 445-7.000.

Polyakov, Ivan P.: *See—*
Sychev, Anatoly P.; Sannikov, Jury I.; Grinin, Jury A.; Polyakov, Ivan P.; and Abdeev, Jury M., 4,519,836, Cl. 75-25.000.

Polydex Chemicals Ltd.: *See—*
Healy, George M.; and Curry, Kenneth D., 4,520,107, Cl. 435-240.000.

Popovic, Mikulas: *See—*
Gallo, Robert C.; Popovic, Mikulas; and Sarngadharan, Mangalasseril G., 4,520,113, Cl. 436-504.000.

Porta Systems Corp.: *See—*
De Luca, Paul V., 4,519,663, Cl. 339-99.00R.

Porter, Richard A. Gate with multiple pivot axes for rail members. 4,519,164, Cl. 49-108.000.

Porth, Roland W.: *See—*
Lehman, Richard F.; Porth, Roland W.; and Mason, Lawrence J., 4,519,703, Cl. 355-69.000.

Postnikov, Viktor M.: *See—*
Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; and Postnikov, Viktor M., 4,519,230, Cl. 72-56.000.

Potzick, James E.; and Robertson, Baldwin, to United States of America, Commerce. Synchronous phase marker and amplitude detector. 4,520,320, Cl. 328-133.000.

Poulin, Susan B.: *See—*
Hamel, Roger G.; and Poulin, Susan B., 4,520,137, Cl. 521-79.000.

Poulin, Ted M.: *See—*
Elmore, Carl L.; Poulin, Ted M.; and Barrett, Mark D., 4,519,446, Cl. 165-101.000.

Pozzobon, Alessandro, to Nordica S.p.A. Device for adjusting the flex in rear-entry ski boots. 4,519,149, Cl. 36-121.000.

PPG Industries, Inc.: *See—*
Demarest, Henry M., Jr., 4,519,814, Cl. 65-27.000.

Prabakaran, Arulanandam M.: *See—*
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,519,259, Cl. 73-861.220.

Prater, Keith B.; Thrash, Robert J.; and Connolly, John F., to Standard Oil Company (Indiana). Non-aqueous electrochemical cell and electrolyte. 4,520,083, Cl. 429-101.000.

Prepodnik, Kay E.; Finn, Peter A.; and Manning, Daniel J., to Kelch Corp., The. Receptacle for beverage container. 4,519,219, Cl. 62-457.000.

Prestige Billiards Pty. Ltd.: *See—*
Schill, Alfred G., 4,519,607, Cl. 273-5.00B.

Preuss, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Steroid-20-carboxylic acid compounds and a process for their production. 4,519,949, Cl. 260-397.100.

Pribnow, Hans-Hermann: *See—*
Iseli, Jakob; and Pribnow, Hans-Hermann, 4,519,474, Cl. 180-279.000.

Procedyne Corp.: *See—*
Staffin, H. Kenneth; Roaper, Robert B.; and Bickford, Karin S., 4,519,718, Cl. 374-45.000.

Prodel, Jacques: *See—*
Prodel, Maurice; and Prodel, Jacques, 4,519,491, Cl. 198-349.000.

Prodel, Maurice; and Prodel, Jacques. Apparatus for the assembly and/or machining of circulating and immobilizable parts carried by pallets. 4,519,491, Cl. 198-349.000.

Professional Packaging Limited: *See—*
Holmes, Gordon W., 4,519,630, Cl. 281-31.000.

PROMA Produkt-und Marketing Gesellschaft mbH: *See—*
Lipinski, Reinhard, 4,519,297, Cl. 92-88.000.

Propane Carburetion Company, Inc.: *See—*
Nolff, Robert L., 4,519,347, Cl. 123-195.00A.

Puccini, Sergio E.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,520,478, Cl. 370-63.000.

Puls, Jurgen: *See—*
Sinner, Michael; Dietrichs, Hans-Hermann; Puls, Jurgen; Schweers, Werner; and Brachthauser, Karl-Heinz, 4,520,105, Cl. 435-163.000.

Puntener, Alois, to Ciba-Geigy Corporation. Use of 1:2 cobalt complex dyes for dyeing leather or furs. 4,519,802, Cl. 8-404.000.

Purzycki, Kenneth L.: *See—*
Dahill, Robert T.; Purzycki, Kenneth L.; and Golle, Erlinda F., 4,519,944, Cl. 252-522.00R.

Pyde, Edwin: *See—*
Stone, Albert; Pyde, Edwin; and Carveth, Peter, 4,519,499, Cl. 206-219.000.

Quaker Oats Company, The: *See—*
Godsey, H. Dean; Schoen, Donald F.; and Turek, Joseph F., 4,519,713, Cl. 366-79.000.

Qualeatti, Gail M.; and Arena, Blaise J., to UOP Inc. Selective reduction of fatty materials using a supported group VIII metal in eggshell distribution. 4,519,951, Cl. 260-409.000.

Queille, Philippe: *See—*
Kostelitz, Michel; and Queille, Philippe, 4,519,853, Cl. 148-16.500.

Quets, Jean M.: *See—*
Jackson, John E.; Adler, Thomas A.; Quets, Jean M.; and Tucker, Robert C., Jr., 4,519,840, Cl. 106-1.050.

Quinn, Ross A.: *See—*
Luce, Robert S.; Quinn, Ross A.; and Rowley, Leroy S., 4,519,710, Cl. 356-411.000.

Quirin, Michel: *See—*
Aron, Jerome; and Quirin, Michel, 4,519,194, Cl. 56-370.000.

R. R. Donnelley & Sons Company: *See—*
Mayer, Theodore W., 4,519,599, Cl. 270-53.000.

Raab, Clifford G. Champagne bottle opener. 4,519,277, Cl. 81-3.550.

Rabinowitz, Mario; and Perry, E. Robert, to Electric Power Research Institute, Inc. Cores for electromagnetic apparatus and methods of fabrication. 4,520,078, Cl. 428-636.000.

Rachner, Horst: *See—*
Goertler, Horst; and Rachner, Horst, 4,520,271, Cl. 290-38.00C.

Radiometer A/S: *See—*
Andersen, Jorgen, 4,519,402, Cl. 128-765.000.

Radtke, Hartmut: *See—*
Kiesewetter, Holger; Jung, Friedrich; Radtke, Hartmut; and Witt, Reinhard, 4,519,239, Cl. 73-55.000.

Raeder, Willy: *See—*
Denton, Anthony D., 4,520,262, Cl. 250-221.000.

Ragnegard, Samuel; Strid, Kent; and Sundkvist, Goran, to AB Hedemora Verkstalder. Apparatus for removing a fiber layer from a rotating disc filter. 4,519,910, Cl. 210-327.000.

Rakes, James M.: *See—*
Firth, Rowland V. D., III; Goff, Willie, Jr.; Ku, Ta C.; and Rakes, James M., 4,520,371, Cl. 346-76.0PH.

Ralston, Robert. Ladder stabilizing apparatus. 4,519,477, Cl. 182-107.000.

Ramirez, Ernest R.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.

Rance, William G., Jr.: *See—*
Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., 4,519,553, Cl. 242-56.00R.

Randall Corporation, The: *See—*
Huebel, Robert R., 4,519,824, Cl. 62-26.000.

Randle, James N., to Austin Rover Group Limited. Vehicle suspensions. 4,519,628, Cl. 280-701.000.

Randlett, M. Ronald: *See—*
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,519,118, Cl. 29-121.500.

Randol, Kent B.: *See—*
Harden, Eldon A.; and Randol, Kent B., 4,519,461, Cl. 172-225.000.

Randolph, Donald A.; and Watkins, Kenneth R., to USG Corporation. Pressure coating of mineral fillers. 4,520,073, Cl. 428-405.000.

Ranger, Alan E., to International Octrooi Maatschappij "Octropa" B.V. Method and apparatus for coating paper and the like. 4,520,048, Cl. 427-350.000.

Ranzi, Eliseo: *See—*
Minet, Ronald G.; Dente, Mario; Ranzi, Eliseo; and Sunny H. K., 4,520,217, Cl. 585-415.000.

Rasmuson, Torgny: *See—*
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,520,016, Cl. 514-12.000.

Rauch, Gary C.; and Krause, Robert F., to Westinghouse Electric Corp. Transformer with ferromagnetic circuits of unequal saturation inductions. 4,520,335, Cl. 336-212.000.

Rauch, Hubert: *See—*
Lehmann, Klaus; Dreher, Dieter; Rauch, Hubert; and Siol, Werner, 4,520,172, Cl. 525-369.000.

Raulin, Jean M.; and Bonnerot, Georges, to Telecommunications Radioelectriques et Telephoniques T. R. T. Transmission system using differential pulse code modulation with adaptive prediction. 4,520,491, Cl. 375-27.000.

Rautenberg, Karl, to Forsheda AB. Mold for manufacturing an annular object of elastic material. 4,519,567, Cl. 249-57.000.

Raychem Corporation: *See—*
Frank, Louis M., 4,520,417, Cl. 361-45.000.

Raymond, Beach D. Tooth brush. 4,519,109, Cl. 15-110.000.

Raytheon Company: *See—*
Gentilman, Richard L.; Maguire, Edward A.; and Dolhert, Leonard E., 4,520,116, Cl. 501-98.000.
Perlmutter, Michael S.; and Braun, Kenneth H., 4,519,708, Cl. 356-350.000.

Raz, Zeev. Bathroom cabinet. 4,519,656, Cl. 312-256.000.

Razumovsky, Mikhail I.: *See—*
Gudkin, Timofei S.; Iordanishvili, Evgeny K.; Lidorenko, Nikolai S.; Malkovich, Bella E.; Razumovsky, Mikhail I.; and Rubashov, Igor B., 4,519,389, Cl. 128-303.100.

RCA Corporation: *See—*
Carlin, Donald B., 4,520,471, Cl. 369-112.000.
Dischert, Robert A.; and Libbey, Robert L., 4,520,396, Cl. 358-167.000.
Hsu, Sheng T., 4,519,126, Cl. 29-571.000.
Hurst, Robert N., Jr., 4,520,402, Cl. 358-324.000.
Reno, Charles W., 4,520,472, Cl. 369-112.000.
Tarng, Ming L.; and Romito, William S., 4,520,312, Cl. 324-158.00D.
van Hekken, Frans; and Chen, Hsing-Yeo, 4,520,292, Cl. 313-412.000.
Westerman, Harry H., Jr., 4,519,767, Cl. 425-308.000.

Reaume, Leonard V., to Magna American Corporation. Power drive rear tine tiller with reversing gear transmission for the tines. 4,519,459, Cl. 172-42.000.

Reddy, Kammalathinna V.; and Berry, Michael J., to Allied Corporation. Isotope separation by laser excitation of unimolecular reactants. 4,519,882, Cl. 204-158.00R.

Redele, Jean E. A., to Sxoma-Energie. Fuel heating method and device for vehicles. 4,519,358, Cl. 123-557.000.

Reich, Heinrich: *See—*
Strohmaier, Ernst; Reich, Heinrich; and Wagner, Bernd, 4,519,780, Cl. 433-29.000.

Reichert, Harry J., Jr., to General Instrument Corporation. Subscriber terminal for monitoring radio-frequency signal ingress into cable television systems. 4,520,508, Cl. 455-4.000.

Reinecke, Erich, to WABCO Fahrzeugbremsen GmbH. Gear selector unit for a transmission. 4,519,266, Cl. 74-471.0XY.

Reiner, Roland, to Hoffmann-La Roche Inc. 5-Oxo-as-triazines. 4,520,195, Cl. 544-182.000.

Reinmold, Heinz-Josef: *See—*
Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Schmitz, Alfred; and Mund, Heinz, 4,519,167, Cl. 51-165.770.

Remmel, Hans: *See—*
Schwarze, Werner; Kleemann, Axel; Remmel, Hans; and Hohn, Wolfgang, 4,520,209, Cl. 560-124.000.

Remote Switch Systems, Inc.: *See—*
Fields, Gary C.; and Long, Gary E., 4,520,234, Cl. 179-2.00A.

Renaud, Pierre, to Valeo. Clutch release bearing. 4,519,488, Cl. 192-98.000.

Renger, Larry H.: *See—*
Halford, Wayne R.; Renger, Larry H.; and Dooley, James J., 4,519,789, Cl. 446-444.000.

Reno, Charles W., to RCA Corporation. Beam expansion and relay optics for laser diode array. 4,520,472, Cl. 369-112.000.

Repass, James T.: *See—*
Hagler, Brenda J.; and Repass, James T., 4,520,457, Cl. 364-900.000.

Resan, Stevan A., to Carlisle Corporation. Lubricated roofing membrane fastener. 4,519,175, Cl. 52-713.000.

Research Corporation: *See—*
Miller, Ronald L., 4,520,111, Cl. 436-501.000.

Reusser, Robert E.; Kenton, Joseph R.; and Todd, Elizabeth A. Polymerization catalyst and deodorizing agent and process of use. 4,520,222, Cl. 585-526.000.

Rex, John D.: *See—*
Walker, Ronald P.; Rex, John D.; and Schummers, John H., 4,520,504, Cl. 382-1.000.

Rexnord Inc.: *See—*
Rooney, Thomas C., 4,519,907, Cl. 210-257.100.

Reynolds, Jeannette. Flyguard. 4,519,187, Cl. 54-81.000.

Reynolds Metals Company: *See—*
Dingus, Jack D.; and Gilliam, Edward C., 4,519,489, Cl. 193-31.00R.

Rhone-Poulenc Chimie de Base: *See—*
Gresser, Robert; and Michel, Max, 4,519,933, Cl. 252-140.000.

Rhone-Poulenc Industries: *See—*
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,520,193, Cl. 544-016.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Chaux, Jean-Bernard; Gagne, Pierre; Garcia, Michel; Lespinasse, Dominique; and Roussos, Josiane, 4,519,844, Cl. 106-209.000.

Rhyne Fibers, Inc.: *See—*
Rhyne, Ralph H., 4,519,114, Cl. 19-200.000.

Rhyne, Ralph H., to Rhyne Fibers, Inc. Apparatus and method for cleaning textile fiber. 4,519,114, Cl. 19-200.000.

Rialland, Jean P.; and Barbier, Jean P., to Laiteries E. Bridel. Process for treating milk with a cation-exchange resin for the preparation of decationized, acidified milk. 4,520,036, Cl. 426-271.000.

Ribas, Jean L., to Majorette. System for elastically assembling two pieces. 4,519,724, Cl. 403-345.000.

Ribi, Edgar E.; Cantrell, John L.; and Schwartzman, Steven M., to Ribi ImmunoChem Research, Inc. Stable composition and preparation thereof. 4,520,019, Cl. 424-195.100.

Ribi ImmunoChem Research, Inc.: *See—*
Ribi, Edgar E.; Cantrell, John L.; and Schwartzman, Steven M., 4,520,019, Cl. 424-195.100.

Richardson-Vicks Inc.: *See—*
Dines, Allen I.; Yeung, David; and Nacht, Sergio, 4,520,133, Cl. 514-568.000.

Richter, Horst: *See—*
Fuchs, Wilfried; Richter, Horst; Kober, Roland; Kaufmann, Vendelin; and Muller, Christina, 4,519,997, Cl. 423-265.000.

Ricoh Company, Ltd.: *See—*
Ishikawa, Chuji; Iwasaki, Kyuhachiro; Horike, Masanori; and Komai, Hiromichi, 4,520,367, Cl. 346-75.000.
Mayer, Edward F.; and van Blerk, Victor B., 4,519,699, Cl. 355-15.000.
Murai, Kazuo; and Hasegawa, Yutaka, 4,519,695, Cl. 355-14.00R.
Riddiford, Frederick A., to British Petroleum Company p.l.c., The. Ignition system. 4,519,453, Cl. 166-303.000.
Rieter Machine Works, Ltd.: *See—*
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, 4,519,115, Cl. 28-255.000.
von Burg, Paul; Wirz, Armin; and Graf, Felix, 4,519,778, Cl. 432-35.000.
Weber, Kurt; Mondini, Giancarlo; and Mandl, Gerhard, 4,519,821, Cl. 55-290.000.
Riha, Gerd, to Siemens Aktiengesellschaft. Electronic component functioning with reflected acoustic waves. 4,520,330, Cl. 333-195.000.
Riley, Robert F.; Meyer, Thomas I.; and Jordan, Wesley N., to Westinghouse Electric Corp. High pressure electrical penetrator. 4,519,662, Cl. 339-94.00R.
Rion Kabushiki Kaisha: *See—*
Hori, Kiyoharu, 4,519,399, Cl. 128-724.000.
Ripani, Sergio, to Carle & Montanari S.p.A. Device for controlling and monitoring the thickness of a chocolate film delivered by chocolate refiners. 4,519,304, Cl. 99-489.000.
Risch, Joel V. Backhoe clamping device. 4,519,739, Cl. 414-724.000.
Ristow, Delano H. Waterproof roof. 4,519,172, Cl. 52-96.000.
Ritchie, Robert J., to Du Pont de Nemours, E. I., and Company. Cathodic electrodeposition of charged aqueous powder slurry. 4,519,884, Cl. 204-181.00C.
Rivolier, Michel: *See—*
Bartholomaus, Reiner; and Rivolier, Michel, 4,519,573, Cl. 251-30.000.
Roanoke College: *See—*
Frantz, Virgil L., 4,519,819, Cl. 55-162.000.
Roaper, Robert B.: *See—*
Staffin, H. Kenneth; Roaper, Robert B.; and Bickford, Karin S., 4,519,718, Cl. 374-45.000.
Robert Bosch GmbH: *See—*
Eheim, Franz; Hofer, Gerald; Konrath, Karl; and Straubel, Max, 4,519,352, Cl. 123-373.000.
Krimmer, Erwin; and Fehrenbach, Siegfried, 4,520,227, Cl. 174-65.00R.
Kubach, Hans; Kienzle, Wolfgang; Paschke, Werner; and Sauer, Rudolf, 4,519,547, Cl. 239-585.000.
Locher, Johannes; and Schmidt, Wolfgang, 4,520,419, Cl. 361-104.000.
Pollner, Rudolf, 4,519,784, Cl. 445-7.000.
Robert Linkletter Associates, Inc.: *See—*
Agbay, Albert J.; and Thomas, Ralph H., Sr., 4,519,514, Cl. 215-225.000.
Roberts, Lewis L., to Mercury Development Corp. Slab-hanging system. 4,519,173, Cl. 52-235.000.
Robertshaw Controls Company: *See—*
Ochsner, Rolf H., 4,520,245, Cl. 200-82.00R.
Robertson, Baldwin: *See—*
Potzick, James E.; and Robertson, Baldwin, 4,520,320, Cl. 328-133.000.
Robeson, Lloyd M.: *See—*
Harris, James E.; and Robeson, Lloyd M., 4,520,067, Cl. 428-323.000.
Robinson, Edward L., Jr.: *See—*
Wunschl, Nicholas H.; and Robinson, Edward L., Jr., 4,519,525, Cl. 221-211.000.
Robinson, Michael, to Laporte Industries Limited. Treatment of oxidic materials. 4,519,987, Cl. 423-60.000.
Rock Bit Industries U.S.A., Inc.: *See—*
Garner, Lloyd L., 4,519,614, Cl. 277-84.000.
Rockwell International Corporation: *See—*
Bevilaqua, Paul M.; and Stachura, Stanley J., 4,519,990, Cl. 423-210.000.
Canning, Terry D.; and Hovan, Francis E., 4,519,667, Cl. 339-186.00M.
Hogge, Charles R., Jr., 4,520,489, Cl. 375-14.000.
Marusik, C. Lee, 4,520,275, Cl. 307-64.000.
Rosman, Irwin E.; and Bourgeois, Hector S., 4,519,745, Cl. 416-96.00A.
Searl, Eugene P., 4,520,476, Cl. 370-32.000.
Sutherland, Ray, 4,520,423, Cl. 361-380.000.
Rodriguez, Carl R.: *See—*
Kirk, Johnie C., 4,519,158, Cl. 43-17.000.
Rogers Corporation: *See—*
Woelfel, Robert, 4,520,248, Cl. 200-340.000.
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., to Polaroid Corporation. Optical device including birefringent aromatic amino carboxylic acid polymer. 4,520,189, Cl. 528-331.000.
Rogers, Walter C., Jr., to Parma Corporation. Rocker-recliner chair. 4,519,647, Cl. 297-85.000.
Rogstadius, Ivan. Method for obtaining an accurate concentric fastening of an optical fibre in a connector. 4,519,672, Cl. 350-96.200.
Rohde, Thomas; and Caspers, Friedhelm, to Elektro Physik Hans Nix & Dr. Erich Steingroever. Process and device for the nondestructive measurement of material accumulations or coating thicknesses on dielectric materials, in particular plastic. 4,520,308, Cl. 324-58.50R.
Rohm GmbH: *See—*
Lehmann, Klaus; Dreher, Dieter; Rauch, Hubert; and Siol, Werner, 4,520,172, Cl. 525-369.000.
Rohr Industries, Inc.: *See—*
Timms, Richard H., 4,519,561, Cl. 244-110.00B.
Rohrbach, Carl: *See—*
Wainauski, Harry S.; and Rohrbach, Carl, 4,519,746, Cl. 416-223.00R.
Roireau, Jeanne M., executrix: *See—*
Logan, Andrew H.; and Wagner, Robert A., deceased, 4,519,559, Cl. 244-17.170.
Rolls-Royce Inc.: *See—*
Szuminski, Gary F.; and Jones, Thomas J., 4,519,543, Cl. 239-265.190.
Rolls-Royce Limited: *See—*
Mills, David; Kington, Alan D.; and Lovell, Philip J., 4,520,117, Cl. 501-107.000.
Szuminski, Gary F.; and Jones, Thomas J., 4,519,543, Cl. 239-265.190.
Romancik, Guna: *See—*
Lowe, David A.; Romancik, Guna; Cappelletti, Leonardo M.; and Elander, Richard P., 4,520,101, Cl. 435-49.000.
Romito, William S.: *See—*
Tarng, Ming L.; and Romito, William S., 4,520,312, Cl. 324-158.00D.
Rood, Dennis D.: *See—*
Gray, Floyd R.; and Rood, Dennis D., 4,519,451, Cl. 166-278.000.
Rooney, Thomas C., to Rexnord Inc. Grit settling basin including vane pump. 4,519,907, Cl. 210-257.100.
Roper, Rudolf, to Norton Christensen, Inc. Auxiliary controlled valve disposed in a drilling string. 4,519,574, Cl. 251-31.000.
Rosemount Inc.: *See—*
Frick, Roger L., 4,519,253, Cl. 73-718.000.
Rosen, Gerald M. N-alkyl-4'-hydroxyacetanilides, pharmaceutical compositions comprising them and their use. 4,520,134, Cl. 514-625.000.
Rosen, Haim, to Rotoplas, Ltd. Process for preparing plastic articles having an outer shell and inner foam core. 4,519,964, Cl. 264-45.400.
Rosenberg, Gideon, to State of Israel, Ministry of Defence, Rafael Development Authority, The. Sub-caliber projectile. 4,519,317, Cl. 102-521.000.
Rosman, Irwin E.; and Bourgeois, Hector S., to Rockwell International Corporation. Rotor blade and stator vane using ceramic shell. 4,519,745, Cl. 416-96.00A.
Rosseels, Gilbert; and Inion, Henri, to S. A. Labaz N.V. Indolizine derivatives and use as cardiovascular agents. 4,520,026, Cl. 514-299.000.
Rossmy, Gerd: *See—*
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, 4,520,173, Cl. 525-403.000.
Rostrup-Nielsen, Jens R.: *See—*
Skov, Allan; and Rostrup-Nielsen, Jens R., 4,520,216, Cl. 585-315.000.
Roth, Donald J.; Kubis, Charles S.; Walter, John; and Mohr, Glenn R., to Continental Can Company, Inc. Heating system for and method of finally bonding container end unit to body. 4,519,859, Cl. 156-69.000.
Roth, Robert G. Forming machine including drive mechanism having rack and gear synchronization. 4,519,231, Cl. 72-88.000.
Rotolico, Anthony J., to Eutectic Corporation. Torch flame spray system. 4,519,541, Cl. 239-1.000.
Rotoplas, Ltd.: *See—*
Rosen, Haim, 4,519,964, Cl. 264-45.400.
Rottmaier, Ludwig: *See—*
Dhein, Rolf; Rottmaier, Ludwig; Merten, Rudolf; and Siebourg, Wolfgang, 4,520,147, Cl. 524-100.000.
Rouse, Michael W., to Waste Recovery, Inc. Material guide and cleaner for comminuting apparatus. 4,519,550, Cl. 241-167.000.
Roussel Uclaf: *See—*
Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, 4,519,946, Cl. 260-239.55R.
Roussos, Josiane: *See—*
Chaux, Jean-Bernard; Gagne, Pierre; Garcia, Michel; Lespinasse, Dominique; and Roussos, Josiane, 4,519,844, Cl. 106-209.000.
Rowe, Raymond A., to United States of America, Navy. Fluid responsive rotor generator. 4,520,273, Cl. 290-54.000.
Rowlands, Ronald H.: *See—*
Houvig, Felix J.; and Rowlands, Ronald H., 4,520,488, Cl. 375-5.000.
Rowles, Howard C.: *See—*
Bernhard, Dennis P.; Rowles, Howard C.; and Teichman, Robert L., 4,519,825, Cl. 62-28.000.
Rowley, Leroy S.: *See—*
Luce, Robert S.; Quinn, Ross A.; and Rowley, Leroy S., 4,519,710, Cl. 356-411.000.
Rubashov, Igor B.: *See—*
Gudkin, Timofei S.; Iordanishvili, Evgeny K.; Lidorenko, Nikolai S.; Malkovich, Bella E.; Razumovsky, Mikhail I.; and Rubashov, Igor B., 4,519,389, Cl. 128-303.100.
Rubey, Ulyss R., to Detectors, Inc. Apparatus for automated assembly of shock detectors. 4,519,867, Cl. 156-351.000.
Rubin, Matvei. Brush. 4,519,110, Cl. 15-159.00R.
Ruggeri, Stefano. Selfcentering work-rest. 4,519,279, Cl. 82-38.00R.
Rulseh, Roy M.: *See—*
Parish, Mark G.; and Rulseh, Roy M., 4,519,773, Cl. 431-176.000.

Runions, Alton E.: *See—*
Mayer, William; and Runions, Alton E., 4,520,432, Cl. 362-267.000.
Russ, James J.; Smith, John W.; and Condra, Janet S., to Hydro Fuels, Inc. Methods for removing pollutants from water and waste water and for reducing sludge resistance to dewatering. 4,519,921, Cl. 210-716.000.
Russell, Derek V., to Alphacrete Construction Linings (UK) Limited. Method for reinforcing tubular ducts. 4,519,177, Cl. 52-745.000.
Russell, Gordon A., to Mobil Oil Corporation. Device for holding formation cores for boring. 4,519,592, Cl. 269-25.000.
Russo, Ronald D. Thoracic drainage device. 4,519,796, Cl. 604-319.000.
S. A. Labaz N.V.: *See—*
Rosseels, Gilbert; and Inion, Henri, 4,520,026, Cl. 514-299.000.
S.N.E.C.M.A.: *See—*
Loisy, Jean M.; and Menioux, Claude C. F., 4,519,208, Cl. 60-262.000.
Saab-Scania Aktiebolag: *See—*
Nilsson, Sten E.; and Elfverson, Sven E., 4,519,302, Cl. 98-2.080.
Sachdev, Harbans S.: *See—*
Anderson, Herbert R., Jr.; Sachdev, Harbans S.; and Sachdev, Krishna G., 4,519,872, Cl. 156-643.000.
Sachdev, Krishna G.: *See—*
Anderson, Herbert R., Jr.; Sachdev, Harbans S.; and Sachdev, Krishna G., 4,519,872, Cl. 156-643.000.
Sachs, Howard M.: *See—*
Becker, Mitchell; and Sachs, Howard M., 4,519,875, Cl. 203-28.000.
Safiuddin, Mohammed: *See—*
Snedden, William H.; and Safiuddin, Mohammed, 4,520,450, Cl. 364-607.000.
Sahatjian, Ronald A.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,520,189, Cl. 528-331.000.
Saint-Gobain Vitrage: *See—*
Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Schmitz, Alfred; and Mund, Heinz, 4,519,167, Cl. 51-165.770.
St. Jacques, John W.; and Couch, Robert P., to United Technologies Corporation. Electrostatic gas turbine surge/stall detection. 4,519,240, Cl. 73-116.000.
St. Joseph Bank and Trust Company, executor: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,520,198, Cl. 546-66.000.
Saito, Seitoku; Izumi, Tosniaki; Kobuke, Takayoshi; and Sugihara, Hiroshi, to TDK Electron. Co., Ltd. Magnetic recording medium. 4,520,076, Cl. 428-611.000.
Saitoh, Koichi: *See—*
Kimoto, Toshifumi; Itami, Teruhiko; Nishimura, Nobuo; and Saitoh, Koichi, 4,520,409, Cl. 360-59.000.
Saiwai, Kazuhiko: *See—*
Fujii, Yoshihiko; Tomita, Osamu; Taniguchi, Itaru; and Saiwai, Kazuhiko, 4,520,370, Cl. 346-76.00L.
Sakai Chemical Industry Co., Ltd.: *See—*
Abe, Kazunobu; and Nakatsuji, Tadao, 4,520,124, Cl. 502-159.000.
Sakai, Shinji: *See—*
Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, 4,519,685, Cl. 354-154.000.
Sakai, Takeshi: *See—*
Fujimoto, Michitaro; Ohde, Hironori; Seki, Hirokazu; Takamatsu, Shuhei; and Sakai, Takeshi, 4,520,201, Cl. 548-342.000.
Sakairi, Tadashi: *See—*
Kenmochi, Kazuei; Sakairi, Tadashi; Maruyama, Yoshio; and Itemadani, Eizi, 4,519,761, Cl. 425-135.000.
Sakamoto, Akio: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Sakamoto, Kazunori: *See—*
Nakanishi, Yasuo; Sakamoto, Kazunori; Ando, Giichi; and Watanabe, Teruoki, 4,519,854, Cl. 148-127.000.
Sakamoto, Masaharu: *See—*
Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, 4,520,280, Cl. 307-358.000.
Sakata, Ko; and Imai, Hirosuke, to Nippon Oil Co. Ltd. Process for producing water-insoluble polymers of uniform shape from gelled salts of alginic acid. 4,520,178, Cl. 526-200.000.
Sakitani, Yoshio; and Minamikawa, Yoshihisa, to Hitachi, Ltd. Specimen supporting device. 4,520,421, Cl. 361-234.000.
Sakurai, Akira; and Mizutani, Hiroshi, to Kao Corporation. Sanitary napkin. 4,519,799, Cl. 604-366.000.
Sakurai, Masaki: *See—*
Sugiyama, Hiroyuki; Abe, Ryozo; Yusa, Yasuhiro; Sakurai, Masaki; and Yoshihara, Kenji, 4,520,473, Cl. 369-126.000.
Salazar, Jose A.: *See—*
Morales, Alfredo L.; Galiasso, Roberto E.; Agudelo, Maria M.; Salazar, Jose A.; and Carrasquel, Angel R., 4,520,128, Cl. 502-210.000.
Salinas Valley Engineering & Manufacturing, Inc.: *See—*
Crabb, Richard V., Jr., 4,519,178, Cl. 53-137.000.
Salomon S.A.: *See—*
Bressand, Rene; and Desarmaux, Pierre, 4,519,624, Cl. 280-633.000.
Samans, Robert: *See—*
Hillemanns, Herbert; Samans, Robert; and Meyer, Walter, 4,520,047, Cl. 427-331.000.
Sanborn, Dale. Band sawmill. 4,519,283, Cl. 83-104.000.
Sanders Associates, Inc.: *See—*
Liu, Dean-Yuan, 4,520,372, Cl. 346-136.000.
Sandi, Floyd J.; and Vultaggio, Anthony, to Essex Group, Inc. Multiple push button switch with latch members. 4,520,241, Cl. 200-5.00B.
Sandquist, Ralph. Spine board. 4,519,106, Cl. 5-82.00R.
Sands, Ned R. Sliding ring game. 4,519,611, Cl. 273-126.00R.
Sanguu, Isao: *See—*
Sekiguchi, Toru; and Sanguu, Isao, 4,520,410, Cl. 360-77.000.
Sanifoam, Inc.: *See—*
Kramer, Fritz; Skornscheck, Thomas E.; and Strauss, Ernest, 4,519,338, Cl. 118-305.000.
Sannikov, Jury I.: *See—*
Sychev, Anatoly P.; Sannikov, Jury I.; Grinin, Jury A.; Polyakov, Ivan P.; and Abdeev, Jury M., 4,519,836, Cl. 75-25.000.
Sano, Tetsuo; Orita, Susumu; Yamazaki, Masaya; and Moriyama, Kazuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioner. 4,519,214, Cl. 62-156.000.
Santi, John D., to Briggs & Stratton Corp. Ignition magneto having an improved primary winding construction. 4,520,288, Cl. 310-194.000.
Sanwa Kako Company Limited: *See—*
Yoshida, Iwao; Kasanami, Takeo; and Miura, Shuji, 4,519,963, Cl. 264-45.300.
Sanyo Electric Co. Ltd.: *See—*
Murakami, Yoshihiro; and Hosoya, Nobukazu, 4,520,328, Cl. 332-31.00T.
Sargent-Welch Scientific Company: *See—*
Hanson, David E., 4,519,755, Cl. 418-9.000.
Sarich, Tony R., to Orbital Engine Company Proprietary Limited. Internal combustion engine fuel and air system. 4,519,356, Cl. 123-533.000.
Sarkisian, Robert: *See—*
Seely, James R.; and Sarkisian, Robert, 4,519,152, Cl. 40-156.000.
Sarngadharan, Mangalasseril G.: *See—*
Gallo, Robert C.; Popovic, Mikulas; and Sarngadharan, Mangalasseril G., 4,520,113, Cl. 436-504.000.
Sasaki, Akihiko; Arai, Kouji; Takashi, Takano; and Namiki, Yasuomi, to Victor Company of Japan, Ltd. Insert recording system for a video signal. 4,520,405, Cl. 360-10.300.
Sasaki, Hajime; and Nishiyama, Shinichi, to Hitachi Cable, Ltd. Fin materials for automobile radiators. 4,519,980, Cl. 420-474.000.
Sasaki, Issei: *See—*
Mansfield, Robert J.; Payne, David N.; and Sasaki, Issei, 4,519,704, Cl. 356-73.100.
Sasaki, Itsuo; and Suzuki, Hiroaki. Band pass filter with a switched capacitor. 4,520,283, Cl. 307-520.000.
Sasaki, Shunichi: *See—*
Iida, Takenobu; and Sasaki, Shunichi, 4,520,294, Cl. 315-50.000.
Sasaki, Yoshimasa: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Sasazawa, Kazuo: *See—*
Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, 4,519,942, Cl. 252-520.000.
Sassano, Daniel R., to Westinghouse Electric Corp. High hot bond strength high flash point low viscosity polyester insulating compositions. 4,520,161, Cl. 525-11.000.
Sato, Haruhito, to Idemitsu Kosan Company Limited. Process for the production of pseudocumene or durene. 4,520,219, Cl. 585-462.000.
Sato, Masahiro: *See—*
Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, 4,519,362, Cl. 123-414.000.
Sato, Ryuichi; Taniguchi, Tsutomu; and Ohba, Masatoshi, to Omron Tateisi Electronics Co. Drive circuit for a piezo-electric element. 4,520,289, Cl. 310-316.000.
Sato, Yoshinori, to Japan Steel Works, Ltd., The. Apparatus for controlling a plurality of stud tensioning devices. 4,520,446, Cl. 364-468.000.
Satonaka, Shinobu: *See—*
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, 4,519,702, Cl. 355-51.000.
Satzler, Ronald L.; and Stevens, Samuel B., to Caterpillar Tractor Co. Roller suspension apparatus for a belted vehicle. 4,519,654, Cl. 305-27.000.
Sauer, Rudolf: *See—*
Kubach, Hans; Kienzle, Wolfgang; Paschke, Werner; and Sauer, Rudolf, 4,519,547, Cl. 239-585.000.
Saunders, James W., to Paccar Inc. Lower radiator mount. 4,519,467, Cl. 180-68.400.
Savidge, Michael: *See—*
Bevington, John F.; Meeker, Paul; and Savidge, Michael, 4,519,112, Cl. 15-326.000.
Schaaf, Antoine: *See—*
Peckels, Jean; and Schaaf, Antoine, 4,519,587, Cl. 266-80.000.
Schaefer, Lothar F. Tool for removing an electronic slide-in unit from a fixing rack. 4,519,130, Cl. 29-764.000.

Schaefer, Ronald J.: *See*—
Ahmad, Shamim; and Schaefer, Ronald J., 4,519,430, Cl. 152-209.00R.
Schaer, Leonard S., to Tekcast Industries, Inc. Front loading centrifugal spin caster. 4,519,971, Cl. 264-311.000.
Schendle, Robert N.: *See*—
Jackson, John C., II; and Schendle, Robert N., 4,519,502, Cl. 206-390.000.
Scher, Herbert I.: *See*—
Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., 4,520,062, Cl. 428-148.000.
Scherbatskoy, Serge A. Borehole measurement while drilling systems and methods. 4,520,468, Cl. 367-83.000.
Scherf, Thomas W.: *See*—
LaBarge, Robert L.; Green, Jerrold D.; Arndt, Eric D.; Horansky, Frank J.; Hawkins, Ronald G.; Leftault, Charles J., Jr.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,306, Cl. 100-35.000.
La Barge, Robert L.; Leftault, Charles J., Jr.; Arndt, Eric D.; Green, Jerrold D.; Hawkins, Ronald G.; Horansky, Frank J.; Pohlenz, Elmer E.; and Scherf, Thomas W., 4,519,307, Cl. 100-99.000.
Schick, Rupert: *See*—
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,520,135, Cl. 521-56.000.
Schill, Alfred G., to Prestige Billiards Pty. Ltd. Game table. 4,519,607, Cl. 273-5.00B.
Schippers, Heinz, to Barmag Barmer Maschinenfabrik AG. Yarn twisting method and apparatus. 4,519,203, Cl. 57-328.000.
Schlegel Corporation: *See*—
Clarke, Robert T., Jr.; and Jasienski, Raymond, 4,519,729, Cl. 405-258.000.
Schlicker, Heinrich A., to AB Volvo. Parking brake in a vehicle transmission. 4,519,483, Cl. 192-4.00A.
Schlienkamp, Hubert, to Szabo Maschinenbau GmbH & Co. KG. Method and system for sealing the edges of insulating-glass panels. 4,519,962, Cl. 264-40.700.
Schlumberger Electronics (UK) Limited: *See*—
Dickson, John K., 4,519,251, Cl. 73-639.000.
Schmelzer Corporation: *See*—
Cheney, Jack E., 4,519,349, Cl. 123-198.00R.
Schmidt, Adolf: *See*—
Zabrocki, Karl; Ott, Karl-Heinz; Schmidt, Adolf; and Pischtschan, Alfred, 4,520,165, Cl. 525-84.000.
Schmidt, Andreas R.; Strohmayer, Herbert F.; Sibral, Walter; and Milligan, Barton, to Lim International S.A. Reinforced polyurethane tires. 4,519,432, Cl. 152-357.00A.
Schmidt, Gerhard S. E. Self-closing dispenser. 4,519,530, Cl. 222-494.000.
Schmidt, Wolfgang: *See*—
Locher, Johannes; and Schmidt, Wolfgang, 4,520,419, Cl. 361-104.000.
Schmitt, Gunter K.: *See*—
Weschenfelder, Otto T.; and Schmitt, Gunter K., 4,519,594, Cl. 270-20.100.
Schmitt, Hans-Georg; Palus, Wilfried; and Genth, Hermann, to Bayer Aktiengesellschaft. 3-(3-Iodopropargyl)-benzo-1,2,3-triazin-4-ones, and their use in microbicidal agents. 4,520,023, Cl. 514-241.000.
Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. System for identifying reference marks in a path measuring device. 4,519,140, Cl. 33-125.00C.
Schmitz, Alfred: *See*—
Halberschmidt, Friedrich; Reinmold, Heinz-Josef; Schmitz, Alfred; and Mund, Heinz, 4,519,167, Cl. 51-165.770.
Schneider, Kurt; Heide, Wilfried; Hartmann, Juergen; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Preparation of concentrated aqueous solutions of quaternization products of tertiary aminoalkyl esters or tertiary aminoalkylamides of acrylic or methacrylic acid. 4,520,210, Cl. 560-222.000.
Schnur, Nicholas E.; and Beimesch, Bruce J., to National Distillers and Chemical Corporation. Low temperature hydraulic fluids based on two centistoke synthetic hydrocarbons. 4,519,932, Cl. 252-73.000.
Schoeff, Terry G.; and Hemmert, Raymond A., deceased (by First National Bank, executor), to American Standard Inc. Fireplace assembly. 4,519,376, Cl. 126-121.000.
Schoen, Donald F.: *See*—
Godsey, H. Dean; Schoen, Donald F.; and Turek, Joseph F., 4,519,713, Cl. 366-79.000.
Schoenberger, Frederick. Electrical energy saver. 4,520,259, Cl. 219-501.000.
Schonberger, Milton. Disc for indicator for tamper-evident lid. 4,519,515, Cl. 215-230.000.
Schott Glaswerke: *See*—
Speit, Burkhard; Mennemann, Karl; and Gliemeroth, Georg, 4,520,115, Cl. 501-60.000.
Schottel-Werft Josef Becker GmbH & Co KG.: *See*—
Krautkremer, Franz; Lais, Siegfried; Knecht, Reinhold; and Stache, Detlev, 4,519,335, Cl. 114-144.00R.
Schreiber, Adam; and Hilaire, Jacob, to Sulzer Brothers Limited. Joint socket. 4,519,101, Cl. 3-1.912.
Schreiber, Peter; and Huth, Klaus, to U.S. Philips Corporation. Rotary-anode X-ray tube. 4,520,496, Cl. 378-128.000.
Schreiber, William L.: *See*—
Fujioka, Futoshi; Boden, Richard M.; Schreiber, William L.; Whelan, Patrick; and Hanna, Marie R., 4,519,943, Cl. 252-522.00R.
Schroeder, Albert H.; Denisevich, Peter, Jr.; Suzuki, Shigeto; and Kurkov, Victor P., to Chevron Research Company. Triazole electroactive polymers. 4,519,940, Cl. 252-500.000.
Schrofelbauer, Herbert; and Staudinger, Gernot, to Osterreichische Draukraftwerke Aktiengesellschaft. Method of desulfurizing flue gases of coal firings. 4,519,995, Cl. 423-244.000.
Schuh, Frank J., to Atlantic Richfield Company. Drainhole drilling. 4,519,463, Cl. 175-61.000.
Schulte, Heinz, to G. L. Rexroth GmbH. Control-circuit throttle valve. 4,519,296, Cl. 91-388.000.
Schultz, Robert T. Control system for solar heaters. 4,519,379, Cl. 126-422.000.
Schumacher, Horst; and Grafen, Paul, to BASF Aktiengesellschaft. Production of dry powders of substances which are sensitive to oxidation. 4,519,961, Cl. 264-4.600.
Schummers, John H.: *See*—
Walker, Ronald P.; Rex, John D.; and Schummers, John H., 4,520,504, Cl. 382-1.000.
Schutt, Hartwig: *See*—
Lepper, Herbert; and Schutt, Hartwig, 4,520,211, Cl. 568-863.000.
Schwab, Carl E., to General Signal Corporation. Sensing vertical and horizontal visibility. 4,520,360, Cl. 340-947.000.
Schwanbom, Erik; Frankenberger, Horst; and Baum, Marcel, to Dragerwerk A.G. Respirator apparatus and method of operation thereof. 4,519,388, Cl. 128-204.250.
Schwartz, Frederic W., to Cable Electric Products, Inc. Electrical cord reel and storage system. 4,520,239, Cl. 191-12.400.
Schwartz, Marie A., executrix: *See*—
Schwartz, Sidney J., deceased, 4,520,459, Cl. 365-15.000.
Schwartz, Sidney J., deceased (by Schwartz, Marie A., executrix), to Burroughs Corporation. Bubble memory which transfers bubbles in both right-to-left and left-to-right SPS loops to provide a short access time. 4,520,459, Cl. 365-15.000.
Schwartzman, Steven M.: *See*—
Ribi, Edgar E.; Cantrell, John L.; and Schwartzman, Steven M., 4,520,019, Cl. 424-195.100.
Schwarz, Richard A., to Cosden Technology, Inc. Foamable polymeric styrene particles. 4,520,136, Cl. 521-60.000.
Schwarze, Werner; Kleemann, Axel; Remmel, Hans; and Hohn, Wolfgang, to Degussa Aktiengesellschaft. Process for cyclizing upsilon-chlorocarboxylic acids. 4,520,209, Cl. 560-124.000.
Schweers, Werner: *See*—
Sinner, Michael; Dietrichs, Hans-Hermann; Puls, Jurgen; Schweers, Werner; and Brachthauser, Karl-Heinz, 4,520,105, Cl. 435-163.000.
Schwob, Pierre; and Mieg, Christian, to SEB S.A. Electronic non-use power interruption safety device for an electric flat-iron. 4,520,257, Cl. 219-250.000.
SCM Corporation: *See*—
Fridman, Semyon D., 4,519,988, Cl. 423-76.000.
Hashiguchi, Don H.; Klar, Erhard; and Dietrich, Ronald J., 4,520,130, Cl. 502-345.000.
Scott, Gerald: *See*—
Gilead, Dan; and Scott, Gerald, 4,519,161, Cl. 47-9.000.
Scott, Michael H.: *See*—
Golobic, Robert A.; and Scott, Michael H., 4,519,715, Cl. 366-343.000.
SDS-Elektro GmbH: *See*—
Nagamoto, Mitsuki, 4,520,333, Cl. 335-129.000.
Seaboard Wellhead Control, Inc.: *See*—
Freeman, John W., 4,519,582, Cl. 251-328.000.
Searl, Eugene P., to Rockwell International Corporation. Apparatus for enabling the duplex operation of a transmitter and receiver. 4,520,476, Cl. 370-32.000.
SEB S.A.: *See*—
Schwob, Pierre; and Mieg, Christian, 4,520,257, Cl. 219-250.000.
Sebald, Dorothy D., executrix: *See*—
Sebald, Joseph F., deceased, 4,519,444, Cl. 165-47.000.
Sebald, Joseph F., deceased (by Sebald, Dorothy D., executrix), to Heat Power Products Corporation. Multi-unit sample cooler. 4,519,444, Cl. 165-47.000.
Security Shutter Corporation: *See*—
Forquer, William F., 4,519,434, Cl. 160-133.000.
Sedille, Marcel; and Le Creurer, Maurice, to Automobiles Peugeot-/Automobiles Citroen. Supercharger device for an internal combustion engine. 4,519,211, Cl. 60-602.000.
See, Benito: *See*—
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,520,168, Cl. 525-169.000.
Seeger, G. Hans J.; Giesenberg, Peter; and Steimel, Johannes, to Bodenseewerk Geratetechnik GmbH. Locking device for air-to-air guided missiles. 4,519,291, Cl. 89-1.806.
Seely, James R.; and Sarkisian, Robert, to Marketing Displays, Inc. Tamper proof poster display device. 4,519,152, Cl. 40-156.000.
Seidel, Joseph, to Westinghouse Electric Corp. Control method for loading battery electrodes. 4,519,425, Cl. 141-1.100.
Seifert, Dieter; Muller, Harald; Muller, Lothar; Pestel, Karl; and Geissler, Helmut, to VEB Kombinat Textima. Continuously-operating machine for the treatment of animal hides and skins. 4,519,224, Cl. 69-30.000.
Seiki, Hiromichi, to Idemitsu Kosan Company Limited. Lubricant for use at high temperature. 4,519,927, Cl. 252-49.600.
Seiko Instruments & Electronics, Ltd.: *See*—
Fujita, Sumio, 4,520,502, Cl. 381-51.000.

Seino, Shunji: *See*—
Amano, Masahiro; Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,519,873, Cl. 162-138.000.
Seki, Hirokazu: *See*—
Fujimoto, Michitaro; Ohde, Hironori; Seki, Hirokazu; Takamatsu, Shuhei; and Sakai, Takeshi, 4,520,201, Cl. 548-342.000.
Seki, Mitsuaki: *See*—
Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, 4,520,373, Cl. 346-140.00R.
Seki, Yasutomo; Akiyama, Toshio; Nakabayashi, Norio; and Iizuka, Yutaka, to Nippon Kogaku K.K. Focusing screen of a camera. 4,519,686, Cl. 354-200.000.
Sekiguchi, Toru; and Sanguu, Isao, to Nippon Electric Co., Ltd. Scan tracking apparatus for helical scan video tape recorder. 4,520,410, Cl. 360-77.000.
Sekiya, Takashi: *See*—
Kamata, Nobuo; Sekiya, Takashi; Takeda, Kazutoshi; Hayasaka, Toyoo; and Yoshida, Tomohisa, 4,520,087, Cl. 429-219.000.
Seltz, Charles L., to King-Seeley Thermos Co. Dispensing stopper. 4,519,529, Cl. 222-484.000.
Selvi, Fabio. Transfer machine for overturning a textile tubular element for the sewing of the edges thereof and for the subsequent re-overturning and discharging. 4,519,327, Cl. 112-121.150.
Semmelrodt, Rolf: *See*—
Hausner, Gerd; and Semmelrodt, Rolf, 4,519,202, Cl. 57-264.000.
Sencorp: *See*—
Crutcher, John P., 4,519,535, Cl. 227-131.000.
Senga, Takao; Yamada, Jun; and Suzuki, Shigeyoshi, to Mitsubishi Paper Mills, Ltd. Method for making printing plates. 4,520,088, Cl. 430-49.000.
Sensormatic Electronics Corporation: *See*—
Gillette, Dennis; and Gentzler, David, 4,519,507, Cl. 209-682.000.
Seragnoli, Enzo, to G.D. Societa per Azioni. Spacer device for filter fitting machine. 4,519,405, Cl. 131-94.000.
Shackleton, Craig R., to Mead Corporation, The. Air piloted valve for controlling start/stop of an ink jet drop generator. 4,520,369, Cl. 346-75.000.
Shaffer, John W., to GTE Products Corporation. Life tungsten filament for incandescent lamp. 4,519,785, Cl. 445-48.000.
Shank, William E.; and Bercaw, Kenneth K., to Litton Industrial Products, Inc. Regulating wheelhead drive. 4,519,722, Cl. 403-26.000.
Sharon Manufacturing Company: *See*—
Hudson, Sharon J., Jr., 4,519,368, Cl. 123-468.000.
Sharp Kabushiki Kaisha: *See*—
Hibi, Hitoshi, 4,520,397, Cl. 358-168.000.
Miyoshi, Shuji; Sugihara, Takashi; Jinda, Akihito; and Hijikigawa, Masaya, 4,520,341, Cl. 338-35.000.
Sharps, Gordon V., Jr., to Mobil Oil Corporation. Method and apparatus for the production of a high-strength, tear-resistant polymer composite. 4,519,860, Cl. 156-161.000.
Shatterproof Glass Corp.: *See*—
Innis, David T., 4,519,885, Cl. 204-192.00R.
Shaw, Myron J. Firearm with interchangeable barrels. 4,519,156, Cl. 42-77.000.
Shaw, Robert R.: *See*—
Perry, Charles H.; and Shaw, Robert R., 4,519,851, Cl. 148-6.310.
Shaw, Stuart W. K., to INCO Europe Limited. Nickel-chromium-cobalt base alloys and castings thereof. 4,519,979, Cl. 420-448.000.
Shedd, Clifford M. Temperature actuated burner igniter. 4,519,774, Cl. 431-267.000.
Shell Oil Company: *See*—
Berni, Albert J., 4,520,467, Cl. 367-24.000.
Entwistle, Ian D.; and Boehm, Peter, 4,520,007, Cl. 424-17.000.
Goodall, Brian L., 4,520,163, Cl. 525-53.000.
Himes, Glenn R., 4,520,138, Cl. 521-91.000.
Poll, Ian; and Smit, Jacobus A. J., 4,519,321, Cl. 110-263.000.
Shepler, Eric F.: *See*—
Brush, Robert W., Sr.; and Shepler, Eric F., 4,519,661, Cl. 339-89.00M.
Sherman, Earle C.; and Green, James B. P., Jr., to Johns-Manville Corporation; and Southern Tool Company, Inc. Sleeve carton end panel and flap folding and sealing assembly. 4,519,181, Cl. 53-374.000.
Sherwood, Donald G.: *See*—
Meuschke, Robert E.; Sherwood, Donald G.; and Silverblatt, Bernard L., 4,519,519, Cl. 220-211.000.
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, to Nissan Motor Co., Ltd. Automative compliance steering control supension. 4,519,627, Cl. 280-701.000.
Shibamoto, Takeshi: *See*—
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.
Shibata, Sueo: *See*—
Yamazaki, Masami; and Shibata, Sueo, 4,519,747, Cl. 416-244.00A.
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Satonaka, Shinobu; Kaminaga, Seiji; and Ishito, Mitsuya, to Mita Industrial Company Limited. Apparatus for regulating the movement of a movable member. 4,519,702, Cl. 355-51.000.
Shigeta, Tatsuo, to Think Laboratory Co., Ltd. Apparatus for automatically attaching and detaching cassette-type rolls. 4,519,887, Cl. 204-212.000.
Shih, Chi-Kai: *See*—
Hagman, John F.; and Shih, Chi-Kai, 4,520,169, Cl. 525-185.000.
Shiino, Mitsuo; and Nakamura, Akio, to Shin-Etsu Polymer Co., Ltd. Socket-type connector for flat cables. 4,519,659, Cl. 339-59.00M.
Shimada, Shinichi: *See*—
Nagase, Hidenobu; Suzuki, Shigeru; and Shimada, Shinichi, 4,519,371, Cl. 123-470.000.
Shimada, Toshiyuki, to Sony Corporation. Method and apparatus for encoding an NRZI digital signal with low DC component. 4,520,346, Cl. 340-347.0DD.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi, 4,519,791, Cl. 474-152.000.
Shimizu, Hirokazu: *See*—
Sugino, Takashi; Itoh, Kunio; Wada, Masaru; and Shimizu, Hirokazu, 4,520,485, Cl. 372-48.000.
Shimizu, Hiromichi; Kuboshima, Akira; and Tanaka, Tadashi, to Daiwa Can Company, Limited. Method of multi-color printing on cylindrical container. 4,519,310, Cl. 101-35.000.
Shimizu, Isamu: *See*—
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.
Shimizu, Kimiaki, to System Communications, Inc. Paper extractor. 4,519,911, Cl. 210-478.000.
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Camera with printed circuit boards comprising resistance-conductor laminated constructions. 4,520,340, Cl. 338-195.000.
Shimizu, Shigehisa: *See*—
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,519,701, Cl. 355-39.000.
Shimizu, Takeo; Hiramatsu, Takeo; Takamiya, Bonnosuke; and Fukuchi, Hiroshi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Automatic transmission for vehicles. 4,519,273, Cl. 74-752.00A.
Shimotsuma, Wataru: *See*—
Soga, Mamoru; Yubakami, Keiichi; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,519,931, Cl. 252-62.510.
Shimura, Tastuo, to Hitachi, Ltd. Semiconductor integrated circuit with inversion preventing electrode. 4,520,382, Cl. 357-53.000.
Shin-Etsu Polymer Co., Ltd.: *See*—
Shiino, Mitsuo; and Nakamura, Akio, 4,519,659, Cl. 339-59.00M.
Shinn, Stuart E.: *See*—
Hulme, James H.; and Shinn, Stuart E., 4,519,478, Cl. 182-178.000.
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., to Kennecott Corporation. Hot mill self-centering roll design. 4,519,118, Cl. 29-121.500.
Shiozaki, Takashi: *See*—
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Shiraishi, Yoshiro, to Eiko Shiraishi. Omnidirectional drive system. 4,519,466, Cl. 180-7.100.
Shiraki, Masaru: *See*—
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.
Shirato, Yoshiaki: *See*—
Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, 4,520,373, Cl. 346-140.00R.
Shirazawa, Takashi: *See*—
Inoue, Takeo; and Shirazawa, Takashi, 4,519,970, Cl. 264-261.000.
Shomura, Eiichi: *See*—
Takenoya, Hideaki; and Shomura, Eiichi, 4,519,328, Cl. 112-158.00E.
Shonk, Phyllis: *See*—
O'Boyle, Dolores; and Shonk, Phyllis, 4,519,137, Cl. 33-17.00R.
Shu, Si-Yan; and Tzeng, Shing-Wu P. Wheel trouble detecting and warning device. 4,520,344, Cl. 340-58.000.
Shulski, Michael M.: *See*—
Traczyk, Edward S.; and Shulski, Michael M., 4,519,232, Cl. 72-133.000.
Siano, Donald B.: *See*—
Turner, S. Richard; Siano, Donald B.; and Bock, Jan, 4,520,182, Cl. 526-307.200.
Sibral, Walter: *See*—
Schmidt, Andreas R.; Strohmayer, Herbert F.; Sibral, Walter; and Milligan, Barton, 4,519,432, Cl. 152-357.00A.
Siebold, Horst: *See*—
Loeffler, Wilfried; Oppelt, Arnulf; and Siebold, Horst, 4,520,315, Cl. 324-309.000.
Siebourg, Wolfgang: *See*—
Dhein, Rolf; Rottmaier, Ludwig; Merten, Rudolf; and Siebourg, Wolfgang, 4,520,147, Cl. 524-100.000.
Siemens Aktiengesellschaft: *See*—
Christopher, Hans-Gunther, 4,519,861, Cl. 156-172.000.
Grosse, Joachim; Hassler, Heinrich; and Tiefel, Gunter, 4,519,234, Cl. 72-258.000.
Hohne, Karl; and Starbeck, Gerd, 4,520,081, Cl. 429-19.000.
Kusmierz, Hans, 4,519,723, Cl. 403-33.000.
Loeffler, Wilfried; Oppelt, Arnulf; and Siebold, Horst, 4,520,315, Cl. 324-309.000.
Riha, Gerd, 4,520,330, Cl. 333-195.000.
Steiger, Erwin; and Hering, Bernhard, 4,520,254, Cl. 219-121.00L.
Wessely, Herrmann, 4,520,426, Cl. 361-386.000.
Sieracki, Leonard M.: *See*—
Durkan, Gerald; and Sieracki, Leonard M., 4,519,387, Cl. 128-204.230.

SIG - Schweizerische Industrie-Gesellschaft: *See—*
Bolli, Hans-Ulrich, 4,519,495, Cl. 198-486.000.
Meier, Siegfried, 4,519,179, Cl. 53-236.000.

Sigmund, Jerry A. Pin type fastener usable with swage collar to form a joint. 4,519,736, Cl. 411-361.000.

Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Unsymmetrical aminosulfinamide derivatives of N-phosphonomethylglycine triesters, herbicidal compositions and use. 4,519,832, Cl. 71-87.000.

Silverblatt, Bernard L.: *See—*
Meuschke, Robert E.; Sherwood, Donald G.; and Silverblatt, Bernard L., 4,519,519, Cl. 220-211.000.

Simko, Richard T., to Xicor, Inc. Integrated high voltage distribution and control systems. 4,520,461, Cl. 365-184.000.

Simmler, Lawrence W.; and Carlson, John H., to Omco Inc. Sleeve barrel lock. 4,519,225, Cl. 70-34.000.

Simmonds, Peter G.; and Moore, Robert E., to Sun Tech, Inc. Fluorocarbon tracers and tracing method. 4,520,109, Cl. 436-56.000.

Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., to GTE Automatic Electric Inc. Space stage arrangement for a T-S-T digital switching system. 4,520,478, Cl. 370-63.000.

Simmons U.S.A. Corporation: *See—*
Dillon, Paul J.; and Stumpf, Walter, 4,519,107, Cl. 5-261.000.

Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, to Dynamit Nobel Aktiengesellschaft. Forgery-proof flat article of a synthetic resin, and process for the production thereof. 4,520,063, Cl. 428-195.000.

Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. 5-Substituted-4-oxo-PGI_1 derivatives, PGI_1 compounds of similar structure, their pharmaceutical methods and process for the preparation of said compounds. 4,520,018, Cl. 514-469.000.

Simpkins, Otto K. Electronic flow meter for measuring flow of bulk solids pneumatically conveyed through a hose. 4,519,257, Cl. 73-861.040.

Singer Company, The: *See—*
Zylbert, Thaddeus J.; Fuhrmann, Wolf-Dieter; Hammer, Hans; and Kappertz, Fritz, 4,519,330, Cl. 112-222.000.

Sinner, Michael; Dietrichs, Hans-Hermann; Puls, Jurgen; Schweers, Werner; and Brachthauser, Karl-Heinz, to Bau- und Forschungsgesellschaft Thermoform AG. Process for production of sugars and optionally cellulose and lignin from lignocellulosic raw materials. 4,520,105, Cl. 435-163.000.

Siol, Werner: *See—*
Lehmann, Klaus; Dreher, Dieter; Rauch, Hubert; and Siol, Werner, 4,520,172, Cl. 525-369.000.

Sipila , Heikki; Kiuru, Erkki; and Vaijarvi, Seppo, to Outokumpu Oy. Method and apparatus for analyzing ore by means of gamma radiation. 4,520,267, Cl. 250-358.100.

Sisco, Jann L. Exercise shoe. 4,519,148, Cl. 36-91.000.

Sivyer Steel Corporation: *See—*
Ceurvorst, Kenneth, 4,519,551, Cl. 241-194.000.

Six, Jean-Claude G.; Claeys, Paul; and Guillaume, Michel, to U.S. Philips Corporation. Flame detection system with isolation between burner and electronic control device. 4,519,771, Cl. 431-25.000.

Skach, Edward J., Jr., to Dow Chemical Company, The. Rotary cooling table. 4,519,758, Cl. 425-6.000.

Skeels, Anthony J., to Xerox Corporation. Device for transferring particulate material. 4,519,693, Cl. 355-3.0DD.

Skoge, Klaus: *See—*
Montlick, Terry; Skoge, Klaus; Vetter, David C.; and Ahrens, Paul R., 4,520,499, Cl. 381-36.000.

Skopal, Judit: *See—*
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , 4,520,018, Cl. 514-469.000.

Skornscheck, Thomas E.: *See—*
Kramer, Fritz; Skornscheck, Thomas E.; and Strauss, Ernest, 4,519,338, Cl. 118-305.000.

Skotheim, Terji, to United States of America, Energy. Rechargeable solid polymer electrolyte battery cell. 4,520,086, Cl. 429-192.000.

Skov, Allan; and Rostrup-Nielsen, Jens R., to Haldor Topsoe. Process for the preparation of synthetic hydrocarbons. 4,520,216, Cl. 585-315.000.

Skowronek, Jerzy; and Persson, Jan O. Method for electroless copper-plating and a bath for carrying out the method. 4,520,052, Cl. 427-443.100.

Skynar, Larry, to Ford Motor Company. Anti-splay shim for a two stage leaf spring assembly. 4,519,589, Cl. 267-52.000.

Slak, William M.: *See—*
Boettcher, Charles W., Jr.; Hamilton, Billy H.; Slak, William M.; and Zweig, Walter L., 4,520,437, Cl. 363-41.000.

Smalheiser, Lawrence A., to Stauffer Chemical Company. Process for absorption of SO_2 into phosphate absorbent. 4,519,994, Cl. 423-242.000.

Smeulers, Wouter: *See—*
Zwijsen, Wilhelmus A. J. M.; Duijndam, Cornelis P. J.; and Smeulers, Wouter, 4,520,393, Cl. 358-149.000.

Smit, Jacobus A. J.: *See—*
Poll, Ian; and Smit, Jacobus A. J., 4,519,321, Cl. 110-263.000.

Smit, Karlo. Ash tray having fire protecting activity. 4,520,345, Cl. 340-309.200.

Smith, Donald M., to Lubrizol Corporation, The. Sulfur-containing compounds and lubricants containing them. 4,519,925, Cl. 252-48.600.

Smith, James W., to Omnicom Engineering. Telephone line security apparatus. 4,520,233, Cl. 179-1.50R.

Smith, John W.: *See—*
Russ, James J.; Smith, John W.; and Condra, Janet S., 4,519,921, Cl. 210-716.000.

Smith, Marc L.: *See—*
Holzrichter, Edward J.; and Smith, Marc L., 4,520,188, Cl. 528-274.000.

Smith, Paul B., to Davco Manufacturing Corporation. Anti-theft lock device. 4,519,653, Cl. 303-89.000.

Smith, Stuart B., to Thermocell Development, Ltd. High-modulus, flexible urethane coating and method of preparation. 4,520,042, Cl. 427-209.000.

Smith, Thomas V., to United States of America, Army. Portable orbiting grinding machine. 4,519,169, Cl. 51-241.00S.

SMS Schloemann-Siemag AG: *See—*
Feldmann, Hugo; Hollmann, Friedrich; Beisemann, Gerd; and Gartner, Horst, 4,519,233, Cl. 72-247.000.

Snedden, William H.; and Safiuddin, Mohammed, to Westinghouse Electric Corp. Digital ramp function generator and motor drive system including the same. 4,520,450, Cl. 364-607.000.

Sneider, Vincent R. Valve control of nozzle flow from disposable syringe. 4,519,794, Cl. 604-212.000.

Snook, Randolph W., to Crown Union, Inc. Chimney lining system including frame-supported membrane. 4,519,303, Cl. 98-58.000.

Snyder Laboratories, Inc.: *See—*
Atkinson, Robert W.; Elliott, Joseph W.; and Johnson, Donald W., 4,519,385, Cl. 128-66.000.

Snyder, Solomon H.; and Gould, Robert J., to Johns Hopkins University, The. Assay method for organic calcium antagonist drugs and a kit for such an assay. 4,520,112, Cl. 436-504.000.

Societa Cavi Pirelli S.p.A.: *See—*
Borroni, Andrea, 4,519,197, Cl. 57-64.000.

Societe Anonyme des Plieuses Automatiques: *See—*
Maure, Jean, 4,519,180, Cl. 53-234.000.

Societe Anonyme Saunier Duval eau Chaude Chauffage - S.D.E.C.C.: *See—*
Boulle, Franck; and Zveguintzoff, Michel, 4,519,540, Cl. 237-7.000.

Societe d'Etudes Et Conseils A E R O: *See—*
Fourre, Remy; and de Langre, Bruno, 4,520,482, Cl. 371-68.000.

Societe Labofina S.A.: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,519,983, Cl. 422-78.000.

Societe Nationale de l'Amiante: *See—*
Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Labonte, Normand, 4,519,811, Cl. 51-309.000.

Societe Nationale des Poudres et Explosifs: *See—*
Leneveu, Louis J. J.; and Treneules, Didier J., 4,519,855, Cl. 149-21.000.

Societe Nationale Elf Anquitaine: *See—*
Oliveau, Olivier; and Blanc, Claude, 4,519,991, Cl. 423-220.000.

Soga, Mamoru; Yubakami, Keiichi; Sonoda, Nobuo; and Shimotsuma, Wataru, to Matsushita Electric Industrial Co., Ltd. Magnetic fluid. 4,519,931, Cl. 252-62.510.

Sokulsky, Marvin N.: *See—*
Murphy, Richard D.; and Sokulsky, Marvin N., 4,519,626, Cl. 280-661.000.

Soletanche: *See—*
Bollinger, Karl, 4,519,475, Cl. 182-17.000.

Somfy: *See—*
Dussoliet, Jacques; and Dieupart, Michel, 4,519,554, Cl. 242-67.400.
Florin, Guy, 4,519,487, Cl. 192-36.000.

Sommer, Horst; and Gronle, Hansgeorg, to Elring Dichtungswerke GmbH. Reinforced support sheet and method for making same. 4,520,068, Cl. 428-324.000.

Sonderegger, Hans-Conrad; and Lutz, Eugen, to Kistler Instrumente A.G. High pressure transducer. 4,519,254, Cl. 73-726.000.

Sonetaka, Kazunori: *See—*
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Iketani, Yukiyoshi, 4,519,807, Cl. 44-15.00R.

Song, Sung T. Foldable vehicle cover storable on the vehicle. 4,519,644, Cl. 296-136.000.

Sonoda, Nobuo: *See—*
Soga, Mamoru; Yubakami, Keiichi; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,519,931, Cl. 252-62.510.

Sonoda, Takenori: *See—*
Tanaka, Masato; and Sonoda, Takenori, 4,520,407, Cl. 360-32.000.

Sonval S.A.: *See—*
Wyser, Paul-Julian, 4,520,085, Cl. 429-174.000.

Sony Corporation: *See—*
Asaida, Takashi, 4,520,386, Cl. 358-13.000.
Nakajima, Kaoru; and Miyai, Seiichi, 4,520,079, Cl. 428-694.000.
Ohshima, Eiji, 4,520,411, Cl. 360-85.000.
Shimada, Toshiyuki, 4,520,346, Cl. 340-347.0DD.
Tanaka, Masato; and Sonoda, Takenori, 4,520,407, Cl. 360-32.000.
Uedaira, Satoru; Yamanoi, Hiroshi; and Tamura, Hidemasa, 4,520,004, Cl. 423-598.000.

Sood, Lal C., to Motorola, Inc. Method and apparatus for selectively precharging column lines of a memory. 4,520,465, Cl. 365-203.000.

Sornes, Tor, to TrioVing A/S. Electronic recodeable lock. 4,519,228, Cl. 70-276.000.

Southern Tool Company, Inc.: *See—*
Sherman, Earle C.; and Green, James B. P., Jr., 4,519,181, Cl. 53-374.000.

Southwire Company: *See—*
Staib, William G., 4,519,588, Cl. 266-220.000.

Starnes, Ralph E., Jr.; and Carden, Danny P., 4,519,131, Cl. 29-825.000.

Sovonics Solar Systems: *See—*
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., 4,519,339, Cl. 118-718.000.
Ovshinsky, Stanford R., 4,520,039, Cl. 427-35.000.
Ovshinsky, Stanford R.; and Madan, Arun, 4,520,380, Cl. 357-2.000.

Soychak, Francis J.: *See—*
Chesebro, Donald G.; and Soychak, Francis J., 4,519,128, Cl. 29-576.00W.

Spaanderman Cornelis, to Internationale Octrooi Maatschappij "Octropa" B.V. Rotary weigh-sorter. 4,519,506, Cl. 209-592.000.

Spaller, Albert E., to Eastman Kodak Company. Package wind cutter. 4,519,281, Cl. 83-37.000.

Spaziante, Placido M.: *See—*
Pellegri, Alberto; and Spaziante, Placido M., 4,519,889, Cl. 204-275.000.

Specialty Packaging Products, Inc.: *See—*
Wiles, Laurence E.; and Page, Frank C., III, 4,519,518, Cl. 215-331.000.

Spector, George: *See—*
Wilhelm. Stanley R.; and Spector, George, 4,519,586, Cl. 256-51.000.

Speedfam Corporation: *See—*
Cesna, Joseph V., 4,519,168, Cl. 51-216.0LP.

Speit, Burkhard; Mennemann, Karl; and Gliemeroth, Georg, to Schott Glaswerke. High absorbance Pb-containing glass for cathode ray tube picture screen. 4,520,115, Cl. 501-60.000.

Spellar, Peter C.: *See—*
Murphy, David A.; and Spellar, Peter C., 4,519,748, Cl. 417-45.000.

Spencer, Byron A. T., to Lucas Industries Inc. Devices for controlling flow of fluid under pressure. 4,519,417, Cl. 137-501.000.

Spengler, Ernst M., to Stanztechnik GmbH R+S. Apparatus for manufacturing three-dimensional work pieces. 4,519,766, Cl. 425-302.100.

Speronello, Barry K.: *See—*
Andrews, Robert W.; Himpsl, Francis L.; Horvath, Eugene B.; and Speronello, Barry K., 4,520,119, Cl. 502-67.000.

Sperry Corporation: *See—*
Blakeslee, Edward A., 4,519,190, Cl. 56-181.000.
Kline, Charles M., 4,519,209, Cl. 60-433.000.
Liepa, Arnolds E., 4,520,439, Cl. 364-200.000.
McMahon, Donald H., 4,519,252, Cl. 73-655.000.
Webster, Emmett G.; and McLean, Kenneth W., 4,519,188, Cl. 56-16.400.

Spetra-Physics, Inc.: *See—*
Morrow, Robert J. P., 4,519,705, Cl. 356-138.000.

Spevack, Jerome S. Heat conversion system. 4,519,441, Cl. 165-1.000.

Spiess, Karl-Heinz: *See—*
Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,520,063, Cl. 428-195.000.

Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH: *See—*
Barauke, Norbert, 4,519,199, Cl. 57-87.000.

Spinner, Georg; Lang, Manfred; and Pautz, Anton, to Spinner GmbH, Elektrotechnische Fabrik. Light-rotation coupling for a plurality of channels. 4,519,670, Cl. 350-96.150.

Spinner GmbH, Elektrotechnische Fabrik: *See—*
Spinner, Georg; Lang, Manfred; and Pautz, Anton, 4,519,670, Cl. 350-96.150.

Spittka, Horst; Eckardt, Rudolf; and Neuendorf, Cristoph, to Flachglas Aktiengesellschaft. Method of and apparatus for quench-tempering shaped glass. 4,519,829, Cl. 65-114.000.

Square D Company: *See—*
Curran, Earl J., Jr., 4,520,304, Cl. 318-800.000.

Staar S. A.: *See—*
d'Alayer de Costemore d'Arc, Stephane, 4,520,470, Cl. 369-72.000.

Stache, Detlev: *See—*
Krautkremer, Franz; Lais, Siegfried; Knecht, Reinhold; and Stache, Detlev, 4,519,335, Cl. 114-144.00R.

Stachura, Stanley J.: *See—*
Bevilaqua, Paul M.; and Stachura, Stanley J., 4,519,990, Cl. 423-210.000.

Staffin, H. Kenneth; Roaper, Robert B.; and Bickford, Karin S., to Procedyne Corp. Method and apparatus for thermal testing. 4,519,718, Cl. 374-45.000.

Stafford, Donald C.: *See—*
Allo, Vincent F.; and Stafford, Donald C., 4,519,448, Cl. 165-118.000.

Stahlecker, Fritz, to Stahlecker, Hans, a part interest. Wrapped yarn spinning machine with several spinning places. 4,519,196, Cl. 57-18.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz, 4,519,196, Cl. 57-18.000.

Staib, William G., to Southwire Company. Molten copper oxygenation apparatus. 4,519,588, Cl. 266-220.000.

Standard Oil Company, The: *See—*
Burrington, James D.; Pesa, Fred A.; Maher, Elizabeth A.; and Grasselli, Robert K., 4,519,954, Cl. 260-465.80D.
Coffey, Gerald P.; Curatolo, Benedict S.; and Cepulis, Rimvydas L., 4,520,190, Cl. 528-336.000.

Standard Oil Company (Indiana): *See—*
Basalay, Robert J.; West, C. Thomas; and Petrille, Dennis G., 4,519,926, Cl. 252-49.600.
Chang, Yuehsiung, 4,519,881, Cl. 204-149.000.
Prater, Keith B.; Thrash, Robert J.; and Connolly, John F., 4,520,083, Cl. 429-101.000.
Tinker, Lawrence A.; and Harkness, Allan C., 4,520,084, Cl. 429-101.000.

Stants, Richard O. Method and apparatus for controlling the loads or a plurality of units on a shared source. 4,520,274, Cl. 307-39.000.

Stanztechnik GmbH R+S: *See—*
Spengler, Ernst M., 4,519,766, Cl. 425-302.100.

Starbeck, Gerd: *See—*
Hohne, Karl; and Starbeck, Gerd, 4,520,081, Cl. 429-19.000.

Starnes, Ralph E., Jr.; and Carden, Danny P., to Southwire Company. Method and apparatus for stripping multiplex wire and cable. 4,519,131, Cl. 29-825.000.

State of Israel, Ministry of Agriculture: *See—*
Loebenstein, Gad; and Gera, Abed, 4,520,020, Cl. 424-197.100.

State of Israel, Ministry of Defence, Rafael Development Authority, The: *See—*
Rosenberg, Gideon, 4,519,317, Cl. 102-521.000.

Staudinger, Gernot: *See—*
Schrofelbauer, Herbert; and Staudinger, Gernot, 4,519,995, Cl. 423-244.000.

Stauffer Chemical Co.: *See—*
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,519,833, Cl. 71-100.000.
Smalheiser, Lawrence A., 4,519,994, Cl. 423-242.000.
Via, Francis A., 4,519,883, Cl. 204-159.150.

Stauter, John C.: *See—*
Baldwin, Roger A.; Stauter, John C.; Kauffman, Jim W.; and Laughlin, William C., 4,519,913, Cl. 210-611.000.

Stawitz, Josef, to Bayer Aktiengesellschaft. Process for preparing 4,4'-dibenzoylaminodianthrimidecarbazole. 4,520,202, Cl. 548-416.000.

Stearley, John W.; and Woodard, Tony O., to Eaton Corporation. Pushbutton switch with remotely controlled operating attachment. 4,520,334, Cl. 335-186.000.

Steelcase, Inc.: *See—*
Whitwam, Ronald L., 4,519,651, Cl. 297-455.000.

Steidel, Clinton F., to Transco Products, Inc. Rotary actuator for a microwave switch. 4,520,331, Cl. 335-125.000.

Steigauf, William A. Apparatus for driving nails using an impact hammer. 4,519,536, Cl. 227-147.000.

Steiger, Erwin; and Hering, Bernhard, to Siemens Aktiengesellschaft. Method and apparatus for the adjustment of contact springs in a relay. 4,520,254, Cl. 219-121.00L.

Steimel, Johannes: *See—*
Seeger, G. Hans J.; Giesenberg, Peter; and Steimel, Johannes, 4,519,291, Cl. 89-1.806.

Steiner, Hakan: *See—*
Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,520,016, Cl. 514-12.000.

Steinle, Benedikt: *See—*
Petr, Jan; and Steinle, Benedikt, 4,520,311, Cl. 324-117.00R.

Stenzenberger, Horst, to Boots Company PLC, The. Modified thermosetting imide resins with improved fracture toughness. 4,520,145, Cl. 523-500.000.

Sternson Limited: *See—*
Tosh, Douglas J., 4,520,185, Cl. 528-65.000.

Stevens, David P.: *See—*
DeYoreo, Sal G.; and Stevens, David P., 4,519,776, Cl. 431-328.000.

Stevens, Samuel B.: *See—*
Satzler, Ronald L.; and Stevens, Samuel B., 4,519,654, Cl. 305-27.000.

Stevens, Timothy S.; and Langhorst, Martin A., to Dow Chemical Company, The. High performance analytical column for anion determination. 4,519,905, Cl. 210-198.200.

Stevens, William D.: *See—*
Paredes, Candelario; and Stevens, William D., 4,520,390, Cl. 358-108.000.

Stevenson, Michael J. Method for use of pattern transfers in rotomolding. 4,519,972, Cl. 264-245.000.

Stewart-Warner Corporation: *See—*
Mayer, William; and Runions, Alton E., 4,520,432, Cl. 362-267.000.

Stichting Nederlands Instituut Voor Zuivelonderzoek: *See—*
Ottenhof, Henricus A. W. E. M., 4,519,945, Cl. 260-119.000.

Stier, Kenneth. Slats for vertical venetian blinds. 4,519,435, Cl. 160-166.00A.

Stisen, Borge. Straw fuel briquette press. 4,519,808, Cl. 44-10.00A.

Stobb, Inc.: *See—*
Stobb, Walter J., 4,519,740, Cl. 414-71.000.

Stobb, Walter J., to Stobb, Inc. Apparatus and method for palletizing bundles of sheets. 4,519,740, Cl. 414-71.000.

Stol, Israel. Surface-fastened frangible adhesive capsule. 4,519,866, Cl. 156-295.000.

Stoll, Kurt. Solenoid valve. 4,519,421, Cl. 137-596.160.

Stoll, Kurt; and Glattli, Hans-Heinrich. Adapter block and a mold for producing such blocks by foam molding. 4,520,061, Cl. 428-137.000.

Stolpen, Alan H.: *See—*
Kelly, Austin T.; Stolpen, Alan H.; and Emile, Philip, Jr., 4,520,310, Cl. 324-115.000.

Stone, Albert; Pyde, Edwin; and Carveth, Peter, to Baxter Travenol Laboratories, Inc. Container having a selectively openable seal line and peelable barrier means. 4,519,499, Cl. 206-219.000.

Stone, Gary H.: *See—*
Stone, Joel R.; and Stone, Gary H., 4,519,631, Cl. 283-70.000.

Stone, Joel R.; and Stone, Gary H. System for providing updated product and pricing information for retailer. 4,519,631, Cl. 283-70.000.

Straubel, Max: *See—*
Eheim, Franz; Hofer, Gerald; Konrath, Karl; and Straubel, Max, 4,519,352, Cl. 123-373.000.
Strauss, Ernest: *See—*
Kramer, Fritz; Skornscheck, Thomas E.; and Strauss, Ernest, 4,519,338, Cl. 118-305.000.
Straw, Robert D.: *See—*
Yannopoulos, Lymperios N.; Straw, Robert D.; and Philips, D. Colin, 4,520,157, Cl. 524-462.000.
Street, Kenneth: *See—*
Brotherton, William A.; and Street, Kenneth, 4,520,427, Cl. 361-389.000.
Strickland, James K.; and Ivey, H. Grady, to Strickland Systems, Inc. Inside corner concrete form unit. 4,519,570, Cl. 249-194.000.
Strickland Systems, Inc.: *See—*
Strickland, James K.; and Ivey, H. Grady, 4,519,570, Cl. 249-194.000.
Strid, Kent: *See—*
Ragnegard, Samuel; Strid, Kent; and Sundkvist, Goran, 4,519,910, Cl. 210-327.000.
Strohmaier, Ernst; Reich, Heinrich; and Wagner, Bernd, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,519,780, Cl. 433-29.000.
Strohmayer, Herbert F.: *See—*
Schmidt, Andreas R.; Strohmayer, Herbert F.; Sibral, Walter; and Milligan, Barton, 4,519,432, Cl. 152-357.00A.
Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., to Leland Stanford Junior University, The Board of Trustees of the. Fluorescent immunoassay employing a phycobiliprotein labeled ligand or receptor. 4,520,110, Cl. 436-501.000.
Stuart, James M., to Malvern Scale Company. Weighing scale with adjustable suspension and thermal compensation. 4,519,464, Cl. 177-244.000.
Stucke, Walter: *See—*
Landgraf, Helmut; and Stucke, Walter, 4,519,863, Cl. 156-244.120.
Stuckey, William C. Vertical plant support with horizontal hoops. 4,519,162, Cl. 47-47.000.
Studt, William L.: *See—*
Campbell, Henry F.; Kuhla, Donald E.; Studt, William L.; and Dodson, Stuart A., 4,520,025, Cl. 514-275.000.
Stumpf, Walter: *See—*
Dillon, Paul J.; and Stumpf, Walter, 4,519,107, Cl. 5-261.000.
Submicron, Inc.: *See—*
Czerlinski, George H., 4,520,249, Cl. 219-10.49R.
Subramanian, Narayanan S., to Du Pont de Nemours, E. I., and Company. Process for making random ethylene/alkyl acrylate copolymers. 4,520,183, Cl. 526-318.000.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co.: *See—*
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, 4,519,120, Cl. 29-157.00R.
Suga, Shigeru. Device for testing combustability. 4,519,716, Cl. 374-8.000.
Sugahara, Kenshi; Yasuda, Kazuo; and Mori, Junji, to Hitachi, Ltd. Liquid film type, anion-selective electrode. 4,519,891, Cl. 204-418.000.
Sugihara, Hiroshi: *See—*
Saito, Seitoku; Izumi, Toshiaki; Kobuke, Takayoshi; and Sugihara, Hiroshi, 4,520,076, Cl. 428-611.000.
Sugihara, Takashi: *See—*
Miyoshi, Shuji; Sugihara, Takashi; Jinda, Akihito; and Hijikigawa, Masaya, 4,520,341, Cl. 338-35.000.
Suginaka, Shunji: *See—*
Kobayashi, Tatsuhiko; Ikeuchi, Satoru; Watanabe, Kazumasa; and Suginaka, Shunji, 4,520,095, Cl. 430-223.000.
Sugino, Takashi; Itoh, Kunio; Wada, Masaru; and Shimizu, Hirokazu, to Matsushita Electric Industrial Co., Ltd. Semiconductor device. 4,520,485, Cl. 372-48.000.
Sugiura, Tsutomu: *See—*
Bunno, Masayasu; Sugiura, Tsutomu; Tsuji, Masao; Harada, Hidemi; and Ichihara, Yoshihiro, 4,520,102, Cl. 435-61.000.
Sugiyama, Hiroyuki; Abe, Ryozo; Yusa, Yasuhiro; Sakurai, Masaki; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Signal pickup device in a rotary recording medium reproducing apparatus. 4,520,473, Cl. 369-126.000.
Sugiyama, Hiroyuki: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.
Suh, John T.: *See—*
Loev, Bernard; Jones, Howard; and Suh, John T., 4,520,131, Cl. 514-156.000.
Sukumar, Subramaniam: *See—*
Hall, Laurance D.; and Sukumar, Subramaniam, 4,520,316, Cl. 324-309.000.
Sullivan, Ashley H. Mouth splint. 4,519,386, Cl. 128-136.000.
Sulzer Brothers Limited: *See—*
Meier, Bruno, 4,519,272, Cl. 74-752.00R.
Schreiber, Adam; and Hilaire, Jacob, 4,519,101, Cl. 3-1.912.
Sulzer-Escher Wyss Ltd.: *See—*
Oertle, Jakob; and Mulhaupt, Bruno, 4,519,899, Cl. 208-179.000.
Sumida, Shizuo: *See—*
Nagaoka, Mitsuru; Oda, Kazuya; and Sumida, Shizuo, 4,519,484, Cl. 192-3.580.
Sumino, Yoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnosis apparatus using reduced numbers of photo transmission lines. 4,519,250, Cl. 73-626.000.
Sumitomo Chemical Co., Ltd.: *See—*
Hattori, Makoto; Taguma, Akihiro; Morimitsu, Toshihiko; and Takeshita, Akira, 4,519,947, Cl. 260-371.000.
Sumner, Leslie, to Gallaher Limited. Material handling device. 4,519,298, Cl. 92-103.00F.
Sun Tech, Inc.: *See—*
Hsu, Chao-Yang; and Lyons, James E., 4,519,948, Cl. 260-396.00R.
Simmonds, Peter G.; and Moore, Robert E., 4,520,109, Cl. 436-56.000.
Sunbelt Plastics, A Division Of Sunbelt Manufacturing, Inc.: *See—*
Jackson, John C., II; and Schendle, Robert N., 4,519,502, Cl. 206-390.000.
Sundet, Sherman A., to Du Pont de Nemours, E. I., and Company. Production of composite membranes. 4,520,044, Cl. 427-244.000.
Sundkvist, Goran: *See—*
Ragnegard, Samuel; Strid, Kent; and Sundkvist, Goran, 4,519,910, Cl. 210-327.000.
Sundstrand Corporation: *See—*
Glennon, Timothy F., 4,520,279, Cl. 307-254.000.
Sunny H. K.: *See—*
Minet, Ronald G.; Dente, Mario; Ranzi, Eliseo; and Sunny H. K., 4,520,217, Cl. 585-415.000.
Supreme Aluminum Industries Limited: *See—*
Hulme, James H.; and Shinn, Stuart E., 4,519,478, Cl. 182-178.000.
Susi, Roger E. Reset circuit. 4,520,418, Cl. 361-92.000.
Sutcliffe, John W., to United Technologies Corporation. Method for the machining of composite materials. 4,519,732, Cl. 408-1.00R.
Sutherland, Donald. Playground carrousel. 4,519,602, Cl. 272-33.00R.
Sutherland, Ray, to Rockwell International Corporation. Tamperproof, moisture proof readout enclosure. 4,520,423, Cl. 361-380.000.
Sutoh, Shinji; Hara, Toshizo; and Takahashi, Akiyoshi, to Diesel Kiki Kabushiki Kaisha. Window pane defroster device with vehicle air conditioning apparatus. 4,519,443, Cl. 165-17.000.
Sutton, David L.; and Walker, Michael L., to Halliburton Company. Environmentally compatible high density drill mud or blow-out control fluid. 4,519,922, Cl. 252-8.50B.
Suzuki, Fujio: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.
Suzuki, Hayao, to Kabushiki Kaisha Daini Seikosha. Controlling apparatus for positioning. 4,520,301, Cl. 318-609.000.
Suzuki, Hiroaki: *See—*
Sasaki, Itsuo; and Suzuki, Hiroaki, 4,520,283, Cl. 307-520.000.
Suzuki, Hiroshi: *See—*
Yoshida, Jituo; Okuyama, Shigeaki; and Suzuki, Hiroshi, 4,519,193, Cl. 56-328.00R.
Suzuki, Ryoichi: *See—*
Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, 4,519,685, Cl. 354-154.000.
Suzuki, Shigeru: *See—*
Nagase, Hidenobu; Suzuki, Shigeru; and Shimada, Shinichi, 4,519,371, Cl. 123-470.000.
Suzuki, Shigeto: *See—*
Schroeder, Albert H.; Denisevich, Peter, Jr.; Suzuki, Shigeto; and Kurkov, Victor P., 4,519,940, Cl. 252-500.000.
Suzuki, Shigeyoshi: *See—*
Senga, Takao; Yamada, Jun; and Suzuki, Shigeyoshi, 4,520,088, Cl. 430-49.000.
Suzuki, Toshinori; and Ozawa, Minoru. Video tape recorder with record review mode for editing signals recorded on magnetic tape. 4,520,406, Cl. 360-14.200.
Swanson, Carl I., to Kidde, Inc. Multiple redundant suppression devices with provision of supervision and fault correction. 4,520,348, Cl. 340-508.000.
Swindler, Dan E., to Texas Instruments Incorporated. Four-way key switch control mechanism. 4,520,240, Cl. 200-5.00R.
SWS Silicones Corporation: *See—*
Martin, Eugene R.; Ansel, David S.; and Manis, Paul A., 4,520,176, Cl. 524-598.000.
Sxoma-Energie: *See—*
Redele, Jean E. A., 4,519,358, Cl. 123-557.000.
Sychev, Anatoly P.; Sannikov, Jury I.; Grinin, Jury A.; Polyakov, Ivan P.; and Abdeev, Jury M., to Vsesojuzny Nauchno-Issledovatelsky Institut Tsvetnoi Metallurgii. Method of processing lead sulphide or lead-zinc sulphide ores, or sulphide concentrates, or mixtures thereof. 4,519,836, Cl. 75-25.000.
Sycon Corporation: *See—*
Kelly, Austin T.; Stolpen, Alan H.; and Emile, Philip, Jr., 4,520,310, Cl. 324-115.000.
Synthelabo: *See—*
Cavero, Icilio; and Langer, Salomon, 4,520,030, Cl. 514-629.000.
System Communications, Inc.: *See—*
Shimizu, Kimiaki, 4,519,911, Cl. 210-478.000.
Szabo, Laszlo. Portable lawn and garden sprinkler system. 4,519,544, Cl. 239-279.000.
Szabo Maschinenbau GmbH & Co. KG: *See—*
Schlienkamp, Hubert, 4,519,962, Cl. 264-40.700.
Szczepanski, Henry, to Ciba-Geigy Corporation. Herbicidal ethynylphenylureas. 4,519,834, Cl. 71-100.000.
Szilagyi, Ildiko : *See—*
Simonidesz, Vilmos; Ivanics, Jozsef; Galambos, Geza; Papp nee Behr, Agnes; Kovacs, Gabor; Skopal, Judit; and Szilagyi, Ildiko , 4,520,018, Cl. 514-469.000.

Szuminski, Gary F.; and Jones, Thomas J., to Rolls-Royce Inc.; and Rolls-Royce Limited. Vectorable nozzles for turbomachines. 4,519,543, Cl. 239-265.190.
Tabak, Samuel A.: *See—*
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., 4,520,215, Cl. 585-255.000.
Tabata, Junichi, to Kabushiki Kaisha Daini Seikosha. Pulse detector. 4,519,397, Cl. 128-706.000.
Tabuchi, Hiroshi: *See—*
Oshima, Masanao; Narita, Hitoshi; Yashima, Nobuyoshi; and Tabuchi, Hiroshi, 4,519,728, Cl. 405-224.000.
Tachikawa Spring Co.: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichirou; Hayashi, Koji; and Kon, Shigeki, 4,519,862, Cl. 156-219.000.
Tada, Satomi: *See—*
Kumasaka, Sadao; and Tada, Satomi, 4,520,141, Cl. 521-126.000.
Tagliafico, Carlo, to Costruzioni Elettromagnetiche Industriali di Tagliafico Carlo. Solenoid with internally located switch contacts. 4,520,332, Cl. 335-126.000.
Taguchi, Shunichi: *See—*
Ishihara, Masahiro; Watanabe, Mitsuru; Ohkawa, Shuji; Taguchi, Shunichi; and Kikuchi, Itsuo, 4,520,250, Cl. 219-10.55B.
Taguma, Akihiro: *See—*
Hattori, Makoto; Taguma, Akihiro; Morimitsu, Toshihiko; and Takeshita, Akira, 4,519,947, Cl. 260-371.000.
Taiho Kogyo Co., Ltd.: *See—*
Kutsuna, Tomoharu; Ohtani, Shinzi; and Kondo, Kunimasa, 4,520,045, Cl. 427-294.000.
Taiyo Yuden Co., Ltd.: *See—*
Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, 4,519,942, Cl. 252-520.000.
Takabayashi, Katsuyuki: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; and Takabayashi, Katsuyuki, 4,520,100, Cl. 435-13.000.
Takagi, Satoshi: *See—*
Itoh, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,519,269, Cl. 74-483.00R.
Takahashi, Akiyoshi: *See—*
Sutoh, Shinji; Hara, Toshizo; and Takahashi, Akiyoshi, 4,519,443, Cl. 165-17.000.
Takahashi, Fuminobu: *See—*
Hori, Yuji; Nishimura, Yoshichika; and Takahashi, Fuminobu, 4,519,923, Cl. 252-8.50C.
Takahashi, Hiroshi, to Nippon Electric Co., Ltd. Digital television special effect waveform generator. 4,520,398, Cl. 358-183.000.
Takahashi, Kotei, to Nissan Motor Company, Limited. Automotive manual transmission. 4,519,267, Cl. 74-473.00R.
Takahashi, Naoyuki: *See—*
Kamimura, Yoshihiko; Okamoto, Toshiro; Takahashi, Naoyuki; Makihara, Hiroshi; and Oshima, Michio, 4,520,224, Cl. 585-648.000.
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, to Victor Company of Japan, Ltd. Digital video signal recording system and reproducing apparatus. 4,520,401, Cl. 358-310.000.
Takahashi, Susumu, to Niigata Engineering Co., Ltd. Emergency disconnector for fluid loading and unloading lines. 4,519,411, Cl. 137-68.00R.
Takahashi, Susumu: *See—*
Tomisawa, Yoshiaki; Takeuchi, Toshio; Honda, Keijiro; Takahashi, Susumu; and Kinoda, Seiji, 4,519,690, Cl. 354-324.000.
Takai, Kazuki: *See—*
Itoh, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,519,269, Cl. 74-483.00R.
Takamatsu, Shuhei: *See—*
Fujimoto, Michitaro; Ohde, Hironori; Seki, Hirokazu; Takamatsu, Shuhei; and Sakai, Takeshi, 4,520,201, Cl. 548-342.000.
Takamiya, Bonnosuke: *See—*
Shimizu, Takeo; Hiramatsu, Takeo; Takamiya, Bonnosuke; and Fukuchi, Hiroshi, 4,519,273, Cl. 74-752.00A.
Takano, Osamu; and Fujiwara, Koji, to Kabushiki Kaisha Takuma. Velocity controlling apparatus and method to be used with a stoker type burning apparatus. 4,519,323, Cl. 110-281.000.
Takasago Perfumery Co., Ltd.: *See—*
Mitsuhashi, Shigeru; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,520,212, Cl. 568-875.000.
Takashi, Takano: *See—*
Sasaki, Akihiko; Arai, Kouji; Takashi, Takano; and Namiki, Yasuomi, 4,520,405, Cl. 360-10.300.
Takashi, Takuma: *See—*
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.
Takashima, Seiichi: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.
Takatori, Yasushi: *See—*
Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, 4,520,373, Cl. 346-140.00R.
Takeda Chemical Industries, Ltd.: *See—*
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,520,194, Cl. 544-22.000.
Takeda, Hiroaki; Tanaka, Kano; and Murata, Shinji, to Canon Kabushiki Kaisha. Image forming apparatus. 4,519,697, Cl. 355-14.00R.
Takeda, Kazutoshi: *See—*
Kamata, Nobuo; Sekiya, Takashi; Takeda, Kazutoshi; Hayasaka, Toyoo; and Yoshida, Tomohisa, 4,520,087, Cl. 429-219.000.
Takenaka, Akihiko: *See—*
Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, 4,519,362, Cl. 123-414.000.
Takenaka Komuten Co., Ltd.: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Takenoya, Hideaki; and Shomura, Eiichi, to Janome Sewing Machine Co., Ltd. Electronic sewing machine with control detecting device. 4,519,328, Cl. 112-158.00E.
Takeshita, Akira: *See—*
Hattori, Makoto; Taguma, Akihiro; Morimitsu, Toshihiko; and Takeshita, Akira, 4,519,947, Cl. 260-371.000.
Takeuchi, Tatsuro; Yoshida, Shohei; and Kawai, Kazuhiro. Gas-liquid contacting apparatus. 4,519,959, Cl. 261-93.000.
Takeuchi, Toshio: *See—*
Tomisawa, Yoshiaki; Takeuchi, Toshio; Honda, Keijiro; Takahashi, Susumu; and Kinoda, Seiji, 4,519,690, Cl. 354-324.000.
Talsma, Robert C.: *See—*
Kosrow, Robert L.; and Talsma, Robert C., 4,519,331, Cl. 112-262.300.
Tamaki, Kiyoshi: *See—*
Yamazaki, Hiroshi; and Tamaki, Kiyoshi, 4,520,090, Cl. 430-106.600.
Tambo, William: *See—*
Coleman, Larry M.; and Tambo, William, 4,519,999, Cl. 423-337.000.
Tamura, Hidemasa: *See—*
Uedaira, Satoru; Yamanoi, Hiroshi; and Tamura, Hidemasa, 4,520,004, Cl. 423-598.000.
Tamura, Raymond M. Pollution reducing aircraft propulsion. 4,519,563, Cl. 244-208.000.
Tan, Sing L.: *See—*
Jackson, Richard N.; and Tan, Sing L., 4,520,385, Cl. 358-12.000.
Tanabe Seiyaku Co., Ltd.: *See—*
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,519,955, Cl. 260-501.120.
Tanahashi, Toru, to Mitsubishi Denki Kabushiki Kaisha. Safety apparatus for elevator. 4,519,479, Cl. 187-29.00R.
Tanaka, Akio. Apparatus and method for the combustion of water-in-oil emulsion fuels. 4,519,769, Cl. 431-4.000.
Tanaka, Kano: *See—*
Takeda, Hiroaki; Tanaka, Kano; and Murata, Shinji, 4,519,697, Cl. 355-14.00R.
Tanaka, Katsushi: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.
Tanaka, Koji: *See—*
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.
Tanaka, Masato; and Sonoda, Takenori, to Sony Corporation. Recording and/or reproducing apparatus for a multi-channel digital signal. 4,520,407, Cl. 360-32.000.
Tanaka, Osamu; Iijima, Hiroshi; Ito, Masayoshi; and Okigawa, Etsumi, to Kanagawa Rehabilitation Center. Wheelchair. 4,519,649, Cl. 297-316.000.
Tanaka, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Failure detection circuit for an X-ray tube. 4,520,495, Cl. 378-117.000.
Tanaka, Tadashi: *See—*
Shimizu, Hiromichi; Kuboshima, Akira; and Tanaka, Tadashi, 4,519,310, Cl. 101-35.000.
Tanaka, Takashi: *See—*
Ono, Yoshio; and Tanaka, Takashi, 4,519,337, Cl. 118-33.000.
Tanaka, Takumi: *See—*
Arai, Yoshihiro; and Tanaka, Takumi, 4,520,174, Cl. 525-438.000.
Arai, Yoshihiro; and Tanaka, Takumi, 4,520,175, Cl. 525-438.000.
Tanaka, Yoshikazu: *See—*
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,519,790, Cl. 474-18.000.
Taniguchi, Itaru: *See—*
Fujii, Yoshihiko; Tomita, Osamu; Taniguchi, Itaru; and Saiwai, Kazuhiko, 4,520,370, Cl. 346-76.00L.
Taniguchi, Masato: *See—*
Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, 4,520,354, Cl. 340-679.000.
Taniguchi, Tsutomu: *See—*
Sato, Ryuichi; Taniguchi, Tsutomu; and Ohba, Masatoshi, 4,520,289, Cl. 310-316.000.
Tanner Companies, The: *See—*
Gillen, Orval D.; and Healey, John G., Jr., 4,519,711, Cl. 366-4.000.
Tao, Muneo; and Migaki, Fumihiko, to Matsushita Electric Industrial Co., Ltd. Burner apparatus. 4,519,775, Cl. 431-344.000.

Tarng, Ming L.; and Romito, William S., to RCA Corporation. Method for determining the integrity of passivant coverage over rectifying junctions in semiconductor devices. 4,520,312, Cl. 324-158.00D.

Taylor, Brian E.: *See—*
Lindstrom, Gerald D.; Eckhart, Clifford F.; Farthing, George A., Jr.; Muckley, James J.; and Taylor, Brian E., 4,519,322, Cl. 110-264.000.

Taylor, Mark P.: *See—*
Beall, George H.; MacDowell, John F.; and Taylor, Mark P., 4,519,828, Cl. 65-33.000.

Taylor, Ronald P.; Cekoric, Mark E.; Dewhurst, John E.; and Abouzahr, Saad M., to Mobay Chemical Corporation. Internal mold release agent for use in reaction injection molding. 4,519,965, Cl. 264-51.000.

Taylor, Thomas E. Fireplace heat transfer apparatus. 4,519,377, Cl. 126-121.000.

Tazuki, Shoji; and Toyama, Koji, to Mitsubishi Paper Mills, Ltd. Electrophotographic offset masters. 4,520,089, Cl. 430-49.000.

TDK Electronics Co., Ltd.: *See—*
Saito, Seitoku; Izumi, Toshiaki; Kobuke, Takayoshi; and Sugihara, Hiroshi, 4,520,076, Cl. 428-611.000.

Team, Inc.: *See—*
Harrison, George W., 4,520,051, Cl. 427-387.000.

Tecumseh Products Company: *See—*
Hermanson, William O., 4,519,486, Cl. 192-3.00S.

Tefft, Ronald E.: *See—*
Worrall, James D.; and Tefft, Ronald E., 4,520,059, Cl. 428-109.000.

Teichman, Robert L.: *See—*
Bernhard, Dennis P.; Rowles, Howard C.; and Teichman, Robert L., 4,519,825, Cl. 62-28.000.

Tekcast Industries, Inc.: *See—*
Schaer, Leonard S., 4,519,971, Cl. 264-311.000.

Tekken Construction Co., Ltd.: *See—*
Horimatsu, Kazuo, 4,519,730, Cl. 405-258.000.

Tektronix, Inc.: *See—*
Hoffman, Gilbert A., 4,520,325, Cl. 330-302.000.
Mitch, John H., 4,520,355, Cl. 340-709.000.

Telecommunications Radioelectriques et Telephoniques T. R. T.: *See—*
Raulin, Jean M.; and Bonnerot, Georges, 4,520,491, Cl. 375-27.000.

Teleflex Morse Limited: *See—*
Hemens, James F., 4,519,294, Cl. 91-374.000.

Terada, Takami; Nawa, Hiroshi; and Kawamura, Reiki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Seat back frame assembly for automobile seats. 4,519,650, Cl. 297-452.000.

Testore, Guido, to ORMIG S.p.A. Mobile yard crane for handling containers. 4,519,741, Cl. 414-738.000.

Teutsch, Jean G.; Costerousse, Germain; Philibert, Daniel; and Deraedt, Roger, to Roussel Uclaf. Steroids. 4,519,946, Cl. 260-239.55R.

te Velde, Ties S., to U.S. Philips Corporation. Passive display device. 4,519,676, Cl. 350-269.000.

Texaco Inc.: *See—*
Davis, Lorne A., Jr.; and Haskin, Helen K., 4,519,982, Cl. 422-68.000.
Lin, Jiang-Jen; and Duranleau, Roger G., 4,519,956, Cl. 260-549.000.
Mott, George E.; and Levert, Frederick J., Jr., 4,519,725, Cl. 405-195.000.

Texaco Limited: *See—*
Knowles, John P.; Wheeler, Steven A.; and Mitchell, Stewart D., 4,519,726, Cl. 405-195.000.
Mitchell, Stewart D.; and Wheeler, Steven A., 4,519,727, Cl. 405-204.000.

Texas Eastern Engineering Ltd.: *See—*
Buls, Ronald L.; and Gilcrease, James P., 4,519,815, Cl. 55-46.000.

Texas Instruments Incorporated: *See—*
Hahn, Larry A., 4,520,277, Cl. 307-252.00C.
Swindler, Dan E., 4,520,240, Cl. 200-5.00R.

Th. Goldschmidt AG: *See—*
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, 4,520,173, Cl. 525-403.000.

Thaler, Warren A.: *See—*
Peiffer, Dennis G.; Lundberg, Robert D.; Duvdevani, Ilan; and Thaler, Warren A., 4,520,158, Cl. 524-481.000.

The, Paul J.: *See—*
Pearson, Alan; and The, Paul J., 4,519,989, Cl. 423-121.000.

Theis, Ulrich: *See—*
Bethmann, Karl W.; and Theis, Ulrich, 4,519,316, Cl. 102-513.000.

Thermo Electron Corporation: *See—*
Lee, Chung H.; Fronduto, John; and Oettinger, Peter E., 4,519,876, Cl. 204-15.000.

Thermo King Corporation: *See—*
Barnett, Joe R., 4,519,215, Cl. 62-158.000.

Thermocell Development, Ltd.: *See—*
Smith, Stuart B., 4,520,042, Cl. 427-209.000.

Thielenhaus, Ernst, to Ernst Thielenhaus KG. Method of and apparatus for holding a shaft during finish grinding. 4,519,170, Cl. 51-289.00R.

Think Laboratory Co., Ltd.: *See—*
Shigeta, Tatsuo, 4,519,887, Cl. 204-212.000.

Thiokol Corporation: *See—*
Inman, Frank S.; Giedt, Donald C.; and Lushis, Donald V., 4,519,290, Cl. 87-7.000.

Thomas & Betts Corporation: *See—*
Biswas, Ranjit, 4,519,658, Cl. 339-17.0CF.

Thomas, Leslie P., to Diamond Automations, Inc. Egg transfer system. 4,519,505, Cl. 209-513.000.

Thomas, Leslie P.: *See—*
McEvoy, John C.; and Thomas, Leslie P., 4,519,494, Cl. 198-448.000.

Thomas, Ralph H., Sr.: *See—*
Agbay, Albert J.; and Thomas, Ralph H., Sr., 4,519,514, Cl. 215-225.000.

Thompson, J. Brent: *See—*
Mitchell, William A.; Thompson, J. Brent; and Freese, John L., 4,519,734, Cl. 409-231.000.

Thomson-CSF: *See—*
Grimberg, Martine; and Berard, Alain, 4,520,442, Cl. 364-414.000.
Huignard, Jean-Pierre; and Malard, Marcel, 4,520,484, Cl. 372-24.000.

Thomson, David S.: *See—*
Marsham, Peter R.; and Thomson, David S., 4,520,027, Cl. 514-354.000.

Thorsett, Eugene D.: *See—*
Harris, Elbert E.; and Thorsett, Eugene D., 4,520,021, Cl. 514-212.000.

Thrash, Robert J.: *See—*
Prater, Keith B.; Thrash, Robert J.; and Connolly, John F., 4,520,083, Cl. 429-101.000.

Tiberg, Lars: *See—*
Fredriksson, Hasse; and Tiberg, Lars, 4,519,439, Cl. 164-476.000.

Tiefel, Gunter: *See—*
Grosse, Joachim; Hassler, Heinrich; and Tiefel, Gunter, 4,519,234, Cl. 72-258.000.

Tillotson, John D., to Elco Corporation. Multipin connector and method of reducing EMI by use thereof. 4,519,664, Cl. 339-143.00R.

Timms, Richard H., to Rohr Industries, Inc. Aircraft thrust reverser mechanism. 4,519,561, Cl. 244-110.00B.

Timoschuk, Walter. Universal cable winding drum. 4,519,556, Cl. 242-117.000.

Tinker, Lawrence A.; and Harkness, Allan C., to Standard Oil Company (Indiana). Etched metal electrodes and their use in nonaqueous electrochemical cells. 4,520,084, Cl. 429-101.000.

Tinoco, Edward N.: *See—*
Ishimitsu, Kichio K.; and Tinoco, Edward N., 4,519,560, Cl. 244-45.00R.

Tochikubo, Osamu: *See—*
Torii, Yoshihiko; and Tochikubo, Osamu, 4,519,248, Cl. 73-223.000.

Toda, Takao: *See—*
Kashiwagi, Kazuo; and Toda, Takao, 4,519,694, Cl. 355-5.000.

Todd, Elizabeth A.: *See—*
Reusser, Robert E.; Kenton, Joseph R.; and Todd, Elizabeth A., 4,520,222, Cl. 585-526.000.

Todokoro, Shigeru; Nakane, Hiroshi; and Maeda, Satoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Tracking servo system for optical-disc information reproducing apparatus. 4,520,469, Cl. 369-44.000.

Tokaichi, Tetsuro: *See—*
Ichimura, Yoshiaki; Noda, Atsuhito; Tokaichi, Tetsuro; and Umesato, Shoji, 4,519,660, Cl. 339-75.00M.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Abe, Takahiko, 4,520,395, Cl. 358-163.000.
Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,520,041, Cl. 427-88.000.
Arai, Kazuhiro, 4,519,127, Cl. 29-571.000.
Arita, Masataka; and Matsubara, Mitsuyoshi, 4,520,494, Cl. 378-108.000.
Ishii, Akira, 4,519,255, Cl. 73-727.000.
Kohyama, Mitsuaki; and Toshimitsu, Kenshi, 4,519,698, Cl. 355-15.000.
Komatsubara, Yoshiaki; Ide, Kyozoh; and Munakata, Eiko, 4,519,678, Cl. 350-338.000.
Nara, Seietsu, 4,520,447, Cl. 364-478.000.
Ohba, Hiroshi; and Horino, Shigeo, 4,519,523, Cl. 221-129.000.
Sano, Tetsuo; Orita, Susumu; Yamazaki, Masaya; and Moriyama, Kazuhiro, 4,519,214, Cl. 62-156.000.
Sumino, Yoichi, 4,519,250, Cl. 73-626.000.
Tanaka, Shigeru, 4,520,495, Cl. 378-117.000.
Todokoro, Shigeru; Nakane, Hiroshi; and Maeda, Satoru, 4,520,469, Cl. 369-44.000.
Watanabe, Junji, 4,519,601, Cl. 271-114.000.
Yokoyama, Hideo; Tomita, Seiji; and Yamada, Shigeo, 4,519,558, Cl. 242-186.000.

Tokyo Shibaura Kenki Kabushiki Kaisha: *See—*
Iida, Kazuhiko, 4,520,399, Cl. 358-287.000.

Tomisawa, Yoshiaki; Takeuchi, Toshio; Honda, Keijiro; Takahashi, Susumu; and Kinoda, Seiji, to Hitachi Chemical Company, Ltd. Process for developing or peeling alkali-type photosensitive film and apparatus used therein. 4,519,690, Cl. 354-324.000.

Tomita, Osamu: *See—*
Fujii, Yoshihiko; Tomita, Osamu; Taniguchi, Itaru; and Saiwai, Kazuhiko, 4,520,370, Cl. 346-76.00L.

Tomita, Seiji: *See—*
Yokoyama, Hideo; Tomita, Seiji; and Yamada, Shigeo, 4,519,558, Cl. 242-186.000.

Tomita, Seisuke: *See—*
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.

Tomiyama, Tsuyoshi, to Kotobuki Seiyaku Co., Ltd. Farnesene derivatives, mucosal stabilizing compositions and method of manufacturing the same. 4,520,029, Cl. 514-479.000.

Tomlin, Jerry B.; Levey, Gustave S.; and O'Neil, Michael A., to Koomey, Inc. Seal for an underwater connector. 4,519,636, Cl. 285-95.000.

Tomy Kogyo Company, Incorporated: *See—*
Ajiro, Yutaka; and Kozuka, Michihiro, 4,519,788, Cl. 446-356.000.

Tonouchi, Akira: *See—*
Hara, Tomihiro; Adaniya, Takeshi; and Tonouchi, Akira, 4,519,878, Cl. 204-28.000.

Toon, John J. Process for blending fibers and textiles obtained from the fiber blends. 4,519,201, Cl. 57-252.000.

Topper International Enterprises: *See—*
Kinney, Roger D.; and Federowicz, Raymond J., 4,519,409, Cl. 135-88.000.

Tops, Martinus J.: *See—*
Van Rooy, Henricus J.; and Tops, Martinus J., 4,520,291, Cl. 313-365.000.

Toray Industries, Inc.: *See—*
Kato, Hiroyasu; Yagi, Kenkichi; and Okamoto, Miyoshi, 4,519,804, Cl. 8-485.000.

Torii, Yoshihiko; and Tochikubo, Osamu, to Kabushiki Kaisha Vine. Device for measuring a whole day urinary output. 4,519,248, Cl. 73-223.000.

Tosh, Douglas J., to Sternson Limited. Alkanolamine linked epoxy-urethanes. 4,520,185, Cl. 528-65.000.

Toshimitsu, Kenshi: *See—*
Kohyama, Mitsuaki; and Toshimitsu, Kenshi, 4,519,698, Cl. 355-15.000.

Toth, Dennis A., to Foster Wheeler Energy Corporation. Gas injection method for improving the operation of a fluidized bed reactor. 4,519,324, Cl. 110-347.000.

Toyama, Koji: *See—*
Tazuki, Shoji; and Toyama, Koji, 4,520,089, Cl. 430-49.000.

Toyo Rubber Chemical Industry Co., Ltd.: *See—*
Kumasaka, Sadao; and Tada, Satomi, 4,520,141, Cl. 521-126.000.

Toyo Seikan Kaisha Limited: *See—*
Kawaguchi, Kiyoshi; and Yamada, Muneki, 4,519,977, Cl. 264-550.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Akazawa, Michihiro; and Kawasaki, Nobuhiro, 4,519,888, Cl. 204-252.000.

Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, to Furukawa Electric Co., Ltd., The; Kanto Denka Kogyo Co., Ltd.; and Fujidie Co., Ltd. Sintered high vanadium high speed steel and method of making same. 4,519,839, Cl. 75-242.000.

Toyoda, Kazuhiro: *See—*
Yamada, Katuyuki; and Toyoda, Kazuhiro, 4,520,462, Cl. 365-189.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Fujimura, Kazushiro; and Ito, Toshimitsu, 4,519,355, Cl. 123-491.000.
Hamada, Eiichi; and Hamada, Kouzou, 4,519,642, Cl. 292-247.000.
Hayashi, Kunihisa; and Nogami, Takahiro, 4,519,469, Cl. 180-169.000.
Imayoshi, Kiyoyuki, 4,519,123, Cl. 29-434.000.
Inui, Masaki, 4,519,264, Cl. 74-409.000.
Ito, Takaaki; and Kato, Takashi, 4,519,957, Cl. 261-44.00C.
Iwata, Minoru, 4,519,370, Cl. 123-432.000.
Katoh, Yuuichi; Matsuoka, Hiroki; and Iwata, Minoru, 4,519,354, Cl. 123-472.000.
Kawaguchi, Hiroshi; and Nishina, Shuho, 4,519,270, Cl. 74-535.000.
Terada, Takami; Nawa, Hiroshi; and Kawamura, Reiki, 4,519,650, Cl. 297-452.000.

Toyota Jidosha Kabushiki Kaishi: *See—*
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,519,353, Cl. 123-359.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakanishi, Kiyoshi; and Okumura, Takeshi, 4,519,346, Cl. 123-188.00M.
Yamazaki, Masami; and Shibata, Sueo, 4,519,747, Cl. 416-244.00A.

Traczyk, Edward S.; and Shulski, Michael M., to National Can Corporation. Method and apparatus for necking containers. 4,519,232, Cl. 72-133.000.

Tran, Danh C., to United States of America, Navy. Optical fibers having a fluoride glass cladding and method of making. 4,519,826, Cl. 65-3.110.

Transco Products, Inc.: *See—*
Steidel, Clinton F., 4,520,331, Cl. 335-125.000.

Trautmann, Wolfgang, to Institut Dr. Friedrich Forster Prufgeratebau GmbH & Co. KG. Apparatus for the nondestructive testing of elongated test specimens by magnetic techniques. 4,519,243, Cl. 73-432.00R.

Trebes, Fred W.: *See—*
Leighton, Francis; and Trebes, Fred W., 4,519,580, Cl. 251-223.000.

Tremblay, Gerald J. Solar heating apparatus and method. 4,519,381, Cl. 126-424.000.

Tremintin, Bernard, to International Business Machines Corporation. Method of characterizing reliability in bipolar semiconductor devices. 4,520,448, Cl. 364-488.000.

Treneules, Didier J.: *See—*
Leneveu, Louis J. J.; and Treneules, Didier J., 4,519,855, Cl. 149-21.000.

Trinity Industrial Corporation: *See—*
Yokoe, Sadao; Abe, Seimei; Wakata, Shoichi; Endou, Satosi; and Onozawa, Kazuyoshi, 4,519,549, Cl. 239-703.000.

TrioVing A/S: *See—*
Sornes, Tor, 4,519,228, Cl. 70-276.000.

Triplett, Richard A. Track type four sprocket wheel drive crawler tractor. 4,519,465, Cl. 180-6.480.

Tsao, Thomas K. Golf putter. 4,519,612, Cl. 273-163.00R.

Tsao, Yuh-hwang; and Binder, George G., Jr., to Exxon Production Research Co. Method of drilling and cementing a well using a drilling fluid convertible in place into a settable cement slurry and composition therefor. 4,519,452, Cl. 166-288.000.

Tsiamis, Chris: *See—*
McCaskie, John E.; and Tsiamis, Chris, 4,520,046, Cl. 427-304.000.

Tsuchikawa, Syunzo: *See—*
Hayashi, Masaharu; Tsuchikawa, Syunzo; and Itakura, Masato, 4,519,343, Cl. 123-41.490.

Tsuchiya, Toshiaki: *See—*
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Tsuda, Keishiro: *See—*
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.

Tsugawa, Shunichi: *See—*
Ichida, Toshio; Kobayashi, Hideo; Ogata, Hajime; and Tsugawa, Shunichi, 4,519,879, Cl. 204-35.100.

Tsuji, Masao: *See—*
Bunno, Masayasu; Sugiura, Tsutomu; Tsuji, Masao; Harada, Hidemi; and Ichihara, Yoshihiro, 4,520,102, Cl. 435-61.000.

Tsuji, Yoshitaka: *See—*
Fujita, Teizo; and Tsuji, Yoshitaka, 4,519,668, Cl. 339-241.000.

Tsukada, Akira: *See—*
Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, 4,519,942, Cl. 252-520.000.

Tsukagoshi, Shigeru: *See—*
Hirano, Takashi; Ohashi, Shinichi; Morimoto, Satoshi; Shiraki, Masaru; Tsuda, Keishiro; Kobayashi, Tomowo; and Tsukagoshi, Shigeru, 4,520,162, Cl. 525-327.600.

Tsuno, Katsushige; and Honda, Toshikazu, to JEOL Ltd. Electron microscope. 4,520,264, Cl. 250-311.000.

Tsutsumi, Akira, to Amada Company, Limited. Detector for the deviation of the optical axis in laser processing apparatus. 4,520,261, Cl. 250-203.00R.

Tucker, John G., to AT&T Technologies, Inc. Wire routing, tension-controlling and breaking mechanism. 4,519,552, Cl. 242-7.170.

Tucker, Robert C., Jr.: *See—*
Jackson, John E.; Adler, Thomas A.; Quets, Jean M.; and Tucker, Robert C., Jr., 4,519,840, Cl. 106-1.050.

Tuftco Corporation: *See—*
Green, Jerry T.; and Beasley, Max M., 4,519,326, Cl. 112-79.00R.

Tukamoto, Masahiro, to Nippon Seiko Kabushiki Kaisha. Webbing locking device for the seat belt of an automotive vehicle. 4,519,555, Cl. 242-107.200.

Tumelty, Paul F.: *See—*
Gualtieri, Devlin M.; and Tumelty, Paul F., 4,520,460, Cl. 365-33.000.

Tunc, Deger C. Method of reducing nutrient absorption. 4,520,017, Cl. 514-54.000.

Tuot, James, to Nestec, S.A. Process for the preparation of foamed aromatization capsules and the capsules produced thereby. 4,520,033, Cl. 426-96.000.

Turbyfill, Rueben M.: *See—*
Kelly, Timothy A.; and Turbyfill, Rueben M., 4,519,645, Cl. 296-224.000.

Turek, Joseph F.: *See—*
Godsey, H. Dean; Schoen, Donald F.; and Turek, Joseph F., 4,519,713, Cl. 366-79.000.

Turner, S. Richard; Siano, Donald B.; and Bock, Jan, to Exxon Research & Engineering Co. Acrylamide-alkylacrylamide copolymers. 4,520,182, Cl. 526-307.200.

Turner, Weems D.: *See—*
Le, Tam D.; and Turner, Weems D., 4,519,262, Cl. 74-89.200.

Tzeng, Shing-Wu P.: *See—*
Shu, Si-Yan; and Tzeng, Shing-Wu P., 4,520,344, Cl. 340-58.000.

Uchida, Masayosi: *See—*
Ishihara, Tuneo; and Uchida, Masayosi, 4,519,762, Cl. 425-183.000.

Uchidoi, Masanori: *See—*
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,520,340, Cl. 338-195.000.

Uchiki, Hideo: *See—*
Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, 4,520,108, Cl. 436-52.000.

Uchino, Shoichi: *See—*
Morishita, Hajime; Akagi, Motoo; Hayashi, Nobuaki; Nonogaki, Saburo; Uchino, Shoichi; and Kohashi, Takahiro, 4,520,094, Cl. 430-144.000.

Uchiyama, Takashi: *See—*
Momiyama, Kikuo; Uchiyama, Takashi; Suzuki, Ryoichi; Murakami, Hiroyasu; Kawamura, Masaharu; and Sakai, Shinji, 4,519,685, Cl. 354-154.000.

Ueda, Fumio: *See—*
Horikiri, Kenji; Ueda, Fumio; and Ideno, Hiroaki, 4,519,679, Cl. 350-339.00R.

Uedaira, Satoru; Yamanoi, Hiroshi; and Tamura, Hidemasa, to Sony Corporation. Method of manufacturing metal titanate fine powder. 4,520,004, Cl. 423-598.000.

Uematsu, Hiroaki; Aoki, Junji; and Oku, Narihiro, to Horiba, Ltd. Flow system glass electrode. 4,519,890, Cl. 204-409.000.

Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, to Furukawa Electric Co., Ltd., The; and Mitsubishi Petrochemical Company Limited. Cross-linked polyethylene insulated power cable with improved electric breakdown strength and method for manufacturing the same. 4,520,230, Cl. 174-107.000.

Uhlig, Albert R., to Owens-Illinois, Inc. Method of making plastic articles. 4,519,976, Cl. 264-540.000.

Ulbing, Otmar M.: *See—*
Pancook, James J.; and Ulbing, Otmar M., 4,520,247, Cl. 200-298.000.

Ulh, Robert J.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.

Umeda, Tadashi; Miyoshi, Hideo; Kishimoto, Keiichi; Iida, Kazumi; Akiyama, Kazunori; Abe, Yuji; and Taniguchi, Masato, to Mita Industrial Company Limited. Display device for copying apparatus. 4,520,354, Cl. 340-679.000.

Umesato, Shoji: *See—*
Ichimura, Yoshiaki; Noda, Atsuhito; Tokaichi, Tetsuro; and Umesato, Shoji, 4,519,660, Cl. 339-75.00M.

Underwood, Gene E. Separator. 4,519,848, Cl. 134-34.000.

Ungar, Israel S.; Scher, Herbert I.; and O'Neill, Nelson L., to Nevamar Corporation. Transfer coating of abrasion-resistant layers. 4,520,062, Cl. 428-148.000.

Union Carbide Corporation: *See—*
Coleman, Larry M.; and Tambo, William, 4,519,999, Cl. 423-337.000.
Harris, James E.; and Robeson, Lloyd M., 4,520,067, Cl. 428-323.000.
Jackson, John E.; Adler, Thomas A.; Quets, Jean M.; and Tucker, Robert C., Jr., 4,519,840, Cl. 106-1.050.
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,520,168, Cl. 525-169.000.
Long, Noel V.; and Mierke, Charles H., 4,520,430, Cl. 361-433.000.
Nausedas, Joseph A., 4,519,504, Cl. 206-554.000.

Union Oil Company of California: *See—*
Bertram, Rick V., 4,519,874, Cl. 201-39.000.

Union Special Corporation: *See—*
Kosrow, Robert L.; and Talsma, Robert C., 4,519,331, Cl. 112-262.300.

United Air Filter Company: *See—*
Kinney, William L., Jr.; and Evans, Richard E., Jr., 4,519,823, Cl. 55-493.000.

United Kingdom Atomic Energy Authority: *See—*
Norris, Michael A., 4,519,445, Cl. 165-76.000.

United States of America
Air Force: *See—*
Perry, John S., 4,520,364, Cl. 343-872.000.
Walker, Ronald P.; Rex, John D.; and Schummers, John H., 4,520,504, Cl. 382-1.000.
Army: *See—*
Arszman, Jerrold H., 4,519,315, Cl. 102-377.000.
Smith, Thomas V., 4,519,169, Cl. 51-241.00S.
Commerce: *See—*
Potzick, James E.; and Robertson, Baldwin, 4,520,320, Cl. 328-133.000.
Energy: *See—*
Makiel, Joseph M., 4,520,082, Cl. 429-26.000.
Skotheim, Terji, 4,520,086, Cl. 429-192.000.
Health and Human Services: *See—*
Gallo, Robert C.; Popovic, Mikulas; and Sarngadharan, Mangalasseril G., 4,520,113, Cl. 436-504.000.
Knight, William A., III, 4,520,031, Cl. 514-632.000.
Neville, David M., Jr.; and Youle, Richard J., 4,520,011, Cl. 424-85.000.
Neville, David M., Jr.; and Youle, Richard J., 4,520,226, Cl. 424-85.000.
National Aeronautics and Space Administration: *See—*
Kuminecz, Jerome F.; and Lausten, Merlyn F., 4,519,545, Cl. 239-288.000.
Navy: *See—*
Lusk, Kenneth P., 4,520,428, Cl. 361-399.000.
Rowe, Raymond A., 4,520,273, Cl. 290-54.000.
Tran, Danh C., 4,519,826, Cl. 65-3.110.

U.S. Philips Corporation: *See—*
Bolhuis, Pieter J., 4,520,295, Cl. 315-291.000.
Bukoschek, Romuald L.; and Diefenbach, Gerhard, 4,520,286, Cl. 310-83.000.
Grima, Jean-Claude; Pando, Bernard; and David, Guy A. J., 4,520,479, Cl. 370-84.000.
Jackson, Richard N.; and Tan, Sing L., 4,520,385, Cl. 358-12.000.
Morley, Peter; and Little, Peter J., 4,519,706, Cl. 356-319.000.
Schreiber, Peter; and Huth, Klaus, 4,520,496, Cl. 378-128.000.
Six, Jean-Claude G.; Claeys, Paul; and Guillaume, Michel, 4,519,771, Cl. 431-25.000.
te Velde, Ties S., 4,519,676, Cl. 350-269.000.
Van Rooy, Henricus J.; and Tops, Martinus J., 4,520,291, Cl. 313-365.000.
Vugts, Ludovicus, 4,520,342, Cl. 338-308.000.
Zwijsen, Wilhelmus A. J. M.; Duijndam, Cornelis P. J.; and Smeulers, Wouter, 4,520,393, Cl. 358-149.000.

United Technologies Corporation: *See—*
St. Jacques, John W.; and Couch, Robert P., 4,519,240, Cl. 73-116.000.
Sutcliffe, John W., 4,519,732, Cl. 408-1.00R.
Wainauski, Harry S.; and Rohrbach, Carl, 4,519,746, Cl. 416-223.00R.

Unitika Ltd.: *See—*
Arai, Yoshihiro; and Tanaka, Takumi, 4,520,174, Cl. 525-438.000.
Arai, Yoshihiro; and Tanaka, Takumi, 4,520,175, Cl. 525-438.000.
Murakami, Kunio, 4,519,969, Cl. 264-210.700.
Murase, Shigemitsu, 4,520,050, Cl. 427-381.000.

University of British Columbia, The: *See—*
Hall, Laurance D.; and Sukumar, Subramaniam, 4,520,316, Cl. 324-309.000.

University of California, The Regents of the: *See—*
Kado, Clarence I., 4,520,106, Cl. 435-172.300.

University of New Mexico: *See—*
Kirst, John A.; and Kutz, Daniel F., 4,520,503, Cl. 381-56.000.

University of Pennsylvania, Trustees of the: *See—*
Black, Jonathan; and Baranowski, Thomas J., Jr., 4,519,394, Cl. 128-419.00F.

University of Southern California: *See—*
Ho, Chih-Ming; and Gutmark, Ephraim, 4,519,423, Cl. 137-888.000.

UOP Inc.: *See—*
Arena, Blaise J., 4,520,122, Cl. 502-152.000.
Berg, Roy C.; Malloy, Thomas P.; and Vora, Bipin V., 4,520,218, Cl. 585-449.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,519,952, Cl. 260-419.000.
Ou, Di-Yi, 4,519,845, Cl. 127-46.200.
Qualeatti, Gail M.; and Arena, Blaise J., 4,519,951, Cl. 260-409.000.
Vora, Bipin V., 4,520,214, Cl. 585-254.000.

Upjohn Company, The: *See—*
Wiley, Paul F., 4,520,191, Cl. 536-17.900.

Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichirou; Hayashi, Koji; and Kon, Shigeki, to Tachikawa Spring Co. Method of manufacturing cushion materials. 4,519,862, Cl. 156-219.000.

Urushidani, Haruo: *See—*
Okabe, Akira; Urushidani, Haruo; and Kashiwahara, Katsuto, 4,519,207, Cl. 60-39.182.

USG Corporation: *See—*
Randolph, Donald A.; and Watkins, Kenneth R., 4,520,073, Cl. 428-405.000.

USV Pharmaceutical: *See—*
Loev, Bernard; Jones, Howard; and Suh, John T., 4,520,131, Cl. 514-156.000.

Utsumi, Hiroo: *See—*
Arakawa, Miyao; Takenaka, Akihiko; Sato, Masahiro; Ohyama, Hideo; Utsumi, Hiroo; and Inoue, Shingo, 4,519,362, Cl. 123-414.000.

Utsunomiya, Michito, to Kabushiki Kaish Ishida Koki Seisakusho. Load cell with adjustable bridge circuit. 4,520,339, Cl. 338-5.000.

Vacher, Pierre, to A.N.F. Industrie. Bogie with orientable axles for railroad vehicles. 4,519,329, Cl. 105-218.00A.

Vaijarvi, Seppo: *See—*
Sipila , Heikki; Kiuru, Erkki; and Vaijarvi, Seppo, 4,520,267, Cl. 250-358.100.

Valentin, Ingo, to Applied Power Inc. Control system for a variable displacement pump. 4,519,752, Cl. 417-298.000.

Valeo: *See—*
Renaud, Pierre, 4,519,488, Cl. 192-98.000.

van Blerk, Victor B.: *See—*
Mayer, Edward F.; and van Blerk, Victor B., 4,519,699, Cl. 355-15.000.

Van Buytene, Arend. Apparatus for utilizing the energy present in flowing water. 4,519,742, Cl. 415-7.000.

Van Cleave, George W.: *See—*
Barker, Robert B.; Davidge, Ronald V.; Gibson, David K.; and Van Cleave, George W., 4,519,700, Cl. 355-3.0SH.

Van Eenam, Donald N., to Monsanto Company. Polyetherene-polyacrylic polymerizable compositions. 4,520,184, Cl. 526-320.000.

Van Egeren, Andrew M.: *See—*
Johnson, Gary E.; and Van Egeren, Andrew M., 4,519,596, Cl. 270-32.000.

van Hekken, Frans; and Chen, Hsing-Yeo, to RCA Corporation. Cathode-ray tube having an asymmetric slot formed in a screen grid electrode of an inline electron gun. 4,520,292, Cl. 313-412.000.

Van Horn, Joseph M.: *See—*
Epstein, Paul; Ballas, John S., Jr.; Mandler, John J., Jr.; and Van Horn, Joseph M., 4,519,396, Cl. 128-698.000.

van Michaels, Christopher. Multi-fuel rotary power plants using gas pistons, elliptic compressors, internally cooled thermodynamic cycles and slurry type colloidal fuel from coal and charcoal. 4,519,206, Cl. 60-39.540.

Vanosdall, Dennis L., to Hawkeye Food Machinery, Inc. Vegetable peeler. 4,519,305, Cl. 99-625.000.

Van Rhyn, Pierre: *See—*
Bredenkamp, Gordon L.; and Van Rhyn, Pierre, 4,520,255, Cl. 219-130.100.

Van Rooy, Henricus J.; and Tops, Martinus J., to U.S. Philips Corporation. Pick-up unit comprising a camera tube. 4,520,291, Cl. 313-365.000.

Varano, Vincent. Alarm system activated by buzzers. 4,520,349, Cl. 340-531.000.

Varian Associates, Inc.: *See—*
Cordts, Bernhard F., 4,520,040, Cl. 427-38.000.

Vartanov, Albert A.: *See—*
Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A., 4,519,992, Cl. 423-230.000.

VEB Kombinat Textima: *See—*
Seifert, Dieter; Muller, Harald; Muller, Lothar; Pestel, Karl; and Geissler, Helmut, 4,519,224, Cl. 69-30.000.

VEB-Leuna-Werke "Walter Ulbricht": *See—*
Fuchs, Wilfried; Richter, Horst; Kober, Roland; Kaufmann, Vendelin; and Muller, Christina, 4,519,997, Cl. 423-265.000.

VEB Werk fuer Fernsehelektronik im Kombinat Mikroelektronik: *See—*
Demus, Dietrich; Weissflog, Wolfgang; and Kresse, Horst, 4,519,936, Cl. 252-299.630.

Velasquez, Juan F., to VSP Labs, Inc. Clock signal synchronization apparatus and method for decoding self-clocking encoded data. 4,520,408, Cl. 360-51.000.

Ventilator Associates: *See—*
Kelly, Timothy A.; and Turbyfill, Rueben M., 4,519,645, Cl. 296-224.000.

Verex Laboratories, Inc.: *See—*
Dunn, James M., 4,520,009, Cl. 424-78.000.

Vermeer, Dick C.: *See—*
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., 4,519,116, Cl. 28-257.000.

Vesuvius International Corporation: *See—*
Grosso, Roberto; and Hamilton, Tom P., 4,519,438, Cl. 164-415.000.

Vetter, David C.: *See—*
Montlick, Terry; Skoge, Klaus; Vetter, David C.; and Ahrens, Paul R., 4,520,499, Cl. 381-36.000.

Via, Francis A., to Stauffer Chemical Company. Sensitization of glyoxylate photoinitiators using a terphenyl compound. 4,519,883, Cl. 204-159.150.

Vickers, Incorporated: *See—*
Muller, Hans-Jurgen; and Krines, Hans-Gebhard, 4,519,572, Cl. 251-29.000.

Vickery, James D. Dry material sorting device. 4,519,896, Cl. 209-44.100.

Victor Company of Japan, Ltd.: *See—*
Kaneko, Kenji, 4,520,394, Cl. 358-150.000.
Sasaki, Akihiko; Arai, Kouji; Takashi, Takano; and Namiki, Yasuomi, 4,520,405, Cl. 360-10.300.
Sugiyama, Hiroyuki; Abe, Ryozo; Yusa, Yasuhiro; Sakurai, Masaki; and Yoshihara, Kenji, 4,520,473, Cl. 369-126.000.
Takahashi, Nobuaki; Takashima, Seiichi; Shibamoto, Takeshi; Suzuki, Fujio; Tanaka, Koji; Kubo, Mitsuo; Sugiyama, Hiroyuki; Amano, Yoshiaki; and Kikuchi, Mitsuru, 4,520,401, Cl. 358-310.000.

Victor, John G., to Institute of Gas Technology. Method for solvent recovery in solvent separation of ethanol from water. 4,520,213, Cl. 568-913.000.

Vilmur, Richard J., to Motorola, Inc. Duplex communication transceiver with modulation cancellation. 4,520,474, Cl. 370-24.000.

Vita, Piero: *See—*
Cavalieri D'Oro, Enzo; and Vita, Piero, 4,520,329, Cl. 333-135.000.

Voepel, Harry W.: *See—*
Wang, David C.; and Voepel, Harry W., 4,520,287, Cl. 310-184.000.

Vogel, Roger F.: *See—*
Mitchell, Bruce R.; and Vogel, Roger F., 4,520,120, Cl. 502-68.000.

Vogt, Karl H.: *See—*
Bradler, Hans J.; Brauner, Wilfried; Deyhle, Manfred; and Vogt, Karl H., 4,519,865, Cl. 156-256.000.

von Burg, Paul; Wirz, Armin; and Graf, Felix, to Rieter Machine Works, Ltd. Heatable godet. 4,519,778, Cl. 432-35.000.

Von Kohorn, Henry. System, apparatus and method for recording and editing broadcast transmissions. 4,520,404, Cl. 358-335.000.

Vora, Bipin V., to UOP Inc. High selectivity process for dehydrogenation of paraffinic hydrocarbons. 4,520,214, Cl. 585-254.000.

Vora, Bipin V.: *See—*
Berg, Roy C.; Malloy, Thomas P.; and Vora, Bipin V., 4,520,218, Cl. 585-449.000.

Vsesojuzny Nauchno-Issledovatelsky Institut Tsvetnoi Metallurgii: *See—*
Sychev, Anatoly P.; Sannikov, Jury I.; Grinin, Jury A.; Polyakov, Ivan P.; and Abdeev, Jury M., 4,519,836, Cl. 75-25.000.

VSP Labs, Inc.: *See—*
Velasquez, Juan F., 4,520,408, Cl. 360-51.000.

Vugts, Ludovicus, to U.S. Philips Corporation. Resistor. 4,520,342, Cl. 338-308.000.

Vultaggio, Anthony: *See—*
Sandi, Floyd J.; and Vultaggio, Anthony, 4,520,241, Cl. 200-5.00B.

W. C. Heraeus GmbH: *See—*
Aldinger, Fritz; Keilberth, Richard; and Werdecker, Waltraud, 4,519,966, Cl. 264-56.000.

Waara, Ulf C.: *See—*
Petersson, Stig A.; and Waara, Ulf C., 4,520,003, Cl. 423-533.000.

WABCO Fahrzeugbremsen GmbH: *See—*
Reinecke, Erich, 4,519,266, Cl. 74-471.0XY.

Wachspress, Melvin H.; and Abramowitz, Walter, to General Instrument Corporation. Omnidirectional vertical antenna with improved high-angle coverage. 4,520,363, Cl. 343-828.000.

Wada, Masaru: *See—*
Sugino, Takashi; Itoh, Kunio; Wada, Masaru; and Shimizu, Hirokazu, 4,520,485, Cl. 372-48.000.

Wagenseil, Ludwig; and Hoffmeister, Hermann, to Hydromatik GmbH. Pressure averager. 4,519,413, Cl. 137-111.000.

Wagner, Bernd: *See—*
Strohmaier, Ernst; Reich, Heinrich; and Wagner, Bernd, 4,519,780, Cl. 433-29.000.

Wagner, Robert A., deceased: *See—*
Logan, Andrew H.; and Wagner, Robert A., deceased, 4,519,559, Cl. 244-17.170.

Wainauski, Harry S.; and Rohrbach, Carl, to United Technologies Corporation. Airfoil blade. 4,519,746, Cl. 416-223.00R.

Waitkus, Phillip A.: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,520,198, Cl. 546-66.000.

Wakata, Shoichi: *See—*
Yokoe, Sadao; Abe, Seimei; Wakata, Shoichi; Endou, Satosi; and Onozawa, Kazuyoshi, 4,519,549, Cl. 239-703.000.

Walker, David G. Treatment of carbonaceous shales or sands to recover oil and pure carbon as products. 4,519,894, Cl. 208-11.00R.

Walker, Ernest D. Shellfish cutting and eating implement. 4,519,136, Cl. 30-142.000.

Walker, Michael L.: *See—*
Sutton, David L.; and Walker, Michael L., 4,519,922, Cl. 252-8.50B.

Walker, Ronald P.; Rex, John D.; and Schummers, John H., to United States of America, Air Force. Infrared system with computerized image display. 4,520,504, Cl. 382-1.000.

Walter, Bob. Adjustable ratio rocker arm. 4,519,345, Cl. 123-90.160.

Walter, John, to Continental Can Company, Inc. Tamper indicator for closure. 4,519,517, Cl. 215-253.000.

Walter, John: *See—*
Roth, Donald J.; Kubis, Charles S.; Walter, John; and Mohr, Glenn R., 4,519,859, Cl. 156-69.000.

Wang, David C.; and Voepel, Harry W., to Emerson Electric Co. Stator for a multiple-pole dynamoelectric machine and method of fabricating same. 4,520,287, Cl. 310-184.000.

Ward, Philip A., to Associated Electrical Industries Limited. Induction motors. 4,520,303, Cl. 318-778.000.

Warner-Lambert Technologies, Inc.: *See—*
Michalik, John K., 4,519,692, Cl. 354-412.000.

Warner & Swasey Company, The: *See—*
Hunter, James R.; and Lazzarotti, S. James, 4,519,284, Cl. 83-410.000.

Warwick, Dennis J.; Nubson, Richard C.; and Howes, Ronald B., Jr., to Data Card Corporation. Card feeding, transfer and output apparatus for an automatic embossing system. 4,519,600, Cl. 271-4.000.

Wasemann, William A., to White Consolidated Industries, Inc. Washing machine tub construction. 4,519,223, Cl. 68-23.500.

Waser, Rudolf: *See—*
Mast, Fred; and Waser, Rudolf, 4,519,682, Cl. 353-122.000.

Waste Recovery, Inc.: *See—*
Rouse, Michael W., 4,519,550, Cl. 241-167.000.

Watanabe, Junji, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet feeding apparatus. 4,519,601, Cl. 271-114.000.

Watanabe, Kazumasa: *See—*
Kobayashi, Tatsuhiko; Ikeuchi, Satoru; Watanabe, Kazumasa; and Suginaka, Shunji, 4,520,095, Cl. 430-223.000.

Watanabe, Kazuo; Ohkubo, Yuichi; Haeno, Akira; and Yokogawa, Fumihiko, to Hitachi, Ltd.; and Pioneer Electronic Corporation. Electronic impedance circuit including a compensation arrangement for d.c. offset. 4,520,282, Cl. 307-491.000.

Watanabe, Kunio: *See—*
Shimizu, Masami; Omi, Junji; Watanabe, Kunio; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,520,340, Cl. 338-195.000.

Watanabe, Mitsuru: *See—*
Ishihara, Masahiro; Watanabe, Mitsuru; Ohkawa, Shuji; Taguchi, Shunichi; and Kikuchi, Itsuo, 4,520,250, Cl. 219-10.55B.

Watanabe, Teruoki: *See—*
Nakanishi, Yasuo; Sakamoto, Kazunori; Ando, Giichi; and Watanabe, Teruoki, 4,519,854, Cl. 148-127.000.

Watanabe, Yukinobu. Cylindrical fuse. 4,520,338, Cl. 337-297.000.

Watkins, Kenneth R.: *See—*
Randolph, Donald A.; and Watkins, Kenneth R., 4,520,073, Cl. 428-405.000.

Watson, Donald A.: *See—*
Hascal, Marcel; Watson, Donald A.; Danielski, Andrew; and Lopez, Sergio, 4,520,318, Cl. 324-457.000.

Watson, James M.; Butler, James R.; and Forward, Cleve H., to Cosden Technology, Inc. Alkylation of aromatics employing silicalite catalysts. 4,520,220, Cl. 585-467.000.

Webasto-Werk. W. Baier GmbH & Co.: *See—*
Mittmann, Bernd, 4,519,772, Cl. 431-45.000.

Webasto-Werke W. Baier GmbH & Co.: *See—*
Galtz, Rudiger, 4,519,375, Cl. 126-110.00B.

Weber, Charles A.: *See—*
Weber, Randall W.; and Weber, Charles A., 4,519,677, Cl. 350-637.000.

Weber, Herbert, to Licentia Patent-Verwaltungs-GmbH. Method for determining the optimum sampling times for a QPSK or QAM received signal. 4,520,492, Cl. 375-86.000.

Weber, Kurt; Mondini, Giancarlo; and Mandl, Gerhard, to Rieter Machine Works, Ltd. Means for removing a layer of matted fibers from a filter drum. 4,519,821, Cl. 55-290.000.

Weber, Randall W.; and Weber, Charles A., to Bock Products, Inc. Power-operated vehicle mirror. 4,519,677, Cl. 350-637.000.

Webster, Emmett G.; and McLean, Kenneth W., to Sperry Corporation. Linkage for equalizing conditioning roll pressure. 4,519,188, Cl. 56-16.400.

Wei, Lee-Fang, to AT&T Information Systems Inc. Differentially nonlinear convolutional channel coding with expanded set of signalling alphabets. 4,520,490, Cl. 375-27.000.

Wei, Peter H. L., to American Home Products Corporation. α-Mercaptophenylacetic acid derivatives of imidazole-containing compounds and analogues thereof. 4,520,196, Cl. 544-285.000.

Weiler, Gerhard H.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Container having pierceable insert. 4,519,513, Cl. 215-32.000.

Weiss, Arnold A.; and Gustafson, Dale A., to Weiss, Arnold A. High-voltage tire testing apparatus. 4,520,307, Cl. 324-54.000.

Weiss, Eugen: *See*—
Luitz, Max; and Weiss, Eugen, 4,519,625, Cl. 280-633.000.

Weiss, Kurt: *See*—
Dumbser, Gerhard; Lutz, Manfred; Fey, Rainer; and Weiss, Kurt, 4,519,227, Cl. 70-264.000.

Weiss, Richard: *See*—
Simon, Manfred; Spiess, Karl-Heinz; and Weiss, Richard, 4,520,063, Cl. 428-195.000.

Weissflog, Wolfgang: *See*—
Demus, Dietrich; Weissflog, Wolfgang; and Kresse, Horst, 4,519,936, Cl. 252-299.630.

Weitemeyer, Christian: *See*—
Fink, Hans-Ferdi; Kunzel, Gert; Klocker, Otto; Koerner, Gotz; Rossmy, Gerd; and Weitemeyer, Christian, 4,520,173, Cl. 525-403.000.

Weitman, Jacob. Method for heat recovery. 4,519,440, Cl. 165-1.000.

Weldon-Ming, Richard S. Collapsible support structures. 4,519,318, Cl. 108-33.000.

Wells, Bruce D.; and Ferguson, Du'Bois J., to Calgon Carbon Corporation. Use of activated carbon to remove dissolved organics from uranium leachate. 4,519,985, Cl. 423-6.000.

Wells, James E., III, to Elkem Metals Company. Apparatus and process for producing predominately iron alloy containing magnesium. 4,519,838, Cl. 75-129.000.

Wells, Wayne E., to Ford Motor Company. Axle clamp for filament reinforced synthetic material leaf springs. 4,519,590, Cl. 267-52.000.

Wen, Wilson K., to AT&T Bell Laboratories. Control information communication arrangement for a time division switching system. 4,520,477, Cl. 370-58.000.

Wende, Russell E.: *See*—
Caveney, Jack E.; Moody, Roy A.; Bulanda, John J.; and Wende, Russell E., 4,519,129, Cl. 29-749.000.

Werdecker, Waltraud: *See*—
Aldinger, Fritz; Keilberth, Richard; and Werdecker, Waltraud, 4,519,966, Cl. 264-56.000.

Werkzeugfabrik Fritz Machtes GmbH & Co. K.G.: *See*—
Machtle, Roland, 4,519,735, Cl. 411-65.000.

Werner, Eberhard: *See*—
Kluge, Reimund; and Werner, Eberhard, 4,520,497, Cl. 378-166.000.

Weschenfelder, Otto T.; and Schmitt, Gunter K., to Koenig & Bauer Aktiengesellschaft. Former for a folder in a web-fed rotary printing press. 4,519,594, Cl. 270-20.100.

Wessely, Herrmann, to Siemens Aktiengesellschaft. Cooling subrack for logic cards. 4,520,426, Cl. 361-386.000.

West, C. Thomas: *See*—
Basalay, Robert J.; West, C. Thomas; and Petrille, Dennis G., 4,519,926, Cl. 252-49.600.

Westerman, Harry H., Jr., to RCA Corporation. Transfer apparatus for a record molding press. 4,519,767, Cl. 425-308.000.

Westinghouse Electric Corp.: *See*—
Abbondanti, Alberto, 4,520,298, Cl. 318-490.000.
Baker, Donal E., 4,520,319, Cl. 328-133.000.
Cameron, Frank L., 4,520,337, Cl. 337-275.000.
Down, Michael G., 4,519,837, Cl. 75-0.50B.
Kobuck, Richard M.; and Kalkbrenner, Ralph W., 4,519,593, Cl. 269-40.000.
Meuschke, Robert E.; Sherwood, Donald G.; and Silverblatt, Bernard L., 4,519,519, Cl. 220-211.000.
Rauch, Gary C.; and Krause, Robert F., 4,520,335, Cl. 336-212.000.
Riley, Robert F.; Meyer, Thomas I.; and Jordan, Wesley N., 4,519,662, Cl. 339-94.00R.
Sassano, Daniel R., 4,520,161, Cl. 525-11.000.
Seidel, Joseph, 4,519,425, Cl. 141-1.100.
Snedden, William H.; and Safiuddin, Mohammed, 4,520,450, Cl. 364-607.000.
Yannopoulos, Lymperios N.; Straw, Robert D.; and Philips, D. Colin, 4,520,157, Cl. 524-462.000.

Wetzel, Lawrence E. Air flow balancing fire damper. 4,519,301, Cl. 98-1.000.

Wheeler, Steven A.: *See*—
Knowles, John P.; Wheeler, Steven A.; and Mitchell, Stewart D., 4,519,726, Cl. 405-195.000.
Mitchell, Stewart D.; and Wheeler, Steven A., 4,519,727, Cl. 405-204.000.

Whelan, Patrick: *See*—
Fujioka, Futoshi; Boden, Richard M.; Schreiber, William L.; Whelan, Patrick; and Hanna, Marie R., 4,519,943, Cl. 252-522.00R.

White, Carl J. Method and apparatus for entrapment prevention and lateral guidance in passenger conveyor systems. 4,519,490, Cl. 198-333.000.

White Consolidated Industries, Inc.: *See*—
Wasemann, William A., 4,519,223, Cl. 68-23.500.

White, William P. Pin inserting machine. 4,519,534, Cl. 227-117.000.

Whitmore, Richard L. Paint-bucket holder. 4,519,565, Cl. 248-237.000.

Whittaker Corporation: *See*—
Holzrichter, Edward J.; and Smith, Marc L., 4,520,188, Cl. 528-274.000.

Whittington, Paul H.: *See*—
Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., 4,519,553, Cl. 242-56.00R.

Whitwam, Ronald L., to Steelcase, Inc. Convertible inner shell for seating and the like. 4,519,651, Cl. 297-455.000.

Whyte, Lance; and Herweyer, Elliott E. Method and apparatus for magnetically treating fluids. 4,519,919, Cl. 210-695.000.

Wichterle, Otto, to Ceskoslovenska Adademie Ved. Soft lenticular contact lens with negative refraction. 4,519,681, Cl. 351-160.00H.

Wiech, Raymond E., Jr., to Fine Particle Technology Corporation. Substrate cooling. 4,519,447, Cl. 165-104.330.

Wiech, Raymond E., Jr., to Fine Particle Technology Corporation. Formation of narrow conductive paths on a substrate. 4,519,877, Cl. 204-15.000.

Wightman, William O., Jr.: *See*—
Campbell, Jesse L.; Fennema, Alan A.; Henderson, Robert B.; Rance, William G., Jr.; Whittington, Paul H.; and Wightman, William O., Jr., 4,519,553, Cl. 242-56.00R.

Wilcockson, Brian: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Ulh, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,519,103, Cl. 4-317.000.

Wilcox, Milton E.: *See*—
Jett, William B., Jr.; and Wilcox, Milton E., 4,520,324, Cl. 330-285.000.

Wiles, Laurence E.; and Page, Frank C., III, to Specialty Packaging Products, Inc. Means for mounting a closure in a predetermined position. 4,519,518, Cl. 215-331.000.

Wiley, Paul F., to Upjohn Company, The. Paulomycin derivatives. 4,520,191, Cl. 536-17.900.

Wilhelm Ruf KG: *See*—
Hoffmann, Horst, 4,520,228, Cl. 174-68.500.

Wilhelm Sihn Jr. KG.: *See*—
Langheck, Richard, 4,520,365, Cl. 343-903.000.

Wilhelm, Stanley R.; and Spector, George. Lifetime livestock fence post. 4,519,586, Cl. 256-51.000.

Wilken, Rolf-Dieter: *See*—
Knochel, Arndt; Eggers, Ingo; Klatte, Bernd; and Wilken, Rolf-Dieter, 4,519,996, Cl. 423-249.000.

William H. Rorer, Inc.: *See*—
Campbell, Henry F.; Kuhla, Donald E.; Studt, William L.; and Dodson, Stuart A., 4,520,025, Cl. 514-275.000.

Williams, Harvey A.: *See*—
Grabarski, David L.; and Williams, Harvey A., 4,519,276, Cl. 81-3.200.

Williams, Lanny J. Mechanical toy bull. 4,519,787, Cl. 446-313.000.

Williams, Robert L.; and Marks, Christopher, to Allied Corporation. Triaxial electrical connector. 4,519,666, Cl. 339-177.00R.

Williamson, Roger J.: *See*—
Pitt, Gillies D.; Williamson, Roger J.; Batchelder, David N.; and Prabakaran, Arulanandam M., 4,519,259, Cl. 73-861.220.

Willis, Horace E., Jr., to Merichem Company. Method for preparing elemental sulfur as a diffusion-resistant gas and methods for its use in making lime, sulfur dioxide and sulfuric acid from waste gypsum. 4,520,002, Cl. 423-522.000.

Willis, Stephen B.; and Boyce, Pamela J., to Dow Chemical Company, The. Modified polyalkylenepolyamines. 4,519,843, Cl. 106-90.000.

Willis, William M. Aircraft. 4,519,562, Cl. 244-207.000.

Wills, Robert P.; and Brooker, Andrew F., to Orthopedic Equipment Co. Inc. Distal locking intramedullary nail. 4,519,100, Cl. 3-1.900.

Wilson, James D. Nestable/stackable basket/tray combination for use in bakery goods distribution systems. 4,519,503, Cl. 206-505.000.

Wilson, Robert C., Jr.: *See*—
Angevine, Philip J.; Oleck, Stephen M.; Wilson, Robert C., Jr.; and Mizrahi, Sadi, 4,519,900, Cl. 208-254.00H.

Wilson, William J. Polygraphic encryption-decryption system. 4,520,232, Cl. 178-22.050.

Windmoller & Holscher: *See*—
Hornschuh, Manfred, 4,520,389, Cl. 358-107.000.

Winegeart, Mitchell E. Oil well safety valve for use with drill pipe. 4,519,576, Cl. 251-62.000.

Winter, Horst; and Eder, Erich, to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik. Device for attaching tubular segments of plastic film on vessels. 4,519,186, Cl. 53-585.000.

Wirz, Armin: *See*—
Gujer, Peter; Guldenfels, Dieter; Wirz, Armin; Knopp, Hans; Herion, Dieter; and Conzelmann, Gerhard, 4,519,115, Cl. 28-255.000.
von Burg, Paul; Wirz, Armin; and Graf, Felix, 4,519,778, Cl. 432-35.000.

Wischniewski, Martin, to Deutsche Babcock Anlagen Aktiengesellschaft. Device for burning a coal-containing ash-rice sludge. 4,519,320, Cl. 110-238.000.

Witt, Alvin E., to PermaGrain Products, Inc. Stain-resistant earthen articles, grout and floor and wall surfaces composed thereof. 4,519,174, Cl. 52-389.000.

Witt, Reinhard: *See*—
Kiesewetter, Holger; Jung, Friedrich; Radtke, Hartmut; and Witt, Reinhard, 4,519,239, Cl. 73-55.000.

Wittkopf, Eugene W.; Jorgensen, Allen R.; and Daane, Robert A., to Magna-Graphics Corporation. Web surface treating apparatus. 4,519,757, Cl. 425-143.000.

Wittmer, Paul: *See*—
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,520,135, Cl. 521-56.000.

Woelfel, Robert, to Rogers Corporation. Keyboard assembly. 4,520,248, Cl. 200-340.000.

Wohnig, Ernest W.: *See*—
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., 4,519,116, Cl. 28-257.000.

Wojcik, Jean: *See*—
Metzger, Jean; Lecouls, Henri; Colombe , Philippe; and Wojcik, Jean, 4,520,001, Cl. 423-332.000.

Wolak, Ronald G., to Ford Motor Company. Temperature sensing structure for a furnace. 4,519,830, Cl. 65-162.000.

Wolcott, John H., to Eaton Corporation. Rolled housing for eddy current coupling. 4,520,284, Cl. 310-42.000.

Wolff, Gerard: *See*—
Berger, Christian; Farge, Daniel; Moutonnier, Claude; and Wolff, Gerard, 4,520,193, Cl. 544-016.000.

Wong, Alan S.: *See*—
Lisiecki, Andrew I.; and Wong, Alan S., 4,519,398, Cl. 128-710.000.

Wong, Chak-Kuen: *See*—
Miranker, Glen S.; and Wong, Chak-Kuen, 4,520,456, Cl. 364-900.000.

Wood, David C. Boat trailer. 4,519,738, Cl. 414-483.000.

Woodard, Tony O.: *See*—
Stearley, John W.; and Woodard, Tony O., 4,520,334, Cl. 335-186.000.

Woodcock, Stewart J.: *See*—
Dolan, Courtney F.; and Woodcock, Stewart J., 4,519,265, Cl. 74-443.000.

Woodruff, Seth D. Valve for control of fluid flow. 4,519,908, Cl. 210-287.000.

Worrall, James D.; and Tefft, Ronald E., to Engineered Yarns, Inc. Ionomer-coated yarns and their use in papermakers wet press felts. 4,520,059, Cl. 428-109.000.

Wright, Bernard S.: *See*—
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., 4,520,215, Cl. 585-255.000.

Wrightcel Limited: *See*—
Brunswick, Robert, 4,519,184, Cl. 53-503.000.

Wunschl, Nicholas H.; and Robinson, Edward L., Jr., to J. I. Case Company. Seed dispenser for planters. 4,519,525, Cl. 221-211.000.

Wyser, Paul-Julian, to Sonval S.A. Gas-tight primary battery. 4,520,085, Cl. 429-174.000.

Xerox Corporation: *See*—
Badesha, Santokh S.; and Abkowitz, Martin A., 4,520,010, Cl. 427-83.000.
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., 4,520,455, Cl. 364-900.000.
Ims, Dale R., 4,520,368, Cl. 346-75.000.
Knapp, John F.; and Gruber, Robert J., 4,520,092, Cl. 430-120.000.
Lehman, Richard F.; Porth, Roland W.; and Mason, Lawrence J., 4,519,703, Cl. 355-69.000.
Skeels, Anthony J., 4,519,693, Cl. 355-3.0DD.

Xicor, Inc.: *See*—
Simko, Richard T., 4,520,461, Cl. 365-184.000.

Xu, Zhong, to Lau, Pauline Y.; and Lau, Roland L. Method and apparatus for introducing normally solid materials into substrate surfaces. 4,520,268, Cl. 250-492.100.

Yagi, Kenkichi: *See*—
Kato, Hiroyasu; Yagi, Kenkichi; and Okamoto, Miyoshi, 4,519,804, Cl. 8-485.000.

Yagihashi, Shinichi: *See*—
Maeda, Yasuhiro; Yokoyama, Takashi; and Yagihashi, Shinichi, 4,519,764, Cl. 425-256.000.

Yamada, Hiromichi: *See*—
Murai, Toshio; Aoyagi, Hayao; Furukawa, Masahiko; Yamada, Hiromichi; Kawamura, Tateo; Ishikawa, Yoshihiro; Sakamoto, Akio; Tsuchiya, Toshiaki; Shiozaki, Takashi; Kubota, Hirokuni; Okada, Isoji; Ishii, Jiro; Fujii, Fumio; Nagao, Masakazu; Kikuchi, Masamitsu; Ishii, Morio; Sasaki, Yoshimasa; Tanaka, Katsushi; and Itakura, Tadashi, 4,519,768, Cl. 425-456.000.

Yamada, Jun: *See*—
Senga, Takao; Yamada, Jun; and Suzuki, Shigeyoshi, 4,520,088, Cl. 430-49.000.

Yamada, Katuyuki; and Toyoda, Kazuhiro, to Fujitsu Limited. Semiconductor memory device. 4,520,462, Cl. 365-189.000.

Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, to Konishiroku Photo Industry Co., Ltd. Photographic taking lens driving means. 4,519,691, Cl. 354-400.000.

Yamada, Muneki: *See*—
Kawaguchi, Kiyoshi; and Yamada, Muneki, 4,519,977, Cl. 264-550.000.

Yamada, Nobuyuki: *See*—
Uesugi, Kenji; Irie, Shin-ichi; Asada, Yoshihisa; Maeda, Masahiro; Yamada, Nobuyuki; and Nakagawa, Hideaki, 4,520,230, Cl. 174-107.000.

Yamada, Shigeki: *See*—
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,519,955, Cl. 260-501.120.

Yamada, Shigeo: *See*—
Yokoyama, Hideo; Tomita, Seiji; and Yamada, Shigeo, 4,519,558, Cl. 242-186.000.

Yamada, Tomoharu: *See*—
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.

Yamaguchi, Katsuhiko: *See*—
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; Iko, Kazuo; and Miki, Kazuyuki, 4,520,075, Cl. 428-435.000.

Yamaguchi, Shinsuke: *See*—
Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, 4,519,431, Cl. 152-209.00R.

Yamamiya, Kunio: *See*—
Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, 4,520,280, Cl. 307-358.000.

Yamamoto, Katsuyoshi; Mizukami, Haruo; and Nambu, Hajime, to Mitsubishi Denki Kabushiki Kaisha. Character reading device. 4,520,505, Cl. 382-55.000.

Yamamoto, Nobuyuki; Nishikawa, Yasuo; Naruo, Kyoichi; and Okita, Tsutomu, to Fuji Photo Film Company Limited. Magnetic recording medium and process for producing same. 4,520,070, Cl. 428-336.000.

Yamamoto, Tatuo: *See*—
Hagiwara, Zenzi; Yamamoto, Tatuo; and Kurozumi, Hiroshi, 4,519,813, Cl. 55-26.000.

Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, to Nissan Motor Company, Limited. Hydraulic control system for continuously variable V-belt transmission. 4,519,790, Cl. 474-18.000.

Yamane, Chiyoki: *See*—
Fujii, Hideichi; Yamane, Chiyoki; and Kawai, Fumio, 4,520,057, Cl. 428-68.000.

Yamanoi, Hiroshi: *See*—
Uedaira, Satoru; Yamanoi, Hiroshi; and Tamura, Hidemasa, 4,520,004, Cl. 423-598.000.

Yamaoka, Nobutatsu; Tsukada, Akira; and Sasazawa, Kazuo, to Taiyo Yuden Co., Ltd. Semiconductive ceramic compositions with a non-linear volt-ampere characteristic, and process for preparing coherent bodies of such compositions. 4,519,942, Cl. 252-520.000.

Yamazaki, Hiroshi; and Tamaki, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Magnetic toner. 4,520,090, Cl. 430-106.600.

Yamazaki, Masami; and Shibata, Sueo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for assembling an impeller onto a turboshaft. 4,519,747, Cl. 416-244.00A.

Yamazaki, Masaya: *See*—
Sano, Tetsuo; Orita, Susumu; Yamazaki, Masaya; and Moriyama, Kazuhiro, 4,519,214, Cl. 62-156.000.

Yanase, Takaomi: *See*—
Hikosaka, Shinichi; Murayama, Kosho; Fukuura, Shinichi; and Yanase, Takaomi, 4,519,906, Cl. 210-223.000.

Yang, Frank C.: *See*—
Heard, Charles M.; and Yang, Frank C., 4,520,493, Cl. 375-97.000.

Yang, Yaw-Kuen. Combination lock. 4,519,229, Cl. 70-312.000.

Yannopoulos, Lymperios N.; Straw, Robert D.; and Philips, D. Colin, to Westinghouse Electric Corp. Early warning fire-detection paint. 4,520,157, Cl. 524-462.000.

Yao, Yung-Fang Y., to Ford Motor Company. Method of making a compound. 4,520,005, Cl. 423-599.000.

Yashima, Nobuyoshi: *See*—
Oshima, Masanao; Narita, Hitoshi; Yashima, Nobuyoshi; and Tabuchi, Hiroshi, 4,519,728, Cl. 405-224.000.

Yasuda, Kazuo: *See*—
Sugahara, Kenshi; Yasuda, Kazuo; and Mori, Junji, 4,519,891, Cl. 204-418.000.

Yasunori, Fuke: *See*—
Toyoaki, Ishibachi; Minoru, Yoshihara; Takashi, Takuma; Yasunori, Fuke; and Masayuki, Maeda, 4,519,839, Cl. 75-242.000.

Yates, Samuel L.: *See*—
Aberle, Leonard J.; Kim, Dong W.; Lees, Robert; Vermeer, Dick C.; Wohnig, Ernest W.; and Yates, Samuel L., 4,519,116, Cl. 28-257.000.

Yazaki, Tomoyoshi: *See*—
Ishii, Mikio; Iiyama, Kazunobu; and Yazaki, Tomoyoshi, 4,520,034, Cl. 426-96.000.

Yeung, David: *See*—
Dines, Allen I.; Yeung, David; and Nacht, Sergio, 4,520,133, Cl. 514-568.000.

Yoda, Hironori: *See*—
Matsuda, Shunsuke; Mitani, Katsuaki; Yoda, Hironori; and Nishizawa, Kesaji, 4,519,763, Cl. 425-192.00R.

Yodoshi, Tatsuo; Ohata, Hiroyoshi; and Inoue, Hiroshi, to Higashio Pipe Fittings Mfg. Co., Ltd. Pipe joint. 4,519,638, Cl. 285-305.000.

Yokoe, Sadao; Abe, Seimei; Wakata, Shoichi; Endou, Satosi; and Onozawa, Kazuyoshi, to Trinity Industrial Corporation. Electrostatic coating process and apparatus for use therein. 4,519,549, Cl. 239-703.000.

Yokogawa, Fumihiko: *See*—
Watanabe, Kazuo; Ohkubo, Yuichi; Haeno, Akira; and Yokogawa, Fumihiko, 4,520,282, Cl. 307-491.000.

Yokomori, Iwao: *See*—
Ariyoshi, Hiromi; and Yokomori, Iwao, 4,520,420, Cl. 361-154.000.

Yokosawa, Tomoo, to Hidaka Seiki KK. Method of and apparatus for mounting plate fins of hairpin pipes. 4,519,121, Cl. 29-157.30C.

Yokoyama, Hideo; Tomita, Seiji; and Yamada, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape player. 4,519,558, Cl. 242-186.000.

Yokoyama, Takashi: *See*—
Maeda, Yasuhiro; Yokoyama, Takashi; and Yagihashi, Shinichi, 4,519,764, Cl. 425-256.000.

Yokozeki, Seiki, to Matsushita Electric Industrial Co., Ltd. Method for operating a programmable microwave heating apparatus with food defrosting control. 4,520,251, Cl. 219-10.55M.

Yonezawa, Toshio: *See*—
Aoyama, Masaharu; Abe, Masahiro; Ajima, Takashi; and Yonezawa, Toshio, 4,520,041, Cl. 427-88.000.

Yoon, Heeyoung, to Conco Inc. Alcohol dissociation reactor for motor vehicles. 4,519,342, Cl. 123-3.000.

Yoshida, Iwao; Kasanami, Takeo; and Miura, Shuji, to Sanwa Kako Company Limited. Electroconductive cross-linked polyolefin foam and method for manufacture thereof. 4,519,963, Cl. 264-45.300.

Yoshida, Jituo; Okuyama, Shigeaki; and Suzuki, Hiroshi, to Kubota, Ltd. Fruit harvesting apparatus with television camera and monitor. 4,519,193, Cl. 56-328.00R.

Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, to Hitachi, Ltd. Method for continuous flow analysis of liquid sample. 4,520,108, Cl. 436-52.000.

Yoshida, Kobun, to Pioneer Electronic Corporation. Autostop mechanism for tape recorder. 4,520,412, Cl. 360-96.100.

Yoshida, Shohei: *See*—
Takeuchi, Tatsuro; Yoshida, Shohei; and Kawai, Kazuhiro, 4,519,959, Cl. 261-93.000.

Yoshida, Susumu: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,520,443, Cl. 364-424.000.

Yoshida, Takao: *See*—
Hall, John B.; and Yoshida, Takao, 4,520,032, Cl. 426-3.000.

Yoshida, Tomohisa: *See*—
Kamata, Nobuo; Sekiya, Takashi; Takeda, Kazutoshi; Hayasaka, Toyoo; and Yoshida, Tomohisa, 4,520,087, Cl. 429-219.000.

Yoshihara, Kenji: *See*—
Sugiyama, Hiroyuki; Abe, Ryozo; Yusa, Yasuhiro; Sakurai, Masaki; and Yoshihara, Kenji, 4,520,473, Cl. 369-126.000.

Yoshii, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Tape cassette. 4,519,521, Cl. 220-335.000.

Yoshii, Toshio; and Furukawa, Shigeyoshi, to Mitsubishi Denki Kabushiki Kaisha. On-load tap changer of the type of vacuum switches. 4,520,246, Cl. 200-144.00B.

Yoshikawa, Shozi; Kodama, Hiroshi; Ohsima, Ken; Sakamoto, Masaharu; Kato, Kiichi; and Yamamiya, Kunio, to Olympus Optical Company Limited. Apparatus for detecting input signal. 4,520,280, Cl: 307-358.000.

Yoshimura, Yoshito; Oshima, Noboru; Shimizu, Isamu; Yamaguchi, Shinsuke; Fujimaki, Tatsuo; Yamada, Tomoharu; and Tomita, Seisuke, to Bridgestone Tire Company Limited; and Japan Synthetic Rubber Co., Ltd. Styrene-butadiene copolymers with high styrene content. 4,519,431, Cl. 152-209.00R.

Yoshino, Akira; and Iwami, Isamu, to Asahi-Dow Limited. Heterogeneous system photosensitive oxidation sensitizer. 4,520,072, Cl. 428-403.000.

Yoshioka, Ryuzo: *See*—
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,519,955, Cl. 260-501.120.

Youle, Richard J.: *See*—
Neville, David M., Jr.; and Youle, Richard J., 4,520,011, Cl. 424-85.000.
Neville, David M., Jr.; and Youle, Richard J., 4,520,226, Cl. 424-85.000.

Young, Dennis L.: *See*—
Boeckman, Paul A.; and Young, Dennis L., 4,519,578, Cl. 251-163.000.

Young, William C.: *See*—
Curtis, Lyn; and Young, William C., 4,519,671, Cl. 350-96.150.

Yubakami, Keiichi: *See*—
Soga, Mamoru; Yubakami, Keiichi; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,519,931, Cl. 252-62.510.

Yugenkaisha Hakusui Sangyo: *See*—
Kutsuna, Tomoharu; Ohtani, Shinzi; and Kondo, Kunimasa, 4,520,045, Cl. 427-294.000.

Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho; and Kabushiki Kaisha Meidensha. Control device for loading and unloading mechanism. 4,520,443, Cl. 364-424.000.

Yusa, Yasuhiro: *See*—
Sugiyama, Hiroyuki; Abe, Ryozo; Yusa, Yasuhiro; Sakurai, Masaki; and Yoshihara, Kenji, 4,520,473, Cl. 369-126.000.

Zabrocki, Karl; Ott, Karl-Heinz; Schmidt, Adolf; and Pischtschan, Alfred, to Bayer Aktiengesellschaft. ABS-moulding compositions. 4,520,165, Cl. 525-84.000.

Zambon S.p.A.: *See*—
Della Bella, Davide; and Chiarino, Dario, 4,520,200, Cl. 548-247.000.

Zenith Electronics Corporation: *See*—
Cox, Charles M.; and Heuer, Charles, 4,520,392, Cl. 358-147.000.
Moon, Frederick H., 4,520,507, Cl. 455-3.000.

Zidon, Amicam C.: *See*—
Katz, Carlos; and Zidon, Amicam C., 4,519,759, Cl. 425-97.000.

Zillig, Robert G.: *See*—
Hoskins, John T.; and Zillig, Robert G., 4,519,449, Cl. 165-141.000.

Zincroksid S.p.A.: *See*—
Lavezzari, Carlo, 4,520,077, Cl. 428-632.000.

Zinser Textilmaschinen GmbH: *See*—
Hausner, Gerd; and Semmelrodt, Rolf, 4,519,202, Cl. 57-264.000.

Zoecon Corporation: *See*—
Kohn, Gustave K.; and Bamberg, Joe T., 4,520,199, Cl. 546-302.000.
Lee, Shy-Fuh, 4,520,197, Cl. 546-21.000.

Zot Manufacturing Company: *See*—
Lenhart, Richard D.; and Lindblad, Roger D., 4,519,609, Cl. 273-54.00A.

Zveguintzoff, Michel: *See*—
Boulle, Franck; and Zveguintzoff, Michel, 4,519,540, Cl. 237-7.000.

Zweig, Walter L.: *See*—
Boettcher, Charles W., Jr.; Hamilton, Billy H.; Slak, William M.; and Zweig, Walter L., 4,520,437, Cl. 363-41.000.

Zwick Energy Research Organization, Inc.: *See*—
Brigham, William D.; and Dung, Nguyen D., 4,519,213, Cl. 62-52.000.

Zwijsen, Wilhelmus A. J. M.; Duijndam, Cornelis P. J.; and Smeulers, Wouter, to U.S. Philips Corporation. Synchronizing circuit arrangement for deriving and processing a synchronizing signal contained in an incoming video signal. 4,520,393, Cl. 358-149.000.

Zylbert, Thaddeus J.; Fuhrmann, Wolf-Dieter; Hammer, Hans; and Kappertz, Fritz, to Singer Company, The. Sewing needle with two portion shank. 4,519,330, Cl. 112-222.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF MAY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Cyanamid Company: *See*—
Halverson, Frederick, Re. 31,900, Cl. 210-734.000.

Ando, Yoshio: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

Goodyear Aerospace Corporation: *See*—
Suter, Charles A., Re. 31,898, Cl. 52-2.000.

Halverson, Frederick, to American Cyanamid Company. Process for the flocculation of suspended solids. Re. 31,900, Cl. 210-734.000.

Johnson, Dee Lynn, to Minnesota Mining and Manufacturing Company. Method for the alteration of a lens. Re. 31,897, Cl. 51-284.00R.

Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, to Pilot Man-Nen-Hitsu Kabushiki Kaisha; and Toyo Giken Kogyo Kabushiki Kaisha. Continuous electrolytical treatment of aluminum or its alloys. Re. 31,901, Cl. 204-28.000.

Minnesota Mining and Manufacturing Company: *See*—
Johnson, Dee Lynn, Re. 31,897, Cl. 51-284.00R.

Mizusawa, Masashi: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

Mochida, Haruo, to Nissan Motor Co., Ltd. Remote control arrangement. Re. 31,899, Cl. 292-8.000.

Nadkarni, Anil V., to SCM Corporation. Dispersion strengthened metals. Re. 31,902, Cl. 75-0.5BC.

Nissan Motor Co., Ltd.: *See*—
Mochida, Haruo, Re. 31,899, Cl. 292-8.000.

Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

SCM Corporation: *See*—
Nadkarni, Anil V., Re. 31,902, Cl. 75-0.5BC.

Suter, Charles A., to Goodyear Aerospace Corporation. Inflatable-deflatable flexible structural component. Re. 31,898, Cl. 52-2.000.

Takahashi, Masaaki: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

Toyo Giken Kogyo Kabushiki Kaisha: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

Watanabe, Hiroshi: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

Yamagiwa, Yoichi: *See*—
Kawai, Satoshi; Yamagiwa, Yoichi; Mizusawa, Masashi; Watanabe, Hiroshi; Ando, Yoshio; and Takahashi, Masaaki, Re. 31,901, Cl. 204-28.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allen, Herbert, to Hallen Company. Cork extractor. B1 4,291,597, 5-28-85, Cl. 81-3.480.

Bayer Aktiengesellschaft: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,903,127, Cl. 260-453.0AB.

Berentzen, Hardo: *See*—
Mayer, Harald; and Berentzen, Hardo, B1 4,294,086, Cl. 66-121.000.

Daniel, Richard A.; and Geil, Ronald J., to Gould Inc. Microprocessor controlled micro-stepping chart drive. B1 4,377,847, 5-28-85, Cl. 364-400.000.

Eimer, Johannes: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,903,127, Cl. 260-453.0AB.

Geil, Ronald J.: *See*—
Daniel, Richard A.; and Geil, Ronald J., B1 4,377,847, Cl. 364-400.000.

Gorton, Thomas S., Jr.: *See*—
Wenstrom, Richard T.; and Gorton, Thomas S., Jr., B1 3,665,554, Cl. 17-45.000.

Gould Inc.: *See*—
Daniel, Richard A.; and Geil, Ronald J., B1 4,377,847, Cl. 364-400.000.

Hallen Company: *See*—
Allen, Herbert, B1 4,291,597, Cl. 81-3.480.

Liebsch, Dietrich: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,903,127, Cl. 260-453.0AB.

Mayer, Harald; and Berentzen, Hardo, to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft. Latch needle for knitting machines. B1 4,294,086, 5-28-85, Cl. 66-121.000.

Nishizawa, Edward E.: *See*—
Rynbrandt, Ronald H.; and Nishizawa, Edward E., B1 4,168,315, Cl. 424-270.000.

Raab, Rainer: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,903,127, Cl. 260-453.0AB.

Rynbrandt, Ronald H.; and Nishizawa, Edward E., to Upjohn Company, The. Novel dianisyl thiazole compound, compositions and method of antithrombotic treatment. B1 4,168,315, 5-28-85, Cl. 424-270.000.

Slade Gorton & Co., Inc.: *See*—
Wenstrom, Richard T.; and Gorton, Thomas S., Jr., B1 3,665,554, Cl. 17-45.000.

Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft: *See*—
Mayer, Harald; and Berentzen, Hardo, B1 4,294,086, Cl. 66-121.000.

Upjohn Company, The: *See*—
Rynbrandt, Ronald H.; and Nishizawa, Edward E., B1 4,168,315, Cl. 424-270.000.

Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates with a biuret structure. B1 3,903,127, 5-28-85, Cl. 260-453.0AB.

Wenstrom, Richard T.; and Gorton, Thomas S., Jr., to Slade Gorton & Co., Inc. Method of eviscerating shellfish. B1 3,665,554, 5-28-85, Cl. 17-45.000.

Zirner, Joachim: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,903,127, Cl. 260-453.0AB.

LIST OF DESIGN PATENTEES

Acushnet Company: *See—*
Worster, John A.; Lyon, Herbert W.; Rambo, Charles D.; Santy, Arthur F.; and Foegen, M. Michael, 279,022, Cl. D21-220.000.
Advanced Plastics, Inc.: *See—*
Waters, John E., 278,995, Cl. D12-157.000.
Akiyama, Kunio, to Sharp Corporation. Personal computer. 279,009, 5-28-85, Cl. D14-106.000.
American Commercial, Incorporated: *See—*
Seibel, Ben, 278,962, Cl. D7-13.000.
American Cyanamid Company: *See—*
Harris, Ned, 278,973, Cl. D9-300.000.
Anaya, Randall C. Trowel. 278,966, 5-28-85, Cl. D8-10.000.
Anderson, Kirk S.; and Shane, Scott D., to Anderson Metals Corporation. Combined packaging and display container. 278,979, 5-28-85, Cl. D9-415.000.
Anderson Metals Corporation: *See—*
Anderson, Kirk S.; and Shane, Scott D., 278,979, Cl. D9-415.000.
Arcieri, Robert G. Housing for a waveguide feed for a parabolic dish antenna. 279,008, 5-28-85, Cl. D14-90.000.
Asoma Oy: *See—*
Soininen, Jarmo A., 278,949, Cl. D3-36.000.
AT&T Information Systems Inc.: *See—*
Ceradelli, Vittorio; Genaro, Donald M.; and Kelly, Thomas J., 279,010, Cl. D14-113.000.
AT&T Technologies, Inc.: *See—*
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., 279,005, Cl. D14-63.000.
Bauer, Harold F.: *See—*
Smith, Lloyd T.; Bauer, Harold F.; and Roth, Allen K., 278,971, Cl. D8-107.000.
Baumann, Gerhard. Receptacle for hydroponics. 278,989, 5-28-85, Cl. D11-152.000.
Berry, Richard D., Jr., to Design Institute America, Inc. Table. 278,959, 5-28-85, Cl. D6-480.000.
Biermann, P. J. Flexible pouring spout. 278,981, 5-28-85, Cl. D9-447.000.
Bolyn, Anthony E., to Congoleum Corporation. Display unit for samples of floor tiles, carpets or similar articles. 278,954, 5-28-85, Cl. D6-409.000.
Boudreaux, Mark D., to CPG Products Corp. Toy vehicle. 279,016, 5-28-85, Cl. D21-87.000.
Boudreaux, Mark D., to CPG Products Corp. Toy vehicle. 279,017, 5-28-85, Cl. D21-87.000.
Boudreaux, Mark D., to CPG Products Corp. Toy vehicle. 279,018, 5-28-85, Cl. D21-87.000.
Braswell, Ronald E. Fire extinguisher head assembly. 279,035, 5-28-85, Cl. D29-5.000.
Breitschwerdt, Werner; van Winsen, Friedrich; and Sacco, Bruno, to Daimler-Benz Aktiengesellschaft. Automobile. 278,992, 5-28-85, Cl. D12-92.000.
Bridgestone Tire Company Limited: *See—*
Nishio, Hideaki; and Tateo, Yuji, 278,994, Cl. D12-137.000.
Brodie, Richard A. Font for musical symbols. 279,014, 5-28-85, Cl. D18-32.000.
Brown, Omar L.; Peters, Don B.; and Kalter, Jack L., to Fraze, Ermal C. End closure for a container. 278,980, 5-28-85, Cl. D9-438.000.
Brunner, Robert D.: *See—*
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 279,007, Cl. D14-113.000.
Burlington Basket Company: *See—*
Thompson, Cloud H., Jr., 279,038, Cl. D32-37.000.
Caton, Robert W.: *See—*
Eckstedt, Paul D.; and Caton, Robert W., 278,998, Cl. D13-35.000.
Ceradelli, Vittorio; Genaro, Donald M.; and Kelly, Thomas J., to AT&T Information Systems Inc. Video monitor. 279,010, 5-28-85, Cl. D14-113.000.
Chen, James, to Volta Industrial Co., Ltd. Thong sandal. 278,946, 5-28-85, Cl. D2-270.000.
Cheung, Kwok K., to Wai Hing Industrial Manufacturing Factory. Vanity mirror with hinged cover for attachment to the sun visor of an automobile. 278,996, 5-28-85, Cl. D12-191.000.
Colortran, Inc.: *See—*
Wolfe, Denis G.; Young, Thomas S.; Wasserman, Arnold S.; and Lawing, Edward, 278,997, Cl. D13-12.000.
Congoleum Corporation: *See—*
Bolyn, Anthony E., 278,954, Cl. D6-409.000.
Cornell, Samuel M.; and Goldstein, Robert B., to Goldstein, Robert B. Stuffed doll. 279,021, 5-28-85, Cl. D21-184.000.
Corning Glass Works: *See—*
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 278,963, Cl. D7-15.000.
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 278,964, Cl. D7-15.000.
Cousins, Morison, to International Mobile Machines Corp. Code attachment housing for a telephone stand. 279,003, 5-28-85, Cl. D14-60.000.
CPG Products Corp.: *See—*
Boudreaux, Mark D., 279,016, Cl. D21-87.000.
Boudreaux, Mark D., 279,017, Cl. D21-87.000.
Boudreaux, Mark D., 279,018, Cl. D21-87.000.
Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; van Winsen, Friedrich; and Sacco, Bruno, 278,992, Cl. D12-92.000.
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., to Corning Glass Works. Drinking glass or the like. 278,963, 5-28-85, Cl. D7-15.000.
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., to Corning Glass Works. Drinking glass or the like. 278,964, 5-28-85, Cl. D7-15.000.
Daynes, John C.: *See—*
Labuda, Lawrence L.; Linstad, Gregory A.; Jones, Paul W.; and Daynes, John C., 279,002, Cl. D14-6.000.
Design Institute America, Inc.: *See—*
Berry, Richard D., Jr., 278,959, Cl. D6-480.000.
Doerner, Frank. Chair control. 278,961, 5-28-85, Cl. D6-500.000.
Doman, Donald W.: *See—*
Kohler, Herbert V., Jr.; and Doman, Donald W., 279,028, Cl. D23-55.000.
Dorfman, Leonard M.: *See—*
Houlihan, John T.; and Dorfman, Leonard M., 278,986, Cl. D10-125.000.
Doyel, John S. Booklight. 279,032, 5-28-85, Cl. D26-60.000.
Eckstedt, Paul D.; and Caton, Robert W., to FMC Corporation. Pump monitor. 278,998, 5-28-85, Cl. D13-35.000.
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., to Fortune Systems Corporation. Adjustable computer display and base. 279,007, 5-28-85, Cl. D14-113.000.
Farmer, James E., Sr. Cutlery sharpener. 278,968, 5-28-85, Cl. D8-91.000.
Fiskar Manufacturing Corporation: *See—*
Smith, Lloyd T.; Bauer, Harold F.; and Roth, Allen K., 278,971, Cl. D8-107.000.
Fletcher, Gary D.: *See—*
Ludwig, Joseph B., 279,036, Cl. D30-30.000.
Flototto, Reinhard-Heinrich. Cabinet. 278,957, 5-28-85, Cl. D6-432.000.
FMC Corporation: *See—*
Eckstedt, Paul D.; and Caton, Robert W., 278,998, Cl. D13-35.000.
Foam Tek, Inc.: *See—*
Ray, Sam W., 278,974, Cl. D9-305.000.
Foegen, M. Michael: *See—*
Worster, John A.; Lyon, Herbert W.; Rambo, Charles D.; Santy, Arthur F.; and Foegen, M. Michael, 279,022, Cl. D21-220.000.
Foldes, Steven M. Shoe and the like. 278,947, 5-28-85, Cl. D2-282.000.
Foldes, Steven M., to Fun Footwear, Co. Shoe and the like. 278,948, 5-28-85, Cl. D2-291.000.
Formelprodukter: *See—*
Nordgren, Peter; and Sjoholm, Hans, 279,024, Cl. D21-230.000.
Nordgren, Peter; and Sjoholm, Hans, 279,025, Cl. D21-230.000.
Nordgren, Peter; and Sjoholm, Hans, 279,026, Cl. D21-230.000.
Fortune Systems Corporation: *See—*
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 279,007, Cl. D14-113.000.
Franchi, Thomas A.; and Rogers, Leslie B., to Mobil Oil Corporation. Oil container. 278,977, 5-28-85, Cl. D9-383.000.
Franchi, Thomas A.; and Rogers, Leslie B., to Mobil Oil Corporation. Oil container. 278,978, 5-28-85, Cl. D9-383.000.
Fraze, Ermal C.: *See—*
Brown, Omar L.; Peters, Don B.; and Kalter, Jack L., 278,980, Cl. D9-438.000.
Fredriksson, Rune. Combined fastening bolt and locking washer therefor. 278,972, 5-28-85, Cl. D8-388.000.
Fubershaw, Gerard A.: *See—*
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 279,007, Cl. D14-113.000.
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, to Kabushiki Kaisha Suwa Seikosha. Portable television receiver. 279,006, 5-28-85, Cl. D14-77.000.
Fun Footwear, Co.: *See—*
Foldes, Steven M., 278,948, Cl. D2-291.000.
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., to AT&T Technologies, Inc. Housing for a telephone handset or similar article. 279,005, 5-28-85, Cl. D14-63.000.
Genaro, Donald M.: *See—*
Ceradelli, Vittorio; Genaro, Donald M.; and Kelly, Thomas J., 279,010, Cl. D14-113.000.
Gold Eagle Co.: *See—*
Gurolnick, William R., 278,975, Cl. D9-370.000.
Goldstein, Robert B.: *See—*
Cornell, Samuel M.; and Goldstein, Robert B., 279,021, Cl. D21-184.000.
Gordon, Arnold. Desk with built in computer console. 278,956, 5-28-85, Cl. D6-422.000.
Gurolnick, William R., to Gold Eagle Co. Bottle or similar article. 278,975, 5-28-85, Cl. D9-370.000.
Harris, Ned, to American Cyanamid Company. Combined bottle and cap. 278,973, 5-28-85, Cl. D9-300.000.
Henkels, Walter. Combined holder for writing instruments and note paper. 279,015, 5-28-85, Cl. D19-78.000.
Hewitt, Ronald, to Webb, Walter. Folding hatchet. 278,967, 5-28-85, Cl. D8-76.000.
Houlihan, John T.; and Dorfman, Leonard M., to Timex Corporation. Electro-optic display for a timepiece. 278,986, 5-28-85, Cl. D10-125.000.
Innovative Time Corporation: *See—*
Novak, Mickey E., 278,958, Cl. D6-471.000.

International Mobile Machines Corp.: *See—*
Cousins, Morison, 279,003, Cl. D14-60.000.
International Playtex, Inc.: *See—*
Stern, Harold; and Suleiman, Elisabeth, 278,945, Cl. D2-24.000.
Jennings, Don M. Clown doll. 279,020, 5-28-85, Cl. D21-173.000.
Joffe, Richard M.: *See—*
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., 279,005, Cl. D14-63.000.
John J. Madison Company, Inc.: *See—*
Santa-Eulalia, Jesus A. C.; and Santa-Eulalia, Javier B. C., 278,991, Cl. D11-162.000.
Johnson, Conrad E. Glass cutter. 278,969, 5-28-85, Cl. D8-98.000.
Jones, Paul W.: *See—*
Labuda, Lawrence L.; Linstad, Gregory A.; Jones, Paul W.; and Daynes, John C., 279,002, Cl. D14-6.000.
Kabushiki Kaisha KEM-O-PRO: *See—*
Morikawa, Iwao, 278,976, Cl. D9-376.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, 279,006, Cl. D14-77.000.
Kalinsky, Stuart. Cosmetic brush. 278,951, 5-28-85, Cl. D4-135.000.
Kalinsky, Stuart. Cosmetic brush. 278,952, 5-28-85, Cl. D4-135.000.
Kalter, Jack L.: *See—*
Brown, Omar L.; Peters, Don B.; and Kalter, Jack L., 278,980, Cl. D9-438.000.
Kaneko, Toshiro. Box for cultivating vegetables or the like. 278,990, 5-28-85, Cl. D11-155.000.
Kassai, Kenzou. Baby carriage. 278,993, 5-28-85, Cl. D12-129.000.
Kelly, Thomas J.: *See—*
Ceradelli, Vittorio; Genaro, Donald M.; and Kelly, Thomas J., 279,010, Cl. D14-113.000.
Kohler Co.: *See—*
Kohler, Herbert V., Jr.; and Doman, Donald W., 279,028, Cl. D23-55.000.
Kohler, Herbert V., Jr.; and Doman, Donald W., to Kohler Co. Bathtub or the like. 279,028, 5-28-85, Cl. D23-55.000.
Kolb, Walter, to Wolf-Gerate GmbH. Handle for gardening tool or the like. 278,970, 5-28-85, Cl. D8-107.000.
Kyle, Loris. Playhouse. 279,019, 5-28-85, Cl. D21-114.000.
Labuda, Lawrence L.; Linstad, Gregory A.; Jones, Paul W.; and Daynes, John C., to Physio-Control Corporation. ECG And voice cassette recorder. 279,002, 5-28-85, Cl. D14-6.000.
Lawing, Edward: *See—*
Wolfe, Denis G.; Young, Thomas S.; Wasserman, Arnold S.; and Lawing, Edward, 278,997, Cl. D13-12.000.
Linstad, Gregory A.: *See—*
Labuda, Lawrence L.; Linstad, Gregory A.; Jones, Paul W.; and Daynes, John C., 279,002, Cl. D14-6.000.
Ludwig, Joseph B., to Fletcher, Gary D., a part interest. Stirrup strap for mounting a horse. 279,036, 5-28-85, Cl. D30-30.000.
Lyon, Herbert W.: *See—*
Worster, John A.; Lyon, Herbert W.; Rambo, Charles D.; Santy, Arthur F.; and Foegen, M. Michael, 279,022, Cl. D21-220.000.
McGarvey, John N.: *See—*
Genaro, Donald M.; Joffe, Richard M.; and McGarvey, John N., 279,005, Cl. D14-63.000.
Mobil Oil Corporation: *See—*
Franchi, Thomas A.; and Rogers, Leslie B., 278,977, Cl. D9-383.000.
Franchi, Thomas A.; and Rogers, Leslie B., 278,978, Cl. D9-383.000.
Moran, John C.: *See—*
Weisenbarger, Gale M.; and Moran, John C., 279,027, Cl. D23-3.000.
Morikawa, Iwao, to Kabushiki Kaisha KEM-O-PRO. Can. 278,976, 5-28-85, Cl. D9-376.000.
Morton, Walter D. Garden marker-lawn stanchion. 278,965, 5-28-85, Cl. D8-01.000.
Nagasawa, Minoru, to Nippon Chemi-Con Corporation. Portable combined micro-cassette tape recorder, radio and calculator. 279,001, 5-28-85, Cl. D14-5.000.
Nippon Chemi-Con Corporation: *See—*
Nagasawa, Minoru, 279,001, Cl. D14-5.000.
Nishio, Hideaki; and Tateo, Yuji, to Bridgestone Tire Company Limited. Vehicle tire. 278,994, 5-28-85, Cl. D12-137.000.
Nordgren, Peter; and Sjoholm, Hans, to Formelprodukter. Snow plate. 279,024, 5-28-85, Cl. D21-230.000.
Nordgren, Peter; and Sjoholm, Hans, to Formelprodukter. Snow plate. 279,025, 5-28-85, Cl. D21-230.000.
Nordgren, Peter; and Sjoholm, Hans, to Formelprodukter. Ski pole grip. 279,026, 5-28-85, Cl. D21-230.000.
Northern Telecom Limited: *See—*
Ryan, Desmond J., 279,004, Cl. D14-63.000.
Novak, Mickey E., to Innovative Time Corporation. Display case for watches or the like. 278,958, 5-28-85, Cl. D6-471.000.
Peters, Don B.: *See—*
Brown, Omar L.; Peters, Don B.; and Kalter, Jack L., 278,980, Cl. D9-438.000.
Physio-Control Corporation: *See—*
Labuda, Lawrence L.; Linstad, Gregory A.; Jones, Paul W.; and Daynes, John C., 279,002, Cl. D14-6.000.
Putney, Mark R. Manicurist's finger nail clipping shield. 279,034, 5-28-85, Cl. D28-56.000.
Quaker Oats Company, The: *See—*
Riehm, Merry S., 279,011, Cl. D15-66.000.
Rambo, Charles D.: *See—*
Worster, John A.; Lyon, Herbert W.; Rambo, Charles D.; Santy, Arthur F.; and Foegen, M. Michael, 279,022, Cl. D21-220.000.
Ray, Sam W., to Foam Tek, Inc. Combined bag and handle. 278,974, 5-28-85, Cl. D9-305.000.
Redken Laboratories, Inc.: *See—*
Stansbury, Benjamin H., Jr., 279,033, Cl. D28-35.000.
Riehm, Merry S., to Quaker Oats Company, The. Loom. 279,011, 5-28-85, Cl. D15-66.000.
Risi, Angelo; and Risi, Antonio. Header for cribbing. 279,030, 5-28-85, Cl. D25-80.000.
Risi, Antonio: *See—*
Risi, Angelo; and Risi, Antonio, 279,030, Cl. D25-80.000.
Roberts, Joseph M., Sr. Portable circuit tester. 278,984, 5-28-85, Cl. D10-78.000.
Rogers, Leslie B.: *See—*
Franchi, Thomas A.; and Rogers, Leslie B., 278,977, Cl. D9-383.000.
Franchi, Thomas A.; and Rogers, Leslie B., 278,978, Cl. D9-383.000.
Roth, Allen K.: *See—*
Smith, Lloyd T.; Bauer, Harold F.; and Roth, Allen K., 278,971, Cl. D8-107.000.
Ryan, Desmond J., to Northern Telecom Limited. Housing for a telecommunications handset. 279,004, 5-28-85, Cl. D14-63.000.
Sacco, Bruno: *See—*
Breitschwerdt, Werner; van Winsen, Friedrich; and Sacco, Bruno, 278,992, Cl. D12-92.000.
Santa-Eulalia, Javier B. C.: *See—*
Santa-Eulalia, Jesus A. C.; and Santa-Eulalia, Javier B. C., 278,991, Cl. D11-162.000.
Santa-Eulalia, Jesus A. C.; and Santa-Eulalia, Javier B. C., to John J. Madison Company, Inc. Figurine of a goose. 278,991, 5-28-85, Cl. D11-162.000.
Santy, Arthur F.: *See—*
Worster, John A.; Lyon, Herbert W.; Rambo, Charles D.; Santy, Arthur F.; and Foegen, M. Michael, 279,022, Cl. D21-220.000.
Sarges, Karl A., to U.S. Philips Corporation. Combined automobile tape player and radio receiver. 279,000, 5-28-85, Cl. D14-5.000.
Schuler, Jacob P. Container for storing brushes or the like. 279,037, 5-28-85, Cl. D32-35.000.
Seibel, Ben, to American Commercial, Incorporated. Champagne glass. 278,962, 5-28-85, Cl. D7-13.000.
Shane, Scott D.: *See—*
Anderson, Kirk S.; and Shane, Scott D., 278,979, Cl. D9-415.000.
Sharp Corporation: *See—*
Akiyama, Kunio, 279,009, Cl. D14-106.000.
Shields, Joseph B. Foot protecting cushion for a bed leg. 278,960, 5-28-85, Cl. D6-491.000.
Sieverding, Wayne F., to Western Manufacturing Corporation. Blower unit for portable heater. 279,029, 5-28-85, Cl. D23-155.000.
Sjoholm, Hans: *See—*
Nordgren, Peter; and Sjoholm, Hans, 279,024, Cl. D21-230.000.
Nordgren, Peter; and Sjoholm, Hans, 279,025, Cl. D21-230.000.
Nordgren, Peter; and Sjoholm, Hans, 279,026, Cl. D21-230.000.
Smith, Lloyd T.; Bauer, Harold F.; and Roth, Allen K., to Fiskar Manufacturing Corporation. Hand grip handle for detachable tools. 278,971, 5-28-85, Cl. D8-107.000.
Smith, Morley L., to T. S. Simms & Co. Limited. Handle for paint roller frame. 278,953, 5-28-85, Cl. D4-138.000.
Smith, Vance R.: *See—*
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., 278,955, Cl. D6-381.000.
Soininen, Jarmo A., to Asoma Oy. Slalom shoe suitcase. 278,949, 5-28-85, Cl. D3-36.000.
Sowle, Harry A. Ornamental design for a guitar or similar instrument. 279,013, 5-28-85, Cl. D17-18.000.
Stansbury, Benjamin H., Jr., to Redken Laboratories, Inc. Handle for a curling iron or styler. 279,033, 5-28-85, Cl. D28-35.000.
Steiner, Willa J. Christmas tree ornament. 278,988, 5-28-85, Cl. D11-125.000.
Stern, Harold; and Suleiman, Elisabeth, to International Playtex, Inc. Brassiere. 278,945, 5-28-85, Cl. D2-24.000.
Stowell, Davin B.: *See—*
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 278,963, Cl. D7-15.000.
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 278,964, Cl. D7-15.000.
Suleiman, Elisabeth: *See—*
Stern, Harold; and Suleiman, Elisabeth, 278,945, Cl. D2-24.000.
Suzuki, Masumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 279,031, 5-28-85, Cl. D26-3.000.
Suzuki, Susumu: *See—*
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, 279,006, Cl. D14-77.000.
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., to Vermont Castings, Inc. Park bench. 278,955, 5-28-85, Cl. D6-381.000.
T. S. Simms & Co. Limited: *See—*
Smith, Morley L., 278,953, Cl. D4-138.000.
Tateo, Yuji: *See—*
Nishio, Hideaki; and Tateo, Yuji, 278,994, Cl. D12-137.000.
Thompson, Cloud H., Jr., to Burlington Basket Company. Clothes hamper. 279,038, 5-28-85, Cl. D32-37.000.
Timex Corporation: *See—*
Houlihan, John T.; and Dorfman, Leonard M., 278,986, Cl. D10-125.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Suzuki, Masumi, 279,031, Cl. D26-3.000.
Tyrol, Brian J.: *See*—
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., 278,955, Cl. D6-381.000.
Uchihori, Noritaka: *See*—
Fukasawa, Naoto; Suzuki, Susumu; and Uchihori, Noritaka, 279,006, Cl. D14-77.000.
U.S. Philips Corporation: *See*—
Sarges, Karl A., 279,000, Cl. D14-5.000.
van Winsen, Friedrich: *See*—
Breitschwerdt, Werner; van Winsen, Friedrich; and Sacco, Bruno, 278,992, Cl. D12-92.000.
Van Zandt, John M. Display holder for a container of lipstick or the like. 278,982, 5-28-85, Cl. D9-457.000.
Vaughan, Peter W. Key tag. 278,950, 5-28-85, Cl. D3-62.000.
Vermont Castings, Inc.: *See*—
Syme, Duncan C.; Smith, Vance R.; and Tyrol, Brian J., 278,955, Cl. D6-381.000.
Viemeister, Tucker L.: *See*—
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 278,963, Cl. D7-15.000.
Dair, Thomas M.; Stowell, Davin B.; and Viemeister, Tucker L., 278,964, Cl. D7-15.000.
Volta Industrial Co., Ltd.: *See*—
Chen, James, 278,946, Cl. D2-270.000.
Von Gunten, Lee. Organ player attachment. 279,012, 5-28-85, Cl. D17-9.000.
Wai Hing Industrial Manufacturing Factory: *See*—
Cheung, Kwok K., 278,996, Cl. D12-191.000.
Walden, Eddie R. Storage container for sports accessories. 279,039, 5-28-85, Cl. D34-40.000.
Wasserman, Arnold S.: *See*—
Wolfe, Denis G.; Young, Thomas S.; Wasserman, Arnold S.; and Lawing, Edward, 278,997, Cl. D13-12.000.
Waters, John E., to Advanced Plastics, Inc. Truck tool box. 278,995, 5-28-85, Cl. D12-157.000.
Webb, Walter: *See*—
Hewitt, Ronald, 278,967, Cl. D8-76.000.
Weisenbarger, Gale M.; and Moran, John C. Magnetic fluid conditioner. 279,027, 5-28-85, Cl. D23-3.000.
Wessels, William H. Snow ski teather. 279,023, 5-28-85, Cl. D21-230.000.
Western Manufacturing Corporation: *See*—
Sieverding, Wayne F., 279,029, Cl. D23-155.000.
Whitaker, Judith A. Extendible automotive ashtray reflector. 278,985, 5-28-85, Cl. D10-111.000.
William Findings Corporation: *See*—
Zauderer, Wilhelm, 278,987, Cl. D11-88.000.
Wolf-Gerate GmbH: *See*—
Kolb, Walter, 278,970, Cl. D8-107.000.
Wolfe, Denis G.; Young, Thomas S.; Wasserman, Arnold S.; and Lawing, Edward, to Colortran, Inc. Lighting system control console. 278,997, 5-28-85, Cl. D13-12.000.
Woodruff, James L. Module for laser wheel alignment system. 278,983, 5-28-85, Cl. D10-46.000.
Worster, John A.; Lyon, Herbert W.; Rambo, Charles D.; Santy, Arthur F.; and Foegen, M. Michael, to Acushnet Company. Golf club head design. 279,022, 5-28-85, Cl. D21-220.000.
Young, Thomas S.: *See*—
Wolfe, Denis G.; Young, Thomas S.; Wasserman, Arnold S.; and Lawing, Edward, 278,997, Cl. D13-12.000.
Zauderer, Wilhelm, to William Findings Corporation. Earring nut. 278,987, 5-28-85, Cl. D11-88.000.
Zimmerman, Joseph. Circuitry component casing. 278,999, 5-28-85, Cl. D13-40.000.

LIST OF PLANT PATENTEES

Anderson, Fred W., deceased; and by Olson, Wendel J., heir. Cherry tree (King-44-p-477). 5,478, 5-28-85, Cl. 37.000.
Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de La Londe. Carnation named Lonbalma. 5,476, 5-28-85, Cl. 70.000.
Chrysanthemum Breeders Assoc. N.V.: *See*—
Hubertus van Veen, Johannes W., 5,477, Cl. 74.000.
Ducloux, Yves: *See*—
Barberet, Nicole; and Ducloux, Yves, 5,476, Cl. 70.000.
Earl J. Small Growers, Inc.: *See*—
Sweet, Jack S., 5,479, Cl. 86.000.
Hubertus van Veen, Johannes W., to Chrysanthemum Breeders Assoc. N.V. Chrysanthemum. 5,477, 5-28-85, Cl. 74.000.
Laboratoire de Physiologie Vegetale de La Londe: *See*—
Barberet, Nicole; and Ducloux, Yves, 5,476, Cl. 70.000.
Nakagawa, Allan T.: *See*—
Nakagawa, Glenn T., 5,480, Cl. 41.000.
Nakagawa, Glenn T., to Nakagawa, Glenn T.; and Nakagawa, Allan T. Nectarine tree—N15500. 5,480, 5-28-85, Cl. 41.000.
Olson, Wendel J., heir: *See*—
Anderson, Fred W., deceased; and Olson, Wendel J., heir, 5,478, Cl. 37.000.
Sweet, Jack S., to Earl J. Small Growers, Inc. Poinsettia plant named Red Champion. 5,479, 5-28-85, Cl. 86.000.
Weeks, O. L. Rose plant. 5,481, 5-28-85, Cl. 19.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 28, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
16 4,519,097
161 R 4,519,098
424 4,519,099

CLASS 3
1.9 4,519,100
1.912 4,519,101

CLASS 4
292 4,519,102
317 4,519,103
484 4,519,104
661 4,519,105

CLASS 5
82 R 4,519,106
261 4,519,107

CLASS 7
167 4,519,108

CLASS 8
404 4,519,802
445 4,519,803
485 4,519,804
650 4,519,805

CLASS 15
110 4,519,109
159 R 4,519,110
167 R 4,519,111
326 4,519,112
335 4,519,113

CLASS 17
45 B1 3,665,554

CLASS 19
200 4,519,114

CLASS 23
302 T 4,519,806

CLASS 28
255 4,519,115
257 4,519,116

CLASS 29
1.2 4,519,117
121.5 4,519,118
156.5 R 4,519,119
157 R 4,519,120
157.3 C 4,519,121
237 4,519,122
434 4,519,123
526 R 4,519,124
558 4,519,125
571 4,519,126
4,519,127
576 W 4,519,128
749 4,519,129
764 4,519,130
825 4,519,131
845 4,519,132
863 4,519,133

CLASS 30
28 4,519,134
134 4,519,135
142 4,519,136

CLASS 33
17 R 4,519,137
32 C 4,519,139
32 R 4,519,138
125 C 4,519,140
179.5 R 4,519,141
185 R 4,519,142
189 4,519,143
199 R 4,519,144

CLASS 34
27 4,519,145
104 4,519,146

CLASS 36
19.5 4,519,147
91 4,519,148
121 4,519,149
4,519,150

CLASS 38
102.9 4,519,151

CLASS 40
156 4,519,152
591 4,519,153
615 4,519,154
625 4,519,155

CLASS 42
77 4,519,156
83 4,519,157

CLASS 43
17 4,519,158
25 4,519,159
113 4,519,160

CLASS 44
10 A 4,519,808
15 R 4,519,807
53 4,519,809

CLASS 47
9 4,519,161
47 4,519,162
58 4,519,163

CLASS 48
202 4,519,810

CLASS 49
108 4,519,164
307 4,519,165

CLASS 51
103 WH 4,519,166
165.77 4,519,167
216 LP 4,519,168
241 S 4,519,169
284 R Re.31,897
289 R 4,519,170
309 4,519,811
419 4,519,171
422 4,519,812

CLASS 52
2 Re.31,898
96 4,519,172
235 4,519,173
389 4,519,174
713 4,519,175
742 4,519,176
745 4,519,177

CLASS 53
137 4,519,178
234 4,519,180
236 4,519,179
374 4,519,181
461 4,519,182
4,519,183
503 4,519,184
550 4,519,185
585 4,519,186

CLASS 54
81 4,519,187

CLASS 55
26 4,519,813
46 4,519,815
59 4,519,816
112 4,519,817
130 4,519,818
162 4,519,819
284 4,519,820
290 4,519,821
459 R 4,519,822
493 4,519,823

CLASS 56
16.4 4,519,188
16.6 4,519,189
181 4,519,190
298 4,519,192
328 R 4,519,193
331 4,519,191
370 4,519,194

CLASS 57
3 4,519,195
18 4,519,196
64 4,519,197
71 4,519,198
87 4,519,199
246 4,519,200
252 4,519,201
264 4,519,202
328 4,519,203
340 4,519,204
406 4,519,205

CLASS 60
39.182 4,519,207
39.54 4,519,206
262 4,519,208
433 4,519,209
602 4,519,210
4,519,211
669 4,519,212

CLASS 62
26 4,519,824
28 4,519,825
52 4,519,213
156 4,519,214
158 4,519,215
185 4,519,216
256 4,519,217
271 4,519,218
457 4,519,219

CLASS 63
29 R 4,519,220

CLASS 65
3.11 4,519,826
27 4,519,814
29 4,519,827
33 4,519,828
114 4,519,829
162 4,519,830

CLASS 66
107 4,519,221
121 B1 4,294,086

CLASS 68
5 C 4,519,222
23.5 4,519,223

CLASS 69
30 4,519,224

CLASS 70
34 4,519,225
48 4,519,226
264 4,519,227
276 4,519,228
312 4,519,229

CLASS 71
13 4,519,831
87 4,519,832
100 4,519,833
4,519,834

CLASS 72
56 4,519,230
88 4,519,231
133 4,519,232
247 4,519,233
258 4,519,234
414 4,519,235
457 4,519,236

CLASS 73
23 4,519,237
40.5 R 4,519,238
55 4,519,239
116 4,519,240
162 4,519,241
4,519,242
198 4,519,247
204 4,519,246
223 4,519,248
432 R 4,519,243
4,519,244
579 4,519,245
596 4,519,249
626 4,519,250
639 4,519,251
655 4,519,252
718 4,519,253
726 4,519,254
727 4,519,255
745 4,519,256
861.04 4,519,257
861.22 4,519,259
861.25 4,519,260
864.16 4,519,258

CLASS 74
7 E 4,519,261
89.2 4,519,262
128 4,519,263
409 4,519,264
443 4,519,265
471 XY 4,519,266
473 P 4,519,268
473 R 4,519,267
483 R 4,519,269
535 4,519,270
594.3 4,519,271
752 A 4,519,273
752 R 4,519,272
866 4,519,274
4,519,275

CLASS 75
0.5 B 4,519,837
0.5 BC Re.31,902
10 R 4,519,835
25 4,519,836
129 4,519,838
242 4,519,839

CLASS 81
3.2 4,519,276
3.48 B1 4,291,597
3.55 4,519,277
427.5 4,519,278

CLASS 82
38 R 4,519,279

CLASS 83
34 4,519,280
37 4,519,281
85 4,519,282
104 4,519,283
410 4,519,284
880 4,519,285

CLASS 84
1.03 4,519,286
1.16 4,519,287
411 M 4,519,288
421 4,519,289

CLASS 87
7 4,519,290

CLASS 89
1.806 4,519,291
36.13 4,519,292

CLASS 91
178 4,519,293
374 4,519,294
376 R 4,519,295
388 4,519,296

CLASS 92
88 4,519,297
103 F 4,519,298
129 4,519,299
158 4,519,300

CLASS 98
1 4,519,301
2.08 4,519,302
58 4,519,303

CLASS 99
489 4,519,304
625 4,519,305

CLASS 100
35 4,519,306
99 4,519,307
102 4,519,308
229 R 4,519,309

CLASS 101
35 4,519,310
109 4,519,311
349 4,519,312

CLASS 102
310 4,519,313
313 4,519,314
377 4,519,315
513 4,519,316
521 4,519,317

CLASS 105
218 A 4,519,329

CLASS 106
1.05 4,519,840
27 4,519,841
90 4,519,842
4,519,843
209 4,519,844

CLASS 108
33 4,519,318
111 4,519,319

CLASS 110
238 4,519,320
263 4,519,321
264 4,519,322
281 4,519,323
347 4,519,324

CLASS 111
85 4,519,325

CLASS 112
79 R 4,519,326
121.15 4,519,327
158 E 4,519,328
222 4,519,330
262.3 4,519,331
266.2 4,519,332
311 4,519,333

CLASS 114
144 R 4,519,334
4,519,335
286 4,519,336

CLASS 118
33 4,519,337
305 4,519,338
718 4,519,339
748 4,519,401

CLASS 119
1 4,519,340

CLASS 123
1 A 4,519,341
3 4,519,342
41.49 4,519,343
55 VF 4,519,344
90.16 4,519,345
188 M 4,519,346
195 A 4,519,347
195 C 4,519,348
198 R 4,519,349
308 4,519,350
337 4,519,369
357 4,519,351
359 4,519,353
373 4,519,352
399 4,519,360
4,519,361
414 4,519,362
432 4,519,363
4,519,364
4,519,365
4,519,370
435 4,519,366
440 4,519,367
468 4,519,368
470 4,519,371
4,519,372
472 4,519,354
491 4,519,355
533 4,519,356
539 4,519,357
557 4,519,358
559 4,519,373
668 4,519,359

CLASS 124
23 R 4,519,374

CLASS 126
110 B 4,519,375
121 4,519,376
4,519,377
225 4,519,378
422 4,519,379
4,519,380
424 4,519,381
425 4,519,382
430 4,519,383
438 4,519,384

CLASS 127
46.2 4,519,845

CLASS 128
66 4,519,385
136 4,519,386
204.23 4,519,387
204.25 4,519,388
303.1 4,519,389
4,519,390
303.15 4,519,391
325 4,519,392
400 4,519,393
419 F 4,519,394
671 4,519,395
698 4,519,396
706 4,519,397
710 4,519,398
724 4,519,399
741 4,519,400
765 4,519,402
785 4,519,403
4,519,404

CLASS 131
94 4,519,405
4,519,406
291 4,519,407

CLASS 132
89 4,519,408

CLASS 134
15 4,519,846
28 4,519,847
34 4,519,848

CLASS 135
88 4,519,409
93 4,519,410

CLASS 137
68 R 4,519,411
72 4,519,412
111 4,519,413
246.22 4,519,414
318 4,519,415
488 4,519,416
501 4,519,417
571 4,519,418
596 4,519,419
4,519,420
596.16 4,519,421
630.14 4,519,422
888 4,519,423

CLASS 139
91 4,519,424

CLASS 141
1.1 4,519,425
5 4,519,426
65 4,519,427
98 4,519,428

CLASS 144
3 R 4,519,429

CLASS 148
1.5 4,519,849
4,519,850
6.31 4,519,851
16 4,519,852
16.5 4,519,853
127 4,519,854

CLASS 149
21 4,519,855

CLASS 152
209 R 4,519,430
4,519,431
357 A 4,519,432

CLASS 156
49 4,519,856
64 4,519,857
4,519,858
69 4,519,859
161 4,519,860
172 4,519,861

219 4,519,862
244.12 4,519,863
248 4,519,864
256 4,519,865
295 4,519,866
351 4,519,867
353 4,519,868
428 4,519,869
603 4,519,870
622 4,519,871
643 4,519,872

CLASS 160

126 4,519,433
133 4,519,434
166 A 4,519,435

CLASS 162

138 4,519,873

CLASS 164

120 4,519,436
284 4,519,437
415 4,519,438
476 4,519,439

CLASS 165

1 4,519,440
4,519,441
9.2 4,519,442
17 4,519,443
47 4,519,444
76 4,519,445
101 4,519,446
104.33 4,519,447
114 4,519,450
118 4,519,448
141 4,519,449

CLASS 166

278 4,519,451
288 4,519,452
303 4,519,453
4,519,454
305 R 4,519,455
312 4,519,456
317 4,519,457

CLASS 169

56 4,519,458

CLASS 172

42 4,519,459
176 4,519,460
225 4,519,461

CLASS 174

65 R 4,520,227
68.5 4,520,228
73 R 4,520,229
107 4,520,230
158 F 4,520,231

CLASS 175

53 4,519,462
61 4,519,463

CLASS 177

CLASS 191

12.4 4,520,239

CLASS 192

0.033 4,519,485
3 S 4,519,486
3.58 4,519,484
4 A 4,519,483
36 4,519,487
98 4,519,488

CLASS 193

31 R 4,519,489

CLASS 198

333 4,519,490
349 4,519,491
408 4,519,492
414 4,519,493
448 4,519,494
486 4,519,495
676 4,519,496

CLASS 200

5 B 4,520,241
5 R 4,520,240
6 A 4,520,242
51.07 4,520,243
67 DA 4,520,244
82 R 4,520,245
144 B 4,520,246
298 4,520,247
340 4,520,248

CLASS 201

39 4,519,874

CLASS 203

28 4,519,875

CLASS 204

15 4,519,876
4,519,877
28 Re.31,901
4,519,878
35.1 4,519,879
91 4,519,880
149 4,519,881
158 R 4,519,882
159.15 4,519,883
181 C 4,519,884
192 R 4,519,885
196 4,519,886
212 4,519,887
252 4,519,888
275 4,519,889
409 4,519,890
418 4,519,891

CLASS 206

37 4,519,497
214 4,519,498
219 4,519,499
223 4,519,892
311 4,519,893
312 4,519,900
339 4,519,901
390 4,519,902
505 4,519,911

734 Re.31,900

CLASS 211

59.2 4,519,508
119.13 4,519,509
131 4,519,510
187 4,519,511
193 4,519,512

CLASS 215

32 4,519,513
225 4,519,514
230 4,519,515
252 4,519,516
253 4,519,517
331 4,519,518

CLASS 217

69 W 4,520,253

CLASS 219

10.49 R 4,520,249
10.55 B 4,520,250
10.55 M 4,520,251
69 M 4,520,252
121 L 4,520,254
130.1 4,520,255
225 4,520,256
250 4,520,257
279 4,520,258
501 4,520,259
553 4,520,260

CLASS 220

211 4,519,519
263 4,519,520
335 4,519,521

CLASS 221

13 4,519,522
129 4,519,523
167 4,519,524
211 4,519,525

CLASS 222

212 4,519,526
383 4,519,527
396 4,519,528
484 4,519,529
494 4,519,530

CLASS 223

30 4,519,531

CLASS 227

8 4,519,532
109 4,519,533
117 4,519,534
131 4,519,535
147 4,519,536

CLASS 228

221 4,519,537

CLASS 229

27 4,519,538

CLASS 236

11 4,519,539

CLASS 249

57 4,519,567
66 R 4,519,568
142 4,519,569
194 4,519,570

CLASS 250

203 R 4,520,261
221 4,520,262
223 R 4,520,263
311 4,520,264
338 4,520,265
357.1 4,520,266
358.1 4,520,267
492.1 4,520,268
492.2 4,520,269
560 4,520,270

CLASS 251

1 A 4,519,571
29 4,519,572
30 4,519,573
31 4,519,574
58 4,519,575
62 4,519,576
4,519,577
163 4,519,578
172 4,519,579
223 4,519,580
268 4,519,581
328 4,519,582
4,519,583

CLASS 252

8.5 B 4,519,922
8.5 C 4,519,923
35 4,519,924
48.6 4,519,925
49.6 4,519,926
4,519,927
50 4,519,928
51.5 A 4,519,929
62.2 4,519,930
62.51 4,519,931
73 4,519,932
140 4,519,933
174.12 4,519,934
299.1 4,519,935
299.63 4,519,936
500 4,519,937
4,519,938
4,519,939
4,519,940
514 4,519,941
520 4,519,942
522 R 4,519,943
4,519,944

CLASS 254

29 R 4,519,584
271 4,519,585

CLASS 256

51 4,519,586

CLASS 260

139 4,519,945
239.55 R 4,519,946

220 4,519,588

CLASS 267

52 4,519,589
4,519,590
148 4,519,591

CLASS 269

25 4,519,592
40 4,519,593

CLASS 270

20.1 4,519,594
31 4,519,595
32 4,519,596
42 4,519,597
53 4,519,598
4,519,599

CLASS 271

4 4,519,600
114 4,519,601

CLASS 272

33 R 4,519,602
73 4,519,603
4,519,604
116 4,519,605

CLASS 273

1 R 4,519,606
5 B 4,519,607
29 A 4,519,608
54 A 4,519,609
89 4,519,610
126 R 4,519,611
163 R 4,519,612
417 4,519,613

CLASS 277

84 4,519,614
92 4,519,615
152 4,519,616
153 4,519,617
228 4,519,618
235 B 4,519,619

CLASS 279

2 R 4,519,620
116 4,519,621

CLASS 280

33.99 S 4,519,622
461 A 4,519,623
633 4,519,624
4,519,625
661 4,519,626
701 4,519,627
4,519,628

CLASS 281

25 A 4,519,629
31 4,519,630

CLASS 283

70 4,519,631
75 4,519,632

CLASS 305

27 4,519,654

CLASS 307

39 4,520,274
64 4,520,275
228 4,520,276
252 C 4,520,277
253 4,520,278
254 4,520,279
358 4,520,280
475 4,520,281
491 4,520,282
520 4,520,283

CLASS 310

42 4,520,284
83 4,520,285
4,520,286
184 4,520,287
194 4,520,288
316 4,520,289

CLASS 312

12 4,519,655
256 4,519,656

CLASS 313

15 4,520,290
365 4,520,291
412 4,520,292

CLASS 315

5.25 4,520,293
50 4,520,294
291 4,520,295

CLASS 318

254 4,520,296
490 4,520,297
4,520,298
587 4,520,299
603 4,520,300
609 4,520,301
696 4,520,302
778 4,520,303
800 4,520,304

CLASS 322

2 R 4,520,305

CLASS 323

324 4,520,306

CLASS 324

54 4,520,307
58.5 R 4,520,308
73 R 4,520,309
115 4,520,310
117 R 4,520,311
158 D 4,520,312
158 P 4,520,314
158 R 4,520,313
309 4,520,315
4,520,316
326 4,520,317
497 4,520,318

CLASS 328

308 4,520,342

CLASS 339

15 4,519,657
17 CF 4,519,658
59 M 4,519,659
75 M 4,519,660
89 M 4,519,661
94 R 4,519,662
99 R 4,519,663
143 R 4,519,664
147 R 4,519,665
177 R 4,519,666
186 M 4,519,667
241 4,519,668
274 4,519,669

CLASS 340

19 R 4,520,343
58 4,520,344
309.2 4,520,345
347 DD 4,520,346
4,520,347
508 4,520,348
531 4,520,349
569 4,520,350
574 4,520,351
590 4,520,352
636 4,520,353
679 4,520,354
709 4,520,355
750 4,520,356
783 4,520,357
799 4,520,358
870.19 4,520,359
947 4,520,360

CLASS 343

361 4,520,362
372 4,520,361
828 4,520,363
872 4,520,364
903 4,520,365

CLASS 346

1.1 4,520,366
75 4,520,367
4,520,368
4,520,369
76 L 4,520,370
76 PH 4,520,371
136 4,520,372
140 R 4,520,373
4,520,374
4,520,375
204 4,520,376
208 4,520,377
209 4,520,378
214 4,520,379

CLASS 350

96 15 4,519,670
4,519,671
96 20 4,519,672
96 32 4,519,673
102 4,519,674
259 4,519,675
269 4,519,676
338 4,519,678
339 R 4,519,679

326 4,519,707
350 4,519,708
373 4,519,709
411 4,519,710

CLASS 357

2 4,520,380
30 4,520,381
53 4,520,382
81 4,520,383
82 4,520,384

CLASS 358

12 4,520,385
13 4,520,386
90 4,520,387
107 4,520,388
4,520,389
108 4,520,390
133 4,520,391
147 4,520,392
149 4,520,393
150 4,520,394
163 4,520,395
167 4,520,396
168 4,520,397
183 4,520,398
287 4,520,399
296 4,520,400
310 4,520,401
324 4,520,402
332 4,520,403
335 4,520,404

CLASS 360

10.3 4,520,405
14.2 4,520,406
32 4,520,407
51 4,520,408
59 4,520,409
77 4,520,410
85 4,520,411
96.1 4,520,412
113 4,520,413
125 4,520,414
137 4,520,415

CLASS 361

11 4,520,416
45 4,520,417
92 4,520,418
104 4,520,419
154 4,520,420
234 4,520,421
305 4,520,422
380 4,520,423
383 4,520,424
384 4,520,425
386 4,520,426
389 4,520,427
399 4,520,428
413 4,520,429
433 4,520,430

CLASS 362

180 4,520,431
267 4,520,432
296 4,520,433
309 4,520,434

210 4,520,466

CLASS 366

4 4,519,711
77 4,519,712
79 4,519,713
285 4,519,714
343 4,519,715

CLASS 367

24 4,520,467
83 4,520,468

CLASS 369

44 4,520,469
72 4,520,470
112 4,520,471
4,520,472
126 4,520,473

CLASS 370

24 4,520,474
4,520,475
32 4,520,476
58 4,520,477
63 4,520,478
84 4,520,479
100 4,520,480

CLASS 371

37 4,520,481
68 4,520,482
4,520,483

CLASS 372

24 4,520,484
48 4,520,485
95 4,520,486

CLASS 373

134 4,520,487

CLASS 374

8 4,519,716
17 4,519,717
45 4,519,718

CLASS 375

5 4,520,488
14 4,520,489
27 4,520,490
4,520,491
86 4,520,492
97 4,520,493

CLASS 376

307 4,519,978

CLASS 378

108 4,520,494
117 4,520,495
128 4,520,496
166 4,520,497

CLASS 381

16 4,520,498
36 4,520,499
43 4,520,500
48 4,520,501
51 4,520,502

361 4,519,736

CLASS 414

71 4,519,740
337 4,519,737
483 4,519,738
724 4,519,739
738 4,519,741

CLASS 415

7 4,519,742
92 4,519,744

CLASS 416

1 4,519,743
96 A 4,519,745
223 R 4,519,746
244 A 4,519,747

CLASS 417

45 4,519,748
158 4,519,749
270 4,519,750
298 4,519,752
322 4,519,751
403 4,519,753
477 4,519,754

CLASS 418

9 4,519,755
68 4,519,756

CLASS 420

448 4,519,979
474 4,519,980

CLASS 422

64 4,519,981
68 4,519,982
78 4,519,983
196 4,519,984

CLASS 423

6 4,519,985
19 4,519,986
60 4,519,987
76 4,519,988
121 4,519,989
210 4,519,990
220 4,519,991
230 4,519,992
235 4,519,993
242 4,519,994
244 4,519,995
249 4,519,996
265 4,519,997
277 4,519,998
332 4,520,001
337 4,519,999
456 4,520,000
522 4,520,002
531 4,520,006
533 4,520,003
598 4,520,004
599 4,520,005

CLASS 424

17 4,520,007
47 4,520,008
78 4,520,009

209 4,520,042
239 4,520,043
244 4,520,044
294 4,520,045
304 4,520,046
331 4,520,047
350 4,520,048
356 4,520,049
381 4,520,050
387 4,520,051
443.1 4,520,052

CLASS 428

31 4,520,053
35 4,520,054
55 4,520,055
68 4,520,056
4,520,057
90 4,520,058
109 4,520,059
131 4,520,060
137 4,520,061
148 4,520,062
195 4,520,063
199 4,520,064
222 4,520,065
288 4,520,066
323 4,520,067
324 4,520,068
328 4,520,069
336 4,520,070
402 4,520,071
403 4,520,072
405 4,520,073
412 4,520,074
435 4,520,075
611 4,520,076
632 4,520,077
636 4,520,078
694 4,520,079

CLASS 429

18 4,520,080
19 4,520,081
26 4,520,082
101 4,520,083
4,520,084
174 4,520,085
192 4,520,086
219 4,520,087

CLASS 430

49 4,520,088
4,520,089
106.6 4,520,090
110 4,520,091
120 4,520,092
144 4,520,094
223 4,520,095
233 4,520,096
280 4,520,097
292 4,520,093
495 4,520,098
613 4,520,099

CLASS 431

4 4,519,769
7 4,519,770
25 4,519,771

CLASS 445

7 4,519,784
48 4,519,785

CLASS 446

97 4,519,786
313 4,519,787
356 4,519,788
444 4,519,789

CLASS 455

3 4,520,507
4 4,520,508

CLASS 474

18 4,519,790
152 4,519,791

CLASS 501

12 4,520,114
60 4,520,115
98 4,520,116
107 4,520,117

CLASS 502

53 4,520,118
67 4,520,119
68 4,520,120
105 4,520,121
152 4,520,122
153 4,520,123
159 4,520,124
170 4,520,125
184 4,520,126
209 4,520,127
210 4,520,128
222 4,520,129
345 4,520,130

CLASS 514

12 4,520,016
54 4,520,017
156 4,520,131
200 4,520,022
212 4,520,021
241 4,520,023
255 4,520,024
275 4,520,025
299 4,520,026
354 4,520,027
447 4,520,028
469 4,520,018
479 4,520,029
560 4,520,132
568 4,520,133
625 4,520,134
629 4,520,030
632 4,520,031

CLASS 521

56 4,520,135
60 4,520,136
79 4,520,137
91 4,520,138
109.1 4,520,139
115 4,520,140
126 4,520,141

CLASS 523

219 4,519,862
244.12 4,519,863
248 4,519,864
256 4,519,865
295 4,519,866
351 4,519,867
353 4,519,868
428 4,519,869
603 4,519,870
622 4,519,871
643 4,519,872

CLASS 160

126 4,519,433
133 4,519,434
166 A 4,519,435

CLASS 162

138 4,519,873

CLASS 164

120 4,519,436
284 4,519,437
415 4,519,438
476 4,519,439

CLASS 165

1 4,519,440
4,519,441
9.2 4,519,442
17 4,519,443
47 4,519,444
76 4,519,445
101 4,519,446
104.33 4,519,447
114 4,519,450
118 4,519,448
141 4,519,449

CLASS 166

278 4,519,451
288 4,519,452
303 4,519,453
4,519,454
305 R 4,519,455
312 4,519,456
317 4,519,457

CLASS 169

56 4,519,458

CLASS 172

42 4,519,459
176 4,519,460
225 4,519,461

CLASS 174

65 R 4,520,227
68.5 4,520,228
73 R 4,520,229
107 4,520,230
158 F 4,520,231

CLASS 175

53 4,519,462
61 4,519,463

CLASS 177

244 4,519,464

CLASS 178

22.05 4,520,232

CLASS 179

1.5 R 4,520,233
2 A 4,520,234
99 LS 4,520,235
107 E 4,520,236
115.5 ES 4,520,237
121 C 4,520,238

CLASS 180

6.48 4,519,465
7.1 4,519,466
8.5 4,519,468
68.4 4,519,467
169 4,519,469
180 4,519,470
219 4,519,471
227 4,519,472
229 4,519,473
279 4,519,474

CLASS 182

17 4,519,475
28 4,519,476
107 4,519,477
178 4,519,478

CLASS 187

29 R 4,519,479

CLASS 188

52 4,519,480
322.17 4,519,481
343 4,519,482

CLASS 191

12.4 4,520,239

CLASS 192

0.033 4,519,485
3 S 4,519,486
3.58 4,519,484
4 A 4,519,483
36 4,519,487
98 4,519,488

CLASS 193

31 R 4,519,489

CLASS 198

333 4,519,490
349 4,519,491
408 4,519,492
414 4,519,493
448 4,519,494
486 4,519,495
676 4,519,496

CLASS 200

5 B 4,520,241
5 R 4,520,240
6 A 4,520,242
51.07 4,520,243
67 DA 4,520,244
82 R 4,520,245
144 B 4,520,246
298 4,520,247
340 4,520,248

CLASS 201

39 4,519,874

CLASS 203

28 4,519,875

CLASS 204

15 4,519,876
4,519,877
28 Re.31,901
4,519,878
35.1 4,519,879
91 4,519,880
149 4,519,881
158 R 4,519,882
159.15 4,519,883
181 C 4,519,884
192 R 4,519,885
196 4,519,886
212 4,519,887
252 4,519,888
275 4,519,889
409 4,519,890
418 4,519,891

CLASS 206

37 4,519,497
214 4,519,498
219 4,519,499
223 4,519,892
311 4,519,893
312 4,519,500
339 4,519,501
390 4,519,502
505 4,519,503
554 4,519,504

CLASS 208

8 LE 4,519,895
11 R 4,519,894
74 4,519,897
131 4,519,898
179 4,519,899
254 H 4,519,900
321 4,519,901

CLASS 209

44.1 4,519,896
234 4,519,902
513 4,519,505
592 4,519,506
682 4,519,507

CLASS 210

94 4,519,903
167 4,519,904
198.2 4,519,905
223 4,519,906
257.1 4,519,907
287 4,519,908
327 4,519,910
478 4,519,911
500.2 4,519,909
611 4,519,912
4,519,913
633 4,519,914
663 4,519,915
678 4,519,916
4,519,917
680 4,519,918
695 4,519,919
701 4,519,920
716 4,519,921
734 Re.31,900

CLASS 211

59.2 4,519,508
119.13 4,519,509
131 4,519,510
187 4,519,511
193 4,519,512

CLASS 215

32 4,519,513
225 4,519,514
230 4,519,515
252 4,519,516
253 4,519,517
331 4,519,518

CLASS 217

69 W 4,520,253

CLASS 219

10.49 R 4,520,249
10.55 B 4,520,250
10.55 M 4,520,251
69 M 4,520,252
121 L 4,520,254
130.1 4,520,255
225 4,520,256
250 4,520,257
279 4,520,258
501 4,520,259
553 4,520,260

CLASS 220

211 4,519,519
263 4,519,520
335 4,519,521

CLASS 221

13 4,519,522
129 4,519,523
167 4,519,524
211 4,519,525

CLASS 222

212 4,519,526
383 4,519,527
396 4,519,528
484 4,519,529
494 4,519,530

CLASS 223

30 4,519,531

CLASS 227

8 4,519,532
109 4,519,533
117 4,519,534
131 4,519,535
147 4,519,536

CLASS 228

221 4,519,537

CLASS 229

27 4,519,538

CLASS 236

13 4,519,539

CLASS 237

7 4,519,540

CLASS 239

1 4,519,541
4,519,542
265.19 4,519,543
279 4,519,544
288 4,519,545
542 4,519,546
585 4,519,547
652 4,519,548
703 4,519,549

CLASS 241

167 4,519,550
194 4,519,551

CLASS 242

7.17 4,519,552
56 R 4,519,553
67.4 4,519,554
107.2 4,519,555
117 4,519,556
118.31 4,519,557
186 4,519,558

CLASS 244

17.17 4,519,559
45 R 4,519,560
110 B 4,519,561
207 4,519,562
208 4,519,563

CLASS 248

58 4,519,564
237 4,519,565
360 4,519,566

CLASS 249

57 4,519,567
66 R 4,519,568
142 4,519,569
194 4,519,570

CLASS 250

203 R 4,520,261
221 4,520,262
223 R 4,520,263
311 4,520,264
338 4,520,265
357.1 4,520,266
358.1 4,520,267
492.1 4,520,268
492.2 4,520,269
560 4,520,270

CLASS 251

1 A 4,519,571
29 4,519,572
30 4,519,573
31 4,519,574
58 4,519,575
62 4,519,576
4,519,577
163 4,519,578
172 4,519,579
223 4,519,580
268 4,519,581
328 4,519,582
4,519,583

CLASS 252

8.5 B 4,519,922
8.5 C 4,519,923
35 4,519,924
48.6 4,519,925
49.6 4,519,926
4,519,927
50 4,519,928
51.5 A 4,519,929
62.2 4,519,930
62.51 4,519,931
73 4,519,932
140 4,519,933
174.12 4,519,934
299.1 4,519,935
299.63 4,519,936
500 4,519,937
4,519,938
4,519,939
4,519,940
514 4,519,941
520 4,519,942
522 R 4,519,943
4,519,944

CLASS 254

29 R 4,519,584
273 4,519,585

CLASS 256

51 4,519,586

CLASS 260

119 4,519,945
239.55 R 4,519,946
371 4,519,947
396 R 4,519,948
397.1 4,519,949
404 4,519,950
409 4,519,951
419 4,519,952
453 AB B1 3,903,127
465 H 4,519,953
465.8 D 4,519,954
501.12 4,519,955
549 4,519,956

CLASS 261

44 C 4,519,957
50 A 4,519,958
93 4,519,959
94 4,519,960

CLASS 264

4.6 4,519,961
40.7 4,519,962
45.3 4,519,963
45.4 4,519,964
51 4,519,965
56 4,519,966
86 4,519,967
178 R 4,519,968
210.7 4,519,969
245 4,519,972
261 4,519,970
267 4,519,973
279 4,519,974
311 4,519,971
526 4,519,975
540 4,519,976
550 4,519,977

CLASS 266

80 4,519,587
220 4,519,588

CLASS 267

52 4,519,589
4,519,590
148 4,519,591

CLASS 269

25 4,519,592
40 4,519,593

CLASS 270

20.1 4,519,594
31 4,519,595
32 4,519,596
42 4,519,597
53 4,519,598
4,519,599

CLASS 271

4 4,519,600
114 4,519,601

CLASS 272

33 R 4,519,602
73 4,519,603
4,519,604
116 4,519,605

CLASS 273

1 R 4,519,606
5 B 4,519,607
29 A 4,519,608
54 A 4,519,609
89 4,519,610
126 R 4,519,611
163 R 4,519,612
417 4,519,613

CLASS 277

84 4,519,614
92 4,519,615
152 4,519,616
153 4,519,617
228 4,519,618
235 B 4,519,619

CLASS 279

2 R 4,519,620
116 4,519,621

CLASS 280

33.99 S 4,519,622
461 A 4,519,623
633 4,519,624
4,519,625
661 4,519,626
701 4,519,627
4,519,628

CLASS 281

25 A 4,519,629
31 4,519,630

CLASS 283

70 4,519,631
75 4,519,632

CLASS 285

3 4,519,633
55 4,519,634
93 4,519,635
95 4,519,636
113 4,519,637
305 4,519,638
415 4,519,639

CLASS 290

38 C 4,520,271
40 A 4,520,272
54 4,520,273

CLASS 292

8 Re.31,899
33 4,519,640
127 4,519,641
247 4,519,642

CLASS 294

19.1 4,519,643

CLASS 296

136 4,519,644
224 4,519,645

CLASS 297

15 4,519,646
85 4,519,647
146 4,519,648
316 4,519,649
452 4,519,650
455 4,519,651
477 4,519,652

CLASS 303

89 4,519,653

CLASS 305

27 4,519,654

CLASS 307

39 4,520,274
64 4,520,275
228 4,520,276
252 C 4,520,277
253 4,520,278
254 4,520,279
358 4,520,280
475 4,520,281
491 4,520,282
520 4,520,283

CLASS 310

42 4,520,284
83 4,520,285
4,520,286
184 4,520,287
194 4,520,288
316 4,520,289

CLASS 312

12 4,519,655
256 4,519,656

CLASS 313

15 4,520,290
365 4,520,291
412 4,520,292

CLASS 315

5.25 4,520,293
50 4,520,294
291 4,520,295

CLASS 318

254 4,520,296
490 4,520,297
4,520,298
587 4,520,299
603 4,520,300
609 4,520,301
696 4,520,302
778 4,520,303
800 4,520,304

CLASS 322

2 R 4,520,305

CLASS 323

324 4,520,306

CLASS 324

54 4,520,307
58.5 R 4,520,308
73 R 4,520,309
115 4,520,310
117 R 4,520,311
158 D 4,520,312
158 P 4,520,314
158 R 4,520,313
309 4,520,315
4,520,316
326 4,520,317
457 4,520,318

CLASS 328

133 4,520,319
4,520,320
4,520,321

CLASS 330

263 4,520,322
268 4,520,323
285 4,520,324
302 4,520,325

CLASS 331

116 R 4,520,326
177 R 4,520,327

CLASS 332

31 T 4,520,328

CLASS 333

135 4,520,329
195 4,520,330

CLASS 335

125 4,520,331
126 4,520,332
129 4,520,333
186 4,520,334

CLASS 336

212 4,520,335

CLASS 337

140 4,520,336
275 4,520,337
297 4,520,338

CLASS 338

5 4,520,339
35 4,520,341
195 4,520,340

308 4,520,342

CLASS 339

15 4,519,657
17 CF 4,519,658
59 M 4,519,659
75 M 4,519,660
89 M 4,519,661
94 R 4,519,662
99 R 4,519,663
143 R 4,519,664
147 R 4,519,665
177 R 4,519,666
186 M 4,519,667
241 4,519,668
274 4,519,669

CLASS 340

19 R 4,520,343
58 4,520,344
309.2 4,520,345
347 DD 4,520,346
4,520,347
508 4,520,348
531 4,520,349
569 4,520,350
574 4,520,351
590 4,520,352
636 4,520,353
679 4,520,354
709 4,520,355
750 4,520,356
783 4,520,357
799 4,520,358
870.19 4,520,359
947 4,520,360

CLASS 343

361 4,520,362
372 4,520,361
828 4,520,363
872 4,520,364
903 4,520,365

CLASS 346

1.1 4,520,366
75 4,520,367
4,520,368
4,520,369
76 L 4,520,370
76 PH 4,520,371
136 4,520,372
140 R 4,520,373
4,520,374
4,520,375
204 4,520,376
208 4,520,377
209 4,520,378
214 4,520,379

CLASS 350

96.15 4,519,670
4,519,671
96.20 4,519,672
96.32 4,519,673
102 4,519,674
259 4,519,675
269 4,519,676
338 4,519,678
339 R 4,519,679
486 4,519,680
637 4,519,677

CLASS 351

160 H 4,519,681

CLASS 353

122 4,519,682

CLASS 354

127.11 4,519,683
145.1 4,519,684
154 4,519,685
200 4,519,686
202 4,519,687
297 4,519,688
304 4,519,689
324 4,519,690
400 4,519,691
412 4,519,692

CLASS 355

3 DD 4,519,693
3 SH 4,519,700
5 4,519,694
14 D 4,519,696
14 R 4,519,695
4,519,697
15 4,519,698
4,519,699
39 4,519,701
51 4,519,702
69 4,519,703

CLASS 356

73.1 4,519,704
138 4,519,705
319 4,519,706
326 4,519,707
350 4,519,708
373 4,519,709
411 4,519,710

CLASS 357

2 4,520,380
30 4,520,381
53 4,520,382
81 4,520,383
82 4,520,384

CLASS 358

12 4,520,385
13 4,520,386
90 4,520,387
107 4,520,388
4,520,389
108 4,520,390
133 4,520,391
147 4,520,392
149 4,520,393
150 4,520,394
163 4,520,395
167 4,520,396
168 4,520,397
183 4,520,398
287 4,520,399
296 4,520,400
310 4,520,401
324 4,520,402
332 4,520,403
335 4,520,404

CLASS 360

10.3 4,520,405
14.2 4,520,406
32 4,520,407
51 4,520,408
59 4,520,409
77 4,520,410
85 4,520,411
96.1 4,520,412
113 4,520,413
125 4,520,414
137 4,520,415

CLASS 361

11 4,520,416
45 4,520,417
92 4,520,418
104 4,520,419
154 4,520,420
234 4,520,421
305 4,520,422
380 4,520,423
383 4,520,424
384 4,520,425
386 4,520,426
389 4,520,427
399 4,520,428
413 4,520,429
433 4,520,430

CLASS 362

180 4,520,431
267 4,520,432
296 4,520,433
309 4,520,434
311 4,520,435
366 4,520,436

CLASS 363

41 4,520,437
98 4,520,438

CLASS 364

200 4,520,439
4,520,440
4,520,441
400 B1 4,377,847
414 4,520,442
424 4,520,443
426 4,520,444
450 4,520,445
468 4,520,446
478 4,520,447
488 4,520,448
559 4,520,449
607 4,520,450
900 4,520,451
4,520,452
4,520,453
4,520,454
4,520,455
4,520,456
4,520,457
46 4,520,458

CLASS 365

15 4,520,459
33 4,520,460
184 4,520,461
189 4,520,462
4,520,463
4,520,464
203 4,520,465
210 4,520,466

CLASS 366

4 4,519,711
77 4,519,712
79 4,519,713
285 4,519,714
343 4,519,715

CLASS 367

24 4,520,467
83 4,520,468

CLASS 369

44 4,520,469
72 4,520,470
112 4,520,471
4,520,472
126 4,520,473

CLASS 370

24 4,520,474
4,520,475
32 4,520,476
58 4,520,477
63 4,520,478
84 4,520,479
100 4,520,480

CLASS 371

37 4,520,481
68 4,520,482
4,520,483

CLASS 372

24 4,520,484
48 4,520,485
95 4,520,486

CLASS 373

134 4,520,487

CLASS 374

8 4,519,716
17 4,519,717
45 4,519,718

CLASS 375

5 4,520,488
14 4,520,489
27 4,520,490
4,520,491
86 4,520,492
97 4,520,493

CLASS 376

307 4,519,978

CLASS 378

108 4,520,494
117 4,520,495
128 4,520,496
166 4,520,497

CLASS 381

16 4,520,498
36 4,520,499
43 4,520,500
48 4,520,501
51 4,520,502
56 4,520,503

CLASS 382

1 4,520,504
55 4,520,505
56 4,520,506

CLASS 384

94 4,519,719

CLASS 400

241 4,519,720
472 4,519,721

CLASS 403

26 4,519,722
33 4,519,723
345 4,519,724

CLASS 405

195 4,519,725
4,519,726
204 4,519,727
224 4,519,728
258 4,519,729
4,519,730

CLASS 407

46 4,519,731

CLASS 408

1 R 4,519,732

CLASS 409

7 4,519,733
231 4,519,734

CLASS 411

65 4,519,735
361 4,519,736

CLASS 414

71 4,519,740
337 4,519,737
483 4,519,738
724 4,519,739
738 4,519,741

CLASS 415

7 4,519,742
92 4,519,744

CLASS 416

1 4,519,743
96 A 4,519,745
223 R 4,519,746
244 A 4,519,747

CLASS 417

45 4,519,748
158 4,519,749
270 4,519,750
298 4,519,752
322 4,519,751
403 4,519,753
477 4,519,754

CLASS 418

9 4,519,755
68 4,519,756

CLASS 420

448 4,519,979
474 4,519,980

CLASS 422

64 4,519,981
68 4,519,982
78 4,519,983
196 4,519,984

CLASS 423

6 4,519,985
19 4,519,986
60 4,519,987
76 4,519,988
121 4,519,989
210 4,519,990
220 4,519,991
230 4,519,992
235 4,519,993
242 4,519,994
244 4,519,995
249 4,519,996
265 4,519,997
277 4,519,998
332 4,520,001
337 4,519,999
456 4,520,000
522 4,520,002
531 4,520,006
533 4,520,003
598 4,520,004
599 4,520,005

CLASS 424

17 4,520,007
47 4,520,008
78 4,520,009
85 4,520,011
4,520,226
95 4,520,012
141 4,520,013
153 4,520,014
4,520,015
195.1 4,520,019
197.1 4,520,020
270 B1 4,168,315

CLASS 425

6 4,519,758
97 4,519,759
113 4,519,760
135 4,519,761
143 4,519,757
183 4,519,762
192 R 4,519,763
256 4,519,764
263 4,519,765
302.1 4,519,766
308 4,519,767
456 4,519,768

CLASS 426

3 4,520,032
96 4,520,033
4,520,034
128 4,520,035
271 4,520,036
330.6 4,520,037

CLASS 427

26 4,520,038
35 4,520,039
38 4,520,040
83 4,520,010
88 4,520,041
209 4,520,042
239 4,520,043
244 4,520,044
294 4,520,045
304 4,520,046
331 4,520,047
350 4,520,048
356 4,520,049
381 4,520,050
387 4,520,051
443.1 4,520,052

CLASS 428

31 4,520,053
35 4,520,054
55 4,520,055
68 4,520,056
4,520,057
90 4,520,058
109 4,520,059
131 4,520,060
137 4,520,061
148 4,520,062
195 4,520,063
199 4,520,064
222 4,520,065
288 4,520,066
323 4,520,067
324 4,520,068
328 4,520,069
336 4,520,070
402 4,520,071
403 4,520,072
405 4,520,073
412 4,520,074
435 4,520,075
611 4,520,076
632 4,520,077
636 4,520,078
694 4,520,079

CLASS 429

18 4,520,080
19 4,520,081
26 4,520,082
101 4,520,083
4,520,084
174 4,520,085
192 4,520,086
219 4,520,087

CLASS 430

49 4,520,088
4,520,089
106.6 4,520,090
110 4,520,091
120 4,520,092
144 4,520,094
223 4,520,095
233 4,520,096
280 4,520,097
292 4,520,093
495 4,520,098
613 4,520,099

CLASS 431

4 4,519,769
7 4,519,770
25 4,519,771
45 4,519,772
176 4,519,773
267 4,519,774
328 4,519,776
344 4,519,775

CLASS 432

13 4,519,777
35 4,519,778

CLASS 433

18 4,519,779
29 4,519,780

CLASS 434

156 4,519,781

CLASS 435

13 4,520,100
49 4,520,101
61 4,520,102
121 4,520,103
160 4,520,104
163 4,520,105
172.3 4,520,106
240 4,520,107

CLASS 436

52 4,520,108
56 4,520,109
501 4,520,110
4,520,111
504 4,520,112
4,520,113

CLASS 441

40 4,519,782
117 4,519,783

CLASS 445

7 4,519,784
48 4,519,785

CLASS 446

97 4,519,786
313 4,519,787
356 4,519,788
444 4,519,789

CLASS 455

3 4,520,507
4 4,520,508

CLASS 474

18 4,519,790
152 4,519,791

CLASS 501

12 4,520,114
60 4,520,115
98 4,520,116
107 4,520,117

CLASS 502

53 4,520,118
67 4,520,119
68 4,520,120
105 4,520,121
152 4,520,122
153 4,520,123
159 4,520,124
170 4,520,125
184 4,520,126
209 4,520,127
210 4,520,128
222 4,520,129
345 4,520,130

CLASS 514

12 4,520,016
54 4,520,017
156 4,520,131
200 4,520,022
212 4,520,021
241 4,520,023
255 4,520,024
275 4,520,025
299 4,520,026
354 4,520,027
447 4,520,028
469 4,520,018
479 4,520,029
560 4,520,132
568 4,520,133
625 4,520,134
629 4,520,030
632 4,520,031

CLASS 521

56 4,520,135
60 4,520,136
79 4,520,137
91 4,520,138
109.1 4,520,139
115 4,520,140
126 4,520,141

CLASS 523

205 4,520,142
410 4,520,143
435 4,520,144
500 4,520,145

CLASS 524

94 4,520,146
100 4,520,147
4,520,148
4,520,149
4,520,150
101 4,520,151
120 4,520,152
145 4,520,153
157 4,520,154
166 4,520,155
397 4,520,156
462 4,520,157
481 4,520,158
598 4,520,176
606 4,520,159
765 4,520,160

CLASS 525

11 4,520,161
53 4,520,163
67 4,520,164
84 4,520,165
85 4,520,166
131 4,520,167
169 4,520,168
185 4,520,169
200 4,520,170
247 4,520,181
279 4,520,171
327.6 4,520,162
369 4,520,172

CLASSIFICATION OF PATENTS

403	4,520,173	73	4,520,186	285	4,520,196	548	4,520,206	913	4,520,213	832	4,520,225
438	4,520,174	176	4,520,187		CLASS 546		CLASS 549		CLASS 585		CLASS 604
	4,520,175	274	4,520,188	21	4,520,197	79	4,520,207	254	4,520,214	152	4,519,792
	CLASS 526	331	4,520,189	66	4,520,198	308	4,520,208	255	4,520,215	180	4,519,793
151	4,520,177	336	4,520,190	302	4,520,199		CLASS 560	315	4,520,216	212	4,519,794
200	4,520,178		CLASS 536		CLASS 548	124	4,520,209	415	4,520,217	289	4,519,795
212	4,520,179	17.9	4,520,191	247	4,520,200	222	4,520,210	449	4,520,218	319	4,519,796
	4,520,180	66	4,520,192	342	4,520,201		CLASS 568	462	4,520,219	332	4,519,797
307.2	4,520,182		CLASS 544	416	4,520,202	863	4,520,211	467	4,520,220	358	4,519,798
318	4,520,183	22	4,520,194	432	4,520,203	875	4,520,212	517	4,520,221	366	4,519,799
320	4,520,184	016	4,520,193	461	4,520,204			526	4,520,222	385 A	4,519,800
	CLASS 528	182	4,520,195	491	4,520,205			629	4,520,223	892	4,519,801
65	4,520,185							648	4,520,224		

CLASSIFICATION OF DESIGNS

D2—	24	278,945		500	278,961		383	278,977		129	278,993		113	279,007			279,025
	270	278,946	D7—	13	278,962			278,978		137	278,994			279,010			279,026
	282	278,947		15	278,963		415	278,979		157	278,995	D15—	66	279,011	D23—	3	279,027
	291	278,948			278,964		438	278,980		191	278,996	D17—	9	279,012		55	279,028
D3—	36	278,949	D8—	01	278,965		447	278,981	D13—	12	278,997		18	279,013		155	279,029
	62	278,950		10	278,966		457	278,982		35	278,998	D18—	32	279,014	D25—	80	279,030
D4—	135	278,951		76	278,967	D10—	46	278,983		40	278,999	D19—	78	279,015	D26—	3	279,031
		278,952		91	278,968		78	278,984	D14—	5	279,000	D21—	87	279,016		60	279,032
	138	278,953		98	278,969		111	278,985			279,001			279,017	D28—	35	279,033
D6—	381	278,955		107	278,970		125	278,986		6	279,002			279,018		56	279,034
	409	278,954			278,971	D11—	88	278,987		60	279,003		114	279,019	D29—	5	279,035
	422	278,956		388	278,972		125	278,988		63	279,004		173	279,020	D30—	30	279,036
	432	278,957	D9—	300	278,973		152	278,989			279,005		184	279,021	D32—	35	279,037
	471	278,958		305	278,974		155	278,990		77	279,006		220	279,022		37	279,038
	480	278,959		370	278,975		162	278,991		90	279,008		230	279,023	D34—	40	279,039
	491	278,960		376	278,976	D12—	92	278,992		106	279,009			279,024			

CLASSIFICATION OF PLANTS

P.—	19	5,481		37	5,478		41	5,480		70	5,476		74	5,477		86	5,479

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,519,315	4,519,765	08 :	4,519,108		4,520,362		4,519,952		4,519,534
	4,519,542	4,519,770		4,519,164		4,520,506		4,520,043		4,519,800
	4,520,232	4,519,789		4,519,288	13 :	4,519,107		4,520,064	24 :	4,519,100
04 :	4,519,278	4,519,793		4,519,393		4,519,131		4,520,073		4,519,136
	4,519,553	4,519,801		4,519,606		4,519,142		4,520,104		4,519,143
	4,519,711	4,519,810		4,519,609		4,519,201		4,520,122		4,519,382
	4,520,313	4,519,833		4,519,715		4,519,428		4,520,144		4,519,662
05 :	4,519,458	4,519,847		4,519,896		4,519,508		4,520,164		4,519,787
06 :	4,519,105	4,519,849		4,520,009		4,519,543		4,520,213		4,519,826
	4,519,122	4,519,868		4,520,231		4,519,588		4,520,214		4,519,988
	4,519,148	4,519,874		4,520,464		4,519,751		4,520,218		4,520,011
	4,519,158	4,519,877	09 :	Re.31,900		4,519,794		4,520,248		4,520,062
	4,519,160	4,519,908		4,519,155		4,520,042		4,520,249		4,520,112
	4,519,163	4,519,937		4,519,159	15 :	4,519,563		4,520,279		4,520,113
	4,519,178	4,519,938		4,519,311	17 :	4,519,129		4,520,290		4,520,226
	4,519,182	4,519,940		4,519,357		4,519,145		4,520,392		4,520,297
	4,519,206	4,519,941		4,519,518		4,519,168		4,520,432		4,520,320
	4,519,213	4,519,958		4,519,639		4,519,189		4,520,474	25 :	4,519,118
	4,519,260	4,519,972		4,519,704		4,519,232		4,520,475		4,519,154
	4,519,277	4,519,986		4,519,732		4,519,305		4,520,478		4,519,156
	4,519,286	4,520,078		4,519,746		4,519,331		4,520,498		4,519,183
	4,519,334	4,520,103		4,519,859		4,519,415		4,520,507		4,519,225
	4,519,338	4,520,106		4,519,971		4,519,426	18 :	4,519,173		4,519,252
	4,519,345	4,520,110		4,520,133		4,519,448		4,519,295		4,519,396
	4,519,373	4,520,188		4,520,139		4,519,461		4,519,376		4,519,410
	4,519,379	4,520,197		4,520,167		4,519,499		4,519,480		4,519,514
	4,519,383	4,520,199		4,520,245		4,519,500		4,519,493		4,519,610
	4,519,384	4,520,217		4,520,351		4,519,504		4,519,677		4,519,620
	4,519,392	4,520,233		4,520,404		4,519,513		4,519,767		4,519,629
	4,519,398	4,520,234		4,520,499		4,519,517		4,519,798		4,519,688
	4,519,423	4,520,236	10 :	4,519,884		4,519,525		4,519,840		4,519,689
	4,519,442	4,520,242		4,519,892		4,519,529		4,520,024		4,519,708
	4,519,447	4,520,261		4,520,044		4,519,557		4,520,187		4,519,743
	4,519,457	4,520,265		4,520,093		4,519,564		4,520,198		4,519,776
	4,519,498	4,520,273		4,520,169		4,519,597		4,520,274		4,519,876
	4,519,503	4,520,276		4,520,170		4,519,598		4,520,287		4,519,914
	4,519,520	4,520,300		4,520,171		4,519,599		4,520,387		4,520,040
	4,519,544	4,520,312		4,520,181		4,519,613	19 :	4,519,468		4,520,116
	4,519,559	4,520,317		4,520,183		4,519,619		4,519,551		4,520,137
	4,519,561	4,520,324	12 :	4,519,240		4,519,654		4,519,579		4,520,146
	4,519,562	4,520,331		4,519,271		4,519,713		4,519,667		4,520,189
	4,519,580	4,520,372		4,519,381		4,519,717		4,520,207		4,520,348
	4,519,605	4,520,414		4,519,434		4,519,755	20 :	4,519,325		4,520,350
	4,519,611	4,520,417		4,519,507		4,519,792	21 :	4,519,635		4,520,356
	4,519,632	4,520,428		4,519,511		4,519,795	22 :	4,519,181		4,520,403
	4,519,644	4,520,429		4,519,570		4,519,818		4,519,502		4,520,416
	4,519,674	4,520,436		4,519,618		4,519,845		4,519,568	26 :	4,519,102
	4,519,699	4,520,452		4,519,634		4,519,858		4,519,576		4,519,125
	4,519,707	4,520,456		4,519,643		4,519,881		4,519,725		4,519,152
	4,519,710	4,520,459		4,519,756		4,519,893		4,519,738		4,519,191
	4,519,739	4,520,461		4,519,774		4,519,909		4,519,898		4,519,192
	4,519,745	4,520,493		4,519,856		4,519,926	23 :	4,519,147		4,519,231
	4,519,760	4,520,494		4,520,140		4,519,951		4,519,283		4,519,339

4,519,347
4,519,349
4,519,368
4,519,374
4,519,494
4,519,505
4,519,589
4,519,590
4,519,591
4,519,626
4,519,651
4,519,653
4,519,664
4,519,737
4,519,744
4,519,754
4,519,816
4,519,830
4,519,903
4,519,905
4,519,924
4,519,950
4,519,967
4,520,005
4,520,039
4,520,053
4,520,160
4,520,176
4,520,191
4,520,241
4,520,305
4,520,380
4,520,408
4,520,449
4,168,315
27 : Re.31,897
4,519,097
4,519,113
4,519,135
4,519,215
4,519,253
4,519,289
4,519,340
4,519,395
4,519,403
4,519,404
4,519,532
4,519,536
4,519,583
4,519,600
4,519,631
4,519,714
4,519,973
4,520,142
4,520,307
4,520,413
4,520,439
28 : 4,519,459
29 : 4,519,832
4,519,929
4,520,184
30 : 4,519,429
4,520,013
4,520,019
31 : 4,519,623
4,520,353
33 : 4,519,603
34 : 4,519,103
4,519,126
4,519,132
4,519,134
4,519,137
4,519,157
4,519,276
4,519,319
4,519,324
4,519,330
4,519,348

4,519,400
4,519,408
4,519,417
4,519,422
4,519,444
4,519,501
4,519,512
4,519,515
4,519,526
4,519,658
4,519,671
4,519,718
4,519,740
4,519,759
4,519,809
4,519,817
4,519,852
4,519,871
4,519,875
4,519,882
4,519,900
4,519,901
4,519,928
4,519,943
4,519,944
4,520,017
4,520,021
4,520,032
4,520,067
4,520,119
4,520,148
4,520,149
4,520,150
4,520,158
4,520,168
4,520,179
4,520,180
4,520,215
4,520,221
4,520,310
4,520,326
4,520,396
4,520,402
4,520,437
4,520,438
4,520,460
4,520,471
4,520,472
4,520,477
4,520,490
35 : 4,519,293
4,520,503
4,520,504
36 : 4,519,106
4,519,110
4,519,124
4,519,146
4,519,169
4,519,216
4,519,220
4,519,258
4,519,265
4,519,301
4,519,407
4,519,435
4,519,441
4,519,446
4,519,449
4,519,450
4,519,539
4,519,541
4,519,566
4,519,569
4,519,581
4,519,586
4,519,661
4,519,663

4,519,666
4,519,669
4,519,692
4,519,703
4,519,720
4,519,749
4,519,828
4,519,838
4,519,851
4,519,860
4,519,872
4,519,883
4,519,994
4,519,999
4,520,010
4,520,035
4,520,046
4,520,056
4,520,074
4,520,086
4,520,092
4,520,098
4,520,101
4,520,114
4,520,131
4,520,132
4,520,152
4,520,153
4,520,182
4,520,204
4,520,247
4,520,269
4,520,357
4,520,360
4,520,361
4,520,363
4,520,368
4,520,440
4,520,450
4,520,455
37 : 4,519,114
4,519,522
4,519,552
4,519,647
4,519,700
4,519,823
4,520,134
4,520,334
4,520,435
38 : 4,519,460
39 : Re.31,898
Re.31,902
4,519,098
4,519,112
4,519,151
4,519,223
4,519,235
4,519,322
4,519,385
4,519,401
4,519,409
4,519,419
4,519,420
4,519,430
4,519,482
4,519,516
4,519,535
4,519,705
4,519,782
4,519,812
4,519,842
4,519,857
4,519,885
4,519,904
4,519,925
4,519,932
4,519,954

4,519,976
4,519,990
4,520,028
4,520,033
4,520,055
4,520,123
4,520,130
4,520,151
4,520,155
4,520,156
4,520,190
4,520,206
4,520,259
4,520,260
4,520,281
4,520,319
4,520,388
4,520,431
4,520,433
4,377,847
40 : 4,519,238
4,519,418
4,519,455
4,519,578
4,519,584
4,519,585
4,519,912
4,519,913
4,519,922
4,519,984
4,519,993
4,520,000
4,520,121
4,520,129
4,520,222
4,520,418
41 : 4,519,176
4,519,465
4,519,550
4,520,325
4,520,355
42 : 4,519,171
4,519,174
4,519,175
4,519,188
4,519,190
4,519,209
4,519,245
4,519,284
4,519,300
4,519,303
4,519,306
4,519,307
4,519,342
4,519,377
4,519,387
4,519,394
4,519,425
4,519,464
4,519,519
4,519,593
4,519,604
4,519,655
4,519,665
4,519,722
4,519,736
4,519,748
4,519,779
4,519,785
4,519,806
4,519,814
4,519,825
4,519,837
4,519,866
4,519,948
4,519,965
4,519,985

4,519,989
4,520,025
4,520,082
4,520,120
4,520,157
4,520,159
4,520,161
4,520,196
4,520,205
4,520,229
4,520,256
4,520,292
4,520,298
4,520,306
4,520,335
4,520,337
4,520,423
4,520,451
4,520,488
4,520,508
44 : 4,519,433
4,519,796
4,520,059
4,520,239
4,520,454
45 : 4,519,153
4,519,548
4,519,975
4,520,038
4,520,111
4,520,268
4,520,430
47 : 4,519,200
4,519,257
4,519,281
4,519,326
4,519,386
4,519,921
48 : 4,519,262
4,519,263
4,519,280
4,519,313
4,519,372
4,519,412
4,519,451
4,519,452
4,519,454
4,519,456
4,519,463
4,519,545
4,519,571
4,519,575
4,519,577
4,519,582
4,519,592
4,519,602
4,519,614
4,519,617
4,519,633
4,519,636
4,519,637
4,519,719
4,519,729
4,519,758
4,519,783
4,519,815
4,519,824
4,519,843
4,519,848
4,519,867
4,519,894
4,519,956
4,519,960
4,519,974
4,519,982
4,520,002
4,520,031

4,520,051
4,520,136
4,520,138
4,520,163
4,520,220
4,520,240
4,520,275
4,520,277
4,520,347
4,520,352
4,520,366
4,520,369
4,520,371
4,520,390
4,520,391
4,520,445
4,520,457
4,520,465
4,520,467
4,520,468
4,520,476
4,520,481
4,520,489
4,291,597
49 : 4,519,290
4,519,390
4,519,869
50 : 4,519,128
4,519,734
51 : 4,519,116
4,519,378
4,519,486
4,519,510
4,519,565
4,519,612
4,519,645
4,519,680
4,519,712
4,519,819
4,519,831
4,519,841
4,519,902
4,519,919
4,520,299
4,520,501
3,665,554
53 : 4,519,256
4,519,285
4,519,341
4,519,462
4,519,467
4,519,490
4,519,560
4,520,223
4,520,364
4,520,424
54 : 4,519,162
4,519,244
55 : 4,519,172
4,519,198
4,519,219
4,519,486
4,519,533
4,519,596
4,519,684
4,519,752
4,519,757
4,519,773
4,519,797
4,519,907
4,520,244
4,520,284
4,520,288
4,520,304
4,520,336
4,520,375
4,520,379

DESIGN PATENTS

04 : 279,008
06 : 278,956
278,958
278,966
278,982
278,984
278,997
278,998
279,007
279,014
279,019

279,021
279,022
279,033
279,034
279,039
09 : 278,986
12 : 278,999
279,013
13 : 278,967
278,968
16 : 279,023

17 : 278,975
279,012
19 : 279,029
279,038
20 278,971
278,979
278,988
25 : 278,969
26 : 278,960
29 : 279,036
34 : 278,945

278,965
279,005
36 : 278,951
278,952
278,954
278,962
278,963
278,964
278,973
278,987

279,003
279,011
279,032
37 : 278,959
39 : 278,980
278,983
279,016
279,017
279,018
279,027

42 : 278,947
278,948
278,985
48 : 278,974
278,995
279,020
279,035
50 : 278,955
53 : 279,002
55 : 279,028

PLANT PATENTS

06 : 5,478
5,480
5,481
12 : 5,479

U.S. GOVERNMENT PRINTING OFFICE : O—1985

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Acting Commissioner*

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1054

MAY

1985

BELL+HOWELL

Publication Products

B H

END